



# TGAR-1062-3G-M12 series

**Industrial EN50155 IEEE 802.11 a/b/g/n 3G Cellular Router  
With 2x10/100/1000Base-T(X), M12 connector**

## Features

- Leading EN50155-compliant wireless access point for rolling stock application
- High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
- Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
- Secured Management by HTTPS
- Various kind of WAN Connection Type supported: Dynamic/Static IP, PPPoE, Modem Dial Up
- IP table configurable to prevent access from unauthorized IP address
- Support VPN for secured network connection (Open VPN , PPTP VPN)
- Support NAT Setting (Virtual Server , Port Trigger , DMZ , UPnP)
- Support DHCP forwarding through PPTP function
- 3.5G HSDPA Modem dial up included
- Dual redundant Ethernet ports support Ethernet redundant mode (Recovery time < 10ms) and switch mode in M12 connector (A-coding)
- GPS support for GPS model
- 1KV isolation for PoE P.D. port for PoE model.
- Event Warning by Syslog, Email, SNMP Trap and Relay output
- Ultra rugged enclosure for toughest industrial usages
- Wall mounting enabled



## Introduction

ORing's Transporter™ series cellular router is designed for industrial and rolling stock wireless applications, such as vehicle, and railway applications. TGAR-1062-3G-M12 is reliable IEEE802.11 a/b/g/n router with 2 ports LAN 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. TGAR-1062-3G-M12 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, TGAR-1062+-3G-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification and TGAR-1062+-3GS-M12 supports GPS function. Therefore, TGAR-1062-3G-M12 is one of the most reliable choices for rolling stock applications on the wireless network.

## Application

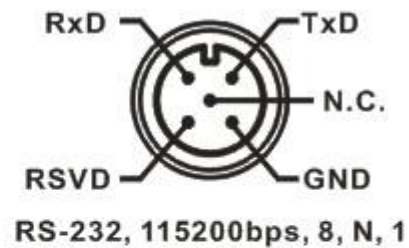
In TGAR-1062-3G-M12, there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. TGAR-1062-3G-M12 also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.

## Pin Definition

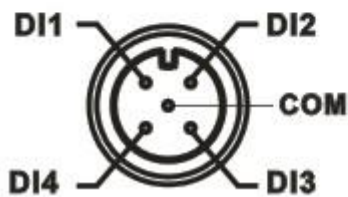
### Relay Output



### Console



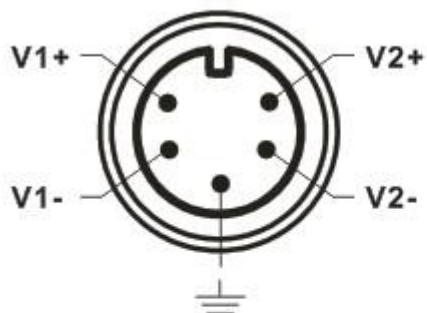
### DI



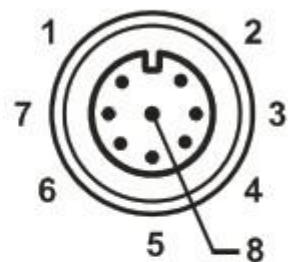
### DO



### Power

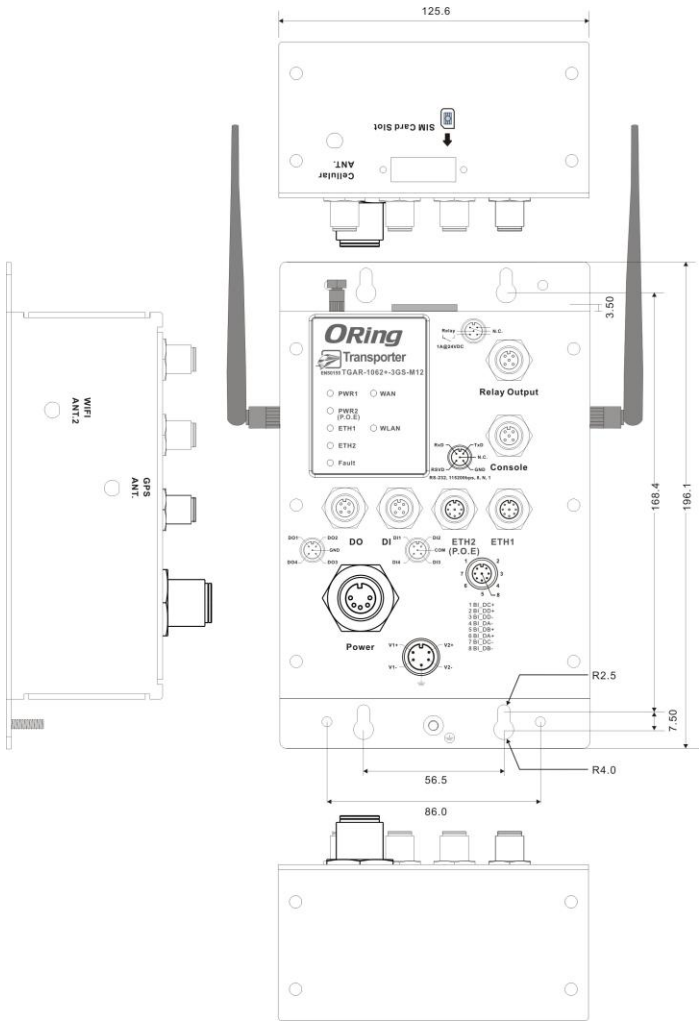


### Ethernet

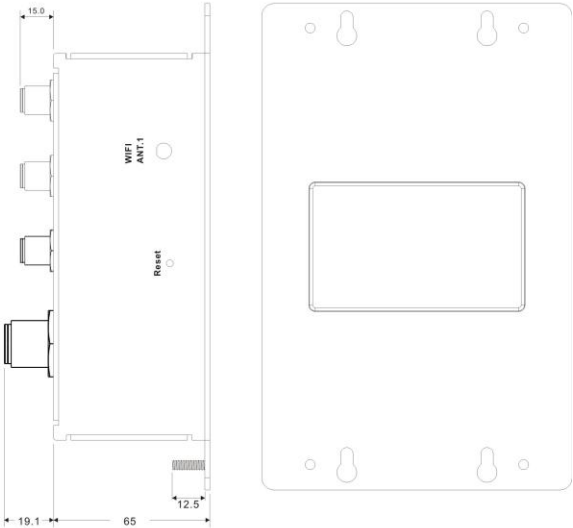


- 1 BI\_DC+
- 2 BI\_DD+
- 3 BI\_DD-
- 4 BI\_DA-
- 5 BI\_DB+
- 6 BI\_DA+
- 7 BI\_DC-
- 8 BI\_DB-

# Dimension



Dimension (Unit =mm)



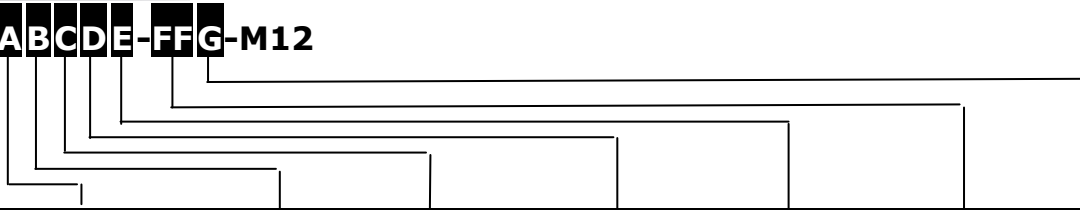
## Specifications

| ORing EN50155 WLAN Access Point Router Model                        | TGAR-1062-3G-M12   | TGAR-1062+-3G-M12  | TGAR-1062+-3GS-M12 |
|---|--|--|--------------------|
| <b>Physical Ports</b>   |  |  |                    |
| 10/100/1000Base-T(X) Ports in M12<br>Auto MDI/MDIX (8-pin A-coding) | <b>2</b>   | <b>2</b> (Present at ETH2<br>Fully compliant with IEEE 802.3af PoE P.D ) |                    |
| DIDO port in M12 (5-pin A-coding)                                   | <b>2(DI x 4 and DO x 4) :</b><br>Dry Contact:<br>On: short to GND, Off: open<br>Wet Contact (DI to COM/GND):<br>On: 0 to 3VDC, Off: 10 to 30VDC  |  |                    |
| RS-232 Console port in M12<br>(5-pin A-coding)                      | <b>115200, 8 ,N ,1</b>   |  |                    |
| Relay port in M12 (5-pin A-coding)                                  | <b>1A@24VDC</b>  |  |                    |
| SIM Card Slot   | <b>1</b>   |  |                    |
| <b>GPS (-3GS model only)</b>  |  |  |                    |
| Antenna Connector   | 1 x External reverse SMA antenna connector   |  |                    |
| Frequency   | 1575.42MHz   |  |                    |
| <b>WLAN Interface</b>   |  |  |                    |
| Antenna Connector   | 2 x External reverse SMA-type antenna connector  |  |                    |
| Radio Frequency Type  | DSSS, OFDM   |  |                    |
| Modulation  | IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM<br>IEEE802.11b: CCK, DQPSK, DBPSK<br>IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM<br>IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM  |  |                    |
| Frequency Band  | America / FCC : 2.412~2.462 GHz (11 channels)<br>5.180~5.240 GHz & 5.745~5.825 GHz ( 9 channels )<br>Europe CE / ETSI : 2.412~2.472 Ghz (13 channels)<br>5.180~5.240 GHz (4 channels)  |  |                    |
| Transmission Rate   | IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps<br>IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps<br>IEEE801.11n: up to 300Mbps  |  |                    |
| Transmit Power  | 802.11a: 12dBm ± 1.5dBm@54Mbps<br>802.11b: 17dBm ± 1.5dBm@11Mbps<br>802.11g: 16dBm ± 1.5dBm@54Mbps<br>802.11gn HT20: 15dBm ± 1.5dBm @MCS7<br>802.11gn HT40: 14dBm ± 1.5dBm @MCS7<br>802.11an HT20: 12dBm ± 1.5dBm @MCS7<br>802.11an HT40: 11dBm ± 1.5dBm @MCS7 |  |                    |
| Receiver Sensitivity  | 802.11a : -76dBm ± 2dBm@54Mbps<br>802.11b : -85dBm ± 2dBm@11Mbps<br>802.11g : -76dBm ± 2dBm@54Mbps<br>802.11gn HT20:-75dBm ± 2dBm@MCS7<br>802.11gn HT40:-72dBm ± 2dBm@MCS7<br>802.11an HT20:-74dBm ± 2dBm@MCS7<br>802.11an HT40:-71dBm ± 2dBm@MCS7             |  |                    |
| Encryption Security   | WEP: (64-bit ,128-bit key supported)<br>WPA/WPA2 :802.11i(WEP and AES encryption)<br>WPAPSK (256-bit key pre-shared key supported)<br>802.1X Authentication supported<br>TKIP encryption   |  |                    |
| Wireless Security   | SSID broadcast disable   |  |                    |
| <b>Cellular Interface</b>   |  |  |                    |
| Cellular Standard   | GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA  |  |                    |
| Band Option   | Dual-band : HSUPA 1900/2100 MHz<br>Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz<br>WCDMA/HSDPA 850/900/1900/2100 MHz  |  |                    |
| <b>Protocol Support</b>   |  |  |                    |

|                                |  |          |            |
|--------------------------------|--|----------|------------|
| Protocol                       | ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE  |          |            |
| <b>LED Indicators</b>          |  |          |            |
| Power Indicator                | 2 x LEDs,<br>PW1:Green for DC Power on<br>PW2:Green for DC Power on or power by PoE                                      |          |            |
| 10/100/1000Base-T(X) Indicator | 2 x LEDs, Green for port Link/Act  |          |            |
| WLAN LED                       | 1 x LED, Green for WLAN Link/Act   |          |            |
| WAN LED                        | 1 x LED, Green for Cellular modem Link/ Act  |          |            |
| Fault Indicator                | 1 x LED, Red for Ethernet link down or power down indicator  |          |            |
| <b>Fault Contact</b>           |  |          |            |
| Relay                          | Relay output to carry capacity of 3A at 24VDC  |          |            |
| <b>Power</b>                   |  |          |            |
| Redundant Input Power          | Relay output to carry capacity of 1A at 24VDC(5-pin M12 A-coding)  |          |            |
| Power Consumption (Typ.)       | 9 Watts  | 10 Watts | 10.2 Watts |
| Overload Current Protection    | Present  |          |            |
| Reverse Polarity Protection    | Present  |          |            |
| <b>Physical Characteristic</b> |  |          |            |
| Enclosure                      | IP-40  |          |            |
| Dimension (W x D x H)          | 125.6(W) x 65(D) x 196.1(H) mm (4.94 x 2.55 x 7.72 inch.)  |          |            |
| Weight (g)                     | 985g   | 990g     | 990g       |
| <b>Environmental</b>           |  |          |            |
| 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   |          |            |
| <b>Regulatory Approvals</b>    |  |          |            |
| EMI                            | FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2)  |          |            |
| 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 Fall                      | IEC60068-2-31  |          |            |
| Vibration                      | IEC60068-2-6, EN61373  |          |            |
| Rail Traffic                   | EN50155  |          |            |
| Cooling                        | EN60068-2-1  |          |            |
| Dry Heat                       | EN60068-2-2  |          |            |
| Safety                         | EN60950-1  |          |            |
| <b>Warranty</b>                | 5 years  |          |            |

## Ordering Information

**TGAR-ABCDE-FFG-M12**



| Code Definition | Cellular Module Number    | 2 <sup>nd</sup> Wireless Mode  | 1 <sup>st</sup> Wireless Mode  | Giga Ethernet Port Number | PoE Identification              | Cellular Generation | GPS Function |
|-----------------|---------------------------|--|--|---------------------------|---------------------------------|---------------------|--------------|
| Option          | 1: One SIM<br>2: Dual SIM | 1: 802.11 b/g<br>2: 802.11 a<br>3: 802.11 a/b/g<br>4: 802.11 b/g/n<br>5: 802.11 a/n<br>6: 802.11 a/b/g/n | 1: 802.11 b/g<br>2: 802.11 a<br>3: 802.11 a/b/g<br>4: 802.11 b/g/n<br>5: 802.11 a/n<br>6: 802.11 a/b/g/n | 2: 2 ports                | -"+" : PoE P.D. present at ETH2 | 3G :UMTS            | S:GPS        |

| Model Name      | Description                  |  |
|-----------------|------------------------------|--|
| Available Model | <b>TGAR-1062-3G-M12_US</b>   | Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, US band                    |
|                 | <b>TGAR-1062+-3G-M12_US</b>  | Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D,US band     |
|                 | <b>TGAR-1062+-3GS-M12_US</b> | Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D,US band |
|                 | <b>TGAR-1062-3G-M12_EU</b>   | Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, EU band                    |
|                 | <b>TGAR-1062+-3G-M12_EU</b>  | Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D,EU band     |
|                 | <b>TGAR-1062+-3GS-M12_EU</b> | Industrial EN50155 IEEE 802.11 a/b/g/n 3G cellular GPS router with 2x10/100/1000Base-T(X), M12 connector, 1-port PoE P.D,EU band |

## Packing List

- **TGAR-1062(+)-3G(S)-M12 x 1**
- **2.4GHz/5GHz Antenna x 2**
- **CD x 1**
- **3G Antenna x 1**
- **Quick Installation Guide x 1**

## Optional Accessories

- **DR-45 series : 45 Watts power supply**
- **DR-120 series : 120 Watts power supply**
- **RF Antenna Base series**
- **DR-75 series : 75 Watts power supply**
- **WLAN RF Antenna series**
- **RF Cable series**