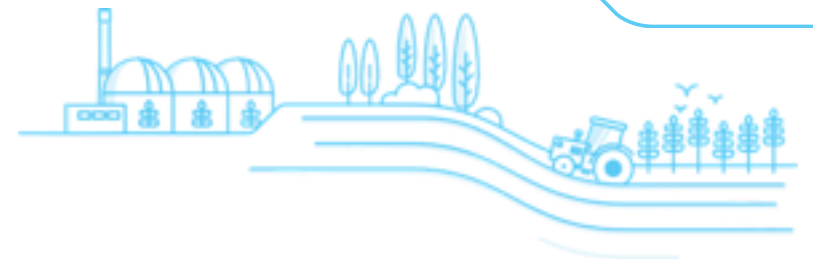


# TS 3.24.70 (RES) Dynamic System Monitoring (DSM)

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# Presentation Objectives

**To present an update to the TS3.24.70 Dynamic System Monitoring (DSM).**

Provide some of the supporting ideas:

- Why are DSMs required.
- What changes have been made.
- Parallel/Future work.

# Dynamic System Monitor (DSM)

## What is DSM?

A Dynamic System Monitor (DSM) can capture:

- Transient events, in a similar manner to a fault recorder.
- Slow disturbances such as voltage depressions that last over multiple seconds.
- Harmonic data (limited).

Data is captured against an accurate time standard which makes it possible to compare the effects of an event across the system.



## Technical Specification

The implementation of DSMs must comply with:

**TS3.24.70 (RES) Dynamic System Monitoring (DSM) – Issue 1 – October 2014.**

Current published standard is TS3.24.70 (RES) – Issue 2 – February 2018.

<https://www.nationalgrideso.com/industry-information/codes/grid-code/electrical-standards-documents>

# Why is the DSM required?

## Codes and Contracts

Clause “ECC.6.6.1-System Monitoring” of the Grid Code has placed an explicit requirement on connectees to install DSM.

*There is no explicit requirement on the ESO within the code.*



## History of the DSM

- First specifications that I have found date back to about 2006.
- “STCP 27-1 System Monitoring Performance Requirements” introduced requirement for TOs to provide data.
- The European code however brought in the requirement for Generators to install DSMs in 2019.

# Overview of TS3.24.70

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## Changes from the previous specification

- **Aligned to ENA G99.**
  - Removal of text around server based architecture and other hardware specific requirements. **The ESO is unconcerned about the underlying implementation of the device.**
- **Improved time specifications.** Timing accuracy specifications have been included.

# Overview of TS3.24.70

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## Changes from the previous specification

- **Increased sampling rate:** Sampling rate increased to 512 (from 256) samples per cycle. This increases bandwidth to 25.6kHz.
- **Changes to accuracy requirements:** The accuracy requirement is now gain based as opposed to offset based.
- **Relaxation of the supporting software specification.**
- **Minimum instrument transformer specification added.**

# Comparison of TS3.24.70 and G99

- **G99:** Is more prescriptive on the hardware and on software.
- Timing specification is equivalent.
- Accuracy and triggering standards are equivalent.
  - Power Quality Monitoring is omitted in TS3.24.70 (RES).
  - Fault Recording is described in TS3.24.71 (RES).
- Instrument transformer specification are less prescriptive in T3.24.70 (RES).



# Parallel/Future Development Work



## Parallel Work

- In E&W some generator-installed DSMs are connected to a network. In Scotland functionally no units are connected via a network.
- For units not connected to networking data must be downloaded by customer and passed to the ESO.
- Project in progress to scope a solution for connecting an increased number of customers.

## Future Work

- Optionally: Add in “Power Quality Metering” to specification.
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