

ERM-DA Installation Guide



Product Overview

Echoflex's ERM-DA is an active circuit transmitter that provides a low cost method of using a live electrical circuit as a switch. When the circuit is active, the transmitter will broadcast a heartbeat indicating the circuit state. When the circuit is not live, the ERM-DA has no power and will not broadcast. The electrical circuit state can be used to indicate when any electrical load is turned ON and active. As a wireless transmitting device, a receiver can be commissioned to respond to the circuit state.

Example: *On a time clock scheduled event, a centralized control system switches off several loads to conserve energy. The facility wishes to turn off other loads as well and has the ERM-DA installed on the controlled circuits. Other Echoflex controllers are installed to activate the additional loads based on the switch input.*

Assigning the transmitter to other controllers is easy and eliminates the cost of wire and installation of a switch leg.

The ERM-DA should only be installed at indoor locations. It must be mounted in either a wall or ceiling mount electrical junction box with the provided hardware; behind a duplex receptacle, switch or fixture.

This guide covers model numbers ERM-DA(x) , and ERM-DA(x)-LV, where the (x) is "U" the model is equipped with a 902 MHz radio and models with "Y" are equipped with an 868MHz radio.

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Included in the package

The package includes the ERM-DA transmitter and installation guide.

ERM-DA Operation

The ERM-DA is a radio transmitter that will broadcast a signal according to standardized EnOcean telegrams. The EnOcean profile supported by the ERM-DA is the occupancy sensor EEP: A5-07- 01.

The ERM-DA will transmit an occupied telegram every 100 seconds when powered.

Installing Wireless Devices

Careful planning is needed when locating the receivers and transmitters based on the construction materials in the space and possibility of tenant's furniture disrupting the transmissions.

The occupancy sensor should be installed in the space where the receiver is mounted and connected to the occupancy control equipment. The signal will travel through some material barriers.

Refer to the tables below for range considerations with building materials that reduce the radio signal power.

Material	Attenuation
Wood	0 - 10%
Plaster	0 - 10%
Glass	0 - 10%
Brick	5 - 35%
MDF	5 - 35%
Ferroconcrete	10 - 90%
Metal	90 - 100%
Aluminum	90 - 100%

Material	Radio Range-typical
Line of sight:	80' (24m) corridors
Line of sight:	150' (46m) open halls
Plasterboard:	80' (24m) through 3 walls
Brick:	33' (10m) through 1 wall
FerroConcrete:	33' (10m) through 1 wall
Ceiling:	not recommended

Preparing to Install

To install the ERM-DA transmitter, you will need access to an electrical junction box containing the desired circuit you wish to monitor.

You will require hand tools to gain access to the junction box and remove any cover plates or other hardware. A pin or pen is needed for pressing the controller buttons when assigning the transmitter to the receiver/controllers.

IMPORTANT SAFETY INSTRUCTIONS



WARNING:

ELECTRICAL SHOCK HAZARD

SOME MODELS OF THE ERM USE HIGH VOLTAGE AND SHOULD ONLY BE INSTALLED BY A QUALIFIED INSTALLER OR ELECTRICIAN. FOLLOW ALL APPLICABLE ELECTRICAL CODES IN THE COUNTRY OF INSTALLATION.

Installing the ERM-DA

Review these instructions completely before installing the ERM-DA transmitter. For best results, the ERM transmitter should be installed into a non-metal electrical junction box.

NOTE: The ERM-DA should only be installed in an indoor location. The high voltage models must be mounted in an electrical junction box, either wall or ceiling mount, preferably plastic.

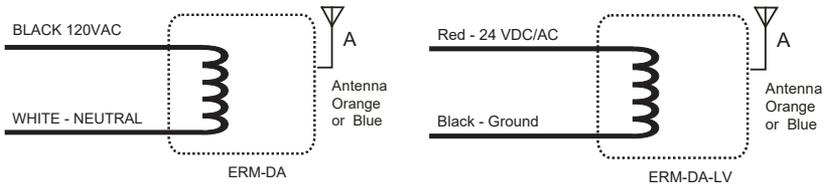
1. Locate the circuit breaker panel and turn off the power to the circuit.
2. Remove all face plates from the junction box.
3. Refer to the wiring diagram to connect the ERM-DA to the line power and neutral wires. Use wire nuts on all connections and cap any bare wires except the antenna wire. The orange antenna wire should be placed so it is near the front of the box. Use tape to hold the antenna in place if needed. Before closing up the electrical box, the ERM-DA should be linked to a receiver. Refer to the section later in this guide on the linking process.
4. Push the ERM-DA transmitter into the junction box together with all the wires insuring that the antenna is not pushed to the back. If the electrical box is grounded metal, it is important that the antenna is not enclosed inside the box. Arranging the antenna at the front to sit behind a plastic faceplate or passing the antenna outside the box is advised. Echoflex offers back-plates for wall box faceplates that can increase the space within the wall box cavity allowing the antenna to sit outside the walls of the grounded box.
5. Replace the faceplate .
6. Restore power to the circuit

Wiring Instructions

Power to the line voltage models is connected between the White (Neutral) and the Black (120VAC) wires.

The low voltage 24V models have a red (24+) and black (ground) wires for power input.

Use only approved wire. Cap off all unused wires. Do not cut or cap the orange antenna wire.



Connection	Color	Min. Size
Line Voltage Models		
120VAC	Black	300V, 18AWG
Neutral	White	300V, 14AWG
Antenna	Orange or Blue	no connection
Low Voltage Mode		
24+	Red	22AWG
Ground	Black	22AWG
Antenna	Orange or blue	no connection

Diagnostic LED's and buttons

The two LEDs and Status and Repeater buttons are only accessible at the transmitter. Use extreme caution when accessing the ERM-DA directly when it is powered inside an electrical junction box.

Status Button - The Status button is used to link the transmitter to a receiver or controller. The status button also enables the transmitter to broadcast the circuit state.

Linking Process:

- Place the receiver into LEARN mode by pressing the Learn button on the receiver. Consult the manufacturers directions if needed.
- Tap the status button twice on the ERM-DA. The ERM-DA will transmit its teach command to the receiver.

To enable or disable the circuit state telegram:

- Press the status button once to disable the telegram, press twice within 5 seconds to enable the telegram.

Repeater Button - The repeater enable button can be used to turn on the repeater function of the ERM-DA. When enabled, the ERM-DA will repeat all telegrams that are received. The Repeater led indicates whether this is enabled. Single hop repeating allows a telegram to be repeated only once. Dual hop repeating allows a telegram to be repeated twice.

Repeater Button	Function Status	LED
Press once	Repeater Disabled	Blinks once
Press twice*	Repeat Single Hop	Blinks twice
Press 3 times*	Repeat Dual Hop	Blinks three

*Within 5 seconds

LED Blink Patterns

Description	Status(green)	Repeater (red)
Repeater-single	n/a	on + short blinks off
Repeater-dual	n/a	on + long blinks off
Repeater disabled	n/a	off
Status enabled	on	n/a
Status disabled	off	n/a

Wireless System Layout Hints

Avoid locating transmitters and receivers on the same wall.

Avoid locating transmitters and receivers where the telegrams must penetrate walls at acute angles. This increases the material the telegram must pass through reducing the signal power.

Avoid large metal obstructions as they create radio shadows. Place receivers in alternate locations to avoid the shadow or use repeaters to go around the obstacle.

Do not locate receivers close to other high frequency transmitters.

Leave at least 3' between the receiver and any other source of interference including, ballasts, LED drivers, computers, video equipment, Wi-Fi/LAN routers, GSM modems and monitors. Transmitters are not affected by these sources of interference.

Hardware Specifications

Power Supply :

ERM-DA 120 VAC, 50/60 Hz

Power Consumption: 1.1W

ERM-DA-LV, 24 VAC/DC

Power Consumption: 600mW

Outputs: [2] LEDs - Status and Power

Inputs: Status and Repeater buttons

Communications: 902MHz, or 868MHz radio
with whip antenna

Factory Defaults

Circuit Status Message Disabled

Repeating Enabled, single hop

Mechanical Specifications

Operating Temperature: 14°F to 104°F
(-10°C to 40°C)

Relative Humidity: 5% - 95% RH (non-condensing)

Weight: 2 ounces (46 gms.)

Dimensions: 2.2" x 1.5" x 1.0" (56mm x38mm x26mm)

Listings

ETL Listed Component (120VAC models only)

Conforms to UL Standard 508

Certified to CAN/CSA Std. C22.2 No.14



FCC and IC Licensing (902 MHz models only)

The enclosed device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:

- (i.) this device may not cause harmful interference and
- (ii.) this device must accept any interference received, including interference that may cause undesired operation.



Only applies to models with 902MHz radios.

Contains FCC ID: SZV-TCM320U

Contains IC: 5713A-TCM320U

868 MHz models CE marking



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