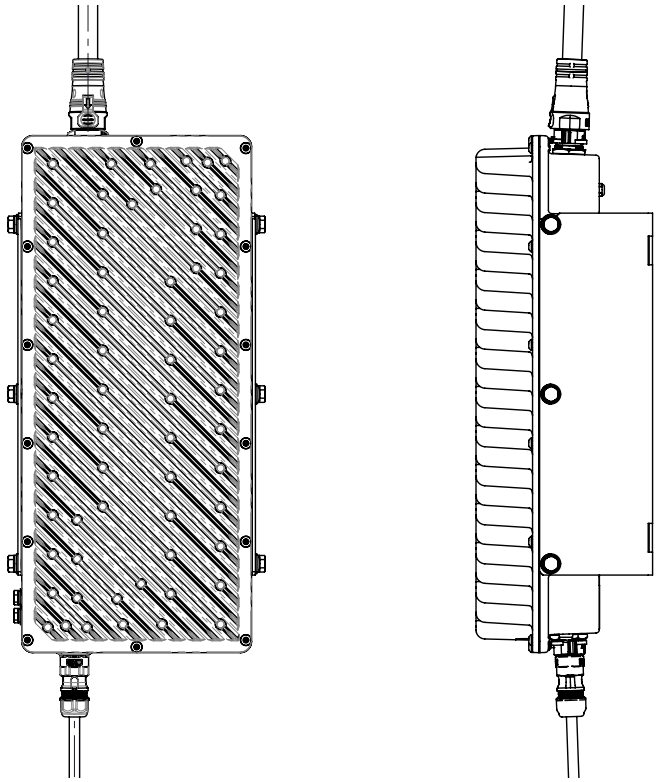
an EnerSys® company

# Alpha® DPX 1500 W Downconverter

## ±190 to 48 VDC Downconverter

**User Guide ID:** 0120098-J0
**Effective:** 11/2024



**Read this document carefully.**
Learn how to protect your equipment from damage and fully understand its functions.

# Contents

# 1. Safety

## Save these instructions

This document contains important safety instructions that must be followed during the installation, servicing, and maintenance of the product. Keep it in a safe place. Review the drawings and illustrations contained in this document before proceeding. If there are any questions regarding the safe installation or operation of this product, contact Alpha Technologies Ltd. or the nearest Alpha® power system representative.

## 1.1 Safety symbols

To reduce the risk of injury or death, and to ensure the continued safe operation of this product, the following symbols have been placed throughout this document. Where these symbols appear, use extra care and attention.

| Symbol | Type | Description |
|---|---|---|
|  | **WARNING** | Risk of serious injury or death<br>Equipment in operation poses a potential electrical hazard which could result in serious injury or death to personnel. This hazard may continue even when power is disconnected. |
|  | **CAUTION** | Cautions indicate the potential for injury to personnel. |
|  | **CAUTION** | Risk of burns<br>A device in operation can reach temperature levels which could cause burns. |
|  | **ATTENTION** | The use of attention indicates specific regulatory or code requirements that may affect the placement of equipment or installation procedures. Follow the prescribed procedures to avoid equipment damage or service interruption. |
|  | **GROUNDING** | This symbol indicates the location or terminal intended for the connection to protective earth. An enclosure that is not properly connected to protective earth presents an electrical hazard. Only a licensed electrician can connect AC power and protective earth to the enclosure. |
|  | **NOTICE** | A notice provides additional information to help complete a specific task or procedure or general information about the product. |

## 1.2 General warning and cautions

**WARNING**

**You must read and understand the following warnings before installing the device. Failure to do so could result in personal injury or death.**

- **Read and follow all instructions included in this document.**
- **Only trained personnel are qualified to install or replace this equipment and its components.**
- **Use proper lifting techniques whenever handling equipment, parts, or batteries.**

**WARNING**

This system is designed to be installed in a restricted access location that is inaccessible to the general public.

Ce système est conçu pour être installé dans un endroit à accès restreint inaccessible au grand public.

**WARNING**

This equipment is not suitable for use in locations where children are likely to be present.

Cet équipement ne convient pas pour une utilisation dans des lieux ou des enfants sont susceptibles d'être présents.

## 1.3 Mechanical safety

- Power supplies can reach extreme temperatures under load.
- Use caution around sheet metal components and sharp edges.

## 1.4 Electrical safety

**WARNING**

Hazardous voltages are present at the input of power equipment.

The DC input from converter devices is a hazardous voltage. Do not touch the connections when under power. Ensure that power has been removed from the outputs before working on them.

Before working with any live battery or power system, follow these precautions:

- Remove all metallic jewelry, such as watches, rings, metal rimmed glasses, or necklaces.
- Wear safety glasses with side shields at all times during the installation.
- Use Occupational Health and Safety Association (OSHA®) approved insulated hand tools. Do not rest tools on top of batteries.

**WARNING**

Lethal voltages are present within power equipment. Always assume that an electrical connection or conductor is energized. Check the circuit with a voltmeter with respect to the grounded portion of the enclosure (both AC and DC) before performing any installation or removal procedure.

- Do not work alone under hazardous conditions.
- A licensed electrician is required to install permanently wired equipment. Input voltages can range from ±157.5 to ±200 VDC. Ensure that the input power is disconnected and locked out before performing any installation or removal procedure.
- Ensure that no liquids or wet clothes come into contact with internal components.
- Hazardous electrically live parts inside this unit are energized from the batteries even when the AC input power is disconnected.
- The enclosure which contains the DC or AC power system along with customer installed radios must remain locked at all times, except when authorized service personnel are present.
- Always assume electrical connections or conductors are live. Turn off all circuit breakers and double-check with a voltmeter before performing installation or maintenance.
- Place a warning label on the utility panel to warn emergency personnel that a reserve battery source is present which will power the loads in a power outage condition or if the AC disconnect breaker is turned off.
- At high ambient temperature conditions, the internal temperature can be hot so use caution when touching the equipment.

# 2. Overview

The DPX downconverter is part of the distributed power transport product family specifically engineered using the new Alliance for Telecommunications Industry Solutions (ATIS®) fault managed power distribution technologies. The device converts the incoming ±190VDC voltage to 48VDC to power a multitude of communication devices such as small cells, remote radio heads, and Internet of Things devices.

The device provides one isolated output from a single 12 to 18 AWG (4 to 0.75 mm²) hybrid or copper cable. This output can deliver a maximum of 1500 watts at 48VDC of total power to remote communication equipment from the DPX power source enclosure. The maximum distance between the DPX power source enclosure and the DPX downconverter is dependent on cable gauge, number of pairs, and load power.

Key benefits of the DPX downconverter are:

- IP68/Type 6P rated enclosure provides maximum flexibility for various installation options (pole, wall, underground, or strand).
- Extended operating temperature range for deployment in the harshest outdoor environments.
- Remote monitoring via the Cordex® HP system controller offers advanced monitoring and control of the single output channel including power cycling, voltage, and current readings.
- Class 4 rated input circuit for fault managed safety.

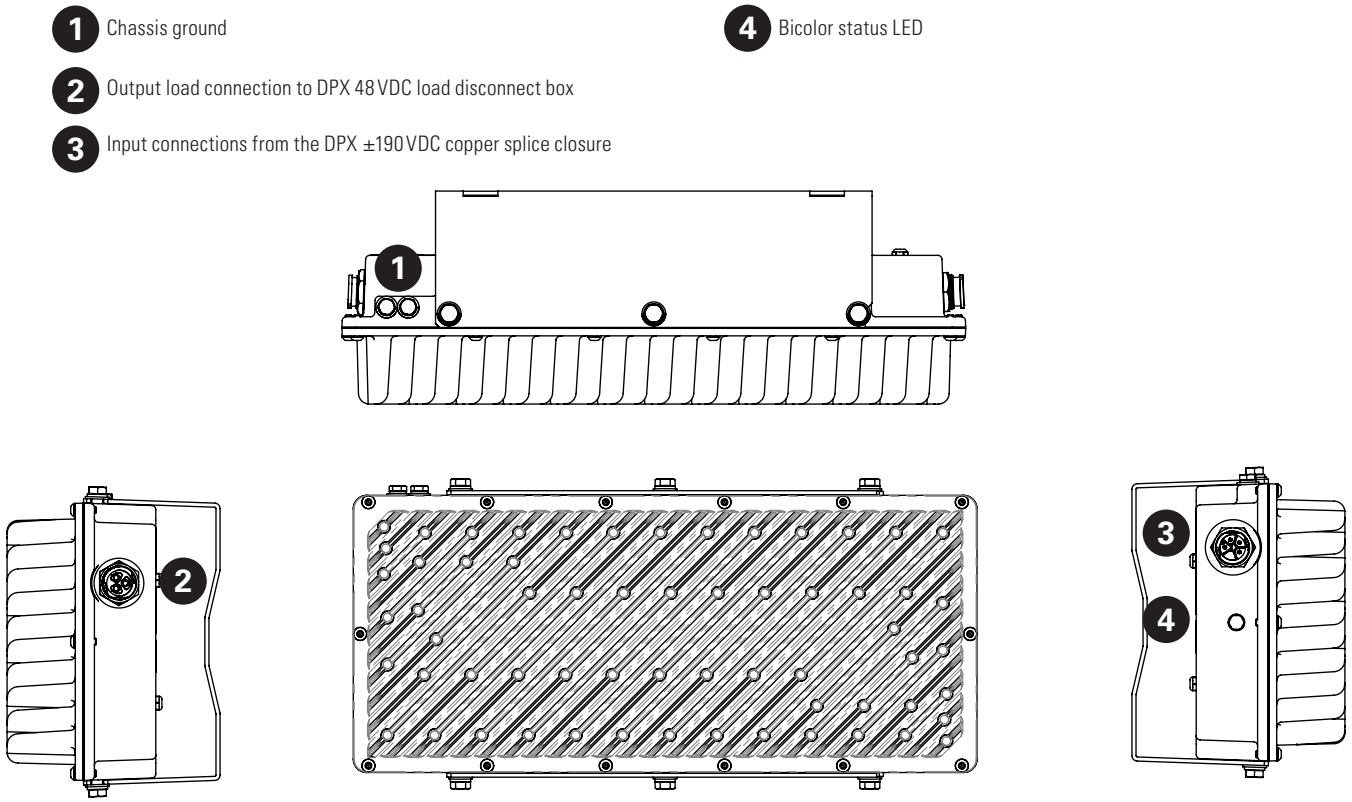



Figure 1: DPX 1500 W downconverter (PN: 0120098-001)

## 2.1 Simplified wiring diagram

The following figures show a simplified wiring diagram with the DPX power source 10-channel enclosure, DPX ±190VDC copper splice closure, DPX 1500W downconverter, and DPX 48VDC load disconnect box.

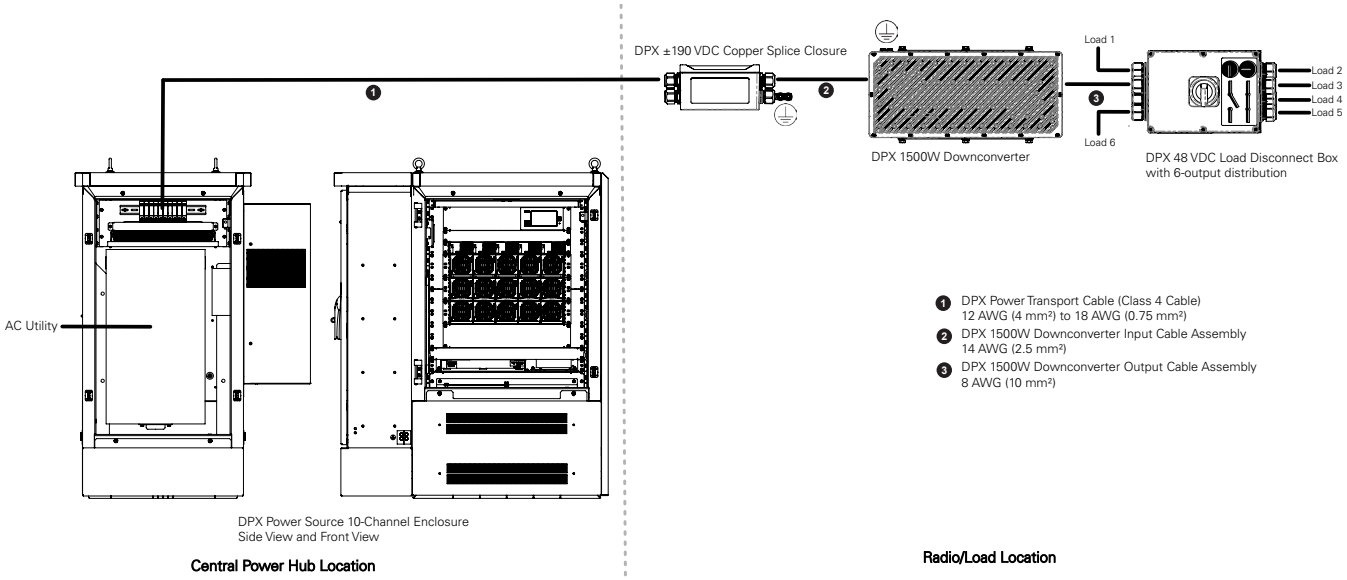



Figure 2: Simplified wiring diagram

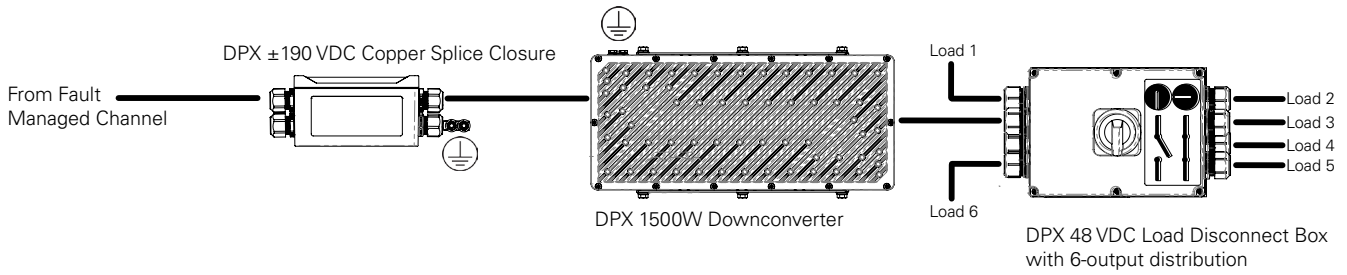



Figure 3: DPX ±190 VDC copper splice closure to DPX 1500 W downconverter to DPX 48 VDC load disconnect box wiring diagram

**NOTICE**

The DPX power source enclosure output terminal and the DPX downconverter input terminal are part of the fault managed power section.

**WARNING**

The DPX power source enclosure and DPX downconverter must only be installed with a DPX power transport cable that has been tested and certified for use with the DPX distributed power transport system. Failure to do so may result in system malfunction and could potentially cause an unsafe condition. Consult the Alpha Technologies Ltd. team for help with the proper selection of cable best suited for your application and to meet safety requirements as per Alliance for Telecommunications Industry Solutions (ATIS®) TR 0600040, Underwriters Laboratories Outline of Investigation 1400-1, and UL 1400-2.

## 2.2 Part numbers

The product, options, and accessories can be ordered by using the part numbers in the following table.

Table A: Part numbers, options, and accessories

| Description | Part number |
|---|---|
| **Modules** | |
| DPX 1500W downconverter<br>**Note:** Pole mounting bracket included. | 0120098-001 |
| DPX 48VDC load disconnect box | 7401272-001 |
| **Accessories** | |
| Strand mount bracket kit | 0380712-001 |
| **Transport cables** | |
| DPX copper splice closure to DPX downconverter<br>6.6 ft (2 m) input cable assembly; 14 AWG (2.5 mm²) | 8701390-001 |
| DPX copper splice closure to DPX downconverter<br>25 ft (7.6 m) input cable assembly; 14 AWG (2.5 mm²) | 8701390-002 |
| DPX copper splice closure to DPX downconverter<br>50 ft (15.2 m) input cable assembly; 14 AWG (2.5 mm²) | 8701390-003 |
| DPX downconverter to DPX load disconnect box<br>6.6 ft (2 m) output cable assembly; 8 AWG (10 mm²) | 8701513 |
| DPX downconverter to DPX load disconnect box<br>25 ft (7.6 m) output cable assembly; 8 AWG (10 mm²) | 8701514 |
| DPX downconverter to DPX load disconnect box<br>50 ft (15.2 m) output cable assembly; 8 AWG (10 mm²) | 8701515 |

# 3. Specifications

## 3.1 Alpha® DPX 1500W Downconverter

Table B: Alpha® DPX 1500W downconverter specifications

| | |
|---|---|
| **Electrical** | |
| **Input voltage** | **Nominal:** ±190V |
| | **Operating:** ±157.5 to ±200V |
| **Efficiency** | 95% at 77°F (25°C) ambient and full load |
| **Output voltage[1]** | 56VDC |
| **Output voltage ripple** | <300 mV peak to peak |
| **Output voltage drop** | 1V at full load |
| **Output power[2]** | **Maximum:** 1500W |
| | **Minimum:** 0W |
| **Output current** | 31.25A (maximum) at 48VDC |
| **Load regulation** | <±3% (static) |
| **Holdup time** | 170 ms |
| **Features** | |
| **LED** | Bicolor status/alarm LED |
| **Protection** | • Current limit and short circuit<br>• Input reverse polarity<br>• Output high voltage shutdown<br>• Power limiting<br>• Over temperature protection |
| **Communication** | Power Line Communication (PLC) |
| **Mechanical** | |
| **Dimensions H × W × D** | 8.94 × 18 × 4.3 in. (227 × 457.2 × 109 mm) |
| **Net weight** | 24 lb (18.14 kg) |
| **Connection** | **Input:** 1 |
| | **Output:** 1 (isolated) |
| **Mounting** | Pole |
| | Wall |
| | Underground |
| | Strand |
| **Distance from DPX power source enclosure** | The maximum distance between the DPX power source enclosure and the DPX downconverter is dependent on cable gauge, number of pairs, and load power. |
| **Environmental** | |
| **Operating temperature[3]** | –40 to 149°F (–40 to 65°C) |
| | **Full rated output power:** –40 to 131°F (–40 to 55°C) |
| **Storage temperature** | –40 to 185°F (–40 to 85°C) |

| | |
|---|---|
| **Relative humidity** | 5 to 95% non-condensing |
| **Elevation** | Up to 4,921 ft (1,500 m); derated to 9,842 ft (3,000 m) |
| **Enclosure rating** | IP68 |
| | Type 6P |
| **Regulatory compliance** | |
| **Safety** | IEC/EN/CSA/UL 62368-1 |
| | UL 1400-1 |
| **EMC** | FCC CFR 47 PART 15/B – Class A |
| | CAN ICES-003(A)/NMB-003(A) |
| | ETSI EN 300 386 |
| | EN IEC 61000-4-2 |
| | EN IEC 61000-6-4: 2019 |
| | EN 61000-6-2: 2019 |
| | EN 55032: 2015 + A11: 2020 |
| | EN 55035: 2017 + A11: 2020 |
| | ANSI/IEEE C62.41 Category B3 |
| **Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. | |
| [1] Output voltage is floating.<br>[2] For paralleling of two DPX 1500W downconverters, contact the sales team. Note that output cables should be the same length.<br>[3] If the ambient temperature exceeds 149°F (65°C), the DPX 1500W downconverter will power down to protect itself. | |

## 3.2 Alpha® DPX 48VDC Load Disconnect Box

Table C: Alpha® DPX 48VDC load disconnect box specifications

| | |
|---|---|
| **Electrical** | |
| **Input voltage** | <60VDC |
| **Output voltage** | <60VDC |
| **Number of inputs** | 2 (feed 2 is optional) |
| **Maximum input current** | 31.3A maximum (per feed) |
| **Number of outputs** | 6 |
| **Maximum output current** | 23A maximum per output and 35A maximum per board |
| | 31.3A maximum (single input feed) |
| | 62.5A maximum (dual input feed) |
| **Features** | |
| **Protection** | Fuse protection per output |
| **Mechanical** | |
| **Dimensions H × W × D** | 9.4 × 6.9 × 5 in. (238.8 × 175.3 × 127 mm) |
| **Net weight** | 5.5 lb (2.5 kg) |

| | |
|---|---|
| **Connection** | **Input:** 1 or 2 connections<br>Each input can support 8 AWG (10 mm²) wires. |
| | **Output:** Up to 6 connections<br>Each output can support up to 10 AWG (6 mm²) wires. |
| **Mounting** | Pole |
| | Wall |
| **Distance from downconverter** | The maximum distance between DPX 1500W downconverter and the DPX 48VDC distribution box is 50 feet (15.2 m). |
| **Environmental** | |
| **Operating temperature** | –40 to 115°F (–40 to 46°C) plus solar loading |
| **Storage temperature** | –40 to 176°F (–40 to 80°C) |
| **Relative humidity** | 5 to 95% non-condensing |
| **Elevation** | Up to 9,842 ft (3,000 m) |
| **Enclosure rating** | IP66 |
| | Type 4X |
| **Regulatory compliance** | |
| **Safety** | IEC/EN/CSA/UL 62368-1 |

**ATTENTION**

Only use accessories (such as grommets or fittings) provided by the manufacturer to ensure IP68/Type 6P compliance.

**NOTICE**

Fuses are not provided.

# 4. Inspection

## 4.1 Packaging materials

Alpha Technologies Ltd. is committed to providing products and services that meet our customers' needs and expectations in a sustainable manner, while complying with all relevant regulatory requirements. As such Alpha® strives to follow our quality and environmental objectives from product supply and development through to the packaging for our products.

Rectifier and battery modules are shipped on individual pallets and are packaged according to the manufacturer's guidelines.

Almost all Alpha® packaging material is from sustainable resources and/or is recyclable.

## 4.2 Returns for service

**NOTICE**

**Alpha Technologies Ltd. is not responsible for damage caused by improper packaging of returned products.**

Save the original shipping container. If the product needs to be returned for service, it should be packaged in its original shipping container. If the original container is unavailable, make sure that the product is packed with at least three inches of shock absorbing material to prevent shipping damage.

## 4.3 Check for damage

Before unpacking the product, note any damage to the shipping container. Unpack the product and inspect the exterior for damage. If any damage is observed, contact the carrier immediately. Continue the inspection for any internal damage. In the unlikely event of internal damage, inform the carrier and contact Alpha Technologies Ltd. for advice on the impact of any damage.

## 4.4 General receipt of shipment

The inventory included with your shipment depends on the options you have ordered. The options are clearly marked on the shipping container labels and bill of materials.

## 4.5 Miscellaneous small parts

Review the packing slip and bill of materials to determine the part number of the configuration kits included with your system. Review the bill of materials to verify that all the small parts are included. Contact us if you have any questions before you proceed.

# 5. Installation

**ATTENTION**

**Only qualified personnel should install and connect the power components.**

## 5.1 Safety precautions

Refer to the Safety section near the beginning of this document.

## 5.2 Installation tools

Various insulated tools are essential for the installation. Use this list as a guide:

- Cable cutters
- Cutters and wire strippers 6 to 22 AWG (16 to 0.34 mm²)
- Various hand tools including:
  - Combination wrenches.
  - Various screwdrivers.
  - Ratchet and socket set.
  - Electricians knife.

## 5.3 Site selection

Consider the following before selecting a mounting site:

- The DPX 1500W downconverter is designed for pole, wall, underground, or strand mounting.
- The DPX 48VDC load distribution box can be wall or pole mounted.
- Avoid areas that could be subjected to hot air exhaust from nearby equipment or buildings.
- Find out if your intended area is subjected to architectural controls or environmental restrictions.

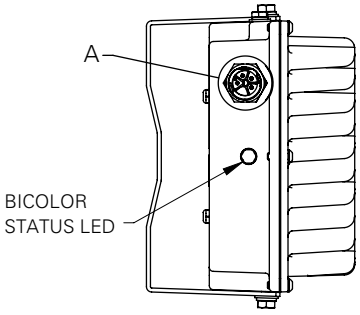
## 5.4 Downconverter connections

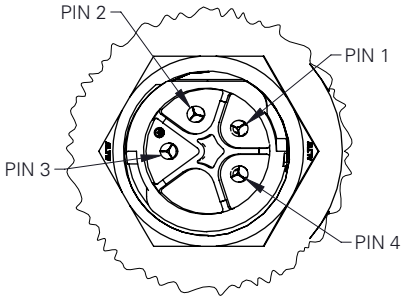
**NOTICE**

For more information, refer to the technical drawings at the end of this document.

### 5.4.1 Input connections

**Input port**




| PIN # | CIRCUIT DESIGNATION |
|---|---|
| 2 | DPX COPPERSPLICE-C |
| 1 | +190 V |
| 3 | DPX COPPERSPLICE-NO |
| 4 | –190 V |

DETAIL A
INPUT

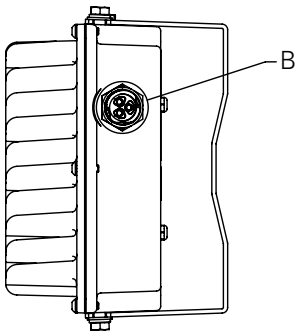
**I/O CABLE INSTALLATION:**
ALIGN WHITE TRIANGLES ON THE MODULE CONNECTOR AND CABLE END AND PUSH CABLE STRAIGHT ONTO CONNECTOR UNTIL CABLE END CLICKS.

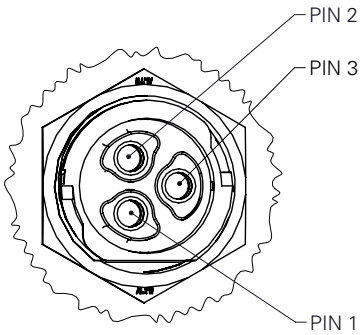
Figure 4: Input connection detail

**NOTICE**

DC input connection is polarity dependent. Unit will not turn ON if input polarity is reversed.

### 5.4.2 Output connections




| PIN # | CIRCUIT DESIGNATION | CABLE WIRE COLORS |
|---|---|---|
| 1 | 0 V | BLACK |
| 2 | 56 V[1] | WHITE |
| 3 | NOT USED | GREEN/NOT USED |

NOTE: 1. OUTPUT IS FLOATING.
NOTE: 2. IF EQUIPPED WITH A 48 VDC LOAD DISTRIBUTION BOX WITH FUSING ON NEGATIVE SIDE, THEN THE POSITIVE MUST BE GROUNDED AT THE LOAD END.

DETAIL B
OUTPUT

**I/O CABLE INSTALLATION:**
ALIGN WHITE TRIANGLES ON THE MODULE CONNECTOR AND CABLE END AND PUSH CABLE STRAIGHT ONTO CONNECTOR UNTIL CABLE END CLICKS.

Figure 5: Output connection detail

**ATTENTION**

The total power from the output channel cannot exceed 1500 watts.

### 5.4.3 Chassis ground

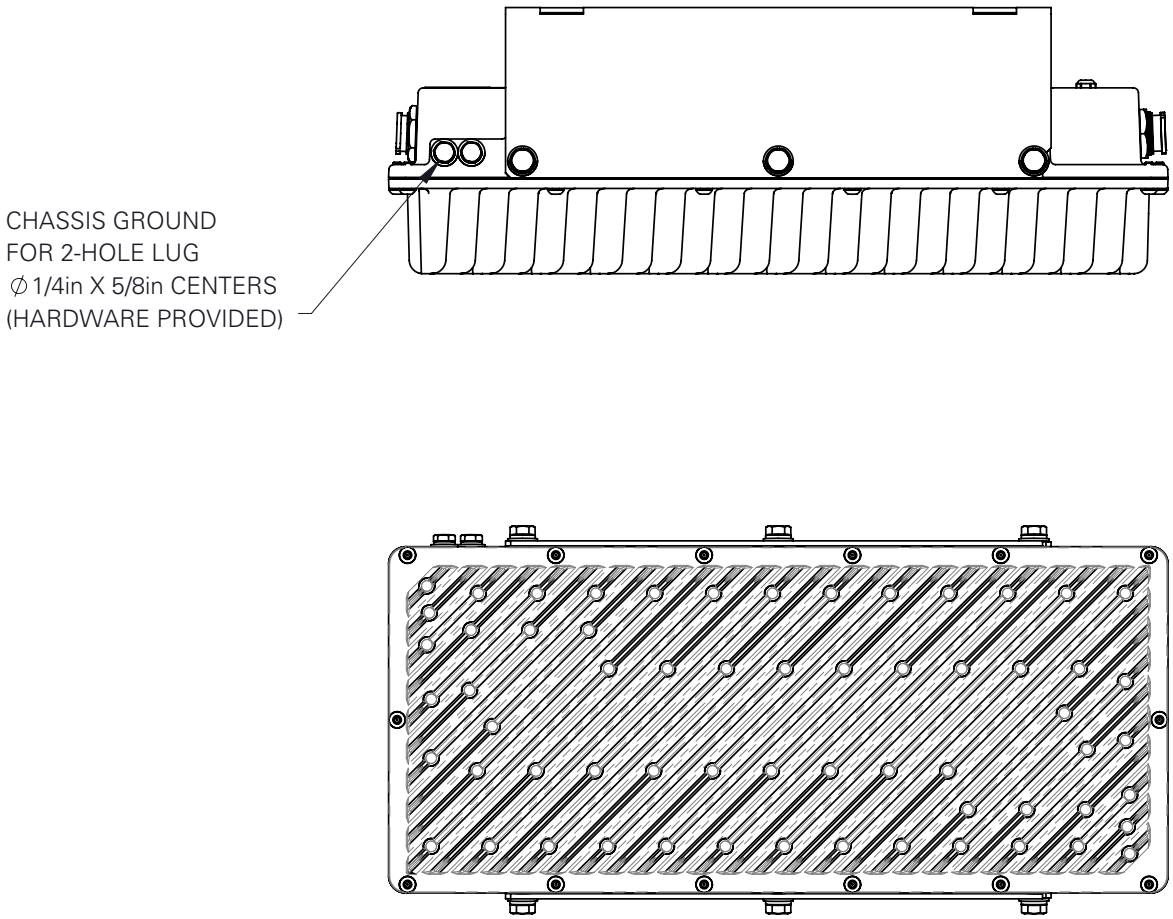



Figure 6: Chassis ground connection detail

**Grounding**

The recommended grounding wire size is 6 AWG (16 mm²) tinned solid copper ground wire.

**ATTENTION**

A proper grounding system (ground electrode system) that meets or exceeds the specifications of the equipment must be designed and installed prior to or in conjunction with the installation. The ground system must be bonded to the enclosure to ensure a common or single-point ground.

**ATTENTION**

An enclosure that is not properly grounded presents an electrical hazard and will likely result in premature equipment failure.

## 5.5 Load disconnect box connections

**NOTICE**

For more information, refer to the technical drawings at the end of this document.

### 5.5.1 Input and distribution connections

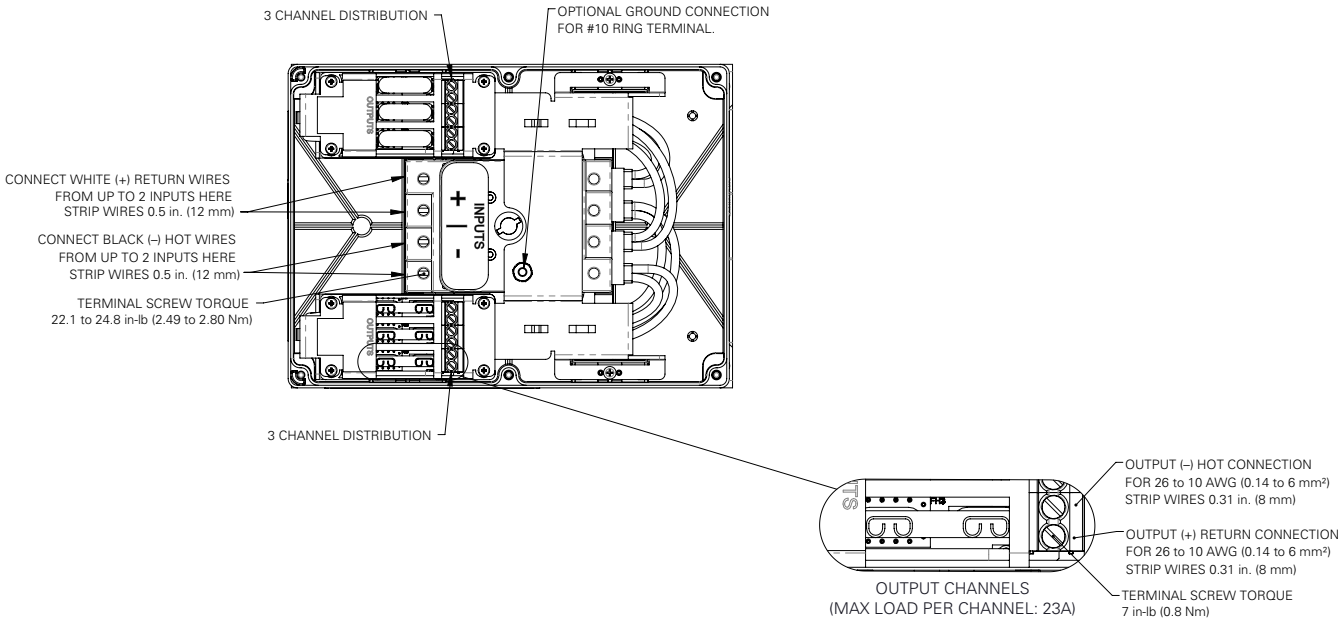



Figure 7: Input and distribution connection detail

### 5.5.2 Disconnect switch positions

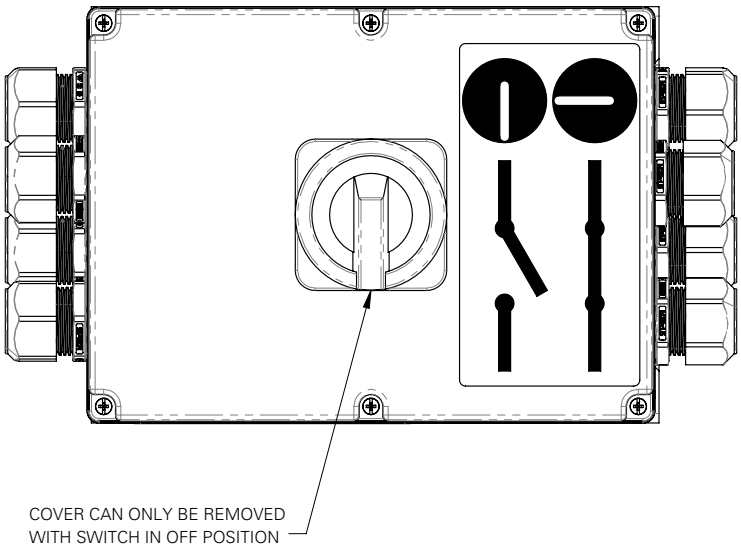



Figure 8: Disconnect switch position detail

## 5.6 Mounting the downconverter

### 5.6.1 Mounting the device to a wooden pole

**Tools and materials required**

- ½ inch wrench for the bolts that attach the device to the mounting bracket
- Two ⅝ inch diameter machine bolts, UNC thread, SAE Grade 5 or better, length to suit the pole (not provided)
- Four ⅝ inch diameter stainless steel lock washers and flat washers (not provided)
- Two ⅝ inch diameter hex nuts UNC threaded (not provided)
- Auger or drill for boring ¾ inch (19 mm) diameter holes in the wood pole (not provided)

**Procedure**

1. Using the mounting bracket as a template, drill two holes into the pole to accept the machine bolts.
2. Secure the mounting bracket to the pole with the machine bolts.
3. Secure the device to the mounting bracket with the supplied bolts.

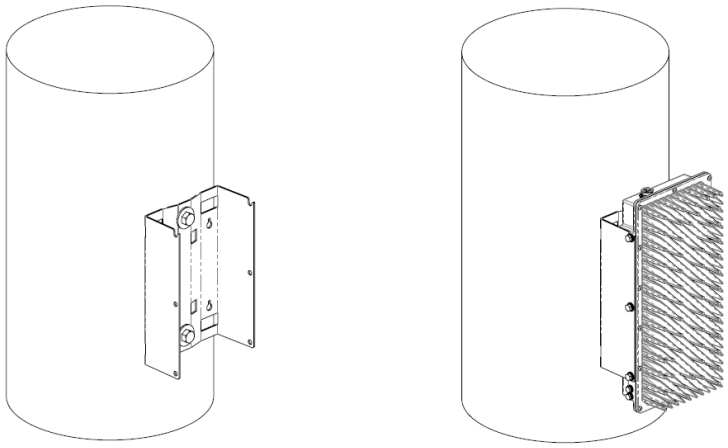


Figure 9: Mounting the DPX 1500 W downconverter to a wooden pole

**ATTENTION**

Complete output wiring before powering up the system. If wiring needs to be modified while the system is in operation, remove the power distribution module connected to the corresponding wiring terminal blocks first, perform necessary adjustments, and then re-insert the power distribution module back into its shelf slot.

## 5.6.2 Mounting the device to a metal or concrete pole

### Tools and materials required

- ½ inch wrench for the bolts that attach the module to the mounting bracket
- Two pole mount straps that fit the pole. Straps must be stainless or galvanized steel.
- C001 BAND-IT® tool or equivalent
- C206 ¾ inch stainless steel BAND-IT® band or equivalent
- C256 ¾ inch stainless steel BAND-IT® buckles or equivalent

### Procedure

1. Secure the mounting bracket to the pole with the straps.
2. Secure the device to the mounting bracket with the supplied bolts.

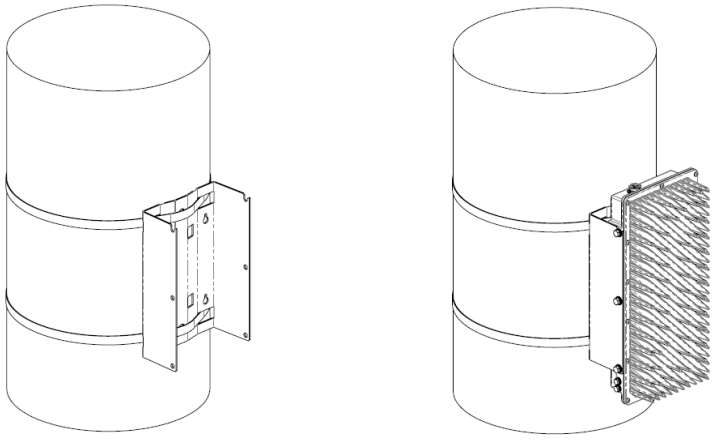


Figure 10: Mounting the DPX 1500 W downconverter to a metal or concrete pole

**ATTENTION**

Complete output wiring before powering up the system. If wiring needs to be modified while the system is in operation, remove the power distribution module connected to the corresponding wiring terminal blocks first, perform necessary adjustments, and then re-insert the power distribution module back into its shelf slot.

## 5.6.3 Mounting the device to a wall

### Tools and materials required

- ½ inch wrench for the bolts that attach the module to the mounting bracket
- Four #10 × 1-¼ inch lag screws (not provided)
- Four #10 diameter flat washers (not provided)
- Drill with a ⅛ inch (8 mm) bit for drilling pilot holes (not provided)

### Procedure

1. Using the mounting bracket as a template, drill four pilot holes into the wall to accept #10 lag screws.
2. Secure the mounting bracket to the wall with the four bolts and washers.
3. If the wall structure is not strong enough to support the weight of the unit reinforce the wall structure with ½ inch plywood of a suitable grade for the application environment.
4. Secure the device to the mounting bracket with the supplied bolts.

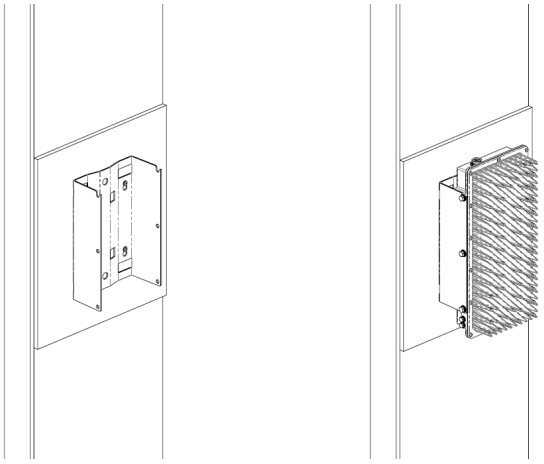


Figure 11: Mounting the DPX 1500 W downconverter to a wall

**ATTENTION**

Complete output wiring before powering up the system. If wiring needs to be modified while the system is in operation, remove the power distribution module connected to the corresponding wiring terminal blocks first, perform necessary adjustments, and then re-insert the power distribution module back into its shelf slot.

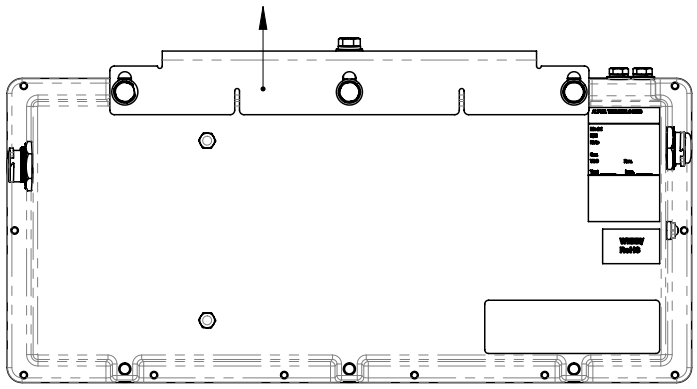
## 5.6.4 Strand mounting the device

### Tools and materials required

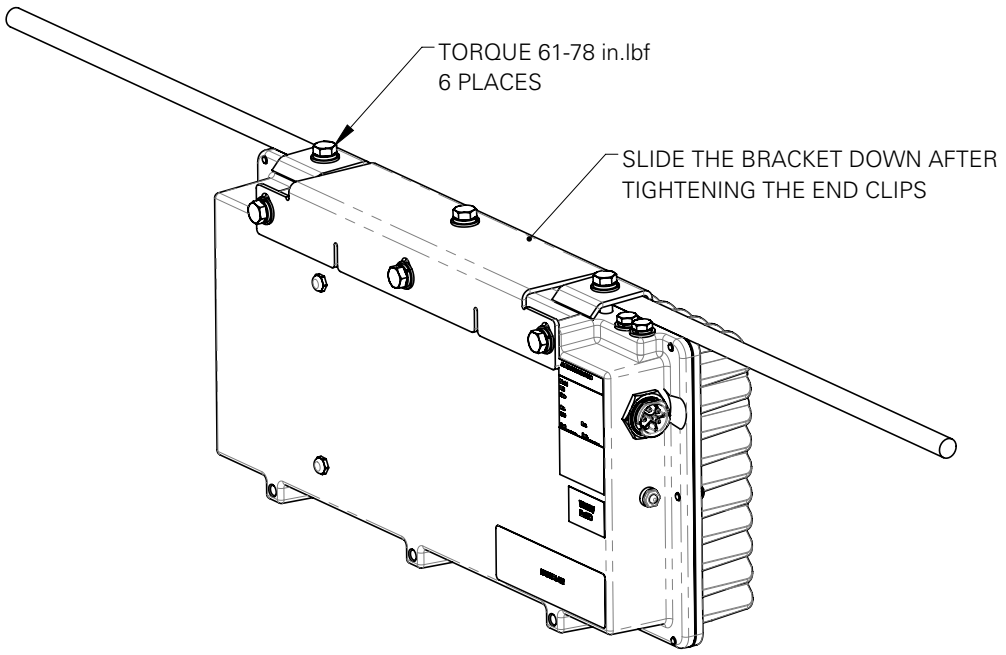
- Strand mount bracket kit (PN: 0380712-001)
- ½ inch wrench for the bolts that attach the mounting bracket kit to the module
- ½ inch torque wrench

### Procedure

1. Attach the strand mount bracket kit to the DPX 1500W downconverter.
2. When installing to a strand, loosen the three bolts, and slide the bracket to the top position.



3. Position the device on the strand, slide the bracket down. Install the end clips and tighten all six bolts.




**ATTENTION**

Complete output wiring before powering up the system. If wiring needs to be modified while the system is in operation, remove the power distribution module connected to the corresponding wiring terminal blocks first, perform necessary adjustments, and then re-insert the power distribution module back into its shelf slot.

## 5.7 Mounting the load disconnect box

### 5.7.1 Mounting the device to a wooden pole

**Tools and materials required**

- ½ inch wrench for the bolts that attach the device to the mounting bracket
- Two ⅝ inch diameter machine bolts, UNC thread, SAE Grade 5 or better, length to suit the pole (not provided)
- Four ⅝ inch diameter stainless steel lock washers and flat washers (not provided)
- Two ⅝ inch diameter hex nuts UNC threaded (not provided)
- Auger or drill for boring ¾ inch (19 mm) diameter holes in the wood pole (not provided)

**Procedure**

1. Using the mounting bracket as a template, drill two holes into the pole to accept the machine bolts.
2. Secure the mounting bracket to the pole with the machine bolts.
3. Secure the device to the mounting bracket with the supplied bolts.

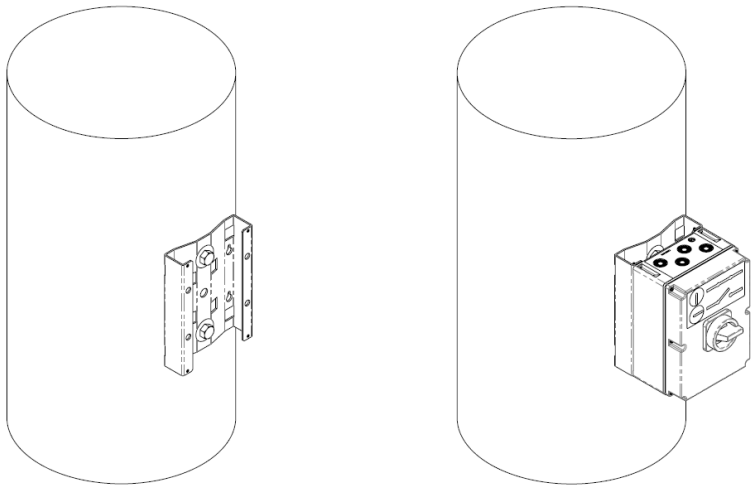


Figure 12: Mounting the DPX 48 VDC load disconnect box to a wooden pole

**ATTENTION**

Complete output wiring before powering up the system. If wiring needs to be modified while the system is in operation, remove the power distribution module connected to the corresponding wiring terminal blocks first, perform necessary adjustments, and then re-insert the power distribution module back into its shelf slot.

## 5.7.2 Mounting the device to a metal or concrete pole

### Tools and materials required

- ½ inch wrench for the bolts that attach the module to the mounting bracket
- Two pole mount straps that fit the pole. Straps must be stainless or galvanized steel
- C001 BAND-IT® tool or equivalent
- C206 ¾ inch stainless steel BAND-IT® band or equivalent
- C256 ¾ inch stainless steel BAND-IT® buckles or equivalent

### Procedure

1. Secure the mounting bracket to the pole with the straps.
2. Secure the device to the mounting bracket with the supplied bolts.

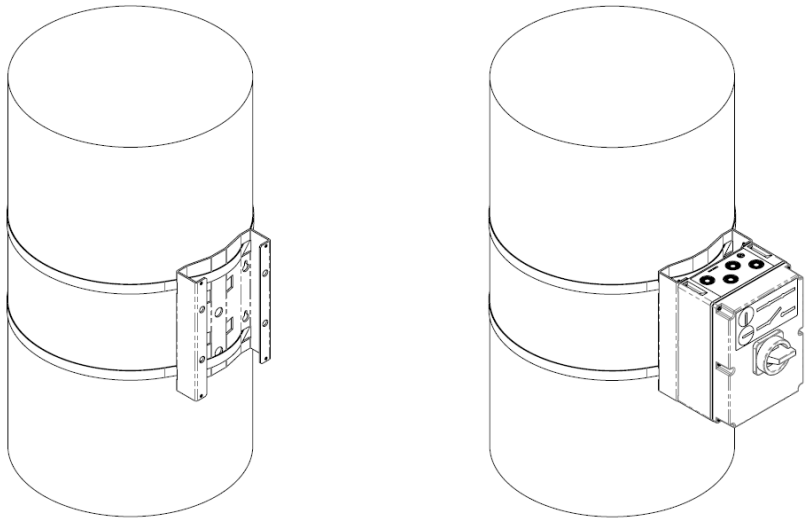


Figure 13: Mounting the DPX 48 VDC load disconnect box to a metal or concrete pole

**ATTENTION**

Complete output wiring before powering up the system. If wiring needs to be modified while the system is in operation, remove the power distribution module connected to the corresponding wiring terminal blocks first, perform necessary adjustments, and then re-insert the power distribution module back into its shelf slot.

## 5.7.3 Mounting the device to a wall

### Tools and materials required

- ½ inch wrench for the bolts that attach the module to the mounting bracket
- Four #10 × 1-¼ inch lag screws (not provided)
- Four #10 diameter flat washers (not provided)
- Drill with a ⅛ inch (8 mm) bit for drilling pilot holes (not provided)

### Procedure

1. Using the mounting bracket as a template, drill four pilot holes into the wall to accept #10 lag screws.
2. Secure the mounting bracket to the wall with the four bolts and washers.
3. If the wall structure is not strong enough to support the weight of the unit reinforce the wall structure with ½ inch plywood of a suitable grade for the application environment.
4. Secure the device to the mounting bracket with the supplied bolts.

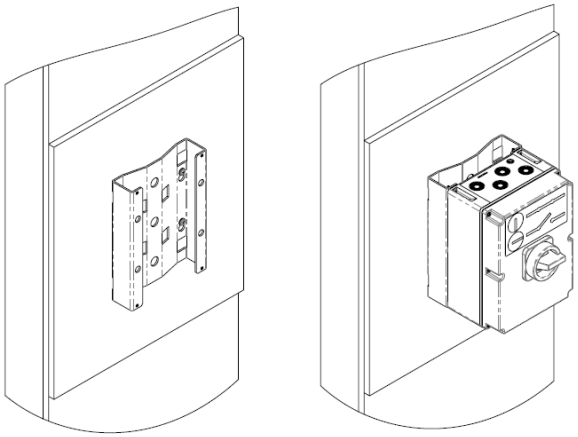


Figure 14: Mounting the DPX 48 VDC load disconnect box to a wall

**ATTENTION**

Complete output wiring before powering up the system. If wiring needs to be modified while the system is in operation, remove the power distribution module connected to the corresponding wiring terminal blocks first, perform necessary adjustments, and then re-insert the power distribution module back into its shelf slot.

## 5.8 Cabling notice

**ATTENTION**

Before connecting or disconnecting the cables, ensure the input is powered off.

**WARNING**

The DPX power source enclosure and DPX downconverter must only be installed with a DPX power transport cable that has been tested and certified for use with the DPX distributed power transport system. Failure to do so may result in system malfunction and could potentially cause an unsafe condition. Consult the Alpha Technologies Ltd. team for help with the proper selection of cable best suited for your application and to meet safety requirements as per Alliance for Telecommunications Industry Solutions (ATIS®) TR 0600040, Underwriters Laboratories Outline of Investigation 1400-1, and UL 1400-2.

# 6. Maintenance

Although very little maintenance is required with distributed power transport systems, routine checks and adjustments are recommended to ensure optimum system performance. Qualified service personnel should do the repairs.

The following table lists a few maintenance procedures for this system. These procedures should be performed at least once a year.

**WARNING**

Use extreme care when working inside the unit while the system is energized. Do not make contact with live components or parts.

**ATTENTION**

Circuit cards, including semiconductor devices, can be damaged by static electricity. Always wear a grounded wrist strap when handling or installing circuit cards.

**ATTENTION**

Ensure redundant modules or batteries are used to eliminate the threat of service interruptions while performing maintenance on the system's alarms and control settings.

Table D: Sample maintenance log

| Procedure | Date completed |
|---|---|
| **Clean as needed.** | |
| **Inspect all system connections. Re-torque if necessary.** | |
| **Verify alarm and control settings.** | |
| **Verify module mode operation.** | |

# 7. Troubleshooting

Modules are designed for simple installation and reliable, trouble-free operation.

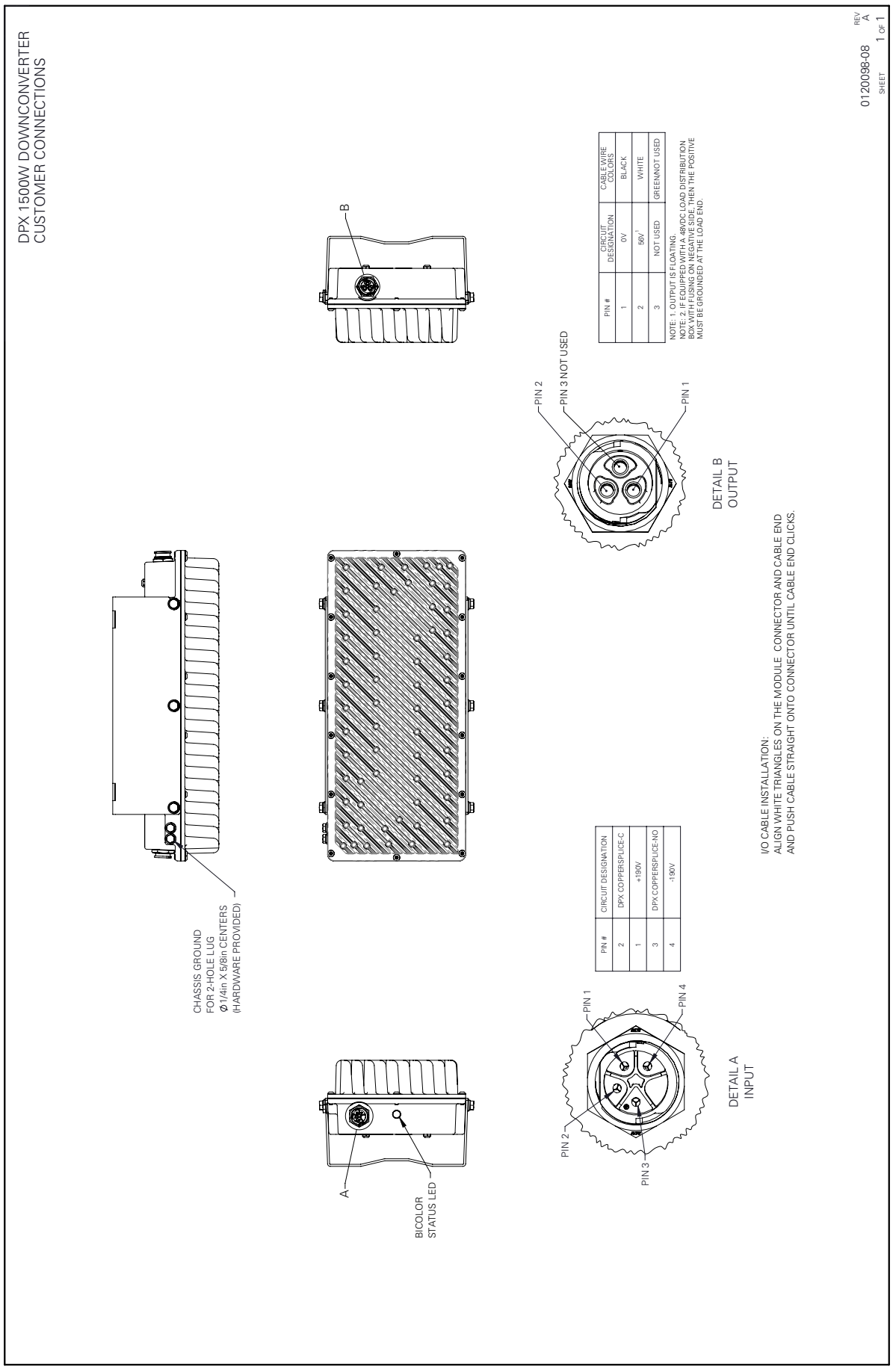
In most cases the modules will recover from minor alarms and faults automatically. However under certain conditions the modules may need remote power cycling. In the unlikely event of a module failure, it may need replacement.

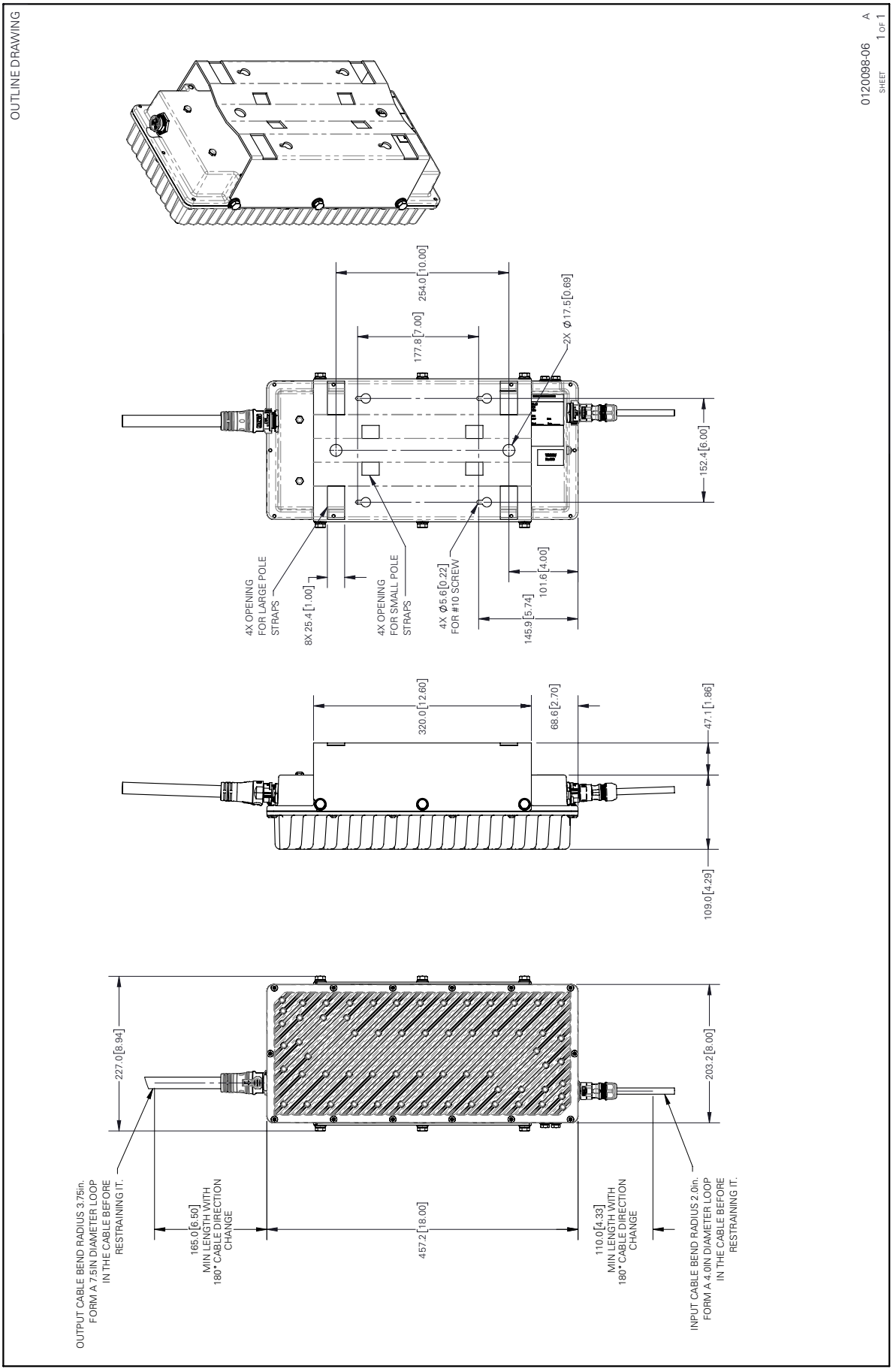
The following table provides a quick reference of the LED and the corresponding states.

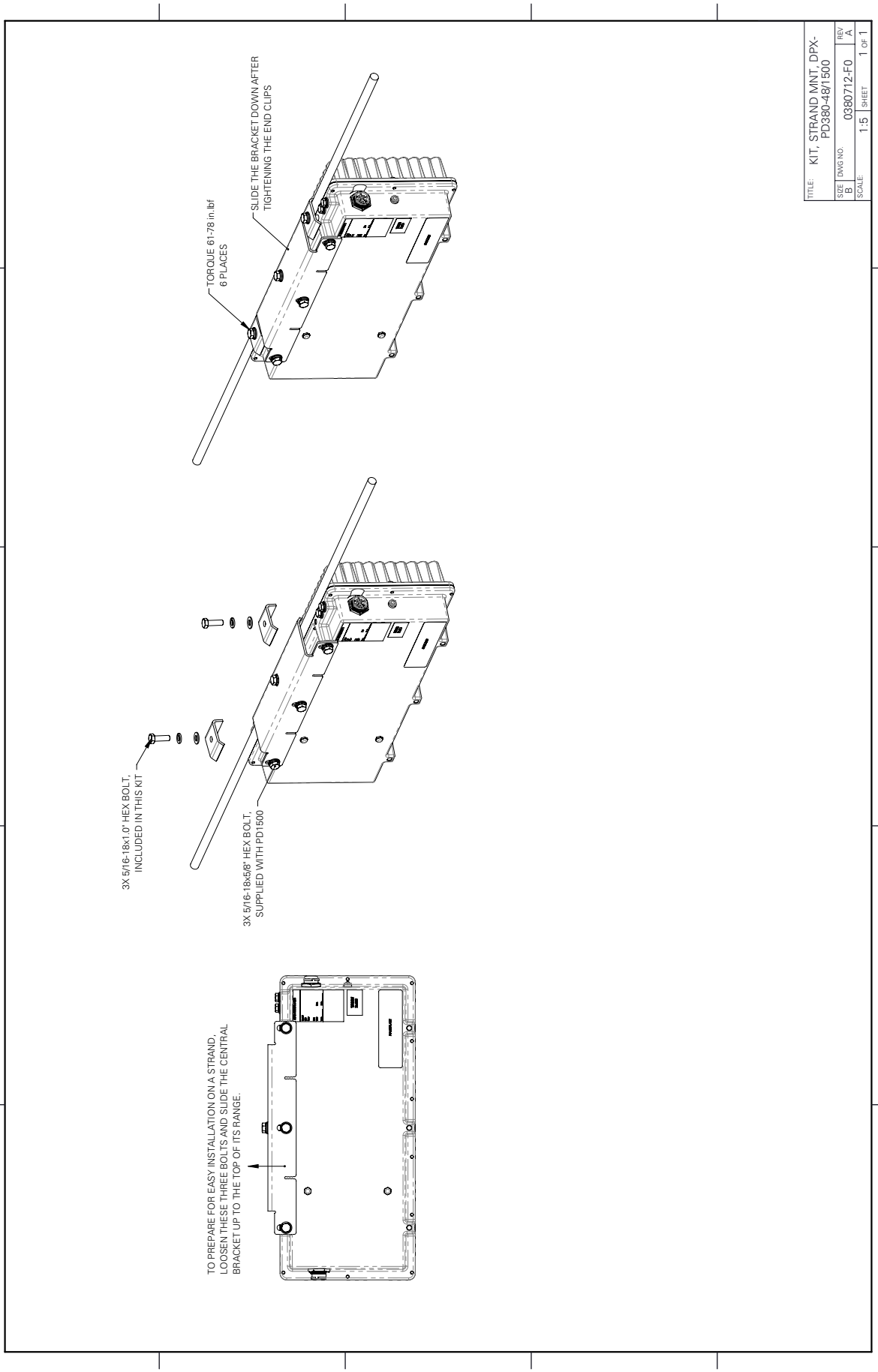
## 7.1 Bicolor status LED

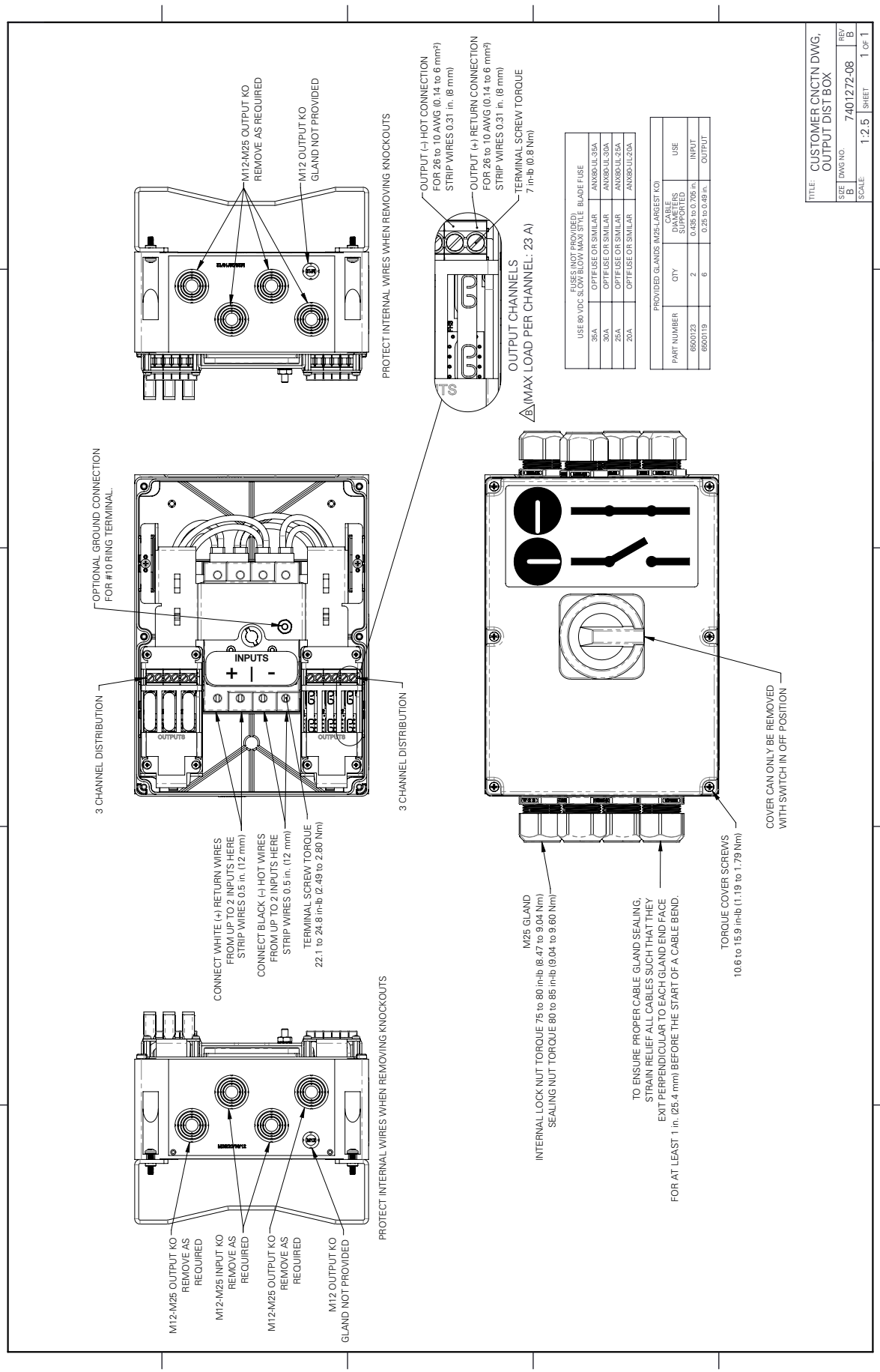
Table E: Bicolor status LED states

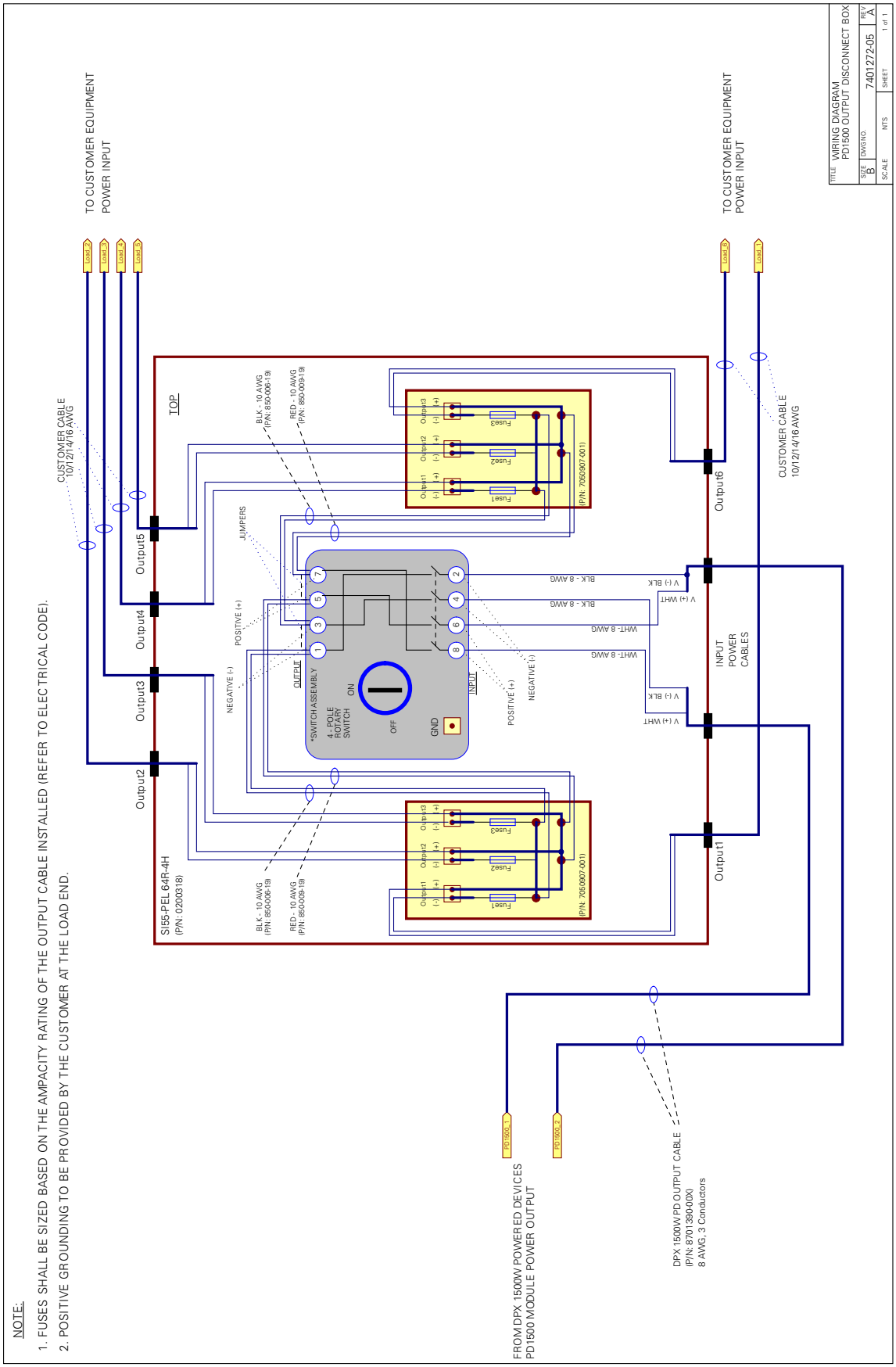
| LED name | Color | State | Meaning |
|---|---|---|---|
| **Bicolor status/ alarm LED** | **Red** | **Off** | Indicates the downconverter is not powered. |
| | | **Solid** | Indicates (one of):<br>• There is a fault from the input stage (boost shunt), that is, input under voltage protection (UVP), input over current protection (OCP), boost overvoltage protection (OVP), shunt OVP, shunt OCP, or temperature fault.<br>• There is a fault from the DCDC, that is, output OCP, OVP, or temperature fault.<br>• The internal bus OK signal is inactive, meaning DCDC will not turn on and will not deliver power to the load.<br>• Short circuit fault. |
| | | **Flashing** | • SPD failed.<br>• Output current limit is active or output power limit is active. |
| | **Green** | **Off** | Indicates the downconverter is not powered. |
| | | **Solid** | Indicates the input is OK, the downconverter is providing power to the load, and is not in any of the error conditions mentioned. |
| | | **Flashing** | N/A |

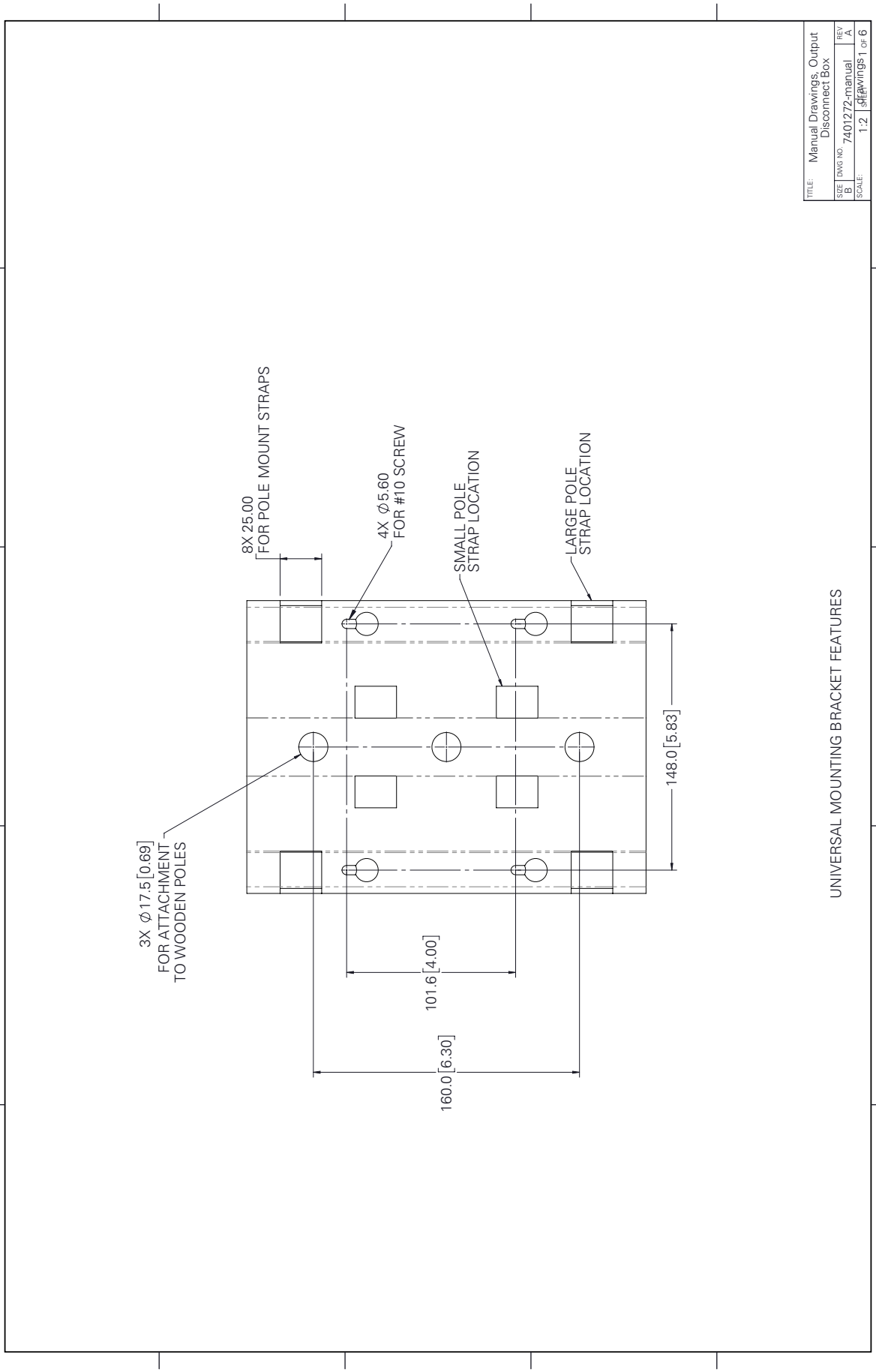

DPX 1500W DOWNCONVERTER
CUSTOMER CONNECTIONS
0120098-08
REV A
SHEET 1 OF 1
B
PIN 2
PIN 3 NOT USED
PIN 1
DETAIL B
OUTPUT
PIN # | CIRCUIT DESIGNATION | CABLE WIRE COLORS
1 | 0V | BLACK
2 | 56V* | WHITE
3 | NOT USED | GREEN/NOT USED
NOTE: 1. OUTPUT IS FLOATING.
NOTE: 2. IF EQUIPPED WITH A 48VDC LOAD DISTRIBUTION BOX WITH FUSING ON NEGATIVE SIDE, THEN THE POSITIVE MUST BE GROUNDED AT THE LOAD END.
CHASSIS GROUND
FOR 2-HOLE LUG
Ø 1/4in X 5/8in CENTERS
(HARDWARE PROVIDED)
I/O CABLE INSTALLATION:
ALIGN WHITE TRIANGLES ON THE MODULE CONNECTOR AND CABLE END
AND PUSH CABLE STRAIGHT ONTO CONNECTOR UNTIL CABLE END CLICKS.
A
BICOLOR
STATUS LED
PIN # | CIRCUIT DESIGNATION
2 | DPX COPPERSPLICE-C
1 | +190V
3 | DPX COPPERSPLICE-NO
4 | -190V
PIN 1
PIN 4
PIN 2
PIN 3
DETAIL A
INPUT

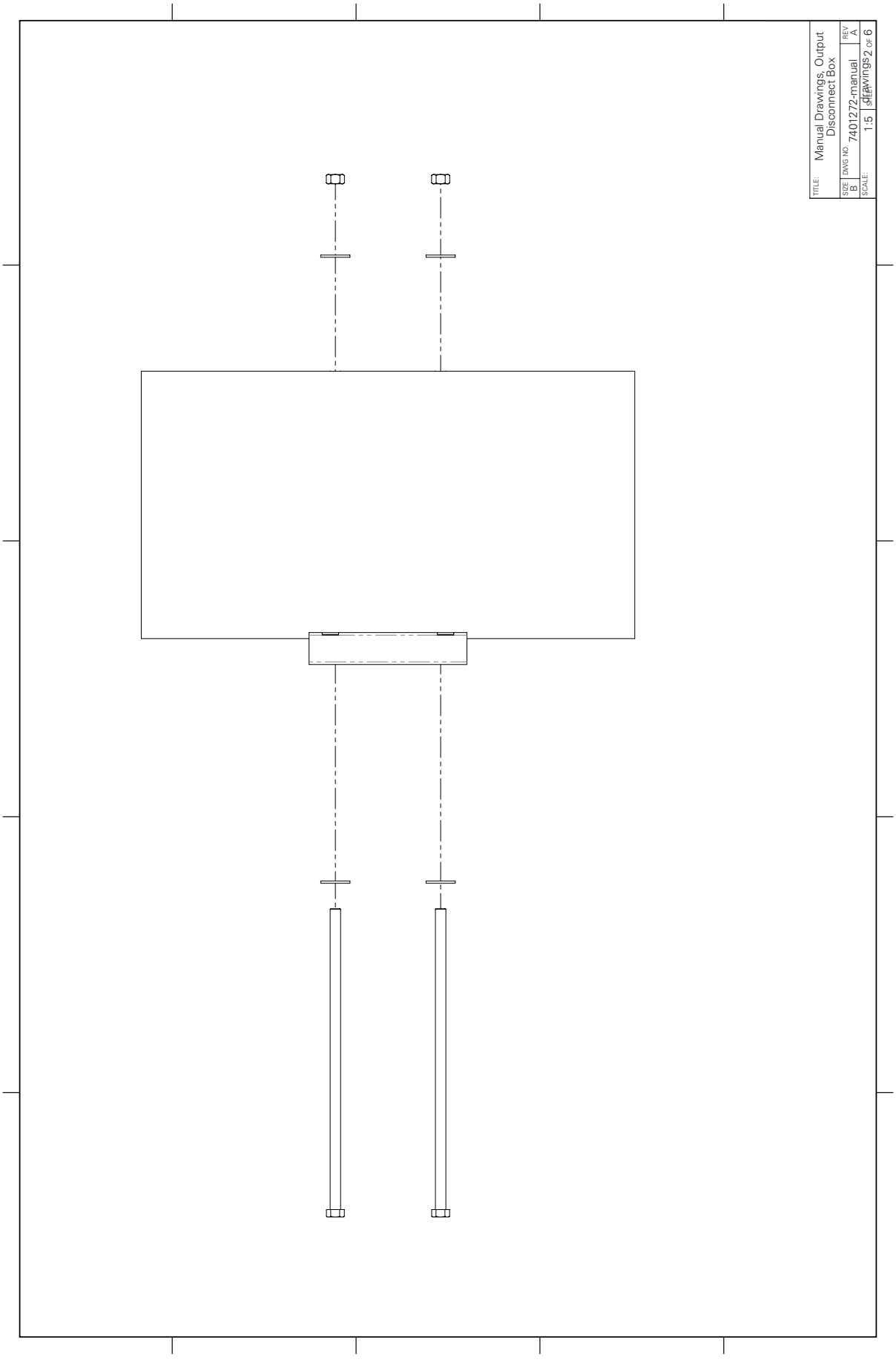

OUTLINE DRAWING
0120098-06 A
SHEET 1 OF 1
254.0 [10.00]
177.8 [7.00]
2X ⌀ 17.5 [0.69]
152.4 [6.00]
4X OPENING FOR LARGE POLE STRAPS
8X 25.4 [1.00]
4X OPENING FOR SMALL POLE STRAPS
4X ⌀5.6 [0.22] FOR #10 SCREW
145.9 [5.74]
101.6 [4.00]
320.0 [12.60]
68.6 [2.70]
47.1 [1.86]
109.0 [4.29]
227.0 [8.94]
203.2 [8.00]
OUTPUT CABLE BEND RADIUS 3.75in. FORM A 7.5IN DIAMETER LOOP IN THE CABLE BEFORE RESTRAINING IT.
165.0 [6.50] MIN LENGTH WITH 180° CABLE DIRECTION CHANGE
457.2 [18.00]
110.0 [4.33] MIN LENGTH WITH 180° CABLE DIRECTION CHANGE
INPUT CABLE BEND RADIUS 2.0in. FORM A 4.0IN DIAMETER LOOP IN THE CABLE BEFORE RESTRAINING IT.


TITLE: KIT, STRAND MNT, DPX-PD380-48/1500
SIZE B
DWG NO. 03807712-F0
REV A
SCALE: 1:5
SHEET 1 OF 1
SLIDE THE BRACKET DOWN AFTER TIGHTENING THE END CLIPS
TORQUE 61-78 in.lbf 6 PLACES
3X 5/16-18x1.0" HEX BOLT, INCLUDED IN THIS KIT
3X 5/16-18x5/8" HEX BOLT, SUPPLIED WITH PD1500
TO PREPARE FOR EASY INSTALLATION ON A STRAND, LOOSEN THESE THREE BOLTS AND SLIDE THE CENTRAL BRACKET UP TO THE TOP OF ITS RANGE.

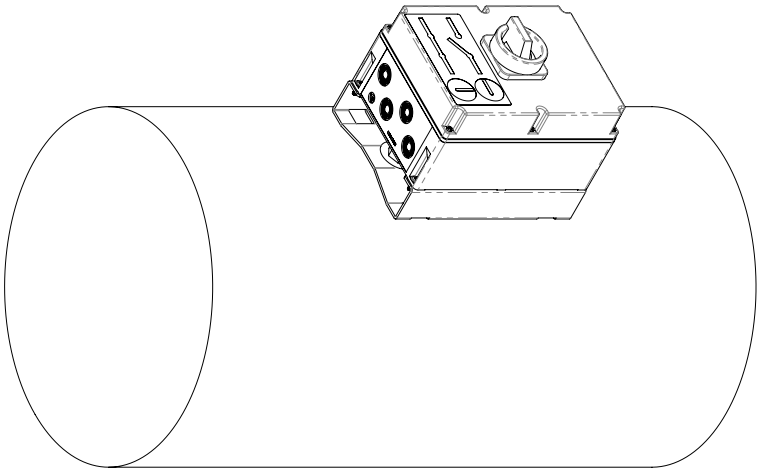

M12-M25 OUTPUT KO
REMOVE AS REQUIRED
M12 OUTPUT KO
GLAND NOT PROVIDED
PROTECT INTERNAL WIRES WHEN REMOVING KNOCKOUTS
OUTPUT (-) HOT CONNECTION
FOR 26 to 10 AWG (0.14 to 6 mm²)
STRIP WIRES 0.31 in. (8 mm)
OUTPUT (+) RETURN CONNECTION
FOR 26 to 10 AWG (0.14 to 6 mm²)
STRIP WIRES 0.31 in. (8 mm)
TERMINAL SCREW TORQUE
7 in-lb (0.8 Nm)
OUTPUT CHANNELS
(MAX LOAD PER CHANNEL: 23 A)
B
FUSES (NOT PROVIDED)
USE 80 VDC SLOW BLOW MAXI STYLE BLADE FUSE
35A OPTIFUSE OR SIMILAR ANX80-UL-35A
30A OPTIFUSE OR SIMILAR ANX80-UL-30A
25A OPTIFUSE OR SIMILAR ANX80-UL-25A
20A OPTIFUSE OR SIMILAR ANX80-UL-20A
PROVIDED GLANDS (M25-LARGEST KO)
PART NUMBER QTY CABLE DIAMETERS SUPPORTED USE
6500123 2 0.438 to 0.705 in. INPUT
6500119 6 0.25 to 0.49 in. OUTPUT
OPTIONAL GROUND CONNECTION
FOR #10 RING TERMINAL.
3 CHANNEL DISTRIBUTION
INPUTS
+ | -
OUTPUTS
OUTPUTS
3 CHANNEL DISTRIBUTION
CONNECT WHITE (+) RETURN WIRES
FROM UP TO 2 INPUTS HERE
STRIP WIRES 0.5 in. (12 mm)
CONNECT BLACK (-) HOT WIRES
FROM UP TO 2 INPUTS HERE
STRIP WIRES 0.5 in. (12 mm)
TERMINAL SCREW TORQUE
22.1 to 24.8 in-lb (2.49 to 2.80 Nm)
M25 GLAND
INTERNAL LOCK NUT TORQUE 75 to 80 in-lb (8.47 to 9.04 Nm)
SEALING NUT TORQUE 80 to 85 in-lb (9.04 to 9.60 Nm)
TO ENSURE PROPER CABLE GLAND SEALING,
STRAIN RELIEF ALL CABLES SUCH THAT THEY
EXIT PERPENDICULAR TO EACH GLAND END FACE
FOR AT LEAST 1 in. (25.4 mm) BEFORE THE START OF A CABLE BEND.
TORQUE COVER SCREWS
10.6 to 15.9 in-lb (1.19 to 1.79 Nm)
COVER CAN ONLY BE REMOVED
WITH SWITCH IN OFF POSITION
PROTECT INTERNAL WIRES WHEN REMOVING KNOCKOUTS
M12-M25 OUTPUT KO
REMOVE AS
REQUIRED
M12-M25 INPUT KO
REMOVE AS
REQUIRED
M12-M25 OUTPUT KO
REMOVE AS
REQUIRED
M12 OUTPUT KO
GLAND NOT PROVIDED
TITLE: CUSTOMER CNCTN DWG, OUTPUT DIST BOX
SIZE B
DWG NO: 7401272-08
REV B
SCALE: 1:2.5
SHEET 1 OF 1

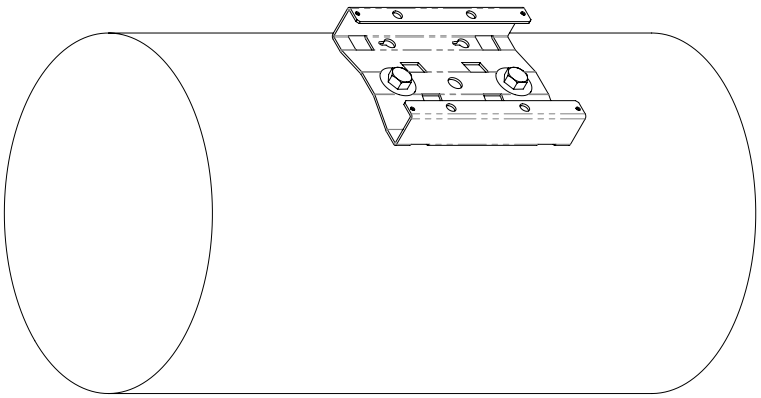

TO CUSTOMER EQUIPMENT
POWER INPUT
TO CUSTOMER EQUIPMENT
POWER INPUT
CUSTOMER CABLE
10/12/14/16 AWG
CUSTOMER CABLE
10/12/14/16 AWG
TOP
Output5
Output4
Output3
Output2
Output6
Output1
JUMPERS
POSITIVE (+)
NEGATIVE (-)
*SWITCH ASSEMBLY
4 - POLE
ROTARY
SWITCH
ON
OFF
GND
OUTPUT
INPUT
NEGATIVE (+)
POSITIVE (+)
BLK - 8 AWG
WHT - 8 AWG
V (-) BLK
V (+) WHT
INPUT
POWER
CABLES
BLK - 10 AWG
(P/N: 850-006-19)
RED - 10 AWG
(P/N: 850-009-18)
SI55-PEL 64R-4H
(P/N: 0200318)
(P/N: 7050907-001)
FROM DPX 1500W POWERED DEVICES
PD1500 MODULE POWER OUTPUT
DPX 1500W PD OUTPUT CABLE
(P/N: 8701390-00X)
8 AWG, 3 Conductors
NOTE:
1. FUSES SHALL BE SIZED BASED ON THE AMPACITY RATING OF THE OUTPUT CABLE INSTALLED (REFER TO ELECTRICAL CODE).
2. POSITIVE GROUNDING TO BE PROVIDED BY THE CUSTOMER AT THE LOAD END.
TITLE
WIRING DIAGRAM
PD1500 OUTPUT DISCONNECT BOX
SIZE
B
DWG NO.
7401272-05
REV
A
SCALE
NTS
SHEET
1 of 1


TITLE: Manual Drawings, Output Disconnect Box
SIZE B
DWG NO. 7401272-manual drawings
REV A
SCALE: 1:2
SHEET 1 OF 6
UNIVERSAL MOUNTING BRACKET FEATURES
8X 25.00 FOR POLE MOUNT STRAPS
4X ⌀5.60 FOR #10 SCREW
SMALL POLE STRAP LOCATION
LARGE POLE STRAP LOCATION
3X ⌀17.5 [0.69] FOR ATTACHMENT TO WOODEN POLES
148.0 [5.83]
101.6 [4.00]
160.0 [6.30]

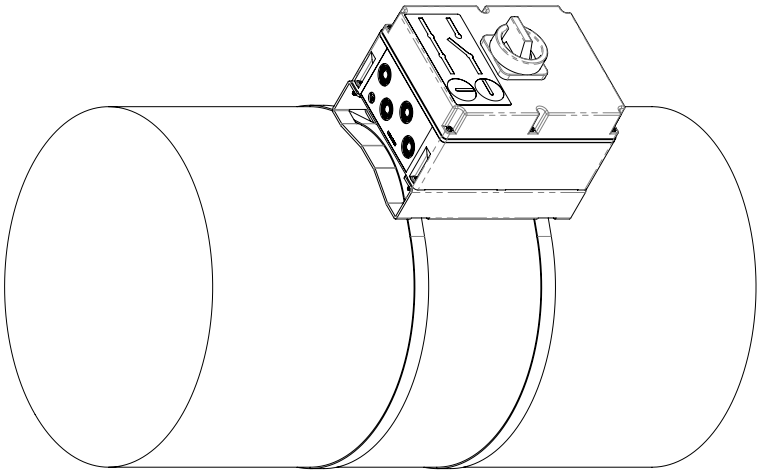

TITLE: Manual Drawings, Output Disconnect Box
SIZE B
DWG NO. 7401272-manual drawings
REV A
SCALE: 1:5
SHEET 2 OF 6

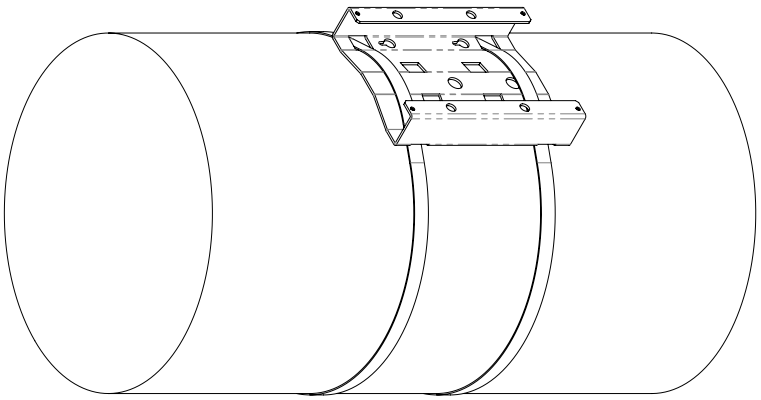
| | | | |
|---|---|---|---|
| TITLE: Manual Drawings, Output Disconnect Box | | | REV A |
| SIZE B | DWG NO. 7401272-manual drawings | | SHEET 3 OF 6 |
| SCALE: 1:5 | | | |



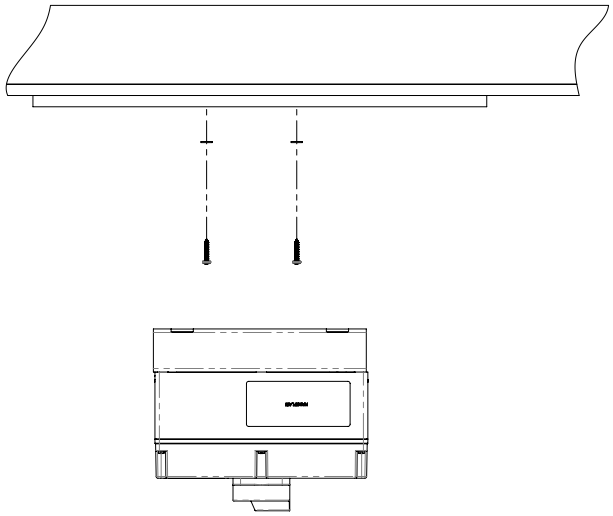


| | | |
|---|---|---|
| TITLE: | Manual Drawings, Output Disconnect Box | REV A |
| SIZE B | DWG NO. 7401272-manual drawings | SHEET 4 OF 6 |
| SCALE: | 1.5 | |

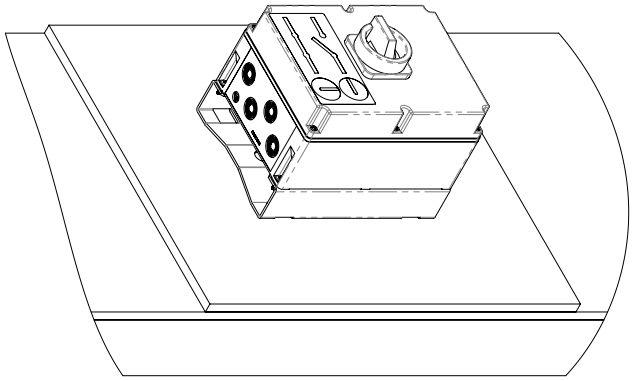


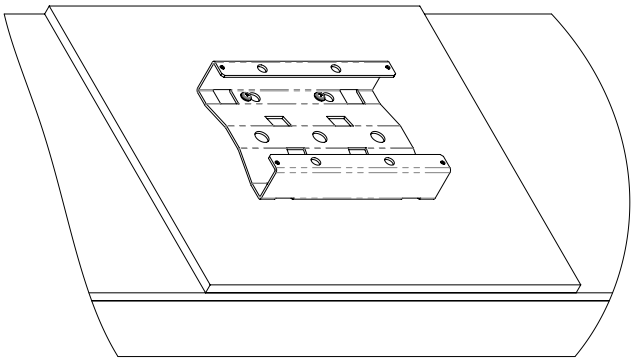


| | | | |
|---|---|---|---|
| TITLE: Manual Drawings, Output Disconnect Box | | | REV A |
| SIZE B | DWG NO. 7401272-manual drawings | | SHEET 5 OF 6 |
| SCALE: 1.5 | | | |



| | | | |
|---|---|---|---|
| TITLE: Manual Drawings, Output Disconnect Box | | | REV A |
| SIZE B | DWG NO. 7401272-manual drawings | | SHEET 6 OF 6 |
| | SCALE: 1:5 | | |



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