

GUIDELINES FOR PLANNING OF TELEMETRY AND VOICE COMMUNICATION FOR COMPLAINEE OF CSEGC 2011 CLAUSE 4.5 AND CERC COMMUNICATION REGULATION CLAUSE 5 & 7.8

1. The DAS/RTU to be installed at the power stations/substations/pooling station should have IEC 60870-5-101 or IEC 60870-5-104 protocol with interoperability matrix compatible with the SCADA system available at Main SLDC/BackUp SLDC.
2. The IPP/PPP/Renewable generating Stations are required to arrange data channel up to nearest control centre i.e. SLDC Raipur/Backup SLDC Khedamara or nearest wideband nodes. The existing wideband nodes are at SLDC Raipur, Backup SLDC Bhilai, 400KV S/s Bhilai, 400KV S/s Raita, 400KV S/s Jagdalpur, 400KV HTPS Korba West, 400KV MTPP Champa, 220KV KTPS Korba East, 220KV Bhilai, 220KV Urla, 220KV S/s Gurur, 220KV S/s Doma, 132KV S/s Kuhera, 132KV S/s Kondagaon, 132KV Rawanbhata. **Connectivity at the wideband nodes shall be given only on IEC 60870-5-101 protocol.**
3. The IPP/PPP/Renewable Generators are required to provide pooling station wise and turbinewise / inverter wise telemetry. For solar and wind generators weather parameters will also be required. The turbine wise/inverterwise telemetry (active and reactive power) along with active and reactive power of all feeders up to 33KV connected at pooling station/control centre, active and reactive power of transformers, bus voltage, frequency and circuit breaker status of all feeders, transformers, bus couplers of your pooling station/control centre, SOE up to 132KV elements of pooling station where DAS /RTU is located shall be provided by REGenerator. Further, telemetry of weather parameters like wind speed of each wind turbine, irradiation parameters, temperature, humidity, etc shall also require to be provided by RE generators.
4. The IPP/PPP/renewable generating stations are required to arrange reliable data channel using either by Power Line Carrier Communication (PLCC), OPGW Communication, dedicated point to point leased line, VSAT communication or combination of these.

It may please be noted that communication channel using GPRS/GSM is not found reliable and suitable by SLDC, CSPTCL and hence shall not be permitted for telemetry. Further, data channels using internet/broadband internet shall also not permitted due to cyber security reasons.

5. The measurand mentioned above are required to be configured in RTU/DAS as IEC type detailed hereunder: -

S.No.	Data object	IEC Data type to be configured
1.	Breaker Status	M_DP_TA_1 (TYPE04) i.e. Double Point Status with time tag.
2.	Analog Input (MW, MVAR, KV, HZ)	M_ME_NA_1 (TYPE09) or M_ME_NC_1 (TYPE13)

6. The other important IEC 870-5-101 parameter setting required to be made in DAS/RTU are also given hereunder: -

lecMaxUserFrameLength	255
lecLLAddrFieldLength	1 octet
lecASDUAddrFieldlength	1 octet
lecObjectAddr Field length	2 octet
lecTransmission Field length	1 octet

7. The various protocol parameters required to be configured as given hereunder: -

Type of power system data	Data unit type	Description as per IEC	Data polling method	Scan group	Class-x	Object address range
Analog values	ASDU-9 or ASDU-13	Measured value normalized or short float	Periodic group scan	Group-3	Class-2	3001-4001
Single Input digital status	ASDU-1	Single Point information without time tag	By exception (spontaneous) and on periodic group scan	Group-1	Class-1 after exception, class-1 after group scan	1-1000
Single Input digital status	ASDU-2	Single Point information with time tag	By exception (spontaneous)	Group-1	Class-1 after exception	1001-2000
Digital Inputs Double point	ASDU-3	Double point information	By exception (spontaneous)	Group-2	Class1 after exception	2001-3001

8. The reliable data channel from DAS/RTU to nearest SLDC/wideband node (either PLCC or leased line) is required to be arranged by IPP/ CPP/Regenerator. The data channel speed for IEC 60870-5-101 protocol may be worked out on the basis of Number of Analog data as per details given hereunder: -

No. of Analog Data	Minimum Baud Rate
0 – 30	300
31 – 60	600
61 - above	1200

For IEC 60870-5-104 protocol data channel using OPGW/VAST/dedicated point to point leased line with Ethernet port at both the ends is required to be arranged. The IP address for RTU/Ethernet port shall be provided at the time of commissioning. Two Number FEP server IP address is to be configured in RTU for redundancy purpose. Data is required to be updated at SLDC SCADA as and when it is changed at field. The data update rate from RTU at IPP/ CPP/RE generator to SLDC SCADA/EMS system for Analog signal is required in less than or equal to 10 seconds and for status signal is required in less than or equal to 4 seconds.

9. As these IPP/ CPP/renewable generating stations are located at remote stations, outage of telemetry due to non-availability of backup auxiliary power supply is also observed. Hence, in order to ensure round the clock availability of telemetry, it is also required that the telemetry system shall be commissioned with UPS and battery of sufficient capacity so that power backup for at least 8 hours is available.

10. Modem/other integration equipment like VSAT terminal/OPGW terminalequipment/PLCC cabinets along with necessary wiring/cabling required for integration oftelemetry of your plant at SLDC shall also be arranged by the concernIPP/PPP/renewable generating agency. In case of leased line/VSAT communication arrangement for payment of leased charges are required to be made by IPP/PPP/renewable generating stations promptly for the uninterrupted service. The data base preparation in SLDC/backup SLDC SCADA systemshall be arranged by SLDC.
11. The IPP/PPP/renewable generating stations are advised to obtain approval of telemetryscheme as well as data IO list along with SLD of the station before commissioning of telemetry so that compatibility issue with SLDC SCADA/EMS system, if any may be avoided.
12. Ensuring round the clock availability of telemetry after its commissioning is of utmost importance and necessary arrangement for ensuring 100% availability after sub sequent commissioning of telemetry like arrangement of sufficient spares for data channel as well as data acquisition equipment , AMC with OEMS, availability of backup of all configuration files, wiring diagram etc is required to be maintained and details of contact person responsible for maintenance of telemetry is required to be informed by each IPP/PPP/renewable generating stations to SLDC.
13. In order to ensure round the clock availability, it is required to install TU/DAS/MFM/MODEMS of reputed make having type test certificate.
14. In any case, synchronization of IPP/PPP/Renewable generating station without telemetry shall not be permitted.
