

ER1C-BFC installation guide



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Part # 8DC-5074 | Revision 1.1

Product Overview

The Echoflex Fixture Controller provides distributed control of any standard lighting fixture by using wireless technology. Used with Echoflex wireless sensors and decorator style rocker switches, the fixture controller provides a simple method of retrofitting an existing light fixture or adding new lights to any space. Use the fixture controller for occupancy based lighting or use the manual ON / auto-OFF feature and start saving energy by shutting off un-needed lights.

The fixture controller includes Echoflex's intelligent configuration software Smart Click™ allowing installers and facility operators access to the controller's configuration parameters making it easy to set-up and make changes in the future. Using just a wireless wall switch, the facility maintenance engineer can adjust setting on the installed controllers eliminating a service call to an electrician.

This guide covers model number ER1C-BFC which is equipped with an EnOcean 315 MHZ radio.

The package includes the ER1C-BFC controller and installation guide.

Planning the Installation

The ER1C-BFC controller is intended to be used with switches, sensors and actuators enabled with EnOcean PTM or STM transmitters. Locating the wireless transmitters to work with the installed ER1C-BFC 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 or any large metal products will disrupt wireless transmissions.

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

Material	Signal Range-typical
Line of site:	100' (30m) corridors 330' (100m) open halls
Plasterboard:	100' (30m), through 5 walls
Brick, Aerated Concrete:	66' (20m), 3 walls
FerroConcrete, Ceiling:	33' (10m), 1 ceiling

Use an EPM100 for on-site range testing and location suitability. The EPM100 provides the convenience of a hand-held device indicating signal strength from transmitters. The EPM100 will verify proper signal reception at your intended controller locations.

For more information about range planning, please refer to the range planning guide downloaded from

"http://www.echoflexsolutions.com/files/downloads/Reliable Range Planning_0308.pdf"

Preparing to Install

The ER1C-BFC is mounted to an electrical junction box or panel with a 1/2" threaded nipple. The antenna for the controller is embedded in the housing requiring the ER1C-BFC to be mounted on the outside of the junction box either directly at the electrical load or before the load in the circuit.

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 wireless switches.

Important Safety Instructions

WARNING:

ELECTRICAL SHOCK HAZARD

THE ER1C-BFC USES 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 ER1C-BFC

Review these instructions completely before installing the ER1C-BFC controller.

- 1) Locate the circuit breaker panel and turn off the power to the circuit.
- 2) Remove all face plates and other hardware from the junction box so you can access the high voltage wires.
- 3) The ER1C-BFC is mounted to the exterior of the junction box or panel with the 1/2" threaded nipple.

3) Refer to the wiring diagram to connect the ER1C-BFC to the line power, neutral and load wires. Use wire nuts on all connections and cap any bare wires.

4) Replace the junction box faceplate.

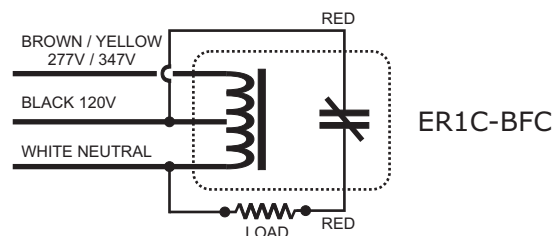
5) Restore power to the circuit.

6) Refer to the section in this guide titled **LEARN Button** to assign a switch or sensor to the controller. Alternatively, refer to the Smart Click instructions on page 4 for assigning switches and sensors remotely.

Wiring Instructions

Power to the controller is connected between the White (Neutral) and the Black (120V). Optionally, based on model number, commercial voltages are applied between the White (Neutral) and the Brown(277V) or Yellow(347V). (see wiring diagram).

Use only approved wire. Cap off all unused wires.



Connection	Color	Specification
LOAD x 2	Red	14AWG, 600V
Neutral	White	18AWG
Line 120VAC	Black	18AWG
Line 227VAC*	Brown	18AWG
Line 347VAC*	Yellow	18AWG

***not used in all models**

Using the ER1C-BFC with a wired wall switch:

If the circuit will have an additional manual switch, wire the ER1C-BFC in series before the manual switch.

Diagnostic LED's and buttons

LEARN button – The LEARN button is used to link a switch or switch to the ER1C-BFC controller.

1. Insert a small pin or pen into the LEARN hole depressing the button for a half second. In link mode the LEARN led will stay ON and the POWER

led will toggle every 2 seconds.

2. Using the switch that you want to link to the controller, press the wall switch three times or press the sensors TEACH button. The POWER led will remain lit for 4 seconds while it links the new device. It will resume toggling allowing you to TEACH another device up to a total of 30 devices. Linking a switch or sensor that is already linked to a controller, will remove or un-link it from the controller.

3. To exit link mode, depress the LEARN button on the ER1C-BFC controller again for a half second. Link mode will time out after no activity in 30 seconds.

CLEAR button – The CLEAR button erases all switches linked to the ER1C-BFC controller and resets the controller to factory default settings.

Insert a small pin or pen into the CLEAR hole depressing the button for 5 seconds. The LINK led will flash ON for 1 second and then OFF to complete the step.

The table below describes the LED activity and associated mode of the controller.

Description	LINK	POWER
LINK mode	ON	Toggle 2 sec.
Storing ID	ON	ON 4 sec.
CLEAR mode	ON 1 sec.	n/a
Normal operation		
w/o linked switch	OFF	ON w/relay closed factory default
w/ linked switch	OFF	Long blink followed by short blinks counting the switches linked, repeated

Specifications

EnOcean Equipment Profiles

EEP: 05-02-02	Light and Blinds - US/Canada
EEP: 07-06-02	Light Sensor [range 0 - 1024 lux]
EEP: 07-07-01	Occupancy Sensor
EEP: 07-11-01	Controller Status

Hardware Specifications

Power Supply	120/277 VAC or 120/347 VAC, 60Hz
Power	4.0 W full load
Output	N.O. Relay 15A@347 VAC or 20A@120 or 227 VAC
Inputs	LEARN and CLEAR buttons
Communications	315 MHZ EnOcean radio with whip antenna

Mechanical Specifications

Operating Temperature	14°F to 113°F (-10°C to 45°C)
Relative Humidity	5 to 95% RH (non-condensing)
Weight	13.5 oz. (385 gms.)
Dimensions	3.5" x 1.9" x 1.9" (88 x 48 x 48 mm)
Mounting	½" nipple

Agency Listing and Compliance

Safety	ETL Recognized Component 3188207 Conforms to UL Standard 508 Certified to CAN/CSA Std. C22.2 No.14 UL 2043 Plenum rated
Radio Frequency	FCC Part 15.231 - Remote Control Transmitter IC RSS-210

SmartClick Instructions for ER1C-BFC

Configuring the ER1C-BFC controller requires that at least one wireless PTM wall switch is linked to the controller.

Linking the first switch

⇒ With the ER1C-BFC controller in the factory default state, click the PTM switch ON three times, OFF three times and ON three times quickly.

Using this method of linking a switch will only work on the first PTM switch. Use Smart Click to link additional switches or to configure the controller parameters.

Using Smart Click to Configure the ER1C-BFC

It is important to have feedback from the ER1C-BFC controller during configuration.

- ⇒ Using a linked switch (see above), turn the light OFF.
- ⇒ Click and hold the switch OFF for 10 seconds. The light will blink once and then turn on. If the switch is linked to more than 1 ER1C-BFC controller you will have to click the ON side of the switch until the controller you wish to configure is selected indicated by the light turning ON.
- ⇒ Press ON for 5 seconds. The light will begin blinking once.

Linking an additional switch or sensor

- ⇒ With the light blinking once, press ON for 3 seconds. The light will begin blinking ON/OFF every second.
- ⇒ Add additional PTM switches by clicking ON 3 times quickly. Add sensors by pressing the TEACH button on the sensor.
- ⇒ To continue with configuration, press the switch ON for 3 seconds, the light will resume blinking once. To exit Smart Click press OFF for 5 seconds.

Clear switches or sensors (restore factory defaults)

- ⇒ Click the switch ON or OFF until the light is blinking twice.
- ⇒ Click the switch ON 5 times to clear the switch, click ON 5 times again to clear ALL switches and sensors and reset the ER1C-BFC to factory defaults.

⇒ Press OFF for 5 seconds to complete clearing.

Repeater Function - repeats any telegram within range. EnOcean telegrams can only be repeated once.

- ⇒ Click the switch ON or OFF until the light is blinking three times.
- ⇒ Press ON for 3 seconds. If the repeater function is enabled the light will turn ON, if disabled the light will be OFF.
- ⇒ Click ON to activate this function, OFF to deactivate.
- ⇒ To continue with configuration, press ON for 3 seconds, the light will resume blinking three times. To exit Smart Click press OFF for 5 seconds.

Status Telegram - the ER1C-BFC can broadcast a status telegram per EEP: 07-11-01. The telegram will broadcast every 100 seconds. Refer to the table on page 5 for a detailed explanation of the telegram.

- ⇒ Click the switch ON or OFF until the light is blinking four times
- ⇒ Press ON for 3 seconds. If the status telegram function is enabled the light will turn ON, if disabled the light will be OFF
- ⇒ Click ON to activate this function, OFF to deactivate
- ⇒ To continue with configuration, press ON for 3 seconds, the light will resume blinking four times. To exit Smart Click press OFF for 5 seconds

Timeouts - the ER1C-BFC can be configured to wait a period of time after an ON event from a PTM switch or occupancy sensor before turning the load OFF (auto-off).

- ⇒ Click the switch ON or OFF until the light is blinking five times.
- ⇒ Press ON for 3 seconds. The light will turn OFF and then ON per the table settings below.

Light	Switch Timer	Occ.Sensor Timer
ON	no auto-off	0 sec.
1 Blink	30 min.	5 min.
2 Blinks	60 min.	10 min.
3 Blinks	95 min.	15 min.

4 Blinks	120 min.	20 min.
5 Blinks	150 min.	25 min.

- ⇒ Click ON move down the table, OFF to move up.
- ⇒ To continue with configuration, press ON for 3 seconds, the light will resume blinking five times. To exit SmartClick press OFF for 5 seconds.

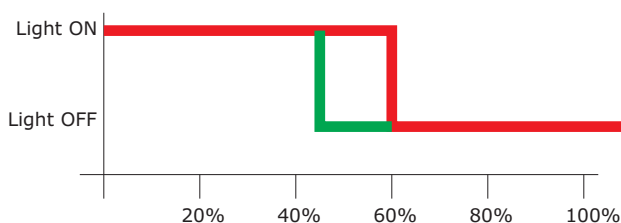
Auto-ON Function - use with an occupancy sensor to turn lights ON automatically when motion is detected.

- ⇒ Click the switch ON or OFF until the light is blinking six times.
- ⇒ Press ON for 3 seconds. If the auto-on function is enabled the light will turn ON, if disabled the light will be OFF
- ⇒ Click ON to activate this function, OFF to deactivate
- ⇒ To continue with configuration, press ON for 3 seconds, the light will resume blinking six times. To exit SmartClick press OFF for 5 seconds.

Light Level Setpoint - use with a photo sensor(light sensor) to automatically turn lights on or off depending on ambient light levels.

- ⇒ Click the switch ON or OFF until the light is blinking eight times.
- ⇒ Press ON for 3 seconds. Default setting is 60% of the light sensors full range. Adjust the light level to the brightness level when the light should trigger OFF, see diagram below. There are 5 steps from 20% to 100% - the light will blink the step count.

In the diagram, the red line indicates the light off event, the green line indicates the light on event. The light on event is 85% of the light off setpoint. For example: 85% of 60 = 51% of the light sensors full range.



- ⇒ Click on to increase the setpoint, off to decrease the setpoint.

- ⇒ To continue with configuration, press ON for 3 seconds, the light will resume blinking six times. To exit SmartClick press OFF for 5 seconds.

Default Settings for ER1C-BFC

Repeater	disabled
Status	disabled
Time-out(auto-off)	disabled
Auto-ON	enabled
Light Level Setpoint	60%

Status Feedback Telegram

EEP:07-11-01
DB_3 Illumination
0 ... 510lx, linear n=0...255
DB_2 Illumination Set Point
Min. ... Max., linear n=0...255
DB_1: Dimming Output
Level Min. ... Max., linear n=0...255
DB_0.BIT_7: Repeater
0b0 disabled, 0b1 enabled
DB_0.BIT_6: Power Relay Timer
0b0 disabled 0b1 enabled
DB_0.BIT_5: Daylight Harvesting
0b0 disabled 0b1 enabled
DB_0.BIT_4: Dimming
0b0 switching load 0b1 dimming load
DB_0.BIT_3: Learn button
0b0 Teach-in telegram 0b1 Data telegram
DB_0.BIT_2: Magnet Contact
0b0 open 0b1 closed
DB_0.BIT_1: Occupancy
0b0 unoccupied 0b1 occupied
DB_0.BIT_0: Power Relay
0b0 off 0b1 on