ERM-DAC installation guide

Product Overview

Echoflex's ERM-DAC 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 DAC 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-DAC 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-DAC 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-DAC, ERM-DAC-LV, ERM-DA and ERM-DA-LV. The model number ending in "C" is equipped with a EnOcean 315 MHZ Dolphin radio with the other equipped with an EnOcean 868MHz Dolphin radio.

Included in the package

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

ERM-DAC Operation

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

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

Echoflex Solutions, Inc.
1, 38924 Queens Way
Squamish, British Columbia
Canada V8B 0K8
Toll Free: (888) 324-6359
sales@echoflexsolutions.com
www.echoflexsolutions.com

Part # 8DC-5202 | Revision 1.2

Radio Range Planning

The ERM-DAC active circuit transmitter is intended to be used with Echoflex controllers. Locating the wireless transmitters to work with the installed ERM controller requires planning. Careful consideration should be made for locating the controllers based on the construction materials in the space and possibility of tenant's furniture disrupting the transmissions. Fire doors, elevator shafts, stairwells, storage areas and any large metal products create radio shadows and will disrupt wireless transmissions.

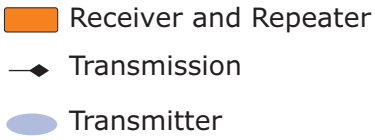
On floor-plan drawings, draw 100 feet (30m) diameter circles to identify optimal transmitter and controller locations. Refer to the table for range considerations with other building materials.

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%

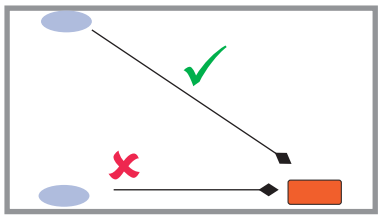
Material	Range-typical
Line of sight:	100’ (30m) corridors
Line of sight:	330’(100m)open halls
Plasterboard:	100’ (30m) through 5 walls
Brick:	65’ (20m) through 3 walls
Concrete:	65’ (20m) through 3 walls
FerroConcrete:	33’ (10m)
Ceiling:	1 ceiling

For more information about range planning, please refer to the range planning guide downloaded from www.echoflexsolutions.com.

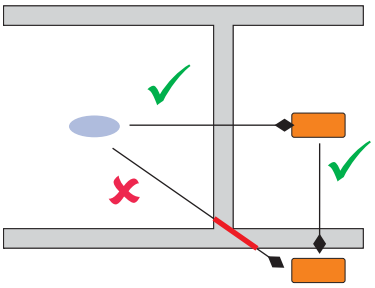
Layout Hints



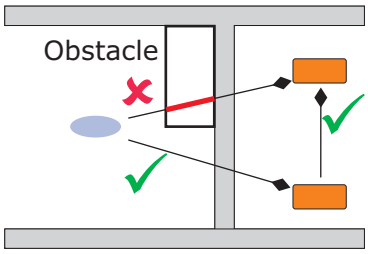
⇨ Avoid transmitting down a length of wall to reduce signal reflection.



⇨ Avoid transmissions that must penetrate walls at acute angles. This increases the wall material the telegram must pass through, greatly reducing the signal power.



⇨ Avoid large obstructions. Place receivers in alternate locations to avoid the radio shadow or use repeaters to go around the obstacle.



⇨ Do not locate receivers close to other high frequency transmitters. Leave at least 2’ between the receiver and any other source of interference including, lighting ballasts, computers, video equipment, Wi-Fi/LAN routers, GSM modems and monitors. Transmitters are not affected by these sources of interference.

Preparing to Install

To install the ERM-DAC 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

ALL 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-DAC

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

NOTE: The ERM-DAC 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, duplex receptacle or switch hardware from the junction box.

3) Refer to the wiring diagram to connect the ERM-DAC 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.

4) Push the ERM-DAC 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 duplex receptacle and/or switch and faceplate .

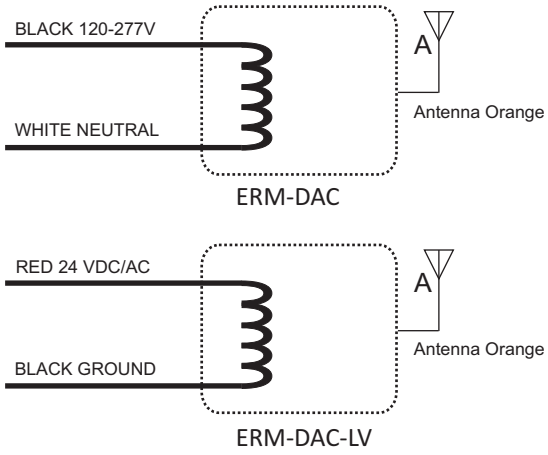
6) Restore power to the circuit

Wiring Instructions

Power to the line voltage models is connected between the White (Neutral) and the Black (120 - 277 VAC) 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 (315M radio) or blue (868M radio) antenna wire.



Connection	Color	Min.Size
Line Voltage Model		
120-277VAC	Black	300V, 18AWG
Neutral	White	300V, 14AWG
Antenna	Orange	no connection
Low Voltage Model		
24+	Red	22AWG
Ground	Black	22AWG

Hardware Specifications

Power Supply

Line Voltage Model: 120-277 VAC, 50/60Hz

Low Voltage Model: 24 VAC/DC

Power Consumption: 1.1 W

Outputs: [2] LEDs - Status and Power

Inputs: Status and Repeater buttons

Communications: 315MHz or 868MHz EnOcean radio with whip antenna

NOTE: The radio is protected by a sealed screw. Breaking this seal will void the warranty.

Mechanical Specifications

Operating Temperature: 14°F to 113°F (-10°C to 45°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)

FCC and IC Licensing

Contains FCC ID: SZV-TCM320C
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.

Contains IC: 5713A-TCM320C

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 transmitter 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.

To link the ERM-DAC to a receiver:

- 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-DAC. The ERM-DAC 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-DAC. When enabled, the ERM-DAC will repeat all EnOcean 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.

- Press the repeater button once to disable repeating
- Press the repeater button twice within 5 seconds to enable single hop repeating
- Press the repeater button three times within 5 seconds to enable dual hop repeating.

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