

EM35xxA Series

Compact Power and Energy Meters
(Pulse, Modbus, BACnet, LON)

For Use Only with METSECTRx Series Rope Style CTs

Quick Installation Guide
Z206842-0F
1121



Schneider
Electric



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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

1. Disconnect and lock out power. Use a properly rated voltage sensing device to confirm power is off.

2. 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.

3. Snap the clips onto the DIN rail.

See diagram of the underside of the meter.

4. To reduce horizontal shifting across the DIN rail, use two end stop clips.

B. Screw Mounting

1. Disconnect and lock out power. Use a properly rated voltage sensing device to confirm power is off.

2. 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.

3. 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 ID	User Interface: SETUP> S SYS	VLL	VLN	Balance	Diagram number
Single-Phase Wiring											
2	1	A	2	N	L-N	10	1L + 1n	AN		1	
2	1	A	2	B	L-L	11	2L	AB		2	
3	2	A, B	3	A, B, N	L-L, with N	12	2L + 1n	AB	AN	AN-BN	3
Three-Phase Wiring											
3	3	A, B, C	3	A, B, C	Delta	31	3L	AB, BC, CA	AB-BC, CA	4	
4	3	A, B, C	4	A, B, C, N	Ground-Wye	40	3L + 1n	AB, BC, CA	AN, BN, CN	AB-BC, CA	5, 6

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Specifications

Measurement Accuracy:	Real Power and Energy: IEC 62053-22 Class 0.2S, ANSI C12.20 0.2%
Input Voltage Characteristics:	Measured AC Voltage: Minimum 90V _{AC} (156V _{DC}) for stated accuracy; UL Maximums: 600V _{AC} (347V _{DC}), CE Maximum: 300V _{AC}
Impedance:	2.5 MΩ / 5 MΩ
Frequency Range:	45 to 65 Hz
Input Current Characteristics:	METSECTRx Series Rogowski style CTs only
Control Power:	AC: 5 VA max.; 90 V min. UL Maximums: 600V _{AC} (347V _{DC}) CE Maximum: 300V _{AC}
Ride Through Time:	3W max.; UL and CE: 125 to 300 Vdc 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
Rail:	14 to 24 AWG (0.2 to 2.1 mm ²) 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 (noncondensing)
Altitude of Operation:	3 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 _{AC} (600V _{DC}) CAT III; for distribution systems up to 300V _{DC}
CE:	CAT III
Dielectric Withstand:	Per UL 508, IEC/EN 61010-1
Conducted and Radiated Emissions:	FCC part 15 Class B, EN 55011/6
Conducted and Radiated Immunity:	EN 61000 Class A (heavy industrial)
Agency Approval:	US and Canada (cULus) UL 508 (open type device)/CSA 22.2 No. 3045 Europe (CE) IEC/EN 61010-1

* 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 from 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 (latest edition). Safety guidelines for the use of networked devices in critical control systems are available at www.nema.org/ics/.
Failure to follow these instructions will result in death or serious injury.

FCC PART 15 INFORMATION

NOTE: This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules.

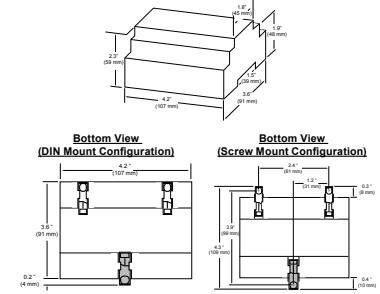
These limits are designed to provide reasonable protection against harmful interference in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause harmful interference to radio communications. It is the responsibility of the user to correct any interference that may be caused.

(1) The device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Modifications to this product without the express written notice of the manufacturer nullify this warranty.

Dimensions

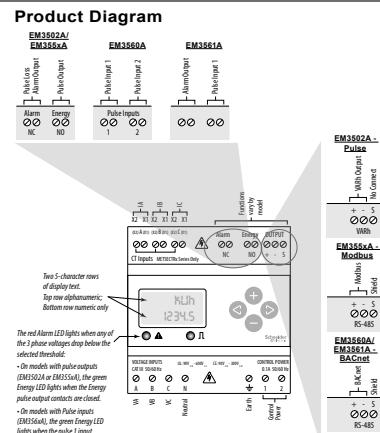


Product Identification

EM35xxA:	
02	= Unidirectional metering, pulse and alarm outputs only
05	= Unidirectional metering, Modbus full data set, pulse and alarm outputs
50	= 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

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

Product Diagram



NOTICE

RISK OF EQUIPMENT DAMAGE

This product is designed only for use with METSECTRx current transducers (CTs).

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

Failure to follow these instructions can result in equipment damage.

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Wiring

WARNING

RISK OF ELECTRIC SHOCK OR PERMANENT EQUIPMENT DAMAGE

CT terminals are referenced to the meter's neutral and may be at elevated voltages:

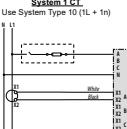
- Do not contact meter terminals while the unit is connected.
- Do not connect or short other circuits to the CT terminals.

Failure to follow these instructions may cause injury, death or equipment damage.

CTs are NOT polarity sensitive. No need to observe orientation.

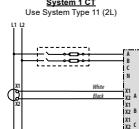
1. Turn off all power supplying this device and the equipment in which it is installed before working on the device or equipment.
2. Always use a properly rated voltage sensing device to confirm that all power is off.
3. Connect the CT output leads to the meter inputs. The white wire is the x1 lead. The METSECTR CT has an arrow indicating the load side.
4. Remove the clasp on one side of the CT and open it on the hinge.
5. Fit the Rogowski coil around the conductor, bringing the coil ends together.
6. Lock the coil by turning the ring clockwise as shown in the diagram at right.
7. Reconnect power to the panel.

Diagram 1: 1-Phase Line-to-Neutral 2-Wire



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Diagram 2: 1-Phase Line-to-Line 2-Wire



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Wiring

Diagram 3: 1-Phase Direct Voltage Connection 2 CT

Use System Type 12 (2L + 1n)

Diagram 4: 3-Phase 3-Wire 3 CT no PT

Use System Type 31 (3L)

Diagram 5: 3-Phase 4-Wire Wye Connection

Use System Type 40 (3L + 1n)

Diagram 6: 3-Phase 4-Wire Wye Connection

Use System Type 40 (3L + 1n)

Diagram 7: 3-Phase 4-Wire Wye Connection

Use System Type 40 (3L + 1n)

Direct Connect Control Power (DC Control Power)

DC Control Power from 125 VDC to 300 VDC (UL or L-L. Output to meet meter input requirements.)

Control Power Transformer (CPT) Connection

The Control Power Transformer may be wired L-N and CE max.)

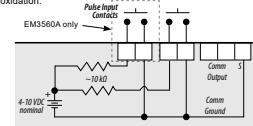
Fuse Recommendations:

Keep the fuses close to the power source (obey local and national code requirements). For selecting fuses and circuit breakers, use the following criteria:

- Select current interrupt capacity based on the installation category and fault current availability.
- Select over-current protection with a time delay.
- Use a voltage rating sufficient for the input voltage applied.
- Provide overcurrent protection and disconnecting means to protect the wiring and components. If none are provided, provide external circuit protection. Suggested: 0.5A, time delay fuses.
- The earth connection (G) is required for electromagnetic compatibility (EMC) and is not a protective earth ground.

Pulse Contact Inputs (EM356xA Only)

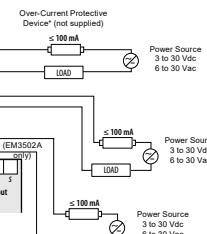
The EM3560A has two inputs with pulse accumulators for solid state or mechanical contacts in other sensors, such as water or gas flow meters. The EM3560A has one pulse input. These inputs are isolated from the measured circuits and referenced to the communication output shared terminal. Use with contacts that do not require current to remove oxidation.



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Solid State Pulse Output (EM3502A and EM355xA Only)

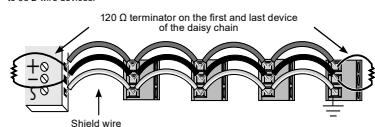
The EM3502A and EM355xA have one normally open (N.O.) K-Y Form A output and one normally closed (N.C.) output. One is dedicated to energy (W/H), and the other to Alarm. The EM3502A also provides an additional (N.O.) reactive energy (VARh) contact. See the Setup section for configuration information.



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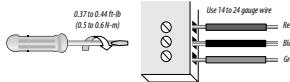
RS-485 Communications (EM355xA and EM356xA Only)

Daisy-chaining Devices to the Power Meter
The RS-485 slave port allows the power meter to be connected in a daisy chain with up to 63 2-wire devices.



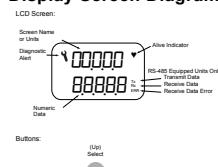
NOTES:

- The terminal's voltage and current ratings are compliant with the requirements of the EIA RS-485 communications standard.
- The RS-485 transceivers are $\frac{1}{4}$ unit load or less.
- RS-485+ has a 47 kΩ pull up to +5V, and RS-485- has a 47 kΩ pull down to ground.
- Wire the RS-485 bus as a daisy chain from device to device, without any stubs. Use 120 Ω termination resistors at each end of the bus (not included).
- Shield is not internally connected to Earth Ground.
- Connect Shield to Earth Ground somewhere on the RS-485 bus.
- Use 14 to 24 gauge (0.2 to 2.1 mm²) wire for all connections.
- When tightening terminals, apply the correct torque: 0.37 to 0.44 ft-lb (0.5 to 0.6 N·m).



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Display Screen Diagram



Initial Setup Instructions

These instructions assume the meter is set to factory defaults. If it has been previously configured, check all optional values. For more options and the full setup instructions, see the full installation guide for the specific model.

A. To Navigate to the Setup screens:

1. Press or repeatedly until SETUP screen appears.
2. Press to get to the PRSM screen.
3. Press to move through the digits. Use the or buttons to enter your password (the default is 0000).
4. Press to move to the first Setup screen (5 CT on EM3502A, 5 CPT on EM355xA, 5 SRC on EM356xA).
5. Use or to select the parameter screen you want to set.
6. After you set the parameters you want, use or to select the next Setup screen or to exit the Setup screens (return to SETUP).

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B. To Enter Modbus communication parameters (EM355xA model only):

1. Navigate to the 5 C0N (set communications) Setup screen (see section A).
2. Press to go to the 5 C0R screen and through the address digits. Use or to select the Modbus address (default is 00).
3. Press to accept the value and go to the BRUD screen. Use or to select the baud rate (default is 9600).
4. Press to go to the PR screen. Use or to select the parity (default is E8N).
5. Press to go back to the 5 C0N screen.

C. To Enter BACnet communication parameters (EM356xA models only)

1. Navigate to the 5 BRC (set BACnet) Setup screen (see section A).
2. Press to go to the 5 BCD screen and through the address digits. Use or to select the BACnet address (default is 0000).
3. Press to accept the value and go to the KBRD screen. Use or to select the baud rate (default is 9600).
4. Press to go to the 5 C screen and through the upper four digits of the Device Instance. Use or to select the ID digits (default is a pseudo-random number).
5. Press to accept the value and go to the 5 C0 screen and through the lower three digits of the Device Instance. Use or to select the ID digits (default is a pseudo-random number).
6. Press to accept the value and go back to the 5 BRC screen.

D. To Enter the CT (Current Transducer) input current ranges:

1. Navigate to the 5 CT (Set Current Transducer) Setup screen (see section A).
2. Press to go to the 5 CT1 screen and through the digits. Use or to select the CT size in amps (default is 3A).
3. Press to accept the value and go back to the 5 CT screen.

E. To Enter the service type to be monitored:

1. Navigate to the 5 S5S (Set System) Setup screen (see section A).

2. Press to go to the 5 S5T screen. Use or to select the configuration (see wiring diagrams - default is 3L-n).

3. Press to accept the value and go back to the 5 S5S screen.

F. To Enter the service type to be monitored:

1. Navigate to the 5 S5S (Set System) Setup screen (see section A).

2. Press to go to the 5 S5T screen. Use or to select the configuration (see wiring diagrams - default is 3L-n).

3. Press to accept the value and go back to the 5 S5S screen.

G. To Enter the service type to be monitored:

1. Navigate to the 5 S5S (Set System) Setup screen (see section A).

2. Press to go to the 5 S5T screen. Use or to select the configuration (see wiring diagrams - default is 3L-n).

3. Press to accept the value and go back to the 5 S5S screen.

H. To Enter the service type to be monitored:

1. Navigate to the 5 S5S (Set System) Setup screen (see section A).

2. Press to go to the 5 S5T screen. Use or to select the configuration (see wiring diagrams - default is 3L-n).

3. Press to accept the value and go back to the 5 S5S screen.

I. To Enter the service type to be monitored:

1. Navigate to the 5 S5S (Set System) Setup screen (see section A).

2. Press to go to the 5 S5T screen. Use or to select the configuration (see wiring diagrams - default is 3L-n).

3. Press to accept the value and go back to the 5 S5S screen.

China RoHS Compliance Information (EFUP Table)

部件名称	有害物质	有害物质 - Hazardous Substances
电子元件	无	无

该产品符合RoHS指令2011/65/EU关于RoHS的指令要求。

X 表示该有害物质至少在该部件的某一材料中的含量大于GB/T 26572规定的限量要求。

无此表示此部件没有该有害物质。

此表是根据EFUP制作的。

This table is made according to EFUP 1164.

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