

EA_Repeater remote LAN-ready

Installation instructions
IL42-5043B

General

NOTICE

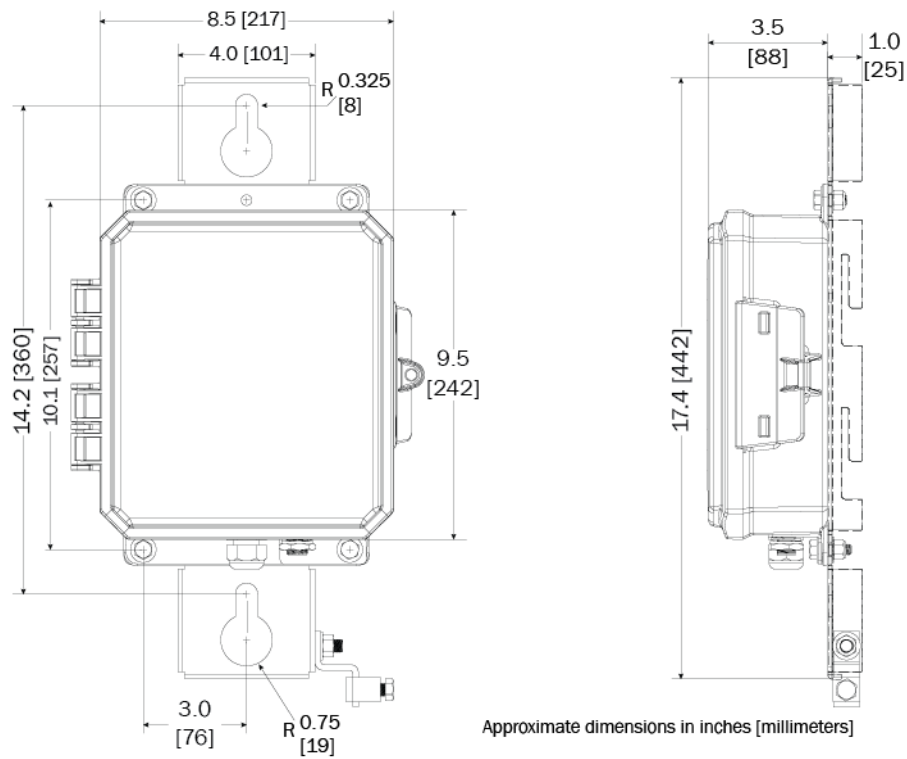
Before installing the EA_Repeater, you must tear off the foam cubes located the inside surface of the enclosure door. Failure to remove the foam cubes may result in allowing moisture and dust to enter the enclosure. See “Installing the EA_Repeater” on page 4 for more information.

The EA_Repeater is network element within the EnergyAxis® System that reinforces network coverage where electricity meters are not sufficiently dense to support reliable communications between the EA_Gatekeeper and other network elements. The EA_Repeater can also be used to create the EA_LAN for water-only or gas-only utilities or utility service areas.

The EA_Repeater is certified to ANSI C12.1-2008, Test 38 (rain tightness) and Test 37 (salt spray).

The EA_Repeater remote LAN antenna ready product uses a NEMA 4X-rated polycarbonate enclosure that provides different installation options using a supplied universal mounting bracket. This bracket supports band strap mounting features up to $\frac{3}{4}$ -inch wide and features to allow mounting using machine or Lag bolts up to $\frac{1}{2}$ inch. Figure 1 shows reference dimensions of the enclosure; Figure 2 shows the location for the mounting keyhole and the open aperture banding slots.

Figure 1.



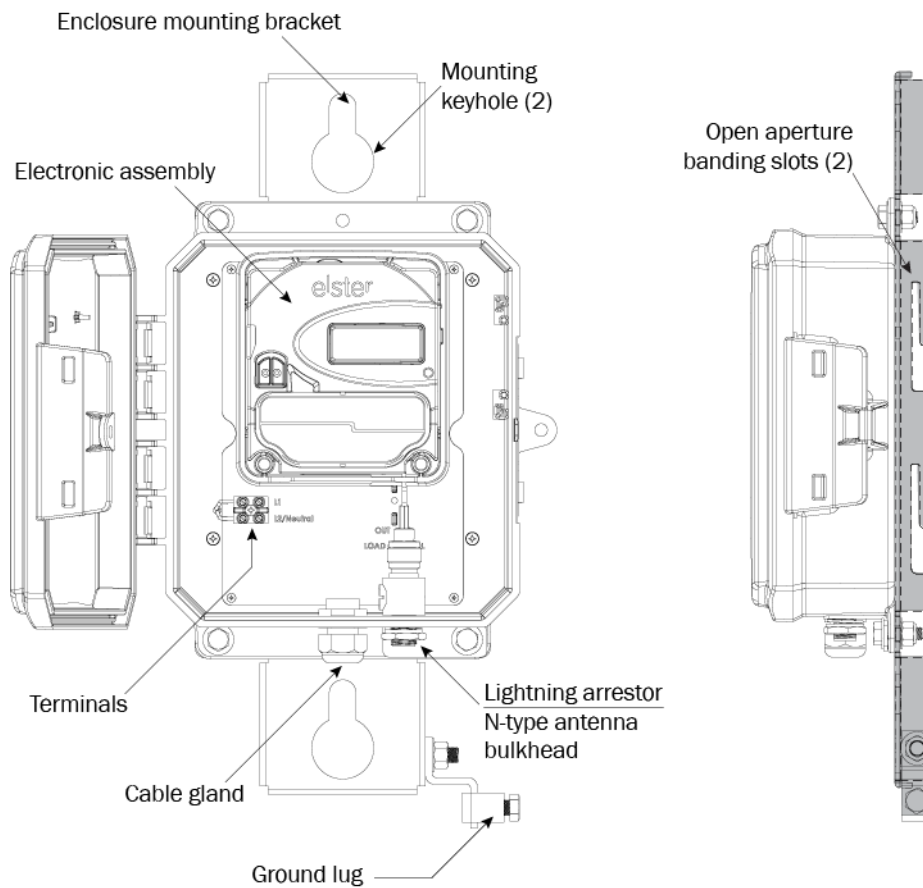
EA_Repeater remote LAN antenna ready components

The EA_Repeater remote LAN antenna ready product variants are available in 2 style options. These style options support either 120 VAC or 240 VAC operation. These styles are included in the following table:

Item	Description
7S41N1G001	120 VAC, hinged lid enclosure, remote LAN antenna ready, universal mounting bracket included
7S41R1G002	240 VAC, hinged lid enclosure, remote LAN antenna ready, universal mounting bracket included

Figure 2 shows the component locations and identification.

Figure 2.



EA_Repeater remote LAN antenna supporting hardware

These additional antenna hardware components are required to place the EA_Repeater into service: antenna, antenna mounting hardware, and an RF cable to route between the enclosure and antenna. The following table identifies the approved antennas. You can obtain the components using your preferred provider or order it through your local Elster representative.

Note: This device has been designed to operate with the antennas listed below and having a maximum gain of 5.15 dBi. Antennas not included in this list or having a gain greater than 5.15 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Antenna	Mount	Gain
PCTEL (MAXRAD) MFB9150 unity gain Fiberglass omnidirectional	Remote	2.15 dBi
PCTEL (MAXRAD) MFB9153 3 dB Fiberglass omnidirectional	Remote	5.15 dBi

The following hardware is available for purchase from Elster. Your local Elster representative can assist you with purchasing these components as needed.

Item	Part number
MAXRAD MBF9153 antenna and mounting hardware	7S1812G001
Stock cable lengths	
N-male to N-male LMR-400 RF cable, 10-foot	7S1816H001
N-male to N-male LMR-400 RF cable, 15-foot	7S1816H002
N-male to N-male LMR-400 RF cable, 25-foot	7S1816H003
N-male to N-male LMR-400 RF cable, 35-foot	7S1816H004
N-male to N-male LMR-400 RF cable, 50-foot	7S1816H005
N-male to N-male LMR-400 RF cable, 100-foot	7S1816H006

Installing the EA_Repeater

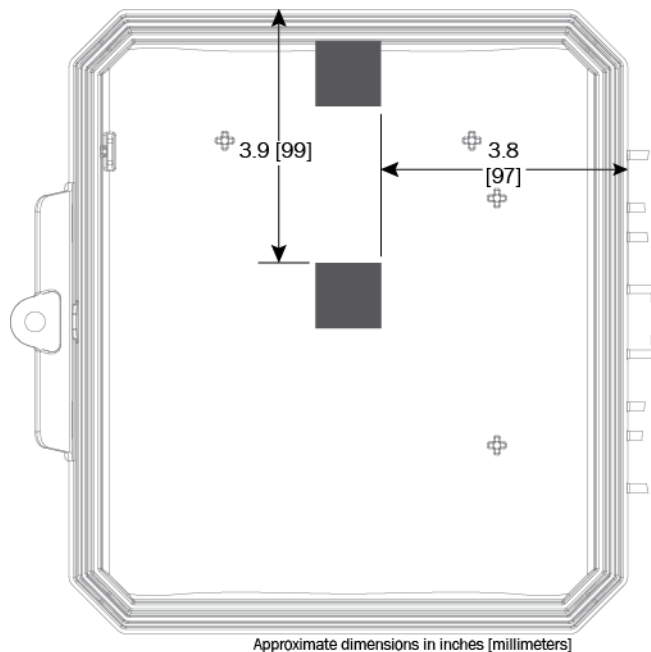
⚠ WARNING

Use authorized utility procedures when installing the EA_Repeater into service. Dangerous voltages are present. Equipment damage, personal injury, or death can result if authorized utility procedures are not followed when installing the EA_Repeater.

NOTICE

Tear off the two 1-inch by 1-inch foam cubes located the inside surface of the enclosure door (see Figure 3). Failure to remove the foam cubes may result in allowing moisture and dust to enter the enclosure.

Figure 3. Inside view of the enclosure door



Determine your mounting location and use the appropriate features on the universal mounting bracket to secure the device:

- **Keyhole features:** The keyhole features are intended to ease installation of the EA_Repeater by allowing the device to hang from the fastener. The bolts can be partially installed in the mounting location leaving a few inches of fastener exposed. The head of the fastener can then pass through the large portion of the opening and rest in the narrower portion. The fasteners can then be fully secured without having to hold the device in place.
- **Open aperture banding slots:** The banding features are used to accommodate up to a 3/4-inch stainless steel strap. These features include an open aperture to allow the bands to be partially installed such that the EA_Repeater can hang on the straps. The straps can then be fully secured without having to hold the device in place.

Installing the EA_Repeater Remote Antenna hardware

WARNING

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Placing the EA_Repeater into service will require mounting the remote external antenna in a suitable location. The antenna should be mounted in the clear, as free from conductive or metallic obstructions as possible. The connectors should be sealed for waterproofing.

Remote external antennas:

- PCTEL/MAXRAD P/N MFB 9380 for unity gain (2.15 dBi)
- PCTEL/MAXRAD P/N MFB 9153 for 3 dB gain (5.15 dBi)

There are several options for remote antenna cabling. The most economical connection to the external remote antenna is the LMR-400 type cable. This type of cable is suitable for distances up to 100 feet (approximately 30 meters). Antenna cables should be ordered with the N-type male connectors on each end. One end attaches to the EA_Repeater housing, and the other end attaches to the antenna. You may perform on-site assembly, order stock lengths from Elster, or order pre-assembled cables (for example, from Laird Technologies).

The RF cable should be mounted at the bottom of the enclosure in a drip loop fashion. A drip loop is formed by bringing the RF cable to a point below the enclosure and then bending it back up to the lightning arrestor bulkhead. This forms a U-shape which allows water to run down the cable exterior.

Connecting power to the EA_Repeater

WARNING

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After mounting the EA_Repeater and antenna, you must connect power to the unit.

1. Open the hinged enclosure lid.
2. Insert the power cable through the cable gland. To ensure a proper seal with the gland, use a round power cable with a smooth jacket. The power cable should be mounted at the bottom of the enclosure in a drip loop fashion. A drip loop is formed by bringing the power cable to a point below the enclosure and then bending it back up to the cable gland. This forms a U-shape which allows water to run down the cable exterior.
3. Connect Line 1 and Line 2/Neutral from the power cable to the appropriate screw terminal inside the enclosure.
4. Tighten cable gland locknut to seal the power cable.
5. Apply power to the EA_Repeater to verify operation. The LCD will turn on and begin its display sequence.
6. Close the enclosure lid ensuring the latches fully engage properly sealing the lid.

Notes:

FCC and Industry Canada Compliance**User Information (Part 15.105)**

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 the receiver
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced radio/TV technician for help

If you experience trouble with this equipment, please use the Return Material Authorization (RMA) feature available at the Online Customer Services at www.elstersolutions.com. Do not attempt to repair this equipment yourself unless you are replacing the entire module.

Compliance Statement (Part 15.19)

This device complies with Part 15 of the FCC Rules and Class B digital apparatus requirements for ICES-003. 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 of the device.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Énoncé de conformité

Cet appareil est conforme à la Partie 15 des règles de la FCC et aux exigences relatives aux appareils numériques de classe B conformément à l'avis sur la compatibilité électromagnétique ACEM-3. L'utilisation de cet appareil est soumise aux deux conditions suivantes : (1) Cet appareil ne doit pas provoquer d'interférences nocives et (2) cet appareil doit accepter toutes les interférences reçues notamment celles pouvant provoquer un fonctionnement intempestif de l'appareil.

Antenna Compliance

To reduce potential interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than permitted for successful communication. Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Warning (Part 15.21)

Changes or modifications not expressly approved by Elster could void the user's authority to operate the equipment.

RF Radiation Safety Guidelines

The device should be installed in a location where there will be a separation greater than 20 cm (8 inches) from locations occupied by humans.

Collocation Statement

Collocation of simultaneously-transmitting (co-transmitting) antennas located within 20 cm of each other within a final product is not allowed.

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