TS0894 Isolated RS232 to RS485 Interface installation guide

TS0894 Isolated RS232 to RS485 Interface converts data from Challenger or Alliance control panels between RS232 and RS485 levels for use with leased line modems and/or for distant or multi-drop control panels.
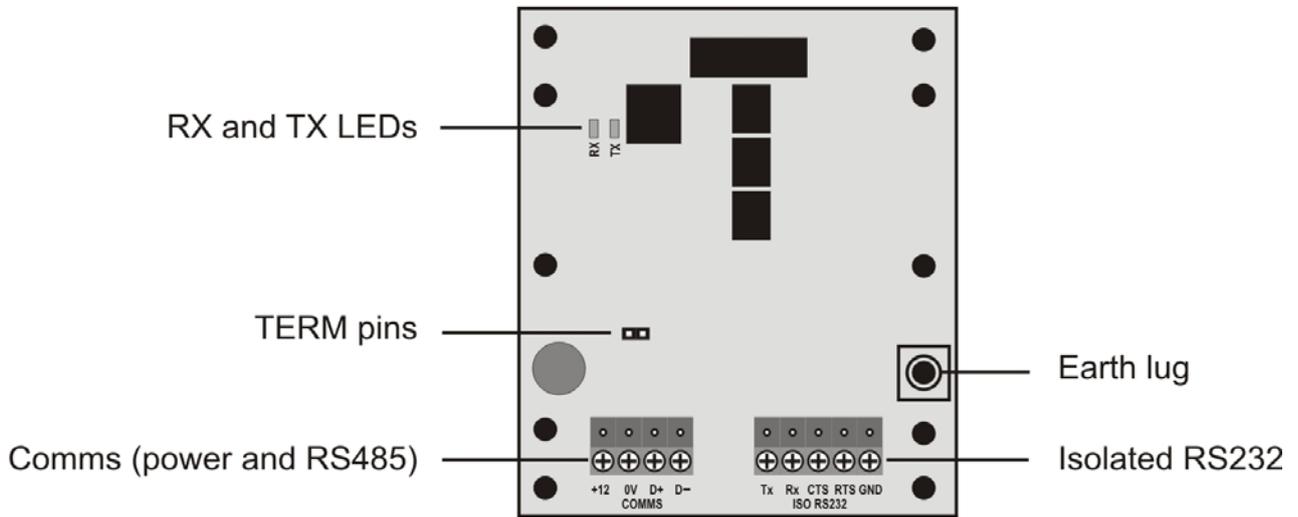

Figure 1: TS0894 PCB

Overview

TS0894 Isolated RS232 to RS485 Interface is used with a Challenger or Alliance control panel to convert data between RS232 and RS485 levels. Typical applications include:

- Enabling panel to DGP communications via modem.

- Enabling the use of 'multi-drop' panel connections to a management computer.

Refer to *Application* on page 2 for additional details.

Installation information

Installation kit

Item	Quantity
TS0894 1
Installation Guide 1
2-way plug-on screw terminal 3
3-way plug-on screw terminal 1
M3×8 pan-head Phillips screw....................................4
PCB support stand off 4
Earth lug 1

General installation guidelines

This product has been designed, assembled, and tested to meet the requirements related to safety, emission, and immunity with respect to environmental electrical and electromagnetic interference, C-Tick, and CE standards. Refer to the *Challenger System Earthing Supplement* for details (available from the GE Interlogix website at www.GEsecurity.com.au).

In addition to these guidelines, during the installation of the TS0894, it is essential to follow any state or national independent installation requirements.

Before you begin

Fit a link over the TERM pins (see Figure 1) only if the TS0894 is either the first or last devices on the system LAN (in a 'star' wiring configuration, the TERM link is fitted on the devices at the ends of the two longest system LAN cable runs).

Applications

Typical TS0894 applications include:

- Connecting a computer to a control panel over an extended distance, see Figure 2. Total length of the LAN must not exceed 1500 metres.

- Connecting a computer to as many as six control panels (multi-drop), see Figure 3.

- Connecting a control panel to a DGP via leased line and modems, see Figure 4.
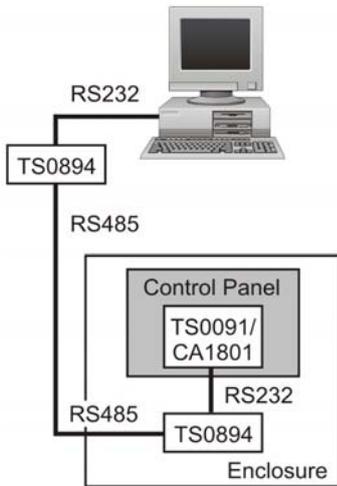

Figure 2: TS0894 used to enable a distant computer connection to a control panel.
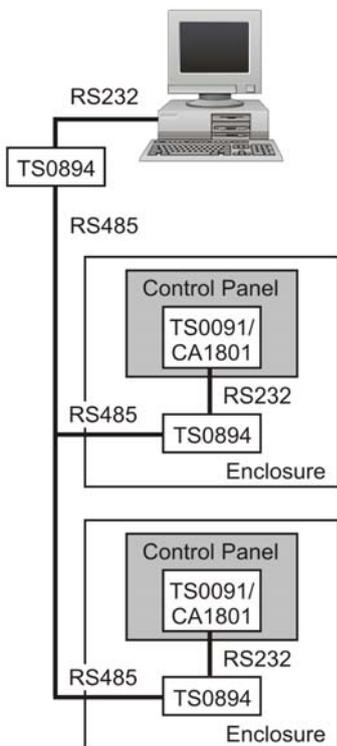

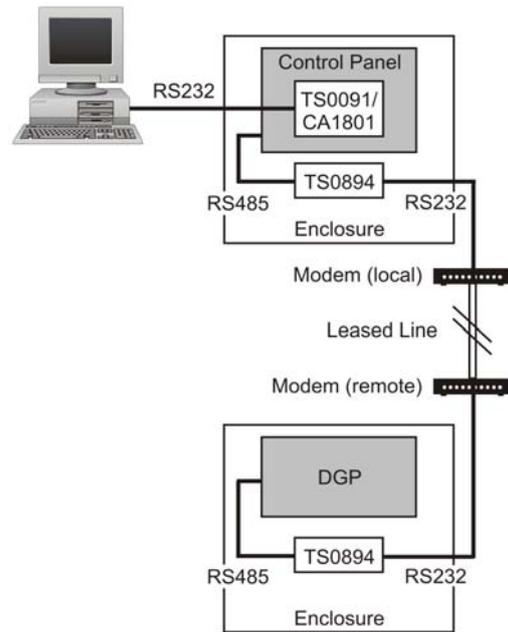*Figure 3: TS0894 used to enable a computer connection with multiple control panels.*

Figure 4: TS0894 used to enable communications over a leased line using modems.

Connector details

Refer to Figure 1 for locations of comms, Isolated RS232 connectors, and the earth lug.

Comms

The functions of the comms connections are as follows:

+12V	+12 VDC supply input. 100 mA maximum
0V	Negative supply
D+	Positive data connection of the RS485 databus
D-	Negative data connection of the RS485 databus

Recommended cable is Belden 8723 2-pair twisted shielded data cable.

Use the +12V and 0V connectors to power the TS0894. Each TS0894 must be powered by an isolated 12V source (panel AUX power, or TS0073 Power Supply, as appropriate).

RS232

The functions of the Isolated RS232 connections are as follows:

Tx	RS232 data transmit
Rx	RS232 data receive
CTS	Clear to send
RTS	Request to send
GND	Isolated RS232 ground

RS232 connections with a computer or a modem serial port are made via a DB9 or a DB25 connector. Alliance or TITAN computers typically use DB9 connectors, and ARES computers typically use DB25 connectors. Figure 5 lists the DB9 or DB25 pin number that corresponds with each function.

Function	Pin no.	
	DB9	DB25
TX	3	2
RX	2	3
CTS	8	5
RTS	7	4
CD	1	8
DTR	4	20
DSR	6	6
GND	5	7

Figure 5: Serial DB9 and DB25 pin numbering

Earth

Connect the earth lug to the Communications Earth Terminal (CET). Refer to the *Challenger System Earthing Supplement* for details.

Wiring details

Connecting to a control panel

When RS485 data is needed for extended or multi-drop connection to a control panel, the TS0894 receives RS232 data from a Computer & Printer Interface (TS0091 for V8 Challenger, CA1801 for Alliance). See Figure 6.
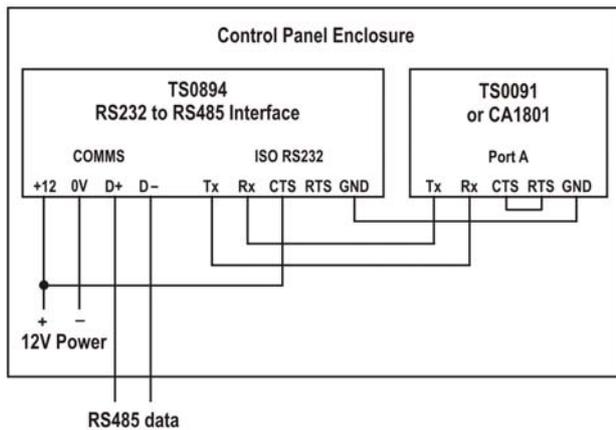

Figure 6: TS0894 connections when used to provide RS485 communications for multi-drop control panels

Connecting to a computer

The connections required depend on whether the control panel is communicating with ARES management software or with TITAN or Alliance management software.

- See Figure 7 for ARES connection details.

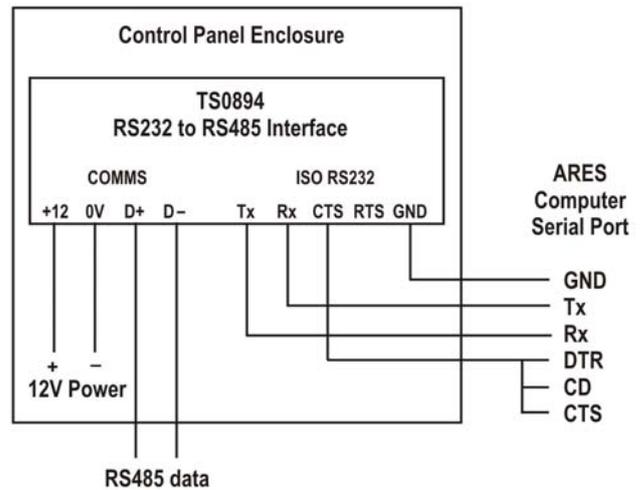- See Figure 8 for Alliance or TITAN connection details.

Figure 7: TS0894 connections when used to connect to an ARES computer's serial port (DB25 connector)
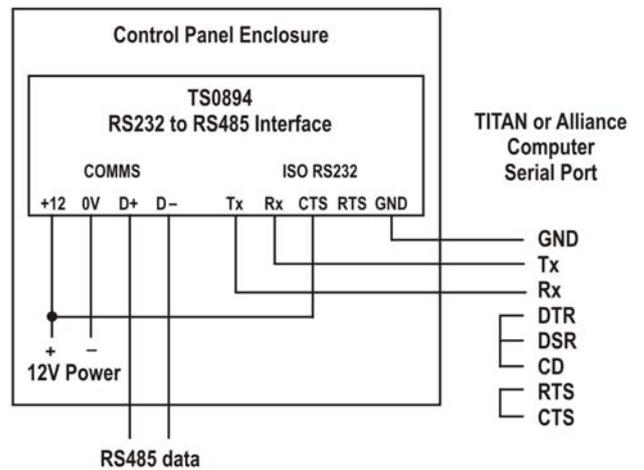

Figure 8: TS0894 connections when used to provide RS232 communications for connection with a TITAN or Alliance computer's serial port (DB9 connector)

Connecting to modems

The connections required depend on whether the modem is used in a local or remote role. See Figure 9 for connection details.
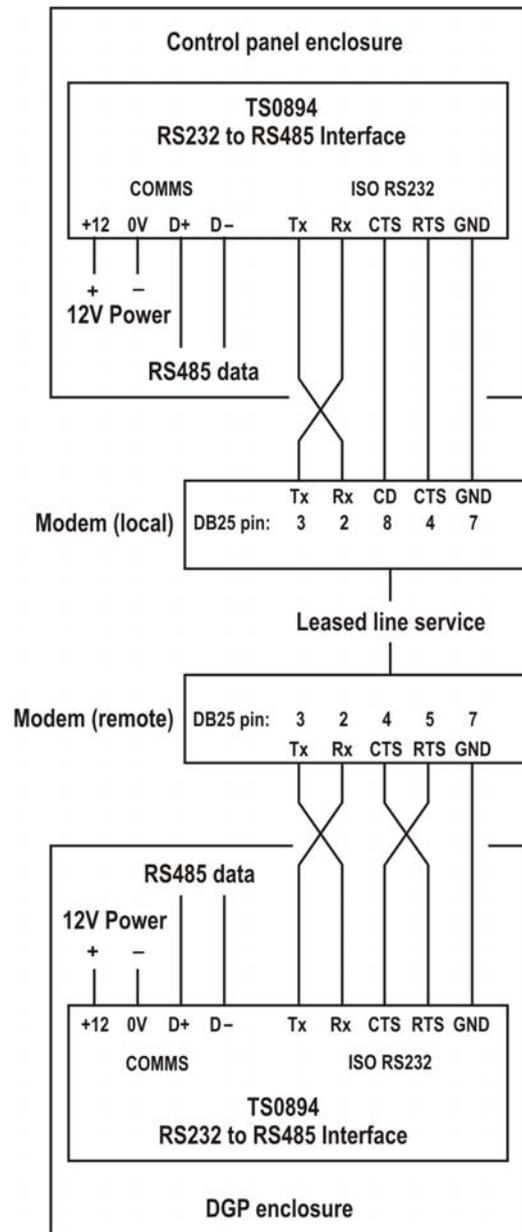

Figure 9: TS0894 connections when used to connect a control panel to a remote DGP

Modem use

This section describes the use of Netcomm SmartModem SM5695, or equivalent. Modems used with TS0894 must support leased line mode. This section is only a guide — refer to your modem's documentation for specific details.

TS0894 may be used to enable communications over a leased line via local and remote modems. Prior to using the modems, you must perform the following actions:

- Initialise the modem by connecting it to a computer and running a VT100 terminal session (e.g. Windows HyperTerminal).
- Configure the modem by setting its switches.

Initialising the modems

Use the following steps initialise each modem:

1. Connect the modem to a computer serial port.

2. Apply power to the modem.

3. Open a VT100 terminal session.

4. Configure the terminal session using the connection parameters 4800 baud, 8 bits, 1 stop bit, no parity.

5. Enter the required AT commands (see below).

AT commands are so named because each command is prefixed by AT and executed by pressing ENTER. Multiple commands may be strung together (e.g. AT&L1&L2), but different modems permit different lengths of command strings.

The AT commands differ slightly between the local modem and the remote modem. The following command strings have been tested by GE Interlogix. Refer to Table 1 for an explanation of the specific AT commands used.

Use the following commands for the **local** modem:

- AT&F0B10\N1\Q0
- AT&L1&L2
- ATR4
- AT+MS=9,0,4800,4800
- ATQ1&W

Use the following commands for the **remote** modem:

- AT&F0B10\N1\Q0
- AT&L1&L3
- ATR4
- AT+MS=9,0,4800,4800
- ATQ1&W

Table 1: AT commands for Netcomm SmartModem SM5695

Command	Purpose
&F0	Defaults the modem.
B10	Sets the modem to V.32 at 4800bps.
R4	Sets terminal speed to 4800 bps.
&C1	DCD follows modem on-line.
&L1	Sets modem into leased line mode.
&L2	Auto leased line Originate mode
&L3	Auto leased line Answer mode
\N1	Direct data connection (variable speed mode).
\Q0	Disables flow control.
\Q1	Disables modem messages. There will be no response (modem messages) sent to the terminal after this command.
+MS	Select Modulation • 9 is mode 9 (V.32 9600 or 4800) • 0 is automode disabled, i.e., fixed modulation) • 4800 is the minimum bps rate • 4800 is the maximum bps rate
&W	Saves the settings.

Configuring the modems

Set the switches of the local and remote modems according to Table 2.

Table 2: Modem switch settings

Switch	Local modem	Remote modem
DIP switch 3 (auto answer disable)	ON	OFF
DIP switch 4 (dumb mode)	ON	ON
DIP switch 6 (originate/answer)	ON (originate)	OFF (answer)
Talk/Data switch	IN (data)	IN (data)

LED indications

When connected and powered, LEDs on the PCB indicate system status:

- **Tx** — indicates RS232 data has been received and is resent as RS485

- **Rx** — indicates RS485 data has been received and is resent as RS232

Specifications

- Supply voltage: 12 VDC

- Typical operating current: 100 mA

- Operating temperature: 0° to 50°C

- Humidity: 95% non-condensing

Statements

N4131

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

$C\epsilon$

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

GE Interlogix Pty Ltd
646 Whitehorse Rd. Mitcham, Victoria 3132 Australia
Phone +61 3 9259 4700
Fax +61 3 9259 4799
E-mail: techsupport@indsys.ge.com

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