

Phasor Measurement Terminal RES 521



Opening a new perspective

The Phasor Measurement Terminal RES 521 enables **increasing the transmission capacity without the need to invest in additional transmission lines**. At the same time, it improves the operational security of the power system. The superior measurement performance of RES 521, in combination with software tools for monitoring and presentation of power system dynamics, provide the operator with real-time phasor information for remedial actions.

The RES 521 terminal is more than a first-class product. **It is supplied with a value-adding information package** about the product and its use in your application. Information such as technical data, user documentation and connection diagrams is essential to ensure the smooth and efficient use of the terminal throughout its lifetime. **You can access this information easily via the operator's workplace or from your PC with Inform^{IT} Aspect Object Viewer software.**

Optimize your asset utilization

The GPS (Global Positioning System) synchronization of the RES 521 phasor measurements allows for a direct comparison of the phase angles between corresponding phasors from various locations in the power system. Operators receive **the measurements time-tagged with an accuracy of one microsecond**. This high measurement accuracy is used to estimate, or in fact, calculate the power system state.

In the case of evolving power oscillations, RES 521 provides information, for example, about voltages and currents to retain system stability. These measurements, based on system-wide data, allow, for instance, fast and reliable emergency actions as well as load shedding. Additionally, RES 521 facilitates the transfer of data to a centrally located data concentrator or evaluation station for off-line studies and analyses. As a result, **the stability limit can be moved closer to the thermal limits of power lines, enabling efficient utilization of the entire transmission system.**

Reliable and proven technology

RES 521 is based on the same proven technology as ABB's 500 series protection and control terminals, ensuring a reliable foundation for accurate phasor measurement. Developed to meet the stringent EMC requirements imposed on protective relays, it can be connected directly to CTs and VTs without the **need for any additional equipment.**

Take a major step to increase transmission capacity

Open communication

RES 521 features communication capabilities for **standard protocols in TCP/IP and UDP/IP: IEEE 1344 streaming data or PC37.118 synchrophasor format**. This ensures openness and enables the use of standard communication components, as well as easy integration into any system or PC compliant with the phasor data format.

Integrated in ABB's PSGuard system

When synchronized phasor measurements from RES 521 are combined with advanced communication technology, you can access **a wide range of applications to improving the efficiency of your power system**. As a key component in ABB's PSGuard Wide Area Monitoring, Control and Protection System RES 521 provides you with the means to, for instance, monitor and record power system dynamics, improve state estimation and system-wide power oscillation mitigation.



RES 521 *1.0

Technology summary:

Features and functions

- Protective relay technology and EMC noise suppression
- Time-tagged AC phasors, positive sequence voltages and currents as real and imaginary quantities, for local or remote applications
- Frequency, 3-phase based, and rate-of-change of frequency
- Selectable transfer rate to 1 per cycle, 1 per 2 cycles, or 1 per 4 cycles
- Built-in GPS clock module for synchronized sampling of terminals in different substations
- Time-tagged accuracy of one microsecond
- Continuous self-supervision and diagnostics
- Highly accurate voltage and current measurements
- Extensive calibration possibilities to compensate for external CT and VT non-linearity
- Highly accurate phase angle calculation
- 6 analogue current inputs, 3 analogue voltage inputs; additional 6 analogue current inputs, 3 analogue voltage inputs as option
- 8 binary inputs can be freely connected to the IEEE 1344 protocol
- 2 settable trigger levels for frequency and $\Delta f/\Delta t$ measurement
- 2 settable undervoltage and 4 settable overcurrent triggers
- Normally open output contacts for trigger pickup for f , rate of change of frequency $\Delta f/\Delta t$, U and I
- Change over output contact for loss of power supply and internal failure
- Front HSI panel
- Ready-made configuration

Communication

- Remote communication port 10/100 Base Tx for TCP/IP, UDP/IP and streaming data in IEEE 1344 or PC37.118 synchrophasor formats
- Option for additional optical remote communication ports 100 Base FX for TCP/IP, UDP/IP and streaming data in IEEE 1344 or PC37.118 synchrophasor formats

Technical details are available in the RES 521 Buyer's Guide at www.abb.com/substationautomation.



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