

TS1054 4G Communication Module Installation Sheet

This installation manual applies to models:

- TS1054
- TS1054DS
- TS1054SS

The installation manual will refer to all of these collectively as “TS1054” unless otherwise stated.

Description

The TS1054 4G Communication Module provides a cellular data (wireless) connection to applications such as supported management software for Challenger10 and Challenger*Plus* panels. Refer to (Figure 1) for details.

Before you begin

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 TS1054 module (the coverage may vary between networks and providers).

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

Management software uses the Challenger panel's serial number when connecting via radio. The serial number is displayed via RAS in Install menu option 11–Version, option 1–Chall. Record the serial number for use later, if needed.

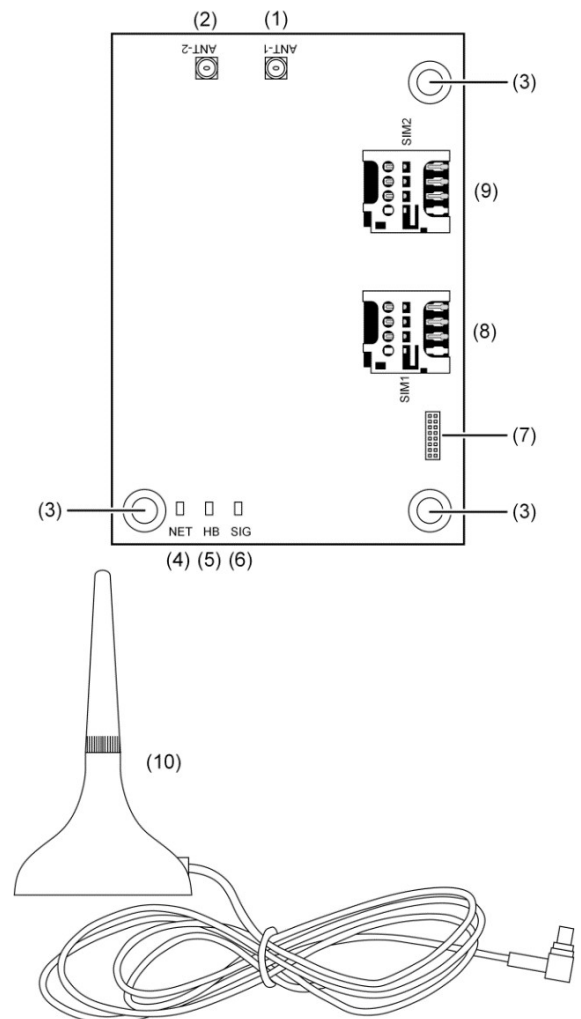
Please note that you will need to configure the hardware as a TS1053 when used on a Challenger10 panel.

The host device current draw will increase when the TS1054 is connected according to the following table

Table 1 Power Data (Vbat = 12V)

Mode	Current	Comment
IDLE	53mA	Connected to Network. No data transfer
PEAK	114mA	High Data transfer e.g. Firmware Update

Figure 1: TS1054 module details



1. Antenna 1 connector (Primary antenna)
2. Antenna 2 connector (Optional diversity antenna)
3. Mounting point
4. NET LED (green) network indicator
5. HB LED (red) heart beat indicator
6. SIG LED (green) radio signal strength indicator
7. Location of connecting pins (under PCB)
8. SIM1 holder
9. SIM2 holder (N/A)
10. Antenna (with magnetic base)

Installation

The interface module is plugged into a Challenger panel's expander slot. Power to the panel must be off during installation.

Note: A qualified service person, complying with all applicable codes, should perform all required hardware installation.

An antenna must be plugged in to ANT-1 in order to operate effectively. The TS1054 uses a micro-miniature coaxial (MMCX) connector, and includes an antenna. Alternative or additional antennas may be used.

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

In order to configure a TS1054 module, you need to have a micro-SIM card from your carrier (for example, Telstra) to provide a data connection via an access point name (APN). You may be required to enter the APN in "Programming" on page 3.

Note: Insert the micro-SIM card into the module only when the Challenger panel is disconnected from all power sources or before the module is installed.

Note: The TS1054DS comes with SIM cards pre-loaded in SIM 1 and SIM 2, and should not be removed and/or changed. The TS1054SS comes with a SIM card pre-loaded in SIM 1, and should not be removed and/or changed. Please discuss with your local Aritech representative for more information.

To install the module:

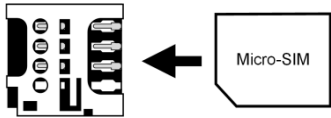
1. Disconnect the power supply and battery from the control panel.
2. Carefully remove the module from its packaging, taking care that none of the pins are bent.
3. If using the TS1054DS or TS1054SS, skip to step 4. Install a micro-SIM into the SIM1 holder (Figure 1 on page 1, item 8). Insert the micro-SIM into the SIM holder with the contacts facing the terminals, as shown in Figure 2 below.
Note: Avoid touching the micro-SIM's contacts.
4. Remove the antenna from its packaging and remove any twists in the cable.
5. Install the supplied antenna by gently pressing the antenna's male connector into the module's female Antenna 1 connector (Figure 1 on page 1, item 1) until the antenna is firmly connected.

If required, install a second antenna (not supplied) in the module's Antenna 2 connector (Figure 1 on page 1, item 2). This provides antenna diversity.
6. Gently press the module into Expander 1 slot or Expander 2 slot of the Challenger panel until the module sits firmly on the standoff and the three mounting holes are aligned with the PCB studs.
7. Secure in place with the supplied mounting screws.
8. Place the antenna in a location where the signal strength will be acceptable (see "Checking the status via RAS" on page 3). If the antenna cable needs to be

run a distance from the Challenger panel's enclosure, you may wish to run it via conduit for security.

9. Secure any excess antenna cable inside the Challenger panel's enclosure. Excess cable may be coiled into loops no smaller than 200 mm.
10. Reconnect power to the control panel.

Figure 2: Inserting a micro-SIM



LED indications

Refer to Figure 1: TS1054 module details on page 1. The LED indications are as follows:

- **NET LED** (item 4):

Table 2 Net LED indications

LED indication	Description
1 Led is ON	Indicates the radio path is active, a socket is established, and working as expected.
2 LED fast blinks 4 times every 2 seconds	Indicates that the radio is connected to a 4G network, the radio has obtained an IP address, but no comms paths are active
3 LED fast blinks 2 times every 2 seconds	Indicates the radio is connected to a 3G network
4 LED off	Indicates that the radio is not connected

- **HB LED** (item 5): LED fast blinks once every two seconds if the module is not programmed.

Under normal operating conditions, LED is on for one second then off for one second, repeating.

LED remains on continuously to indicate an error condition. The nature of the error (e.g. SIM missing) can be determined by viewing the corresponding status menu via keypad.

- **SIG LED** (item 6): LED fast blinks, followed by a pause, to indicate the equivalent number of signal strength bars (e.g. 3 blinks to indicate 3 bars), where 0 bars represents poor signal strength and 5 bars represents excellent signal strength. Refer to Table 3: Radio signal strength indications below for details.

Table 3: Radio signal strength indications

Max signal	SIG LED indication	RAS indication
Up to -105 dBm	Off	_____
Up to -93 dBm	One blink	# _____
Up to -81 dBm	Two blinks	## _____
Up to -69 dBm	Three blinks	### ____
Up to -57 dBm	Four blinks	#### _
Over -57 dBm	On	#####

Programming

The Challenger^{Plus} panel must be configured to use the TS1054 hardware (including the APN), and have a communications path defined and enabled. Please note that you will need to configure the hardware as a TS1053 when used on a Challenger10 panel.

The following is a summary of the items to be configured via the Install menu on an LCD RAS. (Alternatively, use CTPlus to configure these options.)

To set up the hardware for Challenger10:

1. From the Install menu, select 9–Communications and then 1–Setup H/W, to select the Setup menu.
2. From the Setup menu, press [ENTER] to see the locations and their menu numbers.
3. Press the menu number ([2] for Expander 1 or [3] for Expander 2), and then press [ENTER].
4. On Challenger10, press [4] [ENTER] for a TS1053 module.
5. If required, enter the PIN, and then press [ENTER]. Otherwise, leave blank, and then press [ENTER].
6. Optional: Press [1] to enter the APN via the keypad (refer to “Entering text via RAS” in the *Challenger10 Administrators Manual* or *ChallengerPlus Administrators Manual* for details).
7. If required, press [1] to edit the APN user name. Otherwise, leave blank, and then press [ENTER].
8. If required, press [1] to edit the APN password. Otherwise, leave blank, and then press [ENTER], to select the APN Authentication menu.
9. From the APN Authentication menu, press the required option number. Press [0] for none if APN authentication is not used, press [1] for PAP authentication, or press [2] for CHAP authentication.

To set up the hardware for Challenger Plus:

1. From the Install menu, select 9–Communications and then 1–Setup H/W, to select the Setup menu.
2. From the Setup menu, press [ENTER] to see the locations and their menu numbers.
3. Press the menu number ([2] for Expander 1 or [3] for Expander 2), and then press [ENTER].
4. Ensure that E1-Yes-Enabled.
5. If required, enter the PIN, and then press [ENTER]. Otherwise, leave blank, and then press [ENTER].
6. Optional: Press [1] to enter the APN via the keypad (refer to “Entering text via RAS” in the *Challenger10 Administrators Manual* or *ChallengerPlus Administrators Manual* for details).
7. If required, press [1] to edit the APN user name. Otherwise, leave blank, and then press [ENTER].
8. If required, press [1] to edit the APN password. Otherwise, leave blank, and then press [ENTER], to select the APN Authentication menu.

9. From the APN Authentication menu, press the required option number. Press [0] for none if APN authentication is not used, press [1] for PAP authentication, or press [2] for CHAP authentication.

To set up a path:

1. From the Install menu, select 9–Communications and then 2–Setup Paths, to select the path number. (If the panel is not using path 3 for IP connection, then you can use it for GSM connection.)
2. Enter [3] (or other communications path number), and then press [ENTER].
3. The RAS displays the number of the path. If correct, press [ENTER] to display the path menu. Press [ENTER] to display each menu option in turn.
4. From the path menu, press [1] [ENTER] to program the Path Main options, in particular:
 - Format. Select “Computer Event Driven”.
 - Enable path. Change to Yes.
 - Path name. Assign a name, such as “SIM1 path”.
 - Path location. Select option [2] for Expander 1 (or option [3] for Expander 2, depending on which expander slot contains the TS1054 module).
 - Path slot. Select option [4] for GSM SIM1 or option [5] for GSM SIM 2. (Only SIM 1 is supported)
 - Backup path number. Enter the number of the path that this path backs up, if required.
5. From the path menu, press [6] [ENTER] to program the Path IP Address options, in particular:
 - IP address. Enter the IP address of the WAN to access the data carrier’s access point (mobile internet).
 - UDP/IP to TCP/IP. Select TCP/IP.
6. From the path menu, press [8] [ENTER] to program the Path Advanced Settings options, if required.

Note: If you need to change the format of a path that has been previously programmed (or one of the default paths), first set the format to 0–None to clear the previous format’s programming.

Checking the status via RAS

The TS1054 module’s status can be quickly displayed via RAS to facilitate installation and troubleshooting.

To check the module’s status for Challenger10:

1. From the Install menu, select 9–Communications, and then select 3–Status to open the Status menu.
2. Press [2] [ENTER] to open the HW Status menu.
3. Press the menu number ([2] for Expander 1 or [3] for Expander 2), and then press [ENTER]

4. The screen indicates network status messages, including “Not Registered”, “Registering”, “Registered on Network”, and “Network Session Ready”. Press [ENTER].
5. The screen indicates the signal strength with 0 to 5 hash marks ‘#’. It should display something like “Signal Level is #####_”. The signal strength indicator relates to dBm levels as shown in Table 2 Net LED indications on page 2.
6. Press [ENTER] to display the IP address to which the module is connected (your carrier’s IP connection).

To check the module’s status for ChallengerPlus:

1. From the Install menu, select 9–Communications, and then select 3–Status to open the Status menu.
2. Press [2] [ENTER] to open the HW Status menu. Press the menu number ([2] for Expander 1 or [3] for Expander 2), and then press [ENTER].
3. The screen indicates <Radio State> such as “SIM1 Registered on network”. Press [ENTER].
4. The screen indicates <Data State>: such as “Network session ready”. Press [ENTER].
5. The screen indicates <Radio Network >: such as “Telstra Mobile (4G)”. Press [ENTER].
6. The screen indicates the signal strength with 0 to 5 hash marks ‘#’. It should display something like “Signal Level is #####_”. The signal strength indicator relates to dBm levels as shown in Table 2 Net LED indications on page 2
7. The screen indicates <Radio IP address>: such as “101.1.100.20”. Press [ENTER].
8. The screen indicates <Radio >: such as “Cintern ELS61-AUS (01.005)” Press [ENTER].
9. The screen indicates <Radio IMEI>: such as “3582049823-48123. Press [ENTER].
10. The screen indicates <SIM1 ICCID >: 54323432352524525435. Press [ENTER].
11. The screen indicates <SIM1 IMSI >: 54323432352524525435. Press [ENTER].

Firmware upgrade process

The module’s firmware can be upgraded via CTPlus (it is the easiest method of updating firmware). Refer to CTPlus help for instructions.

This section describes how to upgrade the module’s firmware from a USB connection to a computer (not via CTPlus).

Note: During the upgrade process, the Challenger panel will not be able to receive or report alarm signals. We recommend that you follow the general instructions listed in the *Challenger10 Programming Manual or ChallengerPlus Programming Manual*, “Recommended routine maintenance procedures”, in particular to notify the alarm monitoring company and personnel on the premises (if applicable).

Requirements

To upgrade the firmware you need the following:

- A powered and functioning Challenger10 or ChallengerPlus panel.
- A Windows PC with a USB 2.0 port.
- CTPlus application.
- Access to the Challenger panel’s printed circuit board (PCB).
- A USB cable (“Type A Male to Type B Mini Male” or “Type A Male to Type B Micro Male”, depending on the Challenger panel’s PCB version) to connect the computer to the Challenger panel.
- An internet connection.

Upgrading the firmware

Note: Refer to the *Challenger10 Installation and Quick Programming Manual or ChallengerPlus Installation and Quick Programming Manual* for the locations of any items referred to in this section.

To upgrade the module’s firmware:

1. Disconnect the panel’s power supply.
2. Fit test links 1 and 2 on the PCB.
3. Reconnect power to the panel. LED L1 will blink rapidly and the TS1054’s HB LED will also blink rapidly.
4. Use the USB cable to connect the computer to the Challenger panel’s USB port at J18.

The first time you connect a Challenger panel to the computer’s USB port, the Found New Hardware Wizard may display. If the Found New Hardware Wizard does not display, go directly to step 8.
5. If the wizard asks “Can Windows connect to Windows Update to search for software?” click to select the “No, not this time” radio button, and then click Next.
6. If the wizard asks “What do you want the wizard to do?” click to select the “Install from a list or specific location” radio button, and then click Next.
7. Click to select the “Search for the best driver in these locations” radio button, and then browse to include the location of the CTPlus application in the search (for example, C:\Program Files (x86)\Tecom\CTPlus).
8. Run CTPlus, log in as the master user, and click on the “Sync firmware” button from the Administration tab. Wait for the event log to say Sync complete, and then click on the “Firmware loader” button.
9. Click Select File... and click on the version you wish to load, and then click Open.
10. Click to select the Exp 1 or Exp 2 radio button (as appropriate).
11. Click Program File... to update the firmware. The process may take several minutes. The percentage completion displays at the bottom of the window. When finished, a “Programming is complete” message displays.

12. Remove the USB cable from the Challenger panel.
13. Disconnect the panel's power supply.
14. Remove test links 1 and 2.
15. Reconnect power to the panel.

Troubleshooting

Insufficient signal strength or no connection

The Challenger 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). You may need to fit a high-gain antenna to achieve sufficient signal strength (however, this is subject to network coverage).

Resetting the module

If the TS1054 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 Challenger panel does not detect the presence of a micro-SIM at SIM1 then the path goes into failure mode.

After the fault is corrected, the module will need to be reset. One way to perform a simple reset is to cycle the panel's power. This section describes resetting via RAS without cycling power.

To reset the module without cycling power for Challenger10:

1. From the Install menu, select 9–Communications and then 1–Setup H/W, to select the Setup menu.
2. From the Setup menu, press [ENTER] to see the locations and their menu numbers.
3. Press the menu number for the expander slot ([2] for Expander 1 or [3] for Expander 2), and then press [ENTER].
4. The board type should be set to 4–TS1053 3G Module.
To reset the module whilst retaining installer programming, press [0] [ENTER] to set the board type to 0–None, and then press [5] [ENTER] to toggle the board type back to 4–TS1053 3G Module. Press [ENTER] to exit the menu and reset the module.
5. Alternatively, to reset the module and restore factory programming, press [0] [ENTER] to set the board type to 0–None. Press [ENTER] to exit the menu.
Note: Whilst the board type is set to 0–None, the TS1054 module's LEDs will not operate.
6. If set to 0–None, then you must set the board type back to 4–TS1053 3G Module, and then press [ENTER] to exit the menu and reset the module.

To reset the module without cycling power for Challenger Plus

1. From the Install menu, select 9–Communications and then 1–Setup H/W, to select the Setup menu.
2. From the Setup menu, press [ENTER] to see the locations and their menu numbers.
3. Press the menu number for the expander slot ([2] for Expander 1 or [3] for Expander 2), and then press [ENTER].
4. Change the expander from Enabled to Disabled, and exit the menu.
5. Repeat steps 1 to 4 and change expander from Disabled to Enabled

Regulatory information

Manufacturer	Made in China by KGS Safety System (Hebei) Co., Ltd No. 80, Changjiang East Road, QETDZ, Qinhuangdao, Hebei, P. R. China 066004 Imported by KGS Fire and Security Australia Pty Ltd Suite 4.01, 2 Ferntree Place, Notting Hill, Victoria, 3168, Australia
Year of manufacture	The first two digits following "Mfd" on the product identification label indicate the year of manufacture.
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

