



# TGAR-1662-3G-M12 series

**Industrial EN50155 Dual 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: **Dual RF in IEEE 802.11 a/b/g/n**  
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
- **Support 3.5G HSDPA dial up**
- 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
- 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.
- Provide Digital Input and Digital Output
- 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-1662-3G-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-1662-3G-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-1662+-3G-M12 also provides P.D. feature on ETH2 which is fully compliant with IEEE802.3af PoE P.D. specification and TGAR-1662+-3GS-M12 supports GPS

function. Therefore, TGAR-1662-3G-M12 is one of the most reliable choices for rolling stock applications on the wireless network.

## ➤ Application

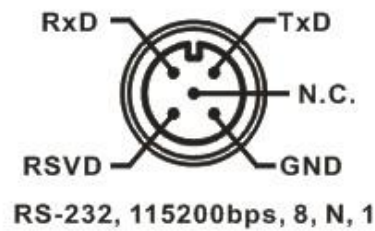
In TGAR-1662-3G-M12, there are 3 modes of routing functions supported: Dynamic/Static IP route, PPPoE dial up, and Modem dial up. TGAR-1662-3G-M12 also support NAT, VPN and Back up functions. You can build up the wireless network and connect to the Internet easily.

## ➤ Pin Definition

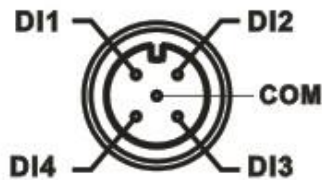
### Relay Output



### Console



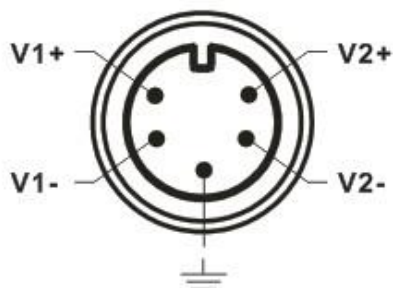
### DI



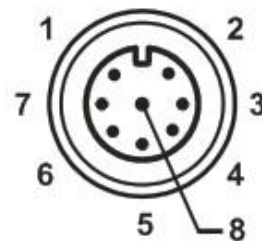
### DO



### Power

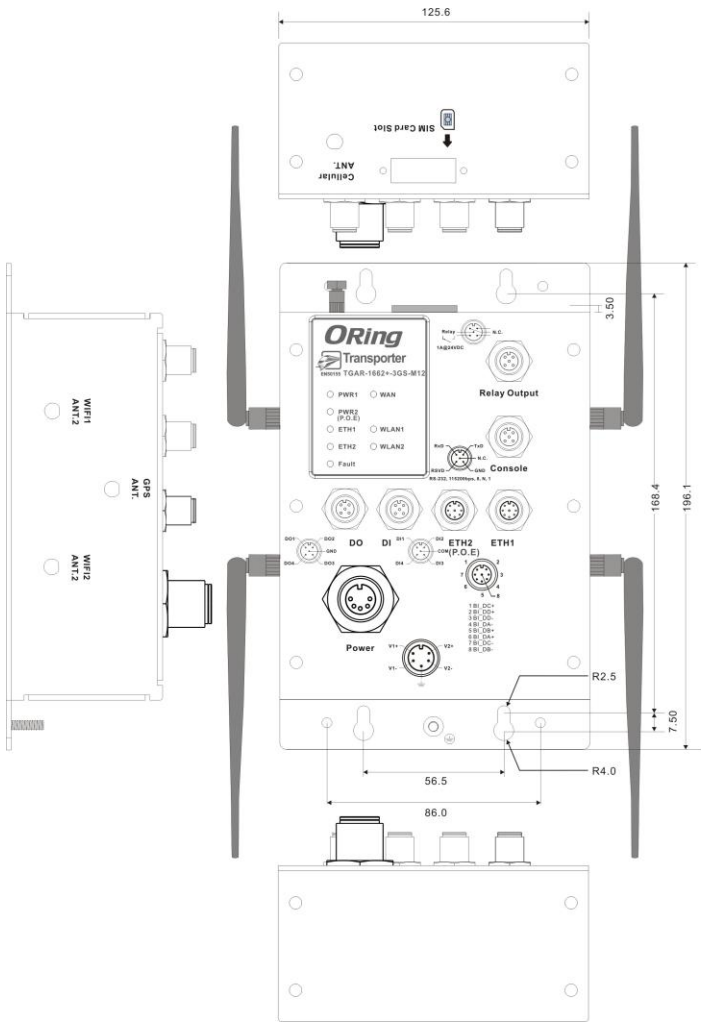


### Ethernet

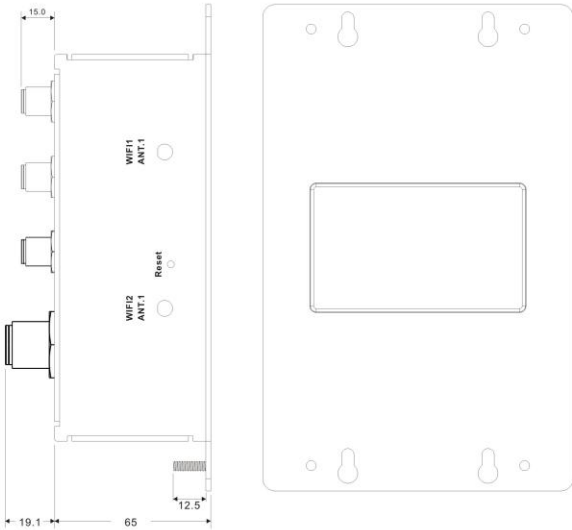


1 BI\_DC+  
2 BI\_DD+  
3 BI\_DD-  
4 BI\_DA-  
5 BI\_DB+  
6 BI\_DA+  
7 BI\_DC-  
8 BI\_DB-

Dimension



Dimension (Unit =mm)



\* All specifications are subject to change without notice.

## Specifications

ORing EN50155 WLAN		TGAR-1662-3G-M12	TGAR-1662+-3G-M12	TGAR-1662+-3GS-M12
Access Point Router Model				
Physical Ports				
10/100/1000Base-T(X) Ports in M12 Auto MDI/MDIX (8-pin A-coding)	2	2(Present at ETH2 Fully compliant with IEEE 802.3af PoE P.D )		
DIDO port in M12 (5-pin A-coding)	2(DI x 4 and DO x 4) : Dry Contact: On: short to GND, Off: open Wet Contact (DI to COM/GND): On: 0 to 3VDC, Off: 10 to 30VDC			
RS-232 Console port in M12 (5-pin A-coding)	115200, 8 ,N ,1			
Relay port in M12 (5-pin A-coding)	1A@24VDC			
SIM Card Slot	1			
GPS (-3GS model only)				
Antenna Connector	1 x External reverse SMA antenna connector			
Frequency	1575.42MHz			
WLAN Interface				
Antenna Connector	4 x Reverse SMA Female			
Radio Frequency Type	DSSS, OFDM			
Modulation	IEEE802.11a : OFDM with BPSK, QPSK, QAM, 64QAM IEEE802.11b: CCK, DQPSK, DBPSK IEEE802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM IEEE802.11n : BPSK, QPSK, 16-QAM, 64-QAM			
Frequency Band	America / FCC : 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz ( 9 channels ) Europe CE / ETSI : 2.412~2.472 Ghz (13 channels) 5.180~5.240 GHz (4 channels)			
Transmission Rate	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE801.11n: up to 300Mbps			
Transmit Power	802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7 802.11an HT40: 11dBm ± 1.5dBm @MCS7			
Receiver Sensitivity	802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7 802.11an HT40:-71dBm ± 2dBm@MCS7			
Encryption Security	WEP: (64-bit ,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption			
Wireless Security	SSID broadcast disable			
Cellular Interface				
Cellular Standard	GSM / GPRS/ EGPRS/ EDGE / WCDMA / HSDPA / HSUPA /HSPA+			
Antenna Connector	1 x Reverse SMA Female			
Band Option	Dual-band : HSUPA 1900/2100 MHz Quad-band : GSM/GPRS/EDGE 850/900/1800/1900 MHz WCDMA/HSDPA 850/900/1900/2100 MHz			

Protocol Support			
Protocol	ARP,BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE		
LED Indicators			
Power Indicator	2 x LEDs, PW1:Green for DC Power on PW2:Green for DC Power on or power by PoE		
10/100/1000Base-T(X) port Indicator	2 x LEDs, Green for port Link/Act		
WLAN LED	2 x LED, Green for WLAN Link/Act		
WAN LED	1 x LEDs, Green for functioning normal		
Fault Indicator	1 x LED, Red for Ethernet link down or power down indicator		
Fault Contact			
Relay	Relay output to carry capacity of 1A at 24VDC		
Power			
Redundant Input Power	Dual Power Inputs. 12~48 VDC on M23 connector (24 VDC Typ.)		
Power Consumption (Typ.)	13 Wait	14 Wait	14.2 Wait
Overload Current Protection	Present		
Reverse Polarity Protection	Present		
Physical Characteristic			
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)	1030g	1035g	1035g
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)		
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		
Warranty		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 2: Dual SIM	1: 802.11 b/g 2: 802.11 a 3: 802.11 a/b/g 4: 802.11 b/g/n 5: 802.11 a/n 6: 802.11 a/b/g/n	1: 802.11 b/g 2: 802.11 a 3: 802.11 a/b/g 4: 802.11 b/g/n 5: 802.11 a/n 6: 802.11 a/b/g/n	2: 2 ports	-"+" : PoE P.D. present at ETH2	3G :UMTS	S:GPS

Available Model	Model Name	Description
	TGAR-1662-3G-M12_US	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, US band
	TGAR-1662+-3G-M12_US	Industrial EN50155 Dual 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
	TGAR-1662+-3GS-M12_US	Industrial EN50155 Dual 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
	TGAR-1662-3G-M12_EU	Industrial EN50155 Dual IEEE 802.11 a/b/g/n 3G cellular router with 2x10/100/1000Base-T(X), M12 connector, EU band
	TGAR-1662+-3G-M12_EU	Industrial EN50155 Dual 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
	TGAR-1662+-3GS-M12_EU	Industrial EN50155 Dual 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-1662(+)-3G(S)-M12 x 1
- 2.4GHz/5GHz Antenna x 4
- 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