

Phasor Measurement Unit RES670 Ver. 2.0

Release note

Dear Reader,

We are pleased to announce the release of phasor measurement unit RES670 version 2.0. RES670 provides accurate measurement of current and voltage phasors for wide area monitoring systems based on synchrophasors.



Introduction

Wide Area Monitoring System (WAMS) consists of geographically dispersed Phasor Measurement Units (PMUs) delivering synchrophasors, i.e., time-tagged data samples of a power system's voltage or current phasor using a standard time signal as the reference. The data in each PMU are time-synchronized via Global Positioning System (GPS) receivers – with an accuracy of one microsecond. The phasors measured simultaneously provide snapshots of the state of the monitored power system, enabling a number of synchrophasor applications to be available.

RES670 is a Phasor Measurement Unit (PMU) that provides power system AC voltages and currents as synchrophasors, providing real and imaginary parts or magnitude and phase angle. The communication capabilities of RES670 include IEEE C37.118 for WAMS solutions and IEC 61850 for easy integration in an existing substation automation system. Further, along with the phasor data measurement functionality, several protection and control functions of the Relion[®] 670 series IEDs are available in RES670.

The new RES670 version 2.0 release presents several improvements of the PMU functionality, compliance to international standards and communication capability. This new release also inherits all the benefits available with the new 670 series version 2.0, like support to IEC 61850 Ed.2, the local HMI including configurable three colour LEDs and programmable command buttons, cyber security features and improvement in the user experience for engineering efficiency and overall usability, among others.

ABB AB

Substation Automation Products
SE-721 59 Västerås, Sweden
Tel +46 21 35 20 00
Fax +46 21 14 69 18
www.abb.com/substationautomation

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New features and benefits

A number of new features are included in this release. The key features and their benefits are listed below:

- Compliancy with standard for synchrophasor measurements for power systems IEEE C37.118-2011, including the amendment IEEE C37.118.1a-2014
- Single-phase phasor data streaming in addition to positive, negative and zero sequence components available from the previous release
- Two independent synchrophasor data streams from one PMU that enables the reporting of synchrophasor data with two different report-rates and/or different performance classes (P/M) and/or data type at the same time
- Phasor measurement reporting function for up to 32 phasors on each data stream, configurable for single-phase phasors, positive, negative, zero sequence values or all of them
- Active and reactive power analog data streaming that allows the power measurement directly from the PMU, improving the accuracy of the measurement, and no need to calculate power in the PDC or anywhere else
- Analog data streaming also include streaming of mili-Amp input signals via PMU protocol for control purposes, with no need to use any other means to transfer transducer's signals
- Both built-in GPS and IRIG-B modules can now work simultaneously providing redundant time sync capability with higher availability of time sync source
- Additional protection functions, like power swing detection, out-of-step protection, directional under-power protection, directional overpower protection
- Support for simultaneous synchrophasor data stream for up to 8 PDC clients over TCP/IP and up to 6 PDC clients over UDP/IP that can be configured for unicast or multicast, enabling a better design of WAMS communication and suitable for WAMS with several utilities or applications involved.

The following product variants for ready-made application configurations are available:

Product	Ready-made configurations	Hardware variants
RES670 PMU Three bays, single busbar 12 analog inputs	A20	1/2 x 19" case 3/4 x 19" case 1 TRM 1/1 x 19" case 1 TRM
RES670 PMU Six bays, double busbar 24 analog inputs	B20	3/4 x 19" case 2 TRM 1/1 x 19" case 2 TRM

In addition to the ready-made configurations, the RES670 version 2.0 is available in customized variant.

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For more details about the configurations and customized variant, please refer to the respective Product Guide.

With the Protection and control IED manager PCM600, the configuration can be easily adapted for specific applications using the glue logic capability and by amending parameter settings.

Following improvements have been made in the RES670 Ver. 2.0

- Selectable performance class P&M according to IEEE C37.118-2011 (IEEE C37.118.1a-2014), and frequency adaptive anti-aliasing filters
- Up to 24 freely configurable analog data channels for reporting analog data, for example as active and reactive power measurement and/or milli-Amp input signals
- Up to 24 freely configurable binary channels for reporting binary signals, plus 4 binary signals according to IEEE C37.118 for trigger-signal
- Possibility of redundant time sync capability using the built-in GPS and IRIG-B by automatic selection of the most accurate source
- Automatic selection of the Phasor in PMUReport function block for frequency reporting
- 3PHSUM blocks can now be connected to the PHASORREPORT channels
- Increase the number of instances of the following functions: thermal overload protection (0-6), two step under-voltage protection (0-4), two step over-voltage protection (0-4), under-frequency protection (0-6), over-frequency protection (0-6), rate of change of frequency protection (0-6), four step residual overcurrent protection (0-6), four step directional negative phase sequence overcurrent protection (0-6), sensitive directional residual over current and power protection (0-6),
- Fully IEC 61850 compliant, Edition 1 and Edition 2
- Improvement in the support of IEC 61850-8-1 with GOOSE intlReceive (59 Instances) in order to receive double-point commands, SPPGGIO (64 Instances) in order for sending fast single-point GOOSE, SP16GGIO (16 Instances) in order for sending fast single-point GOOSE
- Support for sampled values IEC 61850-9-2
- 1/2, 3/4 and 1/1 rack

Ordering and delivery

The RES670 version 2.0 products can be ordered as of today. For current delivery time please refer to your local ABB representative.

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Documentation

The complete technical documentation for RES670 version 2.0 product will be available via www.abb.com/substationautomation.

IED Connectivity package version 3.0 for 670 series Ver. 2.0

Version 3.0 of the IED Connectivity Package supports Relion 670 series version 2.0 IEDs and all previous versions. For further details about this connectivity package and its installation, please refer to the release note 1MRG015708.

Protection and control IED manager PCM600

The RES670 version 2.0 is supported by Protection and control IED manager PCM600 version 2.6 or later. We recommend upgrading any earlier PCM600 installation to the latest version. For more details please refer to the PCM600 release note 1MRG014630.

Kind regards,

Luis-Fabiano Santos
Global Product Manager
Substation Automation Products