

## NAME OF WORK: CONSTRUCTION OF LIBRARY BUILDING AT JHAGADIYA.

(Item-1) Point wiring for Light / Bell with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multi strand copper wires up to 10 mtr length , in below type of pipe erected with 6A Modular type switch / bell push & accessories and earth continuity of following type, erected on PVC / Metallic/Wooden box, single mounting base frame covered with textured/metallic/white front plate modules erected on / in wall / ceiling as per pipe erected, with necessary Lamp holder/ceiling rose / H.D. Connector as directed. (f) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete Cat. III

### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular switch/bell push with mounting boxes.
- Proper earthing and continuity testing.
- Testing and commissioning of each point.

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### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

### 3.3 Switch / Bell Push

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

### 3.4 Boxes

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Screws, rawl plugs, clamps

### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
  - Continuous earth loop from DB to point
  - All metal parts properly earthed
  - Earth continuity testing mandatory
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### 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
  2. Chasing of walls/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper clamping and alignment of conduit.
  5. Making good of chased portion using cement mortar.
  6. Drawing of FRLS copper wires using draw wire.
  7. Termination of wires at switch, lamp holder and junction box.
  8. Installation of modular switch/bell push and cover plate.
  9. Connection of lamp holder/ceiling rose/connector.
  10. Testing for continuity, polarity, insulation resistance.
  11. Commissioning of point.
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### 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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### 6. Measurement Criteria

- Each point shall be measured as one unit
- Length of wiring up to 10 meters included
- Includes:

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Conduit
  - Wires
  - Switch
  - Boxes
  - Accessories
  - Termination
  - Testing
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#### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
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#### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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#### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
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#### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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#### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

**(Item-2) Point wiring for FAN with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (Green) both are of .ISI marked 1.1 KV Grade FRLS PVC insulated multi strand copper wires up to 10 mtr length, in below type of pipe erected with 6A Modular type switch and hum free EME step type electronic fan regulator mounted and accessories with earth continuity of following type erected on PVC / Metallic/Wooden box, single mounting base frame covered with textured/metallic/white front plate modules erected on / in wall / ceiling as per pipe erected. with necessary ceiling rose / H.D.Connector as directed (f) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete Cat. III**

#### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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#### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch/bell push with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of each point.
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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### 3.3 Switch / Bell Push

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 3.4 Boxes

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

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## 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
2. Chasing of walls/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper clamping and alignment of conduit.
5. Making good of chased portion using cement mortar.
6. Drawing of FRLS copper wires using draw wire.
7. Termination of wires at switch, lamp holder and junction box.
8. Installation of modular switch/bell push and cover plate.
9. Connection of lamp holder/ceiling rose/connector.
10. Testing for continuity, polarity, insulation resistance.
11. Commissioning of point.

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## 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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#### 6. Measurement Criteria

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
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#### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
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#### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
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### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
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### **14. Detailed Technical Specifications (Fan Point)**

#### **14.1 Wiring**

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### **14.2 Conduit / Pipe System**

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### **14.3 Switch & Regulator**

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### **14.4 Boxes & Front Plate**

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

#### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB
- Earthing of regulator & metal parts
- Earth continuity test mandatory

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#### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
2. Chasing of wall/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper alignment & fixing.
5. Making good with cement mortar.
6. Drawing of wires.
7. Termination at switch, regulator & ceiling rose.
8. Fixing of modular switch & regulator.
9. Connection of fan through H.D. connector.
10. Testing and commissioning.

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#### 16. Testing & Commissioning

- Insulation resistance test
- Continuity test
- Polarity check
- Functional test of regulator
- Earth continuity verification

### 17. Measurement Criteria

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
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### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 19. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

**(3) Point wiring for Individual Plug with & earth wire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multi strand copper wires up to 10 mtr length, in below type of pipe erected complete with Modular type switch & 5 pin Plug erected on PVC / Metallic/Wooden box covered with appropriate front plate modules erected on / in wall / ceiling as per pipe erected with following type of accessories. [I] For 6A Plug and 6 a switch with 2-1.5 sq.mm Cu. Wire from nearby switchboard/mcb db board (f) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete Cat. III**

#### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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#### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch/bell push with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of each point.
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### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### 3.3 Switch / Bell Push

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 3.4 Boxes

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

#### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

#### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

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#### 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
2. Chasing of walls/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper clamping and alignment of conduit.
5. Making good of chased portion using cement mortar.
6. Drawing of FRLS copper wires using draw wire.
7. Termination of wires at switch, lamp holder and junction box.
8. Installation of modular switch/bell push and cover plate.
9. Connection of lamp holder/ceiling rose/connector.

DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

10. Testing for continuity, polarity, insulation resistance.

11. Commissioning of point.

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**5. Testing & Commissioning**

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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**6. Measurement Criteria**

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
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**7. Standards & Codes**

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
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### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular switch and electronic fan regulator with mounting boxes.
- Proper earthing and continuity testing.
- Testing and commissioning of fan point.

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### 14. Detailed Technical Specifications (Fan Point)

#### 14.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### 14.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### 14.3 Switch & Regulator

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Rating: Suitable for ceiling fan up to 120W
- Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### 14.4 Boxes & Front Plate

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

#### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB
- Earthing of regulator & metal parts
- Earth continuity test mandatory

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#### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
2. Chasing of wall/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper alignment & fixing.
5. Making good with cement mortar.
6. Drawing of wires.
7. Termination at switch, regulator & ceiling rose.
8. Fixing of modular switch & regulator.
9. Connection of fan through H.D. connector.
10. Testing and commissioning.

#### **16. Testing & Commissioning**

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
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#### **17. Measurement Criteria**

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
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#### **18. Tender Description (Elaborated – Fan Point)**

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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#### **19. Category**

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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### **ADDITIONAL TECHNICAL SPECIFICATION**

#### **20. Title**

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 21. Scope of Work (6A Plug Point)

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

**(4) Point wiring for Individual Plug with & earth wire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multi strand copper wires up to 10 mtr length, in below type of pipe erected complete with Modular type switch & 5 pin Plug erected on PVC / Metallic/Wooden box covered with appropriate front plate modules erected on / in wall / ceiling as per pipe erected with following type of accessories. [II] For 16A Plug and 16 amp switch with 2-2.5 sq.mm Cu. Wire from mcb db board.(f) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete Cat. III**

#### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular switch/bell push with mounting boxes.
- Proper earthing and continuity testing.
- Testing and commissioning of each point.

---

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### **3.2 Conduit / Pipe System**

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### **3.3 Switch / Bell Push**

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### **3.4 Boxes**

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

---

## 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
2. Chasing of walls/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper clamping and alignment of conduit.
5. Making good of chased portion using cement mortar.
6. Drawing of FRLS copper wires using draw wire.
7. Termination of wires at switch, lamp holder and junction box.
8. Installation of modular switch/bell push and cover plate.
9. Connection of lamp holder/ceiling rose/connector.
10. Testing for continuity, polarity, insulation resistance.
11. Commissioning of point.

---

## 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 6. Measurement Criteria

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
- 

### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
-



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 14. Detailed Technical Specifications (Fan Point)

#### 14.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### 14.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### 14.3 Switch & Regulator

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### 14.4 Boxes & Front Plate

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
  - Continuous earth loop from DB
  - Earthing of regulator & metal parts
  - Earth continuity test mandatory
- 

### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
  2. Chasing of wall/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper alignment & fixing.
  5. Making good with cement mortar.
  6. Drawing of wires.
  7. Termination at switch, regulator & ceiling rose.
  8. Fixing of modular switch & regulator.
  9. Connection of fan through H.D. connector.
  10. Testing and commissioning.
- 

### 16. Testing & Commissioning

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

### 17. Measurement Criteria

- Each fan point measured as one unit
- Wiring length up to 10 meters included

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Includes all materials, labor & testing
- 

### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 19. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 20. Title

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 21. Scope of Work (6A Plug Point)

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(5) Point wiring for on board Looped Plug with 6A Modular type switch & 5 pin socket erected on PVC / Metallic / Wooden box, single mounting base frame covered with textured / metallic/white front plate modules erected on / in wall / ceiling with following type accessories Cat. III**

### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch/bell push with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of each point.
- 

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Bends
- Couplers
- Junction boxes
- Inspection boxes
- Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### **3.3 Switch / Bell Push**

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### **3.4 Boxes**

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

#### **3.5 Accessories**

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

#### **3.6 Earthing**

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
  2. Chasing of walls/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper clamping and alignment of conduit.
  5. Making good of chased portion using cement mortar.
  6. Drawing of FRLS copper wires using draw wire.
  7. Termination of wires at switch, lamp holder and junction box.
  8. Installation of modular switch/bell push and cover plate.
  9. Connection of lamp holder/ceiling rose/connector.
  10. Testing for continuity, polarity, insulation resistance.
  11. Commissioning of point.
- 

### 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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### 6. Measurement Criteria

- Each point shall be measured as one unit
- Length of wiring up to 10 meters included
- Includes:
  - Conduit
  - Wires
  - Switch
  - Boxes
  - Accessories
  - Termination
  - Testing

## 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

## 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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## 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
- 

## 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
- 

### 14. Detailed Technical Specifications (Fan Point)

#### 14.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### 14.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### 14.3 Switch & Regulator

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### 14.4 Boxes & Front Plate

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

#### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB
- Earthing of regulator & metal parts
- Earth continuity test mandatory

---

#### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
2. Chasing of wall/ceiling for concealed conduit.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

3. Laying of rigid PVC conduit with accessories.
  4. Proper alignment & fixing.
  5. Making good with cement mortar.
  6. Drawing of wires.
  7. Termination at switch, regulator & ceiling rose.
  8. Fixing of modular switch & regulator.
  9. Connection of fan through H.D. connector.
  10. Testing and commissioning.
- 

#### 16. Testing & Commissioning

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

#### 17. Measurement Criteria

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

#### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**19. Category**

Category: III Type: Concealed wiring with medium class rigid PVC conduit

---

**ADDITIONAL TECHNICAL SPECIFICATION**

**20. Title**

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

**21. Scope of Work (6A Plug Point)**

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

**(6) Providing & erecting Switch board for Computer or electric apparatus consisting of following modular type accessories mounted with PVC / Metallic concealed/open box with single mounting base frame covered with textured/metallic /white front plate,modules erected with necessary connections as directed**

1 no. 6A/16A universal plug-switch combined.

3 nos. 6A Switch

3 nos. 6A 5 pin Plug For Modular Type Accessories Cat. III

**1. Title**

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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**2. Scope of Work**

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch/bell push with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of each point.
- 

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### 3.3 Switch / Bell Push

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 3.4 Boxes

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

#### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

#### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

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#### 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
2. Chasing of walls/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper clamping and alignment of conduit.
5. Making good of chased portion using cement mortar.
6. Drawing of FRLS copper wires using draw wire.
7. Termination of wires at switch, lamp holder and junction box.
8. Installation of modular switch/bell push and cover plate.
9. Connection of lamp holder/ceiling rose/connector.

DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

10. Testing for continuity, polarity, insulation resistance.

11. Commissioning of point.

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**5. Testing & Commissioning**

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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**6. Measurement Criteria**

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
- 

**7. Standards & Codes**

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

---

### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
- 

### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
- 

### 14. Detailed Technical Specifications (Fan Point)

#### 14.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### 14.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### 14.3 Switch & Regulator

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Rating: Suitable for ceiling fan up to 120W
- Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### 14.4 Boxes & Front Plate

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

#### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB
- Earthing of regulator & metal parts
- Earth continuity test mandatory

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#### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
2. Chasing of wall/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper alignment & fixing.
5. Making good with cement mortar.
6. Drawing of wires.
7. Termination at switch, regulator & ceiling rose.
8. Fixing of modular switch & regulator.
9. Connection of fan through H.D. connector.
10. Testing and commissioning.

#### **16. Testing & Commissioning**

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

#### **17. Measurement Criteria**

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

#### **18. Tender Description (Elaborated – Fan Point)**

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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#### **19. Category**

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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### **ADDITIONAL TECHNICAL SPECIFICATION**

#### **20. Title**

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 21. Scope of Work (6A Plug Point)

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

**(7) Providing following type of Modular Type Accessories mounted with PVC / metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate , modules erected with necessary connections as per site situation directed by Engineer In charge.(3) Two Pin/RJ-11 Telephone Socket [A] For One Gang Cat.III**

#### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular switch/bell push with mounting boxes.
- Proper earthing and continuity testing.
- Testing and commissioning of each point.

---

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### **3.2 Conduit / Pipe System**

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### **3.3 Switch / Bell Push**

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### **3.4 Boxes**

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
  - Continuous earth loop from DB to point
  - All metal parts properly earthed
  - Earth continuity testing mandatory
- 

## 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
  2. Chasing of walls/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper clamping and alignment of conduit.
  5. Making good of chased portion using cement mortar.
  6. Drawing of FRLS copper wires using draw wire.
  7. Termination of wires at switch, lamp holder and junction box.
  8. Installation of modular switch/bell push and cover plate.
  9. Connection of lamp holder/ceiling rose/connector.
  10. Testing for continuity, polarity, insulation resistance.
  11. Commissioning of point.
- 

## 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 6. Measurement Criteria

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
- 

### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 14. Detailed Technical Specifications (Fan Point)

#### 14.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### 14.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### 14.3 Switch & Regulator

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### 14.4 Boxes & Front Plate

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
  - Continuous earth loop from DB
  - Earthing of regulator & metal parts
  - Earth continuity test mandatory
- 

### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
  2. Chasing of wall/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper alignment & fixing.
  5. Making good with cement mortar.
  6. Drawing of wires.
  7. Termination at switch, regulator & ceiling rose.
  8. Fixing of modular switch & regulator.
  9. Connection of fan through H.D. connector.
  10. Testing and commissioning.
- 

### 16. Testing & Commissioning

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

### 17. Measurement Criteria

- Each fan point measured as one unit
- Wiring length up to 10 meters included

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Includes all materials, labor & testing
- 

#### **18. Tender Description (Elaborated – Fan Point)**

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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#### **19. Category**

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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#### **ADDITIONAL TECHNICAL SPECIFICATION**

#### **20. Title**

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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#### **21. Scope of Work (6A Plug Point)**

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(8) Providing following type of Modular Type Accessories mounted with PVC / metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate , modules erected with necessary connections as per site situation directed by Engineer In charge.(7) Blank Plate Single Cat.III**

### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch/bell push with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of each point.
- 

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Bends
- Couplers
- Junction boxes
- Inspection boxes
- Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### **3.3 Switch / Bell Push**

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### **3.4 Boxes**

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

#### **3.5 Accessories**

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

#### **3.6 Earthing**

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
  2. Chasing of walls/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper clamping and alignment of conduit.
  5. Making good of chased portion using cement mortar.
  6. Drawing of FRLS copper wires using draw wire.
  7. Termination of wires at switch, lamp holder and junction box.
  8. Installation of modular switch/bell push and cover plate.
  9. Connection of lamp holder/ceiling rose/connector.
  10. Testing for continuity, polarity, insulation resistance.
  11. Commissioning of point.
- 

### 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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### 6. Measurement Criteria

- Each point shall be measured as one unit
- Length of wiring up to 10 meters included
- Includes:
  - Conduit
  - Wires
  - Switch
  - Boxes
  - Accessories
  - Termination
  - Testing

## 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

## 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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## 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
- 

## 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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### ADDITIONAL TECHNICAL SPECIFICATION

#### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

#### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
- 

#### 14. Detailed Technical Specifications (Fan Point)

##### 14.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

##### 14.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### 14.3 Switch & Regulator

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### 14.4 Boxes & Front Plate

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

#### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB
- Earthing of regulator & metal parts
- Earth continuity test mandatory

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#### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
2. Chasing of wall/ceiling for concealed conduit.



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

3. Laying of rigid PVC conduit with accessories.
  4. Proper alignment & fixing.
  5. Making good with cement mortar.
  6. Drawing of wires.
  7. Termination at switch, regulator & ceiling rose.
  8. Fixing of modular switch & regulator.
  9. Connection of fan through H.D. connector.
  10. Testing and commissioning.
- 

#### 16. Testing & Commissioning

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

#### 17. Measurement Criteria

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

#### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 19. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

---

## ADDITIONAL TECHNICAL SPECIFICATION

### 20. Title

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

### 21. Scope of Work (6A Plug Point)

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

**(9) Providing following type of Modular Type Accessories mounted with PVC / metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate , modules erected with necessary connections as per site situation directed by Engineer In charge.(8) Computer RJ-45 socket Cat.III**

### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular switch/bell push with mounting boxes.
- Proper earthing and continuity testing.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Testing and commissioning of each point.
- 

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### 3.3 Switch / Bell Push

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Textured / metallic / white finish
- Modular type

#### 3.4 Boxes

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

#### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

#### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

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#### 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
2. Chasing of walls/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper clamping and alignment of conduit.
5. Making good of chased portion using cement mortar.
6. Drawing of FRLS copper wires using draw wire.
7. Termination of wires at switch, lamp holder and junction box.
8. Installation of modular switch/bell push and cover plate.
9. Connection of lamp holder/ceiling rose/connector.
10. Testing for continuity, polarity, insulation resistance.
11. Commissioning of point.

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#### 5. Testing & Commissioning

- Insulation resistance test using megger (500V)

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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#### 6. Measurement Criteria

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
- 

#### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

#### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
- 

### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
- 

### **14. Detailed Technical Specifications (Fan Point)**

#### **14.1 Wiring**

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### **14.2 Conduit / Pipe System**

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### **14.3 Switch & Regulator**

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### **14.4 Boxes & Front Plate**

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### **14.5 Accessories**

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

#### **14.6 Earthing**

- Earth wire: 1.5 sq.mm green copper
  - Continuous earth loop from DB
  - Earthing of regulator & metal parts
  - Earth continuity test mandatory
- 

#### **15. Installation Methodology (Fan Point)**

1. Marking of conduit routes.
  2. Chasing of wall/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper alignment & fixing.
  5. Making good with cement mortar.
  6. Drawing of wires.
  7. Termination at switch, regulator & ceiling rose.
  8. Fixing of modular switch & regulator.
  9. Connection of fan through H.D. connector.
  10. Testing and commissioning.
- 

#### **16. Testing & Commissioning**

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
-



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 17. Measurement Criteria

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 19. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 20. Title

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

### 21. Scope of Work (6A Plug Point)

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### **(10) Supplying & erecting approved make LAN cable of following size in existing pipe as per direction [C] CAT – 6**

#### **1. Title**

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

#### **2. Scope of Work**

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch/bell push with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of each point.
- 

#### **3. Detailed Technical Specifications**

##### **3.1 Wiring**

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

##### **3.2 Conduit / Pipe System**

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Couplers
- Junction boxes
- Inspection boxes
- Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### **3.3 Switch / Bell Push**

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### **3.4 Boxes**

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

#### **3.5 Accessories**

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

#### **3.6 Earthing**

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
  2. Chasing of walls/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper clamping and alignment of conduit.
  5. Making good of chased portion using cement mortar.
  6. Drawing of FRLS copper wires using draw wire.
  7. Termination of wires at switch, lamp holder and junction box.
  8. Installation of modular switch/bell push and cover plate.
  9. Connection of lamp holder/ceiling rose/connector.
  10. Testing for continuity, polarity, insulation resistance.
  11. Commissioning of point.
- 

### 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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### 6. Measurement Criteria

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
- 

### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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### ADDITIONAL TECHNICAL SPECIFICATION

#### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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#### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
- 

#### 14. Detailed Technical Specifications (Fan Point)

##### 14.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

##### 14.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### 14.3 Switch & Regulator

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### 14.4 Boxes & Front Plate

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

#### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB
- Earthing of regulator & metal parts
- Earth continuity test mandatory

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#### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
2. Chasing of wall/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

4. Proper alignment & fixing.
  5. Making good with cement mortar.
  6. Drawing of wires.
  7. Termination at switch, regulator & ceiling rose.
  8. Fixing of modular switch & regulator.
  9. Connection of fan through H.D. connector.
  10. Testing and commissioning.
- 

#### 16. Testing & Commissioning

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

#### 17. Measurement Criteria

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

#### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 19. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

---

### ADDITIONAL TECHNICAL SPECIFICATION

#### 20. Title

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

#### 21. Scope of Work (6A Plug Point)

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

**(11) Providing and erecting ISI mark Medium class RIGID PVC PIPES of following size complete to be erected on/in wall or ceiling erected with necessary PVC fittings & Junction boxes fixed with adhesive solution & Clamps with following dia of pipes, in approved manner as directed (a) 20 mm**

#### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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#### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular switch/bell push with mounting boxes.
- Proper earthing and continuity testing.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Testing and commissioning of each point.
- 

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### 3.3 Switch / Bell Push

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Textured / metallic / white finish
- Modular type

#### 3.4 Boxes

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

#### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

#### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

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#### 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
2. Chasing of walls/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper clamping and alignment of conduit.
5. Making good of chased portion using cement mortar.
6. Drawing of FRLS copper wires using draw wire.
7. Termination of wires at switch, lamp holder and junction box.
8. Installation of modular switch/bell push and cover plate.
9. Connection of lamp holder/ceiling rose/connector.
10. Testing for continuity, polarity, insulation resistance.
11. Commissioning of point.

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#### 5. Testing & Commissioning

- Insulation resistance test using megger (500V)

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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#### 6. Measurement Criteria

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
- 

#### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

#### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
- 

### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
- 

### **14. Detailed Technical Specifications (Fan Point)**

#### **14.1 Wiring**

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### **14.2 Conduit / Pipe System**

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### **14.3 Switch & Regulator**

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### **14.4 Boxes & Front Plate**

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

#### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB
- Earthing of regulator & metal parts
- Earth continuity test mandatory

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#### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
2. Chasing of wall/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper alignment & fixing.
5. Making good with cement mortar.
6. Drawing of wires.
7. Termination at switch, regulator & ceiling rose.
8. Fixing of modular switch & regulator.
9. Connection of fan through H.D. connector.
10. Testing and commissioning.

---

#### 16. Testing & Commissioning

- Insulation resistance test
- Continuity test
- Polarity check
- Functional test of regulator
- Earth continuity verification

### 17. Measurement Criteria

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 19. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

---

## ADDITIONAL TECHNICAL SPECIFICATION

### 20. Title

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 21. Scope of Work (6A Plug Point)

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Installation of modular swi

**(12) Providing and erecting ISI mark Medium class RIGID PVC PIPES of following size complete to be erected on/in wall or ceiling erected with necessary PVC fittings & Junction boxes fixed with adhesive solution & Clamps with following dia of pipes, in approved manner as directed (b) 25 mm**

### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch/bell push with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of each point.
- 

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### **3.3 Switch / Bell Push**

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### **3.4 Boxes**

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

#### **3.5 Accessories**

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

#### **3.6 Earthing**

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

#### **4. Installation Methodology**

1. Marking of conduit routes as per approved drawings.
  2. Chasing of walls/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper clamping and alignment of conduit.
  5. Making good of chased portion using cement mortar.
  6. Drawing of FRLS copper wires using draw wire.
  7. Termination of wires at switch, lamp holder and junction box.
  8. Installation of modular switch/bell push and cover plate.
  9. Connection of lamp holder/ceiling rose/connector.
  10. Testing for continuity, polarity, insulation resistance.
  11. Commissioning of point.
- 

#### **5. Testing & Commissioning**

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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#### **6. Measurement Criteria**

- Each point shall be measured as one unit
- Length of wiring up to 10 meters included
- Includes:
  - Conduit
  - Wires
  - Switch
  - Boxes
  - Accessories

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Termination
- Testing

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### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
- IS: 9537 – PVC conduit
- IS: 732 – Code of practice for electrical wiring
- National Electrical Code
- CPWD / State PWD specifications

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### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
- Manufacturer warranty on materials
- Only ISI marked materials permitted
- Samples to be approved before bulk supply

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### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
- 

### 14. Detailed Technical Specifications (Fan Point)

#### 14.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### 14.2 Conduit / Pipe System

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### 14.3 Switch & Regulator

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### 14.4 Boxes & Front Plate

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

#### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB
- Earthing of regulator & metal parts
- Earth continuity test mandatory

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#### 15. Installation Methodology (Fan Point)

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

1. Marking of conduit routes.
  2. Chasing of wall/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper alignment & fixing.
  5. Making good with cement mortar.
  6. Drawing of wires.
  7. Termination at switch, regulator & ceiling rose.
  8. Fixing of modular switch & regulator.
  9. Connection of fan through H.D. connector.
  10. Testing and commissioning.
- 

#### 16. Testing & Commissioning

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

#### 17. Measurement Criteria

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

#### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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### 19. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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## ADDITIONAL TECHNICAL SPECIFICATION

### 20. Title

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

### 21. Scope of Work (6A Plug Point)

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

**(13) Providing and erecting ISI mark Medium class RIGID PVC PIPES of following size complete to be erected on/in wall or ceiling erected with necessary PVC fittings & Junction boxes fixed with adhesive solution & Clamps with following dia of pipes, in approved manner as directed (c) 32 mm**

### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Installation of modular switch/bell push with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of each point.
- 

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### 3.3 Switch / Bell Push

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- PVC / metallic / wooden box
- Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### 3.4 Boxes

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

#### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

#### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

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#### 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
2. Chasing of walls/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper clamping and alignment of conduit.
5. Making good of chased portion using cement mortar.
6. Drawing of FRLS copper wires using draw wire.
7. Termination of wires at switch, lamp holder and junction box.
8. Installation of modular switch/bell push and cover plate.
9. Connection of lamp holder/ceiling rose/connector.
10. Testing for continuity, polarity, insulation resistance.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 11. Commissioning of point.

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#### 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

---

#### 6. Measurement Criteria

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
- 

#### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

#### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

---

#### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
- 

#### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

---

#### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

---

#### ADDITIONAL TECHNICAL SPECIFICATION

##### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

##### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
- 

### 14. Detailed Technical Specifications (Fan Point)

#### 14.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### 14.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### 14.3 Switch & Regulator

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 14.4 Boxes & Front Plate

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB
- Earthing of regulator & metal parts
- Earth continuity test mandatory

---

## 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
2. Chasing of wall/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper alignment & fixing.
5. Making good with cement mortar.
6. Drawing of wires.
7. Termination at switch, regulator & ceiling rose.
8. Fixing of modular switch & regulator.
9. Connection of fan through H.D. connector.
10. Testing and commissioning.

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## 16. Testing & Commissioning

- Insulation resistance test
- Continuity test

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

#### 17. Measurement Criteria

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

#### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

---

#### 19. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

---

#### ADDITIONAL TECHNICAL SPECIFICATION

##### 20. Title

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

##### 21. Scope of Work (6A Plug Point)

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

**(14) Providing and erecting Mains with 1.1 KV grade FRLS PVC insulated ISI marked stranded Copper conductor wire in following type of pipe to be erected concealed in /flushed on wall/ceiling, with 1.5 sq. mm copper conductor FRLS PVC insulated stranded wire of green colour for earth continuity of following size (A) With medium class Rigid PVC pipe and accessories (a) 2 wire 1.5 sq. mm**

### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular switch/bell push with mounting boxes.
- Proper earthing and continuity testing.
- Testing and commissioning of each point.

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### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

### **3.2 Conduit / Pipe System**

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

### **3.3 Switch / Bell Push**

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

### **3.4 Boxes**

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

### **3.5 Accessories**

- Lamp holder (Batten/pendant type as required)
- Ceiling rose

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

#### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
  - Continuous earth loop from DB to point
  - All metal parts properly earthed
  - Earth continuity testing mandatory
- 

#### 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
  2. Chasing of walls/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper clamping and alignment of conduit.
  5. Making good of chased portion using cement mortar.
  6. Drawing of FRLS copper wires using draw wire.
  7. Termination of wires at switch, lamp holder and junction box.
  8. Installation of modular switch/bell push and cover plate.
  9. Connection of lamp holder/ceiling rose/connector.
  10. Testing for continuity, polarity, insulation resistance.
  11. Commissioning of point.
- 

#### 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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#### 6. Measurement Criteria

- Each point shall be measured as one unit
- Length of wiring up to 10 meters included

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
- 

#### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

#### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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#### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
- 

#### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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#### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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#### ADDITIONAL TECHNICAL SPECIFICATION

#### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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#### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
- 

#### 14. Detailed Technical Specifications (Fan Point)

##### 14.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### **14.2 Conduit / Pipe System**

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### **14.3 Switch & Regulator**

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### **14.4 Boxes & Front Plate**

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

#### **14.5 Accessories**

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

#### **14.6 Earthing**

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Earth wire: 1.5 sq.mm green copper
  - Continuous earth loop from DB
  - Earthing of regulator & metal parts
  - Earth continuity test mandatory
- 

#### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
  2. Chasing of wall/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper alignment & fixing.
  5. Making good with cement mortar.
  6. Drawing of wires.
  7. Termination at switch, regulator & ceiling rose.
  8. Fixing of modular switch & regulator.
  9. Connection of fan through H.D. connector.
  10. Testing and commissioning.
- 

#### 16. Testing & Commissioning

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

#### 17. Measurement Criteria

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

#### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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#### 19. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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#### ADDITIONAL TECHNICAL SPECIFICATION

##### 20. Title

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

##### 21. Scope of Work (6A Plug Point)

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

**(15) Providing and erecting Mains with 1.1 KV grade FRLS PVC insulated ISI marked stranded Copper conductor wire in following type of pipe to be erected concealed in /flushed on wall/ceiling, with 1.5 sq. mm copper conductor FRLS PVC insulated stranded wire of green colour for earth continuity of following size (A) With medium class Rigid PVC pipe and accessories (b) 2 wire 2.5 sq. mm**

##### 1. Title

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 2. Scope of Work

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch/bell push with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of each point.
- 

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

All accessories shall be of matching make and material, properly secured.

### 3.3 Switch / Bell Push

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

### 3.4 Boxes

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

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## 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
2. Chasing of walls/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper clamping and alignment of conduit.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

5. Making good of chased portion using cement mortar.
  6. Drawing of FRLS copper wires using draw wire.
  7. Termination of wires at switch, lamp holder and junction box.
  8. Installation of modular switch/bell push and cover plate.
  9. Connection of lamp holder/ceiling rose/connector.
  10. Testing for continuity, polarity, insulation resistance.
  11. Commissioning of point.
- 

#### 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check
- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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#### 6. Measurement Criteria

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
- 

#### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
- IS: 9537 – PVC conduit

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

#### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

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#### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship
  - Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
- 

#### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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#### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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**ADDITIONAL TECHNICAL SPECIFICATION**

**12. Title**

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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**13. Scope of Work (Fan Point)**

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch and electronic fan regulator with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of fan point.
- 

**14. Detailed Technical Specifications (Fan Point)**

**14.1 Wiring**

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

**14.2 Conduit / Pipe System**

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 14.3 Switch & Regulator

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

### 14.4 Boxes & Front Plate

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type

### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB
- Earthing of regulator & metal parts
- Earth continuity test mandatory

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## 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
2. Chasing of wall/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper alignment & fixing.
5. Making good with cement mortar.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

6. Drawing of wires.
  7. Termination at switch, regulator & ceiling rose.
  8. Fixing of modular switch & regulator.
  9. Connection of fan through H.D. connector.
  10. Testing and commissioning.
- 

#### 16. Testing & Commissioning

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

#### 17. Measurement Criteria

- Each fan point measured as one unit
  - Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

#### 18. Tender Description (Elaborated – Fan Point)

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

---

#### 19. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

---

**ADDITIONAL TECHNICAL SPECIFICATION**

**20. Title**

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

**21. Scope of Work (6A Plug Point)**

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

**(16) providing and erecting Mains with 1.1 KV grade FRLS PVC insulated ISI marked stranded Copper conductor wire in following type of pipe to be erected in / on wall / ceiling with 2.5 sq. mm copper conductor FRLS PVC insulated stranded wire of green colour for earth continuity of following size (A) with medium class Rigid PVC pipe and accessories (a) 2 wire 4 sq. mm**

**1. Title**

Point Wiring for Light / Bell with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

**2. Scope of Work**

The scope of work covers supply, installation, testing and commissioning of point wiring for lighting and bell points using ISI marked FRLS copper wires installed in concealed medium class rigid PVC conduits, complete with modular switches/bell push, accessories and earthing continuity.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, lamp holders, ceiling roses, connectors, etc.
  - Concealed conduit laying in wall/ceiling with necessary chasing and making good.
  - Drawing of wires through conduit.
  - Installation of modular switch/bell push with mounting boxes.
  - Proper earthing and continuity testing.
  - Testing and commissioning of each point.
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 3. Detailed Technical Specifications

#### 3.1 Wiring

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694 (latest revision)
- Maximum length per point: Up to 10 meters

#### 3.2 Conduit / Pipe System

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories:
  - Bends
  - Couplers
  - Junction boxes
  - Inspection boxes
  - Saddles/clamps

All accessories shall be of matching make and material, properly secured.

#### 3.3 Switch / Bell Push

- Rating: 6 Amp
- Type: Modular
- Standard: ISI marked
- Make: Approved make as per department/client list
- Mounting:
  - PVC / metallic / wooden box
  - Single mounting base frame
- Front plate:
  - Textured / metallic / white finish
  - Modular type



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 3.4 Boxes

- Type: PVC / GI / wooden as approved
- Thickness: Minimum 18 gauge for GI boxes
- Properly fixed flush with wall surface

### 3.5 Accessories

- Lamp holder (Batten/pendant type as required)
- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, rawl plugs, clamps

### 3.6 Earthing

- Earth wire: 1.5 sq.mm green copper
- Continuous earth loop from DB to point
- All metal parts properly earthed
- Earth continuity testing mandatory

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## 4. Installation Methodology

1. Marking of conduit routes as per approved drawings.
2. Chasing of walls/ceiling for concealed conduit.
3. Laying of rigid PVC conduit with accessories.
4. Proper clamping and alignment of conduit.
5. Making good of chased portion using cement mortar.
6. Drawing of FRLS copper wires using draw wire.
7. Termination of wires at switch, lamp holder and junction box.
8. Installation of modular switch/bell push and cover plate.
9. Connection of lamp holder/ceiling rose/connector.
10. Testing for continuity, polarity, insulation resistance.
11. Commissioning of point.

---

## 5. Testing & Commissioning

- Insulation resistance test using megger (500V)
- Continuity test for phase, neutral and earth
- Polarity check

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Functional test of switch/bell
- Earthing resistance verification

All tests shall comply with IS: 732 and IE rules.

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#### 6. Measurement Criteria

- Each point shall be measured as one unit
  - Length of wiring up to 10 meters included
  - Includes:
    - Conduit
    - Wires
    - Switch
    - Boxes
    - Accessories
    - Termination
    - Testing
- 

#### 7. Standards & Codes

Work shall comply with:

- IS: 694 – PVC insulated cables
  - IS: 9537 – PVC conduit
  - IS: 732 – Code of practice for electrical wiring
  - National Electrical Code
  - CPWD / State PWD specifications
- 

#### 8. Makes (Indicative)

- Wires: Finolex / Polycab / Havells / RR Kabel
- Conduit: AKG / Precision / Supreme
- Switches: Anchor / Legrand / Schneider / GM

(Or approved equivalent)

---

#### 9. Warranty & Quality Assurance

- Minimum 1-year warranty on workmanship

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Manufacturer warranty on materials
  - Only ISI marked materials permitted
  - Samples to be approved before bulk supply
- 

#### 10. Tender Description (Elaborated)

Providing, installing, testing and commissioning point wiring for light/bell using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with all accessories such as bends, couplers, junction boxes, saddles etc.

The point shall be controlled through 6A modular type switch or bell push, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of lamp holder/ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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#### 11. Category

Category: III Type: Concealed wiring with medium class rigid PVC conduit

---

#### ADDITIONAL TECHNICAL SPECIFICATION

#### 12. Title

Point Wiring for Fan with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

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#### 13. Scope of Work (Fan Point)

The scope includes supply, installation, testing and commissioning of fan point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, hum-free electronic fan regulator, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, electronic regulator, ceiling rose, connectors, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular switch and electronic fan regulator with mounting boxes.
- Proper earthing and continuity testing.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Testing and commissioning of fan point.
- 

### **14. Detailed Technical Specifications (Fan Point)**

#### **14.1 Wiring**

- Phase and Neutral wires: 2 x 1.5 sq.mm
- Earth wire: 1 x 1.5 sq.mm (Green color)
- Conductor material: Multi-strand annealed electrolytic grade copper
- Insulation: FRLS (Flame Retardant Low Smoke) PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Maximum length per point: Up to 10 meters

#### **14.2 Conduit / Pipe System**

- Type: Medium class rigid PVC conduit
- Standard: ISI marked conforming to IS: 9537
- Size: Minimum 20 mm diameter or as required
- Installation: Concealed in wall/ceiling
- Accessories: Bends, couplers, junction boxes, inspection boxes, saddles

#### **14.3 Switch & Regulator**

- Switch rating: 6 Amp modular type
- Fan regulator:
  - Type: Step type electronic
  - Performance: Hum free
  - Rating: Suitable for ceiling fan up to 120W
  - Make: Approved make
- Standard: ISI marked
- Mounting: On PVC / metallic / wooden flush box

#### **14.4 Boxes & Front Plate**

- Box: PVC / GI / wooden
- GI box thickness: Minimum 18 gauge
- Base frame: Single mounting frame
- Front plate:
  - Textured / metallic / white finish

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Modular type

### 14.5 Accessories

- Ceiling rose
- Heavy duty connector (H.D. Connector)
- Screws, clamps, rawl plugs

### 14.6 Earthing

- Earth wire: 1.5 sq.mm green copper
  - Continuous earth loop from DB
  - Earthing of regulator & metal parts
  - Earth continuity test mandatory
- 

### 15. Installation Methodology (Fan Point)

1. Marking of conduit routes.
  2. Chasing of wall/ceiling for concealed conduit.
  3. Laying of rigid PVC conduit with accessories.
  4. Proper alignment & fixing.
  5. Making good with cement mortar.
  6. Drawing of wires.
  7. Termination at switch, regulator & ceiling rose.
  8. Fixing of modular switch & regulator.
  9. Connection of fan through H.D. connector.
  10. Testing and commissioning.
- 

### 16. Testing & Commissioning

- Insulation resistance test
  - Continuity test
  - Polarity check
  - Functional test of regulator
  - Earth continuity verification
- 

### 17. Measurement Criteria

- Each fan point measured as one unit

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Wiring length up to 10 meters included
  - Includes all materials, labor & testing
- 

#### **18. Tender Description (Elaborated – Fan Point)**

Providing, installing, testing and commissioning point wiring for ceiling fan using 2 x 1.5 sq.mm FRLS copper phase & neutral wires and 1 x 1.5 sq.mm green copper earth wire of 1.1 kV grade, ISI marked, drawn through medium class rigid PVC concealed conduit system, complete with accessories such as bends, couplers, junction boxes and saddles.

The point shall be controlled through 6A modular type switch and hum-free step type electronic fan regulator, mounted on PVC/metallic/wooden flush mounting box with single mounting frame and covered with textured/metallic/white modular front plate. Installation shall be concealed in wall/ceiling including chasing, making good and finishing to match surrounding surface.

The work includes supply and fixing of ceiling rose/heavy duty connector as directed, complete earthing with continuous green copper earth wire, proper termination, testing and commissioning. All materials shall be ISI marked and of approved make.

The rate shall include all materials, labor, tools, testing and completion of work as per specifications, drawings and directions of Engineer-in-charge.

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#### **19. Category**

Category: III Type: Concealed wiring with medium class rigid PVC conduit

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#### **ADDITIONAL TECHNICAL SPECIFICATION**

#### **20. Title**

Point Wiring for Individual 6A Plug Point with 2 x 1.5 sq.mm phase & neutral and 1 x 1.5 sq.mm earth wire, using FRLS copper conductor, installed in concealed rigid PVC conduit – Category III

---

#### **21. Scope of Work (6A Plug Point)**

The scope includes supply, installation, testing and commissioning of individual 6A plug point wiring using FRLS copper wires in concealed rigid PVC conduit, complete with modular switch, 5-pin socket, accessories and proper earthing.

This includes:

- Supply of all materials such as wires, conduits, accessories, switch boxes, modular plates, 5-pin socket, etc.
- Concealed conduit laying in wall/ceiling with necessary chasing and making good.
- Drawing of wires through conduit.
- Installation of modular swi

**(17) providing and erecting Mains with 1.1 KV grade FRLS PVC insulated ISI marked stranded Copper conductor wire in following type of pipe to be erected in / on wall / ceiling with 2.5 sq. mm copper conductor FRLS PVC insulated stranded wire of green colour for earth continuity of following size (A) with medium class Rigid PVC pipe and accessories (i) 4 wire 10 sq. mm (use earth wire of 4 sq.mm )**

### **138. Title**

Providing & Erecting Mains Wiring with 4 x 10 sq.mm FRLS Copper Cable in Medium Class Rigid PVC Conduit – Category III

---

### **139. Scope of Work**

The scope includes supply, laying, pulling, fixing, jointing, termination, testing and commissioning of mains wiring using 4 x 10 sq.mm FRLS copper conductors along with 4 sq.mm green copper earth wire laid in concealed medium class rigid PVC conduit complete with accessories as directed by Engineer-in-Charge.

This includes:

- Supply of FRLS copper wires
  - Supply of rigid PVC conduit & accessories
  - Pulling of cables through conduit
  - Termination at distribution board/switchboard
  - Earthing continuity
  - Testing & commissioning
- 

### **140. Detailed Technical Specifications**

#### **140.1 Main Wiring Cable**

- Phase & Neutral: 4 x 10 sq.mm
- Earth wire: 4 sq.mm (Green)
- Conductor: Multi-strand annealed electrolytic copper
- Insulation: FRLS PVC
- Voltage grade: 1.1 kV
- Standard: ISI marked conforming to IS: 694
- Current rating: As per IS standard

#### **140.2 Conduit System**

- Type: Medium class rigid PVC
- Size: Minimum 32 mm or as required
- Standard: ISI marked conforming to IS: 9537
- Installation: Concealed / flushed on wall/ceiling

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Accessories: Bends, couplers, tees, junction boxes

#### **140.3 Earthing**

- Earth conductor: 4 sq.mm green copper
  - Continuous earth loop maintained
  - Termination at earth bus bar
- 

#### **141. Installation Methodology**

1. Mark conduit route as per design.
  2. Fix PVC conduit concealed in wall/ceiling.
  3. Pull all phase and earth conductors.
  4. Identify cables with sleeves.
  5. Terminate at distribution board / load point.
  6. Test insulation resistance.
  7. Commission circuit.
- 

#### **142. Testing & Commissioning**

- Insulation resistance test (500V megger)
  - Continuity test
  - Polarity test
  - Earth continuity test
- 

#### **143. Measurement Criteria**

- Measurement in running meter
  - Includes supply of wire, conduit & accessories
- 

#### **144. Tender Description (Elaborated – 4 x 10 sq.mm Mains Wiring)**

Providing, supplying, laying, pulling, terminating, testing and commissioning mains wiring using 4 x 10 sq.mm FRLS PVC insulated stranded copper conductors of 1.1 kV grade along with 4 sq.mm green copper earth wire drawn through concealed medium class rigid PVC conduit complete with all accessories such as bends, couplers, junction boxes etc., as directed by Engineer-in-Charge.

The work includes proper earthing continuity, termination at distribution board/switchboard, testing and commissioning complete. All materials shall be ISI marked and of approved make. The rate shall include all labour, tools and accessories required for completion of work.

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 145. Category

Category: III

**(18) Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables (C) 3 1/2 core 50 Sq. mm ( 25 Sq.1/2 mm core)**

#### 1. Title

Providing & Erecting XLPE Armoured Aluminium Conductor Cable – 3.5 Core 50 sq.mm (25 sq.mm 1/2 Core) – 1.1 kV – Category III

---

#### 2. Scope of Work

The scope includes supply, laying, fixing, jointing, termination, testing and commissioning of 3.5 core XLPE insulated, armoured aluminium conductor cable rated for 1.1 kV. The cable shall be laid on wall with necessary clamps or in existing trench/pipe as directed by Engineer-in-Charge.

This includes:

- Supply of XLPE armoured aluminium conductor cable
  - Wall/pipe/trench mounting
  - Fixing clamps & saddles
  - Cable termination with lugs & glands
  - Testing & commissioning
- 

### 148. Detailed Technical Specifications

#### 148.1 Cable

- Type: XLPE insulated, armoured
- Conductor: Multistrand Aluminium
- Core: 3.5 (3 full + 1/2 neutral)
- Size: 50 sq.mm (3 cores) + 25 sq.mm (1/2 core neutral)
- Voltage grade: 1.1 kV
- Standard: IS:7098(Part 1) - 1988, ISI marked
- Sheath: PVC / FRLS

#### 148.2 Installation

- Laying: Wall mounted with clamps or in existing trench/pipe
- Spacing of clamps: As per IS code / approved by Engineer
- Avoid sharp bends and mechanical stress

#### 148.3 Termination & Accessories

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Cable glands: Suitable size for armoured cable
  - Lugs: Compression type for aluminium conductor
  - Earthing: Proper continuity of armour to earth
- 

#### 149. Installation Methodology

1. Inspect trench / wall route.
  2. Unroll cable carefully.
  3. Fix with clamps at specified spacing.
  4. Avoid damage to insulation.
  5. Terminate at switchgear / panel with approved lugs and glands.
  6. Ensure armouring properly earthed.
  7. Test insulation and continuity.
- 

#### 150. Testing & Commissioning

- Insulation resistance test
  - Continuity check
  - Earth continuity for armour
  - Phase sequence verification
- 

#### 151. Measurement Criteria

- Measurement in running meter
  - Includes cable, clamps, glands, lugs, and installation
- 

#### 152. Tender Description (Elaborated – XLPE Armoured Cable 3.5 Core 50 sq.mm)

Providing, supplying, laying, fixing, terminating, testing and commissioning XLPE insulated ISI armoured multistrand aluminium conductor cable of 3.5 cores (50 sq.mm for 3 cores + 25 sq.mm for 1/2 neutral) rated for 1.1 kV on wall with necessary clamps or in existing trench/pipe complete with all accessories such as lugs, glands, earthing continuity, as directed by Engineer-in-Charge.

All materials shall be ISI marked and approved make. The rate shall include all labour, tools and accessories required for completion of work.

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#### 153. Category

Category: III

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(19) Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables (A) 3 1/2 core 25 Sq. mm ( 16 Sq. mm 1/2 core)**

### 154. Title

Providing & Erecting XLPE Armoured Aluminium Conductor Cable – 3.5 Core 25 sq.mm (16 sq.mm 1/2 Core) – 1.1 kV – Category III

---

### 155. Scope of Work

The scope includes supply, laying, fixing, jointing, termination, testing and commissioning of 3.5 core XLPE insulated, armoured aluminium conductor cable rated for 1.1 kV. The cable shall be laid on wall with necessary clamps or in existing trench/pipe as directed by Engineer-in-Charge.

This includes:

- Supply of XLPE armoured aluminium conductor cable
  - Wall/pipe/trench mounting
  - Fixing clamps & saddles
  - Cable termination with lugs & glands
  - Testing & commissioning
- 

### 156. Detailed Technical Specifications

#### 156.1 Cable

- Type: XLPE insulated, armoured
- Conductor: Multistrand Aluminium
- Core: 3.5 (3 full + 1/2 neutral)
- Size: 25 sq.mm (3 cores) + 16 sq.mm (1/2 core neutral)
- Voltage grade: 1.1 kV
- Standard: IS:7098(Part 1) - 1988, ISI marked
- Sheath: PVC / FRLS

#### 156.2 Installation

- Laying: Wall mounted with clamps or in existing trench/pipe
- Spacing of clamps: As per IS code / approved by Engineer
- Avoid sharp bends and mechanical stress

#### 156.3 Termination & Accessories

- Cable glands: Suitable size for armoured cable

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Lugs: Compression type for aluminium conductor
  - Earthing: Proper continuity of armour to earth
- 

#### 157. Installation Methodology

1. Inspect trench / wall route.
  2. Unroll cable carefully.
  3. Fix with clamps at specified spacing.
  4. Avoid damage to insulation.
  5. Terminate at switchgear / panel with approved lugs and glands.
  6. Ensure armouring properly earthed.
  7. Test insulation and continuity.
- 

#### 158. Testing & Commissioning

- Insulation resistance test
  - Continuity check
  - Earth continuity for armour
  - Phase sequence verification
- 

#### 159. Measurement Criteria

- Measurement in running meter
  - Includes cable, clamps, glands, lugs, and installation
- 

#### 160. Tender Description (Elaborated – XLPE Armoured Cable 3.5 Core 25 sq.mm)

Providing, supplying, laying, fixing, terminating, testing and commissioning XLPE insulated ISI armoured multistrand aluminium conductor cable of 3.5 cores (25 sq.mm for 3 cores + 16 sq.mm for 1/2 neutral) rated for 1.1 kV on wall with necessary clamps or in existing trench/pipe complete with all accessories such as lugs, glands, earthing continuity, as directed by Engineer-in-Charge.

All materials shall be ISI marked and approved make. The rate shall include all labour, tools and accessories required for completion of work.

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#### 161. Category

Category: III

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(20) Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand / Solid Copper conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe at road crossing or floor of following size of cables. (B) 4 core 4 Sq. mm**

### 162. Title

Providing & Erecting XLPE Armoured Copper Conductor Cable – 4 Core 4 sq.mm – 1.1 kV – Road Crossing / Floor – Category III

---

### 163. Scope of Work

The scope includes supply, laying, fixing, jointing, termination, testing and commissioning of 4 core XLPE insulated, armoured copper conductor cable rated for 1.1 kV to be laid on wall with necessary clamps or in existing trench/pipe at road crossing or floor as directed by Engineer-in-Charge.

This includes:

- Supply of XLPE armoured copper conductor cable
  - Wall/trench/floor mounting
  - Fixing clamps & saddles
  - Cable termination with lugs & glands
  - Testing & commissioning
- 

### 164. Detailed Technical Specifications

#### 164.1 Cable

- Type: XLPE insulated, armoured
- Conductor: Multistrand / solid Copper
- Core: 4
- Size: 4 sq.mm per core
- Voltage grade: 1.1 kV
- Standard: IS:7098(Part 1) - 1988, ISI marked
- Sheath: PVC / FRLS

#### 164.2 Installation

- Laying: Wall mounted with clamps, or in existing trench/pipe at road crossing/floor
- Spacing of clamps: As per IS code / approved by Engineer
- Avoid sharp bends and mechanical stress
- Ensure mechanical protection at floor/road crossing

#### 164.3 Termination & Accessories

- Cable glands: Suitable size for armoured cable

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Lugs: Compression type for copper conductor
  - Earthing: Proper continuity of armour to earth
- 

#### 165. Installation Methodology

1. Inspect route, trench or floor crossing.
  2. Unroll cable carefully.
  3. Fix with clamps at specified spacing.
  4. Protect cable at floor/road crossing with covers or conduit.
  5. Terminate at switchgear / panel with approved lugs and glands.
  6. Ensure armouring properly earthed.
  7. Test insulation and continuity.
- 

#### 166. Testing & Commissioning

- Insulation resistance test
  - Continuity check
  - Earth continuity for armour
  - Phase sequence verification
- 

#### 167. Measurement Criteria

- Measurement in running meter
  - Includes cable, clamps, glands, lugs, and installation
- 

#### 168. Tender Description (Elaborated – XLPE Armoured Copper Cable 4 Core 4 sq.mm)

Providing, supplying, laying, fixing, terminating, testing and commissioning XLPE insulated ISI armoured multistrand / solid copper conductor cable of 4 cores, 4 sq.mm per core rated for 1.1 kV, to be laid on wall with necessary clamps or in existing trench/pipe at road crossing or floor complete with all accessories such as lugs, glands, earthing continuity, as directed by Engineer-in-Charge.

All materials shall be ISI marked and approved make. The rate shall include all labour, tools and accessories required for completion of work.

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#### 169. Category

Category: III

DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(21) Supplying and erecting Flexible PVC insulated multi strand multi core 1.1 kv grade ISI marked copper wires of following size to be erected as directed.(e) 1.50 Sq.mm 3 core round PVC sheathed**

**170. Title**

Supplying & Erecting Flexible PVC Insulated Multi-Strand Multi-Core Copper Wires – 1.5 sq.mm 3 Core Round PVC Sheathed – 1.1 kV – Category III

---

**171. Scope of Work**

The scope includes supply, laying, fixing, terminating, testing and commissioning of 1.5 sq.mm 3 core round flexible PVC insulated multi-strand copper wires of 1.1 kV grade ISI marked as directed by Engineer-in-Charge.

This includes:

- Supply of flexible multi-strand copper wire
  - Laying through conduit, tray or open run as directed
  - Fixing with clamps or ties
  - Termination at electrical devices or panels
  - Testing and commissioning
- 

**172. Detailed Technical Specifications**

**172.1 Cable / Wire**

- Type: Flexible multi-strand copper conductor
- Core: 3 cores (phase, neutral, earth)
- Size: 1.5 sq.mm per core
- Insulation: PVC, 1.1 kV grade, ISI marked
- Sheath: Round PVC
- Standard: ISI approved
- Voltage rating: 1.1 kV
- Current rating: As per IS: 8130 / IS:694

**172.2 Installation**

- Laying method: Through conduit, cable tray, or open run as directed
- Fixing: Clamps / ties at proper spacing
- Avoid mechanical stress and sharp bends
- Proper identification of cores using sleeves or color coding

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 172.3 Accessories

- Cable clips, saddles, glands
  - Termination lugs if required
- 

### 173. Installation Methodology

1. Inspect route and prepare support points.
  2. Unroll wire carefully.
  3. Pull wire through conduit or lay on tray.
  4. Fix with clamps at regular intervals.
  5. Terminate at devices / panels.
  6. Identify cores with sleeves or markers.
  7. Test continuity, insulation, and functionality.
- 

### 174. Testing & Commissioning

- Continuity test
  - Insulation resistance test
  - Polarity check
  - Functional verification at device / panel
- 

### 175. Measurement Criteria

- Measurement in running meter
  - Includes supply, laying, fixing, termination and testing
- 

### 176. Tender Description (Elaborated – 1.5 sq.mm 3 Core Flexible PVC Copper Wire)

Providing, supplying, laying, fixing, terminating, testing and commissioning flexible PVC insulated multi-strand copper wire of 3 cores, 1.5 sq.mm size per core, 1.1 kV grade, ISI marked, round PVC sheathed as directed by Engineer-in-Charge. The wire shall be laid through conduit, cable tray, or open run as per site conditions.

The work includes all necessary accessories, proper identification of cores, termination, and testing. The rate shall include supply of wire, clamps, ties, lugs, labour and tools required for completion of work.

---

### 177. Category

Category: III



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(22) providing and erecting Miniature circuit breaker single pole 6A to 25A suitable to operate on 240 V A.C. system and having breaking capacity 10 KA to be erected in existing box. confirming to IS 8828/1996 with ISI Mark Cat.III**

### 178. Title

Providing & Erecting Miniature Circuit Breaker (MCB) Single Pole 6A to 25A – 240 V AC – 10 kA – ISI Mark – Category III

---

### 179. Scope of Work

The scope includes supply, installation, connection, testing, and commissioning of single pole miniature circuit breakers (MCBs) ranging from 6A to 25A suitable for 240 V AC system, with a breaking capacity of 10 kA, to be erected in existing electrical boxes as directed by Engineer-in-Charge.

This includes:

- Supply of ISI marked MCBs confirming to IS:8828/1996
  - Mounting in existing boxes
  - Proper connection to phase and neutral
  - Functional testing
  - Ensuring protection for downstream circuits
- 

### 180. Detailed Technical Specifications

#### 180.1 MCB Specifications

- Type: Single pole
- Current rating: 6A to 25A
- Operating voltage: 240 V AC
- Breaking capacity: 10 kA
- Standard: IS:8828/1996, ISI marked
- Mounting: Existing box
- Features:
  - Thermal-magnetic trip unit
  - Overload and short-circuit protection
  - Compact modular design

#### 180.2 Installation

- MCB to be fixed in existing modular box

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Proper alignment and tightening of terminals
  - Phase and neutral correctly connected
  - Ensure easy accessibility for operation
- 

#### **181. Installation Methodology**

1. Switch off main supply.
  2. Open existing box and inspect mounting location.
  3. Mount MCB on the DIN rail or box mounting points.
  4. Connect phase and neutral conductors securely.
  5. Tighten all screws and check mechanical stability.
  6. Restore supply and test MCB operation.
  7. Label circuits as required.
- 

#### **182. Testing & Commissioning**

- Continuity test
  - Insulation resistance test
  - Functionality test (ON/OFF operation)
  - Trip test for overload / short-circuit
- 

#### **183. Measurement Criteria**

- Measurement per number of MCBs supplied and installed
  - Includes supply, erection, connection, testing, and commissioning
- 

#### **184. Tender Description (Elaborated – Single Pole MCB 6A to 25A)**

Providing, supplying, erecting, connecting, testing, and commissioning single pole miniature circuit breakers of 6A to 25A, 240 V AC, with 10 kA breaking capacity, ISI marked as per IS:8828/1996, to be installed in existing electrical boxes. The work includes proper connection, testing, and ensuring operational safety as directed by Engineer-in-Charge. Rate shall include all labour, tools, and accessories required for completion.

---

#### **185. Category**

Category: III

DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(23) Providing & erecting 415 V MCB Four Pole for Motor & Inductive Load (C Curve) having 10KA breaking capacity & confirms to IS :8828 in existing box having following capacity (b)40 Amp. Cat.III**

**186. Title**

Providing & Erecting 415 V MCB Four Pole for Motor & Inductive Load (C Curve) – 40 A – 10 kA – IS:8828 – Category III

---

**187. Scope of Work**

The scope includes supply, installation, connection, testing, and commissioning of 415 V four-pole miniature circuit breakers (MCBs) suitable for motor and inductive loads (C Curve) with a breaking capacity of 10 kA, confirming to IS:8828, to be erected in existing electrical boxes as directed by Engineer-in-Charge.

This includes:

- Supply of ISI marked four-pole MCBs confirming to IS:8828
  - Mounting in existing electrical boxes
  - Proper connection to phases and neutral
  - Functional testing for motor / inductive load protection
- 

**188. Detailed Technical Specifications**

**188.1 MCB Specifications**

- Type: Four Pole (4P)
- Current rating: 40 A
- Operating voltage: 415 V AC
- Curve: C Curve (for motor & inductive loads)
- Breaking capacity: 10 kA
- Standard: IS:8828, ISI marked
- Features:
  - Thermal-magnetic trip unit
  - Protection against overload and short circuit
  - Compact modular design

**188.2 Installation**

- MCB to be fixed in existing modular box
- Proper alignment and tightening of terminals
- Correct phase and neutral connection
- Ensure easy accessibility for operation

### **189. Installation Methodology**

1. Switch off main supply.
  2. Inspect existing box and prepare mounting location.
  3. Mount 4P MCB securely.
  4. Connect all three phases and neutral.
  5. Tighten all screws and check mechanical stability.
  6. Restore supply and perform functional test.
  7. Label circuits appropriately.
- 

### **190. Testing & Commissioning**

- Continuity test
  - Insulation resistance test
  - Functional ON/OFF operation
  - Trip test for overload / short-circuit conditions
- 

### **191. Measurement Criteria**

- Measurement per number of MCBs supplied and installed
  - Includes supply, erection, connection, testing, and commissioning
- 

### **192. Tender Description (Elaborated – Four Pole 40A MCB for Motor Load)**

Providing, supplying, erecting, connecting, testing and commissioning four-pole miniature circuit breakers, 40 A, 415 V AC, C Curve suitable for motor and inductive loads, with 10 kA breaking capacity, ISI marked as per IS:8828, to be installed in existing electrical boxes. The work includes proper connection, testing, and ensuring operational safety as directed by Engineer-in-Charge. Rate shall include all labour, tools, and accessories required for completion.

---

### **193. Category**

Category: III

**(24) Providing & erecting 415 V MCB Four Pole for Motor & Inductive Load (C Curve) having 10KA breaking capacity & conforms to IS :8828 in existing box having following capacity (c)63 Amp. . Cat.III**

### **194. Title**

Providing & Erecting 415 V MCB Four Pole for Motor & Inductive Load (C Curve) – 63 A – 10 kA – IS:8828 – Category III

---

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 195. Scope of Work

The scope includes supply, installation, connection, testing, and commissioning of 415 V four-pole miniature circuit breakers (MCBs) suitable for motor and inductive loads (C Curve) with a breaking capacity of 10 kA, conforming to IS:8828, to be erected in existing electrical boxes as directed by Engineer-in-Charge.

This includes

- Supply of ISI marked four-pole MCBs conforming to IS:8828
- Mounting in existing electrical boxes
- Proper connection to phases and neutral
- Functional testing for motor / inductive load protection

---

### 196. Detailed Technical Specifications

#### 196.1 MCB Specifications

- Type: Four Pole (4P)
- Current rating: 63 A
- Operating voltage: 415 V AC
- Curve: C Curve (for motor & inductive loads)
- Breaking capacity: 10 kA
- Standard: IS:8828, ISI marked
- Features:
  - Thermal-magnetic trip unit
  - Protection against overload and short circuit
  - Compact modular design

#### 196.2 Installation

- MCB to be fixed in existing modular box
- Proper alignment and tightening of terminals
- Correct phase and neutral connection
- Ensure easy accessibility for operation

---

### 197. Installation Methodology

1. Switch off main supply.
2. Inspect existing box and prepare mounting location.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

3. Mount 4P MCB securely.
  4. Connect all three phases and neutral.
  5. Tighten all screws and check mechanical stability.
  6. Restore supply and perform functional test.
  7. Label circuits appropriately.
- 

#### 198. Testing & Commissioning

- Continuity test
  - Insulation resistance test
  - Functional ON/OFF operation
  - Trip test for overload / short-circuit conditions
- 

#### 199. Measurement Criteria

- Measurement per number of MCBs supplied and installed
  - Includes supply, erection, connection, testing, and commissioning
- 

#### 200. Tender Description (Elaborated – Four Pole 63A MCB for Motor Load)

Providing, supplying, erecting, connecting, testing and commissioning four-pole miniature circuit breakers, 63 A, 415 V AC, C Curve suitable for motor and inductive loads, with 10 kA breaking capacity, ISI marked as per IS:8828, to be installed in existing electrical boxes. The work includes proper connection, testing, and ensuring operational safety as directed by Engineer-in-Charge. Rate shall include all labour, tools, and accessories required for completion.

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#### 201. Category

Category: III

**(25) Providing and erecting Sheet Steel powder coated MCB distribution board - flush / surface mounted fitted with busbar, neutral link, earth bar and DIN rail, Conforms to IS 8623-1 & 3, IEC 61439-1 & 3 without MCB to house appropriate nos. of MCBs. (The DBs should be used of same company of MCB to be used) suitable for (B) three phase incoming and single phase horizontal type outgoing Per phase isolation type (PPI) (b) sheet steel double door (iii) 8 way**

#### 202. Title

Providing & Erecting Sheet Steel Powder Coated MCB Distribution Board – 8 Way – Three Phase Incoming / Single Phase Horizontal Outgoing – Double Door – PPI Type – Category III

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 203. Scope of Work

The scope includes supply, installation, fixing, and commissioning of sheet steel powder coated MCB distribution boards (DBs), flush or surface mounted, fitted with busbar, neutral link, earth bar, and DIN rail, without MCBs, suitable to house appropriate number of MCBs. The DBs shall be of the same company as the MCBs to be installed and conforming to IS 8623-1 & 3 and IEC 61439-1 & 3, as directed by Engineer-in-Charge.

This includes:

- Supply of sheet steel powder coated DB
  - Installation (flush or surface)
  - Mounting of busbars, neutral links, earth bars, and DIN rails
  - Ensuring proper phase arrangement and horizontal outgoing
  - Labeling of circuits
- 

### 204. Detailed Technical Specifications

#### 204.1 Distribution Board

- Type: Sheet steel, powder coated
- Mounting: Flush or surface
- Incoming: Three phase
- Outgoing: Single phase horizontal type
- Number of ways: 8
- Door type: Double door
- Phase isolation: Per phase isolation (PPI)
- Conformity: IS 8623-1 & 3, IEC 61439-1 & 3
- Features:
  - Busbar of adequate copper/aluminium
  - Neutral link
  - Earth bar
  - DIN rail for mounting MCBs
  - Powder coated finish for corrosion resistance
- Compatible with MCBs of same make

#### 204.2 Installation

- Mounting: Flush / surface as per site requirement
- Alignment and leveling
- Proper securing with screws / anchors

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Clearance for ventilation and access to MCBs
- 

#### **205. Installation Methodology**

1. Select location as per site requirement.
  2. Prepare wall for flush / surface mounting.
  3. Fix DB using anchors / screws.
  4. Install busbar, neutral link, earth bar, and DIN rails.
  5. Ensure phase separation and proper alignment.
  6. Label phases and outgoing positions.
  7. Test for mechanical stability.
- 

#### **206. Testing & Commissioning**

- Mechanical inspection for alignment and tightness
  - Continuity check of busbar, neutral, and earth
  - Ensure proper phase isolation and horizontal outgoing
  - Verify compatibility with MCBs
- 

#### **207. Measurement Criteria**

- Measurement per number of distribution boards supplied and installed
  - Includes supply, erection, mounting, busbar, neutral link, earth bar, DIN rail, and testing
- 

#### **208. Tender Description (Elaborated – 8 Way Double Door Sheet Steel DB)**

Providing, supplying, erecting, and commissioning sheet steel powder coated double door MCB distribution board, 8 way, three phase incoming and single phase horizontal outgoing, per phase isolation type (PPI), flush / surface mounted, fitted with busbar, neutral link, earth bar, and DIN rail, without MCBs. The DB shall conform to IS 8623-1 & 3 and IEC 61439-1 & 3, of the same make as the MCBs to be used. The work includes proper installation, labeling, alignment, and testing as directed by Engineer-in-Charge. Rate shall include all labour, tools, and accessories required for completion.

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#### **209. Category**

Category: III



**(26) Half / One Module Blanking Plate of Standard Size.**

**210. Title**

Providing & Erecting Half / One Module Blanking Plate – Standard Size – Category III

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**211. Scope of Work**

The scope includes supply, fixing, and commissioning of half or one module blanking plates of standard size, to cover unused modular openings in switchboards, DBs, or wall boxes as directed by Engineer-in-Charge.

This includes:

- Supply of blanking plates of approved make and size
  - Fixing on modular switchboards, boxes or panels
  - Ensuring proper alignment and flush mounting
  - Maintaining aesthetic finish and safety
- 

**212. Detailed Technical Specifications**

**212.1 Blanking Plate Specifications**

- Type: Modular blanking plate
- Size: Half module / One module standard size
- Material: ABS / PVC / approved flame retardant material
- Finish: Textured / Metallic / White as required
- Conformity: ISI marked or approved equivalent
- Features: Provides safe closure of unused modules, prevents dust ingress, and maintains aesthetic appearance

**212.2 Installation**

- Fixed over unused modular openings
  - Securely mounted without gaps
  - Flush with surrounding modules
  - Easily removable if future expansion required
- 

**213. Installation Methodology**

1. Identify unused modular openings in switchboard, DB, or box.
2. Select appropriate size blanking plate (half or full module).
3. Align plate and press / screw into position.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

4. Ensure plate is flush and securely mounted.
5. Verify safety and appearance.

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#### 214. Testing & Commissioning

- Check mechanical fit and flush alignment
- Confirm no sharp edges or gaps
- Ensure safety against accidental contact

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#### 215. Measurement Criteria

- Measurement per number of blanking plates supplied and fixed
- Includes supply, fixing, and minor adjustments

---

#### 216. Tender Description (Elaborated – Half / One Module Blanking Plate)

Providing, supplying, and fixing half or one module blanking plates of standard size on modular switchboards, DBs, or wall boxes as directed by Engineer-in-Charge. The plates shall be of approved material (ABS/PVC), ISI marked or approved equivalent, with textured/metallic/white finish, securely fixed and flush mounted to cover unused modular openings. Rate includes supply, fixing, and all accessories required for completion.

---

#### 217. Category

Category: III

**(27) providing and erecting Approved make RCCBs conforming to IS: 12640 and having sensitivity of 30 mA and Short Circuit withstand capacity of 10 KA and suitable for operation on single phase 240 V,50Hz. having characteristic of quick action & tripping with all advance feature & do not incorporate any electronic component. for following Max. rating erected as directed (i) 25 Amps.DP Cat. III**

#### 218. Title

Providing & Erecting Approved Make RCCBs – 25 A, DP, 30 mA Sensitivity, 10 kA Short Circuit Capacity – Single Phase 240 V, 50 Hz – Category III

---

#### 219. Scope of Work

The scope includes supply, installation, connection, testing, and commissioning of double pole residual current circuit breakers (RCCBs) rated at 25 A, 30 mA sensitivity, suitable for single phase 240 V, 50 Hz system, conforming to IS:12640. RCCBs shall be quick action type without any electronic components and shall include all advanced features as required, to be installed as directed by Engineer-in-Charge.

This includes:

- Supply of ISI marked RCCBs

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Mounting in existing or new DBs as required
  - Proper connection of phase and neutral
  - Functional testing
- 

### **220. Detailed Technical Specifications**

#### **220.1 RCCB Specifications**

- Type: Double Pole (DP)
- Current Rating: 25 A
- Sensitivity: 30 mA
- Voltage: 240 V AC, single phase, 50 Hz
- Short Circuit Capacity: 10 kA
- Standard: IS:12640, ISI marked
- Trip Characteristics: Quick action, no electronic components
- Features: Advanced safety features, manual test button

#### **220.2 Installation**

- Mounting in existing or new modular DBs
  - Ensure proper alignment and securing of terminals
  - Correct connection of phase and neutral
  - Easy accessibility for operation and testing
- 

### **221. Installation Methodology**

1. Switch off main supply.
  2. Inspect mounting location in DB.
  3. Mount RCCB securely.
  4. Connect phase and neutral correctly.
  5. Tighten all connections and ensure mechanical stability.
  6. Test RCCB using test button and functional test.
  7. Label circuits as required.
- 

### **222. Testing & Commissioning**

- Continuity test
- Insulation resistance test

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Functional test using RCCB test button
  - Trip test for simulated leakage
- 

#### 223. Measurement Criteria

- Measurement per number of RCCBs supplied and installed
  - Includes supply, fixing, connection, and testing
- 

#### 224. Tender Description (Elaborated – 25 A DP RCCB)

Providing, supplying, erecting, connecting, testing, and commissioning approved make double pole RCCBs rated at 25 A, 30 mA sensitivity, 10 kA short circuit withstand capacity, suitable for single phase 240 V, 50 Hz system, quick action type, without electronic components, conforming to IS:12640, to be installed in existing or new distribution boards as directed by Engineer-in-Charge. Rate includes all labour, tools, and accessories required for completion.

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#### 225. Category

Category: III

**(28) providing and erecting Approved make RCCBs conforming to IS: 12640 and having sensitivity of 30 mA and Short Circuit withstand capacity of 10 KA and suitable for operation on single phase 240 V,50Hz. having characteristic of quick action & tripping with all advance feature & do not incorporate any electronic component. for following Max. rating erected as directed (ii) 40Amps. DP Cat. III**

#### 226. Title

Providing & Erecting Approved Make RCCBs – 40 A, DP, 30 mA Sensitivity, 10 kA Short Circuit Capacity – Single Phase 240 V, 50 Hz – Category III

---

#### 227. Scope of Work

The scope includes supply, installation, connection, testing, and commissioning of double pole residual current circuit breakers (RCCBs) rated at 40 A, 30 mA sensitivity, suitable for single phase 240 V, 50 Hz system, conforming to IS:12640. RCCBs shall be quick action type without any electronic components and shall include all advanced features as required, to be installed as directed by Engineer-in-Charge.

This includes:

- Supply of ISI marked RCCBs
  - Mounting in existing or new DBs as required
  - Proper connection of phase and neutral
  - Functional testing
- 

#### 228. Detailed Technical Specifications

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 228.1 RCCB Specifications

- Type: Double Pole (DP)
- Current Rating: 40 A
- Sensitivity: 30 mA
- Voltage: 240 V AC, single phase, 50 Hz
- Short Circuit Capacity: 10 kA
- Standard: IS:12640, ISI marked
- Trip Characteristics: Quick action, no electronic components
- Features: Advanced safety features, manual test button

### 228.2 Installation

- Mounting in existing or new modular DBs
  - Ensure proper alignment and securing of terminals
  - Correct connection of phase and neutral
  - Easy accessibility for operation and testing
- 

### 229. Installation Methodology

1. Switch off main supply.
  2. Inspect mounting location in DB.
  3. Mount RCCB securely.
  4. Connect phase and neutral correctly.
  5. Tighten all connections and ensure mechanical stability.
  6. Test RCCB using test button and functional test.
  7. Label circuits as required.
- 

### 230. Testing & Commissioning

- Continuity test
  - Insulation resistance test
  - Functional test using RCCB test button
  - Trip test for simulated leakage
- 

### 231. Measurement Criteria

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Measurement per number of RCCBs supplied and installed
  - Includes supply, fixing, connection, and testing
- 

#### **232. Tender Description (Elaborated – 40 A DP RCCB)**

Providing, supplying, erecting, connecting, testing, and commissioning approved make double pole RCCBs rated at 40 A, 30 mA sensitivity, 10 kA short circuit withstand capacity, suitable for single phase 240 V, 50 Hz system, quick action type, without electronic components, conforming to IS:12640, to be installed in existing or new distribution boards as directed by Engineer-in-Charge. Rate includes all labour, tools, and accessories required for completion.

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#### **233. Category**

Category: III

**(29) Providing & erecting 240 V MCB double pole switch for motor & inductive load (C Curve) having 10 KA breaking capacity & confirms to IS : 8828 in existing box having following capacity (A) 6 to 32 Amp.**

#### **234. Title**

Providing & Erecting 240 V MCB Double Pole Switch for Motor & Inductive Load (C Curve) – 6 to 32 A – 10 kA – IS:8828 – Category III

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#### **235. Scope of Work**

The scope includes supply, installation, connection, testing, and commissioning of double pole miniature circuit breakers (MCBs) rated for motor and inductive loads (C Curve), 6 to 32 A current rating, suitable for 240 V AC system, with a breaking capacity of 10 kA, conforming to IS:8828, to be erected in existing electrical boxes as directed by Engineer-in-Charge.

This includes:

- Supply of ISI marked double pole MCBs
  - Mounting in existing modular boxes
  - Proper connection to phase and neutral
  - Functional testing for motor / inductive load protection
- 

#### **236. Detailed Technical Specifications**

##### **236.1 MCB Specifications**

- Type: Double Pole (DP)
- Current Rating: 6 to 32 A
- Operating Voltage: 240 V AC

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Curve: C Curve (for motor & inductive loads)
- Breaking Capacity: 10 kA
- Standard: IS:8828, ISI marked
- Features:
  - Thermal-magnetic trip unit
  - Protection against overload and short circuit
  - Compact modular design

#### **236.2 Installation**

- MCB to be fixed in existing modular box
  - Proper alignment and tightening of terminals
  - Correct connection of phase and neutral
  - Ensure easy accessibility for operation
- 

#### **237. Installation Methodology**

1. Switch off main supply.
  2. Inspect existing box and prepare mounting location.
  3. Mount DP MCB securely.
  4. Connect both poles correctly to phase and neutral.
  5. Tighten all screws and check mechanical stability.
  6. Restore supply and perform functional test.
  7. Label circuits appropriately.
- 

#### **238. Testing & Commissioning**

- Continuity test
  - Insulation resistance test
  - Functional ON/OFF operation
  - Trip test for overload / short-circuit conditions
- 

#### **239. Measurement Criteria**

- Measurement per number of MCBs supplied and installed
  - Includes supply, erection, connection, testing, and commissioning
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### **240. Tender Description (Elaborated – 240 V DP MCB for Motor Load 6–32 A)**

Providing, supplying, erecting, connecting, testing, and commissioning 240 V AC double pole miniature circuit breakers rated 6 to 32 A, C Curve suitable for motor and inductive loads, with 10 kA breaking capacity, ISI marked as per IS:8828, to be installed in existing electrical boxes. The work includes proper connection, testing, and ensuring operational safety as directed by Engineer-in-Charge. Rate shall include all labour, tools, and accessories required for completion.

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### **241. Category**

Category: III

**(30) Providing & erecting open well horizontal mono block pump set with cast iron body, complete for three phase submersible motor having [B] For 2 HP 3 phase open well horizontal mono block pump set suitable for 200 LPM @ 25 mtr head suitable for 50 mm dia delivery pipe Cat.II**

### **242. Title**

Providing & Erecting Open Well Horizontal Mono Block Pump Set – 2 HP, Three Phase – 200 LPM @ 25 m Head – 50 mm Delivery Pipe – Cast Iron Body – Category II

---

### **243. Scope of Work**

The scope includes supply, installation, alignment, testing, and commissioning of a 2 HP three phase open well horizontal mono block pump set with cast iron body. The pump shall be suitable for 200 LPM discharge at 25 m head, compatible with a 50 mm diameter delivery pipe, to be installed as directed by Engineer-in-Charge.

This includes:

- Supply of pump set with three phase motor
  - Installation and alignment on base / plinth
  - Connection to suction and delivery pipes
  - Electrical connection to motor
  - Functional testing and commissioning
- 

### **244. Detailed Technical Specifications**

#### **244.1 Pump Set Specifications**

- Type: Open well horizontal mono block
- Motor: Three phase, 2 HP
- Flow rate: 200 LPM
- Head: 25 m
- Delivery pipe: 50 mm dia
- Body material: Cast Iron



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Suitable for continuous operation
- Efficiency: As per manufacturer's standard

#### **244.2 Installation**

- Mounting: On suitable plinth or base
- Proper alignment of pump and motor
- Connection to suction and delivery piping
- Vibration damping if required

#### **244.3 Electrical Connection**

- Three phase supply as per motor rating
  - Proper earthing
  - Overload protection if required
- 

#### **245. Installation Methodology**

1. Prepare plinth / base and ensure level.
  2. Position pump and secure with anchor bolts.
  3. Align pump and motor shaft accurately.
  4. Connect suction and delivery pipes.
  5. Connect electrical supply and earthing.
  6. Test for leaks, vibration, and correct operation.
  7. Commission pump under supervision.
- 

#### **246. Testing & Commissioning**

- Mechanical inspection for alignment
  - Trial run to verify flow rate and head
  - Check for vibration and noise
  - Electrical test for motor operation and safety
  - Adjustment as required
- 

#### **247. Measurement Criteria**

- Measurement per number of pump sets supplied and installed
  - Includes supply, installation, alignment, connection, and testing
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### **248. Tender Description (Elaborated – 2 HP Horizontal Mono Block Pump Set)**

Providing, supplying, erecting, connecting, aligning, testing, and commissioning open well horizontal mono block pump set of 2 HP, three phase, cast iron body, suitable for 200 LPM discharge at 25 m head with 50 mm delivery pipe. The work includes mounting on base, pipe connection, electrical connection, functional testing, and commissioning as directed by Engineer-in-Charge. Rate shall include all labour, tools, and accessories required for completion.

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### **249. Category**

Category: II

**(31) Supplying & erecting approved make 3 phase motor control cubical panel ( Star - Delta) made from 16 G. CRCA sheet duly painted with epoxy powder painted inside and outside with hinged doors and locking arrangement, consisting of suitable size of ON- OFF isolator (AC - 3/23 duty) main fuses, single phasing preventer cum water level. Guard (Complete unit), Toggle switch to by pass Single phase preventer cum WLG, indicating lamps for R- Y- B phases, over load relay, Automatic water level controller, Ammeter & Voltmeter each with two way selector switch incoming wires duly socket Crimped, Panel to be erected on angle iron frame grouted on wall as directed. Star Delta & main contactor, overload relay, thermal / Electronic Star delta cutoff timer, start - stop push buttons. The isolator overload relay & contactors of L& T, Siemens or Cuttler Hamer make only. Panel to be erected on angle iron frame ground on wall. (A) S/D up to 7.5 H.P.**

### **250. Title**

Supplying & Erecting 3 Phase Motor Control Cubical Panel (Star-Delta) – Up to 7.5 HP – CRCA Sheet, Epoxy Powder Coated – Category II

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### **251. Scope of Work**

The scope includes supply, assembly, erection, wiring, testing, and commissioning of 3 phase motor control cubical panels with star-delta starters, suitable for motors up to 7.5 HP. The panel shall be fabricated from 16 G CRCA sheet, epoxy powder painted inside and outside, with hinged doors and locking arrangements. The work includes supply of all accessories, wiring, instruments, and mounting on angle iron frames as directed by Engineer-in-Charge.

This includes:

- Supply of motor control panel (Star-Delta)
- ON-OFF isolator (AC-3/23 duty), main fuses
- Single phasing preventer cum water level guard with bypass toggle switch
- Indicating lamps for R-Y-B phases
- Overload relay, automatic water level controller
- Ammeter & voltmeter each with two-way selector switch
- Star-Delta & main contactor
- Thermal/electronic Star-Delta cutoff timer
- Start-Stop push buttons
- All wiring, socket crimping, and internal connections

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Mounting on angle iron frame grouted on wall

All isolators, overload relays, and contactors shall be of L&T, Siemens, or Cutler-Hammer make.

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### **252. Detailed Technical Specifications**

#### **252.1 Panel Construction**

- Material: 16 G CRCA sheet
- Finish: Epoxy powder coated inside and outside
- Doors: Hinged with locking arrangement
- Mounting: On angle iron frame grouted to wall
- Protection: IP 42 or as per site requirement

#### **252.2 Electrical Components**

- Star-Delta starter suitable for up to 7.5 HP motor
- Main and star contactors
- Thermal / Electronic overload relay
- ON/OFF isolator (AC-3/23 duty)
- Single phasing preventer cum water level guard with bypass toggle switch
- Automatic water level controller
- Start-Stop push buttons
- Indicating lamps for R-Y-B phases
- Ammeter & voltmeter with two-way selector switch
- Wiring: Copper conductor, ISI marked, with proper terminations and crimped sockets

#### **252.3 Accessories**

- Terminal blocks, busbars, fuses, timers
  - Proper labeling of circuits and phases
  - All control devices of approved make
- 

### **253. Installation Methodology**

1. Prepare mounting location and angle iron frame.
2. Fix panel securely on frame and grout to wall.
3. Install all internal components including contactors, relays, timers, controllers, and instruments.
4. Complete all wiring as per schematic diagram.
5. Connect incoming and outgoing power lines.

DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

6. Test individual components and overall panel functionality.
  7. Commission motor using Star-Delta operation and verify water level control and overload protection.
  8. Ensure proper labeling and safety compliance.
- 

**254. Testing & Commissioning**

- Continuity test of wiring
  - Insulation resistance test
  - Functional test of Star-Delta operation
  - Overload protection verification
  - Single phasing preventer and water level controller testing
  - Verification of ammeter, voltmeter, and indicators
  - Safety and operational compliance check
- 

**255. Measurement Criteria**

- Measurement per number of MCB cubical panels supplied and installed
  - Includes supply, erection, wiring, connection, testing, and commissioning
- 

**256. Tender Description (Elaborated – 3 Phase Star-Delta Motor Control Panel up to 7.5 HP)**

Providing, supplying, erecting, wiring, testing, and commissioning 3 phase motor control cubical panel (Star-Delta) suitable for motors up to 7.5 HP. Panel shall be fabricated from 16 G CRCA sheet, epoxy powder coated, fitted with hinged doors, locking arrangement, ON-OFF isolator, main fuses, single phasing preventer cum water level guard with bypass toggle switch, R-Y-B indicating lamps, overload relay, automatic water level controller, ammeter & voltmeter with two-way selector switch, star-delta & main contactors, thermal/electronic Star-Delta cutoff timer, start-stop push buttons. Panel shall be mounted on angle iron frame grouted to wall. All isolators, overload relays, and contactors to be of L&T, Siemens, or Cutler-Hammer make. Rate includes all labour, tools, accessories, wiring, and testing as directed by Engineer-in-Charge.

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**257. Category**

Category: II

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(32) Providing & erecting weather proof, dust & vermin proof, floor mounted front operated indoor type cubical panel board necessary IP-42 and above protection as per approval from engineer incharge made from 14 SWG thick CRC M.S. sheet for outer body & doors, 16 SWG thick CRC M.S. sheet for internal partitions with necessary accessories, supporting angles/ flats channel including cutting, bending, drilling, welding, riveting with internal partitions & cable alley as per requirements & instruction of engineer-in-charge with erection of supplied switch gears, BUSBARS, suitable size of inter connecting PVC copper wire / copper-aluminium strips, rubber grommets, rib, bakelite control fuses/MCB for measuring instruments, earth bus & earth bolts, foundation flange - bolts-base Plates, sufficient nos. of hinged doors, handles with locking arrangement and rubber gasket, heavy duty end terminal connection, danger notice board, necessary ventilation, earthing strip complete. The Panel shall be painted with epoxy powder coating. (The rates excludes the cost of switchgears, bus bars, inter connecting mains & Copper Aluminium strips, meters, Fuses etc. The dimension shall be measured excluding base beams) The panel shall be supplied with following approved manufacturers with following size. (B) The standard companies switch gear shall be used and only manufacturers at CPRI approved factory (i) with 350mm depth**

#### 258. Title

Providing & Erecting Weather Proof, Dust & Vermin Proof, Floor Mounted Indoor Cubical Panel Board – Front Operated – 350 mm Depth – IP-42 – Cat-II

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#### 259. Scope of Work

The scope includes supply, fabrication, assembly, erection, wiring, and commissioning of weatherproof, dust and vermin proof, floor-mounted, front-operated indoor cubical panel boards with IP-42 or higher protection, suitable for housing switchgears, meters, and other electrical accessories as directed by Engineer-in-Charge. Panels shall be fabricated from 14 SWG CRC M.S. sheet for outer body & doors and 16 SWG CRC M.S. sheet for internal partitions with necessary cable alleys, supporting angles, flats, and channels. The work includes welding, riveting, drilling, cutting, and all required fabrication, along with painting with epoxy powder coating.

This includes:

- Fabrication of panel body, internal partitions, cable alleys, and supporting structure
- Hinged doors with handles, locking arrangements, and rubber gaskets
- Foundation flange, base plates, and bolt fixing
- Rubber grommets, ribs, bakelite control fuses/MCBs for measuring instruments
- Earth bus and earth bolts
- Heavy-duty end terminal connections
- Ventilation provisions and danger notice board
- Painting with epoxy powder coating

**Note:** Rates exclude switchgears, bus bars, interconnecting copper/aluminium strips, meters, fuses, etc.

---

#### 260. Detailed Technical Specifications

##### 260.1 Panel Construction

- Outer body & doors: 14 SWG CRC M.S. sheet

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Internal partitions: 16 SWG CRC M.S. sheet
- Depth: 350 mm
- Floor-mounted, front-operated
- Protection: IP-42 or above
- Hinged doors with locking and rubber gasket
- Cable alleys and internal partitions as per site requirement
- Supporting angles, flats, channels for structural stability
- Rubber grommets, ribs, and ventilation provisions
- Foundation flange with base plates and anchor bolts
- Danger notice board and proper labeling

#### **260.2 Accessories (Supplied Externally)**

- Switchgears, bus bars, interconnecting PVC copper wires / copper-aluminium strips, meters, fuses, MCBs, as per project design

#### **260.3 Finish**

- Epoxy powder coated inside and outside
- Color and texture as per approval of Engineer-in-Charge

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#### **261. Installation Methodology**

1. Prepare foundation and leveling surface for floor mounting.
2. Position panel and fix using foundation flanges and bolts.
3. Install internal partitions, cable alleys, and supporting angles.
4. Ensure proper alignment of hinged doors with locking arrangements.
5. Install earth bus, earth bolts, terminal connections, grommets, ribs, and ventilation.
6. Apply epoxy powder coating for finished surface.
7. Check mechanical stability and clearances.
8. Commission the panel for proper alignment and accessibility for future installations.

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#### **262. Testing & Commissioning**

- Mechanical inspection of body, partitions, and cable alleys
- Check IP protection level (IP-42 or above)
- Verify hinged doors, locking, and gaskets
- Earth continuity test
- Functional check of foundation stability

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Ensure panel is ready for installation of switchgear and bus bars

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#### 263. Measurement Criteria

- Measurement per number of panels fabricated and erected
- Depth measured as 350 mm, excluding base beams
- Includes fabrication, erection, wiring for control fuses/MCBs, gaskets, doors, ventilation, earthing, and epoxy coating

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#### 264. Tender Description (Elaborated – Floor Mounted Indoor Cubical Panel 350 mm Depth)

Providing, supplying, fabricating, erecting, and commissioning weatherproof, dust & vermin proof, floor-mounted, front-operated indoor cubical panel board with IP-42 protection, fabricated from 14 SWG CRC M.S. sheet for outer body & doors and 16 SWG CRC M.S. sheet for internal partitions. Panel shall be equipped with hinged doors with handles and locking arrangements, rubber gaskets, foundation flange, base plates, earth bus, earth bolts, ventilation, cable alleys, and painted with epoxy powder coating. Depth of panel shall be 350 mm. Rates exclude switchgears, bus bars, interconnecting copper/aluminium strips, meters, fuses, and MCBs. Panel shall be of approved make from CPRI-approved manufacturers and installed as directed by Engineer-in-Charge.

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#### 265. Category

Category: II

**(33) Providing and erecting multifunctional meter suitable for application of Power monitoring and showing measurement of following Voltage, Frequency, Apparent energy, Apparent power, Active and reactive energy, Active and reactive power, Average voltage Vavg, Peak demand power PM, QM, SM, Demand power P, Q, S, Apparent power S, S1, S2, S3, Unbalance current, Power factor and displacement PF (signed, four quadrant), Calculated neutral current, Active, reactive, apparent energy (signed, four quadrant), Active power P, P1, P2, P3, Voltage U21, U32, U13, V1, V2, V3, Phase currents, Average current Iag, Peak demand currents, Reactive power Q, Q1, Q2, Q3, Demand current I1, I2, I3, [Us] rated supply voltage 40...300 V AC 45...65 Hz, 40...300 V DC, Network frequency 50 Hz, Type of network 3P, Display type 7 segments LED, Display colour Red, Messages display capacity 3 fields of 4 characters, Display digits 12 digit(s) - 14.2 mm in height**

#### 266. Title

Providing & Erecting Multifunctional Energy & Power Monitoring Meter – 3 Phase – LED Display – Cat-II

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#### 267. Scope of Work

The scope includes supply, installation, connection, testing, and commissioning of multifunctional meters suitable for power monitoring applications. The meter shall measure and display various electrical parameters as directed by Engineer-in-Charge. The work includes proper mounting, electrical connections, and verification of all readings.

This includes:

- Supply of approved multifunctional meters

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Mounting on panel or switchboard
  - Connection of phase and neutral wires
  - Integration with incoming supply for measurement
  - Functional testing and commissioning
  - Labeling of meter and circuits
- 

### **268. Detailed Technical Specifications**

#### **268.1 Measurement Parameters**

The meter shall be capable of measuring and displaying:

- Voltage (V1, V2, V3)
- Phase-to-phase voltage (U21, U32, U13)
- Frequency
- Active and reactive power (P, Q, P1, P2, P3, Q1, Q2, Q3)
- Apparent power (S, S1, S2, S3)
- Active, reactive, and apparent energy (signed, four quadrant)
- Average voltage (Vavg)
- Peak demand power (PM, QM, SM)
- Demand current (I1, I2, I3)
- Average current (Iavg)
- Calculated neutral current
- Power factor and displacement PF (signed, four quadrant)
- Unbalance current
- Display of messages (3 fields of 4 characters each)

#### **268.2 Electrical & Network Specifications**

- Rated supply voltage: 40–300 V AC / 40–300 V DC
- Network frequency: 50 Hz
- Type of network: 3 Phase
- Display: 7-segment LED, red color
- Display digits: 12 digits, 14.2 mm height

#### **268.3 Installation**

- Proper mounting on panel or designated enclosure
- Correct wiring connections for phase, neutral, and current transformers if required



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Verification of input voltage range and polarity
- 

### 269. Installation Methodology

1. Inspect mounting location for the meter.
  2. Fix meter securely on panel or enclosure.
  3. Connect supply phases and neutral as per wiring diagram.
  4. Connect current transformers (CTs) if required.
  5. Power ON and verify display for correct readings.
  6. Configure settings for peak demand and energy monitoring as required.
  7. Label meter and associated circuits.
- 

### 270. Testing & Commissioning

- Continuity and insulation check of wiring
  - Verification of all displayed parameters
  - Functional test for energy, power, and demand readings
  - Accuracy check against reference meter
  - Operational test for alarms/messages display
- 

### 271. Measurement Criteria

- Measurement per number of multifunctional meters supplied, mounted, wired, and commissioned
  - Includes all wiring, CTs, mounting hardware, and accessories
- 

### 272. Tender Description (Elaborated – Multifunctional Power & Energy Meter)

Providing, supplying, erecting, wiring, testing, and commissioning multifunctional meters suitable for power monitoring in three-phase systems. The meter shall measure and display voltage, frequency, apparent energy, apparent power, active and reactive energy, active and reactive power, average voltage, peak demand power, demand current, unbalance current, power factor, displacement PF, calculated neutral current, and other parameters as specified. The meter shall support 40–300 V AC/DC supply, 50 Hz, 3-phase network, with 7-segment red LED display (12 digits, 14.2 mm height) and message display capability of 3 fields x 4 characters. Installation shall include proper mounting, electrical connections, and functional verification as directed by Engineer-in-Charge.

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### 273. Category

Category: II

DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(34) Providing and erecting metallic vitrified danger notice board as per language suggested by engineer incharge for MEDIUM VOLTAGE installation to be erected as per IS-2551.**

**274. Title**

Providing & Erecting Metallic Vitrified Danger Notice Board for Medium Voltage Installation – As per IS-2551 – Cat-II

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**275. Scope of Work**

The scope includes supply, fabrication, and erection of metallic vitrified danger notice boards for medium voltage electrical installations. Boards shall display warning messages in the language specified by Engineer-in-Charge, conforming to IS-2551. The work includes proper mounting, positioning, and fixing as directed.

This includes:

- Supply of metallic vitrified danger notice board
  - Inscription in approved language
  - Mounting on poles, walls, or panel enclosures as required
  - Ensuring visibility and safety compliance
  - Fixing with screws, bolts, or other suitable fasteners
- 

**276. Detailed Technical Specifications**

**276.1 Board Specifications**

- Material: Metal with vitrified enamel surface
- Size: As per site requirement and IS-2551 standards
- Text: Danger message for medium voltage installation
- Language: As specified by Engineer-in-Charge
- Finish: Weatherproof, corrosion resistant, and vermin proof
- Mounting: Surface-mounted, pole-mounted, or on panels as required

**276.2 Installation**

- Secure mounting using suitable fasteners
  - Ensure visibility from a reasonable distance
  - Positioning in accordance with safety norms and IS-2551
- 

**277. Installation Methodology**

1. Identify location for danger notice board installation.
2. Prepare surface or mounting poles.

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

3. Fix board using suitable bolts/screws ensuring firm attachment.
  4. Ensure the message is clearly visible and readable.
  5. Verify compliance with IS-2551 requirements.
- 

#### **278. Testing & Verification**

- Visual inspection for text clarity and durability
  - Mechanical check for firm attachment
  - Verification of language, size, and compliance with IS-2551
- 

#### **279. Measurement Criteria**

- Measurement per number of metallic vitrified danger notice boards supplied and erected
  - Includes supply, fixing, and inscriptions
- 

#### **280. Tender Description (Elaborated – Metallic Vitrified Danger Notice Board)**

Providing, supplying, and erecting metallic vitrified danger notice boards for medium voltage installations as per IS-2551. The board shall display warning messages in the language specified by Engineer-in-Charge, mounted securely on walls, poles, or panels, weatherproof and corrosion resistant. The rate includes supply, mounting, fixing hardware, and inscriptions as directed.

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#### **281. Category**

Category: II

**(35) Supplying and erecting triple pole & neutral 440V/ 500V panel mounting Aluminium Busbars with four equal Nos. of bus having current density not more than 0.8 Amp. / sq.mm (Rated current / cross section area) duly wrapped with colour insulating tape for phase sequence of following current carrying capacity, erected with necessary bus bar supports /insulators, main cable socket to each busbar,erected in existing cubical panel with necessary connections. (A) Suitable for 100 Amp. Capacity**

#### **282. Title**

Supplying & Erecting Triple Pole & Neutral Panel-Mounting Aluminium Busbars – 440V/500V – 100 A – Cat-II

---

#### **283. Scope of Work**

The scope includes supply, erection, and connection of triple pole and neutral aluminium busbars for panel mounting. Busbars shall be suitable for 440V/500V system, rated for 100 A capacity, and erected within existing cubical panels as directed by Engineer-in-Charge.

This includes:

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Supply of panel mounting aluminium busbars
  - Erection within existing cubical panels
  - Wrapping with colour insulating tape for phase identification
  - Installation of necessary busbar supports and insulators
  - Provision of main cable sockets to each busbar
  - Electrical connection and securing of busbars
  - Testing for continuity and proper phase sequence
- 

### **284. Detailed Technical Specifications**

#### **284.1 Busbar Specifications**

- Material: Aluminium
- Configuration: Triple pole + neutral
- Voltage Rating: 440 V / 500 V AC
- Current Rating: 100 A
- Number of Equal Busbars: Four (3 phase + 1 neutral)
- Current Density: Not more than 0.8 A/sq.mm (Rated current / cross section area)
- Insulation: Wrapped with colour-coded insulating tape for phase sequence
- Mounting: Panel-mounted with suitable supports/insulators

#### **284.2 Accessories & Connections**

- Busbar supports / insulators
  - Main cable sockets for each busbar
  - Bolts, nuts, washers, and fixing hardware as required
  - Provision for earthing if required
- 

### **285. Installation Methodology**

1. Inspect existing cubical panel and ensure sufficient space for busbar installation.
2. Mount busbars on supports/insulators inside the panel.
3. Wrap each busbar with colour-coded insulating tape as per phase sequence.
4. Connect main cables to busbar sockets using suitable crimped lugs or connectors.
5. Tighten all connections and verify mechanical stability.
6. Check continuity, phase sequence, and insulation.
7. Label phases and neutral appropriately.

#### **286. Testing & Commissioning**

- Visual inspection for alignment and proper insulation
  - Mechanical check for secure mounting
  - Continuity and phase sequence test
  - Verification of rated current handling (if required)
  - Compliance with electrical safety norms
- 

#### **287. Measurement Criteria**

- Measurement per number of busbar sets supplied, erected, and connected
  - Includes supply, wrapping, mounting, connections, and testing
- 

#### **288. Tender Description (Elaborated – Triple Pole & Neutral Aluminium Busbars 100 A)**

Providing, supplying, erecting, and connecting triple pole and neutral panel-mounted aluminium busbars for 440V/500V system with 100 A current rating. Busbars shall consist of four equal bars (3 phase + neutral), with current density not exceeding 0.8 A/sq.mm, wrapped with colour-coded insulating tape for phase identification. Busbars shall be mounted with suitable supports and insulators inside existing cubical panels, with main cable sockets provided for each busbar. Rate includes supply, erection, insulation, connections, and testing as directed by Engineer-in-Charge.

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#### **289. Category**

Category: II

**(36) Providing and erecting Approved make Earth fault Relay suitable to mount with inter connection suitable to following size of moulded case circuit breaker having CT ratio & MCCB rating as following along with shunt trip 220V AC. with all internal connections & complete erected in existing M.S.housing. (1) 15 A -100 A , CT Ratio 1/100**

#### **290. Title**

Providing & Erecting Approved Make Earth Fault Relay with Shunt Trip – Suitable for MCCB 15–100 A, CT Ratio 1/100 – 220 V AC – Cat-II

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#### **291. Scope of Work**

The scope includes supply, mounting, interconnection, wiring, and commissioning of approved make earth fault relays suitable for installation with moulded case circuit breakers (MCCB) rated 15–100 A with CT ratio 1/100. The relay shall include shunt trip operation for 220 V AC supply. The work includes all internal wiring, mounting in existing MS housing, and functional testing as directed by Engineer-in-Charge.

This includes:

- Supply of approved earth fault relay with shunt trip
- Mounting in existing MS housing

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Internal wiring and connections
  - Integration with MCCB
  - Functional testing and commissioning
  - Proper labeling and documentation
- 

## **292. Detailed Technical Specifications**

### **292.1 Earth Fault Relay Specifications**

- Type: Earth fault relay with shunt trip
- MCCB Rating: 15–100 A
- CT Ratio: 1/100
- Supply Voltage for Shunt Trip: 220 V AC
- Mounting: Suitable for integration with MCCB in existing MS housing
- Features:
  - Trip indication
  - Adjustable pickup and time delay
  - High reliability and durability

### **292.2 Electrical & Mechanical Requirements**

- Suitable interconnection with MCCB terminals
  - Internal wiring with proper insulation and connections
  - Compliance with relevant IS standards for protection relays
  - Mechanical mounting to ensure stability and easy maintenance
- 

## **293. Installation Methodology**

1. Inspect existing MS housing and MCCB installation.
  2. Mount earth fault relay securely in designated location.
  3. Connect CT inputs, shunt trip wiring (220 V AC), and other terminals as per schematic diagram.
  4. Ensure all internal connections are firm and insulated.
  5. Test the relay operation including shunt trip functionality.
  6. Label relay and connections appropriately.
  7. Verify complete integration with MCCB for earth fault protection.
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 294. Testing & Commissioning

- Continuity and insulation test of internal wiring
  - Functional test for earth fault detection
  - Verification of shunt trip operation at 220 V AC
  - Calibration of pickup current and time delay settings
  - Compliance check with IS standards and project requirements
- 

### 295. Measurement Criteria

- Measurement per number of earth fault relays supplied, mounted, and commissioned
  - Includes supply, internal connections, integration with MCCB, and testing
- 

### 296. Tender Description (Elaborated – Earth Fault Relay for MCCB 15–100 A, CT 1/100)

Providing, supplying, mounting, interconnecting, wiring, testing, and commissioning approved make earth fault relay suitable for 15–100 A MCCB with CT ratio 1/100. Relay shall include 220 V AC shunt trip, all internal connections, and be fully erected in existing MS housing. The work shall ensure reliable earth fault protection, integration with MCCB, proper labeling, and functional verification as directed by Engineer-in-Charge.

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### 297. Category

Category: II

**(37) Providing and erecting Approved make Four pole moulded case circuit breaker having breaking capacity ICU of 25 KA. at 415 V, having normal current rating up to 25 A to 100A. with Fixed thermal & magnetic release suitable to work on A.C. supply 50 c/s. with all internal connections, spreader tinned copper & complete erected in existing 16 G.M.S. housing. ICS=100% of ICU only Cat III**

### 298. Title

Providing & Erecting Approved Make Four Pole Moulded Case Circuit Breaker (MCCB) – 25 KA Breaking Capacity – 25–100 A – 415 V – Cat-III

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### 299. Scope of Work

The scope includes supply, erection, connection, and commissioning of approved make four-pole moulded case circuit breakers (MCCB) rated for 25–100 A with 25 kA breaking capacity at 415 V AC. MCCB shall have fixed thermal and magnetic release suitable for 50 Hz AC supply. The work includes all internal connections, tinned copper spreaders, and complete erection in existing 16 G MS housing as directed by Engineer-in-Charge.

This includes:

- Supply of approved MCCB
- Mounting in existing 16 G MS housing
- Internal connections and tinned copper spreaders

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Functional verification
  - Testing and commissioning
- 

### **300. Detailed Technical Specifications**

#### **300.1 MCCB Specifications**

- Type: Four Pole, moulded case
- Rated Voltage: 415 V AC
- Rated Current: 25 A to 100 A
- Breaking Capacity (ICU): 25 kA
- Service Breaking Capacity (ICS): 100% of ICU
- Frequency: 50 Hz AC
- Trip Mechanism: Fixed thermal and magnetic release
- Features: High interrupting capacity, reliability, modular design
- Compliance: Relevant IS standards

#### **300.2 Construction & Installation**

- Internal connections using tinned copper spreaders
  - Complete assembly mounted in existing 16 G MS housing
  - Proper insulation and mechanical stability
  - Provision for easy operation and maintenance
- 

### **301. Installation Methodology**

1. Inspect existing 16 G MS housing.
  2. Mount MCCB securely in designated position.
  3. Connect internal tinned copper spreaders and wiring.
  4. Verify proper insulation and mechanical stability.
  5. Restore supply and check MCCB operation.
  6. Test trip mechanism (thermal and magnetic) for functionality.
  7. Label breaker and ensure accessibility for maintenance.
- 

### **302. Testing & Commissioning**

- Continuity and insulation tests
- Mechanical and electrical check for internal connections



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Functional test for normal operation
  - Verification of rated current and breaking capacity
  - Test trip mechanism and confirm ICS = 100% ICU
  - Compliance with safety and IS standards
- 

#### 303. Measurement Criteria

- Measurement per number of MCCBs supplied, mounted, and commissioned
  - Includes supply, internal connections, spreaders, and functional testing
- 

#### 304. Tender Description (Elaborated – Four Pole MCCB 25–100 A, 25 kA, 415 V)

Providing, supplying, erecting, wiring, and commissioning approved make four-pole moulded case circuit breaker (MCCB) rated 25–100 A, 25 kA breaking capacity at 415 V AC, with fixed thermal and magnetic release suitable for 50 Hz AC supply. MCCB shall include all internal connections, tinned copper spreaders, and be mounted completely in existing 16 G MS housing. ICS shall be 100% of ICU. Work shall include supply, erection, testing, and commissioning as directed by Engineer-in-Charge.

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#### 305. Category

Category: III

**(38) Providing and, fixing heavy duty flange type brass double compression type cable gland with rubber ring for PVC insulated armoured cable complete with out going tails, insulating tape etc for following size of cables.(A) 3 & 1/2 / 4 core 25 Sq. mm**

#### 306. Title

Providing & Fixing Heavy Duty Flange Type Brass Double Compression Cable Gland – For 3½ / 4 Core 25 Sq.mm PVC Insulated Armoured Cable – Cat-II

---

#### 307. Scope of Work

The scope includes supply, fixing, and termination of heavy-duty flange type brass double compression cable glands for PVC insulated armoured cables. Work includes preparation of cable ends, installation of rubber rings, outgoing tails, insulating tape, and proper termination as directed by Engineer-in-Charge.

This includes:

- Supply of heavy-duty flange type brass double compression cable glands
- Fixing glands to panels or equipment
- Installation of rubber sealing rings
- Connection of outgoing cable tails
- Insulating tape application for additional insulation
- Verification of proper clamping and sealing

### **308. Detailed Technical Specifications**

#### **308.1 Cable Gland Specifications**

- Type: Flange type, heavy duty, double compression
- Material: Brass
- Suitable For: PVC insulated armoured cables
- Cable Size: 3½ / 4 core, 25 Sq.mm
- Sealing: Rubber ring for dust, moisture, and vermin protection
- Outgoing tails: Properly insulated and terminated
- Mechanical strength: Suitable for panel or equipment mounting

#### **308.2 Installation**

- Cable gland to be fixed to panels, junction boxes, or equipment
  - Ensure proper clamping of cable armour
  - Rubber ring to be correctly seated for complete sealing
  - Outgoing tails to be connected securely
  - Apply insulating tape for additional insulation
  - Verify mechanical stability and sealing integrity
- 

### **309. Installation Methodology**

1. Strip cable armour and insulation as per gland requirements.
  2. Insert cable through gland with rubber sealing ring.
  3. Tighten gland to ensure proper compression.
  4. Connect outgoing tails and secure with insulating tape.
  5. Mount gland on panel or equipment securely.
  6. Inspect and test for mechanical stability and sealing.
- 

### **310. Testing & Commissioning**

- Visual inspection for correct installation
  - Mechanical test for secure clamping
  - Verification of proper sealing and insulation
  - Check for continuity and insulation of outgoing tails
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 311. Measurement Criteria

- Measurement per number of cable glands supplied, fixed, and commissioned
  - Includes supply, fixing, outgoing tails, rubber ring, and insulating tape
- 

### 312. Tender Description (Elaborated – Brass Double Compression Cable Gland for 25 Sq.mm Armoured Cable)

Providing, supplying, and fixing heavy-duty flange type brass double compression cable glands for 3½ / 4 core 25 Sq.mm PVC insulated armoured cables, complete with rubber sealing rings, outgoing tails, insulating tape, and secure mechanical fixing to panels or equipment. Rate includes supply, installation, termination, and functional verification as directed by Engineer-in-Charge.

---

### 313. Category

Category: II

**(39) Providing and, fixing heavy duty flange type brass double compression type cable gland with rubber ring for PVC insulated armoured cable complete with out going tails, insulating tape etc for following size of cables.(B) 3 & 1/2 core 35/50 Sq. mm**

### 314. Title

Providing & Fixing Heavy Duty Flange Type Brass Double Compression Cable Gland – For 3½ Core 35/50 Sq.mm PVC Insulated Armoured Cable – Cat-II

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### 315. Scope of Work

The scope includes supply, fixing, and termination of heavy-duty flange type brass double compression cable glands for PVC insulated armoured cables. Work includes preparation of cable ends, installation of rubber rings, outgoing tails, insulating tape, and proper termination as directed by Engineer-in-Charge.

This includes:

- Supply of heavy-duty flange type brass double compression cable glands
  - Fixing glands to panels or equipment
  - Installation of rubber sealing rings
  - Connection of outgoing cable tails
  - Insulating tape application for additional insulation
  - Verification of proper clamping and sealing
- 

### 316. Detailed Technical Specifications

#### 316.1 Cable Gland Specifications

- Type: Flange type, heavy duty, double compression

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Material: Brass
- Suitable For: PVC insulated armoured cables
- Cable Size: 3½ core, 35/50 Sq.mm
- Sealing: Rubber ring for dust, moisture, and vermin protection
- Outgoing tails: Properly insulated and terminated
- Mechanical strength: Suitable for panel or equipment mounting

#### **316.2 Installation**

- Cable gland to be fixed to panels, junction boxes, or equipment
  - Ensure proper clamping of cable armour
  - Rubber ring to be correctly seated for complete sealing
  - Outgoing tails to be connected securely
  - Apply insulating tape for additional insulation
  - Verify mechanical stability and sealing integrity
- 

#### **317. Installation Methodology**

1. Strip cable armour and insulation as per gland requirements.
  2. Insert cable through gland with rubber sealing ring.
  3. Tighten gland to ensure proper compression.
  4. Connect outgoing tails and secure with insulating tape.
  5. Mount gland on panel or equipment securely.
  6. Inspect and test for mechanical stability and sealing.
- 

#### **318. Testing & Commissioning**

- Visual inspection for correct installation
  - Mechanical test for secure clamping
  - Verification of proper sealing and insulation
  - Check for continuity and insulation of outgoing tails
- 

#### **319. Measurement Criteria**

- Measurement per number of cable glands supplied, fixed, and commissioned
  - Includes supply, fixing, outgoing tails, rubber ring, and insulating tape
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### **320. Tender Description (Elaborated – Brass Double Compression Cable Gland for 35/50 Sq.mm Armoured Cable)**

Providing, supplying, and fixing heavy-duty flange type brass double compression cable glands for 3½ core 35/50 Sq.mm PVC insulated armoured cables, complete with rubber sealing rings, outgoing tails, insulating tape, and secure mechanical fixing to panels or equipment. Rate includes supply, installation, termination, and functional verification as directed by Engineer-in-Charge.

---

### **321. Category**

Category: II

**(40) Solder less crimping type Aluminium lugs conforming to IS suitable for cable of following size evenly crimped with high pressure tool & connected to switchgear terminals with brass/cadmium plated nut bolts in an approved manner. (A) 1.5/ 2.5/4/6 Sq.mm**

### **322. Title**

Solderless Crimping Type Aluminium Lugs – For 1.5/2.5/4/6 Sq.mm Cables – Cat-II

---

### **323. Scope of Work**

The scope includes supply, crimping, and connection of solderless aluminium lugs for cables. Lugs shall conform to relevant IS standards and be crimped using high-pressure tools. Lugs shall be connected to switchgear terminals using brass or cadmium plated nut bolts as approved by Engineer-in-Charge.

This includes:

- Supply of solderless crimping type aluminium lugs
  - Crimping with high-pressure tool
  - Connection to switchgear terminals using brass/cadmium plated nuts and bolts
  - Verification of mechanical stability and electrical continuity
  - Ensuring proper insulation and torque tightening
- 

### **324. Detailed Technical Specifications**

#### **324.1 Lug Specifications**

- Type: Solderless crimping type
- Material: Aluminium
- Cable Size: 1.5 / 2.5 / 4 / 6 Sq.mm
- Standard: Conforming to relevant IS specifications
- Connection: Brass or cadmium plated nut and bolts
- Installation: Suitable for switchgear terminals
- Crimping: Using approved high-pressure crimping tool

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 324.2 Installation

- Strip cable end as per lug requirement
  - Insert cable into lug
  - Crimp using high-pressure crimping tool
  - Connect lug to switchgear terminal with brass/cadmium plated nut and bolt
  - Ensure mechanical and electrical integrity
  - Apply insulation/tape if required
- 

### 325. Installation Methodology

1. Prepare cable end by stripping insulation to correct length.
  2. Insert cable conductor fully into aluminium lug.
  3. Crimp lug using high-pressure crimping tool ensuring uniform compression.
  4. Connect lug to switchgear terminal using approved brass/cadmium plated nut and bolt.
  5. Tighten bolts to manufacturer-recommended torque.
  6. Verify mechanical stability and electrical continuity.
  7. Apply insulation/tape if required.
- 

### 326. Testing & Commissioning

- Visual inspection of crimping quality
  - Mechanical check for proper bolted connection
  - Electrical continuity test
  - Verification of insulation and safety
- 

### 327. Measurement Criteria

- Measurement per number of aluminium lugs supplied, crimped, and connected
  - Includes supply, crimping, nuts/bolts, and testing
- 

### 328. Tender Description (Elaborated – Solderless Crimp Aluminium Lugs 1.5–6 Sq.mm)

Providing, supplying, crimping, and connecting solderless aluminium lugs for 1.5 / 2.5 / 4 / 6 Sq.mm cables, conforming to IS standards. Lugs shall be crimped using high-pressure crimping tools and connected to switchgear terminals with brass or cadmium plated nuts and bolts. Rate includes supply, crimping, connection, testing, and verification as directed by Engineer-in-Charge.

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## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 329. Category

Category: II

**(41) Solder less crimping type Aluminium lugs conforming to IS suitable for cable of following size evenly crimped with high pressure tool & connected to switchgear terminals with brass/cadmium plated nut bolts in an approved manner.(C) 16/25 Sq.mm.**

### 330. Title

Solderless Crimping Type Aluminium Lugs – For 16/25 Sq.mm Cables – Cat-II

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### 331. Scope of Work

The scope includes supply, crimping, and connection of solderless aluminium lugs for cables. Lugs shall conform to relevant IS standards and be crimped using high-pressure tools. Lugs shall be connected to switchgear terminals using brass or cadmium plated nut bolts as approved by Engineer-in-Charge.

This includes:

- Supply of solderless crimping type aluminium lugs
  - Crimping with high-pressure tool
  - Connection to switchgear terminals using brass/cadmium plated nuts and bolts
  - Verification of mechanical stability and electrical continuity
  - Ensuring proper insulation and torque tightening
- 

### 332. Detailed Technical Specifications

#### 332.1 Lug Specifications

- Type: Solderless crimping type
- Material: Aluminium
- Cable Size: 16 / 25 Sq.mm
- Standard: Conforming to relevant IS specifications
- Connection: Brass or cadmium plated nut and bolts
- Installation: Suitable for switchgear terminals
- Crimping: Using approved high-pressure crimping tool

#### 332.2 Installation

- Strip cable end as per lug requirement
- Insert cable into lug
- Crimp using high-pressure crimping tool
- Connect lug to switchgear terminal with brass/cadmium plated nut and bolt
- Ensure mechanical and electrical integrity

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Apply insulation/tape if required
- 

#### **333. Installation Methodology**

1. Prepare cable end by stripping insulation to correct length.
  2. Insert cable conductor fully into aluminium lug.
  3. Crimp lug using high-pressure crimping tool ensuring uniform compression.
  4. Connect lug to switchgear terminal using approved brass/cadmium plated nut and bolt.
  5. Tighten bolts to manufacturer-recommended torque.
  6. Verify mechanical stability and electrical continuity.
  7. Apply insulation/tape if required.
- 

#### **334. Testing & Commissioning**

- Visual inspection of crimping quality
  - Mechanical check for proper bolted connection
  - Electrical continuity test
  - Verification of insulation and safety
- 

#### **335. Measurement Criteria**

- Measurement per number of aluminium lugs supplied, crimped, and connected
  - Includes supply, crimping, nuts/bolts, and testing
- 

#### **336. Tender Description (Elaborated – Solderless Crimp Aluminium Lugs 16/25 Sq.mm)**

Providing, supplying, crimping, and connecting solderless aluminium lugs for 16 / 25 Sq.mm cables, conforming to IS standards. Lugs shall be crimped using high-pressure crimping tools and connected to switchgear terminals with brass or cadmium plated nuts and bolts. Rate includes supply, crimping, connection, testing, and verification as directed by Engineer-in-Charge.

---

#### **337. Category**

Category: II



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(42) Solder less crimping type Aluminium lugs conforming to IS suitable for cable of following size evenly crimped with high pressure tool & connected to switchgear terminals with brass/cadmium plated nut bolts in an approved manner.(D) 35/50 Sq.mm.**

### **338. Title**

Solderless Crimping Type Aluminium Lugs – For 35/50 Sq.mm Cables – Cat-II

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### **339. Scope of Work**

The scope includes supply, crimping, and connection of solderless aluminium lugs for cables. Lugs shall conform to relevant IS standards and be crimped using high-pressure tools. Lugs shall be connected to switchgear terminals using brass or cadmium plated nut bolts as approved by Engineer-in-Charge.

This includes:

- Supply of solderless crimping type aluminium lugs
  - Crimping with high-pressure tool
  - Connection to switchgear terminals using brass/cadmium plated nuts and bolts
  - Verification of mechanical stability and electrical continuity
  - Ensuring proper insulation and torque tightening
- 

### **340. Detailed Technical Specifications**

#### **340.1 Lug Specifications**

- Type: Solderless crimping type
- Material: Aluminium
- Cable Size: 35 / 50 Sq.mm
- Standard: Conforming to relevant IS specifications
- Connection: Brass or cadmium plated nut and bolts
- Installation: Suitable for switchgear terminals
- Crimping: Using approved high-pressure crimping tool

#### **340.2 Installation**

- Strip cable end as per lug requirement
  - Insert cable into lug
  - Crimp using high-pressure crimping tool
  - Connect lug to switchgear terminal with brass/cadmium plated nut and bolt
  - Ensure mechanical and electrical integrity
  - Apply insulation/tape if required
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 341. Installation Methodology

1. Prepare cable end by stripping insulation to correct length.
  2. Insert cable conductor fully into aluminium lug.
  3. Crimp lug using high-pressure crimping tool ensuring uniform compression.
  4. Connect lug to switchgear terminal using approved brass/cadmium plated nut and bolt.
  5. Tighten bolts to manufacturer-recommended torque.
  6. Verify mechanical stability and electrical continuity.
  7. Apply insulation/tape if required.
- 

### 342. Testing & Commissioning

- Visual inspection of crimping quality
  - Mechanical check for proper bolted connection
  - Electrical continuity test
  - Verification of insulation and safety
- 

### 343. Measurement Criteria

- Measurement per number of aluminium lugs supplied, crimped, and connected
  - Includes supply, crimping, nuts/bolts, and testing
- 

### 344. Tender Description (Elaborated – Solderless Crimp Aluminium Lugs 35/50 Sq.mm)

Providing, supplying, crimping, and connecting solderless aluminium lugs for 35 / 50 Sq.mm cables, conforming to IS standards. Lugs shall be crimped using high-pressure crimping tools and connected to switchgear terminals with brass or cadmium plated nuts and bolts. Rate includes supply, crimping, connection, testing, and verification as directed by Engineer-in-Charge.

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### 345. Category

Category: II

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(43) Supplying & erecting earth pit of minimum bore dia.150mm size approved make Earthing Electrode consisting Pipe-in-Pipe Technology as per IS 3043-1987 made of corrosion free hot dipped G.I.Pipes having Outer pipe dia of 50mm having 80-200 Micron galvanising, Inner pipe dia of 25 mm having 200-250 Micron galvanising, connection terminal dia of 12mm with constant ohmic value surrounded by highly conductive compound with high charge dissipation suitable for following type of applications with chamber and heavy duty cover. (A)(approved make OEM has to submit test certificate including value of earth resistance of installation duly stamped and signed by agency and officer Incharge has to ensure the value of earthing resistance mentioned in test Certificate) & having back filling compound of (B) Inner chemical (CCM Compound)- Resistivity:- 0.2 ohm / meter testing as per IEC 62561-2017, Voltage drop:- < 1 volt at no load & dry form, Sulphur content:- <2%(C) Back fill Compound :- Earthing compound should be capable to retain moisture for long time Necessary test report must be submitted by Agency. (b)For Electrical installation up to 11 KV in normal soil.**

Length of Pipe : 2.00 mtrs Back filling Compound :1 no. Bag of 25 Kg.

#### **346. Title**

Supplying & Erecting Earth Pit – Pipe-in-Pipe Earthing Electrode – For Electrical Installation up to 11 kV – Cat-II

---

#### **347. Scope of Work**

The scope includes supply, installation, and testing of an earth pit using pipe-in-pipe technology for electrical installations up to 11 kV. The earth pit shall comply with IS 3043-1987, be corrosion-free, and consist of hot-dipped G.I. pipes. The work includes backfilling with approved earthing compound, provision of chamber, heavy-duty cover, and submission of test certificates for earth resistance.

This includes:

- Supply of approved make OEM earth electrode
- Installation of earth pit with 2.00 m pipe length
- Provision of chamber with heavy-duty cover
- Backfilling with inner chemical (CCM Compound) and earthing compound
- Submission of earth resistance test certificate stamped and signed by agency
- Verification of ohmic value and compliance by Officer-in-Charge

---

#### **348. Detailed Technical Specifications**

##### **348.1 Earth Electrode**

- Technology: Pipe-in-Pipe
- Standard: IS 3043-1987
- Outer Pipe Diameter: 50 mm, 80-200 Micron galvanising
- Inner Pipe Diameter: 25 mm, 200-250 Micron galvanising
- Connection Terminal Diameter: 12 mm
- Length of Pipe: 2.00 m

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Material: Corrosion-free hot dipped G.I. pipe
- Compound: High conductivity, high charge dissipation
- Testing: Constant ohmic value to be verified at installation
- Submission: Test certificate including earth resistance value, duly stamped and signed

#### **348.2 Backfilling Compound**

- Inner Chemical (CCM Compound)
  - Resistivity: 0.2 ohm/meter
  - Voltage Drop: <1 V at no load & dry form
  - Sulphur Content: <2%
  - Testing: As per IEC 62561-2017
- Backfill Compound: Earthing compound capable of retaining moisture for long duration
- Quantity: 1 bag of 25 Kg per earth pit

#### **348.3 Application**

- Suitable for electrical installations up to 11 kV in normal soil conditions
  - Ensures low resistance and reliable earthing
- 

#### **349. Installation Methodology**

1. Excavate pit as per required dimensions.
  2. Install inner and outer GI pipes in pipe-in-pipe configuration.
  3. Connect 12 mm terminal to electrical system.
  4. Fill with CCM compound and earthing compound to ensure proper contact and moisture retention.
  5. Place chamber and heavy-duty cover at surface.
  6. Verify earth resistance using standard testing methods.
  7. Submit test certificate with ohmic value to Officer-in-Charge.
- 

#### **350. Testing & Commissioning**

- Verify installation as per IS 3043-1987
  - Measure earth resistance and confirm against test certificate
  - Inspect mechanical stability and compound integrity
  - Ensure low resistance (<1 ohm if applicable) and moisture retention
  - Submit test reports to Engineer-in-Charge for approval
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 351. Measurement Criteria

- Measurement per earth pit installed and tested
  - Includes supply, installation, backfilling, chamber, cover, and test certificate submission
- 

### 352. Tender Description (Elaborated – Earth Pit for Electrical Installation up to 11 kV)

Providing, supplying, and erecting approved make earth pit using pipe-in-pipe G.I. technology for electrical installations up to 11 kV. Outer pipe shall be 50 mm dia, inner pipe 25 mm dia, with 12 mm terminal connection. Installation shall include backfilling with inner chemical CCM compound and earthing compound, chamber with heavy-duty cover, 2.00 m pipe length, and submission of test certificate with earth resistance value as per IS 3043-1987. Backfilling compound shall retain moisture for long-term performance. Rate includes supply, erection, backfilling, testing, and certification as directed by Engineer-in-Charge.

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### 353. Category

Category: II

**(44) Supplying and erecting approved make Octagonal pole made from HR sheet steel. The pole should be made as per IS. and shall be coated with hot dip galvanizing as per IS 2629/2633/4759, suitable suspend local wind speed with integral Junction box consist of terminal plate of min 6mm Hylam sheet, standard profile 35mmX7.5mm Din-Rail for MCB Mounting, stud type terminal and arrangement for cable termination to be erected With Suitable foundation (Included) as per details given by manufacturer considering site requirement.(D) 6 Mtr. Long 70 mm Top X 135 mm bottom dia, 3 mm thickness with 200mmX200mmX12mm base plate, 4-M20 Bolts and 600mm long with necessary G.I. J Bolts .Approx Pole weight 59 kg**

### 354. Title

Supplying & Erecting Octagonal Pole – 6.0 M Height – Hot Dip Galvanized – With Foundation – Cat-II

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### 355. Scope of Work

The scope includes supply, transportation, erection, and commissioning of approved make octagonal poles fabricated from HR sheet steel, hot dip galvanized as per relevant IS standards. Work includes integral junction box with internal accessories, suitable foundation including anchor bolts, and complete installation as per manufacturer's drawings and site conditions.

This includes:

- Supply of octagonal pole as per specification
  - Hot dip galvanizing as per IS standards
  - Integral junction box with accessories
  - Foundation construction including base plate and GI J-bolts
  - Erection, alignment, and grouting
  - Testing and commissioning
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 356. Detailed Technical Specifications

#### 356.1 Pole Specifications

- Type: Octagonal pole
- Height: 6.0 meters
- Material: HR sheet steel
- Standard: As per relevant IS specifications
- Galvanizing: Hot dip galvanized as per IS 2629 / 2633 / 4759
- Wind Load: Suitable for local wind speed
- Top Diameter: 70 mm
- Bottom Diameter: 135 mm
- Thickness: 3 mm
- Approx. Weight: 59 kg

#### 356.2 Base Plate & Bolts

- Base Plate Size: 200 mm x 200 mm x 12 mm thick
- Anchor Bolts: 4 Nos. M20 bolts
- GI J-Bolts: 600 mm long

#### 356.3 Junction Box (Integral)

- Terminal Plate: Minimum 6 mm thick Hylam sheet
- DIN Rail: Standard 35 mm x 7.5 mm for MCB mounting
- Terminals: Stud type terminal blocks
- Cable Termination: Suitable arrangement provided

#### 356.4 Foundation

- Foundation: Included in scope
- Design: As per manufacturer's drawing and site requirement
- Material: RCC foundation with grouting of anchor bolts

---

### 357. Installation Methodology

1. Excavate pit as per foundation drawing.
2. Place GI J-bolts and template in correct position.
3. Cast RCC foundation and allow curing.
4. Mount pole on foundation using base plate and anchor bolts.
5. Align pole vertically and tighten bolts.

DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

6. Connect internal wiring through junction box.
  7. Fix MCB on DIN rail and terminate cables.
  8. Check mechanical stability and verticality.
- 

**358. Testing & Commissioning**

- Visual inspection for galvanization and damage
  - Verification of foundation strength and bolt tightening
  - Check vertical alignment
  - Electrical continuity check of junction box terminals
  - Functional test of MCB and wiring
- 

**359. Measurement Criteria**

- Measurement per number of poles supplied and erected
  - Includes supply, foundation, erection, accessories, and commissioning
- 

**360. Tender Description (Elaborated – 6.0 M Octagonal Pole)**

Providing, supplying, and erecting approved make 6.0 m high octagonal pole fabricated from HR sheet steel, hot dip galvanized as per IS 2629/2633/4759, suitable for local wind speed. Pole shall have 70 mm top dia, 135 mm bottom dia, 3 mm thickness, approximate weight 59 kg, and provided with 200 x 200 x 12 mm base plate, 4 nos. M20 anchor bolts, and 600 mm long GI J-bolts. Integral junction box shall include 6 mm thick Hylam terminal plate, 35 x 7.5 mm DIN rail for MCB, stud type terminals, and cable termination arrangement. Rate includes RCC foundation as per manufacturer's design, supply, erection, alignment, wiring, and commissioning complete as directed by Engineer-in-Charge.

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**361. Category**

Category: II

**(45) Providing and erecting street light pole bracket comprising main B Class GI pipe of 4.2 cm/require outside dia. complete with suitable B Class G.I sleeve tubing of approx. 45cms.length and suitable for 76.5 mm / 80mm. / require size pole top having sufficient fasteners for fixing the brackets and having spread of 1 mtr. length with suitable rise as per site condition & suitable welded stiffener reducer and nipple with check nut complete painted with one coat of Red oxide / PU base primer and two coats of Aluminium / PU paint. paint with following nos of arms..[A] Single Arm bracket 1 Mtr**

**362. Title**

Providing & Erecting Street Light Pole Bracket – Single Arm 1.0 Mtr – Cat-II

---

**363. Scope of Work**

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

The scope includes supply, fabrication, painting, and erection of street light pole bracket made from B-Class GI pipe, complete with sleeve tubing, fasteners, welded stiffeners, reducers, and nipples with check nuts. The bracket shall be suitable for mounting on poles of specified diameter and shall be painted as per specifications.

This includes:

- Supply of B-Class GI pipe bracket
- Fabrication of single arm bracket of 1.0 m length
- Provision of GI sleeve tubing (approx. 450 mm long)
- Welding of stiffeners, reducers, and nipples
- Painting with primer and finish coats
- Fixing on existing pole top with fasteners

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### 364. Detailed Technical Specifications

#### 364.1 Bracket Specifications

- Type: Street light pole bracket
- Arm: Single arm
- Arm Length: 1.0 meter
- Material: B-Class GI pipe
- Outside Diameter: 4.2 cm or as required
- Sleeve Tubing: B-Class GI, approx. 450 mm length
- Suitable Pole Top Dia: 76.5 mm / 80 mm / as required
- Rise: As per site condition
- Spread: 1.0 meter

#### 364.2 Fabrication Details

- Proper welded stiffeners for strength
- Reducer and nipple with check nut
- Sufficient fasteners for fixing
- Welding shall be smooth and free from burrs

#### 364.3 Painting

- One coat of Red Oxide / PU base primer
- Two coats of Aluminium / PU paint
- Finish shall be uniform and weather resistant

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### 365. Installation Methodology



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

1. Inspect pole top diameter and site condition.
  2. Fix GI sleeve tubing on pole top.
  3. Mount bracket arm with proper alignment.
  4. Tighten fasteners securely.
  5. Check rise and spread as per requirement.
  6. Touch up paint if damaged during installation.
- 

#### **366. Testing & Commissioning**

- Visual inspection of fabrication and paint finish
  - Check mechanical stability of bracket
  - Verify alignment and spread
  - Ensure firm fastening and no vibration
- 

#### **367. Measurement Criteria**

- Measurement per number of brackets supplied and erected
  - Includes supply, fabrication, painting, and installation
- 

#### **368. Tender Description (Elaborated – Single Arm Street Light Bracket)**

Providing, supplying, fabricating, painting, and erecting street light pole bracket made from B-Class GI pipe of approx. 4.2 cm outside diameter, complete with B-Class GI sleeve tubing of approx. 450 mm length suitable for 76.5 mm / 80 mm or required size pole top. Bracket shall have single arm of 1.0 m length with suitable rise, welded stiffeners, reducer, nipple with check nut, and sufficient fasteners for fixing. Painting shall consist of one coat of red oxide / PU base primer and two coats of aluminium / PU paint. Rate includes supply, fabrication, painting, fixing, and commissioning complete as directed by Engineer-in-Charge.

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#### **369. Category**

Category: II

**(46) Making trench in soft soil of suitable width of 90 cm deep for laying cable or locating the fault all over the run and back filling the same and making the surface as normal ground.**

#### **370. Title**

Making Trench in Soft Soil – 90 cm Deep – For Cable Laying / Fault Locating – Cat-II

---

#### **371. Scope of Work**

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

The scope includes excavation of trench in soft soil of suitable width and 90 cm depth for laying underground cables or for locating faults along the entire run. Work includes refilling the trench, compaction, and restoring the surface to its original condition as directed by Engineer-in-Charge.

This includes:

- Manual/mechanical excavation of trench
- Maintaining required depth and width
- Safe stacking of excavated soil
- Laying of cables / fault locating activity
- Backfilling with excavated soil
- Compaction and surface restoration

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### **372. Detailed Technical Specifications**

#### **372.1 Trench Specifications**

- Soil Type: Soft soil
- Depth: 90 cm
- Width: Suitable width as per cable size / site condition
- Length: As per site requirement
- Slope: As required for safety

#### **372.2 Execution Requirements**

- Excavation to be done carefully to avoid damage to existing utilities
- Barricading and safety signage to be provided
- Excavated soil to be stacked neatly
- Trench bottom to be leveled
- Cable laying / fault repair as required

---

### **373. Installation / Execution Methodology**

1. Mark trench alignment as per drawing.
2. Excavate trench in soft soil to required depth and width.
3. Stack soil safely beside trench.
4. Carry out cable laying or fault locating.
5. Backfill trench with excavated soil.
6. Compact layer by layer.
7. Restore surface to original ground condition.

### **374. Testing & Inspection**

- Visual inspection of trench depth and width
  - Check compaction of backfilled soil
  - Ensure surface restoration is satisfactory
- 

### **375. Measurement Criteria**

- Measurement in running meters (RMT)
  - Depth considered as 90 cm
  - Includes excavation, backfilling, and surface restoration
- 

### **376. Tender Description (Elaborated – Trench in Soft Soil 90 cm Deep)**

Providing, excavating, and refilling trench in soft soil of suitable width and 90 cm depth for laying underground cables or for locating faults along the entire run. Work shall include careful excavation, stacking of soil, backfilling after completion, compaction, and restoring the surface to normal ground condition. Rate includes all labour, tools, safety arrangements, and finishing as directed by Engineer-in-Charge.

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### **377. Category**

Category: II

**(47) Providing & laying approved make Double walled corrugated pipes (DWC of polyethylene (conforming to IS 14930 II )with necessary connecting accessories of same material at required depth in existing trench for laying of cable. below ground / road surface for enclosing cable (A)50 mm outer dia**

### **378. Title**

Providing & Laying Double Walled Corrugated (DWC) HDPE Pipe – 50 mm Dia – Cat-II

---

### **379. Scope of Work**

The scope includes supply, laying, jointing, and installation of approved make double walled corrugated (DWC) polyethylene pipes conforming to IS 14930 (Part II) for underground cable protection. Work shall be executed in existing trenches below ground / road surface, including provision of all necessary accessories of the same material. This includes:

- Supply of DWC HDPE pipes
- Laying in existing trench at required depth
- Jointing using couplers / accessories

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Alignment and leveling
  - Backfilling after installation
- 

### **380. Detailed Technical Specifications**

#### **380.1 Pipe Specifications**

- Type: Double walled corrugated (DWC)
- Material: High Density Polyethylene (HDPE)
- Standard: IS 14930 (Part II)
- Outer Diameter: 50 mm
- Colour: As per manufacturer standard
- Structure: Corrugated outer wall, smooth inner wall
- Application: Underground cable protection

#### **380.2 Accessories**

- Couplers / connectors of same material
  - End caps if required
  - Sealing rings
- 

#### **381. Installation Methodology**

1. Inspect existing trench for required depth and cleanliness.
  2. Lay DWC pipe carefully ensuring straight alignment.
  3. Join pipes using approved couplers.
  4. Ensure proper slope and clearance for cable pulling.
  5. Place warning tape if required.
  6. Backfill trench with selected soil.
  7. Compact soil and restore surface.
- 

#### **382. Testing & Inspection**

- Visual inspection for alignment and joint integrity
  - Check for pipe deformation
  - Verify continuity of duct
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 383. Measurement Criteria

- Measurement in running meters (RMT)
  - Includes supply, laying, jointing, and accessories
- 

### 384. Tender Description (Elaborated – DWC Pipe 50 mm Dia)

Providing, supplying, and laying approved make double walled corrugated (DWC) HDPE pipes conforming to IS 14930 (Part II) of 50 mm outer diameter with all necessary couplers and accessories of same material in existing trench at required depth below ground / road surface for enclosing underground cables. Rate includes supply, laying, jointing, backfilling, and restoration complete as directed by Engineer-in-Charge.

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### 385. Category

Category: II

**(48) Supplying & erecting approved make Digital time switch having lithium cell 6 years operative and operate battery backup 1 channel day clock with 14 memory programme, suitable to operate on 240V + 5%, 16A with, floating contacts Minimum switching setup time 1 minimum & LCD display. Also comprised permanent ON/OFF switching. Programming switches & housed in fire proof thermoplastic enclosure & transparent cover erected as required with necessary connection erected as directed.**

### 386. Title

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

---

### 387. Scope of Work

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

This includes:

- Supply of digital time switch
  - Mounting in suitable location / panel
  - Electrical connections
  - Programming of time schedule
  - Testing and commissioning
- 

### 388. Detailed Technical Specifications

#### 388.1 Electrical Specifications

- Type: Digital time switch (Day clock)
- Channels: 1 channel

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Rated Voltage: 240 V  $\pm$ 5%
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

#### **388.2 Functional Features**

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF
- Display: LCD display
- Programming: Push button switches

#### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

#### **389. Installation Methodology**

1. Fix time switch securely in designated location.
  2. Connect incoming and outgoing wiring.
  3. Program required ON/OFF schedule.
  4. Verify battery backup function.
  5. Test manual override operation.
  6. Ensure LCD display is functional.
- 

#### **390. Testing & Commissioning**

- Check supply voltage and current rating
  - Test automatic switching as per program
  - Verify battery backup operation
  - Check manual ON/OFF override
  - Confirm accuracy of clock timing
- 

#### **391. Measurement Criteria**

- Measurement per number of time switches supplied and commissioned

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Includes supply, wiring, programming, and testing

---

### 392. Tender Description (Elaborated – Digital Time Switch)

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm 5\%$  supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

---

### 393. Category

Category: II

(49) Supplying & erecting IP 55 grade following size section pillar fabricated from joint less M.S. Sheet with angle iron legs made from jointless M.S. Angle with cable clamps to be buried in ground to have appropriate erection to work uniform until erected with cement concrete foundation and 45 cm high bricks work finishing with plaster etc. hinged double door internally supported on both side, with internal and outside looking arrangement with lock and keys in duplicate 35 x 35 x 5 mm M.S. Angle of Two Nos. one is welded and other with nut and bolt for erecting Bakelite sheet. Painting the Section Pillar inside and out side with three tank powder coated paint. section pillar roof should be without joint with water leakage proof & tested as per IP 55 test & followed by IS 2147 of 1962 (B) 75 X 60 X 45 cm section pillar fabricated from 16 Gauge MS Sheet with angle iron legs 45 cm long made from 35 X 35 X 5 mm thick MS angle.

### 386. Title

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

---

### 387. Scope of Work

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

This includes:

- Supply of digital time switch
- Mounting in suitable location / panel
- Electrical connections
- Programming of time schedule
- Testing and commissioning

---

### 388. Detailed Technical Specifications

#### 388.1 Electrical Specifications

- Type: Digital time switch (Day clock)

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Channels: 1 channel
- Rated Voltage: 240 V  $\pm 5\%$
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

#### **388.2 Functional Features**

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF
- Display: LCD display
- Programming: Push button switches

#### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

#### **389. Installation Methodology**

1. Fix time switch securely in designated location.
  2. Connect incoming and outgoing wiring.
  3. Program required ON/OFF schedule.
  4. Verify battery backup function.
  5. Test manual override operation.
  6. Ensure LCD display is functional.
- 

#### **390. Testing & Commissioning**

- Check supply voltage and current rating
  - Test automatic switching as per program
  - Verify battery backup operation
  - Check manual ON/OFF override
  - Confirm accuracy of clock timing
-



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 391. Measurement Criteria

- Measurement per number of time switches supplied and commissioned
  - Includes supply, wiring, programming, and testing
- 

### 392. Tender Description (Elaborated – Digital Time Switch)

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm 5\%$  supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

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### 393. Category

Category: II

**(50) Supplying and erecting LED indoor fittings with LEDs of wattage 0.2 Watt to 0.5 Watt assembled on single MCPCB, with housing used as a heat sink shall be made of thick sheet Steel conforming to IS: 513/CRCA/aluminium pressure die cast powder coated and high U.V. & corrosion resistance with diffuser housed in aluminium casted body with company mark/name 160V to 270V, Power Factor more than 0.95, THD < 15 %, CCT 3000 K to 6500K, Luminaire efficacy > 85 lumens/watt, LED driver efficiency > 85 % ( fitting required LM-79 & LM-80 Certificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.) (A) Square/ Circular shaped Surface/Recessed Mount Downlight with provision for spring loaded mounting clips complete. IP20 (iv) 22-24 watts, Surge-2 KV, Surge-2 KV Cat-III**

### 386. Title

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

---

### 387. Scope of Work

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

This includes:

- Supply of digital time switch
  - Mounting in suitable location / panel
  - Electrical connections
  - Programming of time schedule
  - Testing and commissioning
-

### **388. Detailed Technical Specifications**

#### **388.1 Electrical Specifications**

- Type: Digital time switch (Day clock)
- Channels: 1 channel
- Rated Voltage: 240 V  $\pm 5\%$
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

#### **388.2 Functional Features**

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF
- Display: LCD display
- Programming: Push button switches

#### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

### **389. Installation Methodology**

1. Fix time switch securely in designated location.
  2. Connect incoming and outgoing wiring.
  3. Program required ON/OFF schedule.
  4. Verify battery backup function.
  5. Test manual override operation.
  6. Ensure LCD display is functional.
- 

### **390. Testing & Commissioning**

- Check supply voltage and current rating
- Test automatic switching as per program
- Verify battery backup operation
- Check manual ON/OFF override

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Confirm accuracy of clock timing

---

#### 391. Measurement Criteria

- Measurement per number of time switches supplied and commissioned
- Includes supply, wiring, programming, and testing

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#### 392. Tender Description (Elaborated – Digital Time Switch)

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm 5\%$  supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

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#### 393. Category

Category: II

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#### Supplying & Erecting IP-55 Grade Section Pillar (75 x 60 x 45 cm)

##### Scope of Work

Supplying, fabricating, erecting and commissioning IP-55 grade outdoor section pillar made from jointless MS sheet including foundation, brick masonry, plastering, painting and complete installation as per specifications and directions of Engineer-in-Charge.

##### Technical Specifications

- Size : **75 cm (H) x 60 cm (W) x 45 cm (D)**
- Material : **Jointless 16 Gauge Mild Steel Sheet**
- Legs : **35 x 35 x 5 mm MS Angle – 45 cm long**
- Protection : **IP-55 dust & water proof**
- Doors : Hinged **double door**, internally supported both sides
- Locking : Inside & outside locking arrangement with **duplicate keys**
- Roof : Jointless, water leakage proof, IP tested
- Mounting : Buried angle iron legs with **cement concrete foundation**
- Brick Work : **45 cm height brick masonry** with plaster finish
- Internal Mounting : Two nos. **35x35x5 mm MS angle** – one welded, one bolted for Bakelite sheet mounting
- Painting : **Three coat powder coating** inside & outside
- Cable Entry : Proper cable clamps & glands

##### Construction Details

- Fabricated from jointless MS sheet
- Angle iron legs embedded in concrete foundation
- 45 cm high brick masonry pedestal
- Hinged double door with stiffeners
- Rubber gasket sealing for IP protection

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Standards & Testing

- IP-55 protection test
- As per **IS 2147:1962**
- Water leakage & dust ingress test

### Installation Method

1. Excavation for foundation
2. Fixing angle iron legs
3. Cement concrete foundation
4. Brick masonry & plastering
5. Erection of pillar
6. Leveling & alignment
7. Internal mounting & finishing

### Measurement

- **Per Nos.** complete installed

### Rate Includes

- ✓ Fabrication
- ✓ Foundation work
- ✓ Brick work & plaster
- ✓ Painting
- ✓ Transportation
- ✓ Testing & commissioning

### Tender Description

"Supplying & erecting IP-55 grade section pillar of size 75x60x45 cm fabricated from jointless 16G MS sheet with angle iron legs, cement concrete foundation, brick masonry pedestal, hinged double door, locking arrangement, powder coating inside & outside, complete as per IS 2147 & as directed by Engineer-in-Charge."

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## LED Indoor Downlight Fitting – 22 to 24 Watts (IP20)

### Scope of Work

Supplying, installing, testing and commissioning LED indoor downlight fittings of approved make, square/circular shape, surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: High quality opal diffuser

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square / Circular
- Mounting: Surface/Recessed with spring loaded clips
- IP Rating: IP20
- Wattage: 22 – 24 Watts
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- Heat sink integrated into housing
- High thermal conductivity aluminium body
- Flicker-free electronic driver
- Low lumen depreciation
- Uniform light distribution

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening (for recessed type)
3. Connect supply through terminal block
4. Fix fitting using spring clips
5. Ensure firm mounting
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Lux level verification

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Heat dissipation observation
- Functional test

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire retardant materials

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

#### Tender Approval Description

"Supplying and erecting approved make LED indoor downlight fittings, 22 to 24 watts, square/circular shape, surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

**(51) Supplying and erecting LED indoor fittings with LEDs of wattage 0.2 Watt to 0.5 Watt assembled on single MCPCB, with housing used as a heat sink shall be made of thick sheet Steel conforming to IS:**

**513/CRCA/aluminium pressure die cast powder coated and high U.V. & corrosion resistance with diffuser housed in aluminium casted body with company mark/name 160V to 270V, Power Factor more than 0.95, THD  $< 15\%$ , CCT 3000 K to 6500K, Luminaire efficacy  $> 85$  lumens/watt, LED driver efficiency  $> 85\%$  (fitting required LM-79 & LM-80 Certificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.) (B) LED Panel Light with provision for Plane front frame with translucent cover fixed to housing complete. IP20 (vi) 36 watts, 24" x 24", Surge- 2KV Cat-III**

#### 386. Title

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

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#### 387. Scope of Work

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

This includes:

- Supply of digital time switch
  - Mounting in suitable location / panel
  - Electrical connections
  - Programming of time schedule
  - Testing and commissioning
-

### **388. Detailed Technical Specifications**

#### **388.1 Electrical Specifications**

- Type: Digital time switch (Day clock)
- Channels: 1 channel
- Rated Voltage: 240 V  $\pm 5\%$
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

#### **388.2 Functional Features**

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF
- Display: LCD display
- Programming: Push button switches

#### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

### **389. Installation Methodology**

1. Fix time switch securely in designated location.
  2. Connect incoming and outgoing wiring.
  3. Program required ON/OFF schedule.
  4. Verify battery backup function.
  5. Test manual override operation.
  6. Ensure LCD display is functional.
- 

### **390. Testing & Commissioning**

- Check supply voltage and current rating
- Test automatic switching as per program
- Verify battery backup operation
- Check manual ON/OFF override

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Confirm accuracy of clock timing

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### 391. Measurement Criteria

- Measurement per number of time switches supplied and commissioned
- Includes supply, wiring, programming, and testing

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### 392. Tender Description (Elaborated – Digital Time Switch)

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm 5\%$  supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

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### 393. Category

Category: II

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### Supplying & Erecting IP-55 Grade Section Pillar (75 x 60 x 45 cm)

#### Scope of Work

Supplying, fabricating, erecting and commissioning IP-55 grade outdoor section pillar made from jointless MS sheet including foundation, brick masonry, plastering, painting and complete installation as per specifications and directions of Engineer-in-Charge.

#### Technical Specifications

- Size : **75 cm (H) x 60 cm (W) x 45 cm (D)**
- Material : **Jointless 16 Gauge Mild Steel Sheet**
- Legs : **35 x 35 x 5 mm MS Angle – 45 cm long**
- Protection : **IP-55 dust & water proof**
- Doors : Hinged **double door**, internally supported both sides
- Locking : Inside & outside locking arrangement with **duplicate keys**
- Roof : Jointless, water leakage proof, IP tested
- Mounting : Buried angle iron legs with **cement concrete foundation**
- Brick Work : **45 cm height brick masonry** with plaster finish
- Internal Mounting : Two nos. **35x35x5 mm MS angle** – one welded, one bolted for Bakelite sheet mounting
- Painting : **Three coat powder coating** inside & outside
- Cable Entry : Proper cable clamps & glands

#### Construction Details

- Fabricated from jointless MS sheet
- Angle iron legs embedded in concrete foundation
- 45 cm high brick masonry pedestal
- Hinged double door with stiffeners
- Rubber gasket sealing for IP protection

#### Standards & Testing

- IP-55 protection test



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- As per **IS 2147:1962**
- Water leakage & dust ingress test

#### Installation Method

1. Excavation for foundation
2. Fixing angle iron legs
3. Cement concrete foundation
4. Brick masonry & plastering
5. Erection of pillar
6. Leveling & alignment
7. Internal mounting & finishing

#### Measurement

- **Per Nos.** complete installed

#### Rate Includes

- ✓ Fabrication
- ✓ Foundation work
- ✓ Brick work & plaster
- ✓ Painting
- ✓ Transportation
- ✓ Testing & commissioning

#### Tender Description

"Supplying & erecting IP-55 grade section pillar of size 75x60x45 cm fabricated from jointless 16G MS sheet with angle iron legs, cement concrete foundation, brick masonry pedestal, hinged double door, locking arrangement, powder coating inside & outside, complete as per IS 2147 & as directed by Engineer-in-Charge."

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#### LED Indoor Downlight Fitting – 22 to 24 Watts (IP20)

#### Scope of Work

Supplying, installing, testing and commissioning LED indoor downlight fittings of approved make, square/circular shape, surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

#### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: High quality opal diffuser
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85 \text{ lm/W}$
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square / Circular
- Mounting: Surface/Recessed with spring loaded clips
- IP Rating: IP20
- Wattage: 22 – 24 Watts
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- Heat sink integrated into housing
- High thermal conductivity aluminium body
- Flicker-free electronic driver
- Low lumen depreciation
- Uniform light distribution

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening (for recessed type)
3. Connect supply through terminal block
4. Fix fitting using spring clips
5. Ensure firm mounting
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Lux level verification
- Heat dissipation observation
- Functional test

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire retardant materials

### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

### Tender Approval Description

"Supplying and erecting approved make LED indoor downlight fittings, 22 to 24 watts, square/circular shape, surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

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### LED Panel Light – 36 Watts (24" x 24") IP20

#### Scope of Work

Supplying, installing, testing and commissioning approved make LED panel light fittings, 36W, size 24" x 24", surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

#### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: Translucent polycarbonate cover
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square panel
- Mounting: Surface / Recessed mounting

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Frame: Plane front frame fixed to housing
- IP Rating: IP20
- Wattage: 36 Watts
- Size: 24" x 24"
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- High thermal conductivity aluminium heat sink
- Flicker-free constant current driver
- Uniform light distribution
- Low lumen depreciation
- Fire retardant internal components

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening for recessed mounting
3. Fix mounting frame
4. Connect supply through terminal block
5. Mount panel securely
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Functional testing
- Heat dissipation observation
- Lux level verification

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire resistant materials

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Tender Approval Description

"Supplying and erecting approved make LED panel light, 36 watts, size 24" x 24", surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, translucent diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

**(52) Supplying and erecting LED street light / Flood light fittings with High power White LEDs wattage of 3 Watt and above assembled on single MCPCB, efficiency more than 130 lm/w and corrosion free High pressure die cast aluminum housing with smooth finish powder coated and heat sink extruded aluminium with diffuser and Polycarbonate optics/ lenses, with toughened glass with company mark/name engraved or embossed 160 to 270 V, Power Factor more than 0.95, THD  $< 10\%$ , CCT 3000 K to 5700K, Uniformity ratio  $> 0.45$ , Luminaire efficacy  $> 100$  lumens/watt . LED driver efficiency  $> 85\%$ . ( fittings required LM-79 & LM-80 certificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.)) (A) Street Light (IP-65), Surge protection -4KV integral and Light must have 440VAC line supply with over-voltage protection. (ii) above 48 to 60 Watts Cat-III**

### 386. Title

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

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### 387. Scope of Work

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

This includes:

- Supply of digital time switch
- Mounting in suitable location / panel
- Electrical connections
- Programming of time schedule
- Testing and commissioning

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### 388. Detailed Technical Specifications

#### 388.1 Electrical Specifications

- Type: Digital time switch (Day clock)
- Channels: 1 channel
- Rated Voltage: 240 V  $\pm 5\%$
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### **388.2 Functional Features**

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF
- Display: LCD display
- Programming: Push button switches

### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

## **389. Installation Methodology**

1. Fix time switch securely in designated location.
  2. Connect incoming and outgoing wiring.
  3. Program required ON/OFF schedule.
  4. Verify battery backup function.
  5. Test manual override operation.
  6. Ensure LCD display is functional.
- 

## **390. Testing & Commissioning**

- Check supply voltage and current rating
  - Test automatic switching as per program
  - Verify battery backup operation
  - Check manual ON/OFF override
  - Confirm accuracy of clock timing
- 

## **391. Measurement Criteria**

- Measurement per number of time switches supplied and commissioned
  - Includes supply, wiring, programming, and testing
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 392. Tender Description (Elaborated – Digital Time Switch)

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm 5\%$  supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

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### 393. Category

Category: II

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### Supplying & Erecting IP-55 Grade Section Pillar (75 x 60 x 45 cm)

#### Scope of Work

Supplying, fabricating, erecting and commissioning IP-55 grade outdoor section pillar made from jointless MS sheet including foundation, brick masonry, plastering, painting and complete installation as per specifications and directions of Engineer-in-Charge.

#### Technical Specifications

- Size : **75 cm (H) x 60 cm (W) x 45 cm (D)**
- Material : **Jointless 16 Gauge Mild Steel Sheet**
- Legs : **35 x 35 x 5 mm MS Angle – 45 cm long**
- Protection : **IP-55 dust & water proof**
- Doors : Hinged **double door**, internally supported both sides
- Locking : Inside & outside locking arrangement with **duplicate keys**
- Roof : Jointless, water leakage proof, IP tested
- Mounting : Buried angle iron legs with **cement concrete foundation**
- Brick Work : **45 cm height brick masonry** with plaster finish
- Internal Mounting : Two nos. **35x35x5 mm MS angle** – one welded, one bolted for Bakelite sheet mounting
- Painting : **Three coat powder coating** inside & outside
- Cable Entry : Proper cable clamps & glands

#### Construction Details

- Fabricated from jointless MS sheet
- Angle iron legs embedded in concrete foundation
- 45 cm high brick masonry pedestal
- Hinged double door with stiffeners
- Rubber gasket sealing for IP protection

#### Standards & Testing

- IP-55 protection test
- As per **IS 2147:1962**
- Water leakage & dust ingress test

#### Installation Method

1. Excavation for foundation
2. Fixing angle iron legs
3. Cement concrete foundation

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

4. Brick masonry & plastering
5. Erection of pillar
6. Leveling & alignment
7. Internal mounting & finishing

#### Measurement

- **Per Nos.** complete installed

#### Rate Includes

- ✓ Fabrication
- ✓ Foundation work
- ✓ Brick work & plaster
- ✓ Painting
- ✓ Transportation
- ✓ Testing & commissioning

#### Tender Description

"Supplying & erecting IP-55 grade section pillar of size 75x60x45 cm fabricated from jointless 16G MS sheet with angle iron legs, cement concrete foundation, brick masonry pedestal, hinged double door, locking arrangement, powder coating inside & outside, complete as per IS 2147 & as directed by Engineer-in-Charge."

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#### LED Indoor Downlight Fitting – 22 to 24 Watts (IP20)

##### Scope of Work

Supplying, installing, testing and commissioning LED indoor downlight fittings of approved make, square/circular shape, surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

##### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: High quality opal diffuser
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square / Circular
- Mounting: Surface/Recessed with spring loaded clips
- IP Rating: IP20
- Wattage: 22 – 24 Watts
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- Heat sink integrated into housing
- High thermal conductivity aluminium body
- Flicker-free electronic driver
- Low lumen depreciation
- Uniform light distribution

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening (for recessed type)
3. Connect supply through terminal block
4. Fix fitting using spring clips
5. Ensure firm mounting
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Lux level verification
- Heat dissipation observation
- Functional test

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire retardant materials

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

### Tender Approval Description

"Supplying and erecting approved make LED indoor downlight fittings, 22 to 24 watts, square/circular shape, surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

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### LED Panel Light – 36 Watts (24" x 24") IP20

#### Scope of Work

Supplying, installing, testing and commissioning approved make LED panel light fittings, 36W, size 24" x 24", surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

#### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: Translucent polycarbonate cover
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square panel
- Mounting: Surface / Recessed mounting
- Frame: Plane front frame fixed to housing
- IP Rating: IP20
- Wattage: 36 Watts
- Size: 24" x 24"

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- High thermal conductivity aluminium heat sink
- Flicker-free constant current driver
- Uniform light distribution
- Low lumen depreciation
- Fire retardant internal components

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening for recessed mounting
3. Fix mounting frame
4. Connect supply through terminal block
5. Mount panel securely
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Functional testing
- Heat dissipation observation
- Lux level verification

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire resistant materials

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

#### Tender Approval Description

"Supplying and erecting approved make LED panel light, 36 watts, size 24" x 24", surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, translucent diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

### **LED Street Light – 48 to 60 Watts (IP65)**

#### **Scope of Work**

Supplying, installing, testing and commissioning approved make LED street light fittings, wattage range 48–60W, IP65 protection, complete with mounting hardware, wiring connections, aiming and commissioning as directed by Engineer-in-Charge.

#### **Technical Specifications**

- LED Type: High power white LEDs ( $\geq 3\text{W}$ ) mounted on single MCPCB
- Housing: High pressure die-cast aluminium, corrosion free
- Finish: Smooth powder coated, UV resistant
- Heat Sink: Extruded aluminium for efficient heat dissipation
- Optics: Polycarbonate lenses
- Cover: Toughened glass
- Marking: Company name/logo engraved or embossed
- Input Voltage: 160V – 270V AC
- Line Protection: Suitable up to 440V AC with over-voltage protection
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 10\%$
- CCT: 3000K to 5700K
- Uniformity Ratio:  $> 0.45$
- Luminaire Efficacy:  $\geq 100 \text{ lm/W}$
- LED Efficiency:  $\geq 130 \text{ lm/W}$
- Driver Efficiency:  $\geq 85\%$
- Surge Protection: 4 KV integral
- IP Rating: IP65
- Certifications: LM-79 & LM-80 mandatory
- Wattage Range: 48W to 60W
- Category: Cat-III

#### **Construction Features**

- Weatherproof and corrosion resistant body
- Efficient thermal management system
- High impact resistant optics

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Flicker-free constant current driver
- Long LED life (>50,000 hrs)

#### Installation Methodology

1. Fix luminaire on pole/bracket
2. Adjust tilt angle
3. Connect supply through termin

**(53) Supplying and erecting LED indoor fittings with LEDs of wattage 0.2 Watt to 0.5 Watt assembled on single MCPCB, with housing used as a heat sink shall be made of thick sheet Steel conforming to IS:**

**513/CRCA/aluminium pressure die cast powder coated and high U.V. & corrosion resistance with diffuser housed in aluminium casted body with company mark/name 160V to 270V, Power Factor more than 0.95, THD < 15 %, CCT 3000 K to 6500K, Luminaire efficacy > 85 lumens/watt, LED driver efficiency > 85 % ( fitting required LM-79 & LM-80 Certificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.) (H) Mirror Light 9 Watts, wall mounted minimum 1 feet long**

#### 386. Title

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

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#### 387. Scope of Work

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

This includes:

- Supply of digital time switch
  - Mounting in suitable location / panel
  - Electrical connections
  - Programming of time schedule
  - Testing and commissioning
- 

#### 388. Detailed Technical Specifications

##### 388.1 Electrical Specifications

- Type: Digital time switch (Day clock)
- Channels: 1 channel
- Rated Voltage: 240 V  $\pm$ 5%
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### **388.2 Functional Features**

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF
- Display: LCD display
- Programming: Push button switches

### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

## **389. Installation Methodology**

1. Fix time switch securely in designated location.
  2. Connect incoming and outgoing wiring.
  3. Program required ON/OFF schedule.
  4. Verify battery backup function.
  5. Test manual override operation.
  6. Ensure LCD display is functional.
- 

## **390. Testing & Commissioning**

- Check supply voltage and current rating
  - Test automatic switching as per program
  - Verify battery backup operation
  - Check manual ON/OFF override
  - Confirm accuracy of clock timing
- 

## **391. Measurement Criteria**

- Measurement per number of time switches supplied and commissioned
  - Includes supply, wiring, programming, and testing
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 392. Tender Description (Elaborated – Digital Time Switch)

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm 5\%$  supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

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### 393. Category

Category: II

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### Supplying & Erecting IP-55 Grade Section Pillar (75 x 60 x 45 cm)

#### Scope of Work

Supplying, fabricating, erecting and commissioning IP-55 grade outdoor section pillar made from jointless MS sheet including foundation, brick masonry, plastering, painting and complete installation as per specifications and directions of Engineer-in-Charge.

#### Technical Specifications

- Size : **75 cm (H) x 60 cm (W) x 45 cm (D)**
- Material : **Jointless 16 Gauge Mild Steel Sheet**
- Legs : **35 x 35 x 5 mm MS Angle – 45 cm long**
- Protection : **IP-55 dust & water proof**
- Doors : Hinged **double door**, internally supported both sides
- Locking : Inside & outside locking arrangement with **duplicate keys**
- Roof : Jointless, water leakage proof, IP tested
- Mounting : Buried angle iron legs with **cement concrete foundation**
- Brick Work : **45 cm height brick masonry** with plaster finish
- Internal Mounting : Two nos. **35x35x5 mm MS angle** – one welded, one bolted for Bakelite sheet mounting
- Painting : **Three coat powder coating** inside & outside
- Cable Entry : Proper cable clamps & glands

#### Construction Details

- Fabricated from jointless MS sheet
- Angle iron legs embedded in concrete foundation
- 45 cm high brick masonry pedestal
- Hinged double door with stiffeners
- Rubber gasket sealing for IP protection

#### Standards & Testing

- IP-55 protection test
- As per **IS 2147:1962**
- Water leakage & dust ingress test

#### Installation Method

1. Excavation for foundation
2. Fixing angle iron legs
3. Cement concrete foundation

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

4. Brick masonry & plastering
5. Erection of pillar
6. Leveling & alignment
7. Internal mounting & finishing

#### Measurement

- **Per Nos.** complete installed

#### Rate Includes

- ✓ Fabrication
- ✓ Foundation work
- ✓ Brick work & plaster
- ✓ Painting
- ✓ Transportation
- ✓ Testing & commissioning

#### Tender Description

"Supplying & erecting IP-55 grade section pillar of size 75x60x45 cm fabricated from jointless 16G MS sheet with angle iron legs, cement concrete foundation, brick masonry pedestal, hinged double door, locking arrangement, powder coating inside & outside, complete as per IS 2147 & as directed by Engineer-in-Charge."

---

#### LED Indoor Downlight Fitting – 22 to 24 Watts (IP20)

##### Scope of Work

Supplying, installing, testing and commissioning LED indoor downlight fittings of approved make, square/circular shape, surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

##### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: High quality opal diffuser
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square / Circular
- Mounting: Surface/Recessed with spring loaded clips
- IP Rating: IP20
- Wattage: 22 – 24 Watts
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- Heat sink integrated into housing
- High thermal conductivity aluminium body
- Flicker-free electronic driver
- Low lumen depreciation
- Uniform light distribution

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening (for recessed type)
3. Connect supply through terminal block
4. Fix fitting using spring clips
5. Ensure firm mounting
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Lux level verification
- Heat dissipation observation
- Functional test

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire retardant materials

#### Measurement

- Unit: Each (Nos.)

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Measurement: Per installed fitting

#### **Tender Approval Description**

"Supplying and erecting approved make LED indoor downlight fittings, 22 to 24 watts, square/circular shape, surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

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#### **LED Panel Light – 36 Watts (24" x 24") IP20**

##### **Scope of Work**

Supplying, installing, testing and commissioning approved make LED panel light fittings, 36W, size 24" x 24", surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

##### **Technical Specifications**

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: Translucent polycarbonate cover
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square panel
- Mounting: Surface / Recessed mounting
- Frame: Plane front frame fixed to housing
- IP Rating: IP20
- Wattage: 36 Watts
- Size: 24" x 24"
- Surge Protection: 2 KV
- Category: Cat-III

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Construction Details

- High thermal conductivity aluminium heat sink
- Flicker-free constant current driver
- Uniform light distribution
- Low lumen depreciation
- Fire retardant internal components

### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening for recessed mounting
3. Fix mounting frame
4. Connect supply through terminal block
5. Mount panel securely
6. Check illumination and functionality

### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Functional testing
- Heat dissipation observation
- Lux level verification

### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire resistant materials

### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

### Tender Approval Description

"Supplying and erecting approved make LED panel light, 36 watts, size 24" x 24", surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, translucent diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

---

### LED Street Light – 48 to 60 Watts (IP65)

#### Scope of Work

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

Supplying, installing, testing and commissioning approved make LED street light fittings, wattage range 48–60W, IP65 protection, complete with mounting hardware, wiring connections, aiming and commissioning as directed by Engineer-in-Charge.

#### Technical Specifications

- LED Type: High power white LEDs ( $\geq 3\text{W}$ ) mounted on single MCPCB
- Housing: High pressure die-cast aluminium, corrosion free
- Finish: Smooth powder coated, UV resistant
- Heat Sink: Extruded aluminium for efficient heat dissipation
- Optics: Polycarbonate lenses
- Cover: Toughened glass
- Marking: Company name/logo engraved or embossed
- Input Voltage: 160V – 270V AC
- Line Protection: Suitable up to 440V AC with over-voltage protection
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 10\%$
- CCT: 3000K to 5700K
- Uniformity Ratio:  $> 0.45$
- Luminaire Efficacy:  $\geq 100 \text{ lm/W}$
- LED Efficiency:  $\geq 130 \text{ lm/W}$
- Driver Efficiency:  $\geq 85\%$
- Surge Protection: 4 KV integral
- IP Rating: IP65
- Certifications: LM-79 & LM-80 mandatory
- Wattage Range: 48W to 60W
- Category: Cat-III

#### Construction Features

- Weatherproof and corrosion resistant body
- Efficient thermal management system
- High impact resistant optics
- Flicker-free constant current driver
- Long LED life ( $> 50,000 \text{ hrs}$ )

#### Installation Methodology

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

1. Fix luminaire on pole/bracket
2. Adjust tilt angle
3. Connect supply through termina

**(54) Supplying and erecting LED indoor fittings with LEDs of wattage 0.2 Watt to 0.5 Watt assembled on single MCPCB, with housing used as a heat sink shall be made of thick sheet Steel conforming to IS: 513/CRCA/ aluminium die cast powder coated and high U.V. & corrosion resistance with diffuser with company mark/name 160V to 270V, Power Factor more than 0.95, THD < 15%, CCT 3000 K to 6500K, Luminaire efficacy > 85 lumens/watt, LED driver efficiency > 85 % ( fitting required LM-79 & LM-80 Certificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.) (A) Tube Light with integral driver (iii) 18-20 Watts, Surge - 2KV, IP-20, conventional 4 feet Cat-III**

#### **386. Title**

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

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#### **387. Scope of Work**

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

This includes:

- Supply of digital time switch
  - Mounting in suitable location / panel
  - Electrical connections
  - Programming of time schedule
  - Testing and commissioning
- 

#### **388. Detailed Technical Specifications**

##### **388.1 Electrical Specifications**

- Type: Digital time switch (Day clock)
- Channels: 1 channel
- Rated Voltage: 240 V  $\pm$ 5%
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

##### **388.2 Functional Features**

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF
- Display: LCD display
- Programming: Push button switches

#### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

#### **389. Installation Methodology**

1. Fix time switch securely in designated location.
  2. Connect incoming and outgoing wiring.
  3. Program required ON/OFF schedule.
  4. Verify battery backup function.
  5. Test manual override operation.
  6. Ensure LCD display is functional.
- 

#### **390. Testing & Commissioning**

- Check supply voltage and current rating
  - Test automatic switching as per program
  - Verify battery backup operation
  - Check manual ON/OFF override
  - Confirm accuracy of clock timing
- 

#### **391. Measurement Criteria**

- Measurement per number of time switches supplied and commissioned
  - Includes supply, wiring, programming, and testing
- 

#### **392. Tender Description (Elaborated – Digital Time Switch)**

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm$ 5% supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

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### 393. Category

Category: II

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#### Supplying & Erecting IP-55 Grade Section Pillar (75 x 60 x 45 cm)

##### Scope of Work

Supplying, fabricating, erecting and commissioning IP-55 grade outdoor section pillar made from jointless MS sheet including foundation, brick masonry, plastering, painting and complete installation as per specifications and directions of Engineer-in-Charge.

##### Technical Specifications

- Size : **75 cm (H) x 60 cm (W) x 45 cm (D)**
- Material : **Jointless 16 Gauge Mild Steel Sheet**
- Legs : **35 x 35 x 5 mm MS Angle – 45 cm long**
- Protection : **IP-55 dust & water proof**
- Doors : Hinged **double door**, internally supported both sides
- Locking : Inside & outside locking arrangement with **duplicate keys**
- Roof : Jointless, water leakage proof, IP tested
- Mounting : Buried angle iron legs with **cement concrete foundation**
- Brick Work : **45 cm height brick masonry** with plaster finish
- Internal Mounting : Two nos. **35x35x5 mm MS angle** – one welded, one bolted for Bakelite sheet mounting
- Painting : **Three coat powder coating** inside & outside
- Cable Entry : Proper cable clamps & glands

##### Construction Details

- Fabricated from jointless MS sheet
- Angle iron legs embedded in concrete foundation
- 45 cm high brick masonry pedestal
- Hinged double door with stiffeners
- Rubber gasket sealing for IP protection

##### Standards & Testing

- IP-55 protection test
- As per **IS 2147:1962**
- Water leakage & dust ingress test

##### Installation Method

1. Excavation for foundation
2. Fixing angle iron legs
3. Cement concrete foundation
4. Brick masonry & plastering
5. Erection of pillar
6. Leveling & alignment

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 7. Internal mounting & finishing

#### Measurement

- **Per Nos.** complete installed

#### Rate Includes

- ✓ Fabrication
- ✓ Foundation work
- ✓ Brick work & plaster
- ✓ Painting
- ✓ Transportation
- ✓ Testing & commissioning

#### Tender Description

"Supplying & erecting IP-55 grade section pillar of size 75x60x45 cm fabricated from jointless 16G MS sheet with angle iron legs, cement concrete foundation, brick masonry pedestal, hinged double door, locking arrangement, powder coating inside & outside, complete as per IS 2147 & as directed by Engineer-in-Charge."

---

### LED Indoor Downlight Fitting – 22 to 24 Watts (IP20)

#### Scope of Work

Supplying, installing, testing and commissioning LED indoor downlight fittings of approved make, square/circular shape, surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

#### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: High quality opal diffuser
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square / Circular
- Mounting: Surface/Recessed with spring loaded clips



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- IP Rating: IP20
- Wattage: 22 – 24 Watts
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- Heat sink integrated into housing
- High thermal conductivity aluminium body
- Flicker-free electronic driver
- Low lumen depreciation
- Uniform light distribution

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening (for recessed type)
3. Connect supply through terminal block
4. Fix fitting using spring clips
5. Ensure firm mounting
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Lux level verification
- Heat dissipation observation
- Functional test

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire retardant materials

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

#### Tender Approval Description

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

"Supplying and erecting approved make LED indoor downlight fittings, 22 to 24 watts, square/circular shape, surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

---

#### **LED Panel Light – 36 Watts (24" x 24") IP20**

##### **Scope of Work**

Supplying, installing, testing and commissioning approved make LED panel light fittings, 36W, size 24" x 24", surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

##### **Technical Specifications**

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: Translucent polycarbonate cover
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square panel
- Mounting: Surface / Recessed mounting
- Frame: Plane front frame fixed to housing
- IP Rating: IP20
- Wattage: 36 Watts
- Size: 24" x 24"
- Surge Protection: 2 KV
- Category: Cat-III

##### **Construction Details**

- High thermal conductivity aluminium heat sink

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Flicker-free constant current driver
- Uniform light distribution
- Low lumen depreciation
- Fire retardant internal components

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening for recessed mounting
3. Fix mounting frame
4. Connect supply through terminal block
5. Mount panel securely
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Functional testing
- Heat dissipation observation
- Lux level verification

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire resistant materials

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

#### Tender Approval Description

"Supplying and erecting approved make LED panel light, 36 watts, size 24" x 24", surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, translucent diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

---

#### LED Street Light – 48 to 60 Watts (IP65)

##### Scope of Work

Supplying, installing, testing and commissioning approved make LED street light fittings, wattage range 48–60W, IP65 protection, complete with mounting hardware, wiring connections, aiming and commissioning as directed by Engineer-in-Charge.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Technical Specifications

- LED Type: High power white LEDs ( $\geq 3W$ ) mounted on single MCPCB
- Housing: High pressure die-cast aluminium, corrosion free
- Finish: Smooth powder coated, UV resistant
- Heat Sink: Extruded aluminium for efficient heat dissipation
- Optics: Polycarbonate lenses
- Cover: Toughened glass
- Marking: Company name/logo engraved or embossed
- Input Voltage: 160V – 270V AC
- Line Protection: Suitable up to 440V AC with over-voltage protection
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 10\%$
- CCT: 3000K to 5700K
- Uniformity Ratio:  $> 0.45$
- Luminaire Efficacy:  $\geq 100 \text{ lm/W}$
- LED Efficiency:  $\geq 130 \text{ lm/W}$
- Driver Efficiency:  $\geq 85\%$
- Surge Protection: 4 KV integral
- IP Rating: IP65
- Certifications: LM-79 & LM-80 mandatory
- Wattage Range: 48W to 60W
- Category: Cat-III

### Construction Features

- Weatherproof and corrosion resistant body
- Efficient thermal management system
- High impact resistant optics
- Flicker-free constant current driver
- Long LED life ( $> 50,000 \text{ hrs}$ )

### Installation Methodology

1. Fix luminaire on pole/bracket
2. Adjust tilt angle

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 3. Connect supply through termina

**(55) Supplying and erecting LED indoor fittings with LEDs of wattage 0.2 Watt to 0.5 Watt assembled on single MCPCB, with housing used as a heat sink shall be made of thick sheet Steel conforming to IS:**

**513/CRCA/aluminium pressure die cast powder coated and high U.V. & corrosion resistance with diffuser housed in aluminium casted body with company mark/name 160V to 270V, Power Factor more than 0.95, THD < 15 %, CCT 3000 K to 6500K, Luminaire efficacy > 85 lumens/watt, LED driver efficiency > 85 % ( fitting required LM-79 & LM-80 Certificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.) (A) Square/ Circular shaped Surface/Recessed Mount Downlight with provision for spring loaded mounting clips complete. IP20 (ii) 11-15 watts, Surge-2 KV Cat-III**

### 386. Title

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

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### 387. Scope of Work

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

This includes:

- Supply of digital time switch
- Mounting in suitable location / panel
- Electrical connections
- Programming of time schedule
- Testing and commissioning

---

### 388. Detailed Technical Specifications

#### 388.1 Electrical Specifications

- Type: Digital time switch (Day clock)
- Channels: 1 channel
- Rated Voltage: 240 V  $\pm 5\%$
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

#### 388.2 Functional Features

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Display: LCD display
- Programming: Push button switches

#### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

#### **389. Installation Methodology**

1. Fix time switch securely in designated location.
  2. Connect incoming and outgoing wiring.
  3. Program required ON/OFF schedule.
  4. Verify battery backup function.
  5. Test manual override operation.
  6. Ensure LCD display is functional.
- 

#### **390. Testing & Commissioning**

- Check supply voltage and current rating
  - Test automatic switching as per program
  - Verify battery backup operation
  - Check manual ON/OFF override
  - Confirm accuracy of clock timing
- 

#### **391. Measurement Criteria**

- Measurement per number of time switches supplied and commissioned
  - Includes supply, wiring, programming, and testing
- 

#### **392. Tender Description (Elaborated – Digital Time Switch)**

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm 5\%$  supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

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### 393. Category

Category: II

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#### Supplying & Erecting IP-55 Grade Section Pillar (75 x 60 x 45 cm)

##### Scope of Work

Supplying, fabricating, erecting and commissioning IP-55 grade outdoor section pillar made from jointless MS sheet including foundation, brick masonry, plastering, painting and complete installation as per specifications and directions of Engineer-in-Charge.

##### Technical Specifications

- Size : **75 cm (H) x 60 cm (W) x 45 cm (D)**
- Material : **Jointless 16 Gauge Mild Steel Sheet**
- Legs : **35 x 35 x 5 mm MS Angle – 45 cm long**
- Protection : **IP-55 dust & water proof**
- Doors : Hinged **double door**, internally supported both sides
- Locking : Inside & outside locking arrangement with **duplicate keys**
- Roof : Jointless, water leakage proof, IP tested
- Mounting : Buried angle iron legs with **cement concrete foundation**
- Brick Work : **45 cm height brick masonry** with plaster finish
- Internal Mounting : Two nos. **35x35x5 mm MS angle** – one welded, one bolted for Bakelite sheet mounting
- Painting : **Three coat powder coating** inside & outside
- Cable Entry : Proper cable clamps & glands

##### Construction Details

- Fabricated from jointless MS sheet
- Angle iron legs embedded in concrete foundation
- 45 cm high brick masonry pedestal
- Hinged double door with stiffeners
- Rubber gasket sealing for IP protection

##### Standards & Testing

- IP-55 protection test
- As per **IS 2147:1962**
- Water leakage & dust ingress test

##### Installation Method

1. Excavation for foundation
2. Fixing angle iron legs
3. Cement concrete foundation
4. Brick masonry & plastering
5. Erection of pillar
6. Leveling & alignment
7. Internal mounting & finishing

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### LED Indoor Downlight Fitting – 22 to 24 Watts (IP20)

#### Scope of Work

Supplying, installing, testing and commissioning LED indoor downlight fittings of approved make, square/circular shape, surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

#### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: High quality opal diffuser
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square / Circular
- Mounting: Surface/Recessed with spring loaded clips
- IP Rating: IP20
- Wattage: 22 – 24 Watts
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- Heat sink integrated into housing
- High thermal conductivity aluminium body
- Flicker-free electronic driver
- Low lumen depreciation
- Uniform light distribution

#### Installation Methodology

1. Mark mounting location



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

2. Cut ceiling opening (for recessed type)
3. Connect supply through terminal block
4. Fix fitting using spring clips
5. Ensure firm mounting
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Lux level verification
- Heat dissipation observation
- Functional test

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire retardant materials

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

#### Tender Approval Description

"Supplying and erecting approved make LED indoor downlight fittings, 22 to 24 watts, square/circular shape, surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

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#### LED Panel Light – 36 Watts (24" x 24") IP20

##### Scope of Work

Supplying, installing, testing and commissioning approved make LED panel light fittings, 36W, size 24" x 24", surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

##### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: Translucent polycarbonate cover

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square panel
- Mounting: Surface / Recessed mounting
- Frame: Plane front frame fixed to housing
- IP Rating: IP20
- Wattage: 36 Watts
- Size: 24" x 24"
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- High thermal conductivity aluminium heat sink
- Flicker-free constant current driver
- Uniform light distribution
- Low lumen depreciation
- Fire retardant internal components

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening for recessed mounting
3. Fix mounting frame
4. Connect supply through terminal block
5. Mount panel securely
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Voltage fluctuation test
- Functional testing
- Heat dissipation observation
- Lux level verification

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire resistant materials

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

#### Tender Approval Description

"Supplying and erecting approved make LED panel light, 36 watts, size 24" x 24", surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, translucent diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

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#### LED Street Light – 48 to 60 Watts (IP65)

##### Scope of Work

Supplying, installing, testing and commissioning approved make LED street light fittings, wattage range 48–60W, IP65 protection, complete with mounting hardware, wiring connections, aiming and commissioning as directed by Engineer-in-Charge.

##### Technical Specifications

- LED Type: High power white LEDs ( $\geq 3W$ ) mounted on single MCPCB
- Housing: High pressure die-cast aluminium, corrosion free
- Finish: Smooth powder coated, UV resistant
- Heat Sink: Extruded aluminium for efficient heat dissipation
- Optics: Polycarbonate lenses
- Cover: Toughened glass
- Marking: Company name/logo engraved or embossed
- Input Voltage: 160V – 270V AC
- Line Protection: Suitable up to 440V AC with over-voltage protection
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 10\%$

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- CCT: 3000K to 5700K
- Uniformity Ratio: > 0.45
- Luminaire Efficacy:  $\geq 100$  lm/W
- LED Efficiency:  $\geq 130$  lm/W
- Driver Efficiency:  $\geq 85\%$
- Surge Protection: 4 KV integral
- IP Rating: IP65
- Certifications: LM-79 & LM-80 mandatory
- Wattage Range: 48W to 60W
- Category: Cat-III

#### Construction Features

- Weatherproof and corrosion resistant body
- Efficient thermal management system
- High impact resistant optics
- Flicker-free constant current driver
- Long LED life (>50,000 hrs)

#### Installation Methodology

1. Fix luminaire on pole/bracket
2. Adjust tilt angle
3. Connect supply through termina

**(56) Supply, Installation, Testing and Commissioning of suitable sweep, BEE 5 Star rated, Ceiling fan with Brush Less Direct Current (BLDC) permanent ferrite magnet Motor, class of insulation: B, Rust free 3 nos. Aluminium blades, 2 nos. canopies, shackle kit with earthing provision, copper winding, Power factor not < 0.9, Service Value (CMM/W) minimum 6.85, Air delivery minimum 215 CMM, 350 RPM, 230v (tolerance as per IS : 374-2019), THD < 10%, compatible with electronic regulator unit for Speed Control and all remaining accessories including safety pin, nut bolts, washers, temperature rise = 75 degree C (Max.), suitable for 140 to 285 Voltage and rectifier circuit with surge, over current and overload protection , 50 Hz, Single phase AC Supply, earthing etc. Complete as required.[ Make shall be approved by Engineer in Charge] (B) 1200 mm Sweep (48"**

#### 386. Title

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

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#### 387. Scope of Work

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

This includes:

- Supply of digital time switch
  - Mounting in suitable location / panel
  - Electrical connections
  - Programming of time schedule
  - Testing and commissioning
- 

### **388. Detailed Technical Specifications**

#### **388.1 Electrical Specifications**

- Type: Digital time switch (Day clock)
- Channels: 1 channel
- Rated Voltage: 240 V  $\pm 5\%$
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

#### **388.2 Functional Features**

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF
- Display: LCD display
- Programming: Push button switches

#### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

### **389. Installation Methodology**

1. Fix time switch securely in designated location.
2. Connect incoming and outgoing wiring.
3. Program required ON/OFF schedule.
4. Verify battery backup function.
5. Test manual override operation.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

6. Ensure LCD display is functional.

---

### 390. Testing & Commissioning

- Check supply voltage and current rating
- Test automatic switching as per program
- Verify battery backup operation
- Check manual ON/OFF override
- Confirm accuracy of clock timing

---

### 391. Measurement Criteria

- Measurement per number of time switches supplied and commissioned
- Includes supply, wiring, programming, and testing

---

### 392. Tender Description (Elaborated – Digital Time Switch)

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm 5\%$  supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

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### 393. Category

Category: II

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### Supplying & Erecting IP-55 Grade Section Pillar (75 x 60 x 45 cm)

#### Scope of Work

Supplying, fabricating, erecting and commissioning IP-55 grade outdoor section pillar made from jointless MS sheet including foundation, brick masonry, plastering, painting and complete installation as per specifications and directions of Engineer-in-Charge.

#### Technical Specifications

- Size : **75 cm (H) x 60 cm (W) x 45 cm (D)**
- Material : **Jointless 16 Gauge Mild Steel Sheet**
- Legs : **35 x 35 x 5 mm MS Angle – 45 cm long**
- Protection : **IP-55 dust & water proof**
- Doors : Hinged **double door**, internally supported both sides
- Locking : Inside & outside locking arrangement with **duplicate keys**
- Roof : Jointless, water leakage proof, IP tested
- Mounting : Buried angle iron legs with **cement concrete foundation**
- Brick Work : **45 cm height brick masonry** with plaster finish

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Internal Mounting : Two nos. **35x35x5 mm MS angle** – one welded, one bolted for Bakelite sheet mounting
- Painting : **Three coat powder coating** inside & outside
- Cable Entry : Proper cable clamps & glands

#### Construction Details

- Fabricated from jointless MS sheet
- Angle iron legs embedded in concrete foundation
- 45 cm high brick masonry pedestal
- Hinged double door with stiffeners
- Rubber gasket sealing for IP protection

#### Standards & Testing

- IP-55 protection test
- As per **IS 2147:1962**
- Water leakage & dust ingress test

#### Installation Method

1. Excavation for foundation
2. Fixing angle iron legs
3. Cement concrete foundation
4. Brick masonry & plastering
5. Erection of pillar
6. Leveling & alignment
7. Internal mounting & finishing

#### Measurement

- **Per Nos.** complete installed

#### Rate Includes

- ✓ Fabrication
- ✓ Foundation work
- ✓ Brick work & plaster
- ✓ Painting
- ✓ Transportation
- ✓ Testing & commissioning

#### Tender Description

"Supplying & erecting IP-55 grade section pillar of size 75x60x45 cm fabricated from jointless 16G MS sheet with angle iron legs, cement concrete foundation, brick masonry pedestal, hinged double door, locking arrangement, powder coating inside & outside, complete as per IS 2147 & as directed by Engineer-in-Charge."

---

#### LED Indoor Downlight Fitting – 22 to 24 Watts (IP20)

##### Scope of Work

Supplying, installing, testing and commissioning LED indoor downlight fittings of approved make, square/circular shape, surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: High quality opal diffuser
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square / Circular
- Mounting: Surface/Recessed with spring loaded clips
- IP Rating: IP20
- Wattage: 22 – 24 Watts
- Surge Protection: 2 KV
- Category: Cat-III

### Construction Details

- Heat sink integrated into housing
- High thermal conductivity aluminium body
- Flicker-free electronic driver
- Low lumen depreciation
- Uniform light distribution

### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening (for recessed type)
3. Connect supply through terminal block
4. Fix fitting using spring clips
5. Ensure firm mounting



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Lux level verification
- Heat dissipation observation
- Functional test

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire retardant materials

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

#### Tender Approval Description

"Supplying and erecting approved make LED indoor downlight fittings, 22 to 24 watts, square/circular shape, surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

---

### LED Panel Light – 36 Watts (24" x 24") IP20

#### Scope of Work

Supplying, installing, testing and commissioning approved make LED panel light fittings, 36W, size 24" x 24", surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

#### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: Translucent polycarbonate cover
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- THD: < 15%
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square panel
- Mounting: Surface / Recessed mounting
- Frame: Plane front frame fixed to housing
- IP Rating: IP20
- Wattage: 36 Watts
- Size: 24" x 24"
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- High thermal conductivity aluminium heat sink
- Flicker-free constant current driver
- Uniform light distribution
- Low lumen depreciation
- Fire retardant internal components

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening for recessed mounting
3. Fix mounting frame
4. Connect supply through terminal block
5. Mount panel securely
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Functional testing
- Heat dissipation observation
- Lux level verification

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire resistant materials

### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

### Tender Approval Description

"Supplying and erecting approved make LED panel light, 36 watts, size 24" x 24", surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, translucent diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

---

### LED Street Light – 48 to 60 Watts (IP65)

#### Scope of Work

Supplying, installing, testing and commissioning approved make LED street light fittings, wattage range 48–60W, IP65 protection, complete with mounting hardware, wiring connections, aiming and commissioning as directed by Engineer-in-Charge.

#### Technical Specifications

- LED Type: High power white LEDs ( $\geq 3W$ ) mounted on single MCPCB
- Housing: High pressure die-cast aluminium, corrosion free
- Finish: Smooth powder coated, UV resistant
- Heat Sink: Extruded aluminium for efficient heat dissipation
- Optics: Polycarbonate lenses
- Cover: Toughened glass
- Marking: Company name/logo engraved or embossed
- Input Voltage: 160V – 270V AC
- Line Protection: Suitable up to 440V AC with over-voltage protection
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 10\%$
- CCT: 3000K to 5700K
- Uniformity Ratio:  $> 0.45$
- Luminaire Efficacy:  $\geq 100$  lm/W
- LED Efficiency:  $\geq 130$  lm/W

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Driver Efficiency:  $\geq 85\%$
- Surge Protection: 4 KV integral
- IP Rating: IP65
- Certifications: LM-79 & LM-80 mandatory
- Wattage Range: 48W to 60W
- Category: Cat-III

#### Construction Features

- Weatherproof and corrosion resistant body
- Efficient thermal management system
- High impact resistant optics
- Flicker-free constant current driver
- Long LED life (>50,000 hrs)

#### Installation Methodology

1. Fix luminaire on pole/bracket
2. Adjust tilt angle
3. Connect supply through termina

**(57) Supplying and erecting 19 / 20 mm. nominal bore Medium Class M.S. Pipe down rod erected duly painted for fan complete with proper insulation without leakage and earthing.**

#### 386. Title

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

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#### 387. Scope of Work

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

This includes:

- Supply of digital time switch
  - Mounting in suitable location / panel
  - Electrical connections
  - Programming of time schedule
  - Testing and commissioning
-

### **388. Detailed Technical Specifications**

#### **388.1 Electrical Specifications**

- Type: Digital time switch (Day clock)
- Channels: 1 channel
- Rated Voltage: 240 V  $\pm 5\%$
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

#### **388.2 Functional Features**

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF
- Display: LCD display
- Programming: Push button switches

#### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

### **389. Installation Methodology**

1. Fix time switch securely in designated location.
  2. Connect incoming and outgoing wiring.
  3. Program required ON/OFF schedule.
  4. Verify battery backup function.
  5. Test manual override operation.
  6. Ensure LCD display is functional.
- 

### **390. Testing & Commissioning**

- Check supply voltage and current rating
- Test automatic switching as per program
- Verify battery backup operation
- Check manual ON/OFF override

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Confirm accuracy of clock timing

---

#### 391. Measurement Criteria

- Measurement per number of time switches supplied and commissioned
- Includes supply, wiring, programming, and testing

---

#### 392. Tender Description (Elaborated – Digital Time Switch)

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm 5\%$  supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

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#### 393. Category

Category: II

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#### Supplying & Erecting IP-55 Grade Section Pillar (75 x 60 x 45 cm)

##### Scope of Work

Supplying, fabricating, erecting and commissioning IP-55 grade outdoor section pillar made from jointless MS sheet including foundation, brick masonry, plastering, painting and complete installation as per specifications and directions of Engineer-in-Charge.

##### Technical Specifications

- Size : **75 cm (H) x 60 cm (W) x 45 cm (D)**
- Material : **Jointless 16 Gauge Mild Steel Sheet**
- Legs : **35 x 35 x 5 mm MS Angle – 45 cm long**
- Protection : **IP-55 dust & water proof**
- Doors : Hinged **double door**, internally supported both sides
- Locking : Inside & outside locking arrangement with **duplicate keys**
- Roof : Jointless, water leakage proof, IP tested
- Mounting : Buried angle iron legs with **cement concrete foundation**
- Brick Work : **45 cm height brick masonry** with plaster finish
- Internal Mounting : Two nos. **35x35x5 mm MS angle** – one welded, one bolted for Bakelite sheet mounting
- Painting : **Three coat powder coating** inside & outside
- Cable Entry : Proper cable clamps & glands

##### Construction Details

- Fabricated from jointless MS sheet
- Angle iron legs embedded in concrete foundation
- 45 cm high brick masonry pedestal
- Hinged double door with stiffeners
- Rubber gasket sealing for IP protection

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Standards & Testing

- IP-55 protection test
- As per **IS 2147:1962**
- Water leakage & dust ingress test

### Installation Method

1. Excavation for foundation
2. Fixing angle iron legs
3. Cement concrete foundation
4. Brick masonry & plastering
5. Erection of pillar
6. Leveling & alignment
7. Internal mounting & finishing

---

### LED Indoor Downlight Fitting – 22 to 24 Watts (IP20)

#### Scope of Work

Supplying, installing, testing and commissioning LED indoor downlight fittings of approved make, square/circular shape, surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

#### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: High quality opal diffuser
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85 \text{ lm/W}$
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square / Circular
- Mounting: Surface/Recessed with spring loaded clips

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- IP Rating: IP20
- Wattage: 22 – 24 Watts
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- Heat sink integrated into housing
- High thermal conductivity aluminium body
- Flicker-free electronic driver
- Low lumen depreciation
- Uniform light distribution

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening (for recessed type)
3. Connect supply through terminal block
4. Fix fitting using spring clips
5. Ensure firm mounting
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Lux level verification
- Heat dissipation observation
- Functional test

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire retardant materials

---

#### LED Panel Light – 36 Watts (24" x 24") IP20

##### Scope of Work

Supplying, installing, testing and commissioning approved make LED panel light fittings, 36W, size 24" x 24", surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.



## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: Translucent polycarbonate cover
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85$  lm/W
- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square panel
- Mounting: Surface / Recessed mounting
- Frame: Plane front frame fixed to housing
- IP Rating: IP20
- Wattage: 36 Watts
- Size: 24" x 24"
- Surge Protection: 2 KV
- Category: Cat-III

### Construction Details

- High thermal conductivity aluminium heat sink
- Flicker-free constant current driver
- Uniform light distribution
- Low lumen depreciation
- Fire retardant internal components

### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening for recessed mounting

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

3. Fix mounting frame
4. Connect supply through terminal block
5. Mount panel securely
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Functional testing
- Heat dissipation observation
- Lux level verification

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire resistant materials

---

#### LED Street Light – 48 to 60 Watts (IP65)

##### Scope of Work

Supplying, installing, testing and commissioning approved make LED street light fittings, wattage range 48–60W, IP65 protection, complete with mounting hardware, wiring connections, aiming and commissioning as directed by Engineer-in-Charge.

##### Technical Specifications

- LED Type: High power white LEDs ( $\geq 3W$ ) mounted on single MCPCB
- Housing: High pressure die-cast aluminium, corrosion free
- Finish: Smooth powder coated, UV resistant
- Heat Sink: Extruded aluminium for efficient heat dissipation
- Optics: Polycarbonate lenses
- Cover: Toughened glass
- Marking: Company name/logo engraved or embossed
- Input Voltage: 160V – 270V AC
- Line Protection: Suitable up to 440V AC with over-voltage protection
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 10\%$

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- CCT: 3000K to 5700K
- Uniformity Ratio: > 0.45
- Luminaire Efficacy:  $\geq 100$  lm/W
- LED Efficiency:  $\geq 130$  lm/W
- Driver Efficiency:  $\geq 85\%$
- Surge Protection: 4 KV integral
- IP Rating: IP65
- Certifications: LM-79 & LM-80 mandatory
- Wattage Range: 48W to 60W
- Category: Cat-III

#### Construction Features

- Weatherproof and corrosion resistant body
- Efficient thermal management system
- High impact resistant optics
- Flicker-free constant current driver
- Long LED life (>50,000 hrs)

#### Installation Methodology

1. Fix luminaire on pole/bracket
2. Adjust tilt angle
3. Connect supply through termina

**(58) Supplying & erecting fan hook box of 10 mm M.S. round bar bounded to the RCC bars up to 50mm length each side and pierced through a 16 Gauge M.S. box / Heavy Duty PVC box complete erected concealed in Ceiling with necessary finishing.**

#### 386. Title

Supplying & Erecting Digital Time Switch – 16A, 240V, Battery Backup – Cat-II

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#### 387. Scope of Work

The scope includes supply, mounting, wiring, programming, and commissioning of approved make digital time switch with inbuilt lithium battery backup. The timer shall be suitable for automatic ON/OFF control of electrical loads as per programmed schedule.

This includes:

- Supply of digital time switch
- Mounting in suitable location / panel
- Electrical connections

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Programming of time schedule
  - Testing and commissioning
- 

### **388. Detailed Technical Specifications**

#### **388.1 Electrical Specifications**

- Type: Digital time switch (Day clock)
- Channels: 1 channel
- Rated Voltage: 240 V  $\pm 5\%$
- Rated Current: 16 A
- Contact Type: Floating contacts
- Switching Interval: Minimum 1 minute

#### **388.2 Functional Features**

- Battery Backup: Lithium cell, minimum 6 years life
- Memory Programs: Minimum 14 ON/OFF programs
- Permanent Manual Override: ON/OFF
- Display: LCD display
- Programming: Push button switches

#### **388.3 Construction**

- Enclosure: Fire-proof thermoplastic
  - Cover: Transparent front cover
  - Mounting: DIN rail / surface mount
- 

### **389. Installation Methodology**

1. Fix time switch securely in designated location.
  2. Connect incoming and outgoing wiring.
  3. Program required ON/OFF schedule.
  4. Verify battery backup function.
  5. Test manual override operation.
  6. Ensure LCD display is functional.
-

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 390. Testing & Commissioning

- Check supply voltage and current rating
  - Test automatic switching as per program
  - Verify battery backup operation
  - Check manual ON/OFF override
  - Confirm accuracy of clock timing
- 

### 391. Measurement Criteria

- Measurement per number of time switches supplied and commissioned
  - Includes supply, wiring, programming, and testing
- 

### 392. Tender Description (Elaborated – Digital Time Switch)

Providing, supplying, erecting, wiring, programming, and commissioning approved make digital time switch (day clock) with 1 channel, minimum 14 memory programs, lithium battery backup with minimum 6 years life, suitable for 240 V  $\pm 5\%$  supply, 16 A current rating, floating contacts, LCD display, permanent manual ON/OFF override, housed in fire-proof thermoplastic enclosure with transparent cover. Rate includes supply, installation, programming, testing, and commissioning complete as directed by Engineer-in-Charge.

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### 393. Category

Category: II

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### Supplying & Erecting IP-55 Grade Section Pillar (75 x 60 x 45 cm)

#### Scope of Work

Supplying, fabricating, erecting and commissioning IP-55 grade outdoor section pillar made from jointless MS sheet including foundation, brick masonry, plastering, painting and complete installation as per specifications and directions of Engineer-in-Charge.

#### Technical Specifications

- Size : **75 cm (H) x 60 cm (W) x 45 cm (D)**
- Material : **Jointless 16 Gauge Mild Steel Sheet**
- Legs : **35 x 35 x 5 mm MS Angle – 45 cm long**
- Protection : **IP-55 dust & water proof**
- Doors : Hinged **double door**, internally supported both sides
- Locking : Inside & outside locking arrangement with **duplicate keys**
- Roof : Jointless, water leakage proof, IP tested
- Mounting : Buried angle iron legs with **cement concrete foundation**
- Brick Work : **45 cm height brick masonry** with plaster finish
- Internal Mounting : Two nos. **35x35x5 mm MS angle** – one welded, one bolted for Bakelite sheet mounting
- Painting : **Three coat powder coating** inside & outside
- Cable Entry : Proper cable clamps & glands

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Construction Details

- Fabricated from jointless MS sheet
- Angle iron legs embedded in concrete foundation
- 45 cm high brick masonry pedestal
- Hinged double door with stiffeners
- Rubber gasket sealing for IP protection

### Standards & Testing

- IP-55 protection test
- As per **IS 2147:1962**
- Water leakage & dust ingress test

### Installation Method

1. Excavation for foundation
2. Fixing angle iron legs
3. Cement concrete foundation
4. Brick masonry & plastering
5. Erection of pillar
6. Leveling & alignment
7. Internal mounting & finishing

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## LED Indoor Downlight Fitting – 22 to 24 Watts (IP20)

### Scope of Work

Supplying, installing, testing and commissioning LED indoor downlight fittings of approved make, square/circular shape, surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: High quality opal diffuser
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 15\%$
- CCT Range: 3000K – 6500K
- Luminous Efficacy:  $\geq 85 \text{ lm/W}$

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- LED Driver Efficiency:  $\geq 85\%$
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square / Circular
- Mounting: Surface/Recessed with spring loaded clips
- IP Rating: IP20
- Wattage: 22 – 24 Watts
- Surge Protection: 2 KV
- Category: Cat-III

#### Construction Details

- Heat sink integrated into housing
- High thermal conductivity aluminium body
- Flicker-free electronic driver
- Low lumen depreciation
- Uniform light distribution

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening (for recessed type)
3. Connect supply through terminal block
4. Fix fitting using spring clips
5. Ensure firm mounting
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Lux level verification
- Heat dissipation observation
- Functional test

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire retardant materials

#### Measurement

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Unit: Each (Nos.)
- Measurement: Per installed fitting

#### Tender Approval Description

"Supplying and erecting approved make LED indoor downlight fittings, 22 to 24 watts, square/circular shape, surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, diffuser, PF ≥0.95, THD <15%, luminous efficacy ≥85 lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

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#### LED Panel Light – 36 Watts (24" x 24") IP20

##### Scope of Work

Supplying, installing, testing and commissioning approved make LED panel light fittings, 36W, size 24" x 24", surface/recessed mounted complete with accessories, wiring terminations and mounting hardware as directed by Engineer-in-Charge.

##### Technical Specifications

- LED Type: 0.2W to 0.5W LEDs mounted on single MCPCB
- Housing Material: CRCA sheet steel / Aluminium pressure die-cast conforming to IS:513
- Finish: Powder coated, UV & corrosion resistant
- Diffuser: Translucent polycarbonate cover
- Body: Aluminium casted body with embossed company logo
- Input Voltage: 160V – 270V AC
- Frequency: 50 Hz
- Power Factor: ≥ 0.95
- THD: < 15%
- CCT Range: 3000K – 6500K
- Luminous Efficacy: ≥ 85 lm/W
- LED Driver Efficiency: ≥ 85%
- Certifications: LM-79 & LM-80 test certificates mandatory
- Shape: Square panel
- Mounting: Surface / Recessed mounting
- Frame: Plane front frame fixed to housing
- IP Rating: IP20
- Wattage: 36 Watts
- Size: 24" x 24"
- Surge Protection: 2 KV



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Category: Cat-III

#### Construction Details

- High thermal conductivity aluminium heat sink
- Flicker-free constant current driver
- Uniform light distribution
- Low lumen depreciation
- Fire retardant internal components

#### Installation Methodology

1. Mark mounting location
2. Cut ceiling opening for recessed mounting
3. Fix mounting frame
4. Connect supply through terminal block
5. Mount panel securely
6. Check illumination and functionality

#### Testing & Commissioning

- Insulation resistance test
- Voltage fluctuation test
- Functional testing
- Heat dissipation observation
- Lux level verification

#### Safety & Standards

- Conforms to BIS & IEC standards
- Surge protection provided
- Fire resistant materials

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fitting

#### Tender Approval Description

"Supplying and erecting approved make LED panel light, 36 watts, size 24" x 24", surface/recessed mounted, IP20, aluminium die-cast body, CRCA housing, translucent diffuser, PF  $\geq 0.95$ , THD  $< 15\%$ , luminous efficacy  $\geq 85$  lm/W, surge protection 2KV, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### **LED Street Light – 48 to 60 Watts (IP65)**

#### **Scope of Work**

Supplying, installing, testing and commissioning approved make LED street light fittings, wattage range 48–60W, IP65 protection, complete with mounting hardware, wiring connections, aiming and commissioning as directed by Engineer-in-Charge.

#### **Technical Specifications**

- LED Type: High power white LEDs ( $\geq 3W$ ) mounted on single MCPCB
- Housing: High pressure die-cast aluminium, corrosion free
- Finish: Smooth powder coated, UV resistant
- Heat Sink: Extruded aluminium for efficient heat dissipation
- Optics: Polycarbonate lenses
- Cover: Toughened glass
- Marking: Company name/logo engraved or embossed
- Input Voltage: 160V – 270V AC
- Line Protection: Suitable up to 440V AC with over-voltage protection
- Frequency: 50 Hz
- Power Factor:  $\geq 0.95$
- THD:  $< 10\%$
- CCT: 3000K to 5700K
- Uniformity Ratio:  $> 0.45$
- Luminaire Efficacy:  $\geq 100 \text{ lm/W}$
- LED Efficiency:  $\geq 130 \text{ lm/W}$
- Driver Efficiency:  $\geq 85\%$
- Surge Protection: 4 KV integral
- IP Rating: IP65
- Certifications: LM-79 & LM-80 mandatory
- Wattage Range: 48W to 60W
- Category: Cat-III

#### **Construction Features**

- Weatherproof and corrosion resistant body
- Efficient thermal management system
- High impact resistant optics
- Flicker-free constant current driver

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Long LED life (>50,000 hrs)

#### Installation Methodology

1. Fix luminaire on pole/bracket
2. Adjust tilt angle
3. Connect supply through termina

**(59) Supplying and erecting approved make oscillating type bracket fan A.C. 230V. 50cy/s 400/450 mm sweep wall mounted with height adjustment and rotary tilting device complete with guard, flexible Core plug top complete erected with lead wires as directed. Cat.II**

#### Scope of Work

Supplying, installing, testing, and commissioning approved make wall-mounted oscillating bracket fan, complete with guard, tilting device, flexible lead wire, and plug top as directed by Engineer-in-Charge.

#### Technical Specifications

- Fan Type: Oscillating bracket fan, wall mounted
- Sweep: 400 / 450 mm
- Voltage: 230V AC, 50 Hz
- Height Adjustment: Provided
- Tilting: Rotary tilting mechanism included
- Guard: Heavy duty metal guard
- Plug: Flexible core with plug top
- Motor: A.C., single phase
- Safety Features: Overload protection, secure wall mounting
- Category: Cat. II

#### Construction Features

- Rust-resistant body and blades
- Sturdy wall mounting bracket
- Smooth oscillation and tilt control
- Balanced blades for low vibration

#### Installation Methodology

1. Mark wall mounting points
2. Drill holes and insert rawl plugs
3. Fix bracket securely to wall
4. Mount fan and attach guard
5. Connect lead wire and plug top

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### 6. Test oscillation, tilt, and speed

#### Testing & Commissioning

- Voltage test
- Oscillation and tilt check
- Speed and air delivery verification
- Earthing continuity check

#### Safety & Standards

- Conforms to BIS standards
- Fire retardant lead wires
- Guarding as per IS safety standards

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed fan

#### Tender Approval Description

"Supplying and erecting approved make oscillating type wall-mounted bracket fan, 400/450 mm sweep, 230V AC, 50 Hz, with height adjustment, rotary tilting device, guard, flexible core plug top, complete with wiring, testing and commissioning as directed by Engineer-in-Charge."

**(60) Supplying & erecting approved make low noise decorative exhaust fan having square frame ABS body with inbuilt lowers & square frame. 250mm with 1350 RPM Cat.II**

#### Scope of Work

Supplying, installing, testing, and commissioning approved make decorative low noise exhaust fan with square frame, complete with inbuilt louvers, wiring, mounting hardware and accessories as directed by Engineer-in-Charge.

#### Technical Specifications

- Fan Type: Decorative exhaust fan, low noise
- Frame: Square, ABS body
- Blade: High efficiency, low noise
- Sweep: 250 mm
- RPM: 1350
- Voltage: 230V AC, 50 Hz
- Mounting: Wall / Window / Ceiling as per site requirement
- Category: Cat. II
- Safety: Provided with protective grill / louvers

#### Construction Features

- ABS square frame, fire retardant

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Aerodynamic blades for low noise operation
- Balanced motor and rotor assembly
- Compact and aesthetic design

#### Installation Methodology

1. Prepare mounting location
2. Fix fan securely to wall/window/ceiling
3. Connect supply through insulated wiring
4. Ensure proper alignment
5. Test air flow, RPM, and noise level

#### Testing & Commissioning

- Insulation resistance test
- Operational test at rated voltage
- Noise level measurement
- Vibration and balance check

#### Safety & Standards

- Conforms to BIS/IS standards
- Fire retardant body material
- Proper earthing

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed exhaust fan

#### Tender Approval Description

"Supplying and erecting approved make low noise decorative exhaust fan, square ABS body, sweep 250 mm, 1350 RPM, complete with inbuilt louvers, wiring, mounting and testing as directed by Engineer-in-Charge."

**(61) Lowering of submersible motor pump set at the depth of following ,complete with required. Nos. and size of casing pipes erected by means of proper chain pulley block & pipe wrenches after checking of threads of each pipe with coupling to take the load of the pump set and pipe assembly filled up with water (D)For Open well Horizontal submersible pump set for sump well (i) 1 HP to 5 HP**

#### Scope of Work

Lowering of submersible motor pump set into the sump/open well to the required depth, including erection of casing pipes, coupling, filling with water and ensuring proper alignment and operation, as directed by Engineer-in-Charge.

#### Technical Specifications

- Pump Type: Open well horizontal submersible pump set

#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

- Motor Rating: 1 HP to 5 HP
- Casing Pipes: Required number and size as per pump manufacturer
- Erection Method: Using chain pulley block and pipe wrenches
- Threading: All pipe threads to be checked before assembly
- Couplings: Heavy-duty threaded couplings to support pump and pipe weight
- Water Filling: Pipe assembly to be filled with water to avoid air locks

#### Construction Features

- Stable lowering mechanism to prevent damage
- Proper alignment of pump and pipe assembly
- Adequate support and lifting for motor and casing

#### Installation Methodology

1. Inspect pump, motor and casing pipes
2. Assemble casing pipes with threaded couplings
3. Lift pump set using chain pulley block
4. Lower pump carefully into well/sump
5. Fill casing pipes with water
6. Check alignment and proper seating
7. Connect to electrical supply for testing

#### Testing & Commissioning

- Check motor rotation direction
- Measure pump current and voltage
- Flow and head measurement
- Check for leakage and vibration

#### Safety & Standards

- Conforms to manufacturer and IS standards
- Proper earthing and mechanical safety precautions

#### Measurement

- Unit: Each (Nos.)
- Measurement: Per lowered pump set

#### Tender Approval Description

"Lowering of open well horizontal submersible motor pump set, 1 HP to 5 HP, with required casing pipes, using proper lifting equipment, filled with water, aligned and tested complete as directed by Engineer-in-Charge."

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

**(62) Providing and erecting ISI marked PVC insulated PVC Sheathed Flat flexible Submersible copper cable approved make of following Size. (A) 3 Core x 1.5 Sq. mm.**

### Scope of Work

Supplying, installing, testing, and commissioning ISI marked PVC insulated, PVC sheathed flat flexible submersible copper cable of approved make, for connection to submersible pump sets as directed by Engineer-in-Charge.

### Technical Specifications

- Cable Type: Flat flexible submersible cable
- Conductor Material: Copper, multi-strand
- Insulation: ISI marked PVC
- Sheath: PVC, waterproof and flexible
- Number of Cores: 3
- Cross Section: 1.5 Sq.mm per core
- Voltage Rating: Suitable for 230V AC, 50 Hz
- Application: Submersible pump sets
- Approvals: ISI marked, approved make

### Construction Features

- Multi-strand copper for flexibility
- Durable PVC insulation and sheath for water immersion
- Resistant to abrasion, UV, and chemical action
- Designed for continuous submersion in water

### Installation Methodology

1. Lay cable along trench or conduit route to submersible pump
2. Avoid sharp bends and mechanical stress
3. Connect to pump terminal block and main supply
4. Provide proper sealing and strain relief at entry points
5. Test insulation and continuity before energization

### Testing & Commissioning

- Insulation resistance test
- Continuity test
- Voltage drop verification
- Functional test with pump operation

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Safety & Standards

- Conforms to IS:694/IS 1554 (Part 1) for PVC insulated cables
- Fire retardant and water proof
- Proper earthing and strain relief provided

### Measurement

- Unit: Meter (m)
- Measurement: Per length of cable supplied and installed

### Tender Approval Description

"Providing and erecting ISI marked PVC insulated PVC sheathed flat flexible submersible copper cable, 3 Core x 1.5 Sq.mm, approved make, for submersible pump connection, complete with laying, termination, testing and commissioning as directed by Engineer-in-Charge."

**(63) Providing and erecting ISI marked PVC insulated PVC Sheathed Flat flexible Submersible copper cable approved make of following Size. (B) 3 Core x 2.5 Sq. mm.**

### Scope of Work

Supplying, installing, testing, and commissioning ISI marked PVC insulated, PVC sheathed flat flexible submersible copper cable of approved make, for connection to submersible pump sets as directed by Engineer-in-Charge.

### Technical Specifications

- Cable Type: Flat flexible submersible cable
- Conductor Material: Copper, multi-strand
- Insulation: ISI marked PVC
- Sheath: PVC, waterproof and flexible
- Number of Cores: 3
- Cross Section: 2.5 Sq.mm per core
- Voltage Rating: Suitable for 230V AC, 50 Hz
- Application: Submersible pump sets
- Approvals: ISI marked, approved make

### Construction Features

- Multi-strand copper for flexibility
- Durable PVC insulation and sheath for water immersion
- Resistant to abrasion, UV, and chemical action
- Designed for continuous submersion in water

### Installation Methodology

1. Lay cable along trench or conduit route to submersible pump
2. Avoid sharp bends and mechanical stress



#### DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

3. Connect to pump terminal block and main supply
4. Provide proper sealing and strain relief at entry points
5. Test insulation and continuity before energization

#### Testing & Commissioning

- Insulation resistance test
- Continuity test
- Voltage drop verification
- Functional test with pump operation

#### Safety & Standards

- Conforms to IS:694/IS 1554 (Part 1) for PVC insulated cables
- Fire retardant and waterproof
- Proper earthing and strain relief provided

#### Measurement

- Unit: Meter (m)
- Measurement: Per length of cable supplied and installed

#### Tender Approval Description

"Providing and erecting ISI marked PVC insulated PVC sheathed flat flexible submersible copper cable, 3 Core x 2.5 Sq.mm, approved make, for submersible pump connection, complete with laying, termination, testing and commissioning as directed by Engineer-in-Charge."

#### **(64) Supplying & erecting approved make Four Pole 415V change over switch interior for panel mounting with operating mechanism A.C.23 duty confirming to IS for (C)100-125A**

#### Scope of Work

Supplying, installing, testing, and commissioning approved make four-pole 415V change over switch for panel mounting with AC-23 duty operating mechanism, suitable for 100-125A, as directed by Engineer-in-Charge.

#### Technical Specifications

- Switch Type: Four Pole Change Over Switch
- Voltage Rating: 415V AC, 50 Hz
- Current Rating: 100-125A
- Duty: AC-23 (Motor & Inductive Load)
- Mounting: Panel mounting
- Operating Mechanism: Manual / Lever operated as per manufacturer
- Enclosure: Metal housing suitable for panel installation
- Approvals: IS/IEC compliant, approved make

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Construction Features

- Robust copper/aluminium contacts
- Insulated operating handle
- Thermal and mechanical protection
- Clear ON/OFF/Changeover indication
- Suitable for indoor panel mounting

### Installation Methodology

1. Mount switch in panel at designated location
2. Connect incoming and outgoing terminals
3. Tighten all connections as per torque specification
4. Ensure proper insulation and earthing
5. Label as per electrical schematic

### Testing & Commissioning

- Continuity and insulation test
- Mechanical operation check
- Load testing as per rating
- Visual inspection for alignment and mounting

### Safety & Standards

- Conforms to IS 4064 / IS 13947 standards
- Proper earthing and insulation
- Mechanical interlock to prevent accidental switching

### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed switch

### Tender Approval Description

"Supplying and erecting approved make four-pole 415V change over switch for panel mounting with AC-23 duty operating mechanism, suitable for 100-125A, complete with connections, testing and commissioning as directed by Engineer-in-Charge."

**(65) Providing and erecting approved make split air-conditioning unit consisting of copper condensing unit with fan motor, hermetically sealed rotary compressor with accessories etc. duly connected separately erected evaporating unit and blower motor with its accessories by means of extra supplied proper insulated copper tubing, drain PVC pipes suitable for ( cost includes powder coated Stand, Eco Friendly green gas charging, 15A plug top & Remote Control) with necessary core cutting. (1)For ISEER Range (KWH/KWH)(3.1 to 3.99) Premium Category (b) for 1.5 ton capacity**

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Scope of Work

Supplying, installing, testing, and commissioning approved make split air-conditioning unit of 1.5 ton capacity with ISEER rating 3.1 to 3.99 (Premium Category), complete with condensing unit, evaporator unit, blower motor, copper piping, drain PVC pipes, insulation, powder-coated stand, eco-friendly refrigerant charging, 15A plug top, remote control and necessary core cutting as directed by Engineer-in-Charge.

### Technical Specifications

- Type: Split Air Conditioning Unit
- Capacity: 1.5 Ton
- ISEER Range: 3.1 to 3.99 (Premium Category)
- Condensing Unit: Copper, with fan motor and hermetically sealed rotary compressor
- Evaporator Unit: Wall mounted / as per site requirement
- Blower Motor: Suitable for specified capacity with low noise operation
- Accessories: Remote control, 15A plug top, powder-coated stand
- Refrigerant: Eco-friendly green gas (R-32 / approved equivalent)
- Piping: Extra supplied copper tubing with insulation
- Drain: PVC pipe with slope for proper drainage
- Power Supply: 230V AC, single phase, 50 Hz

### Construction Features

- Copper piping with proper insulation
- Powder-coated condenser stand for outdoor unit
- Noise and vibration control measures
- Core cutting for concealed piping as required
- Safety and overload protection in unit

### Installation Methodology

1. Select installation site as per standards
2. Install condenser on powder-coated stand
3. Mount evaporator on wall with suitable brackets
4. Connect copper refrigerant piping with insulation
5. Connect drain PVC pipe
6. Connect electrical supply and 15A plug
7. Charge unit with approved eco-friendly refrigerant
8. Test unit for performance, cooling, and efficiency

## DETAILED ITEMWISE SPECIFICATION OF ELECTRICAL WORK.

### Testing & Commissioning

- Pressure and leak test of refrigerant piping
- Electrical safety test
- ISEER performance verification
- Temperature drop and airflow verification
- Functional test with remote control

### Safety & Standards

- Conforms to IS/IEC standards for air conditioners
- Use of eco-friendly refrigerant
- Proper earthing and insulation
- Fire retardant cabling

### Measurement

- Unit: Each (Nos.)
- Measurement: Per installed split AC unit including all accessories and commissioning

### Tender Approval Description

"Providing and erecting approved make split air-conditioning unit of 1.5 ton capacity, ISEER 3.1 to 3.99 (Premium Category), complete with copper condensing unit, evaporator unit, blower motor, accessories, powder-coated stand, eco-friendly refrigerant, 15A plug top, remote control, insulated copper piping, PVC drain pipe, core cutting and commissioning as directed by Engineer-in-Charge."