User Manual

Product Name: Smart Gateway
Model Name: DSGW-230

Revision History

Specification		Sect.	Update Description	By
Rev	**Date**			
1.0	2022-05-20		New version release	

Approvals

Organization	*Name*	*Title*	*Date*

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1. Introduction

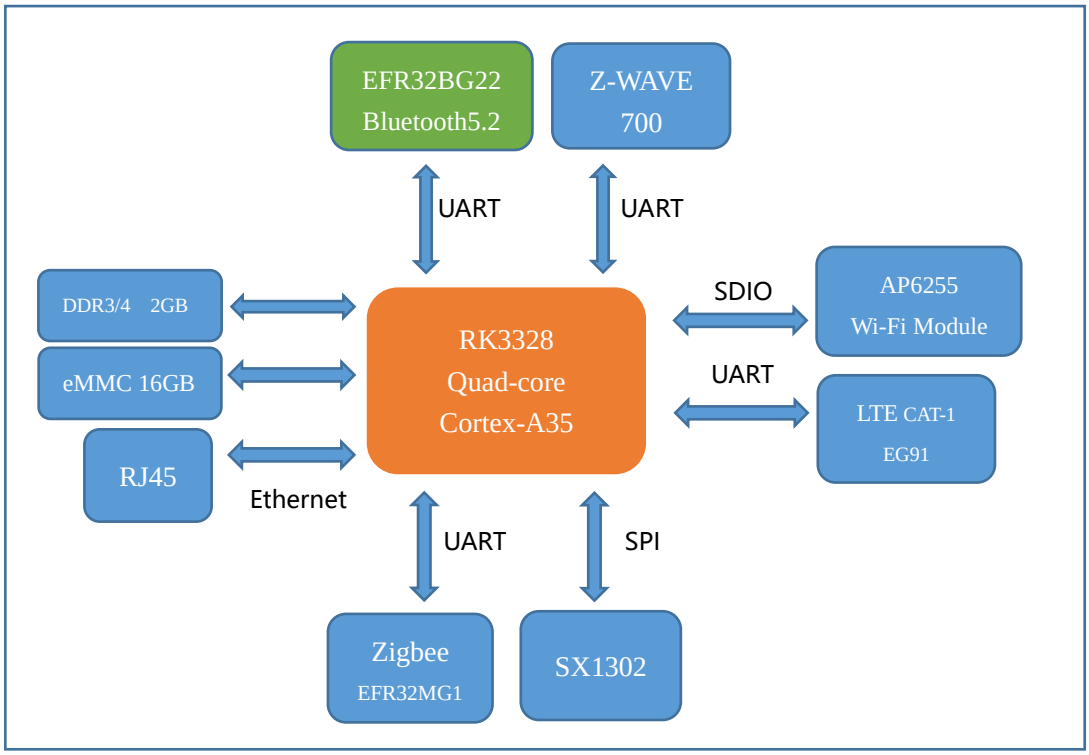
1.1 Purpose& Description

DSGW-230 is IoT gateway with multiple protocol and edge computing function. It provides reliable connectivity for a wide range of wireless IoT devices. The gateway's modular architecture provides the ability to customize many gateway features providing an off-the-shelf solution that meets your exact needs. Options include Cellular, Bluetooth, Wi-Fi, Ethernet, ZigBee, Z-wave.

1.2 Product Feature Summary

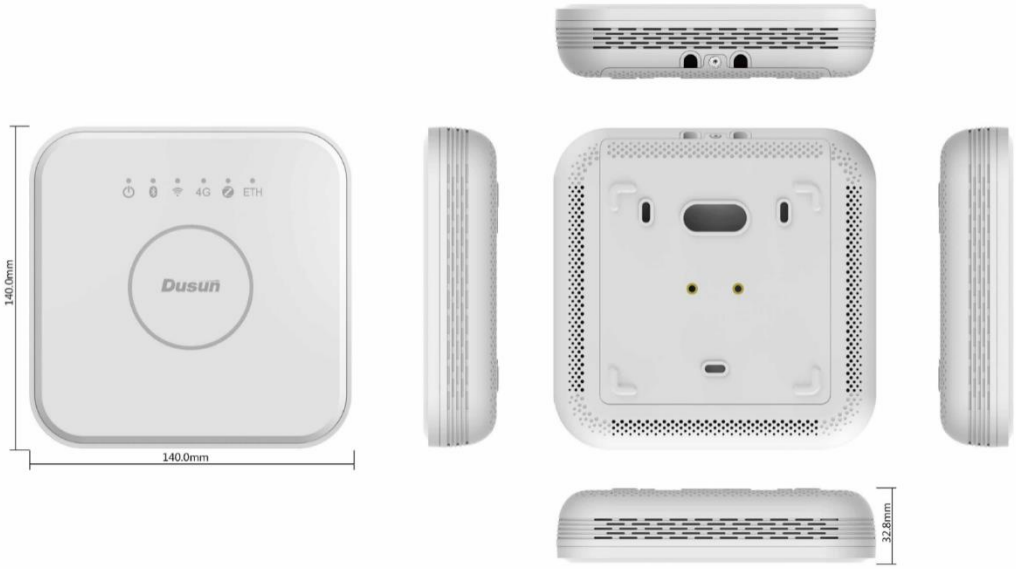
- Support 12V power supply
- Support IEEE802.11ac, IEEE802.11a,IEEE802.11n,IEEE802.11g,IEEE 802.11b Protocol
- Support 4G LTE cat 1
- Support Bluetooth 5.2
- Support ZigBee3.0
- Support Z-WAVE
- Support LoRaWAN
- One WAN/LAN variable network port

1.3 Hardware block diagram



2. Mechanical Requirement

2.1 Drawings



3. Specifications

3.1 Technical Specification

Category	Specifications
Power Supply	DC 12V/1.5A
Reset button	The reset button is hole button, After pressing the reset button for more than 5 seconds, the Locator will be restored to the factory settings.
Switch	On/Off power
Network Interface	The network interface supports CAT-5/CAT-5E to transmit data and POE Power Supply. It is WAN/LAN variable.
SIM card	Dual SIM card，link backup
SD card	Up to 128GB SD card
Indicator LEDs(RGB)	1).Power LED 2). Wireless LED 3）LTE indicator
Wireless protocol	Zigbee, Z-WAVE, BLE, Wi-Fi
Antenna	Zigbee PCB Antenna；Wi-Fi/LTE/Lora FPC Antenna；Zwave Ceramic Antenna；BLE Metal Antenna
Installation method	Flat,Ceiling,DIN
RTC	Real Time Clock operated from on board battery
Operating Temperature	-10℃~40℃
Storage Temperature	-40℃~85℃

Operating humidity	10%~90%
Cooling	Heat dissipation silicone/aluminum
Current	500mA@5V

3.2 Performance Requirement

CPU	• Quad-core Cortex A53
RAM	• 2GB
eMMC	• 16GB
SD card	• Up to 128GB
Wi-Fi Performance	• IEEE wireless LAN standard: IEEE802.11ac; IEEE 802.11a; IEEE802.11n; IEEE802.11g; IEEE 802.11b • Data Rate: IEEE 802.11b Standard Mode:1,2,5.5,11Mbps IEEE 802.11g Standard Mode:6,9,12,18,24,36,48,54 Mbps IEEE 802.11n: MCS0~MCS7 @ HT20/ 2.4GHz band MCS0~MCS7 @ HT40/ 2.4GHz band MCS0~MCS9 @ HT40/ 5GHz band IEEE 802.11ac: MCS0~MCS9 @ VHT80/ 5GHz band • Sensitivity: VHT80 MCS9 : -60dBm@10% PER(MCS9) /5GHz band HT40 MCS9 : -63dBm@10% PER(MCS9) /5GHz band HT40 MCS7 : -70dBm@10% PER(MCS7) /2.4GHz band HT20 MCS7 : -71dBm@10% PER(MCS7) /2.4GHz band • Transmit Power: IEEE 802.11ac: 13dBm @HT80 MCS9 /5GHz band IEEE 802.11ac: 16dBm @HT80 MCS0 /5GHz band IEEE 802.11n: 14dBm @HT20/40 MCS7 /5GHz band IEEE 802.11n: 16dBm @HT20/40 MCS0 /5GHz band IEEE 802.11n: 16dBm @HT20/40 MCS7 /2.4GHz band IEEE 802.11g: 16dBm @54MHz IEEE 802.11b: 18dBm @11MHz • Wireless Security: WPA/WPA2, WEP, TKIP, and AES • Working mode : Bridge、Gateway、AP Client • Range: 50 meters minimum, open field • Transmit Power:17dBm • Highest Transmission Rate: 300Mbps • Frequency offset: +/- 50KHZ • Frequency Range (MHz): 2412.0~2483.5 • Low Frequency (MHz):2400

	• High Frequency (MHz):2483.5 • E.i.r.p (Equivalent Isotopically Radiated power) (mW)<100mW • Bandwidth (MHz):20MHz/40MHz • Modulation: BPSK/QPSK, FHSSCCK/DSSS, 64QAM/OFDM
Bluetooth-Performance	• TX Power: 19.5dBm • Range: 150 meters minimum, open filed • Receiving Sensibility: -80dBm@0.1%BER • Frequency offset: +/-20KHZ • Frequency Range (MHz):2401.0~2483.5 • Low Frequency (MHz):2400 • High Frequency (MHz):2483.5 • E.i.r.p (Equivalent Isotopically Radiated power) (mW)<10mW • Bandwidth (MHz):2MHz • Modulation: GFSK
Zigbee Performance	• TX Power: 17.5dBm • Range: 100 meters minimum, open filed • Receiving Sensibility:-94dBm • Frequency offset: +/-20KHZ • Frequency Range (MHz):2401.0~2483.5 • Low Frequency (MHz):2400 • High Frequency (MHz):2483.5 • E.i.r.p (Equivalent Isotopically Radiated power) (mW)<100mW • Bandwidth (MHz):5MHz • Modulation: OQPSK
Z-wave Performance	• TX power up to13dBm (20mW) • RX sensitivity: @100kbps-97.5dBm • Range: 100 meters minimum, open filed • Default Frequency: 916MHz(Different country with different frequency)
LoraWAN	• Frequency band support: RU864, IN865, EU868, US915, AU915, KR920, AS923 • TX power up to 27dBm, RX sensitivity down to -139dBm @SF12, BW125kHz
LTE Cat 1	Operation Frequency Band: 850/900/1800/1900MHZ
	• Global:LTE:FDD:B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 • North America: LTE TDD:B2/B4/B12/B13
WAN/LAN	10/100M bps

4. QA Requirements

4.1 Quality and Testing Information

Information Description	Standard(Yes) custom(No)
ESD Testing	Yes
RF Antenna Analysis	Yes
Environmental Testing	Yes
Reliability Testing	Yes
Certification	FCC, CE, Bluetooth(BQB), PTCRB, RoHs

5. Software

	System/Driver	Support	
System	Linux	●	
	Debian	●	
	Andriod	●	
Driver	Uboot	●	
	UART	●	
	SPI	●	
	I2C	●	
	USB	●	
	eMMC	●	
	PCIe	●	
	Ethernet	●	
	SDIO	●	
	OTA	●	
Protocol Stack	Zigbee3.0	●	
	BLE5.1	●	
	Z-Wave	●	
	Wi-Fi	●	
Application	Wi-Fi sniffer	Demo source code	
	zigbee3.0 APP	Demo source code	
	beacon scanner	Demo source code	
	MQTT client	Demo source code	
	Z-Wave APP	Demo source code	

FCC Statement

1. 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.

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

2. 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 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.

To comply with RF exposure requirements, a minimum separation distance of 20 cm must be maintained between the user’s body and the device, including the antenna.