

EM35xx Series
Compact Power and Energy Meters
(Pulse, Modbus, BACnet)

Quick Installation Guide
Z206079-0F
1121



Excerpts for additional information, please refer to the full installation guide at www.se.com

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Follow safe electrical work practices. See NFPA 70E in the USA, CSA 2462 in Canada, or applicable local codes.
- Read and understand the instructions before installing the product. Follow the instructions during installation.
- Installation, wiring, testing or service must be performed only by qualified persons in accordance with all applicable codes and regulations.
- Install the product in an appropriate electrical and fire enclosure per local regulations.
- Do not use the product for life or safety applications.
- Do not install the product in hazardous or classified locations.
- Do not exceed the product's ratings or maximum limits.
- The product may use multiple voltage/power sources.
- Turn off ALL power supplying equipment before working on or inside the equipment.
- Use a properly rated voltage sensing device to confirm that all power is off.
- Do NOT depend on the product for voltage indication.
- Products rated only for basic insulation must be installed on insulated conductors.
- Current transformer secondaries (current mode) must be shorted or connected to a burden at all times.
- Remove all wire scraps and tools, replace all doors, covers and protective devices before powering the equipment.

Failure to follow these instructions will result in death or serious injury.

A qualified person is one who has skills and knowledge related to the construction and operation of this electrical equipment and installations, and has received safety training to recognize and avoid the hazards involved. NEC Article 100

If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired. No responsibility is assumed by the manufacturer for any consequences arising out of the use of this material.

The safety of any system incorporating this equipment is the responsibility of the assembler of the system.

WARNING: LOSS OF CONTROL. Networked devices can interfere with critical control functions. Refer to NEMA ICS 1.1 (latest edition), Safety Guidelines for the Application, Installation, and Maintenance of Solid State Controls or its equivalent in your country, language, and/or location. Provide a device to disconnect this product from the supply. Place it in close, easy reach of the product, and mark it as the disconnecting device. The device shall meet IEC 60947-1 and IEC 60947-3 and be suitable for the application. In the US and Canada, disconnecting fuse holders can be used. Provide overcurrent protection for supply conductors with approved current limiting devices suitable to protect the wiring.

For use in an Installation Category III or II, Pollution Degree 2 or better environment only. See full install for definitions.

FCC PART 15 INFORMATION

EM35xx has been tested by the manufacturer and found to comply with the limits for a Class B Digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Modifications to this product without the express authorization of the manufacturer nullify this statement.

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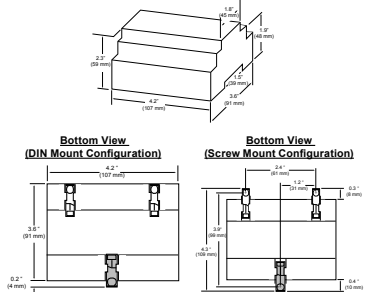
Specifications

Measurement Accuracy:	IEC 62053-22 Class 0.2S, ANSI C12.20 0.2%
Real Power & Energy	IEC 62053-22 Class 0.2S, ANSI C12.20 0.2%
Input Voltage Characteristics:	Minimum 90 V _{L-N} (156 V _{L-L}) for stated accuracy;
Measured AC Voltage	UL Maximums: 600 V _{L-L} (347 V _{L-L}); CE Maximum: 300 V _{L-L}
Impedance	2.5 MΩ ± 25 MΩ
Frequency Range	45 to 65 Hz
Input Current Characteristics:	0 to 0.333 VAC or 0 to 1.0 VAC (+20% over-range)
Measurement Input Range	10.6 kΩ (1/3 V mode) or 32.1 kΩ (1 V mode)
Impedance	10.6 kΩ (1/3 V mode) or 32.1 kΩ (1 V mode)
Control Power:	AC
AC	5 VA max.; 90 V min.
UL Maximums:	600 V _{L-L} (347 V _{L-L})
CE Maximum:	300 V _{L-L}
DC*	3 W max.; UL and CE: 125 to 300 VDC
Ride Through Time	100 msec at 120 VAC
Mechanical Characteristics:	
IP Degree of Protection (IEC 60529)	IP40 front display; IP20 Meter
Terminal Block Screw Torque	0.37 ft-lb (0.5 N-m) nominal
Terminal Block Wire Size	0.44 ft-lb (0.6 N-m) max.
Rail	14 to 24 AWG (0.2 to 2.1 mm)
Terminal Block Wire Size	T35 (35 mm) DIN Rail per EN 50022
Environmental Conditions:	
Operating Temperature	-30° to 70°C (-22° to 158°F)
Storage Temperature	-40° to 85°C (-40° to 185°F)
Humidity Range	<95% RH (non-condensing)
Altitude of Operation	5 km max.
Mounting Location	Not suitable for wet locations. For indoor use only.
Metering Category:	
North America	CAT III; for distribution systems up to 347 V _{L-L} (200 V _{L-L})
CE	CAT III; for distribution systems up to 300 V _{L-L}
Dielectric Withstand	Per UL 508, IEC/EN 61010-1
Conducted and Radiated Emissions	FCC part 15 Class B, EN 55011/EN 61000 Class B (residential and light industrial)
Conducted and Radiated Immunity	EN 61000 Class A (heavy industrial)
Agency Approvals:	
US and Canada (cULus)	UL 508 (open type device)/CSA 22.2 No. 14-05
Europe (CE)	IEC/EN 61010-1

* External DC current limiting is required, see fuse recommendations.

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Dimensions



Product Identification

EM35xx:

- 02 = Unidirectional metering, pulse and alarm outputs only
- 50 = Unidirectional metering, Modbus full data set, pulse and alarm outputs
- 55 = Bidirectional metering, Modbus full data set, data logging, pulse and alarm outputs
- 60 = Unidirectional metering, BACnet full data set, data logging, and two pulse inputs
- 61 = Unidirectional metering, BACnet full data set, one alarm output, and one pulse input

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Installation

The meter can be mounted in two ways: on standard 35 mm DIN rail or screw-mounted to the back of the enclosure.

- A. DIN Rail Mounting**
- Disconnect and lock out power. Use a properly rated voltage sensing device to confirm power is off.
 - Attach mounting clips to the underside of the housing by sliding them into the slots from the inside. The stopping pegs must face the housing, and the outside edge of the clip must be flush with the outside edge of the housing.
 - Snap the clips onto the DIN rail. See diagram of the underside of the meter.
 - To prevent horizontal shifting across the DIN rail, use two end stop clips.
- B. Screw Mounting**
- Disconnect and lock out power. Use a properly rated voltage sensing device to confirm power is off.
 - Attach the mounting clips to the underside of the housing by sliding them into the slots from the outside. The stopping pegs must face the housing, and the screw hole must be exposed on the outside of the housing.
 - Use three #8 screws (not supplied) to mount the meter to the back of the enclosure. See diagram of the underside of the meter.

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Supported System Types

CTs		Voltage Connections		System Type		Phase Loss Measurements		Wiring Diagram	
Num. of wires	Qty	ID	Qty	ID	Type	Modbus Register 130 or BACnet Analog Value object #V2	User Interface: SETUP/5 SYS	VLL VLN Balance	Diagram number
Single-Phase Wiring									
2	1	A	2	A	L-N	10	1L + 1n	AN	1
2	1	A	2	A	L-L	11	2L	AB	2
3	2	A, B	3	A, B, N	L-L with N	12	2L + 1n	AB, AN, BN	3
Three-Phase Wiring									
3	3	A, B, C	3	A, B, C	Delta	31	3L	AB, BC, CA	4
4	3	A, B, C	4	A, B, C, N	Grounded Wye	40	3L + 1n	AB, AN, BN, CN	5, 6

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To avoid distortion, use parallel wires for control power and voltage inputs.

The following symbols are used in the wiring diagrams on the following pages.

Symbol	Description
	Voltage Disconnect Switch
	Fuse (installer is responsible for ensuring compliance with local requirements. No fuses are included with the meter.)
	Earth ground
	Current Transducer
	Potential Transformer
	Protection device containing a voltage disconnect switch with a fuse or disconnect circuit breaker. The protection device must be rated for the available short-circuit current at the connection point.

NOTICE

RISK OF EQUIPMENT DAMAGE

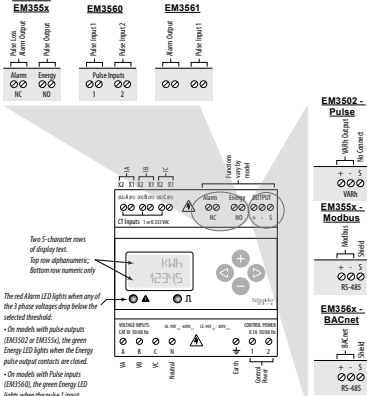
This product is designed only for use with 1 V or 0.333 V current transducers (CTs).

DO NOT USE CURRENT OUTPUT (e.g. 5A) CTs ON THIS PRODUCT.

Failure to follow these instructions can result in overheating and permanent equipment damage.

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Product Diagram



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