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The following related online documents and resources provide additional information for this product:

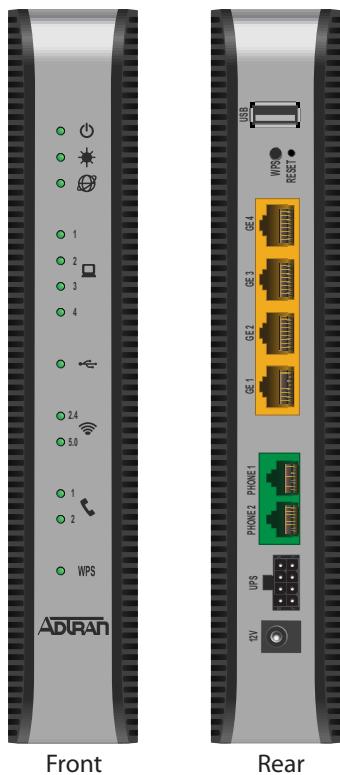
*Total Access 5000 GPON OLT User Interface Guide*

*Total Access 5000 Series CLI Dictionary*

*Total Access 5000/5006 Engineering Guide*

*Total Access 5000 Series Fiber to the Premises Deployment Guide*

*ADTRAN 400 Series Residential Gateway ONT Basic Configuration Guide*



## DESCRIPTION

The ADTRAN 2 POTS/4GigE with 2.4+5.0 Gig WiFi is an Optical Network Unit (424RG ONU) that converts signals being transmitted on optical fiber into electrical signals at a customer location. The illustration at the left displays the front and rear of the 424RG ONU.

## FEATURES

The 424RG ONU supports the following features:

- Two POTS (PHONE) Ports
- Four Ethernet Ports
- 2.4 GHz and 5.0 GHz WiFi
- 12 VDC Power Adapter
- USB Port
- UPS Connector
- Reset Button

## Resetting the ONT

### ⚠ WARNING

All settings will return to Factory Defaults; registration provisioning will be lost.

A reset button is available if the 424RG ONU needs to be rebooted. The Reset button is located just below the **USB** port on the rear of the 424RG ONU. To reset the 424RG ONU, press the **RESET** button for 5 seconds or longer.

## Voice Processing

POTS uses in-band signaling tones and currents to determine call status (for example, call request). Because POTS allows for the transfer of audio signals below 3.3 kHz, POTS systems are also used for modems that allow data transmission (referred to as dial up connections).

## Ethernet Interface

The 424RG ONU supports data service through four 10/100/1000Base-T Ethernet interfaces via RJ-45 connectors.

## Power

Power is provided by a 12 VDC Power Adapter that is included with the 424RG ONU. The Power Adapter operates from a main power source input of 100 to 240 VAC, 50/60 Hz, with a nominal output of 12 VDC. The total power consumption with WiFi enabled, 4 Ethernet Ports running and both POTS lines off-hook is approximately 22.0 Watts. A connection for an optional un-interruptible power supply (UPS) is also provided.

## UPS

The 424RG ONU provides an optional connection for an UPS. An UPS is a battery backup system designed to continue providing power when the primary power source is lost. Power is supplied to the 424RG ONU by a local power source with battery backup that utilizes the AC power at the customer premises and keeps the battery charged.

## WiFi

The WPS or “Wi-Fi Protected Setup” function allows you to connect wireless devices without entering the password in the device. This is enabled by simultaneously pressing the button on the left-side of the 424RG ONU and the WPS button on the device which it is going to link to for 5 seconds.

The 424RG ONU WiFi 802.11b/g/n/ac supports both 2.4 GHz and 5 GHz. When the WPS button on the rear of the 424RG ONU is turned on (pressed in), the wireless network in your home is secure and encryption is activated.

## USB

There is a USB data connection on the rear of the 424RG ONU that can be used for connection and communications with other computers and electronic devices.

## INSTALLATION

After unpacking the 424RG ONU, inspect it for damage. If damage is noted, file a claim with the carrier and then contact ADTRAN. For more information, refer to the warranty.

Installation consists of positioning the 424RG ONU on a desktop and connecting POTS (PHONE), Ethernet, Fiber, and power.

### Installation Guidelines

The following are guidelines for this installation.

- Read all warnings and cautions before installing or servicing the 424RG ONU.
- Do not locate the 424RG ONU in direct sunlight or next to any thermal obstructions.

### Installation Overview

To install the 424RG ONU, you will need to complete the following steps:

- “Step 1: Install the Base and Connect Fiber”
- “Step 2: Connect POTS (PHONE)”
- “Step 3: Connect Ethernet”
- “Step 4: Connect Power”
- “Step 5: Connect USB (optional)”

### Required tools

Standard technician tools and those listed below are required for installing the 424RG ONU:

- Phillips-head screwdriver
- Two, RJ-11 connectors
- Four, RJ-45 connectors
- Wire strippers
- RJ-11 and RJ-45 crimpers
- PON power meter with wavelength filtering
- Fiberscope or videoscope

For fiber optic connections, the following is required:

- ODC Fiber cleaning tool

## Installation Steps

### NOTICE

The 424RG ONU must sit upright using the stand provided. DO NOT lay the ONU flat as it may overheat.

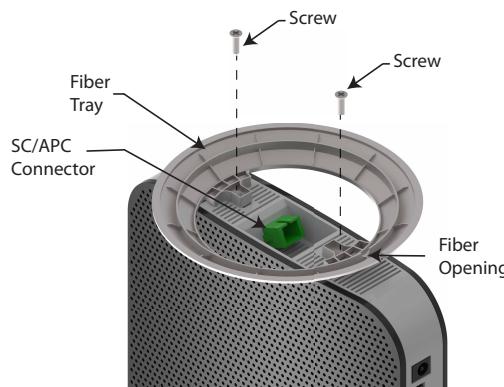
To install the 424RG ONU, refer to the figures on the first page and complete the following steps.

### Step 1: Install the Base and Connect Fiber

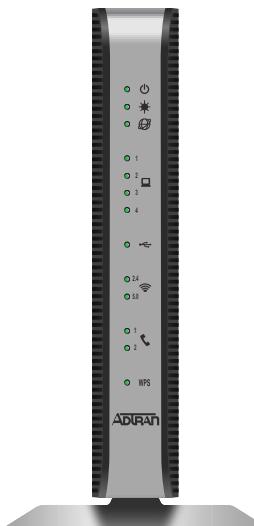
Ensure the 424RG ONU is not located in direct sunlight and is not located next to any thermal obstructions. To attach the 424RG ONU to the base, refer to [Figure 1](#) and complete the following steps:

1. Remove the two screws from the base of the 424RG ONU.
2. Position the 424RG ONU on the base.
3. Using the two screw provided, secure the base to the 424RG ONU.
4. Thread the fiber cable through the opening in the base. If there is excess fiber, carefully wrap it around the Fiber Tray.
5. Remove the plug from the SC/APC Connector and insert the fiber cable. Retain this plug and insert it in the fiber connection when the fiber cable is not connected. This will protect the optical portion of the connection.

[Figure 2](#) illustrates the 424RG ONU after the base has been attached.



**Figure 1. Attach 424RG ONU to Base and Connect Fiber**



**Figure 2. 424RG ONU with Base Attached**

## Step 2: Connect POTS (PHONE)

If POTS cables are not available, use [Figure 3](#) and the following procedure to create the POTS cables:

1. Trim the insulation for the subscriber POTS cables.
2. Refer to the illustration below and connect the twisted-pair Tip (green) and Ring (Red) to the RJ-11 connector using an RJ-11 crimper.
3. Insert the RJ-11 connector in the appropriate PHONE 1 or PHONE 2 jack.



**Figure 3. POTS (PHONE) Connection**

## Step 3: Connect Ethernet

The 424RG ONU supports four 1 Gigabit (10/100/1000Base-T) connections (GE 1 to GE 4).

If Ethernet cables are not available, use the following procedure and table to create the Ethernet cables:

1. Trim the insulation for the subscriber Ethernet cable.
2. Connect the wires per the following table using an RJ-45 Crimper.

Ethernet RJ-45 Pin-out			
Pin	Name	Description	Color Code
1	TRD0+	Transmit/Receive Positive	White/Orange
2	TRD0-	Transmit/Receive Negative	Orange
3	TRD1+	Transmit/Receive Positive	White/Green
4	TRD2+	Transmit/Receive Positive	Blue
5	TRD2-	Transmit/Receive Negative	White/Blue
6	TRD1-	Transmit/Receive Negative	Green
7	TRD3+	Transmit/Receive Positive	White/Brown
8	TRD3-	Transmit/Receive Negative	Brown

3. Insert the CAT 6 rated cable in the appropriate GE 1 through GE 4 ports on the rear of the 424RG ONU.

## Step 4: Connect Power

Plug the supplied 12 VDC Power Adapter into the **12V** connection on the rear of the chassis. Connect the AC plug to a standard 120 VAC outlet.

## Step 5: Connect USB (optional)

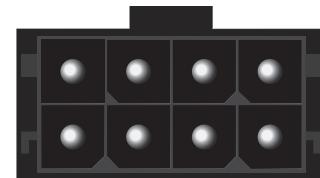
### NOTICE

DO NOT connect the Power Adapter and an UPS at the same time as this will cause damage to the 424RG ONU. The ONU can be powered by either power source, but not both simultaneously.

The 424RG ONU can typically use an un-interruptible power supply (UPS) if desired. Power is supplied to the 424RG ONU by a local power source with battery backup that utilizes the AC power at the customer premises. The UPS powers the 424RG ONU and functions as a battery backup unit (BBU) supplying continuous 12 VDC. Refer to the installation material that is provided with the UPS when installing the BBU.

### UPS Connector

Connect the UPS to the 8-pin MOLEX connector labeled "UPS" located on the rear of the SFU ONT chassis. [Figure 4](#) illustrates the MOLEX connector on the rear of the ONT.



**Figure 4. 8-Pin Molex Connector**

The UPS Power/Alarm Connections Table below defines each pin on the connector.

### NOTE

ADTRAN offers a UPS Cable assembly (P/N 1287402G1) for this connector.

### UPS Power/Alarm Table

The following table indicates which pin is associated with each alarm provided through a UPS connection.

Pin-Out	Description	Alarm
1	Power Input (+12 VDC)	-
2	UPS Status - On Battery	1
3	UPS Status - Battery Missing	2
4	Signal Return	-
5	Power 12 V Return	-
6	UPS Status - Replace Battery	3
7	UPS Status - Low Battery	4
8	No Connection	-

### NOTE

If an UPS is being used and is disconnected, the 424RG ONU is not protected from power outages, and will send a "Battery Missing" alarm to the OLT.

## LED STATUS

The LEDs are located beneath the plastic housing and are only visible after power has been applied. The following table provides the LED status during normal operations.

Label	Status	Indication
POWER	<input type="radio"/> Off <input checked="" type="radio"/> Green	AC or battery off No Failure
		
FIBER	<input type="radio"/> Off <input checked="" type="radio"/> Green  <input checked="" type="radio"/> Green Flashing Fast	No connection to the OLT, open fiber, failure at the ONT, or power is Off Signal present and is within operating range Ranging in Progress
		
INTERNET	<input type="radio"/> Off <input checked="" type="radio"/> Green	No IP address configured on WAN Interface, or Power is Off WAN Interface is configured with IP address
		
GE 1-4	<input type="radio"/> Off <input checked="" type="radio"/> Green  <input checked="" type="radio"/> Green Flashing Fast	Link is down or not equipped Link is up Data is being sent or received
		
USB	<input type="radio"/> Off <input checked="" type="radio"/> Green  <input checked="" type="radio"/> Green Flashing Fast	Power Off or no device connected Device connected Data is being sent or received
		
2.4GHZ	<input type="radio"/> Off <input checked="" type="radio"/> Green  <input checked="" type="radio"/> Green Flashing Fast	Power is Off, or Wireless 2.4GHz is Disabled Wireless 2.4GHz is Enabled Data is being sent or received on 2.4GHz
		
5GHZ	<input type="radio"/> Off <input checked="" type="radio"/> Green  <input checked="" type="radio"/> Green Flashing Fast	Power is Off, or Wireless 5GHz is Disabled Wireless 5GHz is Enabled Data is being sent or received on 5GHz
		
PHONE 1-2	<input type="radio"/> Off <input checked="" type="radio"/> Green  <input checked="" type="radio"/> Green Flashing Slow	Unequipped or on-hook and not ringing Line is off-hook Line in ringing state
		
WPS	<input type="radio"/> Off <input checked="" type="radio"/> Green  <input checked="" type="radio"/> Green Flashing Fast	Power Off or WPS is Disabled WPS is Enabled WPS push button pressed and device is ready to accept connection
		

## REGISTRATION ID

Registration ID is performed by Serial Number Activation. This occurs when the 424RG ONU is "Discovered" by the OLT.

### NOTE

If AOE Auto Upgrade is active, a new 424RG ONU installation will be detected and a fast blinking **FIBER** LED will indicate a new software download has commenced. This may take 5 - 10 minutes to complete.

## SPECIFICATIONS

- Electrical
  - ◆ Voltage: 12 Volts typical
  - ◆ Minimum Voltage: 10 Volts
  - ◆ Maximum Voltage: 13.9 Volts
  - ◆ Power Consumption: Typical 25.0 watts
- Physical
  - ◆ 10.8 inches high (27.4 centimeters)
  - ◆ 7.4 inches deep (18.8 centimeters)
  - ◆ 3.2 inches wide (8.1 centimeters)
  - ◆ Weight: 1 pounds (0.45 kilograms)
- Environmental
  - ◆ Operational Temperature: 32°F to +104°F (0°C to +40°C)
  - ◆ Storage Temperature: -4°F to 122°F (-20°C to +50°C)
  - ◆ Relative Humidity: 90%, noncondensing
- Optical
  - ◆ TX min power: +0.5 dBm
  - ◆ TX max power: +5.0 dBm
  - ◆ RSSI max sensitivity: -27.0 dBm
  - ◆ R.OX overload: -8.0 dBm
  - ◆ TX wavelength: 1310 nm typical
  - ◆ RX wavelength: 1490 nm typical

## MAINTENANCE

The 424RG ONU does not require routine hardware maintenance for normal operation. ADTRAN does not recommend that repairs be attempted in the field. Repair services may be obtained by returning the defective unit to ADTRAN. Refer to the warranty for further information. Field support for software is provided through upgrade facilities.

## SAFETY AND REGULATORY COMPLIANCE

Refer to the Safety and Regulatory Compliance Notice for this product (P/N 61287781F2-17) for detailed safety and regulatory information.

Consultez l'avis sur la sécurité et la conformité à la réglementation pour ce produit (61287781F2-17) pour obtenir des renseignements détaillés sur la sécurité et la réglementation.

**Warranty:** ADTRAN will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found online at [www.adtran.com/warranty](http://www.adtran.com/warranty).

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