Xicato®

XIG-2
DATA SHEET

Xmesh IP Gateway

Features

- Power over Ethernet 802.11af Compliant Powered Device
- Gigabit Ethernet
- 2.4 GHz and 5.0 GHz 802.11b/g/n/ac Wireless LAN
- Xicato Xmesh Wireless

Xicato designs and delivers one of the broadest portfolio spot and linear light sources and electronics that enable architects, designers and building managers to create beautiful, smart spaces in which people love to live and work. With thousands of installations around the globe, Xicato continues to be a leading supplier of high quality lighting solutions. Xicato is defining the future of intelligent light sources by integrating electronics, software and connectivity. Xicato's headquarters is based in Silicon Valley and the company has offices Worldwide.

xicato.com

GENERAL DESCRIPTION

XIG – XICATO Xmesh IP GATEWAY

The XIG is a small, robust appliance that provides wired or wireless IP access to a network of Xicato Xmesh nodes, including XIM modules, drivers (XID and XAD), sensors (XIS), switches (XSW), and protocol bridges built by Xicato and Xicato partners. XIG integrates Xicato firmware and software into a standard, Linux-based embedded computing platform.

Xicato Xmesh products employ wireless mesh communication for peer-to-peer interaction, improving system performance and reliability. Xicato powered lighting nodes contain embedded intelligence so there is no single point of failure and they can be programmed by standard computers and mobile devices to respond to sensors, switches, and schedules, as well as mobile and remote commands. The XIG enables remote monitoring, control, configuration and management functions, as well as general range extension. It also enables interaction with building management systems and third-party lighting control systems through its open API.

The XIG is an 802.3af compliant Power over Ethernet (PoE) Powered Device that can be powered from a standard PoE switch, router or PoE injector. XIG can also be powered by an external 48Vdc power supply.

The XIG allows end users to monitor, control and configure a virtually unlimited number of Xmesh devices over any geographic distance (see Figure 1), as long as the user has access to the private wired or wireless local area network (LAN) connected to the XIG(s).

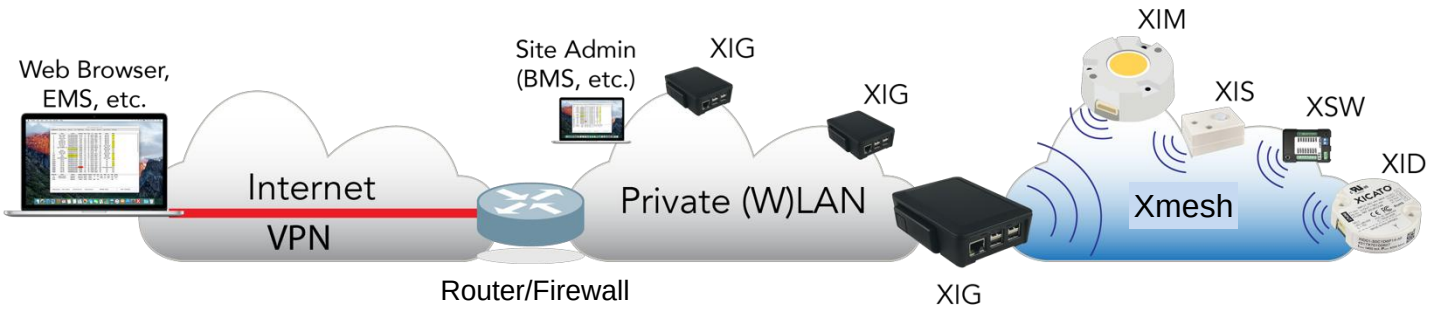


Figure 1: XIG access can be over wired or wireless LAN or Internet VPN using a web browser, EMS/BMS, or 3rd party control software

XIG OPEN SOFTWARE INTERFACES

OPEN HTTP OR EMBEDDED BROWSER INTERFACE

XIG communicates on the IP network using an open, standard HTTP API interface that is available free of charge from Xicato. The HTTP interface enables any building management system (BMS), building automation system (BAS), enterprise management system (EMS) or 3rd party audio-visual or lighting control system to control nodes on an Xmesh network as a subset of a larger, multi-vendor network that might include HVAC, audio-visual, or other environmental controls.

For convenience, Xicato has integrated an Apache web server that is accessible using any standard browser. Users simply enter the IP address of an XIG in their local area network – or over an Internet VPN – and the XIG provides the interface. Access is secure – users must log into the IP network the XIG is installed on – and the XIG supports individual permission controls – e.g., view, control, manage, administer, etc. – that can be specifically tailored for each user ID set up on the XIG.

Consult the XIG User Guide for usage, screen shots, and other information about the XIG web interface.

MONITORING FEATURES

MULTIPLE GATEWAY VISIBILITY

An Xmesh network has almost unlimited scalability. It can be configured with over 4 billion separately secure networks, each of which can contain over 32,000 devices, for a total capacity of over 140 trillion nodes! Large networks may take the form of multi-story office buildings with multiple tenants, each of which has one or more secure network zones. Or it may be a corporate or university campus, where different secure networks are assigned to different buildings or departments. Or it may encompass an entire multi-site, geographically distributed enterprise or property management portfolio. This makes an IP gateway such as XIG absolutely essential for proper management.

To simplify the user experience, the XIG interface allows you to add a second, third, or more additional XIGs to the browser interface. Devices can be grouped in Unified view, where devices seen by all gateways are on a single list, sorted by secure network; or in Physical view, sorted by both XIG and secure network, in a list that can scroll indefinitely in a single browser window.

DEVICE REAL-TIME DATA MONITORING

XIG monitors devices within its radio range as well as more distant devices communicating through a Xicato Xmesh network, tracking real-time data and enabling access to historical data stored in Xmesh devices.

Real-time data monitoring of lighting nodes includes:

- Unique Device ID
- Device Name
- Device Model
- Lighting Intensity
- LED Temperature (˚C)
- Power Consumption (W)
- Module Supply Voltage (V)
- Total Operating Hours
- Received Signal Strength Indication (RSSI)
- Device Status
- Total power consumption of viewed devices

Temperature monitoring allows users to proactively maintain modules that have been incorrectly installed or operate in hostile ambient temperature environments. Supply voltage monitoring allows users to detect when a power supply is mismatched, or when it is nearing end of life. Operating hour monitoring allows users to anticipate when LED modules are nearing the end of their initial warranty period (50,000 hours).

Users can set refresh intervals for how frequently the data is updated, and can switch between secure networks in the XIG's Xmesh domain.

DETAILED DEVICE DATA RETRIEVAL

XIG can also retrieve data stored in devices in non-volatile memory, including:

- Hardware version
- Base Firmware revision
- Xmesh Firmware revision
- Xmesh address
- Module color temperature
- Module CRI
- Module maximum luminous flux
- Programmed flux
- Power on/off cycles
- LED commanded on/off cycles
- PCB temperature

SENSOR DATA MONITORING

Users can monitor data coming from Xmesh sensors, including both device health data and sensed environmental conditions such as occupancy (motion), temperature, relative humidity, current lux level, and total lux-hours since last reset. Administrators can see and change the network membership of each sensor, and can see and update device firmware revision.

CONTROL FEATURES

INDIVIDUAL LIGHT CONTROL

XIG allows a remote user to control individual lighting nodes within the XIG's Xmesh domain. Commands can include:

- Simple on/off,
- Fixed dim level
- Scene commands

Users can also set fade time – how quickly the device or device group achieves the requested dim level.

LIGHTING GROUP CONTROL

Users can manually control entire lighting groups, including on/off/dim and scenes.

GROUP CONFIGURATION

Each secure Xmesh network can be configured with up to 16,383 groups. Users can configure (add or delete) the group membership of individual nodes remotely through the XIG. Each node can be a member of up to 16 groups, and stores the group numbers internally. Group numbers become, in effect, another shared name for the node in addition to its unique node ID.

SCENE CONFIGURATION

XIG allows users to configure individual nodes and groups with their scenes and scene behaviors. Each secure Xmesh network can be configured with up to 64,535 scenes. Users can configure up to 32 scenes in each node. Each scene has a scene number, an optional scene name, a target intensity level (0-100%), a fade rate (time in seconds it takes to achieve the target intensity from its current intensity level), and a delay time (the time it waits before beginning its fade).

SENSOR RESPONSE CONFIGURATION

XIG allows users to configure lighting responses to sensors, switches, and other control commands using the XIG API. Occupancy and lux sensors such as the Xicato Intelligent Sensor (XIS), Xmesh switch messages and commands, mobile device commands, and even designated lighting node messages can all determine individual lighting behavior, and that behavior can change depending on time-of-day and day-of-week scheduling.

XIG gives users the power to create the most interesting, the most energy-efficient, and the most user-responsive lighting control in the industry, and gives them the ability to manage it from anywhere in the world.

NETWORK AND DEVICE MANAGEMENT FEATURES

NETWORK TIME DISTRIBUTION

XIG synchronizes its time clock to an NTP timeserver, and can be the single time source for an entire network, sending a periodic network time synchronization signal into the Xmesh network to ensure the coordination of scheduled behavior between Xmesh nodes.

RADIO CONFIGURATION

XIG can set the transmission parameters of lighting, sensor and switch nodes, including transmission power, transmission cadence (frequency), and trigger thresholds (status or event-driven messages).

FIRMWARE UPDATES

Administrators can efficiently update device firmware by distributing firmware loads to XIG for distributed, sequential updates. This saves a great deal of time, especially in large installations with hundreds or thousands of nodes, by allowing updates to occur in parallel in multiple locations. And the performance of the XIG is superior to USB dongles attached to macOS or Windows computers.

GATEWAY ADMINISTRATION AND MANAGEMENT FEATURES

With the use of the XIG Administration Panel, users who have the XIG administration password, can:

- Change the XIG login password that allows users to access monitoring and control
- Set XIG time zone
- Distribute XIG Firmware updates over the IP network – update the Xmesh capabilities of the XIG
- Distribute XIG Software updates over the IP network – update feature capabilities of the XIG, bug fixes, etc.
- Program secure network keys into XIG – determine what devices are visible in the Xmesh network
- Configure the XIG Wi-Fi interface
- Change the XIG host name – allows use of a unique name instead of a fixed IP address in DHCP environments, allowing use of Bonjour, Zeroconf, or mDNS for device discovery in the LAN
- Get the XIG's IP configuration information
- Set the XIG's fixed IP address
- Reboot the XIG system (shut down and restart the XIG operating system)
- See detailed status information on the XIG (total uptime, etc.)
- Kill the XIG Apache server process
- Collect logs from the XIG for diagnosis and debugging

MECHANICAL SPECIFICATIONS

Module Housing	ABS Plastic (Acrylonitrile butadiene styrene)
Dimensions	101.6 x 101.6 x 30.48 mm (4.0 x 4.0 x 1.2 in)
Weight	178 grams (6.3 oz.)
Shipping weight	310 grams (10.9 oz.)
Operating Temperature	0 to 40°C
Storage Temperature	-20°C to +55°C
Relative Humidity	15% to 85% non-condensing

ELECTRICAL SPECIFICATIONS

Power Supply (PoE)	44Vdc to 56Vdc, 802.3af compliant PoE-PD (Power over Ethernet Powered Device)
Power Supply (DC Adapter)	48Vdc, 5.5mm O.D., 2.1mm I.D., Positive Tip
Power Consumption	2W to 8W depending on WiFi activation and HTTP parameters
Processor	Quad-Core ARM A72, 64-bit, 1.5 GHz
Memory	4 GB LPDDR4 RAM
Wired I/O Interface	Gigabit Ethernet (10/100/1000, RJ-45)
Wired data rate (max)	1 Gbps
Xmesh I/O	2.4 GHz Wireless
Wireless LAN (WiFI)	2.4 GHz and 5.0 GHz 802.11b/g/n/ac

Xmesh WIRELESS SPECIFICATIONS

Spectral band	2.4 GHz
Bandwidth	1 Mbps
Channels	40
Transmission Power	+0 dBm to +8dBm
Receive Sensitivity	-95 dBm
RSSI Resolution	1 dB resolution

ENVIRONMENTAL SAFETY

RoHS Compliance: XIG-2 was tested to the following standards and found to be compliant with the RoHS Directive 2011/65/EU

- IEC62321-3-1:2013, IEC 62321-4:2013,+AMD1:2017 CSV, IEC 62321-5:2013,
- IEC62321-7-1:2015, IEC62321-7-2:2017, IEC62321-6:2015, IEC62321-8:2017

REACH Compliance: XIG-2 was tested for the 247 Substances of Very High Concern (SVHC) and 4 potential Substances that have been listed on ECHA's website (https://echa.Europa.eu/candidate-list-table).

- The substances were found to be not detectable (ND) and, therefore, below the 0.1% weight by weight (w/w) limit.

REGULATORY CERTIFICATIONS

XIG-2 was test to the following standards and found to be compliant

- **Health and Safety:** IEC62368-1:2018, EN IEC 62368-1:2020+A11:2020, BS EN IEC 62368-1:2020+A11:2020, EN IEC 62311:2020, EN 50665:2017
- **Electromagnetic Compatibility:** EN55032:2015+A1:2020, EN 55035:2017+A11:2020, ETSI EN 301 489-1 V2.2.3 (2019-11), ETSI EN 301 489-3 V2.3.2 (2023-01), ETSI EN 301 489-17 V3.2.4 (2020-09)
- **Effective Use of Radio Spectrum:** ETSI EN 300 328 V2.2.2 (2019-07), ETSI EN 301 893 V2.1.1 (2017-05), ETSI EN 300 440 V2.2.1 (2018-07)
- **FCC:** FCC Part 15 Subpart B: 2023

WIRELESS COMPLIANCE

FCC Notice: 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.

Note: 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 or more 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 radio/TV technician for help.

Note: The Grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. such modifications could void the user's authority to operate the equipment.

The device has been evaluated to meet general RF exposure requirement.

To maintain compliance with FCC's RF exposure guidelines, the distance must be at least 20 cm between the radiator and your body, and fully supported by the operating and installation

ISED Notice: This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

(1)This device may not cause interference.

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

Cet appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux normes CNR exemptes de licence d'Innovation, Sciences et Développement économique Canada. Son fonctionnement est assujetti aux deux conditions suivantes :

(1)Cet appareil ne doit pas causer d'interférences.

(2)Cet appareil doit accepter toute interférence, y compris celles qui peuvent entraîner un fonctionnement indésirable de l'appareil.

The device has been evaluated to meet general RF exposure requirement. To maintain compliance with RSS-102 -Radio Frequency (RF) Exposure guidelines, this equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

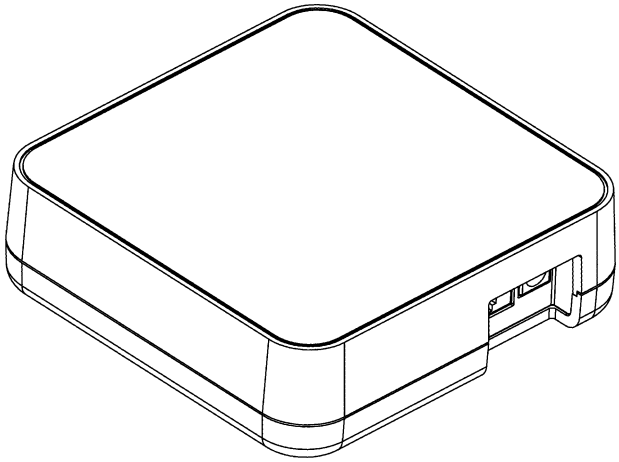
le dispositif de a été évalué à répondre général rf exposition exigence.pour maintenir la conformité avec les directives d'exposition du RSS-102-Radio Fréquence (RF). ce matériel doit être installé et exploité à une distance minimale de 20 cm entre le radiateur et votre corps.

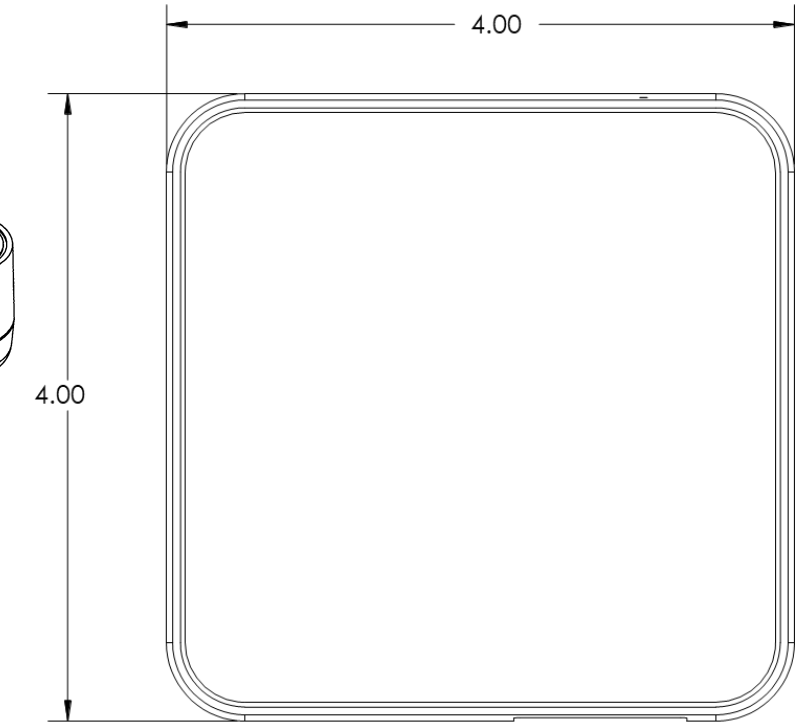
CE RED: Declaration of Conformity: Hereby, Xicato declares that the XIG-2 series complies with the essential requirements and other relevant provisions of RED 2014/53/EU.

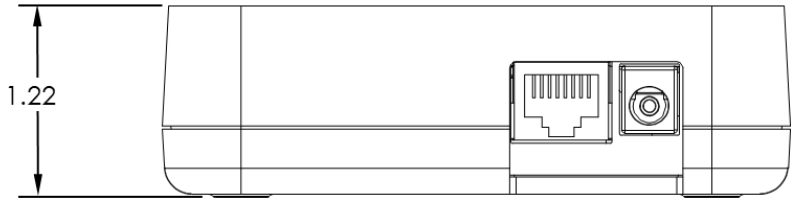
ORDERING GUIDE

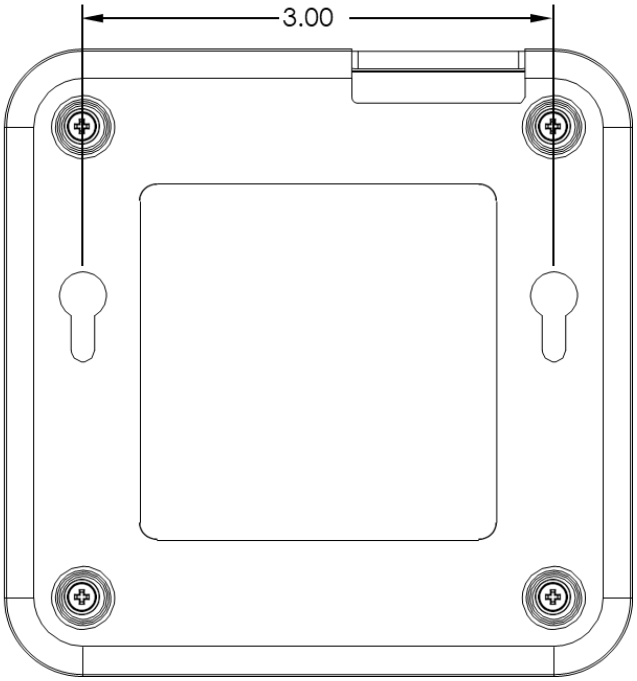
Part Number	Description
XIG-2P-BK	Xmesh IP Gateway, PoE or 48Vdc, Black housing
XIG-2P-WHT	Xmesh IP Gateway, PoE or 48Vdc, White housing
XSA-241	Microsemi PD-3501G PoE injector (required IEC320 C13 power cord not included)

MECHANICAL DRAWINGS









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