GE
Security

TS0898

Ethernet Interface

installation & programming guide

imagination at work

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Contents

Product overview

The TS0898 Ethernet Interface provides the TS0816 V8 Challenger panel motherboard with an RJ45 Ethernet port connection and a simplex serial RS232 printer port connection.

The RJ45 Ethernet connector is used to interface to:

- a computer via LAN/WAN for system management software to monitor or program Challenger installations, and/or
- SecureStream IP Receiver

Management software includes ARES 4.5 (or later), Forcefield, and TITAN (single-user) software.

TS0898 provides real-time printing of events to various printer types. The TS0898 may be used to replace a TS0091 serial computer printer interface.

Use the TS0898 only where it can communicate to another compatible IP device.

NOTES

- TS0898 is not compatible with V9 Challenger.
- Ethernet connection to TITAN computer requires TITAN V1.08.01 or later.

Installation

Installation overview

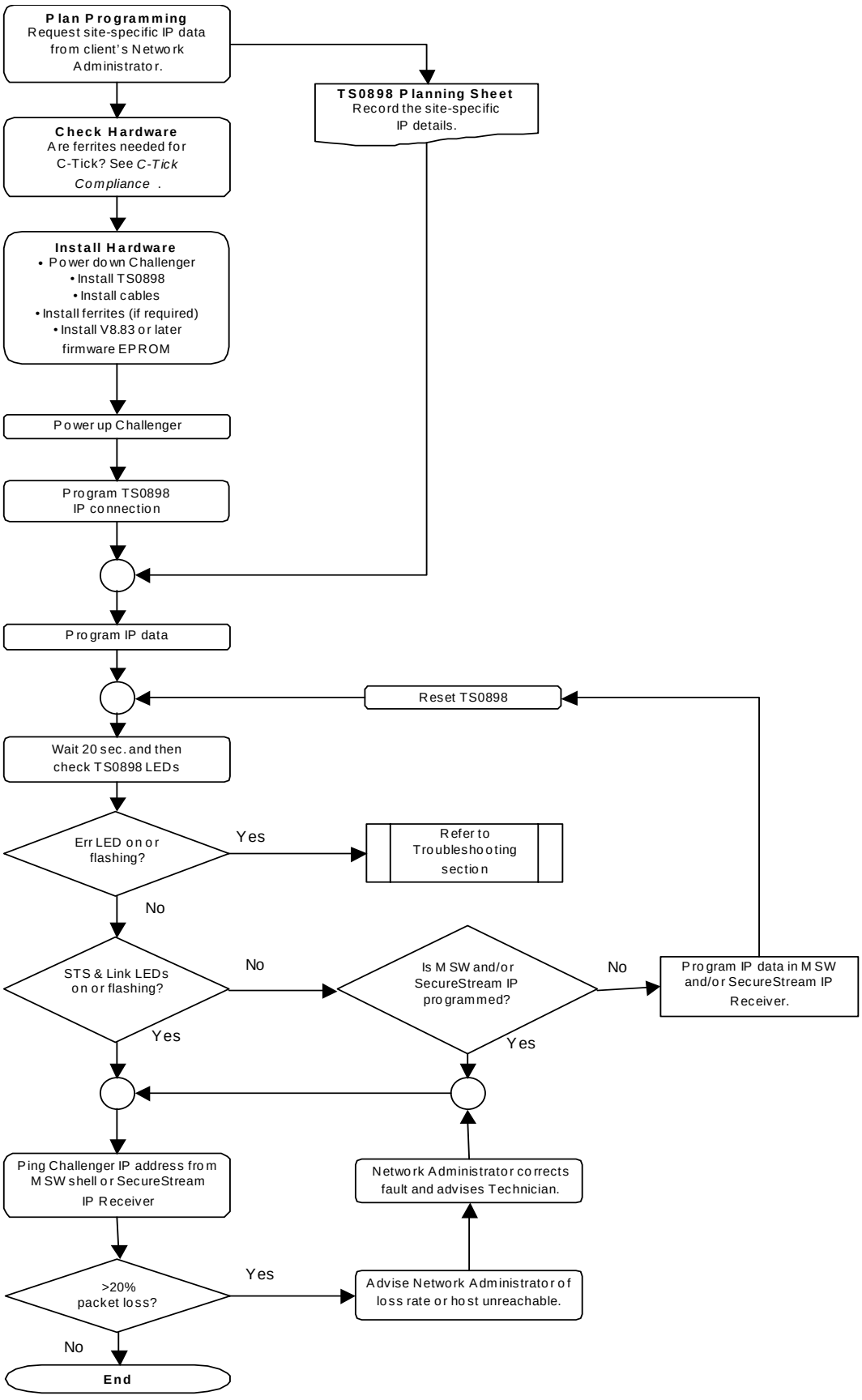


Figure 1: TS0898 Installation flowchart. (MSW is short for management software)

Requirements

This document is to be used subject to the following requirements:

Item	Requirement
Use	This document contains information for a technician to install and program a TS0898 module for a Ethernet LAN/WAN connection. This document is based on V8.83 Challenger firmware. Later versions of Challenger firmware may introduce different defaults and features. This document also contains program planning sheets and programming instructions to enable communications to the management software and/or SecureStream IP Receiver.
Planning	Correct installation of TS0898 requires consultation with the client's Network Administrator. Failure to gain the essential information from the client may result in the TS0898 not communicating with the management software or introducing data collisions with parts of the client's existing IP network and possibly a total network shutdown.
Technician Qualifications	Only trained Challenger Integration technicians should plan the programming of Challenger TS0898 IP data. Technicians must comply with and be trained in security and electrical industry installation regulations. An example qualification is the ACA Cabler for Cat 5 structured cabling.
Cabling	In Australia, the TS0898 must be installed in accordance with Australian Communications Authority (ACA) cabling requirements. In other locations check local regulatory requirements. Install a printer cable (if required) according to *Serial printer cable requirements* below.
C-Tick Compliance	The TS0898 installation must comply with the Australian Communications Authority (ACA) C-Tick regulations. See *C-Tick Compliance* on page 7.

Table 1: Installation Requirements

Serial printer cable requirements

A four-core shielded RS232 data cable (e.g., Belden 9534) must be used if connecting to a printer. A DB25 connector is supplied, alternatively a DB9 connector may be used (not supplied).

Use the following table as a guide to connect TS0898 to a printer using a DB25 or a DB9 connector.

TS0898 terminals		DB25 terminals (pin #)	DB9 terminals (pin #)
TX	Connect to ...	RX (3)	RX (2)
RX			
CTS	Connect to ...	DTR (20)	DTR (4)
RTS			
GND	Connect to ...	GND (7)	GND (5)
+12			
		Link RTS (4) to CTS (5)	Link RTS (7) to CTS (8)

Table 2: Serial printer cable connections

Installation kit

The following parts are provided with the TS0898:

Item	Quantity
This document	1
TS0898 board	1
DB25 printer connector (with back shell)	1
3-way (blue) screw terminal block	2
8 mm M3 screws	4
2 MB EPROM (V8.83 or later)	1

NOTE: The 2 MB EPROM upgrades the Challenger firmware. Printer and Ethernet cables are not supplied.

C-Tick Compliance

The TS0898 installation must comply with the Australian Communications Authority (ACA) C-Tick regulations. TS0898 meets C-Tick requirements **only** where the TS0898 is connected in an approved Challenger enclosure in such a manner as to prevent excessive RF emissions.

To avoid excessive noise emissions, ensure the Challenger enclosure cover remains fitted and your IP connection is installed in accordance with this manual.

The use of ferrites may be required in order to provide C-Tick compliance, depending upon the following Challenger and enclosure conditions. Where required, fit ferrites as follows:

- The Challenger's power supply, LAN, and external siren cables must pass **one time** through one of two ferrite blocks.
- The Ethernet cable connected to the TS0898 must pass **two times** through a second ferrite block. (The Ethernet cable loops once around the outside of the ferrite and passes through the block a second time.)

Refer to *Installation diagram* on page 8 for details.

For use with Standard Enclosure (TS0328 or TS0329)

- Challenger PCB 1069K — two ferrites required
- Challenger PCB 3069B — two ferrites required
- Challenger PCB 3069C (or later) — no ferrites required

For use with Universal Enclosure (TS0307, TS0308, or TS0309)

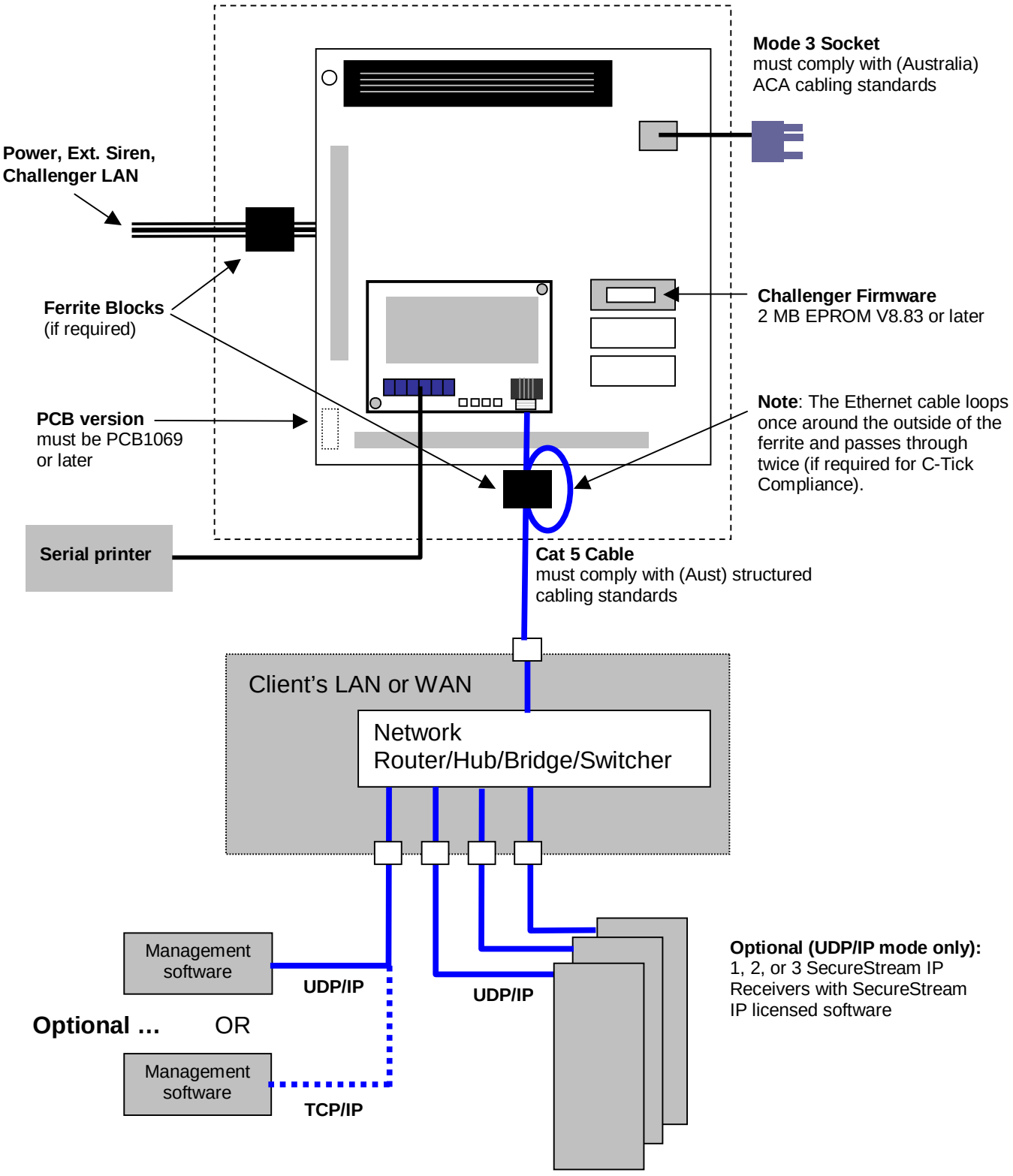
- Challenger PCB 1069K — **this configuration cannot provide C-Tick Compliance**
- Challenger PCB 3069B — two ferrites required
- Challenger PCB 3069C (or later) — two ferrites required

Installation instructions

Use the following process to install TS0898 hardware.

Step	Instructions
1	Disconnect power from the Challenger panel before installing the TS0898. Remove the TS0091 printer interface if one is installed.
2	Plug the TS0898 Ethernet Interface into the black J18 connector on the main Challenger panel PCB. Secure it with the two M3 screws supplied.
3	Replace the Challenger firmware EPROM with the 2 MB firmware EPROM supplied (the new EPROM upgrades the firmware). The position of the EPROM is labelled on the Challenger PCB. **Note:** If your Challenger panel has firmware version V8-C-MFX.864 or earlier, you'll need to upgrade your Challenger PCB to accept a 2 MB EPROM. Refer to the V8 Challenger panel technical bulletin 0816-011 available on our website **www.gesecurity.com.au**.
4	Connect the Ethernet cable to the RJ45 connector on the TS0898, and the other end of the cable to your LAN connection point.
5	Check to see if you need to add ferrites to your Challenger PCB to comply with C-Tick (see *C-Tick Compliance* above for details). Install ferrites if required.
6	If you are using management software, make sure it is on.
7	Go to page 9 for instructions on how to program the TS0898 via the RAS.

Installation diagram



Programming

This section describes only the programming required to establish communications with the management software. Additional programming is required to, for example, configure the printing options provided by TS0898.

You must initially use a RAS to program the TS0898 to communicate with the management software. After communication has been established, the management software may be used for programming. This section describes the programming steps using a RAS.

The TS0898 can be programmed to communicate via either of two modes:

- In polled mode, the TS0898 uses Transmission Control Protocol (TCP/IP) to communicate with management software. See *Polled mode* below.
- In event-driven mode, the TS0898 uses User Datagram Protocol (UDP/IP) to communicate with management software, as well as to SecureStream IP Receiver. See *Event-driven mode* on page 12.

Polled mode (TCP/IP)

In polled mode, the Challenger uses TCP/IP to continuously poll the management software.

NOTE: Polled mode uses considerable network bandwidth.

Step	Instructions for polled mode	RAS display & key sequence
1	**Action:** Navigate to TS0898 Programming. **Result:** The next RAS window is displayed.	RAS key sequence: **[*]-[code]-[19]-[Enter]-[47]-[Enter]**
2	**Action:** Verify that Extended Event protocol is not enabled. Default is No. Do not change the default. **Result:** Extended Event protocol is not used. (It is required for event-driven mode only.)	No – Enable Extended Event protocol * - Change 0 - Skip RAS key sequence: **[Enter]**
3	**Action:** Enable TCP/IP UDP/IP Support. Default is No. Change from No to Yes. **Result**: TCP/IP and UDP/IP support is enabled.	No – Enable TCP/IP UDP/IP Support * - Change 0 - Skip RAS key sequence: **[*]-[Enter]**
4	**Action:** Program the Challenger IP address provided by the network administrator. **Result**: IP address for the TS0898 is programmed and saved. **Note**: The IP address is assigned only by the client's network administrator.	Challenger IP: 000.000.000.000 New Addr: __ RAS key sequence: **[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]** nnn represents the assigned address from 000 to 255
5	**Action:** Skip this step. **Note**: The SecureStream IP Receiver cannot receive TCP/IP data.	CID Stn #1 IP: 000.000.000.000 New Addr: __ RAS key sequence: **[Enter]**
6	**Action:** Skip this step. **Note**: The SecureStream IP Receiver cannot receive TCP/IP data.	CID Stn #2 IP: 000.000.000.000 New Addr: RAS key sequence: **[Enter]**
7	**Action:** Skip this step. **Note**: The SecureStream IP Receiver cannot receive TCP/IP data.	CID Stn #3 IP: 000.000.000.000 New Addr: RAS key sequence: **[Enter]**

Step	Instructions for polled mode	RAS display & key sequence
8	**Action:** Program the 1st management software IP address. **Result**: The IP address is programmed. **Note**: IP addresses are assigned only by the client's network administrator.	Management Sw #1 IP: 000.000.000.000 New Addr: RAS key sequence: **[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]** nnn represents the assigned address from 000 to 255
9	**Action:** Skip this step. **Note**: This option is not used for polled mode.	Management Sw #2 IP: 000.000.000.000 New Addr: RAS key sequence: **[Enter]**
10	**Action:** Program the Gateway (Router) IP address. **Result**: The Router IP address is programmed for the Challenger to communicate to. **Notes**: Not all TS0898s require a gateway address. The Router IP address is assigned only by the client's network administrator.	Gateway IP: 000.000.000.000 New Addr: RAS key sequence: **[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]** nnn represents the assigned address from 000 to 255
11	**Action:** Program the number of host bits to create the subnet mask (host bits is a number in the range 0 through 31). **Result:** The host bits value is saved. **Notes**: The subnet mask is assigned by the client's network administrator. E.g. if the subnet mask is 255.255.255.0, then the host bit value is 8. See *Glossary* for details.	Host Bits: 00 Num of Bits: RAS key sequence: **[nn]-[Enter]** nn represents a number from 0 to 31
12	**Action:** Program the Challenger IP port address (default = 3001). Program one number from 3001 to 65,535. **Result:** The assigned port number is programmed and saved. **Note**: The TS0898 port number is assigned only by the Challenger Integration Technician.	Port Number: 3001 New Port: __ RAS key sequence: **[nnnnn]-[Enter]** nnnnn represents the assigned port address from 3001 to 65535.
13	**Action:** Program the Heartbeat Timeout period in either seconds (default) or minutes. Do not program 0 (zero). **Result:** The timeout value is saved. **Note**: If a connection is not established within this period the panel sends a heartbeat failure event to the next available monitoring station.	Heartbeat Timeout: 0060 Seconds * Chg Time: __ RAS key sequence: **[nnnn]-[Enter]** n represents the assigned seconds from 1 to 9999 Alternatively, to program the time in minutes, press [*]. Heartbeat Timeout: 0001 Minutes * Chg Time: __ RAS key sequence: **[nnnn]-[Enter]** n represents the assigned minutes from 1 to 166
14	**Action:** Program the delay time when the Heartbeat is expected to be acknowledged. Do not program 0 (zero). **Result:** The timeout period is saved. **Note**: If an acknowledge is not received by this time out a fail message will be generated.	Event Ack Timeout: 005 secs Seconds: __ RAS key sequence: **[nnn]-[Enter]** nnn represents the seconds from 001 to 255

Step	Instructions for polled mode	RAS display & key sequence
15	**Action:** Program the Event Flag you want for reporting Ethernet Link Fail events. **Result:** An Event Flag number is saved. **Note**: If the Ethernet Link fails this Challenger Event Flag number will be set.	Ethernet Link Fail No Event Flag Event Flag: __ RAS key sequence: **[nnn]-[Enter]** nnn represents the assigned event flag from 000 to 255
16	**Action:** Program the Event Flag you want for reporting Heartbeat Fail condition. **Result:** An Event Flag number is saved. **Note**: If the Heartbeat fails this Challenger Event Flag number will be set.	Heartbeat Fail No Event Flag Event Flag: __ RAS key sequence: **[nnn]-[Enter]** nnn represents the assigned event flag from 000 to 255
17	**Action:** Skip this step. It does not apply to polled mode.	CID Station Fail No Event Flag Event Flag: __ RAS key sequence: **[Enter]**
18	**Action:** Program the Event Flag you want for reporting the Ethernet Hardware failure. **Result:** An Event Flag number is saved. **Note**: If the Ethernet Hardware fails this Event Flag number will be set and CID event code E706 is sent. The Event Flag will reset if the Ethernet Hardware restores and the CID event code R706 is sent.	Ethernet Hardware Fail No Event Flag Event Flag: __ RAS key sequence: **[nnn]-[Enter]** nnn represents the assigned event flag from 000 to 255
19	**Action:** This option displays the status of Encryption, CID Stn#, Ethernet Hardware and Link. **Result:** Diagnostics are displayed **Note**: The Enrol option cannot be used in polled mode. See event-driven mode.	Status *- Refresh, 0-Enrol, # - Exit Encryption, CID # 001, Hw OK, Lnk OK Press [*] to refresh diagnostics. Press [#] to exit. **RAS Display Diagnostics** Hw Err — a hardware error is present Hw OK — the hardware is healthy Lnk Err — no Ethernet link is detected Lnk OK — Ethernet Link is healthy Encryption — encryption option is enabled CID # 00x — station number the TS0898 is communicating to. Dialler — may be displayed if programmed
20	**Action:** Enable to stop "report fail" messages from appearing on the RAS after communication from CID site 1 is lost. **Result**: Report fail messages do not display on the RAS.	No – Suspend REPORT Fail * - Change 0 - Skip RAS key sequence: **[*]-[Enter]**
21	**Action:** Skip this step. **Note**: This option is not used for polled mode.	No – Suspend Management SW #2 Events * - Change 0 - Skip RAS key sequence: **[Enter]**
22	**Action:** Skip this step to leave the Telnet protocol for TS0898 Challengers disabled. Change to enabled only if required (requires Challenger firmware version 8.112 or later).	No – Enable Telnet * - Change 0 - Skip RAS key sequence:

Step	Instructions for polled mode	RAS display & key sequence
	Result: Telnet protocol disabled by default.	**[Enter]**
23	**Action:** Press 0 to end this programming and to return to Installer Menu options.	RAS key sequence: **[*]**

Event-driven mode (UDP/IP)

In event-driven mode, the Challenger uses UDP/IP with Extended Event protocol to report events only as they occur. This prevents the management software and SecureStream IP Receiver software from continuously polling Challengers and therefore minimises network bandwidth requirements.

Step	Instructions for event-driven mode	RAS display
1	**Action:** Navigate to TS0898 Programming. **Result:** The next RAS window is displayed.	RAS key sequence: **[*]-[code]-[19]-[Enter]-[47]-[Enter]**
2	**Action:** Enable Extended Event protocol. Default is No. Change from No to Yes. **Result:** Extended Event Protocol allows TS0898 to communicate to management software, and to SecureStream IP Receiver software in event-driven mode.	No – Enable Extended Event protocol * - Change 0 - Skip RAS key sequence: **[*]-[Enter]**
3	**Action:** Enable TCP/IP UDP/IP Support. Default is No. Change from No to Yes. **Result**: TCP/IP and UDP/IP support is enabled.	No – Enable TCP/IP UDP/IP Support * - Change 0 - Skip RAS key sequence: **[*]-[Enter]**
4	**Action:** Program the Challenger IP address provided by the network administrator. **Result**: IP address for the TS0898 is programmed and saved. **Note**: The IP address is assigned only by the client's network administrator.	Challenger IP: 000.000.000.000 New Addr: __ RAS key sequence: **[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]** nnn represents the assigned address from 000 to 255
5	**Action:** Program the 1st Contact ID Station IP (main SecureStream IP Receiver) address. **Result**: The Challenger's main SecureStream IP Receiver address is programmed. **Note**: The IP address is assigned only by the client's network administrator.	CID Stn #1 IP: 000.000.000.000 New Addr: __ RAS key sequence: **[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]** nnn represents the assigned address from 000 to 255
6	**Action:** Program the 2nd Contact ID Station IP (backup SecureStream IP Receiver) address. **Result**: The Challenger's backup SecureStream IP Receiver address is programmed. **Note**: The IP address is assigned only by the client's network administrator.	CID Stn #2 IP: 000.000.000.000 New Addr: RAS key sequence: **[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]** nnn represents the assigned address from 000 to 255
7	**Action:** Program the 3rd Contact ID Station IP (disaster SecureStream IP Receiver) address. **Result**: The Challenger's disaster SecureStream IP Receiver address is programmed. **Note**: The IP address is assigned only by the client's network administrator.	CID Stn #3 IP: 000.000.000.000 New Addr: RAS key sequence: **[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]** nnn represents the assigned address from 000 to 255
8	**Action:** Program the 1st management software IP address. **Result**: The Challenger's management software IP address is programmed. **Note**: The IP address is assigned only by the client's network administrator.	Management Sw #1 IP: 000.000.000.000 New Addr: RAS key sequence: **[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]** nnn represents the assigned address from 000 to 255

Step	Instructions for event-driven mode	RAS display
9	**Action:** Skip this option. The 2nd management software IP address will be programmed automatically if the management software is ARES 5 or Forcefield. **Result**: The 2 nd management software IP address is not programmed.	Management Sw #2 IP: 000.000.000.000 New Addr: RAS key sequence: **[Enter]**
10	**Action:** Program the Gateway (Router) IP address. **Result**: The Router IP address is programmed for the Challenger to communicate to. **Notes**: Not all TS0898s require a Gateway Address. The Router IP address is assigned only by the client's network administrator.	Gateway IP: 000.000.000.000 New Addr: RAS key sequence: **[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]-[nnn]-[Enter]** nnn represents the assigned address from 000 to 255
11	**Action:** Program the number of host bits to create the subnet mask (host bits is a number in the range 0 through 31). **Result:** The host bits value is saved. **Notes**: The subnet mask is assigned by the client's network administrator. E.g. if the subnet mask is 255.255.255.0, then the host bit value is 8. See *Glossary* for details.	Host Bits: 00 Num of Bits: RAS key sequence: **[nn]-[Enter]** nn represents a number from 0 to 31
12	**Action:** Program the Challenger IP port address (default = 3001). Program one number from 3001 to 65,535. **Result:** The assigned port number is programmed and saved. **Note**: The TS0898 port number is assigned only by the Challenger Integration Technician.	Port Number: 3001 New Port: __ RAS key sequence: **[nnnnn]-[Enter]** nnnnn represents the assigned port address from 3001 to 65535.
13	**Action:** Program the Heartbeat Timeout period in either seconds (default) or minutes. Do not program 0 (zero). **Result:** The timeout value is saved. **Note**: If a connection is not established within this period the panel sends a heartbeat failure event to the next available monitoring station.	Heartbeat Timeout: 0060 Seconds * Chg Time: __ RAS key sequence: **[nnnn]-[Enter]** n represents the assigned seconds from 1 to 9999 Alternatively, to program the time in minutes, press [*]. Heartbeat Timeout: 0001 Minutes * Chg Time: __ RAS key sequence: **[nnnn]-[Enter]** n represents the assigned minutes from 1 to 166
14	**Action:** Program the delay time when the Heartbeat is expected to be acknowledged. Do not program 0 (zero). **Result:** The timeout period is saved. **Note**: If an acknowledge is not received by this time out a fail message will be generated.	Event Ack Timeout: 005 secs Seconds: __ RAS key sequence: **[nnn]-[Enter]** nnn represents the seconds from 001 to 255
15	**Action:** Program the Event Flag you want for reporting Ethernet Link Fail events. **Result:** An Event Flag number is saved. **Note**: If the Ethernet Link fails this Challenger Event Flag number will be set.	Ethernet Link Fail No Event Flag Event Flag: __ RAS key sequence: **[nnn]-[Enter]** nnn represents the assigned event flag from 000 to 255

Step	Instructions for event-driven mode	RAS display
16	**Action:** Program the Event Flag you want for reporting Heartbeat Fail condition. **Result:** An Event Flag number is saved. **Note**: If the Heartbeat fails this Challenger Event Flag number will be set.	Heartbeat Fail No Event Flag Event Flag: __ RAS key sequence: **[nnn]-[Enter]** nnn represents the assigned event flag from 000 to 255
17	**Action:** Program the Event Flag you want for reporting the SecureStream IP Receiver communication failure. **Result:** An Event Flag number is saved. **Note**: If the SecureStream IP link fails this Challenger Event Flag number will be set.	CID Station Fail No Event Flag Event Flag: __ RAS key sequence: **[nnn]-[Enter]** nnn represents the assigned event flag from 000 to 255
18	**Action:** Program the Event Flag you want for reporting the Ethernet hardware failure. **Result:** An Event Flag number is saved. **Note**: If the Ethernet hardware fails this Event Flag number will be set and CID event code E706 is sent. The Event Flag will reset if the Ethernet hardware restores and the CID event code R706 is sent.	Ethernet Hardware Fail No Event Flag Event Flag: __ RAS key sequence: **[nnn]-[Enter]** nnn represents the assigned event flag from 000 to 255
19	**Action:** The Ethernet status option allows you to enrol a Challenger with the SecureStream IP Receiver and displays the status of Encryption, CID Stn#, Ethernet Hardware status and Link status. **Result:** Diagnostics are displayed. **Note:** Enrol option only applies to SecureStream IP Receiver applications. Press 0 to force the Challenger to send data to the programmed SecureStream IP Receiver address/es. Dialler option will be active only if the technician programs the dialler to function.	Status *- Refresh, 0-Enrol, # - Exit Encryption, CID # 001, Hw OK, Lnk OK Press [*] to refresh diagnostics. Press [0] to enrol TS0898 for all connected SecureStream IP Receivers. Press [#] to exit. **RAS Display Diagnostics** Hw Err — a hardware error is present Hw OK — the hardware is healthy Lnk Err — no Ethernet link is detected Lnk OK — Ethernet Link is healthy Encryption — encryption option is enabled CID # 00x — station number the TS0898 is communicating to. Dialler — TS0898 is unable to communicate with the CID Station (SecureStream IP Receiver) via the Ethernet link & the Dialler is active (if programmed)
20	**Action:** Enable to stop "report fail" messages from appearing on the RAS after communication from CID site 1 is lost. **Result**: Report fail messages do not display on the RAS.	No – Suspend REPORT Fail * - Change 0 - Skip RAS key sequence: **[*]-[Enter]**
21	**Action:** Enable to stop event delivery to the second ARES 5 management software station (requires Challenger firmware version 8.106 or later). **Result**: Events are transmitted to only the first ARES 5 management software station.	No – Suspend Management SW #2 Events * - Change 0 - Skip RAS key sequence: **[*]-[Enter]**
22	**Action:** Skip this step to leave the Telnet protocol for TS0898 Challengers disabled. Change to enabled only if required (requires Challenger firmware version 8.112 or later). **Result**: Telnet protocol disabled by default.	No – Enable Telnet * - Change 0 - Skip RAS key sequence: **[Enter]**

Step	Instructions for event-driven mode	RAS display
23	**Action:** Press 0 to end this programming and to return to Installer Menu options.	RAS key sequence: **[*]**

Troubleshooting

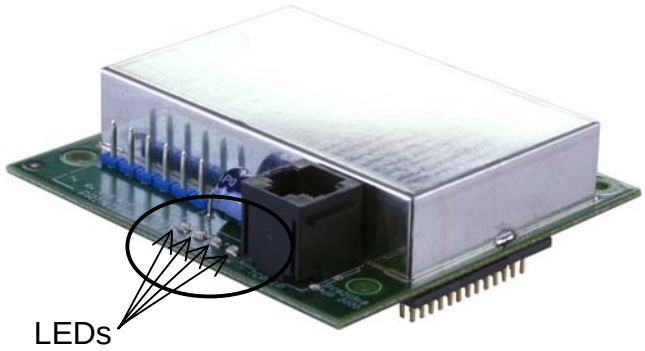
Likely TS0898 failure causes are:

- Incorrect Challenger firmware
- Incorrect Challenger computer address and/or security password
- Incorrect IP address allocation
- Networking failures
- TS0898 module failure

LED indications

TS0898 has four LEDs to assist in diagnosing faults. The LEDs from left to right (on image) are:

- Err (Red) — error and diagnostic LED.
- N/A — not used (ignore any activity).
- STS (Green) — displays the status of the data communications. On indicates data communications between the TS0898 and the panel. This LED is also used for diagnostics and error detection when combined with the Err LED.
- Link (Green) — Active if good link.



Ignore the LEDs during programming, as they may flash randomly. On completion of the programming wait 20 seconds before checking the LED status. If present, a fail code will cycle continuously.

Note whether any LEDs are on constantly or are flashing. If flashing, note whether the flashing occurs in sets. See Table 3 to diagnose the TS0898 module status from the LED indications.

Normal operation

- Err — LED off
- STS — LED on to indicate Event mode, flashing to indicate Polling mode
- Link — LED on to indicate successful connection to LAN

Failure mode operation

If the Err LED is on or flashing, see table below.

	Err LED flashing	Err LED on	Fault recovery actions
Link LED off		LAN connection not detected	Check cable connection. Ping IP address
STS LED flashing		EPROM checksum error.	TS0898 boot error. Toggle power to see if problem persists.
STS LED 2 flashes, repeating		RAM error	Possible faulty TS0898. Toggle power to see if problem persists.
STS LED 3 flashes, repeating		Network controller error	Network error. Toggle power to see if problem persists.
STS LED 4 flashes, repeating	Network connection faulty		This should only appear after power up. Even though the TS0898 is going into operational mode, the problem will potentially persist. Check all network connections.
STS LED 4 flashes, repeating		EPROM error	Reset TS0898. Replace after three resets if problem persists.
STS LED 5 flashes, repeating		Duplicated IP addresses	Check, find, replace duplicated IP address.

Table 3: TS0898 Failure Mode Indications and recovery actions

Note: If the LED combination is not defined above, reset or re-power the TS0898. If the failure persists, replace with a known working TS0898 to isolate the cause. If the failure is resolved by replacing the TS0898, return the faulty TS0898 to point of sale.

Diagnostic Actions

Reset TS0898

Before replacing a TS0898, reset the module by disabling and then re-enabling (toggle) the TS0898 Extended Event Protocol option.

Assuming that the TS0898 is currently programmed for TCP/IP or UDP/IP support, use the following procedure to reset TS0898.

Step	Instructions
1	Re-enter programming mode and toggle the first option. The RAS key sequence is: [*]-[Installer Code]-[Enter]-[19]-[Enter]-[47]-[Enter]-[*]-[0]-[Enter]. Upon exiting menu 47, the TS0898 LEDs will flash for about a minute. Wait until the LEDs stop flashing.
2	Re-enter menu 47 and toggle the first option *a second time* (in order to return to the correct option). Upon exiting menu 47, the TS0898 LEDs will flash for about a minute. Wait until the LEDs stop flashing.
3	If an error code displays after 20 seconds, see Table 3 to diagnose the TS0898 module status. The error code will cycle (repeat).

Check IP addresses and data

NOTE: Only qualified Challenger Integration technicians should alter IP addresses.

Use the following procedure to check IP addresses and data.

Step	Instructions
1	Request a copy of the original IP data provided by the client's network administrator.
2	Ensure the Challenger panel firmware is the correct version.
3	Open the Challenger programming windows in the management software. Check the programmed IP data corresponds with the original data provided by the network administrator.
4	If applicable, open the Challenger programming windows in the SecureStream IP Receiver software. Verify the programmed IP data corresponds with the original data provided by the network administrator.

Ping Challenger IP addresses

Only qualified Challenger Integration technicians should use ping commands. Ask the client's network administrator to conduct this test if you are unsure.

Use the following procedure to ping a Challenger IP address.

Step	Instructions
1	Open a command shell on the server (management software or SecureStream IP Receiver).
2	At the command prompt type: ping nnn.nnn.nnn.nnn [where n represents the digits that make up the Challenger TS0898 IP address].
3	Observe the network PCs attempt to receive acknowledgements from the Challenger IP address.
4	After approximately 30 seconds press the **[Ctrl]+[C]** keys together to end the ping command.
5	Read the ping statistics results. Lost packets above 20% represent an unsatisfactory result. A 'Destination host unreachable' message indicates 100% loss, and the server could not reach the Challenger TS0898 module.
6	Alternatively type: path ping [IP address] command to display which of the network routers the 'ping' command successfully passes through.
7	Advise the network administrator of the path ping or ping command results and wait until the network administrator resolves the failure.
8	On advice from the network administrator that the failure is recovered, repeat the ping command and recheck the 'Packet Lost' statistics to verify a satisfactory result.

Additional notes

Certain conditions require action using the programming steps described in this document. This section describes such conditions.

Common Ademco Contact ID (CID) error codes

The following table lists the common default CID codes sent to the monitoring station by SecureStream IP Receiver.

CID code	Explanation
E703	Ethernet link failed
E704	Ethernet heartbeat failed
E705	Ethernet CID site failed (SecureStream IP Receiver)
E706	Ethernet hardware init failed (TS0898)

Replacing TS0898

If the TS0898 is being replaced on a Challenger that has already been programmed for a TS0898, the new TS0898 must be defaulted to the Challenger's programming.

Use the process described in *Reset TS0898* on page 16.

Multiple SecureStreams (main and backup)

If a new Challenger is programmed to report back to more than one SecureStream, the Challenger must be enrolled in those SecureStreams.

Go to the Ethernet status option (programming step #19) and press '0' (Enrol). This will enrol this Challenger in all SecureStreams as programmed in CID #1, CID #2, and CID #3.

[*]-[Installer Code]-[Enter]-[19]-[Enter]-[47]-[Enter]- [Enter 16 times]-[0]-[#]

Ethernet Init Fail

If an 'Ethernet Init Fail' message appears on the RAS after the TS0898 is programmed, the cause likely to be either duplicated IP or corrupted programming. Refer to the following sections.

Duplicated IP

This occurs when the Challenger IP is the same as another device on the network. Use the following procedure to change the IP address.

Step	Instructions
1	Arrange with the network administrator to have a new IP address assigned to the Challenger.
2	Unplug the Ethernet cable from TS0898.
3	Toggle power to the Challenger.
4	Program the Challenger IP address to the new one provided by the network administrator, as described in step 4 of the programming section.
5	Wait for TS0898's 'STS' and 'N/A' LEDs to reach a steady state (not flashing).
6	Plug the Ethernet cable into TS0898.

Corrupted Programming

This may occur when programming has been interrupted. Use the following procedure to initialise (set to default) the TS0898 programming.

Step	Instructions
1	Re-enter programming mode and select option 4 from the installer menu option 14-Defaults to return the TS0898 to its factory default settings. The RAS key sequence is: [*]-[Installer Code]-[Enter]-[19]-[Enter]-[14]-[Enter]-[4]-[Enter]

NOTE: After you set the TS0898 to its factory default settings you will need to reprogram any non-default settings that are required (see *Programming* on page 9).

TS0898 Planning Sheet

Standard installation data

Facility

- Building Address _____
- Room/Location _____

Challenger panel

Number _____ Computer Address _____ Security Password _____

Installation options (cross out unneeded items)

TS0898 Ethernet Interface:

- Enable Extended Event Protocol? Yes or No
- Enable TCP/IP UDP/IP Support? Yes or No
- IP Address* _____
- Gateway IP Address* _____
- Host Bits* _____ (__)
- Port Number ____

SecureStream IP Receiver:

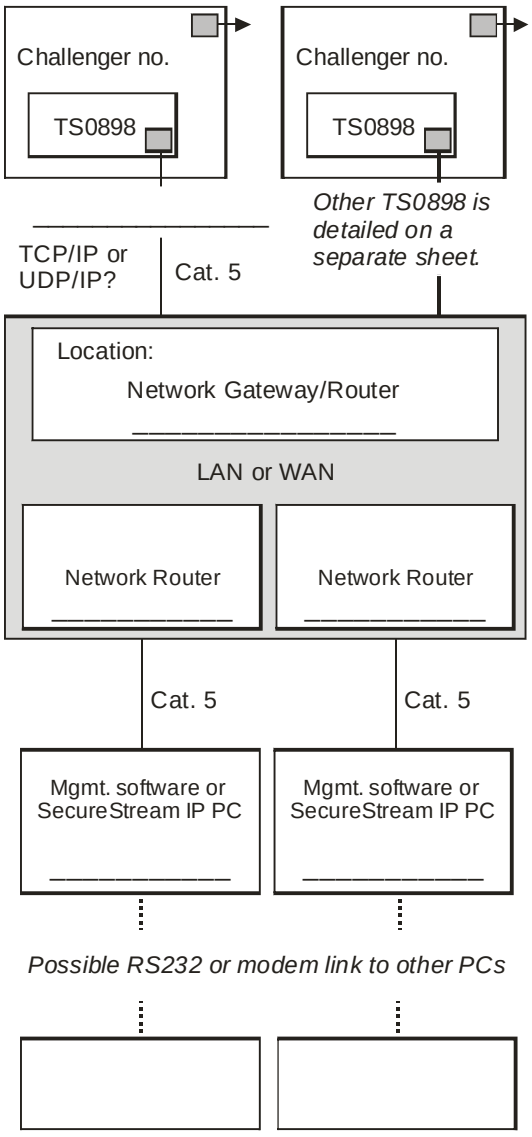
- CID Stn 1 IP Address* _____
- CID Stn 2 IP Address* _____
- CID Stn 3 IP Address* _____
- Gateway IP Address* _____
- Encryption (16 bytes) __.__.__.__.__.__.__.__ __.__.__.__.__.__.__.__
- Heartbeat Timeout (min.) ____
- Event Ack Timeout (sec.) ____

ARES / Forcefield / TITAN management software:

- Node ____
- MSW IP Address* _____
- MSW Gateway IP Address* _____
- MSW Netmask* _____

Challenger Event Flags:

- Ethernet Link Fail No. ____
- Heartbeat Fail No. ____
- SecureStream IP Fail No. ____
- Ethernet Hardware Fail No. ____



*** Contact the network administrator for details.**

NOTE: For ARES or Forcefield, enter the node number. For TITAN, always enter node number 1.

Case studies

1. One TS0898 to one SecureStream IP Receiver

This case study provides an example of how a TS0898 may be applied. Data shown in the case study is for demonstration purposes only. This data must not be used unless specified by a network administrator.

Standard installation data

Facility

- Building Address: National Tyres, 112 Moore St Nth Sydney NSW
- Room/Location: Managers Office

Challenger panel

Number 01 Computer Address 12 Security Password 0123456789

Installation options (cross out unneeded items)

TS0898 Ethernet Interface:

- Enable Extended Event Protocol? Yes or ~~No~~
- Enable TCP/IP UDP/IP Support? Yes or ~~No~~
- IP Address* 10.5.144.12
- Gateway IP Address* 10.5.144.1
- Host Bits* 255.255.255.128 (7)
- Port Number 3001

SecureStream IP Receiver:

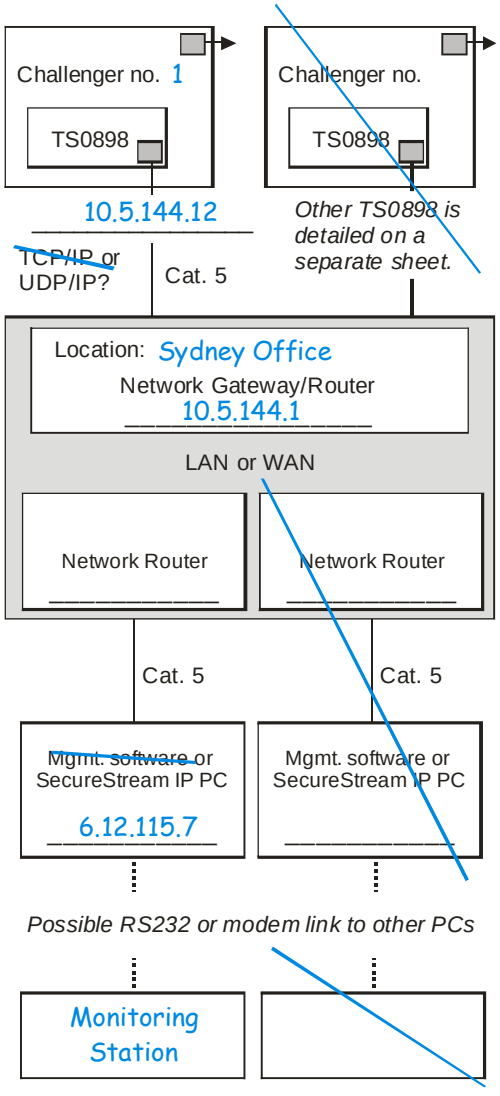
- CID Stn 1 IP Address* 6.12.115.7
- ~~CID Stn 2 IP Address*~~
- ~~CID Stn 3 IP Address*~~
- Gateway IP Address* 6.12.115.1
- Encryption (16 bytes) __.__.__.__.__.__.__.__ __.__.__.__.__.__.__.__
- Heartbeat Timeout (min.) 90
- Event Ack Timeout (sec.) 15

ARES / Forcefield / TITAN management software:

- Node ____
- MSW IP Address* ____
- MSW Gateway IP Address* ____
- MSW Netmask* ____

Challenger Event Flags:

- Ethernet Link Fail No. 255
- Heartbeat Fail No. 254
- SecureStream IP Fail No. 253
- Ethernet Hardware Fail No. 252



*** Contact the network administrator for details.**

2. Two TS0898s to ARES and SecureStream IP Receiver

This case study provides an example of how a TS0898 may be applied. Data shown in the case study is for demonstration purposes only. This data must not be used unless specified by a network administrator.

Standard installation data

Facility

- Building Address: BBA Bank, 22 High St Meadow Heights, Vic
- Room/Location: Ground floor — Computer Room

Challenger panel

Number 01 Computer Address 24 Security Password 1122334455

Installation options (cross out unneeded items)

TS0898 Ethernet Interface:

- Enable Extended Event Protocol? Yes or ~~No~~
- Enable TCP/IP UDP/IP Support? Yes or ~~No~~
- IP Address* 3.17.209.21
- Gateway IP Address* 3.17.209.20
- Host Bits* 255.255.255.128 (7)
- Port Number 3001

SecureStream IP Receiver:

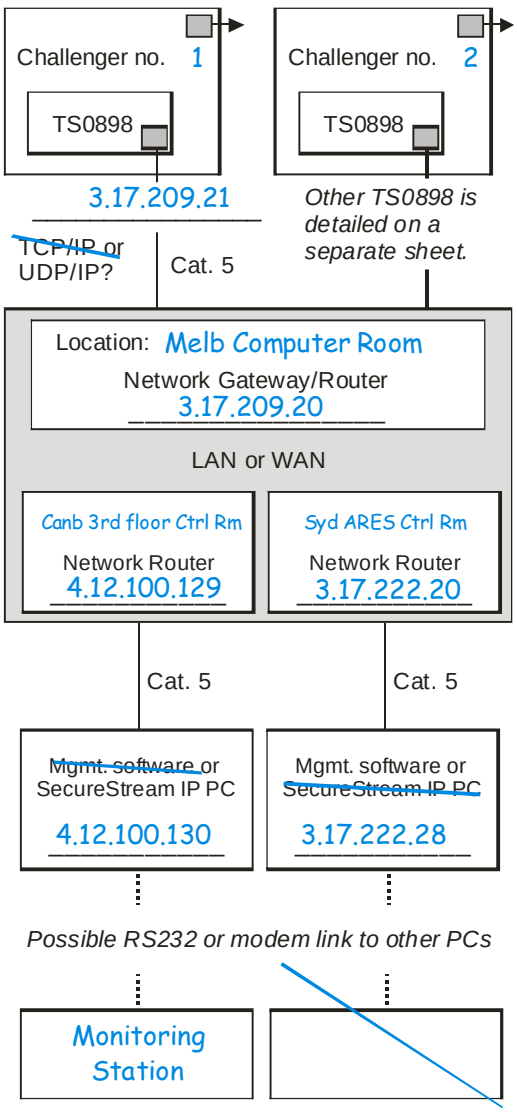
- CID Stn 1 IP Address* 4.12.100.130
- ~~CID Stn 2 IP Address*~~
- ~~CID Stn 3 IP Address*~~
- Gateway IP Address* 4.12.100.129
- Encryption (16 bytes) __.__.__.__.__.__.__.__ __.__.__.__.__.__.__.__
- Heartbeat Timeout (min.) 20
- Event Ack Timeout (sec.) 15

ARES / ~~Forcefield / TITAN~~ management software:

- Node 01
- MSW IP Address* 3.17.222.28
- MSW Gateway IP Address* 3.17.222.20
- MSW Netmask* 255.255.255.128

Challenger Event Flags:

- Ethernet Link Fail No. 255
- Heartbeat Fail No. 254
- SecureStream IP Fail No. 253
- Ethernet Hardware Fail No. 252



*** Contact the network administrator for details.**

3. One TS0898 to TITAN

This case study provides an example of how a TS0898 may be applied. Data shown in the case study is for demonstration purposes only. This data must not be used unless specified by a network administrator.

Standard installation data

Facility

- Building Address: Melbourne Office Supplies, 22A Elizabeth St. Melbourne
- Room/Location: Ground floor — Store Room

Challenger panel

Number 01 Computer Address 05 Security Password 0125434599

Installation options (cross out unneeded items)

TS0898 Ethernet Interface:

- Enable Extended Event Protocol? Yes or ~~No~~
- Enable TCP/IP UDP/IP Support? Yes or ~~No~~
- IP Address* 16.5.144.12
- Gateway IP Address* 16.5.144.1
- Host Bits* 255.255.255.128 (7)
- Port Number 3001

~~SecureStream~~ IP Receiver:

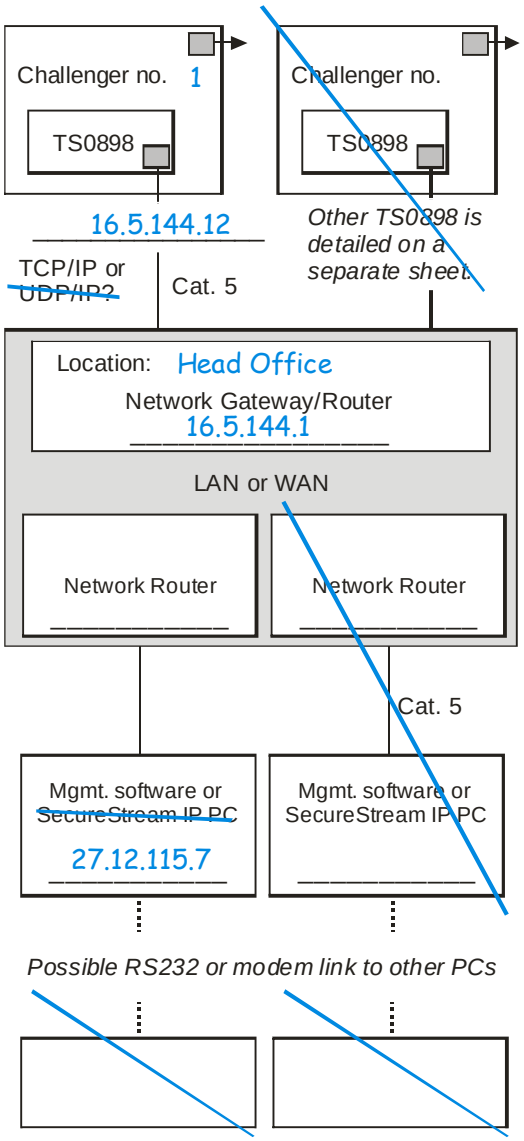
- CID Stn 1 IP Address* _____
- CID Stn 2 IP Address* _____
- CID Stn 3 IP Address* _____
- Gateway IP Address* _____
- Encryption (16 bytes) __.__.__.__.__.__.__.__ __.__.__.__.__.__.__.__
- Heartbeat Timeout (min.) ____
- Event Ack Timeout (sec.) ____

~~ARES / Forcefield /~~ TITAN management software:

- Node 01
- MSW IP Address* 27.12.115.7
- MSW Gateway IP Address* 27.12.115.1
- MSW Netmask* 255.255.255.128

Challenger Event Flags:

- Ethernet Link Fail No. 200
- Heartbeat Fail No. ____
- SecureStream IP Fail No. ____
- Ethernet Hardware Fail No. 202



*** Contact the network administrator for details.**

Glossary

ACA	Australian Communications Authority – governs the regulations for telecommunications and data communication cabling standards.
Address	A unique number that allows a device to communicate on a shared communication link.
ARES	See *Management software*.
Bandwidth	The total number of bytes a network (LAN/WAN) can handle at any given time.
Challenger Integration Technician	A Technician who is competent in all Challenger database programming and has been trained to integrate Challenger with 3rd party systems.
CID	Contact ID: the security industry standard for receiving alarm events into a centralised monitoring station.
CID Station	A general term for a computer that collects CID event data from the field. The GE CID Station application is the SecureStream IP Receiver.
Encryption	A process by which data is concealed during transmission. It is recommended that encryption is not enabled until after you have established communication.
Event	A message sent to a monitoring computer with alarm or site activity information.
Event-driven mode	TS0898 operating mode where the Challenger uses UDP/IP protocol to report events to management software only as they occur.
Extended Event Protocol	An engineering term for UDP/IP protocol. Treat both terminology identically for TS0898 applications.
Ferrite	A cable clamp designed to block/reject frequency emissions from passing into or leaving an enclosure.
ForceField	See *Management software*.
Gateway	The device on a network that collects multiple IP connections from dissimilar networks and translates the data into a single data stream. Also known as a router.
Heartbeat	A message sent to a Challenger at a predetermined time to verify that the Challenger remains connected and is healthy. Allows the system to minimise bandwidth utilisation.
Host bits	The number of 0 (host) bits contained in the subnet mask (in binary notation).
IP	Internet Protocol: an IT industry standard for sending data via the internet.
IP port	The software port number the TS0898 module permits external communications to directly access the module. User definable number should start at 3001, and onwards.
SecureStream	SecureStream IP Receiver — The product name given to GE software that collects all Challenger alarm event messages in IP format and converts into serial format to be sent to a CID formatted monitoring station computer.
LAN	Local Area Network: a hardware configuration of computers that share server resources or need to communicate within a given physical area or restricted to a group of people.
Management software	ARES 4.5 (or later), Forcefield, or TITAN software engineered by GE to monitor and administer Challenger security systems.
MSS100	External third-party device server used for RS232-TCP/IP conversion (e.g. Lantronix MSS100) in order to communicate with TITAN software prior to version 1.08.01. TITAN V1.08.01 or later can use the TITAN computer's Ethernet port and does not need to use MSS100.
Network Administrator	A person who has been trained to administer hardware and operating system software, network systems, provides networking diagnostics and OS maintenance services. May also be called an IT Manager.
OS	Operating System: The software loaded onto a server or desktop computer that controls the functionality of the computer. Typical systems are Novell, Windows, etc.
PCB	Printed circuit board: All electronic components are soldered to a PCB.
Ping	A command entered into a networked PC to determine the addressing of other network devices is connected and programmed correctly. Path Ping command can be used to identify the functional devices as the ping message attempts to reach its destination.
Polled mode	TS0898 operating mode where the Challenger uses TCP/IP to continuously poll the management software.
RAS	Remote Arming Station
Shell	A window permitting a technician to enter commands to diagnose and maintain the computer's OS.
Simplex	A data circuit that can transmit in one direction only.
Subnet mask	The number derived from the network class IP address to determine the size of a sub network. Assigned by the network administrator.
TITAN	See *Management software*.
TCP/IP	TCP Internet Protocol: the IT industry standard for continuous data transmission. See also UDP/IP
UDP/IP	User Datagram Protocol Internet Protocol used for event-driven communication, and does not require the receiver to acknowledge receipt. It uses less bandwidth for transmission than polled communication.

GE Security Pty Ltd
Unit 3, 310 Ferntree Gully Road
Notting Hill, VIC, 3168
Australia

A.B.N. 84 086 771 404
Phone +61 3 9239 1200
Fax +61 3 9239 1299

Statements

N4131

When installed as directed, this product conforms to the standards set by Standards Australia on behalf of the Australian Communications Authority (ACA).

GE Security recommend enclosure covers remain fitted to comply with C-Tick.

Warning

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

Technical Support

E-mail: techsupport@gesecurity.com.au

Hours are from 9:00 a.m. to 5:30 p.m., Monday to Friday (AEST).

imagination at work

Part number: MAINST-TS0898
Issue: 3.2