

Windrock SPL-EDGE Spotlight Edge Gateway User Manual

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User Manual
SPL-EDGE-AB-C-D-XXX Gateway



Note: XXX encodes a number of options that have no bearing on certification and can be of indeterminate length

Gateway

Doc No. SPL-EDGE Gateway_UM Rev 1.1

Date: July 23, 2021

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Important Safety Notices

When used in accordance with the instructions in this manual and the associated control drawings, Windrock Gateway is approved for use in Class 1 Division 2 and unclassified areas. Failure to follow this manual may result

in an explosion hazard when used in hazardous locations or improper operation.

The examples and diagrams in this manual are included for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Windrock Inc. cannot assume responsibility or liability for actual use based upon examples and diagrams.

For any questions, problems, or services for any Windrock products, visit the Windrock website at www.windrock.com. Inquiries may also be directed to windrock.support@apergy.com or 1-865-3301110.

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Compliance Notices

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 device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's license-exempt RSS(s). 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.

Miscellaneous Notices

IMPORTANT: POWER REQUIREMENTS. If voltage and power requirements are not met, system integrity will be compromised. Review power requirements and warnings as laid forth in this document. For additional details, refer to the Gateway Datasheet.

VOID WARRANTY NOTICE. THIS SYSTEM CONTAINS NO USER-SERVICEABLE COMPONENTS. ANY ATTEMPT TO MODIFY A GATEWAY SYSTEM, USE FOR OTHER THAN ITS INTENDED PURPOSE, OR SUBSTITUTION OF COMPONENTS MAY DAMAGE THE SYSTEM LEADING TO UNRELIABLE OPERATION AND DECREASED PROTECTION FOR THE DEVICE BEING MONITORED. MODIFICATION OF ANY COMPONENT OF THE GATEWAY SYSTEM WILL INVALIDATE THE HAZLOC CERTIFICATION AND VOID THE WARRANTY.

PRESSURE WASH WARNING. The use of harsh cleaning chemicals, solvents, and degreasers may impair the functionality of the system. When pressure washing, be cautious about the length of time and intensity of spray-on all parts of the system, including sensors and cabling. If parts of a Gateway system were removed to perform cleaning and/or maintenance, contact Windrock Product Support at 865-330-1100 and ask for Gateway Installation Support to verify operation.

Revision History

Revision 1.0: 4/20/2020, Blake Atkins

Revision 1.1: 7/23/2021, Blake Atkins

Added Revision History and Compliance Notices

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Product Description

Gateway

THE SPL-EDGE-AB-C-D-XXX GATEWAY CONTAINS NO USER-SERVICEABLE COMPONENTS. ANY ATTEMPT TO MODIFY THIS DEVICE, USE FOR OTHER THAN ITS INTENDED PURPOSE, OR SUBSTITUTION OF COMPONENTS MAY DAMAGE THIS DEVICE LEADING TO UNRELIABLE OPERATION AND DECREASED PROTECTION FOR THE DEVICE BEING MONITORED.



Figure 1.1: SPL-EDGE-AB-C-D-XXX

Connections

The Gateway utilizes a single-piece antenna that has the capability of WiFi/BT, LTE and GPS communication. For the details on antenna cable assembly, see section 2. In addition, the gateway provides M.2 slots for feature extensibility which can include other optional wireless communications.

For models with cellular service, a universal SIM card has been installed in the gateway. The SIM card has been pre-configured with the ability to communicate with cellular providers in the intended country of use.

The Gateway is produced in several models to accommodate the needs of different customers, based on the country in which the gateway will be used and also on other customer requirements. Some models are configured to upload data via a cellular network with the possibility to use an Ethernet-based local network connection instead. Other models are restricted to an Ethernet connection and do not have cellular service configured at all.

4G LTE Antenna – The Gateway board has two SMA female connectors to connect the 4G LTE antennas. (See section 2.1 for the location of SMA jacks on PCB).

WiFi Antenna – The Gateway board has one SMA female jack which is used to connect WiFi/BT antenna. (See section 2.1 for the location of WiFi/BT SMA jack)

GPS Antenna – The Gateway board has one SMA female jack which is used to connect GPS antenna. (See section 2.1 for the location of GPS SMA jack)

USB – The Gateway board has the provision of 1 USB port. (See section 2.1 for the location of the USB port.)



Power Input – Power is applied via the integral power cable. NOTE: EQUIPMENT SHALL BE POWERED BY AN APPROVED SELV LPS POWER SOURCE. Refer to Gateway Datasheet for details.



WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS

BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

The gateway enclosure comes with the option to connect to a local Ethernet. For models not intended for use with a cellular network, this Ethernet connection must be connected to a local network. For models intended for use with a cellular network, it is possible to configure this Ethernet connection to be used as the primary uplink and the cellular network as a backup. The Ethernet cable is not part of the standard accessories provided by Windrock. Contact Windrock and ask for Gateway Installation Support to arrange such a connection.

Indicators

There are various LED indicators located on the Gateway PCB inside the Metal Enclosure, refer to Table 1-2 to understand its functions and figure 1-2 for their locations.

LED	State	Green	Function	LED 'ON' Status
1	ON	Green ●	3.3V supply Indication	OK and with limits
2	ON	Green ●	5V Isolated supply Indication	OK and with limits
3	ON	Green ●	3.3V Isolated supply Indication	OK and with limits
4	ON	Green ●	6.5V supply Indication	OK and with limits
5	ON	Green ●	5V supply Indication	OK and with limits
6	ON	Red ●	3.8V supply Indication	OK and with limits
7	ON	Yellow ●	Input supply fault indication	Faulted and outside limits
8	On transmission	Green ●	Network status light	Network Communication Active
9	ON	Green ●	Device status light	Gateway Active
10	ON	Green ●	Debug UART Tx and Rx	Upper LED – Gateway transmitting Lower LED – Gateway receiving
11	ON	Green ●	1.8V supply Indication	OK and with limits

Table 1 – 2. Status Indication

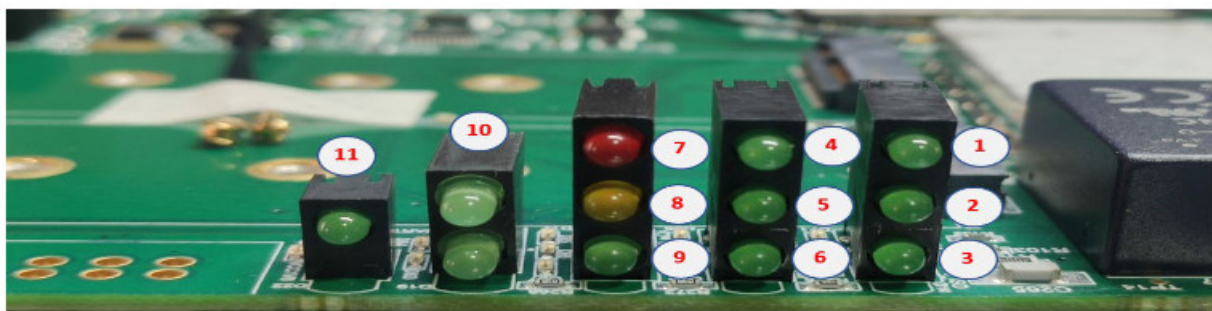


Figure 1-2 –LED Locations

Operations

Once installed and initial operation has been verified, long-term user interaction with the Gateway is not required. When applying initial power to the Gateway, the installer should verify proper operation by calling Windrock and asking for Gateway Installation Support.

WARNING: If the SPL-EDGE-AB-C-D-XXX Gateway is not operating properly, then the unit must be returned to Windrock for repair service. Contact your sales representative or Windrock directly at windrock.support@apergy.com or 1-865-330-1110.

Accessory Descriptions

General

Gateway systems have ONLY been approved for using the accessories listed in the following section.

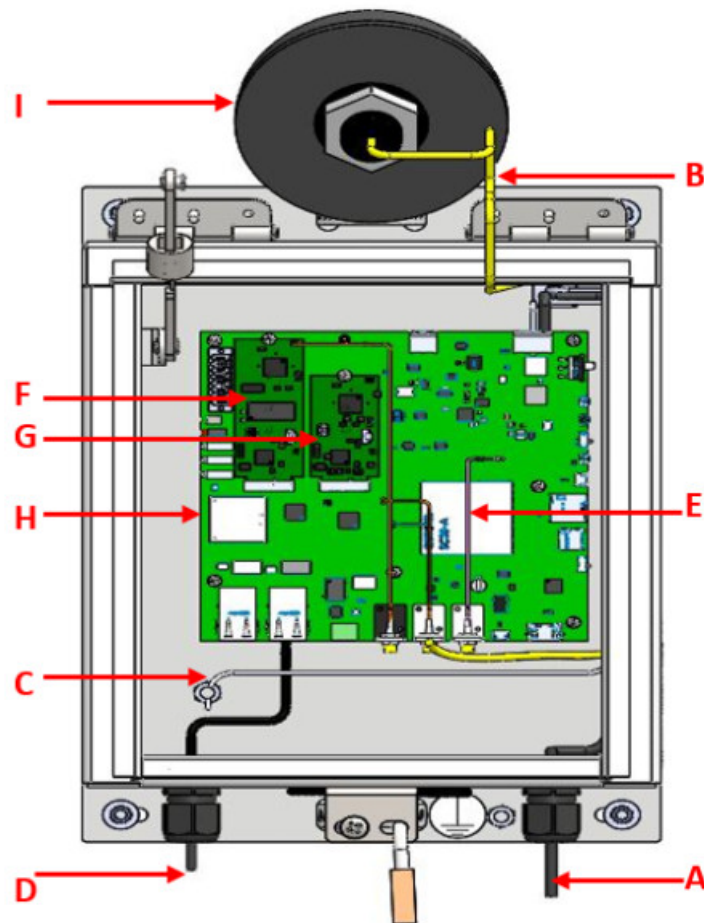


Figure 2-1 – Gateway Parts

NOTE: THE SAFETY OF ANY SYSTEM INCORPORATING THE EQUIPMENT IS THE RESPONSIBILITY OF THE INSTALLER OF THE SYSTEM.

IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.

Letter	Part
A	Main power cable
B	Antenna cable
C	Internal grounding cable
D	External ethernet cable
E	SMA connector cables
F	M.2 DUST board
G	M.2 HART board or M.2 Bluetooth board
H	PCB board
I	Antenna

Table 2-1, Gateway Part Connections

Label	Port
1	Main Antenna (LTE)
2	WiFi/BT antenna
3	Diversity Antenna (LTE)
4	GPS Antenna
5	M.2 Antenna
Eth1	External Ethernet connection
Eth2	External Ethernet connection
USB	External USB connection
Power Input	External Power Cable

Table 2-2, Gateway Port Connections

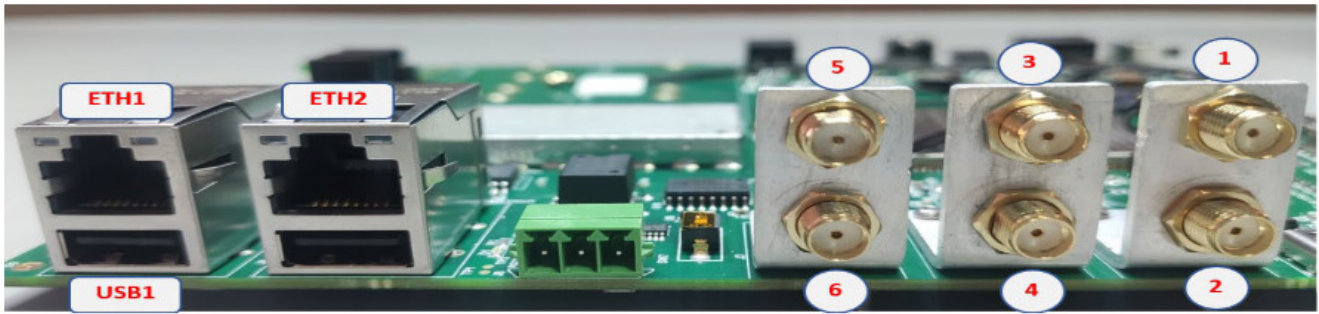


Figure 2-2, Gateway Port Connections 1

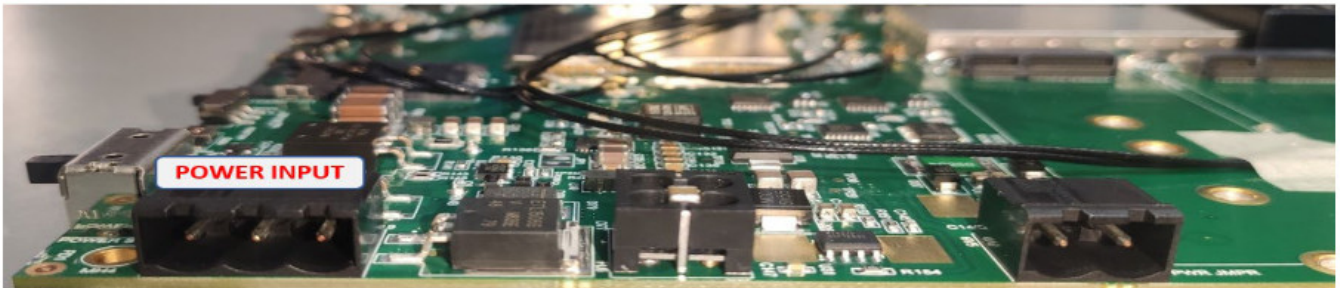


Figure 2-3, Gateway Port Connections 2

Gateway Antennae

The Cellular models of the Gateway use a single-piece antenna that has the capability of WiFi/BT, LTE, and GPS as shown in Figure 2-1. It contains Omni-directional antennae and the radiation patterns are stable across all major cellular (2G/3G/4G) bands. The individual antennae connect by using SMA (M) connectors.

Functional descriptions

The Gateway is a 24Vdc powered device that collects data either wirelessly or wired (using IEEE 802.3 standard) from field devices. Some of the wireless protocols are on separate M.2 cards that need to be connected to the gateway in order to be used. Once data is collected, the gateway organizes and processes the data. It then transmits the information to a cloud computing service. The gateway may transmit in two ways, the first way is through commercial cellular networks. The second way is using wired IEEE 802.3.

Product Maintenance

The Windrock Gateway contains no user-serviceable parts and requires no routine maintenance. Repair and support are provided by Windrock Inc. only. Firmware and software updates are available periodically. The Gateway automatically installs updates as needed. The use of cleaning chemicals is not recommended. Dust and dirt may be removed with a soft cloth.

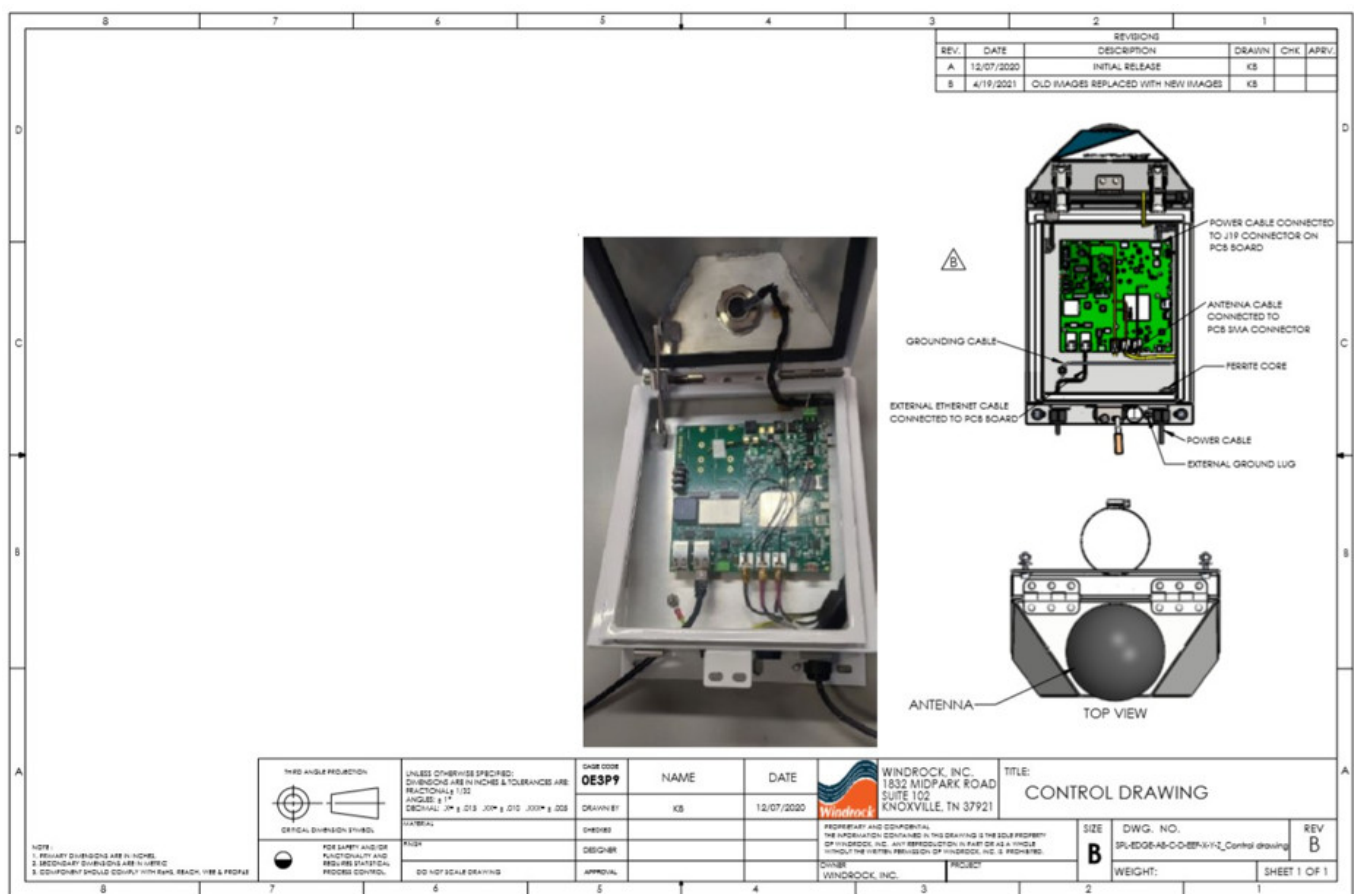
PRESSURE WASH WARNING. The use of harsh cleaning chemicals, solvents, and degreasers may impair the functionality of the system. When pressure washing, be cautious on length of time and intensity of spray on all parts of the system, including sensors and cabling. If parts of a Gateway system were removed to perform cleaning and/or maintenance, contact Windrock Product Support at 865-330-1100 and ask for Gateway Installation Support to verify operation.

Appendix.

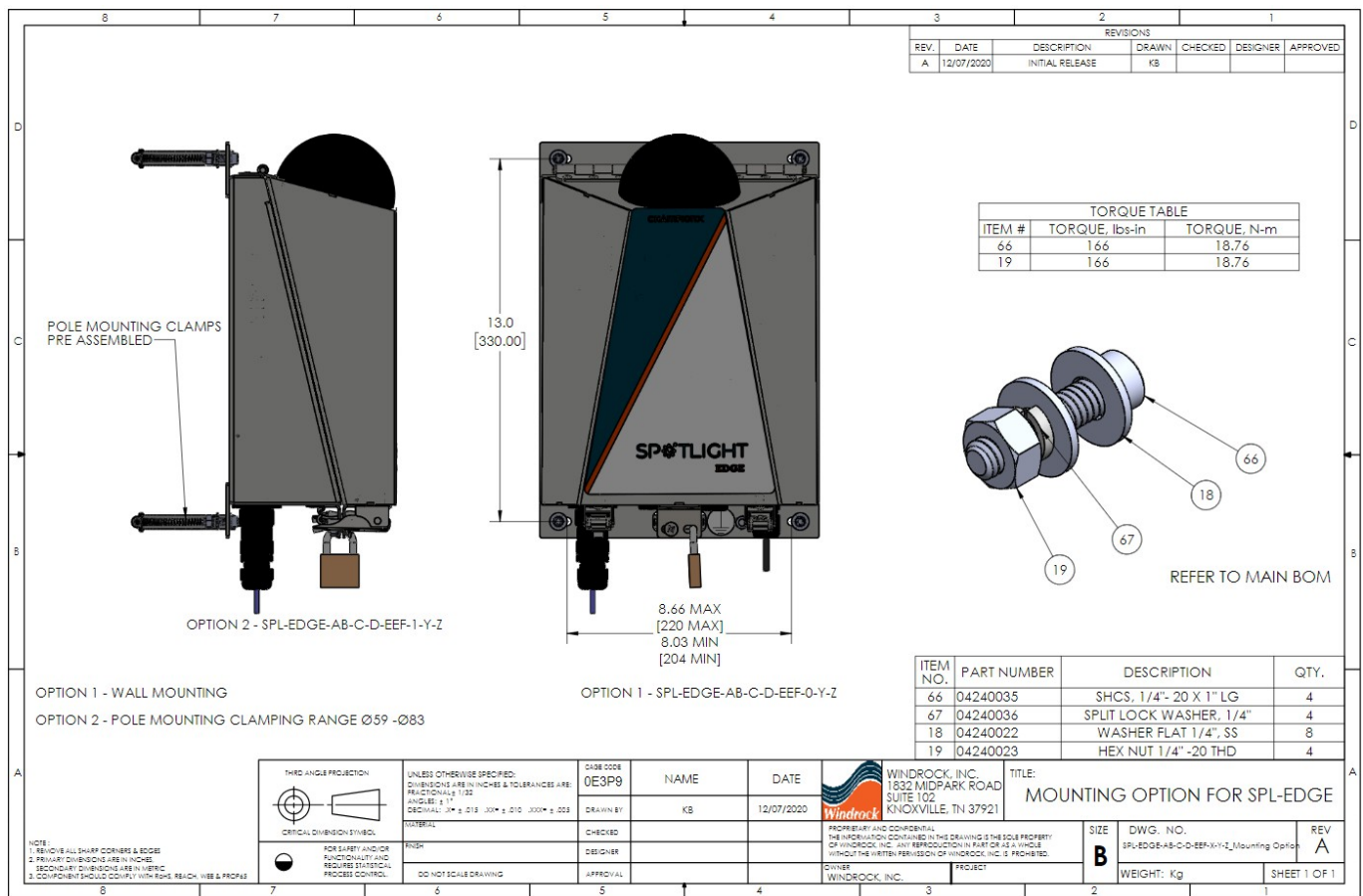
Gateway Control Drawing

NOTES:


1. WARNING – EXPLOSION HAZARD- DO NOT CONNECT OR DISCONNECT THE DC POWER CONNECTION UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS. AVERTISSEMENT – RISQUE D'EXPLOSION – NE BRANCHEZ PAS ET NE DEBRANCHEZ PAS LA PUISSANCE AVANT QUE LA ZONE SOIT CONNUE POUR ETRE LIBRE DE CONCENTRATIONS IGNITABLES.
2. DO NOT modify/replace/repair any parts on PC board. (All repairs/modifications of board components must be performed by Windrock personnel.
3. DO NOT attempt repair/modification of this unit. (All repairs/modifications of unit must be performed by Windrock personnel.)
4. Refer to user manual for cable selection recommendation.
5. Suitable for use in Class I, Division 2, Groups A, B, C, D, T4, hazardous locations.
6. The normal operating ambient temperature range is -40 to 60° C. 7. Connections Power input is known to be incendive field wiring connections.



Gateway Mounting Options



Documents / Resources

<p>User Manual SPL-EDGE-AB-C-D-EEF-1-Y-Z Gateway</p>  	<p>Windrock SPL-EDGE Spotlight Edge Gateway [pdf] User Manual</p> <p>SPL-EDGE, SPLEDGE, VYK-SPL-EDGE, VYKSPLEDGE, SPL-EDGE Spotlight Edge Gateway, Spotlight Edge Gateway</p>
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