



ELITEpro XC™

PORTABLE RECORDING POWER METER

THE NEXT GENERATION ENERGY LOGGER
FROM DENT INSTRUMENTS

FEATURES

- For single or 3-phase systems using 80-600V phase-to-phase (AC or DC) services when line powered or 0-600V (AC or DC) when externally powered. Measures up to four channels of energy metrics with currents ranging from 0-6,000 amps.
- Analog Inputs record analog data with configurable input ranges for voltage (0-10 VDC) or current loop (0-20 or 4-20 mA) transducers. Analog inputs are used for process or environmental correlation studies with power.
- Line-powered – no need for batteries or external power source.
- User-selectable recording intervals as short as every 1 second.
- 16 MB non-volatile memory standard for months of recording time.
- Better than 1% accuracy (<0.2% typical).
- Fast USB connection and standard Ethernet port.
- ELITEpro XC may be configured with optional Bluetooth® wireless technology.
- Optional Wi-Fi interface allows for remote data collection over wireless networks. Check real-time values using a Wi-Fi-enabled laptop, tablet, or smartphone via a web browser.
- Simple yet powerful Windows-based ELOG™ software package for setup, data retrieval, and analysis. Easy data exporting to almost any analysis program.
- Easy to setup and installs in minutes. Patented PhaseChek™ LED indicators ensure correct CT orientation at installation.
- Rugged and compact—easily fits inside breaker panels and switch gear.

APPLICATIONS

- Measurement and Verification (M&V) Studies
- Electrical Load Profiling
- Energy Audits
- New Technology Assessment Studies



ELITEPRO XC™ DETAILS

FOCUSED ON ENERGY MEASUREMENT

DENT Instruments designs and manufactures data loggers and energy recorders for today's energy professionals. Our products are often the first step in developing strong energy strategies, for maintaining peak operations, and for lowering operating costs. Our company has built a reputation for providing instruments of the highest quality whose robust design, small size and remote data acquisition make them the loggers of choice for companies large and small.

Since the company's emergence in 1988, we have performed energy measurement studies for a wide range of utility, government, and private clients. This unique customer perspective has strongly influenced the design of our products, reflected in their ease of installation and use.

DENT products provide meaningful energy data that is used to accurately allocate energy costs, identify energy cost-savings opportunities and lower utility bills. Our versatile instruments help pinpoint electrical usage and quantify consumption.

A DEPENDABLE AND VERSATILE TOOL TO MEASURE YOUR ENERGY USAGE

The ELITEpro XC is a complete solution for pinpointing electric usage and quantifying energy usage. It is capable of measuring, storing, and analyzing electrical consumption data which is derived from the voltage and current inputs. The ELITEpro XC uses direct connections to each phase of the voltage and various interchangeable CT options such as split-core current transformers or flexible RoCoils™ (for large loads or large cables and bussbars) to monitor current on each phase.

These meters can capture kWh/kW energy and demand data as well as virtually all relevant energy parameters for diagnostics and monitoring on three-phase or single-phase circuit installations. Electrical load diagnostic parameters, such as displacement power factor, are captured in addition to energy and demand values.

The ELITEpro XC's flexibility, size, and ease-of-use make it the ideal tool for gathering detailed consumption information in commercial, industrial, government and retail environments.

FOUR ANALOG INPUT CHANNELS: CORRELATE YOUR CONSUMPTION WITH ENVIRONMENTAL CONDITIONS

New to the ELITEpro XC are 4 analog input channels which can be configured for voltage or current input used in any combination among channels. Analog inputs are especially helpful when used in conjunction with power measurements to correlate the consumption of electricity with environmental, HVAC plant performance, or other process conditions. Typical uses might include logging ambient temperature, building temperatures, solar insolation, tank pressures, duct flows, etc. Obtain this valuable data using just one meter: the ELITEpro XC.

ELITEPRO XC ANATOMY



ELITEPRO XC™ FEATURES

LINE POWERED WITH REDUCED IMPACT ON THE ENVIRONMENT

The ELITEpro XC is powered directly from the phases of the service being measured. It incorporates a broadband power supply which operates on virtually any 80-600V phase-to-phase service. You will not have to worry about constantly changing or recharging batteries, nor finding an external power source at the job site. And you will avoid the negative environmental impact of disposing of batteries containing rare earth materials that are difficult to recycle or reclaim.

MEMORY FOR EXTENDED RECORDING

Measurements are stored in on-board memory at recording intervals selected by the user, which can be as short as one second or as long as once every 24 hours. The ELITEpro XC has 16MB of internal non-volatile memory, which allows for long-term logging sessions. For example, the ELITEpro XC can record a WYE setup with all available system measurements using a 2 minute integration interval for over 160 days!

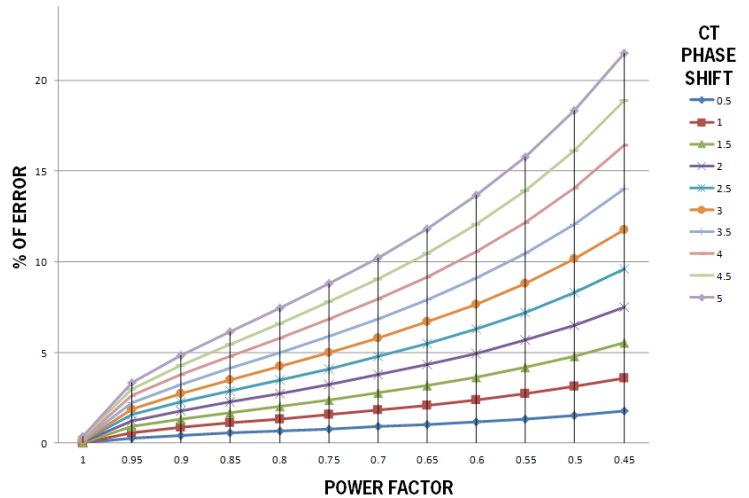
FAST SAMPLING RATE DISPLAYS POWER QUALITY DATA

Regardless of the user-selectable recording interval, the ELITEpro XC has a waveform sampling frequency of 12 kHz. This is the number of data points the logger samples on each AC waveform (200 points per cycle at 60 Hz; 240 points per cycle at 50 Hz). This fast sampling rate allows for real-time display of voltage, current waveforms, and harmonics. The channel sampling rate is 8 Hz or every 125 mSec.

EXCLUSIVE CT PHASE ERROR CORRECTION

All CTs exhibit both a ratio error and phase shift error. The CT phase error results from the phase relationship of the input versus output signal difference. This inherent phase angle error affects power readings if left uncorrected. When using CTs with a known phase angle error, the ELITEpro XC can correct for this error—making your calculations more accurate, particularly on loads with low power factor.*

EFFECT OF CT PHASE ANGLE ERROR ON POWER MEASUREMENTS



For example, with an uncorrected 3° phase angle error and reported power factor of 0.5, there is a corresponding kW error of >10%.

BI-DIRECTIONAL METERING FOR RENEWABLES STUDIES

The ELITEpro XC design delivers bi-directional metering, which is capable of monitoring power generated by a renewable energy source versus power imported from the grid—ideal for solar power measurements.

FIELD-PROVEN: RUGGED & COMPACT

Measuring in at only 21.6 x 6.3 x 4.7 cm (8.5" x 2.5" x 1.9") and weighing 340 grams (12 ounces), the ELITEpro XC was designed to fit inside panels for safety and convenience. Its rugged plastic housing is even supplied with magnets on the housing to facilitate mounting.

Our optional NEMA 4 rated weathertight drop-in enclosure delivers stronger environmental integrity, separate voltage plugs, water-tight connectors for both the current leads and the power and communication cables. This option for the ELITEpro XC will meet the stringent requirements of remote data logging.



A drop-in, NEMA 4X rated enclosure is available for harsh environments.

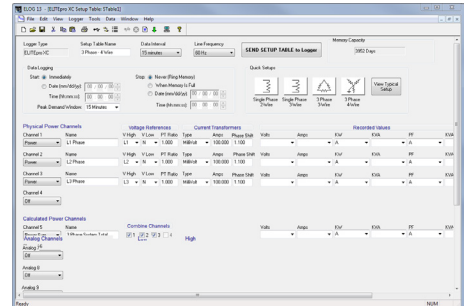
ELITEPRO XC™ START TO FINISH

EASY SETUP, INSTALLATION, AND DATA RETRIEVAL

Using the ELITEpro XC on your next project is as easy as 1, 2, 3.

1 INSTALL ELOG AND SEND A SETUP TABLE TO THE ELITEPRO XC

The ELITEpro XC is configured using ELOG software. A Setup Table is the file that programs the logger for an upcoming project. Set parameters such as sampling rate and type of service then send the file to the logger. The ELITEpro XC is now ready for deployment.



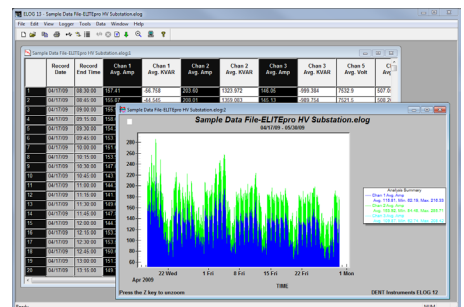
A simple one-page Setup Table guides you through the ELITEpro XC's flexible metering options.

2 CONNECT THE ELITEPRO XC TO THE PANEL YOU NEED TO MEASURE

Installation and connection of the ELITEpro XC is both simple and straightforward. Magnets on the housing facilitate mounting inside electrical cabinets. A variety of internally-shunted, snap-on CTs and clip-on voltage leads connect to almost any panel load without turning the power off.

3 DOWNLOAD THE DATA FROM THE ELITEPRO XC

At the end of the project, simply connect the ELITEpro XC to a computer with ELOG and download the data file. Analyze the data and create graphs in ELOG or export the data as a .csv file to popular spreadsheet programs, such as Microsoft Excel®.

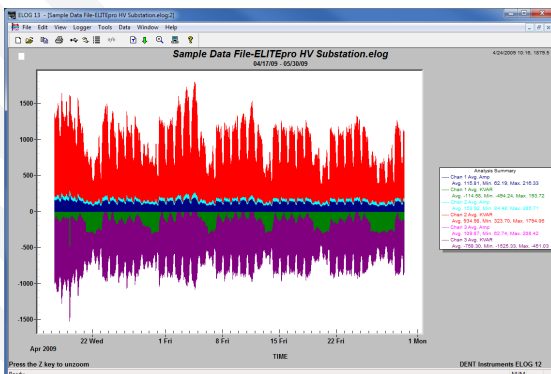


In-Depth Data Analysis: Display your data graphically.

ELOG™ SIMPLE DATA ANALYSIS

POWERFUL SOFTWARE

The Windows-based ELOG software package is used to program the meter, display metered values, and retrieve and analyze the collected data. ELOG graphically displays recorded data, performs analysis, and facilitates automatic remote data collection. Data is also easily exported to popular spreadsheet and database programs for additional analysis. You are provided with an unlimited site license to the software with purchase.

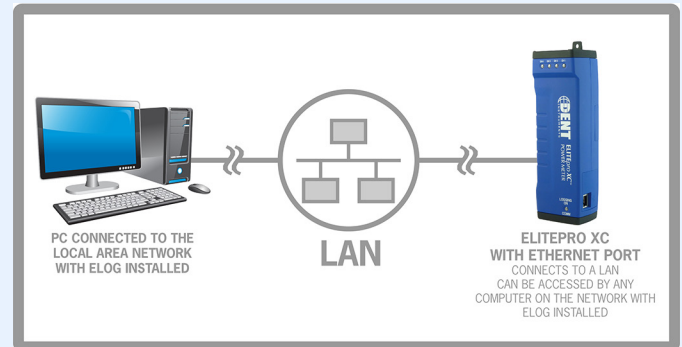


COMMUNICATION OPTIONS

CONNECT TO THE ELITEPRO XC FOUR WAYS

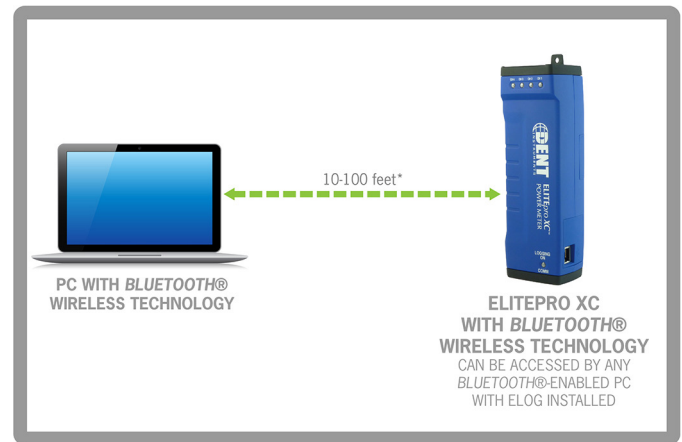
STANDARD USB AND ETHERNET CONNECTIONS

Every ELITEpro XC includes a USB and Ethernet (RJ-45) port. Connect directly to the ELITEpro XC via the included A-to-B USB cable. Or, have the ELITEpro XC on your local area network for convenient remote data download. Supports 10/100 MB Ethernet over Cat 5 or better and can be configured for DHCP or static IP. Schedule automatic data downloads from the logger using AutoPoll software (included with ELOG). Reconfigure the ELITEpro XC for a new project without leaving your workstation.



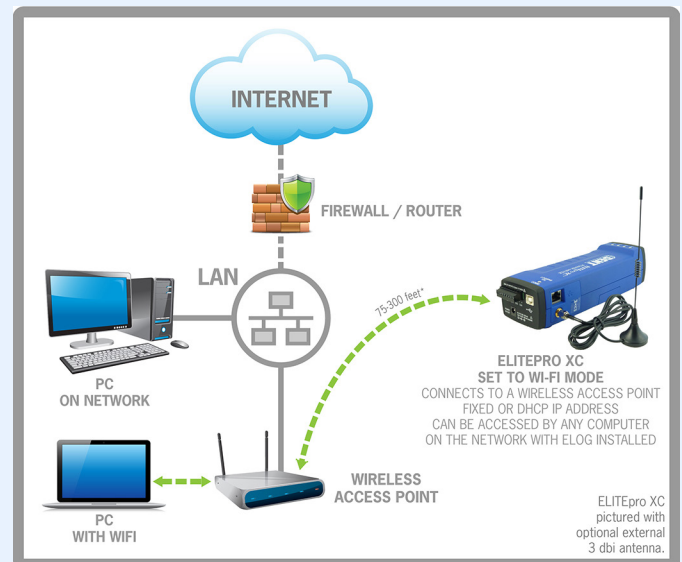
OPTIONAL BLUETOOTH® WIRELESS TECHNOLOGY

Save time and meet safety requirements by communicating with the ELITEpro XC without removing the electrical panel door. In addition to the standard USB and Ethernet ports, ELITEpro XC instruments may be equipped with an optional *Bluetooth*® interface, which will allow a PC with a *Bluetooth*® adapter running ELOG to connect to the ELITEpro XC over short distances (10-100 feet typical) to send setup tables or download data. PC must support Serial Port Profile (SPP).



OPTIONAL WI-FI INTERFACE

Need a meter on your local area network but do not have a network connection near by? The ELITEpro XC's optional Wi-Fi interface allows the meter to be connected to a Wi-Fi network and accessed from any PC on the network using ELOG software. Or, configure the ELITEpro XC as its own Wi-Fi hotspot and view real-time data using a Wi-Fi enabled PC, tablet, or smart phone via a web browser from up to 300 ft. away. Two antenna options available: internal antenna (75-300 ft.) or external 3 dbi antenna (150-300 ft). Use ELOG to switch between Wi-Fi and Access Point mode.



ELITEPRO XC™ TRANSFORMERS

	MINI HINGED HSC-020, -050 	MIDI HINGED HMC-100, -200 	HIGH ACCURACY SHS-0005, -0015 	SMALL SPLIT CORE SCS-0050, -0100 	MED SPLIT CORE SCM-0100, -0200, -0400, -0600 	
KEY SPECIFICATIONS						
WINDOW SIZE	1 cm (0.4")	2.5 cm (1.0")	1.0 cm (0.4")	1.9 cm (.75")	3.2 cm (1.25")	5.0 cm (2.0")
OUTPUT SIGNAL	333 mV at rated current	333 mV at rated current	333 mV at rated current	333 mV at rated current	333 mV at rated current	333 mV at rated current
USEFUL CURRENT RANGE	0.25-40 Amps 0.25-80 Amps	1-200 Amps 1-300 Amps	0.05-7 Amps 0.15-20 Amps	1-65, 2-130 Amps	5-130, 4-260, 8-520, 12-780 Amps	5-130, 4-260, 8-520, 12-780 Amps
ELECTRICAL SPECIFICATIONS						
NOMINAL RATING	20, 50 Amps	100, 200 Amps	5, 15 Amps	50, 100 Amps	100, 200, 400, 600 Amps	100, 200, 400, 600 Amps
ACCURACY	<0.5% at rated current	<1.0% at rated current	+/- 0.5% at rated current	+/- 1% at 10% to 130% of rated current	+/- 1% at 10% to 130% of rated current	+/- 1% at 10% to 130% of rated current
PHASE SHIFT	<1.5° at rated current	<0.5° at rated current	<0.5° at rated current	<2° at rated current	<2° at rated current	<2° at rated current
FREQUENCY RANGE	50 Hz to 400 Hz	50 Hz to 400 Hz	10 Hz to 10 KHz	50 Hz to 400 Hz	50 Hz to 400 Hz	50 Hz to 400 Hz
DIELECTRIC STRENGTH	3520 VAC for 1 minute	5200 VAC for 1 minute	5000V around the case 600V rated leads	5000V around the case 600V rated leads	5000V around the case 600V rated leads	5000V around the case 600V rated leads
MECHANICAL SPECIFICATIONS						
DIMENSIONS	2.6 x 2.9 x 4.2 cm (1.04 x 1.16" x 1.64")	4.7 x 4.7 x 7.0 cm (1.85 x 1.85 x 2.76")	6.4 x 2.5 x 5.1 cm (2.5 x 1.0 x 2.0")	5.08 x 5.34 x 1.55 cm (2.0 x 2.1 x 0.6")	8.26 x 8.6 x 2.54 cm (3.3 x 3.4 x 1.0")	8.26 x 8.6 x 2.54 cm (3.3 x 3.4 x 1.0")
WEIGHT	91 g (3.2 oz)	221 g (7.8 oz)	136 g (4.8 oz)	136 g (4.8 oz)	340 g (12 oz)	340 g (12 oz)
POLARITY	White lead is positive	White lead is positive	White lead is positive	White lead is positive	White lead is positive	White lead is positive
OUTPUT LEAD	Leads 2.7 m (8 ft) twisted pair, 20 AWG	Leads 2.7 m (8 ft) twisted pair, 22 AWG	Leads 2.7 m (8 ft) twisted pair, 22 AWG	Leads 2.7 m (8 ft) twisted pair, 20 AWG	Leads 2.7 m (8 ft) twisted pair, 20 AWG	Leads 2.7 m (8 ft) twisted pair, 20 AWG
OPERATING TEMPERATURE	-15° to 60 °C (5° to 140 °F)	-15° to 60 °C (5° to 140 °F)	-20° to 55 °C (-4° to 131 °F)	-20° to 55 °C (-4° to 131 °F)	-20° to 55 °C (-4° to 131 °F)	-20° to 55 °C (-4° to 131 °F)
STORAGE TEMPERATURE	Maximum 105 °C (220 °F)	Maximum 105 °C (220 °F)	Maximum 80 °C (176 °F)	Maximum 80 °C (176 °F)	Maximum 80 °C (176 °F)	Maximum 80 °C (176 °F)
CASE PROTECTION	White nylon, UL 94 V-0	White nylon, UL 94 V-0	Epoxy encapsulated housing ABS/PVS UL 94 V-0	Epoxy encapsulated housing ABS/PVS UL 94 V-0	Epoxy encapsulated housing ABS/PVS UL 94 V-0	Epoxy encapsulated housing ABS/PVS UL 94 V-0
SAFETY SPECIFICATIONS						
SAFETY REQUIREMENTS	UL Recognized: UL STD 61010-1 Certified to: CAN/CSA STD C22.2 No. 61010-1 	UL Recognized: UL STD 61010-1 Certified to: CAN/CSA STD C22.2 No. 61010-1 	Compliant with IEEE C57.13-1993 CE Mark 	Conforms to: UL STD 61010-1 EN 60044-1 Certified to: CAN/CSA STD C22.2 No. 61010-1 	Conforms to: UL STD 61010-1 EN 60044-1 Certified to: CAN/CSA STD C22.2 No. 61010-1 	
WORKING VOLTAGE	600 VAC Category III	600 VAC Category III	Maximum 600 Vrms UL 506	Maximum 600 Vrms Category III	Maximum 600 Vrms Category III	Maximum 600 Vrms Category III

The ELITEpro XC can be equipped with a wide selection of current transformers, which can be interchanged depending on your project needs. Choose from compact and economical Split-Core CTs, convenient Clamp-On style CTs, or the versatile Rogowski Flex CTs. All CTs are shunted and each type offers its own particular advantages depending on your application.

LARGE SPLIT CORE SCL-0600, -1000  150A CLAMP-ON CON-0150EZ  1000A CLAMP-ON CON-1000  ROCOIL R16, R24, R36, R47  ROCOIL R72 				
5.1 cm (2.0")	5.2 cm (1.0")	5.2 cm (2.0")	16": 11.5 cm (4.5") 24": 17.9 cm (7.0") 36": 27.5 cm (10.8") 47": 37.0 cm (14.6")	72": 56.0 cm (22.0")
333 mV at rated current	333 mV @ 150 Amps AC	333 mV/A @ 1000 Amps AC	131 mV/1000A @ 60 Hz 110 mV/1000A @ 50 Hz	131 mV/1000A @ 60 Hz 110 mV/1000A @ 50 Hz
30-780, 20-1300 Amps	.5 to 300 Amps	20 to 1200 Amps	5-5000 Amps	5-5000 Amps
600, 1000 Amps	150 Amps	1000 Amps	5000 Amps	5000 Amps
+/- 1% at 10% to 130% of rated current	<1% at rated current	+/- < 1%	<0.6% **	<1%
<2° at rated current	< 1° from 5 to 25A 1° from 25 to 150A < 1.5° from 150 to 300A	+/- < 1°	< 0.2° at 50/60 Hz	<1° at 50/60 Hz
50 Hz to 400 Hz	50 Hz to 400 Hz	30 Hz to 5 kHz	20 Hz to 5 kHz	40 Hz to 5 kHz
5000V around the case 600V rated leads	5200 VAC, CAT III	5200 VAC, 50/60 Hz between primary, secondary and the outer case of the handle	7400 VAC around coil 1000 VAC rated leads	7400 VAC around coil 1000 VAC rated leads
12.07 x 12.70 x 3.05 cm (4.8 x 5.0 x 1.2")	8.7 x 5.0 x 1.9 cm (3.4 x 1.9 x 0.8")	21.6 x 11.1 x 4.5 cm (8.5 x 4.4 x 1.8")	Length 16" (40 cm) Length 24" (60 cm) Length 36" (90 cm) Length 47" (120 cm)	Length 72" (183 cm)
748 g (26 oz)	136 g (4.8 oz)	500 g (19 oz)	16": 136 g (5 oz) 24": 181 g (6 oz) 36": 227 g (8 oz) 47": 272 g (10 oz)	544 g (19 oz)
White lead is positive	Red lead is positive	Red lead is positive	White lead is positive	White lead is positive
Leads 2.7 m (8 ft) twisted pair, 20 AWG	2.4 m (8') 22 gage, 600V	3 m (118") Double insulated	2 m (79") shielded cable	2 m (79") shielded cable
-20° to 55 °C (-4° to 131 °F)	-20° to 70 °C (-4° to 158 °F)	-10° to 50 °C (14° to 120 °F)	-20° to +70 °C (-4° to +158 °F)	-20° to +80 °C (-4° to +176 °F)
Maximum 80 °C (176 °F)	-25° to 70 °C (-13° to 158 °F)	-20° to 70 °C (-4° to 160 °F)	Maximum 80 °C (176 °F)	Maximum 80 °C (176 °F)
Epoxy encapsulated housing ABS/PVS UL 94 V-0	White ABS, UL 94 V-0	IP 40 (IEC 529) UL 94 V-0	PA6 UL 94 V-0	Polypropylene UL 94 V-0 rated
Conforms to: UL STD 61010-1 EN 60044-1 Certified to: CAN/CSA STD C22.2 No. 61010-1 	Conforms to UL STD 61010-1 Certified to CAN/CSA STD C22.2 No. 61010 	Conforms to UL STD 61010-1 IEC 60044-1 Certified to CAN/CSA STD C22.2 No. 61010 	Conforms to UL STD 61010-1 Certified to CAN/CSA STD C22.2 No. 61010 	Conforms to UL STD 61010-1 Certified to CAN/CSA STD C22.2 No. 61010 
Maximum 600 Vrms Category III	Maximum 600 Vrms Category III	Maximum 600 Vrms Category III	Maximum 1000 Vrms Category III	Maximum 1000 Vrms Category III

*Depending on meter compatibility. ELITEpro SP (v.212 or newer firmware) rated for 5-5000A.

ELITEPRO XC™ SPECIFICATIONS

TECHNICAL	
SERVICE TYPE	Single Phase (two wire or three wire), Three Phase-Four Wire (WYE), Three Phase-Three Wire (Delta), DC Systems (Solar/Battery)
VOLTAGE CHANNELS	3 channels, CAT III, 0-600 VAC (line-to-line) or 600 VDC*
CURRENT CHANNELS	4 channels, .67 VAC max, +/- 1 VDC. Ideal for 333 mV full scale CTs
MAXIMUM CURRENT INPUT	External transducer dependent. 200% of current transducer rating (mV CTs) Measure up to 6000A with RoCoil CTs.
MEASUREMENT TYPE	True RMS using high-speed digital signal processing (DSP)
LINE FREQUENCY	DC/50/60 Hz*
WAVEFORM SAMPLING	12 kHz
CHANNEL SAMPLING RATE	.125 seconds
INTEGRATION PERIOD	1, 3, 15, 30 seconds; 1, 2, 5, 10, 15, 20, and 30 minutes; 1 and 12 hours, 1 day
ENERGY MEASUREMENTS	Volts, Amps, Amp-Hrs (Ah), kW, kWh, kVAR, kVARh, kVA, kVAh, Displacement Power Factor (dPF). All parameters for each phase and for system total.
ANALOG MEASUREMENTS	0-10 Volts, 0-20 or 4-20 mA current loop. Non-isolated, external power for current loop. User scaling for sensor reporting in physical units.
ACCURACY	Better than 1% (<0.2% typical) for V, A, kW, kVAR, kVA, PF, Analog
RESOLUTION	0.01 Amp, 0.001 Volt, 1 Watt, 1 VAR, 1 VA, 0.01 PF, 0.001 ANA
LED INDICATORS	Tri-color (red, green, blue): 1 LED indicates communication (blue for wireless, <i>Bluetooth®</i> or Ethernet), 4 LEDs for correct phasing (PhaseChek™).

POWER	
LINE-POWER	From L1 Phase to L2 Phase. 80-600V (AC or DC) CAT III DC/50/60 Hz, 125 mA, 5 W, or 10 VA max. Non-user replaceable .5 Amp internal fuse protection.
POWER IN	6-10 VDC, 500 mA*
POWER OUT	6 VDC, 200 mA max
COMMUNICATIONS	
USB (STANDARD)	USB standard (Type B). 1.8 M (6 ft) A-to-B USB Cable (included)
ETHERNET (STANDARD)	Standard RJ-45 Connector supports 10/100 MB Ethernet over Cat 5 or better. Configure for DHCP or Static IP.
BLUETOOTH® WIRELESS TECHNOLOGY (OPTIONAL)	Internal antenna with 10-100 ft range (typical). Requires Bluetooth® wireless technology adapter on Windows PC. Adapter must support the Serial Port Profile (SPP).
WI-FI ADAPTER† (OPTIONAL)	Wi-Fi option available as two separate configurations: • Internal antenna: typical range 75-300 ft. • External 3 dbi antenna: typical range 150-300 ft.
MECHANICAL	
OPERATING TEMPERATURE	-7 to + 60 °C (20 to 140 °F)
OPERATING HUMIDITY	5% to 95% non-condensing
ENCLOSURE TYPE	ABS plastic, 94-V0 flammability rating
WEIGHT	340 g (12 ounces)
DIMENSIONS	21.6 x 6.3 x 4.7 cm (8.5" x 2.5" x 1.9")

EXC ORDER STRING

C = CROC CLIPS
F = FUSED CROC CLIPS
S = SHARK CLIPS
L = UNTERMINATED LEADSET
N = NONE

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