

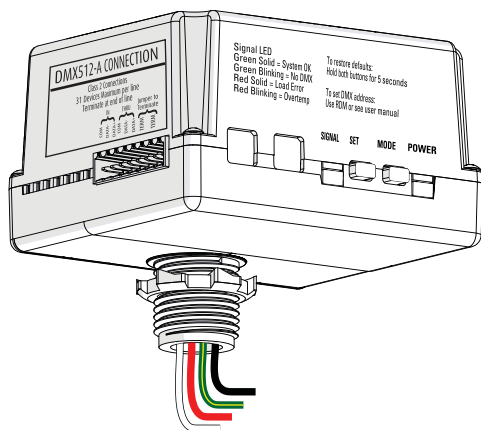
ETC Installation Guide

Unison Foundry Phase-Adaptive Dimmer

Overview

The Unison Foundry Phase-Adaptive Dimmer provides control for 120V and 277V line voltage loads that require forward-phase or reverse-phase dimming, up to 600 watts.

The Phase-Adaptive Dimmer can be wired to individual fixtures or used for zone control, and automatically provides reverse-phase or forward-phase dimming based on the connected load type.



120VAC model
shown

Control connected loads from any DMX control device. Configure the Phase-Adaptive Dimmer either remotely via RDM (using a tool like ETC Net3 Concert) or locally on the controller. See [Configure the Phase-Adaptive Dimmer](#) on [page 6](#).

Specifications

Ambient Environment

For indoor use only. Rated for plenum use.

- 32°F to 122°F (0°C to 50°C) operating temperatures in 5–95% non-condensing humidity.



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Web: etcconnect.com ■ Product information and specifications subject to change.
ETC intends this document to be provided in its entirety.
7179M2100 ■ Rev E ■ Released 2018-12

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Electrical Specification

Two models are available:

- 120VAC, +/- 10% at 47–63Hz, maximum load 600W
- 277VAC, +/- 10% at 47–63Hz, maximum load 600W

Supported load types

- Tungsten
- 2-wire Fluorescent
- LED
- Electronic low voltage transformer
- Magnetic low voltage transformers (120V only, 300W maximum load). Transformers should be correctly loaded to their rated current.



CAUTION: *ETC does not support the use of the Phase-Adaptive Dimmer with magnetic loads at 277V.*

Connecting underloaded magnetic transformers at 120V to the Phase-Adaptive Dimmer may result in damage to the Phase-Adaptive Dimmer. This damage is not covered under warranty.

Compliance

- UL and cUL listed
- Conforms to UL 916 (Energy Management Equipment) and UL 2043 (Plenum rated)

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Prepare for Installation

The Phase-Adaptive Dimmer is designed for mounting directly to an electrical junction box or panel (provided by others) at the electrical lighting load, upstream of the load in the circuit.



Note: *If your installation requires Class 2 wiring to be installed in separate conduit, a voltage barrier installation box is available from ETC. Order ETC part number 7187A1000.*

DMX Control Wiring

The Phase-Adaptive Dimmer connects to a DMX512-A source (provided by others) for control.

DMX wiring runs can be daisy chains of up to 32 devices with no Y's or loops. Each DMX daisy chain must be terminated for proper control performance (see [Terminate DMX](#) on [page 5](#)).

ETC recommends using Belden 9729 (or approved equivalent) Class 2 wire. Belden 1583A or equivalent Cat5, Cat5e, or Cat 6 UTP wire is also acceptable when properly shielded or installed in grounded metal conduit and connected using the Cat5 IDC termination kit (ETC part number 4100A1013). This termination kit is not provided with the Phase-Adaptive Dimmer.

A voltage barrier installation box (part number 7187A1000) is available for installations where DMX control wiring is installed in grounded metal conduit. Contact ETC to purchase termination kits or voltage barrier installation boxes if required.

The total combined length of a DMX wire run (using Belden 9729 or equivalent) may not exceed 1,000 ft (300 m).



Note: *All control wiring should be installed and terminated by a qualified installer and should follow standard wiring installation practices.*

Leave approximately 8 in (20 cm) of wiring available for connection and to allow slack for future service needs.



Note: *For more information on DMX control wiring requirements, see these and other Support Articles at etcconnect.com:*

- support.etcconnect.com/ETC/FAQ/DMX-512-Info
 - support.etcconnect.com/ETC/FAQ/DMX_Over_Cat5
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Installation

Installation should follow all local codes and standard electrical practices. Ensure that the junction box is clean and free of obstructions and that all wiring is installed correctly.



WARNING: Risk of electric shock! This device utilizes high voltage and should only be installed by a qualified installer or electrician. Follow all local codes for installation. Before terminating the AC power wiring verify that the main breaker is in the off position and follow the proper lockout/tag out procedures per NFPA Standard 70E.



WARNING: For indoor use only! Must install to an electrical junction box or wireway.

- 1: Locate the circuit breaker panel and turn off the power to the lighting circuit.
 - 2: To gain access to the line voltage wiring, remove the cover plate and other hardware from the junction box at the load.
 - 3: Mount the Phase-Adaptive Dimmer to the exterior of the junction box or panel using the 1/2 in threaded nipple. Use the provided 1/2 in conduit locknut to secure the Phase-Adaptive Dimmer to the junction box or panel.
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Note: *Follow all local code requirements for terminating wire.*

- *Notice that the harness wires on the controller are pre-stripped for your installation convenience.*
 - *Use appropriately sized wire nuts (not provided) to secure each termination.*
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Connect DMX

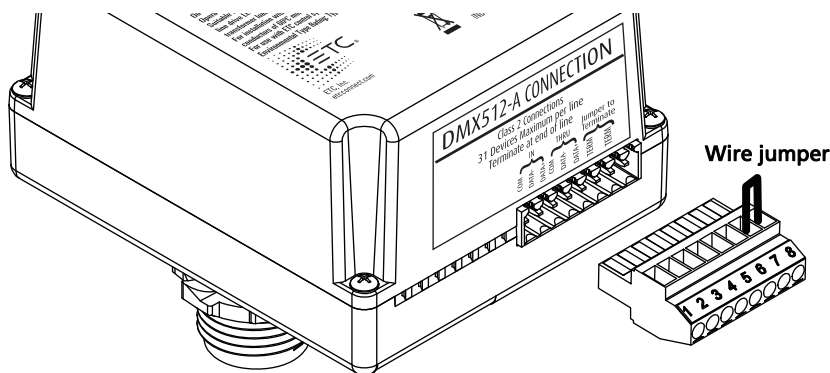
- 1: Pull wiring to the junction box.
- 2: Terminate the DMX cable by following the steps in the termination kit supplied with the unit.

Terminate DMX

Terminate the last device in the DMX data run for proper control performance. To terminate the DMX data run at the Phase-Adaptive Dimmer, connect the last two pins on the termination connector with a wire jumper (not included) as shown below.



Note: *Because resistance is built into the Phase-Adaptive Dimmer, no additional resistor is required to terminate the last device in the DMX data run.*



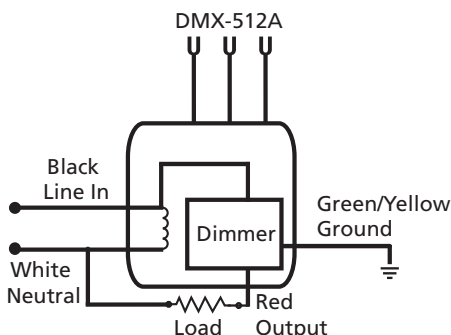
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Connect Power Input and Dimmer Output

The power input and dimmer output wiring exits the Phase-Adaptive Dimmer through the knockout mount on the enclosure.

- 1: Connect the power input wiring. The dimmer is supplied with wiring specific to the input voltage, either 120VAC or 277VAC.
 - a: Connect the green/yellow striped wire (14 AWG) from the controller to the ground wire from the breaker panel and the ground wire from the lighting load.
 - b: Connect the white wire (14 AWG) to the incoming neutral wire from the breaker panel and the neutral wire of the lighting load.
 - c: Connect the power input wire (14 AWG) to the line input feed wire (hot) from the breaker panel. Power input wire is black for 120VAC or brown for 277VAC.
- 2: Connect the red dimmed output wire (14 AWG) to the dimmed line of the lighting load.
- 3: Reinstall the junction box cover plate.



Configure the Phase-Adaptive Dimmer

You can use RDM to set the appropriate dimming mode, dimming curve, DMX address, and data loss behavior for the Phase-Adaptive Dimmer. You can set other parameters using RDM, too. See [RDM Parameters](#) on [page 14](#).

Dimming Mode

The Phase-Adaptive Dimmer has two dimming modes:

- **Auto:** Automatically provides reverse-phase or forward-phase dimming based on the connected load type. This is the default setting.
- **Forward-Phase:** Provides forward-phase dimming only.

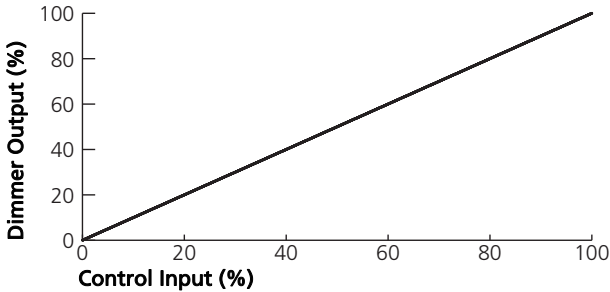
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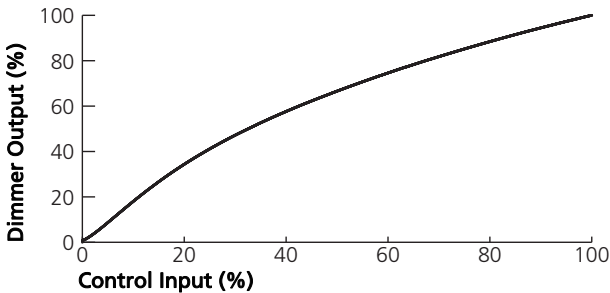
Dimming Curve

The Phase-Adaptive Dimmer has two dimming curves:

- **Linear:** The linear curve matches the control input percentage to Root Mean Squared (RMS) voltage output. Each percent increase in control level increases dimmer voltage output by the same amount.



- **Modified Square Law (Mod-Square):** A standard square law curve may overcompensate for infrared loss, resulting in "steppy" response to incremental control changes at low levels. The ETC modified square law curve applies a second multiple to the standard square law curve for more uniform response to control levels changes across the entire range of dimmer output.



DMX Address

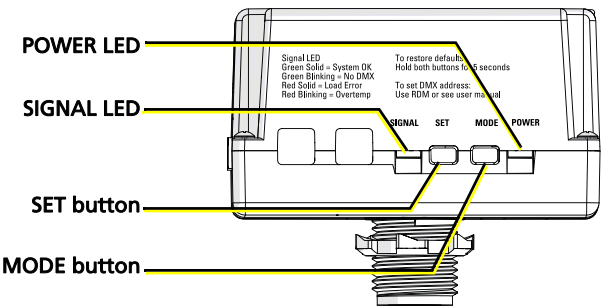
You can assign DMX addresses to an entire daisy chain of Unison Foundry devices using Net3 Concert or another RDM controller. If you cannot assign the DMX addresses using RDM, you can manually set the DMX start address on the device. The default factory-set DMX address is 1, and the range of available addresses is 1–512.

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Manually Set the DMX Address

If you cannot assign the DMX addresses using RDM, use the **MODE** and **SET** buttons to set the value of each digit in the three-digit DMX address in sequence.



Task	What to do	What you will see
1: Put the controller into DMX addressing mode.	Press and hold the MODE button.	<ul style="list-style-type: none">The POWER LED indicator blinks 3 times to indicate that you can set the 100s digit of the DMX address.The SIGNAL LED indicator blinks the 100s digit in the current DMX address. For example, if the current DMX address is 201, the SIGNAL LED indicator blinks 2 times. (If the 100s digit is a 0, the indicator remains lit and does not blink.)
2: Set the 100s digit of the DMX address. <div><div>100s 10s 1s</div><div>201</div></div>	<p>Press the SET button to set the 100s digit. For example, press the button once for 1, twice for 2, and so forth up to five times for 5. Press and hold the SET button for 0.</p> <p>If the 100s digit in the new DMX address is the same as in the current DMX address, you can keep the digit by skipping to step 3.</p>	<ul style="list-style-type: none">The POWER LED indicator continues to blink 3 times to indicate that you are setting the 100s digit of the DMX address.The SIGNAL LED indicator blinks the value that you set for the 100s digit in the DMX address.

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Task	What to do	What you will see
<p>3: Set the 10s digit of the DMX address.</p> <div><div>100s</div><div>10s</div><div>1s</div></div> <div>201</div>	<p>Press the MODE button to advance to the 10s digit.</p>	<ul style="list-style-type: none">• The POWER LED indicator blinks 2 times to indicate that you are setting the 10s digit of the DMX address.• The SIGNAL LED indicator blinks the 10s digit in the current DMX address. For example, if the current DMX address is 201, the SIGNAL LED indicator remains lit and does not blink.• If the SIGNAL LED indicator rapidly blinks red, this means that you set the 100s digit to an invalid value (for example, 6). When this occurs, the Phase-Adaptive Dimmer exits DMX addressing mode without saving.
	<p>Press the SET button to set the 10s digit. For example, press the button once for 1, twice for 2, and so forth up to nine times for 9. Press and hold the SET button for 0.</p> <p>If the 10s digit in the new DMX address is the same as in the current DMX address, you can keep the digit by skipping to step 4.</p>	<ul style="list-style-type: none">• The POWER LED indicator continues to blink 2 times to indicate that you are setting the 10s digit of the DMX address.• The SIGNAL LED indicator blinks the value that you set for the 10s digit in the DMX address.

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Task	What to do	What you will see
4: Set the 1s digit of the DMX address. <div><div>100s 10s 1s</div><div>201</div></div>	Press the MODE button to advance to the 1s digit.	<ul style="list-style-type: none">• The POWER LED indicator blinks once to indicate that you are setting the 1s digit of the DMX address.• The SIGNAL LED indicator blinks the 1s digit in the current DMX address. For example, if the current DMX address is 201, the SIGNAL LED indicator blinks once.• If the SIGNAL LED indicator rapidly blinks red, this means that you set the 10s digit to an invalid value. When this occurs, the Phase-Adaptive Dimmer exits DMX addressing mode without saving.
	Press the SET button to set the 1s digit. If the 1s digit in the new DMX address is the same as in the current DMX address, you can keep the digit by skipping to step 5.	<ul style="list-style-type: none">• The POWER LED indicator continues to blink once to indicate that you are setting the 1s digit of the DMX address.• The SIGNAL LED indicator blinks the value that you set for the 1s digit in the DMX address.
5: Save the new DMX address.	Press the MODE button.	<ul style="list-style-type: none">• The POWER LED indicator and SIGNAL LED indicator return to their normal functions (see LED Indicators and User Interface on page 12).• If the SIGNAL LED indicator rapidly blinks red, this means that you set the 1s digit to an invalid value. When this occurs, the Phase-Adaptive Dimmer exits DMX addressing mode without saving.



Note: *The Phase-Adaptive Dimmer will exit DMX addressing mode after 1 minute of inactivity. When this occurs, the controller retains the DMX address that was saved before you entered DMX addressing mode.*

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Data Loss Behavior

Use RDM to set the behavior of the Phase-Adaptive Dimmer when DMX is lost. The Phase-Adaptive Dimmer has three options for data loss behavior:

- Hold last look (default data loss behavior)
- Wait and fade
- Go to full



Note: *The “Go to full” data loss behavior does not meet the requirements of UL924 for emergency lighting control.*

Power Up and Test

- 1: Restore power to the circuit. The Phase-Adaptive Dimmer will power up and turn on all connected loads to full output.
- 2: Verify that DMX input is present. The green signal LED on the unit should be lit steadily. If it is blinking, check the DMX wiring.
- 3: Configure the controller. If additional configuration is required, use an RDM controller such as ETC Net3 Concert software to configure the appropriate properties. For more detailed information, see the Net3 Concert integrated help system.
- 4: Test the controller response. Use the DMX control system to alter the control level, and make sure the Phase-Adaptive Dimmer responds.

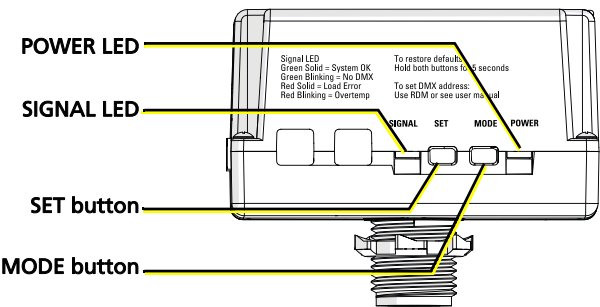
Power-Up Behavior

In the event of a power loss to the Phase-Adaptive Dimmer, the controller will return to the DMX level when power is restored if DMX is present. If DMX is not present when power is restored, the Phase-Adaptive Dimmer will remain off.

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LED Indicators and User Interface



LED Indicator	Color	State	Description
SIGNAL	Green	Solid	DMX present, system OK.
		Slow blinking	DMX absent. Verify that the DMX wiring is correct, and verify that the DMX source is functioning correctly.
		Rapid blinking	DMX errors. Verify that the DMX wiring is correct, and verify that the DMX source is functioning correctly.
	Red	Solid	Shutdown due to overcurrent or short circuit. Dimmer shuts down at an overcurrent of 16 A or when short circuit occurs. To resume normal operation, set dimmer to 0% and then return it to the intended level.
		Blinking	Shutdown due to overtemperature. Dimmer shuts down when temperature reaches 90°C (194°F), and must cool to 75°C (167°F) before resuming normal operation.
POWER	Blue	Solid	Power is OK
		Blinking	The incoming power is outside of the operable range of voltage or frequency for the dimmer. See Specifications on page 1 and verify that incoming power is correct.

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Update the Software

You can update the software for the Phase-Adaptive Dimmer using ETC UpdaterAto software and an ETC Gadget II or Gateway. Both LED indicators on the Phase-Adaptive Dimmer blink during software updates.

Restore Defaults

Return the Phase-Adaptive Dimmer to factory defaults by pressing and holding both the **MODE** and **SET** buttons simultaneously for 5 seconds. Both LEDs will blink rapidly to indicate that the factory defaults have been restored. For factory default values, see [RDM Parameters](#) on [page 14](#).

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RDM Parameters

You can set the following RDM parameters on the Phase-Adaptive Dimmer using Net3 Concert or another RDM controller.

Parameter	ID and Number	Description	Default Value
Device Label	E120_DEVICE_LABEL 0x0082	User-configurable name for the device	ETC DMX Single Dimmer
DMX Start Address	E120_DMX_START_ADDRESS 0x00F0	DMX address, range = 1–512	1
DMX Fail Mode (Data Loss)	E137_1_DMX_FAIL_MODE 0x0141	Configures the behavior when DMX is lost: <ul style="list-style-type: none">• Hold last look• Wait and fade• Go to full	Hold last look
Curve and Mode	E137_1_CURVE 0x0343	Configures the dimming mode and dimming curve: <ul style="list-style-type: none">• Auto, Mod-Square• Auto, Linear• Forward-Phase, Mod-Square• Forward-Phase, Linear	Auto, Linear
Minimum Level	E137_1_MINIMUM_LEVEL 0x0341	Minimum level that the dimmer goes to (when above 0%) range = 0–127	0
Maximum Level	E137_1_MAXIMUM_LEVEL 0x0342	Maximum level that the dimmer goes to (at full), range = 128–255	255
Output Response Time	E137_1_OUTPUT_RESPONSE_TIME 0x0345	Configures the response time: <ul style="list-style-type: none">• Instant• 100 ms• 600 ms• 800 ms• 1000 ms	800 ms

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