

POWER PLATFORM[®]

PP1



- **Single or three-phase power quality, energy, harmonics, inrush and flicker analyzer**
- **Versatile – 4 voltage and 4 current channels**
- **TASKCard[®] technology**
- **Powerful PC analysis and report writing software**

The Dranetz-BMI Power Platform[®] PP1 continues to set the standard in power monitoring instrumentation value and performance.

Thanks to its advanced, patented TASKCard[®]-driven architecture, the Power Platform PP1 is really multiple instruments

in one. Buy the hardware only once and add the functionality you need—as you need it.

The portable and rugged PP1's open architecture design easily adapts to a variety of measurement and analysis tasks. The insertion of a measurement-specific TASKCard[®] configures the system as a full-featured:

Power Quality Analyzer

Energy Analyzer

Inrush Analyzer

Flicker Analyzer

The Power Platform PP1 features a large, easy-to-read LCD display with on-screen menu for easy instrument setup and display of data. View real time data in Scope Mode[®] or Meter Mode[™]. In addition, an optional built-in printer provides hard copy printout with a press of a button. Automatic instrument startup and configuration is simplified with Easy Start[™].

The PP1 is equipped with a built-in serial port for transfer of data to your PC for further analysis with the powerful and easy-to-use DRAN-VIEW[®] software package. The instrument can also be configured with an external modem for remote communications.



The Dranetz-BMI POWER PLATFORM

Portable Three-Phase Power Quality, Harmonics & Energy Meter & Analyzer

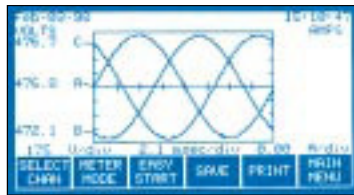
STANDARD FEATURES

The PPI has the eight-channel power to measure, record and analyze Power Quality, Harmonics and Energy from any single or three phase source.

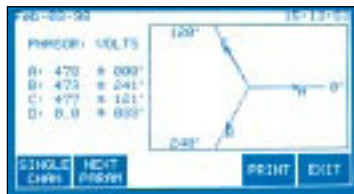
The PPI measures:

- volts, true RMS
- amperes, true RMS
- watts, W
- volt amperes, VA
- volt amps reactive, VAR
- power factor
- frequency (30-450 Hz fundamental)
- voltage unbalance¹
- voltage and current crest factor³
- demand²
- energy²
- sags¹
- swells¹
- voltage and current transient capture¹
- voltage and current THD²
- individual harmonics to the 50th (50/60 Hz)²
- K factor¹
- flicker⁴

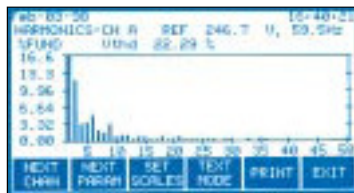
¹ with PQPlus TASKCard installed
² with PQPlus or 8000 TASKCard installed
³ with TASKCard 8000 installed
⁴ with Flicker TASKCard installed



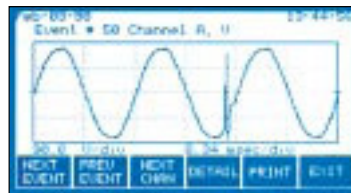
Scope Mode Real-time viewing of:
 ■ voltage and current waveforms



Meter Mode A true three-phase volt-ampere-power-harmonic meter lets you view values updated every second.
 ■ V, A, W, VA, VAR, power factor, frequency, voltage unbalance, voltage and current THD, current crest factor, K factor, demand, energy and individual harmonics
 ■ voltage and current phasor diagrams



- TASKCard® system for maximum monitoring and analysis versatility
- Easy Start™ for fast, automatic start up
- Scope Mode®
- Meter Mode™
- Menu Driven Operation
- DSP – Digital signal processing technology
- True cycle-by-cycle monitoring for disturbances (PQPlus)
- Time plots – graphic display of parameters over time



View Data Recorded data can be viewed easily to quickly show where the problems are.
 ■ Event data can be displayed utilizing the built-in event, worst case or activity reports
 ■ Waveform data displays the actual captured voltage or current waveform¹
 ■ Power quality events (sags and swells) are classified to the IEEE 1159 standard for voltage disturbances¹
 ■ Min/max reports²
 ■ Daily, monthly, midnight summaries²

Harmonics Analysis Real-time or recorded viewing of:
 ■ graph of magnitude of individual harmonics of voltage, current and power
 ■ text display of individual harmonic values

- Simultaneous channel capture (8 channels)
- AC powered operation or battery powered for up to two hours of portable operation
- Internal battery charger
- 1 MB internal memory (expandable)
- Memory card interface
- RS-232 port
- 4 digital inputs
- 4 relay outputs
- Programmable PT and CT ratios
- Voltage cables and clips
- 12V DC input
- On-line Help
- User's Guide
- FREE technical support hotline



Time Plots Displays a graph of the selected parameter since recording began.
 ■ Record up to 30 days with internal memory (expandable)
 ■ Select from up to 16 different parameters
 ■ Select individual channels
 ■ Zoom in for greater detail down to 0.1 s/div

Maximize the versatility of the
POWER PLATFORM PP1
 with *TASKCard*
 Technology

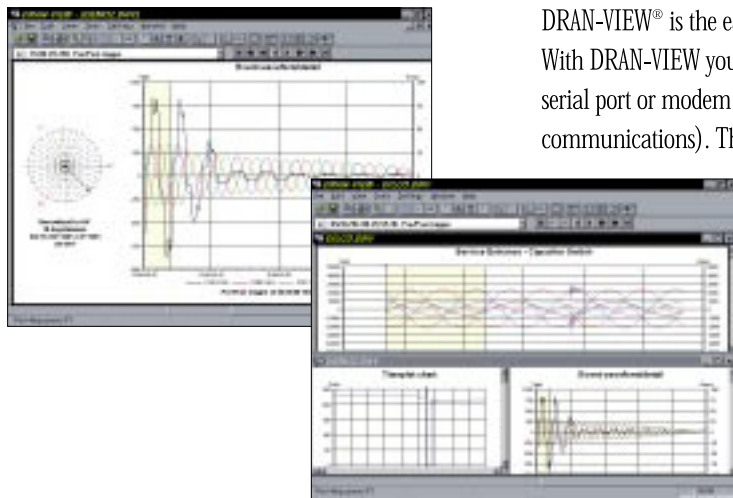


What makes the PP1 a true hardware "platform" is the patented TASKCard® system. By simply inserting a TASKCard, the PP1 is set up with the specific task-oriented operating and application system contained in the card. With the TASKCard system, you configure your PP1 for the job you need to do, without the expense of added features you don't need. And when your needs change, you have a whole new instrument in your hands for just the cost of a new TASKCard. Each TASKCard configuration is equipped with menu-driven operation and on-line help.



PQPlus™	Monitor Power Quality, Harmonics and Energy simultaneously. Cycle-by-cycle monitoring of sags, swells and transients for voltage <i>and</i> current per IEEE 1159. Scope and Meter modes display rms, power, harmonics and energy parameters in real time as well as historical trend recording. Smart thresholds for protection against memory fill. Easy Start™ for automatic configuration. DRAN-VIEW PC analysis and report writing software, optional.
8000™	The world's most comprehensive demand, energy and harmonics analyzer. Built-in reports for energy, harmonics, min/max, and historical trend data logging. Scope and Meter modes (see PQPlus). Programmable demand and energy rate schedules and time-of-use for revenue calculations. Easy Start setup.
Inrush™	Record voltage and current inrush events cycle by cycle. Scope and Meter Modes provide rms, power and harmonic parameters in real time. Ideal for analyzing start ups of electric motors, transformer magnetization characteristics, protective relaying and breaker operations and other devices. Performs like a fault recorder to monitor loads each and every cycle.
Flicker™	Continuously monitor single or three phase flicker parameters per IEC 868 and IEC 1000-4-15. Display probability graphs, min/max reports, subharmonics spectrum, voltage, current and flicker parameters in Scope and Meter modes. Easy Start set-up.

DRAN-VIEW® software



DRAN-VIEW® is the easiest-to-use, most powerful PC analysis tool available! With DRAN-VIEW you can download data (PQPlus) from either a memory card, serial port or modem (DRAN-LINK® PP1/658 is required for modem & serial communications). This enables the PP1's stored data to be viewed and analyzed in the PC while the PP1 continues to monitor in the field. Also, the optional Report Writer formats a complete custom report at the click of your mouse. Additionally, waveforms, timeplots and graphs can be cut and pasted easily into any other Windows application such as a word processor so you can customize your own reports. And DRAN-VIEW runs under Windows 3.1, 3.11, Windows 95 and Windows NT. DRAN-LINK PP1/658 requires Windows 95 or Windows NT.

Specifications

POWER PLATFORM® PP1

MEASURED PARAMETERS

	PQPLUS	8000	INRUSH	FLICKER
Voltage	■	■	■	■
4 fully differential channels Channels A, B, C range: 10-600 Vrms max. Channel D low range: 1-60 Vrms max. Channel D high range: 10-600 Vrms max. Accuracy: ±1% of reading ±0.05% full scale		0.1%	0.1%	
Voltage Transients	■			
Channels A, B, C range: 50-6000 Vpk Channel D low range: 5-600 Vpk Channel D high range: 50-6000 Vpk Accuracy: ±10% of reading ±1% full scale Transient duration: 1 µs min.				
Current	■	■	■	■
4 independent input channels Channels A, B, C range: 10-200% CT full scale Channel D range: 2-200% CT full scale Accuracy: ±1% of reading ±0.05% full scale at fundamental frequency plus current probe accuracy		0.1%	0.1%	
Current Transients	■			
Channels A, B, C range: 10-300% CT full scale Channel D range: 2-200% CT full scale Accuracy: ±10% of reading ±1% full scale plus probe Transient duration: 1 µs min.				
Phase	■	■	■	■
Each voltage/current pair are sampled simultaneously to preserve phase relationship				
Frequency	■	■	■	■
Fundamental range: 30-450 Hz Accuracy: ±0.2% of reading				50/60

COMPUTED PARAMETERS

Update Rate	■	■	■	■
Power & energy parameters: once per second Harmonic-based parameters: every 5 seconds				
ABC Volts	■	■	■	■
Calculated as the geometric mean of the three phases				
ABC Amps	■	■	■	■
Calculated as the sum of the three phases				
Real Power	■	■	■	■
Single Phase: Average of instantaneous power samples taken as the product of voltage and current samples. Includes sign to indicate direction of power flow Three Phase: Calculated as the sum of the three phases. Includes sign to indicate direction of power flow Accuracy: ±2% of Reading ±0.2% of full scale at fundamental frequency		0.2%	0.2%	
Apparent Power	■	■	■	■
Single Phase: Calculated as Vrms times Arms Three Phase: Calculated as the vector sum of VAR _{ABC} and W _{ABC} Accuracy: ±2% of reading ±0.2% of full scale at fundamental frequency		0.2%	0.2%	
Power Factor	■	■	■	■
Calculated as real power divided by apparent power. Includes sign to indicate leading or lagging load current Accuracy: ±0.05 typical				
Reactive Power	■	■	■	■
Single Phase: Calculated as the vector difference between VA and W. Includes sign to indicate capacitive or inductive Three Phase: Calculated as the sum of the three phases. Includes sign to indicate capacitive or inductive Accuracy: ±2% of reading ±0.2% of full scale				
Demand	■	■		
Average power during a demand interval in W, VA, VAR Accuracy: ±2% of reading ±0.02% of full scale at fundamental frequency				
Energy	■	■		
Summation of Watt-Hours for accumulated energy use Accuracy: ±2% of reading ±0.02% of full scale at fundamental frequency				
Total Harmonic Distortion	■	■	■	■
Calculated using the individual harmonic components derived from the FFT				
Flicker				■
Accuracy: ±5% per IEC 1000-4-15				
Task-Specific Parameters	■	■	■	■
Dependent on selected TASKCard				

GENERAL SPECIFICATIONS

Standard Unit Configuration

8 differential input channels (4V/4I)	Internal UPS
RS-232 port	1 MB internal memory
4 digital inputs	PCMCIA interface for memory expansion
4 relay outputs	All voltage cables & clips

Dimensions

(H x W x D): 7" x 13" x 10" (17.8cm x 33.0cm x 25.4cm)
Weight: 21 pounds (9.54 kg)

Environmental

Operating: 5 to 45°C (41 to 113°F)
Storage: -20 to 55°C (4 to 131°F)
Humidity: 10 to 90% non-condensing

System Time Clock

Crystal controlled. 1 second resolution
Event time clock, 10 ms resolution
Time displayed in 24-hour format HH:MM:SS

Internal Memory

1 MB of standard non-volatile data RAM (event storage) expandable with optional memory card

Power Requirements

90-130 or 180-250 Vrms 47-450 Hz 100W max or 12 Vdc 10A

Display

Negative transreflective liquid crystal display (LCD) with electroluminescent (EL) backlighting

Alarm

Audible alarm of an event trigger or error condition

OPTIONAL ACCESSORIES

Internal Printer

High resolution output for text and graphics

Current Probes

CT-10	1-10 A	Up to 0.47" conductors, auto scaling
CT-150	3-150 A	Up to 0.47" conductors, auto scaling
CT-300	10-300 A	Up to 2.17" conductors, auto scaling
CT-1000	50-1000 A	Up to 2.17" conductors, auto scaling
CT-3000	200-3000 A	Up to 2.56" diameter or 1.97" x 5.3" (bus bar)
ISO-1A	Isolated CT Box 1 A	For use with Existing 1A secondary CT
ISO-5	Isolated CT Box 5 A	For use with existing 5A secondary CT
LEM-FLEX 3K	1-300/30-3000A (dual range)	Up to 6" diameter (requires CAPP1LEM)

CT Adapter Cables

CAPP1LEM	Adapts LEMFLEX to PP1
115552-G2	Adapts 658 CT to PP1

Memory Cards (Card-512, Card 1M, Card 2M)

Removable 512kB, 1MB and 2MB PCMCIA type I (PC card) SRAM card for data storage

Memory Card Readers

MCR-R	Adapts to PC RS-232 Serial Port
MCR-P	Adapts to PC Parallel Port

Soft Carrying Case (SCC-8)

Rugged Condura nylon carry case, holds PP1, voltage probes, CTs and manual

Reusable Shipping Container (RSC-8)

Protects the analyzer from damage during shipment. Includes space for accessories

Field Replaceable Battery Pack (FBP-8)

Provides full operation for up to two hours. One included, standard, with PP1

External Battery Charger (XBC-8)

Provides charging of extra batteries when PP1 is in use.

External DC Battery Filter (XBF-12)

Allows operation via automobile-type battery.

Thermal Paper (CTP-16)

16 rolls of paper for use with optional internal printer

Field Handbooks

HB114414	Power Quality Field Handbook
A010-S	Handbook of Power Signatures
HB114415	Energy Management Field Handbook

Windows PC Software (DRAN-VIEW®)

View and analyze PP1 recorded data on a PC. Runs under Windows 3.1, Windows 95 and Windows NT

Communications Software (DRAN-LINK® PP1/658)

Provides interface from PP1 (PQPlus only) to PC via RS-232 serial or modem connection for remote data retrieval. Requires Windows 95 or Windows NT.

RS-232 Cables (RSCOH)

Serial cable for PP1 connection to PC. Includes 9 and 25-pin adapter.



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DRANETZ
BMI

Dranetz-BMI • Edison, NJ • USA

tel: 732.287.3680 fax: 732.248.1834

www.dranetz-bmi.com

1-800-372-6832