SPAN®

SPAN Drive
Installation Manual

Product Specifications

All specifications and descriptions contained in this document are accurate at the time of publication. In the interest of product improvement, SPAN reserves the right to make product modifications at any time without advance notice.

For the latest SPAN product and installation documents, visit:
www.SPAN.io/partner-portal

For errors or omissions, contact support@SPAN.io
For complete product specifications and information on product listing and certification, refer to the Product Datasheet at www.SPAN.io.

SPAN assumes no liability for injury or property damage due to installation or service attempted by unqualified individuals, or due to a failure of installers or service technicians to properly follow safety, installation and service instructions.
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SPAN, SPAN.IO, SPAN Panel, SPAN Drive   **SPAN**®

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Electronic Device Waste Disposal

Proper disposal of electronic equipment is required. Refer to local codes for disposal requirements. To arrange for proper disposal of this product, contact your local authorities or dealer for proper disposal requirements.

Warranty

To secure the full product warranty, SPAN Drive must be registered by completing the commissioning process, which sends system information to SPAN. For complete warranty information, refer to the Product Warranty at www.span.io/warranty

Important Safety Instructions

SAVE THESE INSTRUCTIONS
Follow these instructions during installation, maintenance and operation of the equipment. This section contains safety information that must be observed at all times when working on or using the equipment.

In Case of Fire or other emergency:

If safe to do so, switch off the main or upstream breaker for the panel.
Contact the fire department or other required emergency response team.
Evacuate the area and alert others in the area.

In case of unusual noise, smell or smoke:

Ensure nothing is in contact with the SPAN Drive, SPAN Panel, or other equipment. Ventilate the space. Contact your installer or SPAN Customer Support.

Symbols Used

These symbols indicate important safety information in the documentation or on the equipment:

⚠️ **WARNING:** Indicates a situation where failure to follow instructions or use proper materials may be a safety hazard that may result in serious injury, loss of life, or destruction of equipment. Use caution and do not proceed until the indicated conditions or required procedures are fully understood and met.

⚠️ **CAUTION:** Indicates a situation where failure to follow instructions or use proper materials may be a safety hazard that may result in minor injury or damage to equipment. Do not proceed until the indicated conditions or required procedures are fully understood and met.

ℹ️ **NOTE:** Indicates an important step or additional information that highlights best practices or procedures. Follow instructions carefully.

⚡ **RISK OF ELECTRIC SHOCK:** Indicates components that present risk of electric shock.

⎓ **PROTECTIVE CONDUCTOR TERMINAL:** Indicates location of grounding connection on the equipment.

ℹ️ **REFER TO INSTRUCTIONS:** Indicates that user should refer to operating or installation instructions before proceeding.

ATTENTION: Read all instructions and cautionary markings in this document and on the equipment before installing SPAN Drive. Failure to do so may result in equipment damage, electric shock, serious injury, or loss of life. Failing to follow any of these instructions may also void the warranty. All installations must conform to the laws, regulations, codes and standards applicable in the jurisdiction of installation. Before starting an installation, consult a local building or electrical inspector for current requirements. Local codes may vary but are adopted and enforced to promote safe electrical installations. A permit may be needed to do electrical work, and some codes may require an inspection of the electrical work.

Jurisdiction: Code:
United States   **National Electrical Code (ANSI/NFPA 70)**

General

⚠️ **WARNING:** Risk of electric shock. Risk of fire. Only qualified electrical personnel should install, troubleshoot, service, or replace the equipment.

WARNING: Risk of electric shock. Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices during installation and service. Turn off all power supplying this equipment before working on or inside equipment. Always use a properly rated voltage sensing device to confirm power is off. Replace all devices, covers, and doors before turning on power to the equipment.

WARNING: To protect the equipment and its components from damage when transporting, handle with care. To help prevent damage, leave all equipment in its shipping packaging until it is ready to be installed. Inspect the equipment for damage before installing. Do not install the equipment if it has been damaged in any way.

WARNING: Do not insert foreign objects into any part of the equipment. Do not put fingers into the electric vehicle connector. Do not forcefully fold or apply pressure to SPAN Drive or damage it with sharp objects.

WARNING: Do not attempt to open, disassemble, repair, tamper with, or modify the equipment other than what is permitted in this manual. The equipment contains no user-serviceable parts. Contact the installer who installed the equipment for any repairs. Only qualified electrical personnel should open SPAN Drive.

⚠️ **CAUTION:** Do not use solvents to clean the equipment or expose the equipment to flammable or harsh chemicals or vapors. Do not allow petroleum-based paints, solvents, or sprays to contact nonmetallic parts of the equipment.

CAUTION: Do not use parts or accessories other than those specified for use with the equipment.

Installation and Use

⚠️ **WARNING:** Risk of electric shock. Risk of fire. Only use electrical system components approved for wet locations.

WARNING: Risk of electric shock. Risk of fire. Ensure that all wiring is correct and that none of the wires are pinched or damaged.

WARNING: Risk of electric shock. Risk of fire. Before making any connections verify that the circuit breaker(s) are in the off position. Double check all wiring before applying power.

WARNING: Risk of electric shock. Improper servicing of the equipment or its components may result in a risk of shock or fire. To reduce these risks, disconnect all wiring before attempting any maintenance or cleaning. While connectors are rated for disconnect under load, it is best practice to de-energize before disconnecting.

WARNING: Risk of electric shock. Do not use equipment in a manner not specified by the manufacturer. Doing so may cause injury or loss of life, or damage to equipment.

WARNING: Do not use if the EV charging cable is frayed, has broken insulation, or any other signs of damage. Do not use if the enclosure or the EV connector is broken, cracked, open, or shows any other indication of damage.

WARNING: Do not install or use SPAN Drive near flammable, explosive, harsh, or combustible materials, chemicals, or vapors. Install your charger in a sufficiently ventilated location and avoid areas with direct sunlight.

WARNING: SPAN Drive should be supervised when using around children.

WARNING: SPAN Drive must be grounded through a permanent wiring system or an equipment-grounding conductor.

WARNING: Take appropriate precautions with electronic medical implants. Contact your medical device manufacturer to find out any potential effects.

WARNING: SPAN Drive is only to be used for fixed installations and cannot be used as a portable device.

WARNING: SPAN Drive should never be lifted or carried by the EV cable. Always lift and carry your charger by lifting up the charger's enclosure.

Environmental Conditions

⚠️ **WARNING:** This equipment is intended for operation in an environment having a minimum temperature of −30°C (−22°F) and a maximum temperature of 50°C (122°F). Do not operate SPAN Drive in temperatures outside of its range.

WARNING: Install the equipment in a location that prevents damage from flooding. Ensure that no water sources are above or near the equipment, including downspouts, sprinklers, or faucets. If SPAN Drive was submerged in water due to flooding, have an electrician inspect your charger prior to use.

Maintenance

There are no parts within SPAN Drive that the user has to maintain. Only a qualified electrician may open and modify SPAN Drive.

If you want to clean your SPAN Drive, we recommend that you use a soft, dry or damp cloth. Do not use a spray or direct water stream. Make sure that the power supply is turned off before you start cleaning the charger.

Contents

About your SPAN Drive

SPAN Drive is the first level 2 vehicle charger designed for real-time coordination with all home loads, solar, and home batteries for max charging speeds and optimized energy usage without costly home electrical upgrades.

- **Pairs with your home** to dynamically increase charging power when the home is idle and reduce power throughput during times when the home is active
- **Unlocks Level 2 charging for *any* home** without needing to make any expensive service upgrades
- **Looks as good as it performs** and blends effortlessly with indoor and outdoor spaces
- **Allows you to charge multiple EVs** at the same time with additional SPAN Drive units
- **Enables charging with 100% pure solar energy** for homeowners with solar panels
- **Charges during outages** when paired with a home battery system
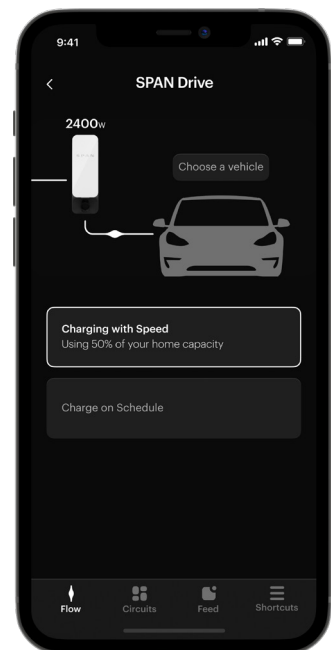
SPAN Drive Datasheet

Performance Specifications

Max Power	11.52 kW (48 A)
AC Voltage (Nominal)	208 - 240 V single-phase
Grid Frequency	50 / 60 Hz
Output Current	6 - 48 A (configurable)
AC Energy Metering	+/- 1%
Connectivity	Ethernet, WiFi (2.5, 5 GHz), Cellular (4G/LTE)
User Interfaces	SPAN Home App (iOS, Android)[1], Onboard status illumination
Ground Fault Circuit Interrupter	Integrated (CCID20)

1. When paired with a SPAN Panel. SPAN Drive may be installed without a SPAN Panel and configured for a fixed charge rate.

Mechanical Specifications

Connector Type	SAE J1772
Cable Length	20 ft (6.1 m)
Dimensions	17.9 x 5.9 x 3.1 in (455 x 150 x 80 mm)
Mounting Options	Wall mounted
Weight	16 lbs (7.2 kg)

Environmental Specifications

Operating Temperature	-22 to 122°F (-30 to 50°C)
Operating Humidity (RH)	Up to 100% condensing
Environment	Indoor and Outdoor rated (NEMA 3R)

Compliance Information

|	
Certifications	UL 2594, UL 2231
Emissions	FCC Part 15 Class B
More	Meets NEC Art. 625 requirements

Additional Features

- Dynamic fast charging
- Solar charging (coming soon)
- Off-grid charge optimization
- Charge management for upgrade avoidance
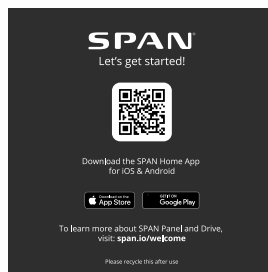- Multi-charger power sharing (coming soon)

Preparing to install

1. SPAN Drive package contents
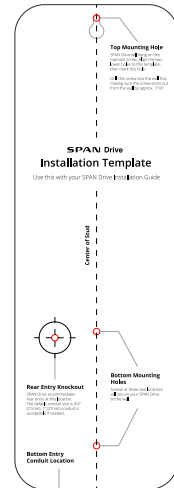
Inspect the packaging and SPAN Drive for damage.

Ensure you have received the following components:
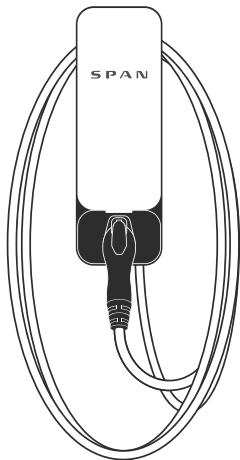
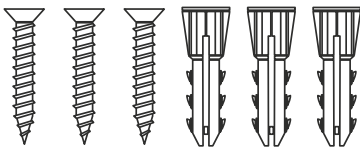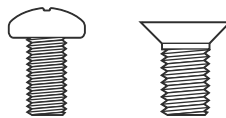**SPAN Drive**
(with charging cable attached)

Getting Started Card

Installation template

Included mounting parts:

3X #12 Phillips screw
& anchors

1X Buttonhead screw
& 1X Flathead
(extra for charger assembly)
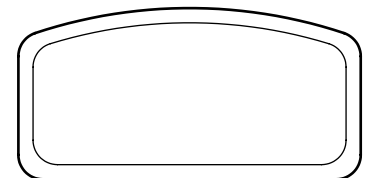
Optional gasket
(for rear entry installation)

> ⚠ **WARNING:** If the unit is damaged in any way, do not proceed with the installation. Contact SPAN for further instructions.
>
> **WARNING:** SPAN Drive must be installed by a licensed electrician. Before installing your charger, be sure to obtain any required permits and/or approvals in accordance with applicable codes, regulations, and ordinances for electrical installations.

2. Installation requirements

You will also need the following equipment and tools that are not included in the packaging:

Required equipment

- Copper conductors rated to a minimum of 90°C, such as THHN, THWN, NM-B, MC.
- Cable for communication between SPAN Drive and the SPAN Panel (Minimum 300 V rated, shielded, twisted-pair, 24–16 AWG). RS485-G optional, but recommended to connect Drain wire to Drive and Panel RS485-G terminals for best signal integrity.
- Conduit, conduit fittings, bushings that are suited to the installation
- Smartphone or tablet with SPAN Installer App for commissioning
- Personal Protective Equipment (PPE) should be worn by all persons at the installation site and properly rated for residential applications.

Required tools

- #2 Phillips screwdriver or bit
- Electric drill
- Small flat head screwdriver (if changing the current selector switch)
- Standard installation tools: wire cutters/strippers, multimeter, stud finder, measuring tape, pencil, tape, step bits (optional)

3. Planning the install location

Electrical, Mechanical, & Environmental Requirements

Before beginning work, check the site for appropriate mounting location and electrical capacity.

The environmental rating of Drive is identical to that of the Panel. The enclosure is NEMA 3R.

SPAN Drive is intended to be wall-mounted, ideally hitting a stud (2x4 or equivalent) with 2 screws.

Verify that the wall construction is adequate to support the weight and continuous use of SPAN Drive. The installation should conform to applicable building codes.

Element	Rating
Location	Indoor or Outdoor (NEMA 3R)
Ambient Temperature	–22°F to 122°F (–30°C to 50°C) recommend out of direct sunlight
Enclosure Dimensions	17.9 x 5.9 x 3.1 in (455 x 150 x 80 mm)
Weight	7.2 kg / 16 lbs

Max charge rates

SPAN Drive can be configured for various max charge rates based on the branch breaker it is connected to. See the section Rated Current Adjustment under the Installation section for more details. Determine the desired charging amperage with the homeowner, as well as based on the availability of space or electrical capacity in the panel.

The max rated current of SPAN Drive is **48A** (60A breaker). SPAN recommends connecting Drive to a **60A 2-pole breaker**, if possible, to allow for the fastest charging functionalities and full range of features.

Circuit breaker rating	Max current, continuous
60 A	48 A
50 A	40 A
45 A	36 A
40 A	32 A
35 A	28 A
30 A	24 A
25 A	20 A
20 A	16 A

NOTE: SPAN Drive may throttle charging based on the power charging commands from the SPAN Panel. This setting is only meant to correspond to the branch breaker size.

⚠️ **CAUTION:** Follow all local codes and standards when planning for and installing SPAN Drive.

Dimensions, clearances, & access

The maximum distance SPAN Drive can be installed from the SPAN Panel is **328 feet** (100 meters).

Pick a location where the **20-foot charging cable** will reach the car's charging port while still providing slack.

The minimum installation height must be at least **18"**, measured from the bottom of the charger.

SPAN recommends an installation height of at least **40"**.

SPAN Drive is designed for **hardwire installations**. The wiring may use either the rear or bottom access ports. The power supply wiring and conduit (if used) will need to be placed on the left side of the charger.

< 328' **< 20'**

18" Minimum

40" Recommended
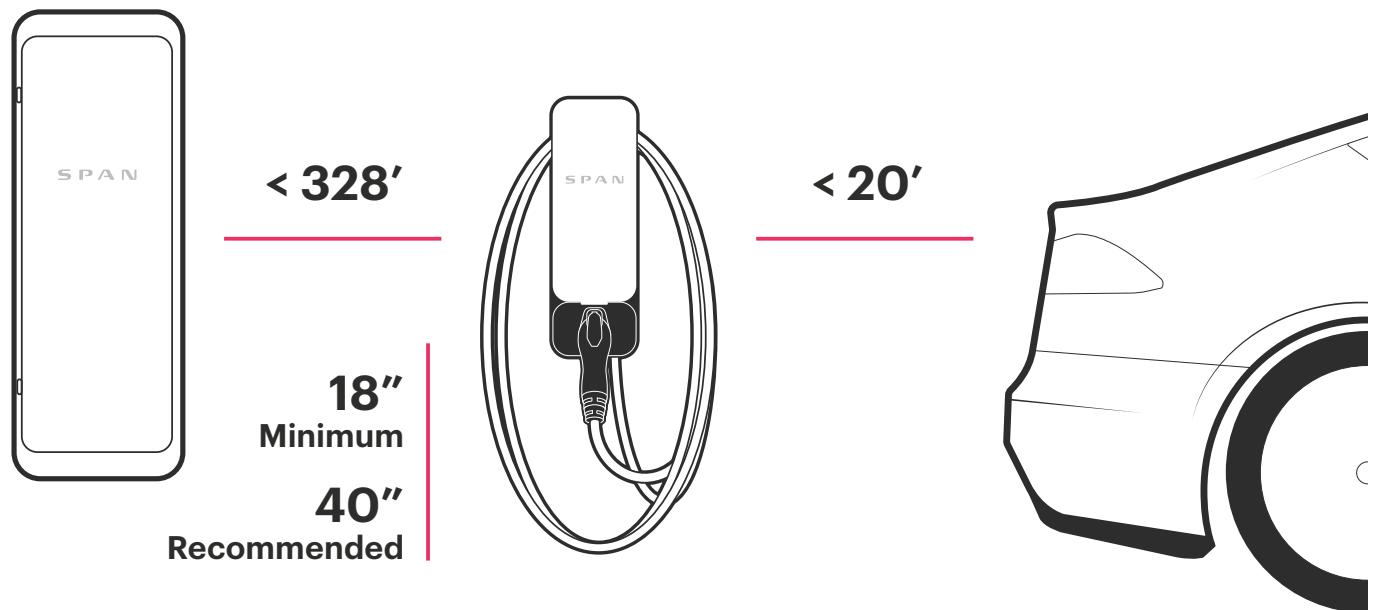
ℹ️ **NOTE:** Ensure that the charging cable is positioned in such a way so that it will not be stepped on, tripped over, or subjected to damage or stress. Do not close a garage door on the charging cable. There should always be slack in the charging cable so as not to apply tension to the cable or the cable connections.

NOTE: SPAN Drive includes integrated GFCI protection – **do not install a GFCI circuit breaker or a NEMA 14-50 outlet to power SPAN Drive**. Two GFCIs on the same circuit can cause nuisance tripping.
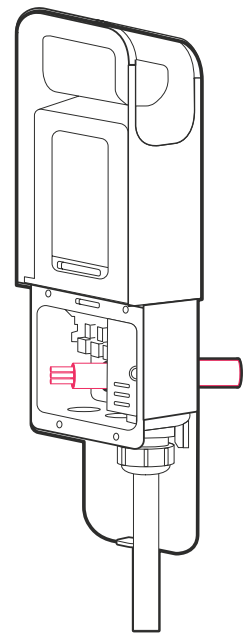
Installation

1. Determine wiring entry

Bottom or rear entry

SPAN Drive allows power supply wiring and conduit entry either through the bottom or rear section of the charger. Before proceeding with the hardwire installation, determine the most appropriate entry location based on the placement of wiring or conduit. Be sure to note that the bottom and rear entry locations are both on the left side of the charger.
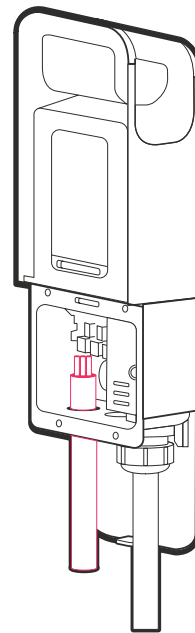
Bottom entry   **Rear entry**

> **ℹ** **NOTE:** When bringing conduit from the right side of the enclosure for a bottom entry installation, make sure there is appropriate clearance for the charging cable.

> **ℹ** **NOTE:** For rear entry installation, adhere the optional gasket for sealing around the knockout.
>
> **NOTE:** If mounting on an exterior wall and bringing power through the rear knockout, apply sealant around the rear knockout to prevent water ingress.
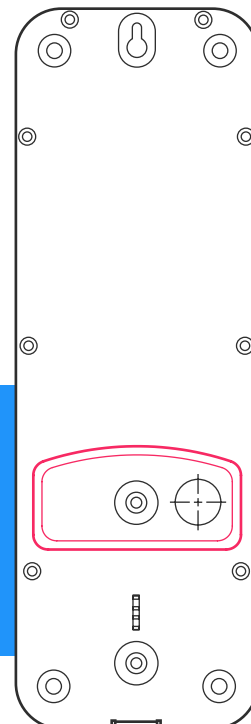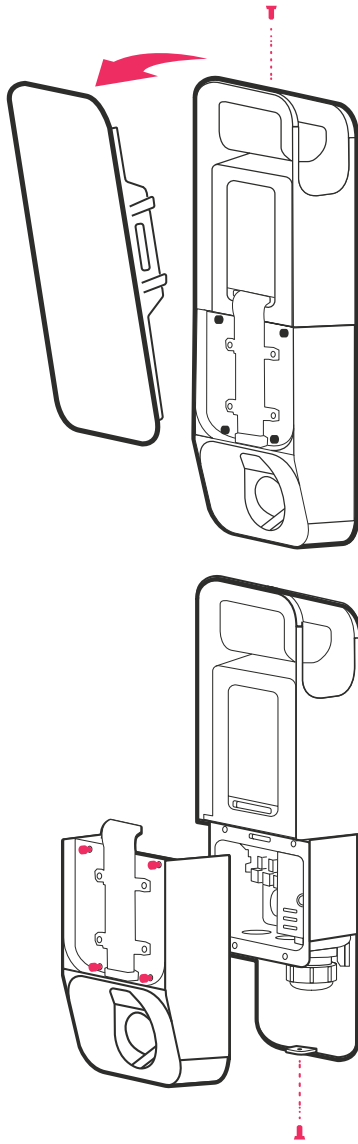
2. Placement & preparing

Remove the glass and lower plastic covers

1. Using a #2 Phillips screwdriver, remove the single fastener on the top surface of Drive (where the charging cable nests). Then, pull the top of the glass cover away from the charger to remove.

2. Using a #2 Phillips screwdriver again, remove the bottommost screw and loosen the 4 Phillips screws on the front face of SPAN Drive. Then, take off the lower plastic cover. Set the covers aside. Make sure to keep the fasteners in a safe place for reassembly.
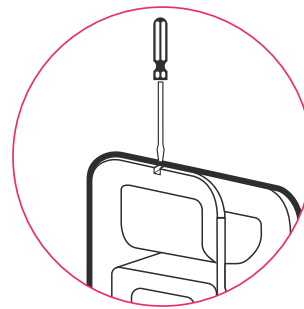
Using the Installation Template

Use a wall stud finder and mark the center of the stud by drawing a vertical line approximately 24" in length at the height of your mounting. You may also find a suitable location on a solid wall.

Place SPAN Drive against the wall at the desired installation location and mark the two lower mounting holes on the stud line.

Align the provided Installation Template to the two lower mounting holes and tape the template to the wall.

Mark the top mounting hole on the wall using the Installation Template. If needed, mark the rear entry knockout location. Remove the template from the wall.
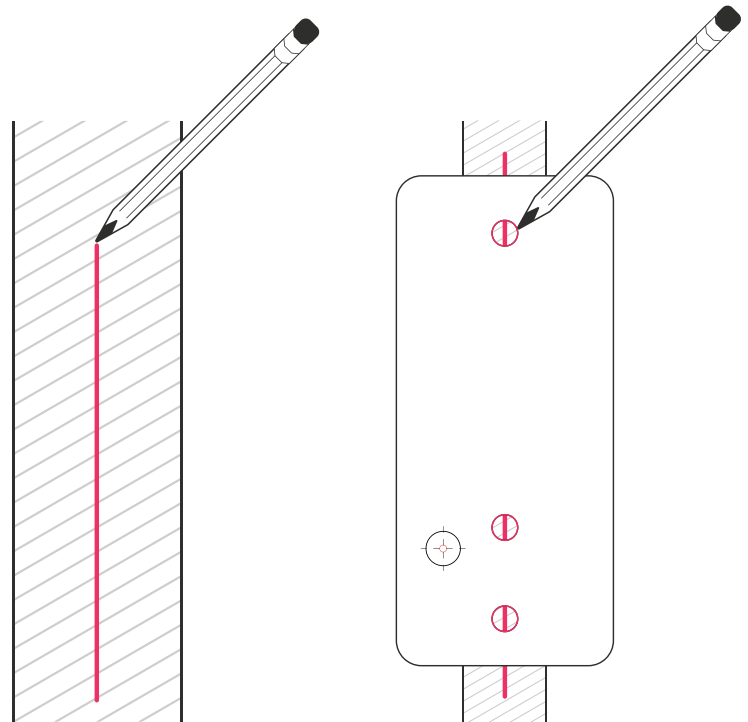
Preparing conduit fittings & bushings

The default conduit size is **¾"** (21mm).
1" (27mm) conduit is acceptable if needed.

Based on fittings and conduit size, prepare SPAN Drive:

For bottom entry, manually remove the conduit plug.

**For rear entry**, drill with a step bit to prepare SPAN Drive for fittings.

The knockout size is **¾"** trade size and can also accommodate 1" trade size.

3. Mounting SPAN Drive

Depending on the material of the mounting wall, use the appropriate hardware and drill pilot holes as needed. The wall anchors provided in packaging work for brick, block, and concrete and require a **¼"** drill bit for pilot holes. SPAN Drive weighs a total of 16 lbs.

Drive the topmost lag screw (**max #12 screw**) into the wall first. Leave approximately **1/2"** of the end of the screw exposed to hang the charger. Hang SPAN Drive on the lag screw using the notch on the back of the charger. For rear entry installation, draw the power supply wiring through the hole in the wall and through the rear port before securing the charger.

Drive the remaining two lag screws into the two bottom mounting holes to secure the charger.
Be careful not to damage the electrical wires.

1/2"
Distance from wall
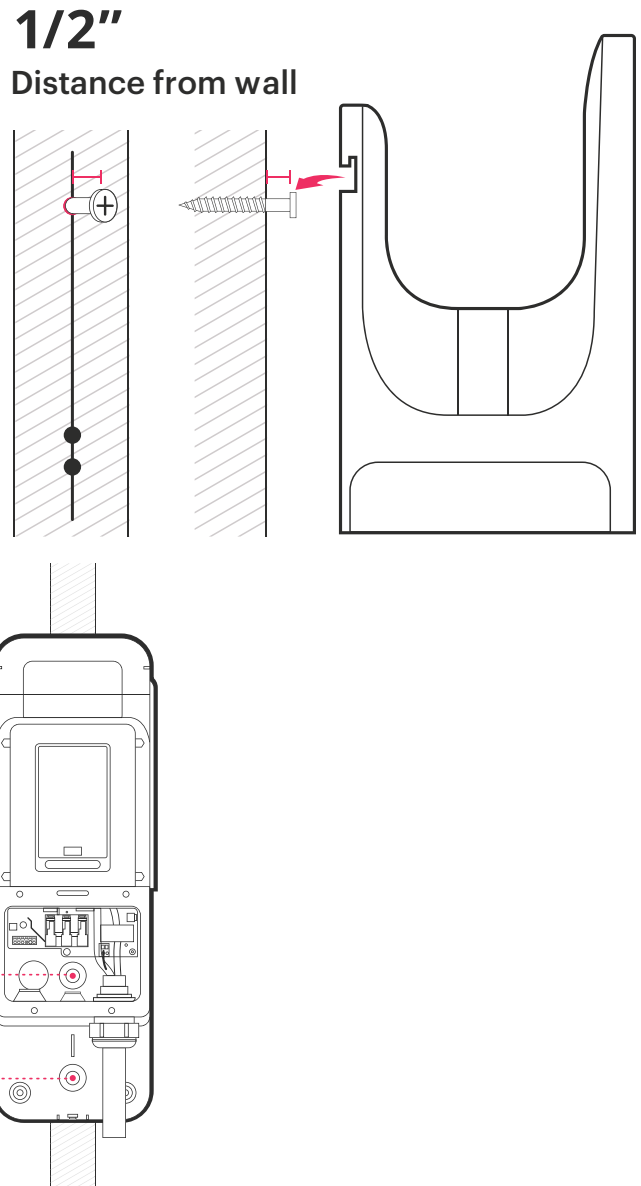
4. Electrical wiring

AC Power Wiring

Insert the AC power conductors either through the bottom or rear entry opening in SPAN Drive. Ensure there's enough length for a **6" service loop** in the enclosure, as well as to easily connect the wires into the lever lock terminal. If using a conduit connection, pull the wiring through before connecting the conduit.

Use appropriate cable glands, bushings, or fittings to secure the wiring in place and protect from water and debris. Ensure that bushings are in place to avoid damage to conductors and ground wire when pulled into the enclosure.

Ensure the electrical panel supports a **120/240V dedicated circuit with a 2-pole circuit breaker**, rated for the selected amperage (see following section Rated Current Adjustment).

The voltage between the hot wires (L1 and L2) must be 208/240V. Only L1, L2, and GND conductors are connected, no Neutral.

Connect the AC power conductors according to the adjacent diagram. **Use 90°C copper conductors only within the wire size range of 10-6 AWG**. Strip ½" (13mm) of insulation off each wire and fully insert into the lever lock terminal. Press the lever down until it snaps into place for each wire. **Be careful of fingers, as the white levers are a pinch point.**

Perform a tug test after inserting each wire and closing the lever lock to ensure the connection is solid.
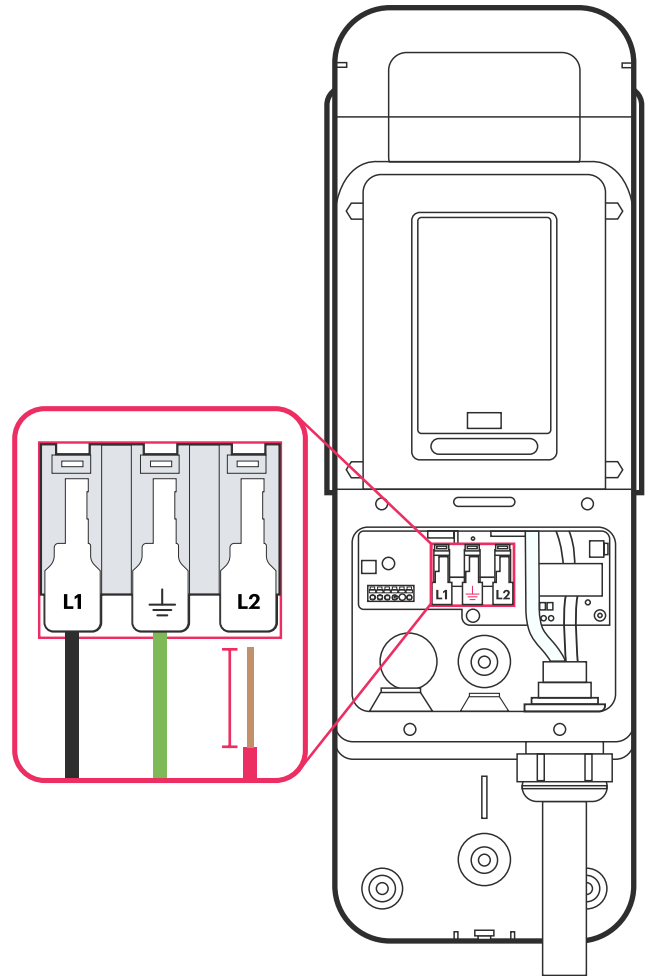
NOTE: For bottom wire entry, if installing fittings with a set screw, ensure that the screw is positioned to avoid interference with the lower plastic cover.

CAUTION: Follow guidance in NEC Chapter 3 and any local AHJ requirements for cable type selection. Consider exterior surface and flush mounted installations as wet/damp conditions and use conduit accordingly. When installed in wet/damp locations cable routed through the bottom face must be wet- or damp-rated.
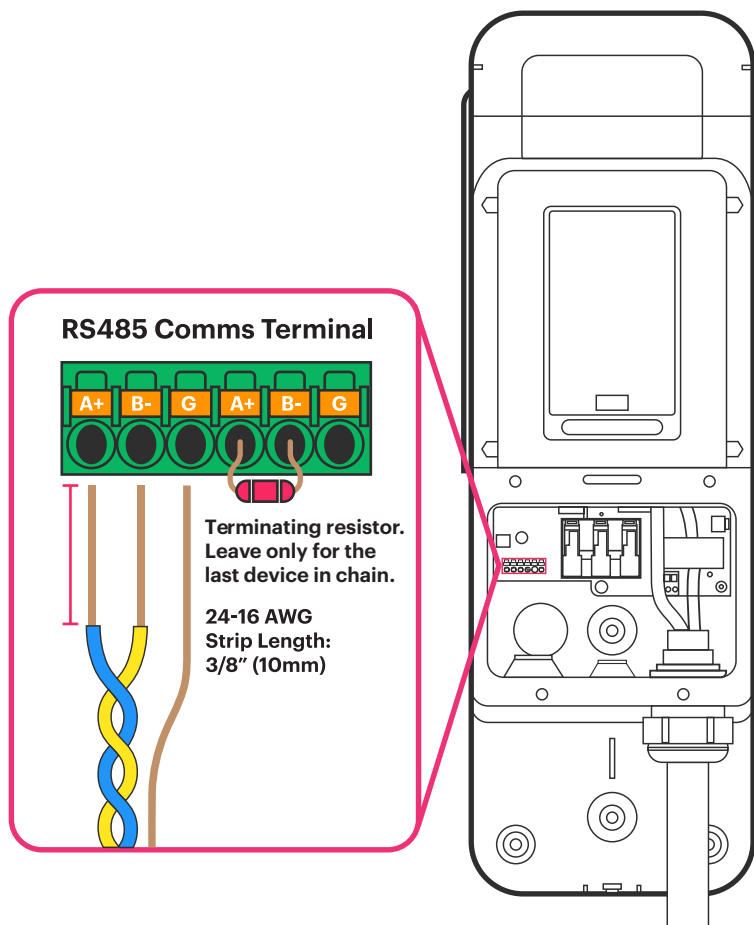
Communication wiring

Connect the communication wires according to the diagram below. Use minimum **300 V rated, 24–16 AWG**, shielded, twisted-pair, copper conductors only for communication wiring. Strip **3/8"** (10mm) of insulation off each wire and fully insert into the terminal. **RS485-G optional**, but recommended to connect Drain wire to Drive and Panel RS485-G terminals for best signal integrity.

When only installing one SPAN Drive, leave the terminating resistor as is. If installing multiple chargers, remove the terminating resistor on all units except for the last unit the chain.

NOTE: If cable assembly such as MC Cable or NM Cable (Romex) is used, communication wiring can be run separately using the center knockout and cable tie mounting point for additional strain relief.

RS485 Comms Terminal

A+ B- G A+ B- G

Terminating resistor. Leave only for the last device in chain.
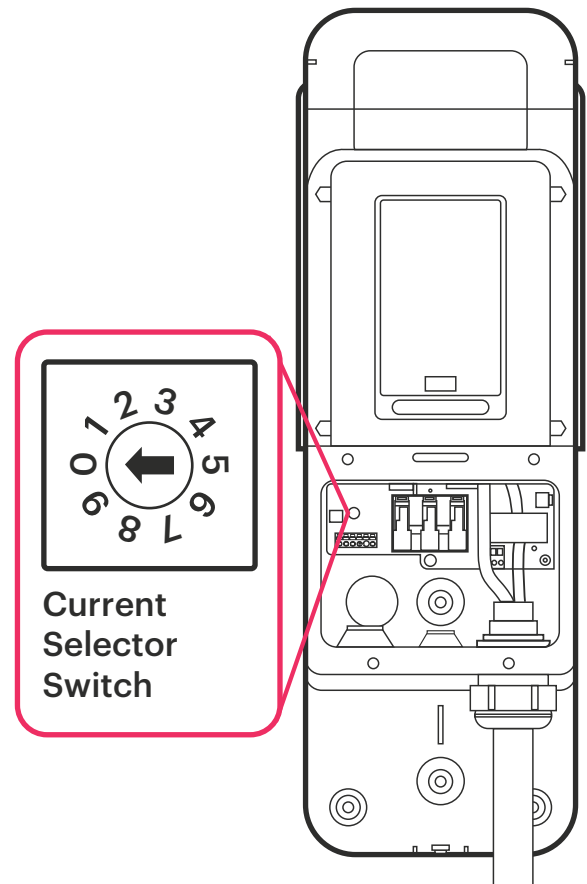
24-16 AWG
Strip Length:
3/8" (10mm)

NOTE: To insert wiring into RS485 terminal on the SPAN Drive, first take out the mating connector. Then use wire strippers to depress the tab while inserting stripped wire.
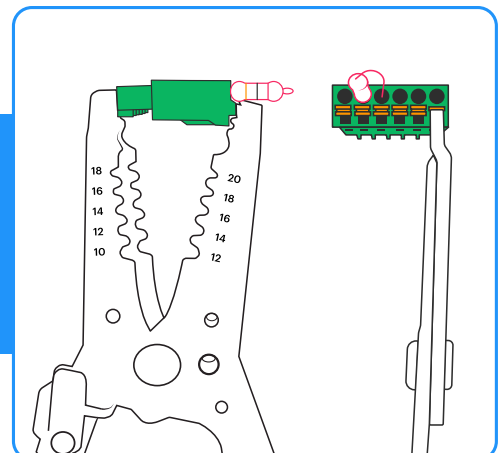
5. Rated current adjustment

On the left side of the circuit board, locate the current selector switch, and set the switch to the appropriate setting per the chart below. If installing with a SPAN Panel, the current selector switch can be left at "0", and the current rating can be set through the SPAN Installer App.

Current selector switch position	Max current, continuous	Circuit breaker rating
0	Default	
1	Reserved	
2	16 A	20 A
3	20 A	25 A
4	24 A	30 A
5	28 A	35 A
6	32 A	40 A
7	36 A	45 A
8	40 A	50 A
9	48 A	60 A

Current Selector Switch

⚠️ **CAUTION:** Be sure to select a switch position that does not exceed your circuit breaker rating. To reduce the risk of fire, **only connect your charger to a circuit with a branch circuit overcurrent protection of 125% of the selected max amperage setting** of the device in accordance with ANSI/NFPA (US) C22.2 NO 280 13 (Canada).
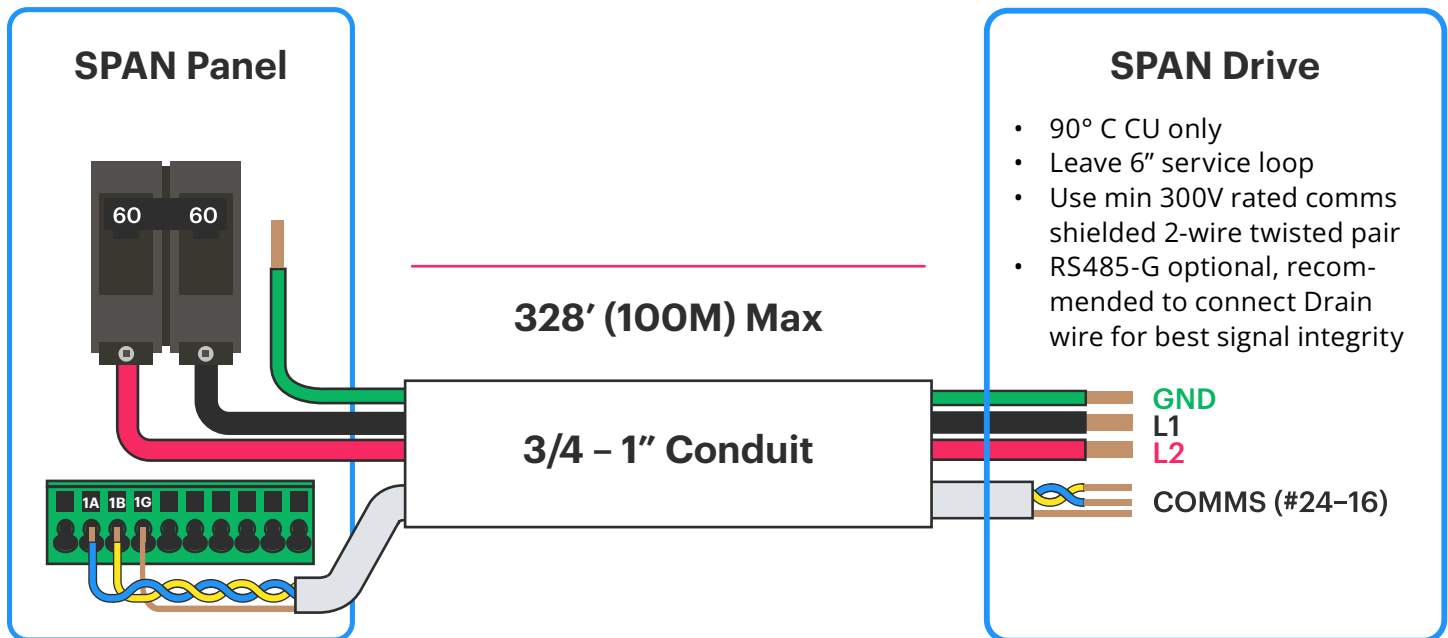
6. Connection to SPAN Panel

⚠️ **WARNING: Risk of electric shock.** Make sure power is turned off while connecting SPAN Drive to the SPAN Panel. Always make sure all electrical equipment is safely de-energized before beginning work.

⚠️ **WARNING:** Ensure all power and ground connections, especially those at the breaker and bus bar, are clean and tight. Remove all oxide from all conductors and terminals before connecting wiring.

- Ensure that the breaker in SPAN is turned off. Note that there is no particular location for the breaker in the SPAN Panel. Any location will work.
- Make the L1, L2, and GND connections from SPAN Drive to the 2-pole breaker and GND in the SPAN Panel.
- Connect the communication wiring from SPAN Drive to the RS485-1 terminal in the SPAN Panel (see image below). RS485-G optional, but recommended to connect Drain wire to Drive and Panel RS485-G terminals for best signal integrity.

SPAN Panel

60   60

1A 1B 1G

328' (100M) Max

3/4 – 1" Conduit

SPAN Drive

- 90° C CU only
- Leave 6" service loop
- Use min 300V rated comms shielded 2-wire twisted pair
- RS485-G optional, recommended to connect Drain wire for best signal integrity

GND
L1
L2

COMMS (#24–16)

ℹ️ **NOTE:** Keep track of circuit labeling. This information will be required during commissioning.

NOTE: To insert wiring into RS485 terminal on the SPAN Panel, use a 2mm flat head driver to depress the tab while inserting stripped wire.
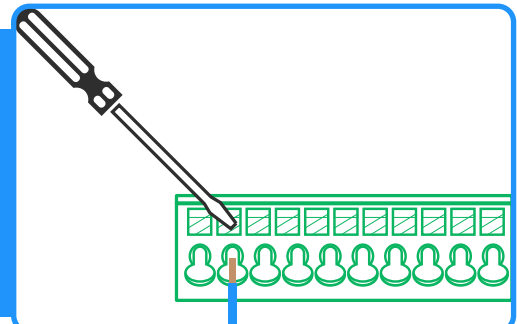
7. Final inspection & closing the unit

Confirm that all connections are correct, properly grounded, and secure.

Reassemble SPAN Drive by attaching the lower plastic cover and glass cover back onto the device using a #2 Phillips screwdriver. Do not over-tighten the screws.

Drape the charging cable around your charger and dock your EV connector in the holster.

Only after fully replacing the lower plastic cover and glass cover, restore power.
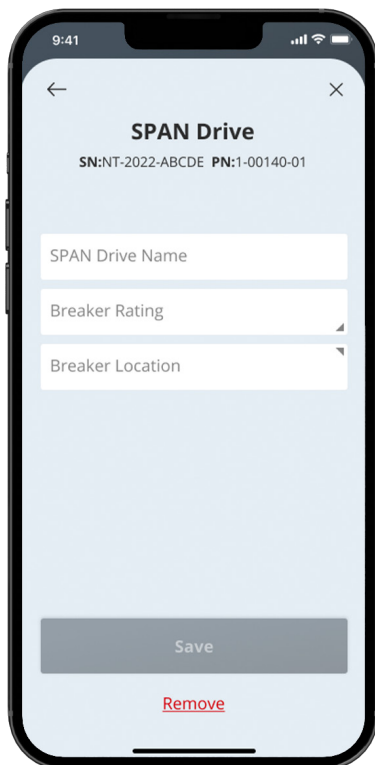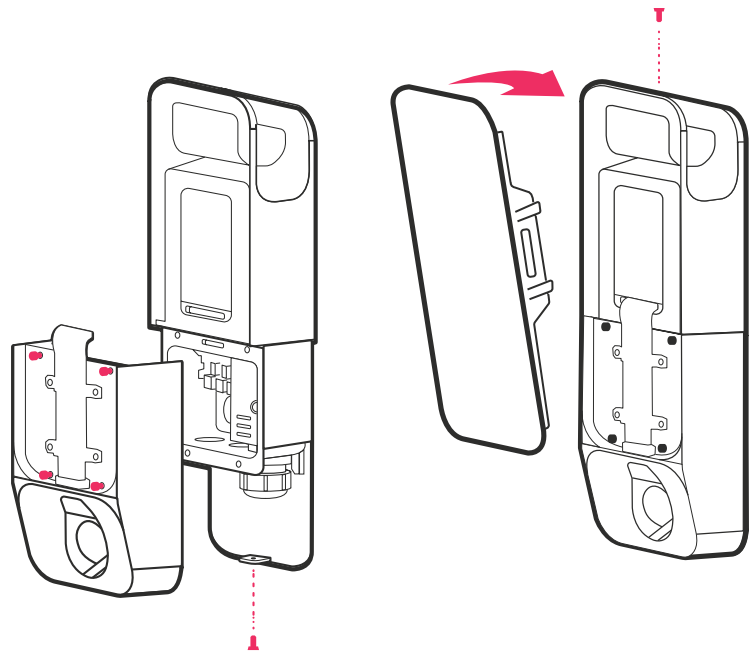
8. Commissioning

SPAN Drive must be configured with the SPAN Installer App prior to use.

Download the SPAN Installer App from:
span.io/span-apps

Troubleshooting & servicing

For additional troubleshooting and support visit www.support.span.io or contact SPAN customer service at (415) 286-5252.

⚠️ **WARNING:** Do not attempt to open, disassemble, repair, tamper with, or modify the equipment. The equipment contains no user-serviceable parts. Contact the installer who installed the equipment for any repairs. Only qualified electrical personnel should open SPAN Drive.

Status & Fault codes

Any red LED on SPAN Drive indicates that the device has encountered a fault state. All blink codes pause for one second before repeating.

LED Code	What It Means
White	Ambient/Idle
Green	Charging
Blue	Setup / commissioning
Purple	Communications lost to SPAN Drive
Red	Fault state

LED code	What it means	How to fix
No LEDs visible	Power supply issue; charging is disabled	Check that the power supply is on. Have an electrician confirm voltage is present at the terminal block using a multimeter and take voltage readings for L1 to L2/N, L1 to GND, L2/N to GND.
One (1) red blink	Internal fault; charging is disabled	Turn the circuit breaker off, wait 5 seconds, and turn it back on. If the issue persists, contact SPAN for further instructions.
Two (2) red blinks	Ground fault circuit interruption; charging is disabled	Remove the charger from the car, wait 15 seconds, and try plugging it back in. Check SPAN Drive (exterior housing, handle, and cable) for damage or signs of water ingress. Have an electrician check conductor wire connections.
Three (3) red blinks	Overvoltage or poor grid quality detected; charging is disabled	Check that the power supply is nominal 200-240 volts. Have an electrician confirm voltage is as expected at the terminal block using a multimeter and take voltage readings for L1 to L2/N, L1 to GND, L2/N to GND.
Four (4) red blinks	Ground integrity check failed; high ground resistance detected; charging is disabled	Have an electrician check that SPAN Drive is properly grounded. The Ground connection must be bonded in the upstream power supply.
Five (5) red blinks	Over temperature detected; charging is limited or disabled	Carefully check the exterior of SPAN Drive and cable handle for excessive warmth. Have an electrician check that the conductors are sized properly.
Purple	Communications lost to SPAN Drive	Follow the commissioning process via the SPAN Installer app for troubleshooting.

Revision Log

Version	Note
2022-06-03	First revision