TS0098 Challenger IP LAN Adaptor Installation and Programming Guide

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 N4131

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Product overview

TS0098 Challenger IP LAN Adaptor modules enable Challenger LAN data to be carried over an IP network and to be converted back to RS-485 communications for connection to LAN devices.

This capability enables connection to LAN devices such as a remote arming station (RAS) or a data gathering panel (DGP) via existing IP network infrastructure rather than by four-wire, twisted-pair, shielded data cable. In addition, TS0098 modules provide securely-encrypted IP communications via a unique 128-bit encryption key.

TS0098 modules are configured as either a start-of-line module (SLM) or an end-of-line module (ELM) and work as a pair for the IP communications link. An SLM can be connected to as many as 31 ELMs to provide IP connections to each LAN's RASs and DGPs.

Note: A Challenger V8 panel can have 16 RASs and 15 DGPs on its LAN. A Challenger10 panel can have 16 RASs and 15 DGPs on LAN1 and 16 RASs and 16 DGPs on LAN2. The maximum number of ELMs is 31.

TS0098 modules have an onboard Web server that is used by installers to configure the module via a Web browser. For security purposes, a module's Web server can be locked to prevent unauthorised access.

TS0098 modules are not polled as LAN devices: they are merely a portion of the system data bus. As a result, a variety of configuration options are possible, depending on what parts of the LAN need to be carried on the IP network. Each Challenger LAN will have at least two TS0098 modules (one SLM and one ELM) and can have up to 32 modules (one SLM and 31 ELMs).

Figure 1 below and Figure 2 on page 2 depict a pair of TS0098 modules used to communicate with LAN devices over the IP network. Figure 3 on page 2 depicts one SLM and multiple ELMs.

Figure 1: One SLM and one ELM connecting a single LAN device

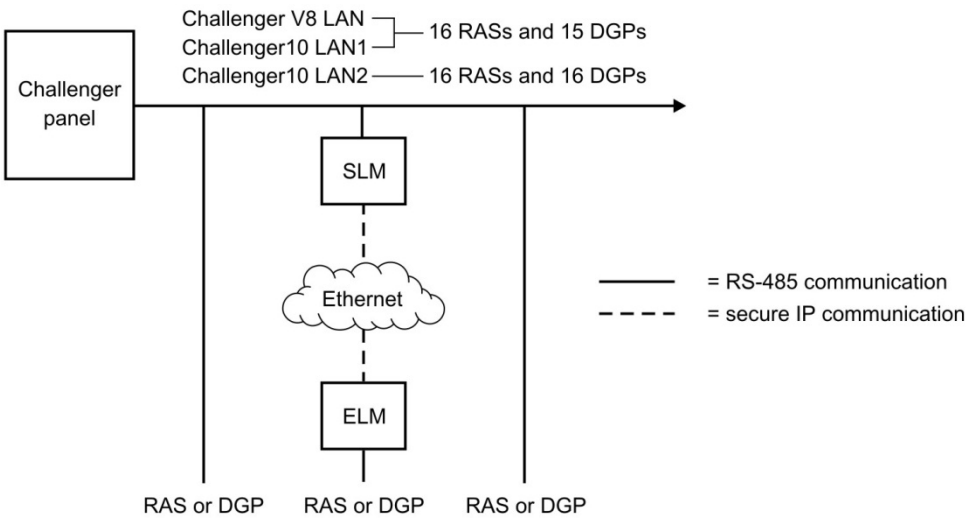


Figure 2: One SLM and one ELM connecting a remote LAN

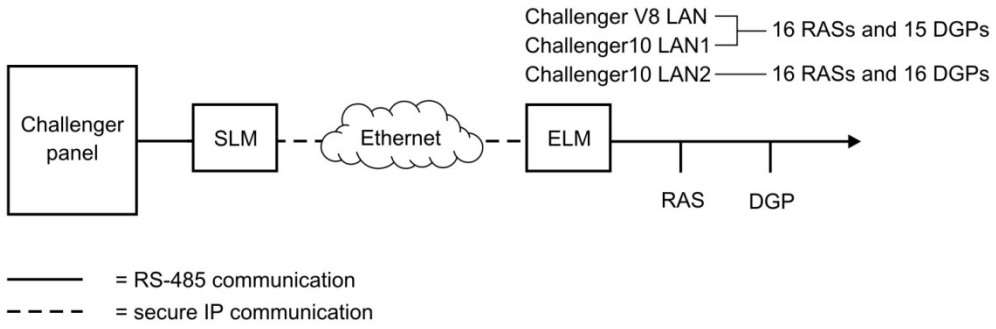
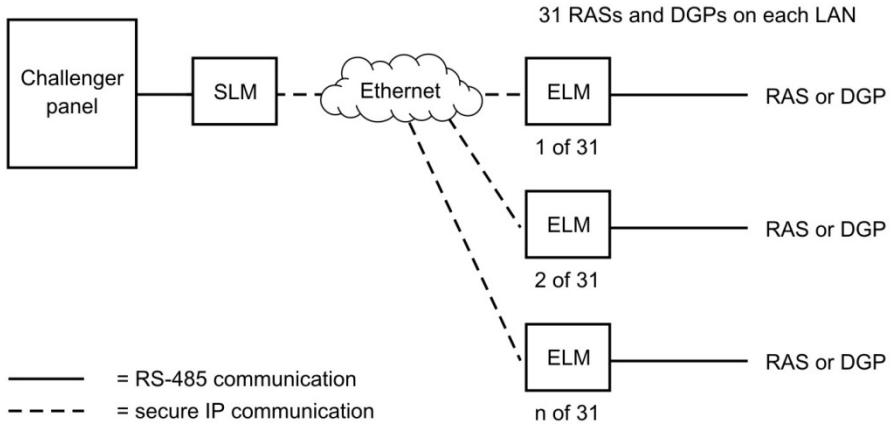
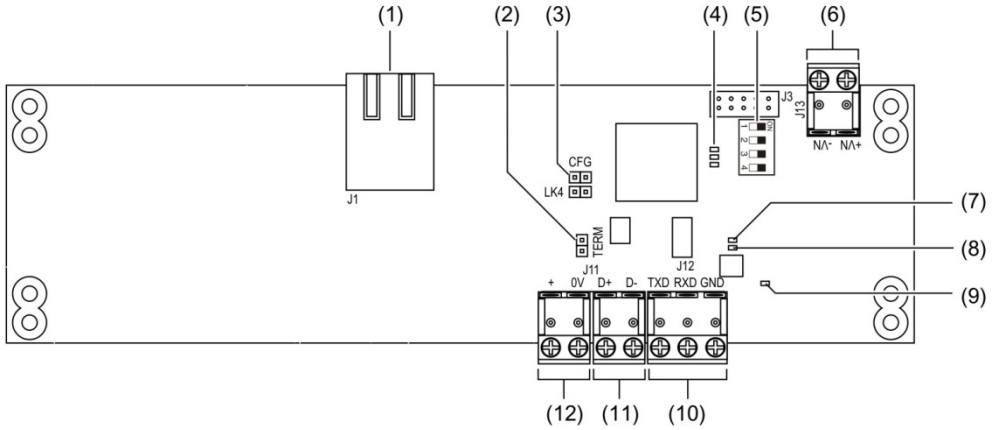


Figure 3: One SLM used with multiple ELMs



Refer to Figure 4 below and this section for details about setting up a TS0098 module.

Figure 4: TS0098 Challenger IP LAN Adaptor general layout



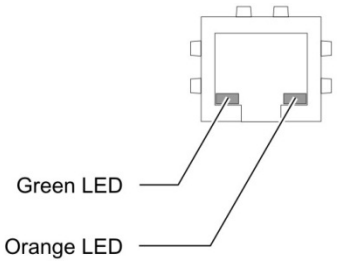
1. RJ-45 Ethernet port
2. RS-485 LAN termination pins
3. CFG pins (ignore adjacent LK4 pins)
4. Mode, fault, encryption LEDs
5. Four-segment DIP switch
6. 12 to 14 VDC supply input from external source (if not powered from LAN)
7. Yellow LED (flashes when receiving data)
8. Red LED (flashes when transmitting data)
9. Green LED (on when the module is powered)
10. RS-232 terminals (for firmware updates)
11. RS-485 LAN data terminals
12. RS-485 LAN power terminals (if applicable)

LED indications

The RJ-45 Ethernet port LEDs (Figure 5 below) indicate the following:

- Orange LED flickers during data transmission or reception.
- Green LED is on when the link is good.

Figure 5: Side view of Ethernet port



The mode, fault, encryption LEDs (Figure 4, item 4, on page 2) are described in the following tables.

Table 1: Mode, fault, encryption LED indications for an SLM

LED	Activity	Indication
Mode LED (top)	Single flash repeating (once per second)	SLM mode (SW1 ON)
Fault LED (middle)	Single flash repeating	The SLM cannot communicate with any one of its paired ELMs
Fault LED (middle)	Double flash repeating	The connection to one or more ELMs is too slow (a one-way latency of more than 40 ms). Refer to “Troubleshooting” on page 14.
Encryption LED (bottom)	Flashing for 4 seconds, then repeating after two seconds	The module is in pairing mode (SW2 ON)
Encryption LED (bottom)	Single flash repeating (twice per second)	Pairing to all ELMs is complete (SW2 ON)
Encryption LED (bottom)	On constantly	Normal operation, pairing completed (SW2 OFF)

Table 2: Mode, fault, encryption LED indications for an ELM

LED	Activity	Indication
Mode LED (top)	Single flash repeating (twice per second)	ELM mode (SW1 OFF)
Fault LED (middle)	Single flash repeating	The ELM cannot communicate with its paired SLM
Fault LED (middle)	Double flash repeating	The connection to the SLM is too slow (a one-way latency of more than 40 ms). Refer to “Troubleshooting” on page 14.

LED	Activity	Indication
Encryption LED (bottom)	Flashing for 4 seconds, then repeating after two seconds	The module is in pairing mode (SW2 ON)
Encryption LED (bottom)	Single flash repeating (twice per second)	Pairing to the SLM is complete (SW2 ON)
Encryption LED (bottom)	On constantly	Normal operation, pairing completed (SW2 OFF)

DIP switch

The four-segment DIP switch (Figure 4, item 5, on page 2) controls the following settings:

- SW1 is OFF for an ELM or ON for an SLM
- SW2 is OFF for normal operating mode or ON for pairing mode
- SW3 is OFF for Web programming mode or ON for lock mode
- SW4 is OFF for normal operating mode or ON for firmware update mode

Web interface

TS0098 modules have an onboard Web interface that is used by installers to configure parameters such as assigned IP addresses.

For security purposes, a TS0098 module's Web server can be locked via SW3 to prevent unauthorised access.

See "Using the TS0098 Web interface" on page 11 for details.

Installation

We recommend that a TS0098 module should be installed in a Challenger or DGP enclosure fitted with a tamper switch in order to provide tamper protection.

Note: Before installing, ensure that the CFG pins (Figure 4 on page 2, item 3) are not linked. The CFG pins are linked only to reset a TS0098 module to its default setting (see “Resetting the TS0098 module” on page 17).

Installation requirements

Application. The module may be used only on a Challenger system RS-485 LAN.

Network performance. The network environment must be capable of transmitting data within specified limits. See “Checking network performance” on page 14 for details.

Cabling. The module must be installed in accordance with Australian Communications and Media Authority (ACMA) cabling requirements. In other locations check local regulatory requirements.

Technician qualifications. Only trained Challenger integration technicians should plan the configuration and programming of Challenger systems. Technicians must comply with and be trained in security and electrical industry installation regulations, as appropriate to this device.

Installing TS0098 modules

TS0098 modules may be set up prior to installation if desired. See “System setup” on page 7.

To install the TS0098 module:

1. Determine whether the module is to be an ELM or an SLM (the default configuration is ELM).
2. If the module is to be an SLM, set SW1 to ON (Figure 4, item 5, on page 2).
3. Determine whether the module’s LAN termination should be ON or OFF.

   If the module is the last device on an RS-485 LAN the LAN termination should be ON. In a star wiring configuration, the RS-485 LAN may consist of a number of cable runs (branches). LAN termination should be set to ON only at the devices at the far ends of the two longest branches. A star LAN that has multiple branches in excess of 100 m may need to use TS0893 Isolated RS-485 to RS-485 Interface modules to isolate the LAN segments that do not have LAN termination set to ON.
4. If required, set the module’s LAN termination to ON by placing the link (provided) over the TERM pins (Figure 4, item 2, on page 2).
5. Mount the module in a suitable enclosure using four screws.
6. Terminate the required cables according to Figure 4 on page 2).

7. Connect the module to the customer's network.
8. Apply power to each TS0098 module from their respective power supplies.

Connecting the TS0098 module

Refer to Figure 4 on page 2 for the locations of terminals.

LAN connections

Use four-wire, twisted-pair, shielded data cable (such as Belden 8723) for the RS-485 LAN. The length of the LAN cable run must not exceed 1.5 km.

In each segment of the LAN cable, connect one end only of the cable shield to a LAN earth terminal (typically at the panel or DGP). A device (such as TS0098 module) that does not have an earth point and is not at the end of the LAN will have in and out LAN segments. Join the LAN cable shields for the in and out segments to make, in effect, one continuous shield that is connected at one end only to a LAN earth terminal.

Powering the module

The TS0098 module consumes 100 mA @ 13.8 V, and may be powered from the Challenger panel's or Four-Door Controller's LAN at J11, or from an external power supply (such as TS0073) at J13 depending on distance and load requirements.

The Challenger panel or Four-Door Controller may be used to power the module in the following circumstances:

- The LAN cabling distance to the module is no more than 50 m.
- Electrical isolation is not required.

If powering the module from the Challenger panel or Four-Door Controller is not practicable, then you must use an external power supply (such as TS0073).

Note: If an external power supply is used, the DC output must be within the range of 12 to 14 VDC.

Powering LAN devices from the module

Refer to the ELM in Figure 1 on page 1, where the ELM may be used to provide an RS-485 LAN connection to a RAS. The ELM would typically be powered by an external power supply if it could not be powered from LAN connections to a DGP.

If powered by an external power supply, the TS0098 module can provide power to LAN devices such as arming stations that are not powered by other means.

Note: If the RS-485 LAN + and 0 V terminals at J11 are used to power LAN devices, the maximum current is 700 mA.

System setup

TS0098 modules may be preconfigured (network parameters assigned and modules paired) before they are installed onsite. Alternatively, modules may be installed onsite and then configured. See “Installing TS0098 modules” on page 5.

A Challenger IP LAN system can have one SLM and up to 31 ELMs on each LAN. Being connected via the IP network, ELMs may be located a considerable distance from the SLM and located in different buildings. Preconfiguring TS0098 modules at one location may not be possible when the assigned IP addresses are in different subnets.

Following system setup and installation (regardless of the order), each TS0098 module’s DIP switch must be in the correct position for normal operating mode. See “DIP switch” on page 4. For security purposes, a module’s Web server can be locked to prevent unauthorised access.

Requirements

Setting up TS0098 modules (one SLM and one or more ELMs) requires that you know the following values for each module, as assigned by the network administrator:

- IP address
- Gateway address
- Netmask
- Port number

If needed, use “Network assignments worksheet” on page 18 to list the details for each module.

In order to preconfigure all modules at one location you will also need a computer on the same network as the TS0098 modules (at their assigned IP addresses) and Ethernet and power cabling for at least two modules (the SLM and one ELM).

Setup overview

A connected and powered TS0098 module may be initially viewed via a Web browser at the default IP address (192.168.20.100 for an SLM or 192.168.20.105 for an ELM). Each module will need to be reprogrammed with network parameters assigned by the site’s network administrator. Any time an IP address is changed and saved, the Web browser will automatically redirect to the new address.

The SLM identifies each ELM by the ELM’s IP address when the ELM communicates with it, and adds it to the list of 31 possible ELMs. Once the SLM and an ELM have their assigned network parameters and connection is verified (connection indicator is green), the modules must be paired to enable communications and to provide encryption.

Programming assigned network parameters

First program the SLM with its assigned network parameters and then program each ELM with the assigned network parameters for both the SLM and the ELM.

To program the SLM's assigned network parameters:

1. Select the TS0098 module with SW1 in the ON position (Figure 4, item 5, on page 2).
2. Connect power and Ethernet cables to the module (Figure 4 on page 2).
3. Start Internet Explorer on a computer connected to the network, type "192.168.20.100" in the address bar, and then press Enter. You should see a screen similar to Figure 7 on page 11.
4. Log in to the SLM's Web interface. See "Logging in" on page 11.
5. Type the assigned network parameters in the SLM's Device Configuration window under the Host heading, and then click Save. After a few seconds, the Web browser will redirect to the login window at the new IP address.

If the module is not yet installed, we recommend that you attach a tag to the module to identify its role (SLM) and its IP address until the module is installed.

To program each ELM's assigned network parameters:

1. Select a TS0098 module with SW1 in the OFF position (Figure 4, item 5, on page 2).
2. Connect power and Ethernet cables to the module (Figure 4 on page 2).
3. Start Internet Explorer on a computer connected to the network, type "192.168.20.105" in the address bar, and then press Enter. You should see a screen similar to Figure 7 on page 11.
4. Log in to the ELM's Web interface. See "Logging in" on page 11.
5. Type the SLM's assigned IP address in the ELM's Device Configuration window under the Remote heading, and then click Save IP.
6. Type the ELM's assigned network parameters in the ELM's Device Configuration window under the Host heading, and then click Save. After a few seconds, the Web browser will redirect to the login window at the new IP address.
7. Repeat steps 1 to 6 for each subsequent ELM. If necessary, disconnect Ethernet and power cabling from the previously programmed ELM to use on the subsequent ELM.

If the module is not yet installed, we recommend that you attach a tag to the module to identify its role (ELM 1, ELM 2, and so on) and its IP address until the module is installed.

Enabling communications

Once the SLM and an ELM have their assigned network parameters and connection is verified (connection indicator is green), the modules must be paired to enable communications and to provide encryption.

Pairing of an ELM to the SLM requires the installer to momentarily toggle a DIP switch on both the SLM (which may be at the Challenger panel) and the ELM (which may be at a remote location).

To pair an ELM to the SLM:

1. On the SLM move DIP switch SW2 to ON (Figure 4 on page 2). The SLM's encryption LED begins flashing.
2. On the ELM move SW2 to ON. The ELM's encryption LED begins flashing.

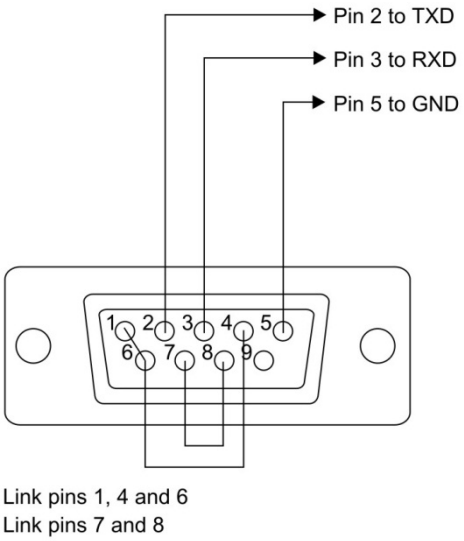
   During the pairing process, the encryption LED blinks evenly for four seconds, pauses (goes off) for two seconds, and repeats this cycle. When the pairing process is complete, the encryption LED blinks every second.
3. After the encryption LED indicates that pairing is complete (typically three seconds) move the ELM's SW2 to OFF.
4. On the SLM move SW2 to OFF.
5. Log in to the SLM's Web interface. See "Logging in" on page 11.
6. In the SLM's Device Configuration window look at the ELM's IP address (Figure 8 on page 12). A green LED to the right of the address indicates encrypted communications.

Updating firmware

A TS0098 module's firmware may be updated from time to time. Refer to the version number displayed below the Logout button on the Web interface (Figure 8 on page 12) for the currently-loaded firmware version.

The TS0098 module's RS-232 terminals can be used to upload a new firmware file from a computer via a HyperTerminal session. Figure 6 on page 10 indicates the required connections from the module to a DB9 connector, and the links required between pins on the DB9 connector.

Figure 6: Wiring details for DB9 connector



Note: During firmware update, the Challenger IP LAN system does not carry communications between the Challenger panel and remote LAN devices.

To update TS0098 firmware:

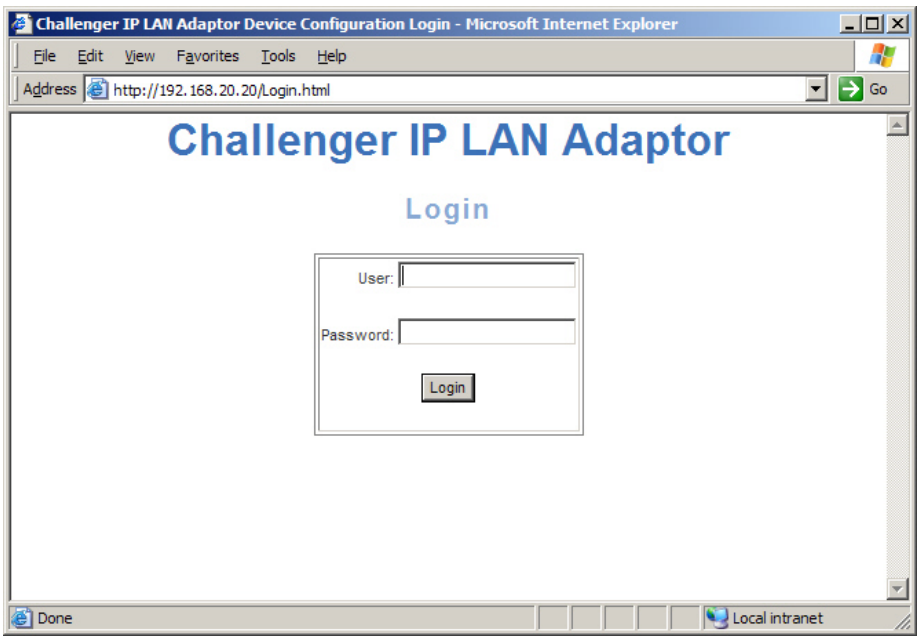
1. View the module's Web interface (Figure 8 on page 12) and note the currently-loaded firmware version.
2. Remove power to the module.
3. Move SW4 (Figure 4, item 5, on page 2) to the ON position.
4. Connect power to the module.
5. Connect the module's RS-232 port (Figure 4, item 10, on page 2) to the computer's COM port.
6. Start HyperTerminal and open a connection to the Comm port with 115200 bits per second, 8-N-1. HyperTerminal should say "waiting for upgrade .... " with a few CCCC on screen.
7. Select Send File from the Transfer menu. Select IK Xmodem as the Protocol and then browse to select the supplied firmware file.
8. Click Send. HyperTerminal opens a Send File window and indicates status. When finished, HyperTerminal closes the Send File window and indicates Upgrade Completed.
9. Remove power to the module.
10. Move SW4 (Figure 4, item 5, on page 2) to the OFF position.
11. Connect power to the module.
12. View the module's Web interface (Figure 8 on page 12) and note the currently-loaded firmware version. It should display the updated version number.

Using the TS0098 Web interface

When powered and connected to an IP network, an installer can access the login page of an unprogrammed TS0098 module's Web interface at http://192.168.20.100 for an SLM or http://192.168.20.105 for an ELM.

Only one device at any time can be on the network at the default IP address. There should be only one SLM at http://192.168.20.100 but there may be multiple ELMs at http://192.168.20.105. If so, any additional ELMs must either be unpowered or not connected to the network.

Figure 7: TS0098 login window



Logging in

Log in with the default user name "admin" and the default password "password".

Note: The default password must be changed to keep unauthorised persons from viewing or modifying your programming. See "Managing users" on page 13.

After logging in, you will see a Device Configuration window, which varies depending on the TS0098 module's role (Figure 8 on page 12). The TS0098 module's role is determined by the setting of SW1 (Figure 4, item 5, on page 2).

A logged in user is automatically logged out after 20 minutes of inactivity.

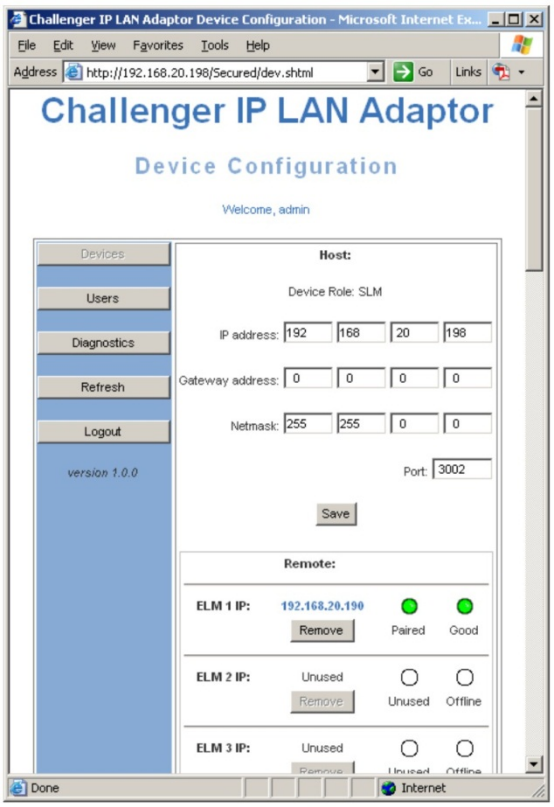
Logging out

To end a session, click the Logout button.

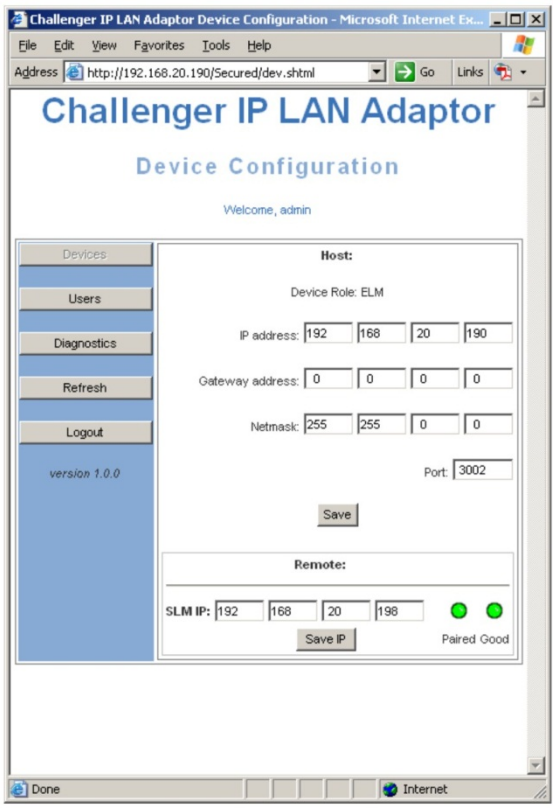
Note: If a user's session is ended without logging out (for example, by closing the Web browser), only that user may log in again until the 20-minute timeout expires.

Figure 8: Device Configuration windows for SLM and ELM

SLM device configuration window



ELM device configuration window



Configuring devices

The Device Configuration window varies depending on the TS0098 module's role (Figure 8 above).

Use the SLM Device Configuration window to:

- Program the SLM's assigned network parameters under the Host heading.
- Display the IP address, pairing (encryption) status, and connection status of each ELM under the Remote heading.
- Remove an unneeded ELM's details to provide space for a new ELM (or the same ELM at a new IP address).

Use the ELM's Device Configuration window to:

- Program the ELM's assigned network parameters under the Host heading.
- Program the SLM's assigned network parameters under the Remote heading.
- Display the IP address, pairing (encryption) status, and connection status of the SLM.

The SLM Device Configuration window displays a pair of simulated LEDs for each ELM, and the ELM Device Configuration window displays a pair of simulated LEDs for the SLM. Refer to Table 3 on page 13 for details.

Hover the cursor over a configuration window control to see additional information.

Table 3: Device configuration window LED indications

Colour	Left-hand LED	Right-hand LED
White	Message is “Unused”. The corresponding module has not been paired, or there is no module detected at that position.	Message is “Offline”. The ELM is not connected to the SLM.
Green	Message is “Paired”. The ELM has been paired to the SLM and no errors have been detected. This is the normal condition.	Message is “Good”. The ELM has a good connection to the SLM. This is the normal condition.
Red	Message is “Pair err”. The ELM has been paired to the SLM and errors have been detected. This IP LAN cannot carry Challenger data until the fault is resolved and the LED is green.	Message is “Slow”. The ELM is connected to the SLM but a high latency condition is detected. This IP LAN cannot carry Challenger data until the fault is resolved and the LED is green. Refer to “Troubleshooting” on page 14.

Managing users

All TS0098 modules are shipped with one default user named “admin” with password “password”. User names and passwords are case sensitive and must be entered correctly.

Note: The default password for “admin” must be changed to keep unauthorised persons from viewing or modifying your programming.

An additional four user name and password combinations can be added. All users have the same permissions (the “admin” user does not have special privileges).

If a TS0098 module is reset, the default user named “admin” with password “password” is restored and all other users are deleted. See “Resetting the TS0098 module” on page 17.

Performing diagnostics

The SLM measures the one-way Ethernet trip times in milliseconds (SLM to ELM) and displays the results for each ELM on the Diagnostics window. Click Refresh to update the window. The time must be less than 40 milliseconds.

Troubleshooting

High latency faults

The IP connection between an SLM and ELM must support fast (low latency) connection. Communications with a Challenger panel are not possible over a slow (high latency) connection.

An excessively slow connection is indicated in the following manner:

- The corresponding right-hand LED indicator in the Device Configuration window (Figure 8 on page 12) is red, and the message is “Slow”.
- The TS0098 module’s onboard fault LED indicates a repeating double flash (see Figure 4, item 4, on page 2).
- The one-way Ethernet trip time between and SLM and an ELM is 40 milliseconds or greater, as shown in the Diagnostics window.

Avoiding high latency faults

Before you install an IP LAN system, use the Challenger IP LAN Adaptor Network Tester to determine whether the network environment is compatible with using TS0098 modules. Refer to “Checking network performance” below.

Troubleshooting high latency faults

If a high latency condition exists before installation, or develops after installation, consider the following options:

- Ensure you are using a fast LAN or WAN connection.
- Avoid the use of dial-up, microwave, or other network links that may increase latency.
- Avoid congested (high-traffic) routers or hubs.
- Reduce the number of routers or hubs between the SLM and ELM.
- Use the Challenger IP LAN Adaptor Network Tester to check the results of any changes. Refer to “Checking network performance” below.

Checking network performance

The “Challenger IP LAN Adaptor Network Tester” application is available on the Interlogix Support Portal Web site at http://support.interlogix.com.au/home.

Use the Challenger IP LAN Adaptor Network Tester to help you determine whether the network environment is compatible with using TS0098 modules to carry Challenger system data, where IP data is carried by more than router (or hub).

We recommend that you test the network prior to installing TS0098 modules. However, even in a successfully tested and installed system, conditions may change and troubleshooting actions may be required.

The Challenger IP LAN Adaptor Network Tester measures the performance of your network, and estimates the number of poll errors that TS0098 modules could experience if installed on the network. We recommend that you test the performance across each router that you plan to use to carry Challenger system data for at least 24 hours to ensure that you have tested during peak network load.

Getting ready

If you are using the Challenger IP LAN Adaptor Network Tester for troubleshooting an installed system, you already have access to the assigned IP addresses of the SLM and ELM.

If you are testing the network prior to installing a Challenger IP LAN system, then you need to know the IP addresses of affected routers (talk to the network administrator if needed). Determine where ELMs are required, and whether they will be connected to the network via a different router than the SLM is connected to. Test the network performance where the IP communications between the SLM and an ELM must cross more than one router.

Tip: If the SLM and ELM will be connected though the same router, then you don't need to use the Challenger IP LAN Adaptor Network Tester for those modules (there shouldn't be any latency and TS0098 modules shouldn't experience any poll errors).

In the following steps, we'll assume you are testing the network prior to installing the Challenger IP LAN system and the testing computer is located on the SLM side of the network. If more convenient, you can test the network from the ELM side of the network because the direction doesn't matter.

To test the network:

1. Install the Challenger IP LAN Adaptor Network Tester application on a computer that is connected to the same router as the SLM would be connected to.
2. Double-click "Challenger IP LAN Adaptor Network Tester.exe" to run the application.
3. Type the IP address of the ELM's router in the Target field.

   If you are troubleshooting an installed system, type the ELM's IP address in the Host field.
4. Click Start and observe the poll errors and statistics data as the tool measures the network's responses to ping commands. See "Test results" below for details.

Test results

The most important detail is "poll errors". This indicates how many times a device (or devices) connected through a Challenger IP LAN will experience poll errors. If you get zero poll errors, then the tested network should be suitable to use a Challenger IP LAN.

Tip: Ensure that the computer running the Challenger IP LAN Adaptor Network Tester is connected to the same router as one end of the Challenger IP LAN, and you are pinging the router at the other end of the Challenger IP LAN.

If you are receiving poll errors, then the network is probably too slow to use a Challenger IP LAN successfully. If you have experienced poll errors, click Details to display a minute-by-minute tally of poll errors. The tally may assist you to determine the cause of the fault (for example, if the only poll errors occurred when a network cable was unplugged). Four slow pings in a row constitute a poll error, and would generate a module offline alarm in Challenger.

Pings below 80 ms indicates how many responses have been received within 80 milliseconds. Pings above 80 ms indicates how many responses have been received above 80 milliseconds.

Timeouts measure how many requests were sent without a reply. If you see multiple timeouts and no replies, it may mean that you have entered an invalid address in the Host field, the host isn't sending ping replies, or a firewall on the network is blocking ping requests. Seek assistance from the network administrator, if needed.

Problems viewing TS0098 Web pages

In order to view a TS0098 module's Web pages:

- You must use a compatible Web browser, such as Internet Explorer 6 (or later) or Mozilla Firefox.
- The module's SW2, SW3, and SW4 must be OFF (Figure 4, item 5, on page 2).
- You must use the IP address currently programmed for the module. The default IP address is 192.168.20.100 for an SLM or 192.168.20.105 for an ELM (determined by the setting of SW1), but this will be changed to an assigned IP address for an installed module.
- Your computer may need to be configured to connect to the module's assigned IP address. See "Setting up the installation computer" below.

Setting up the installation computer

TS0098 modules are programmed using Internet Explorer to display the Web pages generated by the module's embedded Web server at either the default IP address or the assigned IP address (provided by the local network administrator).

Depending on the particular network environment you may need to configure your computer's LAN settings.

Note: If required, seek advice from the client's IT staff before you start.

Problems logging in

If you can see the login window for a particular IP address, but cannot log in with a known good user name and password, a different user may have been logged in less than 20 minutes previously and ended the session without logging out. If so, you will need to wait up to 20 minutes before you can log in. See “Logging out” on page 11.

If you cannot see the login window for a particular IP address, you may need to perform a “hard” refresh of the Web browser. This bypasses any cached versions of the window and displays the current window being served by the TS0098 module.

To hard refresh the Web browser, simultaneously press the Ctrl and F5 keys.

If you still cannot see the login window, close and restart the Web browser. If unsuccessful, see “Problems viewing TS0098 Web pages” on page 16.

Resetting the TS0098 module

TS0098 modules are shipped with the following default settings:

- IP address 192.168.20.100 for an SLM or 192.168.20.105 for an ELM (determined by the setting of SW1)
- Gateway 0.0.0.0
- Netmask 255.255.255.0
- Port 3002
- User name “admin” with password “password”

You may need to reset a TS0098 module to its default settings for troubleshooting purposes or if you cannot log in to the Web interface due to an incorrect password. Resetting the module erases all programming (including the assigned IP address) and creates one user name “admin” and password “password”.

To reset the TS0098 module:

1. Place a link on the CFG pins (Figure 4 on page 2, item 3).
2. Remove power and then repower the module.
3. Remove the link on the CFG pins.

Network assignments worksheet

Copy this form as needed to list the assigned network details for TS0098 Challenger IP LAN Adaptor modules.

Challenger LAN 1 or 2 (Challenger V8 can have 1 only): _____

Role	IP address	Gateway address	Netmask	Port number
SLM				
ELM 1				
ELM 2				
ELM 3				
ELM 4				
ELM 5				
ELM 6				
ELM 7				
ELM 8				
ELM 9				
ELM 10				
ELM 11				
ELM 12				
ELM 13				
ELM 14				
ELM 15				
ELM 16				
ELM 17				
ELM 18				
ELM 19				
ELM 20				
ELM 21				
ELM 22				
ELM 23				
ELM 24				
ELM 25				
ELM 26				
ELM 27				
ELM 28				
ELM 29				
ELM 30				
ELM 31				