

ANNEXURE-4 TO PY55294

INPUT/OUTPUT SIGNALS LIST OF 33kV GAS INSULATED SWITCHGEAR

FOR INTERFACE WITH ECS & SCAP

PROJECT	75MW VISAKH REFINERY MODERNIZATION PROJECT (VRMP)
CUSTOMER	M/S HINDUSTAN PETROLEUM CORPORATION LIMITED,VIZAG,A.P
CONSULTANT	ENGINEERS INDIA LIMITED

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1.0 GENERAL NOTE

- 1.0.1 Signal Type is identified as SOFT (digital data transferred over LAN) or HARD (voltage/ current routed via Potential Free Contacts). INPUT or OUTPUT designation is with respect to upstream system (HMI/ DCS/ ECS/ SCADA/ Control Panel/ PLC as applicable).
- 1.0.2 The Vendor is required to provide the *Address Details* in case of *SOFT Signals* and *Terminal Details* in case of *HARD Signals* for each of the list items during Detailed Engineering Stage.

2.0 ECS IO LIST

- 2.0.1 The Electrical Control Philosophy (attached in Annexure - 2B) shall be followed. The IO Signals for ECS are given below. All these signals exclusively wired upto the TBs for further connectivity customer's RTU panels.
- 2.0.2 These signals shall also be provided on soft for further ECS communication through relay network.

33kV Switchgear Incomer I/O Signals

Type	Pt Type	Signal Description	Set condition Description	Reset Condition description	Remarks
AI	A	R phase current			Hardwired
AI	A	Y phase current			Hardwired
AI	A	B phase current			Hardwired
AI	W	3 phase real power			Hardwired
AI	R	3 phase reactive power			Hardwired
DI	S	CB in service &	Closed	Not closed	Hardwired
DI	S	CB in service &	Open	Not open	Hardwired
DI	D	Relay 86	Operated	Reset	Hardwired
DI	D	Relay 95	Operated	Reset	Hardwired
DI	D	Feeder trip on under voltage	Operated	Reset	Hardwired
DI	D	Unit transformer, if any, alarm	Operated	Reset	Hardwired
DI	D	Numerical Relay	Unhealthy	Healthy	
DI	D	Bus 1 isolator	closed	open	Hardwired
DI	D	Bus 2 isolator	closed	open	Hardwired
DO	C	Bus 1 isolator closed command	Activated	Reset	Hardwired
DO	C	Bus 1 isolator open command	Activated	Reset	Hardwired
DO	C	Bus 2 isolator closed command	Activated	Reset	Hardwired
DO	C	Bus 2 isolator open command	Activated	Reset	Hardwired
DO	C	Dead bus close from ECS	Activated	Reset	Hardwired
DO	C	Synch close from ECS	Activated	Reset	Hardwired
DO	C	Trip from ECS	Activated	Reset	Hardwired

33kV Switchgear Line VT

Type	Pt Type	Signal Description	Set condition Description	Reset Condition description	Remarks
AI	V	R-Y line voltage			Hardwired
AI	V	Y-B line voltage			Hardwired
AI	V	B-Rline voltage			Hardwired
AI	F	Line frequency			Hardwired
DI	D	Line VT MCB	Tripped	Closed	Hardwired
DI	D	Line	Dead	Not dead	Hardwired

33kV Switchgear Bus VT

Type	Pt Type	Signal Description	Set condition Description	Reset Condition description	Remarks
AI	V	R-Y Bus voltage			Hardwired
AI	V	Y-B Bus voltage			Hardwired
AI	V	B-R Bus voltage			Hardwired
AI	F	Bus frequency			Hardwired
DI	D	Bus VT MCB	Tripped	Closed	Hardwired
DI	D	Bus	Dead	Not dead	Hardwired
DI	D	Under frequency relay	Operated	Reset	Hardwired
DI	D	Df/dt relay	Operated	Reset	Hardwired
DI	D	Control supply	failed	Healthy	Hardwired

33kV Switchgear Bus Coupler/ Bus Sectionalizer

Type	Pt Type	Signal Description	Set condition Description	Reset Condition description	Remarks
AI	A	R phase current			Hardwired
AI	A	Y phase current			Hardwired
AI	A	B phase current			Hardwired
AI	W	3 phase real power			Hardwired
AI	R	3 phase reactive power			Hardwired
DI	S	CB in service &	Closed	Not closed	Hardwired for ECS
DI	S	CB in service &	Open	Not open	Hardwired for ECS
DI	D	Relay 86 (Differential)	Operated	Reset	Hardwired for ECS
DI	D	Relay 86	Operated	Reset	Hardwired for ECS
DI	D	Relay 95	Operated	Reset	Hardwired for ECS

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