M2M GATEWAY INDUSTRIAL

ORing

Quick Installation Guide

IMG-4312D(+)-D4G Series Industrial Cellular M2M Gateway

Introduction

IMG-4312D(+)-D4G Series is the LTE cellular M2M gateway with one RS-232/422/485 serial port, two 10/100Base-T(X) ports and one set of Digital Input (DI) & Digital Output (DO). The device provides an IEEE802.11b/g/n Wi-Fi interface featuring a link speed up to 150Mbps. It can be configured to connect to the Internet by dialing up the embedded 2G/3.5G/LTE cellular modem with dual SIM for carrier backup. In addition, the device can transfer data to five host PCs simultaneously for backup purposes. The **IMG-4312D+-D4G** provides P.D. function on its ETH1 port which is fully compliant with IEEE802.3af PoE P.D. specification. Therefore, it can receive power via an Ethernet cable to save installation costs and simplify deployment. **IMG-4312D(+)-D4G Series** is an innovative product for Cloud, Internet of Things and Industry 4.0 applications. It is a perfect choice for remote secured data collection from the factory floor (PLCs, machines, networking devices) and environmental sensors (temperature, humidity, noise, pollution, vibration etc.) as well as for serving control commands coming from Cloud Platforms for changing end-devices status.

The product is open type, intended to be installed in and industrial control panel or an enclosure.

Package Contents

The device is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

Contents	Pictures	Number
IMG-4312D(+)-D4G		X 1
LTE Antenna		X 2
Wi-Fi Antenna		X 1
QIG		X 1
DIN-rail kit		X 1
Wall-Mount Kit		X 2
4-pin terminal block		X 1
3-pin terminal block		X 1
Dust cover		X 2
CD		X 1

Preparation

Before installation, make sure you have all of the package contents available and a PC with Microsoft Internet Explorer 6.0 or later, for using web-based system management tools.

Safety & Warnings

Elevated Operating Ambient: If installed in a closed environment, make sure the operating ambient temperature is compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

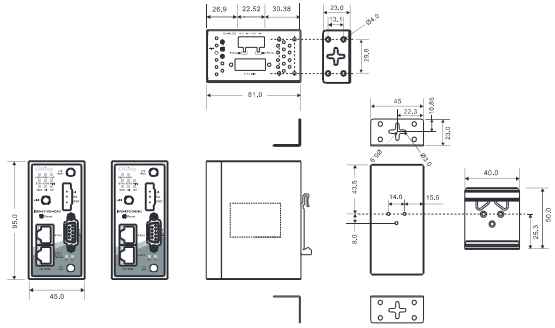
Reduced Air Flow: Make sure the amount of air flow required for safe operation of the equipment is not compromised during installation.

Mechanical Loading: Make sure the mounting of the equipment is not in a hazardous condition due to uneven mechanical loading.

Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

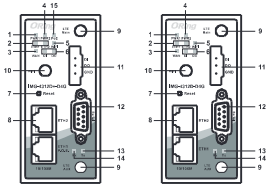
* Indoor use and pollution degree II, it must be wiped with a dry cloth for clean up the device and label.
* Utilisation en intérieur et degré de pollution II, il faut l'essuyer avec un chiffon sec pour nettoyerl'appareil et son étiquette.
* Do not block air ventilation holes.
* Ne bouchez pas les orifices de ventilation.
* If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired."
* Si l'appareil est utilise d'une maniere non specifiee par le fabricant, la protection qu'il apporte peut se voir diminuee."
* Shall be mounted in the Industrial Control Panel and ambient temperature is not exceed 70 degree C
* doit être monté dans le panneau de commande industriel et la température ambiante ne doit pas dépasser 70 degrés C

Dimension Unit =mm (Tolerance ±0.5mm)



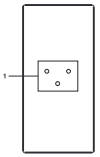
Panel Layouts

Front Panel



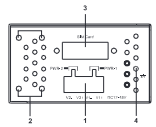
1. LED for Power 1 module
2. LED for Ethernet ports
3. LED for WAN status
4. LED for Power 2 module
5. LED for Wi-Fi status
6. LED for Digital I/O port
7. Reset button
8. Ethernet ports (ETH1 as LAN port; ETH2 as WAN port)
9. LTE antenna connector
10. Wi-Fi antenna connector
11. Digital I/O port
12. Serial port
13. TX status of serial port
14. RX status of serial port
15. PoE indicator (IMG-4312+ Series only)

Rear Panel



1. Din-rail screw holes

Top Panel

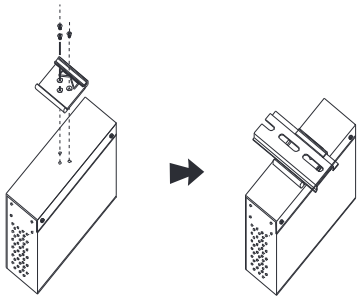


1. Terminal block
2. Wall-mount screw holes
3. SIM card slot
4. Frame ground

Installation

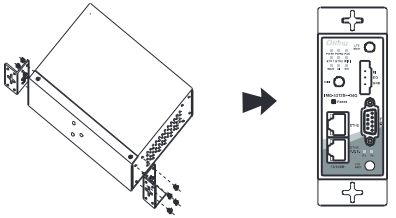
DIN-rail

Step 1 : Slant the device and screw the Din-rail kit onto the back of the device, right in the middle of the back panel.
Step 2 : Slide the device onto a DIN-rail from the Din-rail kit and make sure the device clicks into the rail firmly.



Wall-mount

Step 1: Screw the two pieces of wall-mount kits to the top and bottom panels of the device. A total of eight screws are required, as shown below.
Step 2: Use the device, with wall mount plates attached, as a guide to mark the correct locations of the four screws.
Step 3: Insert a screw head through middle of the keyhole-shaped aperture on the plate, and then slide the device downwards. Tighten the screw head for added stability.



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Network Connection

The device has two 10/100Base-T(X) Ethernet ports. According to the link type, the AP uses CAT 3, 4, 5, 5e, 6 UTP cables to connect to any other network device (PCs, servers, switches, routers, or hubs).

Cable Types and Specifications.

Cable	Type	Max. Length	Connector
10Base-T	Cat. 3, 4, 5 100-ohm	UTP 100 m (328 ft)	RJ45
100Base-TX	Cat. 5 100-ohm UTP	UTP 100 m (328 ft)	RJ45

For pin assignments for different types of cables, please refer to the following tables.

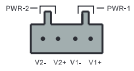
10/100 Base-T(X) RJ-45 Pin Assignments	
Pin Number	Assignment
1	TD+
2	TD-
3	RD+
4	Not used
5	Not used
6	RD-
7	Not used
8	Not used

10/100 Base-T MDI/MDI-X Pin Assignments		
Pin Number	MDI port	MDI-X port
1	TD+(transmit)	RD+(receive)
2	TD-(transmit)	RD-(receive)
3	RD+(receive)	TD+(transmit)
4	Not used	Not used
5	Not used	Not used
6	RD-(receive)	TD-(transmit)
7	Not used	Not used
8	Not used	Not used

Wiring

Power Inputs

This device supports dual redundant power supplies, Power Supply 1 (PWR1) and Power Supply 2 (PWR2). The connectors for PWR1 and PWR2 are located on the terminal block.



STEP 1: Insert the negative/positive DC wires into the V-/V+ terminals, respectively.

STEP 2: To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

Grounding

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screws to the grounding surface prior to connecting devices.

Configurations

After installing the device and connecting cables, the green power LED should turn on. Please refer to the following tablet for LED indication.

LED	Color	Status	Description
PW1	Green	On	DC power module 1 activated
PW2	Green	On	DC power module 2 activated
PoE	Green	On	PoE enabled
10/100Base-T(X) RJ45 Port			
LNK/ACT	Green	On	Port is linked and transmitting data
Serial Port			
Rx	Red	On	Port is receiving data
Tx	Green	On	Port is transmitting data
WiFi Connection			
LNK/ACT	Green	On	Wireless network is linked
WAN Connection			
LNK/ACT	Green	On	Power is on and functioning normally
Digital I/O			
DI/DO	Green	On	Digital I/O activated

Specifications

ORing Device Server Model	IMG-4312D-D4G	IMG-4312D+-D4G
Physical Ports		
10/100Base-T(X) Ports in Auto MDI/MDIX	2	
PoE P.D. port	-	**P.O.E.Present at ETH1** Power Device (IEEE 802.3af): IEEE 802.3af compliant input interface Overload & short circuit protection Isolation Voltage: 1000 VDC min. Isolation Resistance: 10⁷ ohms min
Sim Card Slot	2	
DI/DO	DI x 1, DO x 1 (DI: Logic level 1:5V~30V, Logic level 0:0V~2V DO: Maximum Voltage is 30V, Maximum Current is 20mA)	
Cellular Interface		
Antenna Connector	2 x SMA Female	
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE/ WCDMA/ HSDPA/ HSUPA/LTE	
Band Option	**America (US grade)** LTE: FDD:1900(B2)/1700(B4)/850(B5)/700(B12)/700(B13)/700(B14)/1700(B66)/600(B71) MHZ UMTS/HSDPA/HSUPA/HSPA+: 1900/1700/850 MHz **Europe (EU grade)** LTE: FDD:2100(B1)/1800(B3)/2600(B7)/900(B8)/800(B20) MHz TDD:TDD:2600(B38)/2300(B40)/2500(B41) MHZ UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 2100(B1)/900(B8) MHZ GSM/GPRS/EDGE: 900/850 MHz **Taiwan (TW grade)** LTE: FDD:2100(B1)/1900(B2)/1800(B3)/1700(B4)/850(B5)/2600(B7)/900(B8)/700(B28) MHz TDD:2300(B40 UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 2100(B1)/1900(B2)/850(B5)/900(B8) MHz GSM/GPRS/EDGE: B2/B3/B5/B8 **China (CN grade)** LTE: FDD:2100(B1)/1800(B3)/900(B8) MHz TDD:2600(B38)/1900(B39)/2300(B40)/2500(B41) MHZ TDSCDMA: B34/B39 WCDMA: 900/2100 MHz CDMA 1x/EVDO: 800(BC0) MHz GSM: 900/1800 MHz	
Wifi Interface		
Antenna and Connector	1 x RP-SMA Female	
Modulation	IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM	
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) Europe CE / ETSI : 2.412~2.472 GHz (13 channel)	
Transmission Rate	801.11b: 1/ 2/ 5.5/ 11 Mbps 801.11g: 6/ 9/ 12/ 18/ 24/ 36/ 48/ 54 Mbps 802.11n(MHz): UP to 150 Mbps	
Transmit Power	802.11b: 19dBm ±1.5 dBm 802.11g: 17dBm ±1.5 dBm 802.11n(2.4G@20MHz): 16dBm ±1.5dBm 802.11n(2.4G@40MHz): 14dBm ±1.5dBm	
Receiver Senstivity	802.11b: -90dBm±2.0dB @ 11Mbps 802.11g: -72dBm±2.0dB @ 54Mbps 802.11n(2.4G@40MHz, MCS7): -68dBm ±2dBm	
Encryption Security	WEP: (64-bit, 128-bit key supported) WPA/WPA2: (WEP and AES encryption) 802.11i WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption	
Serial Port		
Connector	DB9 x1	
Operation Mode	RS-232/422/485	
Serial Baud Rate	110 bps to 115.2 Kbps	
Data Bits	7, 8	
Parity	odd, even, none, mark, space	
Stop Bits	1, 1.5, 2	

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND	
Flow Control	XON/XOFF, RTS/CTS, DTR/DSR	
Network Protocol		
Protocol	ICMP, IP, TCP, UDP, DHCP, BOOTP, SSH, DNS, SNMP V1/ V2c, HTTPS, SMTP, DDNS, PPPoE	
Power		
Redundant Input power	Dual DC inputs. 12~48VDC on 4 pin terminal block PoE input 48VDC * Supplied by SELV or double insulation source evaluated by UL 61010-1 or 61010-2-201 power supply only. * Fourni par source SELV ou double isolation évaluée uniquement par l'alimentation UL 61010-1 or UL 61010-2-201.	
Power Consumption(Typ.)	7 Watts Max.(12-48VDC:0.46-0.11A,POE 48VDC:0.15A)	
Overload current protection	Present	
Reverse polarity protection	Present on terminal block	
Physical Characteristic		
Enclosure	IP-30 (non UL certified)	
Dimension (W x D x H)	45(W)x81(D)x95(H) mm (1.77 x 3.19 x 3.74 inch.)	
Weight (g)	387g	395g
Environmental		
Storage Temperature	-40 to 85°C (-40 to 185°F)	
Operating Temperature	-25 to 70°C (-13 to 158°F)	
Operating Humidity	5% to 95% Non-condensing	
Operating Altitude	Up to 2000m	
Regulatory Approvals		
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B	
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B Class A	
EMS	EN 55024,(IEC/EN 61000-4-2(ESD),IEC/EN 61000-4-3(RS),IEC/EN 61000-4-4(EFT), IEC/EN61000-4-5(Surge),IEC/EN61000-4-6(CS),IEC/EN 61000-4-8(PFMF) IEC/EN61000-4-11(DIP))	
Radio Frequency	EN 301 489-1/-17(2.4G), EN 300 328(2.4G), EN 301 511(2G), EN 301 908-1(3G/4G), FCC Par 15C(2.4G)	
Safety	UL61010-1/-2-201, *ATEX, *C1D2	
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-31	
Vibration	IEC60068-2-6	
*Under development		
MTBF	353,679 hrs	
Warranty	5 years	

Warning [AVERTISSEMENT]

Take into consideration the following guidelines before wiring the device

[Tenez compte des directrices suivantes avant de câbler l'appareil.]

1. Terminal block is mating with Plug and suitable for 12-24AWG. Torque value 4.5 lb-in.
[Le bornier est compatible avec les connecteurs et convient pour 12-24AWG. Valeur de couple 4,5 lb-in.]
2. The temperature rating of the input connection cable should higher than 105°C
[La température de service nominale du câble d'entrée doit être supérieure à 105 °C]
3. Use Copper Conductors Only.
[Utilisez uniquement des conducteurs en cuivre.]

Contact for maintenance and repair service:

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ORing Industrial Networking Corp.
TEL: +886-2-2218-1066 Website: www.oringnet.com
FAX: +886-2-2218-1014 E-mail: support@oringnet.com
Address: 3F., No.542-2, Zhongzheng Rd., Xindian Dist., New Taipei City 23148, Taiwan