7100 PQNode®

DRANETZ BMI

A flexible, low-cost system for monitoring power quality, power flow, or harmonics.

The portable, three-phase 7100 PQNode provides eight-channel, simultaneous voltage and current monitoring of power quality, power flow, or harmonics. It relies on easy-to-use Power Evaluation Software (PES) for Windows® for setup, to switch between monitoring modes, and for data retrieval.

A flexible system—at the right price
Designed to cost-effectively support comprehensive monitoring, the 7100 includes your choice of one monitoring mode. (You can add modes by simply downloading software modules.) A full-featured unit could provide a week's data on power flow and harmonics, then be left for months to collect power quality data, allowing you to obtain a complete profile of the site.

Or, because it's compact and easy to connect, you can move 7100s configured for power flow and harmonics from site to site to supplement power quality data—again allowing you to gain complete power profiles cost-effectively.

Complete data—for useful work
• Power quality: Captures ANSI C62.41 Type A and B impulses, waveshape faults, and rms variations.
• Power flow: Calculates demand every cycle.
• Harmonics: Performs one- or four-cycle FFTs up to the 49th.

Slight changes that don't significantly alter the rms value of the voltage waveshape can affect equipment operation. PQNodes capture these disturbances using our patented waveshape fault detection technique.

With its cross-triggering feature, you get a complete picture of the power system each time a disturbance occurs. When one voltage channel detects a disturbance, the 7100 collects voltage and current data on all eight channels.

On-board processing of harmonics and power flow data provides detail, efficient use of memory space, and fast data transfer times.

Harmonics analysis using multiple-cycle FFTs

Measurement Modes

Power Quality	Power Flow	Harmonics
• snapshots	• V_{rms}	• V_{thd}
• rms summaries	• I_{rms}	• I_{thd}
• rms variations	• demand (kW and kVA)	• indiv harmonics to the 49th
• impulses	• kWh	• indiv harmonics triggering
• waveshape faults	• kVAR	• 1- or 4-cycle FFTs
• demand (kW and kVA)	• PF	
• harmonic snapshots to the 49th	• dPF	
• kWh	• V_{thd}	
• kVAh	• I_{thd}	

or ... *or*

Efficient, cost-effective monitoring: The 7100 PQNode installs easily using plug-in connectors, then gathers, stores, and sends data from remote sites to a central PC running Power Evaluation Software for Windows.

helps filter out the effect of inter-harmonics, making results more accurate. Users can set harmonics thresholds that, if exceeded, cause the instrument to capture waveshapes on all channels.

Memory allocation—helps data management
To avoid storing redundant disturbances and to capture target events in power quality mode, you can allocate the 7100's 1.5 MB memory by disturbance type. To manage data capture in power flow mode, you can also specify memory space for these reports. Data is stored in battery-backed memory until transferred to your PC via RS-232 or optional internal modem.

Rugged, reliable, easy to install
The PQNode has a unity power factor power

supply that has minimum influence on the power being monitored, and a front panel display for verifying installation and operation, including site name, time, date, power type, memory status, and battery voltage.

PE Software—a system with a future
Intuitive Power Evaluation Software for Windows controls setup and automatic downloads for an unlimited number of 3100, 7100, 8010, 8020, 9010, 9020, and future PQNodes—so one person can monitor many sites cost-effectively and efficiently. With PE Software, you're buying into a flexible system that can continue to meet your power monitoring needs.

Specifications are listed on the reverse side.

7100 PQNode® Specifications

General Specifications:
- •Voltage Inputs: Phase A, B, C, Neutral, and Ground
- •Current Inputs: Phase A, B, C, and Neutral
- •Power Types Supported: Single phase, split single phase, 3 phase 4 wire wye, 3 phase delta

Operating Power:
- •AC Voltage: 90 - 250 V_{ac}
- •Frequency: 45 - 65 Hz
- •Power Consumption: < 20 VA
- •Power Factor: > 0.97
- •Surge Protection: 6,000 V_{pk}
- •Battery Backup: 14 days data protection
- •UPS Power: Selectable up to 10 minutes

Measurement Range:
- •Number of Channels: Four voltage and four current
- •Voltage:
  - -Phase A,B,C: 5 - 600 V_{rms} (±1000 V_{pk}), at 50/60 Hz
  - -Neutral Channel: 0.1 - 50 V_{pk} or 5 - 600 V_{rms}, at 50/60 Hz
- •Voltage Impulse: 100 - 1500 V_{pk} measured
- •Current: 0 - 3000 A_{rms} (depends on current probe used)
- •Input Bandwidth: 3 kHz for voltage and current
- Sampling Rates: 128 samples/cycle for voltage and current

Input Characteristics:
- •Type: *Voltage:* Solid-state differential, DC coupled; *Current:* Transformer isolation, AC coupled
- •Impedance: *Voltage:* 1 MΩ to ground, <50 pf to ground
- •Connections: *Voltage:* Safety connecting plug; *Current:* Latching six-pin, mini-DIN circular connector
- •Triggers: Voltage Phase A, B, C, and Neutral for impulses, waveshape faults, swells, sags and harmonics

Specifications at 20˚C, 50/60 Hz, 5% full scale to 60% full scale. Temperature coefficient ±200 ppm full scale/˚C; drift less than 10 ppm full scale/day; warmup time related to accuracy: 60 minutes, noise less than 0.05% rms full scale; resolution ±0.5% display count.

Specifications are subject to change without notice.

Measurement Accuracy:
- •Voltage RMS: ±0.5% of reading ±0.35% of full scale
- •Voltage Impulse: ±5.0% of reading ±5.0% of full scale
- •Current RMS: ±1.0% of reading ±1.0% of full scale, typical (actual depends on probe)
- •GPS Time (Optional) ±10ms

Communications:
- •RS-232: Direct connection at 38.4 kbps or user supplied external Hayes compatible 14.4 kbps modem
- •Internal Modem (option): 14.4 kbps modem. MNP-10 Cellular compatible

Environmental Characteristics:
- •Enclosure: Rain-, dust-, ice-, corrosion-resistant
- •Operating Temperature: 4˚F to 113˚F (-20˚C to 45˚C)
- •Operating Humidity: 0 to 95%, non-condensing

Physical Characteristics:
- •Height: 15.25 in (38.8 cm)
- •Width: 14 in (35.6 cm)
- •Depth: 8 in (20.3 cm)
- •Total Weight: <18.0 lbs (8 kg)
- •Enclosure: 0.125 in (0.32 cm) fiberglass polyester

User Interface:
- •Front Panel Display: Four line x 20 character LCD
- •PC Software: Power Evaluation Software (PES) for Microsoft® Windows®

Data Storage:
- •Internal RAM: 1.5 MB

Minimum PC System Requirements for Power Evaluation Software (PES):

- • 80486 processor
- • 8 MB RAM minimum (12 MB recommended for Windows '95)
- • 4 MB hard disk space for PE Software, plus at least 20 MB for data storage
- • Windows version 3.1 or greater (Windows '95 recommended)
- • Windows-compatible pointing device (mouse or trackball)
- • 3.5 inch floppy disk drive