

Specifications

Customer's Part Number:	M3K-GTW
MOONS' Part Number:	4696355000170
Model:	MSPG126173
P/N:	A8625

CUSTOMER'S APPROVAL STAMP

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Please sign back after your approval. The specifications will come into force when we receive purchase order.

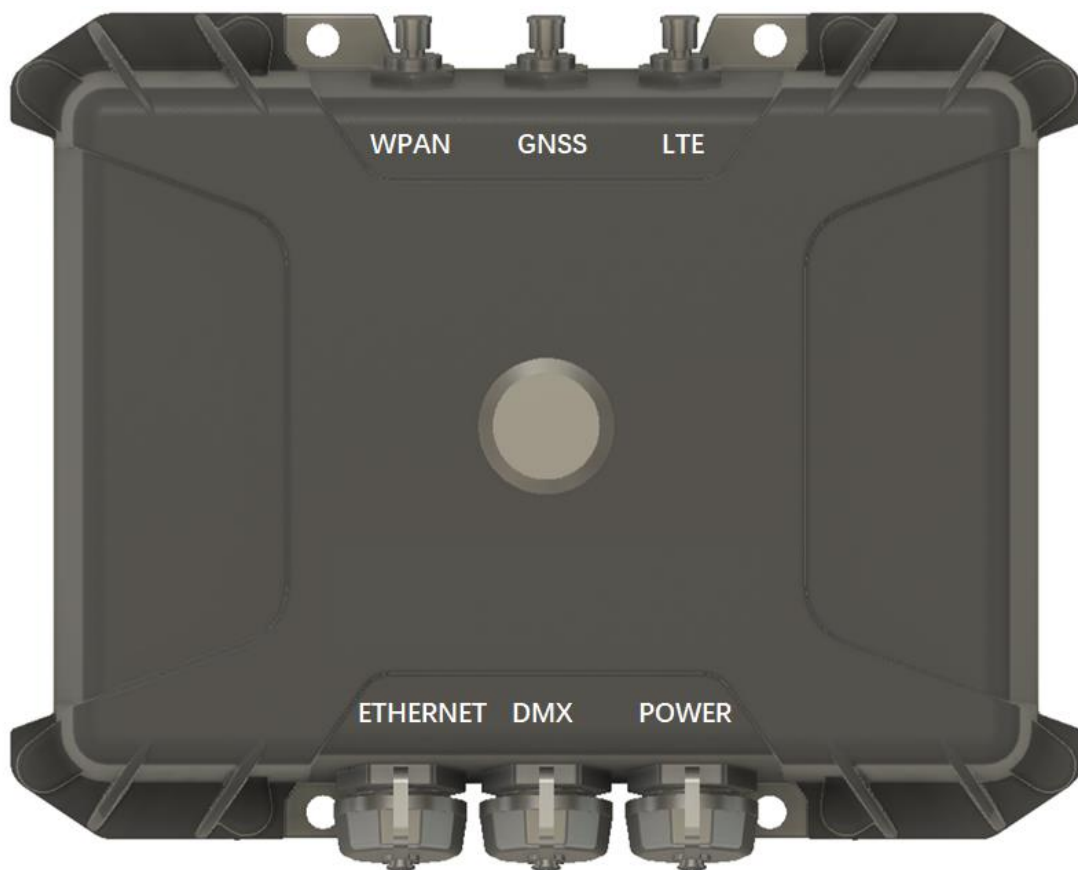
DWG.	CHK.	STANDARD	APPD.

History Version

Rev.	Date	Contents	ECO No.	DWG.	CHK.	APPR.
A0	2025-01-08	The first version		Jiabin.gu	Wanghui.yan	Yiping.lai

1 DESCRIPTIONS

This device is used for data transmission between the server and the node controllers. Data interconnection with the server can be done using Ethernet, or cellular networks. Data interconnection with the Node Controllers use WPAN (915MHz). Bluetooth can be used for the configuration of this device or field commissioning.



1.1 FEATURES

- Gateway input voltage: USB-TYPEC 9V, 12V, 20VDC.
- A 20W USB PD adapter is included
- Operating temperature: -40 to +60°C.
- Power consumption <10W.
- Transfer data between control center and nodes.
- An Ethernet interface for uplink data.
- A cellular RF module for data uplink.
- An accord IEEE802.15.4-915 MHz standard wireless module for data downlink.
- Built-in Bluetooth module for configuration.
- Embedded communication encryption mechanism.
- Protection class: IP66.
- Meet UL, CE, SAA certification.
- Certified by FCC.
- The cellular module support carrier bands around the world.
- The MINI-SIM card (2FF) has been installed internally. Prepaid 5-year data charges cover multiple carriers worldwide.
- Warranty: 5 years standard.

2 CHARACTERISTICS

2.1 ABSOLUTE MAXIMUM RATINGS

At 20 °C, 50% RH, 100Kpa conditions.

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input DC Voltage		8	/	27	Vdc

2.2 OPERATING CONDITIONS

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operating temperature	Gateway	-40	/	+60	°C
	Adapter	0	/	+40	°C
Storage temperature	Indoor dry, well-ventilated place	-30	/	+70	°C
Relative humidity	No frost	10	/	90	%
Vibration		/	/	1	G
Packaging Impact	Drop	/	1	/	M
Warranty	Gateway	/	5	/	Years
Ingress protection	Gateway	IP66			

2.3 EMC

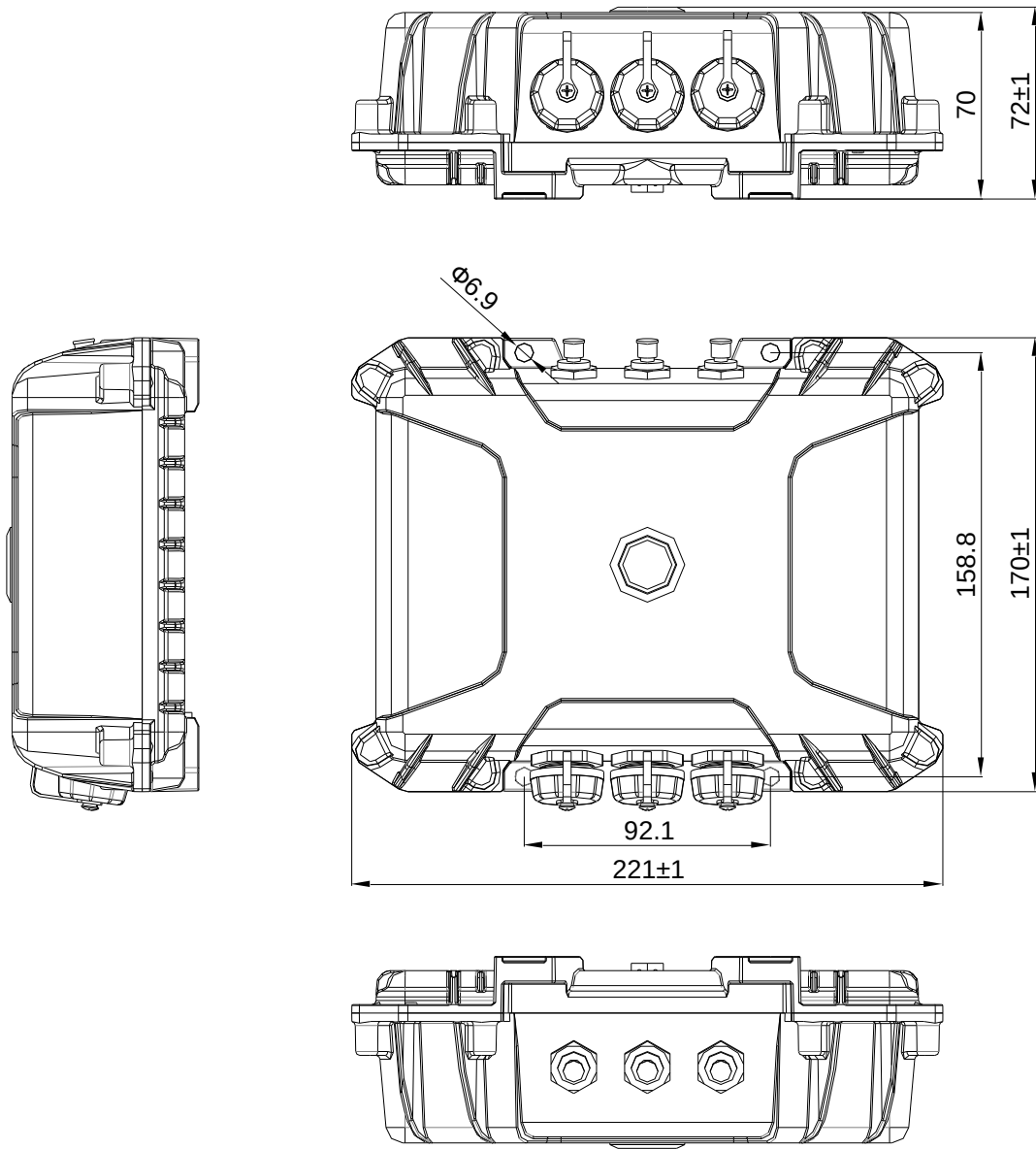
TYPE	Standard	Test level
Electrostatic discharge immunity	IEC61000-4-2	Level 2
RFEMS	IEC61000-4-3	Level 2
Electrical fast transient burst immunity	IEC61000-4-4	Level 3
Surge Immunity	IEC61000-4-5	Level 2
Conducted disturbances induced by RF field immunity	IEC61000-4-6	Level 2
Electromagnetic disturbance characteristics	EN62368, EN62311, EN301489, EN300220, EN300440	

2.4 CERTIFICATION

TYPE	Standard
Safety certification (For AC adapter)	North America: UL62368; Europe: EN62368; Australia: AS/NZS 62368
Electromagnetic interference characteristics certification	North America: FCC 15.247 (915M WPAN) FCC 15C (BLUETOOTH) FCC Title 47 CFR Part 22H, Part 24E, Part 27 and Part 90 (4G CAT1) FCC 15 Class B (For AC adapter) Europe: EN 301908; EN 301489 (4G CAT1) EN 300220 (915M WPAN) EN 300440 (BLUETOOTH) Australia: AS/NZS 301908; AS/NZS 301489 (4G CAT1) AS/NZS 300220 (915M WPAN) AS/NZS 300440 (BLUETOOTH)

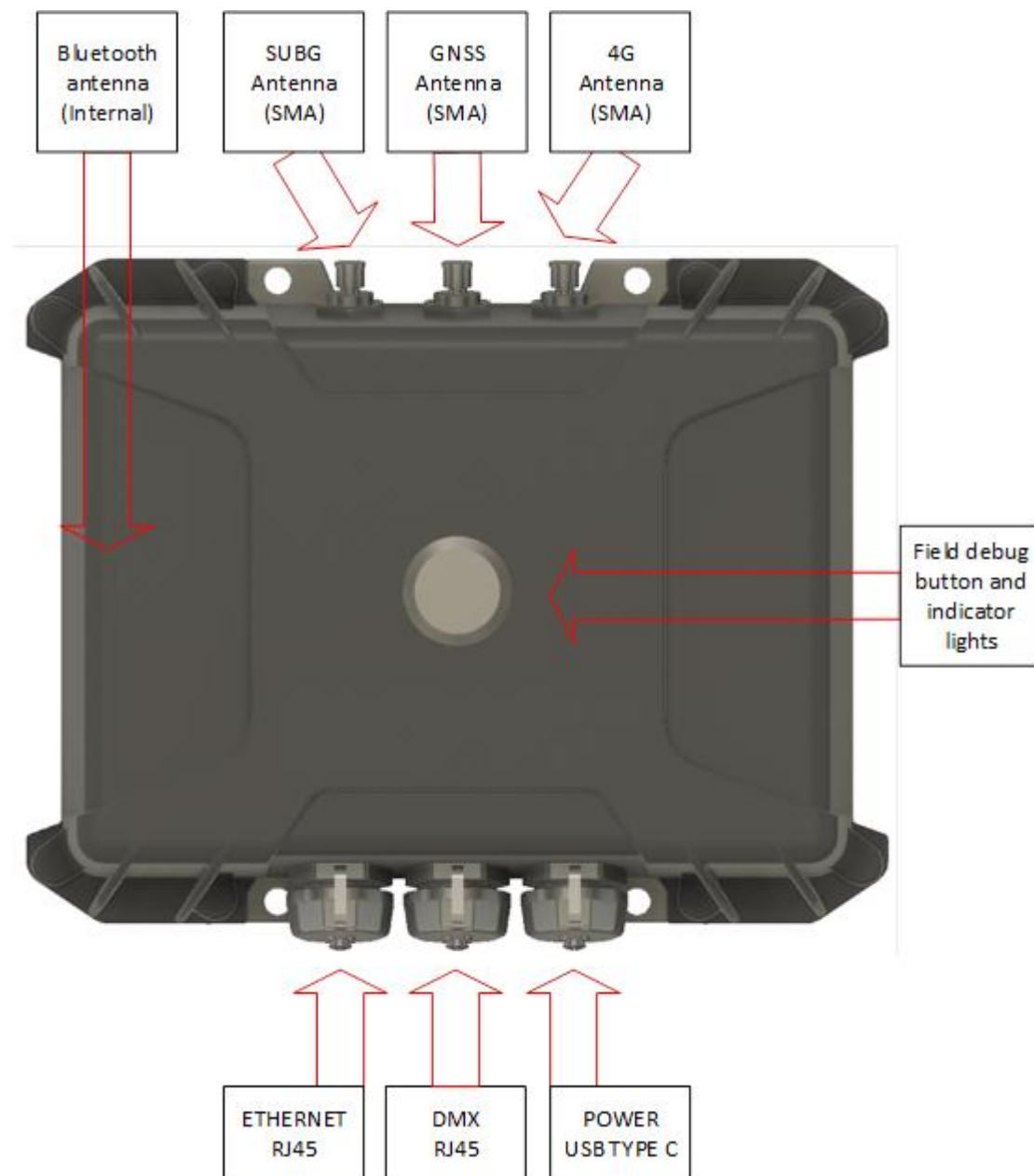
3 MECHANICAL DATA

3.1 DIMENSIONS



Gateway

4 INTERFACE



4.1 POWER SUPPLY

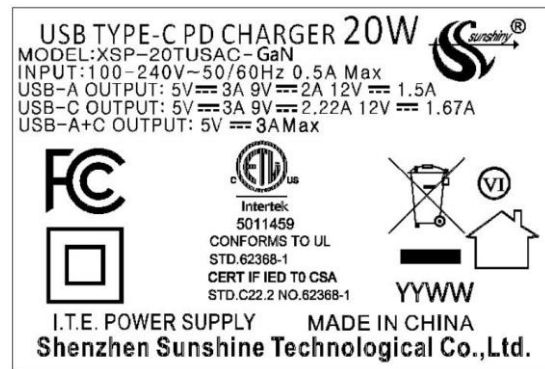
- Gateway Voltage input: 9V, 12V, 20V
- Use IP67 waterproof connector
- Power supply interface: USB-TYPE-C
- A 20W USB PD XSP-20TUSAC-GaN power adapter is included in the package
- The power adapter supports Quick Charge 3.0+/3.0/2.0 protocol



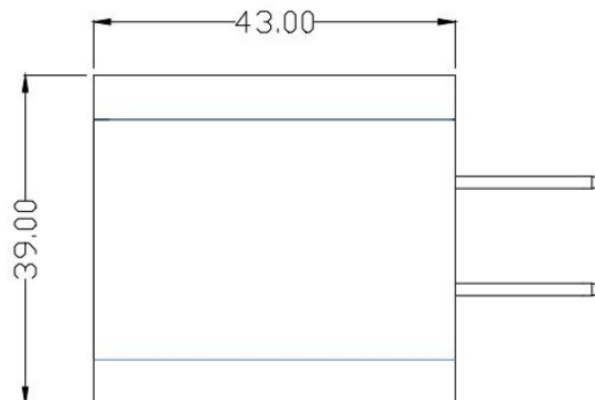
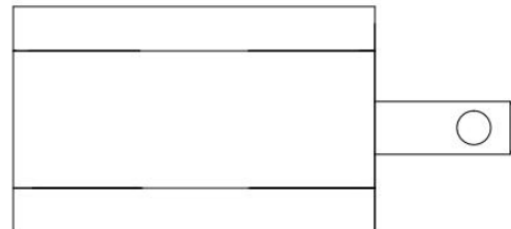
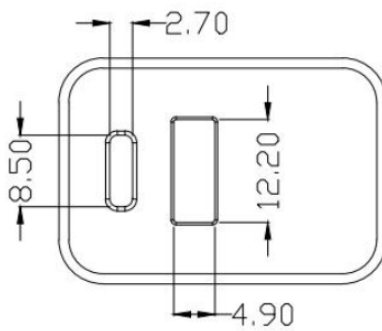
USB Type C socket on the housing

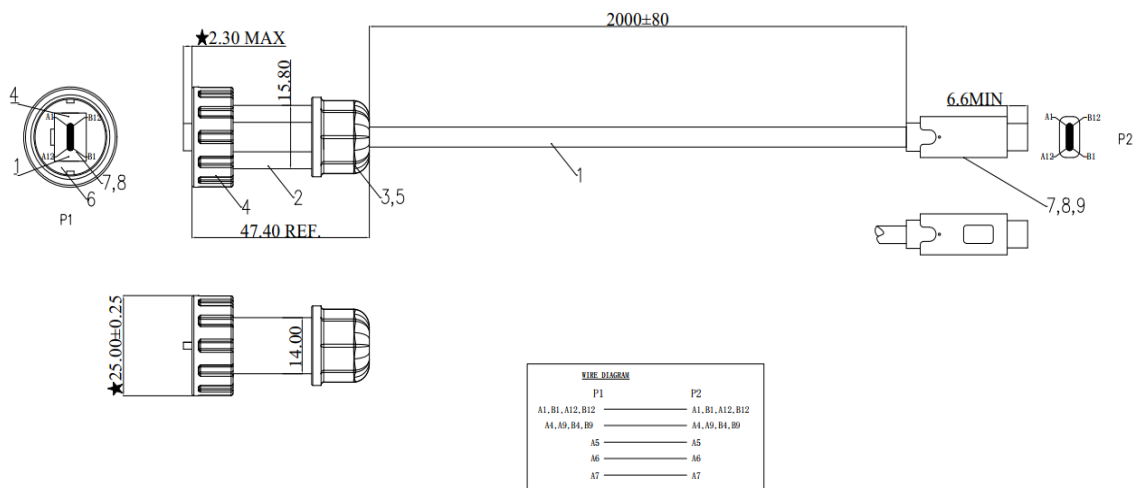


USB Type C plug



USB PD Adapter





Cable for USB PD

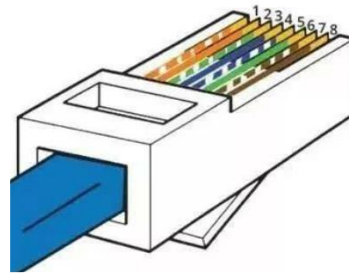
PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Adapter input Voltage	AC (50/60Hz)	100	/	240	VAC
Adapter output power	DC	15	/	20	W
Adapter output current	@5V	/	/	3	A
	@9V	/	/	2.22	A
	@12V	/	/	1.67	A
Gateway input voltage	DC	8.8	12	22	VDC
Gateway input current	RMS 12V	100	/	1000	mA
Gateway Power Dissipation	12V	0.25	2.5	10	W

4.2 LAN

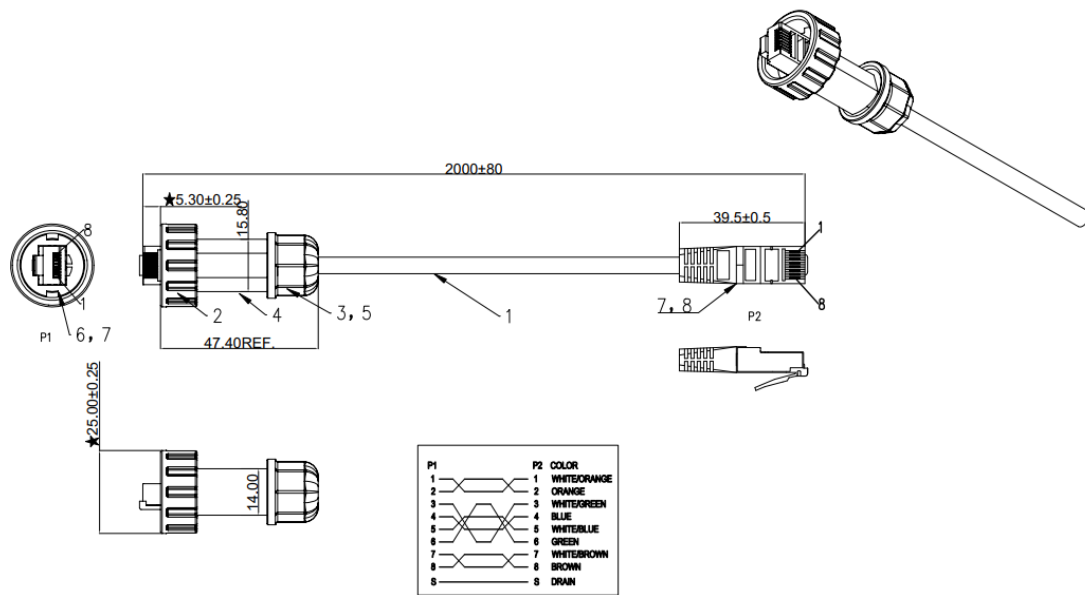
- RJ45 (8pin)
- Meet TCP / IP protocol
- 100M/10M adaptive
- Use IP67 waterproof connector
- The console can be connected via Ethernet to receive data.



RJ45 socket on the housing



RJ45 plug



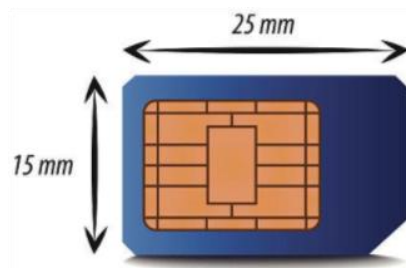
Ethernet RJ45 cable

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Transmission rate		10	/	100	Mbps
Transmission voltage	100Mbps	-1.05	/	+1.05	V
Transmission voltage	10Mbps	-2.8	/	+2.8	V

4.3 Cellular Network

- Support LTE 4G FDD Cat.1
- Built-in 4G antenna is used by default; SMA external 4G antenna can be used upon customer request.
- Bluetooth can be used to configure internal and external antenna access.
- Built-in MINI-SIM card slot,

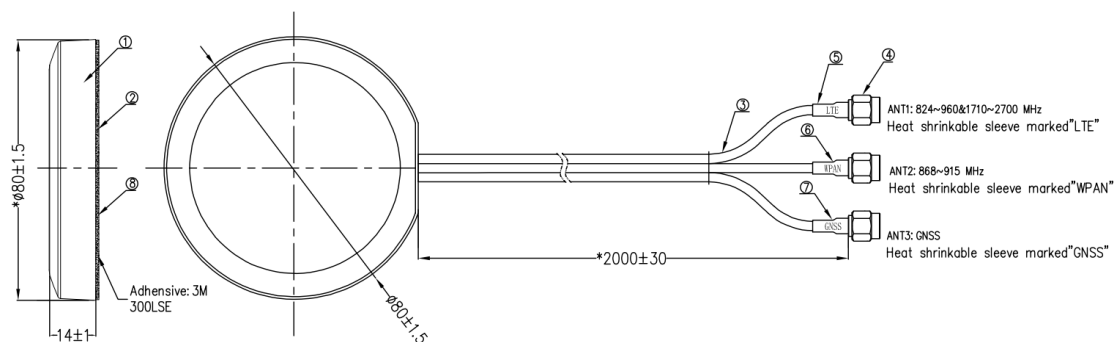
- Uplink up to 5 Mbps; Downlink up to 10 Mbps
- FCC (North America), CE (Europe)
- Output power: Class 3 (0.2 W, 23 dBm) @ LTE
- 4G FDD bands: B1,2,3,4,5,7,8,9,12,13,14,18,19,20,25,26,28
- The cellular module support carrier bands around the world. Support the network of major operators in Asia, Europe, America, Oceania and North Africa.
- The MINI-SIM card (2FF) has been installed internally. Prepaid 5-year data charges cover multiple carriers worldwide.



MINI-SIM CARD



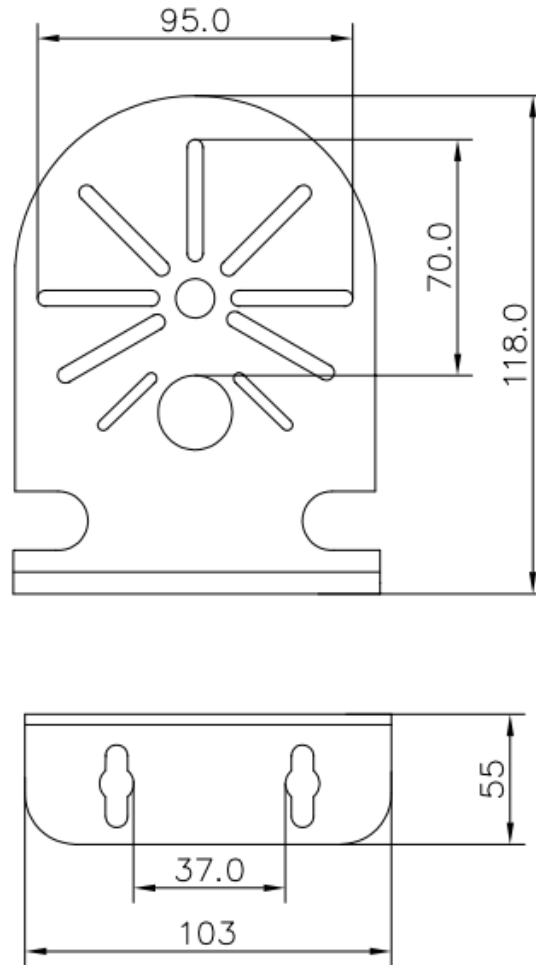
There is 3M double-sided glue on the back of the antenna



3 in 1 Antenna

4GLTE(L)+GNSS(G)+915MHz(E)

Back 3M adhesive and magnet for mounting



Antenna mounting bracket

4.4 GNSS

- Support of GPS, Beidou
- Built-in GNSS antenna is used by default; SMA external GNSS antenna can be used upon customer request.
- Bluetooth can be used to configure internal and external antenna access.
- Active GNSS antenna with external SMA interface,

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Sensitivity	Tracking	-160	/		dBm
Time To First Fix	Cold reset	30	/	/	s
Accuracy	@CEP50	/	/	2	m
Navigation update rate		/	1	/	Hz

4.5 WPAN

- An accord IEEE802.15.4-915 MHz standard wireless module for data downlink
- Self-building network;
- Self-healing network;
- Embedded communication encryption mechanism;
- Built-in SUBG antenna is used by default; SMA external SUBG antenna can be used upon customer request.
- Bluetooth can be used to configure internal and external antenna access.
- Can access SUBG NEMA node controllers.
- Downlink wireless communication through the gateway enables firmware upgrades for Wireless Node Controllers and LED drivers.

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
RF transmission distance	Within visual distance	/	/	500	m
RF band	915MHz	902	/	930	MHz
RF receiver sensitivity		-102	/	/	dBm
RF transmitter power		/	/	19	dBm

4.6 BLUETOOTH

- Bluetooth LE: Bluetooth 5
- Speed: 125 Kbps, 500 Kbps, 1 Mbps, 2 Mbps
- Maximum transmit power: 20dBm
- Minimum receiving sensitivity: -105dBm
- Built-in 2.4GHz Bluetooth antenna.
- Connect the mobile APP through Bluetooth for configuration and on-site debugging.

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
RF transmission distance	Within visual distance	/	/	50	m
RF band		2405	/	2480	MHz

RF receiver sensitivity		-97	/	/	dBm
RF transmitter power		/	/	16	dBm

4.7 WIFI

- Built-in WIFI module for uplink
- IEEE 802.11 b/g/n-compliant
- Center frequency range of operating channel: 2412 ~ 2484 MHz
- Supports 20 MHz, 40 MHz bandwidth in 2.4 GHz band
- Maximum transmit power: 20dBm
- Minimum receiving sensitivity: -98dBm

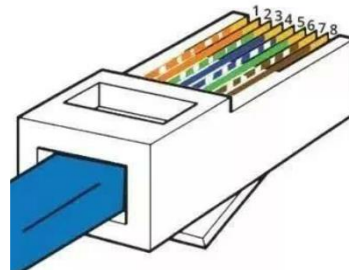
PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
RF transmission distance	Within visual distance	/	/	30	m
RF band		2405	/	2480	MHz
RF receiver sensitivity		-93	/	/	dBm
RF transmitter power		/	/	20	dBm

4.8 DMX INPUT

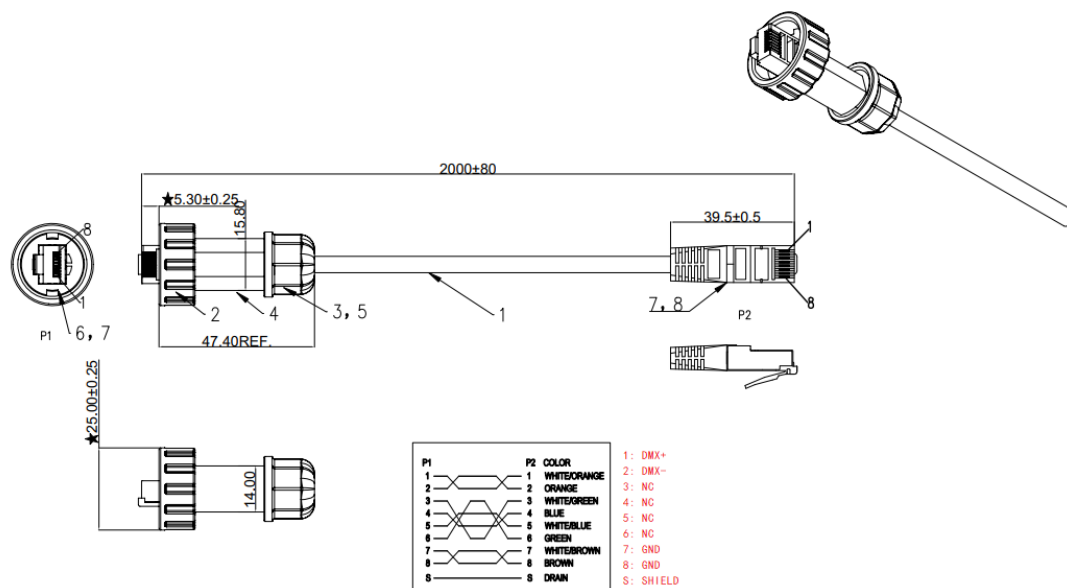
- Receive the control signal from the console and forward it to MCU.
- It conforms to DMX512 standard and can upload data.
- The DMX signal is based on the 3.3V level.
- The interface uses Ethernet cable
- Communication rate: 250kbps.



RJ45 socket on the housing



RJ45 plug



DMX RJ45 cable

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
DMX voltage		-3.3	/	+3.3	V
DMX current	P to N short	/	/	70	mA
DMX Baud rate		/	250	/	Kbps

5 DATA PROCESSING AND STORAGE

5.1 PROCESSOR

- With NXP's ARM cortex-A7 core processor, Clocked at 800MHz

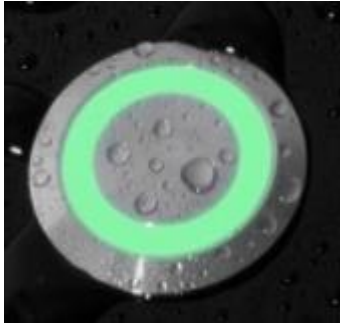
5.2 MEMORY

- DDR RAM 512MB.
- eMMC 8GB.
- Data saved more than 10 years.

5.3 RTC

- RTC can continue to work after a power failure for more than 10 years.

6 BUTTON & INDICATOR LIGHTS



RGB waterproof button

The field debugging button:

After pressing the button, the gateway sends **Preset Scenario1 (The default value is 100% dimming)** instructions to the Wireless Node Controllers in the network. After pressing the button again, the gateway sends **Preset Scenario2 (The default value is 0% dimming)** instructions to the Wireless Node Controllers in the network.

Green indicator light on: Downlink communication OK.

Blue indicator light on: Uplink communication OK.

Azure indicator light on: Uplink & downlink communication OK.

Red indicator light on: Failure of equipment.

White indicator light on: The preset scene command is being sent after the key is pressed

7 FAILURE MODE

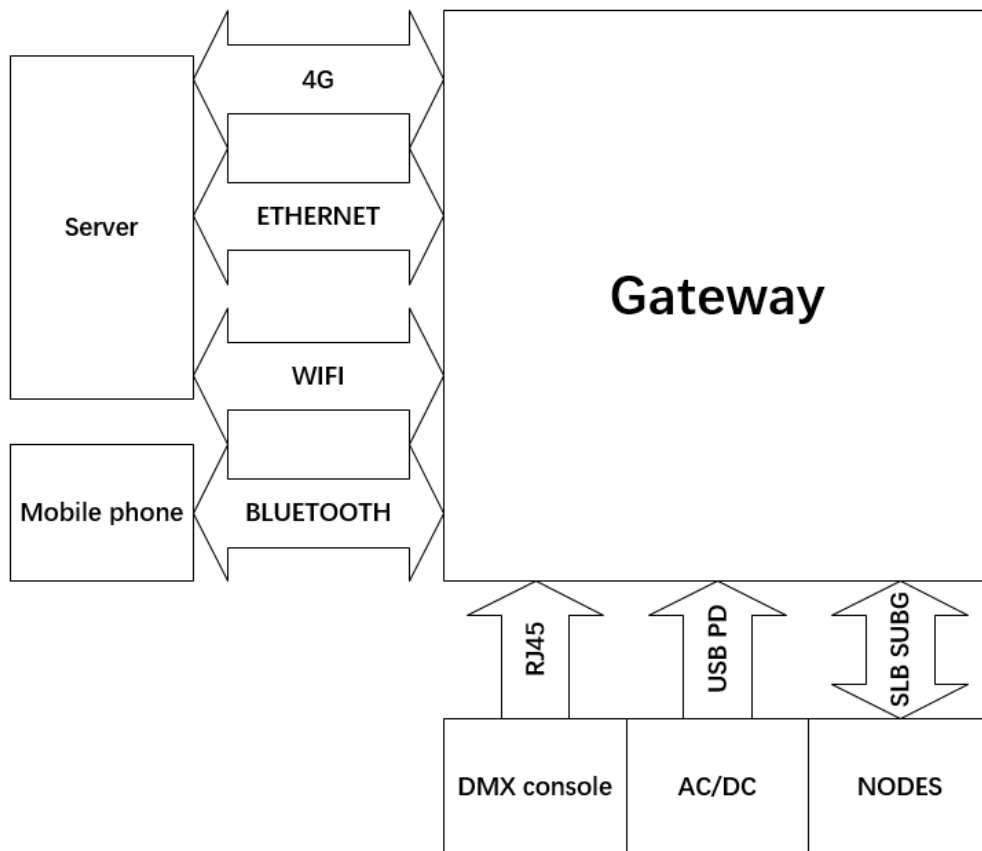
◆ If the gateway disconnects from the server.

- By default, the gateway maintains the existing operation state (maintains the existing scenario or runs the existing timing control schedule).
- Can receive commands from APP of mobile or pad.
- Can control wireless node controllers by the field debug button on the gateway.

◆ If the gateway loses power.

- The Wireless Node Controllers will operate according to the existing scene or time control schedule (if set) or the default failure mode (if no time control schedule).
- After the gateway is restored to power, it will continue to operate according to the existing time control schedule; and after the successful start, the single lamp controller in the previous network will be reconnected.

8 APPLICATIONS



9 ORDERING

DESCRIPTION	ORDERING CODE
MSPG126173 Wireless Gateway for sports	4696355000170
Three in one external antenna (4G+GNSS+SUBG)	4741135000138 (Optional accessories)
Waterproof RJ45 cable	4634140226804 (Optional accessories)
Waterproof USB Type C cable	4634140226805 (Replaceable parts)
20W USB PD Adapter XSP-20TUSAC-GaN (Type A + Type C)	4696355000202 (Replaceable parts)

FCC Warning

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.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the 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 instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC RF 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 20cm between the radiator and any part of your body.

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