FTTP
C424G ONU
2P/4GE WIFI

Quick Start

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DESCRIPTION

The CenturyLink 2P/4GE WIFI is an Optical Network Unit (C424G ONU) that converts signals being transmitted on optical fiber into electrical signals at a customer location. The illustration below displays the front and rear of the C424G ONU.
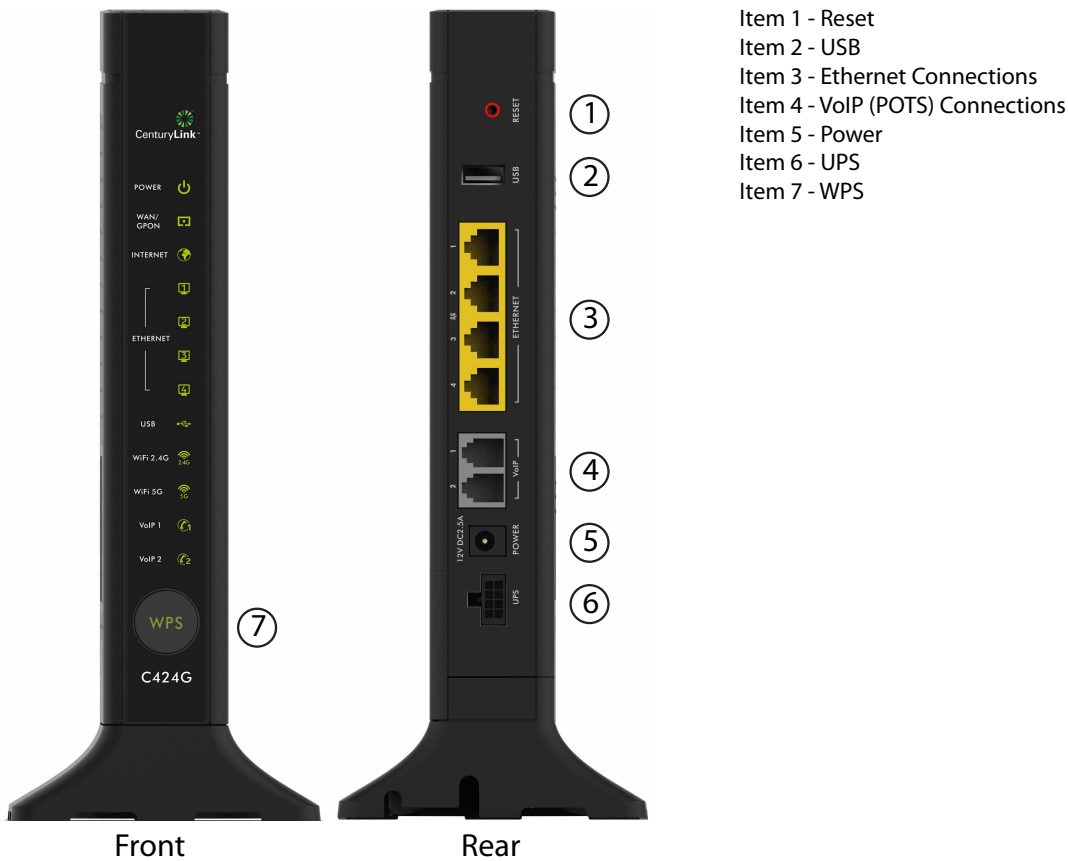

Item 1 - Reset
Item 2 - USB
Item 3 - Ethernet Connections
Item 4 - VoIP (POTS) Connections
Item 5 - Power
Item 6 - UPS
Item 7 - WPS

Front   Rear

Figure 1. C424G ONU Front and Rear

FEATURES

The C424G ONU supports the following features:

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

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Resetting the ONU

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

A reset button is available if the C424G ONU needs to be rebooted. The Reset button is located just above the **USB** port on the rear of the C424G ONU. To reset the C424G ONU, press the RESET button for 10 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 C424G 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 C424G 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. A connection for an optional un-interruptible power supply (UPS) is also provided.

UPS

The C424G ONU provides an optional connection for an UPS. A UPS is a battery backup system designed to continue providing power when the primary power source is lost. Power is supplied to the C424G ONU by a local power source with battery backup that utilizes the AC power at the customer premises to keep the battery charged.

WiFi

The WiFi function allows you to connect wireless devices without entering a "pre-shared password key" in the device. WiFi supports the following protocols:

- 802.11 b/g/n support on 2.4GHz radio with 2x2 MIMO antenna design
- 802.11 a/n/ac support on 5GHz radio with 4x4 MU-MIMO antenna design

| i | **NOTE**

The "pre-shared password key" is the default password and is located on the label of the C424G ONU.

WPS

The Wi-Fi Protected Setup (WPS) enables you to connect to wireless devices without entering a password in the device you are connecting to. WiFi is enabled by simultaneously pressing the **WPS** button on the C424G ONU and the WPS button on the device you are connecting to for approximately 5-seconds.

USB

There is a USB data connection on the rear of the C424G ONU that can be used for connection and communications with other computers and electronic devices. The USB port is USB 2.0 compliant with 500mA service for peripheral devices.

INSTALLATION

After unpacking the C424G 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 C424G ONU on a desktop, or on a wall and connecting POTS (PHONE), Ethernet, Fiber, and power.

Installation Guidelines

The C424G ONU can be mounted on the base (included) or on a wall.

The following are guidelines for this installation.

- Read all warnings and cautions before installing or servicing the C424G ONU.
- Do not locate the C424G ONU in direct sunlight or next to any thermal obstructions.

Installation Overview

To install the C424G ONU, you will need to complete the following steps:

Required tools

Standard technician tools and those listed below are required for installing the C424G 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

Step 1: Mounting Option

Installation consists of positioning the C424G ONU on either a desktop, or mounting it on a wall.

Desk Top Installation

With a desk mount, ensure the C424G ONU is not located in direct sunlight and is not located next to any thermal obstructions.
To attach the C424G ONU to the base, complete the following steps:

1. Snap the base on to the bottom of the C424G ONU.
2. Thread the fiber cable through the opening in the base. If there is excess fiber, carefully wrap it around the Fiber Tray.

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.

Wall Mount Installation

To wall mount the C424G ONU, complete the following steps:

1. Decide on a location for the C424G ONU. Mount below eye-level so the LEDs are visible.
2. Attach a 1/4 inch mounting board (typically plywood) to the wall. If the wall is drywall construction, ensure the mounting board is supported by the wall studs.
3. Install two #8 Pan Head screws (1 inch or greater in length) using the key holes on the bottom of the C424G ONU as location markers. Leave approximately 1/4 inch protruding from the mounting surface.
4. Slide the C424G ONU over the Pan Head screws and exert a small amount of downward pressure to ensure that the top of the slots are resting on the shafts of the Pan Head screws.

Step 2: Connect VoIP (POTS)

Refer to Figure 1 and insert the RJ-11 connector in to one of the two VoIP ports.

Step 3: Connect Ethernet

The C424G ONU supports four, 1 Gigabit (10/100/1000Base-T) connections (1 to 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. Using a CAT 6 cable, 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. Refer to Figure 1 and insert the CAT 6 rated cable in the appropriate Ethernet port.

Step 4: Connect Power

Refer to Figure 1 and plug the 12 VDC Power Adapter (supplied with the unit) into the **12V DC2.5A** connection on the rear of the chassis. Connect the AC plug to a standard 120 VAC outlet.

Step 5: Connect Uninterrupted Power Source (UPS)

The step is optional. The C424G ONU can typically use an un-interruptible power supply (UPS) if desired. Power is supplied to the C424G ONU by a local power source with battery backup that utilizes the AC power at the customer premises. The UPS powers the C424G ONU supplying continuous 12 VDC. Refer to the installation material that is provided with the UPS.

To connect UPS, refer to Figure 1 and connect a UPS cable from the source to the UPS port on the rear of the unit.

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

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

UPS Power/Alarm Table

The following table below provides a pinout of the 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	-

If an UPS is being used and its internal battery is disconnected or fails, the C424G 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 on the front of the C424G ONU, and are only visible after power has been applied. The following table provides the LED status during normal operations.

Label	Function		Status	Indication
POWER	**BOOT-UP**	○	Off	Power is OFF.
		●	Green	Boot-up complete.
		☼	Green Flashing	Boot-Up in process.
		●	Yellow	Software Image boot-up Test in process. Will remain Yellow if test fails.
		●	Red	Hardware boot-up test in process. Will remain Red if test fails.
	RESET	●	Yellow	Hold Reset Button for Ten Seconds. LED turns Yellow during reset.
	UPGRADE LOCAL	☼	Yellow Flashing	Local Upgrade in process.
	UPGRADE REMOTE	☼	Yellow Flashing	During Remote Upgrade, unit alternates between Flashing Yellow and Green.
		✻	Green Flashing	
WAN/GPON	**PHYSICAL LINE LINK UP**	●	Green	Link Connected.
		●	Red	Link Lost.
INTERNET PPP	**AUTO-DETECTION**	●	Green	During Auto-Detection, unit will alternate between Green and Red until unit is detected.
		●	Red	
	REGISTRATION ID			
	Internet PPP and/or IPOE LED during Registration ID will function as follows:			
	CONNECTION FAILURE	●	Red	Red indicates Auto-Detection failed. LED will remain Red for 5-seconds, then Auto-Detection will resume.
	AUTHENTICATED W/PPP CREDENTIALS	●	Yellow	Authentication using PPP at con-nect@centurylink.com complete.
		☼	Yellow Flashing	Authentication from LAN to WAN and WAN to LAN in process.
INTERNET PPP AND IPOE	**WALLED GARDEN**	●	Yellow	Authentication using PPP username in PPPoE or PPPoA mode at connect@centurylink.com complete.
		☼	Yellowing Flashing	Authentication from LAN to WAN and WAN to LAN in process. **NOTE:** The Walled garden state will initiate under the following circumstances: ■ The modem is authenticated with the connect@centurylink.com PPP username in PPPoE or PPPoA mode. ■ The CPE captive portal is enabled via ACS in all protocols.

Label	Function		Status	Indication
INTERNET PPP	AUTHENTICATED WITH UNIQUE CREDENTIALS	●	Green	Authentication complete.
		✳	Green Flashing	Authentication from LAN to WAN and WAN to LAN in process.
INTERNET PPP	PPP FAILING AUTHENTICATION	●	Red	Authentication failing due to bad credentials, or a valid WAN IP address is not obtained.
INTERNET IPOE	IP ADDRESS RECEIVED AND CONNECTION VERIFIED	●	Green	Authentication complete.
		✳	Green Flashing	Authentication from LAN to WAN and WAN to LAN in process.
INTERNET IPOE	IPOE CONNECTION FAILURE	●	Red	The Internet LED will turn Red under the following conditions: ■ A valid WAN IP Address not obtained. ■ The DHCP NAK packet is received incorrectly.
INTERNET LED TRANS-PARENT BRIDGING	TRANSPARENT BRIDGING	○	Off	Internet LED is in an Off state during Transparent Bridging.
STATIC PUB-LIC IP	CONNECTION VERIFIED	●	Green	Static IP verified and connected.
		✳	Green Flashing	LAN to WAN and WAN to LAN connectivity in process.
ETHERNET 1-4		○	Off	Unit is not connected.
		●	Green	Link is up.
		✳	Green Flashing Fast	Data is being sent or received.
USB		○	Off	Power Off or no device connected.
		●	Green	Device connected.
		✳	Green Flashing Fast	Data is being sent or received.
WIFI 2.4GHZ 2.4G	WIFI ENABLED/ DISABLED	○	Off	Power is Off, or Wireless 2.4GHz is Disabled.
		●	Green	Wireless 2.4GHz is Enabled.
		✳	Green Flashing Fast	Data is being sent or received on 2.4GHz.
	TIME OF DAY SCHEDULING	●	Yellow	If radio is disabled via wireless access scheduler, the wireless LED will be solid Yellow.
WIFI 5GHZ 5G	WIFI ENABLED/ DISABLED	○	Off	Power is Off, or Wireless 5GHz is Disabled.
		●	Green	Wireless 5GHz is Enabled.
		✳	Green Flashing Fast	Data is being sent or received on 5GHz.
	TIME OF DAY SCHEDULING	●	Yellow	If radio is disabled via wireless access scheduler, the wireless LED will be solid Yellow.

Label	Function		Status	Indication
VOIP 1 - 2	**VOIP/SIP REGISTRATION**	○	Off	VoIP Disabled in the Gateway.
		●	Green	VoIP Traffic Registered and Active.
		✳	Green Flashing	VoIP Traffic is being transmitted.
		●	Yellow	VoIP Setup process failure.
		✳✳	Yellow/Green Flashing	Attempting to Register to Network.
		●	Red	VoIP Registration to Network Failed.
WPS	**WPS CONNECTION STATUS ENABLED/ DISABLED**	○	Off	WPS Disabled.
		●	Green	WPS Enabled.
	CONNECTION IN PROGRESS	✳	Yellow Flashing	Connection in process.
	AUTHENTICATION STARTED	✳✳	Yellow/Green Flashing	Authentication in process.
	SESSION OVERLAP DETECTED	✳	Red Flashing	Session Overlap Detected. Blinking will continue until Overlap is cleared.
	WPS SUCCESSFUL	●	Green	WIPS Enabled.
		✳	Green Flashing	WPS Session Initiated.

SPECIFICATIONS

- Electrical
  - ♦ Voltage: 12 Volts typical
  - ♦ Minimum Voltage: 11.4 Volts
  - ♦ Maximum Voltage: 12.6 Volts
  - ♦ Power Consumption: Typical 21.0 watts
- Physical
  - ♦ 9.88 inches high (25.1 centimeters)
  - ♦ 7.28 inches deep (18.5 centimeters)
  - ♦ 1.4 inches wide (3.8 centimeters)
  - ♦ Weight: 1.17 pounds (0.53 kilograms)
- Environmental
  - ♦ Operational Temperature: 32°F to +104°F (0°C to +40°C)
  - ♦ Storage Temperature: –4°F to 140°F (–20°C to +60°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.0X overload: –8.0 dBm
  - ♦ TX wavelength: 1310 nm typical
  - ♦ RX wavelength: 1490 nm typical

MAINTENANCE

The C424G 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.

ADTRAN

C A U T I O N !

SUBJECT TO ELECTROSTATIC DAMAGE
OR DECREASE IN RELIABILITY

HANDLING PRECAUTIONS REQUIRED

ADTRAN CUSTOMER CARE:

From within the U.S.   1.888.423.8726
From outside the U.S. +1 256.963.8716

PRICING AND AVAILABILITY 1.800.827.0807

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