



PDS-204GCO/AC™

Outdoor 4 Port BT PoE Switch + 2 SFP Uplink Port Hardware Installation Guide

Introduction

Microchip's PDS-204GCO™ switch is a 4 + 2 ports outdoor PoE switch. It can provide power and data connectivity for four powered devices and connect them to the network through data uplink ports. The PDS-204GCO switch can be remotely managed through the web or SNMP, allowing monitoring and control of the device and its ports. The PDS-204GCO switch supports 10/100/1000 Mbps data rates on the RJ45 Gigabit ports and 100/1000/2500 Mbps on the SFP ports. It is powered through wide-range AC input (100 V_{AC}–240 V_{AC}). The PDS-204GCO switch is IP66/IP67 rated and has an extended temperature range. Therefore, it can be installed in an outdoor environment.

In a typical installation, the PDS-204GCO switch provides power to four outdoor devices, such as WLAN AP, WLAN Mesh, IP Camera, and so on.

Audience

This guide is designed for personnel who install and maintain the switch. These persons must be familiar with electronic circuitry and wiring practices, and qualified and experienced electronic or electromechanical technicians.

Table of Contents

Introduction.....	1
Audience.....	1
1. Hardware Description.....	3
2. Mechanical View	4
3. Installation.....	5
3.1. Wall Installation.....	5
3.2. Pole Mounting Installation.....	6
4. Connecting Network Cables.....	7
4.1. Connecting Gigabit Ethernet Cable	7
4.2. Connecting Fiber Optic Cable.....	9
5. Connecting Power Cable	11
6. Appendix A: Safety and Warnings	13
6.1. Safety Information.....	13
6.2. Warnings.....	13
6.3. Information en Matière de Sécurité.....	13
7. Appendix B: Troubleshooting.....	14
8. Appendix C: Specifications.....	15
9. Appendix D: Standards.....	16
10. Appendix E: Recycling and Disposal.....	17
11. Ordering Information.....	18
12. References.....	19
13. Revision History.....	20
Microchip Information.....	21
The Microchip Website.....	21
Product Change Notification Service.....	21
Customer Support.....	21
Microchip Devices Code Protection Feature.....	21
Legal Notice.....	21
Trademarks.....	22
Quality Management System.....	23
Worldwide Sales and Service.....	24

1. Hardware Description

This switch provides two SFP ports for uplink and four GE copper PoE ports for downstream connectivity.

The PDS-204GCO switch can be either wall or pole mounted.

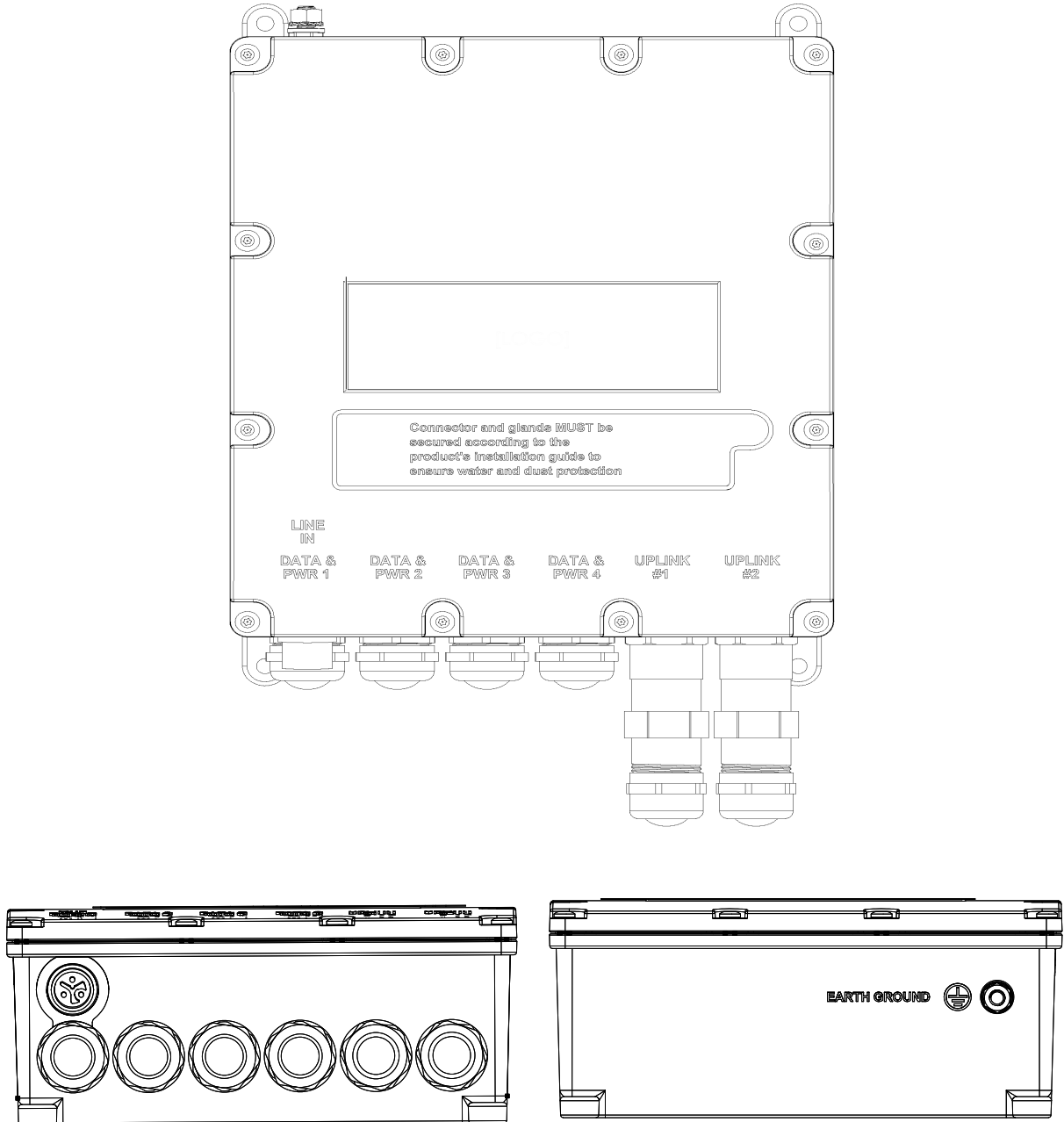
The PDS-204GCO switch provides the following hardware features:

- Two SFP ports 100/1000/2500Base-X
- Four copper PoE 10/100/1000BASE-T ports
- Up to 90W PoE copper per port
- Maximum total power 152W
- Management Ethernet port (any of the ports can be used as Management)
- Fan-less passively cooled design
- AC input
- IP66/IP67 enclosure
- Four Copper cable glands
- Two fiber cable glands + cable gland extender
- Six ports cable gland caps
- Mechanical mounting kit—enables pole mounting (including with unit)

2. Mechanical View

The following figures show the mechanical view of the PDS-204GCO switch.

Figure 2-1. Mechanical View



3. Installation

This section describes the installation process of the PDS-204GCO switch.

⚠ CAUTION

Ensure the following before mounting the PDS-204GCO switch to a fixed location:

- Weather-proof connection is present. To meet IEC60529 level IP66/IP67, the PDS-204GCO AC power plug must be connected to a weather-proof AC power source box.
- There is no ON or OFF switch; plug the PDS-204GCO switch into an AC main power source.
- PDS-204GCO AC power lines must be connected to the socket-outlet. This socket-outlet must be installed near the equipment and must be easily accessible.

⚠ WARNING

PDS-204GCO unit must be connected to earth grounding using a customer-supplied ground wire before power is applied.

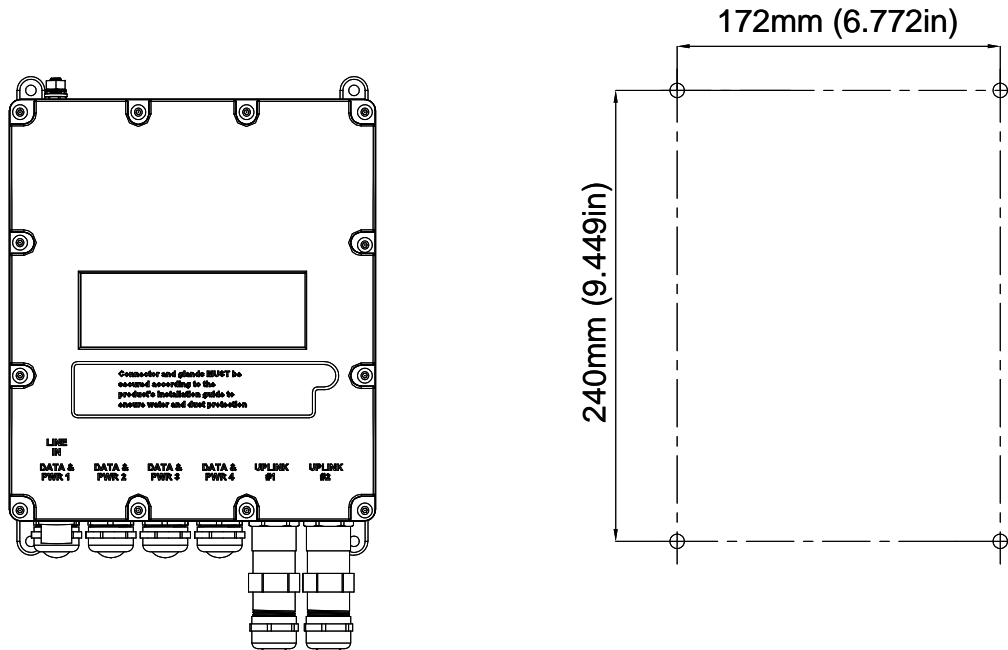
The following two sections describe the installation options.

3.1 Wall Installation

The PDS-204GCO unit can be mounted on a wall/bench (all kinds of flat surfaces: wood, brick, concrete, and so on) using the mounting holes.

Fasten the PDS-204GCO using four screws, as shown in the following figure.

Figure 3-1. Wall Mounting



3.2 Pole Mounting Installation

The following table lists the kit details supplied with the product.

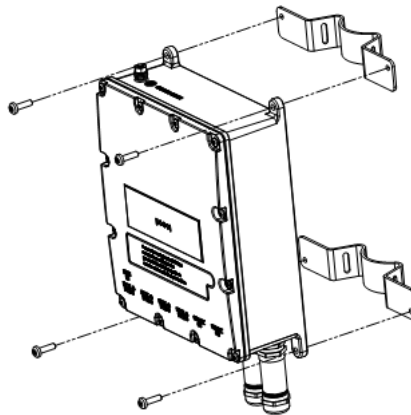
Table 3-1. PDS-204GCO Kit Details

Item Description	Quantity
Pole bracket	2
Worm screw clamps	2
SCREW M5X18	4

Perform the following steps for pole mounting installation.

1. Attach the pole bracket to the switch using four pan head screws and tighten the pan head screws to 1.1 Nm.

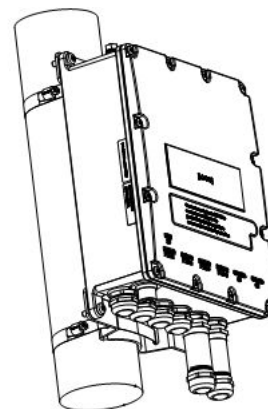
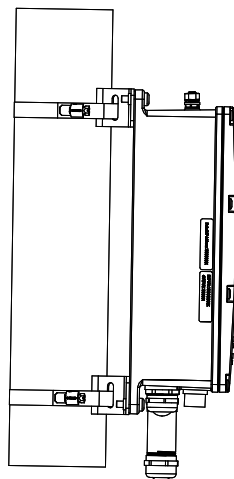
Figure 3-2. Assemble Brackets



2. The unit must be installed with DATA IN, and DATA & PWR OUT ports facing down, as shown in the following figures.

Dimensions of support Pole diameter: 60 mm to 200 mm (2.5 inches to 8 inches)

Table 3-2. Installation of Units on Pole



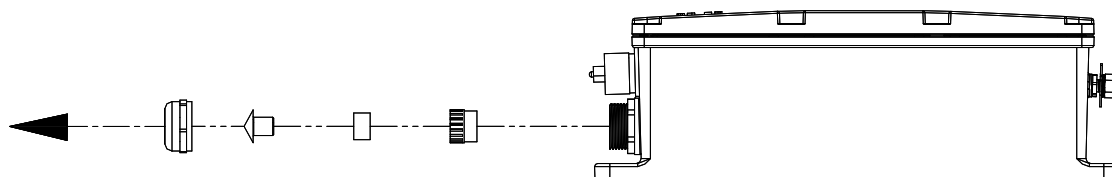
4. Connecting Network Cables

This section describes how to connect the following PDS-204GCO interfaces.

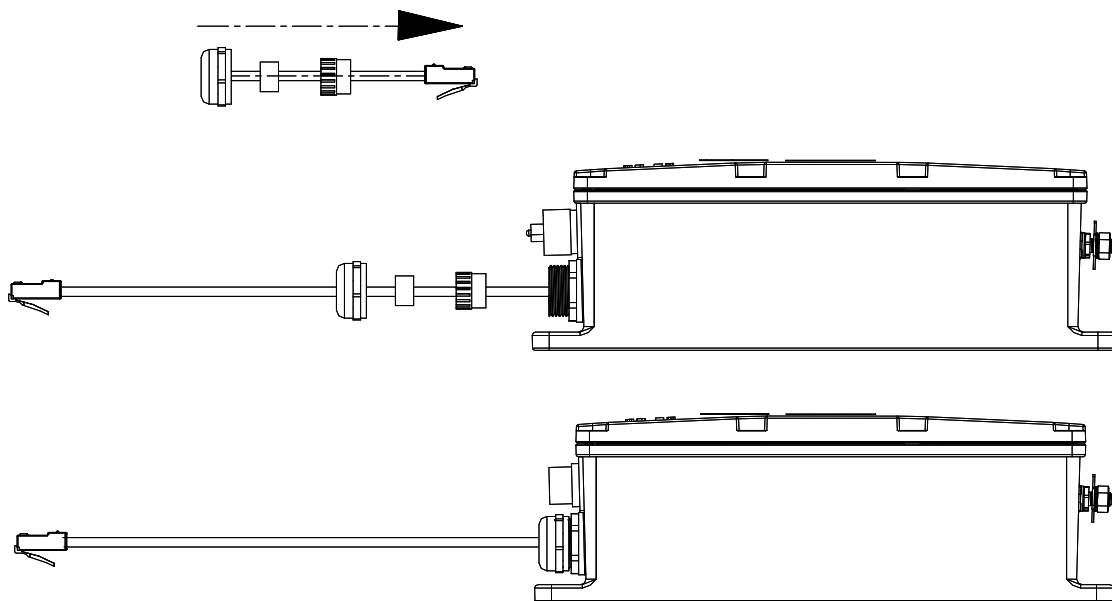
4.1 Connecting Gigabit Ethernet Cable

Perform the following steps to connect the Gigabit Ethernet cable.

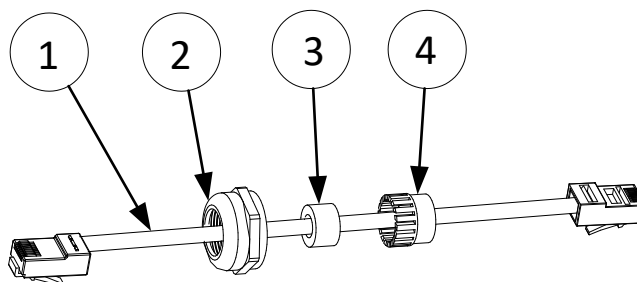
1. Remove the metal gland from the PDS-204GCO unit by turning it counterclockwise. Keep the dust cap for future use.



2. Insert the cable through metal gland, rubber seal, and pressure fingers and plug into the port number 1.



3. Secure all glands till the rubber gasket is tightly closed around the cable.



Where:

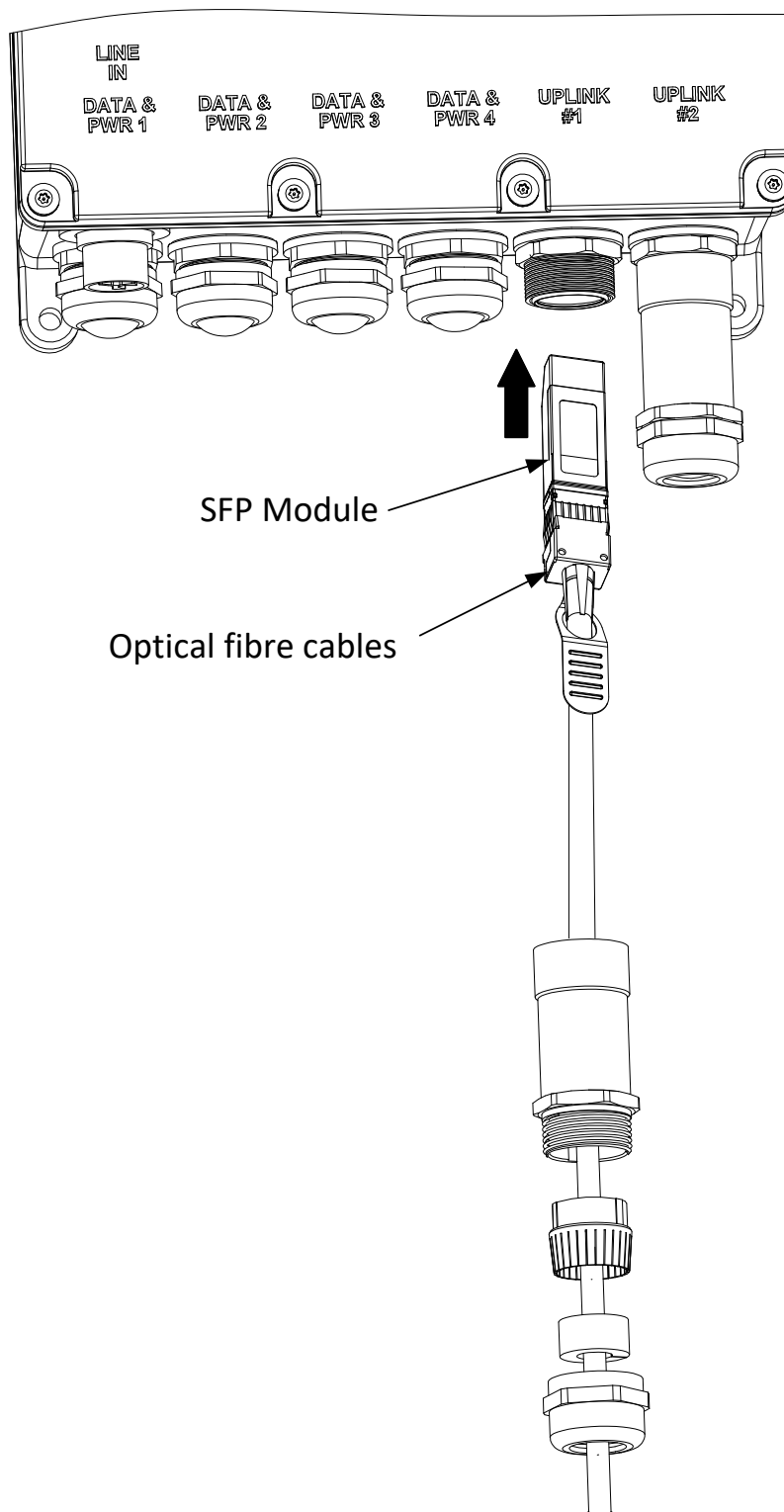
- 1: Ethernet cable
- 2: Metal gland
- 3: Rubber seal
- 4: Pressure fingers

Notes:

- For easier installation, start with port number 1 assembly (**Data & PWR 1**), and then connect the Uplink port.
- Use cable Cat 5e or above outdoor grade.
- Secure the gland until the rubber gasket is firmly closed around the cable.
- The PDS-204GCO switch is not shipped with Ethernet cable and RJ45 male connectors.

4.2 Connecting Fiber Optic Cable

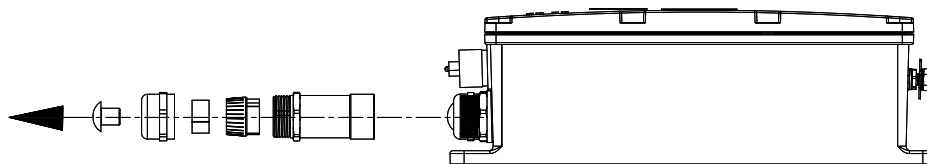
Figure 4-1. Connecting Fiber Optic Cable



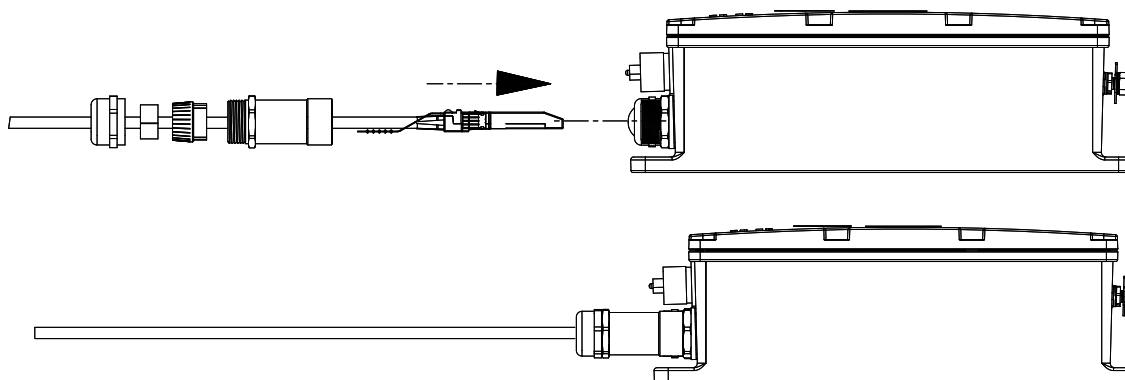
PDS-204GCO/AC™

Connecting Network Cables

1. Remove the metal gland from the PDS-204GCO unit by turning it counterclockwise. Keep the dust cap for future use.



2. Insert the cable through metal gland, rubber seal, and pressure fingers and plug into the **Uplink** port.



3. Secure the gland until the rubber gasket is firmly closed around the cable.

Note: SFP cord must be outdoor use grade.

5. Connecting Power Cable

The following table lists the AC power cable specifications.

Table 5-1. AC Power Cable Specifications

Parameter	Value
Recommended cable type	North America—SJOW or SOOW Worldwide—H05RN-F or H07RN-F
Voltage rating	300V (or better recommended)
Temperature range	–40 °C to 65 °C (or better recommended)
Cable size	16 AWG–18 AWG 3C 1.0 mm ² –1.5 mm ² 3C
Cable outer dimension	Diameter: 3/16 in.–3/8 in. Diameter: 5.0 mm–9.5 mm
Approved for indoor and outdoor applications.	

The following figures show how to connect the power connector.

Figure 5-1. Connecting AC Connector

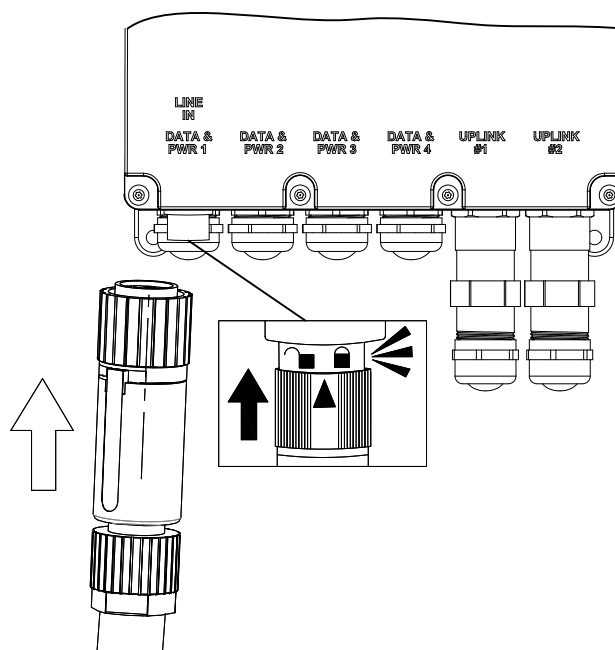
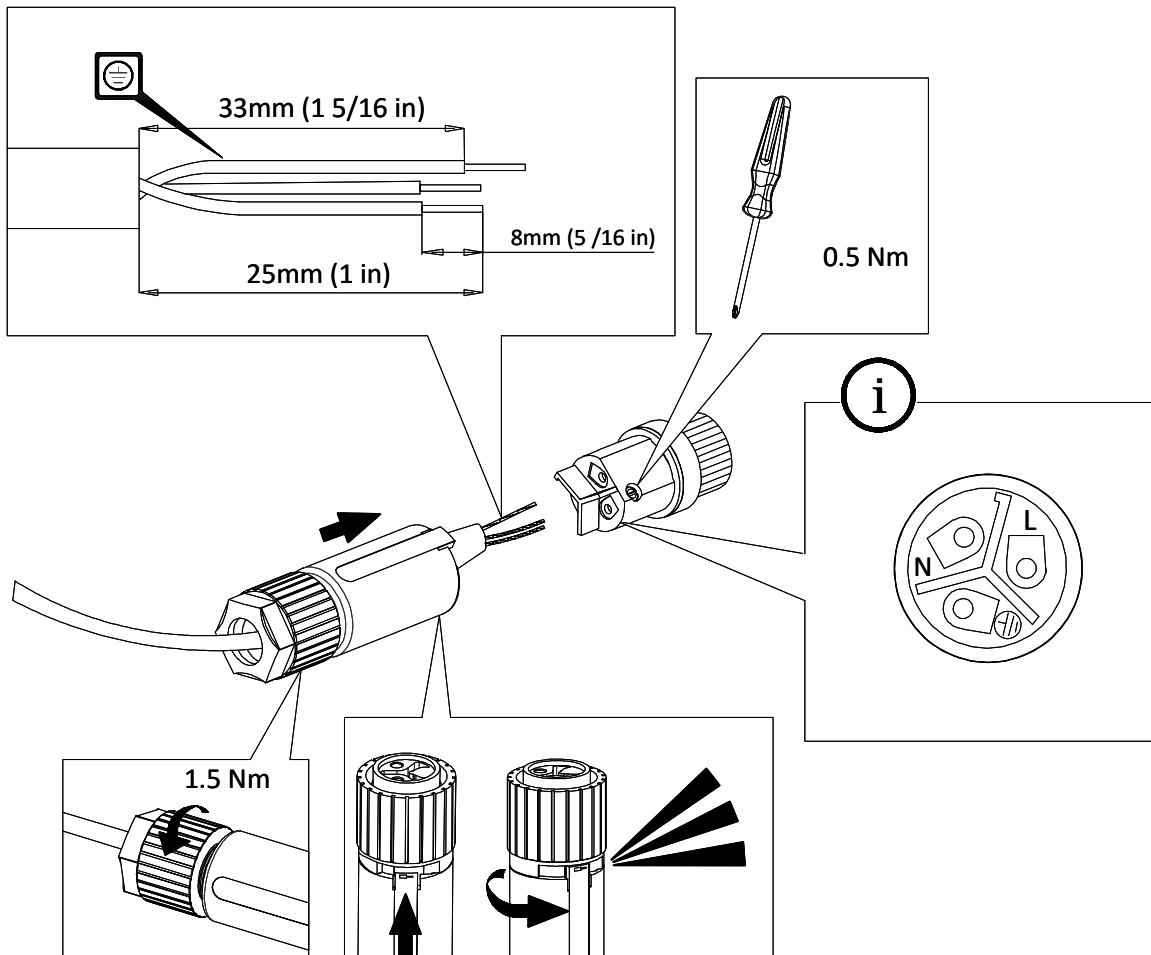


Figure 5-2. AC Connector Assembly



6. Appendix A: Safety and Warnings

The following sections describe safety information and warnings.

6.1 Safety Information

- Installation and removal of the PDS-204GCO unit must be carried out by qualified personnel only.
- The PDS-204GCO DATA PWR OUT ports are shielded RJ45 data sockets. They cannot be used as Plain Old Telephone Service (POTS) sockets. Only RJ45 data connectors can be connected to these sockets.
- Follow basic electricity safety measures while connecting the PDS-204GCO unit to its power source.
- A voltage mismatch can cause equipment damage and might pose a fire hazard. If the voltage indicated on the label is different from the power outlet voltage, do not connect the PDS-204GCO to this power outlet.
- All wiring and connections must be in accordance with NFPA 70 (NEC).
- This product is not intended to become a permanent part of the building structure.
- Power supply cord must not be attached to the building surface or run through walls, ceilings, floors, and similar openings in the building structure.
- Measures must be taken to prevent physical damage to the power supply cord, including proper routing.

6.2 Warnings

- Do not use a cross-over cable between the PDS-204GCO output port and the load device.
- Take extra care when connecting the AC power, so that "N", "L", and "Ground", are connected to the proper polarity.
- Ensure that the AC power is within the allowed range.

6.3 Information en Matière de Sécurité

Lire les informations suivantes en matière de sécurité avant d'utiliser d'activer l'alimentation sur votre appareil Ethernet Switch.

6.3.1 Directives Générales

Lire les informations suivantes en matière de sécurité avant d'installer ou enlever quoi que ce soit, ou procéder à l'entretien de l'alimentation de votre appareil Ethernet Switch. Les mises en garde contiennent des instructions qui doivent être suivies pour la sécurité des personnes et du produit. Suivre les instructions soigneusement.

6.3.2 Mises en Garde

- Lire les instructions d'installation dans [3. Installation](#) avant de connecter le Switch à une source d'alimentation.
- Suivre les mesures de sécurité électrique de base lors de la connexion de l'injecteur PoE à sa source d'alimentation.
- Seul du personnel formé et qualifié doit être autorisé à installer, remplacer et entretenir cet équipement.
- Une disparité de voltage peut endommager l'équipement et constituer un risque d'incendie. Si le voltage indiqué sur l'étiquette est différent du voltage de la source d'alimentation, ne pas connecter le Switch à cette prise.
- Tout le câblage et les connexions doivent être conformes à la norme NFPA 70 (NEC).
- Le cordon d'alimentation ne doit pas être fixé à la surface du bâtiment ni passer à travers les murs, les plafonds, les planchers et les ouvertures similaires de la structure du bâtiment.
- Des mesures doivent être prises pour éviter tout dommage physique au cordon d'alimentation, y compris son acheminement correct.
- Les ports **Data** et **Data Power** du PoE Switch sont des prises de données blindées RJ45. Elles ne peuvent pas être utilisées comme prises de service téléphonique traditionnel. Connecter seulement des connecteurs de données RJ45 à ces prises. Le câblage Ethernet connexe doit être limité à l'intérieur de l'immeuble.
- Pour disposer/jeter ce produit, suivre les lois et règlements locaux.

7. Appendix B: Troubleshooting

Table 7-1. Troubleshooting Symptoms and Solutions

Symptom	Corrective Steps
Unit does not power up	<ol style="list-style-type: none"> 1. Verify that a reliable power cord is used. 2. Verify that the voltage at the power inlet is between 100 VAC–240 VAC. 3. Remove and re-apply power to the device.
PD does not operate	<ol style="list-style-type: none"> 1. Verify that the unit detects a PD. 2. Verify that the PD is designed for PoE operation. 3. Verify that a standard Category 5/5e/6 cable is in use - Straight wired cable, with four pairs. 4. If an external power splitter is in use, replace it with a splitter known to be in good condition. 5. Ensure that the input Ethernet cable is connected to the Up-link port. 6. Verify that the PD is connected to the Data & Power port. 7. Try reconnecting the same PD to a different PoE switch. If it works, then there is probably a faulty port or faulty RJ45 connection. 8. Verify that there is no short-circuit over any of the twisted pair cables or over the RJ45 connectors.
The end device operates, but there is no data link	<ol style="list-style-type: none"> 1. Verify that the port indicator on the unit GUI (Web page) is continuously lit. 2. If an external power splitter is in use, then replace it with a splitter known to be in good condition. 3. Verify that for this link, you are using standard UTP/FTP Category 5 straight (non-crossover) cabling, with all four pairs. 4. Verify that the Ethernet cable length is less than 100 meters from Ethernet source to the remote terminal. 5. Try to reconnect the same PD to a different PoE switch. If it works, then there is probably a faulty port or faulty RJ45 connection.

8. Appendix C: Specifications

The following table lists the environmental specifications.

Table 8-1. Environmental Specifications

Mode	Temperature	Humidity
Operating	-40 °C to 50 °C for 152W (-40 °F to 122 °F) -40 °C to 60 °C for 90W (-40 °F to 140 °F)	10% to 90% (no condensation allowed)
Storage	-40 to 85 °C (-40 °F to 185 °F)	5% to 95%

The following table lists the electrical specifications.

Table 8-2. Electrical Specifications

Parameters	Value
Input Voltage	100 V _{AC} –240 V _{AC} (50 Hz–60 Hz)
Input Current (100 V _{AC} –240 V _{AC})	2.5A (max.)
Available Output Power (max.)	152W
Nominal Output Voltage	55 V _{DC}

The following table lists the specifications of the interface.

Table 8-3. Interface

Parameters	Value
Uplink PDS-204GCO: <ul style="list-style-type: none"> • 1000BASE-X • 2500BASE-X • 100BASE-FX 	SFP cage
Output (DATA PWR OUT)	RJ45 female socket, with DC voltage
AC Power IN	3 Pins AC power in—Line, Neutral, and Earth Ground.

9. Appendix D: Standards

PDS-204 EMC Compliance

- CE:
 - EN55035, EN61000-4-5 Class 5 (6KV on AC in)
 - EN55032 class B
- FCC Part 15 class B
- VCCI

PDS-204 Safety Compliance

- UL/EN/IEC 62368-1
- UL60950-22
- D-Mark

PDS-204 Lightning Protection

Designed to meet GR-1089-CORE (issue 4) lightning protection requirements.

Other Standards and Approvals

- IEEE® 802.3bt (PoE) standards
- RoHS compliant
- WEEE compliant
- REACH compliant
- Dust and water intrusion
 - IEC60529, level IP66/IP67
 - NEMA 250, level 4x

10. Appendix E: Recycling and Disposal

This section provides disposal instructions for old products. The WEEE (Waste Electrical and Electronic Equipment) national environmental initiatives have been put in place to ensure that products are recycled using best available treatment, recovery, and recycling techniques to ensure human health and high environmental protection. Your product is designed and manufactured with high quality materials and components, which can be recycled and reused. Do not dispose of your old product in your general Household waste bin. Inform yourself about the local separate collection system for electrical and electronic products marked by the following symbol:

Figure 10-1. Recycling and Disposal Symbol



Use one of the following disposal options:

- Dispose the complete product (including its cables, plugs, and accessories) in the designated WEEE collection facilities.
- If you purchase a replacement product, hand your complete old product back to the retailer. He must accept it, as required by the national WEEE legislation.

11. Ordering Information

Table 11-1. Ordering Information

Item	Description
Product Name	Microchip Outdoor PoE Switch
Part Number	PDS-204GCO/AC
Description	4 PoE ports + 2 SFP uplink port

12. References

For additional information, see the following related documents:

- Microchip Getting Started With PDS204GCO™ Switch Configuration User Guide
- Microchip PDS-204GCO™ Web Management User Guide
- Microchip PDS-204GCO™ Command Line Interface (CLI) User Guide

13. Revision History

The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

Revision	Date	Description
A	12/2022	Initial Revision

Microchip Information

The Microchip Website

Microchip provides online support via our website at www.microchip.com/. This website is used to make files and information easily available to customers. Some of the content available includes:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip design partner program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

Product Change Notification Service

Microchip's product change notification service helps keep customers current on Microchip products. Subscribers will receive email notification whenever there are changes, updates, revisions or errata related to a specified product family or development tool of interest.

To register, go to www.microchip.com/pcn and follow the registration instructions.

Customer Support

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Embedded Solutions Engineer (ESE)
- Technical Support

Customers should contact their distributor, representative or ESE for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in this document.

Technical support is available through the website at: www.microchip.com/support

Microchip Devices Code Protection Feature

Note the following details of the code protection feature on Microchip products:

- Microchip products meet the specifications contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is secure when used in the intended manner, within operating specifications, and under normal conditions.
- Microchip values and aggressively protects its intellectual property rights. Attempts to breach the code protection features of Microchip product is strictly prohibited and may violate the Digital Millennium Copyright Act.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of its code. Code protection does not mean that we are guaranteeing the product is "unbreakable". Code protection is constantly evolving. Microchip is committed to continuously improving the code protection features of our products.

Legal Notice

This publication and the information herein may be used only with Microchip products, including to design, test, and integrate Microchip products with your application. Use of this information in any other manner violates these terms. Information regarding device applications is provided only for your convenience and may be superseded

by updates. It is your responsibility to ensure that your application meets with your specifications. Contact your local Microchip sales office for additional support or, obtain additional support at www.microchip.com/en-us/support/design-help/client-support-services.

THIS INFORMATION IS PROVIDED BY MICROCHIP "AS IS". MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTIES RELATED TO ITS CONDITION, QUALITY, OR PERFORMANCE.

IN NO EVENT WILL MICROCHIP BE LIABLE FOR ANY INDIRECT, SPECIAL, PUNITIVE, INCIDENTAL, OR CONSEQUENTIAL LOSS, DAMAGE, COST, OR EXPENSE OF ANY KIND WHATSOEVER RELATED TO THE INFORMATION OR ITS USE, HOWEVER CAUSED, EVEN IF MICROCHIP HAS BEEN ADVISED OF THE POSSIBILITY OR THE DAMAGES ARE FORESEEABLE. TO THE FULLEST EXTENT ALLOWED BY LAW, MICROCHIP'S TOTAL LIABILITY ON ALL CLAIMS IN ANY WAY RELATED TO THE INFORMATION OR ITS USE WILL NOT EXCEED THE AMOUNT OF FEES, IF ANY, THAT YOU HAVE PAID DIRECTLY TO MICROCHIP FOR THE INFORMATION.

Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

Trademarks

The Microchip name and logo, the Microchip logo, Adaptec, AVR, AVR logo, AVR Freaks, BesTime, BitCloud, CryptoMemory, CryptoRF, dsPIC, flexPWR, HELDO, IGLOO, JukeBlox, KeeLoq, Kleer, LANCheck, LinkMD, maXStylus, maXTouch, MediaLB, megaAVR, Microsemi, Microsemi logo, MOST, MOST logo, MPLAB, OptoLyzer, PIC, picoPower, PICSTART, PIC32 logo, PolarFire, Prochip Designer, QTouch, SAM-BA, SenGenuity, SpyNIC, SST, SST Logo, SuperFlash, Symmetricom, SyncServer, Tachyon, TimeSource, tinyAVR, UNI/O, Vectron, and XMEGA are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

AgileSwitch, APT, ClockWorks, The Embedded Control Solutions Company, EtherSynch, Flashtec, Hyper Speed Control, HyperLight Load, Libero, motorBench, mTouch, Powermite 3, Precision Edge, ProASIC, ProASIC Plus, ProASIC Plus logo, Quiet- Wire, SmartFusion, SyncWorld, Temux, TimeCesium, TimeHub, TimePicta, TimeProvider, TrueTime, and ZL are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Adjacent Key Suppression, AKS, Analog-for-the-Digital Age, Any Capacitor, AnyIn, AnyOut, Augmented Switching, BlueSky, BodyCom, Clockstudio, CodeGuard, CryptoAuthentication, CryptoAutomotive, CryptoCompanion, CryptoController, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, Espresso T1S, EtherGREEN, GridTime, IdealBridge, In-Circuit Serial Programming, ICSP, INICnet, Intelligent Paralleling, IntelliMOS, Inter-Chip Connectivity, JitterBlocker, Knob-on-Display, KoD, maxCrypto, maxView, memBrain, Mindi, MiWi, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICkit, PICtail, PowerSmart, PureSilicon, QMatrix, REAL ICE, Ripple Blocker, RTAX, RTG4, SAM-ICE, Serial Quad I/O, simpleMAP, SimpliPHY, SmartBuffer, SmartHLS, SMART-I.S., storClad, SQL, SuperSwitcher, SuperSwitcher II, Switchtec, SynchroPHY, Total Endurance, Trusted Time, TSHARC, USBCheck, VariSense, VectorBlox, VeriPHY, ViewSpan, WiperLock, XpressConnect, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

The Adaptec logo, Frequency on Demand, Silicon Storage Technology, and Symmcom are registered trademarks of Microchip Technology Inc. in other countries.

GestIC is a registered trademark of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2022, Microchip Technology Incorporated and its subsidiaries. All Rights Reserved.

ISBN: 978-1-6683-1687-0

Quality Management System

For information regarding Microchip's Quality Management Systems, please visit www.microchip.com/quality.

Worldwide Sales and Service

AMERICAS	ASIA/PACIFIC	ASIA/PACIFIC	EUROPE
Corporate Office 2355 West Chandler Blvd. Chandler, AZ 85224-6199 Tel: 480-792-7200 Fax: 480-792-7277 Technical Support: www.microchip.com/support Web Address: www.microchip.com	Australia - Sydney Tel: 61-2-9868-6733 China - Beijing Tel: 86-10-8569-7000 China - Chengdu Tel: 86-28-8665-5511 China - Chongqing Tel: 86-23-8980-9588 China - Dongguan Tel: 86-769-8702-9880 China - Guangzhou Tel: 86-20-8755-8029 China - Hangzhou Tel: 86-571-8792-8115 China - Hong Kong SAR Tel: 852-2943-5100 China - Nanjing Tel: 86-25-8473-2460 China - Qingdao Tel: 86-532-8502-7355 China - Shanghai Tel: 86-21-3326-8000 China - Shenyang Tel: 86-24-2334-2829 China - Shenzhen Tel: 86-755-8864-2200 China - Suzhou Tel: 86-186-6233-1526 China - Wuhan Tel: 86-27-5980-5300 China - Xian Tel: 86-29-8833-7252 China - Xiamen Tel: 86-592-2388138 China - Zhuhai Tel: 86-756-3210040	India - Bangalore Tel: 91-80-3090-4444 India - New Delhi Tel: 91-11-4160-8631 India - Pune Tel: 91-20-4121-0141 Japan - Osaka Tel: 81-6-6152-7160 Japan - Tokyo Tel: 81-3-6880-3770 Korea - Daegu Tel: 82-53-744-4301 Korea - Seoul Tel: 82-2-554-7200 Malaysia - Kuala Lumpur Tel: 60-3-7651-7906 Malaysia - Penang Tel: 60-4-227-8870 Philippines - Manila Tel: 63-2-634-9065 Singapore Tel: 65-6334-8870 Taiwan - Hsin Chu Tel: 886-3-577-8366 Taiwan - Kaohsiung Tel: 886-7-213-7830 Taiwan - Taipei Tel: 886-2-2508-8600 Thailand - Bangkok Tel: 66-2-694-1351 Vietnam - Ho Chi Minh Tel: 84-28-5448-2100	Austria - Wels Tel: 43-7242-2244-39 Fax: 43-7242-2244-393 Denmark - Copenhagen Tel: 45-4485-5910 Fax: 45-4485-2829 Finland - Espoo Tel: 358-9-4520-820 France - Paris Tel: 33-1-69-53-63-20 Fax: 33-1-69-30-90-79 Germany - Garching Tel: 49-8931-9700 Germany - Haan Tel: 49-2129-3766400 Germany - Heilbronn Tel: 49-7131-72400 Germany - Karlsruhe Tel: 49-721-625370 Germany - Munich Tel: 49-89-627-144-0 Fax: 49-89-627-144-44 Germany - Rosenheim Tel: 49-8031-354-560 Israel - Ra'anana Tel: 972-9-744-7705 Italy - Milan Tel: 39-0331-742611 Fax: 39-0331-466781 Italy - Padova Tel: 39-049-7625286 Netherlands - Drunen Tel: 31-416-690399 Fax: 31-416-690340 Norway - Trondheim Tel: 47-72884388 Poland - Warsaw Tel: 48-22-3325737 Romania - Bucharest Tel: 40-21-407-87-50 Spain - Madrid Tel: 34-91-708-08-90 Fax: 34-91-708-08-91 Sweden - Gothenberg Tel: 46-31-704-60-40 Sweden - Stockholm Tel: 46-8-5090-4654 UK - Wokingham Tel: 44-118-921-5800 Fax: 44-118-921-5820