Multi-line Three-phase Panel Meter

Elite 440 is a multi-line three-phase digital panel meter for accurate and reliable measurement of electrical quantities (Voltage, Current, Power, Frequency, etc.,) in industrial and commercial applications. It has a large multi-line backlit LCD display which enables four parameters to be displayed at the same time. Modbus communications capability allows easy integration with energy monitoring systems. An expansion module can be fitted for enhanced functionality (pulse input / output)



Applications

- · Commercial and industrial sub-metering applications
- Building management and monitoring systems (SCADA/EMS/DAS)
- · High, medium and low-voltage switchgear panels
- · Control and relay panels
- · Power Control Centre (PCC) panels
- · Motor Control Centre (MCC) panels
- · Energy management for commerce and industry

Benefits

- Easy interface with external devices through built-in Modbus (RS-485)
- Detachable connectors for easy installation
- · Onboard diagnostics make installation easy
- Suitable for star or delta connections and for low or highvoltage applications
- · Cost-effective online monitoring
- Field-configurable CT/ PT primary and secondary values using push-buttons

Features

- Large four-line seven-digit display with quadrant identification section and bar graph for instantaneous power-level indication
- High accuracy: Class 1.0,0.5s,0.2s
- Average THD measurement for voltage, current and power, up to 31stharmonic
- Measurement selection (star or delta/ 3P4W or 3P3W)
- Modbus communication via RS-485 port
- True root-mean squared (RMS) metering
- Calibration LED for accuracy test on site
- Wide and configurable current range 1-2A and 5-10A
- Wide-range auxiliary power supply, suitable for high-voltage or low-voltage installations
- · Maximum demand recording
- Midnight snapshot (values) for selected energy registers
- Scroll-lock and 'Favourites Page' display support
- Expansion capability via add on modules for analogue outputs or pulse inputs/outputs
- · Password protection for setup mode

Elite 440

Factors	Models							
Features	441	442	443	444	445	446	447*	448*
P-N voltage	•	•	•	•	•	•	•	•
Average P-N voltage	•	•	•	•	•	•	•	•
P-P voltage	•	•	•	•	•	•	•	•
Average P-P voltage	•	•	•	•	•	•	•	•
Line current (L1, L2, L3 and Aerage)	•	•	•	•	•	•	•	•
Active / Reactive Current	•	•	•	•	•	•	•	•
Frequency	•	•	•	•	•	•	•	•
Power factor		•	•	•	•	•	•	•
Average Power factor		•	•	•	•	•	•	•
Active Power		•	•	•	•	•	•	•
Total Active Power		•	•	•	•	•	•	•
Reactive Power			•	•	•	•	•	•
Total Reactive Power			•	•	•	•	•	•
Apparent Power			•	•	•	•	•	•
Total Apparent Power			•	•	•	•	•	•
Active Total Import / Export Energy					•	•	•	•
Reactive Import (Q1+Q2) / Export (Q3+Q4) Energy						•		•
Reactive (Q1,Q2,Q3,Q4) Energy					•		•	
Apparent Import / Export Energy					•	•	•	•
Active / Apparent Forwarded		•	•	•				
Reactive Lag / Lead Forwarded			•	•				
Cumulative MD				•	•	•	•	•
Phase Angle			•	•	•	•	•	•
Power On / Off Hours			•	•	•	•	•	•
Load On / Off Hours		•	•	•	•	•	•	•
Feeder Interruptions Count (When Aux is also off)			•	•	•	•	•	•
Min / Max Values							•	•
THD Voltage **	•	•	•	•	•	•	•	•
THD Current **	•	•	•	•	•	•	•	•
THD Power **		•	•	•	•	•	•	•
RPM with Freq and VUnb and IUnb		•	•	•	•	•	•	•
Modbus on RS 485	•	•	•	•	•	•	•	

^(*) Additional modules (Two pulse input & output) can be available with Elite 447 and Elite 448

^(**) THD for Voltage, Current and Power are optional in 441 to 446.

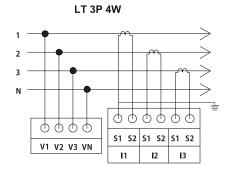
[#] Optional software config view is available for reading and configuration

Metering Parameter Accuracy

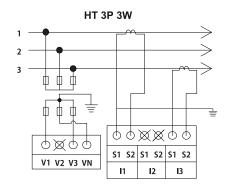
Parameters	Accuracy Class 0.2*	Accuracy Class 0.5
Voltage	0.1	0.1
Current	0.1	0.2
kW	0.2	0.5
kVar	0.2	0.5
kVA	0.2	0.5
kWh	0.2	0.5
kvarh	0.2	0.5
Power Factor	0.2	0.5
Frequency	0.1	0.1

^{*0.2}s available for HT-3 (5A Ibasic)

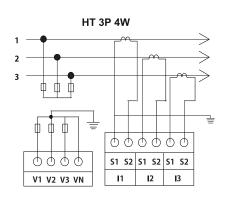
Connection Diagram



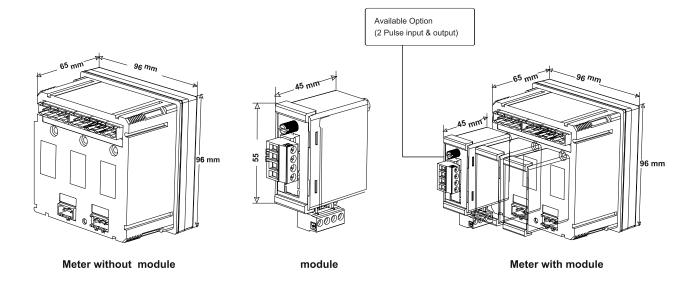
For CT/PT meter, ensure that it is connected on secondary side of instrument transformer.



In case of 3P 3\WN is replaced by V2



Mechanical Dimensions



Elite 440

Technical specifications

Electrical

Connection type Common product for HT3/ HT4/ LT application

Common product for 3 P-3 W and 3 P-4 W application Wiring configuration

Voltage range:

57.7 V (100V) - 230 V (400V) AC 3 phase 4 wire (3 phase 3 wire) Measurement voltage range Aux power supply range 80 VAC/DC - 300 VAC/DC or 24 VDC to 60 VDC (Variant) Current range Available 1-2A and 5-10 A in single variant (field configurable)

Main frequency 50/60Hz with ±5%

0.2s available for HT-4 (for 1A/5A Ibasic) **Accuracy Class**

0.2s available for HT-3 (5A Ibasic)

0.5s & 10 available for LT-4 (for 1A/5A lbasic)

Burden Aux burden: 3.5 VA; 8VA when all modules connected.

> Current ckt burden: 1 A - 005VA per phase, 5 A - 0.25 VA per phase.

Voltage ckt burden : 0.15 VA per phase.

Approvals

Standards IS13779, IS14697, IEC62052-11, IEC62053-23 and IEC62053-22, IEC61010

Mechanical

Dimensions (WXHXD) 96 x 96 x 65 mm (w/o module);

96 x 96 x 110 mm (with module)

Cut out size 92 x 92 mm

Weight 0.5 kg (approx) **Enclosure** Poly Carbonate **Terminals** Combicon connector

Max conductor size 2.5 mm2

Material Used Plastic material self-extinguishing

Environmental

Ingress protection IP 52 (front fascia); IP20 (at terminals)

4 kV RMS 50 Hz Insulation

6 kV Impulse withstand

-20 °C to +60 °C (operating) Temperature

-25 °C to +80 °C (storage)

Humidity 95% non-condensing

Feature

Favourite page On / Off

CT/VT primary Configurable in field through keypad

Communication RS485 Modbus half duplex (Default) and data will be available in floating point format

Baud rate from 1200-38400 bps (Default 9600 bps) 40 days for 6 parameters @ 30 min IP Load survey

Options for 15 or 60-minute integration period.

Modules

2 Digital pulse input and output (single module) Input supports voltage range of 8-40VDC with pre-define duration,

Output are normally open type, voltage rating of 230 VAC @ 100mA with

pre-defined pulse width.





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