

# PACSystems\* RX3i Power Sync and Measurement Module

## Advanced Power Management



GE Intelligent Platforms' PACSystems RX3i Power Sync and Measurement module enhances your ability to maintain continuous operation for mission-critical applications. It is engineered specifically to gather the intelligence needed to implement advanced power management to ensure continuous service and power quality.

As a multi-function RX3i module, the Power Sync and Measurement module can be deployed with a wide variety of PACSystems control components. This flexibility provides advanced power management functionality including power grid synchronization, integrated ANSI and power calculations, and waveform capture.

GE's module is well-suited for paralleling switchgear and generator set OEMs designing backup power systems for use in mission-critical facilities such as data centers, hospitals, and electronic commerce.

At GE, we understand the criticality of uptime. Combining advanced technologies and deep domain expertise in mission-critical power applications, we offer an advanced power management solution that integrates power grid synchronization and measurement directly into your mission-critical control systems—enhancing your ability to maintain continuous operations and increase efficiency with lower total cost of ownership.

### Power grid synchronization

Mission-critical facilities with multiple onsite backup power sources require advanced power management to effectively manage these electrical power systems. The Power Sync and Measurement module delivers the functionality that enables synchronization of multiple backup power sources, power system monitoring and fault detection to achieve continuous operation.

### Advanced measurement

Measurement of power factor and reactive power metrics provides the ability to collect and analyze power consumption of the electrical power systems over time. This critically important data can be used to avoid peak demand charges and to shed loads during peak operating periods to increase efficiency and reduce costs.

### Waveform capture

System configuration validation and power quality monitoring is easier and faster with the module's waveform capture function. The module's built-in detailed fault condition view, harmonic power analysis, and capture of transient voltages and currents eliminates the need for external measurement devices enabling flexibility in system design and lower total cost of ownership.

FEATURE	BENEFIT
<b>Integration with PACSystems RX3i</b>	<ul style="list-style-type: none"> <li>• Common architecture for high reliability and low total cost of ownership</li> <li>• Single point of configuration for easy deployment</li> <li>• Full access to extensive PACSystems control, I/O and Proficy* software portfolio delivers system design flexibility</li> </ul>
<b>Multi-functional module</b> <ul style="list-style-type: none"> <li>• Two-grid synchronization and measurement</li> <li>• Integrated ANSI and power calculations</li> <li>• Waveform capture</li> </ul>	<ul style="list-style-type: none"> <li>• Consolidation of multiple devices increases system reliability</li> <li>• Reduced panel space lowers total cost of ownership</li> </ul>
<b>Integrated standard calculations:</b> <ul style="list-style-type: none"> <li>• Protective calculations</li> <li>• Power measurement</li> </ul>	<ul style="list-style-type: none"> <li>• Protective aware control systems enhance system reliability</li> <li>• Integrated calculations enable faster solution development</li> </ul>



# PACSystems RX3i Power Sync and Measurement Module

## Specifications

### Measurement Specifications

- Three voltage inputs per grid
  - Impedance:  $>1M\Omega$
  - Range: 0–150 VAC RMS (120 VAC range)  
120–750 VAC RMS (600 VAC range)  
Unlimited with use of external PTs
  - Frequency: 30–70 Hz
- Four current inputs per grid
  - Impedance:  $<5m\Omega$
  - Range: 0–7.5A RMS (5A nominal)  
Unlimited with use of external CTs
  - Frequency: 30–70 Hz
- Phase difference between grids:  $\pm 180^\circ$

### Measurement Accuracy

- Voltage:  $\pm 0.2\%$
- Current:  $\pm 0.2\%$
- kW, kVAR, kVA:  $\pm 0.4\%$
- kWh, kVARh, kVAh:  $\pm 0.4\%$
- Power factor:  $\pm 1\%$
- Frequency:  $\pm 0.01$  Hz
- Phase angle:  $\pm 0.1^\circ$

### Calculations

- ANSI 27 – Under-voltage protection
- ANSI 32 – Reverse power protection
- ANSI 46 – Negative sequence protection
- ANSI 50 – Instantaneous over-current protection
- ANSI 59 – Over-voltage protection
- ANSI 60 – Voltage (current) imbalance protection
- ANSI 81U – Under-frequency protection
- ANSI 81O – Over-frequency protection

### Processor Module

- Backplane power consumption: 350 mA max at 5 VDC
- Total power dissipation: 1.75 W maximum
- Isolation from backplane: 1,500 VDC
- Protection feature
  - Watchdog circuitry continuously checks that the module is following its normal pattern of operation

### Interface Module

- Input terminal ratings
  - Current: 15 Amps maximum
  - Voltage: 750 Volts maximum
- Sync contacts
  - Two redundant isolated relay outputs
  - 150 VAC / 150 VDC maximum 1 amp

### Data Exchange Time Between RX3i CPU/Module

- A complete data exchange between the RX3i CPU occurs during each controller scan

### Operating Environment

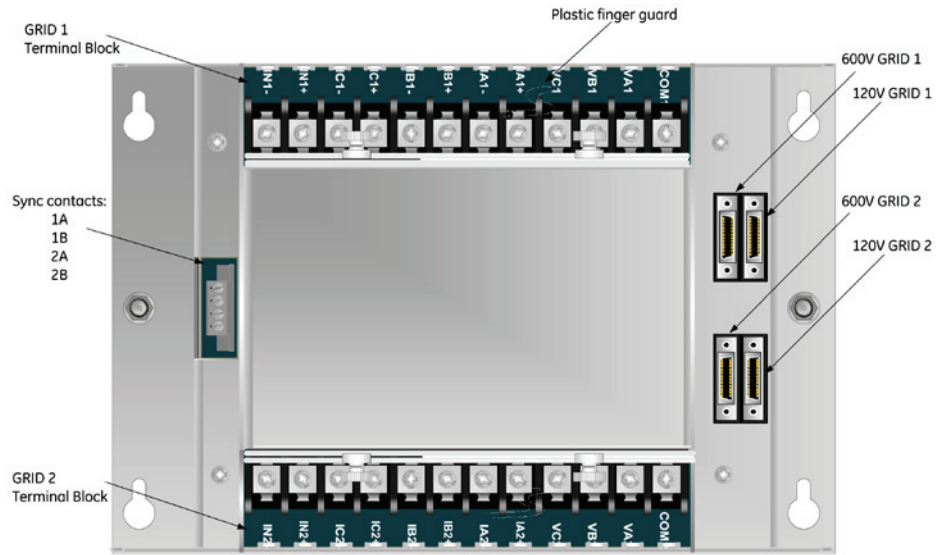
- 0 to  $+60^\circ\text{C}$  ( $+32^\circ\text{F}$  to  $+140^\circ\text{F}$ )
- The RX3i system and its components are considered open equipment, and at a minimum, must be installed in an enclosure meeting the IP20 rating (IEC60529)

### Compatibility

- For the most complete and up-to-date documentation of compatibility, please refer to the IC694PSM001 Important Product Information (IPI) sheet located at <http://support.ge-ip.com>

### Power Measurement Configurations

- Four wire three-phase
- Three wire three-phase
- Three wire single-phase
- Two wire single-phase



The interface module supports direct connect up to 750 VAC RMS so voltage transformers (PTs) are optional for low voltage power systems. Current transformers (CTs) are required for all current measurements.

## Ordering Information

### IC694PSK001

Includes:

- 1 IC694PSM001 RX3i Power Sync and Measurement module
- 1 IC694ACC200 RX3i PSM Termination module with touch guards, touch guard mounting screws, sync connector and grounding nuts
- 2 IC694CBL200 PSM interface cables (2m/6.52ft)

### IC694PSM001

RX3i Power Sync and Measurement Module

### IC694ACC200

RX3i PSM Termination module with touch safe guards, touch guard mounting screws, sync connector and grounding nuts

### IC694CBL200

RX3i PSM interface cable (2m/6.52ft)

### IC694ACC201

RX3i PSM replacement part pack, includes:

- 2 touch guards and touch guard mounting screws
- 1 sync connector
- 2 grounding nuts

## About GE Intelligent Platforms

GE Intelligent Platforms is a division of GE that offers software, control systems, services, and expertise in automation and embedded computing. We offer a unique foundation of agile and reliable technology providing customers a sustainable competitive advantage in the industries they serve, including energy, water, consumer packaged goods, oil and gas, government and defense, and telecommunications. GE Intelligent Platforms is headquartered in Charlottesville, VA. For more information, visit [www.ge-ip.com](http://www.ge-ip.com).

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