

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



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 IES 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
NOTE: This equipment 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, and
(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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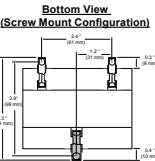
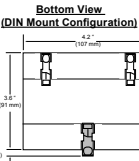
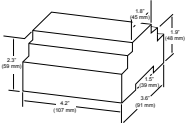
Specifications

Measurement Accuracy:	Real Power and Energy IEC 62053-22 Class 0.2S, ANSI C12.20 0.2%
Input Voltage Characteristics:	Minimum 90V _{AC} (156V _{AC}) for stated accuracy;
Measured AC Voltage:	UL Maximums: 600V _{AC} (347V _{AC}); CE Maximums: 300V _{AC}
Impedance:	UL Maximums: 600V _{AC} (347V _{AC}); CE Maximums: 300V _{AC}
Frequency Range:	2.5 MHz (5 MS) 45 to 65 Hz
Input Current Characteristics:	METSECTRx Series Rogowski style CTs only
Measurement Input Range:	Control Power:
AC:	5 VA max.; 90 V min.
UL Maximums:	600V _{AC} (347 V _{AC})
CE Maximum:	300V _{AC}
DC*	3W 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	0.37 ft lb (0.5 N m) nominal
Terminal Block Screw Torque:	0.44 ft lb (0.6 N m) max.
Terminal Block Wire Size:	14 to 24 AWG (0.2 to 2.1 mm ²)
Rail:	135 (35 mm) DIN Rail per EN 50322
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
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} /600 Vac
CE	CAT III; for distribution systems up to 300 V _{AC}
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

- EM35xxA:
- 02 = Unidirectional metering, pulse and alarm outputs only
 - 55 = Bidirectional metering, Modbus full data set, pulse and alarm outputs
 - 60 = Unidirectional metering, Modbus full data set, data logging, pulse and alarm outputs
 - 61 = Unidirectional metering, BACnet full data set, data logging, and two pulse inputs

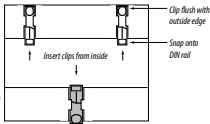
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Installation

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

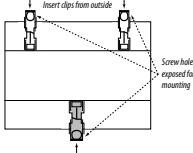
- Disconnect and lock out power. Use a properly rated voltage sensing device to confirm power is off.
- Attach mounting clips to the underside of the housing by sliding them into the slots from the inside. The stopping pegs must face the housing, and the outside edge of the clip must be flush with the outside edge of the housing.
- Snap the clips onto the DIN rail. See diagram of the underside of the meter.
- To reduce horizontal shifting across the DIN rail, use two end stop clips.



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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 AV2	User Interface SETUP- S SYS	VLL	VLN	Balance	Diagram number
Single-Phase Wiring									
2	1	A	2	A, N	L-N	10	1L + 1n	AN	1
2	1	A	2	A, B	L-L	11	2L	AB	2
3	2	A, B	3	A, B, N	L-L with N	12	2L + 1n	AB AN, BN	AN-BN AB-BC
Three-Phase Wiring									
3	3	A, B, C	3	A, B, C	Delta	31	3L	AB, BC, CA	AB-BC-CA
4	3	A, B, C	4	A, B, C, N	Ground- Wye	40	3L + 1n	AN, BN, CN AB-BC-CA	AN-BN AN-CN AB-BC

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.

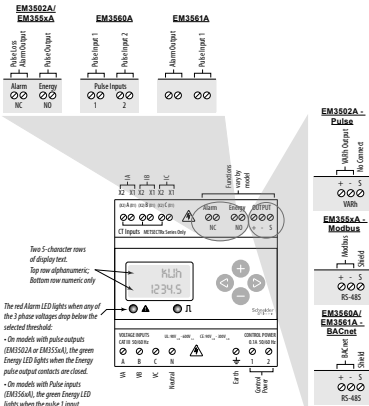
Symbol	Description
	Voltage Disconnect Switch
	Fuse (installer is responsible for ensuring compliance with local requirements. No fuses are included with the meter.)
	Earth ground
	Current Transducer
	Potential Transformer
	Protection device containing a voltage disconnect switch with a fuse or disconnect 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 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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Product Diagram



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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:

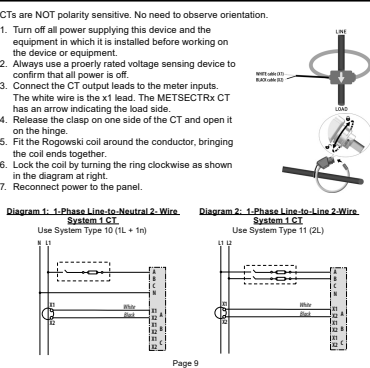
Do not contact meter terminals while the unit is connected.

Do not connect or short other circuits to the CT terminals.

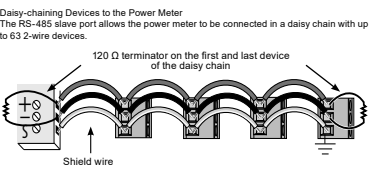
Failure to follow these instructions may cause injury, death or equipment damage.

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

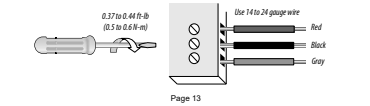
- Turn off all power supplying this device and the equipment in which it is installed before working on the device or equipment.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Connect the CT output leads to the meter inputs. The white wire is the x1 lead. The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



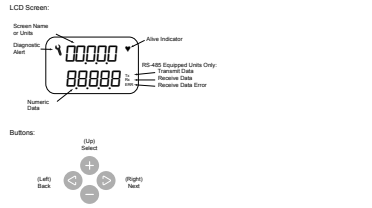
RS-485 Communications (EM355xA and EM356xA Only)



- 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 1/4 load or less.
 - RS-485+ has a 47 k Ω pull up to +5V, and RS-485- has a 47 k Ω pull down to Shield (RS-485 signal 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).

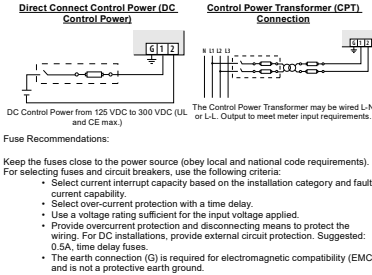


Display Screen Diagram

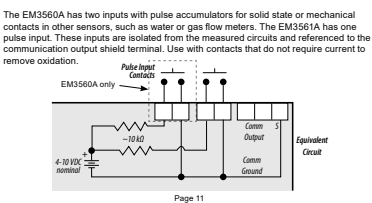


Initial Setup Instructions

- 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:
- Press **ESC** or **ESC** repeatedly until SETUP screen appears.
 - Press **ESC** to get to the PRSD screen.
 - Press **ESC** to move through the digits. Use the **ESC** or **ESC** buttons to enter your password (the default is 0000).
 - Press **ESC** to move to the first Setup screen (5 CT on EM3502A, 5 CDT on EM355xA, 5 BIC on EM356xA).
 - Use **ESC** or **ESC** to select the parameter screen you want to set.
 - After you set the parameters you want, use **ESC** or **ESC** to select the next Setup screen or **ESC** to exit the Setup screens (return to SETUP).

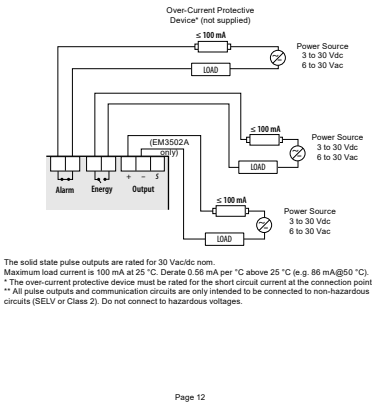


Pulse Contact Inputs (EM356xA Only)



Solid State Pulse Output (EM3502A and EM355xA Only)

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



China RoHS Compliance Information (EFUP Table)

零件名称		有害物质 -- Hazardous Substances			
Part Name	铅 (Pb)	汞 (Hg)	铬 (Cr)	六价铬 (Cr (VI))	多溴联苯 (PBB)
电子秤	X	O	O	O	O
Electronic	X	O	O	O	O

本表格依据GB/T13448制定

O: 有害物质在整机中的含量符合GB/T 26572规定的限量要求以下

X: 有害物质在整机中含量不符合GB/T 26572规定的限量要求

(备注: 可在此处, 根据实际情况对上表中“O”和“X”做出进一步说明)

This table is made according to GB/T 13448.

O indicates that the concentration of hazardous substance in all of the homogeneous materials for this part is below the limit as stipulated in GB/T 26572.

X indicates that concentration of hazardous substance in at least one of the homogeneous materials used for this part is above the limit as stipulated in GB/T 26572.

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