

## EM 6000 DigitAN™ Series


- Compact
- Smart
- Global; CE, UL marks
- Universal

80mm Depth

96 x 96 mm Flush Mount

ISO 9001-2000 Certified

- Accuracy Class 1.0 (0.5 Option)
- True RMS, Accurate on Distorted waveforms
- Simultaneous sampling of Volts & Amps
- Low PT, CT burden
- Patented Alpha numeric bright display
- View 3 Parameters together
- Auto Scaling from Kilo to Mega to Giga
- Programable CT, PT ratios
- Built-in phase analyser
- Quick and easy installation

- UL & CE certified
- Auto Scrolling
- Communication with PCs, PLCs, DCS through optional RS 485 Serial Port
- 10 year back-up of integrated data
- Touch safe terminals
- Sealed dust-proof construction
- Easy Turbo Key  for 'One Touch' operation and setup
- Measures 4 Quadrant Power & 2 Quadrant Energy. (IE option measures 4 Quadrant Energy)
- Monitors Demand (Option)



### User Programmable

- Delta or Star (Wye)
- 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 6459

#### Monitors

- Voltage: Line to Neutral per Phase and Average
- Voltage: Line to Line per phase and Average
- Current: Phase Wise & Average
- PF per phase and 3 phase
- Percentage load phase wise
- Load unbalance in percentage, RPM
- Phase Angles of  $A_1, A_2, A_3$
- Frequency

### EM 6434

- Power Parameters Per Phase and Total (kVA, kW, kVAR)
- PF per phase and 3 phase
- Energy Parameters (kVAh, kWh, kVARh inductive and kVARh capacitive)
- Old energy parameters: (kVAh, kWh, kVARh inductive and kVARh capacitive)
- Built-in RS 485 port

### EM 6400

- EM 6434 & EM 6459 +
- Run Hrs, ON Hrs and No. of Interruptions
- THD V and I
- 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
- Colour Coded Analog Load Bar
- Easy set up through Front Panel keys
- Password protection for setup parameters

### Rugged Construction

#### Conforms to:

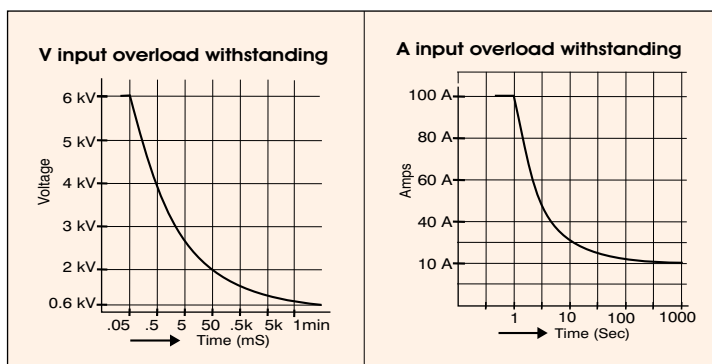
- Emission : CISPR 22
- Fast Transient : 4kV IEC 61000 - 4 - 4
- Burst : IEEE 62.41:1991
- Surge withstand : IEEE C37.90.1:2002
- ESD : EC 61000 - 4 - 2
- Impulse voltage : 6kV, IEC 60060, 1.2/50
- Safety Construction: Self extinguishable V 0 plastic



## Technical Specifications

|                              |   |
|------------------------------|---|
| ■ Sensing / Measurement      | True RMS, 1 sec update time<br>4 Quadrant Power & Energy  |
| ■ Accuracy (Wh)              | Class 1.0 as per IEC 62052-11, 62053-23, class 0.5 (optional) as per IEC 62052-11, 62053-22 and ANSI C12.20                                       |
| ■ Input voltage              | 4 Voltage inputs ( $V_1, V_2, V_3, V_N$ )<br>110 or 415 V L-L nominal<br>(Range 80 to 600V L-L)   |
| ■ Aux Supply (Control Power) | 80 - 270V ac dc,<br>44 - 300V ac dc (wide range option)   |
| ■ Input current              | Current inputs ( $A_1, A_2, A_3$ )<br>20mA - 6A (Field configurable 1A or 5A)   |
| ■ Overload                   | 10A max continuous<br>50A max for 3 seconds   |
| ■ Burden                     | 0.2VA max per Volts/Amps input<br>3VA max on Auxiliary Supply   |
| ■ Frequency                  | 45 - 65Hz   |
| ■ Resolution                 | RMS 4 digit, Integ 8 digit  |
| ■ Digital Communications     | RS 485 serial channel connection<br>Industry standard Modbus RTU protocol.  |
| ■ Isolation                  | 2000 volts AC isolation for 1 minute<br>between communication and other circuits  |
| ■ Demand                     | Integration period multiple of 5 minutes from 5 to 30 minutes<br>15 Sec update time   |
| ■ Safety                     | Measurement category III, Pollution Degree 2, Protection against shock by double insulation at user accessible area                               |
| ■ Environmental              | Operating Temperature -10°C to +60°C (14°F to 140°F)<br>Storage Temperature -25°C to +70°C (-13°F to 158°F)<br>Humidity 5% to 95% non condensing. |
| ■ Weight                     | 400 gms approx. Unpacked<br>500 gms approx. Shipping  |
| ■ Warranty                   | 1 Year from date of Invoice   |

## Overload



## 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 LNAvg                              | 1.0                | 0.5    |
| ■ Volts LLAvg                              | 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    |
| ■ 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 100 mA
- PF error limit is same as W error limit in %

## Display Pages

|  |                                    | Pages | EM6459 | EM6434 | EM6400 |
|--|------------------------------------|-------|--------|--------|--------|
| RMS  | VLL, A avg., PF                    |       | ✓      | —      | ✓      |
|  | VLN, A avg., F                     |       | ✓      | —      | ✓      |
|  | VA, W, VAR                         |       | —      | ✓      | ✓      |
|  | W, VAR, PF                         |       | —      | ✓      | ✓      |
|  | Per phase for the above parameters |       | ✓      | ✓      | ✓      |
| THD  | V1 %, V2 %, V3 %                   |       | —      | —      | ✓      |
|  | A1 %, A2 %, A3 %                   |       | —      | —      | ✓      |
| DM   | VA demand                          |       | —      | —      | ✓      |
|  | Rising demand                      |       | —      | —      | ✓      |
|  | Time remaining                     |       | —      | —      | ✓      |
|  | MD (Max Demand)                    |       | —      | —      | ✓      |
|  | Hr (MD occurred)                   |       | —      | —      | ✓      |
| INTEG<br><small>Also for IE option</small> | VAh                                |       | —      | ✓      | ✓      |
|  | Wh                                 |       | —      | ✓      | ✓      |
|  | VARh Inductive                     |       | —      | ✓      | ✓      |
|  | VARh Capacitive                    |       | —      | ✓      | ✓      |
|  | Run hours                          |       | —      | —      | ✓      |
|  | On hours                           |       | —      | —      | ✓      |
|  | Interruptions (Outages)            |       | —      | —      | ✓      |
|  |                                    |       |        |        |        |
| OLD  | VAh                                |       | —      | ✓      | ✓      |
|  | Wh                                 |       | —      | ✓      | ✓      |
|  | VARh Inductive                     |       | —      | ✓      | ✓      |
|  | VARh Capacitive                    |       | —      | ✓      | ✓      |

## Digital Communication

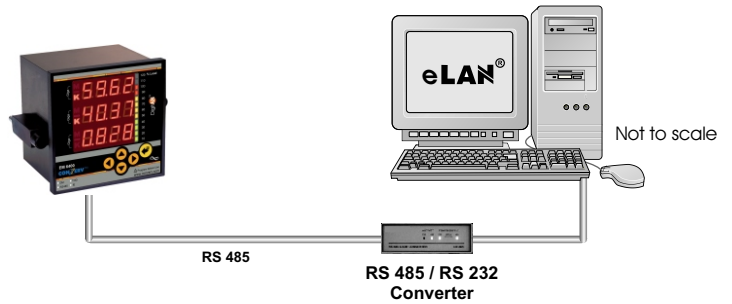
RS 485 standard, communication capability using open Modbus RTU protocol. The meters can be multi-dropped using RS 485 twisted pair. The baud rate can be adjusted from 1200 bps to 9600 bps. (Preferred setting is 9600 bps).

## BMS Compatible

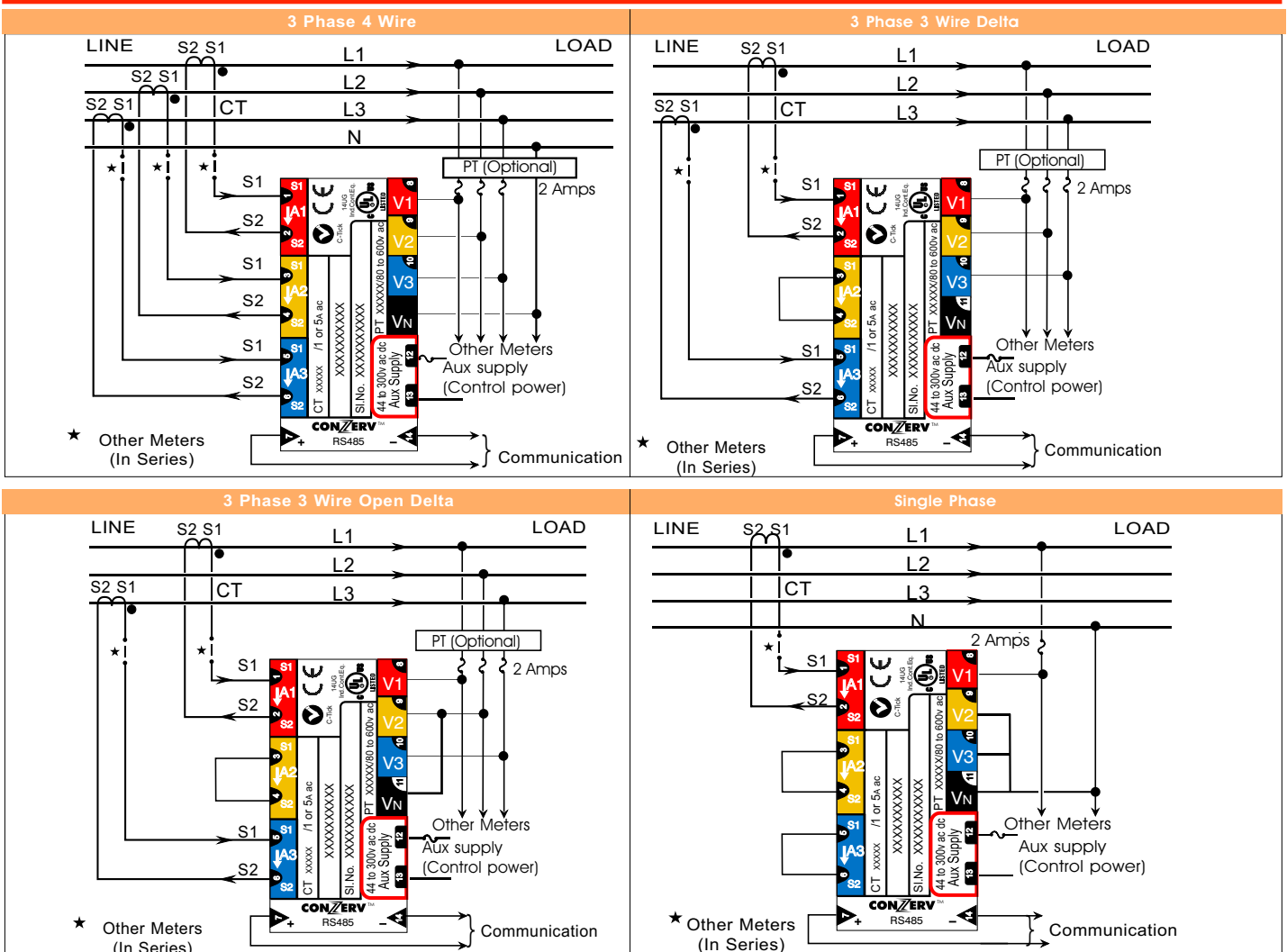
Access of either single (individual) parameter or block of parameters through RS 485 communication port. Integrates with Honeywell, DATS, Siemens Building Technologies and other BMS packages.

## RS 485 Multi-Point Communication Modbus

### RS 485 Single Point Communication Modbus



## Wiring Diagram



## "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<sub>1</sub>+VA<sub>2</sub>+VA<sub>3</sub> is also available as a set-up option if you need to compare with simpler or older meters.

## 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 6459 | EM 6434  | EM 6400 |
|-----|-------------------------------------|---------|----------|---------|
| 1   | Model Number                        | ✓       | ✓        | ✓       |
| 2   | Accuracy (Cl 1.0 /Cl 0.5)           | ✓       | ✓        | ✓       |
| 3   | Communication (Modbus RTU protocol) | ✓       | Built-in | ✓       |
| 4   | Demand                              | —       | —        | ✓       |
| 5   | Import / Export                     | —       | —        | ✓       |
| 6   | Aux. Supply 80-270V / 44-300V ac dc | ✓       | ✓        | ✓       |

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

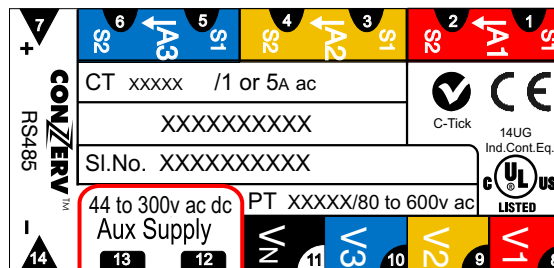
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**Energy Audits, Harmonic Analysis, Harmonic Filters, Training, Energy Management Systems, Multi-Function Meters, Portable Power Analysers, Electronic Energy Meters, Digital Panel Meters, Static Watt Hour Meters, Power Capacitors HT & LT, Current Probes & Voltage Probes.**

|                               |   |
|-------------------------------|---|
| <b>Conzerv Representative</b> | K-Tech Inc., Email: meters@k-tech.com www.k-tech.com call1 224 356-9865 |
|-------------------------------|---|

## Colour Coded TB label

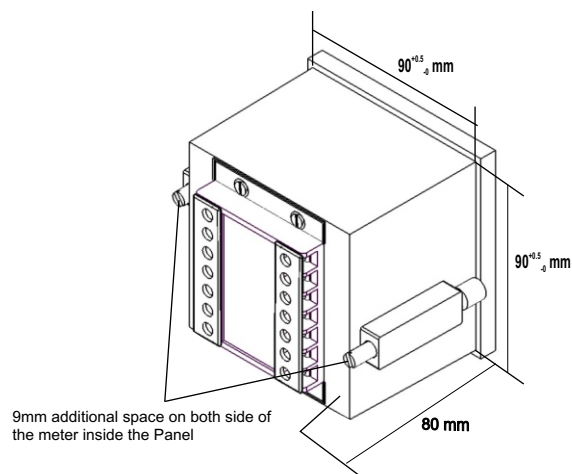
- Terminals are numbered, coloured and grouped such that defect free wiring is ensured



## Dimensions

### Dimension

- Bezel : 96 x 96 mm
- Depth : 80 mm behind Bezel
- Panel cutout : 92<sup>+0.5</sup><sub>-0</sub> x 92<sup>+0.5</sup><sub>-0</sub> mm



## Accessories (Options)

- Optional Fused Voltage Probes & Clamp-on Current Probes for portable use
- Connector Kit