SECURE Elite 500 IEC61850 Protocol Multi-Function Panel Meters Instruction Manual

SECURE
energy together

Elite 500
Modbus / BACnet / Profinet / IEC61850 protocol

Best in class accuracy	Graphical display	Support Rogowski coil	Hot pluggable communication modules

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High-precision, multiple communication, TFT display

The Elite 500 multi-function meter has advanced power monitoring functionality, making it a suitable instrument both as a standalone device and as part of BMS, process industrial controls, and SCADA systems.
It also offers data logging, control IOs, and modular communication with multiple protocols for third-party system integration.
Based on the application, Elite 500 allows customers to select conventional type CT or Rogowski coil input, which can be directly connected to the meter without the need for any additional integrator.

Application

- Energy transfer measurement and reconciliation
- Power plants, feeder monitoring, grid substations, wind turbines, renewables, industrial and commercial premises
- Online monitoring of energy exchange at various interface points
- Automation and system integration
- Process and factory automation
- Retrofit applications up to 4000A can be served by using Rogowski coil along with Modbus / BACnet / Profinet / IEC 61850 protocol support, analogue output and control IOs · Oil and gas / Mining / Hospitals / Malls / Datacentres
- LV / MV / HV Switchgear

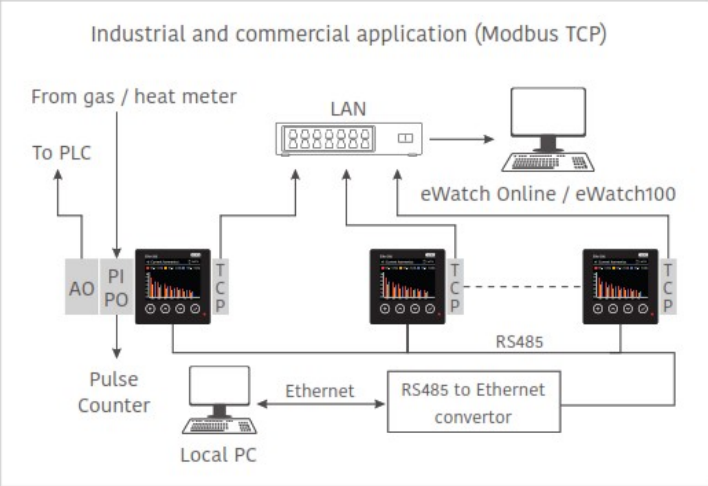
Benefits

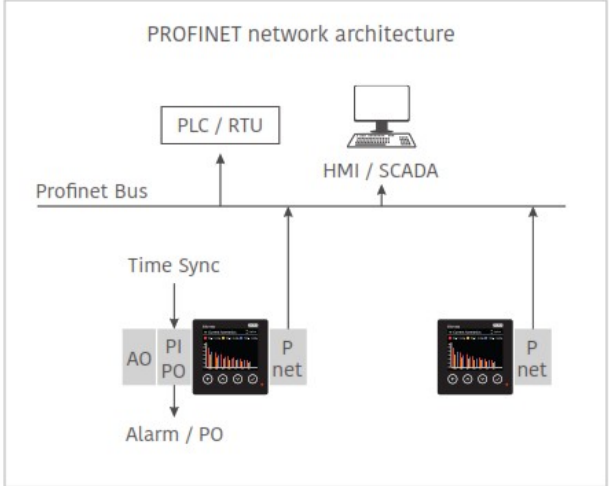
- Minimal integration costs by combining hot-pluggable modular communication and analog output ports in conjunction with a digital pulse I / O and alarms.
- A single instrument covers a wide and versatile range of potential communication options. Both Modus RTU and TCP along with Profinet, BACnet and IEC61850 for SCADA are supported.
- Supports measurements for Energy Efficiency / LEED certification

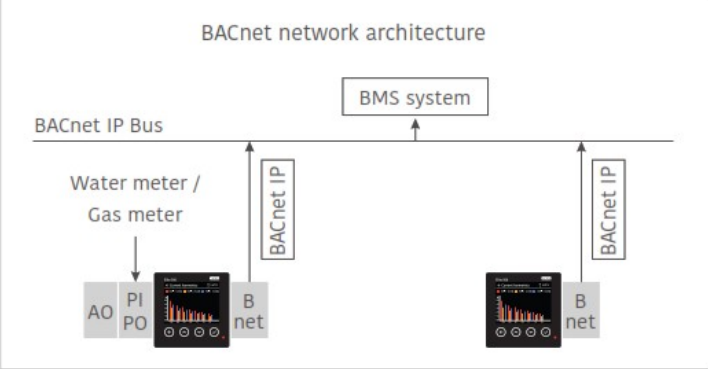
- Large, high-resolution graphical color display for analytical and graphical views
- Options to have conventional CT or Rogowski coil

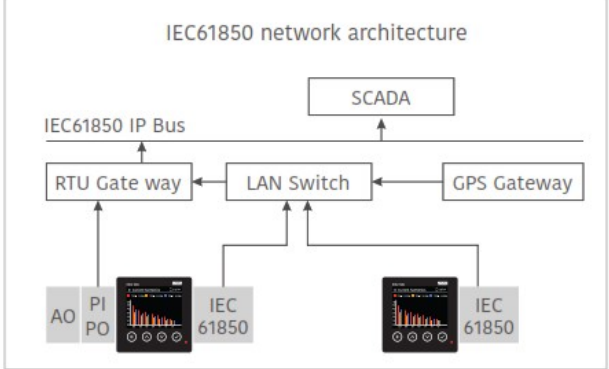
Features

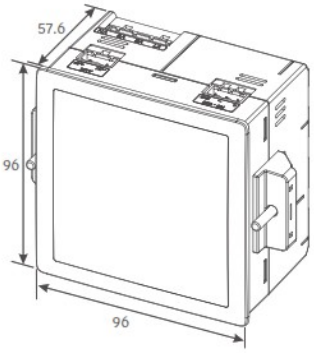
- 17 energy measurements support including net and absolute energy parameters
- Energy resolution: 7+3 digit, Instantaneous parameters: 4+3 digit
- Class 0.2S / 0.5S accuracy for active and 0.5S accuracy for reactive measurement
- TFT display showing vector diagram, bar chart, weekly / monthly energy consumption comparison
- Configurable favorite parameter on the display page
- Time synchronization options through SNTP
- Power quality features include individual harmonics, THD, sag, swell, voltage unbalance, and interruption counter
- Total demand distortion (TDD) factors and waveform quality indices like K factor and crest factor
- Positive, negative, and zero sequence components
- Flexible time-of-day tariff, maximum demand/demand support, DST (daylight saving time)
- Supports PIPO / DIDO, alarm, and analog output module
- Alerts and events on configured parameters
- Dual loggers for instantaneous and energy parameters
- Dual socket support on the Ethernet TCP IP module allows for simultaneous communication over Modbus.
- Supports RS485 Modbus along with any chosen Ethernet protocol
- A high-resolution page for configured energy channel

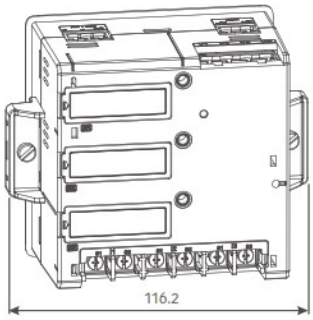




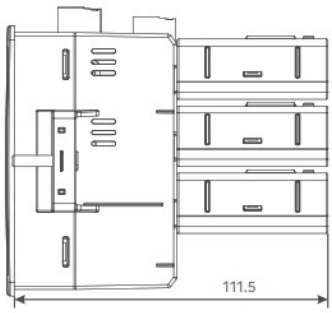




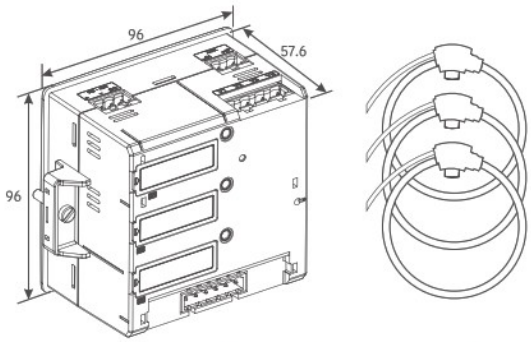




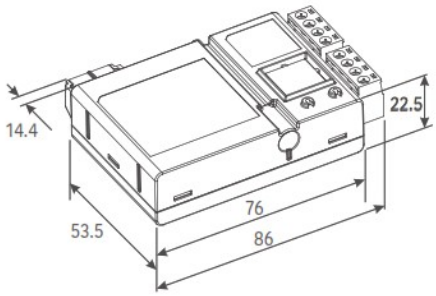
Mounting clamp to mounting clamp



Inside the panel



Integrated solution (product with Rogowski)



pluggable modules (optional)

Technical specifications

	Conventional	**Rowe/ski**
Electrical		
Connection type	LV 3P4W / 1-1V 3P4W / 1CT 3PT / LV KT / HV 3P3W / 3C1 2PT / 2CT 2P T / 1P 2W	
Measurement voltage range	35 V to 500 V (L-L) max, 20 V to 300 V (1.-N) max	
Measurement current range	10mA – 6 A (configurable)	5961. -I. Or -1000 A or 4000 A)
Starting current range	1mA	1A for 1000A /4 A for 4000A
Frequency	50 / 60 Hz	
Burden	Current circuit: < 0.2 VA/phase @ IA & @ 5A	
	Voltage circuit: < 0.2 VA/phase	
Sampling rate	156 samples / cycle / channel	
Accuracy		
Active energy	Class 0.25 / class 0.55 I Class 0.55	
Reactive energy	Class 0.55	
Voltage, Current, Power	0.2% for measurement range	
Frequency	40.05 K2	
Power factor	*0.005 (0.5 lag to 0.5 lead)	

Maximum withstand Voltage	2 times of nominal voltage value for 1 Sec repeated 10 times at 10 secon d interval	
Maximum withstand current	1.2 times of lb continuously	–
Short time over current	20 times In„ for 1 second	–
Overload (continuous)	1.5 times of lb, Up to 7.5A (only measur ement)	–
Standards	IEC 62052-11, IEC 62053-22, IEC 62053-24, IEC61557-12, IEC 62053-3 1, IEC 60529, IEC 61010-1, IEC 61010-2-030, IEC 61326-1,1514697, CE , UKCA	
	IEC 61850-6, 7-1,7-2, 7-3, 7-4,8-1, (as per edition 1 and 2)	
Environmental		
Ingress protection	IP 54 (front fascia): IP20 (at terminals), IP 65 with gasket (Optional)	
Insulation	3.5 kV RMS 50 Hz, 5 seconds	
Impulse withstand	6A kV	
Operating temperaWre	-10°C to t 60°C	
Storage temperature	-25K to • 70K	
Temperature coefficient	0.02% / °C I 0.196 PC	
Mechanical dimension (H x W x 0)	96 x 96 x 57.6 mm (6 0.5 mil), 96 x 96 x 111.5 mm (a 0.5 mm) with modul e	
Weight	365 g 1280 g	
Software	– TWo data loggers (16 MB memay)c	
	Primary data logger	
	Logging of up to 20 energy channels values, with integration	
	period 5,15, 30 860 minutes	
	-12500 parameter-days capacity at 30-minute interval	
	Secondary data logger	
	Logging of up to 20 instantaneous values with integration period	
	1, 2, 5,10,15 & 30 minutes	
	-40000 parameter-days capacity at 30-minute interval	
	– Configurable parameters:	
	•8 time-of-use tariffs (TOU), 8 Seasons, 8 day types, DST dates, 6 billing history	
	•Logging daily energy snapshots values up to 90 days	
	•Alarms and event logging	
	•Up to 311′ individual harmonic component measurement	
	•Up to or total harmonic distortion (THD) measurement	

	•K-factor, Crest Factor, TOD, sequence components	
	•Power quality features including voltage sag, swell	
Features		
Power supply	Range: 48-300VDC / 85-300VAC	
Burden	Base product: <3W, < 6.5VA at 240V AC. With all modules: <6.5W, <16V A	
Display	TFT for graphical and analytics (3.5 inch)	
	Size: 53 x 70 mm (H x VV), 320×240 pixels. Pixel size: 0.22 mm2	
Battery	Battery for RTC backup	
Connector	Ring type for current terminal, combicon for voltage, Aux and modbus RTU	all are combicon
Inputs and Outputs	2 configurable pulse inputs / outputs, 1 fixed pulse output, 1 Alarm output	
	•Pulse outputs:	
	24-230V DC or 48-230 V AC 0 100mA	
	Type: volt-free, pulse width: 20 – 300 ms (for 50Hz); 16 – 300 ms (for 60Hz)	
	•Pulse Input: 24-60 V AC/DC @ 100mA	
	•3 Alarm output: Type: volt-free, 230 V AC/ 30V DC at 2 A	
	•Analogue output (self-powered): 4 configurable AO, 0-20mA, 4-20mA	
	•Indicator – 2 LEDs: one for metrology (red), one for alarms / events (amber)	
Communication		
RS485 port	Protocol: Modbus RTU	
	Baud rate: 1200 – 38400 bps, parity- none, even, odd	
Ethernet port	Ethernet over R.1-45, 10 / 100 Mbit / s, SNTP time sync	
	Optional: Modbus TCP / IP, Modbus Gateway, BACnet IP, ProfiNET, IEC61850	
Software support	Configview (for configuration / reading), Optional eWatch 100 / eWatch Online	
Time synchronization	Through SNTP protocol /through pulse input	

Order codification

Conventional Current input		**Rogowski Current input**	
Elite500	E500	Elite500	E500
Current Input		**Current Input**	
Conventional	C	Rogowski	R
Accuracy		**Accuracy**	
Class 0.2S	2	Class 0.5S	5
Class 0.5S	5		
PQ parameters		**PQ parameters**	
Ind harmonics up to 15th order	1	Ind harmonics up to 15th order	1
Ind harmonics up to 15th order, PQ parameters*	2	Ind harmonics up to 15th order, PQ parameters*	2
Ind harmonics up to 31th order	3	Ind harmonics up to 31th order	3
Ind harmonics up to 31th order, PQ parameters*	4	Ind harmonics up to 31th order, PQ parameters*	4
Fix digit	0	**Rogowski Input**	
For Secure	2	3x (1000A, 70 mm) – C | 3x (1000A, 140mm) – D	
e.g. model number: E500C-2102		3x (4000A, 140mm) – E | 3x (4000A, 200mm) – F	
		For Secure	2
		e.g. model number: E500R-51C2	

Com Modules
Modbus TCP/IP – E500M-1012 | Modbus TCP/IP GW – E500M-1022 | BACnet IP – E500M-1032 | Profinet – E500M-1042 | EC61850 – E500M-1052
For PIPO and AO module refer manual
*PQ Parameters sag, swell, interruption, TDD, K factor, crest factor, TEHD, TOHD, positive, negative and zero sequence components.

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www.securemeters.com

Specifications are subject to change without prior notice
M722 V 2.0

Documents / Resources

	**SECURE Elite 500 IEC61850 Protocol Multi-Function Panel Meters** [pdf] Instruction Manual Elite 500, IEC61850, Protocol Multi-Function Panel Meters, IEC61850 Protocol Multi-Function Panel Meters, Elite 500 IEC61850 Protocol Multi-Function Panel Meters, Multi-Function Panel Meters, Panel Meters, Meters

References

- **Secure Meters**