microPMU & LV

Overview

The microPMU is needed for the assessment of dynamic power flows or to identify complex impedances in distribution grids and microgrids. The microPMU is ideal for projects that need millidegree angle accuracy for synchrophasor measurements. The microPMU can also be used for real-time control applications using the IEEE C37.118.2-2011 communication protocol.

The microPMU-LV option offers an interface to low voltage signals (typically output signals from digital sensors) as opposed to connecting directly to the distribution grid mains voltage.

Features

- Easy installation: can be installed in electrical panels, on distribution poles, and/or pad mount transformers
- Supports connections via PTs and CTs
- Ultra-accurate phasor measurements: TVE 0.01%
- Simultaneous recording and streaming of synchrophasors
- Compliant with IEEE C37.118.1-2011 and C37.118.2-2011
- Fully compatible with OpenPDC, and with Powerside microPMU plotting application software
- 30 days of micro-synchrophasor measurement stored in internal memory

Application

- Stability of microgrids, distribution grids, or power generation systems
- Event identification and characterization
- Topology change detection: open/closed state of switches
- Detection of cyber-attacks rehearsals at substations
## Specifications

<table>
<thead>
<tr>
<th>MAINS VOLTAGE INPUT CHANNELS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection</strong></td>
</tr>
<tr>
<td><strong>Voltage Measurement Range</strong></td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>Voltage Measurement Channels</strong></td>
</tr>
<tr>
<td><strong>Mains Configuration</strong></td>
</tr>
<tr>
<td><strong>Frequency Range</strong></td>
</tr>
<tr>
<td><strong>Sampling Rate</strong></td>
</tr>
<tr>
<td><strong>Isolation</strong></td>
</tr>
<tr>
<td><strong>TVE (Total Vector Error)</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Amplitude Resolution</strong></td>
</tr>
<tr>
<td><strong>Amplitude Accuracy</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>Angle Resolution</strong></td>
</tr>
<tr>
<td><strong>Angle Accuracy</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>CURRENT INPUT CHANNELS</strong></td>
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| **Measurement Channels** | 8 inputs  
Differential voltage inputs (range 0.333 Vrms or 10 Vpk, input impedance 33.3 kΩ, crest factor 3.5)  
Note: 3 phase current channels streamed via IEEE C37.118-2 communication protocol |
| **Current Range** | 0 to 6000A with split-core CT’s (call us for ranges >6000A) |
| **Sampling Rate** | 25,600 samples/s at 50 Hz and 30,720 samples/s at 60 Hz |
| **Wire Connection** | Screw terminal: Max torque 2 inch-pounds (0.25 nm)  
Min. 28 AWG (0.8 mm²)  
Max. 16 AWG (1.31 mm²)  
600V UL-recognized insulation required |

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<thead>
<tr>
<th><strong>MEASURED PARAMETERS</strong></th>
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<tbody>
<tr>
<td><strong>Watts (Power)</strong></td>
<td>Sum of per-phase active fundamental power</td>
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<td><strong>Volt-Amps (Apparent Power)</strong></td>
<td>Sum of per-phase product of RMS voltage and RMS current, taken over the measurement interval</td>
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<tr>
<td><strong>Power Factor</strong></td>
<td>Fundamental power factor-ratio of Watts to Volt-Amps</td>
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<td><strong>Vars (Volt-Amps Reactive)</strong></td>
<td>Fundamental Vars</td>
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<tr>
<th><strong>MODES OF OPERATION</strong></th>
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| **Ultra Precise Mode** | Recordings to Internal Memory  
Streaming according to C37.118.2-2011 (both simultaneously)  
Parameters streamed: 3 voltage and 3 current phasor angle and magnitude, frequency, ROCOF  
Parameters recorded only: active / reactive powers, power factor  
Latency: 5 sec typical |
| **Low Latency Mode** | Using P-Filter* (streaming IEEE C37.118.2 only)  
Using M-Filter* (streaming IEEE C37.118.2 only)  
Parameters streamed: 4 voltage and 8 current phasors, frequency, 4 analog channels  
Latency: 5 sec / 50 msec typical |

*As per IEEE C37.118.2
TECHNICAL SPECIFICATIONS

Dimensions (L x W x H) 4.33 X 2.89 X 3.08 in (11.0 X 7.34 X 7.82 cm), 35 mm DIN rail mountable

Operating Environment (temp., hum., alt.) -20 to 65° C (-4 to 149° F) or 55° C (131° F) with PM2 ALUX load, 5 to 95% RH <2000 m above sea level. For EMC immunity, overvoltage, and other conditions, see full specs

Power Supply AC: 24 Vac ±10% at 50/60/400 Hz, 1.5A max PM1 and PM2 modules supply microPMU compatible power at 100 to 240 Vac 50/60 Hz, and 120 to 370 Vdc
DC: ±24 to 48 Vdc ±10% (polarity independent), 1A max. Power over Ethernet (PoE) compatible

Internal Memory 32 GB up to 30 days of synchrophasor data

Clock Synchronization GPS receiver and antenna provided with the microPMU

Communication Ethernet port RJ-45, 10/100 (optional wireless and cell modem)

Communication Protocols FTP or HTTP (secure FTPS and HTTPS), IEEE C37.118-2.2011

PRODUCT PART NUMBER
microPMU microPMU-DINRail-000-000-XXXX
microPMU-LV microPMU-LV-DINRail-000-000-XXXX