iMeasure
THINK - ACT - SAVE

iEngineering
idea + intelligence + integration

Products

for Efficient **Energy** & **Process** Management

www www.ieng.tech

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WHAT ARE WE?

A SPARKLE TO KEEP THE ENERGY ALIVE FOREVER.

15+ Years in the Energy Business

Product Versatility to 500+ & counting

60,000+ & Growing no. of Happiest Clients

5 Million products in the field

Tailor-made Solutions for 25+ Industries

Footprints in 50+ Countries

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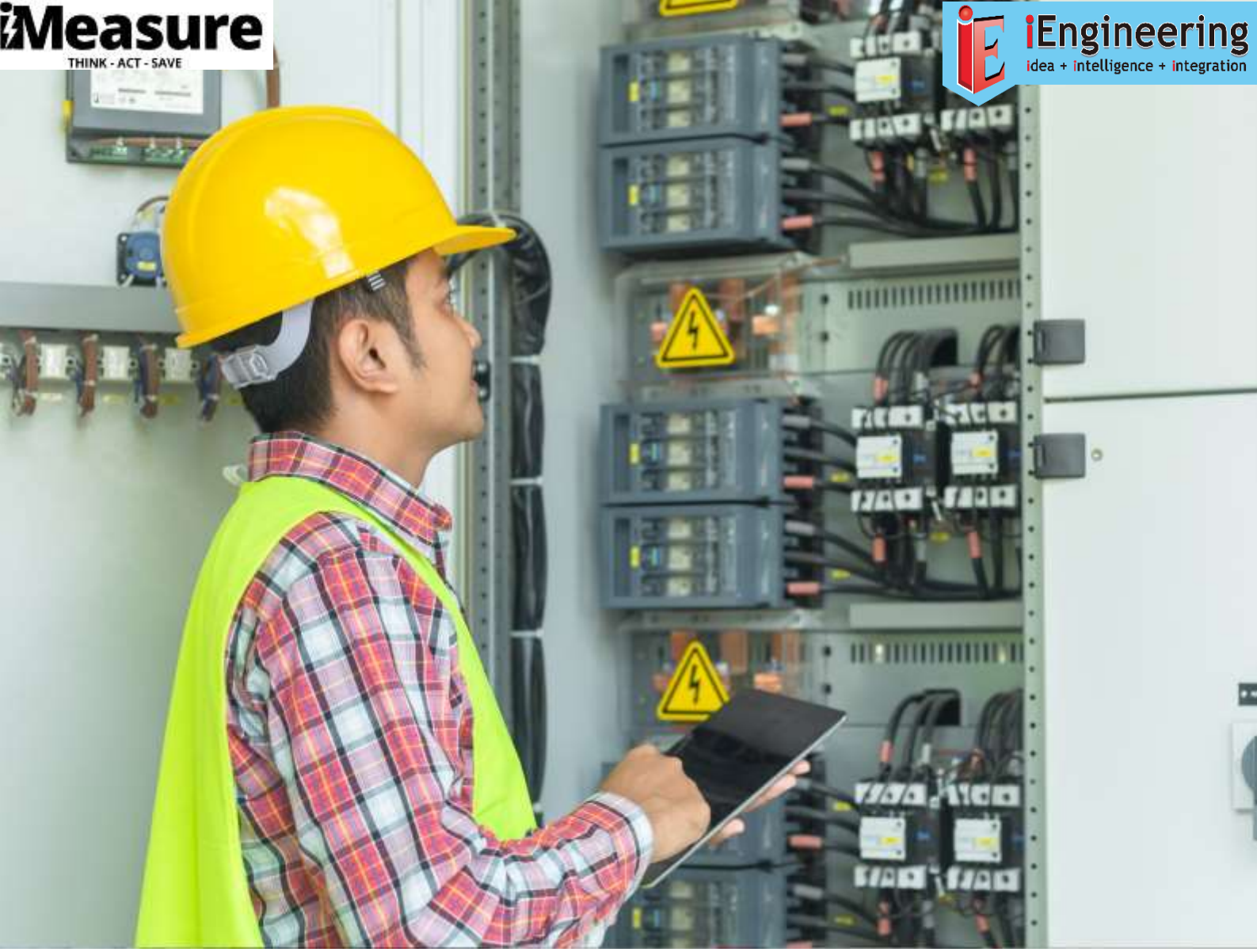

One Platform,
Many Possibilities...

Energy | Costs | Manpower | Environment

Monitor

Energy | Process | Water | Gas

Analyze

Dynamic dashboard | KPI reports | Real time alerts & notifications

Communicate

WiFi | Zigbee | GPRS | 4G | Ethernet | RS485 | Modbus | MQTT | LoRa

Control

On-premises | Remote | Scheduled

Smart Monitoring

Smart Basic Meter (Sleek) 2
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Smart Controlling

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Smart Resource

AC Static Watthour Meter (PE) 18
ACCL .....
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ATS Controller .....
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25

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SMART MONITORING

ENGINEERED FOR EASE OF INSTALLATION WITH ACCURATE MEASUREMENT

Energy Metering

Designed to offer precise energy measurement for power metering and network monitoring applications

Multifunction Meter

High performance digital meter for simultaneous measurement of electrical qualities like voltage, current, Power, energy, frequency, power factor, along with process parameters.

Programmability

User friendly and site programmability of voltage and current based on single phase &three phase applications.

Multi-Channel Meter

Compact meters with the ability to monitor multiple channels that are ideal for data centers, apartments, commercial complexes billing and load pattern studies.

For monitoring energy parameters, iEngineering products has developed a wide range of AC/DC measurements, designed with compact enclosures, easy-to-use, and cost effective energy meter. Smart energy meters can be provided with communication port to connect to your BMS/EMS systems. Smart monitoring products are ideal for industrial panels, gen-sets, solar, pump control panels, genset, solar and UPS applications.

SL

SMART BASIC METER

Ammeter | Voltmeter | VAF Meter | Power Meter

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

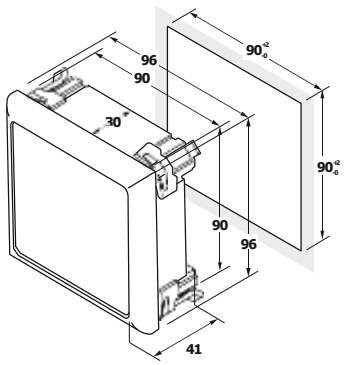
Features:

- 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
- Built in power supply for SL V and 3V
- 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

Additional Features:

- 4 Digits 1 row, 14 mm height bright red LED for 1 row
- 4 Digits 3 row, 14 mm height bright red LED for SL 1300/1330/1340/4300
- Patented alpha numeric display 4 Digits, 3 row, 14 mm height
- Simultaneous sampling of Volts & Amps
- Displays more than 13 basic parameters i.e, VLL, VLN, A, Hz
- RPM measurement for generator in SL 1300/4300
- W, VA, VAR, PF parameters available in SL 4300
- Voltage Indicating lamp and alarm indication in SL 1140

Mechanical Specification



Parameters:

Parameters:	SL A	SL V	SL 3A *	SL 3V *	SL 1140	SL 1330	SL 1340	SL 1300	SL 4300
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								✓	✓
W W_1 W_2 W_3									✓
VA VA_1 VA_2 VA_3									✓
VAR VAR_1 VAR_2 VAR_3									✓
OPTIONAL									
Class 0.5						✓	✓	✓	✓
Class 0.2						✓	✓	✓	
50A projection CT						✓		✓	
100, 200A hanging CT						✓		✓	
Tamper proof	✓	✓	✓	✓	✓	✓	✓	✓	✓
Indicator					✓				
Alarm Indication					✓	✓	✓	✓	

*Optional 0.8" display available for SL 3A & 3V. (MOQ applies)
SL ADC and VDC also available.

Technical Specification:

Specification	Description
Accuracy:	Class 1.0 (Default) Class 0.5 (Option). Frequency 0.5% default.
Sensing/ Measurement:	True RMS, 1 Sec. update time
Input Voltage:	4 Voltage inputs (V_1 V_2 V_3 V_N); (Range 80 to 550V LL) PT primary programmable upto 999kV Nominal 415V LL (415/415 in SL 4300) *Burden:* 0.2VA Max. per phase
Input Frequency:	45 - 65 Hz
Input Current:	Current inputs (A_1 A_2 A_3) 20mA - 6A (Field configurable 1A or 5A). Primary programmable up to 99kA (8000A in SL 4300) *Overload:* 10A max continuous, 50A max for 3 Sec *Burden:* 0.2VA Max, per phase.
Aux-Supply (control power):	180-300V AC (Self powered 3V and V meters) 40-300V AC / DC optional, 24V DC optional. *Burden:* 4 VA Max
Display resolution:	4 digits display with 14mm height
Weight:	Unpacked: 275 gms, Packed: 350 gms
Torque	1 N-m
Wire gauge	11 AWG

μA+

SMART BASIC METER

Ammeter | Voltmeter | DC | RPM & MPM

BASIC PARAMETERS MEASURES PRECISELY!

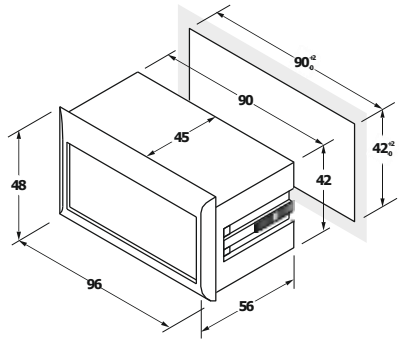
Features:

- True RMS
- Four Digits resolution with auto scaling
- Field programmable Star (Wye) or Delta or Single Phase configuration
- Average & Phase wise information
- Universal auxiliary input 40-300V AC/DC
- Auto-scrolling

Parameters:	μALPHA+ A	μALPHA+ V	μALPHA+ 3A	μALPHA+ 3V	μALPHA+ ADC	μALPHA+ VDC	μALPHA+ RPM
INSTANTANEOUS							
V		✓		✓			
V_1 V_2 V_3 V_{12} V_{23} V_{31}				✓			
A	✓		✓				
A_1 A_2 A_3			✓				
Hz				✓			
RPM/MPM							✓
Voltage DC						✓	
Current DC Programmable 4-20 or 0-20mA					✓		
OPTIONAL							
Class 0.5			✓	✓	✓	✓	✓
100A, 200A hanging CT	✓		✓				

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

Mechanical Specification:



AMMETER - μALPHA+ 3A/A

- Displays Current for μAlpha+ A and 3A (Average & Phase wise)
- Field programmable CT primary and secondary
- Models: μAlpha+ 3A (3 Phase); μAlpha+ A (single phase)

VOLT METER - μALPHA+ 3V/V

- Displays VLL, VLN (Average & Phase wise), F,for μA+ 3V. VLL / VLN for μA+ V
- Models: μAlpha+ 3V (3 phase measurement); μAlpha+ V (Single Phase)

DC METER - μALPHA+ ADC/VDC

- DC Vin - 50mV to 100mV / 10V / 48V / 100V / 500V / 800V default factory set
- DC Ain - 0-20 mA / 4-20 mA input options
- Auxiliary from 40-300V AC/DC
- Field programmable full scale or offset value

RPM/MPM METER - μALPHA+ RPM/MPM

- DC Vin - 50mV to 100mV / 10V / 48V / 100V / 500V / 800V default factory set
- DC Ain - 0-20 mA / 4-20 mA input options
- Auxiliary from 40-300V AC/DC
- Field programmable full scale or offset value

Technical Specification:

Specification	Description
Accuracy:	Class 1.0 (Default), Frequency 0.5, Class 0.5 (Optional)
Sensing/ Measurement:	True RMS, 1 Sec. update time
Input Voltage:	4 Voltage inputs (V_1 V_2 V_3 V_N); (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 (A_1 A_2 A_3) 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 40-70Hz Burden: 4VA Max
Display resolution:	4 digits display with 10mm height
Weight:	Unpacked: 250 gms, Packed: 325 gms
Torque	1 N-m
Wire gauge	11 AWG

Note: *Additional error of 0.05% of full scale, for meter input current below 500mA*

LG

DIGITAL MULTIFUNCTION METER

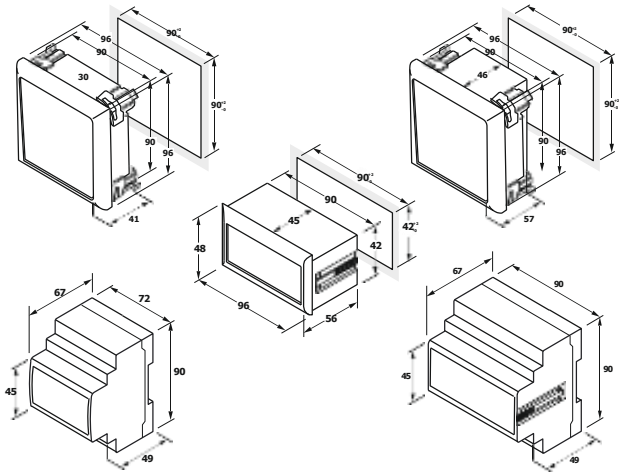
Basic | Power | Energy | Dual Source Meter | Load Manager

SIMULTANEOUS MEASUREMENT OF VARIOUS ELECTRICAL PARAMETERS!

Features:

- Accuracy Class 1.0 (IEC 62053-21), 0.5s (IEC 62053-22) option
- Patented alpha numeric display with bar graph 14 mm height, 4 Digits 3 row for 64xx series, 10mm for single row
- Available in LED 1 row 6 Digits, LCD 1 Row 7 Digits & LED 3 Row 4 Digits each
- Field programmable Star (Wye) or Delta or Single Phase configuration
- Programmable PT, CT ratio upto 2000 MVA
- Wide measurement range 1: 600 (10mA - 6A)
- Graphical representation of programmable load available for (A/W/VA)
- High sampling rate 128 samples/cycle simultaneous sampling of Volts & Amps
- 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 time for Watts/Current
- Non re-settable Over voltage Hour in diagnostic communication mode for healthiness of system
- Sliding demand for W, VA, VAR (LG 6400)
- Energy display programmable - counter based or resolution based
- Energy resetting at 9999999 kVAh x MF
- Individual phase energy through communication - helps branch monitoring, better load distribution study
- Front LED pulse 16000 imp/kWh of secondary input
- Communication with PCs, PLCs, DCS through optically isolated RS485 serial interface
- Finger touch proof terminals to voltage and current connections
- Dynamic Communication register map with the programmable address and user selectable parameter sequence
- CO_2 emission, ON Hrs, Power Interruptions

Mechanical Specification:



Parameters:	LG 1119	LG 3120★ LG 2119	LG 5110	LG 5120★ LG 2520	LG 6600	LG 6425 Any 2 groups	LG 6435 Any 3 groups	LG 6445	LG 6400 Any 4 groups
GROUP 1 *(BASIC)*									
V V_1 V_2 V_3 V_{12} V_{23} V_{31}			✓	✓	✓	✓	✓	✓	✓
A A_1 A_2 A_3	•		✓	✓	✓	✓	✓	✓	✓
Hz			✓	✓	✓	✓	✓	✓	✓
RPM					✓	✓	✓	✓	✓
Phase angle V/A						✓	✓	✓	✓
Unbalance V/A						✓	✓	✓	✓
GROUP 2 *(POWER)*									
PF PF_1 PF_2 PF_3	⊙	✓	✓	✓	✓	✓	✓	✓	✓
W W_1 W_2 W_3	⊙	✓	✓	✓	✓	✓	✓	✓	✓
VA VA_1 VA_2 VA_3	⊙	✓	✓	✓	✓	✓	✓	✓	✓
GROUP 3 *(ENERGY)*									
Wh (Import)	⊙	•	•	•	✓	✓	✓	✓	✓
VAh (Import)	⊙	•	•	•	✓	✓	✓	✓	✓
Load Hours (Import)		✓	✓	✓	✓	✓	✓	✓	✓
ON Hours		✓	✓	✓	✓	✓	✓	✓	✓
Individual phase energy via communication only	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of interruptions					✓	✓	✓	✓	✓
CO_2					✓	✓	✓	✓	✓
GROUP 4 *(REACTIVE)*									
VAR, VAR_1 VAR_2 VAR_3					✓	✓	✓	✓	✓
kVARh inductive (Import)					✓	✓	✓	✓	✓
kVARh capacitive (Import)					✓	✓	✓	✓	✓
GROUP 5 *(ENERGY EXPORT)*									
Wh (Export)					✓	✓	✓	✓	✓
VAh (Export)					✓	✓	✓	✓	✓
Load Hours (Export)					✓	✓	✓	✓	✓
GROUP 6 *(REACTIVE EXPORT)*									
VAR VAR_1 VAR_2 VAR_3					✓	✓	✓	✓	✓
kVARh inductive (Export)					✓	✓	✓	✓	✓
kVARh capacitive (Export)					✓	✓	✓	✓	✓
GROUP 7 *(THD)*									
Voltage THD upto 15th order						✓	✓	✓	✓
Current THD upto 15th order						✓	✓	✓	✓
DEMAND									
Demand W VA VAR									✓
Max. Demand W VA VAR									✓
OPTIONAL									
Class 0.2S			✓	✓	✓	✓	✓	✓	✓
Class 0.5S	✓	✓	✓	✓	✓	✓	✓	✓	✓
RS 485	✓	✓	✓	✓	Built In				
*50A projection CT (MOQ)	✓	✓	✓	✓	✓	✓	✓	✓	✓
*100A / 200A hanging CT (MOQ)	✓	✓	✓	✓	✓	✓	✓	✓	✓
DINrail - 4Din (LED)	✓	✓	✓	✓					
DINrail - 5Din (LCD)	✓			✓	✓				
μG (96x48mm, LED)	✓		✓						
DINrail - 80A Direct Current (LED)			✓	✓					
*IoT Add on with 14GB Memory					✓	✓	✓	✓	✓

• Programmable to either Wh or VAh. ⊙ Any one parameter for 1119
* Restricted additional option ★ Dual Source

Multiplication factor for counter based energy mode

Full Scale in Watts : $\sqrt{3}$ × VPri x APri /1000	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

Technical Specification:

	LG 1000/3000/5000 Series	LG 2000 Series	LG 6000 Series
GENERAL CHARACTERISTICS			
Display type	LED 1 row	LCD 1 row	LED 3 row
Integrated Digits	6	7	8
Instantaneous Digits	4		
Sensing / Measurement	True RMS, 1 Sec update time, 4 Quadrant Power & Energy		
Rated voltage	50-600 VLL		
Rated current	10m A-6A		
Frequency	45-65 Hz		
Poles description	1P + N, 3P, 3P + N		
Sampling rate	128 samples/cycle		
Measured Accuracy Class	Class 1 default / Class 0.5S / Class 0.2 as per 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 slow blow		
CT PT Ratio Max	2000 MVA Programmable		
Auxiliary supply	80-300 V AC/DC (40 - 300V AC/DC Optional)		
Power consumption	4VA		
Data update rate	1sec		
COMMUNICATION			
Device ID & Parity	1 to 247 & Odd, Even, None (Preferred Even)		
Protocol & Interface	Modbus. RTU & RS 485		
Baud rate	2400 bps to 38.4k bps (Preferred 9600)		
Isolation	2000 volts AC isolation for 1 minute between communication and other circuits		
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		
	CAT III		
Measurement Category	2 (As per IEC 61010)		
Pollution degree			
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		
Fast transient	IEC 61000-4-4		
Immunity to surge waves	IEC 61000-4-5		
Conducted and Radiated emissions	CISPR- 22		
SAFETY AND STANDARDS			
Construction	IEC/EN 61010-1 edition 3, CAT III, 300 V LN / 600 V LL , Protection class II.		
Standards	UL 61010-1, IEC/EN 62052-11		
Mechanical characteristics			
Weight	Unpacked: 275 gms, Packed: 350 gms		
Torque at terminals	1 N-m		
Wire Gauge at terminals	11 AWG		

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DC

DC ENERGY METER

SHUNT | HALL EFFECT SENSOR

Multi-channel DC Energy | Voltage/Current full scale

SMART DEVICE FOR ALL RENEWABLE ENERGY RESOURCES!

Features:

- Multiple channels can be measured by a single meter, EN2450N & EN2450D
- 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
- 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
- Data logging - Offers logs of parameters such as Energy, Load hours and Ampere hours both Import and Export (12am Snap shot for 45 days) - Optional
- Optional RS485 communication
- Optional programmable relay output with tripping time upto 180sec.
- Universal Auxiliary supply: 80 - 300 VAC / DC. 20 to 60VDC (optional)
- 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
- Din Rail mounting

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 :

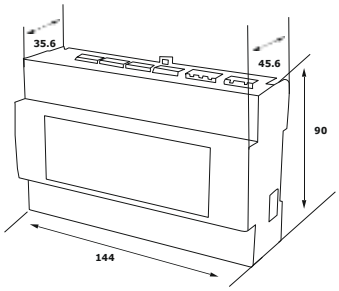
DIN 40050 EN 60529	Degrees of protection provided by enclosure for electrical equipment against ingress of solid foreign objects
IS 12784	Electrical measuring transducers for converting AC electrical quantities into DC electrical quantities

Technical Specification:

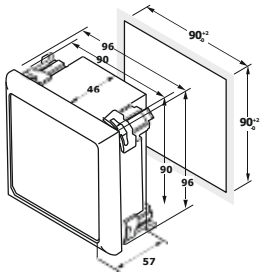
Specification	EN 2450N	EN 2500D
Current Sensing through	DC Shunt	Hall Effect CT
Rating	Shunt mV rating 50mV to 100mV. (Programmable with individually programmable Primary current of range 0.001 to 999.9KA)	Hall Effect CT rating Up to 200A. CT Primary programmable for all channels independently. Primary current of range 0.001 to 999.9KA)
Mounting	Panel mount	Din Rail Mount
Accuracy:	Class 1.0 FS (0.5 FS optional)	
No. of channels	1 voltage channel and 4 current channels	
Voltage Input Range	10V to 800VDC (48V factory default). Varieties of range in voltage like 100VDC, 150VDC, 300VDC, 600VDC, 800VDC, etc (factory settable only) Primary Programmable range: 0.100 to 999.9KV	
Aux supply	80 to 300V AC/DC, 6VA | 20 to 60VDC, 4W (optional)	
Display	1 Row 7 digits, LCD	
Communication Baud rate Isolation	RS 485 serial channel connection Industry standard Modbus RTU protocol. 4800 bps to 38400 bps (preferred 9600 bps) 2000 volts AC isolation for 1 minute between communication and other circuits	
Humidity	5% to 95% non condensing	
Ingress Protection	IP 51	
Operating Temperature	-10º C to +55º C (14º F - 131º F).	
Storage Temperature	-25º C to +70º C (-13º F - 158º F).	
Dimension	96x90x57mm (W x L x B)	144x90x45mm (W x L x B)
Screw	M4 for Current connector and M4 for Voltage connector	M2 for Current connector and M3 for Voltage connector
Torque(Max)	1Nm	2.04kgf-cm/0.2Nm
Wire Gauge	11AWG	28-16AWG
Weight (Approx)	Shunt: When packed: 260g When shipped : 320g	HEC: When packed: 580g When shipped : 680g

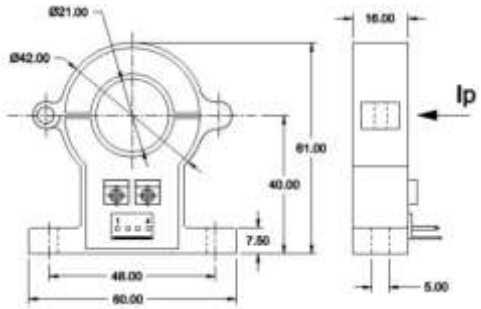
Mechanical Specification:

DIN Rail



Panel Mount





GD

GENERATOR MONITORING UNIT

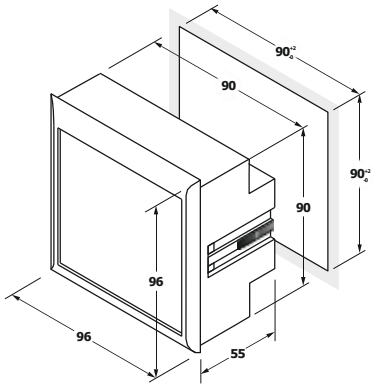
Counter & LED Display | Pulse Output

GENERATOR MONITORING DEVICE WITH DUAL DISPLAY!

Features:

- Dual display: kWh 6½ Digits counter, VAF 4 Digits LED (GD 3110) - Reduces the need of multiple meters
- Simultaneous display of kWh and V or A or Hz.
- Displays kWh and VLL, VLN, A (Average and Phasewise), Hz.
- CT, PT settings through front panel keys. No DIP switch settings hassles (One common CT, PT settings for all parameters)
- Programmable for Single phase and Three phase applications
- Forward kWh integration even with incorrect CT polarities connections (Reverse lock option)
- Optional 50A, 100A or 200A hanging CT (ID is 25 mm)
- Reduces cost and simplifies panel wiring
- Suitable for Generator applications

Mechanical Specification:



Technical Specification:

Specification	Description
Accuracy:	Class 1 (Default) as per IEC 62053-21. Class 05 (Optional)
Sensing/ Measurement:	True RMS, 1 Sec update time for VAF. 4 Quadrant with forward kWh accumulation
Input Voltage:	4 Voltage inputs (V_1 V_2 V_3 V_N). Programmable 110 or 415V LL. Nominal (Range 80 to 550V LL). Primary Programmable up to 999 kV. *Burden*: 0.2VA Max. per phase
Input Frequency:	45 - 65 Hz
Input Current:	Current inputs (A_1 A_2 A_3) 50mA - 6A (Field configurable 1A or 5A) Primary programmable up to 99 kA. *Overload*: 10A max continuous, 50A max for 3 Sec. *Burden*: 0.2VA Max. per phase
Aux-Supply (control power):	80 - 300V AC/DC. *Burden*: 4VA.
Display resolution:	Stepper counter 6½ Digits for kWh, 10mm height, bright red LED display for VAF.
Display type:	10mm height, bright red LED display
CT Ratio:	2000 MVA programmable
Weight:	Unpacked: 300 gms, Packed: 400 gms
Torque	1 N-m
Wire gauge	11 AWG

Ordering Information:

- Accuracy Class 1.0 ☑
- Accuracy Class 0.5 (Optional) ☑
- Pulse Output (Optional) ☑
- Tamper Proof (Optional) ☑

Multiplication factor for counter based energy mode

Full Scale in Watts : $\sqrt{3} \times V_{Pri} \times A_{pri} / 1000$	0.1k to 1.0k	1.01k to 10k	10.1k to 100k	100.1k to 1000k	1M to 10 M	10 M to 100 M	100M to 1000M
Multiplication Factor:	0.01	0.1	1.0	10	100	1000	10000
Unit of display	kWh				MWh		GWh

EPM | EPC

ENERGY & PROCESS MONITOR | CONTROL

Real-Time Monitoring | Improve Productivity

DEVICE TO MONITOR ENERGY & PROCESS TOGETHER!

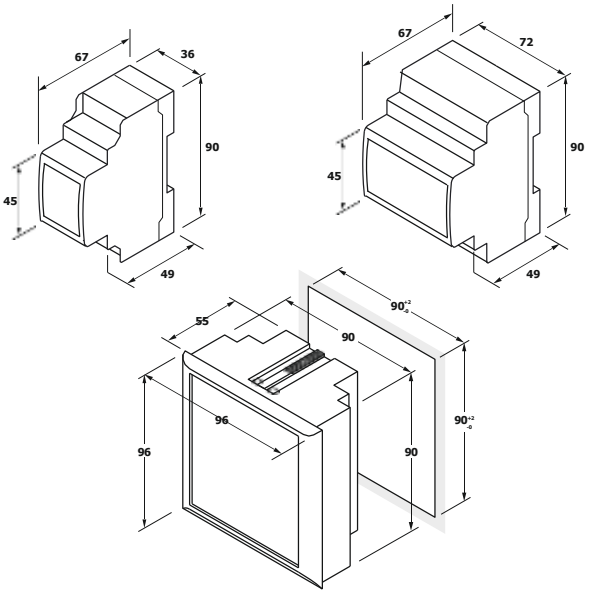
Features:

- True RMS measurement
- Simultaneous sampling of Volts & Amps
- Energy display programmable-counter based or resolution based
- Energy resetting at 999999 kVAh × MF for EPM and 99999999 kWh/kVAh for EPC
- Positive energy accumulation even with CT polarity reversal, reverse lock programmable
- User programmable password protection
- Auto scrolling
- Auto scaling of Kilo, Mega, Giga and Decimal point
- Low PT, CT burden
- Displays - Basic: VLL, VLN, A (Avg. & Phase wise), F; Power: W, PF, VA (Avg. & Phase wise); Energy: Wh or VAh programmable (any one), Load hrs, Max & Min (VLL and Amps), OLD Wh, OLD LH
- Front LED pulse 10000 imp/kWh of secondary input for EPM and 16000 for EPC
- Programmable PT, CT ratio upto 2000 MVA
- Energy is programmable to Wh or VAh with 6 Digits resolution and 4 Digits resolution for instantaneous parameters
- 80 to 300 V AC/DC Auxiliary supply

Intelligent:

- Clearance and Creepage distance meets safety standard
- Finger touch proof terminals to voltage and current connections
- Parameter name and value displaying using 7 segment LED's
- Field programmable Star (Wye) or Delta or Single phase configuration

Mechanical Specification:

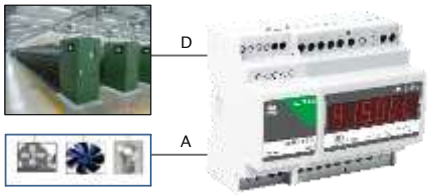


Additional Features: EPC 5110

- High & Low measurements for Voltage and Current (Last one minute of data).
- Digital Input programmable for high frequency (72000 RPM) or low frequency (6RPM)
- Displays last one minute RPM. Cumulative RPM through RS 485.
- Optional: Digital Input (5-24V), Analog input (4-20 mA / 0-20 mA), Digital output (Relay, 2A) programmable up to 18 different parameters for each relay making as mini PLC.
- ON and OFF time for low-frequency input for the better understanding of breaks (avoid glitches).

PROCESS INTEGRATION:

Integration of process parameters such as temperature, flow, pressure, RPM, etc. giving greater flexibility to monitor them along with electrical parameters.



Technical Specification:

	EPM 5110	EPC 5110
Accuracy:	Class 1.0 (Default) as per IEC 62053-21, Class 0.5 as per IEC 62053-22 (Optional)	
Sensing/ Measurement:	True RMS, 1 Sec. update time. 4 Quadrant Power & Energy	
Input Voltage:	4 Voltage inputs (V1 V2 V3 VN). Programmable 110 or 415V LL Nominal (Range 50 to 550V LL) Primary programmable upto 999 kV. *Burden*: 0.2VA Max. per phase	
Input Frequency:	45 - 65 Hz	
Input Current:	Current inputs (A1 A2 A3) 50mA - 6A (Field configurable 1A or 5A). Primary programmable upto 99 kA. *Overload*: 10A max. continuous, 50A max. for 3 sec. *Burden*: 0.2VA Max. per phase	
Aux-Supply (control power):	80 - 300V AC/DC, 40-70Hz. *Burden*: 5VA Max.	
Display resolution:	4 Digits for Instantaneous, Integrated: 6 Digits.	
CT Ratio:	2000 MVA programmable	
Optional IO	3DI, 2AI	6DI, 2AI, 2DO or 8DI, 2AI (Lx0800)
Zigbee:	Optional	Optional
Mounting:	Panel	DIN rail
Weight:	Unpacked 300 gms. Packed 400 gms	
Torque	1 N-m	0.5 N-m
Wire gauge	11 AWG	28-16 AWG
Communication RS485 interface:	*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 circuits	

BM

BRANCH CIRCUIT MONITOR

Multi Channel Load Manager | Power Distribution Unit/System

COMPACT DEVICE TO ENROUTE MULTIPLE CHANNELS!

Features :

- Multi-channel data collection
- 3 Phase, 3 channels or Single phase 9 channels or 5610 with 6 channel 3 phase
- Pluggable up to 10 making 90 channel measurements
- Space saving 1cm per channel for 5130, 0.5cm for 5160
- Displays Basic, Power and Energy parameters
- Direct measurement upto 40A
- Optional Pluggable Ethernet (Default RS 485)
- Space saving compact design for easy installation into existing panel boards
- Direct Pass through upto 40A, 9 channel (3 channel 3 phase)
- No High voltage to product
- Pluggable version
- Installation of 10 sec per channels
- 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 KVAh × Transformer ratio
- Displays more than 25 parameters - Basic [VLL, VLn, A (Average & Phasewise), F], Power [W, PF, VA (Total & Phasewise)] and Energy [Wh, LH]
- Optional Ethernet with 14GB memory for IOT device

Note: Customization can be done for other parameters provided volume justify

Applications :

- For remote reading and control, the BM is supported by ELNet Software, designed for remote setup and data viewing and analysis
- Building Management System: With the open modbus protocol, the BM can interface any system, such as building management, HMI etc
- Compact : Ideal for Data Center
- Ideal for apartments / commercial complexes billing and load pattern study on individual phase
- Individual phase kWh measurement provides user flexibility of measuring 3 phase 3/6 channels or single phase 9/18 channels
- Primary current can be independently configured making it ideal for any kind of industry or upgradation

Note: Additional error of 0.1% of full scale, for meter input current below 500mA for 5A setting

Current Transformers :

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

Up to 100A, 16mm ID

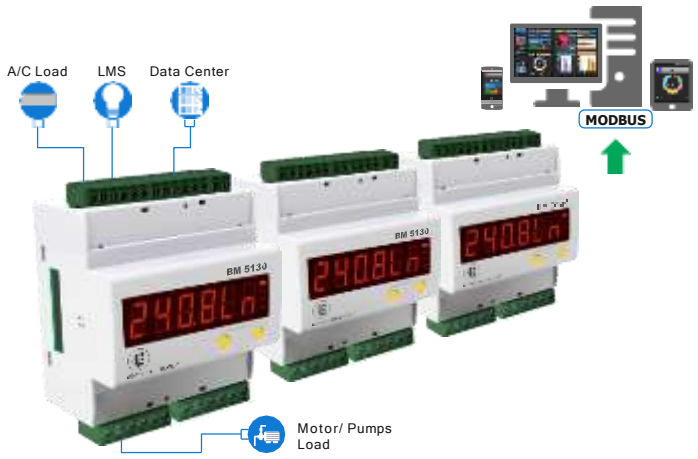
Clip on CT-5A | 50A | 100A | 250A

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

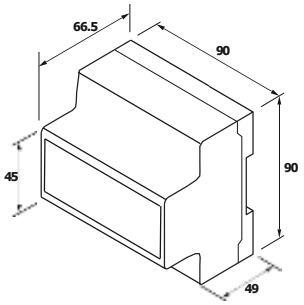
Technical Specification:

Specification	Description
Accuracy:	Class 1.0 (Default) as per IEC 62053-21, Class 0.5 as per IEC 62053-22 (Optional).
Sensing/ Measurement:	1:600
Sensing/ Measurement:	True RMS, 1 Sec update time; 4 Quadrant Power & Energy
Input Voltage:	4 Voltage inputs (V_1 V_2 V_3 V_N) Programmable 110 or 415V LL Nominal (Range 80 to 550V LL) Primary Programmable up to 999 kV. *Burden:* 0.2VA Max. per phase.
Input Frequency:	45 - 65 Hz
Input Current:	Current inputs (A1 A2 A3) - Each channel is independently configurable. Primary Programmable up to 99 kA. *CT output* : Can be upto 1000 mV or 100 mA from Split core CT or Hanging CTs - Manufacturing option.
Aux-Supply	80 - 300V AC / DC, 40-70Hz. *Burden:* 4VA Max.
Display resolution:	1 row 6 Digit for Integrated, 4 Digits for Instantaneous
CT PT Ratio Max:	2000 MVA Programmable.
Communication RS485 interface:	*Parity: Odd, Even, None (Prefered Even)* *Baud rate:* 4800 bps to 19200 bps. (Preferred 9600 bps). *Isolation:* 2000 volts AC isolation for 1 minute between communication and other circuits.
Weight:	*Unpacked:* 275 gms *Packed:* 350 gms (weight of CT excluded)

Schematic Diagram



Mechanical Specification



TR | ISO

Transducers & Isolators

Isolation Interface | Signal Changeover

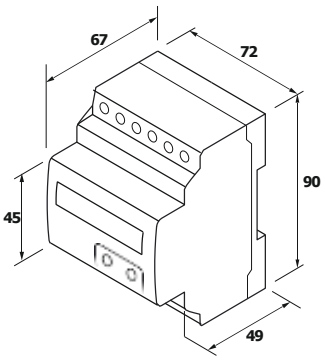
Features:

- 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
- Load resistence for current output is up to 500
- True RMS Measurement
- 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

Benefits:

- Measure, record and visualize electrical network parameters
- Easy to install and is field configurable by the user
- Measured parameters can be programmed to generate equivalent output signals
- True RMS measurements provides accurate and reliable readings
- 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
- 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

Mechanical Specification:



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 A.C. and D.C. electrical quantities to analogue or digital signals

Technical Specification:

Specification	TR XXXX	ISO XXX
Input Range:	10V - 600V, 10mA - 6A	0-20mA or 0-75mV or 0-10V (48V Upto 800V)
Output:	4-20mA or 0-20mA or 0-10V (Upto 2), RS485	4-20mA or 0-20mA or 0-10V (Upto 2), RS485
Power Supply:	60 to 300V AC/DC, 24 to 60V AC/DC (Optional)	24 to 60V AC/DC 60 to 300V AC/DC (Optional)
Display	6 digit, 10mm height	6 digit, 10mm height
Accuracy:	Class 1.0	Class 1.0
Response Time:	300ms	300ms
Frequency Bandwidth:	45-65Hz	DC
Offset Voltage:	10mV	10mV
Thermal Drift:	300 ppm/°C	300 ppm/°C
Power Consumption:	250mW(+12V)	250mW(+12V)
Isolation Voltage:	2500 Vdc	2500 Vdc
Overload Capacity:	1.2 times full scale	1.2 times full scale
Flame Retardancy:	UL94-V0	UL94-V0
Hysteresis Error:	10mV	10mV
Baud Rate:	38.4K, 9600(default), 4800, 2400, 1200; Factory default communication format: 9600; E/8/1,	38.4K, 9600(default), 4800, 2400, 1200; Factory default communication format: 9600; E/8/1,
Parity:	None, Even, Odd	None, Even, Odd
Nodes:	Upto 64	Upto 64
A/D Speed:	100ms	100ms
Output Ripple:	10mV	10mV
Operation Temperature:	-10 to +60°C	-10 to +60°C
Storage Temperature:	-55 to +65°C	-55 to +65°C
Installation:	DIN Rail	DIN Rail

Product Selection:

	TR1110	TR1100	TR1200	TR2100	TR2200	TR4200	TR5200	ISO 100	ISO 200
INSTANTANEOUS									
Single phase A/ V/ Hz	✓	✓	✓			✓	✓		
Three phase A/ V/ Hz		✓	✓			✓	✓		
Three phase Watts/ VA/ Var/ PF				✓	✓	✓	✓		
Energy							✓		
ADC/VDC								✓	✓
Override			✓	✓	✓	✓	✓	✓	✓
Display			✓	✓	✓	✓	✓		✓
RS 485			*	*	*	*	✓	*	*
Analog Output in numbers	1	1	2	1	2	2	2	1	2

[*] Optional

iMeasure
THINK - ACT - SAVE

iEngineering
idea + intelligence + integration

SMART CONTROL ING

INTELLIGENT DEVICE TO MONITOR AND MAINTAIN ELECTRICAL PARAMETERS IN THE REQUIRED RANGE

Fault Detection

Designed to detect faults, Over voltage/current, Under voltage, Phase missing, leakage, Neutral Harmonics to assure safe, reliable operation under any conditions.

Range of measurement

Controller's are featured to allow both flexibility as well as precision to operate over a wide range of input voltages, current and output power levels

Demand Management

User friendly demand controllers to forecast demand and cut off load with site programmability of demand parameters such as kVA, kW, kVAR.

Remote Monitoring

High-end multifunction meter for comprehensive energy management and to enable remote monitoring of the device

Maximum demand controllers, power factor controllers, earth leakage relay, power quality meters are developed for monitoring controlling of energy and power quality parameters. Energy efficient meters such maximum demand controllers provides precise demand management with 1 sec. update for demand. Smart controlling products are ideal for Process management, Maximum demand control & management ,monitoring critical load,incomers, and HT panels Energy accounting & balancing for automotive, mobile and industrial applications.

iPFC

POWER FACTOR CONTROLLER

Current | Voltage | Frequency | PF | VAR | 6/8/12 stage control

INTELLIGENT DEVICE TO MAINTAIN THE POWER FACTOR IN REQUIRED RANGE!

Features:

- Three phase sensing with Three CT or Single CT (Balanced Load)
- Intelligent Power Factor Controlling based on the capacitor bank switching history (Number of operations, ON time) improves the capacitor life time
- 6 or 8 or 12 switching relay outputs
- Automatic or manual control (manual control with power backup option)

  User programmable:
  - Star/Delta
  - Lead and Lag limits
  - PT and CT ratios
  - CT secondary
  - Minimum switch ON time (4-999 seconds) default 20s
  - Minimum discharge time (4-999 seconds) default 50s
  - Minimum capacitor on time (4-999 seconds) default 20s
  - Minimum sensing current for controlling operation 100mA - 500mA
  - User programmable capacitor value
- Fault detection (Over compensation, Under compensation, Over voltage, Over current, Under voltage, Under current, Over harmonics for voltage and current)
- Displays VLL, VLN, Amps (Average and Phasewise) Frequency, W, PF, VAR (Total and Phasewise) Wh, PF Avg
- Four quadrant operation
- RS485 communication interface (Optional)

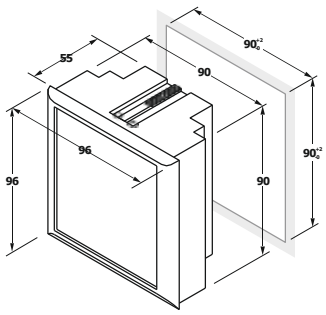
Advantages

- Three phase sensing gives accurate measurement of PF.
- Fault Detection (Over compensation, Under compensation, Over voltage, Over current, Under voltage, Under Current, Over harmonics for voltage and current)
- Automatic or Manual Control (manual control with power backup option)
- Increased capacitor life - capacitor switching based on history - ON time / number of switching

Applications:

- In all Incomers
- Fixed power factor corrections individual (e.g. motor, transformers, lighting, etc.)
- Group fixed power factor correction (several equipments connected in a group)
- Capacitor banks of tuned and detuned
- Harmonic trap applications (e.g. UPS, Frequency Drives and Converters, etc.)

Mechanical Specification:



Note: Depth will be 10 mm more based on the relay/connector accommodation.

Technical Specification:

Specification	Description
Input current:	Current inputs (A_1 A_2 A_3) 50mA - 6A (Field configurable 1A or 5A). Primary Programmable up to 99 kA. Overload: 10A max continuous, 50A max for 3 Sec. Burden: 0.2VA Max. per phase
Input voltage:	4 Voltage inputs (V_1 V_2 V_3 V_N) Programmable 110 or 415V LL Nominal (Range 80 to 550V LL) Primary Programmable up to 999 kV. Burden: 0.2VA Max. per phase
Input Frequency:	45-65 Hz
Sensing/ Measurement:	True RMS, 1 Sec update time. 4 Quadrant Power & Energy
Accuracy:	Class 1.0 (default) as per IEC 62053-21, Class 0.5 as per IEC 62053-22 (Optional)
Aux-Supply :	Control Power: 180 - 300V AC/DC, 40-70Hz. Burden: 10VA Max.
CT PT Ratio Max:	2000 MVA Programmable
Relay contact rating:	SPST, 2A @ 240V
Display Resolution:	1 row, 4 Digits for instantaneous and 6 Digits for integrated (10mm height)
Weight:	Unpacked: 350 gms, Packed: 450 gms.
Communication RS485 interface:	*Parity: Odd, Even, None (Prefered Even)* *Baud rate:* 4800 bps to 19200 bps. (Preferred 9600 bps). *Isolation:* 2000 volts AC isolation for 1 minute between communication and other circuits
Torque	1 N-m
Wire gauge	11 AWG

Note: *Additional error of 0.1% of full scale, for meter input current below 500mA*

iELR

EARTH LEAKAGE RELAY

Earth leakage current | Trip time

DETECT THE LEAKAGE CURRENT IN AN INTELLIGENT ELECTRICAL DEVICE!

Features:

- True RMS measurement
- Clearance and creepage distance meets UL 61010 safety standard
- Inverse curve - 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 online. This can be disabled through setup if required
- 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

Applications:

- 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

Core Balance Current Transformer - CBCT

CBCT Specification
Input Range : 30mA to 1A Default (30mA to 30A Optional)

Round Diameter: (Tape Wound) Inner Diameter 45mm, 60mm, 100mm, 150mm, 200mm, 250mm, 300mm	
Round Diameter: (Case mounted) Inner Diameter 38mm, 57mm, 92mm, 120mm, 210mm	 Plastic Epoxy
Rectangular: (Tape Wound) 150×50mm, 250×100mm, 300×100mm, 350×100mm, 400×125mm, 400×200mm, 500×225mm, 500×200mm. (Any other sizes subject to availability)	

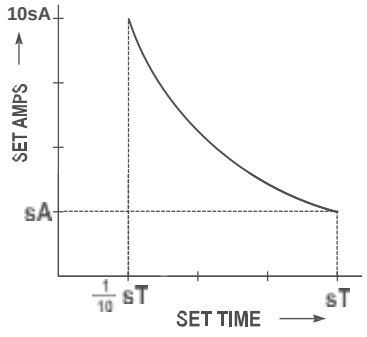
Advantages:

- 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 - 30A and no limitations on set current
- 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 $\propto$ 1/A gives faster and reliable protection
- Auto scrolling of trip information and peak fault current provides better analysis

Technical Specification:

	iELR 200D	iELR 300	iELR 400D
Display:	4 Digit	4 Digit	6 Digit
Mounting Type:	DIN rail	Panel Mount	DIN rail
Mechanical specification:	2 DIN: 90×36×67 mm	Panel Mount: 96×96×30 mm Cutout: 90^{+2}_{0} x 90^{+2}_{0} mm	4DIN: 90×72×67mm
Input Voltage:	NA	NA	50 - 550V LL
Input current:	30mA to 1A Default (100mA to 30A Optional)		
Trip Current:	Programmable		
Tripping time:	100 mS - 30 Sec		
Contact Rating:	2Amps @ 240V AC / 24V DC		
Accuracy:	Class 2.0FS		
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 (Prefered Even)* *Baud rate:* 4800 bps to 38400 bps. (Preferred 9600 bps). *Isolation:* 2000 volts AC isolation for 1 minute between communication and other circuits.		
Torque	1 N-m		
Wire gauge	11 AWG		

Trip Characteristics:



EN | PN

DEMAND CONTROLLER

Multifunction Meter | Demand Controller | Import Export | Harmonics | Power Quality | Digital/Analog Input or Output | Dual Source

HIGH-END MULTIFUNCTION METER FOR COMPREHENSIVE ENERGY MANAGEMENT!

Features:

- High / Low recording VLL, VLN, A, Hz, W, VA, PF, VAR value storage with time stamp
- Accuracy class 1.0 as per IEC 62053-21, Class 0.2s, 0.5s optional
- User programmable Password Protection
- Measures THD and Individual harmonics up to 63rd order with a sampling rate of 512 samples / cycle
- Voltage measurements up to 600 VLL
- Captures and measures power quality events: K factor, Crest factor, Sag / Swell, Interruption and Unbalance in accordance with EN 50160
- Display basic, power, energy, demand for both import and export parameters
- Representation of waveforms for instantaneous V, I, Sag / Swell. voltage and current harmonics histogram
- Records events such as Sag / Swell for voltage with the time stamp in 1s duration
- CO_2 emission, ON Hrs, Power Interruptions
- Max demand 4 high / 4 low, Flash 6MB, 12am snapshot, 31st day snapshot
- Simultaneous sampling of voltage and current, programmable PT & CT ratio
- Demand update every second to forecast kVA, kW & kVAR accurately
- Programmable starting current in % of 5A secondary. Default 10mA
- Programmable Auto scrolling time - 1 sec. to 10 sec. (Default 5 sec.)
- Programmable Energy display - Counter based or Resolution based
- Energy resetting at 9999999 kVAh x MF.
- Front LED pulse 16000 imp/kWh
- OLD register to store previously cleared Energy & Load hours
- Phase wise Voltage Sag & Swell Wave Forms
- LCD 8 parameter display at a time, 8 Digits energy
- Power save mode with Enable/Disable option
- Available RS485 communication & optional Ethernet communication (factory configurable)
- Byte order option - Field Programmable Float / Little Endian / Big Endian data format

Optional Features:

- Digital outputs - 4 potential free contacts with programmable time delay Hysteresis of 1%. Trip time delay: 1 to 180 sec.
  Output configurable to any of the parameters from VLL, A, F, W, PF, VA
- 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
- Individual Harmonics upto 63rd order
- Demand Controller with 4 Relay outputs
- Upto 60A or 100A direct measurements using Hanging CT.
- Datalogger - 6MB optional / Ethernet with 14GB memory for IOT device
- Dual Source

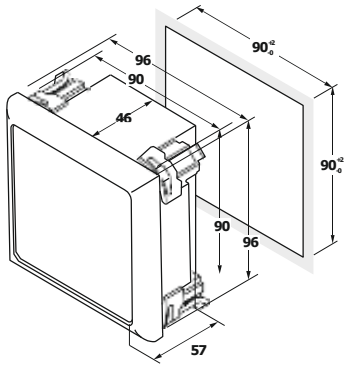
Typical Applications:

- Automatic connection or disconnection of DG connected to common bus
- Power quality inspection of main incomer
- Keep equipment in safe region
- Protection of equipment from Under/ Over Voltage or Current or Frequency
- Process control
- Protection of 3 phase equipment from Single phase prevention, Overload etc

Multiplication factor for counter based energy mode

Full Scale in Watts : $\sqrt{3} \times V_{Pri} \times A_{pri} / 1000$	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

Mechanical Specification:



Product Selection:

	EN 8400	EN 8420	PN 8710	PN 8740
ACCURACY OPTION	Customised LED		Graphical LCD	
CLASS 1.0	■	■	■	■
CLASS 0.5S	□	□	□	□
CLASS 0.2S	□	□	□	
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	■	■	■	■
POWER PARAMETERS				
Unbalance V & A	■	■	■	■
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 - Ind	■	■	■	■
VAR VAR_1 VAR_2 VAR_3 - Cap	■	■	■	■
POWER QUALITY PARAMETERS				
THD - Voltage and Current upto 63rd	■	■	■	■
Individual Harmonics upto 63rd	□ *	□ *	□ *	□ *
K Factor	■	■	■	■
Crest Factor			■	■
High Low	■	■	■	■
Sag & Swell			■	■
Power Interruptions	■	■	■	■
TEHD and TOHD	□	□	■	■
Power THD and TDD	□ *	□ *	■	■
INTEGRATED PARAMETERS	*	*		
Wh	■	■	■	■
VAh	■	■	■	■
VARh-Ind	■	■	■	■
VARh-Cap	■	■	■	■
Phase wise energy through communication and Load Hours.	■	■	■	■
RD (IE)	■		■	■
Kwh Total	□ *	□ *	■	■
KVAh Total	□ *	□ *	■	■
KVARh Total	□ *	□ *	■	■
ON Hours	■	■	■	■
CO_2 Emission	■	■	■	■
% Load	■	■		
OLD Energy	■	■	■	■
OLD Load Hours.	■	■	■	■
OLD RD Details	■		■	■
Volt Squared Hours	□ *	□ *	■	■
Amp Squared Hours	□ *	□ *	■	■
TOD PARAMETERS				
TOD Demand	□	□	□	□
TOD Energy	□	□	□	□
TOD RD (IE)	□		□	□
DEMAND PARAMETERS				
Sliding Demand	■	■	■	■
Block Demand	■	■	■	■
Rising Demand	■	■	■	■
Forecast Demand	■	■	■	■
Step Demand	■	■	■	■
Maximum Demand	■	■	■	■
Maximum Demand 4 high / 4 low			■	■
Cumulative MD Option	□	□	■	■
12am & 31st day snapshot	□	□	■	■
6 MB Data Logging	□	□	■	■
DUAL SOURCE				
Dual Source		■		
ADDITIONAL OPTIONAL FEATURES (ANY ONE)				
Ethernet +14 GB Data Logging	■	■ *	■	■
2DI	■	■ *	■	■
4 DI	■	■ *	■	
1DO	■	■ *	■	
2DO	■	■ *	■	
2AI	■	■ *	■	■
1AO	■	■ *	■	
2AO	■	■ *	■	
2AI, 2DO	■	■ *	■	
2DO, 2AO	■	■ *	■	
4DO	■	■ *	■	

□ Optional feature * Only through communication * Restricted option (MOQ)

Technical Specification:

	EN 8400	EN 8420	PN 8710	PN 8740
GENERAL CHARACTERISTICS				
Display type	LED 3 row, 3 Parameter		LCD 4 row, 7/8 Parameter	
Instantaneous Digits	4			
Integrated Digits	8			
Sensing / Measurement	True RMS, 1 Sec update time, 4 Quadrant Power & Energy			
Rated voltage	50-600 VLL			
Rated current	10mA - 6A			
Frequency	45 - 65Hz			
Poles description	1P + N, 3P, 3P + N			
Sampling rate	512 bits / cycle			
Measured Accuracy Class	Class 1 as per IEC 62053-21 / Class 0.5 / Class 0.2S as per 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			
CT PT Ratio Max	2000MVA Programmable			
Auxiliary supply	80-300V AC / DC			
Power consumption	4VA nominal. 5VA for DMC			
Data update rate	1 Sec.			
COMMUNICATION				
Device ID & Parity	1 to 247 & Odd, Even, None (Preferred Even)			
Protocol & Interface	Modbus. RTU & RS 485			
Baud rate	9600 bps to 38400 bps (Preferred 9600 bps)			
Isolation	2000 volts AC isolation for 1 minute between communication & other circuits			
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 2000mts			
Measurement Category	CAT III			
Pollution degree	2 (As per IEC 61010)			
PROTECTION CLASS				
ngressl 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			
Fast transient	IEC 61000-4-4			
Immunity to surge waves	IEC 61000-4-5			
Conducted and Radiated emissions	CISPR- 22			
SAFETY AND STANDARDS				
Construction	IEC/EN 61010-1 ed.3, CAT III, 300 V LN / 600 V LL , Protection class II.			
Standards	UL 61010-1, IEC/EN 62052-11			
MECHANICAL CHARACTERISTICS				
Weight	Unpacked 350 gms. Packed 450 gms. (It may vary based on optional features)			
Torque	1 N-m (For 5A)			
Wire gauge	11 AWG (For 5A)			

iMeasure
THINK - ACT - SAVE

iEngineering
idea + intelligence + integration

SMART RESOURCES

A VERSATILE COST EFFECTIVE SOLUTION TO MONITOR, CONTROL & CONFIGURE AT SITE

Energy management

Smart resources helps in improving reliability and accuracy by providing consumers better ways to manage energy usage and costs

Smart Analyzer

Allows versatile measurements and analysis of Power quality events such as Swell, Dip, Interruption, transients, and harmonics

Data Acquisition

Real-time data recording, data logging and analysis can be used to anticipate breakdowns, reduce downtime, lower service and maintenance costs.

Automatic Transfer Switches

Smartest approach to provide uninterrupted power for critical applications by transferring sources between the load with accurate measurement of voltage current energy for better protection

Simple and cost effective smart resources from iEngineering can be used to perform periodic assessments, store data, measure energy and to perform detailed analysis to improve their quality and reliability. Typical applications of these devices can be seen in apartments, villas, commercial buildings, medical facilities, automation industries.

IS 15884

IS 13779

PE

AC STATIC WATTHOUR METER

Multifunction | Dual source | Over voltage/current cut off for protection

SINGLE DEVICE FOR ELECTRICITY, GAS & WATER MEASUREMENT!

Features :

- Ability to pay-as-you-go.
- Provides Overload tripping for EB and DG
- Provides Overvoltage protection
- Provides a Dual source measurements Up to 80A whole current / CT operated (for BIS upto 60A)
- Meters are available in Single Phase or Three Phase
- Monitors and display the balance, VLL, VLN, A, Hz, W, PF, VA, kWh EB and DG, Gas and Water usage.
- Allows Time of Use / Time of Day [TOU/TOD] profiling
- Anti-tamper Features provided in the meter as per Indian standards.
- Explicit view of energy usage & tariff rates.
- Communication: RS485, Ethernet, GPRS, LoRa & Wifi.

PE with LoRa

- No dependency with service provider,to make private network
- QR Code scanning for auto configuration Gateway for interfacing with cloud network by using MQTT lite protocol.
- Mobile application for Pre Paid Software (PPS).
- External antenna for the longer range
- Limited amount of data transfer make sure the data delivery
- Completely encrypted End to End solutions
- Optional 4G connectivity
- Data delivery to the PC through MQTT, More devices can be connected to one single server
- Long range up to 1kM radius
- Multiple applications network for EB DG broad casting

Applications :

- Prepaid metering solution will provide flexibility for consumers to pay for electricity from any location without any hurdles, no more standing in queues, the hassle of bills & receive better customer service.
- Shopping Malls & Commercial Complexes.
- Gated residential societies /Residential apartments.
- Industries & Government Sectors.

Technical Specification:

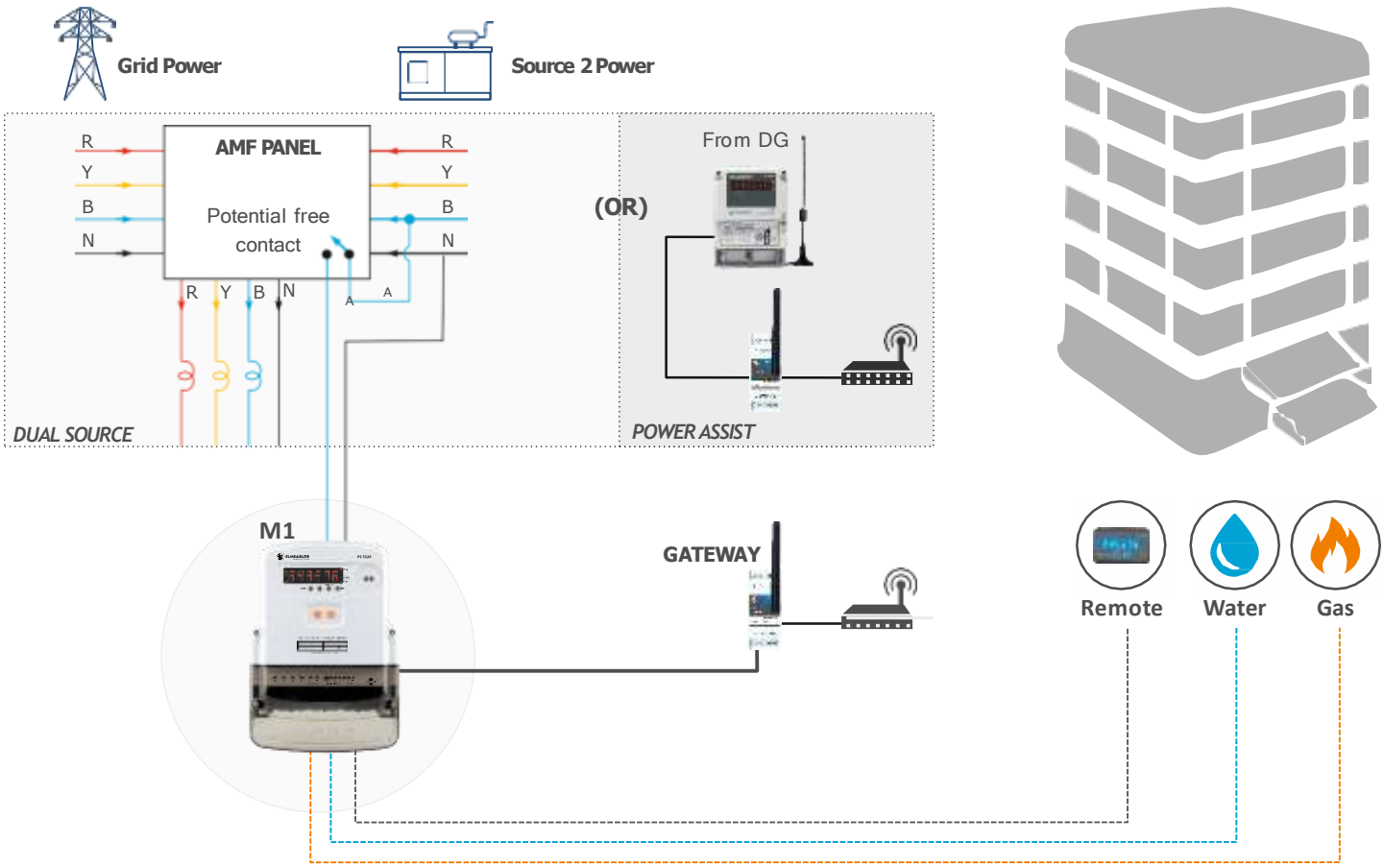
Specification	Description
Accuracy	Class 1.0 (default) as per IS 13779/15884, Class 0.5 as per IS14697 (Optional).
Sensing/ Measurement	True RMS, 1 Sec update time. 2 Quadrant Power & Energy.
Input voltage	4 Voltage inputs (V_1, V_2, V_3, V_N) Programmable 110 or 415V LL Nominal (Range 80 to 550V LL). Primary programmable up to 999kV. *Burden*: 10VA Max.
Input Frequency:	45 - 65Hz
Input current	Current inputs (A_1, A_2, A_3) whole current 10/60A or CT operated 5A. *Overload*: 3 times for 3s. *Burden*: 0.5VA Max. per phase.
Whole current CT Operated	5/30A or 10/60A or 20/80A _____/5A
CT PT Ratio Max	2000 MVA Programmable for CT operated.
Display Resolution	1 row, 6 Digits, (Integrated 6 Digits) 10mm.
Communication	RS485, Ethernet, GPRS, RF & LoRa
Gas / water input option	Factory configurable Digital input with Maximum Frequency 3 Hz for upto 4 channel.
Weight	3 phase: Unpacked - 1650 gms, Packed - 1850 gms Single phase: Unpacked - 670 gms, Packed - 750 gms
Torque	2 N-m
Wire gauge	6 AWG

Product Selection:

Models	Type	Whole Current	CT Operated	Communication				Single Source	Dual Source	Remote Display Unit	Digital Input	
				RS485	LoRa	Ethernet	GPRS				2	4
PE 5121 Single Phase, 10/60A	Prepaid	✓		✓	✓				✓	✓		
		✓		✓				✓	●	✓		
	Postpaid								✓	✓	✓	✓
PE 5120 Three Phase, 10/60A	Prepaid	✓		✓	✓	✓			✓		✓	✓
									✓	✓	✓	
			✓	✓	✓	✓			✓		✓	✓
									✓	✓	✓	
	Postpaid	✓		✓		✓		✓	●	✓	✓	
			✓	✓		✓		✓	●	✓	✓	✓
PE 5120 Three Phase,10/60A	Prepaid or Postpaid	✓	✓	✓			✓	✓	✓	✓	✓	

Note: Input upto 60A is with BIS mark for RS 485 version. Possible to give up to 80A prepaid and 100A post paid in 3 phase meter. All LoRa will have maximum 2 DI ● Optional Feature

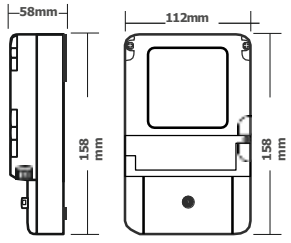
PREPAID METERING SOLUTION



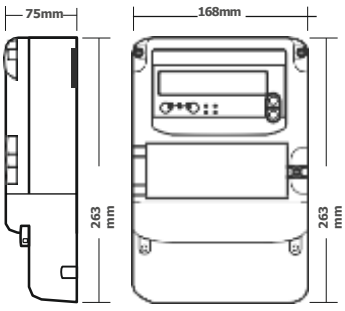
Remote Display Unit

- Allowing customer to monitor consumption.
- Elegant design & no separate power is required.
- Display all parameters including balance.
- Display blinks & buzzer beeps in frequent interval to indicate low balance.

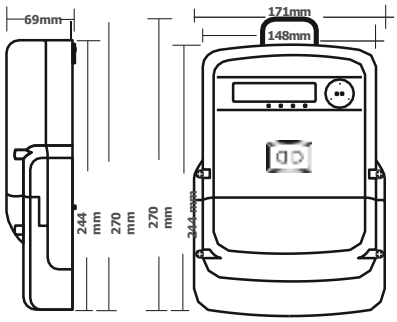
Mechanical Specification:



Single phase: Dimension Bezel:
158 x 112 mm (Depth 58mm)



Three phase: Dimension Bezel:
263 x 168 mm (Depth 75mm)



Three phase: Dimension Bezel:
270 x 171 mm (Depth 69mm)

LoRA SOLUTION

IoT

LoRa GATEWAY

- 4G connectivity
- Reduce 50% of Network operational cost
- Single Gateway can connect
  - 256 Energy Meters with 15 Minutes log interval
  - 512 Energy Meters with 1 Hour log interval
  - 1024 Energy Meters with 12 Hours log interval
- Achieve better accuracy by transmitting limited parameters to the gateway

NETWORK SERVER

- No dependency with service provider,to make private network.
- Single Network server can connect upto 5 gateways
- Two Network Server can be connected to a single ELnet server Network
- server and ELnet server has to be placed in the same location Scan QR
- code from ELConfig APP for quick Installation

SOURCE CHANGEOVER

DG wireless broadcasting from Outdoor Gateway to each meter is on Point -To- Point basis, not as like Zigbee(Mesh) network.

LoRa METERS

- Quick installation of Lora based system, as each Prepaid meters will have unique QR Code and iEngineering the same will be scanned by App 'Elconfig' wh avoids delay in the configuration
- with software.
  Ability to monitor grouped meters,
- integrate gas & water meters.
  Direct recharge through smart phones

MOBILE APP

- Alarm notifications for low credit balance
- Recharge & monitor from anywhere
- Explicit view of energy usage and tariff rates
- ELNetPPS_API : ERP / SAP Integration

Software Features :

- Monthly fixed charges based on kVA/kW.
- Maintenance charges based on area or fixed.
- Advance information about tripping with 2 Alert SMS/Email for the different balance amount.
- Holiday cut off prevention.
- Night time cutoff prevention.
- SMS / Email will be sent stating negative threshold.
- EB/DG Grace threshold setting.
- kW/kWh logging every 15 minutes for future clarification, Profiling.
- Intimation on ELNet whether it is working on EB or DG to prevent misuse.
- ELNet displays EB/DG kWh, kW and Balance.
- Wrong Recharge reversal entry.
- Online Customer Login Portal- User can get balance credit through any of the interface (Mobile / web-portal) or through Apps.
- Service provider name logo, Grievance forum.
- Information through Smart mobile app where in no need of remote display.
- Communication option LoRa for post or pre paid
- 1KM Radius, 1000 meters with 4 hours data log
- No dependency with service provider.
- Alarm notifications for low credit balance.
- Reduces manual supervision.
- Live updates on energy consumption at your fingertips.
- Keep records of recharge & consumption history.

Customer Web Portal | Mobile App

- Online Customer login portal/ Mobile app login.
- User can get balance credit through any of the interface
- (Mobile/Web-portal) or through Apps.
- Remote switch ON/OFF through mobile app
- Information through Smart mobile app - no need of
- Remote display

ENERGY BILLING SOLUTION

Energy Bills, Consumption & Pricing

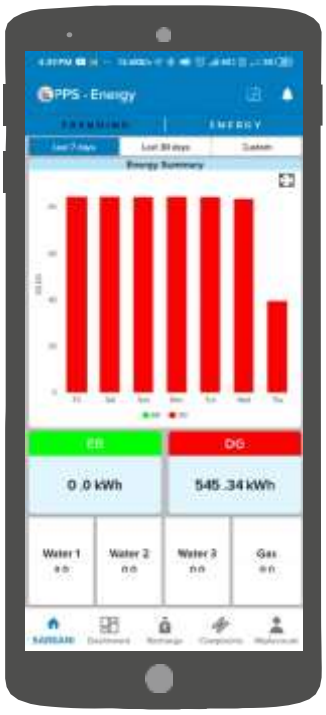
- Real time data monitoring
- Recharge Slip, Recharge history for the selected date range
- Monthly billing with breakup of EB/DG energy bills and Maintenance bills
- Running Hours of DG and Mains Supply is provided
- Cheque reconciliation

ONLINE PAYMENT, PAYTM, CREDIT CARD, DEBIT CARD

Alerts over Email | SMS

- Warning SMS at 20% and 10% of kWh threshold level, step tariff crossover
- Sending SMS to the users during power outage:
- Get alerts for activities like Account recharge, Recharge status,
- Low Credits, Overload, Overvoltage, etc.

ELNet PPS APP



Dashboard | live Update | Trends | Recharge History

iACCL

AUTOMATIC CHANGEOVER WITH CURRENT LIMITER

(current, voltage, frequency, energy)

FOR A SEAMLESS, CHANGEOVER BETWEEN POWER SOURCES!

Features :

- Microcontroller based automatic source changeover with neutral isolation.
- SMPS based design for low power consumption.
- Intelligent re-connection once trip occurs, either due to over voltage or over load.
- Intelligent changeover with R phase or any one phase failure (Manufacturing option).
- Manual reset provision when in sleep mode for restoring power supply Or through the mobile app when network is available.
- Energy, Current, Voltage measurement for DG & Current measurement for EB. Optional EB Energy and Voltage measurement for 3 phase.
- Programmable threshold setting for both sources independently.
- Under/Over voltage protection for DG (In iACCL 600 for EB also)
- DG delay programmable for each ACCL to avoid loading the generator at a time.
- Intelligent tripping: Inverse curve (Higher the overload faster the trip).
- Potential free contact for connecting power load only in EB (single phase / relay version) optional.
- Automatic trip if sum of power circuit and lighting circuit is >40A (single phase / relay version) optional.
- Individual phase overload monitoring (Any Phase > set current, it trips).
- DG Phase selection - Programmable
- EB single phase missing programmable for Y and B phase for iACCL M600
- MCB reset (OFF & ON) option available for over load in DG for iACCL M300 & 330

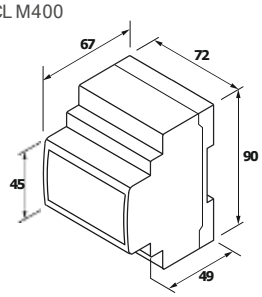
Unique Features :

- Installation is done as DIN rail for single phase and surface mountable for 3 phase (Optional DIN rail for 3 phase up to 40A).
- Eco friendly thermoplastic and fire retardant enclosure.
- Inbuilt display and measurement of A, V, F & kWh on the generator side and mains side for iACCL M600
- Resetting the trip by key press or MCB or through communication.
- Intelligent Overload tripping with AC1 to AC3 behavior.
- Wide range of operational voltage: (180 - 260) VAC
- More than 20000 operations.
- Display of overload information for both EB and DG, along with phase indication.
- Reason for trip is displayed.
- Optional Prepaid feature only for DG
- RS 485 communication. (Optional)
- Wiring simplicity for lighting and power with common neutral in iACCl M100 Single Phase.
- Protection against neutral current flow beyond threshold.
- Withstands 6kV rated impulse voltage.

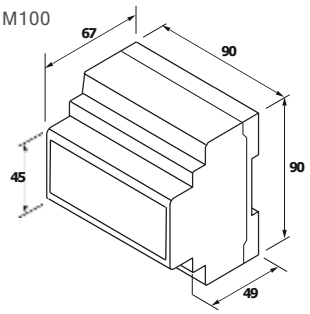
Mechanical Specification :

Single Phase

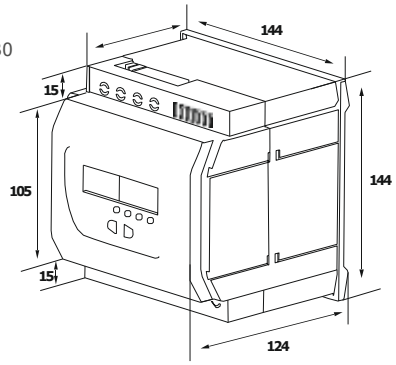
iACCL M400



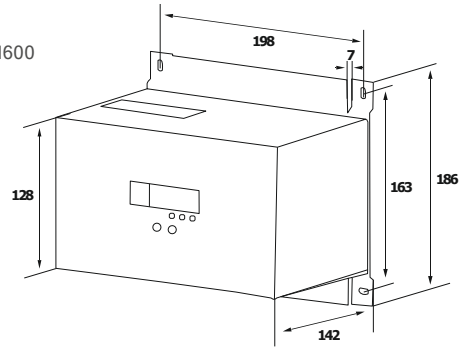
iACCL M100



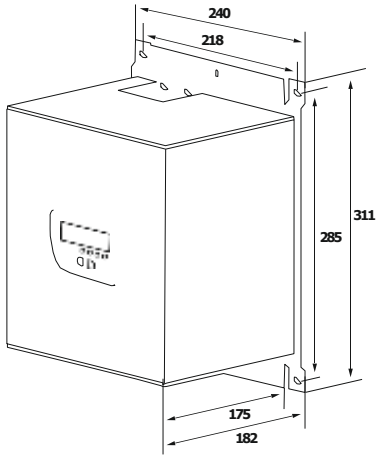
iACCL M300 | M330



iACCL M300 | M600



iACCL M300 | M600



Technical Specification:









	M400	M100	M300	M300	M300	M330	M600	M600	M600
ELECTRICAL CHARACTERISTICS									
Rated Current	25/32A	25/32A	40|63A	80A	100|125A	40A	40|63A	80A	100|125A
No. of Poles	1P+N	1P+N+1 Power Load	3P+N	3P+N	3P+N	EB:3P+N DG:1P+N	3P+N	3P+N	3P+N
Rated Operating Voltage	240VAC	240VAC	415/240VAC	415/240VAC	415/240VAC	415/240VAC	415/240VAC	415/240VAC	415/240VAC
Rated Frequency	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz
Utilization Category AC1	25/32A	25/32A	40|63A	80A	100|125A	40A	40|63A	80A	100|125A
Utilization Category AC3	25/32A	25/32A	32|40A	63A	80A	32|40A	32|40A	63A	80A
Ingress Protection:	IP 20 & Double Insulation (As per IEC 61010-1)								
Accuracy	Class 1								
PROGRAMMING FEATURES									
Energy Selection	Wh /VAh								
DG under voltage	170-210VAC		165-210VAC				170-210VAC		
DG over voltage	240-270VAC								
DG Maximum Current Limit	25/32A	25/32A	40|63A	80A	100|125A	40A	40|63A	80A	100|125A
EB Maximum Current Limit			40|63A	80A	100|125A	40A	40|63A	80A	100|125A
DG Start time	1sec-30sec								
Cycle time	6sec-150sec								
No. of Cycles	5 to 10								
DG Selection	NA		DG Output selection				EB and DG Output selection		
METERING PARAMETERS									
EB Source	NA		Current				Current, Voltage, (PF, W, Wh optional)		
DG Source	Current, Voltage, PF, W, VA, Wh/VAh								
Trip Reset	Reset Key	Reset Key	Reset Key and MCB	Reset Key and MCB	Reset Key and MCB	Reset Key and MCB	Reset Key	Reset Key	Reset Key
INDICATION	EB Source, DG Source, Trip, Minus, Communication and Reason for Trip								
COMMUNICATION									
Device ID & Parity	1 to 247 & Odd, Even, None (Prefered Even)								
Protocol & Interface	Modbus. RTU & RS 485								
Baud rate	4800 bps to 19200 bps (Preferred 9600 bps)								
Isolation	2000 volts AC isolation for 1 minute between communication & other circuits								
DISPLAY									
Display type	LED 1 Row								
Instantaneous Digits	4								
Integrated Digits	4					6			
FAULT TRIPPING									
EB Source			Over Current, Phase Missing				Over Current, Under / Over Voltage Phase Missing		
DG Source	Over Current, Under / Over Voltage Phase Missing								
MECHANICAL CHARACTERISTICS									
Mounting (Vertical)	Din Rail		Surface Mounting						
Outline Dimension	90X72X67	90X90X75	144X193 X137 mm	217X186 X142 mm	240X310 X182 mm	144X193 X137 mm	144X193 X137 mm	186X227 X142 mm	240X310 X182 mm
Weight in kg	280 grams	350 grams	2.1 kg	4.5 kg	7 kg	2.1 kg	2.1 kg	4.5 kg	7 kg
Torque	1 N-m	1 N-m	2 N-m	2 N-m	2.5 N-m	2 N-m	2 N-m	2 N-m	2.5 N-m
Wire gauge	11 AWG	11 AWG	6 AWG	4 AWG	1 AWG	6 AWG	6 AWG	4 AWG	1 AWG
STANDARDS									
Compliance	IEC 60947-6-1								
USE ENVIRONMENT CHARACTERISTICS									
Temperature	Ambient: -5 to +55°C, Storage: -25 to +75°C, Operating: -10 to +55°C, Operating Humidity: 5 to 85% RH								
Environmental	Class B								
Pollution degree	2								

ATeS C40 | M40

ATS Controller

Real-Time Monitoring | Improve Productivity

CONTROL YOUR POWER SOURCES!

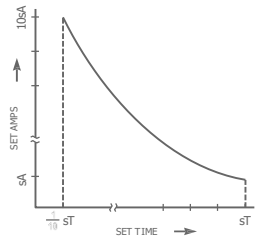
Automatic transfer Switch controllers are designed for quick and safe automatic transfer of load from one source to another by controlling automatic transfer switch, contactors, circuit breakers or other motorised switch gears.
ATScontrollers are a vital part of electrical systems and is a device which tells the generator when to start & when to turn off, when the primary power source is unavailable.

Features :

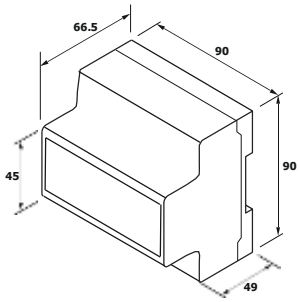
- Intelligent automatic changeover control
- Under/Over Voltage protection for Source I & Source II
- Phase sequence/ unbalance current protection for Source I & Source II
- Monitor and displays VLL, VLN and Hz for Source I & Source II (C40)
- Monitor and displays A, KVA and KVAh for Source I & Source II (M40)
- Monitor and displays ON hour and Number of power interruptions via RS485
- Programmable 1phase/3phase healthy selection for primary source
- Programmable feature is provided to choose Source I or Source II as priority
- Configurable timer for generator start, transfer delay , restore delay and generator cooling time
- Universal power supply of 8-60VDC
- 6 digit inbuilt LED display
- Individual phase overload monitoring with neutral current
- RS485 and addon TC-IP Ethernet Gateway
- Optional option to configure overload tripping module for Source I & Source II separately (M40)
- Optional built in AC Power Supply of 80-300 V AC taken from R Phase
- Optional monitoring of A, kVA, and kVAh feature is available
- Optional Programmable feature of overload ON/OFF cycles
- Optional digital input relay for fire alarm or other inputs of standby generator
- Optional programmable digital input relay for external fault trip

SOURCE I / SOURCE II PROTECTION
Under / Over Voltage
Single Phase missing
Phase sequence
Under / Over Frequency
Over Current & Current unbalance (M40)

Inverse Curve:



Mechanical Specification:



Benefits:

- Offers a fast, safe, and effective means of source changing over minimising power disruptions
- Rugged, versatile, compact and user friendly set up helps in saving time during installation.
- Set time delay to start the generator, transfer sources, and restore source for precise switching among sources as per your application.
- Load ON and source healthiness are indicated via bright LEDs.
- Reliable and field proven mechanism can provide you under voltage and overvoltage protection for your power sources.
- Provides total flexibility for configuring input and output of power sources on field
- Monitor three phase power, on hour of both sources and power interruptions to avoid unnecessary expense at sites
- Equipped to support remote monitoring and communication.
- Sends alarm during fire, fault in generator and during emergency.
- Provided with individual phase overload detection feature with immediate configurable action to trip.

Technical Specification:

Specification	Parameter	Default
Rated Operating Voltage	230V / 50 Hz	
Operating Voltage Range	150V to 300V AC (L-N)	
Rated Frequency	45-65 Hz.	
DG Start Relay Rating	8 A DC Power Relay	8/30V DC
Auxiliary Voltage Range	(8-60)V DC (Optional 80-300VAC Power Supply)	(8-60)V DC
Switching Technology	Relay based	Power Relays (R1-R5)
Accuracy	Class 1, Class 0.5	Class 1
Display	4 digit Instantaneous and 6 digit Integrated LED	
PROGRAMMING PARAMETERS		
EB Under Voltage	(160-210)V AC	(180V AC)
EB Over Voltage	(240-270)V AC	(260V AC)
Generator Start delay	upto 12 hrs	10 sec
Transfer/Restore delay	1-60 Sec	5 Sec
DG Cooling Time	1-600 Sec	30 Sec
Phase selection	1 Phase/ 3 Phase	3 Phase, 4W
Phase healthy selection	Any one Phase /all Phase	3 Phase
Overload	EB/DG (M40)	

Application:

- Data centres
- Healthcare
- Commercial Buildings / Infrastructure
- Telecommunication Industry
- Process Manufacturing/OEM's

ATeS

Automatic Transfer Switch

Real-Time Monitoring | Improve Productivity

CONTROL YOUR POWER SOURCES!

The smartest approach to provide continuous power for critical applications is to transfer sources between the load. ATeS (Automatic Transfer Switch) is designed with automatic start/stop DG operation to ease the transfer between primary source to alternate source for providing continuous power supply.

Features:

- Automatic start/stop operation of DG on mains failure.
- Availability of over load tripping (optional) with inverse curve logic.
- Fire alarm / external fault trip feature is provided.
- Inbuilt control switch for selecting auto/manual mode.
- High capacity to withstand short circuit.
- Inbuilt source selection and trip button for Auto/Manual mode and load ON indication.
- External indication terminal output for Source healthy and load ON.
- Inbuilt fuse protection to avoid failure of AMF controller.
- 3 Position isolation lock for Source I - Off - Source II.
- AC 33B Utilization Category and in coherence with IEC 60947-6-1
- Optional RS485 communication and cloud connectivity for IoT applications.
- Optional Remote display for real time monitoring and controlling of both sources.
- External remote control logic by using PLC, ATS Controller or Genset Controller.
- Source I & Source II protection against under/over voltage, under/over frequency, Single phase missing and optional overload tripping logic.

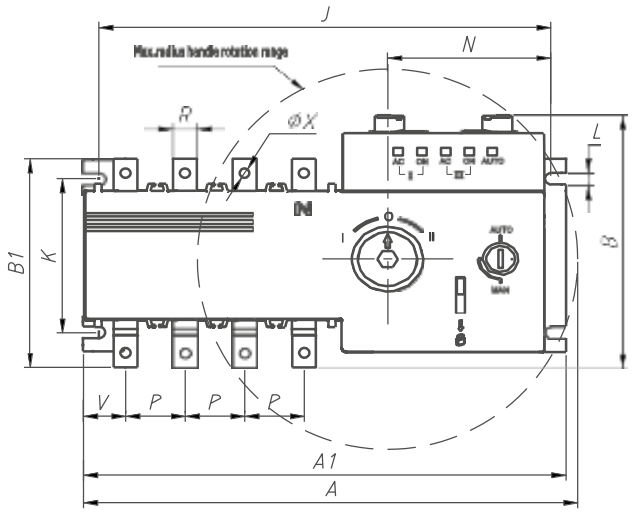
Benefits:

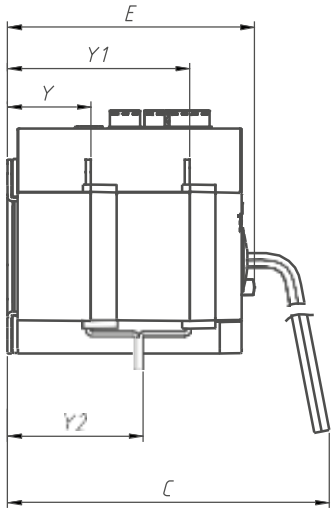
- Smooth and high-speed load transfer in the event of power outage or disturbances in the power supply.
- Incorporated with Fire Alarm/External fault trip and plays a pivotal role in providing maximum immunity to the electrical system from fire risk/faults.
- Systematized with time delays (timers) to prolong the stability of power source during automatic switching of sources in the case of blackout or loss of power.
- Facilitates easy installation and ensures reliable performance.

Application:

- Airport and Railways
- IT Malls and Commercial buildings
- Automobile Industry
- Data Centre and Telecommunications
- Oil and Gas Industry
- Manufacturing Industry
- Healthcare
- Banking and Finance

Mechanical Specification:





63-125A

Spec.	Outline Size (mm)						Mounting Size (mm)								
In	A	A1	B	B1	C	E	J	K	L	N	P	R	V	ØX	ØY
125	243	230	135	125	165	112	132	85	6.5	83	30	12	21	6.5	41.5

160-250A

Spec.	Outline Size (mm)						Mounting Size (mm)								
In	A	A1	B	B1	C	E	J	K	L	N	P	R	V	ØX	ØY
250	430	375	175	175	253	198	350	107	7.5	105	50	25	25	12	67

315-630A

Spec.	Outline Size (mm)						Mounting Size (mm)								
In	A	A1	B	B1	C	E	J	K	L	N	P	R	V	ØX	ØY
630	520	430	240	260	295	245	415	180	10	100	67	40	45	12	135

800-1600A

Spec.	Outline Size (mm)						Mounting Size (mm)								
In	A	A1	B	B1	C	E	J	K	L	N	P	R	V	ØX	ØY
1600	1050	636	345	337	373	320	612	220	11	83.5	120	80	71	13	196

Technical Specification:

	60-125A	160-250A	315-630A	800-1600A
ELECTRICAL CHARACTERISTICS				
Current Rating	63-125A	160-250A	315-630A	
No. of Poles	4			
Rated Operating Voltage	415V			
Rated Insulation Voltage (Ui) V - Power Circuit	690V			
Rated Insulation Voltage (Ui) V - Control Circuit	500V			
Rated impulse withstand voltage (Uimp) - Power Circuit	8kV			
Rated impulse withstand voltage (Uimp) - Control Circuit	4kV			
Utilization Category	AC - 33B			
Rated control Power supply Voltage	230V/50Hz			
Rated short circuit withstand current (KA, Rms) Icw(0.1/1s)	9/5 kA	12/25 kA	50/25 kA	25/50 kA
Rated short circuit Making Capacity (KA, Peak) Icm	8 kA	17 kA	26 kA	55 kA
Rated Limit short circuit current (KA) Iq	120 kA			
Operating Cycle	10000	8000	6000	5000
Motor operating Voltage	220V AC / 50Hz			
Auxiliary DC voltage	12-24V DC			
Standard	IEC60947-6-1			
MEASUREMENT PARAMETERS				
Primary Source	Voltage, Frequency & Current (Optional)			
Secondary Source	Voltage, Frequency & Current (Optional)			
Measurements Monitored	Remote display via LCD			
Communication	(Optional) RS485 / Ethernet gateway			
PROGRAM CONFIGURATION				
Primary Source	Under Voltage(160-200V)/Over Voltage (240-290V) , Over Load (optional), Under Frequency (40-48Hz) /Over Frequency (50-60Hz)			
Secondary Source	Under Voltage(150-200V) / Over Voltage (240-290V), Over Load (optional), Under Frequency (40-48Hz) /Over Frequency (50-60Hz)			
Timers	Recovery delay (3 to 600s), Transfer delay(3 to 600s), Generator Start delay(3 to 600s), Generator stop delay(3 to 600s)			
Priority selection	Primary/Secondary source			
Overload	Source I (50-110%) and Source II (20-110%)			
	3 Cycles			
Overload Cycles	0-99s			
Overload Recovery Time	5-10s			
Overload Delay Time				
APPLICATIONS				
Transfer Between Main Power to Backup Power	Applicable			
Transfer between Backup Power to Main Power	Applicable			
MODE OF OPERATION				
Selection Mode	Auto/Manual/Remote/RS485			
Position order	I-OFF-II			
Functionality	On Load / Off Load			
Manual Emergency Operation	Available			
MECHANICAL CHARACTERISTIC				
Mounting	Position A			
Outline Dimension in mm	245X115X125	373X175X200	435X260X245	635x340x320
Weight in kg	5	10	20	60
GENERAL CHARACTERISTIC				
Ambient temperature	-20° to 55°C			
Air Humidity	Not more than 50% @ 40°C			
Altitude	Not more than 2000 m			
ELECTROMAGNETIC CHARACTERISTIC				
Class	Class B			
Radio Frequency Transmission Test	EN55011			
Radio Frequency radiation Transmission Test	EN55011			

iMeasure
THINK - ACT - SAVE

SMART NETWORKING

SMART DEVICE FOR FLEXIBLE NETWORK AND COORDINATE CONNECTIVITY

Remote Connectivity

Designed to facilitate secure, reliable connectivity and quickly capture precise data ideal for energy management system, building management system and for any IOT solutions.

Compatibility

Seamless integration with multiple protocols/platforms and work as bridge between Zigbee and GPRS for low cost installation.

Converter

User friendly, ideal for connecting serial RS485 devices to notebooks or PC's through an available USB port.

Secured Communication

Compact and rugged device that link non-internet sensor and devices to the internet so that data, configuration and controlling can be made possible onlines expressed in degrees with an

Smart networking devices are highly secure, rugged to simplify connecting,providing interoperability between networks and devices to capture precise data for faster decisions and reduced network load. These devices are designed to provide reliable communications with optional storage facility, built in RTC and one touch recovery for factory reset. Smart networking products are ideal for Energy Management System, Building Management System and Data Centres, for controlling/diagnosing manufacturing machines such as CNC, Process Control Equipment, Barcode Scanners, Serial Printer applications.

GW

GATEWAY

RS485 | ETHERNET | GPRS | RF

A MACHINE COMMUNICATION UNICORN TAILOR MADE FOR INDUSTRIAL IOT WORLD!

Features:

- Compact size
- Built in RTC
- Embedded web server for easy configuration and commissioning using a web browser
- Modbus/MQTT protocol
- DHCP / Static IP support
- Configurable RS485 baud rate, party and stop bits
- Completely isolated in both RS485 and RJ45
- Optional storage Available
- One touch recovery (Factory reset configuration)
- LED indication for easy setup and trouble Shooting

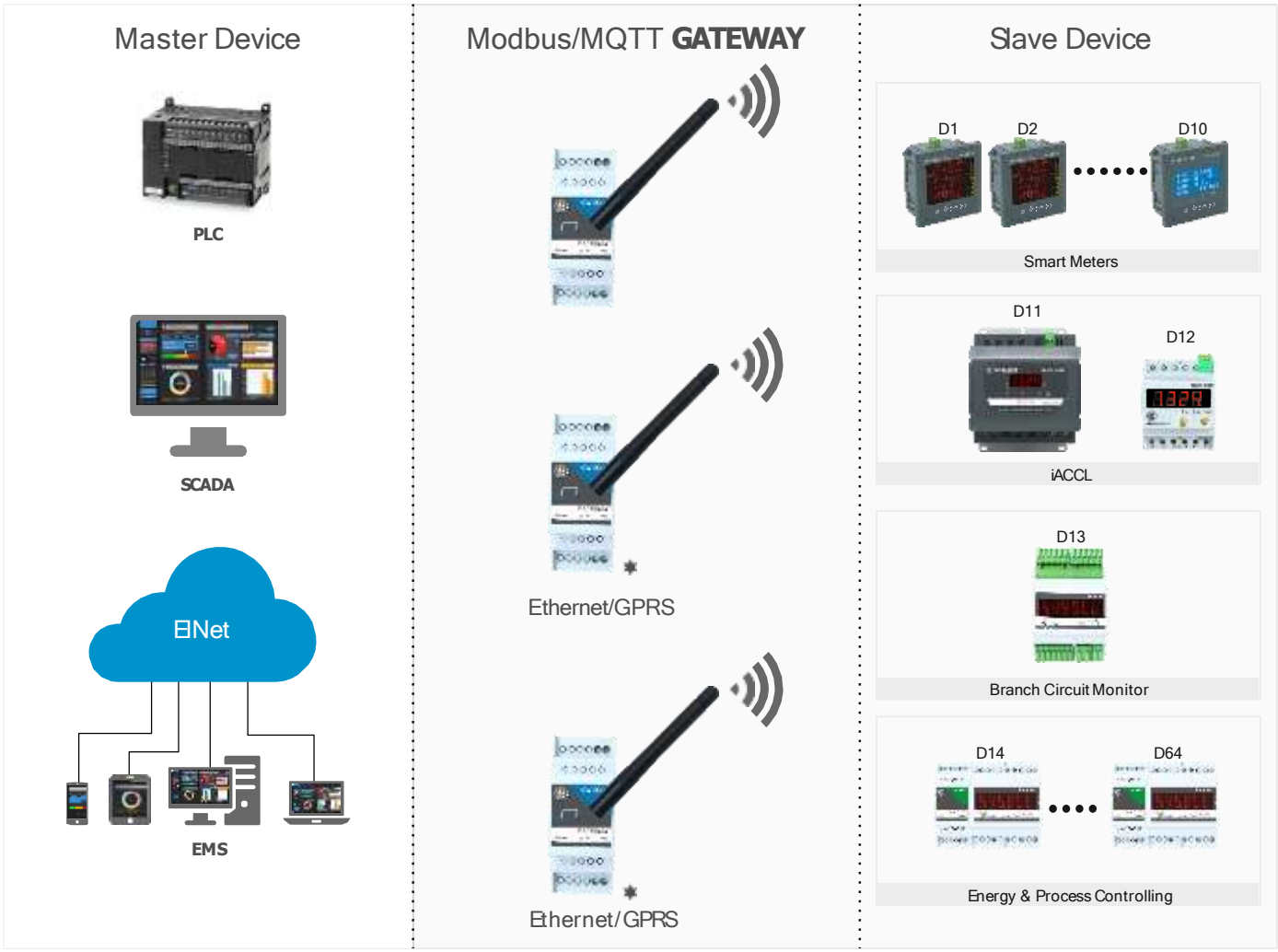
Benefits:

- Gateway helps link non-internet sensor and devices to the internet so that data, configuration and controlling can be made possible online
- Gateway can work as bridge between Zigbee and GPRS at low cost installation

Applications:

- Energy management system
- Building management system
- Data centers, etc.

COMMUNICATION MODEL



Upto 64 device

Technical Specification:

	GW 1000 (Ethernet/GPRS)	GW 2000 (Ethernet/GPRS)
PROTOCOL		
	Modbus RTU	MQTT
ETHERNET PORT		
Connecter	8-pin RJ-45 socket for Cat 5 UTP	8-pin RJ-45 socket for Cat 5 UTP
Physical & Data Link Layer	IEEE 802.3i 10/100 BASE-T	IEEE 802.3i 10/100 BASE-T
Isolation	1.5 kV galvanic	1.5 kV galvanic
Max. cable length	100 m (328 ft)	100 m (328 ft)
Protocols	Modbus TCP Server/client, RTU Server/Client, HTTP.	Modebus RTU. TCP/IP, IPV4,MQTT, DHCP, UDP, HTTP, ARP, ICMP.
Concurrent connections	2Modbus/TCP slave, 8 HTTP web page	Windows: Maximum 1023 client
GPRS INTERFACE		
Antenna	5 dBi (Omni-Directional)	5 dBi (Omni-Directional)
Quadband	(850/900/1800/1900 MHz)	(850/900/1800/1900 MHz)
Connectivity	Internal module and SIM card socket	Internal module and SIM card socket
Compliant to GSM phase 2/2+	Class 4 (2 W @850/900 Mhz); Class 1 (1 W @ 1800/1900 Mhz)	Class 4 (2 W @850/900 Mhz); Class 1 (1 W @ 1800/1900 Mhz)
	Code Schemes C2 1, 2, 3, 4	Code Schemes C2 1, 2, 3, 4
SERIAL PORT RS-485/RS-422 INTERFACE		
Connector	5.08mm 2-pin	5.08mm 2-pin
Physical layer	EIA-485-A, 2-wire	EIA-485-A, 2-wire
Isolation	15KV	15KV
Speed	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps	2400, 4800, 9600, 19200 bps
Max. number of nodes	64	64
Protocols	Modbus RTU (master), Modbus TCP/IP (master)	Modbus RTU (master)
Serial Number	Virtual Com / TCP Server / TCP Client / Serial Tunnel	TCP Server / Serial Tunnel
USER INTERFACE		
LED Indicators	Power (RED), Ethernet link (green)	Power (RED), Ethernet link (green)
Monitoring & Configuration	Web browser based	Web browser based
High availability features	Watchdog supervision, brown-out detection	Support Watchdog, system never halt
POWER SUPPLY		
Connector	5.08mm 2-pin	5.08mm 2-pin
Voltage	4.5-6 V DC	4.5-6 V DC
Current	2A typical @ 5 V DC	2A typical @ 5 V DC
Intrinsic consumption	4W Eth/6W LGRS	4W Eth/6W LGRS
ELECTROMAGNETIC COMPATIBILITY		
Emissions (radiated and conducted)	AS/NXS CISPR 22/En 55022 (Class A)	AS/NXS CISPR 22/En 55022 (Class A)
Immunity	EN 55024	EN 55024
Electrostatic discharge	EN 61000-4-2	EN 61000-4-2
Radiated RF	EN 61000-4-3	EN 61000-4-3
Fast Transients	EN 61000-4-4	EN 61000-4-4
Conducted RF	EN 61000-4-6	EN 61000-4-6
ENCLOSURE		
Material	self-extinguishing PC/ABS blend (UL 94-V0)	self-extinguishing PC/ABS blend (UL 94-V0)
Mounting	35mm DIN rail (EN 60715)	35mm DIN rail (EN 60715)
	IP 20/NEMA Type1	IP 20/NEMA Type1
Classification/Type rating	Connection	Connection
Cooling		
ENVIRONMENT		
Operating Temperature		
Storage Temperature	0 to 60° C / 32 to 140° F	0 to 60° C / 32 to 140° F
Humidity rating	10 to 95% relative humidity, non condensing	10 to 95% relative humidity, non condensing
	-25 to 85° C / -13 to 185° F	-25 to 85° C / -13 to 185° F
Operating Ambience	Free from corrosive gas, minimal dust	Free from corrosive gas, minimal dust
PHYSICAL		
Dimension	36mm x 90mm x 67mm	36mm x 90mm x 67mm
Weight	100gms	100gms

CT

CURRENT TRANSFORMER

SPLIT CORE | CLIP ON

Features:

- Nominal Rating ranges from 5A to 1500A
- Accuracy ±1% from 10% to 130% of full scale range
- Frequency Range of 50 Hz to 400 Hz
- Shrouded core blades for protection during installation
- Snap closing/opening feature
- Meet CE & ETL C57.13

Applications:

- Energy Management, Data logging, Recording,
- Power & Energy Monitoring, Cost allocation

Technical Data Clip On:

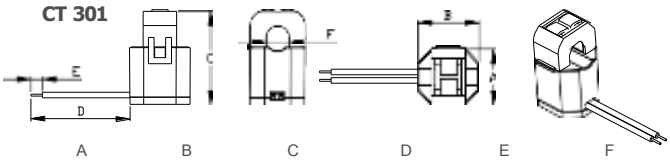
	CT 301	CT 302	CT 303
Electrical			
Rated Primary Current	60A	200A	120A
Saturation current	85A	250A	>120
Rated Secondary current	20mA 666mV (Optional)	66.6mA 666mV (Optional)	40mA 666mV (Optional)
Accuracy	1%	2%	1%
Electrical Strength	3000VAC 1m A60s	3000VAC 1m A60s	3000VAC 1m A60s
Load Resistance	20 Ω	20 Ω	20 Ω
Operation Frequency	50/60Hz	50/60Hz	
Internal Diameter	10mm	24mm	16mm

Technical Data Split Core :

	ELSC 0750	ELSC 1250	ELSC 2000
Electrical			
Nominal Rating	5 - 150 Amps	10 - 600 Amps	600 - 1500 Amps
Accuracy	±1% for 10% to 130% of full scale range	±1% for 10% to 130% of full scale range	±1% for 10% to 130% of full scale range
Phase Shift at Rated current 50/60 Hz	< 2°	< 2°	< 2°
Frequency Range	50 Hz to 400 Hz	50 Hz to 400 Hz	50 Hz to 400 Hz
Useful Current Range	10% to 130% of Rated Current	10% to 130% of Rated Current	10% to 130% of Rated Current
Working Voltage	Maximum 600 Vrms	Maximum 600 Vrms	Maximum 600 Vrms
Output Signal at rated current	666mV (Default) 1000mV (Optional)	666mV (Default) 1000mV (Optional)	666mV (Default) 1000mV (Optional)
Output Lead	White lead is positive 2.5 m twisted pair (22AWG, terminated with ferrules)	White lead is positive 2.5 m twisted pair (22AWG, terminated with ferrules)	White lead is positive 2.5 m twisted pair (22AWG, terminated with ferrules)

Mechanical Specification:

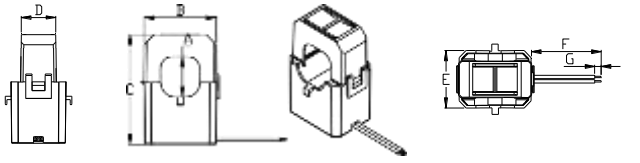
CT 301



A	B	C	D	E	F
25max	27.5max	42.5max	1500±10	6±1	10±0.5

All dimensions in mm

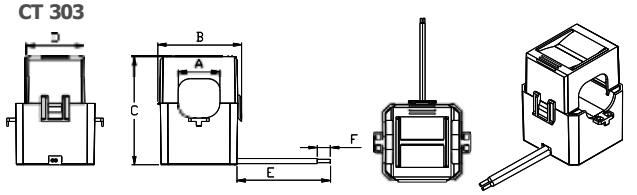
CT 302



A	B	C	D	E	F	G
24.3±0.5	46max	66max	22Max	34Max	1500±10	10.+1

All dimensions in mm

CT 303

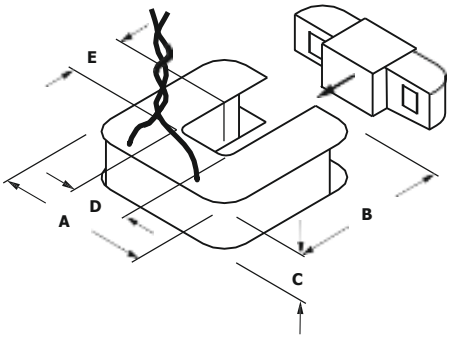


A	B	C	D	E	F
16.0±0.5	31.3±0.3	43.5±0.5	22.8±0.3	1500±10	6.+1

All dimensions in mm

Mechanical Specification:

Window size	1.9 cm (.75")	3.2 cm (1.25")	5.1 cm (2.0")
Dimensions	5.1 × 5.3 × 1.6 cm (2.0 × 2.1 × 0.6")	8.3 × 8.6 × 2.5 cm (3.3 × 3.4 × 1.0")	12.1 × 12.7 × 3.0 cm (4.8 × 5.0 × 1.2")
Operating Temp	-10 to 50 ℃ (14 to 120 ℉)	-10 to 50 ℃ (14 to 120 ℉)	-10 to 50 ℃ (14 to 120 ℉)
Weight	136 g (4.8 oz)	340 g (12 oz)	748 g (26 oz)



A	2.00 inch	3.25 inch	4.75 inch
B	2.10 inch	3.35 inch	5.00 inch
C	0.610 inch	1.00 inch	1.20 inch
D.	**0.75 inch**	**1.25 inch**	**2.00 inch**
E.	0.75 inch	1.25 inch	2.00 inch

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