ORing

LTE Router INDUSTRIAL

Quick Installation Guide

TDGAR-x083D+-D4G12S-M12X-WV

Industrial LTE Cellular Router

Introduction

ORing's TransporterTM series cellular router is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TDGAR-x083D+-D4G12S-M12X-WV is reliable wifi5 router with 3 ports Gigabit Ethernet which is fully compliant with EN50155 certification. It could be configured to operate in 3 modes of routing function: Dynamic/Static IP route, PPPoE authentication, and Cellular modem dial up. Users can set up WLAN environment to fulfill demands of various applications rapidly by dialing up cellular modem. TDGAR-x083D+-D4G12S-M12X-WV EN50155 cellular VPN router use M-series connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. In addition, TDGAR-x083D+-D4G12S-M12X-WV also provides P.D. feature which is fully compliant with IEEE802.3at PoE P.D. specification and TDGAR-x083D+-D4G12S-M12X-WV supports GPS function. Therefore, TDGAR-x083D+-D4G12S-M12X-WV is one of the most reliable choices for rolling stock applications on the wireless network.

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.

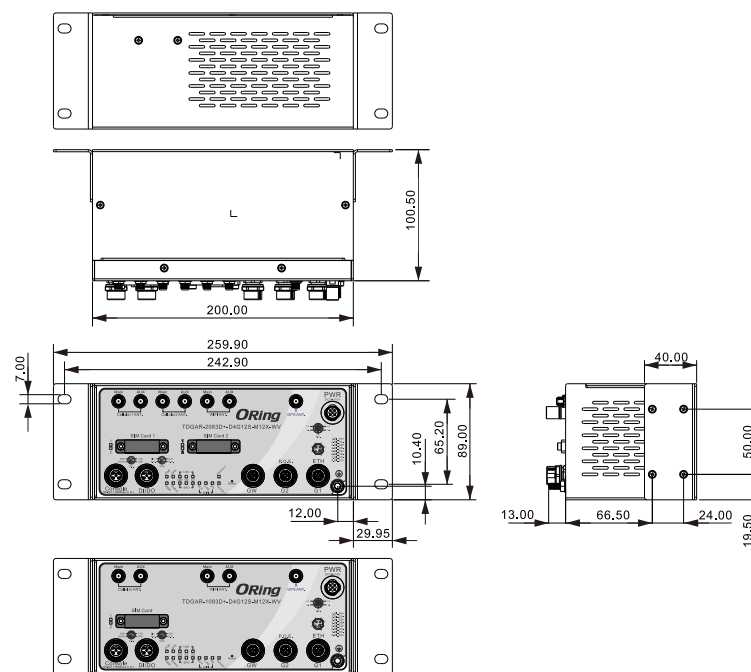| Contents	Pictures	Number
TDGAR-x083+-D4G12S-M12X-WV		X 1
Flat Screw (M3 X5)		X 8
Mounting kit (L&R)		X 1
Quick Installation Guide		X 1
CD QRcode		X 1

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.
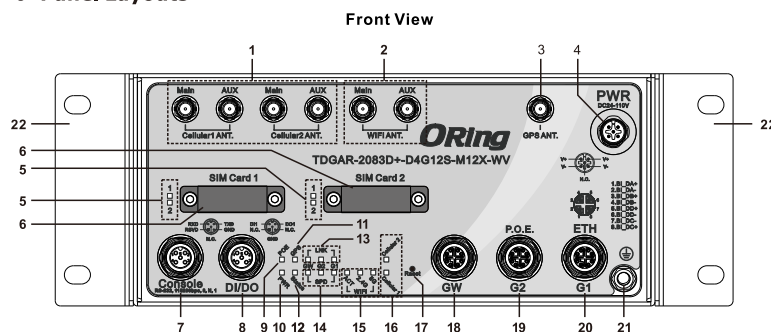
Safety & Warnings

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.

When installing the device, make sure to keep the radiating at a minimum distance of 20 cm (7.9 inches) from all persons to minimize the potential for human contact during normal operation.

Do not operate the device near unshielded blasting caps or in an otherwise explosive environment unless the device has been modified for such use by qualified personnel.

Dimension   Unit =mm (Tolerance ±0.5mm)

100.50
200.00
259.90
242.90
7.00
10.40 65.20 89.00
12.00
29.95
40.00
13.00 66.50 24.00
50.00
19.50

Panel Layouts

Front View

1 2 3 4

22 22

6 5 5 6

11 13

7 8 9 10 12 14 15 16 17 18 19 20 21

1. Cellular antenna connector
2. Wi-Fi antenna connector
3. GPS antenna connector
4. Power connector
5. SIM LED
6. SIM card slot
7. Console connector
8. DI/DO connector
9. POE power LED
10. Power LED
11. GPS LED

12. Status LED
13. LNK/ACT indicator for Gigabit Ethernet port
14. Speed indicator for Gigabit Ethernet port
15. Wi-Fi status LED
16. Cellular LED
17. Reset button
18. Gigabit Ethernet port for WAN
19. Gigabit POE Ethernet port for LAN
20. Gigabit Ethernet port for LAN
21. Ground wire
22. Rack-mount kit

Installation

Rack-mount

With the brackets orientated in front of the rack, fasten the brackets to the rack using two more screws.
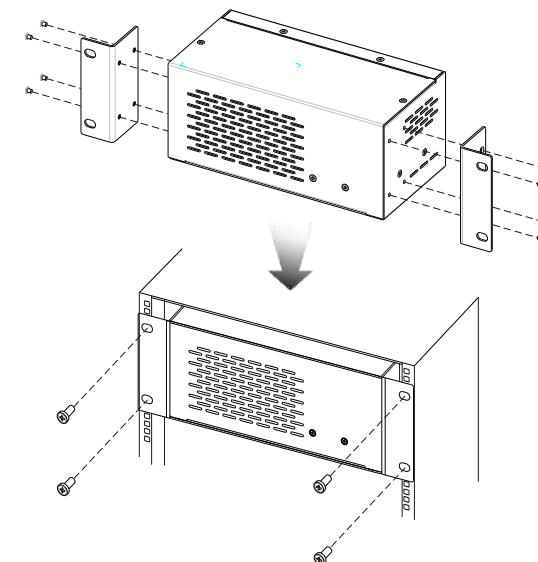
Wiring

For pin assignments of power and console, please refer to the following tables.

Grounding

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

Power port pinouts

The device supports one set of power supplies and uses the 5-pin M12 male A-coding connector on the front panel for the power input.
Step 1: Insert a power cable to the power connector on the device.
Step 2: Rotate the outer ring of the cable connector until a snug fit is achieved. Make sure the connection is tight.

V- V+ V- V+ N.C.

Console port pinouts

RXD TXD
RSVD GND
N.C.

RS-232, 115200bps, 8, N, 1
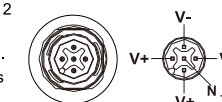
Network Connection

The device has 10/100/1000Base-T(X) Ethernet port of M12 connector. Depending on the link type, the switch uses CAT 3, 4, 5,5e UTP cables to connect to network devices (PCs, servers, switches, routers, or hubs). Please refer to the following table for cable specifications.

Cable	Type	Max. Length	Connector
10BASE-T	Cat. 3, 4, 5 100-ohm	UTP 100 m (328 ft)	8-pin female M12 X-coding connector
100BASE-TX	Cat. 5 100-ohm UTP	UTP 100 m (328 ft)	8-pin female M12 X-coding connector
1000BASE-T	Cat. 5/Cat. 5e 100-ohm UTP	UTP 100 m (328 ft)	8-pin female M12 X-coding connector

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Pin Definition

PWR M12 port

Pin No.	Description
#1	V+
#2	V+
#3	V-
#4	V-
#5	N.C.

A-coding Male

Console M12 port

Pin No.	Description
#1	RXD
#2	TXD
#3	RSVD
#4	GND
#5	N.C.

A-coding Female

10/100/1000Base-T(X) M12 port

Pin No.	Description
#1	BI_DA+
#2	BI_DA-
#3	BI_DB+
#4	BI_DB-
#5	BI_DD+
#6	BI_DD-
#7	BI_DC-
#8	BI_DC+

X-coding Female

DI/DO M12 port

| Pin No.	Description
#1	Digital Input
#2	Digital Output
#3	N.C.
#4	N.C.
#5	GND

A-coding Female

Configurations

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

	TDGAR-1083D+-D4G12S-M12X-WV	TDGAR-2083D+-D4G12S-M12X-WV
LED Indicators		
PWR	1 x LED, Green for DC Power in	
POE	1 x LED, Green for POE Power in	
Ethernet Port Indicator	6 x LEDs, LNK: Green for port Link/Act SPD: Green ON : for 1000/100Base-T(X); Green OFF : for 10Base link	
GPS LED	1 x LED, Green ON: for GPS ON, slow blink for connection Act	
WLAN(Wifi) LED	3 x LEDs, 1 x LED, Green ON: RF ON; Blink: data transmitting 1 x LED, Green for WLAN work on 2.4GHz 1 x LED, Green for WLAN work on 5GHz	
Cellular LED	1x LED, Green slow blink for work normal	2x LED, Green slow blink for work normal
SIM LED	2x LED, Green in used	4x LED, Green in used
Status Indicator	1 x LED, Green slow blink for normal, OFF for system halt	

Follow the steps below to log in and access the system:

1. Launch the Internet Explorer and type in IP address of the device. The default static IP address is **192.168.10.1**
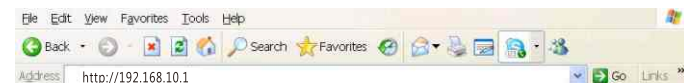
2. Log in with default user name and password (both are admin). After logging in, you should see the following screen. For more information on configurations, please refer to the user manual.

● Resetting

To restore the device configurations back to the factory defaults, press the **Reset** button for a few seconds. Once the power indicator starts to flash, release the button. The device will then reboot and return to factory defaults.

Specifications

ORing EN50155 LTE Router Model	TDGAR-1083D+-D4G12S-M12X-WV	TDGAR-2083D+-D4G12S-M12X-WV
Physical Ports		
10/100/1000Base-T(X) Ports in M12 (8-pin X-coding female)	1 (WAN)+2(LAN)	
Sim Card Slot	2 x 2	2 x 1
Console Ports in M12 (5-pin A-coding female)	1	
DI/DO Port in M12 (5-pin A-coding female)	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)	
Input Power Port in M12 (5-pin A-coding male)	1	
PoE P.D Port	Present at Ethernet (G2) Fully compliant with IEEE 802.3 at Power Device specification Over load & short curcuit protection Isolation Voltage: 1000VDC min. Isolation Resistance: 10^9 ohms min.	
Antenna connector		
WIFI	2 x RP-SMA female	
Cellular (for expansion)	2x SMA female	4 x SMA female
GPS	1 x SMA female	
GPS Interface		
Receiver Type	50 Channels GPS L1 frequency, C/A Code	
Time-To-First-Fix	Cold Start: 29s Warm Start: 29s Hot Start: <1s	
Sensitivity	Tracking & Navigation: -160dBm Reacquisition: -160dBm Cold Start: -147dBm	
Cellular Interface 1		
Cellular Standard	UMTS / HSDPA / HSUPA / LTE+(Cat 12)	
Band Option	LTE : FDD: B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/B17/B18/B19/B20/B21/B25/B26/B28/B29/B30/B32/B66 TDD: B38/B39/B40/B41 UMTS / HSDPA / HSUPA / HSPA+ / DC-HSPA+: B1/B2/B4/B5/B8/B9/B19	
Cellular Interface 2		
Cellular Standard	(No Support)	UMTS / HSDPA / HSUPA / LTE+(Cat 12)
Band Option	(No Support)	LTE : FDD: B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/B17/B18/B19/B20/B21/B25/B26/B28/B29/B30/B32/B66 TDD: B38/B39/B40/B41 UMTS / HSDPA / HSUPA / HSPA+ / DC-HSPA+: B1/B2/B4/B5/B8/B9/B19
WLAN interface		
Modulation	IEEE 802.11a: OFDM IEEE 802.11b: CCK, DQPSK, DBPSK IEEE 802.11g: OFDM IEEE 802.11n: BPSK, QPSK, 16-QAM, 64-QAM IEEE 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	
Frequency Band	America / FCC: 2.412~2.462 GHz 5.180~5.240 GHz & 5.745~5.825 GHz Europe CE / ETSI: 2.412~2.472 GHz 5.180~5.240 GHz	
Transmission Rate	IEEE 802.11b: 1/2/5.5/11 Mbps IEEE 802.11a/g: 6/9/12/18/24/36/48/54 Mbps IEEE 802.11n: UP to 300 Mbps IEEE 802.11ac: up to 867Mbps	
Transmit Power	IEEE 802.11a: 12dBm ± 2dBm@54Mbps IEEE 802.11b: 18dBm ± 2dBm@11Mbps IEEE 802.11g: 15dBm ± 2dBm@54Mbps IEEE 802.11gn HT20: 14dBm ± 2dBm @MCS7 IEEE 802.11gn HT40: 14dBm ± 2dBm @MCS7 IEEE 802.11an HT20: 11dBm ± 2dBm @MCS7 IEEE 802.11an HT40: 10dBm ± 2dBm @MCS7 IEEE 802.11ac VHT80: 7dBm ± 2dBm @MCS9	

Receiver Sensitivity	IEEE 802.11a : -71dBm ± 2dBm@54Mbps IEEE 802.11b : -86dBm ± 2dBm@11Mbps IEEE 802.11g : -72dBm ± 2dBm@54Mbps IEEE 802.11gn HT20:-68dBm ± 2dBm@MCS7 IEEE 802.11gn HT40:-66dBm ± 2dBm@MCS7 IEEE 802.11an HT20:-68dBm ± 2dBm@MCS7 IEEE 802.11an HT40:-67dBm ± 2dBm@MCS7 IEEE 802.11ac VHT80:-57dBm ± 2dBm@MCS9
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption
Wireless Security	SSID boardcast disable
Protocol Support	
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE, STP (IEEE 802.1D)
Power	
Input Power	24~110VDC
Isolation	DC 2KV/ AC 1.5KV
Power Consumption (Typ.)	25 watts Max.
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	200(W) x 100.5(D) x 89(H) mm
Weight	<2Kg
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
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fail	IEC60068-2-31
Vibration	IEC60068-2-6, EN61373
Rail Traffic	EN50155
Cooling	EN60068-2-1
Dry Heat	EN60068-2-2
Safety	EN60950-1
Warranty	5 years

Contact for maintenance and repair service: