DIGITAL PANEL METERS.

Product Catalog for Basic, Energy & Power Monitors

ELMEASURE®
Possibilities...Infinite

ENERGY IS EVERYTHING.

And we help you manage it.

ABOUT US

With a collective experience and expertise in the field of energy and building management, our mission is to contribute significantly to the world by helping people manage energy efficiently, reduce their wastages, and drive sustainability. We continuously strive to collaborate and build innovative energy and power management products, that not only meets the highest quality standards of product performance, but delights the customers as well.

ENERGY & POWER MONITORS

SWITCHGEARS, PROTECTION, CONTROL & NETWORKING PRODUCTS.

THD, TDD, TEHD, TOHD, K-Factor, Crest Factor, Harmonics, Sag & Swell, Power Inter.

W, VA, PF, VAR, Wh, Vah, VARh, Load Hours, Load Efficiency, Co2, V2H, A2H, NET Energy, TOTAL Energy.

VLL, VLN, A, Hz, RPM, Angle V/A, Unbalance V/A.

BASIC VAF METERING

Counter Type Energy Meters

GD 3110
Smart 3E

VAF + PF Meters

SL 1300

Ammeter / Voltmeter

SL 13XX

SL X
SL 3X

µAlpha X
µAlpha 3X

Frequency Meters

SL Hz

µAlpha Hz

DC Ammeter / Voltmeter

SL ADC
SL VDC

µAlpha ADC
µAlpha VDC

MID-LEVEL ENERGY / POWER MONITORING

Branch Circuit Power Monitors

BM 5140

ET 5030

Dual Source Energy Meters

LG 25XX

LG 25XXD

DC Energy Meters

EDC 2150
EDC 2450

EDC 2450X

Multi-functional Energy Meters

LG 64XX

LG 25XX

µG 1119

LG 25XXD

LG MXX

Utility / Revenue Meters

PE 5121S
PE 5120S
PE 5121-P
PE 5120-P

ADVANCED ENERGY / POWER MONITORING

Class A Power Analyzers

PQ 8800

Power Quality Monitors

PN 8700

EN 84XX

Demand Controllers

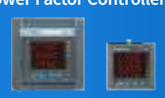
PN 8700

EN 8400

EN 6400

EN 7500

PROTECTION AND CONTROL

Power Factor Controller

APFC 440

APFC 640

Earth Leakage Relay

iELR 300

iELR 200D

PROCESS MEASUREMENTS

Transducers

TR 1XXX

TR 2XXX

TR 4200

TR 5200

Isolators

ISO 100

ISO 200

SOURCE CHANGEOVER SWITCHES

Automatic Transfer Switches

ATeS (63A - 1600A)

Solenoid ATS

Manual Transfer Switches

MTS

ACCL

iACCL 400

iACCL 400C

iACCL M400

iACCL M3XX

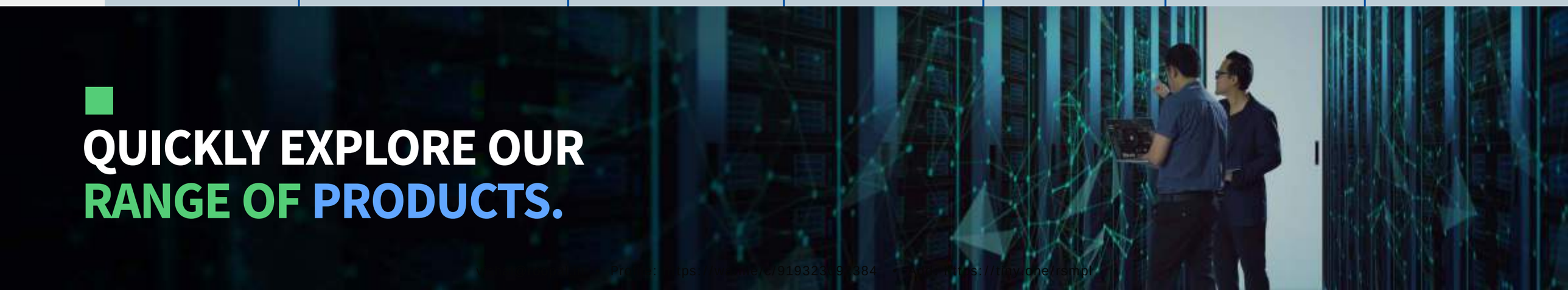
iACCL M3XX

INDUSTRIAL COMMUNICATION

Gateways

GW 2000

GW 3000X



QUICKLY EXPLORE OUR RANGE OF PRODUCTS.

POWER QUALITY ANALYSER

Easily pinpoint & diagnose complex power quality issues.

MAXIMIZE POWER RELIABILITY, ENERGY EFFICIENCY.

- High Sampling rate of **1024 samples/cycle**
- **Class A** metering as per IEC 61000-4-30
- Power quality reporting as per EN 50160 IEEE519, ITIC/CBEMA Curve and COMTRADE
- Total Harmonics Distortion (THD)
- Power Quality measurement as per IEC 62586-2
- Class 0.2S energy metering as per IEC 62053-22

PROTECT YOUR EXPENSIVE PRODUCTION ASSETS.

- Individual harmonics and inter-harmonics up to **127th order**
- Recording of Interruptions, **Dip/Swells, Flicker and Transient**
- Flicker measurement as per IEC 61000-4-15
- Easily publish to IoT Cloud platform for remote asset monitoring
- Secured data transfer over MQTT protocol with **TLS**
- Supports up to 1 TCP and 1 RS485 client connections simultaneously

PRECISE ENERGY AUDITING USING ADVANCED DATA-LOGGING.

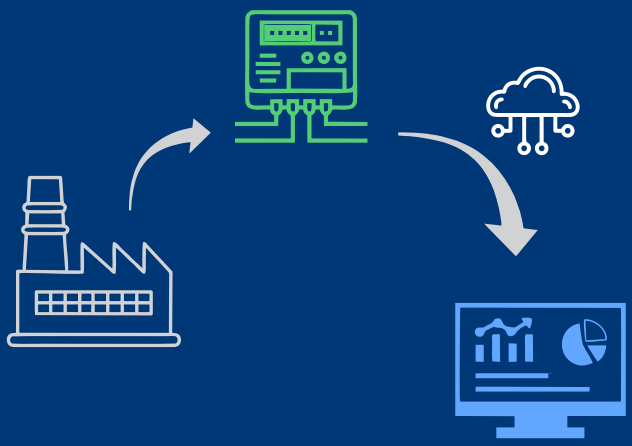
- Phase wise energy recordings of import and export
- **Data logging** for every 5 minutes for 12 months
- Maximum demand recording for kW, kVA, kVAR with time stamp
- 4 high & low demand profile recording
- Import and Export Time of Use (TOU) up to 8 slots

1024 Samples/cycle

IEC 61000-4-30 Measurement standards

0.2S CLASS Metering accuracy

KEEP A TRACK OF YOUR GREENHOUSE EMISSION GOALS AND PERFORMANCE.



- Monitor and record your **CO2** greenhouse gas emission
- Manage **energy usage** based on **Hourly, Daily, Monthly** trends
- Record **Load Efficiency** using 5 programmable slots for analysis

Business Sustainability.

Through advanced monitoring and measurement, the PQ 8800 can help your business avoid costly penalties, reduce bills, protect fragile operating conditions, extend machine life and improve the life of your total system.

Display Parameters

Parameters	PQ8800
ACCURACY CLASS	
CLASS 0.2 S	✓
BASIC PARAMETERS	
V_{12} V_{23} V_{31}	✓
V V_1 V_2 V_3	✓
A A_1 A_2 A_3	✓
Hz	✓
Angle V & A, RPM	✓
Unbalance V & A	✓
POWER PARAMETERS	
W W_1 W_2 W_3	✓
VA VA_1 VA_2 VA_3	✓
PF PF_1 PF_2 PF_3	✓
VAR VAR_1 VAR_2 VAR_3	✓
POWER QUALITY PARAMETERS	
THD - Voltage and Current upto 127th	✓
K-Factor, Crest Factor	✓
High Low - Instantaneous	
High Low - Last Minute	✓ *
Voltage Dips, Swell, Flicker, Transients & Interruptions	✓
Power Cycles	✓
TEHD and TOHD	✓
Power THD	✓
TDD	✓ *
INTEGRATED PARAMETERS	
Wh	✓
VAh	✓
VARh - Ind	✓
VARh - Cap	✓
Load Hours	✓
Phase Energy & Load Hours	✓ *
RD (IE)	✓
Wh - Total and Net	✓ *
VAh - Total and Net	✓ *
ON Hours	✓ *
CO_2 Emission	✓ *
Volt Squared Hours	✓
Amp Squared Hours	✓
TOD PARAMETERS	
TOD Demand - Import	✓
TOD Energy - Import & Export	✓
DEMAND PARAMETERS	
Rising Demand (Sliding /Block - Programmable)	✓
Forecast Demand	✓
Maximum Demand	✓
Demand Profile - 4 High & 4 Low	✓ *
ADDITIONAL FEATURES	
12 AM & 31st day snapshot	✓ *
Load Efficiency	✓ *
Energy Trends	✓ *
Dynamic communication	✓ *
COMMUNICATION	
RS485 (MODBUS]	✓
ETHERNET (Ethernet + data logging) All parameters 4GB/12 months data	✓
OPTIONAL FEATURES	
Up to 4DI + 4DO + 2DI	✓

✓ Available * Through communication

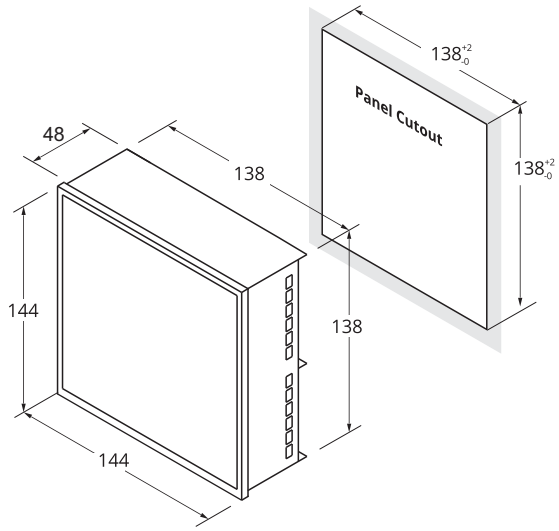
Technical Specification

Specification	Description
GENERAL CHARACTERISTICS	
Display type:	TFT Display (3.5 inch)
Sensing / Measurement:	True RMS, 4 Quadrant power & energy
Rated Voltage:	50 - 600 VLL
Rated Current:	10 mA - 6A
Frequency:	45 - 65 Hz (reports available for 50Hz)
Poles description:	1P + N, 3P, 3P + N
Measured Accuracy Class:	Class 0.2S as per IEC 62053-22
Permissible overload:	120%, Burden: 0.2VA per phase
External fuse rating:	200 mA
CT PT ratio max.:	2000 MVA programmable
Auxiliary supply:	80 - 300V AC / DC
Power consumption:	10VA nominal
Data update rate:	200ms
ENVIRONMENTAL CHARACTERISTICS	
Operating temperature:	-10°C to +55°C (14°F - 130°F)
Storage temperature:	-25°C to +70°C (-13°F - 158°F)
Humidity:	5% to 95% non-condensing
Altitude:	Below 2000 mts
Measurement category:	CAT III
Pollution degree:	2 (As per IEC 61010)
PROTECTION CLASS	
Ingress protection:	IP 51 & Double insulation (as per IEC 61010-1)
COMMUNICATION	
RS485 MODBUS:	*Device ID & Parity:* 1 - 247 & odd, even (preferred even) *Baud rate:* 9600 bps to 115200 bps *Isolation:* 2000 volts AC isolation for 1 minute between communication & other circuits.
ETHERNET	*LAN port:* 10/100 Base-T *Protocol:* TCP/IP, IPV4, MQTT, DHCP *Configuration:* Web server *Protection Ethernet:* Magnetic protection (Ethernet port 1.5 kV), Surge protection *Data storage:* 4 GB
MECHANICAL CHARACTERISTICS	
Weight:	Unpacked: 600gms, Packed: 800gms
Torque at terminals:	0.5 N-m
Wire-guage at terminals:	26 - 10 AWG (4.0mm² for V and A terminals, 2.5mm² for others)

Mechanical Specification

Mechanical Spec.:
144 x 144 x 48mm

Panel cutout:
138 x 138mm



SAFETY AND STANDARDS	
Construction:	IEC/EN 61010-1 EDITION 3, CAT III, 300V LN/ 600V LL, Protection Class II
Standards:	UL 61010-1, IEC/EN 62052-11

ELECTROMAGNETIC COMPATIBILITY	
Electrostatic discharge:	IEC 61000-4-2
Immunity to electromagnetic RF fields:	IEC 61000-4-3
Conducted immunity:	IEC 61000-4-6
Immunity to magnetic fields:	IEC 61000-4-8
Immunity to voltage dips and interruptions:	IEC 61000-4-11
Immunity to surge waves:	IEC 61000-4-5
Fast transient:	IEC 61000-4-4
Conducted and radiated emission:	CISPR - 22

Intertek
5016424

POWER QUALITY MONITORS

Monitor the healthiness of the power systems effectively.

MAXIMIZE POWER QUALITY AND SYSTEM RELIABILITY.

- Automatic connection or disconnection of DG connected to common bus
- Power quality inspection of main incomer
- Protection of equipment from Under/ Over Voltage or Current or Frequency
- Process control
- Protection of 3 phase equipment from Single phase prevention, Overload etc
- RTC setup available through communication.

REMOTELY MONITOR, EASILY VISUALISE AND ANALYSE POWER DATA.

- Dual communication port- RS485, Ethernet- simultaneous polling
- Built in web server displays all the parameters and waveform for Voltage and current
- 256MB storage downloadable through USB - Continuous logging in pen drive up to 8GB
- 12AM snapshot, 31st day snapshot
- Measures THD and Individual harmonics upto 63rd order with a sampling rate of 512 samples/cycle (PN)

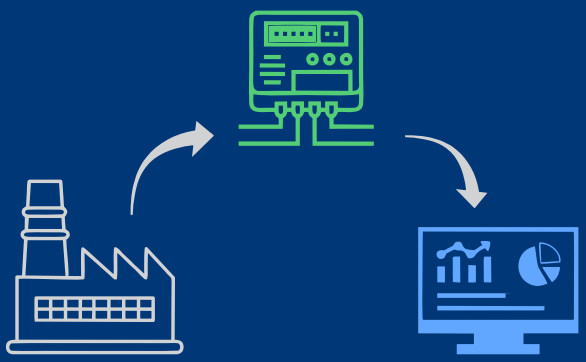
BETTER EQUIPMENT AND ELECTRICAL SYSTEM DESIGN.

- Captures and measures power quality events: K Factor, Crest factor, Dip/Swell, Interruption and unbalance in accordance with EN 50160
- Record events such as Dip/Swell for voltage with the time stamp in 1s duration
- Representation of waveforms for instantaneous V,I, Dip/Swell. Voltage and Current harmonics histogram (PN only)
- Phase wise voltage Dip/Swell waveforms (PN only)

63rd Harmonics recording | 512 SAMPLING RATE For detailed monitoring | SAG | SWELL PQ Measurements

CAPTURE. ANALYSE. EXECUTE.

Collect various electrical load parameters from the field, visualize hidden patterns through an EMS solution and make data-driven management decisions.



Features

- **High / Low recording for last one minute VLL and A**
- Accuracy class 1.0 as per IEC 62053-21, Class 0.2s - IEC 62053-22, 0.5s - IEC 62053-22 (optional)
- User programmable Password Protection
- Measures THD and Individual harmonics up to 63rd order for PN and 31st order for EN
- Sampling rate of 512 samples / cycle for PN and 128 samples / cycle for EN
- Voltage measurements up to 600 VLL
- Representation of waveforms for instantaneous V, I, voltage and current harmonics histogram for PN.
- Records events and waveforms of such as Dip & Swell for voltage input with the time stamp in 1s duration applicable for power quality
- CO2 emission, ON Hrs, Power Interruptions
- Max demand, 12am snapshot, 31st day snapshot and programmable Data-logger up to 1 MB
- Simultaneous sampling of voltage and current, programmable PT & CT ratio
- Demand update every second to forecast VA, W & VAR.
- True PF and Displacement PF
- Programmable starting current in % of 5A secondary (Default 10mA)
- Programmable Auto scrolling time - 1 sec. to 10 sec. (Default 5 sec.) - available in PN series
- Programmable Energy display - Counter or Resolution based
- Energy resetting at 99999999kVAh x MF.
- Front POP for better accuracy 16000 Imp/KWh.
- 8 Parameter display at a time, 8 digits energy (LCD Model).
- Byte order option - Field Programmable Float/ Little Endian/data format.
- Optional neutral current measurement (EN 7500)

Optional Features

- Digital outputs - 2/4 potential free contacts with programmable time delay Hysteresis of 1%. Trip time delay: 1 to 180 sec.
- Output configurable for the parameters Under/Over VLL, A, F, PF, W, VA, AI1, AI2, Over Vthd, Athd, Neutral current, Unbalnce V & A, Reverse A, Demand, Phase missing/Loss.
- TOD option (Energy & Demand upto 8 slots)
- Analog Input upto 2. Accuracy of class 1% FS.
- Digital Input upto 4
- Analog Output - Two independently programmable to 0-20 mA (or) 4-20 mA (On Request)
- Individual Harmonics upto 63rd order for PN, 31st for EN
- Upto 100/200A direct measurements using Hanging CT or Clip on or Split Core CT (MOQ).
- Dual Source (Only for EN)
- Ethernet Interface - Modbus TCP, BACNET IP
- 4 Relay Demand Controller - 8 TOD optional.

High Profile Multifunctional Meter

Demand Controller

- Demand Prediction based on sliding or fixed
- Forecast interval 1% to 50% of demand period (manually set)
- Max Demand 4 high/4 low (PN), Flash 1MB, 12 am snapshot, 31st day snapshot
- Demand update every second to forecast kVA, **kW & kVAR concurrently**
- Either 2 or 4 Relay outputs for circuit breaker or contactor control for demand controller
- Optional 8 Demand and Energy TOD slots

High Profile Dual Source Meter

- 240V AMF Input
- Dual source with Demand Monitor

Ethernet Communication (MQTT)

- User configurable MQTT data transfer time interval
- Programming option for MODBUS or MQTT
- DNS server connection configuration option for MQTT
- Web browser for configuration and setup
- Supports SMTP protocol to send an alert email
- Configuring through web page for selected parameters (RAW-JSON data)

BACNET IP Meter

Ethernet Interface:
BACNET IP Protocol supports read & read multiple for 240 parameter as Analog Input (restricted option).

Multiplication Factor

Counter based energy mode

Full Scale in Watts : $\sqrt{3}$ × VPri x Apri	0.4k to 4.0k	4.01k to 40k	40.1k to 400k	400.1k to 4000k	4M to 40 M	40 M to 400 M	400M to 4000M
Multiplication Factor:	0.01	0.1	1.0	10	100	1000	10000
Unit of display	kWh				MWh		GWh

Product Selection:	EN 8400	EN 8420	EN 7500	PN 8700
ACCURACY OPTION	Customised LED		Graphical LCD	
CLASS 1.0	■	■		■
CLASS 0.2S/0.5S	□	□ 0.5S	■ 0.5S	□
BASIC PARAMETERS				
V12 V23 V31	■	■	■	■
V V1 V2 V3	■	■	■	■
A A1 A2 A3	■	■	■	■
Hz	■	■	■	■
Angle V & A, RPM	■	■	■	■
Unbalance V & A	■	■	■	■
Neutral Current (Calculated)	■	■	■	■
POWER PARAMETERS				
W W1 W2 W3	■	■	■	■
VA VA1 VA2 VA3	■	■	■	■
PF PF1 PF2 PF3	■	■	■	■
VAR VAR1 VAR2 VAR3	■	■	■	■
POWER QUALITY PARAMETERS				
THD - Voltage and Current	■	■	■	■
Individual Harmonics	31st □ *	31st □ *	31st □ *	63rd □
K Factor, Crest Factor				■
High Low - Instantaneous				■
High Low - Last Minute (VLL and Amps)	■ *	■ *	■ *	■ *
Voltage Sag, Swell and Interruptions				□
Power Cycles	■	■	■	■
TEHD and TOHD				■
Power THD and TDD				■
INTEGRATED PARAMETERS				
Wh	■	■	■	■
VAh	■	■	■	■
VARh -Ind	■	■	■	■
VARh-Cap	■	■	■	■
Load Hours	■	■	■	■
Phase Energy and Load hours	■ *	■ *	■ *	■ *
RD (IE)	■	DS	■	■
Wh- Total and Net				■
VAh- Total and Net				■
VARh - Total and Net				■
ON hours	■	■	■	■
CO2 Emission	■	■		■
Bargraph (% Load)	■	■	■	
Volt squared hours				■
Amp squared hours				■
TOD PARAMETERS				
TOD Demand - Import	□ *	□ *		□
TOD Energy - Import and Export	□ *	□ *	□ *	□
DEMAND PARAMETERS				
Rising Demand (Sliding/Block - Programmable)	□	□	□	□
Forecast demand	□	□		□
Maximum demand	□	□		□
Demand Profile 4High & 4 Low				□ *
ADDITIONAL FEATURES				
12am & 31st day snap shot	■ *	■ *	■ *	■ *
Data Logger - 512kb (fixed parameter with 15/30min interval, 1MB (programmable parameters 1min to 12hrs)	512kb □ *	512kb □ *	512kb □ *	□ *
Load Efficiency	■ *	■ *	■ *	■ *
Energy Trends				■ *
Dynamic communication	■ *	■ *	■ *	■ *
DUAL SOURCE		■		
ADDITIONAL OPTIONAL FEATURES(ANY ONE)				
Ethernet +256 MB Data Logging				□
2DI				▲ *
4 DI				▲ *
2DO	▲ *			▲ *
2AI	▲ *			▲ *
2AO (on request)	▲ *			▲ *
2AI, 2DO	▲ *			▲ *
4DO	▲ *			▲ *
DMC	4R ▲ *		2R □	4R ▲ *
COMMUNICATION				
RS485 (MODBUS)	■	■	■	■
WiFi	▲			
ETHERNET	▲			▲
TCP/IP(MODBUS) - with 2DI, 2DO	▲			▲
BACNET IP - without I/O)	▲			

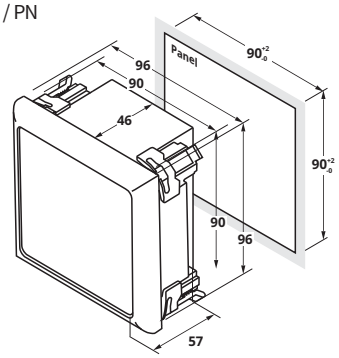
■ Default □ Optional ▲ Restricted option * Through communication only

Rogowski Coil
for EN8400

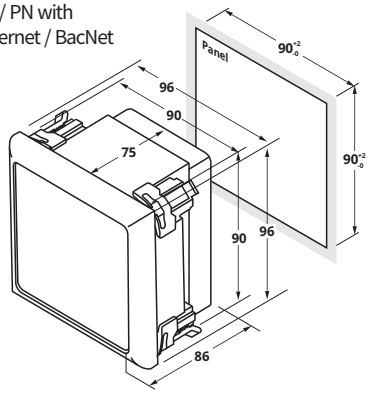
Rogowski Coil 3000A or Clip on CT upto 200A

Mechanical Specification

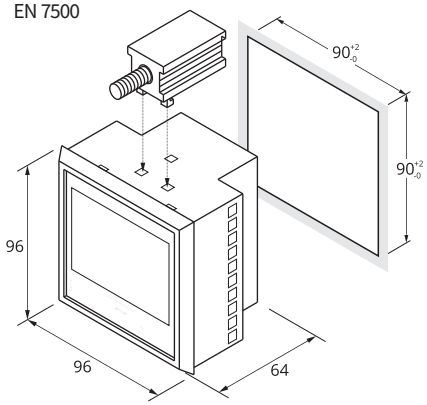
EN / PN



EN / PN with
Ethernet / BacNet



EN 7500



Technical Specification

Specification	Description
GENERAL CHARACTERISTICS	
Display type:	Graphical LCD for PN, LED for EN 84xx, LCD for EN 75xx. Integrated 8 digits, Instantaneous 4 digits.
Sensing / Measurement:	True RMS, 1 sec update time, 4 Quadrant power & energy
Rated Voltage:	50 - 600 VLL
Rated Current:	10 mA - 6A
Frequency:	45 - 65 Hz
Sampling rate	512 samples / cycle / channel for PN, 128 for EN
Measured accuracy class:	Class 1 as per IEC 62053-21 / Class 0.5 / Class 0.2S as per IEC 62053-22 (Optional)
Permissible overload:	120%, Burden: 0.2VA per phase
External fuse rating:	200 mA
CT PT ratio max.:	2000 MVA programmable
Auxiliary supply:	80 - 300V AC / DC (Lower AUX. on request based on MOQ)
Power consumption:	4VA nominal. 5VA for DMC
Data update rate:	1 sec.
COMMUNICATION	
RS485 MODBUS:	*Device ID & Parity:* 1 - 125 for EN, 1-247 for PN & odd, even (preferred even) *Baud rate:* 9600 bps to 38400 bps (preferred 9600 bps) *Isolation:* 2000 volts AC isolation for 1 minute between communication & other circuits.
Optional	ETHERNET TCP IP / BACNET IP, **WiFi:** WiFi Protocol: 802.11 b/g/n; Frequency: 2.4 Ghz - 2.5 Ghz Security: WP/WPA2, WPA-PSK/WPA2-PSK Encryption: WEP/TKIP/AES; Network Protocol: Ipv4, TCP Receive Sensitivity: -83 dBm Typical
ENVIRONMENTAL CHARACTERISTICS	
Operating temperature:	-10°C to +55°C (14°F - 130°F)
Storage temperature:	-25°C to +70°C (-13°F - 158°F)
Humidity:	5% to 95% non-condensing
Altitude:	Below 2000 mts
Measurement category:	CAT III
Pollution degree:	2 (As per IEC 61010)
PROTECTION CLASS	
Ingress protection:	IP 51 (IP 54 front facia optional) & Double insulation (as per IEC 61010-1)
SAFETY AND STANDARDS	
Construction:	IEC/EN 61010-1 EDITION 3, CAT III, 300V LN / 600V LL, Protection Class II
Standards:	UL 61010-1, IEC/EN 62052-11
MECHANICAL CHARACTERISTICS	
Weight:	Unpacked: 600gms, Packed: 800gms
Torque:	1 N-m (For 5A)
Wire-guage:	11 AWG (For 5A)
ELECTROMAGNETIC COMPATIBILITY	
Electrostatic discharge:	IEC 61000-4-2
Immunity to electromagnetic RF fields:	IEC 61000-4-3
Conducted immunity:	IEC 61000-4-6
Immunity to magnetic fields:	IEC 61000-4-8
Immunity to voltage dips and interruptions:	IEC 61000-4-11
Immunity to surge waves:	IEC 61000-4-5
Fast transient:	IEC 61000-4-4
Conducted and radiated emission:	CISPR - 22

MULTIFUNCTIONAL ENERGY METERS

Empowering you with accurate recordings of energy usage.

IMPROVED ENERGY EFFICIENCY & BILLING ACCURACY.

- Field programmable Star (Wye) or Delta configuration. Energy Display programmable - counter based or resolution based.
- Neutral current measurement for selected models optional.
- Communication with PCs, PLCs, DCS through optically isolated RS485 serial interface or WiFi option.

WIDER MEASUREMENT RANGE SUITING VARIETY OF APPLICATIONS.

- High & low measurements for voltage and current (last one minute of data)
- Motor load efficiency can be monitored for 5 different programmable slots along with Load Hrs. for Watts/Current.
- Non resettable overvoltage hour in diagnostic communication mode for healthiness of system.
- CO2 emission, ON hrs, Power interruptions.
- Demand control option with 2 relay (selected models).

DUAL SOURCE ENERGY & POWER METERING.

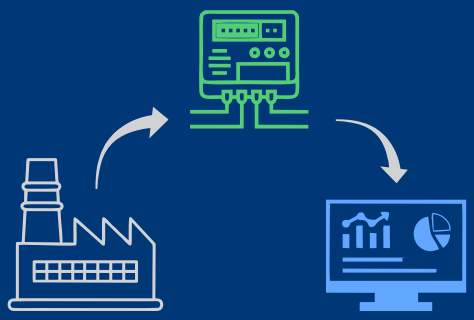
- Pulse LED 16000 imp/kWh of secondary input.
- Wide measurement range 1 : 1000 (6mA to 6000mA & 100mA to 100A).
- Dynamic communication with the programmable address and user selectable parameter sequence.
- Finger touch proof terminals to voltage and current connections.
- Energy resetting at 99999999 kVAh x MF.

PHASEWISE ENERGY
Recording via comm.

DUAL SOURCE
Mains | Genset

BEMS
Network connectivity

EXTENSIVE VERSATILITY TO MEET YOUR NEEDS.



Consistent reliability, superior design, and the flexibility to meet your energy metering needs. With a huge range of selectable models to suit various field applications, MFM offer you unrivaled energy visibility by providing granular second-wise data of the parameters that matters.

Multifunctional Energy Meter

Panel Mounted Meters

- Alpha numeric display LCD 10mm height, 1 row for 2xxx series.
- Accuracy Class 1.0 (IEC 62053-21), 0.5s (IEC 62053-22) option, 0.2S for selected models.
- Individual phase energy through communication - helps branch monitoring, better load distribution study.
- Datalog, block profile (15/30 minutes integration) - Fixed parameters for 45 days.
- Individual harmonics upto 15th for LG 6400 & upto 31st for LG 2550.
- Fixed / Sliding demand with RTC for W, VA, VAR (LG 2550D).
- Most Compact 96x96x47mm with communication
- Low Starting Current 6mA (for LG)
- High sampling rate 128 samples/cycle

DIN-Rail Mounted Meters

- Alpha numeric LCD display for 6mm height, 4 digits 3 row for M series.
- Wide measurement range: 1 : 1000 (6mA to 6000mA & 100mA to 100A).
- Fixed / Sliding demand with RTC for W, VA, VAR (LG 2550D).
- Individual phase energy through communication - helps branch monitoring, better load distribution study.
- **Dynamic communication** with the programmable address and user selectable parameter sequence.

Dual Source Energy Meter

DIN-Rail & Panel Mounted Meters

- Energy display programmable counter based or resolution based
- kWh and kVAh

120A Pass Through Dual Source Meter (LG5120D)

- Measure upto 120A
- Isolated Voltage and Current Terminal

Energy Reset Value

Full Scale in Watts : $\sqrt{3} \times$ VPri x APri	0.4k to 4.0k	4.01k to 40k	40.1k to 400k	400.1k to 4000k	4M to 40M	40M to 400M	400M to 4000M
Reset Value (VAh)	999.99999M	9.9999999G	99.999999G	999.99999G	9999.9999G	9999.9999G	9999.9999G

Product Selection

Parameters	Panel Mount LCD - Single Row					Panel Mount LED - Three Row			2DIN - 1Ph LCD - 3 row		2DIN - 3Ph LCD - 3 row		5DIN - 3Ph LCD - Single Row				
	LG2519	LG2599	LG2510	LG2520	LG2550 #	LG6435	LG6430	LG6400	M13	M10	M30 Any 2 Groups	M50	LG2310D	LG2510D	LG2520D	LG5120D	LG2550D
ACCURACY OPTION																	
CLASS 1.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLASS 0.5S	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]	[✓]
CLASS 0.2S (for 5A / CT operated Models)																	[✓]
BASIC PARAMETERS																	
V12 V23 V31	✓		✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓
V	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
V1 V2 V3	✓		✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓
A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
A1 A2 A3	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓
Hz	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Angle V & A, RPM					✓*			✓	RPM	RPM		✓					✓*
Unbalance V & A					✓*			✓				✓					✓*
POWER PARAMETERS																	
W			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
W1 W2 W3			✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓
VA			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓
VA1 VA2 VA3			✓	✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓
PF			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
PF1 PF2 PF3			✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓
ENERGY - IMPORT																	
Wh Import		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
VAh Import		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
Load Hours Import		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓*	✓*	✓*	✓*
Phase Energy & Load Hours (COM)						✓*		✓*			✓	✓*		✓*	✓*	✓*	✓*
Power Cycles					✓*			✓	✓	✓		✓					✓*
ON Hours		✓	✓	✓	✓	✓*	✓*	✓*	✓	✓		✓		✓	✓	✓	✓
CO2 Emission					✓*			✓	✓	✓		✓		✓	✓		✓
REACTIVE ENERGY - IMPORT																	
VAR					✓			✓		✓		✓					✓
VAR1, VAR2, VAR3					✓			✓			✓	✓					✓
VARh - Ind - Import					✓			✓		✓		✓					✓
VARh - Cap - Import					✓			✓		✓		✓					✓
ENERGY - EXPORT																	
Wh Export					✓			✓		✓		✓					✓
VAh Export					✓			✓		✓	✓	✓					✓
Load Hours Export					✓			✓		✓		✓					✓
REACTIVE ENERGY - EXPORT																	
VAR					✓			✓		✓		✓					✓
VAR1, VAR2, VAR3					✓			✓			✓	✓					✓
VARh - Ind - Export					✓			✓		✓		✓					✓
VARh - Cap - Export					✓			✓		✓		✓					✓
THD																	
THD - Voltage						✓		✓		✓	✓	✓					✓
THD - Current						✓		✓		✓		✓					✓
COMMUNICATION																	
RS485 (MODBUS)	[✓]	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
OPTIONAL FEATURES																	
Direct Current									✓	✓			✓	✓	✓	120A	✓
CT Operated											✓	✓	✓	✓	✓		✓
Dual Source		✓		✓											✓	✓	
Hanging CT upto 100A (3 in 1, 16mm dia.)	✓	✓	✓		✓	✓		✓			✓	✓	✓	✓			
Demand Monitor: W,VA,VAR (with RTC, Fixed / sliding for CT operated)					✓			✓									✓
Datalog, block profile (15/30 minutes integration) - fixed parameters for 45 days					✓			✓									✓
Demand Control with 2 relay					✓			✓									✓
WiFi (for CT operated only) - MOQ														✓	✓	✓	✓
Relay output upto					2	2		2						2	1		2
Individual Harmonics					15th*			15th*									31st*

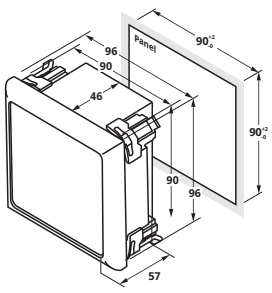
MOQ Applied

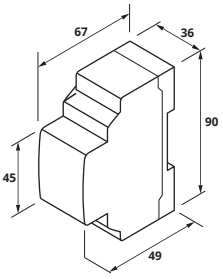
✓ Default * Through communication [✓] Optional

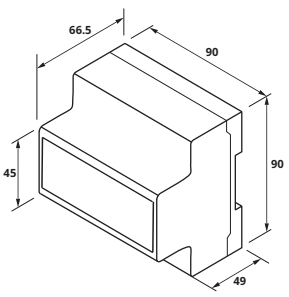
Technical Specification

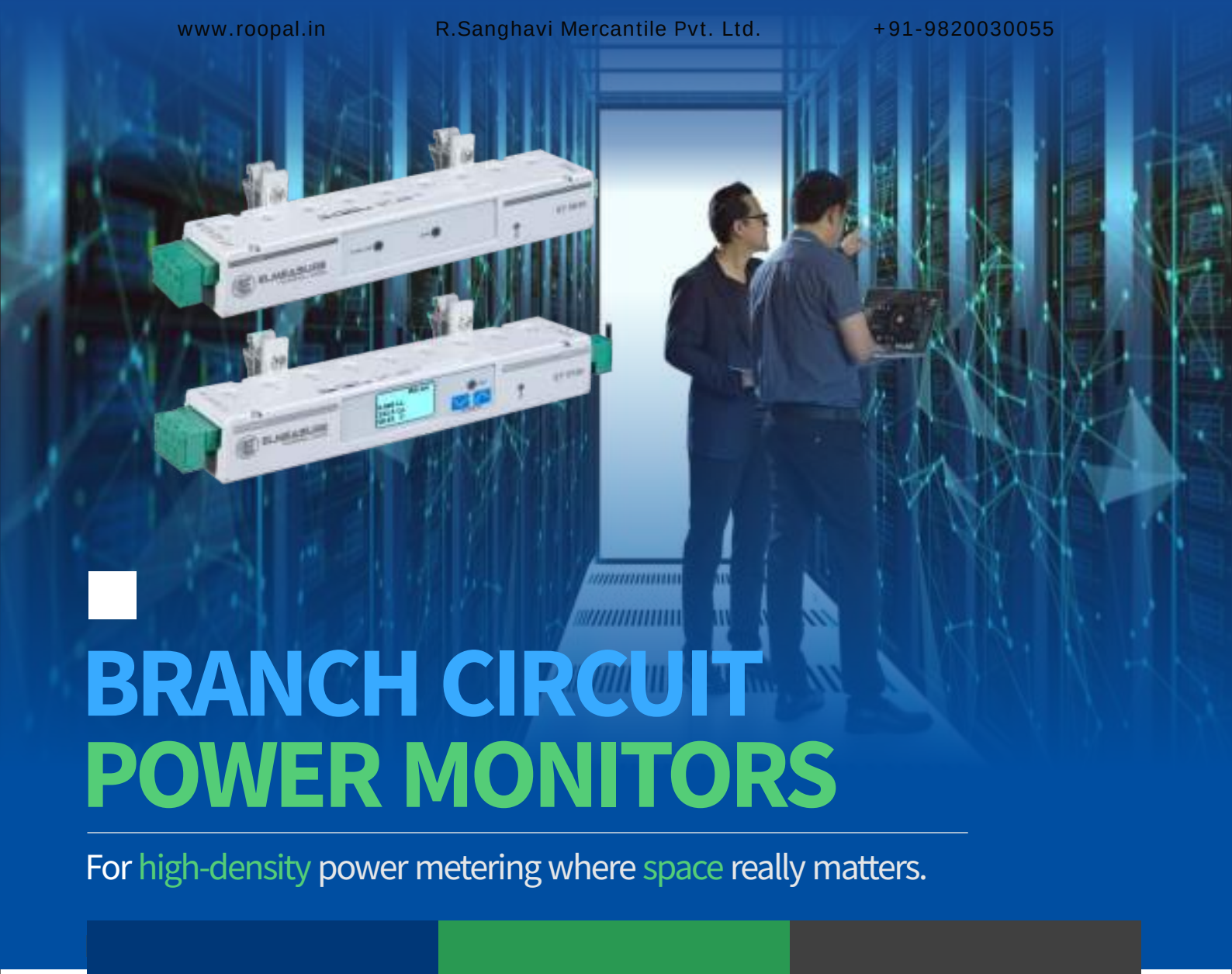
Specification	Panel Mount Three Phase	2DIN Single Phase	2DIN Three Phase	5DIN Three Phase
GENERAL CHARACTERISTICS				
Display type:	LCD single row (7 digits), LED 3Row (4 digits each)	LCD (3 row, 4 digits)		LCD (1 row, 7 digits)
Sensing / Measurement:	True RMS, 1 sec update time, 4 quadrant Power & Energy			
Rated voltage:	50-550 VLL	110-300 VLN	50-550 VLL	
Rated current:	10mA - 6A for 5A meter	100mA - 100A	6mA-6A for CT operated, 100mA-100A for Direct Current 100mA to 120A for pass through	
Frequency:	45 - 65 Hz			
Poles description:	3P + N	1P + N	3P + N	
Measured accuracy class:	Class 1.0 default (Class 0.5S / Class 0.2 as per IE 62053-22 Optional)			
Programmable setting:	415V LL Nominal & Primary Programmable upto 999 kV. Burden: 0.2VA Max. per phase		415V LL Nominal & Primary Programmable upto 999 kV. Burden: 0.2VA Max. per phase	
Permissible overload:	120%, Burden: 0.2VA per phase			
External fuse rating:	200mA slow blow			
CT PT ratio max.:	2000 MVA programmable		2000 MVA programmable	
Auxiliary supply:	80-300V AC/DC, Lower AUX available on request for selected models		Self Powered for direct current, 60-300V AC/DC for CT operated	
Power Consumption:	5VA Max.			
Data update rate:	1 sec.			
COMMUNICATION				
Device ID & Parity:	1 to 125 & Odd, Even, None (Preferred Even)			
Protocol & Interface:	**Modbus RTU & RS485**, Baud rate: 4800 bps to 38.4k bps (Preferred 9600). Isolation: 2000 volts AC isolation for 1 minute between communication and other circuits			
	WiFi Communication: (Not applicable for 2DIN models) WiFi Protocol: 802.11 b/g/n Frequency: 2.4 GHz ~ 2.5 Ghz Security: WPA/WPA2, WPA-PSK/WPA2-PSK Encryption: WEP/TKIP/AES Network Protocol: IPv4, TCP Receive Sensitivity: -83 dBm Typical			
ENVIRONMENTAL CHARACTERISTICS				
Operating temperature:	-10°C to + 55°C (14°F - 131°F)			
Storage temperature:	-25°C to + 70°C (-13°F - 158°F)			
Humidity:	5% to 95% non-condensing			
Altitude:	Below 2000 mts			
Measurement category:	CAT III			
Pollution degree:	2 (As per IEC 61010)			
PROTECTION CLASS				
Ingress protection:	IP 51 & Double insulation (as per IEC 61010-1)			
SAFETY AND STANDARDS				
Construction:	IEC/EN 61010-1 edition 3, CAT III, 300V LN / 600V LL, Protection class II			
Standards:	UL 61010-1, IEC/EN 62052-11			
MECHANICAL CHARACTERISTICS				
Weight	Unpacked: 175 gms, Packed: 250gms			
Torque at terminals	1 N-m (CT Operated), 2.5 N-m (Direct Current)	2.5 N-m	0.5 N-m	1 N-m (CT Operated), 2.5 N-m (Direct Current)

Mechanical Specification









BRANCH CIRCUIT POWER MONITORS

For high-density power metering where space really matters.

IDEAL FOR SMALLER OR CROWEDED ELECTRICAL PANELS.

- For remote reading and control, the Eltag is supported by ELNet Software, designed for remote setup and data viewing and analysis
- Building Management System: With the open modbus protocol, the Eltag can interface any system, such as building management, HMI etc.
- Installation time can be reduced by more than half
- Auto learning of phase protection, including neutral current

EFFICIENT USE OF AVAILABLE SPACE AND RESOURCES.

- Ideal for apartments / commercial complexes billing and load pattern study on individual phase
- Individual phase kWh measurement provides user flexibility of measuring 3 phase 3 channels or single phase 9 channels
- Primary current can be independently configured making it ideal for any kind of industry or upgradation

EASY ENERGY MANAGEMENT AND ENERGY BILLING SERVICES.

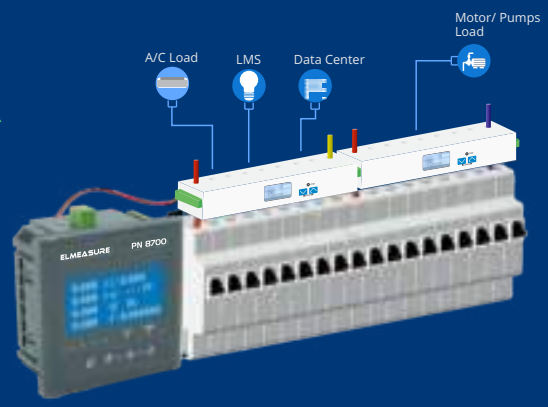
- Pass-through wiring: No separate spacing requirements for CT and CT cabling as EL-Tag offers direct pass through features (32A, 50A).
- A highly compact device: EL-Tag occupies only an area of 165mm x 25mm (compared to the conventional 3 metering devices (3 phase) and 9 metering devices (1 phase), thus reducing the space requirement by more than 80% compared to the other devices.

SPACE SAVING
Extremely slim design

MODULAR
For high scalability

UPTO 108 CHANNELS
Load circuit monitoring

HIGH END BRANCH CIRCUIT MONITOR FOR COMPREHENSIVE ENERGY MANAGEMENT



Digital Multifunction Meter

Master Meter for Branch Circuit Monitor

- High / Low recording VLL, VLN, A, Hz, W, VA, PF, VAR value storage with time stamp
- Accuracy Class 1, 0.5s optional
- Voltage measurement up to 600 VLL
- Display Basic, Power, Energy, Demand for both Import and Export parameters
- Simultaneous sampling of Voltage and Current,
- Programmable PT & CT ratio
- User programmable Password Protection
- Measures THD and Individual harmonics up to 63rd order with a sampling rate of 512 samples / cycle
- Captures and measures power quality events: K factor, Crest factor, Sag / Swell, Interruption and Unbalance in accordance with EN 50160
- Representation of waveforms for instantaneous V, I, Sag / Swell, Voltage and current harmonics histogram for PN 8700
- Records events such as Sag / Swell for voltage with the time stamp in 1s duration
- CO2 emission, ON Hrs, Power Interruptions
- Max demand 4 high / 4 low, 12am snapshot, 31st day snapshot
- Demand update every second to forecast VA, W & VAR accurately
- Programmable starting current in % of 5A secondary. Default 10mA
- Programmable Auto scrolling time - 1 sec. to 10 sec. (Default 5 sec.)
- Programmable Energy format - Counter based or Resolution based
- Phase wise Voltage Sag & Swell Wave Forms
- LCD 8 parameter display at a time, 8 Digits energy
- Power save mode with Enable/Disable option
- Byte order option - Field Programmable Float / Little Endian / Big Endian data format
- High / Low recording VLL, VLN, A, Hz, W, VA, PF, VAR value storage with time stamp
- Energy resetting at 99999999 kVAh x MF.
- OLD register to store previously cleared Energy & Load hours

EL-Tag

Branch Circuit Monitor

- True RMS measurements
- Simultaneous sampling of Volts & Amps
- User programmable password protection
- Supports both with Display and without display (ET5730 and Et5030)
- Multi-channel data collection
- Direct measurement up to 63A Pass through
- Attachable to any MCB (for same Brand MCB)
- Stand alone with Din rail Mounting and RS 485
- Configurable phase selection through RS 485
- Auto learning of Phases or Neutral. (CT polarity to be maintained).
- THD voltage & current measurement for all channels
- 3 Phase, 3 channels or Single phase 9 channels
- Pluggable up to 12 making 3 phase 36 channels or single phase 108 channels
- Space saving of one MCB width, 1/4th MCB length per channel
- Installation of 10 sec per channels
- Energy resetting @ 999999 kWh x TR.

BM Series

DIN-Rail Meters

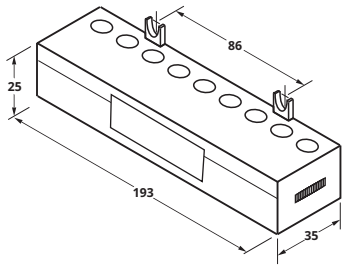
- Multi-channel data collection
- 3 Phase, 4 channels or Single phase 12 channels
- Displays Basic, Power and Energy parameters
- Default RS 485
- Space saving compact design for easy installation into existing panel boards
- True RMS measurements
- Simultaneous sampling of Volts & Amps
- Accuracy class 1.0 as per IEC 62053-21, Class 0.5 as per IEC 62053-22.
- User programmable password protection
- Energy resetting @ 999999 KWh × Transformer Ratio
- Displays more than 25 parameters - Basic [VLL, VLn, A (Average & Phasewise), F], Power [W, PF, VA (Total & Phasewise)] and Energy [Wh, LH]

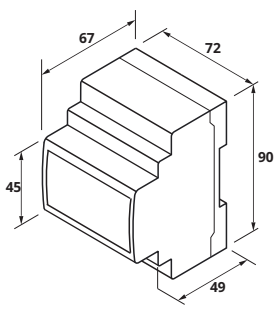
Product Selection

Parameters	PN8700M Graphical LCD	ET 5030 No Display	ET 5730 With Display (MOQ)	ET 5720 With Display (MOQ)	BM 5140 LED
ACCURACY OPTION					
CLASS 1.0	✓	✓	✓	✓	✓
CLASS 0.5S / CLASS 0.2S	[✓]	[✓]	[✓]	[✓]	[✓]
BASIC PARAMETERS					
V12 V23 V31	✓	✓*	✓*	✓*	✓
V V1 V2 V3	✓	✓*	✓	✓	✓
A A1 A2 A3	✓	✓*	✓	✓	✓
Hz	✓	✓*	✓	✓	✓
Angle V & A, RPM	✓				
Unbalance V & A	✓				
POWER PARAMETERS					
W W1 W2 W3	✓	✓*	✓	✓	✓
VA VA1 VA2 VA3	✓	✓*	✓*	✓*	✓
PF PF1 PF2 PF3	✓	✓*	✓	✓	✓
VAR VAR1, VAR2, VAR3	✓				
ENERGY - IMPORT					
THD - Voltage and Current	✓	✓*	✓	✓	
Individual Harmonics upto 63rd	✓				
K Factor, Crest Factor	✓				
High Low - Instantaneous	✓				
High Low - Last Minute	✓*				
Voltage Sag, Swell & Interruptions	[✓]				
Power Cycles	✓				
TEHD and TOHD	✓				
Power THD and TDD	✓				
INTEGRATED PARAMETERS					
Wh	✓	✓*	✓	✓	✓
VAh	✓	✓*	✓*	✓*	✓*
VARh - Ind	✓				
VARh - Cap	✓				
Load Hours	✓	✓*	✓*	✓*	✓*
Phase Energy and Load Hours	✓*	✓*	✓*	✓*	✓*
RD (IE)	✓				
Wh - Total and Net	✓				
Vah - Total and Net	✓				
ON Hours	✓				
Co2 Emission	✓				
Volt Squared Hours	✓				
Amp Squared Hours	✓				
TOD PARAMETERS					
TOD Demand - Import	[✓]				
TOD Energy - Import and Export	[✓]				
DEMAND PARAMETERS					
Rising Demand (Sliding/Block - Programmable)	[✓]				
Forecast Demand	[✓]				
Maximum Demand	[✓]				
Demand Profile - 4 high and 4 low	[✓]*				
ADDITIONAL FEATURES					
12AM & 31st day snap shot	✓*				
Data Logger - 1MB	[✓]*				
Load Efficiency	✓*				
Energy Trends	✓*				
Dynamic Communication	✓*				
Dual Source				✓*	
COMMUNICATION					
RS485 (MODBUS)	✓	✓	✓	✓	✓

✓ Default * Through communication [✓] Optional

Mechanical Specification





Current Transformers

Hang on CT-
5A or 50A or 100A or 200A

Up to 100A, 16mm ID

Clip on
CT-5A | 50A | 100A | 250A

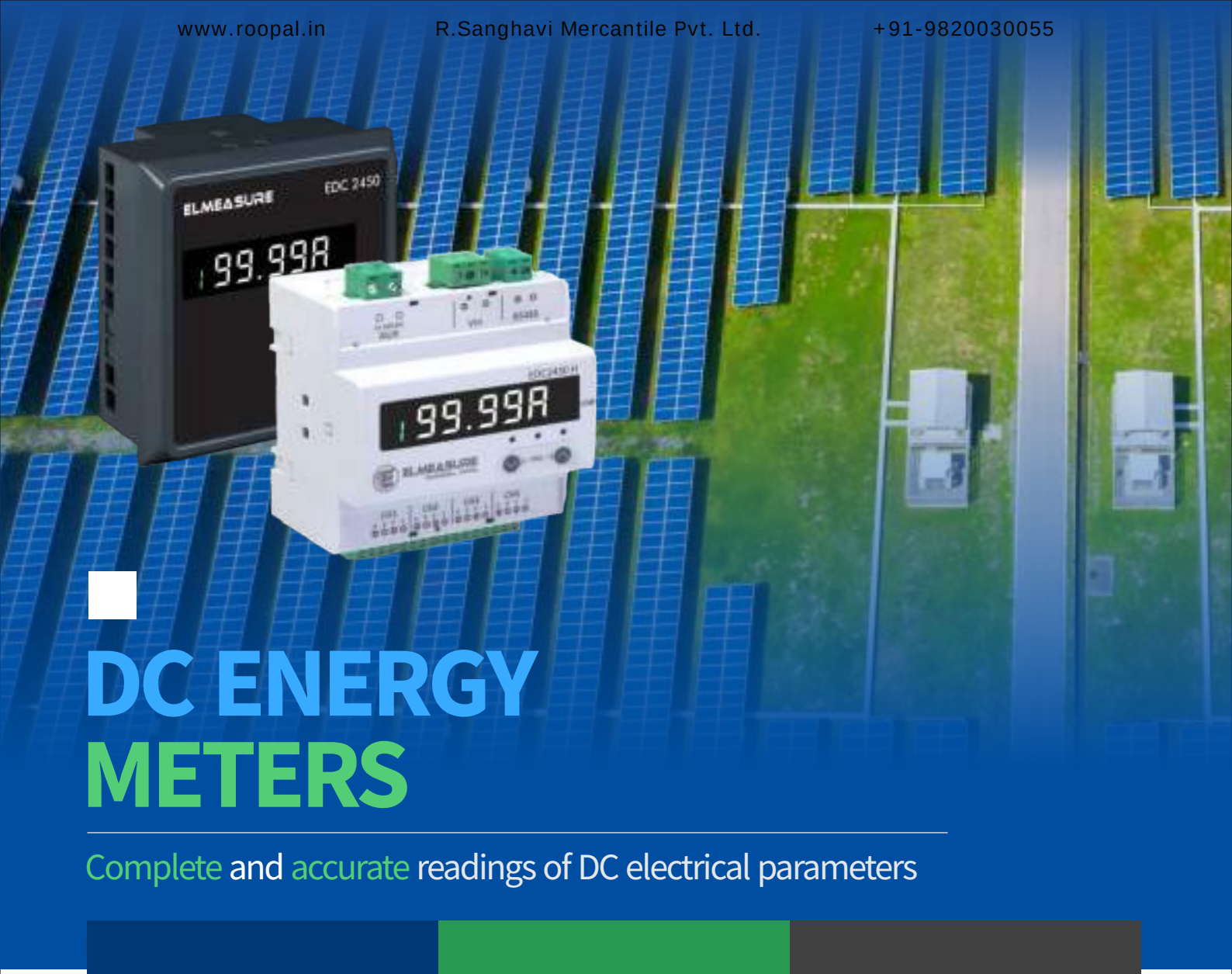
Split Core CT-100A | 400A | 1000A

Technical Specification

Specification	**PN8700M** (Master Meter)	**EL-TAG**	**BM Series**
GENERAL CHARACTERISTICS			
Display type:	LCD 4 row, 7/8 parameter, Integrated 4	Without display LCD display (optional)	1 row 6 digit for integrated, 4 digit for instantaneous
Sensing / Measurement:	True RMS, 1 sec. update time, 4 quadrant power and energy.	True RMS, 1 sec. update time, 2 quadrant power and energy.	True RMS, 1 sec. update time, 4 quadrant power and energy.
Rated Voltage:	50-600 VLL		
Rated Current:	10mA - 6A	10mA-6A, 50mA-32A, 100mA-63A	Optional through external CT
Frequency:	45 - 65Hz		
Poles Description:	1P + N, 3P, 3P + N	3 phase, 3 channel	3 phase, 4 channel
Sampling Rate:	512 samples / cycle	128 samples / cycle	
Measured Accuracy Class:	Class 1.0 as per IEC 62053-21 / Class 0.5 / Class 0.2S as per IEC 62053-22 (Optional)	Class 1.0: IEC 62053-21 (Default) Class 0.5: IEC 62053-22 (Optional)	
Programmable Setting:	110 or 415V LL Nominal & Primary programmable up to 999 kV, Burden: 0.2VA Max. per phase		
Permissible Overload:	120%, Burden: 0.2VA per phase		
External Fuse Rating	200mA	NA	
CT PT Ratio Max.:	2000MVA programmable		
Auxiliary Supply:	80-300V AC/DC Burden: 4VA Max.	Self Powered	80-300V AC/DC, 40-70Hz Burden: 4VA Max.
Power Consumption:	4VA nominal		
Data Update Rate:	1 sec.		
COMMUNICATION			
Device ID & Parity: Protocol & Interface Baud Rate: Isolation:	1 to 247 & Odd, Even, None (Preferred Even) MODBUS, RTU, RS485, 9600 bps to 38400 bps (Preferred 9600 bps) 2000 volts AC isolation for 1 minute between communication & other circuits.	RS485 for stand alone.	1 to 247 & Odd, Even, None RS485 Interface 4800 bps to 19200bps. 2000 volt AC isolation for 1 minute between communication and other circuits
PROTECTION CLASS			
Ingress Protection:	IP 51 (IP 54 front facia optional) & Double insulation (As per IEC 61010-1)		
ELECTROMAGNETIC COMPATIBILITY			
Electrostatic discharge:	IEC 61000-4-2		
Immunity to electromagnetic RF fields:	IEC 61000-4-3		
Conducted immunity:	IEC 61000-4-6		
Immunity to magnetic fields:	IEC 61000-4-8		
Immunity to voltage dips and interruptions:	IEC 61000-4-11		
Immunity to surge waves:	IEC 61000-4-5		
Fast transient:	IEC 61000-4-4		
Conducted and radiated emission:	CISPR - 22		
SAFETY AND STANDARDS			
Construction:	IEC/EN 61010-1 edition 3, CAT III, 300V LN / 600V LL, Protection class II		
Standards:	UL 61010-1, IEC/EN 62052-11		
MECHANICAL CHARACTERISTICS			
Weight	Unpacked: 350g, Packed: 450g. It may vary based on optional features.	200g	Unpacked: 275g, Packed: 350g. Weight of the CT's excluded.
Torque:	1 N-m (for 5A)	0.4 N-m	1 N-m
Wire Gauge:	11 AWG (for 5A)	26-10AWG (4.0mm2) Voltage and communication	11 AWG

ENVIRONMENTAL CHARACTERISTICS	
Operating Temperature:	-10°C to +55°C (14°F - 131°C)
Storage temperature:	-25°C to +70°C (-13°F - 158°F)
Humidity:	5% to 95% non-contensing
Altitude:	Below 2000mts
Measurement Category:	CAT III
Pollution Degree:	2 (As per IEC 61010)

WiFi Communication (Optional)	
WiFi Protocol:	802.11 b/g/n (Network protocol: Ipv4, TCP)
Frequency:	2.4 Ghz - 2.5 Ghz
Security:	WP/WPA2, WPA-PSK/WPA2-PSK
Encryption:	WEP/TKIP/AES
Minimum sensing range:	20%
Receive Sensitivity:	-83 dBm Typical



DC ENERGY METERS

Complete and accurate readings of DC electrical parameters

ACCURATELY MEASURE ALL DC-BASED ELECTRICAL PARAMETERS.

- Multiple channels can be measured by a single meter upto 1000V voltage input
- 4 Current Input channels
- 1 Voltage input channels
- Differential current input for all the current channels
- Bi directional current measurement to study charging and discharging circuits

IMPROVE ENERGY EFFICIENCY OF DC ELECTRICAL SYSTEMS.

- Current full scale programmable independently
- Programmable Shunt secondary (50mV to 100mV) – for Shunt based.
- Programmable CT Primary for all channels up to 200A - for Hall Effect CT
- Optional RS485 communication
- Auxiliary supply: 15 to 60V DC

ENSURING PROPER OPERATION AND SAFETY OF DC ELECTRICAL SYSTEMS.

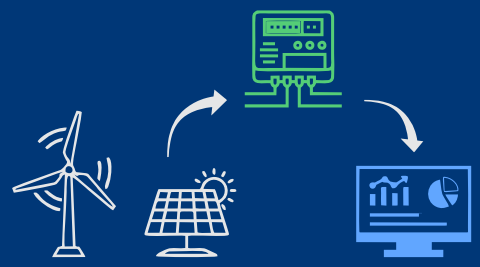
- Energy resetting at 99999999k x PTpri x CT pri
- Auto scaling and Auto scrolling
- Cleared parameters through key press
- User configurable and editable password
- Compact size and weight
- Easy installation and simple wiring

UPTO 1000V DC Measurements | BI-DIRECTIONAL Power monitoring | BEMS Network connectivity

vishal@roopal.in • Profile: https://wa.me/c/919323092384 • Add: https://tiny.one/rsmpl

SMART DEVICE FOR ALL RENEWABLE ENERGY RESOURCES!

Multi-channel DC energy, Voltage/Current full scale



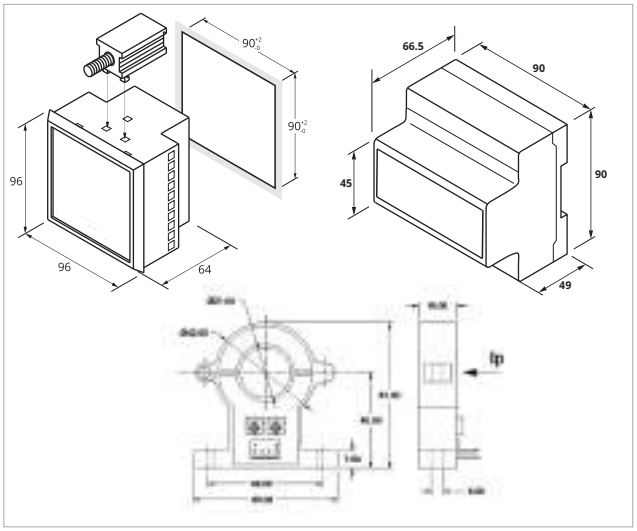
Application

- Renewable energy systems such as solar photovoltaic (PV) arrays, wind turbines, & electric vehicle (EV)
- Telecommunication & Data centres
- DC Energy Management Systems
- Transportation
- Industrial Applications

Applicable Standards

DIN 40050, EN 60529	Degrees of protection provided by enclosure for electrical equipment against ingress of solid foreign objects.
IS 12784	Electrical measuring transducers for converting AC electrical quantities into DC electrical quantities.

Mechanical Specification



Technical Specification

Specification	EDC 2150 / 2150D Single Channel	EDC 2450 / 2450D Four Channel	EDC 2450H Four Channel with Hall Effect
GENERAL CHARACTERISTICS			
Current Sensing Through:	DC Shunt		Hall Effect CT
Rating:	Shunt mV rating 50 mV to 100 mV (Programmable with individually programmable primary current of range 0.001 to 999.9kA.		Hall Effect CT rating up to 200A.
Mounting:	Panel Mount /DIN-Rail Mount		DIN-Rail Mount
Accuracy:	Class 1.0 FS (0.5 FS optional - MOQ on request).		
Number of Channels:	1 voltage channel and 4 current channels.		
Voltage Input Range:	10V to 1000V DC (48V default). Varieties of range in voltage like 100V DC, 300V DC, 800V DC, 1000V DC, etc (factory settable only)		
Auxiliary Supply:	15 to 60V DC		
Display:	1 row 7 digit LCD.		
COMMUNICATION			
RS485 Interface:	Serial channel connection industry standard MODBUS RTU protocol. Baud rate: 4800 bps to 38400 bps (preferred 9600 bps). Isolation: 2000 volts AC isolation for 1 minute between communication and other circuits.		
ENVIRONMENTAL CHARACTERISTICS			
Humidity:	5% to 95% non condensing		
Ingress Protection:	IP 51		
Operating Temperature:	-10°C to +55°C (14°F to 131°F).		
Storage Temperature:	-25°C to +70°C (-13°F to 158°F)		
MECHANICAL CHARACTERISTICS			
Dimension	Panel Mount: 96 x 96 x 57mm, DIN-Rail Mount: 90 x 90 x 67mm		
Screw:	M3		M2 for current connector and M3 for voltage connector
Torque (Max):	1 N-m		0.2 N-m
Wire Gauge:	28-16 AWG		
Weight (Approx.):	Unpacked: 300g, Packed: 350g		Unpacked: 575g, Packed: 675g

BASIC METERS

Basic VAF meters for reliable and cost-effective panels.

ENSURE SAFE OPERATIONS OF ELECTRICAL SYSTEMS.

- True RMS
- Average & phase wise information
- Measurement range 20mA to 6A
- Programmable primary / secondary for both Voltage & Current making wider range of operations – stocking becomes simple
- Universal Auxiliary input 40-300V AC/DC

QUICKLY IDENTIFY POTENTIAL ISSUES SUCH AS OVERLOADING OR UNDERLOADING.

- Auto-scrolling
- Auto-scaling of decimal point
- Low PT. CT burden
- Alerts for 120% Over Voltage, 80% Under Voltage & 100% Over Current in 3 row models
- Voltage & Current terminal on opposite side for safety and easy wiring

EASY INDICATION OF POWER SYSTEM AVAILABILITY.

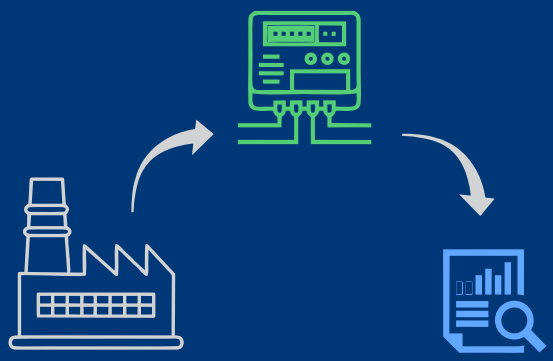
- Basic meter in slim construction (30mm depth)
- Patented alpha numeric display 4 Digits, 3 row, 14 mm height
- Simultaneous sampling of Volts & Amps
- RPM measurement for generator in SL 1300

SLEEK
Product construction

UPTO 60A
Hanging CTs

20mA 6A
WIDE RANGE
Of measurement

FOR COST EFFECTIVE AND EASY INSTALLATION WITH FULL PROGRAMMABILITY AT SITE.



VAF + PF Meter

SLEEK (SL 1300)

- Universal Auxiliary (40-300V AC/DC) supply
- Universal Voltage Input (80-550V AC)
- Current Secondary (20mA to 6A)
- Average and Phase wise measurement
- Voltage and current terminals are opposite to each other for safety and easy wiring
- Patented alpha numeric display for better visibility

Ammeter

SLEEK (SL A/3A/1330) & µALPHA (µA A/3A)

- Universal auxiliary input of 40 - 300V AC/DC
- Direct measurement upto 60A Hanging CT
- Current Average & Phase wise
- Field programmable CT primary and Secondary
- Available in 96 x 96mm and 96 x 48mm

Voltmeter

SLEEK (SL V/3V/1340) & µALPHA (µA V/3V)

- Universal Auxiliary (40-300V AC/DC) supply
- Average and phase wise measurement
- Available in 96 x 96mm and 96 x 48mm
- Frequency can be measured

DC Voltmeter / Ammeter

SLEEK (SL) & µALPHA (µA)

- 4 digits with auto-scaling makes the reading easier and provides a better resolution
- Field programmable Offset value or Full scale
- Voltage and Current terminal on opposite side for safety and easy wiring

Frequency Meter

SLEEK (SL) & µALPHA (µA Hz)

- Field programmable full scale or offset value
- DC Vin - 10V / 48V / 100V / 500V / 800V, DC Ain - 50mV to 100mV (factory set)
- DC 0 to 20mA / 4 to 20mA analog input options- Programmable at site
- Universal auxiliary input of 40 to 300V AC/DC for
- 96x48mm size (Micro series)

Counter Type Energy Meter

GenDuos & Smart 3E

- First time In India: Dual display, counter & LED- Eliminating the use of multiple meters- Reduces cost and simplifies panel wiring
- Monitors 5 key electrical parameters of the genset.
- Simultaneous display of kWh and V / A / Hz for GD 3110
- Common CT, PT settings for all parameters
- Programmable for single phase & three phase applications
- Reverse lock option
- Sealing option available on request

Model Selector Table

	SL A	SL V	SL 3A	SL 3V	SL 1330	SL 1340	SL 1300	SL ADC	SL VDC	SL Hz	µALPHA A	µALPHA V	µALPHA 3A	µALPHA 3V	µALPHA ADC	µALPHA VDC	µALPHA Hz	SMART 3E	GD 3110
ACCURACY CLASS																			
CLASS 1.0 (Default)	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
CLASS 0.5 (Optional)	✓	✓	✓	✓	✓*	✓*	✓	✓	✓		✓*	✓*	✓*	✓*				✓*	✓*
CLASS 0.2										✓							✓		
INSTANTANEOUS																			
V		✓		✓		✓	✓					✓		✓					✓
V_1 V_2 V_3 V_{12} V_{23} V_{31}				✓		✓	✓							✓					✓
A	✓		✓		✓		✓				✓		✓						✓
A_1 A_2 A_3			✓		✓		✓						✓						✓
Hz				✓		✓	✓			✓				✓			✓		✓
RPM							✓												
PF PF_1 PF_2 PF_3							✓												
kWh																		✓	✓
DC Volts									✓							✓			
DC Amps								✓							✓				
Current DC Programmable 4-20 or 0-20mA								✓							✓				
OPTIONAL																			
Communication - RS485							✓												
60A Hanging CT	✓		✓				✓				✓		✓						
100A Hanging CT							✓												
Tamper Proof																		✓	✓

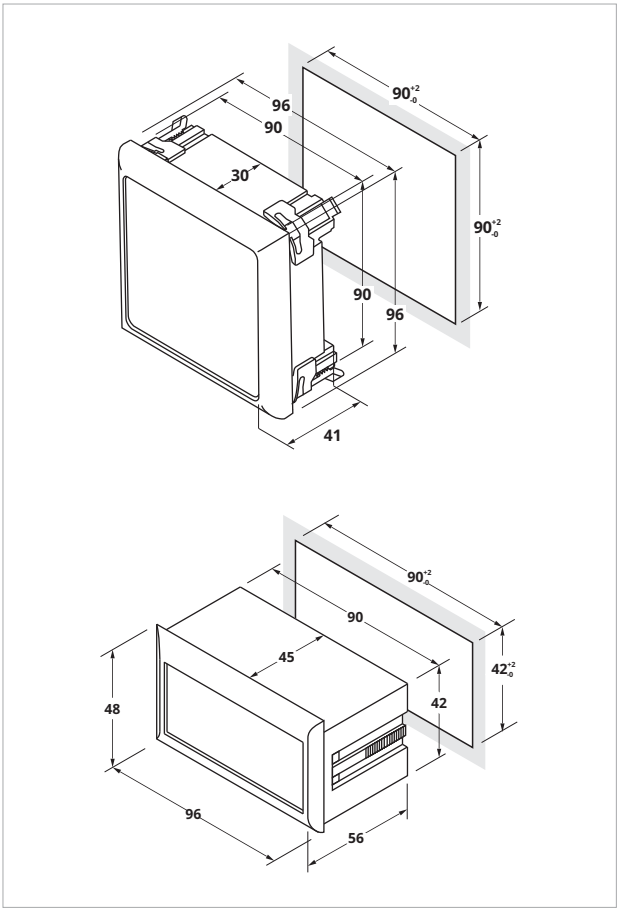
* MOQ On Request

Note : DC measurement Accuracy Class 1.0FS, Class 0.5FS (optional)

Technical Specification

Specification	Description
Accuracy:	Class 1.0 (Default) - EC 62053-21, Class 0.5 (Optional) - EC 62053-22. Frequency 0.2% default.
Sensing/ Measurement:	True RMS, 1 Sec. update time
Input Voltage:	4 Voltage inputs (V1 V2 V3 VN); (Range 80 to 550V LL) PT primary programmable upto 999kV Nominal 415V LL *Burden:* 0.2VA Max. per phase
Input Frequency:	45 - 65 Hz
Input Current:	Current inputs (A1 A2 A3) 20mA - 6A (Field configurable 1A or 5A). Primary programmable up to 99kA *Overload:* 10A max continuous, 50A max for 3 Sec *Burden:* 0.2VA Max, per phase.
Aux-Supply (control power):	40-300V AC/DC. 24V DC optional for selected models on request (MOQ). *Burden:* 4 VA Max
Protection Class: Ingress protection	IP 51 (IP 54 front facia optional) & Double Insulation (As per IEC 61010-1)
Display resolution:	4 digits display with 14mm height
Communication: Only for SL 1300	Modbus RTU & RS485 Baud rate: 2400bps to 38.4k bps (Preferred 9600) Isolation: 2000 volts AC isolation for 1 minute between communication and other circuits.
Weight:	Size 96 x 96mm - Unpacked: 275 gms, Packed: 350 gms Size 96 x 48mm - Unpacked: 250 gms, Packed: 325 gms
Torque:	1 N-m
Wire gauge:	11 AWG

Mechanical Specification



TRANSDUCERS & ISOLATORS

A precise sensing solution for automation/SCADA systems.

FAST RESPONSE TO ENSURE ACCURATE MEASUREMENTS AND CONTROL.

- Measure, record and visualize electrical network parameters
- Easy to install, Field configurable by the user (TR4200/5200)
- Measured parameters can be programmed to generate equivalent output signals
- True RMS measurements provides accurate and reliable readings

VERSATILE PRODUCT WITH ON-SITE PROGRAMMABILITY VIA KEYPAD.

- Isolation between input to output or output to output, ensures safety while connecting multiple systems
- Input and output current parameters are field configurable
- User Friendly interface to support remote monitoring and communication
- Output signal is transferable over a long range

COMPLETE ISOLATION OF SIGNAL NOISE TO ENSURE MAXIMUM DATA RELIABILITY.

- Reliable and field proven safety mechanism isolates input and output during high voltage or current to ensure equipment is safe
- Electrical parameters are displayed via bright LEDs
- Programmable Min, Mid and Max at site

IN OUT Galvanic isolation

TRUE RMS Measurements

Fast Response time

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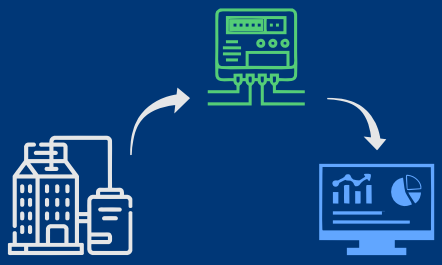
MULTI-FUNCTIONAL TRANSDUCERS FOR PRECISE MONITORING AND CONTROL.



Transducers & Isolators

DIN-Rail Mounted

- True RMS measurement
- Single and Dual output depending on models
- Quick response time of 300 msec
- Load resistence for current output is upto 500 ohms
- Isolation between Input and Output (ISO series)

TR 4200 & TR 5200

- Input signal is isolated from output signal by 2KV
- Monitor and displays A, V, Hz, W, VA, PF & VAr based on Models
- Din Rail Mounting
- Quick response time of 300ms in display and communication
- Sets to protection mode during high voltage/current
- Configurable single phase/ three phase input and output
- Individual phase overload monitoring
- Patented customised display
- Compact device with dual output and Rs485
- Override selection for desired value and range.
- On field configurable Input and Output parameters

APPLICABLE STANDARDS	
DIN 40050, EN 60529	Degrees of protection provided by enclosure for electrical equipment against ingress of solid foreign objects.
DIN / IEC 60688:2012	Electrical measuring transducers for converting AC and DC electrical quantities to analogue or digital signals.

Technical Specification

Specification	TR XXXX	ISO XXX
GENERAL CHARACTERISTICS		
Input Range:	50V - 550V, 10mA - 5A	0-20mA or 0.75mV or 0-10V (48V upto 800V)
Output:	4-20mA or 0-20mA or 0-10V	
Power Supply:	60 to 300V AC/DC, 15 to 60V DC (Optional)	
Display (4DIN Series)*	6 digit, 10mm height	
Accuracy:	Class 0.5, Class 0.2 optional	
Response Time:	300mS	
Frequency Bandwidth:	45 - 65 Hzdc	
Offset Voltage:	10mV	
Thermal Drift:	300 ppm/°C	
Power Consumption:	250mW (+12V)	
Isolation Voltage:	2500 Vdc	
Overload Capacity:	1.2 times full scale	
Flame Retardancy:	UL94-V0	
Hysteresis Error:	10mV	
COMMUNICATION		
Rs485 Interface*	Parity: Odd, Even, None (Preferred Even) Brand rate: 4800 bps to 19200 bps (Preferred 9600 bps) Isolation: 2000 volts AC isolation for 1 minute between communication and other circuits. Nodes: Upto 64	
ENVIRONMENTAL CHARACTERISTICS		
Output Ripple:	10mV	
Operation Temperature:	-10 to +60°C	
Storage Temperature:	-55 to +65°C	
Installation:	4DIN	

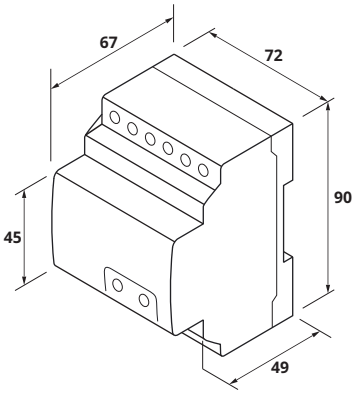
*Only for 4200 / 5200

Model Selection

Parameters	TR 1110	TR 1200	TR 2100	TR 2200	TR 4200	TR 5200	ISO 100	ISO 200
INSTANTANEOUS								
Single Phase V	✓	✓			✓	✓		
Single Phase A	✓	✓			✓	✓		
Single Phase Hz	✓	✓			✓	✓		
Three Phase A/V/Hz		✓			✓	✓		
Three Phase Watts/VA/VAr/PF			✓	✓	✓	✓		
Energy						✓		
ADC/VDC							✓	✓
Over ride		✓	✓	✓	✓	✓	✓	✓
Display					✓	✓		
RS485					★	✓		★
Analog Output in Numbers	1	2	1	2	2	2	1	2

Note: -10 to +10mA option available for single AO ★ Optional

Mechanical Specification



POWER FACTOR CONTROLLERS

For maximizing energy efficiency and savings on energy bills.

IMPROVE POOR POWER FACTOR AND REDUCE ENERGY CONSUMPTION.

- True RMS Measurements
- Simultaneous sampling of voltage and current
- Auto Learn of connection type
- Automatic calculation of C/k ratio
- Accuracy class: class 1.0 as per standard IEC 62053-21
- 3Phase measurement

LOWER ELECTRICITY BILLS & GENERATE SAVINGS IN THE LONG RUN.

- 4/6/8/12 (APFC640) 12/16 (APFC440) switching relay outputs
- Auto recognition of the CT phase
- Two quadrant operations
- 21 pre-programmed control series of capacitor values required for the compensation network
- Learns the number of capacitors connected and the value (10% load)
- Capacitance-based power factor correction takes care of variation in voltage and frequency

ENSURE COMPLIANCE WITH THE REGULATORY BODIES.

- Stores the number of switching and On hours of each capacitor for long life
- Displays Basic, Power, Energy and THD parameters
- Built-in Alarms: Alarm/Fault detection, Overcompensation, Under compensation, Over voltage, Over current, Under voltage, Under current, Reverse Amps, Over harmonics voltage and current

4-16 Stages of control

3Ph Sensing for high accuracy

BEMS Network Connectivity

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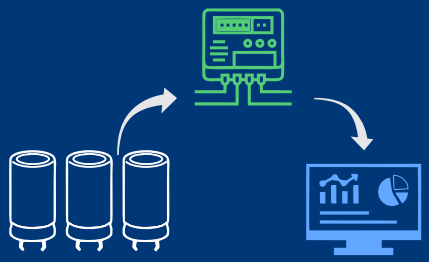
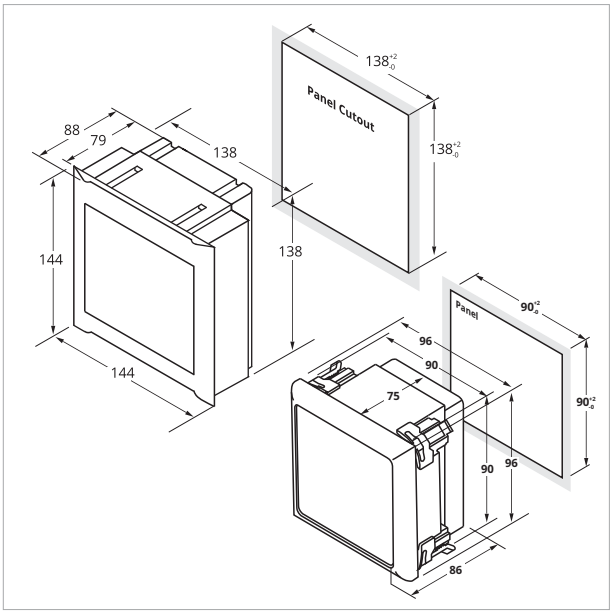
INTELLIGENT DEVICE TO MAINTAIN THE POWER FACTOR IN REQUIRED RANGE.



Features

- Intelligent Power Factor Controlling based on the capacitor bank switching's history (Number of operations, ON Time) which improves the capacitor life time
- Optional communication of present kVAR value based on voltage and frequency
- Controlling based on VAR parameter
- Control principle – nearest value first
- Minimum sensing current for controlling operation 50mA (1% load)
- RS485 communication (optional)
- On Site Programmable:
  Alarm display, Selectable stages, Alarm levels based on the comfort level of the user, Password protection, CT ratio suitable for any load, Star/Delta/3phases or 1 CT option programmable
- Disables the capacitor automatically when the capacitor is deteriorated beyond a certain level
- Improved sensing of switch ON / OFF capacitor within the programmed level and not towards UPF
- Improved Switching's ON / OFF methodology to operate the system very close to the target power factor
- Improved life cycle of the capacitor with less count of switching
- Improved power factor calculation based on reference Voltage and Frequency
- Improved method of Capacitor switching when the alarm occurred
- Threshold setting Lag to Lag or Lag to Lead
- Capacitor Value through key set up with password protection

Mechanical Specification



Technical Specification

Specification	Power Factor Controller APFC440, APFC640
GENERAL CHARACTERISTICS	
Accuracy:	Class 1.0: IEC 62053-21 (Default) Class 0.5: IEC 62053-22 (Optional)
Update Rate:	1 sec.
Power system type:	Programmable: Star (3 phase 4 wire), Delta (3 phase 3 wire), 3V. 1A (3 voltage, 1 current)
Sensing/Measurement:	True RMS, 1 sec update time. 2 quadrant power and energy
Input Voltage (Measurement):	4 voltage inputs (V1, V2, V3, VN) programmable 110 or 415V LL. Nominal primary programmable up to 999kV
Input Frequency:	45 Hz - 65 Hz
Input Current: (Measurement):	Current inputs (A1, A2, A3) 5mA - 6A (Field configurable (1A or 5A), Primary programmable up to 99kA Overload: 10A max continuous, 50A max for each Burden: 0.2VA max. per phase
Auxiliary Supply (Control power):	80 to 300V AC/DC, 40-70Hz Burden: 10VA max External fuse rating: 200mA slow blow type
CT PT Ratio Max.:	2000 MVA programmable
Protection Class:	3
Measurement Category:	CAT III (as per IEC 61010)
Humidity:	5% to 95% non-condensing
Pollution Degree:	2 (as per IEC 61010)
Altitude:	Below 2000m
Insulation:	Double insulation (as per IEC 61010-1)
Ingress Protection:	IP 51 (front facia)
Operating Temperature:	-10°C to +55°C (14°F - 131°F)
Storage Temperature:	-25°C to +70°C (-13°F - 158°F)
Wire Gauge (Connecting wires):	26 - 10 AWG (4.0mm² for V & A, 2.5mm² for relay output)
Container Material:	PC
Display:	Customised 3 row 4 digit LED with % level indicator. Dimension: 3Row 4Digit 0.56" (14mm) Red. Resolution: 4 digits for instantaneous parameters, 8 digits for integrated parameters. LED Bar Graph: % Load indication with programmable parameters (A, VA, WATT)
Communication:	RS485 serial channel connection industry standard MODBUS RTU protocol. 2000 volts AC isolation for 1 minute between communication and other circuits. Baud rate: 4800, 9600, 19.20K, 38.40K (preferred 9600). Isolation: 2000 volts AC isolation for 1 minute between communication and other circuits. Parity: Even, Odd, No Device/Meter ID: 1 to 247 (Programmable)
Relay contact rating:	SPST, 3A@240VAC
Weight:	APFC440: 700gms; APFC 640: 400gms

EARTH LEAKAGE RELAYS

Protecting lives & equipment from earth leakage hazards.

SAFEGUARD FROM FATAL ELECTRICAL SHOCKS AND FIRE HAZARDS.

- True RMS measurement
- Clearance and creepage distance meets UL 61010 safety standard
- Intelligent Protection - trip time is inversely proportional to fault current.
- Field programmable trip current and trip time through front panel keys with password protection
- Continuous leakage current display (Programmable) - Leakage current continuously displayed to enhance the user to understand the quality of Electrical network / Machine / trouble shooting online. This can be disabled through setup if required

PREVENT EQUIPMENT DAMAGE AND THE RISK OF UNPLANNED DOWNTIME.

- Continuous display of trip leakage current (Programmable) - In case of tripping, iELR captures and displays the tripped current with 4 Digits resolution, which helps the user to analyze and correct the problem. This can be disabled through setup if required
- Continuous scrolling display for set current and set time
- Manual test and reset keys
- RS485 communication option
- Auto Configuration through communication
- Reset through communication in trip condition

HELPS IN DIAGNOSING LOOSE CONNECTIONS AND DAMAGED INSULATIONS.

- Protects control panels and switch boards from flame leakage
- Protects motors / transformers / feeders / generators etc., from earth leakage
- Hazardous and sensitive industries like oil refineries / pulp industries / electrical distribution etc., can be protected
- Complete protection for control engineering and mining industry

INVERSE CURVE
Time-graded protection

PROTECTION
Against leakage current

BEMS
Network connectivity

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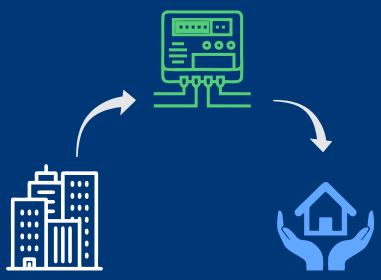
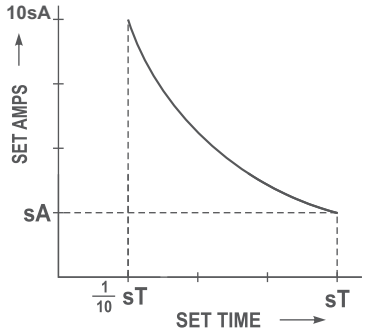
DETECT THE LEAKAGE CURRENT IN AN INTELLIGENT ELECTRICAL DEVICE.



Advantages

- Microcontroller based design provides higher technological advantage
- Peak detection and value display helps in analysis and corrective action
- Password protection for security against mishandling
- Current sensitivity wider range 30mA - 3A and 300mA to 30A no limitations on set current (30mA to 30A coming soon)
- Programmable trip time 30ms - 30s with wider choice to suit different industry
- Selection through soft keys (No DIP switches) provides better IP protection and longer life
- Continuous earth leakage value display helps online loss analysis (Programmable)
- Intelligent tripping based on T ∝ 1/A gives faster and reliable protection
- Auto scrolling of trip information and peak fault current provides better analysis

Trip Characteristics



Technical Specification

Specification	iELR 200D DIN-Rail Mount	iELR 300 Panel Mount
Display:	4 Digit	4 Digit
Input Current:	30mA to 3A or 300mA to 30A (30mA - 30A coming soon)	
Trip Current:	Programmable	
Tripping time:	100 mS - 30 sec.	
Contact Rating:	2Amps @ 240V AC / 24V DC	
Accuracy:	Class 5.0 FS (Default), Optional Class 2.0 FS	
Auxiliary Supply:	80 - 300V AC/DC, 4VA Max.	
CBCT:	Round, Rectangular	
Core Balance:	CT type: Tape wound limited round size, option for epoxy coated and plastic version.	
Communication: RS485 Interface: (Optional)	Parity: Odd, Even, None (Preferred Even) Baud rate: 4800 bps to 38400 bps (Preferred 9600 bps). Isolation: 2000 volts AC isolation for 1 minute between communication and other icrcuits.	
Torque:	1 N-m for Panel Mount, 0.2 N-m for DIN-rail	
Wire Gauge:	11 AWG	

Core Balance Current Transformer (CBCT)

CBCT Specification
Input Range : 30mA to 3A Default (300mA to 30A Optional)

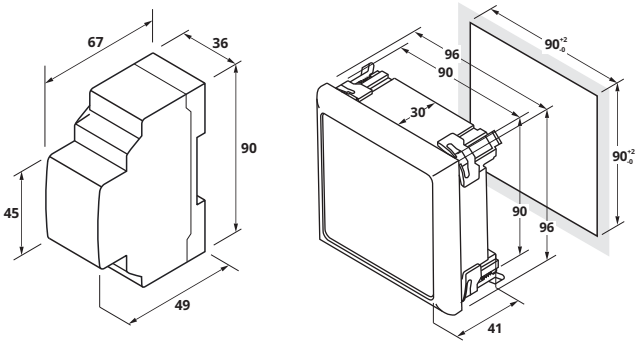
Round Diameter:
(Tape Wound/Resin Cast)
Inner Diameter 60mm, 100mm, 150mm, 200mm, 250mm, 300mm

Case Mounted:
(Plastic)
Inner Diameter 35mm, 70mm, 120mm, 210mm


Plastic Epoxy

Rectangular:
(Tape Wound/Resin Cast)
250×100mm, 300×100mm, 350×100mm, 350×150mm, 450×450mm, 500×200mm.
(Any other sizes subject to availability)

Mechanical Specification



NETWORK GATEWAYS

Reliable IoT gateways to connect different systems together.

EASY INTEGRATION OF INDUSTRIAL DEVICES AND IOT EQUIPMENT.

- **Seamless IoT connectivity:** Multi-protocol IoT networking capability offers interoperability with unconnected systems / other devices with varying protocol.
- **Data Redundancy:** Options for memory storage for upto 4GB. This ensures there is no loss of critical data of the specific operations.

REAL-TIME MONITORING AND CONTROL OF INDUSTRIAL PROCESSES.

- **Process/Operations Monitoring:** Digital/Analog input features enables to monitor all the process parameters through integration of pressure, flow, level, temperature, humidity sensors or other PLC devices with standard 0-20mA input.
- **Cloud Service Independency:** Ability to publish either to AWS or Azure Cloud platform for Remote Monitoring Systems.

PROTECTION AGAINST UNAUTHORISED DATA ACCESS AND OTHER CYBERTHREATS.

- **Data Security:** Offers highly secured connectivity using the secured TLS data encryption.
- **Remote machine/process control:** With the digital output feature of GW 3000L/P, you can remotely turn ON/OFF specific machines or shutdown a larger plant process.

COMPACT Product design | IoT Seamless networking | UPTO 4GB Storage memory

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Product Selector: GW 3000 Series

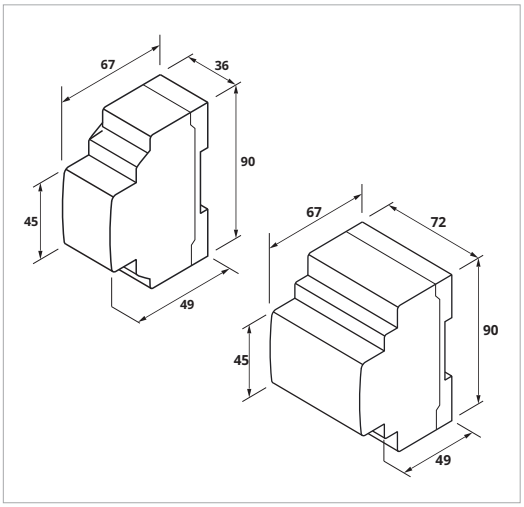


	GW 3000 L	GW 3000 M	GW 3000 P
CONNECTIVITY			
Ethernet	RJ45 10/100Mbit		
Web browser configuration	Available		
MEMORY			
Storage	-	1GB eMMC	8GB eMMC
RTC Battery	-	Built-in	
PROTOCOLS			
Modbus			
RS485 (2-wire)	Available		
Isolation	2kV galvanic		
Speed	800, 9600, 19200, 38400, 57600, 115200 bps		
No. of devices supported	Up to 64 devices (1 block each)		
Protocol	MODBUS RTU, MODBUS TCP/IP		
Function code compatibility	All function codes	Transparent - All Function codes. MQTT-0x03, 0x04	Function codes 0x03, 0x04, 0x05 0x10
SNMP			
Availability	-		Available
Protocol version	-		V 1.0
PDU type	-		Get
PUBLISH TO CLOUD			
MQTT - TLS	-	V1.2	
Data format	-	JSON	
AWS Cloud	-		Available
Azure Cloud	-		Available
Store MQTT messages when remote broker offline & forward when remote broker online.	-	Available	
VPN (Optional)	Available		
Operating System	Ubuntu 18.04, Customized		
Max. Devices	-	32 blocks for 1min, 64 blocks for 5min.	
OPTIONAL FEATURES			
PoE	-	-	Available
Digital Input	-	-	6
Digital Output	-	-	4
Analog Input	-	-	2

Technical Spec: GW 2000 Series

	GW 2000
CONNECTIVITY	
Protocol	MQTT
ETHERNET PORT	
Connecter	8-Pin Rj45 Socket for CAT 5 UTP
Physical & Data Link Layer	IEEE 802.3i 10/100 BASE-T
Isolation	1.5 kV galvanic
Max. Cable Length	100 m (328 ft)
Protocols	MODBUS RTU,TCP/IP, IPV4, MQTT, DHCP, UDP, HTTP, ARP, ICMP
Concurrent Connections:	Windows: Max. 1023 clients
SERIAL PORT RS485 / RS422 INTERFACE	
Connector	5/08 mm 2-pin
Physical layer	EIA-485-A, 2 wire
Isolation	15kV
Speed	2400, 4800, 9600, 19600 bps
Max. Number of nodes	Up to 64 devices (1 block each)
Protocols	MODBUS RTU (Master)
Serial Number	TCP Server / Serial Tunnel
USER INTERFACE	
LED indications	Power (Red), Ethernet link (Green)
Monitoring & Configuration	Web browser based
High availability features	Support Watchdog, system never halt
POWER SUPPLY	
Connector	5.08mm 2-Pin
Voltage	4.5-6V DC
Current	2A typical @ 5VDC
Intrinsic Consumption	4W Eth/6W LGRS

Mechanical Specification



MQTT Message Persistence & Recovery Data Storage

	GW 3000 M				GW 3000 P			
Parameters .	32	16	8	1	32	16	8	1
Devices	32	32	31	32	32	32	32	32
Freq	15 min	15 min	5 min	5 min	15 min	15 min	5 min	5 min
Storage	14 days	17 days	8 days	15 days	14 days	17 days	8 days	15 days
Recovery Data Storage						Last 5 days	Last 5 days	Last 5 days

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