Tosi Gateway User Manual

Tosi 175, Tosi 350, Tosi 375, Tosi 610, Tosi 675, Tosi 675 US, Tosi 695

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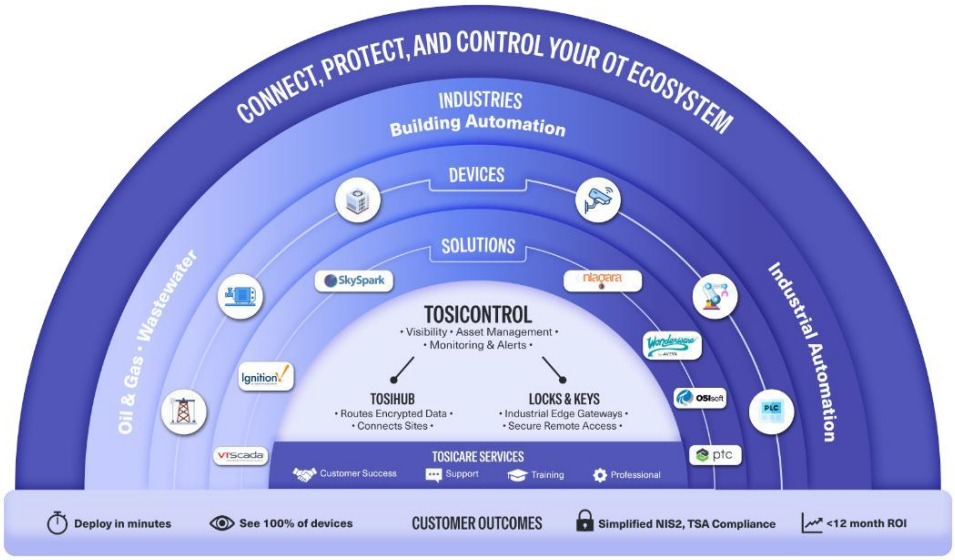
1 Introduction

Congratulations on choosing the Tosi solution!

Tosi is globally audited, patented and performs at the highest security levels in the industry. The technology is based on two-factor authentication, automatic security updates and the latest encryption technology.

Tosi solution consists of modular components that offer unlimited expandability and flexibility. All Tosi products are compatible with each other and are internet connection and operator agnostic. Tosi creates a direct and secure VPN tunnel between the physical devices. Only trusted devices can access the network.



2 Regulatory information

2.1 Tosi gateway intended use

The device is used for controlling other devices remotely over the Internet via a VPN connection. To be installed into a DIN rail, inside a cabinet with the controlled devices. Alternatively, the device may be standing on its rubber feet on a table or a shelf. Product conformity with the requirements is guaranteed only when using the antennas supplied with the product. The use of other antennas will void conformity and is not allowed.

2.2 Important notice for wireless operation

Because of the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices are used in a normal manner with a well-constructed network, Tosi Node with cellular modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property.

Tosibox Oy and its affiliates accept no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using Tosi gateway with cellular modem, or for failure of the Tosi gateway with cellular modem to transmit or receive such data.

2.3 Safety and hazards

At least 20 cm separation distance between the antennas and persons must be always maintained.

Do not operate your device with cellular modem:

- In areas where blasting is in progress
- Where explosive atmospheres may be present including refueling points, fuel depots, and chemical plants
- Near medical equipment, life support equipment, or any equipment which may be susceptible to any form of radio interference. In such areas, the device and the cellular modem MUST BE POWERED OFF. Otherwise, the cellular modem can transmit signals that could interfere with this equipment.
- In an aircraft, the gateway and the cellular modem MUST BE POWERED OFF. Otherwise, the device and the cellular modem can transmit signals that could interfere with various onboard systems and may be dangerous to the operation of the aircraft or disrupt the cellular network. Use of a cellular phone in an aircraft is illegal in some jurisdictions. Failure to observe this instruction may lead to suspension or denial of cellular telephone services to the offender, or legal action or both. Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. The device and the cellular modem may be used normally at this time.

2.4 Information réglementaire

2.5 Domaine d'application du Tosi gateway

Le gateway permet de contrôler des équipements distants à travers Internet en créant une connexion VPN. Il peut être installé sur un rail DIN dans une armoire à côté des équipements à contrôler. Il peut

aussi être posé sur ses patins en caoutchouc sur une table ou une étagère. La conformité des caractéristiques de l'équipement est seulement garantie avec l'installation des antennes livrées. L'utilisation d'autre antenne annulera la conformité et n'est pas autorisée.

2.6 Information importante pour l'utilisation du réseau sans fil

En raison de la nature des communications sans fils, les données transmises et reçues ne peuvent être garanties. Les données peuvent être retardées, corrompues (avoir des erreurs) ou être complètement perdues. Bien que les pertes ou les retards de données soient rares lorsque les équipements sont utilisés dans des conditions normales dans des réseaux construits avec les règles de l'art, le Tosi gateway avec un modem cellulaire ne devrait pas être utilisé dans les cas où les erreurs de transmission ou de réception de données pourraient entrainer des dommages de quelque nature que ce soit pour l'utilisateur ou pour une tierce partie, incluant mais ne limitant pas les blessures physiques, la mort ou la perte de jouissance.

Tosibox Oy et ses filiales ne pourront être tenues pour responsables des dommages de quelque nature que ce soit résultant de retards ou d'erreurs dans les données transmises ou reçues en utilisant un Tosi gateway avec modem cellulaire ou des problèmes créés par l'équipement Tosi gateway avec modem cellulaire lors de transmission ou réception de ces données.

2.7 Sécurité et dangers

Une distance minimale de 20 cm entre les antennes et les personnes doit être respectée à tout moment.

N'utilisez pas votre gateway avec un modem cellulaire interne ou externe:

- Dans les zones des explosions sont est en cours
- Où des atmosphères explosives peuvent être présentes, y compris des points de ravitaillement en carburant, des dépôts de carburant et des usines chimiques
- À proximité d'équipements médicaux, d'équipements de survie, ou de tout équipement susceptible de subir toute forme d'interférence radio. Dans ces zones, le gateway et le modem cellulaire DOIVENT ÊTRE ÉTEINTS, sous peine d'émission de signaux par le modem cellulaire susceptibles d'interférer avec ces équipements.
- Le gateway et le modem cellulaire DOIVENT ÊTRE ÉTEINTS dans un avion. Le gateway et le modem cellulaire sont susceptibles de transmettre des signaux pouvant brouiller les systèmes de embarqués pouvant nuire au bon fonctionnement de l'appareil ou interférer avec les réseaux radio.
- L'utilisation d'un téléphone cellulaire dans un avion est illégale dans certaines juridictions. Le non-respect de cette règle peut entraîner la suspension ou le refus des services de téléphonie cellulaire pour le contrevenant, ou des poursuites judiciaires, ou les deux. Certaines compagnies aériennes peuvent autoriser l'utilisation de téléphones cellulaires lorsque l'avion est au sol et que la porte est ouverte. Le gateway et le modem cellulaire peuvent être utilisés normalement à ce moment.

2.8 Overview

2.9 Tosi Key

Tosi Key is an intelligent USB-connected device that contains a secure cryptoprocessor. The Key is used to establish a secure connection to the gateway. All Tosi Keys and devices are interoperable.

2.10 Tosi gateway

Tosi gateway is a device that accepts remote connections from matched Keys and creates private and secure access to connected network devices. The network devices that are connected to the device LAN port are automatically found. The device automatically distributes IP addresses for the Keys, Sub Keys and the network devices connected to LAN port(s) of the device. The gateway can also control network devices with fixed IP addresses.

Device settings can be changed via service port, encrypted Tosi VPN connection local network

2.10.1.1 Sub Lock

Sub Lock is a device that has been converted to Sub device mode. When connecting two devices to each other, one must be in Sub device mode of operation.

3 Getting started

Make sure the gateway is powered before proceeding to matching the Key with the device. Insert the Key into the USB port of the device. When the LED on the Key turns off, the matching is complete (approximately 10 seconds). Remove the Key from the device. You can also match additional gateways to the same Key.

Connect the gateway to your network according to your use case. Remember to make sure that the device has a working internet connection.

Connect the Key to your computer and install the Key software.

Secure Tosi connection is now ready to be used for controlling and monitoring devices remotely.

3.1 Deploying in Lock mode

With its factory default settings, the device is connected to the Internet via its WAN port, WLAN or cellular modem. In this mode, the gateway creates its own protected local network for the connected devices. In this configuration, only devices that are connected to the gateway by cable or via WLAN access point are accessible with the Key.

Note:

- If the device is connected to a DHCP enabled network via any of its LAN ports, the device's own LAN functionality can be restored by resolving any DHCP conflicts by removing improper LAN connections to the device.

3.1.1.1 Connecting network devices in Lock mode

- Connecting device(s) that use dynamic IP addresses (DHCP)

Devices with a DHCP client enabled will automatically connect to the gateway. Plug the device(s) into the device's LAN port(s) and go!

- Connecting device(s) with Fixed IP addresses by configuring the GATEWAY to the DEVICE:

1. Get the device IP addresses and netmask.

2. Connect your PC to the gateway´s service port and log in following the step 1 on "Updating the gateway software".

3. Go to Network->LAN and change the IP address in the “IPv4 address” field to the next IP address above the IP address of the device (step 1). Also check that the “IPv4 netmask” field corresponds to the netmask set on the device and change it if necessary.

4. Plug the devices into the gateway´s LAN ports and go!

3.2 Deploying in Client mode

Client mode can be used for connecting the device to an existing network (e.g. an office network). In this mode, the gateway joins the network like any other device (e.g. a PC) and provides remote users with access to other devices in the same network. The gateway will obtain its address from the DHCP, so the local network needs to have a working DHCP server that allocates IP addresses.

3.2.1.1 Connecting network devices in Client Mode

Log into the gateway´s web user interface as admin and open the LAN settings by clicking Network > LAN.

Change the LAN interface protocol field to “DHCP Client”. Click the “Switch Protocol” button and click “Save”.

Plug in a cable from the local network into one of the gateway’s LAN ports and go!

Note:

- Do not connect the controlled devices to any LAN port.
- The gateway will scan the entire LAN network for connected devices and will grant device access to any user with a matched Key. Please keep this in mind when considering network and information security.
- In cases where access rights need to be restricted, switch on MAC/IP Filtering (under Advanced Settings) or set up the device in its factory default configuration.
- In this mode, the gateway´s inbuilt firewall does not protect the devices in the LAN network.
- Client Mode is deactivated from the device’s web user interface

3.3 Lock – Sub Lock connection

With Tosi gateway one can connect machines in separate places so that the connection between them is permanently and automatically on. One example is a real-time protected connection between home and office. This is made with a Lock - Sub Lock connection.

- Tosi 175 can have up to 10 Sub Locks
- Tosi 300-series can have up to 10 Sub Locks
- Tosi 600-series can have up to 20 Sub Locks

First match the Key to all the devices to be connected.

3.3.1.1 Connecting gateways

1. Insert a matched Key to the USB port of the computer.
2. Choose ”Devices” from the Key user menu and ”Connect devices” from the drop-down menu.
3. Choose the devices that you want to connect and choose ”Next”.
4. Choose the gateway that you want to attach the Sub devices. The other devices will be changed to Sub device operating mode.
5. Confirm the selection > Save > matching is ready.

Note: The connections will come into effect when the devices have access to the Internet.

The Sub device ends of the connection in the picture do not have their own DHCP service. If the connection between the gateway and the Sub device is interrupted, the network devices connected with the Sub device can no longer connect to the Internet and each other.

3.4 Updating the gateway software

Connect the computer to the service port of the device with an ethernet cable. First check that you have access to the Internet via the service port. Open an internet browser and type http://172.17.17.17 into the address field to access the gateway user interface. Do not type “www” before the “http://” in the address. b. Alternatively you can also log in remotely. When the connection between the Key and the device is active, double click the gateway symbol in the Key user interface.

Log in using “admin” for the user ID. The default admin password is visible on the bottom of the device.

Choose “Settings” > “Software update”. If there is a software update available for the device, you can start the update by clicking the “Start software update” button.

Wait until the update has been downloaded and installed. Do not interrupt the power of the device during the software update process. The update is complete when the software gives a notice “Software updated successfully”.

Automatic software updates are activated as a default setting. You can select the time when the automatic update of the released software is allowed. You can deactivate the automatic software update from the gateway user interface.

Choose “Settings” > “Software update” > uncheck the box “Auto-update enabled”.

3.5 Cellular modem settings

You can connect the gateway to the Internet with a cellular modem. Before inserting or removing the SIM card(s), disconnect the gateway power supply.

- Log in as admin user, select “Network” > “Internal Modem”
- Either use the Automatic APN setting or fill in the APN and if necessary the PIN field according to the SIM card settings. For APN settings information, please contact your mobile operator.

3.6 WLAN settings

You can configure the WLAN as Client (providing Internet access for the gateway) or as Access Point (providing access to gateway LAN and Internet for wireless devices). For detailed set-up instructions visit Tosi Knowledgebase.

3.7 Advanced settings

On the Advanced settings page you can configure LAN and Internet access restrictions and security related settings as well as time zone and NTP server settings. NTP settings are applicable to all products.

1. Log in as admin
2. Choose “Settings” > “Advanced settings”
3. Confirm changes > Save

3.8 Service port

Tosi gateways provide a Service port mechanism to allow login in case device is misconfigured. Enabling Service port sets the last LAN port (LAN1 on Tosi 175, LAN3 on Tosi 600-series, LAN4 on Tosi 300-series) into Service port mode where local login is possible with following settings:

- Gateway management interface IP: 172.17.17.17
- DHCP server: enabled

To enable Service port

- Remove cable from the Service port
- Press the reset button for 3 seconds

When completed, the Internet status LED will blink for three seconds. The gateway Management Interface can then be accessed by entering management IP address on the address bar of your browser. Assigning the port back to LAN range can be done following the same procedure or by restarting the device.

3.9 Input powering options

3.9.1.1 Tosi 175

Use the AC adapter included in the sales package. Alternatively, in case the operating voltage of 9-35V DC (absolute value) is available from an external power source, a DC input plug included in the sales package can be used. Connect the stripped wires by tightening the screws with a flat blade screwdriver. Follow the polarity marking in the plug.

3.9.1.2 Tosi 350 and Tosi 375

Use the AC adapter included in the sales package. Alternatively, in case the operating voltage of 5-35V DC (absolute value) is available from an external power source, a DC input can be used.

3.9.1.3 Tosi 610, Tosi 675, Tosi 675 US, Tosi 695

Use the AC adapter included in the sales package. Alternatively, in case the operating voltage of 9-50V DC (absolute value) is available from an external power source, a DC input can be used.

4 Maintenance instructions

Treat your Tosi devices with care. By observing the following maintenance instructions, you can enjoy the maximum performance of the devices and ensure full warranty coverage.

- Keep the devices dry. Protect the devices from precipitation, moisture and liquids as they can cause corrosion to electronic circuits. The devices are intended for indoor use only. Do not use them in wet environment or outdoors.
- Protect the devices from dirt and dust. When necessary, clean the devices with a soft, dry cloth. Do not use chemicals, solvents, detergents or pressurized air.
- Protect the devices from heat. High temperatures can damage plastic parts and shorten the life of the electronics.
- Protect the devices from cold. Low temperatures can make them more susceptible to breakage. Let the device’s temperature stabilize properly before deploying them into the network.
- Protect the devices from mechanical shocks. Do not shake, knock or drop the devices.
- Do not paint the devices.

- Do not cover the devices or install them on top of each other. This can cause overheating. Allow enough free space around the devices to ensure the free flow of cooling air.
- Do not open the devices. There are no serviceable parts inside the devices. If the devices malfunction or need servicing, contact an authorized service facility.
- After the service life of the devices is over, do not throw them into domestic waste. Instead, take them to an authorized waste electronics collection facility.

5 Technical data

5.1 Tosi 175

5.1.1.1 Ports

- 1x RJ-45 WAN connection, 10/100 Mb/s, auto-negotiation (MDI / MDI-X)
- 1x RJ-45 LAN connection, 10/100 Mb/s, auto-negotiation (MDI / MDI-X)
- LAN can be assigned as Service connection, 10/100 Mb/s, auto-negotiation (MDI / MDI-X)
- RS485 port is not supported in the software. The device can be powered through the port

5.1.1.2 Connections

- 9-35V DC
- 2x WiFi antenna connector, RP-SMA female
- 1x LTE antenna connector, SMA female
- DIN rail attachment (back)

5.1.1.3 4G Module

- Cellular module: Quectel EG25-G
- Region: Global
- LTE Cat-4
- Up to 150 Mbps DL, 50 Mbps UL

5.1.1.4 Frequency Bands

- LTE FDD: B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B25, B26, B28
- LTE TDD: B38, B39, B40, B41
- WCDMA: B1, B2, B4, B5, B6, B8, B19

5.1.1.5 WLAN

- IEEE 802.11 b/g, 2.4 GHz, max. 150 Mbps
- Encryptions WEP, WPA-PSK, WPA2-PSK, WPA-PSK/WPA2-PSK mixed mode
- Frequency 2.412 – 2.462 GHz, 11 channels
- Access point or client mode
- Output power 15 dBm max

5.1.1.6 Physical properties

- Size 104 mm x 28 mm x 110 mm / 4.09” x 1.10” x 4.33”
- Weight 305 g / 0.67 lbs (net weight article)

5.1.1.7 Storage Temperature

- Gateway -30°C … +70°C / -22°F … +158°F

- Power supply -20°C ... +80°C / -4°F … +176°F

5.1.1.8 Operating Temperature

- Gateway -20°C … +55°C / -4°F … +131°F
- Power supply 0°C ... +40°C / 32°F … +104°F

5.2 Tosi 350

5.2.1.1 Ports

- 1 x RJ-45 WAN connection, 10/100 Mbps, auto-negotiation (MDI / MDI-X)
- 4 x RJ-45 LAN connection, 10/100 Mbps, auto-negotiation (MDI / MDI-X)
- 1 x USB 2.0, type A

5.2.1.2 Connections

- 2 pin industrial DC power socket
- 6-Pin 3.5mm Digital IO socket (6-Pin serial interface not supported in software)
- 5-35V DC, reverse polarity protection, voltage surge/transient protection
- 1x RP-SMA for WiFi
- DIN rail mounting in the back
- Maximum power consumption 10W

5.2.1.3 WLAN

- IEEE 802.11 b/g/n, 2.4 GHz, max. 54 Mbps
- Encryptions WEP, WPA-PSK, WPA2-PSK, WPA-PSK/WPA2-PSK mixed mode
- Frequency 2.412 – 2.462 GHz, 11 channels
- Access point or client mode
- Output power 20 dBm max

5.2.1.4 I/O specifications

- 2x Digital input, 0 - 30 V as logic high
- 2x Digital output, relay, up to 5A and 30 VDC/250VAC output
- Software configurable I/O state

5.2.1.5 Physical properties

- Size 145 mm x 114 mm x 45 mm / 5.71” x 4.49” x 1.77”
- Protection class IP30
- Weight 625 g / 1.37 lbs (net weight article)

5.2.1.6 Storage Temperature

- Gateway -35 °C … +75 °C / -31 °F … +167 °F
- Power supply -20 °C ... +80 °C /-4°F … +176 °F

5.2.1.7 Operating Temperature

- Gateway -35 °C … +75 °C / -31 °F … +167 °F
- Power supply -10°C ... +40°C / 14°F … +104°F

5.3 Tosi 375

5.3.1.1 Ports

- 1x RJ-45 WAN connection, 10/100 Mbps, auto-negotiation (MDI / MDI-X)
- 4x RJ-45 LAN connection, 10/100 Mbps, auto-negotiation (MDI / MDI-X)
- 1x USB 2.0, type A

5.3.1.2 Connections

- 2 pin industrial DC power socket
- 6-Pin 3.5mm Digital IO socket (6-Pin serial interface not supported in software)
- 5-35V DC, reverse polarity protection, voltage surge/transient protection
- 1x RP-SMA for WiFi
- DIN rail mounting in the back
- Maximum power consumption 10W

5.3.1.3 4G Module

- Cellular module: Quectel EG25-G
- Region: GLOBAL
- LTE Cat-4
- Up to 150 Mbps DL, 50 Mbps UL

5.3.1.4 Frequency Bands

- LTE FDD: B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B25, B26, B28
- LTE TDD: B38, B39, B40, B41
- WCDMA: B1, B2, B4, B5, B6, B8, B19

5.3.1.5 WLAN

- IEEE 802.11 b/g/n, 2.4 GHz, max. 54 Mbps
- Encryptions WEP, WPA-PSK, WPA2-PSK, WPA-PSK/WPA2-PSK mixed mode
- Frequency 2.412 – 2.462 GHz, 11 channels
- Access point or client mode
- Output power 20 dBm max

5.3.1.6 I/O specifications

- 2x Digital input, 0 - 30 V as logic high
- 2x Digital output, relay, up to 5A and 30 VDC/250VAC output
- Software configurable I/O state

5.3.1.7 Physical properties

- Size 145 mm x 114 mm x 45 mm / 5.71” x 4.49” x 1.77” (W x H x L)
- Protection class IP30
- Weight 625 g / 1.37 lbs (net weight article)

5.3.1.8 Storage Temperature

- Gateway -35 °C … +75 °C / -31 °F … +167 °F
- Power supply -20 °C ... +80 °C /-4°F … +176 °F

5.3.1.9 Operating Temperature

- Gateway -35 °C … +75 °C / -31 °F … +167 °F
- Power supply -10°C ... +40°C / 14°F … +104°F

5.4 Tosi 610

5.4.1.1 Ports

- 1x RJ-45 WAN connection, 10/100/1000 Mb/s, auto-negotiation (MDI / MDI-X)
- 3x RJ-45 LAN connection, 10/100/1000 Mb/s, auto-negotiation (MDI / MDI-X)
- 1x USB 2.0, type A

5.4.1.2 Connections

- 4 pin industrial DC power socket
- 9-50V DC, reverse polarity protection, voltage surge/transient protection
- DIN rail mounting slot in the back
- Maximum power consumption 6W

5.4.1.3 Digital I/O specifications

- 1x Digital input, 0-6 V detected as logic low, 8-30 V detected as logic high
- 1x Digital output, open collector output, max output 30 V, 300 mA
- Software configurable I/O state
- Requires separate I/O cable (accessory)

5.4.1.4 VLAN

- 802.1Q and 802.1ad compliancy
- Each LAN port on a separate subnet
- Inter-VLAN routing
- Access and trunk ports
- Tagged/Untagged VLAN traffic
- Selective LAN access via Key

5.4.1.5 Physical properties

- Size 115 mm x 32 mm x 95 mm / 4.52” x 1.26” x 3.74”
- Protection class IP30
- Weight 345 g / 0.76 lbs (net weight article)

5.4.1.6 Storage Temperature

- Gateway -40°C … +75°C / -40°F … +167°F
- Power supply -20°C ... +70°C / -4°F … +158°F

5.4.1.7 Operating Temperature

- Gateway -40°C … +75°C / -40°F … +167°F
- Power supply -10°C ... +40°C / 14°F … +104°F

5.5 Tosi 675 and Tosi 675 US

5.5.1.1 Ports

- 1x RJ-45 WAN connection, 10/100/1000 Mb/s, auto-negotiation (MDI / MDI-X)
- 3x RJ-45 LAN connection, 10/100/1000 Mb/s, auto-negotiation (MDI / MDI-X)
- 1x USB 2.0, type A

5.5.1.2 Connections

- 4 pin industrial DC power socket
- 9-50V DC, reverse polarity protection, voltage surge/transient protection
- 2x RP-SMA for WiFi
- 2x SMA for LTE
- 1x GNSS
- DIN rail mounting slot in the back and on both sides
- Maximum power consumption 16W

5.5.1.3 4G Module for US and Canada (Tosi 675 US)

- Cellular module: Quectel EG060K-NA
- Region: North America
- LTE Cat-6
- Up to 300 Mbps DL, 50 Mbps UL
- Dual SIM
- Frequency Bands
  - LTE FDD: B2, B4, B5, B7, B12, B13, B14, B25, B26, B29, B66, B71
  - LTE-TDD: B41

5.5.1.4 4G Module for EMEA and APAC (Tosi 675)

- Cellular module: Quectel EG060K-EA
- Region: EMEA/Australia/Brazil
- LTE Cat-6
- Up to 300 Mbps DL, 50 Mbps UL
- Dual SIM
- Frequency Bands
  - LTE FDD: B1, B3, B5, B7, B8, B20, B28, B32
  - LTE TDD: B38, B40, B41
  - WCDMA: B1, B3, B5, B8

5.5.1.5 WLAN

- IEEE 802.11 b/g/n, 2.4 GHz, max. 150 Mbps
- Encryptions WEP, WPA-PSK, WPA2-PSK, WPA-PSK/WPA2-PSK mixed mode
- Frequency 2.412 – 2.462 GHz, 11 channels
- Access point or client mode
- Output power 20 dBm max

5.5.1.6 Digital I/O specifications

- 1x Digital input, 0-6 V detected as logic low, 8-30 V detected as logic high
- 1x Digital output, open collector output, max output 30 V, 300 mA

- Software configurable I/O state
- Requires separate I/O cable (accessory)

5.5.1.7 VLAN

- 802.1Q and 802.1ad compliancy
- Each LAN port on a separate subnet
- Inter-VLAN routing
- Access and trunk ports
- Port and IP based configuration
- Tagged/Untagged VLAN traffic
- Selective LAN access via Key
- Max 127 concurrent VLANs

5.5.1.8 Physical properties

- Size 115 mm x 44 mm x 95 mm / 4.52” x 1.74” x 3.74”
- Protection class IP30
- Weight 456 g / 1.00 lbs (net weight article)

5.5.1.9 Storage Temperature

- Gateway -40°C … +75°C / -40°F … +167°F
- Power supply -20°C ... +70°C / -4°F … +158°F

5.5.1.10 Operating Temperature

- Gateway -40°C … +75°C / -40°F … +167°F
- Power supply -10°C ... +40°C / 14°F … +104°F

5.6 Tosi 695

5.6.1.1 Ports

- 1x RJ-45 WAN connection, 10/100/1000 Mb/s, auto-negotiation (MDI / MDI-X)
- 4x RJ-45 LAN connection, 10/100/1000 Mb/s, auto-negotiation (MDI / MDI-X)
- 1x USB 2.0, type A

5.6.1.2 Connections

- 4 pin industrial DC power socket
- 9-50V DC, reverse polarity protection, voltage surge/transient protection
- 2x RP-SMA for WiFi
- 4x SMA for 5G/LTE
- 1x GNSS
- DIN rail mounting slot in the back and on both sides
- Maximum power consumption 18W

5.6.1.3 5G/LTE Module

- Cellular module: Quectel RG501Q-EU
- Region: EMEA/APAC/Brazil (excluding China)
- Sub-6 GHz
- 5G SA Sub-6 up to 2.1 Gbps DL, 900 Mbps UL

- 5G NSA Sub-6 up to 3.3 Gbps DL, 600/650 Mbps UL
- LTE-FDD up to 2 Gbps DL, 200 Mbps UL
- Dual SIM single standby
- All antennas are equal
- Frequency Bands
  - 5G NR: n1, n3, n5, n7, n8, n20, n28, n38, n40, n41, n77, n78
  - LTE-FDD: B1, B3, B5, B7, B8, B20, B28, B32
  - LTE-TDD: B38, B40, B41, B42, B43
  - WCDMA: B1, B5, B8

5.6.1.4 WLAN

- IEEE 802.11 b/g/n, 2.4 GHz, max. 150 Mbps
- Encryptions WEP, WPA-PSK, WPA2-PSK, WPA-PSK/WPA2-PSK mixed mode
- Frequency 2.412 – 2.462 GHz, 11 channels
- Access point or client mode
- Output power 20 dBm max

5.6.1.5 Digital I/O specifications

- 1x Digital input, 0-6 V detected as logic low, 8-30 V detected as logic high
- 1x Digital output, open collector output, max output 30 V, 300 mA
- Software configurable I/O state
- Requires separate I/O cable (accessory)

5.6.1.6 VLAN

- 802.1Q and 802.1ad compliancy
- Each LAN port on a separate subnet
- Inter-VLAN routing
- Access and trunk ports
- Tagged/Untagged VLAN traffic
- Selective LAN access via Key

5.6.1.7 Physical properties

- Size 132 mm x 44 mm x 95 mm / 4.52” x 1.74” x 3.74”
- Protection class IP30
- Weight 533 g / 1.17 lbs (net weight article)

5.6.1.8 Storage Temperature

- Gateway -40°C … +75°C / -40°F … +167°F
- Power supply -20°C ... +70°C / -4°F … +158°F

5.6.1.9 Operating Temperature

- Gateway -40°C … +75°C / -40°F … +167°F
- Power supply -10°C ... +40°C / 14°F … +104°F

6 Limited warranty

Subject to the exclusions set forth below, Tosi will repair or replace, at its option without charge, any Tosi product which fails due to a defect in material or workmanship within 24 months following the initial consumer purchase.

This warranty does not apply to water damage, abuse or misuse of unauthorized accessories, unauthorized service or modification or altered products.

This warranty does not include the cost of labor for removal or re-installation of the product.

ANY IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL BE LIMITED AS SET FORTH HEREIN AND TO THE DURATION OF THE LIMITED WARRANTY, OTHERWISE THE REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS EXPRESS LIMITED WARRANTY IS THE EXCLUSIVE REMEDY OF THE CONSUMER AND IS PROVIDED IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. IN NO EVENT SHALL TOSIBOX OY BE LIABLE, WHETHER IN CONTRACT OR TORT (INCLUDING BUT NOT LIMITED TO NEGLIGENCE, GROSS NEGLIGENCE, BODILY INJURY, PROPERTY DAMAGE AND DEATH) FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT OR ACCESSORY, OR FOR ANY INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, OR LOSS OF REVENUE OR PROFITS, LOSS OF BUSINESS, LOSS OF INFORMATION OR DATA OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE ABILITY OR INABILITY TO USE THE PRODUCTS OR ACCESSORIES TO THE FULL EXTENT THESE DAMAGES MAY BE DISCLAIMED BY LAW.

The complete information about Tosi Terms and Conditions is available at:

https://www.tosi.net/legal

For Product Purchased in the USA:

Performance of any obligation under this warranty may be obtained by returning the warranted product, prepaid freight, along with proof of purchase to:

Tosibox, Inc.
1212 Corporate Drive, Suite 170
Irving, Texas, 75038
USA

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

Note: The above warranty applies only to merchandise purchased in the United States of America or any of the territories or possessions thereof, or from a U.S. Military exchange.

For Product Purchased in Canada:

Performance of any obligation under this warranty may be obtained by returning the warranted product, along with proof of purchase, to your place of purchase in Canada.

This warranty gives you specified legal rights. Additional warranty rights may be provided by law in some within Canada

7 Legal notices

Because of continuous product development, Tosi reserves the right to change and improve any product mentioned herein without prior notice.

Tosi shall not take responsibility of any loss of information or income or any special, incidental, consequential or indirect damages.

The contents of this document are provided ”as is”. No warranties of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, are made in relation to the accuracy, reliability or contents of this document. Tosi reserves the right to revise this document or withdraw it at any time without prior notice.

Tosi products contain technology that is based on open source software. When requested by the customer, Tosi will deliver more detailed information from the parts that the licenses require. Source code requests can be submitted to: sourcecode.request@tosi.net

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8 Mentions légales

En raison du développement continu du produit, Tosi se réserve le droit de modifier et d’améliorer tous produits mentionnés dans le présent document sans préavis.

Tosi ne pourra être tenu responsable de toutes les pertes d’informations ou de revenus ou autres dommages, indirects ou consécutifs.

Aucune garantie sous quelque forme que ce soit, explicite ou implicite, y compris, mais sans y limiter les garanties implicites d’aptitude à la commercialisation, à l’adéquation à un usage particulier, n’est donnée en ce qui concerne l’exactitude, la fiabilité ou le contenu de ce document.

Tosi se réserve le droit de réviser ce document ou de le retirer à tout moment sans préavis.

Les produits Tosi contiennent une technologie basée sur un logiciel open source. À la demande du client, Tosi fournira des informations plus détaillées sur les composants requis par les licences. Les demandes de code source peuvent être envoyées à: sourcecode.request@tosi.net

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9 Declarations

9.1 Tosi 175

9.1.1.1 EU declaration of conformity

Hereby, Tosibox Oy declares that the radio equipment type 175 is in compliance with directive 2014/53/EU. The full text of the EU declaration of conformity is available on our knowledgebase.

This equipment should be installed and operated with a minimum distance of 20cm between the antenna and the user or bystanders. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

9.1.1.2 Federal Communication Commission interference statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC ID: 2AHCNTBNODE contains FCC ID: XMR201903EG25G

This radio device has been tested to operate with the external antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Tosi 175: Wi-Fi monopole antenna, 50 ohm, max peak gain 0.4 dBi.

9.1.1.3 Brazilian compliance, conformidade brasileiro

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

Para maiores informações, consulte o site da ANATEL

www.gov.br/anatel.

9.2 Tosi 350 and Tosi 375

9.2.1.1 EU declaration of conformity

Hereby, Tosibox Oy declares that the radio equipment type 350 is in compliance with directive 2014/53/EU. The full text of the EU declaration of conformity is available on the knowledgebase.

This equipment should be installed and operated with a minimum distance of 20cm between the antenna and the user or bystanders. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

9.2.1.2 UL declaration of conformity

This device is UL listed in USA and Canada with UL file number E497243.

9.2.1.3 Federal Communication Commission interference statement

This device complies with FCC part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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USA

FCC CAUTION: Any changes or modifications not expressly approved by the party responsible for compliance could void the user´s authority to operate this equipment.

Tosi 350

FCC ID: 2AHCNNODE350

Tosi 375

FCC ID: 2AHCNNODE350 contains FCC ID: XMR201903EG25G

This radio device has been tested to operate with the external antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

- Tosi 350: Wi-Fi monopole antenna, 50 ohm, max peak gain 2.0 dBi
- Tosi 375: Wi-Fi monopole antenna, 50 ohm, max peak gain 2.0 dBi

9.3 Tosi 610

9.3.1.1 EU declaration of conformity

Hereby, Tosibox Oy declares that the radio equipment type 610 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available on the knowledgebase.

This equipment should be installed and operated with a minimum distance of 20cm between the antenna and the user or bystanders. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

9.3.1.2 Safety precaution

Do not use the provided power supply at temperatures exceeding 40C. To use the device in high temperatures, replace the power supply with a source rated for the used temperature.

9.3.1.3 Power supply parameters

- Input 100 – 240 VAC, frequency 50/60Hz, 0.8A
- Output 24 VDC, 1.0 A, max 24 W
- Exchangeable input connector with EU (Type C), UK (Type G), US (Type A), AU (Type I)
- Operating temperature max +40C

9.4 Tosi 675 and Tosi 675 US

9.4.1.1 EU declaration of conformity for Tosi 675

Hereby, Tosibox Oy declares that the radio equipment type 675 is in compliance with directive 2014/53/EU. The full text of the EU declaration of conformity is available on the knowledgebase.

This equipment should be installed and operated with a minimum distance of 20cm between the antenna and the user or bystanders. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

9.4.1.2 Safety precaution

Do not use the provided power supply at temperatures exceeding 40C. To use the device in high temperatures, replace the power supply with a source rated for the used temperature.

9.4.1.3 Power supply parameters for Tosi 675 US

- Input 100 – 240 VAC, frequency 50/60Hz, 0.6A
- Output 12 VDC, 1.5 A, max 18 W
- Input connector US (Type A)
- Operating temperature max +40C

9.4.1.4 Power supply parameters for Tosi 675

- Input 100 – 240 VAC, frequency 50/60Hz, 0.8A
- Output 24 VDC, 1.0 A, max 24 W
- Exchangeable input connector with EU (Type C), UK (Type G), US (Type A), AU (Type I)
- Operating temperature max +40C

9.4.1.5 Federal Communication Commission interference statement for Tosi 675 US

This device complies with FCC part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can

be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

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FCC CAUTION: Any changes or modifications not expressly approved by the party responsible for compliance could void the user´s authority to operate this equipment.

FCC ID: 2AHCNNODE675 FCC ID contains: XMR2022EG060KNA
IC: 25009-NODE675 IC contains: 10224A-2022EG060KNA

This radio device has been tested to operate with the external antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

9.4.1.6 Antenna Information

Brand	Part No.	Type	Gain (dBi)
TELTONIKA	PR14RD35 (main)	Dipole	2.87 for 2.4GHz
	PR14RD35 (aux)		2.87 for 2.4GHz
TAOGLAS	TG.30.8113	Dipole	4.29 for LTE Band 2
			4.29 for LTE Band 4
			3.00 for LTE Band 5
			4.73 for LTE Band 7
			3.00 for LTE Band 12
			3.00 for LTE Band 13
			3.00 for LTE Band 14
			4.29 for LTE Band 25
			3.00 for LTE Band 26 (814-824MHz)
			3.00 for LTE Band 26 (824-849MHz)
			4.73 for LTE Band 41
			4.29 for LTE Band 66
			3.00 for LTE Band 71

9.4.1.7 Industry Canada statement for Tosi 675 US

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This radio transmitter IC: 25009-NODE675 has been approved by ISED to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list,

having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Under ISED regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by ISED. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication!

This equipment should be installed and operated with a minimum distance of 20 cm between the antenna and the user or bystanders.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Le CI émetteur radio IC: 25009-NODE675 a été approuvé par ISED pour fonctionner avec les types d'antennes énumérés ci-dessous avec le gain maximal admissible indiqué. Les types d'antenne non inclus dans cette liste, ayant un gain supérieur au gain maximal indiqué pour ce type, sont strictement interdits d'utilisation avec cet appareil.

Selon les réglementations ISED, cet émetteur radio ne peut fonctionner qu'avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par ISED. Afin de réduire les interférences radio potentielles avec d'autres utilisateurs, le type d'antenne et son gain doivent être choisis de manière à ce que la puissance rayonnée isotrope équivalente (par exemple) ne soit pas supérieure à celle nécessaire pour une bonne communication!

Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre l'antenne et l'utilisateur ou des tiers.

9.5 Tosi 695

9.5.1.1 EU declaration of conformity

Hereby, Tosibox Oy declares that the radio equipment type 695 is in compliance with directive 2014/53/EU. The full text of the EU declaration of conformity is available on the knowledgebase.

This equipment should be installed and operated with a minimum distance of 20cm between the antenna and the user or bystanders. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

9.5.1.2 Safety precaution

Do not use the provided power supply at temperatures exceeding 40C. To use the device in high temperatures, replace the power supply with a source rated for the used temperature.

9.5.1.3 Power supply parameters

- Input Voltage 100-240 VAC, 0.6A
- Input Frequency 50/60 Hz
- Output Voltage 12 VDC
- Output Current 1.5 A
- Operating temperature max +40C