



## EM 2140

### Dual Source Energy Meter



Aux. Supply



True RMS



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Auto or Fix



Output



Masibus EM 2140 is an easy-to-use, low cost electrical energy meter that offers all the basic measurement capabilities required for monitoring an electrical installation.

EM 2140 has 8 digit bright 0.36" LED display for superior readability in poor lighting conditions. LED indication has been provided for phase reversal as well as for all time healthy phase indication with optional DG sense indication.

EM 2140 is available in flush panel mount enclosure having front panel keys for easy set up. EM 2140 has class 1.0 accuracy as per IS 13779/IEC 62053-21.

The CT/PT ratio and installation type is site selectable, making the meter possible to be used in various types of three phase installations.

More than a basic metering, it provides RS485 port with Modbus-RTU protocol as a standard feature & options of relay/ pulse output.

EM 2140 has EB/DG dual source energy measurement option for measurement of energy through Electricity Board or Diesel Generator with isolated pulse or relay output (with high or low side) option.

EM 2140 provides energy measurement along with ON hour & RUN (Load) hour, thus helping to measure and control energy cost.

EM 2140 provides field selectable option of auto scalable decimal point display or fix decimal point display for displaying energy readings

Meter stores energy and programmed parameters into its non-volatile permanent memory.

## Features

- Accuracy class 1.0 as per IS 13779/ IEC 62053-21
- Compact flush panel mounting.
- Field programmable CT/PT ratio.
- True RMS measurement.
- Ultra bright 8 digit LED display 0.36" with auto scaling capability.
- Universal power supply.
- Optional pulse output / relay output.
- Optional EB/DG dual source input.
- Isolated RS 485 (Modbus-RTU protocol).
- 4 keys for configuration.
- Password protection for set parameters.
- Permanent memory based energy storing along with other parameters like ON hour, load hour and power interruption count.

## Applications

- Electrical panels
- DG set panels
- Energy Management System(EMS) & energy audit
- Distribution systems
- HV & LV switch gear panels
- Control & relay panels
- Motor control center panels
- Power control center panels
- Process control
- Original Equipment Manufacturers (OEMs)
- HVAC & building management system
- Remote monitoring

# TECHNICAL SPECIFICATIONS

Meter Type		Output		
3Ph4W/ 3Ph3W (site selectable)		<b>Communication Output RS485</b>		
<b>Input</b>		Interface	RS485	
<b>Voltage</b>		Parity	None, Odd, Even (Selectable)	
Direct Voltage	20V to 350V (L-N) or 34V to 620V (L-L) @ 240V Nominal Voltage	Baud Rate	9600, 19200, 38400 (Selectable)	
PT Secondary (Nominal Voltage)	63.5V L-N to 240V L-N Configurable for 3Ph3W or 3Ph4W system	Start bit	1	
Burden	0.5VA per phase	Stop bit	1, 2 (Selectable)	
PT Ratio	1 to 9999 Programmable	Protocol	Modbus-RTU	
Overload	1.2 x Nominal Voltage (Continuous) 1.5 x Nominal Voltage (3 sec)	<b>Relay Output (Optional in lieu of pulse o/p)</b>		
<b>Current</b>		AC/DC Rating	AC - 250V, 5A, DC - ±30V, 5A	
Direct Current	0.02A to 6A	Relay Set Point	High Side or Low Side Option	
Secondary Current	1 to 5A	Relay O/P Parameters [Field Selectable]	Phase Volt / Avg. Volt / Phase Current / Avg. Current / Sys. Freq. / Phase Watt / Sys. Watt / Phase VAR / Sys. VAR / Phase VA / Sys. VA / Phase PF / Sys. PF	
Burden	0.25VA per phase	Relay Contact Type	SPNO [Factory Default], SPNC [Contact Factory]	
CT Ratio	1 to 9999 Programmable	<b>Pulse Output (Optional in lieu of relay o/p)</b>		
Overload	For 5A CT: 8A (Continuous) For 1A CT: 2A (Continuous) 50A (3sec)	Type	WH	
Starting Current	10 mA	Pulse rate	3600 pulses per Energy	
Frequency	45 to 65 Hz	Pulse duration	40 mSec ± 10%	
<b>DG Sense</b>	100-265VAC (to select DG Energy)	Output Type	Open collector [External Excitation Required]	
<b>Display &amp; Keys</b>		Rating	24 VDC @ 20 mA	
Display	1 line 8 digit 0.36" [9.144 mm], 7-segment LED Phase healthy & reversal indication Various energy parameters [Wh, VARh, VAh, DG]	<b>Auxiliary Power Supply</b>		
Status LED Indication	Kilo & Mega Indication Alarm and RS485 communication Energy Pulse output	Power Supply	85-265VAC, 50/60Hz or 100-300VDC	
Keys	PROG/Enter, Esc/Shift, UP, Down	Burden	<3VA	
<b>Calculated Parameters</b>		<b>Isolation (Withstanding voltage)</b>		
<b>Over Display &amp; Modbus</b>		Between primary terminals* and secondary terminals**: <b>At least 2000 V AC for 1 minute</b> Between primary terminals*: <b>At least 2000 V AC for 1 minute</b> Between secondary terminals**: <b>At least 2000 V AC for 1 minute</b>		
Total Energy	Active Energy, Energy Overflow Count	* Primary terminals indicate Aux Supply, voltage i/p, current i/p & EB/DG input ** Secondary terminals indicate Communication o/p and Pulse/Relay o/p <b>Insulation resistance:</b> 20MΩ or more at 500 V DC between terminals		
EB - Electricity Board	Reactive Energy, Energy Overflow Count	<b>Environmental</b>		
DG - Diesel Generator	Apparent Energy, Energy Overflow Count	Operating temperature	0 to 55 °C	
<b>Over Modbus only</b>		Storage temperature	-10 to 70°C	
Voltage	L1-L2, L2-L3, L1-L3 and Average (3Ph3W & 3Ph4W) L1-N, L2-N, L3-N & average (1Ph & 3Ph4W)	Relative Humidity	30 to 95% RH non-condensing	
Current	All phase currents & their average	Warm up time	5 minutes	
PF	Phase wise and System PF, Phase Angle	<b>Physical</b>		
Frequency	System Frequency	Mounting Type	Panel mount	
Power (Phase wise & Total)	Active Power Reactive Power Apparent Power	Size (in mm)	100 (H) x 100(W) x 55 (D)	
<b>Special Features</b>		Front Bezel (in mm)	100 (H) x 100(W)	
<b>Over Modbus only</b>		Panel cutout (in mm)	92 (H) x 92(W)	
ON Hour		Depth behind panel	50 mm	
EB - Load Hour	up to 65000 hours Recording	Material	ABS	
DG- Load Hour		Accessory	2 Panel mount clamps	
PINTR Power	up to 65000 PINTR counts	Weight	0.3 Kg	
Interruption count		Enclosure Protection	IP50 front fascia; Overall IP20	
% Unbalance	Voltage Unbalance % & Current Unbalance %	Terminal & Cable Size	Barrier Type terminal Cable Size [3 mm <sup>2</sup> ]	
<b>Accuracy</b>				
Voltage	±0.5% of reading	<b>Dual Source Energy Measurement on 3Ph4W System</b>		
Current	±0.5% of reading			
Frequency	±0.5% of reading			
Power Factor	±0.5% of FS			
Active Power* (≥0.02 of Ib)	±1.0% of reading ± 0.01% of FS			
Reactive Power* (≥0.02 of Ib)	±2.0% of reading ± 0.01% of FS			
Apparent Power* (≥0.02 of Ib)	±2.0% of reading ± 0.02% of FS			
Active Energy*	Class 1.0 as per IS 13779/ IEC 62053-21			
Reactive Energy*	Class 2.0 as per IS 13779			
Apparent Energy*	Class 2.0			
(*PF 0.5 Lag to 1.0 to 0.8 Lead Applicable for Power & Energy Parameter)				
<b>Ordering code</b>				
<b>Model</b>	<b>Accuracy</b>	<b>Communication</b>	<b>Dual source</b>	<b>Output</b>
EM 2140	S Class 1.0	1 RS485 Modbus	N None 1 DG	N None 1 Pulse Output 2 Relay Output