Calix Safety and Regulatory Statements - GigaSpire

NOTE: This *Safety and Regulatory Statements Guide* applies to all GigaSpire devices that may or may not include a Wi-Fi radio. Disregard any statements made here if the feature or function is not present on any particular model.

Before you Begin

IMPORTANT SAFETY INSTRUCTIONS

When using your equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

- Read all the instructions listed here and/or in the user manual before you operate this device. Give attention to all safety precautions. Retain the instructions for future reference.
- Always use caution when handling live electrical connections.
- Do not install electrical equipment in wet or damp conditions.
- Ensure that the power source for the system is adequately rated to assure safe operation and provides current overload protection.
- Do not allow anything to rest on the power cable, and do not place this product where people will stand or walk on the power cable.
- To avoid electric shock caused by over-voltage from the PSTN, DO NOT connect the POTS port on this unit directly to any external PSTN line.
- **Children:** Do not allow children to play with the GigaSpire. It contains small parts that could become detached and create a choking hazard.
- This unit must only be used with the certifiedpoweradaptermodelinsidethepackage,whichcomplieswiththerequirementofalimited power source.
- Installation of this device must be in accordance with national wiring codes and conform to local regulations and electrical codes.
- Do not use any accessories other than those approved by the manufacturer or your service provider. Use of non-original or non-approved accessories may result in loss of performance, damage to the product, fire,electricshockorinjury,andmayviolateregulations.The warranty does not cover product failures that have been caused by use of non-original or non-approved accessories.
- It is recommended that the customer install an AC surge protector in the AC outlet to which this device is connected. This is to avoid damaging the device by local lightning strikes and other electrical surges.
- The minimum distance between the user and/or any bystander and the radiating structure of the transmitter varies based on the country where it is deployed. For US deployments, 47 cm is the minimum distance while Canada requires a minimum of 26 cm.
- The pluggable external power supply provided with the unit should be mounted indoors. If other power supplies are employed, they should be LISTED ITE with a Limited Power Source (LPS) output or LISTED with a National Electric Code (NEC) Class 2 output.
- All installation methods shall be in accordance with national and local regulations and practices. The wiring method should include the use of Listed wire/cable acceptable for the application per the National Code, and should be one that an Authority Having Jurisdiction (AHJ) can approve per the Code.
- For US products, no wiring to the product should be exposed in lengths beyond 140 feet, as the circuits should avoid exposure to accidental contact with lightning and power conductors in accordance with NEC Article 725-57 (NEC 2005). The installer should also consider Articles 210, 240, 250, 770, and 810 of the NEC.

ENVIRONMENTAL CONDITIONS

- Maximum environmental values during use:
- Temperature: 0° C to +40° C (32° to 104° F), Humidity: 10% to 90% RH, non-condensing, -200 to 10,000 feet altitude.

REQUIRED SAFETY STATEMENTS

- **Potentially Explosive Atmosphere**: Do not use the GigaSpire in an area where a potentially explosive atmosphere exists.
- **Atmosphère potentiellement explosive:** N'utilisez pas le GigaSpire dans un endroit où existe une atmosphère potentiellement explosive.
- **Intended Use:** This product is classified as telecommunication equipment not intended for direct purchase by the public.
- This product is designed and approved for use in an indoor location only.

CAUTION! Use of any controls, adjustments, or procedures other than those specified herein may result in hazardous radiation exposure.

- **Utilisation prévue:** Ce produit est classé comme équipement de télécommunication non destiné à l'achat direct par le public. Ce produit est conçu et approuvé pour utilisation en intérieur uniquement.

MISE EN GUARDE ! L'utilisation de contrôles, réglages ou procédures autres que ceux spécifiés dans ce manuel peut entraîner une exposition dangereuse à des rayonnements.

- Connect the power supply cord only to an AC power outlet that meets GigaSpire specifications.
- Never alter the AC power cord. If necessary, have the correct outlet installed by a qualified electrician or call your service provider for assistance.
- To reduce the risk of damage to the electric cord, remove it from the outlet by holding onto the AC power adapter rather than the cord.
- Make sure the cord is positioned so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.

WARNING! Do not use any other power adapter except the one that accompanies this unit or a power supply identified in the list below. Use of another adapter could result in damage to the unit. To prevent electrical shock, please do not open the cover. The following power adapter is qualified for use with this GigaSpire.

ALIMENTATION ÉLECTRIQUE

- Connectez le cordon d'alimentation uniquement à uneprise d'alimentation CA conforme aux spécifications GigaSpire.
- Ne modifi ez jamais le cordon d'alimentation CA. Si nécessaire, faites installer la bonne prise par un électricien qualifi é ou appelez votre fournisseur de servicepour obtenir de l'aide.
- Pour réduire le risque d'endommager le cordon électrique, retirez-le de la prise en le tenant par la fiche moulée de l'adaptateur secteur plutôt que par le cordon.
- Assurez-vous que le cordon est positionné de sorte qu'il ne puisse pas marcher dessus, trébucher ou subir
- d'autres dommages ou contraintes.

Attention ! N'utilisez pas d'autre adaptateursecteur que celui qui accompagne cet appareil ou une alimentation électrique autre que celle identifiée dans la liste ci-dessous. L'utilisation d'un autre adaptateur pourrait endommager l'appareil. Pour éviter les chocs électriques, n'ouvrez pas le couvercle. L'adaptateur électrique suivant est qualifié pour être utilisé avec le GigaSpire.

Federal Communications Commission (FCC)

INTERFERENCE STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.

CAUTION: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

CAUTION: This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

FCC regulations restrict the operation of this device to indoor use only.

The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet in the 5.925-6.425 GHz band.

Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

ADDITIONAL CONSIDERATIONS

The country code selection is for non-US models only and is not available on any US models. Per FCC regulations, all Wi-Fi products marketed in the US must be fixedtoUSoperationalchannelsonly.

RF FREQUENCY REQUIREMENTS

This device is for indoor use only when using all channels in the 5.150 GHz - 5.250 GHz and 5.725 GHz - 5.850 GHz frequency range. High power radars are allocated as primary users of the 5.250 GHz - 5.350 GHz and 5.470 GHz - 5.725 GHz bands. These radar stations can cause interference with and/or damage this device. It is restricted to indoor environment only.

FCC RADIATION EXPOSURE STATEMENT

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 47cm between the radiator & your body.

Innovation, Science and Economic Development Canada Requirements - English

The manufacturer declares that this product is in conformity with the requirements and other relevant provisions of the following Canadian standards:

- CAN ICES(B)/NMB(B)
- This device complies with ISED's licence-exempt RSS standards. Operation is subject to the following two conditions:

(1) This device may not cause interference, and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

CAUTION:

(i) The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

(ii) Operation shall be limited to indoor use only.

(iii) Operation on oil platforms, automobiles, trains, maritime vessels and aircraft shall be prohibited except for on large aircraft flying above 3,048 m (10,000 ft).

(iv) Devices shall not be used for control of or communications with unmanned aircraft systems.

RADIATION EXPOSURE STATEMENT

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 26cm between the radiator & your body.

Innovation, Sciences et Développement économique Canada

Le présent appareil est conforme aux CNR d' ISDE applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

- CAN ICES(B)/NMB(B)
- Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisee aux deux conditions suivantes :
  (1) L'appareil ne doit pas produire de brouillage, et
  (2) L'utilisateur de l'appareil doit accepter tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en comprom-ettre le fonctionnement.

AVERTISSEMENT

(i) Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont reserves uniquement pour une utilisation a l'interieur afinde reduire les risques de brouillage prejudiciable aux systemes de satellites mobiles utilisant les memes canaux;
(ii) Le fonctionnement doit être limité à une utilisation en intérieur uniquement.
(iii) L'exploitation sur les plates-formes pétrolières, les automobiles, les trains, les navires maritimes et les aéronefs est interdite, sauf sur les gros aéronefs volant au-dessus de 3,048 m (10,000 pi).
(iv) Les appareils ne doivent pas être utilisés pour contrôler ou communiquer avec des systèmes d'aéronefs sans pilote.

DECLARATION D'EXPOSITION AUX RADIATIONS

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé.
Cet équipe-ment doit être installé et utilisé avec un minimum de 26 cm de distance entre la source de rayonnement et votre corps.

European Union

DISPOSING OF AND RECYCLING YOUR PRODUCT

WEEE Directive: Requirement according to WEEE directive 2012/19/EU
Disposal of old electrical and electronic equipment (Applicable in the European countries with separate collection systems).

This symbol on the product indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. Calix offers take-back and recycling services for products in many locations around the world. Customers are advised to contact the local Calix representative for further information.

CALIX, INC. AND THE ENVIRONMENT

At Calix Inc., we understand and a re committed to reducing any impact our operations and products may have on the environment. To minimize this impact, Calix Inc. designs and builds its products to be as environmentally friendly as possible, by using recyclable, low toxic materials in both products and packaging.

ROHS COMPLIANCE

This equipment meets the requirements detailed in the European RoHS Directive 2011/65/EU.

For Radio Equipment Only

You must set the correct country code with the set WLAN country-code command to avoid violating local radio spectrum laws. This command sets the selectable channel range and transmit power level so that a WLAN connection can be established. For more information about country codes, see the hardware guide for your device.

This device complies with the essential requirements of the Radio Equipment directive: 2014 / 53 / EU. The following test methods have been applied to prove presumption of conformity with the essential requirements of the Radio Equipment directive: 2014 / 53 / EU:
EN 300 328 (2.4 GHz), EN 301 893 (5 GHz) EN 62311:2008, EN 50385, EN 301489-1, EN 301489-17, EN62368-1.

FREQUENCIES	MAX POWER	INDOOR/OUTDOOR
2400-2483.5	100 mW	Indoor
5150-5250	200 mW	Indoor
5250-5350	200 mW	Indoor
5470-5725	1000 mW	Indoor

RADIATION EXPOSURE STATEMENT

The minimum distance between the user and/or any bystander and the radiating structure of the transmitter is 20 cm.

!			NOTICE OF WIRELESS RADIO LAN USAGE IN THE EUROPEAN COMMUNITY
BE	BG	CZ	This device is restricted to ***indoor use*** when operated in the European Community using channels in the 5.15-5.35 GHz band to reduce the potential for interference. This device is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France where restrictive use applies. This device may not be used for setting up outdoor radio links in France and in some areas, the RF output power may be limited to 10 mW EIR P in the frequency range of 2454 –2483.5 MHz. For detailed information, the end-user should contact the national spectrum authority in France. This equipment may be operated in AL, AD, BE, BG, DK, DE, FI, FR, GR, GW, IS, IT, HR, LI, LU, MT, MK, MD, MC, NL, NO, AT, OL, PT, RO, SI, SM, SE, RS, SK, ES, CI, HU, CY
DK	DE	EE	
IE	EL	ES	
FR	HR	IT	
CY	LV	LT	
LU	HU	MT	
NL	AT	PL	
PT	RO	SI	
SK	FI	SE	
UK	LI	IS	
NO	TR	CH	

Usage Notes

- To remain in conformance with European National spectrum usage regulations, frequency and channel limitations will be applied on the products per the country where the equipment is deployed.
- Access points will support DFS (Dynamic Frequency Selection) and TPC (Transmit Power Control) functionality as required when operating in 5 GHz within the EU.

5 GHz Wireless Frequency and Channel Operation in EEC Countries

The table below provides a list of allowable frequency ranges and channels in various EEC countries.

Allowable 802.11a Frequencies and Channels	Countries
5.15-5.25 GHz (Channels 36, 40, 44, 48)	Liechtenstein
5.15-5.25 GHz and 5.725-5.875 GHZ (Channels 36, 40, 44, 48, 149, 153, 157, 161, 165, 169)	Austria
5.15-5.35 GHz (Channels 36, 40, 44, 48, 52, 56, 60, 64)	France
5.15-5.35 and 5.47-5.725 GHz (Channels 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140)	Denmark, Germany, Iceland, Finland, Netherlands, Norway, Poland, Sweden, Slovenia, Luxembourg, U.K., Ireland, Slovak, Switzerland, Hungary, Italy
5.15-5.35 GHz and 5.725-5.875 GHz (Channels 36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157, 161, 165, 169)	Czech Republic

License Information

OPEN SOURCE SOFTWARE UTILIZATION NOTICE

The GigaSpire family uses Open Source software programs. Such software programs are made available subject to certain third-party terms and conditions.

The fact that you are about to begin using or have purchased this product requires that you be informed of the use of these software packages and or libraries and in some cases, the third-party terms and conditions applicable to such software. This information can be found on the manufacturer's support portal. Refer to the appropriate software release notes for additional information on Open Source software programs used by this product.

Declaration of Conformity

Language	Declaration of Conformity
български [Bulgarian]	С настоящото Calix Inc. Това декларира тази Wireless Broadband Терминал за достъп е в съответствие с Директива 2014/53 / ЕС. Пълният текст на ЕС декларацията за съответствие е достъпна онлайн от сайта на декларациите на Calix (https://www.calix.com/declarations).
hrvatski [Croatian]	OOvime Calix Inc. To izjavljuje ovaj bežični širokopojasni pristup terminala u skladu s Direktivom 2014/53 / EU. Puni tekst izjave o sukladnosti za EU je dostupan online od kaliks web deklaracije (https://www.calix.com/declarations).
English	Hereby, Calix Inc. declares that this Broadband wireless Access Terminal is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available online from the Calix Declarations site (https://www.calix.com/declarations).
český [Czech]	Tím Calix Inc. Která deklaruje toto Wireless Broadband Access Terminal je v souladu se směrnicí 2014/53 / EU. Úplné znění EU prohlášení o shodě je k dispozici online na webové stránce prohlášení kalichu (https://www.calix.com/declarations).
Deutsch [German]	Hiermit Calix Inc. Das erklärt der Wireless Broadband Access Terminal in Übereinstimmung mit der Richtlinie 2014/53 / EU. Der vollständige Wortlaut der EU-Konformitätserklärung wird online von den Calix Website Erklärungen zur Verfügung (https://www.calix.com/declarations).
Eesti [Estonian]	Käesolevaga Calix Inc. See kinnitab seda traadita lairibaühenduse Terminal on kooskõlas direktiivi 2014/53 / EL. Tervikteksti ELi vastavusdeklaratsiooni on saadaval võrgus Calix veebilehel deklaratsioonid (https://www.calix.com/declarations).
español [Spanish]	Por la presente, Calix Inc. Que declara esta Terminal de banda ancha de acceso inalámbrico está en conformidad con la Directiva 2014/53 / UE. El texto completo de la declaración de conformidad de la UE está disponible en línea desde el sitio web Declaraciones de Calix (https://www.calix.com/declarations).
Ελληνική [Greek]	Δια του παρόντος, Calix Inc. Αυτό δηλώνει αυτό το Wireless Terminal Ευρυζωνική πρόσβαση είναι σε συμμόρφωση με την οδηγία 2014/53 / ΕΕ. Το πλήρες κείμενο της δήλωσης συμμόρφωσης ΕΕ είναι διαθέσιμα στο διαδίκτυο από την ιστοσελίδα Calix Δηλώσεις (https://www.calix.com/declarations).
français [French]	Par la présente, Calix Inc. Cet accès qui déclare haut débit sans fil terminal est conforme à la directive 2014/53 / UE. Le texte intégral de la déclaration de conformité C'est disponible en ligne à partir des déclarations de site Calix (https://www.calix.com/declarations).
Italiano [Italian]	Con la presente, Calix Inc. Che dichiara questo terminale di accesso wireless a banda larga è conforme alla Direttiva 2014/53 / UE. Il testo integrale della dichiarazione di conformità UE è disponibile online dal sito Dichiarazioni Calix (https://www.calix.com/declarations).
Latvijas [Latvian]	Ar šo, Calix Inc. Tas paziņo, šis bezvadu platjoslas piekļuves termināls atbilst Direktīvas 2014/53 / ES. Pilns teksts ES atbilstības deklarācijas ir pieejama tiešsaistē no Calix tīmekļa deklarācijas (https://www.calix.com/declarations).
Lietuvos [Lithuanian]	Šiuo dokumentu Calix Inc Tai deklaruoja tai bevielės plačiajuostės prieigos terminalas atitinka Direktyvos 2014/53 / ES. Visą tekstą ES atitikties deklaraciją galima rasti internete nuo CALIX svetainės deklaracijas (https://www.calix.com/declarations).
Magyar [Hungarian]	Ezáltal Calix Inc. Hogy kijelenti ezt Wireless Broadband Access Terminal irányelvnek megfelelően 2014/53 / EU. A teljes szöveg az EU-megfelelőségi nyilatkozat elérhető online az Calix honlapján Nyilatkozatok (https://www.calix.com/declarations).
Polski [Polish]	Niniejszym, Calix Inc. Deklaruje, że ten Szerokopasmowy dostęp bezprzewodowy terminal jest zgodny z dyrektywą 2014/53 / UE. Pełny tekst deklaracji zgodności UE jest dostępna on-line ze strony internetowej calix deklaracji (https://www.calix.com/declarations).
português [Portuguese]	Por este meio, Calix Inc. Que declara esta Terminal de Acesso de Banda Larga sem fios está em conformidade com a Directiva 2014/53 / UE. O texto completo da declaração UE de conformidade está disponível online a partir de declarações do Web site da Calix (https://www.calix.com/declarations).
român[Romanian]	Prin prezenta, Calix Inc poate declara que acces de bandă largă fără fir Terminal este în conformitate cu Directiva 2014/53 / UE. Textul integral al declarației de conformitate UE este disponibilă online din calix declarațiile site-ul (https://www.calix.com/declarations).
slovenščina[Slovenian]	S tem lahko calix Inc. razglasi que širokopasovnega brezžičnega dostopa Terminal je v skladu z Direktivo 2014/53 / EU. Celotno besedilo izjave EU o skladnosti je na voljo na spletu na spletni strani izjavami calix (https://www.calix.com/declarations).
slovenský [Slovak]	Týmto Calix Inc. môže vyhlásiť tento que Broadband Wireless Access Terminal je v súlade so smernicou 2014/53 / EÚ. Úplné znenie vyhlásenia o zhode EÚ je k dispozícii online na webovej stránke vyhlásenie kalichu (https://www.calix.com/declarations).

GigaSpire GS7 10GE and GS7 XGS Tri-Gateway Installation Guide

August, 2024

Part Number #220-01xxx-10

Contents

About this Guide

This document provides the installation practice for Calix GigaSpire GS7 (GS7 10GE GS5239E) and GS7XG (GS7 XGS GS5239XG) indoor Tri-Gateway systems.

Intended Audience

This document is intended for use by network planning engineers, outside plant engineers, and field/craft personnel responsible for installation and maintenance of Calix premises equipment.

Safety Notices

This document uses the following safety notice conventions.

DANGER! Danger indicates the presence of a hazard that will cause severe personal injury or death if not avoided.

DANGER! Danger indique la présence d'un danger qui entraînera des blessures graves ou la mort s'il n'est pas évité.

WARNING! Warning indicates the presence of a hazard that can cause severe personal injury if not avoided.

ATTENTION! Avertissement indique la présence d'un danger pouvant entraîner des blessures graves s'il n'est pas évité.

CAUTION! Caution indicates the presence of a hazard that can cause minor to moderate personal injury if not avoided.

MISE EN GARDE! Attention indique la présence d'un danger qui peut causer des blessures légères à modérées s'il n'est pas évité

ALERT! Alert indicates presence of a hazard that can cause damage to equipment or software, loss of data, or service interruption if not avoided.

ALERTE! L'alerte indique la présence d'un danger susceptible d'endommager l'équipement ou les logiciels, de perdre des données ou d'interrompre le service s'il n'est pas évité.

DANGER! CLASS 1 LASER PRODUCT. INVISIBLE LASER RADIATION MAY BE PRESENT. Fiber optic radiation can cause severe eye damage or blindness. Do not look into the open end of an optical fiber.

DANGER! PRODUIT LASER DE CLASSE 1. UN RAYONNEMENT LASER INVISIBLE PEUT ÊTRE PRÉSENT. Le rayonnement de la fibre optique peut causer de graves lésions oculaires ou la cécité. Ne regardez pas dans l'extrémité ouverte d'une fibre optique.

Important Safety Instructions

When using your equipment, basic safety precautions must always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

- Do not use this product near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
- Use only the power cord indicated in this manual.

For external power supplies, the external power supply used in this device is to be Class II or a Limited Power Source (LPS) power supply.

Chapter 1

GigaSpire GS7 10GE and GS7 XGS Tri-Gateway Products Overview

This chapter introduces the GigaSpire GS7 10GE (GS7 10GE GS5239E) and GS7 XGS (GS7 XGS GS5239XG)Tri-Gateway systems and provides an overview of installation considerations.

Topics Covered

This chapter covers the following topics:

- Introducing the GigaSpire GS7 10GE and GS7 XGS Tri-Gateway systems
- Product dimensions
- Exploring the ONT interfaces
- Powering options
- Mounting options
- Installation considerations

Introducing the GigaSpire GS7 10GE and GS7 XGS

The Calix GigaSpire GS7 10GE and GS7 XGS systems are the latest generation of Calix Wi-Fi 7 smart home gateways, offering 10 Gbps throughput (10G WAN and 10GE LAN ports) with the latest 802.11ax 'Wi-Fi 7' technology.

GS7 10GE (GS7 10GE GS5239E)	GS7 XGS (GS7 XGS GS5239XG)
	

- The GigaSpire GS7 10GE (GS7 10GE GS5239E) is an Ethernet Wi-Fi gateway system for use in residential or small -business applications where a 'two-box model' (separate ONT and RG/Wi-Fi gateway systems) is preferred or required. The GS7 10GE is equipped with a 10GE WAN uplink port for connecting to an ONT providing a multi-gig broadband services. The GS7 10GE itself has its own 10GE LAN port to provide multi-gig service throughput on the LAN, plus four additional 1GE LAN ports for connecting client devices on the LAN.

- The GigaSpire GS7 XGS (GS7 XGS GS5239XG) is a combination Wi-Fi gateway plus XGS-PON ONT system for use in residential or small-business applications where a 'one-box model' (combined ONT+RG/Wi-Fi gateway system) is preferred or required. With built-in ONT functionality, the GS7 XGS is equipped with a 10G fiber WAN uplink for connecting to XGS-PON networks. The GS7 XGS features one 10GE LAN port to provide multi-gig service throughput on the LAN, plus four additional 2.5 GE LAN ports for connecting client devices on the LAN.

Both systems feature tri-band Wi-Fi using the latest 802.11ax technology across 6x6 streams (4x4 @ 5 GHz, plus 2x2 @ 2.4 GHz), and are also equipped with two POTS ports for telephony services.

Interfaces	GS7 10GE	GS7 XGS
Wi-Fi	Tri-Band 2x2 + 4x4 + 4x4	Tri-Band 2x2 + 4x4 + 4x4
WAN	10GE	10G XGS-PON
LAN	(1) 10GE + (4)2.5 GE	(1) 10GE + (4) 1GE
POTS	2	2
USB	1	1

Both systems sport the same size and shape for easy deployment planning purposes, and feature a slim-width chassis for installation into structured wiring enclosures commonly seen in higher-density housing (also known as multi-dwelling units, or MDUs).

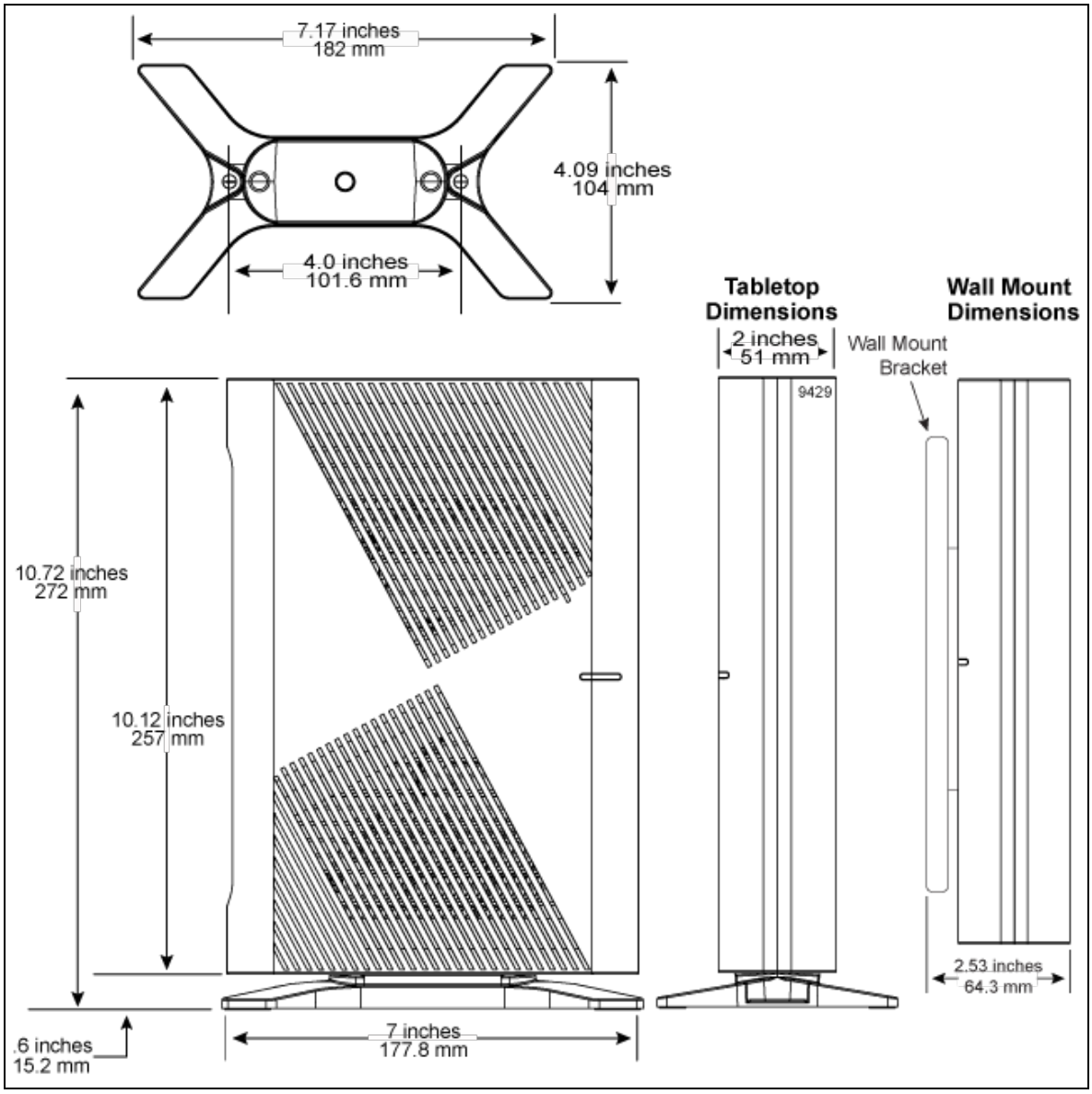
Refer to the product data sheets on calix.com for complete details on features and specifications.

Product Dimensions

The GS7 10GE and GS7 XGS systems are the same size and occupy an identical physical footprint.

When installed, total dimensions vary slightly between tabletop (foot/bracket below) and wall mount (bracket behind) configurations.

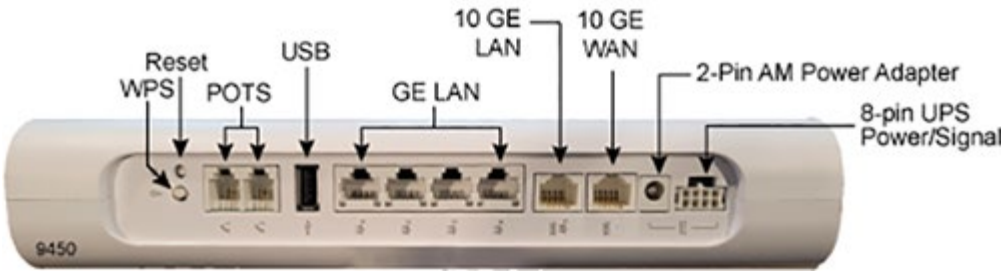
Product Dimensions



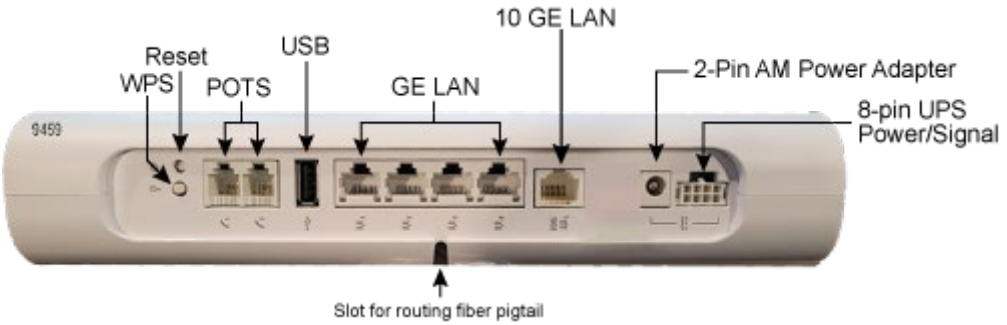
System Interfaces

The system interfaces for GigaSpire GS7 10GE and GS7 XGS systems are shown below.

GS7 10GE System Interfaces



GS7 XGS System Interfaces



Mounting Options

GigaSpire GS7 10GE and GS7 XGS systems each ship with a multi-purpose stand that supports mounting on horizontal or vertical surfaces:

- **Horizontal surfaces** - For "desktop" orientation —free standing on a flat horizontal surface such as a desktop, shelf, or table— attach the stand to the bottom of the system via its snap-in posts, to serve as a foot.
  See *Installing the System on a Horizontal Surface* (on page 20) for instructions.
- **Vertical surfaces** - To mount the system on a vertical surface —a wall, back of a cabinet, or back of a structured wiring enclosure— attach the stand to the side of the system to serve as a mounting bracket. In this configuration, first attach the stand to the vertical surface using (2) mounting screws, and then attach the system to the stand via its snap-in posts.
  See *Installing the System on a Vertical Surface* (on page 22) for instructions.

For horizontal surfaces	For vertical surfaces
	

User-supplied hardware

For mounting on a vertical surface only, some user-supplied hardware is required. Specifically, two (2) screws are required to attach the stand (bracket) to the wall or other vertical surface, but are not included in the kit.

Calix recommends using screws with the following spec: #10 (M4.8) x 1-inch length.

Powering Options

GigaSpire GS7 10GE and GS7 XGS systems each support two powering options:

- **Local AC power:** Connect to a standard AC power outlet using the Calix-supplied power adapter cable with AC/DC adapter.

- **UPS power:** To provide a battery backup option to maintain power to the system during AC power outages, you can use an Uninterruptible Power Supply (UPS), sold separately. Connect DC power from a UPS source via the 8-pin UPS power interface.

  Note: The systems must be supplied by a UL Listed power source compliant with ES1, PS2/LPS, rated output 12VDC, 3.0A, Tma = 40° C minimum, Altitude 5000m.

Local power option

GigaSpire GS7 10GE and GS7 XGS systems accept local AC power using a Calix-supplied AC/DC adapter cable. The DC end of the adapter cable has a two-pin barrel connector to connect to the GigaSpire system. Plug the AC end into any standard AC power outlet. Spare AC/DC power cables are also available from Calix: 100-06024: Power adapter cable, white; 12 V, 3A, Type A; 5-foot (150 cm) length. C-temp rated(indoor-only).

UPS power option

GigaSpire GS7 10GE and GS7 XGS systems accept DC power from a UPS. Connect the UPS power & signal cable to the system's 8-pin interface for UPS power. Use the cable supplied with the UPS to connect its DC power supply to the GigaSpire.

Installation Considerations

Review the following guidelines before starting installation activities.

Guidelines

Follow these general guidelines and practices:

- Determine which mounting and powering methods to use for each site before beginning the installation. See *Powering Options* (on page 14) and *Mounting Options* (on page 13) for details and guidance.
- Follow all standard safety precautions when performing installation tasks.
- Keep cabling neat and secure for safety and strain relief. Use cable ties and screw clips for dressing long-run cables as needed.

User-supplied items

Bring the following tools and materials to the installation site, as needed:

Materials

- WAN link cabling:
  - Ethernet: Cat5e Ethernet cable (for GS7 10GE system only)
  - XGS-PON: Fiber pigtail, 5mm, SC/APC connector (for GS7 XGS system only)
- Mounting screws (2) for stand/bracket (wall-mounts only); spec: #10 (M4.8) x 1-inch length.

Tools

Bring the following tools to the installation site:

- Level
- Pencil (to mark bracket and drill hole locations; wall-mounts only)
- Power drill with drill and driver bits (to install mounting screws; wall-mounts only)

Chapter 2

Installing the GigaSpire System

This chapter describes how to install the GigaSpire system at the service location. This process includes guidance for identifying an appropriate installation location, system hardware installation instructions, and cabling instructions.

Topics Covered

This chapter covers the following topics:

- Unpacking the system
- Selecting an installation location
- Installing the GigaSpire system at the service location:
  - Option 1: Installing the system on a horizontal surface (desktop or shelf)
  - Option 2: Installing the system on a vertical surface (wall or structured wiring enclosure)
- Connecting to the network
- Connecting power
- Activating the system

Unpacking the System

Each GigaSpire GS7 10GE and GS7 XGS system ships in a box that contains the following items:

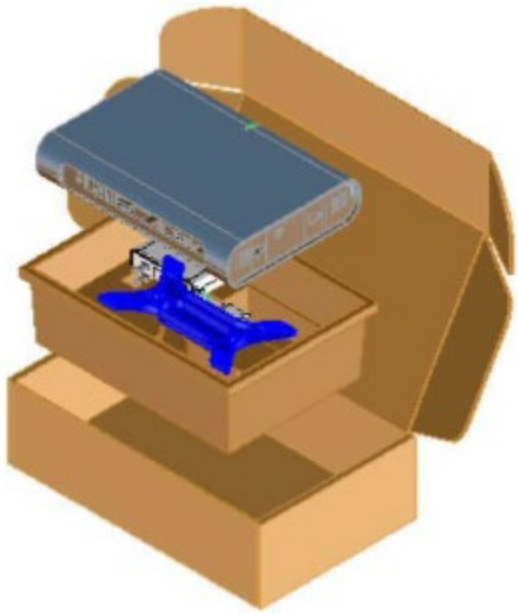
Qty	Description
1	GigaSpire system (GS7 10GE or GS7 XGS)
1	Stand / mounting bracket*
1	Power cable with AC/DC (120VAC to 12VDC) adapter
2	Product identification labels (with default Wi-Fi SSID and RG admin user login info)
1	Safety and regulatory statements guide

***Note:** Mounting screws are not included. See *Mounting Options* (on page 13) for screw spec recommendation.

To unpack the system

1. **Open the box containing the GS7 10GE or GS7 XGS system.**
2. **Remove the system from the pulp tray to retrieve items packed underneath.**

Component Packaging



3. Check to ensure supplied items are present before proceeding:
   - Remove the stand/bracket and set aside for use during installation.
   - Remove the power cable and set aside for use during installation.

Selecting an Installation Location

Consider several factors when selecting an installation location for the system:

- **Proximity to power:**
  - **AC power:** The supplied power cable is five feet long. You must locate the system within (5 feet) reach of an AC power outlet to use standard AC power.
  - **UPS power:** Distance from a UPS power source depends on cabling options available for the UPS. Locate the system with reach of the 8-pin DC power cable attached to the UPS.
- **Proximity to network termination point:**
  - **Distance from ONT (GS7 10GE systems only):** The GS7 10GE system uses a wired Ethernet link to connect to the WAN. The maximum distance to the network termination device (ONT or modem) equals the maximum Ethernet cable length of 100 meters (328 feet).
  - **Distance from fiber jack (GS7 XGS systems only):** The GS7 XGS system's ONT WAN interface uses a fiber pigtail to connect to a fiber jack or other indoor local convergence point (where the PON fiber enters the premises). Locate the GS7 XGS system near enough to the jack to reach it with your user-supplied fiber pigtail.
- **Mounting type:** Depending on the selected mounting type (horizontal or vertical surface) per site, select a location with a surface that can support that mounting type.
- **Location within serving area:** Environmental factors including centralized location and structural materials can affect Wi-Fi performance. Consider the factors described below.

Wi-Fi AP placement

Direct line-of-sight to the Wi-Fi access point (AP) is not essential for client signal quality, thanks to MIMO technology and an omni-directional antennae array in the AP. However, to achieve the best possible Wi-Fi coverage and performance, Calix recommends the following guidance:

- Prioritize a centralized location; the closer the AP system is to the center of the serving area, the better.
- Elevate the system as high up as possible; higher elevation helps the signal clear lower/ground-level obstructions.

Some building materials block Wi-Fi signals more than others. See the table below for reference; lower attenuation yields better performance. Consider the materials in surrounding structures when selecting an installation location for the system.

Effects of Building Materials on Wi-Fi Signals

Material	Wi-Fi Attenuation
• Wood, Drywall, Particle Board, Tile • Glass	Low
• Bricks, Cinder Block • Water	Medium
• Plaster, Stucco • Concrete	High
• Metal • Tinted or Low-E Glass (metalized)	Very High

CAUTION! Use of controls or adjustments or performance of procedures other than those specified in this document may result in hazardous radiation exposure.

MISE EN GARDE! L'utilisation de commandes ou de réglages ou l'exécution de procédures autres que celles spécifiées ici peuvent entraîner une exposition à des rayonnements dangereux.

Option 1: Installing the System on a Horizontal Surface

This topic describes how to install GigaSpire GS7 10GE and GS7 XGS systems onto any flat horizontal surface, such as a desktop, shelf, or table.

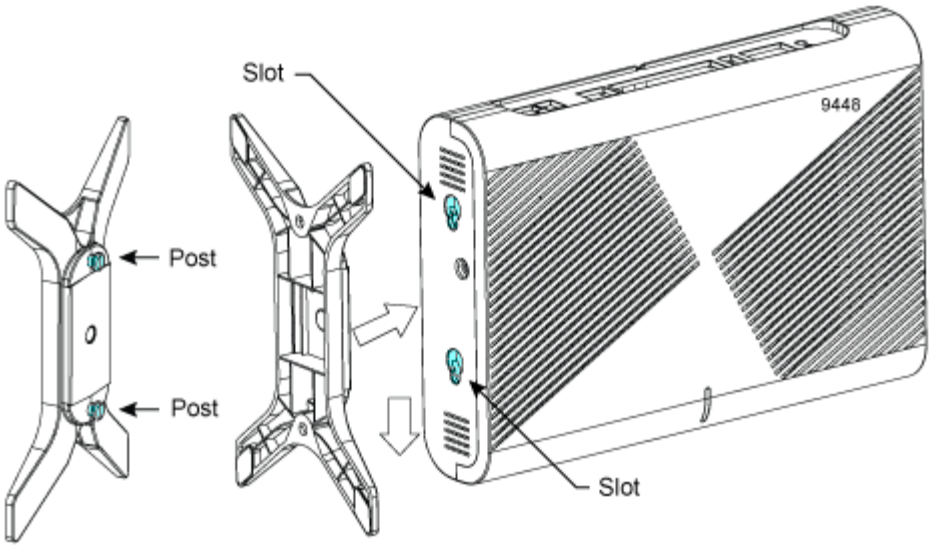
With a "desktop" arrangement, the system's multi-purpose stand/bracket attaches to the bottom of the unit, serving as a foot for free-standing operation on a horizontal surface. The stand snaps onto the bottom of the system via a pair of mating posts, and has rubber pads underneath to reduce accidental slippage on flat surfaces.

Tabletop Mounting

To install the system on a horizontal surface

1. Get the system and its stand/bracket from the ship kit.
2. Attach the stand to the bottom of the system:
   a. Align the stand's (2) posts with the (2) counterpart keyhole slots on the bottom of the system.

Attaching the Mounting Bracket



a. Insert the posts into the slots at the wide end of the keyholes.

b. Slide the stand laterally so the posts fit snugly into the narrow ends of the keyholes.

1. Orient the system upright with its stand at the bottom to serve as a foot.
2. Set the system down on a horizontal surface at its installation location.

Note: Calix recommends locating the system within five feet of an AC power outlet to avoid needing a power extension cord.

Skip to topics *Connecting to the Network* (on page 27) and *Connecting Power* (on page 31) for instructions to connect power and network cables to the system.

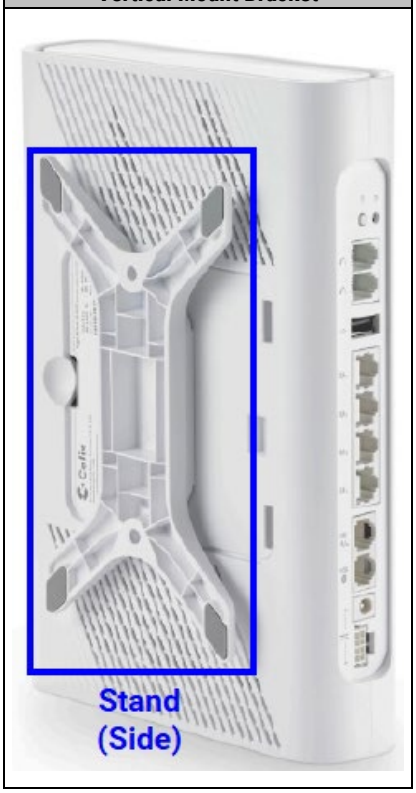
Option 2: Installing the System on a Vertical Surface

This topic describes how to install GigaSpire GS7 10GE and GS7 XGS systems onto a flat vertical surface, such as a wall, the back of a cabinet, or inside a structured wiring enclosure (SWE). For simplicity, this topic shall refer to this installation option as simply a wall-mount installation.

To support wall-mount installations, the system's multi-purpose stand attaches to the side of the unit to serve as a mounting bracket.

First, you attach the stand/bracket to the vertical surface using (2) mounting screws, and then you hang the system onto the bracket in snap-on fashion —where slots on the side of the system (located behind a removable cover panel) fit onto counterpart posts on the stand.

Vertical Mount Bracket



Guidelines

Follow these installation guidelines for wall-mount installations:

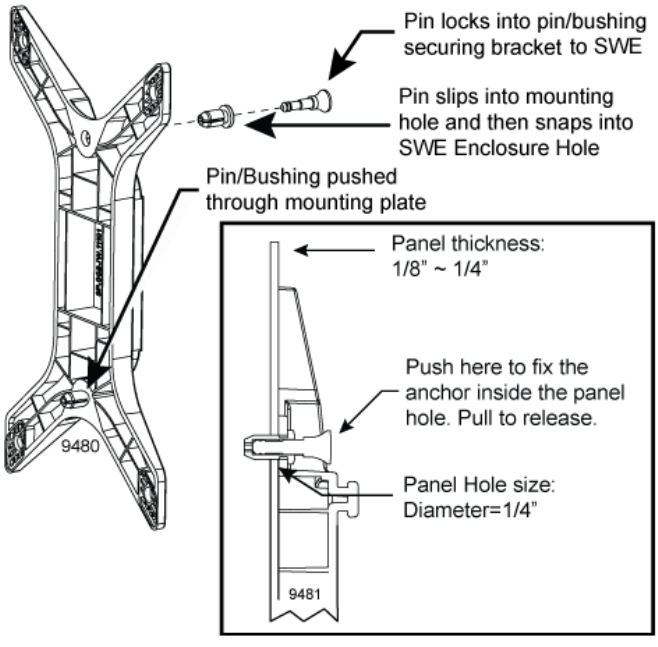
- User-supplied hardware is required to attach the stand/bracket to a wall. Mounting screws arenot included. See Mounting Options (on page 13) for screw specs.
- The wall-mount instructions below assume the drilling is into a stud. If no stud is close enough,use wall anchors instead (not supplied).
- When selecting an installation location, Calix recommends locating the system within five feetof an AC power outlet to avoid needing a power extension cord.
- **Important!** For GS7 XGS systems only, Calix recommends connecting the WAN fiber link to thesystem before mounting the system onto the wall bracket, due to its WAN optical port beinginaccessible when the system is installed on the bracket. Connect the WAN fiber to the systemand then attach the system onto its bracket as described.

To install the bracket onto a vertical surface (wall or SWE)

1. Get the stand/bracket from the ship kit.
2. At the mounting location, mark the position for the bracket on the wall.
   a. Hold the bracket against the wall at the mounting position.
   b. Using a pencil, mark the two (2) hole locations to drill for screws.

   Note: For structured wiring enclosure (SWE) installations, skip to step 4.
3. Drill two (2) holes into the wall at the marked locations.
4. Hold the bracket against the wall or SWE at the marked location and attach it as follows:
   - Attach to a wall:
     a. Insert the first mounting screw into the upper of (2) holes in the bracket, and then use a screwdriver to screw it completely into the hole.
     DO NOT OVER-TIGHTEN the screw or else risk cracking the plastic bracket.
     b. Insert the second mounting screw into the lower of (2) holes in the bracket, and then use a screwdriver to screw it completely into the hole.
   - Attach to a SWE rear panel:
     a. Insert the first pin/bushing into the upper of (2) holes in the bracket and push it all the way through the aligned holes in the SWC rear panel, as shown.

Attaching to a SWE



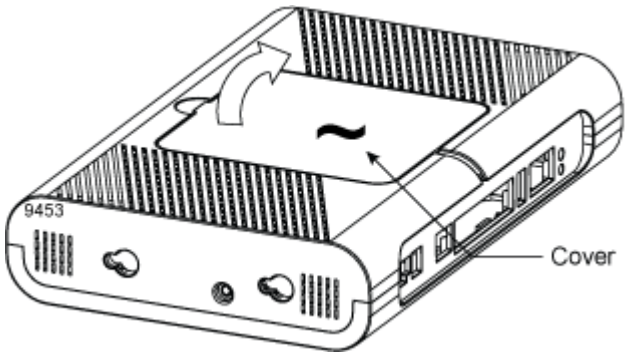
b. Insert the second pin/bushings into the lower of (2) holes in the bracket and push it all the way through the aligned holes in the SWE rear panel.

5. Once both screws or pin/bushing sets are installed, check the bracket to confirm it is tightly attached to the wall or SWE before proceeding to the next task below.

To install the system onto the mounting bracket

1. Get the GS7 10GE or GS7 XGS system from the ship kit.
2. Remove the cover from the system's side panel to access its interior compartment.
   a. With a finger, press on the tab to release the catch.
   b. Pull on the tab to remove the cover away from the side panel.

Mounting Bracket Access Cover



   c. Discard the cover, as it will not be used with wall-mount installations.

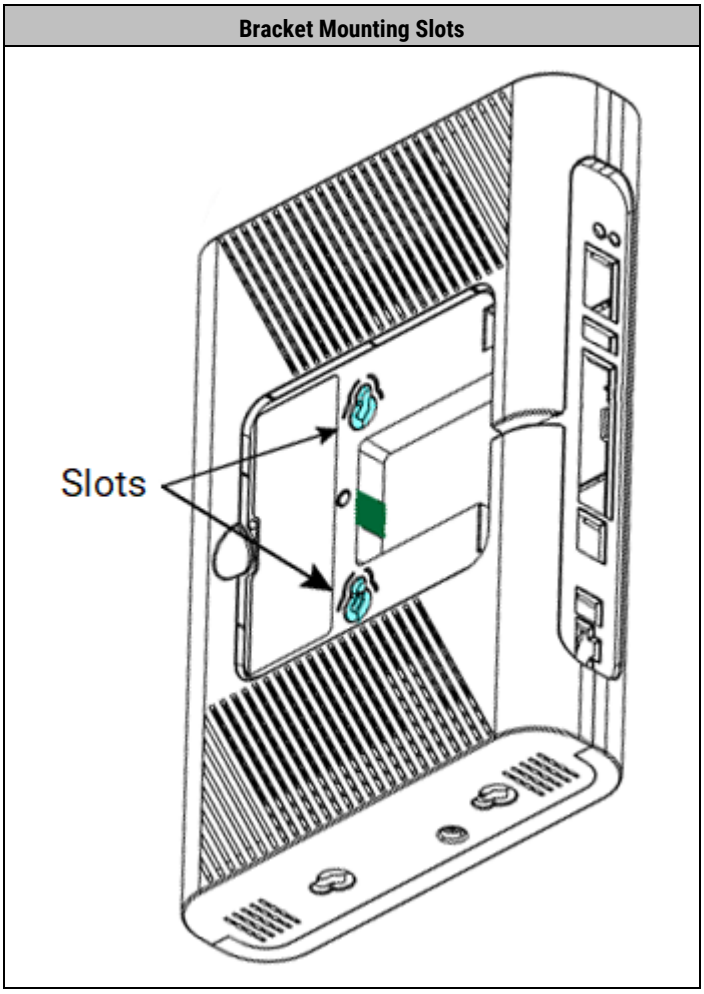
Note: For GS7 10GE systems, skip to step 4.

3. **For GS7 XGS systems only:**
   You must connect the WAN fiber link to the system *before* mounting itonto the wall-mount bracket, due to the WAN optical port being inaccessible while the system isinstalled on the bracket. Go to topic *Connecting the WAN Fiber (GS7 XGS Only)* (on page 28) forinstructions, and then return here to complete the wall-mount installation, as per below.

4. Attach the GS7 10GE or GS7 XGS system to the mounting bracket:

   a. Align the (2) keyhole slots on the system (located inside the compartment) with the (2) counterpart posts on the bracket.

Bracket Mounting Slots



   b. Hang the system onto the bracket posts at the wide end of the keyholes.

   c. Slide the system down onto the posts until the posts fit into the narrow ends of the keyholes.

5. **For GS7 XGS systems only:** Check to make sure the WAN fiber exits left cleanly via the slot in the rounded edge of the system body, near the back left side of the mounted unit (when viewed from the front). Make sure the fiber is not pinched.

Proceed to topics *Connecting to the Network* (on page 27) and *Connecting Power* (on page 31) for instructions to connect power and network cables to the system.

Connecting to the Network

Connect the GigaSpire GS7 10GE or GS7 XGS system to the wide-area network (WAN). If applicable, also connect any wired services or devices to the gateway.

- Network uplink
  - **Ethernet link (GS7 10GE systems)-**Connect the GS7 10GE gateway system to the network via a WAN Ethernet link to the broadband service device (ONT or modem). See *Connecting the WAN Ethernet Link (GS7 10GE Only)*(on page27) for instructions.
  - **XGS-PON fiber link (GS7 XGS systems)-**Connect the GS7 XGS gateway system to the FTTx access network via an XGS-PON WAN fiber link. See *Connecting the WAN Fiber (GS7 XGS Only)*(on page28) for instructions.
- Wired LAN-side connections
  - **Data services** - To support data services to wired Ethernet devices on the LAN, connect those client devices to the gateway system. See *Connecting Wired Services Interfaces* (on page 30) for instructions.
  - **Voice services** - To support voice services at the premises, connect the telephone(s) to the gateway system's POTS ports. See *Connecting Wired Services Interfaces* (on page 30) for instructions.

Connecting the WAN Ethernet Link (GS7 10GE Only)

Note: This task applies only to GigaSpire GS7 10GE (GS7 10GE GS5239E) systems. For GS7 XGS (GS7 XGS GS5239XG) installations, skip this topic.

The GigaSpire GS7 10GE system is equipped with a 10GE WAN Ethernet port for connecting to the broadband network. Follow these guidelines to connect a GS7 10GE system to the network:

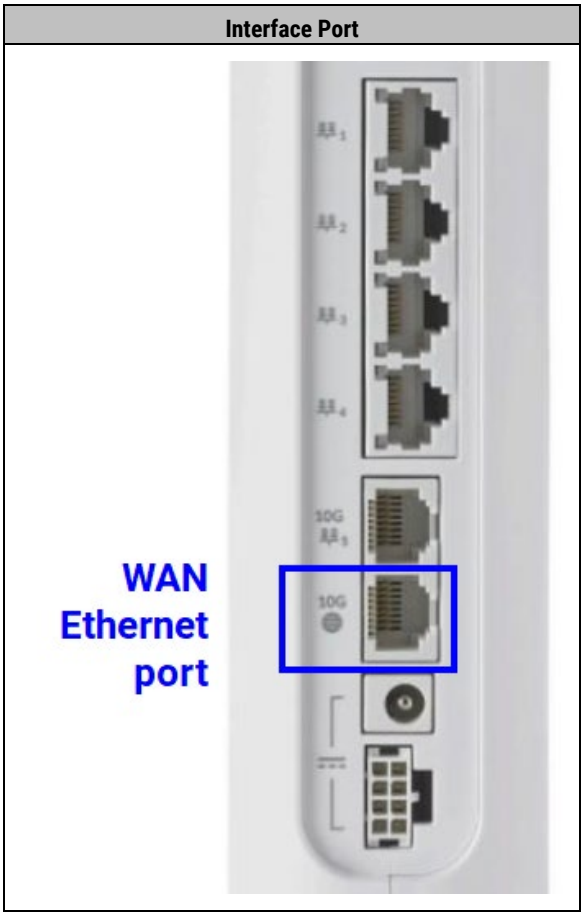
- **RG mode:** For systems that will operate in gateway (RG) mode, use a standard Ethernet data cable (not supplied) to connect the system's WAN Ethernet port to a LAN Ethernet port on the broadband service device (ONT or modem).

  Note: To allow maximum throughput bandwidth to the gateway, Calix recommends connecting to an ONT equipped with a multi-gigabit LAN port. For example, connect to an XGS-PON ONT (most are equipped with a 10GE or 2.5GE LAN port), such as the Calix GP1101X ONT.

- **Satellite mode:** For systems that will operate in mesh satellite mode, you can use either a wired (Ethernet) or wireless backhaul link to connect to the RG system. Follow the instructions below only for systems that will use a wired connection to the gateway.

To connect to the network

1. Bring an Ethernet data cable (not supplied) to the GigaSpire location.
2. Connect the Ethernet cable to the system's WAN Ethernet port —labeled **10G** (WAN icon)— located on the back of the system.



1. Connect the Ethernet cable's other end to the upstream device:
   - For gateways, connect the uplink cable to the broadband service device's LAN Ethernet port.
   - For satellites, connect the uplink cable to an available LAN Ethernet port on the gateway system.
2. Dress, tuck, or tie back any cable slack to prevent accidental catching or snags on the cable, as needed.

Connecting the WAN Fiber (GS7 XGS Only)

Note: This task applies only to GigaSpire GS7 10GE (GS7 10GE GS5239E) systems. For GS7 XGS (GS7 XGS GS5239XG) installations, skip this topic.

The GigaSpire GS7 10GE system is equipped with an integrated XGS-PON ONT for connecting directly to a PON FTTx network. The GS7 10GE WAN optical port uses an SC/APC connector.

Connect the PON service drop fiber to the GS7 10GE system's WAN optical port to establish a PON network connection.

To connect the WAN fiber link

1. Route the service drop fiber from its premises entry location to the GigaSpire location.
2. Remove the cover from the GS7 10GE system's side panel to access the WAN optical port (located inside the interior compartment).
3. Remove the rubber dust cover from the WAN optical port.
4. Insert the WAN fiber's SC/APC male connector into the GS7 10GE system's WAN optical port (SC/APC female connector).

Fiber Interface

Side panel with cover removed (for access to WAN optical port)

1. Remove any slack in the fiber pigtail and then fit the fiber into the exit notch at the back of the side panel.

2. Based on your selected mounting option for this system, do one of the following to finish this task:
   - For horizontal surface mounts (desktop or shelf): Replace the side panel cover, taking care not to pinch the fiber pigtail in the exit notch.
   - For vertical surface mounts (wall or SWE): Attach the system to its (previously installed) mounting bracket using the keyholes in its side compartment. See topic *Option 2: Installing the System on a Vertical Surface* (on page 22) for instructions.

Connecting Wired Services Interfaces

This section describes how to connect service lines to the system's LAN-side interfaces.

GigaSpire GS7 10GE and GS7 XGS systems are equipped with the following service ports:

- (5) LAN Ethernet ports
  - (1) 10GE port with Base-T copper (100/1000/2500/5000/10000), RJ-45 interface
  - (4) 1GE ports with Base-T copper (100/1000), RJ-45 interfaces
- (2) POTS voice ports are copper RJ-11 interfaces

To provide wired services on the LAN, connect Ethernet cables to the LAN ports as described below.

To connect LAN Ethernet cables

1. Bring an Ethernet data cable to the GigaSpire location.
2. Connect the Ethernet cable to a LAN Ethernet port on the system's rear panel:
   - To support a multi-gig connection to a LAN device, insert the cable's RJ-45 connector into LAN port **5** (10G).
   - To support a gigabit connection to a LAN device, insert the cable's RJ-45 connector into LAN port **1**.
3. If connecting additional LAN devices, repeat steps 1-2 to connect to ports **2-4** as needed.
4. Route and connect the far end(s) of the Ethernet cable(s) to the LAN device(s) located on premises.

To provide wired voice services, connect up to two telephone lines as described below.

To connect POTS lines

1. Route a telephone cable to the GigaSpire location.
2. Insert the phone cable's RJ-11 connector into POTS port **1** on the system's rear panel.
3. If connecting a second phone line, repeat steps 1-2 to connect a second line.
4. Route and connect the far end(s) of the telephone cable(s) to the telephone(s) located on premises.

Connecting Power

Connect power to the GigaSpire GS7 10GE or GS7 XGS system via one of the following options:

- **AC power:** Use the power cable supplied with the system to connect it to a standard AC power outlet. See *Connecting AC Power* (on page 31) for instructions.
- **UPS power:** If you purchased an Uninterruptible Power Supply (UPS; sold separately) to provide battery backup support, use the UPS to power the system. See *Connecting UPS Power (Optional)* (on page 32) for instructions.

Connecting AC Power

Calix provides an AC power cable (with AD/DC adapter) with each system. Connect the system to AC power as described below.

To connect the system to AC power

1. Get the AC power adapter cable from the installation kit.
2. Connect the power cable's device end (2-pin barrel connector) to the GigaSpires power input jack.

Connecting AC Power

3. Route the cable's other end (3-prong connector) to a nearby AC power outlet and plug into the outlet.

Note: Indoor installations assume that grounding support for the system is provided via the power cable connected to a Ground Fault Circuit Interrupt (GFCI) outlet.

Connecting UPS Power (Optional)

If using an optional Uninterruptible Power Supply (UPS) for battery backup support, the UPS must be located near the GigaSpire system to ensure that its low-voltage power supply cord is long enough to reach the GigaSpire.

Depending on your UPS (sold separately), varying lengths of power cords may be included:

- The AC power cord (used between AC wall outlet and UPS) is 8 feet long. Make sure to locate the UPS within that distance from an AC outlet.
- The DC power/signal cord (used between UPS and GigaSpire) offers up to three lengths based on UPS model.
    - Connectorized power & signal cable: 8-pin (GigaCenter end) to 8-pin terminal block (UPS end) cable; 1 meter (3 foot) or 3 meter (10 foot) lengths.
    - Connectorized power & signal cable: 8-pin (GigaCenter end) to unterminated (UPS end) cable; 6 meter (20 foot) length.

Note: If using your own supplied cable, the UPS must be located less than 50 feet (15.2 meters) from the GigaSpire if using an 18 AWG Type I power cord, or less than 70 feet (21.3 meters) from the GigaSpire if using an 16 AWG Type II power cord.

WARNING! High voltage electrical and pressurized natural gas lines may be present. Make sure you identify locations of all utility connections before drilling through any surface.

CAUTION! The UPS is designed for indoor installation and must be installed in a location with adequate airflow.

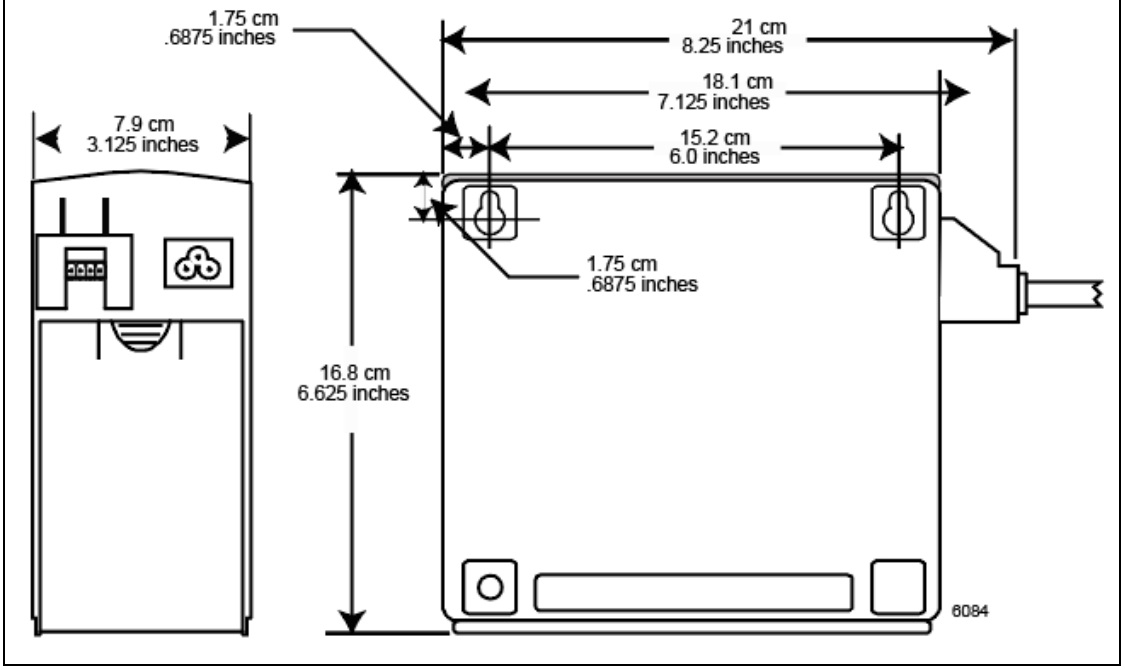
Make sure the UPS is not under water pipes which may leak or drip from condensation.

Most indoor UPS systems support a wall-mounting option. The procedure below includes instructions to install it with or without using the wall-mount option.

Installing the UPS

1. Unpack the UPS and associated hardware from the carton.
2. Find a suitable installation location for the UPS and then install it using one of the following options:
    - To mount the UPS onto a wall, proceed to step 3 below.
    - To set a free-standing UPS on a flat surface (floor, shelf, desktop), place the UPS on that surface and then skip to step 4 below.
3. Install two pan-head screws (not included) into a wall on which to hang the UPS:

UPS Dimensions



a. Pre-drill two mounting holes at appropriate locations per the mounting hole pattern shown above (to accept 8-32 pan-head screws, not provided).

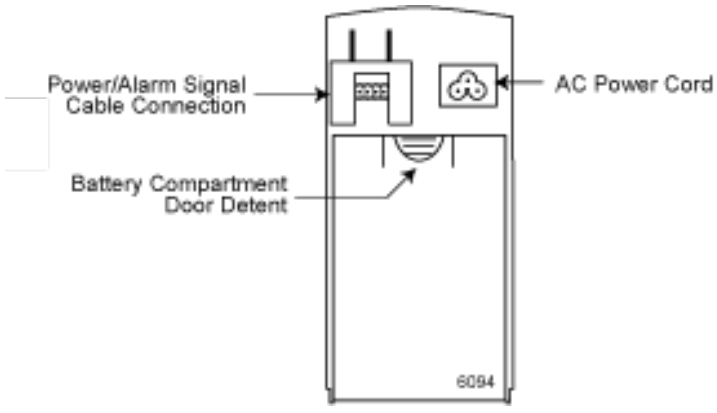
Important: Make sure the material on which you are mounting the UPS is of sufficient strength to support its weight of 7.2 pounds (3.3 kgs).

b. Insert a screw into each hole, leaving 3/16-inch (.48 cm) of the screw protruding from the wall.

c. Align the key slots on the top of the UPS with the screws and slide the unit down into place.

d. If the UPS is not snug after test fitting the mounting screws, remove the UPS and tighten the mounting screws slightly to allow for a tighter fit.

UPS Battery Chassis



4. Unpack the battery and slide it into the UPS housing.
5. Attach the battery leads to the battery (red to red, black to black).
6. Re-install the battery cover.

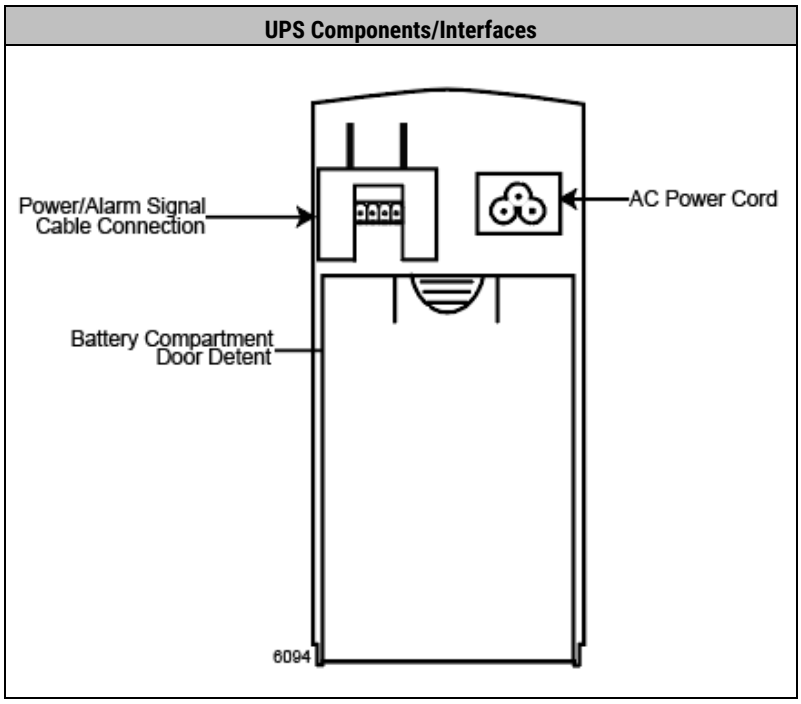
After the UPS is mounted with battery installed, proceed with connecting power cables:

- Connect the AC power cable to the UPS and then to an AC power outlet.
- Connect the DC power cable to the UPS and the to the GigaSpire.

To connect the UPS AC power cable

1. Get the UPS AC power cable from the UPS kit.
2. Connect the AC power cable's female end to the three-pin receptacle on the UPS rear panel.
3. Route the AC power cable's other (male) end to a nearby AC power outlet and plug it in.

UPS Components/Interfaces



To connect the low voltage power cable

1. Get the DC power cable from the UPS kit.
2. On the UPS rear panel, lift the protective housing surrounding the VDC terminal block to expose it for cabling, and then connect the cable's 7-pin connector end to the UPS VDC terminal block.
3. Route the cable's other end to the GigaSpire and connect to the 8-pin DC input connector.

Activating the System

Once the system is cabled out, it is ready to activate and connect to the network.

To activate the system

1. If ou have not done so already, apply power to the GigaSpire system to initiate activation.

   - For systems using AC power: Plug the power cable's 3-prong connector into an AC power outlet. (Refer to Connecting AC Power (on page 31) for instructions.)
   - For systems using a UPS for DC power: Plug the UPS AC power cable's 3-prong connector into an AC power outlet. (Refer to Connecting UPS Power (Optional) (on page 32) for instructions.)

2. Obs ve as the system powers up —and for GS7 XGS systems only, as its internal ONT ranges up and gets discovered by the OLT— and then transitions to 'in service' status (green LED).

Next steps

Before completing the installation, verify system startup operation:

- Verify that the system's status LED shows expected 'in service' state (green) before considering the installation complete. Refer to *System LED Behavior* (on page 37) for expected behavior.
- Verify with your back office that the system checked in to Calix Cloud as applicable.
- For gateway system turn-up instructions, refer to the following related user documentation:
  - *EXOS Systems: Service Provider's Guide*
  - *Calix Deployment Cloud Help*
- For systems that will operate in mesh satellite mode, pair the satellite system to the gateway system using the WPS button on each unit. Refer to the *EXOS Systems: Service Provider's Guide* for instructions.

Appendix A

Appendix

This appendix provides general reference information about the systems.

Topics Covered

This appendix covers the following topics:

- System LED behavior
- System specifications
- Agency listings

System LED Behavior

During boot up, the LEDs go through a sequence as shown below for both gateway (RG) and mesh satellite mode configurations.

LED Behavior - RG Mode			
Status	**Status**	**Description - RG Mode**	**Color**
Power Off and Boot-up	**Off**	Power is OFF The unit has not been turned on, or * There is no power to the unit or * UPS battery has been discharged and can no longer power the unit	 Solid Gray
	Boot-up, SW Upgrade in Progress	* Unit is in the process of being booted up or service/software is being upgraded * Flashing amber every 1 second assuming SW can control the LEDs.	 Off and Amber (1000 msec cycle)
	Boot-up Failure	* Unit boot up failed assuming SW can control the LEDs.	 Off and Red (800 msec cycle)
In Service	**Connected to Internet**	System is In Service and connected to Internet.	 Solid Green
Mesh Satellite Mode			
Mesh	**WPS Pressed, pairing attempt has begun**	* For Satellite/Mesh mode, upon pressing the WPS button a single time (3+ seconds), WPS is enabled. * The LED bar begins to flash 0.5 second green/off and continues to do so for up to 120 seconds. * If the Gateway has also initialized WPS during this time, the Satellite can be paired to the Gateway Wi-Fi radios (5.0 GHz band) thereby creating an association with the Gateway SSID.	 Off and green (1000 msec)
	Mesh Complete.	In Service. Connected to Internet	 Solid Green

System Specifications

Hardware specifications for the GS7 10GE (GS7 10GE GS5239E) and GS7 XGS (GS7 XGS GS5239XG) systems follow:

Dimensions	
Width	2.0 in (5.1 cm); 3.7 in (9.4 cm) with stand
Height	10.1 in (25.7 cm); 10.75 in (27.3 cm) with stand
Depth	7.0 in (17.8 cm)
Weight	2.6 lbs. (1.2 kg)
Power	
AC / DC	Input voltage: 12 V DC (nominal) External Power Adapter (1.5 m): 12 V DC, 3A 1-pin barrel connector UPS power option: 8-pin connector
Network Interfaces	
WAN	**GS5229E system:** One (1) 10GE (100/1000/5000/10000 Base-T) port, RJ-45 **GS5229XG system:** One (1) XGS-PON ONT fiber interface port, SC/APC
LAN	One (1) 10GE (100/1000/5000/10000 Base-T) port, RJ-45 Four (4) 1GE (100/1000 Base-T) ports, RJ-45
Voice	Two (2) POTS ports, RJ-11
Wireless	Dual-band internal antennas, 6x6 streams (2x2 2.4 GHz, 4x4 5 GHz, simultaneous) 2.4 GHz 802.11 b/g/n/ac/ax 5 GHz 802.11 a/b/g/n/ac/ax 4x4 UL/DL MU-MIMO, Explicit high-power, dynamic beamforming
Other interfaces	One (1) USB 2.0 Type A One (1) WPS push-button actuator One (1) reset button
Environmental	
Operating temperature	Indoor ambient temperature: 0 to 40 degrees C (32 to 104 degrees F)
Operating and storage relative humidity	10 to 90 % and 5 to 95% non-condensing respectively
Certification and Compliance	
Emissions	FCC Part 15 Class B, ICES-003 Class B, CISPR-22
Safety	UL 62368 and UL 1697 approved

Agency Listings

FCC WARNING: These devices comply with Part 15 of the FCC Rules and Regulations. Operation is subject to the following conditions.

This device may not cause harmful interference, and, this device must accept any interference received, including interference that may cause undesired operation.

These devices have been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules and Regulations. These limits are designed to provide reasonable protection against harmful interference when this 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 instructions in this guide, may cause harmful interference to radio and television communications.

Hazardous Materials

There are no hazardous materials identified for the GigaSpire GS7 10GE or GS7 XGS.

Application Standards

Following is a list of standards that apply to this product:

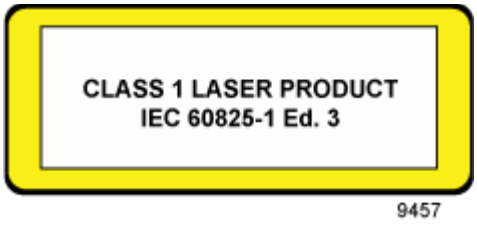
Standards		
FCC Part 15, Sub Part B, class B	UL 62368-1	EN 300 328
CAN ICES-003 Class B	CSA C22.2 No. 62368-1	EN 301 893
ANSI C63.4	IEC 62368-1	EN 301 489-1
FCC Part 15.247	ITU-T K21	EN 301 489-17
FCC Part 15.203	ITU-T K44	EN 55032 Class B
FCC Part 15.207	EN 62368-1	EN 61000-3-2
FCC Part 15.209	IC: 4009A-GS5239XX	EN 61000-3-3
FCC ID:2ABLK-GS5239XX	EN 62311	EN 50581
RSS 102	CE / RED, RoHS, WEEE, Energy	
RSS 247	Telcordia GR-63	EN 50564
FCC Part 15.407	Telcordia-GR-1089	CISPR 32 Class B
NEC (National Electrical Code)	Telcordia GR-950	IEEE: 802.3, 802.3AB, 302.3U, 802.11p, 802.11Q
Telcordia GR-909	Telcordia GR-1244	RCM
FCC Part 2.1091 RSS 248	Telcordia GR-2890	CISPR-22
Wi-Fi Alliance Certified 802.11ax	Wi Fi 7™	c UL us LISTED I.T.E E207975

Radiated Emissions

This Class-B digital device complies with radiated emissions requirements as defined in Canadian ICES-003.

Product labeling

The following required labeling shows the laser class and IEC standard that defines the laser used in this product.



Laser specifications

Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 56, dated May 8, 2019.

Nominal laser wavelength: 1270 nm

Nominal laser wavelength (XGS PON): 1577 nm

Laser Radiation Maximum Output: +9 dBm (7.9 mW)

Pulse Duration: 6.45 x 10^{-11} s to 6.45 x 10^{-10} s

DANGER! CLASS 1 LASER PRODUCT. INVISIBLE LASER RADIATION MAY BE PRESENT. Fiber optic radiation can cause severe eye damage or blindness. Do not look into the open end of an optical fiber.

DANGER! PRODUIT LASER DE CLASSE 1. UN RAYONNEMENT LASER INVISIBLE PEUT ÊTRE PRÉSENT. Le rayonnement de la fibre optique peut causer de graves lésions oculaires ou la cécité. Ne regardez pas dans l'extrémité ouverte d'une fibre optique.

Note: When servicing this product during operation, care must be taken to avoid intrabeam viewing of the laser.