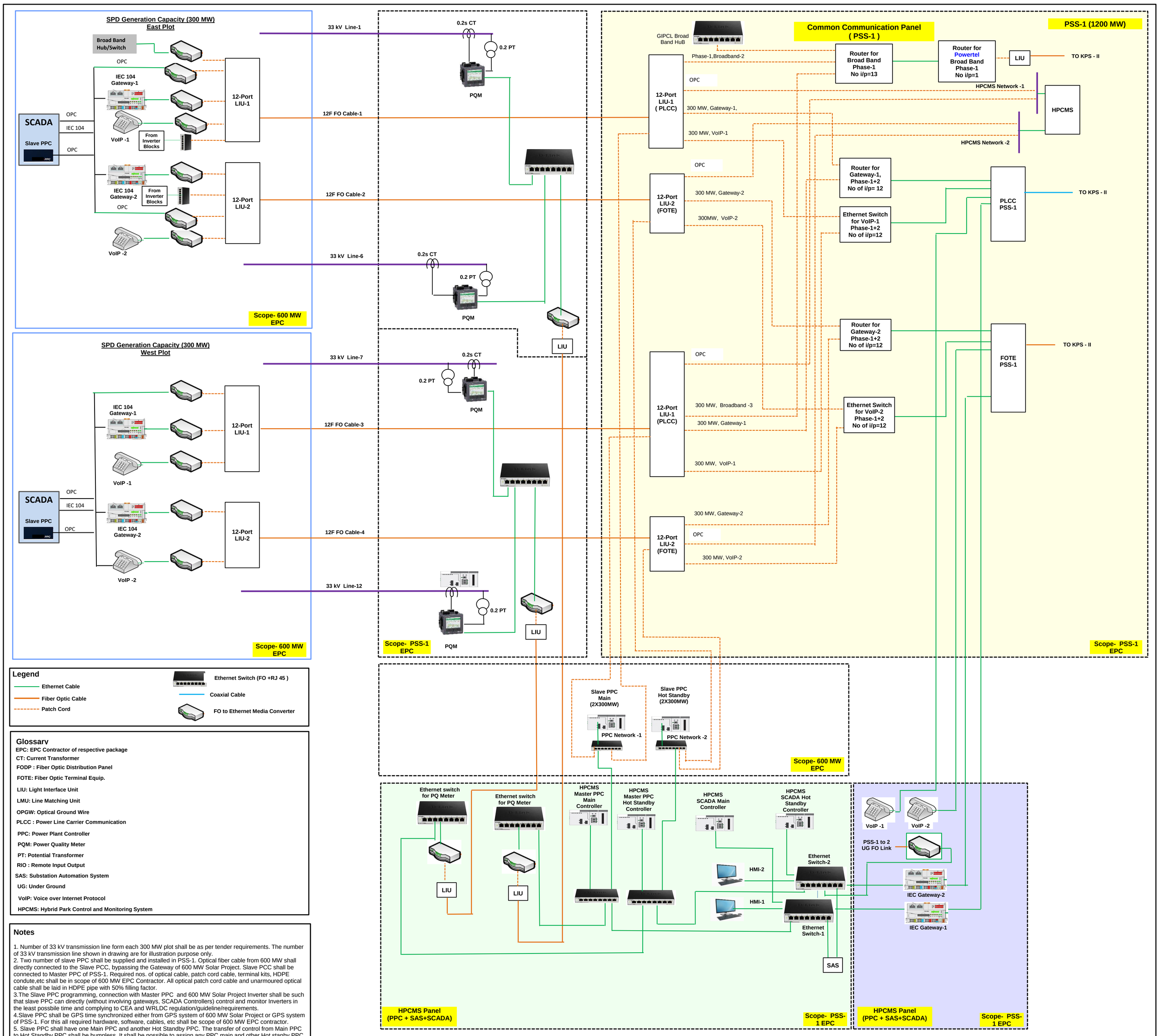

Glossarv

EPC: EPC Contractor of respective package
CT: Current Transformer
FODP : Fiber Optic Distribution Panel
FOTE: Fiber Optic Terminal Equip.
LIU: Light Interface Unit
LMU: Line Matching Unit
OPGW: Optical Ground Wire
PLCC : Power Line Carrier Communication
PPC: Power Plant Controller
PQM: Power Quality Meter
PT: Potential Transformer
RIO : Remote Input Output
SAS: Substation Automation System
UG: Under Ground
VoIP: Voice over Internet Protocol
HPCMS: Hybrid Park Control and Monitoring System

Notes

1. Number of 33 kV transmission line form each 300 MW plot shall be as per tender requirements. The number of 33 kV transmission line shown in drawing are for illustration purpose only.
2. Two number of slave PPC shall be supplied and installed in PSS-1. Optical fiber cable from 600 MW shall directly connected to the Slave PCC, bypassing the Gateway of 600 MW Solar Project. Slave PCC shall be connected to Master PPC of PSS-1. Required nos. of optical cable, patch cord cable, terminal kits, HDPE condute,etc shall be in scope of 600 MW EPC Contractor. All optical patch cord cable and unarmoured optical cable shall be laid in HDPE pipe with 50% filling factor.
3.The Slave PPC programming, connection with Master PPC and 600 MW Solar Project Inverter shall be such that slave PPC can directly (without involving gateways, SCADA Controllers) control and monitor Inverters in the least possbile time and complying to CEA and WRLDC regulation/guideline/requirements.
4.Slave PPC shall be GPS time synchronized either from GPS system of 600 MW Solar Project or GPS system of PSS-1. For this all required hardware, software, cables, etc shall be scope of 600 MW EPC contractor.
5. Slave PPC shall have one Main PPC and another Hot Standby PPC. The transfer of control from Main PPC to Hot Standby PPC shall be bumpless. It shall be possible to assign any PPC main and other Hot stanby PPC.
6. Slave PPC report of 1 second time interval or less as per GIPCL, CEA and WRLDC requirement shall be generated in SCADA of 600 MW Solar Project. The report format shall be excel, PDF or format as per GIPCL requirement.
7.PQM at 33 kV feeder at PSS-1 end shall be directly communicating with the Slave PPC. The feedback of PQM shall be used for controling and monitoring of Active, Reactive Power, Frequency, Voltage and Power Factor. For reactive power requirement hirearchy for use of Inverter, Transformer tap chager and capacitor bank shall be decided during detailed engineering.
8.Mounting arrangement for Slave PPC , ethernet switch and other items which are part of slave PPC are in scope of 600 MW EPC bidder. Slave PPC shall be having redundant power supply and communication sytem. GIPCL shall provide UPS power supply, but all required items and arrangement for drawing power and safeguarding of power is in scope of 600 MW EPC bidder. MCB shall be provided each power supply. There sahll be autochage over of Power supply and communication link in case of failure of power supply and communication link . The failure of power supply and communication link shall be alarmed in SCADA of 600 MW Solar Project.
9.The ethernet switches for Slave PPC shall have required number of FO and RJ45 ports.
10.The optical fiber cable shall have minimum 12 nos fibers. The specification of fiber and other details shall be as per CEA latest guideline/regulations and tender specification.
11. Bidder obtain Two VoIP nos from concerned RLDC for 600 MW Solar Project. Bidder also supply and install two nos. of VoIP. Make of VoIP phone shall be a) Alcatel-Lucent b) MATRIX COMSEC c) Cisco.
12. Number of equipment, optical fibre cable, patch cord cable shall be as per tender requirement. Here these items are shown for illustration of communication architecture diagram.

Basic philosophy and requirement of Master PPC

Master PPC controller shall be suitable for controlling of respective PPC's of various SPD who are connected to common pooling station/stations operating under different control area (NLDC or any of RLDC or any of SLDC or combination of these load dispatch centers etc.) and their power off take is at different target areas.

GIPCL pooling substations (1200 MW) shall be connected with 765/400 KV S/s of CTU by dedicated 400 KV Transmission lines emanating from PSS-1 s/s.

The system shall control different parameters to achieve grid compliant feed-in, based on specified "set points" and change grid parameters at the Point of Interconnection (400 KV bus of CTU). Power system operating authorities (NLDC, RLDC, SLDC etc.) can communicate these set points and parameters to the Master PPC either directly, or through a SCADA system or through substation operator.

Master PPC of the PSS shall either operate in tandem or as standalone system (Dynamically Selectable by system operator) with their respective SPD of each phase and/ or for all phases.

Master PPC controller shall be site configurable for distribution of appropriate set points to respective SPD based on "Scheduling" or "Real time Actual Operating Parameters.

Master PPC controller shall control reactive power control by PSS's reactive power compensating equipments in conjunction with reactive power of associated SPD. The priority and proportion of reactive power compensation by PSS's equipment and SPD equipments (33 KV capacitor banks and PQ Capability of Inverters) shall be selectable by the grid operator / substation operator dynamically/automatically.

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