



2160-A Multifunction Power & Energy Meter



Available In Class 0.2s/ 0.5s/ 1.0 Energy Accuracy

Masibus 2160-A is an easy-to-use, cost effective electrical energy meter that offers all the basic measurement capabilities required for monitoring an electrical installation.

2160-A is available in two display options either bright LED or large multi-line backlit LCD panel for superior readability in poor lighting conditions. It provides four parameters display at a same time.

Based on field requirement 2160-A offers various accuracy class options like Class 0.2s / Class 0.5s Energy accuracy as per IS14697/ IEC 62053-22 and Class 1.0 accuracy as per IS 13779/ IEC 62053-21.

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

2160-A provides four-quadrant energy measurement along with ON (working) hour, RUN (Load) Hour, thus helping to measure and control energy cost.

2160-A provides RS485 port supporting Modbus-RTU protocol for communication. More than basic metering, it optionally provides THD measurements, Maximum Demand and Programmable pulse output.

Along with Maximum Demand option 2160-A can store Power Interruption count with (Last Power OFF & Latest Power ON) Time & Date

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

Features

- Available in Accuracy class 1.0 as per IS 13779/ IEC 62053-21
- Optional Accuracy class 0.5s or 0.2s as per IS14697/ IEC 62053-22
- Field programmable CT/PT primary & secondary values
- True RMS measurement
- More than 100 Electrical parameters
- 4 lines 4 digit high-visibility LED display 0.4" [10mm] to display various parameters OR Optional large multi-line backlit LCD panel
- Isolated RS485 (Modbus-RTU protocol)
- Digital pulse output for energy
- Auto Scaling from Kilo to Mega to Giga watt
- Auto Scrolling feature for easy readability for all parameters
- Favorite page Store feature
- Store energy register efficiently during power failure.
- Four Quadrant measurement for PF, Power & Energy (Active & Reactive)
- ON Hour, RUN HOUR & IDLE HOUR register in Non-Volatile Memory
- Password Protection for set parameters

Applications

- Control & Relay Panels
- Motor Control Center Panels
- Power Control Center Panels
- Process Control
- DG Set panels
- Original Equipment Manufacturers (OEMs)
- HVAC & Building Management System
- Energy Management System (EMS)
- HV & LV Switchgear Panels

TECHNICAL SPECIFICATIONS

Meter Type		Pulse Output (Optional)			
3Ph4W/ 3Ph3W (Site selectable)		Type	WH/ VARH/ VAH		
Input		AC/DC Ratings	24VDC, 20mA		
		Pulse rate	Programmable from 100 to 60000 pulses per Energy		
Voltage		Pulse duration	20 mSec ± 10%		
Direct Voltage	20 to 350V (L-N) or 34V to 620V (L-L) @ 240V Nominal Voltage	Output Type	Open collector [External Excitation Required]		
PT Secondary (Nominal Voltage)	63.5V L-N, 110V L-N or 240V L-N (Site selectable) Configurable for 3Ph3W or 3Ph4W system	Accuracy			
Burden	<0.2VA per phase	Class 0.2 Optional		Class 0.5 Optional	
PT Ratio	1 to 9999.999 Programmable			Class 1.0 (Standard)	
Overload	1.2 x Nominal Voltage (Continuous)	Voltage	0.25% of reading		
Current		Current	0.1% of reading	0.2% of reading	0.5% of reading
Secondary Current	1 or 5A (Site selectable)	Frequency	±0.01Hz		
Burden	<0.2VA per phase	Power Factor	0.2% of FS	0.25% of FS	0.5% of FS
CT Ratio	1 to 9999.999 Programmable	Active Power*	0.2% of reading +/- 0.01% of FS	0.3% of reading +/- 0.01% of FS	1.0% of reading +/- 0.01% of FS
Overload	For 5A CT: 8A Continuous/ 50A for 3sec For 1A CT: 2A Continuous/ 50A for 3sec	Reactive Power*	0.2% of reading +/- 0.02% of FS	0.5% of reading +/- 0.02% of FS	1.0% of reading +/- 0.02% of FS
Starting Current	0.1% of Nominal Current	Apparent Power*	0.2% of reading +/- 0.02% of FS	0.3% of reading +/- 0.02% of FS	1.0% of reading +/- 0.02% of FS
Frequency	45 to 65 Hz	Active Energy*	Class 0.2s as per IS14697/ IEC 62053-22	Class 0.5s as per IS14697/ IEC 62053-22	Class 1.0 as per IS13779/ IEC 62053-21
Display & Keys		Reactive Energy*	Class 0.2s as per IS14697	Class 0.5s as per IS14697	Class 1.0 as per IEC 62053-23
LED	4 line 4 digit 0.4" [10mm] 7-segment Display [3 line 4 digit in Red & 1 line 4 digit in Green] 3mm Round LED for Parameter Indication Bar type LED for '-' indication & % Load	Apparent Energy*	Class 0.2s	Class 0.5s	Class 1.0
LCD Panel (Optional)	Large multi-line backlit LCD Panel 3 lines 7 digits – Height: 9.1 x Width: 5.15 mm last line of 9 digits – Height: 7 x Width: 3.97 mm Bar Graph for % Load for each phase	(*PF 0.5 Lag-1.0 - 0.8 Lead Applicable for Power & Energy Parameter)			
Keys	PROG/Enter, Esc/Shift, UP, Down	Auxiliary Power Supply			
Calculated Parameters		Power Supply	85-265VAC, 50/60Hz or 100-300VDC		
Voltage	L1-L2, L2-L3, L1-L3 and Average (3Ph3W & 3Ph4W) L1-N, L2-N, L3-N & average (1Ph & 3Ph4W)	Burden	Less than 4VA for LED Display Less than 3VA [LCD Panel with Backlight], Less than 2VA [LCD Panel w/o Backlight through Configuration]		
Current	All phase currents & their average (mA, A, kA) Calculated Neutral Current for 3P4W Calculated Y Phase Current for 3P3W [For calculated Current consider it when All other phases are > 0.2 A]	Isolation (Withstanding voltage)			
Frequency	System Frequency	▪ Between primary terminals* and secondary terminals**: At least 2500 V AC for 1 minute			
Power Factor	Phase wise PF & Average PF	▪ Between primary terminals*: At least 2500 V AC for 1 minute			
Phase Angle	Phase wise	▪ Between secondary terminals**: At least 2500 V AC for 1 minute			
Power (Phase wise & Total)	Active Power (W, KW & MW) Reactive Power (VAR, KVAR & MVAR) Apparent Power (VA, KVA & MVA)	* Primary terminals indicate Aux Supply voltage i/p and current i/p			
Energy (Phase wise & Total)	Active Energy for Import & Export (Separate) Reactive Energy for Import & Export (Separate) Apparent Energy	** Secondary terminals indicate Communication o/p and Pulse o/p			
Demand	Maximum Demand on KW/KVA (Block/Sliding)	Insulation resistance: 200MΩ or more at 500 V DC between power terminals and grounding terminal			
Power Quality	Harmonics for each Voltage and Current (3 rd to 15 th odd) THD for Voltage & Current (Phase wise)	Physical			
Special Features		Mounting Type	Panel mount		
Real clock & date		Size (in mm)	96 (H) x 96(W) x 64 (D)		
Percentage Voltage & Current Unbalance		Front Bezel (in mm)	96 (H) x 96(W)		
ON hour, LOAD hour, IDLE hour	up to 65000 hours Recording	Panel cutout (in mm)	92 (H) x 92(W)		
PINTR Power Interruption count	up to 65000 PINTR counts	Depth behind panel	64 mm		
PINTR Time Stamp	Last Power OFF & Latest Power ON (Available with MD option only)	Material	ABS		
Last day Energy for Total [with MD+RTC option only], Min-Max Value (V, I, PF, Frequency, Total w, Total VAR, Total VA)	Time & Date stamp	Accessory	2 Panel mount clamps		
Output		Weight	0.5 Kg		
Communication Output RS485		Enclosure Protection	IP-51 (Front Fascia), IP-20 Over all		
Interface	RS485	Terminal & Cable Size	Barrier Type terminal Cable Size [3.3 mm ² (12 - 22 AWG)]		
Baud Rate	9600, 19200, 38400 (Selectable)	Over voltage category	CATIII 300V max		
Start bit	1	Pollution degree	2		
Parity bit	None, Odd, Even (Selectable)	Insulation class	2		
Stop bit	1, 2 (Selectable)	Environmental			
Protocol	Modbus-RTU	Working temperature	0 to 55 °C		
		Storage temperature	-10 to 70°C		
		Relative Humidity	30 to 95% non-condensing		
		Warm up time	5 minutes		
		Electromagnetic Interference / Compatibility (EMI/EMC)			
		Electrostatic Discharge	IEC 61000-4-2 [As per IEC61326-1 & IEC62052-11]		
		Fast Transient Burst	IEC 61000-4-4 [As per IEC61326-1]		
		Surge Voltage	IEC 61000-4-5 [As per IEC61326-1 & IEC62052-11]		
		Conducted Susceptibility	IEC 61000-4-6 [As per IEC61326-1 & IEC62052-11]		
		Power Frequency Magnetic Field	IEC 61000-4-8 [As per IEC61326-1]		
		Voltage Dip and Short Interruption	IEC 61000-4-11 [As per IEC61326-1]		
		Conducted Emission	CISPR11 [As per IEC61326-1], CISPR22 [As per IEC62052-11]		
		Radiated Emission	CISPR11 [As per IEC61326-1], CISPR22 [As per IEC62052-11]		
		Impulse Voltage	IEC 60060-1		

TECHNICAL SPECIFICATIONS

Ordering code

Model	Accuracy		Communication		Max. Demand		THD		Output		Display Type	
2160-A	X		X		X		X		X		X	
	S	Class 1.0	1	RS485 Modbus	N	None	N	None	N	None	LED	7 seg LED [4 x 4]
	1	Class 0.5s			Y	Required	Y	Required	1	Pulse Output	LCP	LCD Panel
	2	Class 0.2s										