selec

EM2M-1P-C-100A

OP639-V03

PRODUCT PROFILE



SPECIFICATIONS

Display	: 1 Row of 7 Digits LCD Display with backlight
LCD indications	: ⇌ - Communication in Progress : **MD** - Maximum Demand of Power : **IP** - Import Energy : **EP** - Export Energy
LED Indication	: **INT** - Integration of Energy
Wiring Input	: 1Ø - 2W
Rated Input Voltage	: 176-276V AC (Self Powered)
Frequency Range	: 45 to 65 Hz
Rated Input Current	: Ib : 10A, Imin : 0.5A, Imax : 100A
Display Update Time	: 1 sec for all parameters
Display Scrolling	: Auto / Manual (Programmable)
Power Consumption	: Less than 8VA
Environmental Conditions	: Indoor use : Altitude up to 2000 meters : Pollution degree II
Temperature	: Operating : -10°C to 55°C : Storage : -20°C to 75°C
Humidity	: Up to 85% (non - condensing)
Mounting	: DIN Rail
Weight	: 150gms
Output	: Pulse Output : Voltage Range : External 24V DC Max : Current Capacity : 100mA Max
Communication	: RS485 MODBUS RTU
Tightening Torque	: 1.5 Nm to 2 Nm

ORDER CODE INFORMATION

Product	Outputs	Certification
EM2M-1P-C-100A	RS485 (Modbus RTU) & Pulse O/P	CE

SERIAL COMMUNICATION

Interface standard and protocol	RS485 AND MODBUS RTU
Communication address	1 to 255
Transmission mode	Half duplex
Data types	Float and Integer
Transmission distance	500 Meter maximum
Transmission speed	9600 &19200 (in bps)
Parity	None, Odd, Even
Stop bits	1 or 2

RESOLUTION

Energy	0.01k

ACCURACY

Measurement	Accuracy
Voltage	±0.5% of Full scale
Current	±0.5% of Nominal
Power Factor	±0.01 of Full scale
Frequency	±0.1% of Full scale
Active Power	1.00 % of Full scale
Reactive Power	1.00 % of Full scale
Apparent Power	1.00 % of Full scale
Active Energy	Class 1
Reactive Energy	Class 2
Apparent Energy	Class 1
Demand Active Power	1.00 % of Full scale
Demand Reactive Power	1.00 % of Full scale
Demand Apparent Power	1.00 % of Full scale

⚠ SAFETY PRECAUTIONS

All safety related notifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating person as well as the instrument.

If the equipment is not used in a manner specified by the manufacturer it might impair the protection provided by the equipment.

- Do not use the equipment if there is any mechanical damage.
- Ensure that the equipment is supplied with correct voltage.

⚠ CAUTION :

1. Read complete instructions prior to installation and operation of the unit.
2. Risk of electric shock.
3. The equipment in its installed state must not come in close proximity to any heating sources, oils, steam, caustic vapors or other unwanted process by products.

WIRING GUIDELINES

⚠ **WARNING :**

1. To prevent the risk of electric shock, power supply to the equipment must be kept OFF while doing the wiring Arrangement.
2. Wiring shall be done strictly according to the terminal layout. Confirm that all connections are correct.
3. Use lugged terminals.
4. To reduce electromagnetic interference use of wires with adequate rating and twists of the same in equal size shall be made with shortest connections.
5. Layout of connecting cables shall be away from any internal EMI source.
6. Cable used for connection to power source, must have a cross section of 25mm2 (13 to 11AWG ; 75°C(min)). These wires shall have current carrying capacity of 100A.
7. Copper cable should be used (Stranded or Single core cable).
8. Before attempting work on device, ensure absence of voltages using appropriate voltage detection device.

INSTALLATION GUIDELINES

⚠ **CAUTION :**

1. This equipment, being buit-in type, normally becomes a part of main control panel and in such case the terminals do not remain accessible to the user end after installation and internal wiring.
2. Conductors must not come in contact with the internal circuitry of the equipment or else it may lead to a safety hazard that may in turn endanger life or cause electrical shock to the operator.
3. The equipment shall not be installed in environmental condition other than those mentioned in this manual.
4. Connector screw must be tightened after installation.

CONFIGURATION

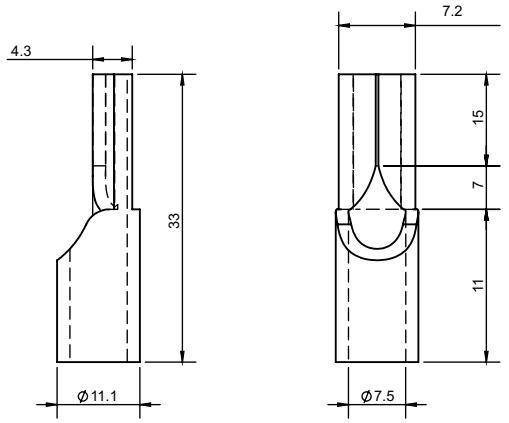
- There are 2 dedicated keys(Scroll & Enter) to enter into configuration Menu / change settings.
  The settings should be done by a professional, after going through this user manual and after having understood the application situation.

For the configuration setting mode :

- Press the (Scroll & Enter) keys for 3 sec to enter or exit from the Configuration menu.
- In online mode, press Scroll key to move on to next page.
- In configuration mode, press Enter key to change the parameters value / page and Scroll key to enable the editing and save the changes in configuration.
- Press the Enter key to check Serial no..
- Press the Enter key for 3 sec for communication Lock.

NOTE : Above 70A current pulse duration should be set to 0.05sec.

LUG DESCRIPTION



LUG TYPE : 25mm2 Copper flat pin type lug

(NOTE : to be Wired with LUG only**)**

Config. page	Function	Range or Selection	Factory Setting
1	Password	0000 to 9998	1000
2	Change Password	No / Yes	No
2.1	New Password	0000 to 9998	0001
3	Demand Interval Method	Sliding / Fixed	Sliding
4	Demand Interval Duration	1 to 30	15
5	Demand Interval Length	1 to 30	1
6	POP	kWh - Total/IP/EP kVArh -Total/IP/EP	Total VArh
7	Pulse Weight	1/10/100/1000	1000
8	Pulse Duration	0.05 to 2 sec	0.1
9	Slave Id	1 to 255	1
10	Baud Rate	9600, 19200 bps	9600 bps
11	Parity	None, Odd, Even	None
12	Stop Bit	1 or 2	1
13	Backlight	0 to 7200	0
14	Factory Default	No / Yes	No
15	Reset	No / Yes	No
15.1	Password	0001 to 9999	1001
15.2	Reset kWh	No / Yes	No
15.3	Reset kVArh	No / Yes	No
15.4	Reset kVAh	No / Yes	No
15.5	Reset Max Demand	No / Yes	No

For resetting energy parameters user will be prompted for password. If correct password is entered, the user will be able to reset parameters. This password will be greater than the configuration password by 1.

AUTOMATIC / MANUAL

Long press scroll key to toggle between Automatic/Manual mode.

MODBUS REGISTER ADDRESSES LIST

Readable parameters for Communication [Length (Register) : 2; Data Structure : Float (Swapped)]

Address	Hex Address	Parameter
30000	0x00	Total Active Energy
30002	0x02	Import Active Energy
30004	0x04	Export Active Energy
30006	0x06	Total Reactive Energy
30008	0x08	Import Reactive Energy
30010	0x0A	Export Reactive Energy
30012	0x0C	Apparent Energy
30014	0x0E	Active Power
30016	0x10	Reactive Power
30018	0x12	Apparent Power
30020	0x14	Voltage L-N
30022	0x16	Current
30024	0x18	Power Factor
30026	0x1A	Frequency
30028	0x1C	Max Demand Active Power
30030	0x1E	Max Demand Reactive Power
30032	0x20	Max Demand Apparent Power

Energy rollover counter addresses : Energy rollover counter will increment when energy is roll over from 99999.99 to 0.
[Data Structure: Integer]

30149	0x95	Total kWh
30150	0x96	Import kWh
30151	0x97	Export kWh
30152	0x98	Total kVArh
30153	0x99	Import kVArh
30154	0x9A	Export kVArh
30155	0x9B	kVAh

PULSE OUTPUT DESCRIPTION

Pulse Output	Type	Description	Pulse width
POP1	Fixed 1000 Pulses	Per kWh	0.05 to 2 sec
POP2	Configurable 1/10/100/1000 Pulses	Per kWh - Total/IP/EP Per kVArh - Total/IP/EP	0.05 to 2 sec

FRONT PANEL DESCRIPTION

FOR EM2M-1P-C-100A

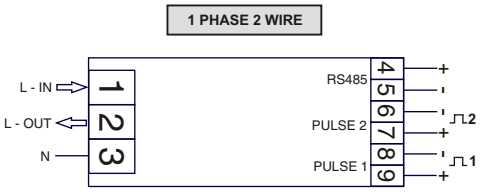
Key Press	Online Page Description	
Press	1st screen	Displays Total Active Energy
	2nd screen	Displays Import Active Energy
	3rd screen	Displays Export Active Energy
	4th screen	Displays Total Reactive Energy
	5th screen	Displays Import Reactive Energy
	6th screen	Displays Export Reactive Energy
	7th screen	Displays Apparent Energy
	8th screen	Displays Active Power
	9th screen	Displays Reactive Power
	10th screen	Displays Apparent Power
	11th screen	Displays Voltage L-N
	12th screen	Displays Current
	13th screen	Displays Power Factor
	14th screen	Displays Frequency
	15th screen	Displays Max Demand Active Power
	16th screen	Displays Max Demand Reactive Power
	17th screen	Displays Max Demand Apparent Power

MODBUS REGISTER ADDRESSES LIST

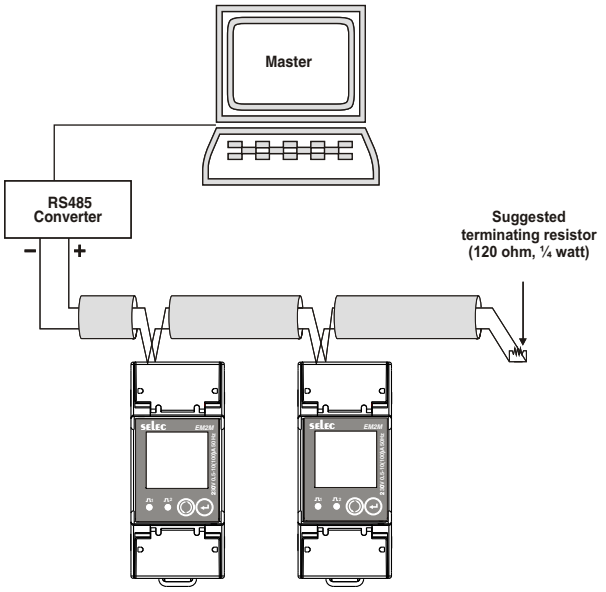
Readable / Writable Parameters : [Data Structure : Integer]

Address	Hex Address	Parameter	Range		Length (Register)
			Min value	**Max value**	
40000	0x00	Password	0	9998	1
40001	0x01	Slave ID	1	255	1
			Value	**Meaning**	
40004	0x04	Demand Interval Method	0	Sliding	1
			1	Fixed	1
			Min Value	**Max Value**	
40005	0x05	Demand Interval Length	1	30	1
40006	0x06	Demand Interval Duration	1	30	1
			Value	**Meaning**	
40007	0x07	POP	0	Total Wh	1
			1	Total VArh	1
			2	IP Wh	1
			3	EP Wh	1
			4	IP VArh	1
			5	EP VArh	1
40008	0x08	Pulse Weight	0	1	1
			1	10	1
			2	100	1
			3	1000	1
			Min Value	**Max Value**	
40009	0x09	Pulse Duration	0.05	2.00	1
			Value	**Meaning**	
40010	0x0A	Baud Rate	0	9600	1
			1	19200	1
40011	0x0B	Parity	0	None	1
			1	Odd	1
			2	Even	1
40012	0x0C	Stop bit	0	1	1
			1	2	1
			Min value	**Max Value**	
40013	0x0D	Backlight OFF	0	7200	1
			Value	**Meaning**	
40014	0x0E	Factory Default	1	Set to Factory Default	1
40040	0x28	Reset kWh	1	Reset Active Energy	1
40041	0x29	Reset kVArh	1	Reset Reactive Energy	1
40042	0x2A	Reset kVAh	1	Reset Apparent Energy	1
40043	0x2B	Reset Max Demand	1	Reset Demand Power	1

TYPICAL WIRING DIAGRAM

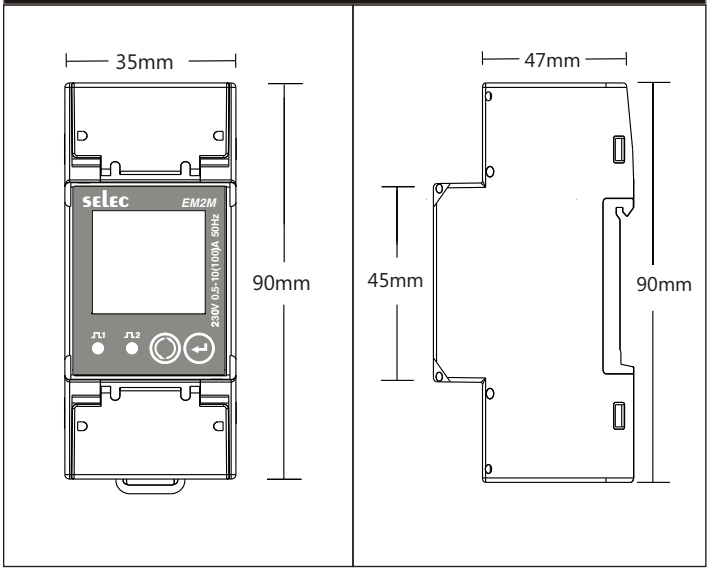


CONNECTION DIAGRAM FOR COMMUNICATION



Contact sales for PC based monitoring software to communicate with the meters.

MECHANICAL DIMENSIONS



(Specifications are subject to change, since development is a continuous process.)

Selec Controls Pvt. Ltd.

Factory Address : EL-27/1, Electronic Zone, TTC Industrial Area, MIDC, Mahape, Navi Mumbai - 400 710, India.
Website : www.selec.com
For Sales & Support,
Tel. No. : +91-22-41418468 / 452
Mob. No. : +91-9136977315, **Email :** sales@selec.com
For Service,
Tel. No. : +91-7498077172 / +91-7400069545
Email : service@selec.com