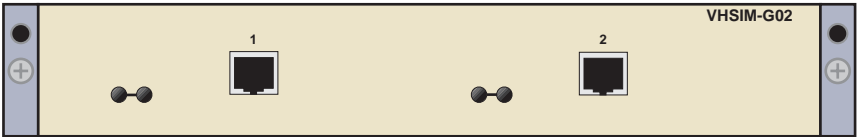


VHSIM-G02

User's Guide





Only qualified personnel should perform installation procedures.

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Application of Council Directive(s): **89/336/EEC**
73/23/EEC

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Manufacturer's Address: **35 Industrial Way**
PO Box 5005
Rochester, NH 03867

European Representative Name: **Mr. J. Solari**

European Representative Address: **Cabletron Systems Limited**
Nexus House, Newbury Business Park
London Road, Newbury
Berkshire RG14 2PZ, England

Conformance to Directive(s)/Product Standards: **EC Directive 89/336/EEC**
EC Directive 73/23/EEC
EN 55022
EN 50082-1
EN 60950

Equipment Type/Environment: **Networking Equipment, for use in a**
Commercial or Light Industrial
Environment.

We the undersigned, hereby declare, under our sole responsibility, that the equipment packaged with this notice conforms to the above directives.

Manufacturer

Mr. Ronald Fotino

Full Name

Compliance Engineering Manager

Title

Rochester, NH, USA

Location

Legal Representative in Europe

Mr. J. Solari

Full Name

Managing Director - E.M.E.A.

Title

Newbury, Berkshire, England

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CHAPTER 1

INTRODUCTION

Welcome to the Cabletron Systems **VHSIM-G02 User's Guide**. This manual describes the VHSIM-G02 and provides information concerning features, installation, troubleshooting, information on Local Management, and specifications for the VHSIM-G02 (Very High Speed Interface Module).

A general working knowledge of IEEE 802.3z (Gigabit Ethernet), IEEE 802.3ab (Gigabit Copper) and IEEE 802.3x (Flow Control and Auto-Negotiation) data communications networks and their physical layer components is helpful when installing the VHSIM-G02.

The VHSIM-G02 can be installed into compatible Cabletron Systems 2000 and 6000 series products.

The VHSIM-G02 (Figure 1-1) has two ports that provide Gigabit Ethernet connections. There are two possible modes of operation for the VHSIM-G02. In mode one, both ports are active and transmit/receive data simultaneously. This mode can only be selected if the host platform has 16 or less fixed front panel ports. In mode two, one port is active and the other is redundant. Redundancy is triggered based on link activity; if port one loses link then port two becomes active. Port one is active by default. The default mode for the VHSIM-G02 is redundancy.

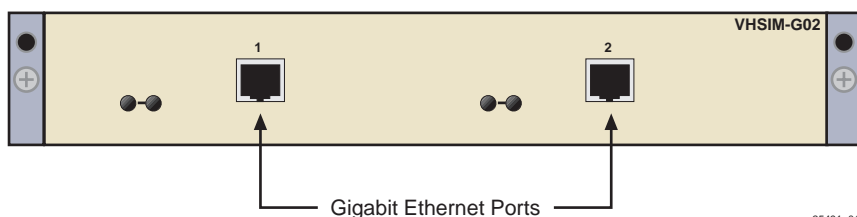


Figure 1-1 VHSIM-G02



The term “host platform” may be used to refer to the module or standalone device in which the VHSIM-G02 is installed.

1.1 STRUCTURE OF THIS GUIDE

Read through this manual completely to familiarize yourself with its content and to gain an understanding of the features and capabilities of the VHSIM-G02. The following list provides an overview of each section of this manual:

Chapter 1, **Introduction**, outlines the contents of this manual, describes the VHSIM-G02 features and concludes with a web site address where related manuals can be obtained.

Chapter 2, **Installation**, describes how to install a VHSIM-G02 into an interface module or a standalone device.

Chapter 3, **LANVIEW LEDs**, describes how to use the VHSIM-G02 LEDs to monitor performance and status.

Chapter 4, **Local Management**, gives information on Local Management for the VHSIM-G02.

Appendix A, **VHSIM-G02 Specifications**, lists the operating specifications and regulatory compliance for the VHSIM-G02.

1.2 OVERVIEW

The VHSIM-G02 has two RJ45 ports for twisted pair connections to Gigabit Ethernet networks. The VHSIM-G02 extends the functionality of various Cabletron Systems interface modules or standalone devices by providing high-speed uplink capability through copper Gigabit Ethernet technology (IEEE 802.3ab).

VHSIM-G02 features include the following:

- RMON support (Statistics, History, Alarms, Events)
- Management
- Flow control and Auto-Negotiation (IEEE 802.3x)

1.2.1 LANVIEW Diagnostic LEDs

Cabletron Systems provides a visual diagnostic and monitoring system called LANVIEW. The VHSIM-G02 LANVIEW LEDs help you quickly identify transmit, receive, and link status. Chapter 3 provides information on the VHSIM-G02 LEDs.

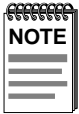
1.2.2 Connectivity

The VHSIM-G02 supports two modes of operation for the Gigabit interfaces. In one mode, the VHSIM-G02 supports one active and one redundant Gigabit Ethernet twisted pair port. In the other mode, both of the interfaces can be active at the same time, if the host platform has 16 or less fixed front panel ports.

The VHSIM-G02 supports Gigabit Ethernet connections on the RJ45 ports using twisted pair. The VHSIM-G02 module supports the IEEE 802.3ab Gigabit specification and the IEEE 802.3x specification for flow control and auto-negotiation. The VHSIM-G02 operates in full duplex mode.

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Caution symbol. Contains information essential to avoid damage to the equipment.



Electrical Hazard Warning symbol. Warns against an action that could result in personal injury or death due to an electrical hazard.

1.4 RELATED DOCUMENTATION

The documentation for the host platform in which the VHSIM-G02 is to be installed, whether standalone device or module, provides additional information about the setup of the VHSIM-G02. This user's guide references procedures in these documents, where appropriate, but does not repeat them.

Documents can be obtained on the World Wide Web in Adobe Acrobat Portable Document Format (PDF) at the following site:

<http://www.cabletron.com/>

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- A description of the failure
- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- The serial and revision numbers of all involved Cabletron Systems products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers

CHAPTER 2

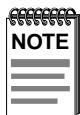
INSTALLATION



Only qualified personnel should install or service this unit.

To install the VHSIM-G02 you need the following items:

- Phillips screwdriver
- Antistatic wrist strap (shipped with the VHSIM-G02)
- Standoff screws (shipped with the VHSIM-G02)



Before using the VHSIM-G02 you should be familiar with the *IEEE 802.3z*, *IEEE 802.3ab*, and *IEEE 802.3x* specification. The network installation must meet the guidelines contained in the specification to ensure satisfactory performance.

2.1 UNPACKING THE VHSIM-G02



The VHSIM-G02 and the host platform are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the VHSIM-G02 or host platform.

Do not use sharp metal objects to open the VHSIM-G02's antistatic bag. They can damage the VHSIM-G02.

Unpack the VHSIM-G02 as follows:

1. Remove the VHSIM-G02 from the shipping box. Leave the module in the antistatic bag until you are ready to install it.
2. Attach the antistatic wrist strap. Refer to the instructions on the antistatic wrist strap package.
3. After removing the VHSIM-G02 from the antistatic bag, visually inspect the device. If there is any sign of damage, contact Cabletron Systems immediately. Refer to Section 1.5 for instructions. Save the antistatic bag in the event the VHSIM-G02 must be reshipped.

2.2 INSTALLING THE VHSIM-G02

You can install a VHSIM-G02 in any Cabletron Systems device that supports VHSIM technology (e.g., 2E253-49R, 6H252-17).



Refer to the release notes for the version of firmware running on the Cabletron Systems device to ensure that the VHSIM-G02 is supported.

The following sections provide instructions for installing a VHSIM-G02 in an interface module or in a standalone device. Refer to your specific interface module or standalone device documentation for exact VHSIM slot and connector locations.

2.2.1 Installing the VHSIM-G02 in an Interface Module

To install a VHSIM-G02 in an interface module that supports VHSIM technology, perform the following steps:

1. Note the ports of the interface module that have cables attached to them. Write down the ports and label the cables to make it easier to reattach the network properly after the installation. Then disconnect the cables from the ports.
2. Attach the antistatic wrist strap (refer to the instructions outlined in the interface module User's Guide).



The VHSIM-G02 and the host module are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the VHSIM-G02 or host module.

3. If the module is installed in a chassis, unlock the top and bottom plastic locking tabs of the module faceplate, and remove the module from the chassis.

4. Lay the module down with the internal components facing up.
5. Refer to Figure 2-1 and remove the two faceplate mounting screws and the VHSIM coverplate. Save the screws.

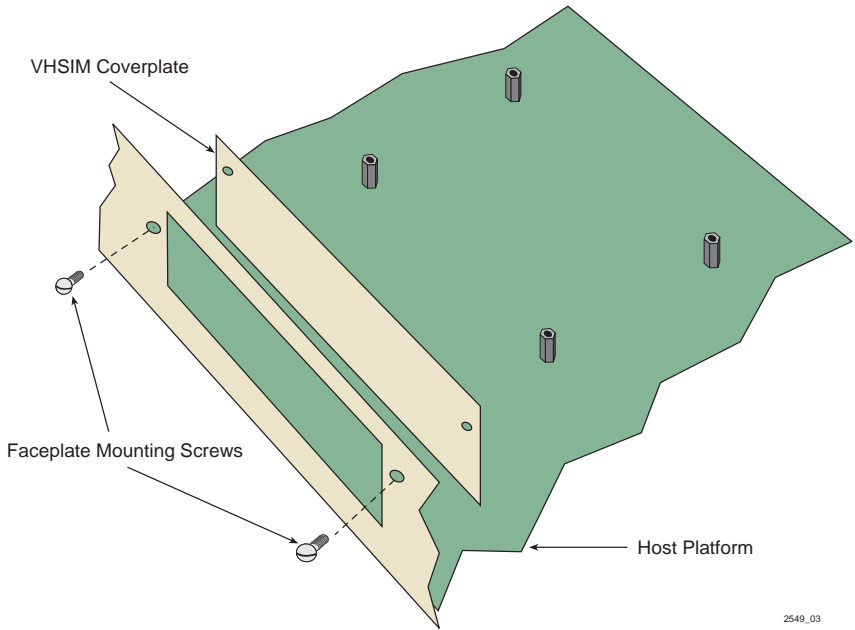


Figure 2-1 Removing the VHSIM Coverplate from the Host Platform

- Refer to Figure 2-2 and position the VHSIM-G02 behind the module faceplate, above the connectors.

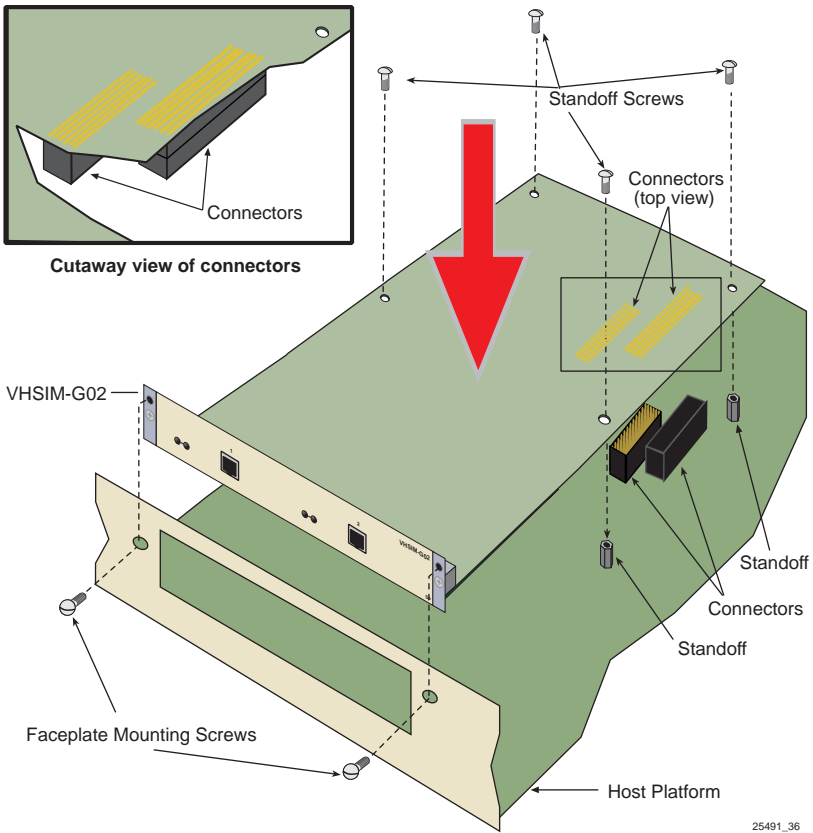


Figure 2-2 Installing the VHSIM-G02 in the Host Platform

- Align the VHSIM-G02 connectors with the VHSIM connectors on the module.



When installing the VHSIM-G02, ensure that the pins on the module align with the connector to prevent bending the pins. Damage to both the VHSIM-G02 and the module can result if they are not properly aligned.

8. Press down firmly on the VHSIM-G02 until the connectors slide all the way onto the pins. Ensure that the standoffs on the interface module align with the standoff screw holes on the VHSIM-G02.
9. Secure the VHSIM-G02 to the module faceplate using the mounting screws saved in step 5.
10. Secure the VHSIM-G02 to the module standoffs using the standoff screws shipped with the VHSIM-G02.
11. Reinstall the interface module in the chassis.
12. Reattach the network cabling to the interface module.

2.2.2 Installing the VHSIM-G02 in a Standalone Device

To install a VHSIM-G02 into a standalone device (e.g., 2H252-25R) that supports VHSIM technology, perform the following steps:

1. Power down the device and remove the power cord.
2. Note the ports that have cables attached to them. Write down the ports and label the cables to make it easier to reattach the network properly after the installation. Then disconnect the cables from the ports.



To install the VHSIM-G02 in a standalone device, the device must first be powered down. Ensure that you remove the power cord and **ONLY** the screws required to remove the chassis cover.

3. Attach the antistatic wrist strap (refer to the instructions outlined on the antistatic wrist strap package).



The VHSIM-G02 and the device are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the VHSIM-G02 or device.

4. Remove the standalone device chassis cover. Refer to your specific standalone device documentation for instructions on removing the chassis cover.

5. Refer back to Figure 2-1 and remove the two faceplate mounting screws and the VHSIM coverplate. Save the screws.
6. Refer back to Figure 2-2 and place the VHSIM-G02 module behind the standalone device faceplate.
7. Align the VHSIM-G02 connectors with the pins on the standalone device.



When inserting the VHSIM-G02 onto the device pins, ensure that the pins do not bend, as this can damage both the device and the VHSIM-G02.

8. Press down firmly on the VHSIM-G02 until the connectors slide all the way onto the pins. Ensure that the standoffs on the standalone device align with the standoff screw holes on the VHSIM-G02.
9. Secure the VHSIM-G02 to the device faceplate using the mounting screws saved in step 5.
10. Secure the VHSIM-G02 to the device standoffs using the standoff screws shipped with the VHSIM-G02.

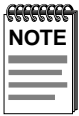


Ensure that the chassis cover is in place before reconnecting the power cord.

11. Reattach the chassis cover to the standalone device, reconnect the power cord, and reconnect the standalone device to the network.

2.3 NETWORK CONNECTIONS

The VHSIM-G02 has two RJ45 connectors for the Gigabit Ethernet connections, Port 1 and Port 2. The cable used for connections is 4-pair Category 5 Unshielded Twisted Pair, conforming to the IEEE 802.3ab specification. The maximum distance supported is 100 meters. Refer to Appendix A for the pin assignments for the RJ45 port.



The VHSIM-G02's Gigabit Ethernet front panel ports support Category 5 Unshielded Twisted Pair (UTP) cabling with an impedance between 85 and 111 ohms.

Connect a twisted pair segment to the Gigabit Ethernet port on the VHSIM-G02 as follows:

1. Ensure that the device connected to the other end of the segment is powered ON.
2. Connect the twisted pair segment to the VHSIM-G02 by inserting the RJ45 connector on the twisted pair segment directly into the RJ45 port as shown in Figure 2-3.

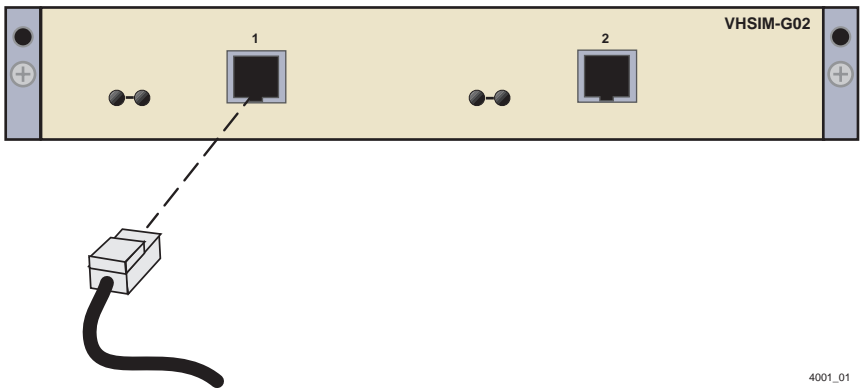


Figure 2-3 Connecting a Twisted Pair Gigabit Ethernet Segment

3. Verify that a link exists by checking that the port **RCV** (Receive) LED is ON (flashing amber, blinking green, or solid green). If the **RCV** LED is OFF and the **XMT** (Transmit) LED is not blinking amber, perform the following steps:
 - a. Verify that the cabling being used is Category 5 UTP with an impedance between 85 and 111 ohms. To operate at 1 Gbps, category 5 cabling must be used.
 - b. Verify that the device at the other end of the twisted pair segment is on and properly connected to the segment.
 - c. Verify that the RJ45 connectors on the twisted pair segment have the proper pinouts (see Appendix A) and check the cable for continuity.
4. Repeat steps 1 through 3 above, for a second connection, as needed.
5. If a link cannot be established, refer to Chapter 3 for LED troubleshooting details. Contact Cabletron Systems if a problem persists. Refer to Getting Help in the **Introduction**.

Refer to Chapter 4 for information on Local Management for the VHSIM-G02.

CHAPTER 3

LANVIEW LEDs

This chapter describes how to use the LANVIEW LEDs to monitor the VHSIM-G02 status and diagnose VHSIM-G02 problems. Figure 3-1 shows the location of the VHSIM-G02 LEDs. Refer to Table 3-1 for a description of the LEDs. Section 3.2 describes redundancy.

3.1 LED DESCRIPTIONS

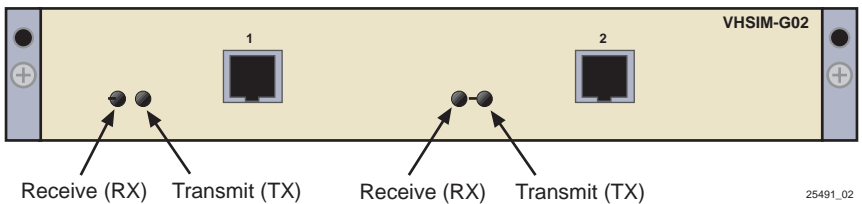
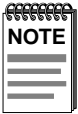


Figure 3-1 LANVIEW LEDs on the VHSIM-G02



The terms **flashing**, **blinking**, and **solid** used in Table 3-1 indicate the following:

Flashing indicates an irregular LED pulse.

Blinking indicates a steady LED pulse (approximately 50% on and 50% off).

Solid indicates a steady LED light. No pulsing.

Table 3-1 VHSIM-G02 LED Functionality

LED	Color	Definition
Transmit	Green (Flashing)	Activity, port enabled.
	Amber (Blinking)	Port in standby.
	Off	No activity, port enabled or disabled.
	Red (Flashing)	Transmit fault or error.
	Red	Diagnostic failure.
Receive	Green (Solid)	Link, no activity. Port enabled.
	Green (Blinking)	Link, port disabled.
	Amber (Flashing)	Link, activity. Port enabled.
	Off	No link, no activity. Port enabled or disabled.
	Red	Diagnostic failure.

3.2 REDUNDANCY

The VHSIM-G02 supports two modes of operation. In the active mode, both interfaces are enabled, and all LED descriptions will apply to both ports. In the redundancy mode, one port is active while the other is redundant.

In the redundancy mode, only one of the two ports on the VHSIM-G02 is active at one time. The port with link status showing (either a green LED, solid or blinking, or an amber LED) is the active port. If both ports show a link, Port 1 is the active port. The default port for the primary port link is Port 1.

The interfaces can be set in the active mode only if the host platform has 16 or less fixed front panel ports. If the host platform has more than 16 fixed front panel ports, the ports on the VHSIM-G02 will be in redundancy mode. The host platform will allow the redundancy mode to be set regardless of the number of fixed front panel ports.

CHAPTER 4

LOCAL MANAGEMENT

This chapter provides information about using Local Management with the VHSIM-G02. The VHSIM-G02 is managed using the Local Management Ethernet screens for configuration and statistics on the host platform.



The host platform is the interface module or standalone device in which the VHSIM-G02 is installed.

4.1 REQUIREMENTS

Make sure that the following requirements have been met before accessing the VHSIM-G02 through Local Management:

- The VHSIM-G02 is installed in the host platform.
- The device is powered up and running with no error LED conditions.
- A Local Management terminal is properly configured and connected to the host platform. Refer to the host platform user's guide to establish a Local Management connection.

4.2 GIGABIT PORT MODE

Local Management Network Tools can be used to change the status of the Gigabit Port Mode. Either both ports can be enabled at the same time, or Port 1 can be active and Port 2 can be set up as redundant. Use the `gigabit_port_mode` command for this process. Refer to the host platforms' Local Management documentation for details on this process. Refer to Section 3.2 for hardware restrictions on setting redundancy.

Important

The Local Management screens are used by the host platform for both configuration and statistics information. These screens will not be repeated in this manual. Refer to the host platform documentation for information on Local Management screens. Refer to Section 1.4 for information on how to obtain host platform manuals.

APPENDIX A

VHSIM-G02 SPECIFICATIONS

This chapter lists the specifications and regulatory requirements for the VHSIM-G02. Cabletron Systems reserves the right to change these specifications at any time without notice.

A.1 PHYSICAL AND ENVIRONMENTAL SPECIFICATIONS

Table A-1 Physical Properties of the VHSIM-G02

Dimensions	3.18 H x 16.51 W x 29.21 D (cm) 1.25 H x 6.5 W x 11.5 D (in)
Weight	0.34 kg (0.75 lb)
MTBF (Predicted)	911,920 hours

Table A-2 Environmental Requirements of the VHSIM-G02

Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 73°C (-22°F to 164°F)
Operating Humidity	5% to 90% (non-condensing)

A.2 REGULATORY COMPLIANCE

This equipment meets the following safety and electromagnetic compatibility (EMC) requirements:

Table A-3 Regulatory Compliance of the VHSIM-G02

Safety	UL 1950, CSA C22.2 No. 950, EN 60950, IEC 950, and 72/73/EEC
Electromagnetic Compatibility (EMC)	FCC Part 15, ICES-003/NMB-003, EN 55022, VCCI V-3, EN 50082-1, 89/336/EEC, and AS/NZS 3548

A.3 GIGABIT PORT PIN ASSIGNMENTS

The following pin assignments are for the RJ45 Gigabit Ethernet ports on the VHSIM-G02. The twisted pair ports conform to the IEEE 802.3ab specification. The cables are 4-pair Category 5 UTP, up to 100 meters in length.

Table A-4 RJ45 Port Pin Assignments

Pin	Function
1	TRDA+
2	TRDA-
3	TRDB+
4	TRDC+
5	TRDC-
6	TRDB-
7	TRDD+
8	TRDD-