Netway® SPECTRUM

Embedded LINQ TECHNOLOGY

4-Port Ethernet over Fiber PoE+ Hardened Switches

Installation Guide

Models include:

NetWaySP4WP
- *Includes Fiber Optic SFP 1G Link, 4-port PoE+ switch and power supply.*
- *NEMA4/4X, IP66 rated Outdoor enclosure.*

NetWaySP4WPX
- *Includes Fiber Optic SFP 1G Link, 4-port PoE+ switch and power supply.*
- *NEMA4/4X, IP66 rated Outdoor enclosure.*
- *Accommodates up to four (4) 12VDC/4AH batteries.*

NetWaySP4X
- *Includes Fiber Optic SFP 1G Link, 4-port PoE+ switch and power supply.*
- *NEMA1 rated Indoor enclosure.*

NetWaySP4WPN
- *Includes Fiber Optic SFP 1G Link and 4-port PoE+ switch (uses external power supply).*
- *NEMA4/4X, IP66 rated Outdoor enclosure.*

NetWaySP4PL
- *Includes Fiber Optic SFP 1G Link, 4-port PoE+ switch and power supply.*
- *Backplane version.*

NetWaySP4B
- *Fiber Optic SFP 1G Link and 4-port PoE+ switch*
- *Board only.*

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CE

DOC#: NetWaySP4 Rev. 032917

Altronix®

More than just power.™

Overview:

Altronix NetWay Indoor/Outdoor Ethernet over Fiber PoE Hardened Switches provide two (2) 1Gb SFP ports and four (4) PoE+ (30W) ports or up to two (2) Hi-PoE (60W) ports, passing data and power to PoE/PoE+ compliant devices. Cameras/edge devices may be located up to 100m from the unit. Features also include an integral battery charger for applications requiring backup and embedded LINQ Technology to monitor, control, and report power and diagnostics from anywhere.

Features:

Input:

- 115VAC, 60 Hz, 2.5A or 230VAC, 50/60 Hz, 1.3A. NetWaySP4B/NetWaySP4WPN: 48-55V UL Listed ITE power supply (up to 120W)

Power Output:

- Four (4) ports PoE+ (30W) or up to two (2) Hi-PoE (60W) ports.
- IEEE 802.3at (30W) and IEEE 802.3af (15W) compliant.
- 120W total power.
- Integral surge protection.

Fiber Port:

- Two (2) Gigabit SFP ports.
- Use with SFP module 1000Base-X (1Gb), compliant to Class 1 laser product (not included).

Ethernet Ports:

- Four (4) 10/100/1000 Mbps ports.
- Connectivity: RJ45, auto-crossover.
- Wire type: 4-pair CAT5 or better structured cable.
- Distance: up to 100m.
- Speed: 10/100/1000 Mbps, half/full duplex, auto negotiation.

Battery Backup:

- Built-in charger for sealed lead acid or gel type batteries.
- Automatic switch over to stand-by battery when AC fails.

LEDs:

- Individual **PoE On** LEDs for each port.
- Individual **IP Link status, 10/100Base-T/active** LEDs for each port.
- **ALOS** LED indicates fiber connection for SFP port.
- **Heartbeat** LED indicates proper operation of the unit.

Environmental:

- Refer to Technical Specifications Chart on page 4 for Environmental Conditions.

Applications:

- Provides PoE / PoE+ / Hi-PoE for cameras/devices.

LINQ Technology:

- Remote network management allows for camera/device reset and monitoring.
- Provides local and/or remote access to critical information via LAN/WAN.
- Email and Windows Dashboard Alert notifications report real-time diagnostics.
- Event log tracks history.

Accessories:

NetWaySP1A

- Ethernet over Fiber Media Converter/Repeater - for applications requiring an additional SFP (Fiber) port *(Fig. 3, pg. 6)*.

Mechanical:

NetWaySP4WP

- NEMA4/4X, IP66 Rated enclosure for outdoor use.
- Dimensions (H x W x D approx.): 13.31" x 11.31" x 5.59" (338.1mm x 287.3mm x 142mm).

NetWaySP4WPN

- NEMA4/4X, IP66 Rated enclosure for outdoor use.
- Dimensions (H x W x D approx.): 13.31" x 11.31" x 5.59" (338.1mm x 287.3mm x 142mm).

NetWaySP4WPX

- NEMA4/4X, IP66 Rated enclosure for outdoor use.
- Accommodates four (4) 12VDC/4AH batteries (48V of backup).
- Dimensions (H x W x D approx.): 17.53" x 15.3" x 6.67" (445.3mm x 388.6mm x 169.4mm).

NetWaySP4X

- Dimensions (H x W x D approx.): 13.5" x 13" x 3.25" (342.9mm x 330.2mm x 83mm).

NetWaySP4PL

- Dimensions (H x W x D approx.): 10.75" x 8.875" x 2.375" (273.1mm x 225.4mm x 60.3mm).

NetWaySP4B

- Dimensions (L x W x D approx.): 5.625" x 4.5" x 0.625" (158.8mm x 142.9mm x 15.9mm).

Agency Listings:

- UL/cUL Listed for Information Technology Equipment (UL 60950-1), Information Technology Equipment to Be Installed Outdoors (UL 60950-22).
- CE approved.

Installation Instructions:

Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/ANSI, and with all local codes and authorities having jurisdiction. All units should be installed by a trained service personnel.

NetWaySP4WP/SP4WPN/SP4WPX Enclosure Mounting and Installation:

1. Remove backplane from enclosure prior to drilling. Do not discard hardware.
   Note: Make sure that hardware will not interfere with components of the circuit board.
2. Mark and drill desired inlets on the enclosure to facilitate wiring. Maximum NEMA type 4X rated fittings to be used are 0.5". Follow manufacturer's specifications for the appropriate size opening.
   Note: Inlets for conduit fittings should only be made on the bottom of the enclosure.
   UL Listed NEMA type 4X rated conduit connector/hubs shall be used for the appropriate size inlets.
3. Clean out the inside of enclosure before remounting circuit board.
4. Mounting NEMA4/4X rated enclosure *(Enclosure Dimensions, pgs. 11-12)*:
   Wall mount: Mount unit in desired location. Mark and drill holes to line up with the top and bottom holes of the enclosure flange. Secure enclosure with appropriate fasteners (e. g. screws and anchors; bolts and locking nuts, etc.) that are compatible with mounting surface and are of sufficient length/construction to ensure a secure mount *(Fig. 5, pg. 8)*.
   Pole Mount: *Refer to Figs. 6 - 10, pg. 8*.
   NetWaySP4WPX only: *In order to properly mount NetWaySP4WPX on a pole using Altronix PMK1, additional holes need to be drilled in the enclosure's flanges, so the distance between those holes is 10".*
5. Mount backplane in enclosure with hardware.
6. To facilitate wire entry utilize weather-tight NEMA rated connectors *(supplied)*, bushings, and cable.

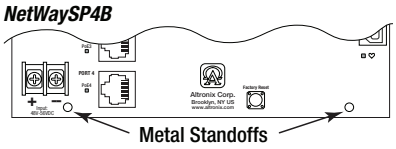
NetWaySP4X Enclosure Mounting and Installation:

1. Mount unit in the desired location. Mark and predrill holes in the wall to line up with the top two keyholes in the enclosure. Install two (2) upper fasteners and screws in the wall with the screw heads protruding. Place the enclosure's upper keyholes over the two (2) upper screws; level and secure. Mark the position of the lower two (2) holes. Remove the enclosure. Drill the lower holes and install two fasteners. Place the enclosure's upper keyholes over the two (2) upper screws. Install the two (2) lower screws and make sure to tighten all screws *(Enclosure Dimensions, pg. 9)*. Secure enclosure to earth ground.

NetWaySP4B/SP4PL Mounting and Installation:

1. Mount board/backplane in the desired location/enclosure with hardware supplied.
2. **NetWaySP4B:** Connect 56VDC/120W max power source to terminal marked [+] and [–].

Note: For proper earth ground connections on NetWaySP4B fasten metal standoffs (provided) to threaded studs at indicated board mounting holes *(shown on the right)*.
This is recommended for better environmental immunity.

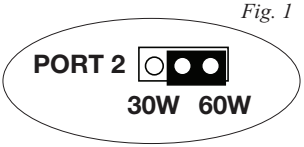


Installation:

1. **For NetWaySP4WP, NetWaySP4WPX, NetWaySP4X, and NetWaySP4PL:**
   Before powering unit, set input voltage selection switch to proper Input Voltage position *(Fig. 3a, pg. 6)*. Units are factory set for 115VAC.
2. Secure cabinet to earth ground. Connect AC power from overcurrent protective device circuit breaker (20A @ 115VAC, 60Hz, 16A @ 230VAC, 50/60Hz) to the terminals marked [L, N] on power supply board *(Fig. 3, pg. 6)*. Use 14AWG or larger for all power connections (Battery, DC output, AC input).
   Connect ground lug ⏚ to earth or green branch wire (12AWG min.).
   Note: For NetWaySP4WPN use external 48-55V UL Listed ITE power supply, carefully observing correct polarity *(Fig. 4, pg. 7)*.
   Keep power-limited wiring separate from non power-limited wiring by utilizing separate knockouts/ inlets. Minimum 0.25" spacing must be provided.
   CAUTION: Do not touch exposed metal parts. Shut branch circuit power before installing or servicing equipment. There are no user serviceable parts inside. Refer installation and servicing to qualified service personnel.
3. **Port Configurations *(Fig. 1, pg. 3; Fig. 3b, pg. 6)*:**

Jumper	Jumper Position	Structured Cable Ports			
		1	2	3	4
PORT 2	30W	30W and Data	30W and Data	–	–
PORT 3	30W	–	–	30W and Data	30W and Data
PORT 2	60W	Data Only	60W and Data	–	–
PORT 3	60W	–	–	60W and Data	Data Only

Fig. 1



4. Connect structured cables from port marked [Port 1] to [Port 4] on NetWay unit to PoE compliant cameras/edge devices *(Fig. 3, pg. 6)*.
   Note: All interconnected devices must be UL Listed.
5. Insert SFP module into port(s) marked [SFP], then connect cable to the SFP module on NetWaySP4B to the corresponding input of an SFP switch *(Fig. 3, pg. 6)*.
6. **Battery Backup** (if desired): Connect four (4) 12VDC batteries wired in series to terminals marked [+ BAT –] *(Fig. 3, pg. 6)*, carefully observing polarity.
   When use of stand-by batteries is desired, they must be lead acid or gel type.
   Note: When batteries are not used, a loss of AC will result in the loss of output voltage.
7. Please ensure that the cover is secured with:
   Key lock and screws for **NetWaySP4X**, security bolt for **NetWaySP4WP, NetWaySP4WPN and NetWaySP4WPX.**

Recommended Altronix SFP Modules:

Altronix P1MM and P1SM10 are hot-pluggable SFP fiber transceiver modules and are readily usable with all Altronix Spectrum fiber optic equipment for 1Gb transmission rates.

P1MM - For use with Multi-Mode Fiber for distances up to 550m.
P1SM10 - For use with Single-Mode Fiber for distances up to 10km.

Technical Specifications:

Parameter	Description		
Number of Ports	Four (4) ports PoE+ (30W) or up to two (2) Hi-PoE (60W) ports. Two (2) Gigabit SFP Ports.		
Input Power Requirements	115VAC, 60Hz, 2.5A or 230VAC, 50/60Hz, 1.3A. **NetWaySP4B/NetWaySP4WPN:** 48-55V UL Listed ITE power supply		
Environmental Conditions	Operating Ambient Temperature: **NetWaySP4WP/NetWaySP4WPX:** **60W:** -40ºC to 75ºC (-40ºF to 167ºF); **75W:** -40ºC to 70ºC (-40ºF to 158ºF); **100W:** -40ºC to 55ºC (-40ºF to 131ºF); **120W:** -40ºC to 45ºC (-40ºF to 113ºF). **NetWaySP4X:** **120W:** -40ºC to 50ºC (-40ºF to 122ºF). **NetWaySP4B/NetWaySP4WPN:** **120W:** -40ºC to 75ºC (-40ºF to 167ºF). Relative Humidity: 85%, +/- 5% Storage Temperature: -40ºC to 85ºC (-40ºF to 185ºF). Operating Altitude: -304.8 to 2,000m.		
Weights (approx.)	**Model**	**Product Weight**	**Shipping Weight**
	NetWaySP4WP	10.72 lbs. (4.86 kg)	12.1 lbs. (5.49 kg)
	NetWaySP4WPN	7.9 lbs. (3.58 kg)	10.2 lbs. (4.63 kg)
	NetWaySP4WPX	15 lbs. (6.8 kg)	17.5 lbs. (7.9kg)
	NetWaySP4X	6.85 lbs. (3.11 kg)	7.75 lbs. (3.51 kg)
	NetWaySP4PL	2.8 lbs. (1.27 kg)	4.2 lbs. (1.9 kg)
	NetWaySP4B	0.45 lbs. (0.2 kg)	1 lbs. (0.45 kg)

Configuring Units for Network Connection

Please be sure to visit altronix.com for latest firmware and installation instructions

Factory Default Settings

- IP Address: 192.168.168.168
- User Name: admin
- Password: admin

1. Set the static IP address for the laptop to be used for programming to the same network IP address as the NetwaySP4. The default address of the NetwaySP4 is 192.168.168.168, E.I. 192.168.168.200.
2. Connect one end of the network cable to the network jack on the NetwaySP4 and the other to the network connection of the laptop.

3. Open a browser on the computer and enter “192.168.168.168” into the address bar.
   A dialog box Authentication Required will appear requesting both user name and password.
   Enter the default values here. Click on the button labeled **Log In**.
4. The status page of the NetWaySP4 will appear. Click on the tab labeled **Network Settings**.
   This will open the Network Setting screen. In this screen the MAC Address of the NetWaySP4 module will be found along with the Network Settings and Email Settings.

Network Settings:

In the IP Address Method field select the method that the IP Address for the NetWaySP4 will be obtained (STATIC or DHCP), then follow the appropriate steps.

Static:

A. IP Address: Enter the IP address assigned to the NetWaySP4 by the network administrator.
B. Subnet Mask: Enter the Subnet of the network.
C. Gateway: Enter the TCP/IP gateway of the network access point (router) being used.
   Gateway configuration is required to properly receive emails from the device.
D. HTTP Port: Enter the HTTP port number assigned to the NetWaySP4 module by the network administrator to allow remote access and monitoring. The default inbound port setting is 80. HTTP is not encrypted and unsecure. Even though HTTP can be used for remote access, it is recommended primarily for use with LAN connections.
E. HTTPS Port: Enter the HTTPS port number assigned to the NetWaySP4 module by the network administrator to allow remote access and monitoring. The default inbound port setting is 443.
   Being encrypted and more secure, HTTPS is highly recommended for remote access.
F. Click the button labeled **Submit Network Settings**.
   A dialog box will display “New network settings will take effect after the server is rebooted”. Click **OK**.

DHCP:

A. After selecting DHCP in the IP Address Method field click the button labeled **Submit Network Settings**.
   A dialog box will display “New network settings will take effect after the server is rebooted”. Click **OK**.
   Next, click on the button labeled **Reboot Server**. After rebooting the NetWaySP4 will be set in the DHCP mode. The IP address will be assigned by the router when the NetWaySP4 is connected to the network.
   It is recommended to have the assigned IP Address reserved to ensure continued access
   (see the network administrator).
B. Subnet Mask: When operating in DHCP, the router will assign the subnet mask values.
C. Gateway: Enter the TCP/IP gateway of the network access point (router) being used.
D. HTTP Port: Enter the HTTP port number assigned to the NetWaySP4 module by the network administrator to allow remote access and monitoring. The default inbound port setting is 80. HTTP is not encrypted and unsecure. Even though HTTP can be used for remote access, it is recommended primarily for use with LAN connections.
E. HTTPS Port: Enter the HTTPS port number assigned to the NetWaySP4 module by the network administrator to allow remote access and monitoring. The default inbound port setting is 443.
   Being encrypted and more secure, HTTPS is highly recommended for remote access.
F. Click the button labeled **Submit Network Settings**.
   A dialog box will display “New network settings will take effect after the server is rebooted”. Click **OK**.

Heartbeat Timer:

The heartbeat timer will send a trap message indicating that the NetWaySP4 is still connected and communicating.

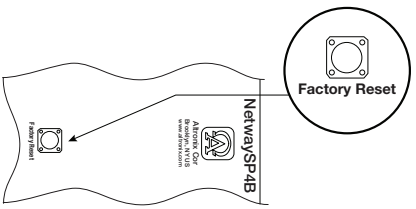
Setting the Heartbeat Timer:

1. Click the button labeled **Heartbeat Timer Setting**.
2. Select the desired time between heartbeat messaging in the Days, Hours, Minutes and Seconds in corresponding fields.
3. Click the button labeled **Submit** to save setting.

Factory Reset Option:

1. Power the unit down. Allow approximately 30 seconds for the unit to power down completely.
2. Depress Factory Reset button on NetWaySP4B while reapplying power to the unit *(Fig. 2, pg. 5; Fig. 3c, pg. 6)*. Continue holding the button until the LEDs on board go through the start up cycle, then release the button.
3. The unit returns to the original factory settings.

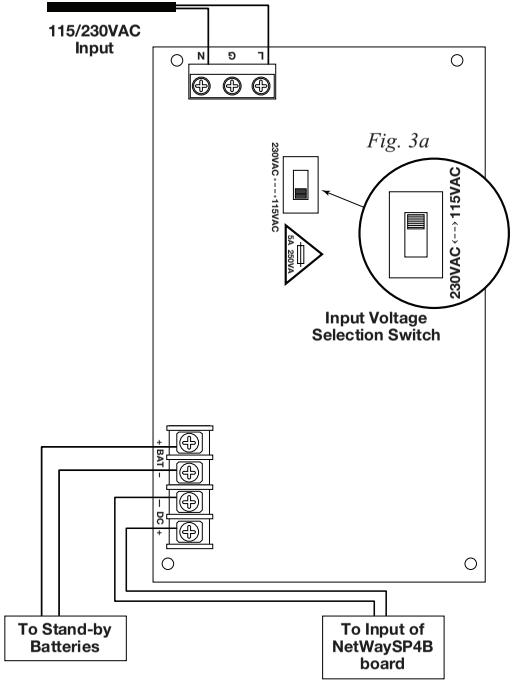
Fig. 2



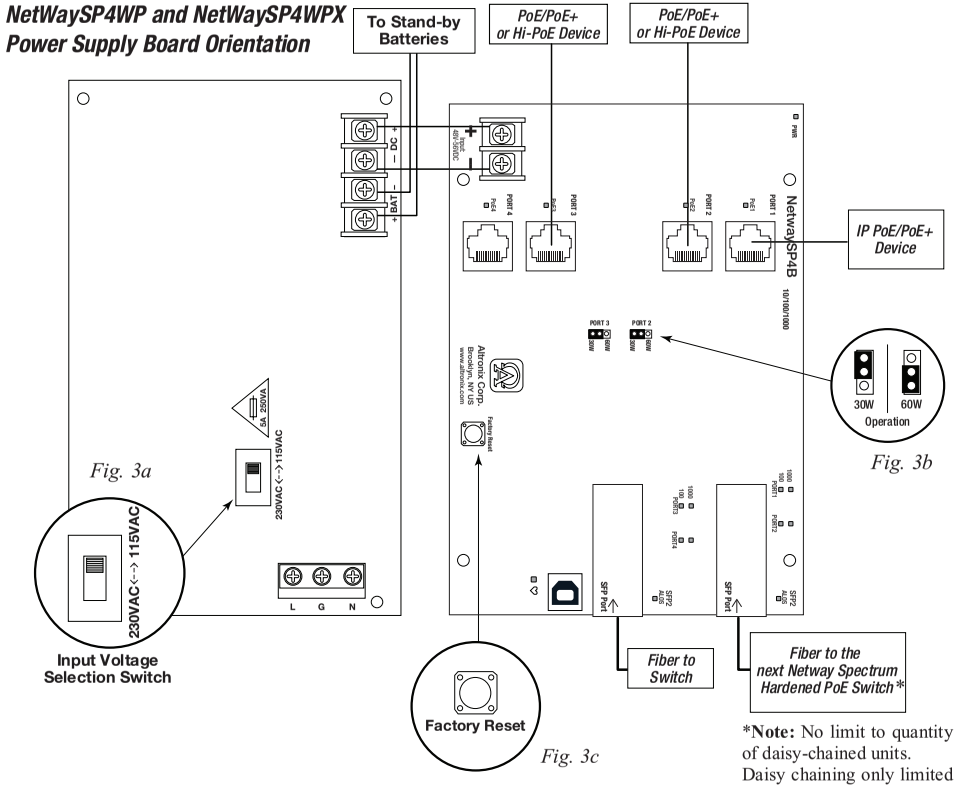
Typical Applications:

Fig.3

NetWaySP4X - Power Supply Board Orientation



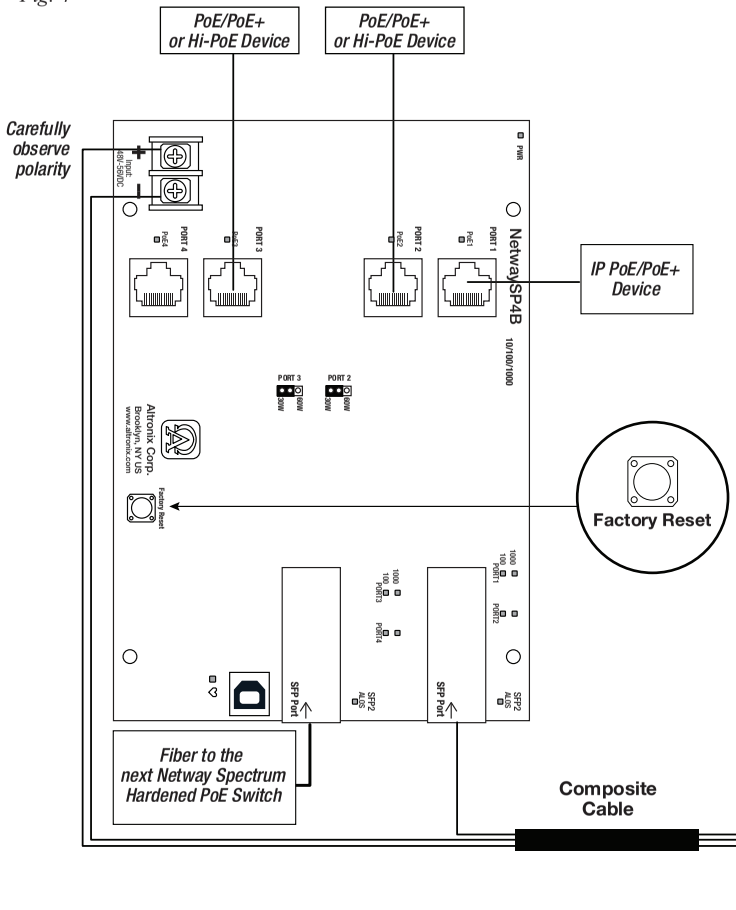
NetWaySP4WP and NetWaySP4WPX Power Supply Board Orientation



***Note:** No limit to quantity of daisy-chained units. Daisy chaining only limited to total bandwidth of 1Gbps.

Typical Applications:

Fig. 4



NetWaySP4WPN – Typical Application with Composite Cable

Power Distance Chart

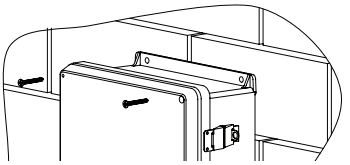
Power Requirements	Power Cabling	Maximum Distance (ft./m)
15W	12/2	11,162’ / 3403m
30W	12/2	5,581’ / 1702m
45W	12/2	3,767 / 1,148m
60W	12/2	2,739’ / 835m
75W	12/2	2,249’ / 686m
90W	12/2	1,872’ / 571m
105W	12/2	1,607’ / 490m
120W	12/2	1,408’ / 429m
15W	16/2	4,415’ / 1,346m
30W	16/2	2,207’ / 673m
45W	16/2	1,490’ / 454m
60W	16/2	1,083’ / 330m
75W	16/2	889’ / 271m
90W	16/2	740’ / 226m
105W	16/2	635’ / 194m
120W	16/2	557’ / 170m

Estimated distances based on starting voltage of 56VDC and accounts for a 10 volt drop. All distances are per IEEE 802.3at standard for device power requirements of minimum 44VDC and leave an approximate 2 volts for safety and flexibility.

Wall Mount Installation

1- Place unit at desired location and secure with mounting screws *(not included) (Fig. 5, pg. 8)*.

Fig. 5



Pole Mounting Using Optional Pole Mount Kit PMK1 (not included):

This installation should be made by qualified service personnel. This product contains no serviceable parts. PMK1 is intended for use with Altronix outdoor rated power supplies or accessories housed in WP1, WP2, WP3 and WP4 enclosures. Brackets are designed for use with the Wormgear Quick Release Straps (two included).

1. Thread one (1) wormgear quick release strap through the slots on the back of a mounting bracket *(Fig. 6, pg. 8)*.
2. Once the desired height of the top Pole Mount bracket is achieved, tighten the straps down by sliding open end of the strap through the locking mechanism on the strap, then tighten the screw with flat head screwdriver or 5/16" hex socket driver *(Fig. 7, pg. 8 and Fig. 9, pg. 8)*.

Fig. 6

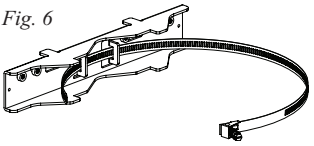


Fig. 7

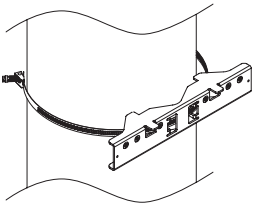
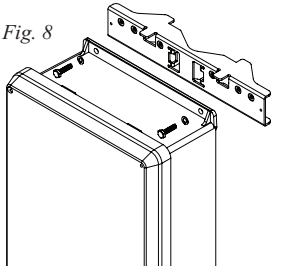


Fig. 8



3. Attach the bottom bracket to the enclosure by inserting bolts through the flange of the enclosure and into the bracket, tightening bolts with a 7/16" hex socket *(Fig. 8, pg. 8)*.
4. Thread the second wormgear quick release strap through the slots on the back of the bottom mounting bracket *(Fig. 6, pg. 8)*.
5. Mount enclosure onto the top bracket by inserting bolts through flange of the enclosure and into the bracket, tightening bolts with a 7/16" hex socket *(Fig. 8, pg. 8)*.
6. Tighten the straps of the bottom bracket down by sliding the open end of the strap through the locking mechanism on the strap, then tighten screw with flat head screwdriver or 5/16" hex socket driver *(Fig. 6, pg. 8)*.
7. Clip excess straps.

Fig. 9

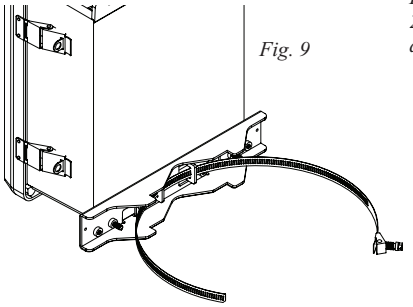


Fig. 10
2" to 8"(50.8mm to 203.2mm) diameter round pole

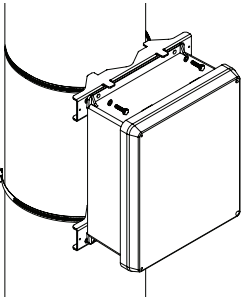
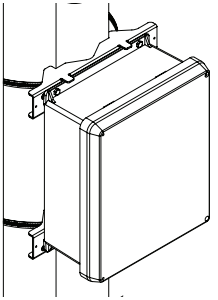
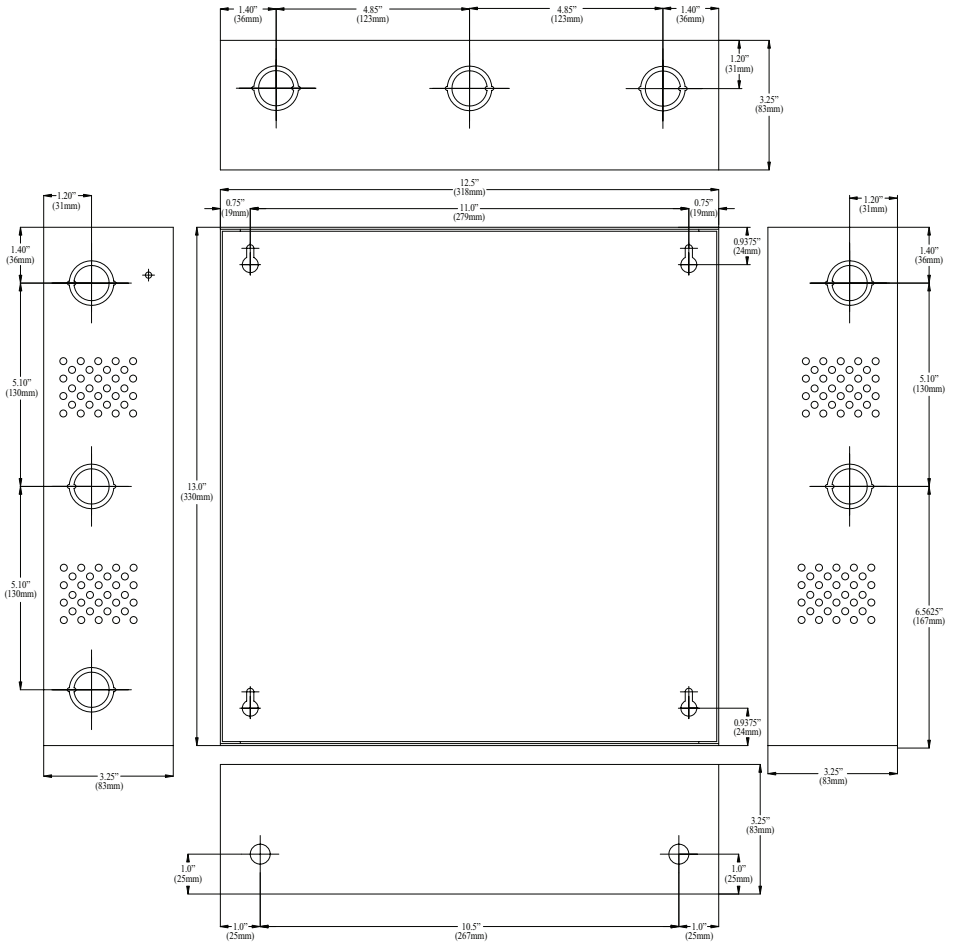


Fig. 10a
5" (127mm) square pole



NetWaySP4X
Mechanical Drawing and Dimensions (H x W x D approx.):

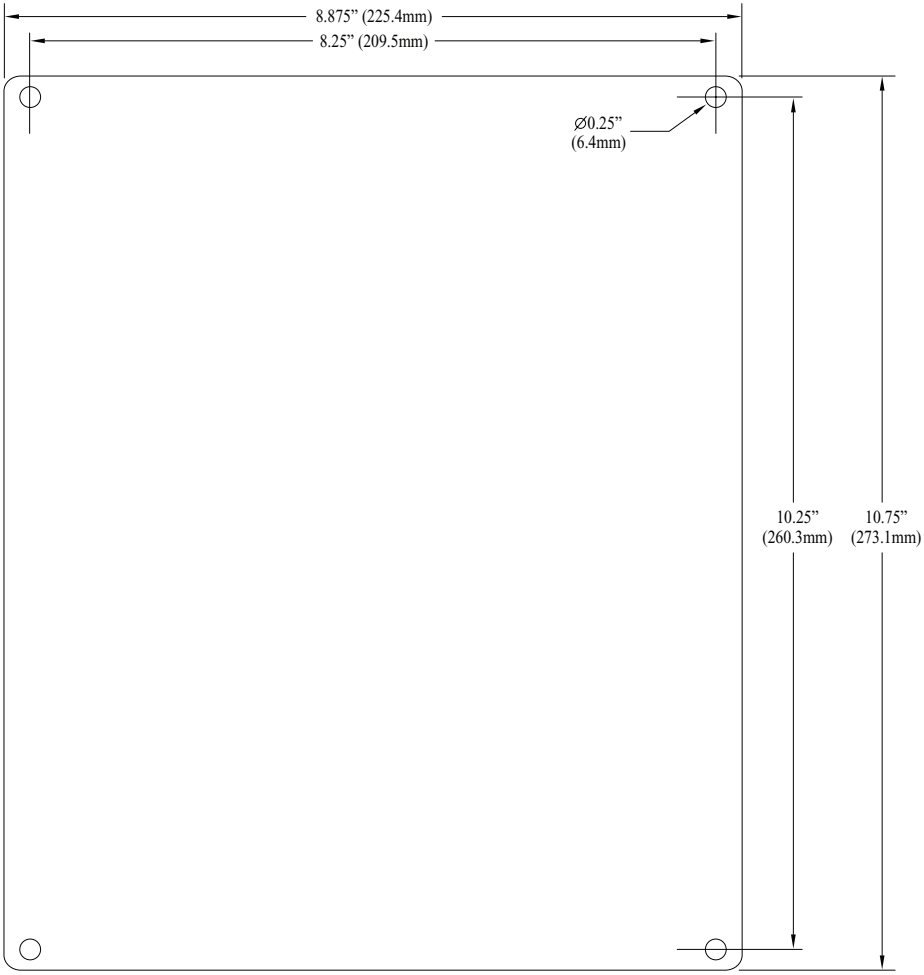
13.5” x 13” x 3.25” (342.9mm x 330.2mm x 82.6mm)



NetWaySP4PL

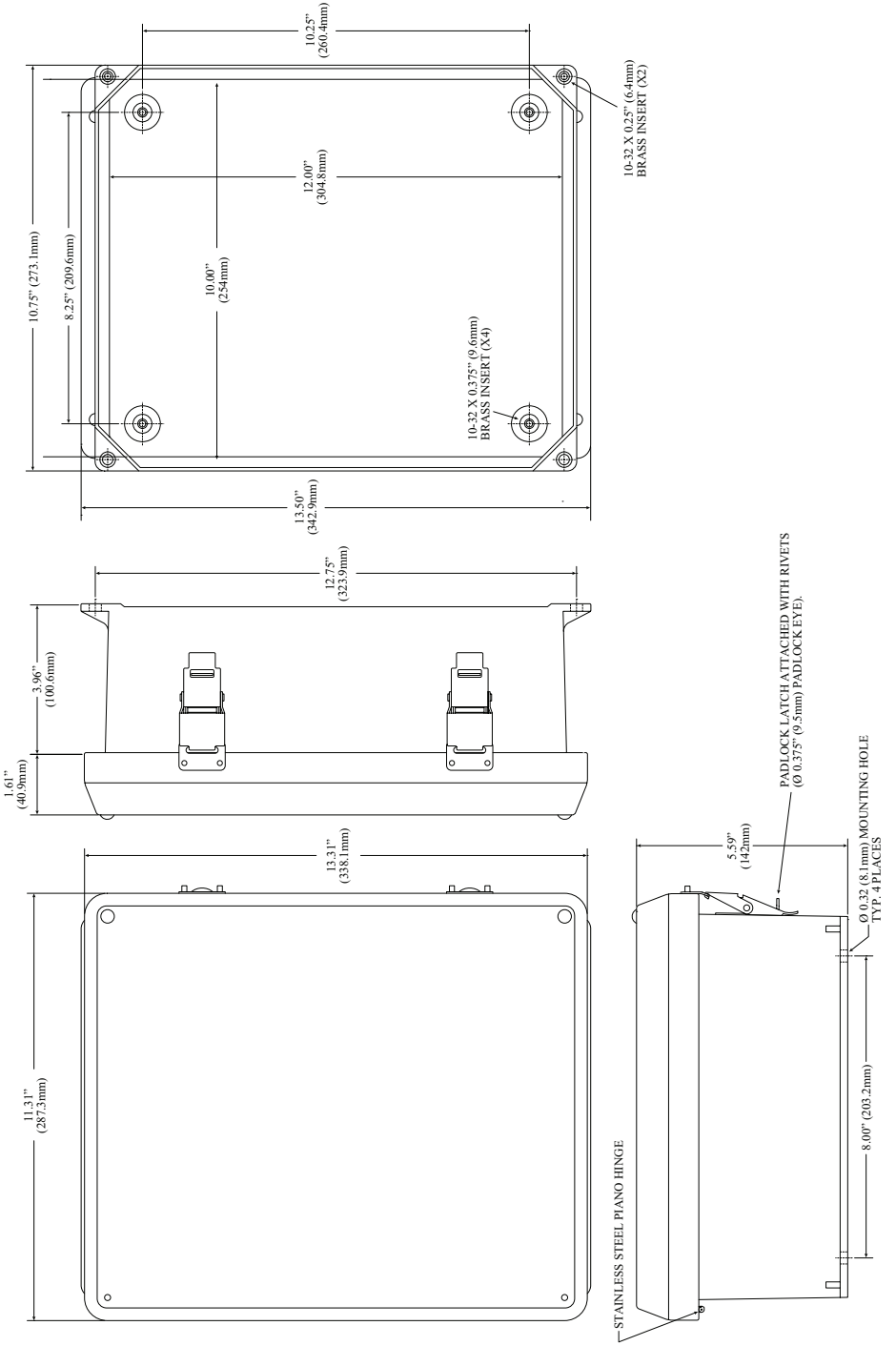
Mechanical Drawing and Dimensions (H x W x D approx.):

10.75” x 8.875” x 2.375” (273.1mm x 225.4mm x 60.3mm)



NetWaySP4WP and NetWaySP4WPN
Mechanical Drawing and Dimensions (H x W x D approx.):

13.31" x 11.31" x 5.59" (338.1mm x 287.3mm x 142mm)



NetWaySP4WPX

Mechanical Drawing and Dimensions (H x W x D approx.):

17.53" x 15.3" x 6.67" (445.3mm x 388.6mm x 169.4mm)

