


- **Compact**
- **Smart**
- **Powerful**
- **Universal**
- **Low investment**

• Accuracy Class 1.0 (0.5 Option) **IEC 61036 / CBIP 88** • True RMS Accurate on Distorted waveforms • **Simultaneous** sampling of **Volts & Amps** • **Low** PT, CT burden • Crisp, **Bright Display** • **View 3 Parameters** together • **Auto Scaling** from Kilo to Mega to Giga • **Programmable** CT, PT ratios • Built-in **phase analyser** • Quick and **easy installation** • **Auto Scrolling** • Communication with PCs, PLCs, DCS through optional RS 485 Serial Port • **10 year** back-up of integrated data • **Tamper Proof** Cover option • Sealed **dust-proof** construction • Simplest to operate - One touch  key • Measures 4 Quadrant Power & 2 Quadrant Energy.(IE option measures 4 Quadrant Energy) • Monitors Demand (Option)



### User Programmable

- Delta or Star
- PT, CT Ratios Primary & Secondary

### Applications

- Control Panels
- Motor Control Centers
- Power Distribution Panels
- Connection to Plant Monitoring & Control Systems
- Genset Panels
- Original Equipment Manufacturers (OEMs)

### EM 6434 Monitors:

- Power Parameters Per Phase and Total (kVA, kW, kVAR)
- PF per phase and 3 phase
- Energy Parameters (kVAh, kWh, kVARh inductive and kVARh capacitive)
- Accuracy Class 1.0, (0.5 option)
- Built-in RS 485 port

### Rugged Construction

Confirms to:

- Emission : CISPR 22
- Fast Transient : Upto 2kV  
IEC 61000 - 4 - 4, level 3
- ESD : IEC 61000 - 4 - 2
- Impulse voltage: 6kV, IEC 60060, 1.2/50

### EM 6400 Monitors: All EM 6434 features Plus

- Voltage: Line to Neutral per Phase and Average
- Voltage: Line to Line per phase and Average
- Current: Phase Wise & Average
- Phase Angles of I<sub>r</sub>, I<sub>y</sub>, I<sub>b</sub>
- Run Hrs, ON Hrs and No of Interruptions
- Frequency
- RS 485 port option
- Demand option
- IE option (Import / Export)

### Display Features

- Brilliant 3 line, 4 digit per line, (digit height 14mm) LED display with auto-scaling capability for Kilo, Mega, Giga
- Meter can display Volts, Amps and Frequency simultaneously
- Easy set up through Front Panel keys
- Password protection for setup parameters

ISO 9001-2000 Certified



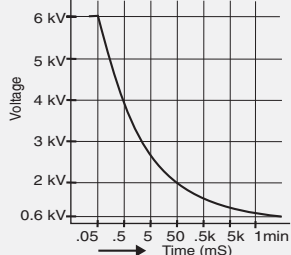
Australian Communications Authority

## Technical Specifications

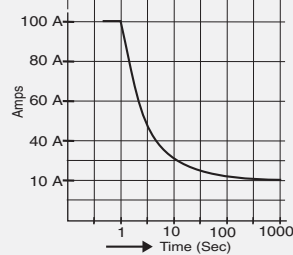
- Sensing / Measurement True RMS, 1 sec update time  
4 Quadrant Power & Energy
- Input voltage 4 Voltage inputs ( $V_1, V_2, V_3, V_N$ )  
110 or 415 V L-L nominal  
(Range 80 to 500V L-L)
- Aux Supply (Control Power) 80 - 270V AC, 45 - 65 Hz  
100 - 270V DC
- Input current Current inputs ( $A_1, A_2, A_3$ )  
50mA - 6A (Field configurable 1A or 5A)  
Overload 10A max Continuous  
50A max for 3 seconds
- Burden 0.2VA max per Volts/Amps input  
3VA max on Auxiliary Supply
- Frequency 45 - 65Hz
- Resolution RMS 4 digit, Integ 8 digit
- Digital Communications RS 485 serial channel connection  
Industry standard Modbus RTU protocol.
- Isolation 2000 volts AC isolation for 1 minute  
between communication and other circuits
- Demand Integration period multiple of 5 minutes  
from 5 to 30 minutes  
  
15 Sec update time
- Environmental Operating Temperature -10 C to +60 C  
(14 F to 140 F)  
Storage Temperature -25 C to +70 C  
(-13 F to 158 F)  
Humidity 5% to 95% non condensing.
- Weight 400 gms approx. Unpacked  
500 gms approx. Shipping
- Warranty 1 Year from date of Invoice

## Overload

V input overload withstanding



A input overload withstanding



## Accuracy

Measurement	Accuracy % Reading	
	CI 1.0	CI 0.5
• Volts LN per phase	1.0	0.5
• Volts LL per phase	1.0	0.5
• Volts LN Avg	1.0	0.5
• Volts LL Avg	1.0	0.5
• Amps per phase	1.0	0.5
• Amps Avg	1.0	0.5
• Amps phase angle per phase	2°	1°
• Frequency	0.1	0.1
• Real Power per phase & total	1.0	0.5
• Reactive Power per phase & total	2.0	1.0
• Apparent Power per phase & total	1.0	0.5
• Power Factor per phase & average	1.0	0.5
• Active Energy Import /Export	1.0	0.5
• Reactive Energy (Inductive / Capacitive)	2.0	1.0
• Apparent Energy	1.0	0.5

Note: Additional error of 0.05 % of full scale, for meter input current below 200 mA

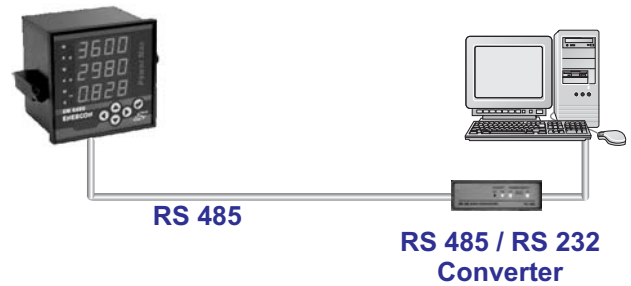
## Display Pages

		Pages	EM 6434	EM 6400
RMS		VLL, A avg., F		✓
		VLN, A avg., F		✓
		VA, W, VAR	✓	✓
		VA, W, PF	✓	✓
		Per phase for the above parameters	✓	✓
DM		VA demand		✓
		Rising demand		✓
		Time remaining		✓
		Maximum Demand		✓
		Hr (Max demand occurred)		✓
INTEG	Also for IE option	VAh	✓	✓
		Wh	✓	✓
		VARh Inductive	✓	✓
		VARh Capacitive	✓	✓
		Run hours		✓
		On hours		✓
		Interruptions (Outages)		✓

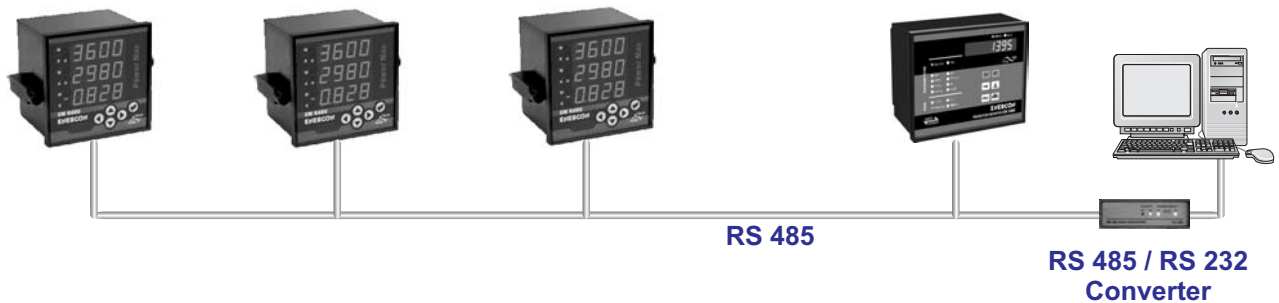
## Digital Communication

RS485 standard, communication capability using open Modbus RTU protocol. The meters can be multi-dropped using RS485 twisted pair. The baud rate can be adjusted from 1200 bps to 19,200 bps. Preferred setting is 9600 bps.

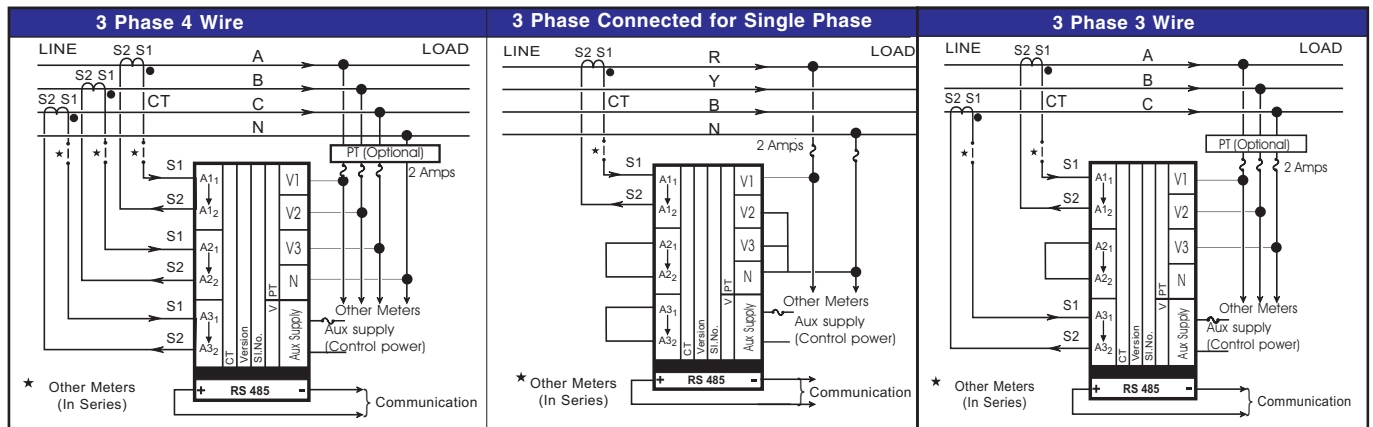
### RS 485 Single Point Communication Modbus



### RS 485 Multi-Point Communication Modbus

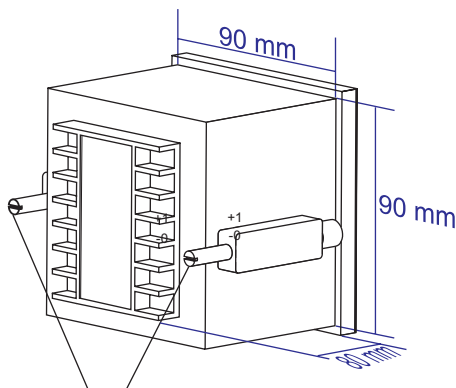


## Wiring Diagram



**Caution:** Do not install selector switch on the voltage and current circuits. It will interrupt energy accumulation.

## Dimensions



9mm additional space on both side of the meter inside the Panel

### Dimension

Bezel	: 96 x 96 mm
Depth	: 80 mm behind Bezel
Panel cutout	: $90_{-0}^{+1} \times 90_{-0}^{+1}$ mm

## Integrated Parameters

- Import / Export is optional. Factory selectable on Order
- Energy Parameter (kWh, kVAh, kVARh inductive and .kVARh Capacitive) (Total, Import & Export)
- Separate Run hrs indication for Import, Export and Total
- Run hrs, ON hrs, No of interruptions

## Demand Parameters

- Monitors Demand- Present, Rising & Maximum, Time remaining
- VA & W demand is selectable through setup table.
- Demand interval is selectable through setup in steps of 5 min (5,10,15,20,25 & 30).
- Demand may be Sliding window (auto) or Fixed window (User), selectable through setup mode.
- The time of occurrence for the Maximum Demand is based on "On hrs" of the system.
- Maximum Demand will be cleared along with the integrators through the CLR function in the setup mode.

## Ordering Information

Sl.	Specify	EM 6400	EM 6434
1	Model Number	✓	✓
2	Accuracy (Cl 1.0 /Cl0.5)	✓	✓
3	Communication (Modbus RTU protocol)	✓	Built-in
4	Demand	✓	
5	Import / Export	✓	

## "3d" VA measurement

- EM 6400 is equipped with "3d VA Measurement" capability. This accurately includes Distortion power(D) per IEEE100, into the VA calculation.

$$\text{So, } VA_{3D} = \sqrt{W^2 + VAR^2 + D^2}$$

- However Arithmetic VA ( $VA = VA_1 + VA_2 + VA_3$ ) is also available as a set-up option if you need to compare with simpler or older meters.

## Accessories (Option)

- Optional Fused Voltage Probes & Clamp-on Current Probes for portable use
- Tamper proof cover
- Safety Cover
- Connector Kit

Enercon strives for continuous product innovation. Product specifications are therefore subject to change without notice.

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Enercon Representative