![Dranetz logo] **DRANETZ**™

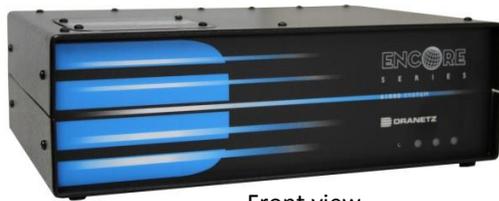THE STANDARD FOR ENERGY & POWER MEASUREMENT

Encore Series Product Brochure

ENC◯RE™
S E R I E S

I04

Table of Contents

61STD-PQ

Front view

Back view

61STD-PQ DataNode® Specifications

Voltage

Channels: (4) differential inputs, AC/DC
Sampling: 512 samples/cycle, 16bit A/D, synchronous sampling
Range: 1-600 Vrms, +/- 1000VPK, Frequency: 16/20Hz, 50Hz, 60Hz
Full Scale Accuracy: 0-600V 0.1% reading +/- 0.05% full scale, 7KHz bandwidth for low/medium
Input impedance: 10MΩ to ground
Screw terminals 61MVS

Current

Channels: (4) differential inputs, AC/DC
Sampling 512 samples/cycle, 16 bit A/D.
Range: Full scale current = 1.5Vrms, crest factor of 3
Accuracy: 0.1% reading +/- 0.05% full scale, 3KHz bandwidth for low/ medium freq. transients. Does not include CT.
Screw terminals 61MAS5

Memory

1GB internal flash

Monitoring Compliance

IEC61000-4-30:2008 Class A, IEC61000-4-7, IEC61000-4-15
EN50160, NVE, IEEE1159, IEEE1453, IEEE519, IEEE1459

Communications

Standard: RJ45 TCP/IP Ethernet, RS232/RS485
Protocols: XML, Modbus TCP/RTU, HTTP, (IEC 61850 optional)
Time synchronization: NTP, optional GPS

Instrument Power

Standard: 90 to 264VAC 47-63Hz
15 minute internal UPS (specified with display & 4 modules)
Battery is replaceable in the field
Din Rail power supply (61DINPWR12VDC) optional

Environmental

Operating temperature: -10 to 60°C
Humidity: 10 to 95%, non-condensing, indoor use only

Safety and Compliance

ISO9001, CE, cULus LISTED

Power Supply Options Please choose ONE

____ **61PSAC-US** 100-250VAC Power supply, US AC Power Cord   ____ **61PSAC-EURO** 100-250VAC Power supply, EURO AC Power Cord
____ **61PSAC-UK** 100-250VAC Power supply, UK AC Power Cord   ____ **61PSAC-AUST** 100-250VAC Power supply, AUST AC Power Cord
____ **61DINPWR12VDC** 85-264VAC or 90-375VDC input Din Rail power supply, 12 VDC output (see page 23)

DRANETZ™
THE STANDARD FOR ENERGY & POWER MEASUREMENT

A **GOSSEN METRAWATT**
Company

61SG-PQ

Front view

Back view

61SG-PQ DataNode® Specifications

Voltage
Channels: (4) differential inputs, AC/DC
Sampling: 512 samples/cycle, 16bit A/D, synchronous sampling
Range: 1-600 Vrms, +/- 1000VPK, Frequency: 16/20Hz, 50Hz, 60Hz
Full Scale Accuracy: 0-600V 0.1% reading +/- 0.05% full scale, 7KHz bandwidth for low/medium
Input impedance: 10MΩ to ground
Screw terminals 61MVS

Current
Channels: (4) differential inputs, AC/DC
Sampling 512 samples/cycle, 16 bit A/D.
Range: Full scale current = 1.5Vrms, crest factor of 3
Accuracy: 0.1% reading +/- 0.05% full scale, 3KHz bandwidth for low/ medium freq. transients. Does not include CT.
Screw terminals 61MAS5

Memory
1GB internal flash

Monitoring Compliance
IEC61000-4-30:2008 Class A, IEC61000-4-7, IEC61000-4-15
EN50160, NVE, IEEE1159, IEEE1453, IEEE519, IEEE1459

Communications
Standard: RJ45 TCP/IP Ethernet, RS232/RS485
Protocols: XML, Modbus TCP/RTU, HTTP, (IEC 61850 optional)
Time synchronization: NTP, optional GPS

Instrument Power
Standard: 90 to 250VAC 50/60Hz, 105 to 125VDC
Screw terminals
15 minute internal UPS (specified with display & 4 modules)
Battery is replaceable in the field

Environmental
Operating temperature: -10 to 60°C
Humidity: 10 to 95%, non-condensing, indoor use only

Safety and Compliance
ISO9001, CE, cULus LISTED

3

DRANETZ™
THE STANDARD FOR ENERGY & POWER MEASUREMENT

A GOSSEN METRAWATT Company

61SGD-PQ

Front view

Back view

61SG-PQ DataNode® Specifications

Voltage
Channels: (4) differential inputs, AC/DC
Sampling: 512 samples/cycle, 16bit A/D, synchronous sampling
Range: 1-600 Vrms, +/- 1000VPK, Frequency: 16/20Hz, 50Hz, 60Hz
Full Scale Accuracy: 0-600V 0.1% reading +/- 0.05% full scale, 7KHz bandwidth for low/medium
Input impedance: 10MΩ to ground
Screw terminals 61MVS

Current
Channels: (4) differential inputs, AC/DC
Sampling 512 samples/cycle, 16 bit A/D.
Range: Full scale current = 1.5Vrms, crest factor of 3
Accuracy: 0.1% reading +/- 0.05% full scale, 3KHz bandwidth for low/ medium freq. transients. Does not include CT.
Screw terminals 61MAS5

Memory
1GB internal flash

Monitoring Compliance
IEC61000-4-30:2008 Class A, IEC61000-4-7, IEC61000-4-15
EN50160, NVE, IEEE1159, IEEE1453, IEEE519, IEEE1459

Communications
Standard: RJ45 TCP/IP Ethernet, RS232/RS485
Protocols: XML, Modbus TCP/RTU, HTTP, (IEC 61850 optional)
Time synchronization: NTP, optional GPS

Instrument Power
Standard: 90 to 250VAC 50/60Hz, 105 to 125VDC
Screw terminals
15 minute internal UPS (specified with display & 4 modules)
Battery is replaceable in the field

Environmental
Operating temperature: -10 to 60°C
Humidity: 10 to 95%, non-condensing, indoor use only

Safety and Compliance
ISO9001, CE, cULus LISTED

MADE IN AMERICA

4

Mainframe Options

61STD Mainframe

61STD
Standard instrument: 4" x 11" x 8"   (10.2cm x 28cm x 20.3cm)
Communications
Standard:
Ethernet, RS232/RS485, (MODBUS TCP, RTU), HTTP
Optional:
GPRS, GSM, Modem
3G/4G wireless
IEC61850 optional
Memory:
1GB internal Flash memory (Not removable)
Display:
¼ VGA touch display (optional)
Power Supply
On/Off Switch
Standard enclosure, 12VDC input
External AC adapter
61DINPWR12VDC Din Rail power supply (optional)(see page 23)
Built in UPS with user accessible battery
Internal GPS receiver (optional), rear panel connector
Time synchronization via NTP or optional internal GPS

Power Supply Options Please choose **ONE**

_____ **61PSAC-US** 100-250VAC Power supply, US AC Power Cord
_____ **61PSAC-EURO** 100-250VAC Power supply, EURO AC Power Cord
_____ **61PSAC-UK** 100-250VAC Power supply, UK AC Power Cord
_____ **61PSAC-AUST** 100-250VAC Power supply, AUST AC Power Cord

61SG Mainframe

61SG
Switchgear mount without display: 6.5" x 7" x 8" (16.5cm x 17cm x 20.3 cm)
Communications
Standard:
Ethernet, RS232/RS485, (MODBUS TCP, RTU), HTTP
Optional:
GPRS, GSM, Modem
3G/4G wireless
IEC61850 optional
Memory:
1GB internal Flash memory (Not removable**)**
Power Supply
On/Off Switch
Switchgear mount
Standard: 90 to 250VAC 50/60Hz, 105 to 125VDC, Optional: 90 to 250V AC/DC, 50/60Hz
Built in UPS with user accessible battery
Internal GPS receiver (optional), rear panel connector
Time synchronization via NTP or optional internal GPS

61SGD Mainframe

61SGD
Switchgear mount with display: 6.5" x 7" x 8" (16.5cm x 17cm x 20.3 cm)
Communications
Standard:
Ethernet, RS232/RS485, (MODBUS TCP, RTU), HTTP
Optional:
GPRS, GSM, Modem
3G/4G wireless
IEC61850 optional
Memory:
1GB internal Flash memory (Not removable)
Display:
¼ VGA touch display
Power Supply
On/Off Switch
Switchgear mount
Standard: 90 to 250VAC 50/60Hz, 105 to 125VDC, Optional: 90 to 250V AC/DC, 50/60Hz
Built in UPS with user accessible battery
Internal GPS receiver (optional), rear panel connector
Time synchronization via NTP or optional internal GPS

5

Host Comm. Module Options

61HCG   Host Module*

61HCG Host Communication Module with GPS
-RS232 / RS485 port
-RJ45 TCP/IP Ethernet
-GPS Antenna input

*One required per mainframe

61HC Host Module*

61HC Host Communication Module
-RS232 / RS485 port
-RJ45 TCP/IP Ethernet

*One required per mainframe
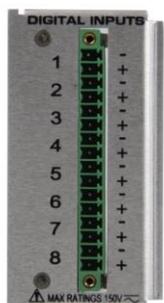
Input Module Options

61MZP Voltage / Current Input Module

Voltage / Current Module
-Allows connection of Voltage / Current pods (pg. 11)
-Allows connection of TR Probes with TRTO55 adapter cable (pg. 12)
-Allows connection of Flex Probes with BNC connectors with BNCTO55 adapter cable (pg.12)

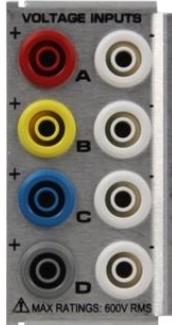## 61MDIN Digital Input Module

Digital Input Module
- 8 channels differential inputs
- Rating: 150V AC or DC
- Change of state logic level detection from "high to low" or "low to high"
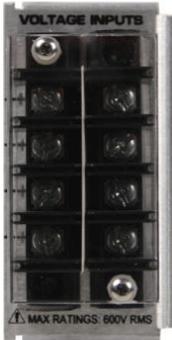
Voltage Input Modules

61MVB Voltage Input Module*

Voltage Module - Safety Connectors
- 4 differential inputs
- Accepts four 5-600 Vrms (AC or DC), ±1000 Vpk
- Channels A, B, C voltage, plus neutral to ground
- Neutral to ground voltage range: 0.5 - 20 Vrms (AC or DC)
- Accuracy ±0.1% of reading ±0.05% full scale

61MVS Voltage Input Module*

Voltage Module - Terminal Block
- 4 differential inputs
- Accepts four 5-600 Vrms (AC or DC), ±1000 Vpk
- Channels A, B, C voltage, plus neutral to ground
- Neutral to ground voltage range: 0.5 - 20 Vrms (AC or DC)
- Accuracy ±0.1% of reading ±0.05% full scale

61MVLS Low Voltage Input Module*

Voltage Module - Terminal Block
- 4 differential inputs
- Accepts four 0-150 Vrms (AC or DC)
- Channels A, B, C voltage, plus neutral to ground
- Neutral to ground voltage range: 0.5 - 20 Vrms (AC or DC)
- Accuracy ±0.1% of reading ±0.05% full scale

*Note: Anti Aliasing filters are available at an additional charge. Contact factory for details.
   At least 1 Voltage module must be chosen.

Current Input Modules

61MAC Current Input Module*

Current Probe Module - TR Series Probes
- 4 differential inputs
- Allows connection of TR Series and Flex probes
- Hypertronics connector inputs, same as used in PX5 portable family
- 1.5 VRMS Full Scale Input (AC or DC)
- Accuracy ±0.1% of reading ±0.05% full scale + CTs

61MAS1 Current Input Module*
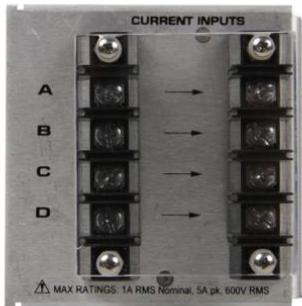
Current Module - Internal CT's
- 4 differential inputs
- Accepts four 0.01-1 Arms, 5 Apk
- Allows connection to #12 AWG wires
- Accuracy ±0.1% of reading ±0.05% full scale

61MAS5 Current Input Module*
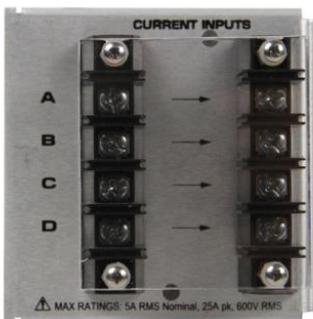
Current Module - Internal CT's
- 4 differential inputs
- Accepts four 0.01-5 Arms, 25 Apk
- Allows connection to #12 AWG wires
- Accuracy ±0.1% of reading ±0.05% full scale

*Note: Anti Aliasing filters are available at an additional charge. Contact factory for details.

Mounting Options

61RMTS
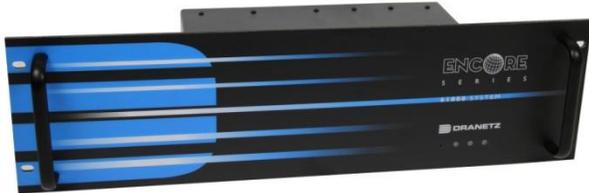
61STD 19" Rack mount without display

61RMTD

61STD 19" Rack mount with ¼ VGA touch display

61SGRMT

Front view

61SG/61SGD 19" Rack mount

Back view

61BRKTS

61STD Wall mounting Brackets (pair)

Enclosures Options

61QENCL

Metal weather resistant enclosure.
Fits one 61STD mainframe and up to 4 Voltage or Current Pods.
Dimensions:
20"L x 20"W x 8"D
(50.8cm x 50.8cm x 20cm)

61WENCL

Weather resistant enclosure.
Dimensions:
16.75"L x 12"W x 8"D
(42.5cm x 30.5cm x 20cm)

AMPOLEMNT14

61WENCL Pole mount kit.

Voltage Pods

5536 Voltage Pod

5536VPOD

- 4 differential Inputs
- Accepts four 5 - 600 Vrms (AC/DC), 1000 Vpk
- Phase A, B, C voltage, plus neutral to ground
- Neutral to ground voltage range: 0.5 - 20 Vrms (AC/DC)
- Accuracy ±0.1% of reading ±0.05% full scale

5539 Voltage Pod

5539VPOD

- 4 differential Inputs
- Accepts four 5 - 1000 Vrms (AC/DC), 1414 Vpk
- Phase A, B, C voltage, plus neutral to ground
- Neutral to ground voltage range: 0.5 - 20 Vrms (AC/DC)
- Accuracy ±0.1% of reading ±0.05% full scale

Current Pods

5533 Current Pod

5533APOD

- 4 differential Inputs
- Accepts four 0.01-5 Arms, 100 Apk
- Allows pass thru wire up to #10 AWG
- The current tube diameter is 0.215" (5.461mm)
- Accuracy ±0.1% of reading ±0.05% full scale
- 20X over current, High fault current application

5534 Current Pod

5534APOD

- 4 differential Inputs
- Accepts four 0.01-1 Arms, 5A pk
- Allows connection up to #12 AWG wire
- Accuracy ±0.1% of reading ±0.05% full scale

5537 Current Pod

5537APOD

- 4 differential Inputs
- Accepts four 0.01-5 Arms, 25A pk
- Allows connection up to #12 AWG wire
- Accuracy ±0.1% of reading ±0.05% full scale

5538 Current Pod

5538APOD

- Same as 5537APOD with one 'TR' connector for Ch. D
- 4 differential Inputs
- Accepts four 0.01-5 Arms, 25A pk
- Allows connection up to #12 AWG wire
- Accuracy ±0.1% of reading ±0.05% full scale
- Typically for DC Current measurement on a UPS

Encore 61000 Accessories

61STD mainframe shown using a DC3VFLEX cable to power 4 flex CT's

61SG or 61SGD mainframe shown using a DC3VFLEX cable to power 4 flex CT's

DC3VFLEX

Power supply cable to power up to 4 flex CT's from the 61000

FLEXPWRHUB

Hub to allow the 61000 to power up to 12 flex CT's. Must use with DC3VFLEX (117067-G1) cable

TRTO55

TR Type Current cable adapter for Dranetz clamp & flex CT's

BNCTO55

Current cable adapter with BNC connector

PODEXTKIT

Voltage & Current POD Extension Cable
Requires connector kit + wire (charged per foot) 50 ft max
116836-G1   Connector kit. One per cable
901084   Wire. Enter # of feet. (50 ft max)

116439-G1

Cable to use 8010 Current Modules with Encore Series

Energy DataNodes

The Encore Series (ES210, ES220, ES230 and ES230S) family of energy monitors are compact, cost effective and easy to use. They record all of the parameters to fit any electrical energy application, and have several options for communications including Ethernet and Serial. Combined with the Encore Series software, this enables users to monitor, record, and report on all energy management initiatives.

ES210 Energy DataNodes

Without Communications

ES2105A	EMS DataNode, 5A, 85-253Vac/DC, 96mm x 96mm. No communications.
ES2101A	EMS DataNode, 1A, 85-253Vac/DC, 96mm x 96mm. No communications.

With 10/100baseT Ethernet Communications, MODBUS TCP

ES2105AE	EMS DataNode, 5A, 85-253Vac/DC, 96mm x 96mm. Ethernet communications.
ES2101AE	EMS DataNode, 1A, 85-253Vac/DC, 96mm x 96mm. Ethernet communications.

With RS232/RS485 Serial Communications, MODBUS RTU

ES2105AS	EMS DataNode, 5A, 85-253Vac/DC, 96mm x 96mm. Serial communications.
ES2101AS	EMS DataNode, 1A, 85-253Vac/DC, 96mm x 96mm. Serial communications.

ES220 Energy DataNodes

Without Communications

ES2205A	EMS DataNode, 5A, 85-253Vac/DC, 144mm x 144mm. No communications.
ES2201A	EMS DataNode, 1A, 85-253Vac/DC, 144mm x 144mm. No communications.

With 10/100baseT Ethernet Communications, MODBUS TCP

ES2205AE	EMS DataNode, 5A, 85-253Vac/DC, 144mm x 144mm. Ethernet communications.
ES2101AE	EMS DataNode, 1A, 85-253Vac/DC, 144mm x 144mm. Ethernet communications.

With RS232/RS485 Serial Communications, MODBUS RTU

ES2205AS	EMS DataNode, 5A, 85-253Vac/DC, 144mm x 144mm. Serial communications.
ES2201AS	EMS DataNode, 1A, 85-253Vac/DC, 144mm x 144mm. Serial communications.

ES230 Energy DataNodes

Without Communications

ES2305A	EMS DataNode, harmonics, 5A, 85-253Vac/DC, 144mm x 144mm. No communications.
ES2301A	EMS DataNode, harmonics, 1A, 85-253Vac/DC, 144mm x 144mm. No communications.
ES230S5A	EMS DataNode, harmonics, 5A, 85-253Vac/DC, 96mm x 96mm. No communications.
ES230S1A	EMS DataNode, harmonics, 1A, 85-253Vac/DC, 96mm x 96mm. No communications.

With 10/100baseT Ethernet Communications, MODBUS TCP

ES2305AE	EMS DataNode, harmonics, 5A, 85-253Vac/DC, 144mm x 144mm. Ethernet communications.
ES2301AE	EMS DataNode, harmonics, 1A, 85-253Vac/DC, 144mm x 144mm. Ethernet communications.
ES230S5AE	EMS DataNode, harmonics, 5A, 85-253Vac/DC, 96mm x 96mm. Ethernet communications.
ES230S1AE	EMS DataNode, harmonics, 1A, 85-253Vac/DC, 96mm x 96mm. Ethernet communications.

With RS232/RS485 Serial Communications, MODBUS RTU

ES2305AS	EMS DataNode, harmonics, 5A, 85-253Vac/DC, 144mm x 144mm. Serial communications.
ES2301AS	EMS DataNode, harmonics, 1A, 85-253Vac/DC, 144mm x 144mm. Serial communications.
ES230S5AS	EMS DataNode, harmonics, 5A, 85-253Vac/DC, 96mm x 96mm. Serial communications.
ES230S1AS	EMS DataNode, harmonics, 1A, 85-253Vac/DC, 96mm x 96mm. Serial communications.
ES230RS232	RS232 Interface Cable

ES Series Misc. options

EMMOD201	RS232/RS485 Communications module, MODBUS RTU.
EMMOD203	Ethernet Communications module, MODBUS TCP.
ESDIN	DIN Rail Mount. **FOR ES210 & ES230s ONLY**
117872-G1	Enclosure for ES220 and ES230 (not for ES210 or ES230s)

Branch Circuit Energy Monitoring Systems

The Dranetz Branch Circuit Energy Monitoring System (BCEM) allows for the easy, centralized monitoring of all power parameters, energy, demand, power factor, load and harmonics* from a single metering location.
Each system can mix and match single phase, two-phase and three-phase (Delta or Wye) connections in order to meet any metering need.

*Harmonics measurements only available with ES230 and ES230s meters

Standard Features
• Supports Dranetz ES210, ES230s, ES220,ES230 and APlus‡
• Clean & easy connection terminal blocks
• Rugged lockable steel cabinet
• Fused voltage connections
• CT shorting blocks (up to 5A CT secondary)
• 2 x pulse/relay outputs per meter
• Integrated 120VAC power outlet
• 15A main circuit breaker
• 4 x 1½" conduit access ways (8 for 118427-Gx)
• Full mounting, wiring and installation documentation included.

Optional Features
• DC instrument power option
• 24V power supply for dry contacts
• Serial, Ethernet, and Wireless options
• Digital Inputs
• Modbus/TCP, Modbus/RTU, DNP3, LON, BacNET, Profibus DP, M-Bus
• Custom labels on front panel
• NEMA 4 option available

BCEM is an enclosure that holds up to 6, 12 or 24 ES210, ES230s, ES220 and ES230 meters (sold separately). Includes 120V power outlet, fused voltage connections, CT shorting blocks and internal wiring.
For stand alone meters or with direct RS485 communications with each meter
118425-G1   **BCEM Instrument Panel, 6 Meter**
118426-G1   **BCEM Instrument Panel, 12 Meter**
118427-G1   **BCEM Instrument Panel, 24 Meter**

For Ethernet communications. Includes RS485 to Ethernet converter.
Recommended for use with ES2101AS, ES2105AS, ES230S1AS, ES230S5AS
118425-G2   **BCEM Instrument Panel, 6 Meter, RS485 to Ethernet**
118426-G2   **BCEM Instrument Panel, 12 Meter, RS485 to Ethernet**
118427-G2   **BCEM Instrument Panel, 24 Meter, RS485 to Ethernet**

Additional options
PSB24-060-P   24VDC, 250mA DIN Rail Power Supply for contacts.

Contact Factory for BCEM to use with Aplus meters.

Aplus Multi Function Energy Meter*

Supplied by Camille Bauer, a Gossen Metrawatt company, the APLUS energy meter is intended for power distribution, building automation and other applications. The APLUS is ideal for demanding measurement tasks where fast and accurate analysis of power systems or loads is required. In addition, it can also replace fault or limit monitoring devices, small control systems and summation stations in energy management systems.

APLUS5AE

Description
- Multifunction power monitor with LED display
- Voltage and Current Harmonics to the 50th
- Ethernet Modbus TCP
- 1 relay output
- 1 digital input
- 1 digital output
- Nominal input Voltage 24-230 VDC, 100-230 VAC
- Housing 96 X 96 mm

APLUS5AS

Description
- Multifunction power monitor with LED display
- Voltage and Current Harmonics to the 50th
- RS-485 Modbus/RTU protocol
- 1 relay output
- 1 digital input
- 1 digital output
- Nominal input Voltage 24-230 VDC, 100-230 VAC
- Housing 96 X 96 mm

* The Aplus energy meter can be integrated into the Encore Series Software using the (optional) SW MODBUS

15

ADAM 4000/5000 Data Acquisition DataNode's

   The Encore Series™ readily interfaces with and acquires data from the popular Advantech® ADAM-4000 and -5000 series data acquisition and control modules. This added feature enables the Encore Series™ to record process control environment parameters such as temperature, pressure, rotation, torque, tension, speed, vibration, and pulse counts at approximately a one second sample rate.

ADAM-4000 Modules

ADAM-4017   8 Channel Analog Input Module
Measures analog data with six (6) differential, and two (2) single ended channels. Multi-range for various applications (±150mV, ±500mV, ±1V, ±5V, ±10V, ±20mA). Sampling rate of 10 samples/sec.

ADAM-4018   8 Channel Thermocouple Input Module
Measure temperature on six (6) differential, and two (2) single ended channels. Multiple input types and ranges make this thermal transducer the best on the market (thermocouples, ±15mV, ±50mV, ±100mV, ±500mV, ±1V, ±2.5V, ±20mA). Sampling at 10 samples/sec with a drift of ±3uV/ C or ±25ppm/ C.

ADAM-4018M 8 Channel Thermocouple Input Module

ADAM-4052   8 Channel Isolated Digital Input Module
Measure digital inputs on six (6) fully independent and two (2) isolated with common ground channels.

ADAM-4523   16 Channel Digital Input Module The ADAM-4053 provides 16 digital input channels for dry contact or wet contact signals. For dry contact, effective distance from DI to contact point is up to 500 m.

ADAM-4060   4 Channel Relay Output Module
Two (2) form A, and two (2) form C relays. Total switch time of 10msec., and a contact rating of up to 250Vac and 110Vdc.

ADAM-4080   2 Channel Counter/Frequency Module
Two (2) independent 32 bit counters with an input frequency of up to 50kHz. With alarm comparators, digital noise filter and two (2) digital output channels.

ADAM-4520   Isolated RS232 TO RS485 Converter
ADAM-4522   RS232 TO RS485 Converter

ADAM-5000 Modules

ADAM-5017   8 Channel Analog Input Module
Measures analog data with six (6) differential, and two (2) single ended channels. Multi-range for various applications (±150mV, ±500mV, ±1V, ±5V, ±10V, ±20mA). Sampling rate of 10 samples/sec.

ADAM-5018   7 Channel Thermocouple Input Module
Measure temperature on seven (7) differential channels. Multiple input types and ranges make this thermal transducer the best on the market (thermocouples, ±15mV, ±50mV, ±100mV, ±500mV, ±1V, ±2.5V, ±20mA). Sampling at 10 samples/sec with a drift of ±.0.3mV/ C or ±25ppm/ C.

ADAM-5050   16 channel digital I/O module, (In only)
ADAM-5051   16 Channel Digital Input Module
Measure digital inputs on sixteen (16) channels. Max voltage of 30Vdc, with a pull-up current circuit type.

ADAM-5052   8 Channel Isolated Digital Input Module
Measure digital inputs on eight (8) fully independent channels.

ADAM-5080   4 Channel Counter/Frequency Module
Four (4) independent 32 bit counters with an input frequency of up to 1000Hz in frequency mode and 5000Hz in counter mode. Hi-Low alarm settings and alarm digital output mapping.

ADAM-5000   4 slot rack
ADAM-5000E 8 slot rack
ADAMPWR   UL/CE 12 VDC 820ma power supply
ADAM5000KIT   Starter Kit: 4 slot rack & power supply
ADAM5000EKIT   Starter Kit: 8 slot rack & power supply

All systems require either the ADAM-4520 isolated RS-232 converter or the ADAM 4522 RS to RS422/485 converter and the ADAM PWR power supply
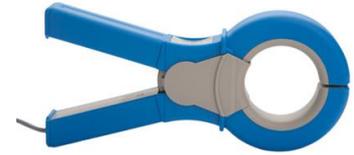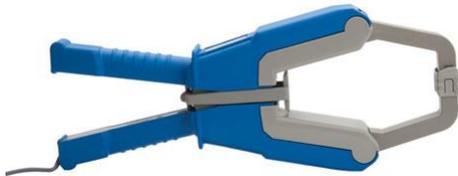
Current Probes

Clamp-on - AC only

TR-2500B 10A-500ARMS CT

TR-2501B 100 mA to 1.2ARMS-CT

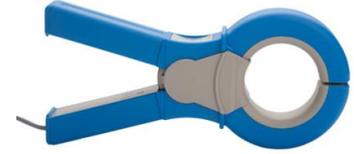**TR-2510B 1A-10ARMS CT**

TR-2530B 20A-300ARMS CT

TR-2520B 100A-3000ARMS CT

TR-2550B 1A-100ARMS CT

TR-2540B 10A-1000ARMS CT

Model	Range		Amplitude Accuracy ±	Phase Accuracy ±	Frequency Range	Maximum Conductor Size	Rated Voltage	Connector/ Output
Clamp CT's								
TR-2500B	10A to 500Arms	100A to 500A	1%	1.5°	40Hz to 5KHz	50mm dia.	600V Max.	Dranetz 1.5V
		10A to 100A	2%	3°				
TR-2501B	100mA to 1.2Arms	1.2A	1.5%	2°	40Hz to 5KHz	15mm dia.	600V Max.	Dranetz 1.5V
		100mA	2%	3°				
TR-2510B	1A to 10Arms	5A to 10A	1.2%	1.5°	40Hz to 5KHz	15mm dia.	600V Max.	Dranetz 1.5V
		1A to 5A	1.2%	1°				
TR-2520B	100A to 3000Arms	1000A to 3000A	0.5%	0.5°	40Hz to 5KHz	72mm dia.*	600V Max.	Dranetz 1.5V
		300A to 1000A	0.75%	0.75°				
		100A to 300A	1.5%	1.5°				
TR-2530B	20A to 300Arms	50A to 300A	1%	0.5°	30Hz to 5KHz	54mm dia.	600V Max.	Dranetz 1.5V
		20A to 50A	1.5%	0.6°				
TR-2540B	10A to 1000A	100A to 1000A	1%	0.4°	30Hz to 5KHz	54mm dia.	600V Max.	Dranetz 1.5V
		10A to 100A	1.5%	0.5°				
TR-2550B	1A to 100Arms	10A to 100A	1%	2.5°	40Hz to 10KHz	15mm dia.	600V Max.	Dranetz 1.5V
		1A to 10A	2%	5°				

Note: These are guidelines only. Many other factors will influence the stated accuracy including but not limited to temperature, humidity, frequency and conductor position. Model numbers and specifications subject to change without notice.
TR probes with an "A" suffix have the same specifications as above.

The current probes shown above have a 1.5V output, Dranetz Hypertronics connector, 3 meter cable and are directly compatible with the following Dranetz products:
Portable instruments:
PowerXplorer, PowerGuide, PowerVisa, PowerGuia, Energy Platform, PP4300, 658 with CA4300 adapter.
Permanent instruments:
Encore 61000 with 61MAC module, Signature System 55XX. Adapters are available for use with other instrument configurations; please contact the factory for details.

AC/DC Current Probes

PR150-SP1B 150A CT
PR1500-SP7B 1500A CT
(Requires one PR9VUS AC Adapter for each probe. UK, Euro Plugs available.)

PR150-SP2B 150A CT
PR1500-SP8B 1500A CT
(9v battery powered only)

Model	Range		Amplitude Accuracy ±	Phase Accuracy +/-	Frequen-cy Range	Maximum Conductor Size	Rated Voltage	Connector/ Output
PR150B	15A to 150A	15A to 150A	1%	3°	DC to 5KHz	52mm dia.	600V Max.	Dranetz 1.5V
PR1500B	150 to 1500A	150A to 1500A	1%	1°	DC to 5KHz	52mm dia.	600V Max.	Dranetz 1.5V

NOTE: These are guidelines only. Many other factors will influence the stated accuracy, including but not limited to; temperature, humidity, frequency and conductor position. Model numbers and specifications subject to change without notice.

The current probes shown above have a 1.5V output, Dranetz Hypertronics connector, 2 meter cable and are directly compatible with the following Dranetz products:
Portable instruments:
PowerXplorer, PowerGuide, PowerVisa, PowerGuia, Energy Platform, PP4300, 658 with CA4300 adapter.
Permanent instruments:
Encore 61000 with 61MAC module, Signature System 55XX. Adapters are available for use with other instrument configurations; please contact the factory for details.

PR9VUA AC Adapter

AC power adapter for the PR150 and PR1500 AC/DC probes

Split Core CT's

Contact the Factory for more information

TR PROBE EXTENSION CABLE

TREXT5B 5' Long   **TREXT20B** 20' Long
TREXT10B 10' Long   **TREXT25B** 25' Long
TREXT15B 15' Long   **TREXT30B** 30' Long

CA4300BNC

BNC TO TR adapter

ISO-65X-5

0-5A ISO CT Term Box (needs CA4300)

CA4300

Adapter for 65x type CT's

Flexible Probes *AC only*

Single Phase

Three Phase

DRANFLEX3000XLB 30A/300A/3000A Probe
DRANFLEX6000XLB 60A/600A/6000A Probe
Available in 24", 36" and 48"

DRANFLEX3003XLB 30A/300A/3000A Probe
DRANFLEX6003XLB 60A/600A/6000A Probe
Available in 24", 36" and 48"

Model	Range		Amplitude Accuracy ±	Phase Accuracy +/-	Frequency Range	Maximum Conductor Size	Rated Voltage	Connector/ Output
DRANFLEX3000XLB DRANFLEX3003XLB 24/36/48	3A to 3000A (3 Ranges)	3A to 30A	1%rdg, ±0.1A	1°	10Hz to 10KHz	8/11/17in dia.	1000V Max	Dranetz 1.5V
		30A to 300A	1%rdg, ±0.1A	1°				
		300A to 3000A	1%rdg, ±1A	1°				
DRANFLEX 6000XLB DRANFLEX 6003XLB 24/36/48	6A to 6000A 3 ranges	6A to 60 A	1%rdg, ±0.1A	1°	10Hz to 10KHz	8/11/17in dia.	1000V Max	Dranetz 1.5V
		60A to 600A	1%rdg, ±0.1A	1°				
		600A to 6000A	1%rdg, ±1A	1°				

NOTE: These are guidelines only. Many other factors will influence the stated accuracy, including but not limited to; temperature, humidity, frequency and conductor position. Model numbers and specifications subject to change without notice.

MicroFlex Probes

AC only. Single Phase.

DRANFLEX300MHB 3A/30A/300A Probe
Available in 6", 8" and 12"

Model	Range		Amplitude Accuracy ±	Phase Accuracy +/-	Frequency Range	Maximum Conductor Size	Rated Voltage	Connector/ Output
DRANFLEX300MHB6 DRANFLEX300MHB8 DRANFLEX300MHB12 6/8/12	0.3A to 300A 3 ranges	0.3A to 3A	1%rdg, ± 0.1A	1º	25Hz to 70kHz	2/2.75/4in dia.	1000V MAX	Dranetz 1.5V
		3A to 30A	1%rdg, ± 0.1A	1º				
		30A to 300A	1%rdg, ± 0.5A	1º				

NOTE: These are guidelines only. Many other factors will influence the stated accuracy, including but not limited to; temperature, humidity, frequency and conductor position. Model numbers and specifications subject to change without notice.

The current probes shown above have a 1.5V output, Dranetz Hypertronics connector, 3 meter cable (2 meters from probe head to intgrator box, 1 meter to instrument) and are directly compatible with the following Dranetz products:
Portable instruments:
PowerXplorer, PowerGuide, PowerVisa, PowerGuia, Energy Platform, PP4300, 658 with CA4300 adapter.
Permanent instruments:
Encore 61000 with 61MAC module, Signature System 55XX. Adapters are available for use with other instrument configurations; please contact the factory for details.

MADE IN AMERICA

DranFlex Power Supplies

ISOFLEX-MHXL*

Isolated 3 volt power adapter for use with an instruments power supply. Does **NOT include RR/PS/4A cable for up to 4 probes.**

ISOFLEX-MHXLU

Isolated 3 volt probe power supply with wall adapter and interchangeable plugs. Does **NOT include RR/PS/4A cable for up to 4 probes.**
Includes interchangeable plugs for: US, Europe, UK and Australia.

ISOFLEX-MHXL4P*

Isolated 3 volt power adapter for use with an instruments power supply. Powers up to four probes.

ISOFLEX-MHXLU4P

Isolated 3 volt power adapter with RR/PS/4A cable for up to four probes.
Not suitable for use with LPC-4300. Includes interchangeable plugs for: US, Europe, UK and Australia.

RR/PS/4A

Flex power cable for up to 4 probes

*ISOFLEX-MHXL and ISOFLEX-MHXL4P Isolated power adapters are intended for use with an instruments power supply. Compatible with PX5, PX5-400, PowerGuide, PowerVisa, Energy Platform EP1 and 61STD instruments.

Communication and Time Synchronization Options

GPS Antenna Cable Assembly

61GPSANT10 - GPS antenna 10' cable, only for use on mainframes with GPS receiver.
61GPSANT25 - GPS antenna 25' cable, only for use on mainframes with GPS receiver.
61GPSANT50 - GPS antenna 50' cable, only for use on mainframes with GPS receiver.
61GPSANT100 - GPS antenna 100' cable, only for use on mainframes with GPS receiver.

10BTSTD

10 Base T standard 6' cable

10BTNUL

10 Base T Null 6' cable

61MDM

External 56K modem

Measurement Accessories

Single Phase Measurement Cables

114015-G1
US

114015-G2
EURO

114015-G3
UK

114015-G4
AUSTRALIA

Voltage cable with 4mm connectors to measure one Single phase circuit.
Compatible with portable and permanent systems with 4mm Voltage connectors.

Cable Pouch
116042-G1

114013-G1

• *1 - Black 25 cm stackable jumpers*

Voltage cable set with 4mm connectors. *Compatible with portable and permanent systems with 4mm voltage connectors.*
FOR USE WITH 61MVB
Includes:
• 8 - Six ft. (183cm) measurement cables:
1 Red, 1 Yellow, 1 Blue, 1 Gray, 4 White
• 4 - Red alligator clips
• 4 - Black alligator clips

Red Alligator Clip
900371
600V CATIII

Black Alligator Clip
900372
600V CATIII

FVA-1K1 Single Fuse Voltage Adapter

FVA-1K4

Inline fuse adapter for one voltage channel, 4mm connector, 1000V MAX.
Compatible with portable and permanent systems with 4mm voltage connectors.

Set of 4 Inline fuse adapters, 4mm connector, 1000V MAX.
Compatible with portable and permanent systems with 4mm voltage connectors.

22

Batteries & Power Adapters

BP-61000

Battery for Encore 61000 Encore products.

61PSDC-SB

Encore 61STD Mainframe Power supply for substations.
120-300 VDC Max, 60W.

61000 AC Adapter 117029-G3

Instrument Power Supply for Encore 61STD and 61STD-PQ.

Power Supply Options for 61STD only

61PSAC-US 100-250VAC Power supply, US AC Power Cord
61PSAC-EURO 100-250VAC Power supply, EURO AC Power Cord
61PSAC-UK 100-250VAC Power supply, UK AC Power Cord
61PSAC-AUST 100-250VAC Power supply, AUST AC Power Cord

61DINPWR12VDC Din Rail power supply

This power supply is supplied with a low voltage cable that plugs into the back of the Encore Series 61000 instrument. This power supply provides a 12 VDC output that powers the instrument and is capable of being secured to a DIN rail TS35/7.5 or TS35/15.
85-264VAC or 90-375VDC input, 12 VDC output

PPA-PP1R/115 Phase Power Adapter

Power the instrument from the phase being measured. For circuits from 90V to 500Vrms.
Dimensions:
4.3"L x 7.1"W x 3.6"D
(10.9cm x 18cm x 9.1cm)
Compatible with portable and permanent systems.

PPA-PP1R/230 Phase Power Adapter

Power the instrument from the phase being measured. For circuits from 90V to 500Vrms.
Dimensions:
4.3"L x 7.1"W x 3.6"D
(10.9cm x 18cm x 9.1cm)
Compatible with portable and permanent systems.

23

Miscellaneous Accessories

Portable Station

Portable computer for Encore Series Software InfoNode. Contact Factory for more information.

Master Station

Desktop computer for Encore Series Software InfoNode. Contact Factory for more information.
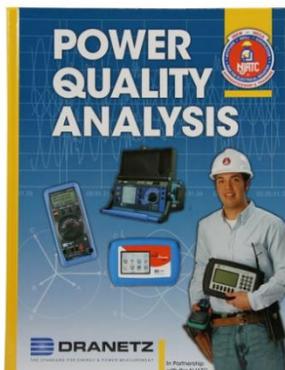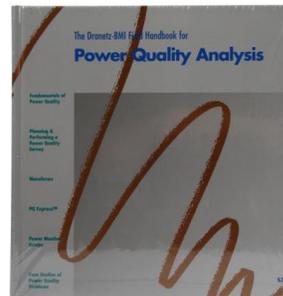
EN104

4 Port Hub

EN108

8 Port Hub

Dranetz Library

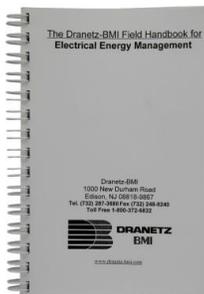### Power Quality Analysis

HB114416 Written in partnership with the NJATC, 228 pages.

### The Dranetz Field Handbook for Power Quality Analysis

HB114414-S Learn the methodology for a successful power survey and how to establish and maintain a power quality program, 283 pages.

The Dranetz BMI Field Handbook for Electrical Energy Management

HB114415 This handbook explores proven energy management techniques useful in a variety of applications, 248 pages.

Handbook of Power Signatures
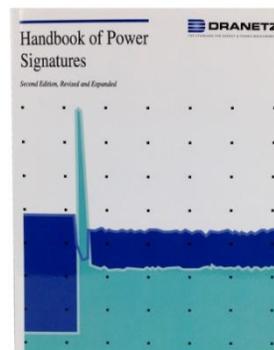
A-010S Learn to interpret and solve AC power problems, 290 pages.

Handbook Set

All 4 of the above handbooks.

IEC 61850 and OPC Communications

IEC 61850 and OPC Communications Options Enhance Versatility of Dranetz Encore Series Platforms in Substation/Industrial/Data Center Applications

The communication Options facilitate interoperability of Dranetz Encore Series power quality and energy monitoring systems with IEC 61850, the emerging automation network protocol standard for utility substations; and the established OPC protocol for industrial automation, utilities, data centers and more.

Dranetz has two communications options for its Encore Series power quality, demand and energy monitoring system. The first is the company's IEC 61850 communications option which are bundled, when specified, into Dranetz 61000 Series instruments. Thus equipped, interoperability will be achieved between Dranetz and third-party devices in utility substation environments operating under the IEC 61850 automation, communications and integration protocol. The IEC 61850 option greatly enhances the flexibility and facilitates deployment of the Dranetz Encore Series in the utility substation automation environment.

The second option is the EssOpc Module — An OPC Gateway for Dranetz Encore Series Software (ESS). Well established in the industrial, utility, data center, and other segments. OPC (Object linking and embedding for Process Control) establishes a common interface for third-party devices allowing access by other systems, including building management, SCADA and other software.

The EssOpc Gateway is a separate and optional software module that works alongside the standard Encore Series Software (ESS) to provide real-time metered data, event counters and system status to the user's compatible software systems. The EssOpc gateway communicates with ESS on a periodic basis, and makes the data and status of each instrument in the monitoring system accessible to third-party systems via OPC.

For more information about these new communications options for Dranetz Encore Series hardware and software systems, contact us at the number below or visit us at dranetz.com.

Encore Series Software

The heart of Encore Series is its web browser-based Encore Series Software. This advanced, intelligent software is both a system controller and a user interface for your entire system. Encore Series Software can be used in any application, from small systems with a few instruments to very large multi-point, facility-wide or utility monitoring systems with 50 or more points. Encore Series Software automatically communicates with each instrument in your system via all supported communications methods to download and store data. Encore Series Software is also a password-protected web server that acts as the gateway to your Encore System. All user interactions with the system such as trending, reports, real time and setups are done using any web browser with connectivity to the system. The multi-user interface allows co-workers, engineers or consultants simultaneous access to analyze and share data and reports within a familiar web environment.

Encore Series Software

Encore Series Software for use with Encore Series or Signature System on a user supplied PC. Web server. HASP Key.

Encore Series Energy Software

Encore Series Energy Software for use with Energy Data Nodes only. Includes Energy Usage Answer Module, SW MODBUS, web server. HASP Key. For use on a user supplied PC only.

Encore Series Software
AnswerModules®

Intelligent Answer Modules

Answer Modules are proprietary algorithms that convert raw power quality event data into precise answers to determine the source and cause of disturbances. Answer Modules characterize data recorded by Dranetz power quality instruments, storing the results of the analysis as part of the data recorded in the Encore Series Software database. These unique software tools are only available from Dranetz, and enable users to save time and improve accuracy when troubleshooting power quality problems.

Answer Modules (for Encore Series Software). Must order separately.

|	
SW PFCAP	PF CAP DIRECTIVITY ANSWER MODULE
SW VAR	VAR VERIFIER ANSWER MODULE
SW SAG	SAG & SWELL DIRECTIVITY SW MODULE
SW UPS	UPS VERIFICATION ANSWER MODULE
SW EUM	ENERGY USAGE MODULE
SW MDBUS	MOD BUS ANSWER MODULE
SW ADAM	ADAM MODULE FIRMWARE DRIVER
SW ESSOPC	OPC GATEWAY TO ENCORE SERIES SOFTWARE
OPCREMSUP	REMOTE EMAIL/PHONE SUPPORT FOR ESSOPC CONFIG
OPCONSITE	ONSITE SUPPORT FOR ESSOPC CONFIG. PLUS EXPENSES

Custom User Interface

SW ONELINE	ONE-LINE DIAGRAM ANSWER MODULE BASE
SW OLSCREEN	EACH CUSTOM SCREEN FOR ONELINE

Answer Modules® are embedded in the Portable firmware and the Encore Software.
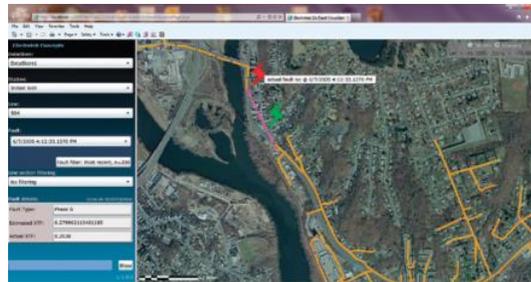
PQView® Software
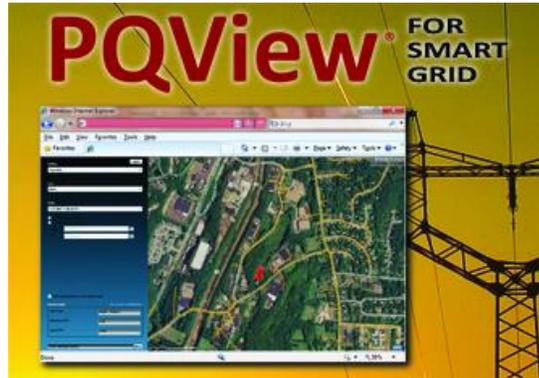
PQView®

PQView® is enterprise software available to expand the analytical capabilities of Dranetz Encore Series and/or manage multiple monitoring systems. Developed by Electrotek Concepts and EPRI®, PQView is a database software application designed to store and analyze large quantities of power quality-related disturbance and steady-state measurement data from hundreds of monitoring points. Featuring data management tools that can quickly characterize this data, PQView includes statistical analysis and plotting tools that can provide single- or multiple-site analysis for power systems. Encore Series, Signature System, PQNode family, Dranetz portable instruments, IEEE PQDIF, IEEE COMTRADE and many non Dranetz meters are PQView compatible.

PQView® is a multi-component software system developed by Electrotek Concepts® and EPRI®. This industry leading software is used for building and analyzing databases of power, power quality, and energy measurements, and is available for use with Dranetz Encore instrument configurations. PQView also integrates data from microprocessor relays, digital fault recorders, power quality monitors, smart meters, and SCADA historians into an open relational database.

29

Dran-View 7 Software

Dran-View 7 Software

Get detailed analysis of Power Quality and/or Energy data from nearly any current product from Dranetz. These are not just screen captures, this is advanced analysis of sample points recorded and saved by Dranetz, and presented in various forms including Time Plots, Event Lists and Event detail. Current with the advanced design of the Dranetz event database Time Plots and Event Detail, graphs can be zoomed in to get to the information. A simple mouse click allows you to quickly scroll through data, zoom in on disturbances, trend data, filter events, evaluate statistics, and perform advanced harmonic and inter-harmonic analyses. The software has been optimized for speed and to accommodate large data sets. Flexibility has been integrated throughout the package. Users can customize both appearance and behavior. Two versions are available, one for the everyday user (Pro), the second for advanced power professional (Enterprise). Multi-functional Dran-View 7 helps you make the most of complex data, so that you can spend time where it counts most evaluating, troubleshooting and preventing power quality events. DRAN-VIEW runs on your Windows operating system. The data file is read by the PC via memory card / reader or direct connect interface. Launch Windows and simply select File>Open and locate the data file you wish to analyze.

Dran-View® 7
Features and comparison of DV7 Professional with DV7 Enterprise

Description	DV7 Professional	DV7 Enterprise
User Interface		
Ribbon bar - Modern appearance	●	●
Scrollable (rubber band) chart axes	●	●
View Trends, Waveforms, Magnitude/Duration and DFT	●	●
Chart area marking tool	●	●
Format templates provides unified layout	●	●
Event filtering/sorting	●	●
Drag and drop charts, axes etc.		●
Insert pictures and photos		●
Floating notations (baloons) with user defined text or data		●
Customizable toolbars, keyboard shortcuts and menus.		●
File and System features		
64 bit program (Optimized for 64 or 32 bit systems)	●	●
Support for large data files	●	●
Automatic updates via Internet	●	●
Compatible with most Dranetz legacy products and Dran-View 6	●	●
Reads PQDIF and COMTRADE files		●
Reads tabulated text files		●
REMOVE partial data from measurement		●
Report Writing		
Basic report writer modules	●	●
Monitoring mode specific reports	●	●
Integrated text editor (RTF-editor)	●	●
Snapshots / Bookmarks		●
Add selected events and trends to report		●
Reports against EN, IEC, G5/4, NVE standards		●
Multi-Site Report Writing		●
Multi-Site Capabilities		
Presentation of up to 16 simultaneous data sets		●
Multi-Site events filter (find events occured at several locations)		●
Multi-Site time synchronization		●
Mathematical comparisons between data sets (difference etc.)		●
Rescue Kit (Data repair)		
Adjust timestamps	●	●
Flip current probes	●	●
Change scaling factors	●	●
Change connection type	●	●
Mathematical		
Calculate trends and harmonics from waveform data		●
Separate harmonic scaling for voltage, current and power	●	●
Enhanced DFT features - Analyze harmonic spectra in the signal		●
Mathematical formulas (calculate leakage current etc)		●
Mathematical comparisons between multiple sites		●

Dranetz - The Standard for Energy & Power Management

For more than 50 years, Dranetz has been the leading provider of intelligent monitoring solutions for electrical demand, energy and power quality. With over 100,000 clients worldwide, Dranetz's scalable solutions range from portable power quality analysis equipment, to permanent energy management devices with data storage and web-based solutions. Dranetz provides a full suite of services, including personalized pre- and post-sales support, educational power quality seminars, consulting, customization and on-site assistance.

Dranetz corporate headquarters, located in Edison, New Jersey USA, includes sales, product support and manufacturing, with distributors and sales representatives located globally. Dranetz proudly manufactures their products in the USA, and is also the supplier of Gossen Metrawatt's (GMC-I) test and measurement products in the Americas.

View our power quality analyzers, energy monitoring systems, electrical safety testers, electrical digital multifunction meters and more at www.Dranetz.com (categorized by function to easily determine the Dranetz product that is the right tool for your needs).

I04