

# ILLUMINATION CONTROL FIXTURE WHIP

Engineered Products Company (EPCO) Illumination Control Fixture Whip (ICFW) is an integral component for illumination and control of all lighting systems. The ICFW can be used in new or retrofit construction for lighting system operating at 120/277 VAC, meets all UL and NEC standards for combining power and lighting circuits with Class 2 or Class 3 control circuits within the same fixture whip, and is the cost-effective solution that saves the contractor time and labor when compared to buying and terminating expensive five conductor MC cable or making a homemade solution at the job site.

The ICFW is easily integrated into the architecture of a building using LED luminaires or fluorescent luminaires with dimming ballast and digital controls to:

- Optimize lighting at all times when used with an independent room controller for daylight harvesting as an energy management solution to reduce energy consumption.
- Operate in compliance with “timed” daily personnel and warehouse schedules.
- Control lighting operations used in combination with occupancy sensors for commercial and industrial applications.

## BENEFITS

- UL Listed. File Number E87199.
- Meets the requirements of the 2017 National Electrical Code, Article 300.3(C)(1), Section 725.136(I)(1), and California Title 24 Lighting Controls, Articles 130.1(A)(B)(C)(D)(E).
- Easy to install and wire. Installation is familiar to electrical contractors and is less prone to installation error.

## What is EPCO’s Illumination Control Fixture Whip?

- Our Illumination Control Fixture Whip (ICFW) is an NEC Code Compliant and UL Listed Pre-Fabricated Wiring Assembly that Reduces Labor and the overall Installed cost of wiring a luminaire.
- The ICFW is intended to be used only with a Fluorescent Luminaires with “Dimmable” Ballast or LED Driver when the Luminaires will be controlled by a Wireless Lighting Control System.
- The Standard ICFW use ½” x 6-Foot Steel Flexible Metallic Conduit. Other lengths can be quoted.
- For the Class 1 circuits, we use THHN, TFFN, TFN conductors rated for 600 Volts. 120 Volt 12-18 AWG Solid or Stranded, Black, White, Red, and Green. 277 Volt 12-18 AWG Solid or Stranded, Brown, Gray, Green, and Orange. Stranded Control Wires, Purple and Gray, also rated for 600 Volts.
- Snap-in or Screw-in Die Cast Connectors are Standard Options. Other connectors Can Be Quoted with lead times.
- For the Class 2 or 3 Circuits, 16/2 PVC Jacketed Tray Cable Gray and Purple Stranded Conductors are the only Option (no other control conductor options are available).

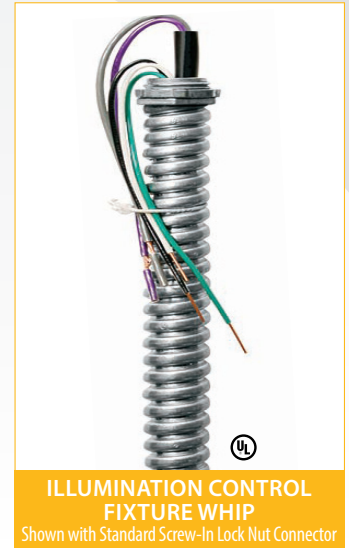
## How Does It Differ From EPCO’s Standard 3/8” or 1/2” Fixture Whip?

EPCO’s Standard Fixture Whip is intended to exclusively connect the Line Voltage Conductors of a Fluorescent Luminaire’s Ballast or a LED Luminaire’s Driver to the incoming Power Conductors within an Electrical Junction Box (Class 1 Circuit).

## Why is it Necessary to have a Different Fixture Whip Configuration than our Standard Whip when a Luminaire will Utilize Wireless Lighting Controls?

- Wireless Lighting Controls Use Relay Modules that can be attached to the outside of an electrical junction box with a nipple.
- The connection(s) of the low voltage conductors from the dimmable ballast or LED driver are intended to go through the Junction Box, and through the nipple and into the Lighting Control Relay Module to receive controller commands.
- When the Electrical Contractor wants to use a single pre-fabricated Fixture Whip to control a luminaire with control features.

Specifications subject to change without prior notice.



**ILLUMINATION CONTROL  
FIXTURE WHIP**  
Shown with Standard Screw-In Lock Nut Connector

### TYPICAL APPLICATIONS:

- LED and Fluorescent Lighting Control Systems
- Automatic Day Lighting Harvesting Control Systems
- Multi-Level Lighting Control Systems
- Occupant Sensing Lighting Control Systems
- Security and Egress Lighting Systems
- Demand Response Control Systems

# ILLUMINATION CONTROL FIXTURE WHIP

## Relevant NEC Code Section

**2017 NEC Code.136:** Separation from Electric Light, Power, Class 1, Non-Powered Limited Alarm Circuit Conductors, and Medium-Power Network - Powered Broadband Communication Cables. If the Luminaires are going to Utilize “Wireless” Electronic Controls, and the Electrical Contractor wants to have a single Fixture Whip to Contain both the Class 1, Class 2, or Class 3 circuits then...

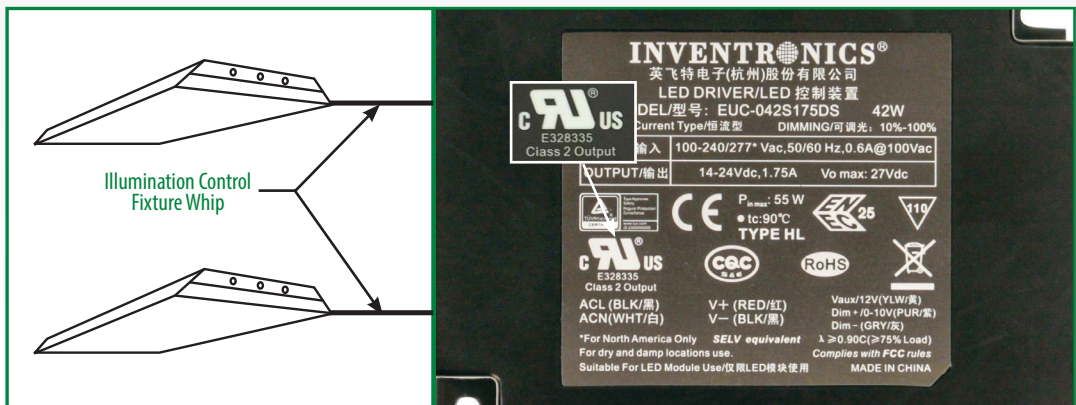
## Relevant NEC Code Section

**(A) General.** “Cables and Conductors of the Class 2 and Class 3 Circuits shall not be placed in any Cable,....Outlet Box, Device Box,....with Conductors of Electric Light, Power, Class 1 Circuits....Unless Permitted by NEC Article 725.136 (B through I)”.

## Relevant NEC Code Section

### (B) Separated by Barriers.

Class 2 and Class 3 Circuits shall be Permitted to be Installed Together with the Conductors of Electric Light, Power, Class 1, Non-Power Limited Fire Alarm, and Medium Power Network Powered Broadband Communication Circuits where they are Separated by a Barrier.



## Relevant NEC Code Section

**(E) Enclosures with Single Opening.** Class 2 and Class 3 Circuits entering compartments, enclosures, device boxes, outlet boxes, or similar fittings shall be permitted to be Installed with Class 1... provided the conductors are separated from other conductors by a continuous and firmly fixed non-conductor, such as flexible tubing or PVC jacketed.

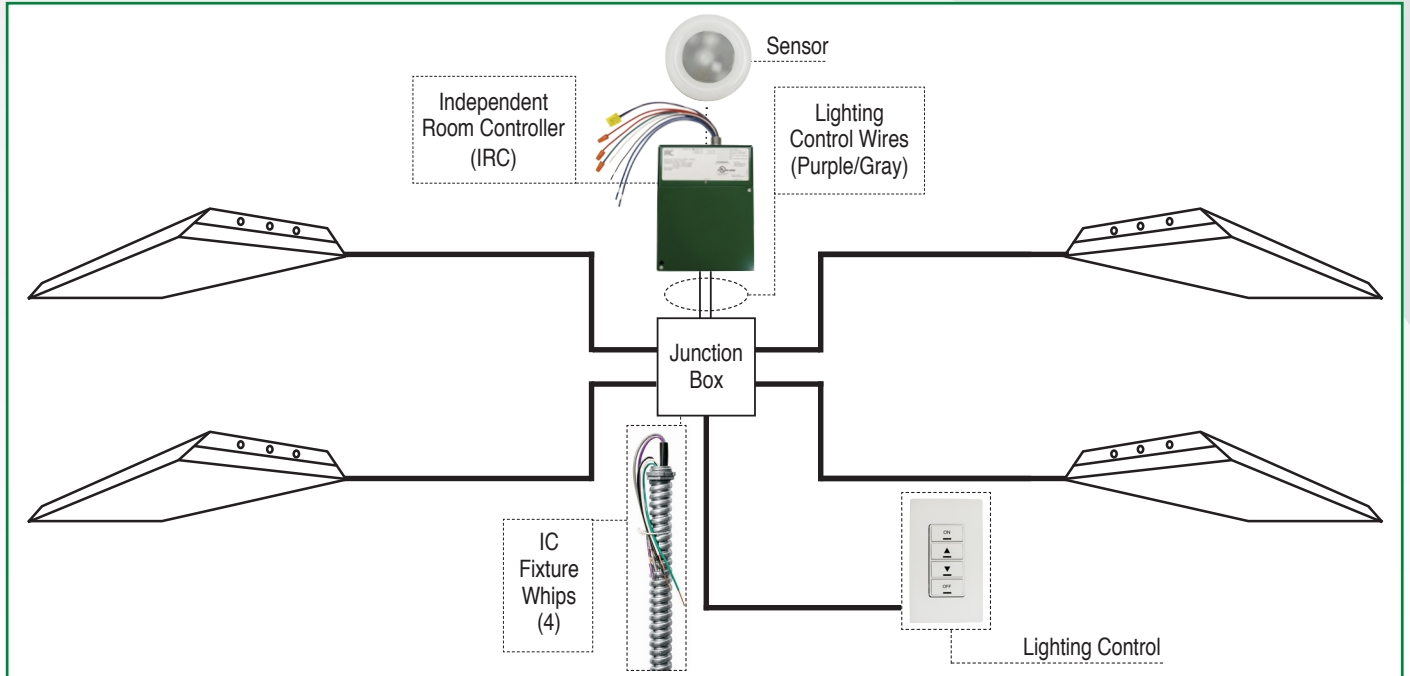
... by using EPCO's ICFW, the Installer complies with NEC Article 725.136 Because the ICFW Isolates and Separates the low voltage conductors (Class 2 or 3) within the tray cable from the power conductors (Class 1) all within the ½" Flexible Metallic Conduit.

## Why is it Necessary to Use the Illumination Control Fixture Whip vs. EPCO's Standard Fixture Whip?

## Relevant NEC Code Section

**NEC 90.5 (A) Mandatory Rules.** Mandatory rules of this NEC reference are those that identify actions that are specifically required or prohibited and are characterized by the use of the terms “shall or shall not”.

- On the Luminaire side, the power conductors are wired to the Black and White conductors from the LED Driver or Dimming Ballast, to the Black and White Conductors within the ICFW. See Figure 1. The “green” conductor within the Fixture Whip may get “Spliced” to the Ballast/Luminaire or simply directly to the luminaire.
- On the control side of the LED Driver or Dimmable Ballast, the Gray and Purple Conductors get spliced to the Gray and Purple Conductors within the PVC Jacketed Tray Cable/Fixture Whip.
- On the Junction Box Side, the Black, White, and Green Conductors get connected to the incoming power conductors within the Junction Box.
- The Gray and Purple conductors within the PVC Jacketed Tray Cable, are passed through the Junction box into the attached Independent Relay Control (IRC) where they are connected.



**Figure 1.** Daylight Harvesting Application Example using EPCO's Illumination Control Fixture Whip.

## SPECIFICATIONS

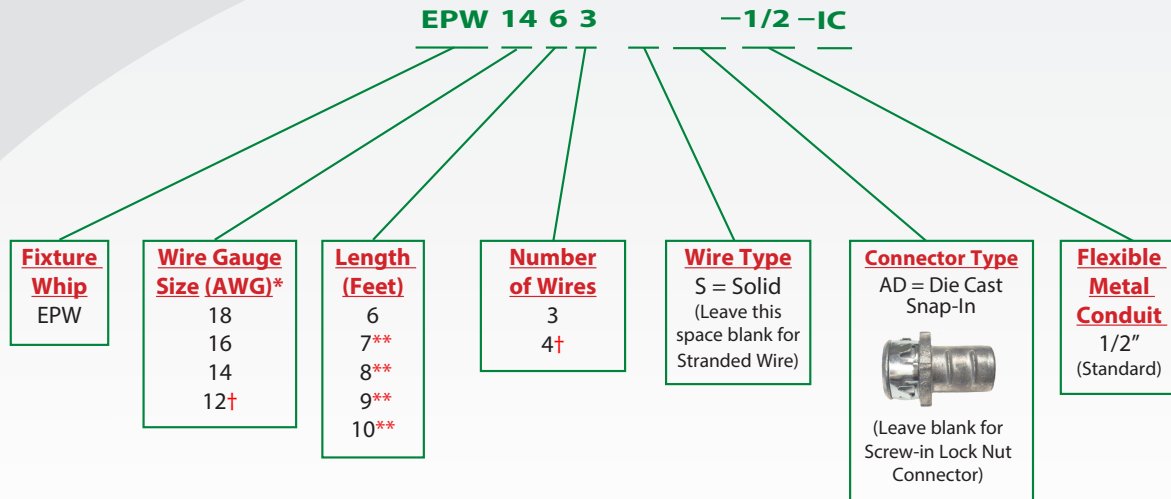
- Meets UL and NEC Articles for combining Power / Lighting Circuits and the Class 2 or Class 3 Control Circuits all within the same Fixture Whip.
- ½" Flexible Steel Conduit x 6-Feet (Standard Conduit Length)
- Circuit Size Conductors = 12, 14, 16, 18 AWG
- Solid or Stranded
  - » Three (3) or four (4) Conductors; Black, White, Green, and Red
  - » 277 Volt Conductors available as a "Custom"
- Standard Die Cast Connector or Snap-In Connector
- 16/2 PVC Jacketed Tray Cable Purple and Gray Stranded Conductors
  - » Low Voltage for Class 2 and Class 3 Circuit Conductors

The Illumination Control Fixture Whip, is available in 28 standard configurations that offer contractors an average cost savings of \$1.25 per whip, is suitable for retrofit applications and includes conductors for power and lighting control. Screw-in or snap-in die cast connectors are available for directly attaching to the luminaire and expedite installation.

- If the customer is using EPCO's **Standard** Fixture Whip and did not take the time and effort to review the above stated NEC Articles, EPCO will "not" be held responsible.
- EPCO will "not" Issue Credit to the Distributor for using our Standard Fixture Whips in the "wrong" application.

# ILLUMINATION CONTROL FIXTURE WHIP

## Illumination Control Fixture Whip Configuration Example: EPW1463\_\_-1/2-IC or EPW1463-1/2-IC



\* Wire Type for all Illumination Control Fixture Whips is THHN rated for 600 Volts.

\*\* Any ICFW longer than 6-feet will require a longer lead time. Contact EPCO Inside Sales for more information.

† Four (4) 12 AWG Conductors in 1/2" (.5") Flexible Metal Conduit (FMC) exceeds the percentage (%) fill capacity for the number of conductors in 1/2" (.5") FMC per the 2017 National Electrical Code (NEC), Article 348.22.

Add item code references shown in **Red** to build your part number.

**Note:**

1. The Illumination Control Fixture Whip (ICFW) will be built to your specifications using only 1/2" (.5") Flexible Metal Conduit.

2. Power Conductors Colors (all Stranded Wire unless Solid Wire "S" is designated above):

- 120 Volt 3-Wire: Black, White, and Green
- 120 Volt 4-Wire: Black, White, Red, and Green
- 277 Volt 3-Wire: Brown, Gray, and Green
- 277 Volt 4-Wire: Brown, Orange, Gray, and Green

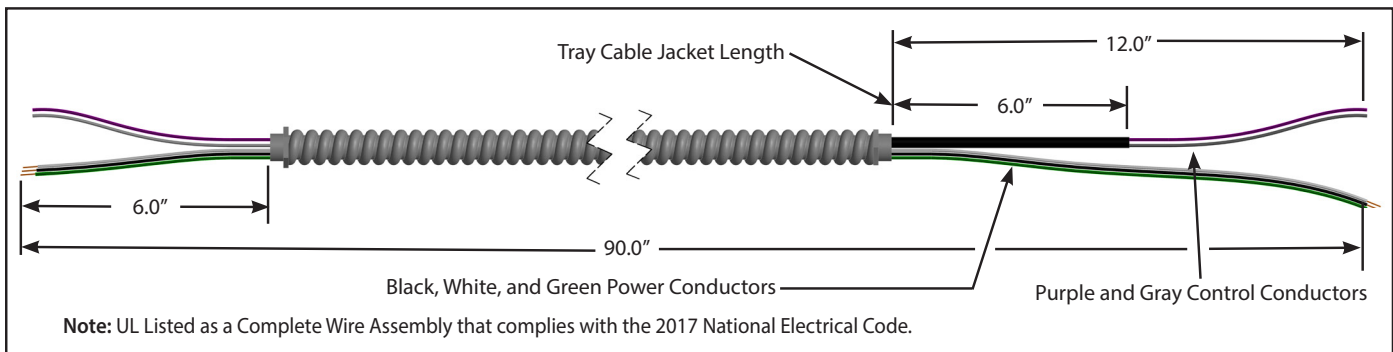
Power Conductors have a "captive" strip 5/8" (.625") on each end of the conductor wires and securely tied to prevent damage to these conductors during shipment.

Connector Type: Screw-in Lock Nut Connector (standard) as shown.

- If your application requires a Die Cast-Snap-in Connector, enter "**AD**" in your part number.
- Contact EPCO Inside Sales for additional information on other fixture whip type connectors available.

Illumination Control (IC) Wires:

- 16 AWG PVC Jacketed Tray Cable Stranded Wire only!
- Includes a "captive" 6-inch strip on each end of the IC wires and securely tied to the Fixture Whip to prevent damage to the wires during shipment.



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