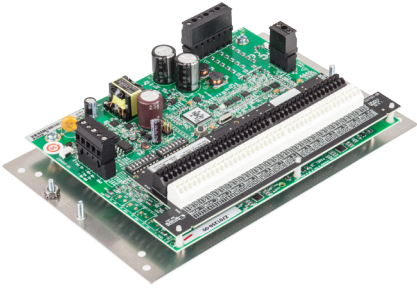


EM49xxx

en es fr de ru zh

EM49xxA



EM49xxE



en EM49xxx Series multi-circuit meters. EM49xxA models are open-board on mounting bracket with Modbus RTU protocol; EM49xxE models are in a metal case with both Ethernet and serial protocols. To download user manuals and other documentation, visit www.schneider-electric.com.

Refer to the user guide when you see this icon.

es

fr

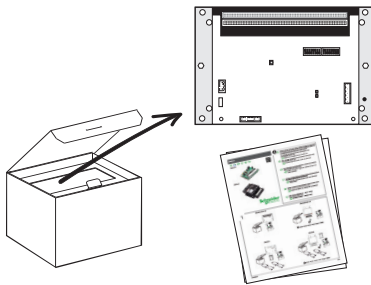
de

ru

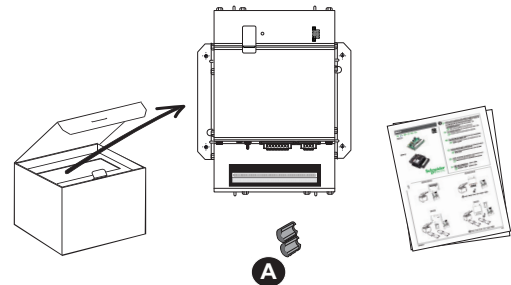
zh

1

EM4904A/08A/14A

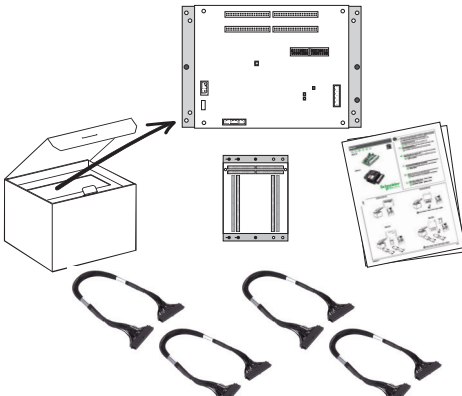


EM4904E/08E/14E

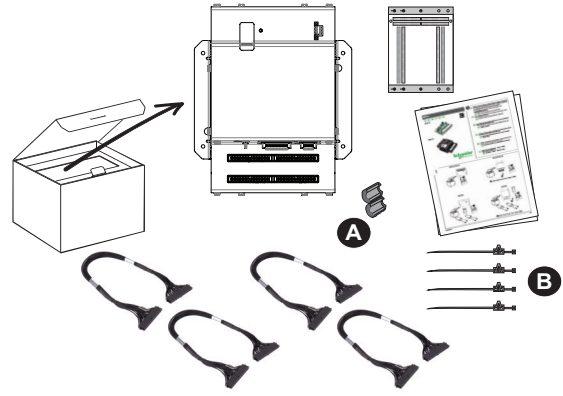


A Ferrite /

EM4928A



EM4928E



A Ferrite /

B Cable ties /

en



DANGER
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- This product must be installed inside a suitable fire and electrical enclosure.
- Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Do not use this device for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Do not install this product in hazardous or classified locations.
- Read, understand and follow the instructions before installing this product.
- Turn off all power supplying equipment before working on or inside the equipment.
- Product may use multiple voltage/power sources. Disconnect all sources before servicing.
- Use a properly rated voltage sensing device to confirm that power is off.
- Do not use data from this device to confirm power is off.
- Replace all doors, covers and protective devices before powering the equipment.
- Do not exceed the product's ratings or maximum limits.
- Treat communications and I/O wiring connected to multiple devices as hazardous live until determined otherwise.

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

If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired.

The installer is responsible for conformance to all applicable codes.

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

Note: See IEC 60950-1:2005, Annex W for more information on communications and I/O wiring connected to multiple devices.

Protective bonding: electrical connection of accessible conductive parts or protective screening to provide electrical continuity to the means for connection of an external protective conductor.

Control system design must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and over-travel stop.


WARNING
LOSS OF CONTROL

- Ensure that the system will reach a safe state during and after a control path failure.
- Separate or redundant control paths must be provided for critical control functions.
- Test the effect of transmission delays or failures of communication links.
- Each implementation of equipment using communication links must be individually and thoroughly tested for proper operation before placing it in service.

Failure to follow these instructions can result in injury, death or equipment damage.

For additional information about anticipated transmission delays or failures of the link, 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 specific country, language, and/or location.

Provide a disconnect device to disconnect the meter from the supply source. Place this device in close proximity to the equipment and within easy reach of the operator, and mark it as the disconnecting device. The disconnecting device shall meet the relevant requirements of IEC 60947-1 and IEC 60947-3 and shall be suitable for the application. In the US and Canada, disconnecting fuse holders can be used. Provide overcurrent protection and disconnecting device for supply conductors with approved current limiting devices suitable for protecting the wiring.

FCC PART 15 INFORMATION

EM49xxA Models: This equipment has been tested 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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that of the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

The user is cautioned that any changes or modifications not expressly approved by Schneider Electric could void the user's authority to operate the equipment.

EM49xxE Models: 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 when the equipment is operated in a commercial 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAN ICES-3 (B) /NMB-3(B)

es

fr

de

ru

zh

3

Dimensions /

EM49xxA

en Data acquisition board and mounting bracket. Mounting hardware not included.

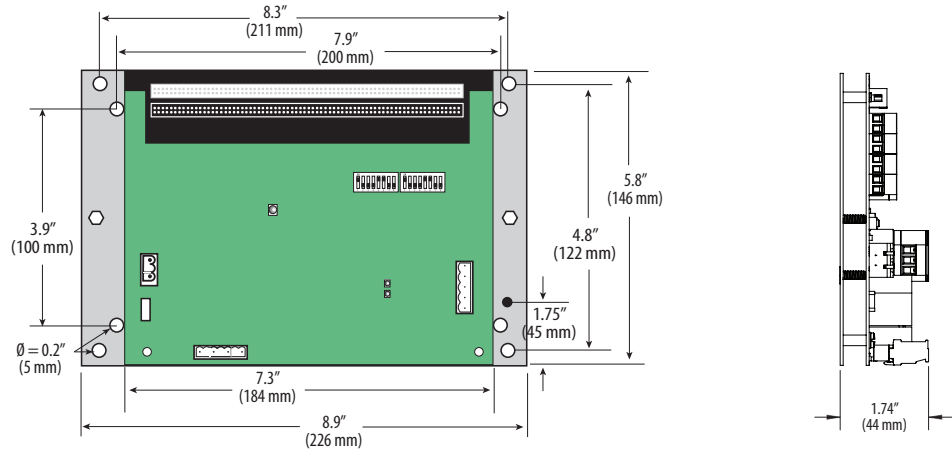
es

fr

de

ru

zh



EM49xxE

en Housing and mounting brackets. Mounting hardware not included.

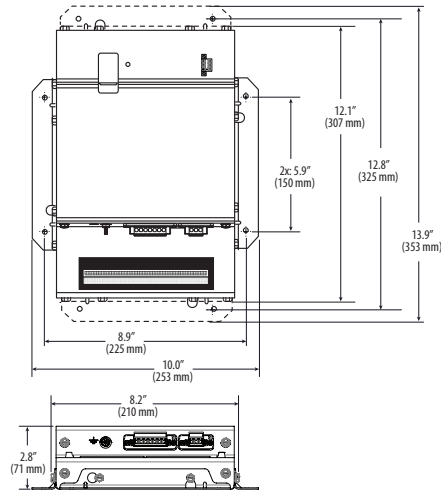
es

fr

de

ru

zh



en Dotted lines indicate dimensions if the two brackets are placed for horizontal mounting. At the factory, the brackets are placed for vertical mounting.

es

fr

de

ru

zh

28-Meter CT Adapter Assembly /

en CT adapter board and mounting bracket. Mounting hardware not included.

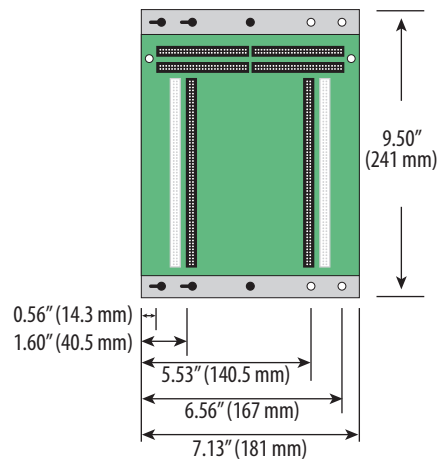
es

fr

de

ru

zh



en

NOTICE**ESD-SENSITIVE DEVICES**

Observe handling precautions for static sensitive devices.

Failure to follow this instruction can result in damaged circuitry and loss of factory warranty.

es

**DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- This product must be installed inside a suitable fire and electrical enclosure.
- Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Do not use this device for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Do not install this product in hazardous or classified locations.
- Read, understand and follow the instructions before installing this product.
- Turn off all power supplying equipment before working on or inside the equipment.
- Product may use multiple voltage/power sources. Disconnect ALL sources before servicing.
- Use a properly rated voltage sensing device to confirm that power is off.
- Replace all doors, covers and protective devices before powering the equipment.
- Do not exceed the product's ratings or maximum limits.
- Treat communications and I/O wiring connected to multiple devices as hazardous live until determined otherwise.
- Use the protective ground connection on the mounting bracket if the device is not mounted to a suitable ground surface.

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

fr

de

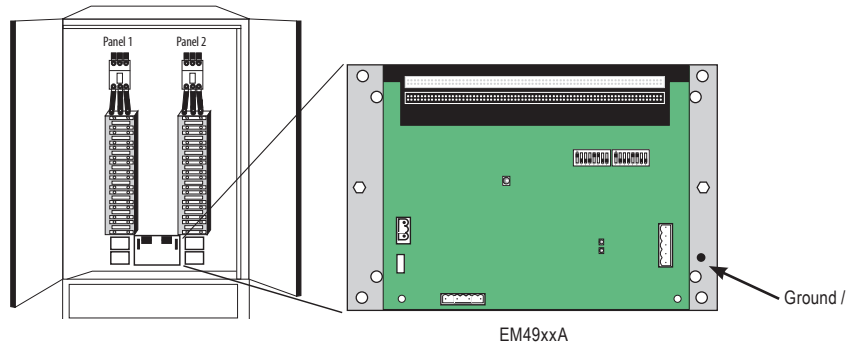
4

Mounting /

ru

zh

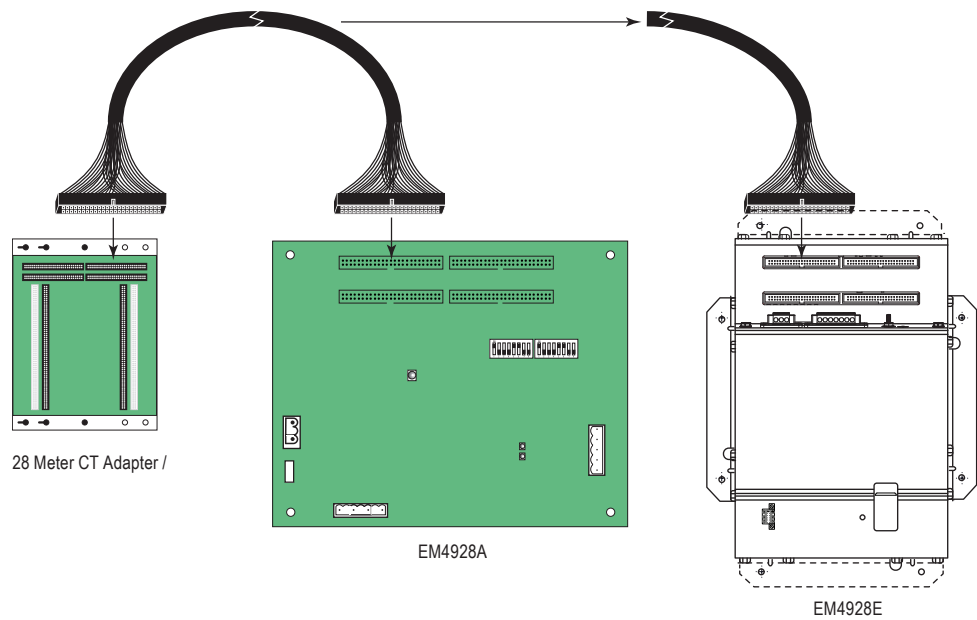
Install main board in breaker panel if there is room. If not, install in a separate enclosure. /



5

Wiring /

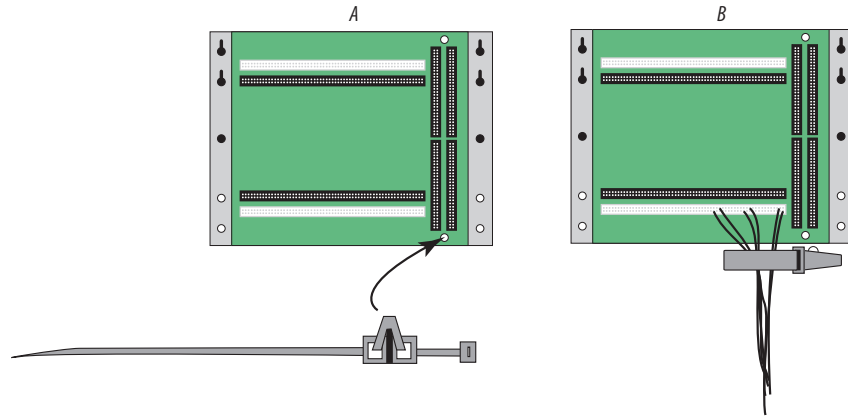
EM4828A & EM4828E: Connect CT adapter board to main unit using ribbon cables provided. /



5

Wiring /

Cable ties are provided for strain relief, if desired. /



en

es

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- While removing or installing panels and covers, ensure that they do not contact an energized bus.
- NEVER bypass external fusing.
- NEVER short the secondary of a potential transformer.
- Before closing covers and doors, carefully inspect the work area and remove any tools, wire scraps or other objects that may have been left inside the equipment.
- Do not exceed the product's ratings or maximum limits.
- Turn off all power supply equipment before working on or inside equipment.
- Use a properly rated voltage sensing device to confirm that power is off.
- Treat all measurement circuits and CT connections as energized live.

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

NOTICE

ESD-SENSITIVE DEVICES

Observe handling precautions for static sensitive devices.

Failure to follow this instruction can result in damaged circuitry and loss of factory warranty.

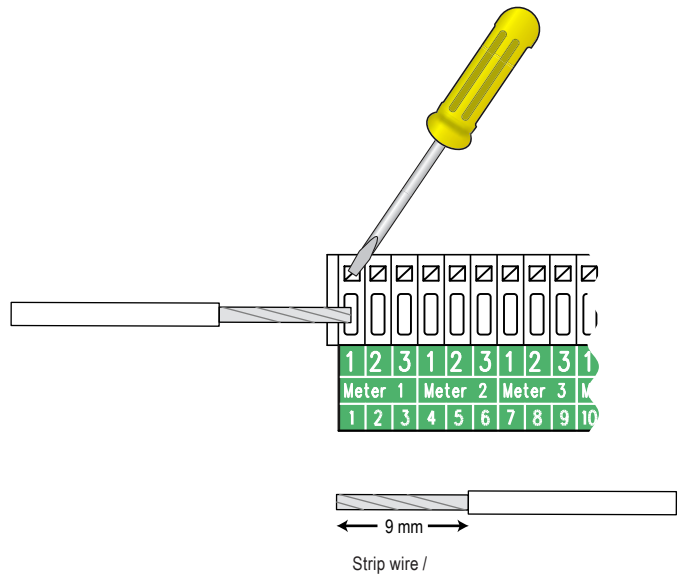
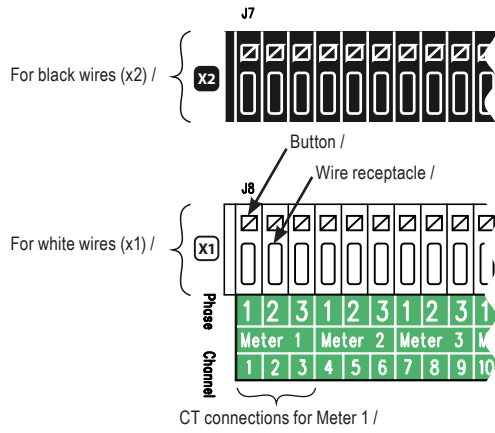
fr

de

ru

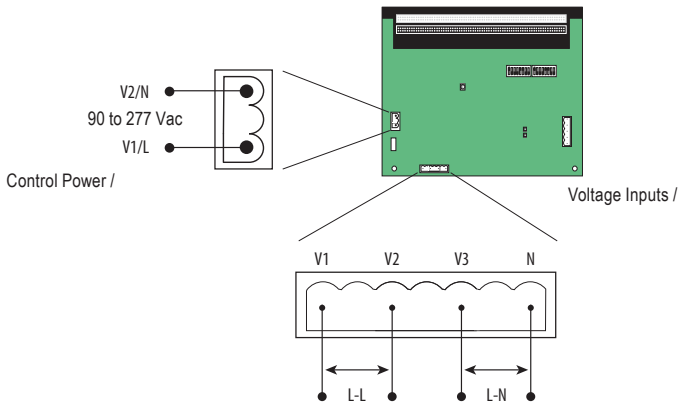
zh

Connecting CT Wires to the Terminals /

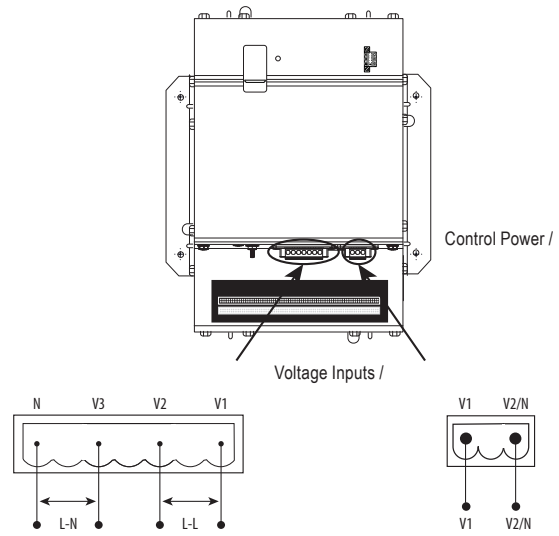


Voltage Connections /

EM49xxA



EM49xxE



en For voltage inputs V1-V3: L-L voltage: 150 to 480 Vac, nominal, L-N voltage: 90 to 300 Vac. Voltage taps are shared by both panels.

de

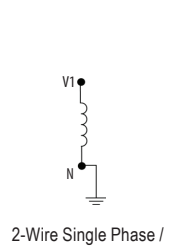
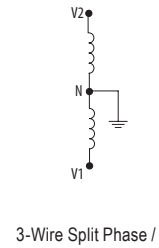
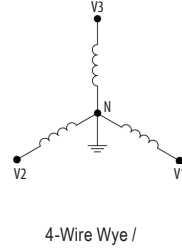
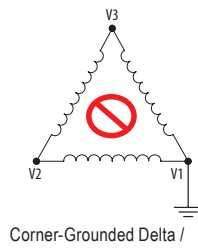
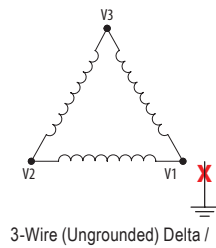
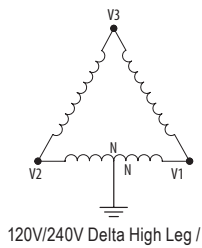
es

ru

fr

zh

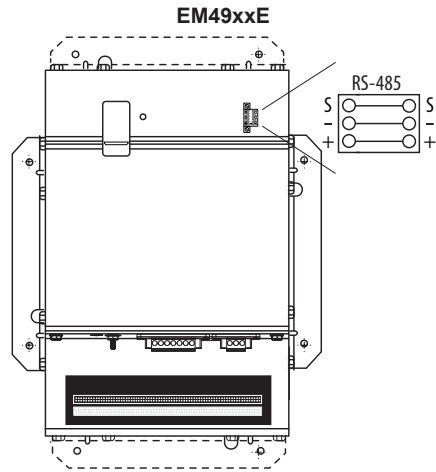
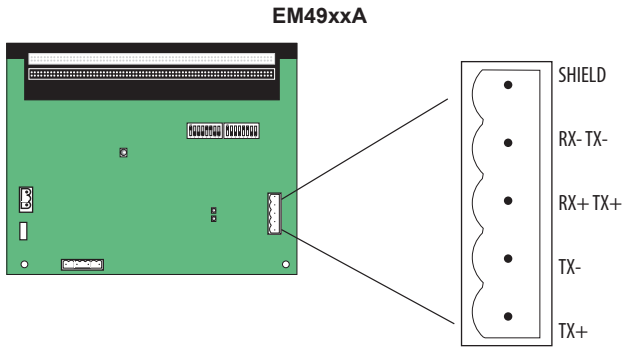
Voltage Wiring Configurations /



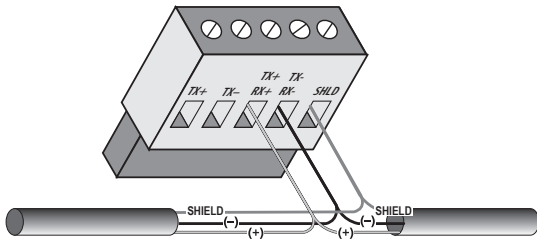
5

Wiring /

Connecting RS-485 /

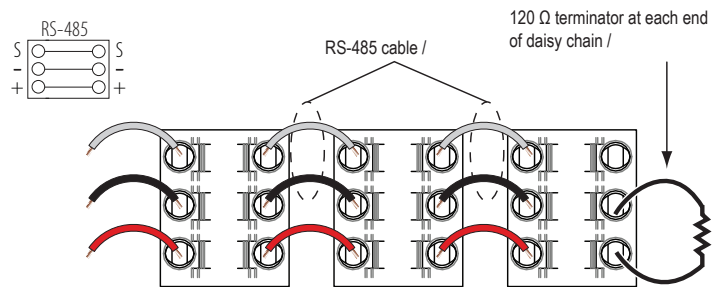
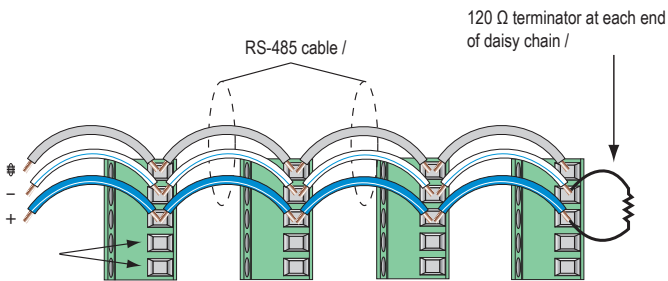


EM49xxA 2-Wire Configuration /



See user manual for 4-wire configurations /

RS-485



en

es

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Turn off all power supply equipment before working on or inside equipment.
- Use a properly rated voltage sensing device to confirm that power is off.

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

NOTICE

ESD-SENSITIVE DEVICES

- Observe handling precautions for static sensitive devices.

Failure to follow this instruction can result in damaged circuitry and loss of factory warranty.

fr

de

ru

zh

en Communications Setup
EM49xxA: Configure communication and addressing parameters using DIP switches.

es

LED Blink Codes for EM49xxA /

Green, once per second /	Normal operation /
Amber, once per second /	Volts or amps clipping /
Amber, twice per second /	Invalid firmware image /
Red, solid or blink /	Diagnostic event detected /

fr

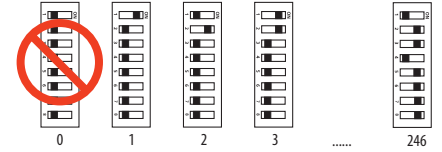
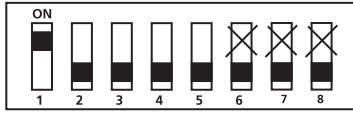
de

ru

zh

Example: 2-wire 19200 Baud No Parity /

Address switch examples /

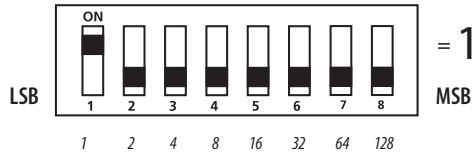


	1	2	3	4	5	6	7	8
en	B0	B1	Off/On Parity	Odd/Even Parity	2/4 wire	Reserved		
es								
fr								
de								
ru								
zh								

Switch settings /

1	2	3	4	5	6	7	8	
off	off				X	X	X	9600
on	off				X	X	X	19200
off	on				X	X	X	38400
on	on				X	X	X	Reserved /
		off	off		X	X	X	No Parity /
		on	off		X	X	X	Odd Parity /
		off	on		X	X	X	No Parity /
		on	on		X	X	X	Even Parity /
				on	X	X	X	4-wire RS-485 /
				off	X	X	X	2-wire RS-485 /

Default Modbus address DIP switch settings /



DIP Switch Values /

en **EM49xxE:** To set the communications parameters, use the web GUI.

es

fr

de

ru

zh

en **Meter Configuration (EM49xxA, EM49xxE):** Use ION Setup software for configuration. <https://schneider-electric.box.com/ionsetupdatest>.

es

fr

de

ru

zh

en

es

VOLTAGE INPUTS

- **Measurement Voltage:** 90 to 300 Vac line-to-neutral
- **Control Power:**
EM49xxA: 90 to 277 Vac line-to-neutral;
EM49xxE: 100 to 277 Vac line-to-neutral
- **Frequency:** 50/60 Hz

ACCURACY

- **Power/Energy:** IEC 62053-21 Class 0.5, ANSI C12.20 class 0.5
- **Voltage:** $\pm 0.5\%$ of reading 90 to 277 V line-to-neutral
- **Current:** $\pm 0.5\%$ of reading from 2% to 100% of full-scale

OPERATION

- **Sampling Frequency:** 2560 Hz
- **Update Rate:** 1.8 seconds (both panels)
- **Overload Capability:** 22 kAIC

SERIAL COMMUNICATION**(EM49XXA)**

- **Type:** Modbus RTU
- **Connection:** DIP switch selectable 2-wire or 4-wire, RS-485
- **Address:** DIP switch selectable address 1 to 247 (in pairs of 2)¹
- **Baud Rate:** DIP switch-selectable 9600, 19200, 38400
- **Parity:** DIP switch-selectable NONE, ODD, EVEN
- **Communication Format:** 8 data bits, 1 start bit, 1 stop bit

- **Termination:** 5-position plug-in connector

(TX+ TX- SHIELD TX+/RX+ TX-/RX-)**SERIAL COMMUNICATION (EM49XXE)**

- **Physical Interface:** 2-wire RS-485
- **Serial Protocols Supported:** Modbus RTU or BACnet MS/TP
- **Address Range:** 1 to 247 for Modbus RTU; 0 to 127 for BACnet MS/TP
- **Baud Rate:** 9600, 19200, 38400
- **Parity:** Modbus RTU: NONE, ODD, EVEN; BACnet MS/TP: NONE (fixed)
- **Communication Format:** 8 data bits, 1 start bit, 1 stop bit
- **Termination:** 2x3 position connector

ETHERNET COMMUNICATION**(EM49XXE)**

- **Physical Interface:** RJ45 connector with 10/100 Mbit Ethernet
- **Protocols Supported:** Modbus TCP, BACnet IP, SNMP V2c

WIRE SIZE RANGE

- **Removable Connectors on Main Board:** 24 to 12 AWG
- **CT Terminals and EM49xxE Serial Connector Terminals:** 26 to 16 AWG

TERMINAL BLOCK TORQUE

- **Removable Connectors:** 4.4 to 5.3 in-lb (0.5 to 0.6 N-m)

MECHANICAL

- **Ribbon Cable Support (28-meter models only):** 4 ft. (0.9 m) round ribbon cable ships standard; up to 20 ft. (6 m) flat or round available

OPERATING CONDITIONS

- **Operating Temperature Range:** 0 to 60 °C (32 to 140 °F) (<95% RH non-condensing)
- **Storage Temperature Range:** -40 to 70 °C (-40 to 158 °F)
- **Altitude of Operation:** 3000 m
- **Mounting Location:** Not suitable for wet locations. For indoor use only.

COMPLIANCE INFORMATION

- **Agency Approvals:** UL508 open type device², IEC/EN61010-1
- **Installation Category:**³ Cat III, Pollution Degree 2
- **Conducted Emissions:** EM49xxA Models: FCC part 15 Class B, EN61000-6-3, EN61326-1 Class B (residential and light industrial)
- **Radiated Emissions:** EM49xxE Models: FCC part 15 Class A, EN6100-6-4, EN61326-1 Class A
- **Conducted and Radiated Immunity:** EN 61000-6-2 and EN 61326-1

1. See Configuration section for details.

2. The EM49xxx must be installed in an appropriate electrical and fire enclosure per local regulations. If EM49xxx products are used in installations with circuits higher than the product ratings, the circuits must be kept segregated per UL508A Sec. 17.5. Note: EM49xxx internal circuitry (cables and CTs) are not circuits as defined by UL508A, as they do not extend beyond the EM49xxx itself without further safety/fire isolation.

3. A Pollution Degree 2 environment must control conductive pollution and the possibility of condensation or high humidity. Consideration must be given to the enclosure, the correct use of ventilation, thermal properties of the equipment and the relationship with the environment.

fr

de

ru

zh

8

China RoHS Compliance Information /

部件名称	有害物质 - Hazardous Substances					
Part Name	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电子件 Electronic	X	O	O	O	O	O

本表格依据SJ/T11364的规定编制。

O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572规定的限量要求以下。

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572规定的限量要求。

(企业可在此处，根据实际情况对上表中打“X”的技术原因进行进一步说明。)

This table is made according to SJ/T 11364.

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

Z000057-0B

9

Notices /

en

es

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it.

Electrical equipment should be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material. A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

PowerLogic and Schneider Electric are trademarks or registered trademarks of Schneider Electric in France, the USA and other countries.

- This product must be installed, connected and used in compliance with prevailing standards and/or installation regulations.
- If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired.
- The safety of any system incorporating this product is the responsibility of the assembler/installer of the system.

As standards, specifications and designs change from time to time, always ask for confirmation of the information given in this publication.

fr

de

ru

zh

en

PowerLogic and Schneider Electric are trademarks or registered trademarks of Schneider Electric in France, the USA and other countries.

- This product must be installed, connected and used in compliance with prevailing standards and/or installation regulations.
- If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired.
- The safety of any system incorporating this product is the responsibility of the assembler/installer of the system.

As standards, specifications and designs change from time to time, always ask for confirmation of the information given in this publication.

es

fr

de

ru

zh

