F-Drive Series W1
Installation Manual

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Introduction

The F-Drive Series W1 Driver LED power control solution provides a centralized approach for controlling LED luminaires. It is a wall-mount driver that provides power and data for up to four circuits in standard and emergency installations. By maintaining remote, easy access to the driver, LED-based systems can be easily installed and serviced, while ensuring critical components are readily accessible to support staff.

Compatible Products

W1 Drivers are compatible with the following luminaires:

Model	Compatible Luminaires	Recommended Breakout Box
W1 CC Driver FDW1CCD	• ETC Navis 100 Fixed White • ETC Source Four Mini LED for F-Drive • ETC Irideon FPZ and WLZ for F-Drive	• None for daisy-chain • B-Box4R for star topology
	• ETC ArcSystem Pro One-Cell Standard, Pro One-Cell Small, and Pro One-Cell Micro	• B-Box4M
	• Third-party 200–700 mA constant current fixtures	• B-Box4T
W1 CC Emergency Driver FDW1ECCD	• ETC Navis 100 Fixed White	• None for daisy-chain • B-Box4R for star topology
W1 Fade to Warm Driver FDW1FTWD	• ETC Navis 100 Fade to Warm	• None for daisy-chain • B-Box4R for star topology
W1 Fade to Warm Emergency Driver FDW1EFTWD		
W1 Chroma Driver FDW1CHD	• ETC Navis 100 RGBW	• None for daisy-chain • B-Box4R for star topology
W1 CV Driver Constant Voltage FDW1CVD	• Third-party 24 VDC constant voltage fixtures	• B-Box4T
W1 CV Emergency Driver Constant Voltage FDW1ECVD		

For more information on compatible products and breakout boxes, see *LED Dimming Compatibility Database on the next page* and *Documentation for Compatible Products on the next page*.

> ℹ️ **Note:** *F-Drive W1 Drivers do not support ArcSystem Pro One-Cell **High Output** luminaires.*

Optional Accessories

- B-Boxes (optional):
  - FD-BBOX-4R can connect F-Drive-compatible luminaires with RJ45 input in star topology.
  - FD-BBOX-4M provides a convenient way to connect ArcSystem Pro One-Cell luminaires.
  - FD-BBOX-4T can be used with third-party loads.

ETC Concert

F-Drive Series drivers can be configured using ETC Concert software.

F-Drive System Design Tool

The F-Drive System Design Tool (etcconnect.com/FDriveSysDesignTool) allows you to design an F-Drive R12 rack unit or F-Drive W1 Driver with different luminaires, breakout boxes, cable lengths, and other system components.

LED Dimming Compatibility Database

The LED Dimming Compatibility Database (etcconnect.com/compatibility) is a searchable list of devices that ETC has tested for compatibility with ETC dimming and control systems.

Documentation for Compatible Products

The following documents are available at etcconnect.com/Products/Power-Controls/LED-Drivers/F-Drive/Documentation.aspx:

- *F-Drive B-Box4 Installation Guide*
- *F-Drive Series R12 Installation Manual*
- *F-Drive R12 and W1 Wiring Reference Guide*

The following documents are available at etcconnect.com/Products/Architectural-Fixtures:

- *ArcSystem Navis 100 Installation Guide*
- *Source Four Mini LED F-Drive Installation Guide*
- *Irideon WLZ (F-Drive) Installation Guide*
- *Irideon FPZ (F-Drive) Installation Guide*
- *ArcSystem Pro D1 and D2 Series Drivers Installation Guide* for information about ArcSystem Pro One-Cell luminaires

ETC Concert software and documentation is available at etcconnect.com/concert.

Document Conventions

This document uses the following conventions to draw your attention to important information.

Note: *Notes are helpful hints and information that is supplemental to the main text.*

CAUTION: *A Caution statement indicates situations where there may be unwanted consequences of an action, potential for data loss or an equipment problem.*

WARNING: **A Warning statement indicates situations where damage may occur, people may be harmed, or there are serious or dangerous consequences of an action.**

WARNING: **RISK OF ELECTRIC SHOCK! This warning statement indicates situations where there is a risk of electric shock.**

All ETC documents are available for free download from our website: etcconnect.com.

Please email comments about this manual to: TechComm@etcconnect.com.

Help from ETC Technical Services

If you are having difficulties and your problem is not addressed by this document, try the ETC support website at support.etcconnect.com or the main ETC website at etcconnect.com. If none of these resources are sufficient, contact ETC Technical Services directly at one of the offices identified below. Emergency service is available from all ETC offices outside of normal business hours.

When calling for help, take these steps first:

- Prepare a detailed description of the problem
- Go near the equipment for troubleshooting
- Find your notification number if you have called in previously

ETC, Inc.
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3031 Pleasant View Road
Middleton, WI 53562
800-775-4382 (USA, toll-free)
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service@etcconnect.com

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Safety

The F-Drive Series W1 is intended for professional use only. **Read the entire manual before using this equipment.**

IMPORTANT SAFEGUARDS

When using electrical equipment, basic safety precautions should always be followed including the following:
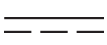
READ AND FOLLOW ALL SAFETY INSTRUCTIONS.

- Do not use outdoors.
- Do not let power supply cords touch hot surfaces.
- Do not mount near gas or electric heaters.
- Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Do not use this equipment for other than intended use.
- To reduce the risk of fire and overheating, make sure all connections are tight.
- Turn off electrical power before modifying the lighting system in any way.

SAVE THESE INSTRUCTIONS

Label Symbols

W1 Drivers are conveniently labeled with relevant symbols for your safety. Refer to the product label to see which symbols apply to your product.

⚠	General warning	Avertissement général
	This product should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling.	Ce produit ne doit pas être jeté avec les déchets ménagers mais doit être déposé dans une collecte de déchets électroniques ou dans un point de collecte.
---	The product input or output is suitable for direct current only.	L'entrée et la sortie de ce produit convient uniquement au courant continu.
∿	The product input or output is suitable for alternating current only.	L'entrée et la sortie de ce produit convient uniquement au courant alternatif.
	Safety extra low voltage device	Dispositif de sécurité à très basse tension
	Independent lighting control gear	Appareil de contrôle d'éclairage indépendant.
EL	Emergency lighting driver (non-battery powered) according to EN-61347-2-13.	Pilote d'éclairage d'urgence (pas alimenté par piles) conformément à la norme EN-61347-2-13.
	Protective earth (ground)	Protection Classe I Mise à la terre
t_c or T_c	Rated maximum case temperature	Température maximale recommandée pour le boîtier

Chapter 1

Overview

F-Drive W1 and W1E Drivers

Features

- Compatible with a wide range of control systems
- DMX/RDM control input with per-circuit patching
- W1E models are UL 924 and CSA C22.2 No. 141 listed for emergency lighting control

⚠ **WARNING:** Connect this equipment to a non-dimmable power source in order to avoid damage to the equipment's internal power supply and other electrical components. Using a dimmable power source may damage the equipment and will void the warranty.

W1 Models

Variant	Load Type	Output Type	Output Voltage	Per Circuit Limits	Driver Limits	Output Connectors
W1 Fade to Warm Driver FDW1FTWD W1 Fade to Warm Emergency Driver FDW1EFTWD	• up to four total ETC ArcSystem Navis 100 Fade to Warm luminaires	constant current, maximum 450 mA per channel	48 VDC	450 mA, 21.6 W	1.8 A, 86 W	RJ45 and 4 two-pin terminal blocks
W1 CC Driver FDW1CCD W1 CC Emergency Driver FDW1ECCD	• up to four total compatible ETC luminaires, see *Compatible Luminaires on page 1* • third-party 200–700 mA constant current fixtures	constant current, adjustable from 200–700 mA (see *Configure the W1 CC Driver on page 32*)	48 VDC	700 mA, 33 W	2.8 A, 134 W	RJ45 and 4 two-pin terminal blocks
W1 CV Driver Constant Voltage FDW1CVD W1 CV Emergency Driver Constant Voltage FDW1ECVD	• third-party 24 VDC constant voltage fixtures	24 VDC	24 VDC	2.1 A, 50 W	6.25 A, 150 W	4 two-pin terminal blocks
W1 Chroma Driver FDW1CHD	• up to four total ETC ArcSystem Navis 100 RGBW luminaires	48 VDC power and data	48 VDC		2.1 A, 100 W	RJ45

> **Note:** *Use ONE type of output connector. For example, use the RJ45 receptacle OR the two-pin terminal blocks on a W1 Fade to Warm Driver or a W1 CC Driver.*

Emergency System Overview

The W1 Emergency Driver is a UL924 listed variant of the W1 Driver. The W1 Emergency Driver is available in constant current, constant voltage, and Fade to Warm models.

Install the W1 Emergency Driver in a location that is accessible by qualified personnel for testing of the emergency operation.

Note: *Installation must follow all national and local codes for electrical equipment.*

Note: *Normal and emergency wiring cannot be contained in the same conduit according to NEC 700.10(B).*

Note: *W1 Emergency Drivers were evaluated for use in emergency systems with Navis Fixed White and Fade to Warm luminaires. Do not use other luminaires with W1 Emergency Drivers in emergency systems.*

Note: *To ensure a smoother transition from an emergency state to a standard run state, ETC recommends setting DMX Loss behavior as "Go to Full" on W1 Emergency Drivers. In the Property Editor in ETC Concert, this setting is called DMX Loss Mode.*

W1 Emergency Functionality

The W1 Emergency Driver requires two circuit connections. These inputs have the following functions:

1. **"Sense" input**. The "Sense" input accepts 40-300 VAC or VDC. There are two options for "sense" input:
   - A normal mains supply circuit to sense failure of the normal supply.
   - The 48 VDC panic output from an F-Drive R12 Driver to sense failure of the power to the F-Drive R12.
   Connect this circuit to the "Sense" input terminal.
2. **"Maintain" input**: a circuit with a changeover relay that switches to a battery-backed supply that provides power to the fixture when the normal mains supply fails. Connect this circuit to the "Maintain" input terminal.

"Sense" detects when power is lost and forces the fixture to a full-on state, powered by the emergency supply through the maintained input. Control of the fixture will not be available until the sense input has been restored.

Sense Input from Normal Mains Supply

⚠️ **CAUTION**: *If you are using a normal mains supply for the "Sense" input, do not mix 120 V and 277 V between the sense and emergency feeds. "Sense" (normal) and "Maintain" (normal/emergency) must have the same phase. The diagram below shows the recommended installation.*
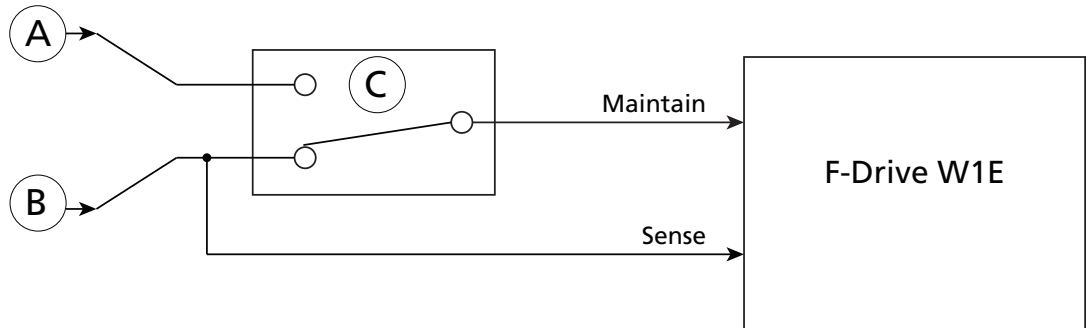
A	Battery-backed supply
B	Normal mains supply
C	Changeover relay

Sense Input from F-Drive R12 48 VDC Panic Output

See the *F-Drive R12 Installation Manual* for details on wiring the panic output on the F-Drive R12. ETC documents are available for download in PDF format free of charge at etcconnect.com.
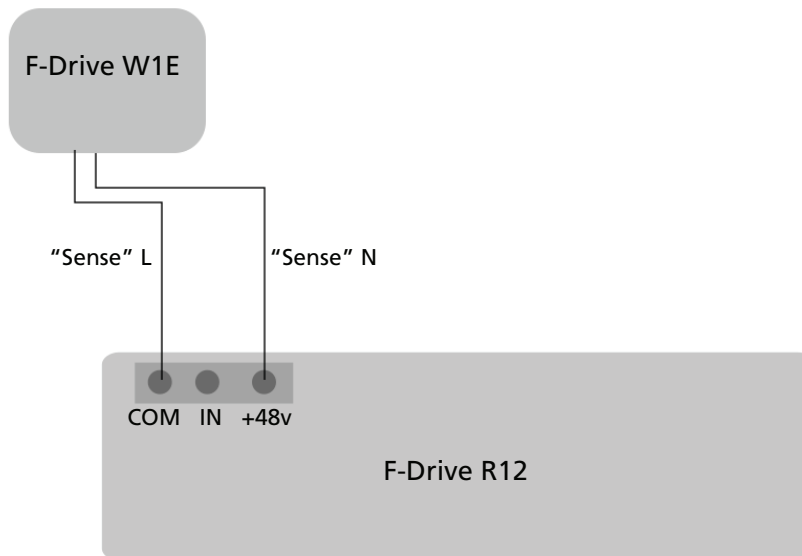
Before You Begin Installation

Review the following information before installing the F-Drive W1.

Installation Requirements

- Ambient operating temperature 0°C–40°C (32°F–104°F), 5%–95% non-condensing humidity.
- Dry locations only.
- Refer to the *ArcSystem Navis 100 Installation Guide* for luminaire installation requirements. All ETC documents are available for free download from our website: etcconnect.com.

Power Disconnect Device

Before installation, make sure you have an accessible input power disconnect device installed ahead of your F-Drive W1.

WARNING: RISK OF DEATH BY ELECTRIC SHOCK! Failure to disconnect all power to the system before installation, maintenance, cleaning, or any other system modification could result in serious injury or death.

AVERTISSEMENT : RISQUE DE MORT PAR DÉCHARGE ÉLECTRIQUE! Négliger de débrancher toutes les sources d'alimentation du système avant l'installation, l'entretien, le nettoyage ou toute autre modification du système peut causer des blessures graves ou la mort.

De-energize main feed to F-Drive Power Control products and follow appropriate Lockout/Tagout procedures as mandated by NFPA 70E. It is important to note that electrical equipment such as breaker panels can present an arc flash hazard if improperly serviced. This is due to the high amounts of short-circuit current available on the electrical supply to this equipment. Any work must comply with OSHA Safe Working Practices.

WARNING: RISK OF ELECTRIC SHOCK! Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.

AVERTISSEMENT : RISQUE DE DÉCHARGE ÉLECTRIQUE! Il est imprudent d'utiliser ou de réparer les circuits installés sans qu'un dispositif de déconnexion de l'alimentation ne soit accessible.

Third-Party Fixtures

The W1 CC Driver and W1 CV Driver support a wide variety of third-party loads. Determining compatibility between these loads and the driver is an important step toward ensuring the success of a project. Search the LED Dimming Compatibility Database at etcconnect.com/compatibility to see if your load is compatible. If your load is not in the compatibility database, follow the instructions at the link above to contact the ETC Applications Engineering department to arrange for compatibility testing.

Visit the F-Drive System Design Tool (etcconnect.com/FDriveSysDesignTool) to design an F-Drive R12 rack unit or F-Drive W1 driver with different luminaires, breakout boxes, cable lengths, and other system components.

Chapter 2

W1 Installation

Prepare to Install the W1

W1 Drivers are for wall-mount only.

Parts and Tools

The following supplies are required, but not provided:

- conduit and conduit fittings, as needed
- conduit punch
- Romex or nonmetallic screw-clamp style conduit connectors for outputs
- Phillips screwdriver
- Flatblade screwdriver
- Wire stripping and cutting tool
- Wire ties
- 5 mm nut driver
- Four #10 screws and other mounting hardware as needed

Note: *Mounting hardware and installation location must support the weight of the driver, conduit hardware, and all cable required for installation.*

Mounting Straps

The mounting straps provide external keyholes to allow wall-mounting without removing the cover of the W1 Driver.

A	Mounting straps
B	Mounting strap attachment nuts
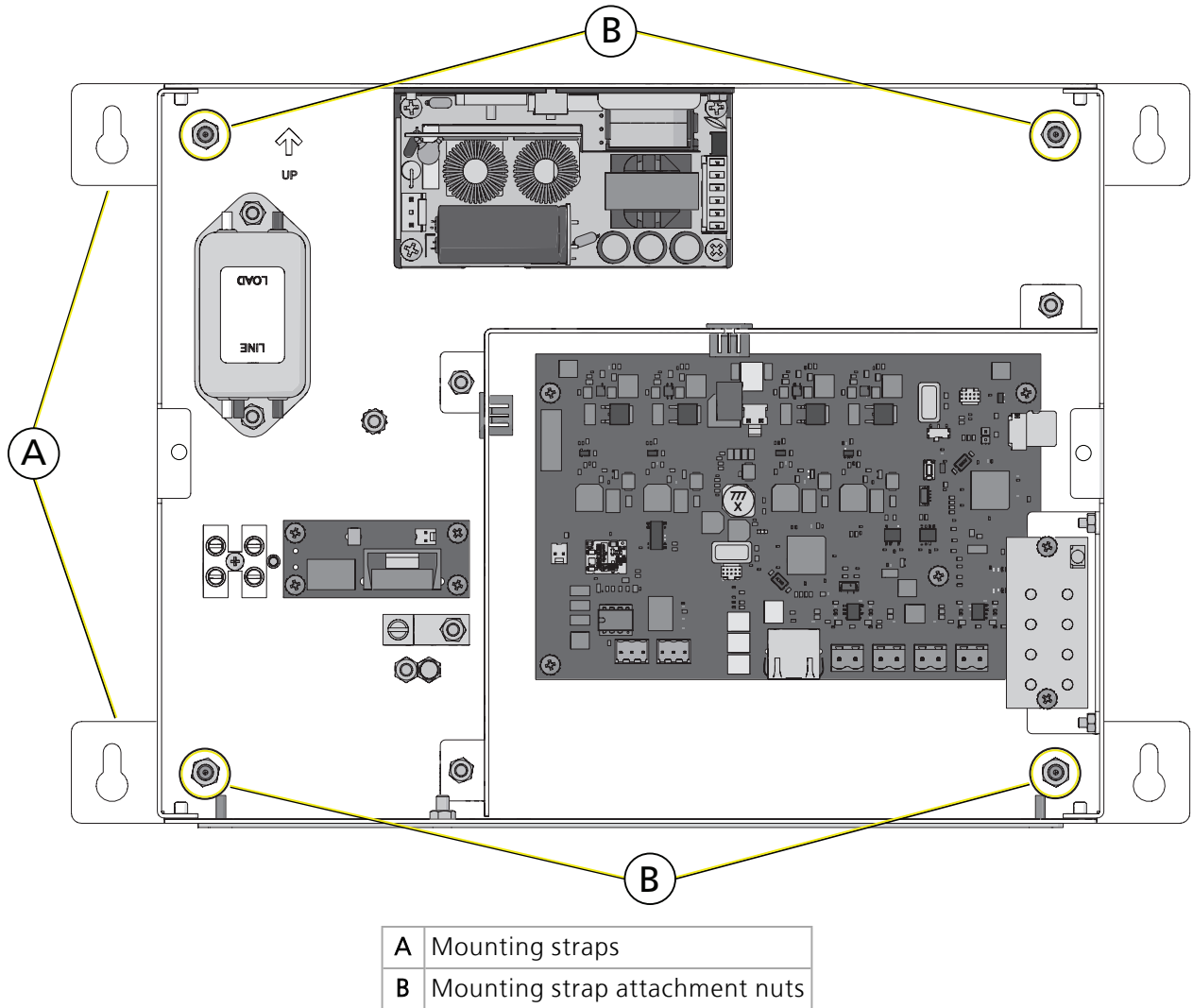
Electrical and Wiring Specifications

Install the driver on a power distribution system with reliably identified earthed neutral (ground), and install a maximum 20 A circuit breaker on the line conductor. The W1 Driver accepts 100–277 VAC, 50/60 Hz. ETC recommends installing all wiring in grounded metal conduit.

WARNING: **RISK OF ELECTRIC SHOCK! Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.**

AVERTISSEMENT : **RISQUE DE DÉCHARGE ÉLECTRIQUE! Il est imprudent d'utiliser ou de réparer les circuits installés sans qu'un dispositif de déconnexion de l'alimentation ne soit accessible.**

CAUTION: *Do not coil excess Category-type cable.*

Wire and Terminal Specifications

Terminal/Connector	Wire Range/Specifications	Strip Length	Torque Rating
"Maintain" input: line/neutral	Up to 6 mm^2 (10 AWG) solid or stranded. Class 1 wiring only. For connections use wire rated for at least 75°C.	7 mm (1/4 in)	0.5 N•m (4.4 in-lb)
"Maintain" input: ground	2.5–10 mm^2 (14–6 AWG)	10 mm (3/8 in)	4.0 N•m (35 in-lb)
"Sense" input: line/neutral/ground	0.25–2.5 mm^2 (24–14 AWG) (emergency drivers only)	6.5 mm (1/4 in)	0.5–0.6 N•m (4.4–5.3 in-lb)
DMX In/Thru three-pin connectors	Belden 9729 or equivalent or Cat5e (or better) minimum 0.2 mm^2 (24 AWG) conductors	See wiring instructions included with the termination kit.	
RJ45 output	You must use 0.25 mm^2 (23 AWG) or larger conductors in Category-type cable. Not present on W1 CV Driver.	Terminate to T568B standard.	
W1 CC Driver and W1 Fade to Warm Driver two-pin terminal block outputs	0.2–1.5 mm^2 (26–14 AWG) Follow Class 2 wiring methods. Not present on W1 Chroma Driver.	6 mm (1/4 in)	0.4–0.5 N•m (3.5–4.4 in-lb)
W1 CV Driver two-pin terminal block outputs	1.5 mm^2 (14 AWG) Follow Class 2 wiring methods.	6 mm (1/4 in)	0.4–0.5 N•m (3.5–4.4 in-lb)

Install the W1
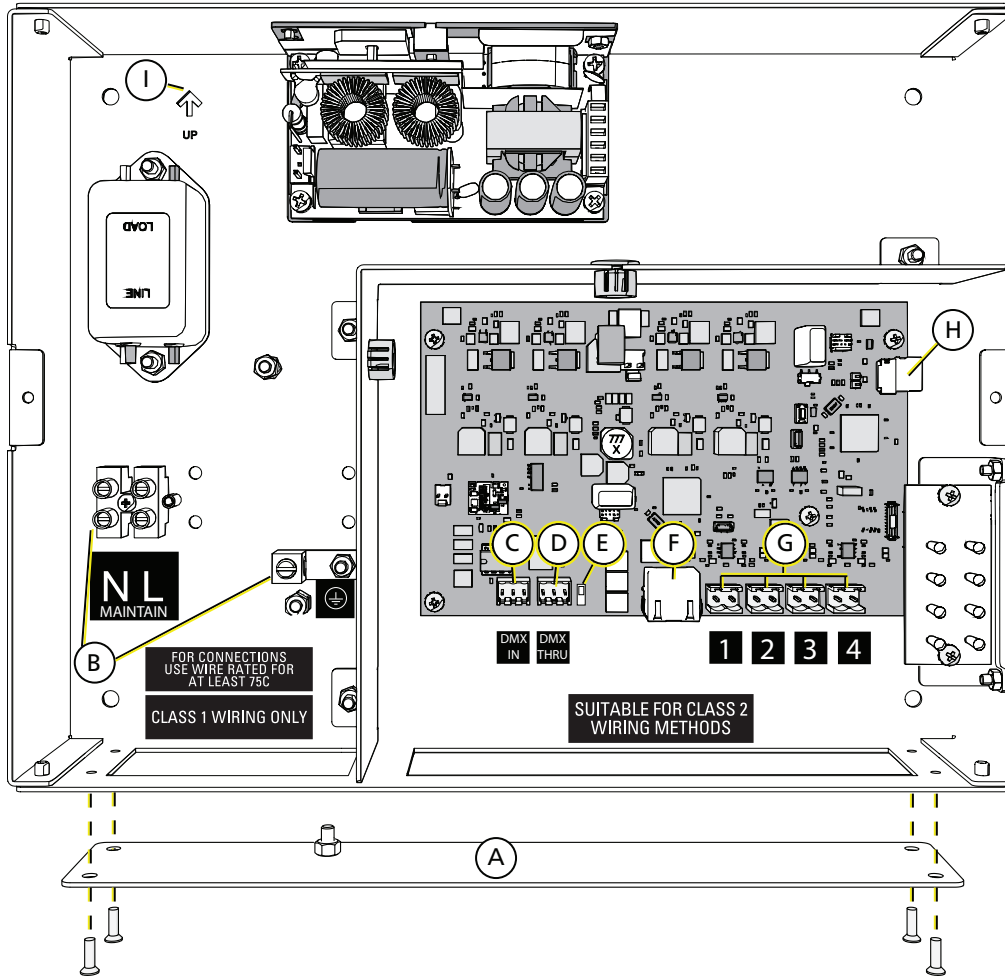
A	Removable wiring panel	F	RJ45 output (not present on W1 CV Driver)
B	AC power input	G	Two-pin terminal outputs (not present on W1 Chroma Driver)
C	DMX In	H	SD card
D	DMX Thru	I	Mounting direction arrow
E	DMX termination switch "DMX_TERM"		

Wire power and data (DMX) to the W1 Driver and then run power out to the Navis luminaires or other loads. If you are installing a W1 Emergency Driver, see *W1 Emergency Driver Installation on page 22*.

Note: *The W1 Chroma Driver ships with an RJ45 terminator. Navis RGBW luminaires are not self-terminating. You must terminate the last Navis RGBW luminaire in line with a 120Ω resistor.*

To purchase extra RJ45 terminators, please contact your ETC customer service representative and request part number N4086.

Wall-Mount the W1 Driver

W1 Drivers can be surface-mounted to any wall capable of supporting their weight using the mounting straps. The mounting straps allow you to install the W1 Driver without removing the cover. If you prefer to use the mounting holes in the back panel of the W1 Driver, you can remove the mounting straps. See *Mounting Straps on page 12*.

Follow these steps to wall-mount the W1 Driver with the mounting straps.

1. Using four #10 screws, mount the back panel to the mounting surface using the mounting straps.
   - Mount the enclosure with the mounting direction arrow pointed up (item I in the illustration on the previous page). The text on the installed cover will be upright.
2. Using the Phillips screwdriver, remove two screws securing the driver cover.
   - Set the screws aside for later reinstallation
   - The cover is tethered to the backbox. Be careful when handling.
3. Remove the four screws securing the removable wiring panel. The wiring panel is designed with no holes so that you can drill or punch the holes needed for your installation.
   - Set the screws aside for later reinstallation.
   - The wiring panel is tethered to the backbox. Remove the nut securing the tether to the wiring panel and save the nut for later reinstallation.
4. Punch holes as needed for conduit for power connection and data connection.
5. Reinstall the wiring panel to the backbox using the nut and four screws removed in step 3.
6. Install Romex or nonmetallic screw-clamp conduit connectors as needed.
7. Attach flexible conduit to the driver.

Note:
- *Use suitable conduit where required by national and local codes.*
- *Driver may require additional means of securement. Installation must follow all national and local codes for electrical equipment.*

Wall-Mount Without the Mounting Straps

If you prefer to remove the mounting straps and mount the W1 Driver to the wall using holes in the back panel, follow the steps below:

1. Using the Phillips screwdriver, remove two screws securing the driver cover.
   - Set the screws aside for later reinstallation
   - The cover is tethered to the backbox. Be careful when handling.
2. Using the 5 mm nut driver, remove the four nuts securing the mounting straps to the back of the W1 Driver (B on *page 12*).
   - Save the mounting straps and nuts for future use or discard them.
3. Using four #10 screws, mount the back panel to the mounting surface using the holes in the back panel.
4. Proceed with steps 3–7 of *Wall-Mount the W1 Driver above*.

Connect the Power Input

Factory Wire Colors*

Model	Color	Type
North America and Europe	green/yellow	ground/earth
North America	black	line/hot
North America	white	neutral
Europe	brown	live
Europe	blue	neutral

*Factory wiring is not shown in the illustration above.

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 required by NFPA Standard 70E.**

AVERTISSEMENT : **RISQUE DE DÉCHARGE ÉLECTRIQUE! Cet appareil utilise une haute tension et ne doit être installé que par un installateur qualifié ou un électricien. Suivez tous les codes locaux pour l'installation. Avant de raccorder le câblage du courant alternatif, vérifiez que le disjoncteur principal est en position d'arrêt et suivez les procédures de vérouillage/étiquetage prescrites par la norme NFPA 70E.**

WARNING: **RISK OF ELECTRIC SHOCK! Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.**

AVERTISSEMENT : **RISQUE DE DÉCHARGE ÉLECTRIQUE! Il est imprudent d'utiliser ou de réparer les circuits installés sans qu'un dispositif de déconnexion de l'alimentation ne soit accessible.**

WARNING: **Connect this equipment to a non-dimmable power source in order to avoid damage to the equipment's internal power supply and other electrical components. Using a dimmable power source may damage the equipment and will void the warranty.**

Perform the following steps to wire power to the driver.

1. Make sure power is off at the main circuit breaker.
2. See *Electrical and Wiring Specifications on page 13* for specification of wire, strip length, and terminal torque ratings. Prepare the wires accordingly.
3. Loosen the three screw terminals for NEUTRAL (N), GROUND (⏚), and LINE (L) connections.
4. Insert the ground wire (typically green) into the GROUND (⏚) terminal and tighten the screw.
5. Insert the neutral wire (typically white) into the NEUTRAL (N) terminal and tighten the screw.
6. Connect the line wire (typically black) into the LINE (L) terminal and tighten the screw.
7. Tug gently on the wires to ensure they are secure.

Terminate DMX In and DMX Thru

DMX is installed in a daisy-chain topology and includes one pair of wires (Data + and Data -) plus an ISO ground (common).

1. Run your DMX lines through the previously installed screw-clamp conduit connector.
2. Follow the DMX termination kit instructions provided with the product to terminate the control wiring.
3. Insert the prepared connector into the "DMX IN" receptacle.
4. Optionally, terminate DMX thru to the next device in the DMX data run. Up to 32 DMX/RDM devices can be daisy-chained together per data run.
   a. Prepare a cable according to the instructions provided with the included termination kit.
   b. Insert the connector with wires terminated into the "DMX THRU" receptacle.
5. Terminate DMX/RDM data signal for the last DMX/RDM device in the data run by sliding the "DMX_TERM" switch to the "ON" position (in the direction of the arrow in the illustration at *DMX Termination Switch below*). All other devices in the data run maintain the factory default termination switch setting (not terminated).
6. Reinstall the driver cover using the two previously removed screws.

DMX Termination Switch
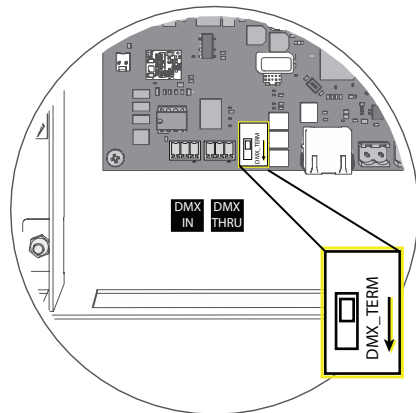
Connect Luminaires

⚠️ **CAUTION:** *Do not coil excess Category-type cable.*

ℹ️ **Note:** *Use ONE type of output connector. For example, use the RJ45 receptacle OR the two-pin terminal blocks on a W1 Fade to Warm Driver or a W1 CC Driver.*

F-Drive-Compatible Luminaires with RJ45 Input

F-Drive-compatible luminaires with RJ45 input include:

- Navis 100
- Irideon FPZ for F-Drive
- Irideon WLZ for F-Drive
- Source Four Mini LED for F-Drive

To connect ArcSystem Pro One-Cell luminaires (which have Molex connectors), see *ArcSystem Pro One-Cell Luminaires on page 20*.

See the luminaire installation guides for luminaire installation instructions and compatibility with F-Drive W1 Drivers. See *Documentation for Compatible Products on page 2*. ETC documents are available for download in PDF format free of charge at etcconnect.com.

Connection options include:

- *Connect F-Drive-Compatible Luminaires in a Daisy Chain below*.
- *Use B-Box4R to Connect F-Drive-Compatible Fixed White or Fade to Warm Luminaires on the next page*.

Alternatively, F-Drive-compatible Fixed White and Fade to Warm luminaires can be connected to the two-pin terminal block outputs of the W1 Driver. See *Connect F-Drive-Compatible Luminaires to the Terminal Block Outputs on page 36*

⚠ **CAUTION**: *Possible damage to equipment. Connect only Fixed White luminaires to a W1 CC Driver. Connect only Fade to Warm luminaires to a W1 Fade to Warm Driver. Connect only Navis 100 RGBW luminaires to a W1 Chroma Driver.*

⚠ **CAUTION**: *Possible damage to equipment. Connect only the same types of luminaires in a wiring run. DO NOT mix Fixed White, Fade to Warm, and RGBW luminaires in the same wiring run.*

⚠ **CAUTION**: *Possible damage to equipment. You must configure the output channel of the W1 CC Driver to the appropriate output for your luminaire before applying power to the luminaire. See Configure the W1 CC Driver on page 32.*

ⓘ **Note:** *Each W1 Chroma Driver ships with an RJ45 terminator. Navis RGBW luminaires are not self-terminating. You must terminate the last Navis RGBW luminaire in line with a 120Ω resistor.*

To purchase extra RJ45 terminators, please contact your ETC customer service representative and request part number N4086.

ⓘ **Note:** *Navis 100, Irideon FPZ for F-Drive, Irideon WLZ for F-Drive, and Source Four Mini LED for F-Drive luminaires can be live-plugged into R12 output cards while the W1 Driver is powered.*

ⓘ **Note:** *Maximum supported wire length between F-Drive-compatible luminaires and F-Drive W1 is 100 m (328 ft).*

Connect F-Drive-Compatible Luminaires in a Daisy Chain

Up to four F-Drive-compatible luminaires with RJ45 input can be daisy-chained along one run of cable from the RJ45 output of a W1 Driver. The cable distance of the wiring run must not exceed 100 m (328 ft). Refer to the luminaire installation guides for full details.

Use B-Box4R to Connect F-Drive-Compatible Fixed White or Fade to Warm Luminaires

> **Note:** *Navis RGBW luminaires are not compatible with B-Box4.*

You can install F-Drive-compatible Fixed White or Fade to Warm luminaires in star topology using a B-Box4 breakout box with RJ45 outputs (FD-BBOX-4R). The FD-BBOX-4R takes a single four-channel RJ45 output from a W1 CC Driver or W1 Fade to Warm Driver and provides four separated RJ45 output channels. The cable distance of each wiring run must not exceed 100 m (328 ft). Visit the F-Drive System Design Tool at etcconnect.com/FDriveSysDesignTool and see the *F-Drive B-Box4 Installation Manual* and the *F-Drive R12 and W1 Wiring Reference Guide* for more information.

ArcSystem Pro One-Cell Luminaires

F-Drive-compatible ArcSystem Pro One-Cell luminaires include:

- ArcSystem Pro One-Cell Standard
- ArcSystem Pro One-Cell Small
- ArcSystem Pro One-Cell Micro

The W1 CC Driver can drive up to four ArcSystem Pro One-Cell Standard, Small, or Micro luminaires. See *Configure the W1 CC Driver on page 32* to configure the W1 CC Driver output current correctly for ArcSystem Pro One-Cell luminaires.

Connection options include:

- *Use B-Box4M to Connect ArcSystem Pro One-Cell Luminaires below*.
- *Connect ArcSystem Pro One-Cell Luminaires to the Terminal Block Outputs on page 37*

> **CAUTION:** *Possible damage to equipment. You must configure the output channel of the W1 CC Driver to the appropriate output for your luminaire before applying power to the luminaire. See Configure the W1 CC Driver on page 32.*

> **Note:** *Maximum supported wire length between ArcSystem Pro One-Cell Standard, Small, and Micro luminaires and F-Drive W1 is 100 m (328 ft).*

Use B-Box4M to Connect ArcSystem Pro One-Cell Luminaires

The FD-BBOX-4M takes a single four-channel RJ45 output from the W1 CC Driver and provides four separated Molex output channels. Visit the F-Drive System Design Tool at etcconnect.com/FDriveSysDesignTool and see the *F-Drive B-Box4 Installation Manual* and the *F-Drive R12 and W1 Wiring Reference Guide* for more information.

Third-Party Fixtures

The W1 CC Driver and the W1 CV Driver support a wide variety of third-party loads. Determining compatibility between these loads and the driver is an important step toward ensuring the success of a project. Search the LED Dimming Compatibility Database at etcconnect.com/compatibility to see if your load is compatible. If your load is not in the compatibility database, follow the instructions at the link above to contact the ETC Applications Engineering department to arrange for compatibility testing.

Third-party constant current or constant voltage fixtures can be connected to a W1 CC Driver or W1 CV Driver either directly to the two-pin terminal or to the RJ45 output through a B-Box4 breakout box with terminal outputs (FD-BBOX-4T) that provides four two-pin terminals.

See *Configure the W1 CC Driver on page 32* for important details about configuring a W1 CC Driver for third-party loads.

⚠️ **CAUTION:** *Do not exceed any Class 2 limits stated by the manufacturer of the third-party load.*

Use B-Box4T to Connect Lighting by Other Manufacturers

The FD-BBOX-4T takes a single four-channel RJ45 output from an W1 Fade to Warm Driver or W1 CC Driver and provides four separated two-pin output channels. Visit the F-Drive System Design Tool at etcconnect.com/FDriveSysDesignTool and see the *F-Drive B-Box4 Installation Manual* and the *F-Drive R12 and W1 Wiring Reference Guide* for more information.

Connect Lighting by Other Manufacturers to the Terminal Block Outputs

Refer to the *Terminal Block Pinout on page 36*.

Chapter 3

W1 Emergency Driver Installation

The W1 Emergency Driver is available in constant current, constant voltage, and Fade to Warm models. F-Drive W1 Emergency Drivers powering Navis 100 Fixed White or Fade to Warm luminaires are compliant with or conform to the applicable safety standards for emergency applications. For current and complete compliance information, view the F-Drive W1 Driver datasheet at etcconnect.com/Products/Power-Controls/LED-Drivers/F-Drive/Documentation.aspx.

Wire a W1 Emergency Driver
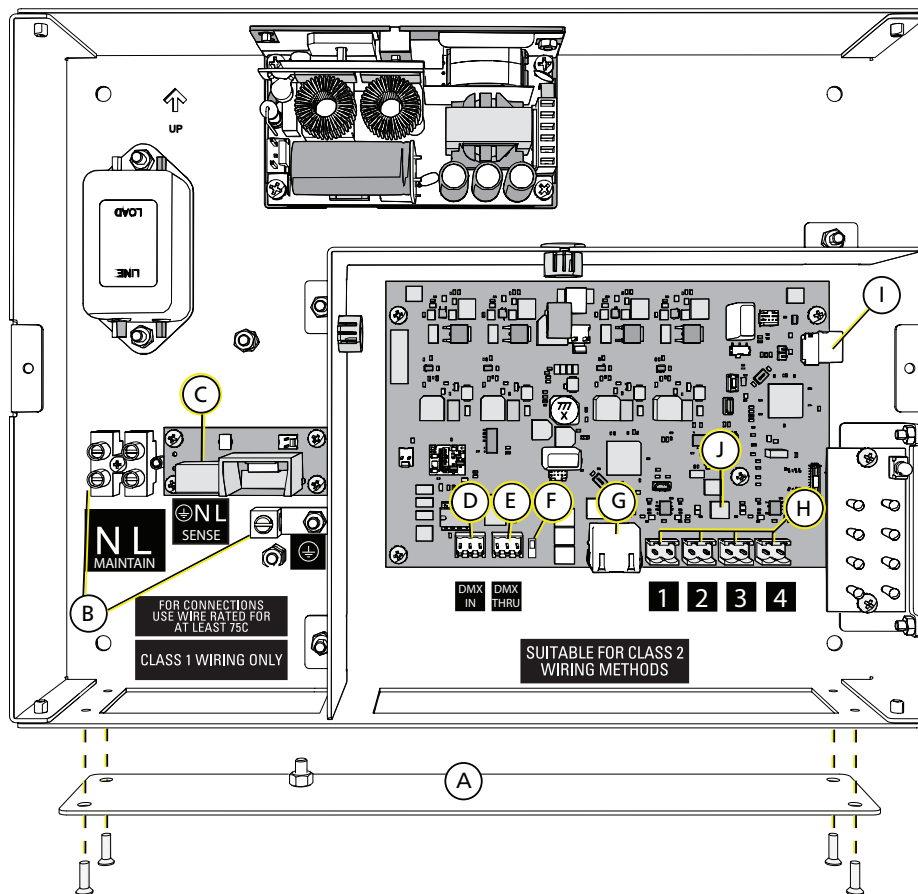
A	Removable wiring panel	F	DMX termination switch "DMX_TERM"
B	AC power input "Maintain"	G	RJ45 output (not present on W1 CV Emergency Driver)
C	Emergency sense input "Sense"	H	Two-pin terminal outputs
D	DMX In	I	SD card
E	DMX Thru	J	Emergency Shift switch block "S4" (W1 CC Emergency Driver only)
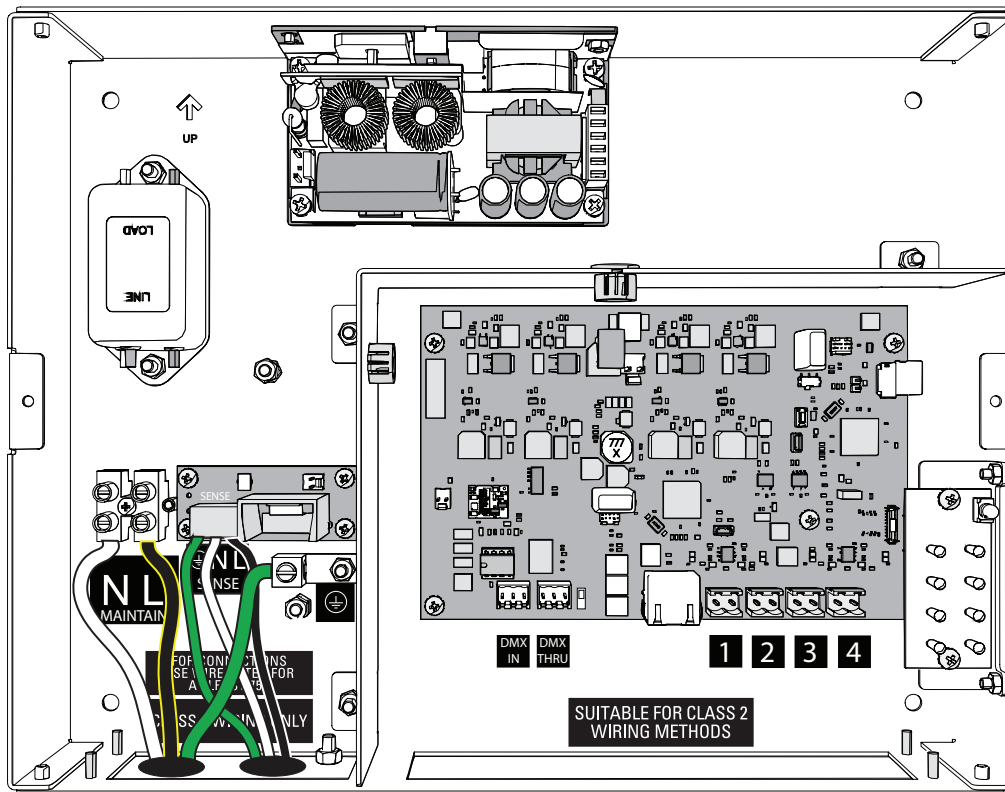
Note: *Normal and emergency wiring cannot be contained in the same conduit according to NEC 700.10(B).*

Note: *Use suitable conduit where required by local or national code.*

Factory Wire Colors*

Model	Color	Type
North America and Europe	green/yellow	ground/earth
North America	black	line/hot
North America	white	neutral
Europe	brown	live
Europe	blue	neutral

*Factory wiring is not shown in the illustration above.

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 required by NFPA Standard 70E.

AVERTISSEMENT : RISQUE DE DÉCHARGE ÉLECTRIQUE! Cet appareil utilise une haute tension et ne doit être installé que par un installateur qualifié ou un électricien. Suivez tous les codes locaux pour l'installation. Avant de raccorder le câblage du courant alternatif, vérifiez que le disjoncteur principal est en position d'arrêt et suivez les procédures de vérouillage/étiquetage prescrites par la norme NFPA 70E.

WARNING: RISK OF ELECTRIC SHOCK! Circuits that are installed without an accessible power disconnect device cannot be serviced or operated safely.

AVERTISSEMENT : RISQUE DE DÉCHARGE ÉLECTRIQUE! Il est imprudent d'utiliser ou de réparer les circuits installés sans qu'un dispositif de déconnexion de l'alimentation ne soit accessible.

Follow the instructions to wall-mount the W1 Emergency Driver before connecting the Sense and Maintained inputs. See *Wall-Mount the W1 Driver on page 15*.

Connect the Sense Input

Connect the "Sense" input to a normal branch circuit or to the 48 VDC output from the panic connector of an F-Drive R12. See *Emergency System Overview on page 8* for details on the "Sense" functionality.

1. Make sure power is off at the main circuit breaker.
2. See *Electrical and Wiring Specifications on page 13* for specification of wire, strip length, and terminal torque ratings. Prepare the wires accordingly.
3. Loosen the three screw terminals for NEUTRAL (N), GROUND (⏚), and LINE (L) connections.
4. Insert the ground wire (typically green) into the GROUND (⏚) terminal and tighten the screw.
5. Insert the neutral wire (typically white) into the NEUTRAL (N) terminal and tighten the screw.
6. Connect the line wire (typically black) into the LINE (L) terminal and tighten the screw.
7. Tug gently on the wires to ensure they are secure.

Connect the Maintain Input

Connect "Maintain" input to a normal/emergency branch circuit with upstream UL 1008 automatic transfer switch:

1. Loosen the three screw terminals for NEUTRAL (N), GROUND (⏚), and LINE (L) connections.
2. Insert the ground wire (typically green) into the GROUND (⏚) terminal and tighten the screw.
3. Insert the neutral wire (typically white) into the NEUTRAL (N) terminal and tighten the screw.
4. Connect the line wire (typically black) into the LINE (L) terminal and tighten the screw.
5. Tug gently on the wires to ensure they are secure.

Configure the W1 CC Emergency Driver TEST Button for Low-Voltage Loads

The W1 Emergency Driver "TEST" button is configured by default to work with Navis 100 Fixed White and Fade to Warm luminaires. If you are using third-party loads with less than 30 V forward voltage, you must set the W1 CC Emergency Driver test switch to work with low-voltage loads. The W1 CV Emergency Driver "TEST" button does not require configuration.

Locate the switch block "S4 Emergency Shift" (see the illustration on *page 22*). The switch block has four switches, one for each output.

- Leave the switch for each output in the default "OFF" (30 V) position to allow the "TEST" button to work with Navis 100 Fixed White and Navis 100 Fade to Warm luminaires and other loads with 30 V or higher forward voltage.
- Set the switch for each output to "ON" (15 V) to allow the "TEST" button to work with loads with less than 30 V forward voltage.

Complete the Installation

Now that you have completed wiring the power to your emergency system driver, you can complete the standard installation procedures. Refer to *Install the W1 on page 14* to complete the following steps after wiring the Sense and Maintained inputs.

- *Terminate DMX In and DMX Thru on page 18*
- *Connect Luminaires on page 18*
- *Configure the W1 CC Driver on page 32*

Chapter 4

Power Up and Control

Power Up Procedure

1. If applicable, check that all third-party load power switches are on.
2. Check the DMX control source to ensure proper installation and termination per the manufacturer's instructions.
3. Check that all wires are terminated properly and secure in the terminals, if applicable.
4. **W1 CC Driver**: Use Concert to verify that each channel is set to output the correct current for the luminaire. See *Configure the W1 CC Driver on page 32*.
5. Apply power at the main circuit breaker.
6. Verify LED status on the front of the W1. See *Troubleshooting on page 35*.

> **Note:** *On initial power up the F-Drive will perform a routine driver setup. During setup status panel LEDs may flash. Do not disconnect power to the F-Drive while LEDs are flashing. Driver setup typically takes several minutes, but may vary depending on connected loads.*

7. Allocate DMX addresses in ETC Concert software. See *DMX System Control below*.
8. If desired, use the "TEST" switch to set all outputs to full. See *Test Button on page 35*.

Identify

You can send an identify command to individual channels of a W1 Driver using ETC Concert or a third-party RDM controller. When you send an identify command to a channel, the corresponding LED (1, 2, 3, or 4) will blink and fixtures connected to the channel will blink on and off: 500 ms on, 500 ms off until you stop the identify command.

See the F-Drive Device Package Help in Concert or *Identify Device on page 28* for information about this RDM command.

DMX System Control

You can control the W1 over wired DMX from a lighting console or ETC Concert software. Concert is available for free download at etcconnect.com/Concert.

- F-Drive Series products are compliant with DMX 512-A (ANSI E1.11-2008 (R2013)).
- DMX loss behavior is configurable via RDM with three options: Go to off, Hold last look, and Go to full.

Navis Luminaire DMX Personalities

Navis RGBW luminaires have two personality options: direct (IRGBW) and IRGB. Navis Fade to Warm luminaires have two personality options: Intensity and Warm Trim. Navis Fixed White luminaires have a single personality: Intensity.The personality is set for all four channels of the W1 Driver.

The IRGB DMX personality provides a means for matching the output from Navis RGBW luminaires to 3000 K Fixed White and Fade to Warm luminaires. When all four IRGB channels are set to 100%, the output from the RGBW luminaire is 3000 K white light.

The Warm Trim DMX personality for Navis Fade to Warm luminaires enables the user to scale the intensity level at which the Red Shift color temperature changes begin to occur.

DMX Channel	Navis RGBW Luminaires		Navis Fade to Warm Luminaires		Navis Fixed White Luminaires
	Direct (IRGBW)	IRGB (default)	Intensity	Warm Trim	Intensity
1	Intensity	Intensity	Intensity	Intensity	Intensity
2	Red	Red		Fade to Warm scaling	
3	Green	Green			
4	Blue	Blue			
5	White				

RDM Parameters

Note: *W1 Chroma Driver RDM communication may not function properly if Navis RGBW luminaires are not set to unique channels using the channel rotary switch on the side of the Navis RGBW luminaire. See the* ArcSystem Navis 100 Installation Guide *for details on Navis RGBW luminaire installation.*

Parameter	RDM PID	Value	Notes
Status Messages	0x0030	See RDM E1.20-2006	Errors will be in the format: "Error type: [data value 1] [data value 2]" Root: • Board overtemp E120_STS_OVERTEMP[0000][Temp degrees C] • Emergency Error E120_STS_DIM_PANIC[0000][0000] Subdevices (output channels): • Board overtemp E120_STS_OVERTEMP[Sensor Number][Temp degrees C] • Board overcurrent/short circuit E120_STS_ OVERCURRENT[0][0]
Device Info	0x0060	See RDM E1.20-2006	• Root: reports a footprint of 0 and a start address of 0xFFFF. • Subdevices (output channels): in patched or straight mode, all output card channels report their current addresses and a footprint of 1. • W1 Chroma Driver will report a footprint of 4 in IRGB mode or 5 in Direct mode. See *DMX Personality below*.

Device Model Description	0x0080	ASCII string for model description	• Root Device: "F-Drive W1"
			• Subdevices (output channels): the driver type..
			  - W1 Chroma Driver: "Chroma"
			  - W1 Fade to Warm Driver: "FTW-150"
			  - W1 CV Driver: "CV-150
			  - W1 CC Driver: "CC-150"

Manufacturer Label	0x0081	ASCII string for manufacturer label	Get returns "ETC" from the root only.
Device Label	0x0082	ASCII string for device label	

Parameter	RDM PID	Value	W1 Drivers	Personalities Supported				Default Personality
				1	2	3	4	
DMX Personality	0x00E0	**1** = Intensity **2** = Direct (IRGBW) **3** = IRGB **4** = Warm Trim	W1 Chroma Driver		✓	✓		2
			W1 Fade to Warm Driver	✓			✓	1
			W1 CC Driver and W1 CV Driver	✓				1

Parameter	RDM PID	Value	Notes
DMX Personality Description	0x00E1		
DMX Start Address	0x00F0	Range = 001 to 512	
Block Address	0x0140	Range = 001 to 512	Sending "set" to root will set the start address of all outputs sequentially.
Identify Device	0x1000	**0** = stop identify **1** = start identify	Load and LEDs will blink in a 500 ms on and 500 ms off pattern.

Parameter	RDM PID	Value	Notes
Minimum Level	0x0341	0 to 254	Bottom trim. Minimum Level must be lower than the Maximum Level. Default is 0. W1 Chroma Driver ignores this setting. See *On Below Minimum on the next page*.
Maximum Level	0x0342	1 to 255	Top trim. Maximum Level must be higher than the Minimum Level. Default is 255. W1 Chroma Driver ignores this setting.
Curve	0x0343	1 or 2	• Set to 1 is Default • Set to 2 matches the dimming curve of ArcSystem Pro One-Cell Fade to Warm luminaires and ArcSystem ArcLamp Fade to Warm lamps
Curve Description	0x0344		
Output Response Time	0x0345	• **1** is 0 ms • **2** is 50 ms • **3** is 100 ms • **4** is 200 ms • **5** is 250 ms • **6** is 300 ms • **7** is 400 ms • **8** is 500 ms • **9** is 600 ms • **10** is 700 ms • **11** is 800 ms • **12** is 900 ms • **13** is 1000 ms	Set the speed of response/slewing. Default is 300 ms.
Output Response Time Description	0x0346	See Output Response Time above.	"Get" returns an ASCII text string.
DMX Loss Behavior	0x810A	**0** = Hold Last Look **1** = Go to Full **2** = Go to Off	Sending "set" to the root determines the behavior if DMX is lost. Scenes and Hold Time are not supported.
DMX Loss Behavior Description	0x810B		Sending "get" to the root returns an ASCII text string.
FTW Temperature Scaling	0x8052	The structure of data includes: • enabled (unin8_t): 0 = disabled, 1 = enabled • Max CT (uint16_t): 2700K–3000K • Int for max CT (unint8_t): 128–255	This parameter is used to set or get the Fade to Warm temperature scaling on a W1 Fade to Warm Driver. This feature allows you to set a maximum color temperature (2700 K–3000 K) that an ArcSystem Navis Fade to Warm luminaire will achieve at an associated "set point" intensity (128–255). Default Max CT is 3000 K. Default set point is 255.
Output Current	0x8053	• **0** is 200 mA • **1** is 250 mA • **2** is 300 mA • **3** is 350 mA • **4** is 400 mA • **5** is 450 mA • **6** is 500 mA • **7** is 550 mA • **8** is 600 mA • **9** is 650 mA • **10** is 700 mA	Gets or sets the output current for a W1 CC Driver. For F-Drive firmware versions v1.1.3 and newer, default output current is 200 mA. For F-Drive firmware versions v1.1.2 and older, default output current was 600 mA. See *Configure the W1 CC Driver on page 32* for the current requirements for F-Drive-compatible luminaires.
Output Current Description	0x8054	See Output Current values above.	Get returns enumerated string describing the output current of a W1 CC Driver.
Red Shift	0x8106	0, 1	Sets if red shift is enabled on a W1 Chroma Driver 0 = disabled 1 = enabled

Parameter	RDM PID	Value	Notes
Red Shift Description	0x8114	"disabled" or "enabled"	"Get" returns an ASCII text string.
Color Fixture White Point	0x8107	• **0** is 2700K • **1** is 3000K • **2** is 3500K • **3** is 4000K • **4** is 5000K	"Set" shifts the white point of the W1 Chroma Driver. The default is 3000 K. This feature is only available in IRGB mode (see *DMX Personality on page 28*).
Color Fixture White Point Description	0x8108	See Color Fixture White Point above.	"Get" returns an ASCII text string.
Get Slot Info	0x0120	W1 Chroma Driver in Direct personality: Intensity, Red, Green, Blue, White	
Get Slot Description	0x0122	W1 Chroma Driver in RGBW personality: Intensity, Red, Green, Blue	
Default Slot Value	0x0122	All other models: Intensity See *DMX System Control on page 26*.	
Factory Defaults	0x0090		Set resets the configuration to default.
Software Version Label	0x00C0		Get returns current software version as an ASCII text string.

On Below Minimum

"On Below Minimum" is a sub-feature of the RDM "Minimum Level" parameter (see *Minimum Level on the previous page*). When "On Below Minimum" is set to "true," the channel's minimum level will hold until the DMX level is 0. Any non-zero input level below the set minimum level will cause fixtures connected to the channel to output at the set minimum level. When "On Below Minimum" is set to "false," the fixtures connected to the channel turn off when the DMX level is below the minimum level.
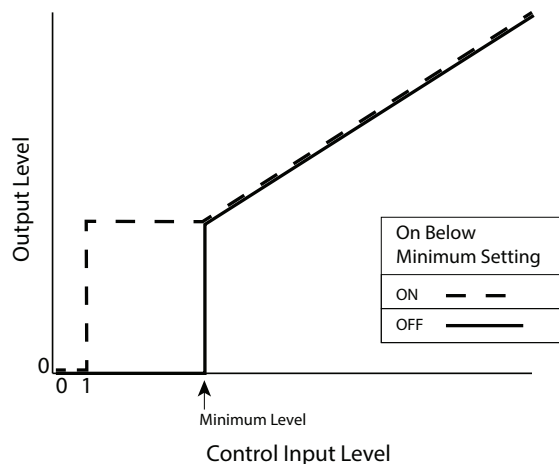
See RDM E1.37-1 2012 for full details.

Live Edit Configuration Files

You can live edit configuration files using ETC Concert software v4.1.2 or later with the F-Drive device package. Concert is available for free download at etcconnect.com/Concert. For more information on Concert, see the help files within the Concert application.

Edit Offline and Save Configuration Files to MicroSD

You can edit configuration files offline in Concert with the F-Drive device package, save them to a microSD card, and install the microSD card in the driver.

WARNING: RISK OF DEATH BY ELECTRIC SHOCK! Failure to disconnect all power to the panel before working inside could result in serious injury or death.

AVERTISSEMENT : RISQUE D'ÉLECTROCUTION! Travailler à l'intérieur du panneau sans avoir déconnecté le courant peut entrainer des blessures graves, voire mortelles.
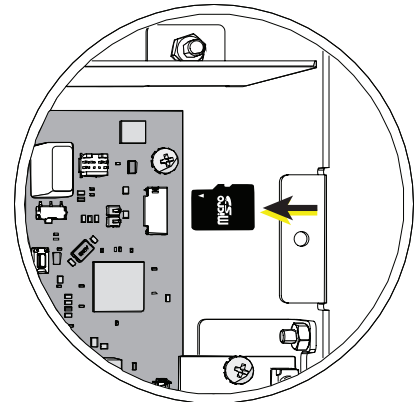
De-energize main feed to the panel and follow appropriate Lockout/Tagout procedures as mandated by NFPA 70E or local jurisdiction requirements. It is important to note that electrical equipment such as breaker panels can present an arc flash hazard if improperly serviced. This is due to the high amounts of short-circuit current available on the electrical supply to this equipment. Any work must comply with OSHA Safe Working Practices or local jurisdiction requirements.

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1. Verify that power is off to the W1 Driver.
2. Remove the cover of the W1 Driver to access the microSD card slot.
3. Remove the microSD card.
4. Edit a configuration file you have saved or edit the default F-Drive configuration file in Concert.
5. Save the configuration file with filename rackConfig.cfg to the root of the microSD card.
   - Overwrite the old configuration file on the microSD card.

Note: *F-Drive R12 and F-Drive W1 configuration files must be named* ***rackConfig.cfg***.

Detail of W1 Driver microSD Card

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6. Insert the microSD card into the receptacle as shown in the illustration above.
7. Replace the cover of the W1 Driver.
8. Turn on power to the W1 Driver.

Configure the W1 CC Driver

⚠️ **CAUTION:** *Setting the F-Drive W1 CC Driver to output more current than the manufacturer recommends for the loads may reduce the lifetime or cause damage to the load.*

ArcSystem Navis 100 Fade to Warm luminaires should only be connected to a W1 Fade to Warm Driver.

⚠️ **CAUTION:** *Do not exceed any Class 2 limits stated by the manufacturer of the third-party load.*

The W1 CC Driver can output 200–700 mA. Output current can be configured for each output channel via ETC Concert.

For F-Drive firmware versions v1.1.3 and newer, default output current is 200 mA. For F-Drive firmware versions v1.1.2 and older, default output current was 600 mA.

ETC Luminaire	Driver Output Current Setting
ArcSystem Navis 100 Fixed White	600 mA
ArcSystem Pro One-Cell Micro White or Fade to Warm	200 mA
ArcSystem Pro One-Cell Small White or Fade to Warm	600 mA
ArcSystem Pro One-Cell White or Fade to Warm	600 mA
Irideon FPZ for F-Drive or Irideon WLZ for F-Drive	450 mA
Source Four Mini LED for F-Drive	350 mA

Firmware Upgrade Instructions

When commissioning a system installation, check all F-Drive Series drivers to ensure that the latest firmware is present. If the firmware is not up to date, upgrade it using ETC Concert and ETC UpdaterAtor software before commissioning is completed. For more information on UpdaterAtor, download the UpdaterAtor Software Quick Guide for free from etcconnect.com.

Alternatively, a qualified ETC technician can upgrade drivers in the field using ETC UpdaterAtor Software and a microSD card.

1. Verify that power is off to the W1 Driver.
2. Remove the cover of the W1 Driver to access the control card with the microSD card slot.
3. Remove the microSD card.
4. Save the new W1 Driver firmware files to the root of the microSD card.
    • Overwrite the old firmware files on the microSD card. The firmware files must be named as shown in the table below.
5. Insert the microSD card into the receptacle on the control card.
6. Replace the cover of the W1 Driver.
7. Turn on power to the W1 Driver.

Note: *Status panel LEDs may flash while the driver updates its firmware. Do not disconnect power to the W1 Driver while LEDs are flashing. Firmware upgrade typically takes several minutes, but may vary depending on connected loads.*

Firmware packages include these five files with ".s" extensions:

Function	File Name
Control Card firmware	W4Control.s
W1 CV Driver firmware	CVDriver.s
W1 Fade to Warm Driver/W1 CC Driver firmware	FTWdriver.s
W1 Chroma Driver firmware	ColorComm.s
Navis RGBW luminaire firmware	RGBWFixture.s

Maintenance

WARNING: RISK OF DEATH BY ELECTRIC SHOCK! Failure to disconnect all power to the system before installation, maintenance, cleaning, or any other system modification could result in serious injury or death.

AVERTISSEMENT : RISQUE DE MORT PAR DÉCHARGE ÉLECTRIQUE! Négliger de débrancher toutes les sources d'alimentation du système avant l'installation, l'entretien, le nettoyage ou toute autre modification du système peut causer des blessures graves ou la mort.

De-energize main feed to F-Drive Power Control products and follow appropriate Lockout/Tagout procedures as mandated by NFPA 70E. It is important to note that electrical equipment such as breaker panels can present an arc flash hazard if improperly serviced. This is due to the high amounts of short-circuit current available on the electrical supply to this equipment. Any work must comply with OSHA Safe Working Practices.

CAUTION: *RISK OF ELECTRIC SHOCK! Disconnect power before servicing.*

ATTENTION : *RISQUE DE CHOC ÉLECTRIQUE! Couper l'alimentation avant l'entretien.*

Emergency Operation and Test

It is important to test W1 Emergency Drivers regularly because they are life safety devices. NOT SELF-TESTING PER ANSI/NFPA 101 - This equipment is not self-testing in conformance with the Life Safety Code, ANSI/NFPA 101. ANSI/NFPA 101 Life Safety Code requires testing of life safety devices every 30 days.

If you are operating a W1 CC Emergency Driver with loads with less than 30 VDC forward voltage, you must configure the test button. See *Configure the W1 CC Emergency Driver TEST Button for Low-Voltage Loads on page 25*.

Press and hold the "TEST" button to test the emergency functionality of this device. The test disables normal control and sets all output circuits to full. During the test, the "DER" LED will illuminate steady green and the channel LED of any channel at full will illuminate green. If any channel is operating below full (below 100%) during the test, the "DER" LED will illuminate red.
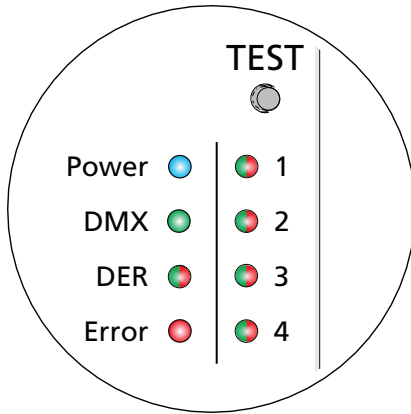
Note: *Contact ETC Technical Services if the derangement signal is red.*

Troubleshooting

Test Button

The "TEST" button is only present on emergency models. See *Emergency Operation and Test on the previous page*.

LED Indicators

TEST

Power

DMX

DER

Error

1

2

3

4

"TEST" button and "DER" LED are only present on emergency models.

Description (Quantity)	Color	Function
Power (1)	blue	solid on = power present at control card
		slow blink = in bootloader mode and waiting for firmware
		triple blink = receiving firmware update
DMX (1)	green	solid on = DMX data is present slow blink = DMX data is absent
DER (1, emergency models only)	green	solid on = test passed. See *Emergency Operation and Test on the previous page*.
	red	solid on = test failed. See *Emergency Operation and Test on the previous page*.
Error (1)	red	solid on = system error off = normal operation
Channel Number (4)	green	solid on = output > 1% off = output off triple blink = receiving firmware update
	red	solid on = output errors: current, voltage, or temperature threshold exceeded for any model or calibration error or missing serial number for W1 Chroma Driver

Appendix A

Connect F-Drive-Compatible Luminaires to the Terminal Block Outputs

The easiest ways to connect F-Drive-compatible Fixed White or Fade to Warm luminaires with RJ45 input are:

- *Connect F-Drive-Compatible Luminaires in a Daisy Chain on page 19*.
- *Use B-Box4R to Connect F-Drive-Compatible Fixed White or Fade to Warm Luminaires on page 20*.

Alternatively, you can connect them to the two-pin terminal block outputs as described below.

The easiest way to connect ArcSystem Pro One-Cell luminaires to a W1 CC Driver is through a B-Box4M. See *Use B-Box4M to Connect ArcSystem Pro One-Cell Luminaires on page 20*. Alternatively, you can connect them to the two-pin terminal block outputs as described on *page 37*.
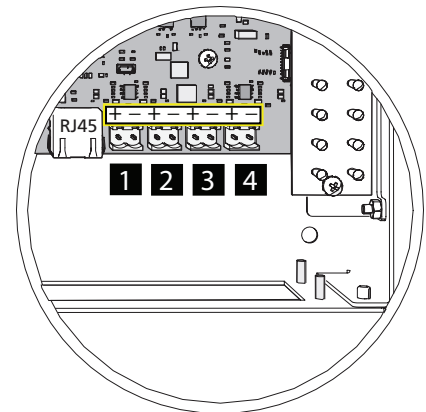
Connect F-Drive-Compatible Fixed White and Fade to Warm Luminaires to the Terminal Block Outputs

The W1 Fade to Warm Driver terminal outputs can be used to power F-Drive-compatible Fade to Warm luminaires, and the W1 CC Driver terminal outputs can be used to power Navis 100 Fixed White luminaires.

RJ45 Pinout for F-Drive-Compatible Fixed White and Fade to Warm Luminaires

RJ45 Pin	Description	Typical Wire Color (T568B standard)
1	Ground	white-and-orange
5	Power	white-and-blue

Terminal Block Pinout

RJ45 output is not present on all models. Terminal output is not present on W1 Chroma Driver.

Each F-Drive-compatible Fixed White or Fade to Warm luminaire can be connected to the appropriate driver by a separate Category-type cable wired to a two-pin connector. You can control up to four luminaires with a single W1 Driver. Follow the instructions below to prepare one cable per luminaire with an RJ45 plug on one end, wired to a two-pin connector on the other.

1. Terminate one end of the cable according to T568B standard.
2. On the other end of the cable, follow installation procedures for the Category-type cable that you are using and strip the ends of the wires.
3. Separate the white-and-orange and white-and-blue wires from the cable.
4. Cut the remaining unused conductors from the cable flush to the cable jacket.
5. Label the cable with the data type and run designation.
6. Insert the conductors through the labeled terminals on one of the provided two-pin screw-terminal connectors as follows and tighten the screws to secure the wires in the terminals:
   a. Pin 1 to the positive terminal ("+").
   b. Pin 5 to negative terminal ("-").
7. Insert the screw-terminal connector into one of the four two-pin receptacles.
8. Repeat steps 1–7 for up to four total luminaires.
9. Plug the RJ45 connector into the "In" receptacle on the luminaire.

Note: *To daisy-chain F-Drive-compatible luminaires using the terminal block outputs of a W1 Driver, see the luminaire installation guide section on daisy-chaining with third-party drivers.*

Connect ArcSystem Pro One-Cell Luminaires to the Terminal Block Outputs

The W1 CC Driver can support four ArcSystem Pro One-Cell, Pro One-Cell Small, or Pro One-Cell Micro luminaires using its terminal block outputs, with one two-pin plug per luminaire.

Note: *ArcSystem Pro One-Cell luminaires have different wire color conventions on their input cables. See the table below for wire colors and see the* Terminal Block Pinout on the previous page.

Luminaire	Wire Color and Polarity	
	Red	Black
ArcSystem Pro One-Cell Standard	negative (-)	positive (+)
ArcSystem Pro One-Cell Small	negative (-)	positive (+)
ArcSystem Pro One-Cell Micro	positive (+)	negative (-)

Appendix B

Compliance

For complete product documentation, including compliance documentation, visit etcconnect.com.

To comply with the requirements of CSA C22.2 No. 250.13, DMX/RDM networks must not have more than 32 device loads per daisy chain. You must terminate the last device on the daisy chain by setting the DMX termination switch to ON. All other devices in the data run should retain the default setting for the termination switch (OFF).