
OPERATIONAL DATA TRANSMISSION

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PURPOSE AND SCOPE

This document describes the functional and performance requirements for Users' equipment directly or indirectly connected to the National Electricity Transmission System, who provide Operational Data pursuant to the terms of their Bilateral Connection Agreement.

This specification lists a number of options allowing a User to send Operational Data to the System Operator. These options will vary in terms of reliability, implementation, effort and cost. Some options are not currently available but may be in the near future. The User shall agree the appropriate option from those set out in the Bilateral Connection Agreement (BCA). The option agreed should consider existing facilities and equipment, reliability, whole life cost and implementation issues.

The data that is required to be sent to the System Operator depends on the type of connection and will be defined in the BCA.

The data will be sent to the Integrated Energy Management System (IEMS) which contains the Main Energy Management System (EMS) and the Emergency Backup Unit (EBU). Both systems need a separate connection and need to be kept up to date from the same set of data.

PART 1 – FUNCTIONAL AND PERFORMANCE REQUIREMENTS

1 INTERFACE TO A NGET SCADA SYSTEM

1.1 Signals available in the NGET bay

Where all required signals are available or can be easily made available in the bay that connects the User, operational metering data can be hard wired into the NGET bay equipment.

NGET will reconfigure its SCADA system at the connecting site to transmit the data from the bay over its station bus to a gateway interfacing the IEMS. The data will be transmitted from the gateway over redundant communications routes to the EMS and the EBU.

The advantage of this connection method is that no new communication links are required. However a reconfiguration of the NGET SCADA system is required and the effort of connecting the signals into a NGET bay unit need to be considered.

1.2 Extension of NGET SCADA system to a remote site

Where not all the required signals can be easily made available at the connecting NGET site the NGET SCADA system can be extended to the User's or third party site. The interface to the NGET SCADA system would be the same as in section 1.1; however the NGET bay unit would be located at the User's site.

This method would require a communication channel between the NGET and the User site and it requires NGET access to the User site for installation and maintenance activities.

2 DIRECT INTERFACE TO THE IEMS

In this scenario the User would configure the required signals and the corresponding gateway in line with the corresponding IEC60870-5-101 interoperability statement required to interface the iEMS. It is to be noted that redundant communications links to the EMS and EBU are not mandatory. It is acceptable to only provide single communication links depending on the availability required by the User. Service Level Agreements for the relevant communication links should be considered when making this decision. The types of communication links available are described in more detail below.

2.1 MPLS connection

Multi-Protocol Line Switching (MPLS) services can be provided over the NGET OPTEL network. This link provides a dedicated secure network connection directly into the IEMS. As mentioned above either 2 or 4 services can be provided depending on redundancy requirements.

This type of communications link offers security and high availability.

2.2 Internet based connection via a Data Concentrator

This type of connection has been made available specifically for License Exempt Embedded Medium Power Stations (LEEMPS). It is based on the IEC60870-5-104 standard. The User will send the required SCADA signals, as agreed in the BCA, from their own SCADA system or a connected gateway through a router which will establish an encrypted VPS tunnel through the Internet to the NGET Internet Gateway Interface.

From there, the signals will be routed through a data concentrator into the IEMS. Configuration guidance for this type of connection will be provided as required.

It is expected that this type of connection can be delivered at lower cost but may not deliver the same performance in terms of security and availability as a MPLS service over the NGET OPTEL network.

PART 2 - DEFINITIONS AND DOCUMENT HISTORY

3 DEFINITIONS AND ABBREVIATIONS

BCA	Bilateral connection Agreement
DNO	Distribution Network Operator
EBU	Emergency Backup Unit
EMS	Energy Management System
IEMS	Integrated energy Management System
LEEMPS	License Exempt Embedded Medium Power Station
NGET	National Grid Electricity Transmission
RTU	Remote Terminal Unit
SCADA	Supervisory Control and Data Acquisition
SO	System Operator

4 AMENDMENTS RECORD

Issue	Date	Summary of Changes / Reasons	Author(s)	Approved By (Inc. Job Title)
1	February 2018	First issue	Thomas Charton Asset Policy	Daniel Penny Asset Policy Manager

4.1 Procedure Review Date

5 years from publication date.

PART 3 - GUIDANCE NOTES AND APPENDICES

5 REFERENCES

IEC60870-5-101	Telecontrol Equipment and Systems – Part 5-101: Transmission Protocols – Companion Standard for basic Telecontrol Tasks
IEC60870-5-104	Telecontrol Equipment and Systems – Part 5-104: Transmission Protocols – Network Access for IEC60870-5-101 using Standard Transport Profiles

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