

TSX16000 4G Communication Module Installation Sheet

This installation manual applies to the following models:

- TSX16000
- TSX16000-AU *
- TSX16000-NZ **

* Australia

** New Zealand

Description

The TSX16000 4G Communication Module provides a cellular data (radio) connection to supported management and/or reporting software for the Discovery TSX10000 Control Panel. Refer to (Figure 1) for details.

Before you begin

This section contains items that govern the installation of the TECOM Discovery Control panel and ancillary components. When installing a Discovery control panel, or any other parts of the system, you need to be aware of requirements for installation location, cabling and earthing, and plan accordingly.

NOTICE! A trained service person must perform all required hardware installation in compliance with all applicable Australian and New Zealand standards.

Disclaimer: This manual contains installation information based on Australia and New Zealand standards. It is not an authoritative reference regarding these standards and has not been reviewed by the responsible authorities. Standards applicable to the specific installation district or installation environment may not have been considered or included. The standards may change from time to time and may not be reflected in this document.

Safety Warnings



The enclosure protective earthing supplementary safeguard is not effective until the equipment is connected to the building earth via the mains plug or a direct wired connection.



Field wiring errors or damage may present hazardous voltages inside the enclosure. Treat all wires and boards in the enclosure as hazardous until checked and validated as safe.



KGS Fire & Security Australia Pty. Ltd. recommends the use of personal protection equipment, such as gloves, glasses, voltage detectors and meters for all installation and maintenance operations.



Take appropriate precautions if working on an active or recently de-energised device.

The circuit board and the heatsink on older TECOM bare circuit board products may be hot. Do not touch.

Equipment location



The TSX16000 is to be installed inside the same enclosure as the TSX10000 and has comparable environmental specifications.



The unit must not be installed in areas where children are likely to be present.



The Discovery system is designed to be fixed in place. When the system is wall mounted, the enclosed unit final weight and access restrictions must be considered when selecting the mounting surface and the fasteners. Additional guidance is given in Appendix A: Radio Module Safety Precautions. Prior to proceeding verify the mounting security and general safe environment of the enclosure.

Prior to working on the unit:

Validate the integrity of the enclosure earth. Be advised that during any work undertaken, the metal enclosure may become disconnected from designated earthing points, depending on the type of work. It is recommended to review how the work being undertaken may affect the enclosure and device earthing and to take the additional safety precaution of providing temporary earthing as deemed necessary. Finally, earthing should be reassessed at the completion of any work and refitted as required.

Ensure that cables entering, immediately behind, or nearby the enclosure are not carrying dangerous voltages. Tecom enclosures are certified to contain terminations of Extra-Low Voltage Cables (ELV) only.

Identify any potential hazards and make them safe; The front door should be removed from the enclosure prior to working on the unit. The system should be de-energised, and the battery removed and safely stored when moving or modifying the enclosure, mounting new hardware or re-wiring the system.

Before drilling into a wall to route any cables or wiring be aware of, voids, studs, and other hazards that may be behind the wall face.

Ensure that all necessary access codes are known and that the procedures for taking the system off-line or placing on test with any connected monitoring stations are followed.

We advise installers to use a smart phone to verify data network

coverage and signal strength at the intended panel location (or within reach of the antenna cable) for the required network before fitting a TSX16000 module (the coverage may vary between networks and providers). This is a general test to inform antenna installation location, but may not adequately prove the quality or availability of 4G networks. In all cases, a 4G network analysis device should be used to confirm that adequate coverage is available. Ensure that panel diagnostics are checked to confirm the reported signal is appropriate as per table 2 of this guide.

In order to use this product with UltraSync, the panel must first be provisioned by a control room. For a list of UltraSync connected control rooms, please refer to <https://www.aritech.com.au/ultrasync/>

Management software requires the panel's UltraSync SID number (SID) when connecting via radio. The Discovery SID is printed on a label affixed to the front of the panel, and should match the panel's serial number, which can be found via the RAS in menu 19 (Install menu) > 3 > 1 > Press ENTER three times. Record the SID / serial number for use later, if needed.

Please note that you will need to configure the hardware as a TSX16000 (4G) when used on a Discovery panel.

The host device current draw will increase when the TSX16000 is connected according to the following table.

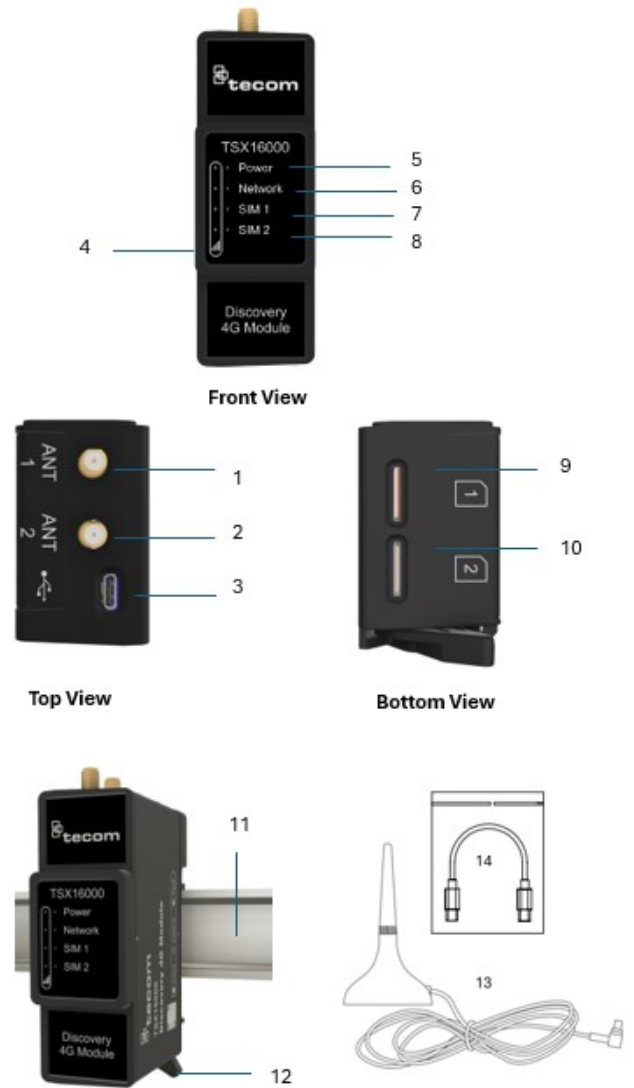
Table 1: Power data (Vbat = 12V)

Mode	Current	Description
Idle	< 75mA @5V	Connected to cellular network, no data transfer
Max, LTE only	< 910mA @ 5V	High data transfer, e.g. firmware update

Figure 1: TSX16000 module details

1. Antenna 1 connector (Primary antenna) Receiving and Transmitting
2. Antenna 2 connector (Optional diversity antenna) Receiving
3. USB C input 5 Vdc
4. 4 X Signal Strength LEDs
5. Power LED
6. Network LED
7. SIM1 LED
8. SIM2 LED
9. SIM1 holder
10. SIM2 holder
11. DIN Rail
12. DIN Rail Mount Lock
13. Antenna with magnetic base, (3 meters lead length) X 2
14. USB C M-M cable 30 cm length

Figure 1: TSX16000 module



Packing List

Description	Quantity
Module TSX16000	1
USBC M-M Lead 30 cm length	1
4G Antenna, magnetic base, RG174 cable, SMA-M connector. 3m length	2
SIM card – Australia - only	2 *
SIM card – New Zealand - only	1 **

* Only applies to the TSX16000-AU

** Only applies to the TSX16000-NZ

Note: For any spare parts required, refer to: Appendix C Spare Parts List

Installation

To install the module:

NOTE: The TSX16000 unit does not have its own firmware. It is driven wholly by the Discovery panel firmware with data and power delivered by the provided USB C cable. Please ensure that the Discovery panel being connected to is a minimum of version 2.0 in order for the unit to be recognised and programmable.

1. During installation of the unit ESD (electrostatic discharge) precautions are to be taken. Wear a wrist strap that is properly earthed and avoid static discharge into the equipment.
2. Carefully remove the module from its packaging.
3. Remove the antenna from its packaging and remove any twists in the cable. Route the cable from where the antenna base will be located, to then through walls, frames and into the enclosure, PRIOR to the connector being mated. Any excess cable should also be looped and secured PRIOR to the connector being mated. The cable is quite rigid and may twist whilst being coiled, necessitating a free end to accommodate the movement. Secure any excess antenna cable inside the Discovery panel's enclosure. Excess cable may be coiled into loops no smaller than 200 mm. Any coiled loops smaller than this will potentially cause signal degradation along the cable and affect the overall signal received by the unit.
4. Antenna coax cables are to be discharged before connection to the TXS16000 SMA connectors – short the antenna connector centre pin to the antenna cable connector shell before connection.

Note: Ensure that the antenna is placed carefully to prevent damage or knocking, and to prevent risk of injury (i.e. do not place at eye level.)

5. Install the supplied antenna into ANT-1 by gently fitting the antenna's male connector into the module's female Antenna 1 connector (Figure 1 on page 1, item 13), twisting gently until the antenna is firmly connected with a torque of 0.3 to 0.6 Nm. Antennas must be installed at a distance greater than 20cm from users or bystanders.
6. If required, install a second antenna into the module's Antenna 2 connector (Figure 1 on page 1, item 2). This provides antenna diversity.
7. Gently fix the module on the DIN rail next to the Discovery panel. (Figure 1 on page 1, item 11)
8. Let the module sit flush on the DIN rail. Secure in place with the DIN rail lock (Figure 1 on page 1, item 12).
9. Place the antenna in a location where the signal strength will be acceptable. required, the antenna cable may be installed inside plastic conduit.
10. Use only the provided USB-C cable (Figure 1 on page 1, item 14) to connect the unit to the Discovery TSX10000 control panel via the dedicated USB C port.

For UltraSync connected devices (TS16000-AU and TSX16000-NZ), the provided sim cards are to be used. It is not possible to self-supply sim cards for connection to UltraSync, and the provided sim cards should be left in the SIM card slots as factory fitted.

In order to configure a TSX16000 module that will not be

connected to UltraSync, a micro-SIM card from a valid carrier (for example, Telstra) is required to provide a data connection via an access point name (APN). It will be required to enter the APN in "Programming" on page 3.

Note: If required, SIM cards should only be changed when the 4G module is disconnected from all power sources. Sim card changes should only be conducted after consultation with Aritech Technical Support.

Note: To seat/unseat the SIM cards you will need to push to insert or push to extract the card. The installer should hear a soft click at each operation including a latch and unlatch event. The card must not be forcibly removed.

LED indications

Once powered up the LED indicators on the front of the module refer to the following:

Note the location of the LEDs by referring to Figure 1: TSX16000 module details on page 2.

Table 2: Signal strength LED indications

	LED Colour	LED indication	Description
1	Green	LED (4) is on	Each Green LED represents the Network Signal strength. 1 LED ON = Poor 2 LEDs ON = Fair 3 LEDs ON = Good 4 LEDs ON = Excellent
2	Blue	LED (5) is on	Power: to the TSX16000 Discovery 4G Module
3	Blue	LED (6) is on	Network: indicates that the module is connected to a 4G network
4	Blue	LED (7) is on	SIM 1: Indicates that SIM 1 is active
5	Blue	LED (8) is on	SIM 2: Indicates the SIM 2 is active

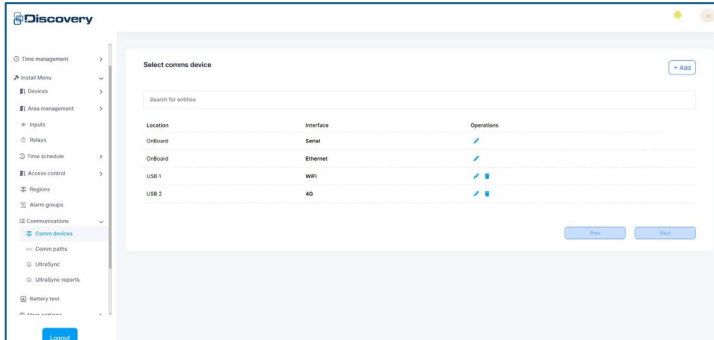
Table 3: Radio signal strength indications

Max signal	RAS indication
Up to -126 dBm	-----
Up to -116 dBm	# -----
Up to -106 dBm	## ----
Up to -96 dBm	### -
Up to -86 dBm	####
Over -86 dBm	#####

Programming

The Discovery panel must be configured to use the TSX16000 hardware (including the APN), and have a communications path defined and enabled.

The following is a summary of the items to be configured via the web browser. Please refer to the Discovery TSX10000 Programming Manual for full programming instructions.



With Discovery firmware V2 and onwards the settings are pre-loaded for use. You will only need to enable it and the web browser as per the 2 dot points below in the 4G radio.

To Program

To program a Comm device, click the **+ Add** button to bring up the Setup page.

USB 2

4G radio

The 4G comms module has the ability to configure up to two SIM cards for connectivity with the panel.

The available configuration options are:

- **Enable:** allows the cellular radio connection to be used as per configured options.
- **Enable access to Web interface from this expander:** allows the WebUI to be accessed through this interface.

SIM 1

- **SIM PIN:** enter the SIM card's access PIN in this field to enable the panel to access to the cellular network.
- **SIM APN:** enter the Access Point Name (APN) for the cellular network.
- **APN Username:** enter the username required to access the cellular network access point.
- **APN password:** enter the password required to access the cellular network access point.
- **APN authentication:** select the APN authentication required for the SIM card. Available options are:
 - **None:** this option is selected if no authorisation is required.
 - **PAP:** select when Password Authentication Protocol (PAP) is required.
 - **CHAP:** select when Challenge Handshake Authentication Protocol (CHAP) is required.

SIM 2

- **SIM PIN:** enter the SIM card's access PIN in this field to enable the panel to access to the cellular network.
- **SIM APN:** enter the Access Point Name (APN) for the cellular network.
- **APN username:** enter the username required to access the cellular network access point.
- **APN password:** enter the password required to access the cellular network access point.
- **APN authentication:** select the APN authentication required for the SIM card. Available options are:
 - **None:** this option is selected if no authorisation is required.
 - **PAP:** select when Password Authentication Protocol (PAP) is required.
 - **CHAP:** select when Challenge Handshake Authentication Protocol (CHAP) is required.

Switch between SIM 1 and SIM 2

The panel can periodically toggle which SIM card is being used, which can be useful in areas with unreliable reception, or for testing purposes.

- **Frequency:** select how often the active SIM should be toggled. Available options are:

- Never
- Hourly
- 4 Hourly
- Daily
- Weekly

- **Start time:** select what time the active SIM should be toggled according to the selected frequency.

- **Day of week:** select which day of the week the active SIM should be toggled when Frequency is configured as 'Weekly'.

NOTE: This option, when enabled, may cause a loss of connection while the unit switches and authenticates to the other SIM card's network. It is recommended for normal operation that this option remain disabled.

Troubleshooting

Insufficient signal strength or no connection

The Discovery panel may be located where cellular connection isn't possible when using the supplied antenna (either at the panel or within reach of the antenna cable). It may be necessary to fit a high-gain antenna to achieve sufficient signal strength. The TSX16000 uses industry standard SMA connectors, suitable for connection to a range of widely available, certified antennas.

Resetting the module

If the TSX16000 module is not functioning correctly, you may need to reset (reinitialise) the module (retaining installer programming) or reset both the module and restore the factory programming. For example, if the Discovery panel does not detect the presence of a SIM at SIM1 then the path goes into failure mode and may need to be disabled and enabled again

After the fault is corrected, it may be necessary for the module to be reset. One way to perform a simple reset is to cycle the panel's power.

Regulatory information

Design UHS Pty. Ltd.
Lidcombe Business Park,
3/29 Birnie Ave, Lidcombe NSW 2141, Australia

Imported by KGS Fire and Security Australia Pty Ltd
Suite 4.01, 2 Ferntree Place,
Notting Hill, Victoria, 3168, Australia

Year of manufacture The serial number on the product identification label can be used to determine the year of manufacture. The serial number is a 12-digit number which start with a 3 digit product code, followed by a 2 digit year. For example, the serial number "357**25**1020123" indicates "25" as the year of manufacture (2025).

Compliance



Notice! This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Disclaimer

The customer is responsible for testing and determining the suitability of this product for specific applications. The customer is responsible for testing the product at least once every three months. In no event is Aritech responsible or liable for any damages incurred by the buyer or any third party arising from its use, or their inability to use the product.

Mobile Data Note: Use of this product may consume large amounts of mobile data which could incur additional fees from your mobile provider. We recommend that you check with your mobile provider periodically to ensure that your plan is suitable for this type of product.

Contact information

For contact information, see www.aritech.com.au.
We recommend that installers visit our website at <http://www.aritech/resources/> to check for firmware updates.







Product Warning QR Code



Appendix A – Radio Module Safety Precaution Notes – Telit Cinterion –

PLSx3 Hardware Interface Description

The following safety precautions **must** be observed during all phases of the operation, usage, service or repair of any cellular terminal or mobile incorporating PLSx3. Manufacturers of the cellular terminal are advised to convey the following safety information to users and operating personnel and to incorporate these guidelines into all manuals supplied with the product. Failure to comply with these precautions violates safety standards of design, manufacture and intended use of the product. Telit Cinterion assumes no liability for customer's failure to comply with these precautions.

	<p>When in a hospital or other health care facility, observe the restrictions on the use of mobiles. Switch the cellular terminal or mobile off, if instructed to do so by the guidelines posted in sensitive areas. Medical equipment may be sensitive to RF energy. The operation of cardiac pacemakers, other implanted medical equipment and hearing aids can be affected by interference from cellular terminals or mobiles placed close to the device. If in doubt about potential danger, contact the physician or the manufacturer of the device to verify that the equipment is properly shielded. Pacemaker patients are advised to keep their hand-held mobile away from the pacemaker, while it is on.</p>
	<p>Switch off the cellular terminal or mobile before boarding an aircraft. Make sure it cannot be switched on inadvertently. The operation of wireless appliances in an aircraft is forbidden to prevent interference with communications systems. Failure to observe these instructions may lead to the suspension or denial of cellular services to the offender, legal action, or both.</p>
	<p>Do not operate the cellular terminal or mobile in the presence of flammable gases or fumes. Switch off the cellular terminal when you are near petrol stations, fuel depots, chemical plants or where blasting operations are in progress. Operation of any electrical equipment in potentially explosive atmospheres can constitute a safety hazard.</p>
	<p>Your cellular terminal or mobile receives and transmits radio frequency energy while switched on. Remember that interference can occur if it is used close to TV sets, radios, computers or inadequately shielded equipment. Follow any special regulations and always switch off the cellular terminal or mobile wherever forbidden, or when you suspect that it may cause interference or danger.</p>
	<p>Road safety comes first! Do not use a hand-held cellular terminal or mobile when driving a vehicle, unless it is securely mounted in a holder for speakerphone operation. Before making a call with a hand-held terminal or mobile, park the vehicle. Speakerphones must be installed by qualified personnel. Faulty installation or operation can constitute a safety hazard.</p>
	<p>IMPORTANT! Cellular terminals or mobiles operate using radio signals and cellular networks. Because of this, connection cannot be guaranteed at all times under all conditions. Therefore, you should never rely solely upon any wireless device for essential communications, for example emergency calls. Remember, in order to make or receive calls, the cellular terminal or mobile must be switched on and in a service area with adequate cellular signal strength. Some networks do not allow for emergency calls if certain network services or phone features are in use (e.g. lock functions, fixed dialing etc.). You may need to deactivate those features before you can make an emergency call. Some networks require that a valid SIM card be properly inserted in the cellular terminal or mobile.</p>

Appendix B Antenna Specifications

The integration of the antennas are limited to fixed or mobile categorised host devices, where a separation distance between the antenna and any person of min. 20cm can be assured during normal operating conditions. Antenna gain, including cable loss, must not exceed the limits listed.

Antenna gain limits for ISED (for W and EP variants)

Operation band	ISED limit	Unit
Maximum gain in GSM/GPRS 850	5.30	dBi
Maximum gain in PCS 1900	10.20	dBi
Maximum gain in WCDMA Band 2	8.01	dBi
Maximum gain in WCDMA Band 4	5.00	dBi
Maximum gain in WCDMA Band 5	6.10	dBi
Maximum gain in LTE Band 2	8.01	dBi
Maximum gain in LTE Band 4	5.00	dBi
Maximum gain in LTE Band 5	6.10	dBi
Maximum gain in LTE Band 7	8.01	dBi
Maximum gain in LTE Band 8	-	dBi
Maximum gain in LTE Band 12	5.61	dBi
Maximum gain in LTE Band 13	5.93	dBi
Maximum gain in LTE Band 26	6.10	dBi
Maximum gain in LTE Band 38	8.01	dBi
Maximum gain in LTE Band 41	8.01	dBi
Maximum gain in LTE Band 66	5.00	dBi

Appendix C Spare Parts List

Parts available for re-order at your local distributor.

Part Numbers	Description	Quantity
Contact Distributor	Antenna	2
Contact Distributor	SIM card – Australia - only	2
Contact Distributor	SIM card – New Zealand - only	1