

**General Information/ Guidelines for Integration of Sub-Station data, IPP's data including RES (Renewable Energy Sources) plants data (i.e. Hydro and Solar power etc.) with SCADA system at ALDC/ SLDC, Control Centre Shimla.**

**Brief Introduction about SCADA installed at ALDC/SLDC, Shimla:** SCADA system was installed and commissioned by M/s Siemens Ltd. at ALDC/ SLDC, Control Centre Shimla and is operational since 2015. The said system is redundant in nature and telemetry data of generating stations, grid Sub-Stations in Himachal Pradesh is available round the clock. In addition, telemetry data of some IPP's having PPA with HPSEBL have also been integrated with said SCADA system. Integration of data with ALDC/ SLDC system involves termination of field Signals, such as RTU's at substations, Generating Stations, IPP's Station etc. In the Communication Front End (CFE) equipment(s) housed in the ALDC/ SLDC complex which is further connected with SCADA system. The said SCADA system supports both IEC 60870-5-101 & IEC60870-5-104 protocols.

The IEC 60870-101/104 protocols define two data classes. Class 1 data is used for time tagged of spontaneously transmitted ASDUs. Class 2 data contains periodic, cyclic data.

**I. Details of various parameters of protocols used for data communication from field to SCADA system are as under:**

**i) IEC 101/104 Protocol Parameter Details:**

Protocol Id i.e. IEC 870-5-101 ( Unbalanced) or IEC 870-5-104
Info object address size i.e. 2 or 3 Bytes
Info object address Format i.e. Structure.
Link and ASDU Address Size i.e. 1 byte Link and 1 byte ASDU for IEC 101 0 byte Link and 2 Byte ASDU for IEC 104
Baud rate i.e. 200 or 300 etc. (for IEC 101 only)
Character Size i.e. 8 (Normal) (For IEC 101 only)
Configuration Type i.e. Point to point (All protocols)
Parity e.g. even parity (For IEC 101 only)
Telegram Max retries i.e. 3
Telegram Time –Out Value i.e. 10 seconds.

**ii) Valid ASDU data Types for Digital Points / Binary Points**

Type ID 1: M_SP_NA_1- Single Point Information
Type ID 2: M_SP_TA_1- Single Point Information with time tag
Type ID 3: M_DP_NA_1- Double Point Information
Type ID 4: M_DP_TA_1 - Double Point Information with time stamp
Type ID 30: M_SP_TB_1 - Single Point Information with time stamp CP56 Time2a
Type ID 31: M_DP_TB_1 - Double Point Information with time stamp CP56 Time2a
Type ID 45: C_SC_NA_1 – Single Command
Type ID 46: C_DC_DA_1– Double Command
Type ID 47: C_RC_NA_1– Regulating Step Command
Type ID 58: C_SC_TA_1 - Single Command with time Tag (104) only
Type ID 59: C_DC_TA_1 - Double Command with time Tag (104) only
Type ID 100 : C_IC_NA_1 – (General) Interrogation command
Type ID 103 : C_CS_NA_1 – Clock synchronization command

*31/05/2018*

iii) **Valid ASDU data Type for Analog Point:**

Type ID 9:M ME NA 1 – Measured Value, normalized value
Type ID 11:M ME NB 1 – Measured Value, scaled value
Type ID 13:M ME NC 1 – Measured Value, short floating point value
Type ID 15:M IT NA 1 – Integrated totals

Further, Telegram addresses are provided by the vendor (s)/ RES data integrators (s). Analog Signal address to be started from 8448, Circuit Breaker address from 256 and isolator address from 376, and Remote Control Addresses to start from 33024 etc.

ii. For the purpose of integration of RTU/SAS/RES data with the said SCADA system, all the concerned are requested to kindly go through the following information/general guidelines as reference. Before finalising/submitted telemetry scheme to ALDC/SLDC, HPSEBL for approval, the concerned person/system integrator is advised to visit ALDC/SLDC, 132 KV grid sub-station, Totu, Shimla for space requirement of their equipments.

a) **List of Documents as required for approval:-**

- 1) Detailed Data telemetry scheme
- 2) System Architecture
- 3) Details of tools/software(s) etc. to be used to counter data hacking/cyber – attacks.
- 4) Data communication route/scheme details.
- 5) Latest Single Line Diagram of Plant/Sub-Station (indicating inverter capacity in MW).
- 6) Database/telegram, addresses of each type of signal (as per details given in para (b) below).
- 7) Test Reports of all hardware to be installed by the firm.
- 8) Any other document(s) as deemed necessary from time to time.

**Note:** Documents to be submitted should be arranged as per the above order/sequence.

b) **Details of Signals.**

1) **Analog Signals**


- I. Generating Units/ Inverters : Unit wise Active & Reactive Power (MW & MVAR)
- II. Lines: Active & Reactive Power (MW&MVAR)
- III. Bus Bar : Voltage (kV)
- IV. Frequency-Hz.

2) **Digital Signals**

- I. Circuit Breaker Status (On/Off)
- II. Isolator Status (On/Off)
- III. Sequence of Events
- IV. Remote Control of Circuit Breakers (if any)

c) **Telemetry system/Infrastructure Requirements:**

- 1) RTUs/SAS/RES vendor(s) / system integrator shall be required to provide / install & commission required telemetry system/infrastructure at their own risk & cost at their respective site(s) and at ALDC/SLDC, Shimla (i.e. hardware, communication connectivity, mounting arrangements, cables/wires etc. including tools/software to counter data hacking/cyber-attacks etc. as per the approval conveyed by ALDC/SLDC for successful integration of their remote plant(s)/ site(s) data. They shall ensure strict compliance of standard industry practises/safety provisions as required to complete their work to the satisfaction of ALDC/ SLDC.

 31/03/2018

- 2) RTUs/SAS/RES vendor(s) system integrator (s) shall ensure redundancy of the telemetry system as well as Communication Link/Connectivity for round the clock, availability of telemetry data of their plant(s)/site(s) at ALDC/SLDC Shimla.

Note(s):

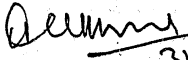
1. Due to space constraint in SLDC Building as mentioned above, it shall not be binding upon the ALDC/SLDC to consider/ approve an independent telemetry system/ infrastructure for each RTUs/ SAS/ RES Vendor(s) / system integrator as proposed by them. As an alternative to the above, RTUs/ SAS/ RES vendor(s)/ System Integrator(s) may use existing data integration facilities as provided by M/S MB Control & System Pvt. Ltd. Kolkata, M/S Synergy Systems, Faridabad, M/S Smart Tech Energy Management Services, New Delhi, M/S Beckhoff, M/S Delligent, M/S Rhythm Automation, NOIDA) as per terms & conditions mutually agreed-upon.
  2. RTUs/ SAS/ RES vendor(s) / system integrator(s) shall be liable to upgrade/ replace their existing telemetry system (at their own cost & risk) in compliance to meet with regulations/statutory requirements as issued by any government agency/CEA/CERC/ HPERC/ PGCIL/ NRPC/ FOLD/ SLDC etc. from time to time. There shall be no financial implications to ALDC/SLDC.
  3. RTUs/ SAS/ RES vendor(s) integrator(s) shall be liable to pay the charges (in addition to the above), if any, as decided/ levied by Government of India/ HP/ CEA/ CERC/ HPERC/ FOLD/ ALDC/ SLDC etc. from time to time.
- d) Other General Requirements for (RTUs/ SAS/ REC vendor(s)/ system integrator(s) :
1. They shall be required to get all the requisite prior approval from concerned offices of ALDC/ SLDC Shimla before taking up any activity in hand.
  2. They shall be fully responsible for proper upkeep and maintenance of their telemetry system so to ensure round the clock availability of telemetry data in ALDC/ SLDC Control Centre, Shimla. ALDC/ SLDC Control Centre, Shimla shall not be responsible in any way.
  3. Telemetry Data as integrated with SCADA system at ALDC/ SLDC Control Centre, Shimla shall remain under observation for its quality/ continuous availability at ALDC/ SLDC Control Centre, Shimla for a period of minimum of 30 days from the date of its integration before declaring the said telemetry system as "**Successfully Integrated with SCADA system**".
  4. They shall also ensure cyber security audit of their telemetry system from the third party independent agencies registered with Indian Computer Emergency Response Team, which is a functional organisation of Ministry of Electronic and Information technology, Government of India (<http://www.cert-in.org.in>) or other agencies only authorized by government from time to time in compliance against cyber security threats and accordingly shall submit certified reports to this office within 30 days of integration of their RTU/SAS/ Plant data with SCADA system and subsequently submit certified reports as above every year.
  5. In case of any failure of SCADA system/ any loss of data either due to non-compliance of Sr. no.4 above or any other lapses in the telemetry system provided by RTUs/ SAS/ RES etc. Vendor(s) system integrator(s) they shall be liable to pay damages/ penalties as per the provisions of various Acts in place and as decided by competent authority.

*[Handwritten signature]*  
3/03/2018

6. They shall have to comply with the instructions issued by CEA/ CERC/ HPERC/ SLDC or any other statutory body etc. from time to time. In case of any dispute, regarding hardware/ software/ or any other technical issues, the decision of SLDC shall be applicable whatsoever.
7. Contact details/ E-mail IDs of the concerned persons, including office contact details of company (owner of plant), Site Engineer, Control room Number and that of the HPSEBL/ HPPCL/ HPTCL/ IPP's Sub-Stations, to which RES power is proposed to be injected, shall be made available to SLDC/ ALDC & may be updated after every 3 months.

**III Contact details of Officers/Officials of HP SLDC/ ALDC control room Shimla :**

Sr. No.	Name	Designation	Contact No.	E-mail ID
1	CE (SLDC)	Chief Engineer (SLDC), HPLDS.	0177-2837649	sehpsldc@gmail.com
2	SE (SLDC),	SE, (SLDC), HPLDS.	0177-2837649	sehpsldc@gmail.com
3	Er. Deepak Uppal	Dy., C. E (PR&ALDC)	0177-2838170	pcshimla2003@gmail.com
4	Er. Ravinder Kumar	Sr. Executive Engineer HPLDS, SLDC	94187-74042	rkdhiman80@gmail.com
5	Er. S.K Sharma	Sr. Executive Engineer (SCADA/EMS/Comm.) ALDC	94180-16719	srxen.scada@gmail.com
6	Er. Anita Sharma	AEE (SCADA/Comm.) ALDC	94180-38172	srxen.scada@gmail.com
7	Er. Anamika Sharma	AE (SCADA/ EMS), ALDC	98054-03978	srxen.scada@gmail.com
	Er. K.R. Sharma	AAE (Comm), ALDC	93186-91741	srxen.scada@gmail.com

  
 (Er. Ajeet Kumar)  
 Chief Engineer, SLDC,  
 HP Load Despatch Society,  
 Kotu Shimla-11.