















NOTE: 1. REPRESENTED STATCOM BAY CONFIGURATION
IS TYPICAL AND MAY VARY AS PER RESPECTIVE OEM DESIGN
2. 87IGBT AND 87R ARE LOW IMPEDANCE PROTECTION
3. ## REQUIREMENT OF COUPLING TRANSFORMER CT/BCT CORE ROUTING
TO CONTROLLER SHALL BE AS PER REQUIREMENT OF RESPECTIVE OEMS

- | | |
|-----------------|--|
| LEGEND:- | |
| (27) | UNDER VOLTAGE RELAY |
| (46) | NEGATIVE PHASE SEQUENCE PROTECTION
(INTEGRATED IN 51, 51N, 67, 67N) |
| (49) | THERMAL OVERLOAD PROTECTION
(INTEGRATED IN 51, 51N) |
| (50) | INSTANTANEOUS OVER CURRENT PROTECTION
(INTEGRATED IN 51, 51N) |
| (50 LBB) | LOCAL BREAKER BACKUP PROTECTION
(INTEGRATED IN 51, 67, 67T & 87B8) |
| (51) | NON DIRECTIONAL O/C PROTECTION |
| (51N) | NON DIRECTIONAL EARTH FAULT PROTECTION
(INTEGRATED IN 51) |
| (59) | OVER VOLTAGE PROTECTION |
| (59N) | RESIDUAL OVER VOLTAGES PROTECTION
(EITHER SEPARATE RELAY OR INTEGRATED IN 59) |
| (64R) | RESTRICTED EARTH FAULT PROTECTION |
| (67) | DIRECTIONAL OVER CURRENT PROTECTION |
| (67N) | DIRECTIONAL EARTH FAULT PROTECTION
(INTEGRATED IN 67) |
| (67T) | TRANSFORMER DIFFERENTIAL PROTECTION |
| (67R) | REACTOR DIFFERENTIAL PROTECTION |
| (67 8B7) | IGBT DIFFERENTIAL PROTECTION |
| (87B8) | BUS BAR PROTECTION
(EXISTING GE MAKE MICOM P74X) |
| (99) | OVER FLUXING PROTECTION
(INTEGRATED IN 87T) |
| (A) | AMMETER |
| (V) | VOLTMETER |
| (F) | FREQUENCY METER |
| (WVAR) | REACTIVE POWER METER |
| (WVAR) | REACTIVE ENERGY METER
(INTEGRATED IN MWh-METER) |
- } Integrated in BCU
- NOTE:-**
- ALL PROTECTIVE RELAYS ARE NUMERICAL & IEC 61850 EDITION 2 AND CYBER SECURITY COMPLIANT.

<u>SYMBOLS :- (220KV EQUIPMENTS)</u>			
SR NO.	ITEM DESCRIPTION	NOMENCLATURE	SYMBOL
01	CROUAT BREAKER 245KV-2000A, 40 kA/3s, (2 ph.)	2-152T-1RAFO.	
	HORIZONTAL DOUBLE BREAK SWITCH WITHOUT ES. 245KV-1600A, 40 kA/3s	2-268A - BS-1 2-1600A - BS-1 2-189C - BS-1 2-189T - BS-1	
03	CURRENT TRANSFORMER, 245KV-1200A, 40 kA/3s, 1500-12000-600/1-1-1-1-1-1 CL : IS, DS2, PA, PV, PT	2-NCT	
04	LIGHTING ARRESTOR, 158KV/162KV, 10KA, CL-3	2-XLA	
	220/KV, 100MVA COUPLING TRANSFORMER (3 ph.) TWO WINDING, 120/11		
05	220KV RY-BUSHING CURRENT TRANSFORMER	HY-BCT	
	XXXX NEUTRAL CURRENT TRANSFORMER	NCT	


SYMBOLS :- (XXXV EQUIPMENTS)			
SR NO.	ITEM DESCRIPTION	NOMENCLATURE	SYMBOL
01	CIRCUIT BREAKER	X-XS2	
02	HORIZONTAL DOUBLE BREAK ISOLATOR WITHOUT ES.	X-XSBP1-PT BAY X-XSB1-BRACO	
03	HORIZONTAL DOUBLE BREAK ISOLATOR WITH ES.	X-XSBP1 & X-XSBA2 X-XSBAE1 & X-XSBAE2	
04	CURRENT TRANSFORMER, XXXV	X-XCT1 X-XCT1 X-XCT2 X-XCT3	
05	XXXV POTENTIAL TRANSFORMER	X-XP1	
06	LIGHTNING ARRESTOR	X-XLA & X-XLA1	
07	XXXV SERIES REACTOR (SR)	X-XSR	
08	XXXV IGBT VALVE	IGBT1	
09	66KV CHARGING RESISTANCE (CR) 3000ohm-20kV	6-XCR	

TENDER	PURPOSE
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100



S.P.VIDYUT BHAVAN, RACE COURSE,
VADODARA - 390 007

TYPICAL PROTECTION SINGLE LINE DIAGRAM
220KV SAGAPARA SUBSTATION STATCOM BAY

DRAWN:	CHECKED:	APPD:	
DE (ENGG.)	EE (ENGG.)	I/C.ACE (ENGG.)	SIZE: A3
SCALE:	DATE:	DRG. NO:	SHEET: REV:
N.T.S	08.11.2024	GETCO 2S-041 / E / P-002A	1 OF 1 RO

1	SLD DRG.NO. GETCO/E/2S-041/P-004,R4, DT.13.05.24	R0	FIRST PREPARATION
SR NO.	REFERENCE	REV:	DESCRIPTION