

TC ROUTER 3002T-4G ...

Industrial mobile routers for the North American market (Verizon or AT&T)

Data sheet
107024_en_04

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1 Description

The **TC ROUTER...** mobile routers enable high-performance high-speed data links via mobile networks. The integrated firewall and VPN (Virtual Private Network) protect your application against unauthorized access.

The devices are industrial 4G mobile routers (LTE). The version for AT&T additionally offers fallback to 3G (UMTS/HSPA).

The focus is on EMC, electrical isolation, and surge protection for reliable and secure communication. In addition, the data link and quality of the mobile phone network are monitored. If required, the device sends a message or re-establishes the mobile phone connection.

Features

- For the North American market
- Virtual dedicated line to connect networks via mobile phone network
- Stateful inspection firewall for dynamic filtering
- IPsec and OpenVPN
- VPN remote start via SMS or call
- Two switching inputs and one switching output
- Alarm sent via SMS or e-mail directly via the integrated switching input
- Configuration via web-based management or microSD card
- Two local Ethernet connections
- Switchable energy-saving mode
- Integrated logbook
- Extended temperature range of -40 °C ...+70 °C




The devices are intended for use in the USA.
Please also refer to the "6 Countries of use" section.




Make sure you always use the latest documentation.

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3 Ordering data

Description	Type	Order No.	Pcs./Pkt.
Industrial LTE 4G router, version for Verizon wireless (US), 2 Ethernet interfaces, firewall, NAT, IPsec and OpenVPN support, 2x SMA-F antenna socket, SMS and e-mail transmission, 2 digital inputs, 1 digital output	TC ROUTER 3002T-4G VZW	2702532	1
Industrial LTE 4G router, version for AT&T (US), fallback to 3G UMTS/HSPA, 2 Ethernet interfaces, firewall, NAT, IPsec and OpenVPN support, 2x SMA-F antenna socket, SMS and e-mail transmission, 2 digital inputs, 1 digital output	TC ROUTER 3002T-4G ATT	2702533	1
Accessories	Type	Order No.	Pcs./Pkt.
Primary-switched TRIO POWER power supply with push-in connection for DIN rail mounting, input: 1-phase, output: 24 V DC/3 A C2LPS	TRIO-PS-2G/1AC/24DC/3/C2LPS	2903147	1
Multiband mobile communication antenna for wall mounting, 0.5 m antenna cable, with SMA circular connector, suitable for LTE/4G	TC ANT MOBILE WALL 0,5M	2702274	1
PCB connector, nominal current: 8 A, number of positions: 5, pitch: 3.81 mm, connection method: Push-in spring connection, color: light gray, contact surface: tin	FK-MCP 1,5/ 5-ST-3,81GY35BD-01	1105115	50
License for mGuard Secure VPN Client v11.x	MGUARD SECURE VPN CLIENT LIC	2702579	1
Mobile network antenna cable, 5 m in length, SMA (male) -> SMA (female), 50 ohm impedance	PSI-CAB-GSM/UMTS- 5M	2900980	1
Mobile network antenna cable, 10 m in length, SMA (male) -> SMA (female), 50 ohm impedance	PSI-CAB-GSM/UMTS-10M	2900981	1
Attachment plug with Lambda/4 technology as surge protection for coaxial signal interfaces Connection: Male/female SMA connectors.	CSMA-LAMBDA/4-2.0-BS-SET	2800491	1
 <p>Operation of the wireless system is only permitted when using accessories available from Phoenix Contact. The use of any other components can lead to the withdrawal of the operating license. You can find the approved accessories for this wireless system listed with the item at phoenixcontact.net/products.</p>			

4 Technical data

Supply		
Supply voltage range	10 V DC ... 30 V DC (SELV, via pluggable Push-in terminal block)	
Typical current consumption	< 200 mA (24 V DC) 65 mA (with activated energy-saving mode)	
Max. current consumption	1.7 A	
Electrical isolation	VCC // LTE // Ethernet // PE	
 Use copper wires rated 85 °C.		
Functions		
Management	Web-based management, SNMP	
Firewall rules	Stateful inspection firewall	
Filtering	IP, port, protocol	
Number of VPN tunnels	3	
1:1 Network Address Translation (NAT) in the VPN	Supported	
Encryption methods	3DES, AES-128, -192, -256	
Internet Protocol Security (IPsec) mode	ESP tunnel	
Authentication	X.509v3, PSK	
Data integrity	MD5, SHA-1	
Dead peer detection (DPD)	RFC 3706	
Ethernet interface, 10/100Base-T(X) in acc. with IEEE 802.3u		
Number of ports	2 (SELV)	
Connection method	RJ45 socket, shielded	
Serial transmission speed	10/100 Mbps, auto negotiation	
Transmission length	100 m (shielded twisted pair)	
Protocols supported	TCP/IP, UDP/IP, FTP, HTTP(S)	
Auxiliary protocols	ARP, DHCP, PING (ICMP), SNMP V1/V2, SMTP(S), NTP, SSL/TLS, STARTTLS	
Wireless interface	TC ROUTER 3002T-4G VZW	TC ROUTER 3002T-4G ATT
Interface description	LTE (FDD)	LTE (FDD) / UMTS
Frequency	700 MHz (LTE B13) 1700 MHz (LTE B4)	850 MHz (UMTS/HSPA B5) 1900 MHz (UMTS/HSPA B2) 700 MHz (LTE B13 / B17) 850 MHz (LTE B5) 1700 MHz (LTE B4) 1900 MHz (LTE B2)
Data rate	≤ 150 Mbps (LTE (DL)) ≤ 50 Mbps (LTE (UL))	≤ 150 Mbps (LTE (DL)) ≤ 50 Mbps (LTE (UL))
Antenna	50 Ω impedance SMA antenna socket	50 Ω impedance SMA antenna socket

Wireless interface	TC ROUTER 3002T-4G VZW	TC ROUTER 3002T-4G ATT
SIM Interface	1.8 volt, 3 volt	1.8 volt, 3 volt
UMTS		HSPA 3GPP R9
LTE	CAT4	CAT4
Digital input		
Number of inputs	2	
Input signal, Voltage	10 V DC ... 30 V DC	
Switching level "1" signal	10 V DC ... 30 V DC	
Digital output		
Number of outputs	1 (resistive load)	
Output signal, Voltage	10 V DC ... 30 V DC (depending on the operating voltage)	
Output signal, Current	≤ 50 mA (not short-circuit proof)	
General data		
Degree of protection	IP20 (manufacturer's declaration)	
Degree of pollution	2 (indoor use only)	
Dimensions (W/H/D)	45 mm x 130 mm x 126 mm	
Housing material	Plastic gray	
Vibration resistance in acc. with EN 60068-2-6/ IEC 60068-2-6	5g, 10...150 Hz, 2.5 h, in XYZ direction	
Shock in acc. with EN 60068-2-27/IEC 60068-2-27	15g	
MTTF (mean time to failure) SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day)	383 Years	
MTTF (mean time to failure) SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day)	184 Years	
MTTF (mean time to failure) SN 29500 standard, temperature 40 °C, operating cycle 100 % (7 days a week, 24 hours a day)	78 Years	
Noise immunity according to Electromagnetic compatibility	EN 61000-6-2 Conformance with RED Directive 2014/53/EU	
Ambient conditions		
Ambient temperature (operation)	-40 °C ... 70 °C (maximum transmission power 5 dBm)	
	-40 °C ... 60 °C (maximum transmission power 23 dBm)	
Ambient temperature (storage/transport)	-40 °C ... 85 °C	
Permissible humidity (operation)	10 % ... 95 % (non-condensing)	
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)	
Altitude	5000 m (for restrictions see manufacturer's declaration)	
Approvals / Certificates		
UL, USA/Canada	Class I, Zone 2, AEx nA IIC T4 / Ex nA IIC T4 Gc Class I, Div. 2, Groups A, B, C, D T4	
Noxious gas test	ISA-S71.04-1985 G3 Harsh Group A	

Conformance with RED Directive 2014/53/EU
Noise immunity according to EN 61000-6-2

Electrostatic discharge	EN 61000-4-2	
	Contact discharge	± 6 kV (Test Level 3)
	Discharge in air	± 8 kV (Test Level 3)
	Comments	Criterion B
Electromagnetic HF field	EN 61000-4-3	
	Frequency range	80 MHz ... 3 GHz (Test Level 3)
	Field intensity	10 V/m
	Comments	Criterion A
Fast transients (burst)	EN 61000-4-4	
	Input	± 2 kV (Test Level 3)
	Signal	± 2 kV (Ethernet)
	Comments	Criterion B
Surge current loads (surge)	EN 61000-4-5	
	Input	± 0.5 kV (symmetrical) ± 1 kV (asymmetrical)
	Signal	± 1 kV (Data line, asymmetrical)
	Comments	Criterion B
Conducted interference	EN 61000-4-6	
	Frequency range	0.15 MHz ... 80 MHz
	Voltage	10 V
	Comments	Criterion A

Emitted interference in acc. with EN 61000-6-4

Radio interference voltage in acc. with EN 55011	Class B, area of application: Industry and residential
Emitted radio interference in acc. with EN 55011	Class B, area of application: Industry and residential

Criterion A Normal operating behavior within the specified limits

Criterion B Temporary impairment of operating behavior that is corrected by the device itself

Conformance with RED Directive 2014/53/EU

EMC - immunity to interference (electromagnetic compatibility of wireless systems)	EN 61000-6-2 Generic standard for the industrial sector
Safety - protection of personnel with regard to electrical safety	EN 60950
Health - limitation of exposure of the population to electromagnetic fields	EC Gazette 1999/519/EC EC Council recommendation of July 12, 1999
Radio - effective use of the frequency spectrum and prevention of radio interference	DIN EN 301511

5 Safety notes

5.1 Intended use

Installation is only permitted in countries that allow the operation of wireless devices in this frequency band and supply range.

The devices are only for export outside of the European Economic Area.

5.2 Safety notes



CAUTION:

Observe the following safety notes when using the device.

- Installation, operation, and maintenance may only be carried out by qualified electricians. Follow the installation instructions as described.
- When installing and operating the device, the applicable regulations and safety directives (including national safety directives), as well as general technical regulations, must be observed. The technical data is provided in the package slip and on the certificates (conformity assessment, additional approvals where applicable).
- The device must not be opened or modified. Do not repair the device yourself, replace it with an equivalent device. Repairs may only be carried out by the manufacturer. The manufacturer is not liable for damage resulting from violation.
- The IP20 protection (IEC 60529/EN 60529) of the device is intended for use in a clean and dry environment. The device must not be subject to mechanical strain and/or thermal loads, which exceed the limits described.
- The device is designed exclusively for SELV operation according to IEC 60950-1/EN 60950-1/VDE 0805. The device may only be connected to devices, which meet the requirements of EN 60950-1.
- The device complies with the EMC regulations for industrial areas (EMC class A). When using the device in residential areas, it may cause radio interference.
- Operation of the wireless system is only permitted when using accessories available from Phoenix Contact. The use of any other components can lead to the withdrawal of the operating license.

5.3 UL warning instructions



WARNING: Explosion hazard when used in potentially explosive areas

Please make sure that the following notes and instructions are observed.

- Use copper wires rated 85°C.
- If the equipment is used in a manner not specified, the protection provided by the equipment may be impaired.
- This device has to be built in an enclosure (control box).
- External circuit from SELV supplied
- SELV - Limited energy according to UL/IEC/EN 61010-1 or NEC class II
- This equipment must be mounted in an enclosure certified for use in Class I, Zone 2 minimum and rated IP54 minimum in accordance with IEC 60529 when used in Class I, Zone 2 environment.
- Device shall only be used in an area of not more than pollution degree 2.



Class I, Zone 2, AEx nA IIC T4 / Ex nA IIC T4 Gc
Class I, Division 2, Groups A, B, C and D T4
Input: 10 - 30 V DC, max. 1.7 A ---
Amb. Temp. Range: -40°C < Tamb < 70°C



6 Countries of use

USA

The TC ROUTER 3002T-4G VZW/ATT devices are intended for use in the US 4G mobile networks of Verizon and AT&T.

Europe

The TC ROUTER 3002T-4G VZW/ATT devices are only for export outside of the European Economic Area.

Use the following devices in Europe:

- TC ROUTER 3002T-4G, 2702528
- TC ROUTER 2002T-4G, 2702530

Only these devices have all the necessary approvals for use in Europe.

Other countries

If the required general conditions are met, the US devices may be used in other countries.



For an initial idea of which frequency bands are available in your country of use, visit www.frequencycheck.com.

- Verify with your provider whether one of the following frequency bands is available:

TC ROUTER 3002T-4G VZW

- LTE, CAT4, B4
- LTE, CAT4, B13

TC ROUTER 3002T-4G ATT

- LTE, CAT4, B2
- LTE, CAT4, B4
- LTE, CAT4, B5
- LTE, CAT4, B13
- LTE, CAT4, B17

- Verify with your provider whether there is network coverage at the installation location.
- Verify with your provider whether the device is approved for operation at the installation location.

7 Product description

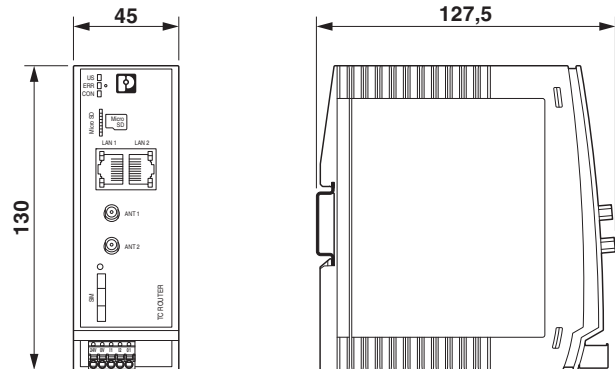


Figure 1 Dimensions

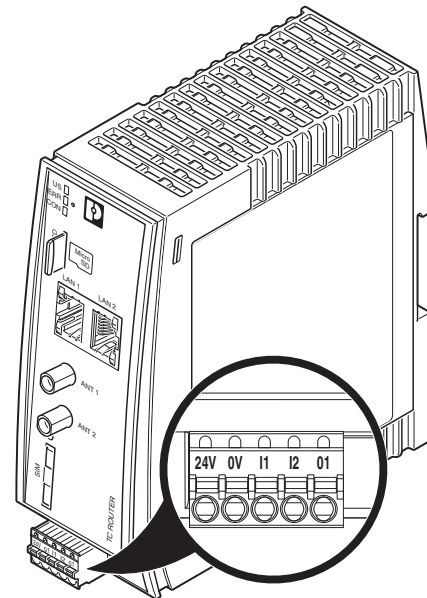


Figure 2 Device connections

7.1 Function elements



The 4G devices have two antenna connections. To achieve optimum LTE reception, always connect two antennas for 4G devices.

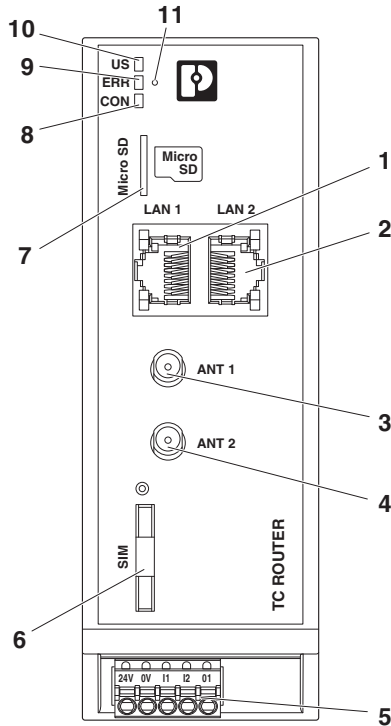


Figure 3 Function elements

- 1 LAN interface 1
- 2 LAN interface 2
- 3 SMA antenna connection 1, primary antenna
- 4 SMA antenna connection 2, secondary antenna
- 5 Pluggable Push-in terminal block
- 6 SIM interface
- 7 Slot for micro SD card
- 8 CON-LED
- 9 ERR-LED
- 10 US-LED
- 11 Reset button

7.2 Status and diagnostics indicators

U_S	Power	Green
	On	Supply voltage present
	Off	Registered on the network
ERR	Error	Red
	Off	Registered on the network
	Flashing	SIM card not inserted, SIM error (e.g. PIN or PUK locked)
CON	On	Searching for cellular network
	Connect	Yellow
	On	Connection established

In the case of the TC ROUTER 3002T..., the CON LED can be configured via web-based management. You can therefore monitor the mobile IP connection or the VPN tunnel.

7.3 Additional functions

Slot for microSD card

You can use a microSD card to load the configuration in the device or permanently store log files.

Energy-saving mode

In energy-saving mode, the power consumption of the mobile router is reduced for battery-powered applications. You can configure the mode via the web interface and activate it via a switching input. When energy-saving mode is activated, the communication interfaces switch to standby mode. Data transmission is limited.

XML interface

The XML interface enables operation and diagnostics of devices from the local LAN. You can therefore query the status of the mobile network connection via Ethernet, for example, or send SMS messages and e-mails.

8 Switching inputs and outputs

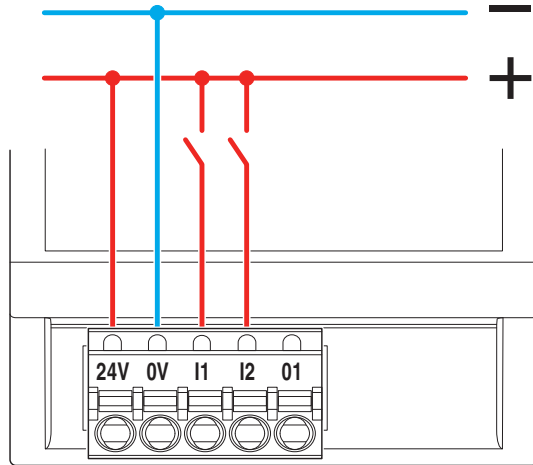


Figure 4 Switching inputs and outputs

- You can connect 10 ... 30 V DC to the switching inputs I1 and I2.
- The switching output O1 is designed for a maximum of 50 mA at 10 ... 30 V DC.
- The connection cables for the switching inputs and the switching output must not be longer than 30 meters.
- You must connect the 0 V potential of the switching inputs and outputs to the "0 V" terminal of the voltage supply connection.

8.1 Function

Two configurable switching inputs for the following functions:

- SMS can be sent, even to multiple recipients
- E-mail can be sent, even to multiple recipients
- Output at a remote station can be controlled via SMS
- Restart router
- Start or stop mobile data link
- Switch IPsec or OpenVPN connection
- Automatically load configuration from a microSD card
- Activate energy-saving mode

One configurable switching output, activated by:

- Activation by the input at a remote station
- SMS
- Web-based management
- Incoming call
- Connection abort
- Status of the mobile network connection
- Status of the mobile data link
- Status of a VPN connection