

ANCILLARY SERVICES BUSINESS MONITORING

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PURPOSE AND SCOPE

The technical specifications for all new plant, equipment, apparatus and services, for use on the National Grid Electricity Transmission system, are contained in a three level hierarchy of documents. Level 1 covers ratings and general requirements, Level 2 covers major plant categories and Level 3 covers specific related plant functions.

This document is a level 3 Specification and details the functional and performance requirements for Ancillary Services Business Monitoring (ASBMON).

Equipment topologies other than those proposed in this specification are acceptable where such solutions can be demonstrated by the supplier to meet the overall functional and performance requirement specified herein.

PART 1 – PROCEDURAL

1 FUNCTIONAL AND PERFORMANCE REQUIREMENTS

1.1 General

- 1.1.1 ASBMON is the current system used to collect data for generators selected by the ENCC for frequency response to determine their performance against their contract for frequency response provision.
- 1.1.2 Policy for the application of ASBMON is given in PS(T) 107 System Monitoring Policy.
- 1.1.3 Access to system data, parameter settings and the configuration of equipment shall be via a secure network connection in accordance with NG IS security policies.
- 1.1.4 ASBMON system shall comprise:
 - a) A data acquisition unit.
 - b) A central server and data storage
- 1.1.5 All ASBMON equipment shall be dual rated for use on both 110 / 48V DC supplies with characteristics as specified in TS 3.24.04.
- 1.1.6 The Data Acquisition Units shall have at least 1 x Ethernet ports, 1 x internal 56K modem, 1 x GRDO RS232 port, and 1 x USB port

All cross site communications shall be conducted using fibre connections.

The USB port or a second Ethernet port shall be utilised to update the firmware locally and provide access to system configuration locally.

1.2 Inputs

1.2.1 The following inputs shall be provided as a minimum.

- 1 x GRDO RS232 port (if signal is derived from OMS as per TS_3.24.72)
- 3 x analogue current (if input is derived directly from Instrument Transformers)
- 3 x Analogue voltage (if input is derived directly from Instrument Transformers)

1.3 Time Keeping

1.3.1 Time keeping shall be derived from the Operation Metering Summator, Substation clock (in accordance with TS_3.24.67) or Network Timing Protocol via Ethernet.

1.4 Continuous Time Series Data

1.4.1 All data acquired by the Data Acquisition Unit shall be continuously stored.

1.4.2 The storage rate shall be capable of at least 1 sample per second, with an overall accuracy of +/- 0.5 seconds if derived from OMS, or 2 samples per second with an overall accuracy of +/- 1% if derived from transformer HV Instrument Transformers.

1.4.3 Non-volatile static memory shall be provided for storage of a minimum of 28 days data, prior to overwriting on a first in first out basis.

Informative: Overall accuracy refers to the accuracy of the ASBMON unit, not the overall system accuracy.

1.5 Parameters to be measured as Continuous Time Series Data

1.5.1 System Frequency

- This shall be derived from the GRDO if using an OMS inputs, or number of cycles if using analogue input.

1.5.2 Active Power

- The accuracy of all power values shall be +/- 2.5% or better.

1.5.3 Reactive Power (if using analogue input)

- The accuracy of all power values shall be +/- 2.5% or better.

2 DATA & USER REQUIREMENTS

2.1 Software and Firmware

2.1.1 All software provided for user remote and local access shall be compliant and suitable for use with the current NG PC operating system. The supplier shall also state the compatible operating systems supported.

2.1.2 All software and associated documentation shall be provided on the basis of National Grid company-wide usage, permitting National Grid, for the purpose of its sole use, to copy and use software and documentation, without restriction.

2.1.3 ASBMON firmware shall be available to NG free of charge and on an as required basis to enable upgrade activities.

2.2 Client User Interface

Informative: This interface relates to the user interface for viewing, configuration and setting purposes remotely and locally.

- 2.2.1 The normal mode of operation will be for engineers to have viewing and analysis access to data stored on the central server or data warehouse, via a web browser interface.
- 2.2.2 Access to the master substation server shall be controlled via password protection functionality in the system firmware. The password protection shall have graded levels of permissions such as: retrieve data, configure and system administrator.
- 2.2.3 The data required for display shall be selectable from any Data Acquisition Unit on the system.
- 2.2.4 All data selected for display shall be clearly identified by its source.
- 2.2.5 The units of time shall be appropriate to the period selected for display.
- 2.2.6 Export of data should be in a range of common formats such as .CSV, .XLS, .MDB

2.3 Communication Architecture

- 2.3.1 Remote access to Data Acquisition Unit shall be connected by RAMP to the NG business Network.

Informative: Connections via CTN will be acceptable if no LAN or RAMP connection is available.

- 2.3.2 Each Data Acquisition shall have the capability to independently sense, acquire and store data and then to transfer the data via a LAN to the central server
- 2.3.3 The central server shall collect all the data from the remote Data Acquisition Units on a pre-determined regular interval, with the option to access the data on request.
- 2.3.4 The data should then be accessible to the engineer from their laptop by web browser.

Informative: RAMP provides a secure, supportable, viable process incorporating hardware that utilises existing infrastructure where possible to provide remote access to substations for internal and external parties and systems. RAMP only provides the infrastructure and access to a router/gateway at site.

3 HARDWARE PLATFORMS

The following apply to all hardware items supplied, as appropriate to the equipment item.

- 3.1.1 Hardware platforms used within a substation environment shall comply with the requirements of TS 3.24.4 and TS 3.24.15.
- 3.1.2 There shall be no moving parts with the ASBMON units. Rotating hard drives and fans are not permitted.
- 3.1.3 The following Status Outputs shall be provided
 - a) Equipment healthy.
 - b) Out of service mode.