

**SCADA BOQ of 220 kV Makansar Substation
(220kV & 66kV System)**

Sr.No.	Particulars of Item	Unit	Erection Qty	Supply Qty
A	Supply, Erection, Testing and Commissioning of SCADA equipments and materials <u>(suitable to IEC 61850 Edition 2 as well as Cyber security compliant IEDs & system)</u> as per respective technical specifications and relevant special conditions and suitable for One Main and One Main cum Transfer Bus system on 220kV side, and Two Main Bus system on 66kV side			
1	Bay Control Unit / RTU for Substation Auxiliaries #	Nos	1	1
2	Bay Control Unit for Protection Coupler of PLCC / FOTE **	Nos	1	1
3	HMI Server computer with required softwares with KVM Extender (UPS for monitor shall be provided as per Technical Specification.)	Nos	2	2
4	DR workstation PC with KVM Extender (UPS for monitor shall be provided as per Technical Specification.)	No.	1	1
4a	DAS metering PC	No.		
5	Gateway for remote control with software	No	1	1
6	Gateway for SLDC Data with software	No	1	1
6a	Firewall	No	2	2
7	SCADA software (For local and Remote control centre)	No	1	1
8	Ethernet Fibber Switches*	Nos	8	8
9	Line Interface unit - 4 Cable entry, 24 ports	Nos	16	16
10	Line Interface unit - 8 Cable entry, 32 ports	Nos	2	2
11	Dismantling of existing earth wire of the existing line portion	Km		
12	Erection of OPGW on the whole line with all required accessories	Km		
13	OPGW Terminal equipments (FOTE) with required hardware and software for remote connectivity	Set		
13A	Armoured Fibre Optic approach cable (Single mode) with HDPE duct for connecting OPGW to FOTE	MTR.		
14	Laser Jet colour Printer	Nos	1	1
15	Laser Jet Printer	Nos	1	1
16	3 KVA UPS with Battery having Auto changeover scheme for seamless changeover (Battery - 12V SMF Battery set, Ah rating and Nos.shall be suitable for 2 hours back-up as per UPS DC Voltage rating)	Nos	0	0
17	3 KVA UPS without battery	Nos	0	0
18	Modem for RTU Data	Nos	0	0
19	Armoured Fibre Optic Cable with HDPE duct (Mutli mode)	MTR.	3300	3300
20	Yard Kiosk for 400KV Switchyard			
	Internal Dimensions - 4000 (L) X 3500 (W) X 3300 (H) mm	Nos	0	0
	Internal Dimensions - 5000 (L) X 3500 (W) X 3300 (H) mm	Nos	0	0
21	Yard Kiosk for 220KV Switchyard			
	Internal Dimensions - 4000 (L) X 3500 (W) X 3300 (H) mm	Nos	4	4
	Internal Dimensions - 5000 (L) X 3500 (W) X 3300 (H) mm	Nos	0	0
22	Yard Kiosk for 132KV Switchyard			
	Internal Dimensions - 4000 (L) X 3500 (W) X 3300 (H) mm	Nos	0	0
	Internal Dimensions - 5000 (L) X 3500 (W) X 3300 (H) mm	Nos	0	0
23	Yard Kiosk for 66KV Switchyard			
	Internal Dimensions - 4000 (L) X 3500 (W) X 3300 (H) mm	Nos	0	0
	Internal Dimensions - 5000 (L) X 3500 (W) X 3300 (H) mm	Nos	2	2
24	Panel for mounting SCADA equipments	Nos	1	1
25	Panel for mounting PLCC / FOTE BCU	Nos	1	1
26	Panel for mounting Station Auxiliaries BCU/RTU	Nos	1	1
27	False Flooring in SCADA Room of Control Building as per following ANNEXURE - 1	Sq Mtr	0	0
28	Furniture for SCADA equipments	Set	1	1
29	Panel for Mounting Spares@	Nos	1	1
	Spares for SCADA and Protection (Of Highest Configuration)			
1	Bay Control Unit	Nos	0	1

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2	Bay Control and Protection Unit	Nos	0	1
3	Line Interface Unit - 8 Cable entry, 32 ports	Nos	0	1
4	Ethernet fibber switch	Nos	0	1
5	Busbar Protection Peripheral Unit	Nos	0	1

Note:

- 1) Any material/equipment accessories which are not listed in BOQ or scope of supply but required to complete the job shall be included and shown in technical bid.
- 2)*Ethernet switches shall have as many spare ports as utilized ports.
- 3)**PLCC / FOTE BCU shall have sufficient I/Os as per given list considering future lines also.
- 4) # BCU for station Auxiliary shall have sufficient I/Os as per list or otherwise suitable RTU shall be provided.
- 5) Contractor shall be responsible for necessary co-ordination with FOTE and OPGW supplier & erection agency to establish remote connectivity and over all operation from Master Control Centre through SCADA system.
- 6) @ Quantity shall be sufficient to accommodate all spares as per spare list.

SCADA BOQ for 220kV Sartanpar S/S end Substation (To Control 220 kV Makansar Substation)				
Sr.No.	Particulars of Item	Unit	Erection Qty	Supply Qty
A	Supply, Erection, Testing and Commissioning of SCADA equipments and materials (<u>suitable to IEC 61850 Edition 2 as well as Cyber security compliant IEDs & system</u>) as per respective technical specifications and relevant special conditions.			
1	HMI Server computer with required softwares with KVM Extender (UPS for monitor shall be provided as per Technical Specification.)	Nos	2	2
2	DR workstation PC with KVM Extender (UPS for monitor shall be provided as per Technical Specification.)	Nos	1	1
3	Gateway for remote control with software	Nos	0	0
4	Gateway for RTU Data with software	Nos	0	0
4a	Firewall	Nos	1	1
5	Ethernet Fibber Switch*	Nos	2	2
6	Line Interface unit - 4 Cable entry, 24 ports	Nos	0	0
	Line Interface unit - 8 Cable entry, 32 ports		0	0
7	OPGW Terminal equipments (FOTE) with required hardware and software for remote connectivity	Set	0	0
7A	Armoured Fibre Optic approach cable with HDPE duct for connecting OPGW to FOTE	MTR.	0	0
8	Laser Jet colour Printer	Nos	1	1
9	Laser Jet Printer	Nos	1	1
10	3 KVA UPS with Battery having Auto changeover scheme for seamless changeover (Battery - 12V SMF Battery set, Ah rating and Nos.shall be suitable for 2 hours back-up as per UPS DC Voltage rating)	Nos	0	0
11	3 KVA UPS without battery	Nos	0	0
12	Modem for RTU Data	Nos	0	0
13	Yard Kiosk for 220 KV Switchyard	Nos	0	0
14	Yard Kiosk for 132 KV Switchyard	Nos	0	0
15	Yard Kiosk for 66 KV Switchyard	Nos	0	0
16	Panel for mounting SCADA equipments	Nos	1	1
17	Panel for mounting PLCC BCU	Nos	0	0
18	Panel for mounting Station Auxiliaries BCU/RTU	Nos	0	0
19	Furniture for SCADA equipments	Set	1	1

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- 1) Any material/equipment accessories which are not listed in BOQ or scope of supply but required to complete the job shall be included and shown in technical bid.
- 2)*Ethernet switches shall have as many spare ports as utilized ports.
- 3) Contractor shall be responsible for necessary co-ordination with FOTE and OPGW supplier & erection agency to establish remote connectivity and over all operation from Master Control Centre through SCADA system.