TYPICAL SIGNAL LIST

1. ENERGY MEASUREMENT

Device Type	Analog	Description	CT Ratio	VT Ratio	Remarks
GENERATOR UNIT	MW	Real Power	REQUIRED	REQUIRED	kV in phase-phase or average
	MX	Reactive Power			
	KV_RY	R-Y phase kV			
	KV_YB	Y-B phase kV			
	KV_BR	B-R phase kV			
	KV	3 phase Average kV			
	I_R	Current			
	I_Y	Current			
	I_B	Current			
	PF	Power Factor			
	MWHE	Real Power Export			
	MXHI	Reactive Power Import			
	MXHE	Reactive Power Export			
TRANSFORMER	MW	Real Power	REQUIRED	REQUIRED	
	MX	Reactive Power			
	I_R	Current			
	I_Y	Current			
	I_B	Current			
	PF	Power Factor			
	TPI	Tap Position Indicator			
	MWHI	Real Power Import			
	MWHE	Real Power Export			
	MXHI	Reactive Power Import			
	MXHE	Reactive Power Export			
BUS	KV_RY	R-Y phase kV	NOT REQUIRED	REQUIRED	
	KV_YB	Y-B phase kV			
	KV_BR	B-R phase kV			
	KV	3 phase Average kV			
	HZ	Frequency			
BUS COUPLER	MW	Real Power	REQUIRED	REQUIRED	
	MX	Reactive Power			
	I_R	Current			
	I_Y	Current			
	I_B	Current			
FEEDER/ LOAD/ LINE	MW	Real Power	REQUIRED	REQUIRED	
	MX	Reactive Power			
	KV_RY	R-Y phase kV			
	KV_YB	Y-B phase kV			
	KV_BR	B-R phase kV			
	KV	3 phase Average kV			
	I_R	Current			
	I_Y	Current			
	I_B	Current			

TYPICAL SIGNAL LIST

	PF	Power Factor			
	MWHI	Real Power Import			
	MXHI	Real Power Export			
	MWHE	Reactive Power Import			
	MXHE	Reactive Power Export			
REACTOR/ CAPACITOR	MX	Reactive Power	REQUIRED	REQUIRED	
	KV_RY	R-Y phase kV			
	KV_YB	Y-B phase kV			
	KV_BR	B-R phase kV			
	KV	3 phase Average kV			
	I_R	Current			
	I_Y	Current			
	I_B	Current			
	PF	Power Factor			

Note:

1. Except energy measurement data, rest of the power system parameter data should be instantaneous value. For example, if power data (MW or MVAR) is provided using energy meter, those data should be instantaneous not every 15 minute block.
2. The stakeholder must submit these energy measurement data for each bay separately.

2. SINGLE POINT STATUS

Device Type	Device	Point	Description	Remarks
GENERATOR UNIT	UNIT	CBT1	CB Trip Coil Protection Operated	Stakeholder must add any signals related to tripping of Unit which are missed out in the list.
	STATOR	DFO	Differential Protection Operated	
	ROTOR	EFOR	Rotor Earth Fault Relay Operated	
	UNIT	EFOU	Unit Earth Fault Relay Operated	
	UNIT	OCR	Over Current (50/51) Relay Operated	
	UNIT	OOS	Out of Step (78) Relay Operated	
	UNIT	UV	Under voltage (27) Relay Operated	
	UNIT	BE	Back Energization (27/50) Relay Operated	
	UNIT	TOT	Thermal Overload Trip	
	UNIT	NPS	Negative Phase Sequence (46) Operated	
	UNIT	LRCB	Local/Remote Switch for CB	
TRANSFORMER	XFMR_P/S	IOCR	Instantaneous Over Current Relay Operated	Mention Transformer Primary or Secondary
	XFMR_P/S	IEFR	Instantaneous Earth Fault Relay Operated	
	XFMR_P/S	DFO	Differential Protection Operated	
	XFMR_P/S	REF	REF Operated	
	XFMR_P/S	OET	Over Excitation Trip	
	XFMR_P/S	WTT	Combined signal related to Winding Temperature Trip	
	XFMR_P/S	BT	Bucholz Trip	

TYPICAL SIGNAL LIST

	XFMR_P/S	TRT	Transformer Trouble Trip and Pressure Relieve Valve	
	XFMR_P/S	LRCB	Local/Remote Switch for CB	
BUS	BUS	BPO	Bus Bar Protection Operated	
	BUS	LBB	Local Breaker Backup Operated	
BUS COUPLER	BC	IOCR	Instantaneous Over Current Relay Operated	
	BC	IEFR	Instantaneous Earth Fault Relay Operated	
	BC	DFO	Differential Protection Operated	
	BC	LRCB	Local/Remote Switch for CB	
FEEDER/ LOAD/ LINE	FDR	IOCR	Instantaneous Over Current Relay Operated	
	FDR	IEFR	Instantaneous Earth Fault Relay Operated	
	FDR	DPRO	Distance Protection Relay Operated	
	FDR	M1Z1	Main-1 Zone-1 Operated	
	FDR	M1Z2	Main-1 Zone-2 Operated	
	FDR	M1Z3	Main-1 Zone-3 Operated	
	FDR	M1Z4	Main-1 Zone-4 Operated	
	FDR	M2Z1	Main-2 Zone-1 Operated	
	FDR	M2Z2	Main-2 Zone-2 Operated	
	FDR	M2Z3	Main-2 Zone-3 Operated	
	FDR	M2Z4	Main-2 Zone-4 Operated	
	FDR	SOTF	Switch On to Fault Operated	
	FDR	PSD	Power Swing Detected	
	FDR	BCD	Broken Conductor Detected	
	FDR	DEFN	Directional Earth Fault Operated	
	FDR	DOCR	Directional Over Current Operated R-phase	
	FDR	DOCY	Directional Over Current Operated Y-phase	
	FDR	DOCB	Directional Over Current Operated B-phase	
	FDR	OV	Over Voltage Operated	
	FDR	UV	Under Voltage Operated	
	FDR	ARO	Auto Reclose Operated	
	FDR	ARL	Auto Reclose Lockout	
	FDR	DTS	Direct Trip Sent	
	FDR	DTR	Direct Trip Received	
	FDR	LRCB	Local/Remote Switch for CB	
BUS REACTOR/ CAPACITOR	BR	IOCR	Instantaneous Over Current Relay Operated	
	BR	IEFR	Instantaneous Earth Fault Relay Operated	
	BR	OV	Over Voltage Operated	
	BR	UV	Under Voltage Operated	
	BR	LRCB	Local/Remote Switch for CB	
Common		DCFL	DC Fail (Common all bays)	

TYPICAL SIGNAL LIST

Note:
1. Any signal related to tripping of Unit/Feeder/Transformer/Reactor, which are left out in the above list must be added.
2. Bus Section is left out since it is usually found in Distribution network. However, if Bus Section is used, stakeholder must provide signals similar to Bus Coupler
3. The stakeholder must submit these single point status for each bay separately.

3. DOUBLE POINT STATUS

Device Type	Device	Point	Description
UNIT/ BUS/ BUS COUPLER/ LINE/ TRANSFORMER / REACTOR	CB	STTS	Circuit Breaker
	BIS	STTS	Bus Isolator
	LIS	STTS	Line Isolator
	IS	STTS	By pass Isolator or Isolator
	TIS	STTS	Transformer Isolator
	EIS	STTS	Earth Switch

Note:
1. Those double point status must be submitted for all 66kV and above bays. Moreover, all those status related to generating terminal voltage must be also submitted.
2. The stakeholder must submit these double point status for each bay separately.

4. DOUBLE POINT COMMAND

Device Type	Device	Point	Description
BUS/ BUS COUPLER/ LINE/ TRANSFORMER / REACTOR	CB	Open	Circuit Breaker Open
	CB	Close	Circuit Breaker Close

Note:
1. Those double point command must be submitted for all 66kV and above bays.
2. The stakeholder must submit these double point command for each bay separately.

5. OTHER DATA

Type of Bay	Parameter Required
Transmission line	Line Length
	Type of Conductor
	Connected CT ratio
Transformer	Tap type (Tap limits)

TYPICAL SIGNAL LIST

	Nominal Tap position
	Nominal MVA rating
	R%, X%
	Z% own base
	Connected CT ratio
Generator Unit	Generation Capability curve
	Nominal MVA rating
	Short Circuit Data
Bus Coupler	Connected CT ratio
Reactor	Nominal MVAR Rating
	Connected CT ratio

Note:
1. In addition to above data, stakeholder must submit Single Line Diagram (SLD)