

FIRST ANGLE PROJECTION

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JOB NO.		353		
STATUS		CONTRACT		
DISTRIBUTION				
REV.	DATE	ALTD	CHD	APPD

CUSTOMER	INDIAN OIL CORPORATION LIMITED PARADIP REFINERY CPP			
CUSTOMER CONSULTANT	ENGINEERS INDIA LIMITED			
	BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA			
	KMG ATOZ SYSTEMS PVT. LTD. C-49, SECTOR-81, NOIDA- 201305 DIST. GAUTAM BUDH NAGAR (U.P)			
	HONEYWELL AUTOMATION INDIA LIMITED 56 & 57, HADAPSAR INDUSTRIAL ESTATE PUNE-411 013			
PACKAGE:- LV SWITCHGEARS				
ATOZ JOB No: 2K10-765			REV.-01	
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			DESN CHD APPD	KK AKD PA
			21/02/2012 21/02/2012 21/02/2012	
TITLE- INPUT-OUTPUT LIST				
BHEL DRG. NO.				
110-PE-VO-353-506-E025				
SHEET-XX OF-XX			REV.-01	

Honeywell	PROJECT : IOCL PARADIP CPP LT AUTOMATION
	CUSTOMER : IOCL PARADIP
	END USER :-IOCL PARADIP REFINERY, CPP
	CONSULTANT :-ENGINEERS INDIA LIMITED
	CONTRACTOR :-BHEL

PROJECT : IOCL PARADIP CPP LT AUTOMATION

DOCUMENT :

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FOR INFORMATION

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FOR APPROVAL

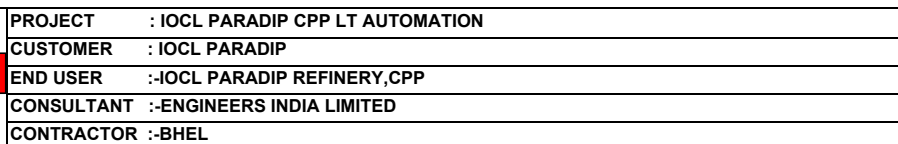
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REFERENCE :

DISTRIBUTION :

			APPD. By	Praveen Agarwal	Project Manager	
1	21-Feb-2012	REVISED ISSUE	CHKD By	Arun Das	Engineering Manager	
0	25-Mar-2011	ORIGINAL ISSUE	PPD By	Kanchan Kulkarni	Project Engineer	
REV	DATE	DESCRIPTION		NAME	DESIGNATION	SIGN

INPUT/ OUTPUT LIST FOR SCADA	DOC.NO. D10T1065-301	REV. 1
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INPUT/ OUTPUT LIST FOR SCADA	
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CONTENT LIST & REVISION STATUS SHEET

[illegible]

INPUT/ OUTPUT LIST FOR SCADA	DOC.NO. D10T1065-301	REV. 1
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DOC.NO. D10T1065-301	REV. 1
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REV. 1

TOTAL I/O QUANTITY - Summary

Sr. No.	Data Concentrator-1 (CCR1/2)	Total Soft I/Os			Total Hardwired I/Os Including 20% Spares			Total I/O Cards Required		
		DI	DO	AI	DI	DO	AI	DI	DO	AI
1	Data Concentrator-1 (CCR)	2427	0	1026	0	0	0	0	0	0
2	Data Concentrator-2 (CCR)	2801	0	1278	0	0	0	0	0	0
TOTAL		5228	0	2304	0	0	0	0	0	0
		Soft I/Os			Hardwired I/Os			Total I/O Cards		

TOTAL I/O COUNT - SWBD Wise																			
Sr. No.	Location Name	Voltage Level	Type of Feeder	No. of Feeders	Soft I/O Count			Hardwired I/O			Total Soft I/O Count			Total Hardwired I/O			Total Including 20%		
					DI	DO	AI	DI	DO	AI	DI	DO	AI	DI	DO	AI	DI	DO	AI
1	Data Concentrator-1 (CONTROL ROOM)	415V UB PMCC1_0DB	BUS PT G1/G2	2	11	0	3	0	0	0	22	0	6	0	0	0	0	0	0
			MOTOR FDR (DM-PM)	5	30	0	12	0	0	0	150	0	60	0	0	0	0	0	0
			PCC_PMCC O/G FOR UB	6	21	0	12	0	0	0	126	0	72	0	0	0	0	0	0
			INCOMER A/B	2	31	0	12	0	0	0	62	0	24	0	0	0	0	0	0
			BUS COUPLER	1	27	0	12	0	0	0	27	0	12	0	0	0	0	0	0
		415V UB PMCC2_0DC	BUS PT G1/G2	2	11	0	3	0	0	0	22	0	6	0	0	0	0	0	0
			MOTOR FDR (DM-PM)	5	30	0	12	0	0	0	150	0	60	0	0	0	0	0	0
			PCC_PMCC O/G FOR UB	6	21	0	12	0	0	0	126	0	72	0	0	0	0	0	0
			INCOMER A/B	2	31	0	12	0	0	0	62	0	24	0	0	0	0	0	0
			BUS COUPLER	1	27	0	12	0	0	0	27	0	12	0	0	0	0	0	0
		415V UB STG PMCC1_4DA.	BUS PT G1/G2	3	11	0	3	0	0	0	33	0	9	0	0	0	0	0	0
			MOTOR FDR (DM-PM)	6	30	0	12	0	0	0	180	0	72	0	0	0	0	0	0
			PCC_PMCC O/G	3	19	0	12	0	0	0	57	0	36	0	0	0	0	0	0
			INCOMER A/B	2	31	0	12	0	0	0	62	0	24	0	0	0	0	0	0
			BUS COUPLER	1	27	0	12	0	0	0	27	0	12	0	0	0	0	0	0
			INCOMER-C	1	31	0	12	0	0	0	31	0	12	0	0	0	0	0	0
			BUS COUPLER-EMG	1	29	0	12	0	0	0	29	0	12	0	0	0	0	0	0
		415V UB STG PMCC2_5DA.	BUS PT G1/G2	3	11	0	3	0	0	0	33	0	9	0	0	0	0	0	0
			MOTOR FDR (DM-PM)	6	30	0	12	0	0	0	180	0	72	0	0	0	0	0	0
			PCC_PMCC O/G	3	19	0	12	0	0	0	57	0	36	0	0	0	0	0	0
			INCOMER A/B	2	31	0	12	0	0	0	62	0	24	0	0	0	0	0	0
			BUS COUPLER	1	27	0	12	0	0	0	27	0	12	0	0	0	0	0	0
			INCOMER-C	1	31	0	12	0	0	0	31	0	12	0	0	0	0	0	0
		BUS COUPLER-EMG	1	29	0	12	0	0	0	29	0	12	0	0	0	0	0	0	
		415V UB MCC1_1HC.	BUS PT G1/ G2	3	11	0	3	0	0	0	33	0	9	0	0	0	0	0	0
			PCC-PMCC I/C	3	31	0	12	0	0	0	93	0	36	0	0	0	0	0	0
			BUS COUPLER	2	27	0	12	0	0	0	54	0	24	0	0	0	0	0	0

TOTAL I/O COUNT - SWBD Wise																			
Sr. No.	Location Name	Voltage Level	Type of Feeder	No. of Feeders	Soft I/O Count			Hardwired I/O			Total Soft I/O Count			Total Hardwired I/O			Total Including 20%		
					DI	DO	AI	DI	DO	AI	DI	DO	AI	DI	DO	AI	DI	DO	AI
	Data Concentrator-1 (CONTROL ROOM)	415V UB EMG PCC_0EB.	BUS PT G1/ G2	2	11	0	3	0	0	0	22	0	6	0	0	0	0	0	0
			DG INCOMER	1	33	0	12	0	0	0	33	0	12	0	0	0	0	0	0
			DG B/C	1	19	0	12	0	0	0	19	0	12	0	0	0	0	0	0
			DG I/C-H	1	31	0	12	0	0	0	31	0	12	0	0	0	0	0	0
			PCC_PMCC O/G	6	21	0	12	0	0	0	126	0	72	0	0	0	0	0	0
		415V UB MCC2_2HC	BUS PT G1 G2	3	11	0	3	0	0	0	33	0	9	0	0	0	0	0	0
			PCC-PMCC I/C	3	31	0	12	0	0	0	93	0	36	0	0	0	0	0	0
			BUS COUPLER	2	27	0	12	0	0	0	54	0	24	0	0	0	0	0	0
		415V ESP PCC # 1DB	ESP I/C	2	19	0	3	0	0	0	38	0	6	0	0	0	0	0	0
			ESP B/C	1	18	0	12	0	0	0	18	0	12	0	0	0	0	0	0
		415V ESP PCC # 2DB	ESP I/C	2	19	0	3	0	0	0	38	0	6	0	0	0	0	0	0
			ESP B/C	1	18	0	12	0	0	0	18	0	12	0	0	0	0	0	0
		415V ESP PCC # 3DB	ESP I/C	2	19	0	3	0	0	0	38	0	6	0	0	0	0	0	0
			ESP B/C	1	18	0	12	0	0	0	18	0	12	0	0	0	0	0	0
		415V ESP PCC # 4DB	ESP I/C	2	19	0	3	0	0	0	38	0	6	0	0	0	0	0	0
			ESP B/C	1	18	0	12	0	0	0	18	0	12	0	0	0	0	0	0

TOTAL I/O COUNT - SWBD Wise																			
Sr. No.	Location Name	Voltage Level	Type of Feeder	No. of Feeders	Soft I/O Count			Hardwired I/O			Total Soft I/O Count			Total Hardwired I/O			Total Including 20%		
					DI	DO	AI	DI	DO	AI	DI	DO	AI	DI	DO	AI	DI	DO	AI
2	Data Concentrator-2 (CONTROL ROOM)	415V UB MCC3_3HC	BUS PT G1/ G2	3	11	0	3	0	0	0	33	0	9	0	0	0	0	0	0
			PCC-PMCC I/C	3	31	0	12	0	0	0	93	0	36	0	0	0	0	0	0
			BUS COUPLER	2	27	0	12	0	0	0	54	0	24	0	0	0	0	0	0
		415V GT PMCC # 3DA	MOTOR FDR (DM-PM)	11	30	0	12	0	0	0	330	0	132	0	0	0	0	0	0
			PCC PMCC O/G	3	19	0	12	0	0	0	57	0	36	0	0	0	0	0	0
			INCOMER A/B	2	31	0	12	0	0	0	62	0	24	0	0	0	0	0	0
			BUS COUPLER	1	27	0	12	0	0	0	27	0	12	0	0	0	0	0	0
			INCOMER-C	1	31	0	12	0	0	0	31	0	12	0	0	0	0	0	0
			BUS COUPLER-EMG	1	29	0	12	0	0	0	29	0	12	0	0	0	0	0	0
		415V GT PMCC # 1DA	MOTOR FDR (DM-PM)	11	30	0	12	0	0	0	330	0	132	0	0	0	0	0	0
			PCC PMCC O/G	3	19	0	12	0	0	0	57	0	36	0	0	0	0	0	0
			INCOMER A/B	2	31	0	12	0	0	0	62	0	24	0	0	0	0	0	0
			BUS COUPLER	1	27	0	12	0	0	0	27	0	12	0	0	0	0	0	0
			INCOMER-C	1	31	0	12	0	0	0	31	0	12	0	0	0	0	0	0
			BUS COUPLER-EMG	1	29	0	12	0	0	0	29	0	12	0	0	0	0	0	0
		415V UB EMG PCC_0EA.	BUS PT G1/G2	2	11	0	3	0	0	0	22	0	6	0	0	0	0	0	0
			MOTOR FDR (DM-PM)	2	30	0	12	0	0	0	60	0	24	0	0	0	0	0	0
			PCC PMCC O/G	12	19	0	12	0	0	0	228	0	144	0	0	0	0	0	0
			INCOMER A/B	2	31	0	12	0	0	0	62	0	24	0	0	0	0	0	0
			BUS COUPLER	1	27	0	12	0	0	0	27	0	12	0	0	0	0	0	0
		415V GT PMCC # 2DA	MOTOR FDR (DM-PM)	11	30	0	12	0	0	0	330	0	132	0	0	0	0	0	0
			PCC PMCC O/G	3	19	0	12	0	0	0	57	0	36	0	0	0	0	0	0
			INCOMER A/B	2	31	0	12	0	0	0	62	0	24	0	0	0	0	0	0
			BUS COUPLER	1	27	0	12	0	0	0	27	0	12	0	0	0	0	0	0
			INCOMER-C	1	31	0	12	0	0	0	31	0	12	0	0	0	0	0	0
			BUS COUPLER-EMG	1	29	0	12	0	0	0	29	0	12	0	0	0	0	0	0
		415V UB PCC_0DA.	BUS PT G1/G2	2	11	0	3	0	0	0	22	0	6	0	0	0	0	0	0
			PCC PMCC O/G	17	19	0	12	0	0	0	323	0	204	0	0	0	0	0	0
			INCOMER A/B	2	31	0	12	0	0	0	62	0	24	0	0	0	0	0	0
			BUS COUPLER	1	27	0	12	0	0	0	27	0	12	0	0	0	0	0	0
		415V UB MCC3_4HC	BUS PT G1/ G2	3	11	0	3	0	0	0	33	0	9	0	0	0	0	0	0
			PCC-PMCC I/C	3	31	0	12	0	0	0	93	0	36	0	0	0	0	0	0
			BUS COUPLER	2	27	0	12	0	0	0	54	0	24	0	0	0	0	0	0

BAY DETAILS -- DATA CONCENTRATOR RING-A (CCR CONTROL ROOM)								
Sr. No.	Feeder No.	Feeder Name	CT Ratio (Amps)	PT Ratio (Vac)			Rating	Feeder Type
					Make	Model		
415V UB PMCC-1 0DB								
1	1	HDTD FUEL OIL PUMP-A	200/1A	415/110V	GE	F650	90KW	DM/PM
2	2	HSFO PUMP-A	300/1A	415/110V	GE	F650	110KW	DM/PM
3	3	SPARE	300/1A	415/110V	GE	F650	110KW	DM/PM
4	4	UB MCC1 #1HC	630/1A	415/110V	GE	F650	630A	DAE-O/G
5	5	UB MCC2 #2HC	630/1A	415/110V	GE	F650	630A	DAE-O/G
6	6	SPARE	630/1A	415/110V	GE	F650	630A	DAE-O/G
7	7	BUS PT A	---	415/110V	GE	F650	---	G1/G2
8	8	INCOMER-A FROM 0DBT01	2500/1A	415/110V	GE	F650	2500A	DAET1/IC
9	9	BUS COUPLER	2500/1A	415/110V	GE	F650	2500A	DAE1/BC
10	10	INCOMER-B FROM 0DBT02	2500/1A	415/110V	GE	F650	2500A	DAET1/IC
11	11	BUS PT B	---	415/110V	GE	F650	---	G1/G2
12	12	UB MCC1 #1HC	630/1A	415/110V	GE	F650	630A	DAE-O/G
13	13	UB MCC2 #2HC	630/1A	415/110V	GE	F650	630A	DAE-O/G
14	14	SPARE	630/1A	415/110V	GE	F650	630A	DAE-O/G
15	15	SPARE	200/1A	415/110V	GE	F650	90KW	DM/PM
16	16	HDTD FUEL OIL PUMP-C	200/1A	415/110V	GE	F650	90KW	DM/PM
415V UB PMCC- 2 0DC								
17	1	HDTD FUEL OIL PUMP-B	200/1A	415/110V	GE	F650	90KW	DM/PM
18	3	HSFO PUMP-B	200/1A	415/110V	GE	F650	90KW	DM/PM
19	4	UB MCC3 #3HC	300/1A	415/110V	GE	F650	110KW	DM/PM
20	5	UB MCC4 #4HC	630/1A	415/110V	GE	F650	630A	DAE-O/G
21	6	BUS PT A	630/1A	415/110V	GE	F650	630A	DAE-O/G
22	7	INCOMER-A FROM 0DCT01	---	415/110V	GE	F650	---	G1
23	8	BUS COUPLER	2500/1A	415/110V	GE	F650	2500A	DAET1/IC
24	9	INCOMER-B FROM 0DCT02	2500/1A	415/110V	GE	F650	2500A	DAE1/BC
25	10	BUS PT B	2500/1A	415/110V	GE	F650	2500A	DAET1/IC
26	11	UB MCC3 #3HC	---	415/110V	GE	F650	---	G1
27	12	UB MCC4 #4HC	630/1A	415/110V	GE	F650	630A	DAE-O/G
28	13	SPARE	630/1A	415/110V	GE	F650	630A	DAE-O/G
29	15	NAPTHA FORWARDING PUMP (HRSG)	630/1A	415/110V	GE	F650	630A	DAE-O/G
30	16	SPARE	300/1A	415/110V	GE	F650	110KW	DM/PM
31	17	HSD FORWARDING PUMP (HRSG)	200/1A	415/110V	GE	F650	90KW	DM/PM
32	18	NAPTHA FORWARDING PUMP (HRSG)	630/1A	415/110V	GE	F650	630A	DAE-O/G
415V STG PMCC-1 4DA								
33	1	CONDENSER EXTRACTION PUMP	200/1A	415/110V	GE	F650	75KW	DM/PM
34	2	ST MCC1	400/1A	415/110V	GE	F650	400A	DAE-O/G
35	3	SPARE	400/1A	415/110V	GE	F650	400A	DAE-O/G
36	4	HSD FORWARDING PUMP (HRSG)	200/1A	415/110V	GE	F650	85KW	DM/PM
37	5	BUS PT A	---	415/110V	GE	F650	---	G1/G2
38	6	INCOMER-A FROM TRF 4DAT01	1600/1A	415/110V	GE	F650	1600A	DAET1/IC-A
39	7	BUS COUPLER1	1600/1A	415/110V	GE	F650	1600A	DAE1/BC
40	8	INCOMER-B FROM TRF 4DAT02	1600/1A	415/110V	GE	F650	1600A	DAET1/IC-B
41	9	BUS PT B	---	415/110V	GE	F650	---	G1/G2
42	10	ST MCC1	400/1A	415/110V	GE	F650	400A	DAE-O/G
43	11	NAPTHA FORWARDING PUMP (HRSG)	200/1A	415/110V	GE	F650	85KW	DM/PM
44	12	CONDENSER EXTRACTION PUMP	200/1A	415/110V	GE	F650	75KW	DM/PM
45	13	BUS COUPLER2	630/1A	415/110V	GE	F650	630A	DAE1/BC
46	14	INCOMER-C FROM PCC#0EA	400/1A	415/110V	GE	F650	630A	DAET1/IC-C
47	15	BUS PT C	---	415/110V	GE	F650	---	G1/G2

BAY DETAILS -- DATA CONCENTRATOR RING-A (CCR CONTROL ROOM)								
Sr. No.	Feeder No.	Feeder Name	CT Ratio (Amps)	PT Ratio (Vac)			Rating	Feeder Type
					Make	Model		
48	23	LUBE OIL PUMP DRIVER MOTOR	200/1A	415/110V	GE	F650	75KW	DM/PM
49	24	SPARE	200/1A	415/110V	GE	F650	75KW	DM/PM
415V STG PMCC-2 5DA								
50	1	CONDENSER EXTRACTION PUMP	200/1A	415/110V	GE	F650	75KW	DM/PM
51	2	ST MCC2	400/1A	415/110V	GE	F650	400A	DAE-O/G
52	3	SPARE	400/1A	415/110V	GE	F650	400A	DAE-O/G
53	4	HSD FORWARDING PUMP (HRSG)	200/1A	415/110V	GE	F650	85KW	DM/PM
54	5	BUS PT A	---	415/110V	GE	F650	---	G2
55	6	INCOMER-A FROM 5DAT01	1600/1A	415/110V	GE	F650	1600A	DAET1/IC
56	7	BUS COUPLER1	1600/1A	415/110V	GE	F650	1600A	DAE1/BC
57	8	INCOMER-B FROM 5DAT01	1600/1A	415/110V	GE	F650	1600A	DAET1/IC
58	9	BUS PT B	---	415/110V	GE	F650	---	G2
59	10	ST MCC2	400/1A	415/110V	GE	F650	400A	DAE-O/G
60	11	NAPTHA FORWARDING PUMP (HRSG)	200/1A	415/110V	GE	F650	85KW	DM/PM
61	12	CONDENSER EXTRACTION PUMP	200/1A	415/110V	GE	F650	75KW	DM/PM
62	13	FIRE BOOSTER PUMP	630/1A	415/110V	GE	F650	630A	DAE1/BC
63	14	INCOMER-C FROM PCC#0EA	400/1A	415/110V	GE	F650	630A	DAET1/IC
64	15	BUS PT C	---	415/110V	GE	F650	---	G2
65	23	LUBE OIL PUMP DRIVER MOTOR	200/1A	415/110V	GE	F650	75KW	DM/PM
66	24	SPARE	200/1A	415/110V	GE	F650	75KW	DM/PM
415V UB MCC-1 1HC								
67	55	BUS PT	---	415/110V	GE	F650	---	G1
68	56	INCOMER-A UB PMCC-1 #0DB	630/1A	415/110V	GE	F650	630A	DAET1
69	57	BUS COUPLER	630/1A	415/110V	GE	F650	630A	DAE1/BC1
70	58	INCOMER-B UB PMCC-1 #0DB	630/1A	415/110V	GE	F650	630A	DAET1
71	59	BUS PT	---	415/110V	GE	F650	---	G1
72	121	BUS COUPLER	630/1A	415/110V	GE	F650	630A	DAE1/BC1
73	122	BUS PT	---	415/110V	GE	F650	---	G1
74	123	INCOMER-C PCC-1 #0EB	630/1A	415/110V	GE	F650	630A	DAE1
415V UB EMG PCC 0EB.								
75	1	UB MCC1 EMG SEC	630/1A	415/110V	GE	F650	630A	DAE-O/G
76	2	UB MCC3 EMG SEC	630/1A	415/110V	GE	F650	630A	DAE-O/G
77	3	SPARE	630/1A	415/110V	GE	F650	630A	DAE-O/G
78	5	BUS PT A	---	415/110V	GE	F650	---	G1
79	6	DG INCOMER FROM UB EMG DG	630/1A	415/110V	GE	F650	630A	DG (I/C)
80	6	DG INCOMER FROM UB EMG DG	630/1A	415/110V	GE	F650	630A	DG (B/C)
81	7	BUS COUPLER	630/1A	415/110V	GE	F650	630A	DG (I/C-H)
82	8	INCOMER FROM TRF 0EB T01	---	415/110V	GE	F650	---	G1
83	9	BUS PT B	630/1A	415/110V	GE	F650	630A	DAE-O/G
84	11	UB MCC2 EMG SEC	630/1A	415/110V	GE	F650	630A	DAE-O/G
85	12	UB MCC4 EMG SEC	630/1A	415/110V	GE	F650	630A	DAE-O/G
415V UB MCC-2 2HC								
86	55	BUS PT	---	415/110V	GE	F650	---	G1
87	56	INCOMER-A UB PMCC-1 #0DB	630/1A	415/110V	GE	F650	630A	DAET1
88	57	BUS COUPLER	630/1A	415/110V	GE	F650	630A	DAE1/BC1
89	58	INCOMER-B UB PMCC-1 #0DB	630/1A	415/110V	GE	F650	630A	DAET1
90	59	BUS PT	---	415/110V	GE	F650	---	G1
91	121	BUS COUPLER	630/1A	415/110V	GE	F650	630A	DAE1/BC1
92	122	BUS PT	---	415/110V	GE	F650	---	G1
93	123	INCOMER-C PCC-1 #0EB	630/1A	415/110V	GE	F650	630A	DAE1

BAY DETAILS -- DATA CONCENTRATOR RING-A (CCR CONTROL ROOM)								
Sr. No.	Feeder No.	Feeder Name	CT Ratio (Amps)	PT Ratio (Vac)			Rating	Feeder Type
					Make	Model		
415V ESP PCC-1 # 1DB								
94	1	FEEDER-1	---	---	---	---	---	ESP- I/C
95	2	FEEDER-2	---	---	---	---	---	ESP- B/C
96	3	FEEDER-3	---	---	---	---	---	ESP- I/C
415V ESP PCC-2 # 2DB								
97	1	FEEDER-1	---	---	---	---	---	ESP- I/C
98	2	FEEDER-2	---	---	---	---	---	ESP- B/C
99	3	FEEDER-3	---	---	---	---	---	ESP- I/C
415V ESP PCC-3 # 3DB								
100	1	FEEDER-1	---	---	---	---	---	ESP- I/C
101	2	FEEDER-2	---	---	---	---	---	ESP- B/C
102	3	FEEDER-3	---	---	---	---	---	ESP- I/C
415V ESP PCC-4 # 4DB								
103	1	FEEDER-1	---	---	---	---	---	ESP- I/C
104	2	FEEDER-2	---	---	---	---	---	ESP- B/C
105	3	FEEDER-3	---	---	---	---	---	ESP- I/C

BAY DETAILS -- DATA CONCENTRATOR RING-B (CCR CONTROL ROOM)								
Sr. No.	Feeder/ No.	Feeder Name	CT Ratio (Amps)	PT Ratio (Vac)			Rating	Feeder Type
					Make	Model		
415V UB MCC -3 3HC								
1	55	BUS PT	---	415/110V	GE	F650	---	G1
2	56	INCOMER-A PMCC-1	630/1A	415/110V	GE	F650	630A	DAET1
3	57	BUS COUPLER	630/1A	415/110V	GE	F650	630A	DAE1/BC1
4	58	INCOMER-B PMCC-1	630/1A	415/110V	GE	F650	630A	DAET1
5	59	BUS PT	---	415/110V	GE	F650	---	G1
6	121	BUS COUPLER	630/1A	415/110V	GE	F650	630A	DAE1/BC1
7	122	BUS PT	---	415/110V	GE	F650	---	G1
8	123	INCOMER-C PCC-1	630/1A	415/110V	GE	F650	630A	DAE1
415V GT PMCC # 3DA								
9	1	FEEDER-1	---	---	---	---	---	---
10	2	FEEDER-2	---	---	---	---	---	---
11	3	FEEDER-3	---	---	---	---	---	---
12	4	FEEDER-4	---	---	---	---	---	---
13	5	FEEDER-5	---	---	---	---	---	---
14	6	FEEDER-6	---	---	---	---	---	---
15	7	FEEDER-7	---	---	---	---	---	---
16	8	FEEDER-8	---	---	---	---	---	---
17	9	FEEDER-9	---	---	---	---	---	---
18	10	FEEDER-10	---	---	---	---	---	---
19	11	FEEDER-11	---	---	---	---	---	---
20	12	FEEDER-12	---	---	---	---	---	---
21	13	FEEDER-13	---	---	---	---	---	---
22	14	FEEDER-14	---	---	---	---	---	---
23	15	FEEDER-15	---	---	---	---	---	---
24	16	FEEDER-16	---	---	---	---	---	---
25	17	FEEDER-17	---	---	---	---	---	---
26	18	FEEDER-18	---	---	---	---	---	---
27	19	FEEDER-19	---	---	---	---	---	---
415V GT PMCC # 1DA								
28	1	FEEDER-1	---	---	---	---	---	---
29	2	FEEDER-2	---	---	---	---	---	---
30	3	FEEDER-3	---	---	---	---	---	---
31	4	FEEDER-4	---	---	---	---	---	---
32	5	FEEDER-5	---	---	---	---	---	---
33	6	FEEDER-6	---	---	---	---	---	---
34	7	FEEDER-7	---	---	---	---	---	---
35	8	FEEDER-8	---	---	---	---	---	---
36	9	FEEDER-9	---	---	---	---	---	---
37	10	FEEDER-10	---	---	---	---	---	---
38	11	FEEDER-11	---	---	---	---	---	---
39	12	FEEDER-12	---	---	---	---	---	---
40	13	FEEDER-13	---	---	---	---	---	---
41	14	FEEDER-14	---	---	---	---	---	---
42	15	FEEDER-15	---	---	---	---	---	---
43	16	FEEDER-16	---	---	---	---	---	---
44	17	FEEDER-17	---	---	---	---	---	---
45	18	FEEDER-18	---	---	---	---	---	---
46	19	FEEDER-19	---	---	---	---	---	---

BAY DETAILS -- DATA CONCENTRATOR RING-B (CCR CONTROL ROOM)								
Sr. No.	Feederl No.	Feeder Name	CT Ratio (Amps)	PT Ratio (Vac)			Rating	Feeder Type
					Make	Model		
415V EMG PCC 0EA								
47	28	ACE-LDB(CCR-BLDG)	200/1A	415/110V	GE	F650	200A	DAE-O/G
48	29	ACE-LDB(ESP-BLDG)	200/1	415/110V	GE	F650	200A	DAE-O/G
49	30	SPARE	200/1	415/110V	GE	F650	200A	DAE-O/G
50	31	EMG SEC STG PMCC-1(#4 DA)	400/1	415/110V	GE	F650	630A	DAE-O/G
51	32	EMG SEC GT PMCC-1(#1 DA)	1600/1A	415/110V	GE	F650	1600A	DAE-O/G
52	33	EMG SEC GT PMCC-2(#2 DA)	1600/1A	415/110V	GE	F650	1600A	DAE-O/G
53	34	SPARE	200/1A	415/110V	GE	F650	65KW	DM/PM
54	35	SPARE	630/1A	415/110V	GE	F650	630A	DAE-O/G
55	36	BUS PT	--	415/110V	GE	F650	--	G1
56	37	INCOMER-A FROM TRF 0EAT01	3000/1A	415/110V	GE	F650	3000A	DAET1
57	38	BUS COUPLER	3000/1A	415/110V	GE	F650		3000A
58	39	INCOMER-B FROM TRF 0EAT02	3000/1A	415/110V	GE	F650	3000A	DAET1
59	40	BUS PT	--	415/110V	GE	F650		--
60	41	EMG SEC STG PMCC-2	400/1A	415/110V	GE	F650	630A	DAE-O/G
61	42	EMG SEC GT PMCC-3	1600/1A	415/110V	GE	F650	1600A	DAE-O/G
62	43	SPARE	1600/1A	415/110V	GE	F650	1600A	DAE-O/G
63	44	ACW PUMP FOR BLACK START	200/1A	415/110V	GE	F650	65KW	DM/PM
64	45		ACE-LDB CCR BLDG	200/1A	415/110V	GE	F650	200A
65	46	ACE-LDB ESP BLDG	200/1A	415/110V	GE	F650	200A	DAE O/G
415V GT PMCC # 2DA								
66	1	FEEDER-1	---	---	---	---	---	---
67	2	FEEDER-2	---	---	---	---	---	---
68	3	FEEDER-3	---	---	---	---	---	---
69	4	FEEDER-4	---	---	---	---	---	---
70	5	FEEDER-5	---	---	---	---	---	---
71	6	FEEDER-6	---	---	---	---	---	---
72	7	FEEDER-7	---	---	---	---	---	---
73	8	FEEDER-8	---	---	---	---	---	---
74	9	FEEDER-9	---	---	---	---	---	---
75	10	FEEDER-10	---	---	---	---	---	---
76	11	FEEDER-11	---	---	---	---	---	---
77	12	FEEDER-12	---	---	---	---	---	---
78	13	FEEDER-13	---	---	---	---	---	---
79	14	FEEDER-14	---	---	---	---	---	---
80	15	FEEDER-15	---	---	---	---	---	---
81	16	FEEDER-16	---	---	---	---	---	---
82	17	FEEDER-17	---	---	---	---	---	---
83	18	FEEDER-18	---	---	---	---	---	---
84	19	FEEDER-19	---	---	---	---	---	---

BAY DETAILS -- DATA CONCENTRATOR RING-B (CCR CONTROL ROOM)								
Sr. No.	Feederl No.	Feeder Name	CT Ratio (Amps)	PT Ratio (Vac)			Rating	Feeder Type
					Make	Model		
415V STATION PCC 0DA								
85	28	ACN LDB	200/1A	415/110V	GE	F650	200A	DAE-O/G
86	29	ACN LDB	200/1A	415/110V	GE	F650	200A	DAE-O/G
87	30	ACN LDB	200/1A	415/110V	GE	F650	200A	DAE-O/G
88	31	SPARE	200/1A	415/110V	GE	F650	200A	DAE-O/G
89	32	AC&VENT MCC #0SB	400/1A	415/110V	GE	F650	400A	DAE-O/G
90	33	STATION Serv. MCC	630/1A	415/110V	GE	F650	630A	DAE-O/G
91	34	66kV GIS	630/1A	415/110V	GE	F650	630A	DAE-O/G
92	35	SPARE	630/1A	415/110V	GE	F650	630A	DAE-O/G
93	36	FOR IOCL USE	1250/1A	415/110V	GE	F650	1250A	DAE-O/G
94	37	BUS PT A	---	415/110V	GE	F650	---	G2
95	38	INCOMER-A FROM 0DAT01	4000/1A	415/110V	GE	F650	4000A	DAET1/IC
96	39	BUS COUPLER	4000/1A	415/110V	GE	F650	4000A	DAE1/BC
97	40	INCOMER-B FROM 0DAT02	4000/1A	415/110V	GE	F650	4000A	DAET1/IC
98	41	BUS PT B	---	415/110V	GE	F650	---	G2
99	42	FOR IOCL USE	1250/1A	415/110V	GE	F650	1250A	DAE-O/G
100	43	66kV GIS	630/1A	415/110V	GE	F650	630A	DAE-O/G
101	44	AC&VENT MCC #0SB	400/1A	415/110V	GE	F650	400A	DAE-O/G
102	45	STATION Serv. MCC	630/1A	415/110V	GE	F650	630A	DAE-O/G
103	46	SPARE	400/1A	415/110V	GE	F650	400A	DAE-O/G
104	47	ACN LDB	200/1A	415/110V	GE	F650	200A	DAE-O/G
105	48	ACN LDB	200/1A	415/110V	GE	F650	200A	DAE-O/G
106	49	ACN LDB	200/1A	415/110V	GE	F650	200A	DAE-O/G
415V UB MCC - 4 4HC								
107	55	BUS PT	---	415/110V	GE	F650	---	G1
108	56	INCOMER-A FROM UB PMCC-2 #0DC	630/1A	415/110V	GE	F650	630A	DAET1
109	57	BUS COUPLER	630/1A	415/110V	GE	F650	630A	DAE1(B/C-1)
110	58	INCOMER-B FROM UB PMCC-2 #0DC	630/1A	415/110V	GE	F650	630A	DAET1
111	59	BUS PT	---	415/110V	GE	F650	---	G1
112	121	BUS COUPLER	630/1A	415/110V	GE	F650	630A	DAE1(B/C-1-EMG)
113	122	BUS PT	---	415/110V	GE	F650	---	G1
114	123	INCOMER-C FROM UB PCC-1 #0EB	630/1A	415/110V	GE	F650	630A	DAE1

INPUT/OUTPUT SIGNALS FOR BUS PT G1 G2							
Sr. No.	Output Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	Voltage Abnormal F/B TO DCS/ECP	✓	✓	HIHI	✓	Operated	Reset
2	Voltage Normal F/B TO DCS/ECP	✓	✓	HIHI	✓	Operated	Reset
3	No Voltage F/B TO DCS/ECP	✓	✓	HIHI	✓	Operated	Reset
4	Spare Contact	✓				Operated	Reset
5	Bus PT Voltage<20%	✓				Operated	Reset
6	Bus PT Voltage<80% Command	✓				Operated	Reset
7	Spare Contact	✓				Operated	Reset
8	Under volatge (27) (LED)	✓	✓	HIHI	✓	Operated	Reset
9	Over volatge (95) (LED)	✓	✓	HIHI	✓	Operated	Reset
Protection Signals							
10	Under volatge (27)		✓	HIHI	✓	Operated	Reset
11	Over volatge (95)		✓	HIHI	✓	Operated	Reset
Analog Inputs							
12	Voltage R-Y (Vry)	✓					
13	Voltage Y-B (Vyb)	✓					
14	Voltage B-R (Vbr)	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	11
Digital Outputs	0	0
Analog Inputs	0	3

INPUT/OUTPUT SIGNALS FOR PCC OUTGOING BKR FOR UB PCC							
Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm	Events	ON State	OFF State
Status Signals							
1	CB IN TEST	✓			✓	Operated	Reset
2	UB O/G BREAKER OPEN	✓			✓	Operated	Reset
3	DDCMIS CLOSING	✓			✓	Operated	Reset
4	CB IN SERVICE					Operated	Reset
5	UB-1 ID/FD FAN BKR. CLOSED	✓			✓	Operated	Reset
6	CB CLOSE	✓			✓	Operated	Reset
7	CB IN SWGR	✓			✓	Operated	Reset
8	CLOSE(TNC SW.)	✓			✓	Operated	Reset
9	DDCIMS TRIPPING	✓	✓	HIHI	✓	Operated	Reset
10	TRIP (TNC SWITCH)	✓	✓	HIHI	✓	Operated	Reset
11	O/C TRIP (LED)	✓			✓	Operated	Reset
12	E/F TRIP (LED)	✓			✓	Operated	Reset
13	U/V TRIP (LED)	✓			✓	Operated	Reset
14	PROTECTION TRIP/86 TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
15	CB CLOSE (LED)	✓			✓	Operated	Reset
16	CB OPEN (LED)	✓			✓	Operated	Reset
17	SPARE (LED)	✓			✓	Operated	Reset
18	CB TCS HEALTHY (LED)	✓	✓	HIHI	✓	Operated	Reset
Protection Signals							
19	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HI	✓	Operated	Reset
20	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HI	✓	Operated	Reset
21	UNDER VOLTAGE(27)		✓	HI	✓	Operated	Reset
Analog Inputs							
22	Voltage R-Y (Vry)	✓					
23	Voltage Y-B (Vyb)	✓					
24	Voltage B-R (Vbr)	✓					
25	Current R (Ir)	✓					
26	Current Y (Iy)	✓					
27	Current B (Ib)	✓					
28	Current N (In)	✓					
29	Active Power (P)	✓					
30	Reactive Power (Q)	✓					
31	Power Factor (Pf)	✓					
32	Frequency (Hz)	✓					
33	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	21
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR PCC PMCC OUTGOING BKR							
Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm	Events	ON State	OFF State
Status Signals							
1	CB IN TEST	✓			✓	Operated	Reset
2	DDCIMS CLOSING	✓			✓	Operated	Reset
3	CB IN SERVICE	✓			✓	Operated	Reset
4	CB IN REMOTE					Operated	Reset
5	CB CLOSE	✓			✓	Operated	Reset
6	CB IN SGWR	✓			✓	Operated	Reset
7	CLOSE FROM TNC SW	✓			✓	Operated	Reset
8	DDCIMS TRIPPING	✓			✓	Operated	Reset
9	TRIP (TNC SWITCH)	✓	✓	HIHI	✓	Operated	Reset
10	O/C TRIP (LED)	✓			✓	Operated	Reset
11	E/F TRIP (LED)	✓			✓	Operated	Reset
12	U/V TRIP (LED)	✓			✓	Operated	Reset
13	PROTECTION TRIP/86 TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
14	CB CLOSE (LED)	✓			✓	Operated	Reset
15	CB OPEN (LED)	✓			✓	Operated	Reset
16	CB TCS HEALTHY (LED)	✓			✓	Operated	Reset
Protection Signals							
17	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HI	✓	Operated	Reset
18	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HI	✓	Operated	Reset
19	UNDER VOLTAGE(27)		✓	HI	✓	Operated	Reset
Analog Inputs							
20	Voltage R-Y (Vry)	✓					
21	Voltage Y-B (Vyb)	✓					
22	Voltage B-R (Vbr)	✓					
23	Current R (Ir)	✓					
24	Current Y (Iy)	✓					
25	Current B (Ib)	✓					
26	Current N (In)	✓					
27	Active Power (P)	✓					
28	Reactive Power (Q)	✓					
29	Power Factor (Pf)	✓					
30	Frequency (Hz)	✓					
31	Energv Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	19
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR PCC_PMCC INCOMER-B							
Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	I/C-B IN TEST	✓			✓	Operated	Reset
2	I/C-B CLOSED	✓			✓	Operated	Reset
3	DDCMIS CLOSING	✓			✓	Operated	Reset
4	U/S BREAKER 86, OPRETED	✓	✓	HIHI	✓	Operated	Reset
5	CLOSED (TNC/SWITCH)	✓			✓	Operated	Reset
6	TRIP (TNC/SWITCH)	✓	✓	HIHI	✓	Operated	Reset
7	I/C-B IN SERVICE	✓			✓	Operated	Reset
8	86, RESET,B/C	✓			✓	Operated	Reset
9	TSS, I/C-B, (DDCMIS)/(ECP)	✓			✓	Operated	Reset
10	SYNC SS, I/C-B (DDCMIS)/(ECP)	✓			✓	Operated	Reset
11	U/S CB CLOSED	✓			✓	Operated	Reset
12	I/C-B IN REMOTE	✓			✓	Operated	Reset
13	LINE PT MCB OFF	✓			✓	Operated	Reset
14	SYNC, CLOSED (ECP)	✓	✓	HIHI	✓	Operated	Reset
15	DB CLOSING (ECP)	✓	✓	HIHI	✓	Operated	Reset
16	B/C CLOSED	✓	✓	HIHI	✓	Operated	Reset
17	I/C-A CLOSED	✓			✓	Operated	Reset
18	I/C-B IN SWGR	✓			✓	Operated	Reset
19	I/C IN-A LINE PT (V>80%)	✓			✓	Operated	Reset
20	TRIP COMMAND (DDCMIS)/(ECP)	✓			✓	Operated	Reset
21	O/C TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
22	E/F TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
23	U/V TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
24	U/S 86 TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
25	PROTECTION TRIP/86 TRIP (LED))	✓	✓	HIHI	✓	Operated	Reset
26	CB CLOSE (LED)	✓			✓	Operated	Reset
27	CB OPEN (LED)	✓			✓	Operated	Reset
28	CB TCS UNHEALTHY / HEALTHY (LED)	✓			✓	Operated	Reset
Protection Signals							
29	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HIHI	✓	Operated	Reset
30	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HIHI	✓	Operated	Reset
31	UNDER VOLTAGE(27)		✓	HI	✓	Operated	Reset
Analog Inputs							
32	Voltage R-Y (Vry)	✓					
33	Voltage Y-B (Vyb)	✓					
34	Voltage B-R (Vbr)	✓					
35	Current R (Ir)	✓					
36	Current Y (Iy)	✓					
37	Current B (Ib)	✓					
38	Current N (In)	✓					
39	Active Power (P)	✓					
40	Reactive Power (Q)	✓					
41	Power Factor (Pf)	✓					
42	Frequency (Hz)	✓					
43	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	31
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR PCC-PMCC INCOMER-C							
Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	I/C-C IN TEST	✓			✓	Operated	Reset
2	I/C-C IN CLOSED	✓			✓	Operated	Reset
3	DDCMIS CLOSED	✓			✓	Operated	Reset
4	U/S BREAKER 86, OPRETED	✓			✓	Operated	Reset
5	CLOSED (TNC/SWITCH)	✓			✓	Operated	Reset
6	I/C-C IN SERVICE	✓			✓	Operated	Reset
7	EMG B/C CLOSEED	✓			✓	Operated	Reset
8	86, RESET, EM, B/C	✓			✓	Operated	Reset
9	TSS,IN I/C-C, (DDCMIS)/(ECP)	✓	✓	HI	✓	Operated	Reset
10	U/S CB CLOSED	✓			✓	Operated	Reset
11	SYNC, SS, I/C-C (DDCMIS)/(ECP)	✓			✓	Operated	Reset
12	SYNC CLOSING (ECP)	✓			✓	Operated	Reset
13	LINE PT MCB OFF	✓			✓	Operated	Reset
14	DB CLOSING (ECP)	✓			✓	Operated	Reset
15	I/C-C IN SWGR	✓			✓	Operated	Reset
16	I/C-C IN REMOTE	✓			✓	Operated	Reset
17	TRIP COMMAND (DDCMIS)/(ECP)	✓			✓	Operated	Reset
18	TRIP (TNC SWITCH)	✓			✓	Operated	Reset
19	A/M SS IN AUTO (DDCMIS)/(ECP)	✓	✓	HIHI	✓	Operated	Reset
20	A/M SS IN MANUAL (DDCMIS)/(ECP)	✓	✓	HIHI	✓	Operated	Reset
21	O/C TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
22	E/F TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
23	U/V TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
24	U/S 86 TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
25	PROTECTION TRIP/86 TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
26	CB CLOSE (LED)	✓			✓	Operated	Reset
27	CB OPEN (LED)	✓			✓	Operated	Reset
28	CB TCS HEALTHY (LED)	✓			✓	Operated	Reset
Protection Signals							
29	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HIHI	✓	Operated	Reset
30	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HIHI	✓	Operated	Reset
31	UNDER VOLTAGE(27)		✓	HIHI	✓	Operated	Reset
Analog Inputs							
32	Voltage R-Y (Vry)	✓					
33	Voltage Y-B (Vyb)	✓					
34	Voltage B-R (Vbr)	✓					
35	Current R (Ir)	✓					
36	Current Y (Iy)	✓					
37	Current B (Ib)	✓					
38	Current N (In)	✓					
39	Active Power (P)	✓					
40	Reactive Power (Q)	✓					
41	Power Factor (Pf)	✓					
42	Frequency (Hz)	✓					
43	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	31
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR PCC_PMCC INCOMER-A							
Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	I/C-A CB IN TEST	✓			✓	Operated	Reset
2	I/C-A CB IN CLOSED	✓			✓	Operated	Reset
3	DDCMIS CLOSING	✓			✓	Operated	Reset
4	U/S BREAKER 86, OPRETED	✓			✓	Operated	Reset
5	CLOSED (TNC/SWITCH)	✓			✓	Operated	Reset
6	TRIP (TNC/SWITCH)	✓	✓	HIHI	✓	Operated	Reset
7	I/C A IN SERVICE	✓			✓	Operated	Reset
8	86, RESET,B/C	✓	✓	HIHI	✓	Operated	Reset
9	TSS, I/C-A, (DDCMIS)/(ECP)	✓	✓	HIHI	✓	Operated	Reset
10	SYNC, SS, I/C-A (DDCMIS)/(ECP)	✓			✓	Operated	Reset
11	U/S CB CLOSED	✓			✓	Operated	Reset
12	I/C-A IN REMOTE	✓			✓	Operated	Reset
13	LINE PT MCB OFF	✓	✓	HIHI	✓	Operated	Reset
14	SYNC, CLOSED (ECP)	✓			✓	Operated	Reset
15	DB CLOSED (ECP)	✓			✓	Operated	Reset
16	B/C CLOSED	✓			✓	Operated	Reset
17	I/C-B CLOSED	✓			✓	Operated	Reset
18	I/C-A IN SWGR	✓			✓	Operated	Reset
19	I/C IN-B LINE PT (V>80%)	✓			✓	Operated	Reset
20	TRIP COMMAND (DDCMIS)/(ECP)	✓	✓	HIHI	✓	Operated	Reset
21	O/C TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
22	E/F TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
23	U/V TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
24	U/S 86 TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
25	PROTECTION TRIP/86 TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
26	CB CLOSE (LED)	✓			✓	Operated	Reset
27	CB OPEN (LED)	✓			✓	Operated	Reset
28	CB TCS UNHEALTHY / HEALTHY (LED)	✓			✓	Operated	Reset
Protection Signals							
29	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HI	✓	Operated	Reset
30	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HI	✓	Operated	Reset
31	UNDER VOLTAGE(27)		✓	HIHI	✓	Operated	Reset
Analog Inputs							
32	Voltage R-Y (Vry)	✓					
33	Voltage Y-B (Vyb)	✓					
34	Voltage B-R (Vbr)	✓					
35	Current R (Ir)	✓					
36	Current Y (Iy)	✓					
37	Current B (Ib)	✓					
38	Current N (In)	✓					
39	Active Power (P)	✓					
40	Reactive Power (Q)	✓					
41	Power Factor (Pf)	✓					
42	Frequency (Hz)	✓					
43	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	31
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR UB EMEG.PCC (DG IC-H)

Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	U/S BKR CLOSED	✓			✓	Operated	Reset
2	DDCMIS CLOSING	✓			✓	Operated	Reset
3	86 RESET (U/S BKR)	✓			✓	Operated	Reset
4	I/C H IN TEST	✓			✓	Operated	Reset
5	I/C H IN SERVICE	✓			✓	Operated	Reset
6	D/G I/C CLOSED	✓			✓	Operated	Reset
7	TSS,IN I/C-H, (DDCMIS)/(ECP)	✓			✓	Operated	Reset
8	SYNC, SS, I/C-H (DDCMIS)/(ECP)	✓	✓	HIHI	✓	Operated	Reset
9	I/C-H CLOSED	✓			✓	Operated	Reset
10	I/C-H IN REMOTE	✓			✓	Operated	Reset
11	ECP SYNC CLOSING	✓			✓	Operated	Reset
12	ECP DB CLOSING	✓			✓	Operated	Reset
13	0EB SECTION-B BUS VOLT<20%	✓			✓	Operated	Reset
14	LINE PT MCB OFF	✓			✓	Operated	Reset
15	I/C-H IN SWGR	✓			✓	Operated	Reset
16	DG B/C CLOSED	✓			✓	Operated	Reset
17	86 RESET DG B/C	✓			✓	Operated	Reset
18	TRIP FROM DG AUTO CLOSING	✓			✓	Operated	Reset
19	CLOSE (TNC SWITCH)	✓			✓	Operated	Reset
20	REMOTE TRIP (DDCIMS)/(ECP)						
21	TRIP TNC SWITCH						
22	O/C TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
23	E/F TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
24	U/V TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
25	PROTECTION TRIP/86 TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
26	CB CLOSE (LED)	✓			✓	Operated	Reset
27	CB OPEN (LED)	✓			✓	Operated	Reset
28	CB TCS UNHEALTHY / HEALTHY (LED)	✓			✓	Operated	Reset
Protection Signals							
29	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HI	✓	Operated	Reset
30	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HIHI	✓	Operated	Reset
31	UNDER VOLTAGE(27)		✓	HIHI	✓	Operated	Reset
Analog Inputs							
32	Voltage R-Y (Vry)	✓					
33	Voltage Y-B (Vyb)	✓					
34	Voltage B-R (Vbr)	✓					
35	Current R (Ir)	✓					
36	Current Y (Iy)	✓					
37	Current B (Ib)	✓					
38	Current N (In)	✓					
39	Active Power (P)	✓					
40	Reactive Power (Q)	✓					
41	Power Factor (Pf)	✓					
42	Frequency (Hz)	✓					
43	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	31
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR UB EMEG.PCC (DG I_C)

Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	EM I/C UB MCC-1 CLOSED	✓			✓	Operated	Reset
2	DDCIMS CLOSING	✓			✓	Operated	Reset
3	DG I/C IN TEST	✓			✓	Operated	Reset
4	DG I/C IN SERVICE	✓			✓	Operated	Reset
5	DG I/C CLOSED	✓			✓	Operated	Reset
6	TSS IN I/C -DG (DDCIMS)/(ECP)	✓			✓	Operated	Reset
7	SYNC SS IN I/C-DG (DDCIMS)/ECP	✓			✓	Operated	Reset
8	I/C-H CLOSED	✓			✓	Operated	Reset
9	UB EM PCC V <20% SEC-B	✓	✓	HIHI	✓	Operated	Reset
10	I/C-DG IN REMOTE	✓			✓	Operated	Reset
11	ECP SYNC CLOSING	✓			✓	Operated	Reset
12	ECP DB CLOSING	✓			✓	Operated	Reset
13	I/C-DG IN SWGR	✓			✓	Operated	Reset
14	DG B/C CLOSED	✓			✓	Operated	Reset
15	86 RESET DG B/C	✓			✓	Operated	Reset
16	CLOSED TNC SWITCH	✓			✓	Operated	Reset
17	UB MCC EMG SEC VOLT <80%	✓			✓	Operated	Reset
18	LINE PT MCB OFF	✓			✓	Operated	Reset
19	DIFF RELAY OPERATED	✓			✓	Operated	Reset
20	REMOTE TRIP -DDCIMS/ECP	✓			✓	Operated	Reset
21	TRIP TNC SWITCH	✓			✓	Operated	Reset
22	A/M MANUAL SWITCH IN AUTO(DDCIMS/ECP)						
23	A/M MANUAL SWITCH IN MANUAL(DDCIMS/ECP)						
24	O/C TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
25	E/F TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
26	U/V TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
27	PROTECTION TRIP/86 TRIP (LED)	✓	✓	HIHI	✓	Operated	Reset
28	CB CLOSE (LED)	✓			✓	Operated	Reset
29	CB OPEN (LED)	✓			✓	Operated	Reset
30	CB TCS UNHEALTHY / HEALTHY (LED)	✓			✓	Operated	Reset
Protection Signals							
31	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HI	✓	Operated	Reset
32	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HIHI	✓	Operated	Reset
33	UNDER VOLTAGE(27)		✓	HIHI	✓	Operated	Reset
Analog Inputs							
34	Voltage R-Y (Vry)	✓					
35	Voltage Y-B (Vyb)	✓					
36	Voltage B-R (Vbr)	✓					
37	Current R (Ir)	✓					
38	Current Y (Iy)	✓					
39	Current B (Ib)	✓					
40	Current N (In)	✓					
41	Active Power (P)	✓					
42	Reactive Power (Q)	✓					
43	Power Factor (Pf)	✓					
44	Frequency (Hz)	✓					
45	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	33
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR Motor Feeder DM_PM

Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	CB IN TEST	✓			✓	Opearated	Reset
2	CB IN SERVICE	✓			✓	Opearated	Reset
3	CB IN REMOTE	✓			✓	Opearated	Reset
4	DDCMIS CLOSING	✓	✓	HIHI	✓	Opearated	Reset
5	CB IN SWGR	✓			✓	Opearated	Reset
6	CB CLOSE	✓			✓	Opearated	Reset
7	EM. PB NOT OPTD (FROM LPB)	✓			✓	Opearated	Reset
8	CLOSE (TNC SW.)	✓			✓	Opearated	Reset
9	DDCMIS TRPING	✓			✓	Opearated	Reset
10	EM. PB TRIP	✓			✓	Opearated	Reset
11	TRIP (TNC SWITCH)	✓			✓	Opearated	Reset
12	PROCESS TRIP	✓			✓	Opearated	Reset
13	O/C TRIP (LED)	✓	✓	HIHI	✓	Opearated	Reset
14	E/F TRIP (LED)	✓	✓	HIHI	✓	Opearated	Reset
15	U/V TRIP (LED)	✓	✓	HIHI	✓	Opearated	Reset
16	THERMAL OVER LOAD TRIP (LED)	✓	✓	HIHI	✓	Opearated	Reset
17	PROTECTION TRIP/86 TRIP (LED)	✓	✓	HIHI	✓	Opearated	Reset
18	NEG SEQ O/C (LED)	✓			✓	Opearated	Reset
19	LOAD-JAM TRIP (LED)	✓			✓	Opearated	Reset
20	CB TCS UNHEALTHY / HEALTHY (LED)	✓			✓	Opearated	Reset
21	CB CLOSE (LED)	✓			✓	Opearated	Reset
22	CB OPEN (LED)	✓			✓	Opearated	Reset
Protection Signals							
23	INST. OVERCURRENT ELEMENT (50)		✓	HI	✓	Operated	Reset
24	INST. NEUTRAL TIME CURRENT ELEMENT (50N)		✓	HI	✓	Operated	Reset
25	UNDER VOLTAGE(27)		✓	HIHI	✓	Operated	Reset
26	THERMAL OVER LOAD ALARM/WARNING ELEMENT 49		✓	HIHI	✓	Operated	Reset
27	THERMAL OVER LOAD TRIP ELEMENT		✓	HIHI	✓	Operated	Reset
28	DEFINITE -TIME NEGATIVE -SEQUENCE OVERCUEEENT ELEMENT (NEGATIVE SEQUENCE) 50_2		✓	HIHI	✓	Operated	Reset
29	LOAD-JAM ALARAM/WARNING ELEMENT		✓	HIHI	✓	Operated	Reset
30	LOAD-JAM TRIP ELEMENT		✓	HIHI	✓	Operated	Reset
Analog Inputs							
31	Voltage R-Y (Vry)	✓					
32	Voltage Y-B (Vyb)	✓					
33	Voltage B-R (Vbr)	✓					
34	Current R (Ir)	✓					
35	Current Y (Iy)	✓					
36	Current B (Ib)	✓					
37	Current N (In)	✓					
38	Active Power (P)	✓					
39	Reactive Power (Q)	✓					
40	Power Factor (Pf)	✓					
41	Frequency (Hz)	✓					
42	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	30
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR BUS COUPLER

Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	B/C IN TEST	✓			✓	Opearated	Reset
2	B/C IN SERVICE	✓			✓	Opearated	Reset
3	B/C IN REMOTE	✓			✓	Opearated	Reset
4	B/C IN SWGR	✓	✓	HIHI	✓	Opearated	Reset
5	I/C-B CLOSED	✓			✓	Opearated	Reset
6	86 RESET I/C-B	✓			✓	Opearated	Reset
7	DDCIMS CLOSING	✓			✓	Opearated	Reset
8	B/C CLOSED	✓			✓	Opearated	Reset
9	I/C-A CLOSED	✓			✓	Opearated	Reset
10	86 RESET I/C-A	✓			✓	Opearated	Reset
11	TSS IN B/C (DDCIMS)/(ECP)	✓			✓	Opearated	Reset
12	SYNC.SS IN B/C (DDCIMS)/(ECP)	✓			✓	Opearated	Reset
13	A/M SS IN MANUAL (DDCIMS/ECP)	✓			✓	Opearated	Reset
14	A/M SS IN AUTO (DDCIMS/ECP)	✓			✓	Opearated	Reset
15	SYNC CLOSING (ECP)	✓	✓	HIHI	✓	Opearated	Reset
16	DB CLOSING (ECP)	✓			✓	Opearated	Reset
17	CLOSE TNC SWITCH	✓			✓	Opearated	Reset
18	REMOTE TRIP (DDCIMS)/(ECP)	✓			✓	Opearated	Reset
19	TRIP (TNC SWITCH)	✓			✓	Opearated	Reset
20	O/V TRIP(LED)	✓	✓	HIHI	✓	Opearated	Reset
21	U/V TRIP(LED)	✓	✓	HIHI	✓	Opearated	Reset
22	CB TCS UNHEALTHY / HEALTHY (LED)	✓	✓	HIHI	✓	Opearated	Reset
23	CB CLOSE (LED)						
24	CB OPEN (LED)	✓	✓	HIHI	✓	Opearated	Reset
Protection Signals							
25	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HI	✓	Operated	Reset
26	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HI	✓	Operated	Reset
27	UNDER VOLTAGE(27)		✓	HIHI	✓	Operated	Reset
Analog Inputs							
28	Voltage R-Y (Vry)	✓					
29	Voltage Y-B (Vyby)	✓					
30	Voltage B-R (Vbr)	✓					
31	Current R (Ir)	✓					
32	Current Y (Iy)	✓					
33	Current B (Ib)	✓					
34	Current N (In)	✓					
35	Active Power (P)	✓					
36	Reactive Power (Q)	✓					
37	Power Factor (Pf)	✓					
38	Frequency (Hz)	✓					
39	Enerav Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	27
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR BUS COUPLER PCC PMCC EMERGENCY

Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	EM B/C IN TEST	✓			✓	Opearated	Reset
2	DDCIMS CLOSING	✓			✓	Opearated	Reset
3	EM B/C IN SERVICE	✓			✓	Opearated	Reset
4	86 RESET I/C-B	✓	✓	HIHI	✓	Opearated	Reset
5	86 RESET I/C-C	✓			✓	Opearated	Reset
6	EMG B/C IN REMOTE	✓			✓	Opearated	Reset
7	I/C -C CLOSED	✓			✓	Opearated	Reset
8	I/C-B CLOSED	✓			✓	Opearated	Reset
9	I/C-A CLOSED	✓			✓	Opearated	Reset
10	TSS IN EM B/C (DDCIMS)	✓			✓	Opearated	Reset
11	TSS IN EM B/C (ECP)	✓			✓	Opearated	Reset
12	EM B/C IN SWGR	✓			✓	Opearated	Reset
13	SYNC CLOSING (ECP)	✓			✓	Opearated	Reset
14	SYNC SS IN EM B/C (DDCIMS)/SYNC SS IN EM B/C (ECP)	✓			✓	Opearated	Reset
15	CB CLOSING (ECP)	✓	✓	HIHI	✓	Opearated	Reset
16	CLOSE TNC SWITCH	✓			✓	Opearated	Reset
17	EM B/C CLOSED	✓			✓	Opearated	Reset
18	B/C CLOSED	✓			✓	Opearated	Reset
19	REMOTE TRIPPING	✓			✓	Opearated	Reset
20	TRIP (TNC SWITCH)	✓			✓	Opearated	Reset
21	PROTECTION TRIP (LED)	✓			✓	Opearated	Reset
22	OVER CURRENT TRIP (LED)	✓			✓	Opearated	Reset
23	EARTH FAULT TRIP(LED)	✓			✓	Opearated	Reset
24	CB TCS UNHEALTHY / HEALTHY (LED)	✓			✓	Opearated	Reset
25	CB OPEN (LED)	✓			✓	Opearated	Reset
26	CB CLOSE (LED)	✓			✓	Opearated	Reset
Protection Signals							
27	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HI	✓	Operated	Reset
28	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HI	✓	Operated	Reset
29	UNDER VOLTAGE(27)		✓	HIHI	✓	Operated	Reset
Analog Inputs							
30	Voltage R-Y (Vry)	✓					
31	Voltage Y-B (Vyb)	✓					
32	Voltage B-R (Vbr)	✓					
33	Current R (Ir)	✓					
34	Current Y (Iy)	✓					
35	Current B (Ib)	✓					
36	Current N (In)	✓					
37	Active Power (P)	✓					
38	Reactive Power (Q)	✓					
39	Power Factor (Pf)	✓					
40	Frequency (Hz)	✓					
41	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	29
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR EMERGENCY DG BUS COUPLER

Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	DG B/C IN TEST	✓			✓	Opearated	Reset
2	DG B/C IN SERVICE	✓			✓	Opearated	Reset
3	DG B/C IN REMOTE	✓			✓	Opearated	Reset
4	DG B/C IN SWGR	✓	✓	HIHI	✓	Opearated	Reset
5	DG B/C CLOSED	✓			✓	Opearated	Reset
6	REMOTE CLOSING (ECP)/(DDCIMS)	✓			✓	Opearated	Reset
7	CLOSE TNC SWITCH	✓			✓	Opearated	Reset
8	REMOTE TRIP (DDCIMS)/(ECP)	✓			✓	Opearated	Reset
9	TRIP TNC SWITCH	✓			✓	Opearated	Reset
10	I/C-H CLOSED	✓			✓	Opearated	Reset
11	PROTECTION TRIP (LED)	✓			✓	Opearated	Reset
12	OVER CURRENT TRIP (LED)	✓			✓	Opearated	Reset
13	EARTH FAULT TRIP(LED)	✓	✓	HIHI	✓	Opearated	Reset
14	CB TCS UNHEALTHY / HEALTHY (LED)	✓			✓	Opearated	Reset
15	CB OPEN (LED)	✓			✓	Opearated	Reset
16	CB CLOSE (LED)	✓			✓	Opearated	Reset
Protection Signals							
17	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HI	✓	Operated	Reset
18	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HI	✓	Operated	Reset
19	UNDER VOLTAGE(27)		✓	HIHI	✓	Operated	Reset
Analog Inputs							
20	Voltage R-Y (Vry)	✓					
21	Voltage Y-B (Vyb)	✓					
22	Voltage B-R (Vbr)	✓					
23	Current R (Ir)	✓					
24	Current Y (Iy)	✓					
25	Current B (Ib)	✓					
26	Current N (In)	✓					
27	Active Power (P)	✓					
28	Reactive Power (Q)	✓					
29	Power Factor (Pf)	✓					
30	Frequency (Hz)	✓					
31	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	19
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR ESP INCOMER

Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	I/C-A IN TEST	✓			✓	Opearated	Reset
2	I/C-A CLOSED	✓			✓	Opearated	Reset
3	DDCIMS CLOSING	✓			✓	Opearated	Reset
4	86 OPERATED	✓	✓	HIHI	✓	Opearated	Reset
5	CLOSE TNC SWITCH	✓			✓	Opearated	Reset
6	TRIP FROM TNC SWITCH	✓			✓	Opearated	Reset
7	INCOMER-A IN SERVICE						
8	86 RESET B/C	✓			✓	Opearated	Reset
9	TSS IN INC-A	✓			✓	Opearated	Reset
10	UPSTREAM CB CLOSED	✓			✓	Opearated	Reset
11	I/C-A IN REMOTE	✓			✓	Opearated	Reset
12	B/C CLOSED	✓			✓	Opearated	Reset
13	I/C-B CLOSED	✓			✓	Opearated	Reset
14	I/C-A IN SWGR	✓			✓	Opearated	Reset
15	I/C-B LINE PT(V>80%)	✓			✓	Opearated	Reset
16	REMOTE TRIP						
Protection Signals							
17	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HI	✓	Operated	Reset
18	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HI	✓	Operated	Reset
19	UNDER VOLTAGE(27)		✓	HIHI	✓	Operated	Reset
Analog Inputs							
20	Voltage R-Y (Vry)	✓					
21	Voltage Y-B (Vyb)	✓					
22	Voltage B-R (Vbr)	✓					
23	Current R (Ir)	✓					
24	Current Y (Iy)	✓					
25	Current B (Ib)	✓					
26	Current N (In)	✓					
27	Active Power (P)	✓					
28	Reactive Power (Q)	✓					
29	Power Factor (Pf)	✓					
30	Frequency (Hz)	✓					
31	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	19
Digital Outputs	0	0
Analog Inputs	0	12

INPUT/OUTPUT SIGNALS FOR ESP BUS COUPLER

Sr. No.	Input Description	Input Availability on SCADA					
		Display	Alarm	Alarm Priority	Events	ON State Description	OFF State Description
Status Signals							
1	B/C IN TEST	✓			✓	Opearated	Reset
2	B/C IN SERVICE	✓			✓	Opearated	Reset
3	B/C IN REMOTE	✓			✓	Opearated	Reset
4	B/C IN SWGR	✓	✓	HIHI	✓	Opearated	Reset
5	SEC-A BUS VOLT >80%						
6	SEC-B BUS VOLT >80%						
7	I/C-B CLOSED	✓			✓	Opearated	Reset
8	86 RESET I/C-B	✓			✓	Opearated	Reset
9	DDCIMS CLOSING	✓			✓	Opearated	Reset
10	B/C CLOSED	✓			✓	Opearated	Reset
11	I/C-A CLOSED	✓			✓	Opearated	Reset
12	86 RESET I/C-A	✓			✓	Opearated	Reset
13	TSS IN B/C	✓			✓	Opearated	Reset
14	SYNC SS IN B/C	✓			✓	Opearated	Reset
15	A/M SWITCH IN AUTO/MANUAL	✓			✓	Opearated	Reset
16	CLOSE TNC SWITCH	✓			✓	Opearated	Reset
17	REMOTE TRIP	✓	✓	HIHI	✓	Opearated	Reset
Protection Signals							
16	DEFINITE-TIME OVERCURRENT ELEMENT 1(51)		✓	HI	✓	Operated	Reset
17	NEUTRAL TIME CURRENT ELEMENT (51N)		✓	HI	✓	Operated	Reset
18	UNDER VOLTAGE(27)		✓	HIHI	✓	Operated	Reset
Analog Inputs							
19	Voltage R-Y (Vry)	✓					
20	Voltage Y-B (Vyb)	✓					
21	Voltage B-R (Vbr)	✓					
22	Current R (Ir)	✓					
23	Current Y (Iy)	✓					
24	Current B (Ib)	✓					
25	Current N (In)	✓					
26	Active Power (P)	✓					
27	Reactive Power (Q)	✓					
28	Power Factor (Pf)	✓					
29	Frequency (Hz)	✓					
30	Energy Kwh	✓					

Total I/O Count	Hard	Soft
Digital Inputs	0	18
Digital Outputs	0	0
Analog Inputs	0	12