QuickPanel* Control/View Communication Module Quick Installation Guide

Genius Interface Adapter
IC754GEN001

April 2010

GFK-2297A

Warnings, Cautions, and Notes as Used in this Publication

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

Caution

Caution notices are used where equipment might be damaged if care is not taken.

Note: Notes merely call attention to information that is especially significant to understanding and operating the equipment.

This document is based on information available at the time of its publication. While efforts have been made to be accurate, the information contained herein does not purport to cover all details or variations in hardware or software, nor to provide for every possible contingency in connection with installation, operation, or maintenance. Features may be described herein which are not present in all hardware and software systems. GE Intelligent Platforms assumes no obligation of notice to holders of this document with respect to changes subsequently made.

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General Contact Information

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Additional information	http://www.ge-ip.com/
Solution Provider	solutionprovider.ip@ge.com

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If you have technical problems that cannot be resolved with the information in this guide, please contact us by telephone or email, or on the web at **www.ge-ip.com/support**

Americas

Online Technical Support	www.ge-ip.com/support
Phone	1-800-433-2682
International Americas Direct Dial	1-780-420-2010 (if toll free 800 option is unavailable)
Technical Support Email	support.ip@ge.com
Customer Care Email	customercare.ip@ge.com
Primary language of support	English

Europe, the Middle East, and Africa

Online Technical Support	www.ge-ip.com/support
Phone +800-1-433-26	82
EMEA Direct Dial	+352-26-722-780 (if toll free 800 option is unavailable or if dialing from a mobile telephone)
Technical Support Email	support.emea.ip@ge.com
Customer Care Email	customercare.emea.ip@ge.com
Primary languages of support	English, French, German, Italian, Czech, Spanish

Asia Pacific

Online Technical Support	www.ge-ip.com/support
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	+86-21-3217-4826 (India, Indonesia, and Pakistan)
Technical Support Email	support.cn.ip@ge.com (China)
	support.jp.ip@ge.com (Japan)
	support.in.ip@ge.com (remaining Asia customers)
Customer Care Email	customercare.apo.ip@ge.com
	customercare.cn.ip@ge.com (China)

The Genius Interface Adapter has been tested and found to meet or exceed the requirements of U.S. (47 CFR 15), Canadian (ICES-003), Australian (AS/NZS 3548) and European (EN55022) regulations for Class A digital devices when installed in accordance with guidelines noted in this manual.

Note: This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: This Class A digital apparatus complies with Canadian ICES-003.

The following statements are required to appear for Class 1, Div 2 Hazardous Locations.

1. EQUIPMENT LABELED WITH REFERENCE TO CLASS 1, GROUPS A, B, C, AND D, DIV 2 HAZARDOUS LOCATIONS IS SUITABLE FOR USE IN CLASS 1, DIVISION 2, GROUPS A, B, C, D, OR NON-HAZARDOUS LOCATIONS ONLY.

2. WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS 1, DIVISION 2.

3. WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.

The communication card meets ATEX Group II Category 3 when installed properly in a QuickPanel View or Control OI.

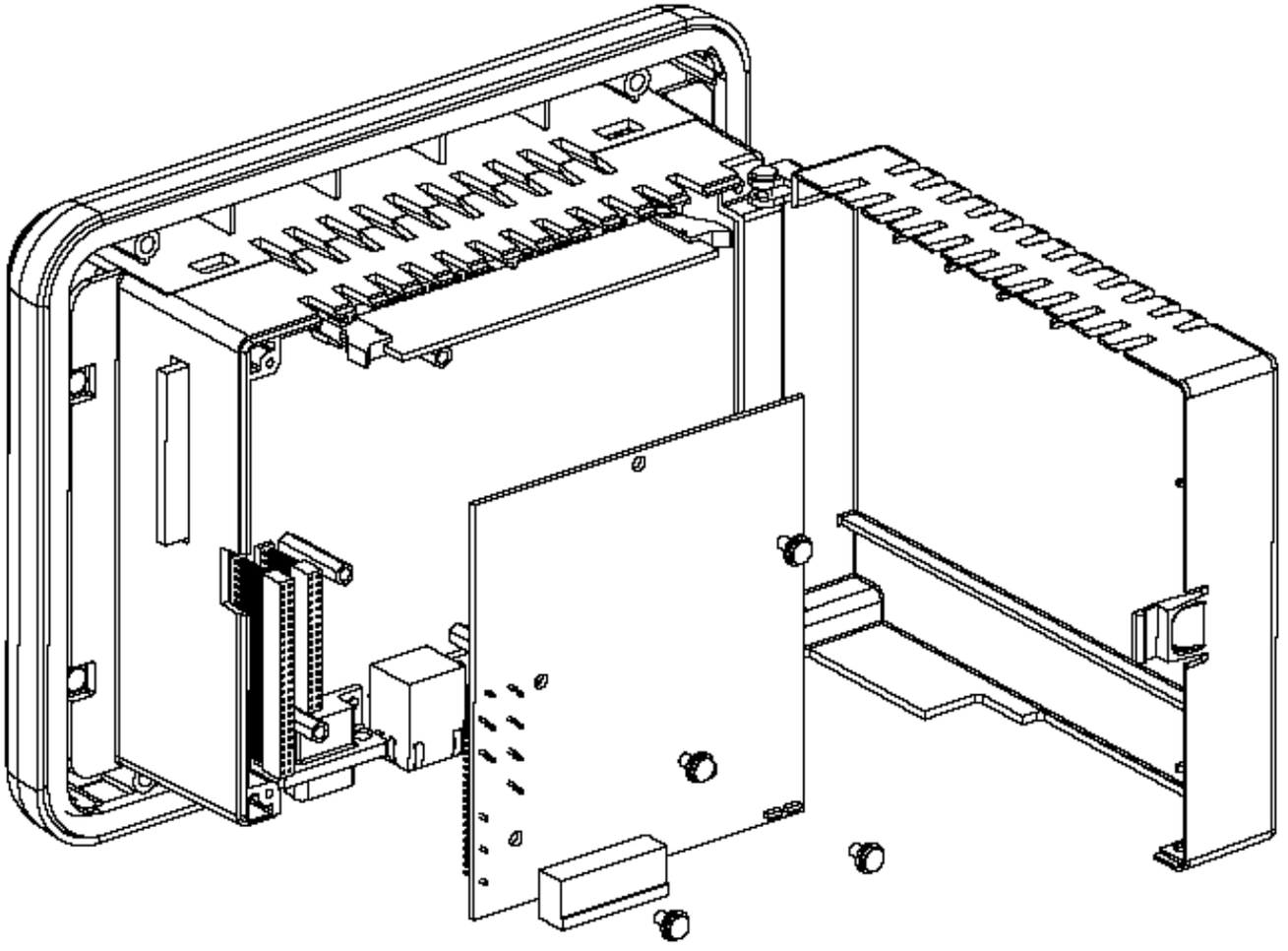
Table of Contents

Description

The Genius I/O Interface Card for the QuickPanel Control or View operator interface provides a general purpose controller interface to the Genius serial bus. This card handles all the interface and protocol tasks associated with the Genius bus communications.

Installing a Communication Module

Warning: Always use anti-static precautions when accessing the mating connector or the interior of the unit.



Note: The 6” model QuickPanel is shown. Other models are similar.

1. Disconnect the DC input power terminal block connector from your QuickPanel Control or View unit before inserting the communication module.
2. Open the back cover.
3. Attach the communication module to the unit by plugging the module into the mating connectors on the back of the unit.

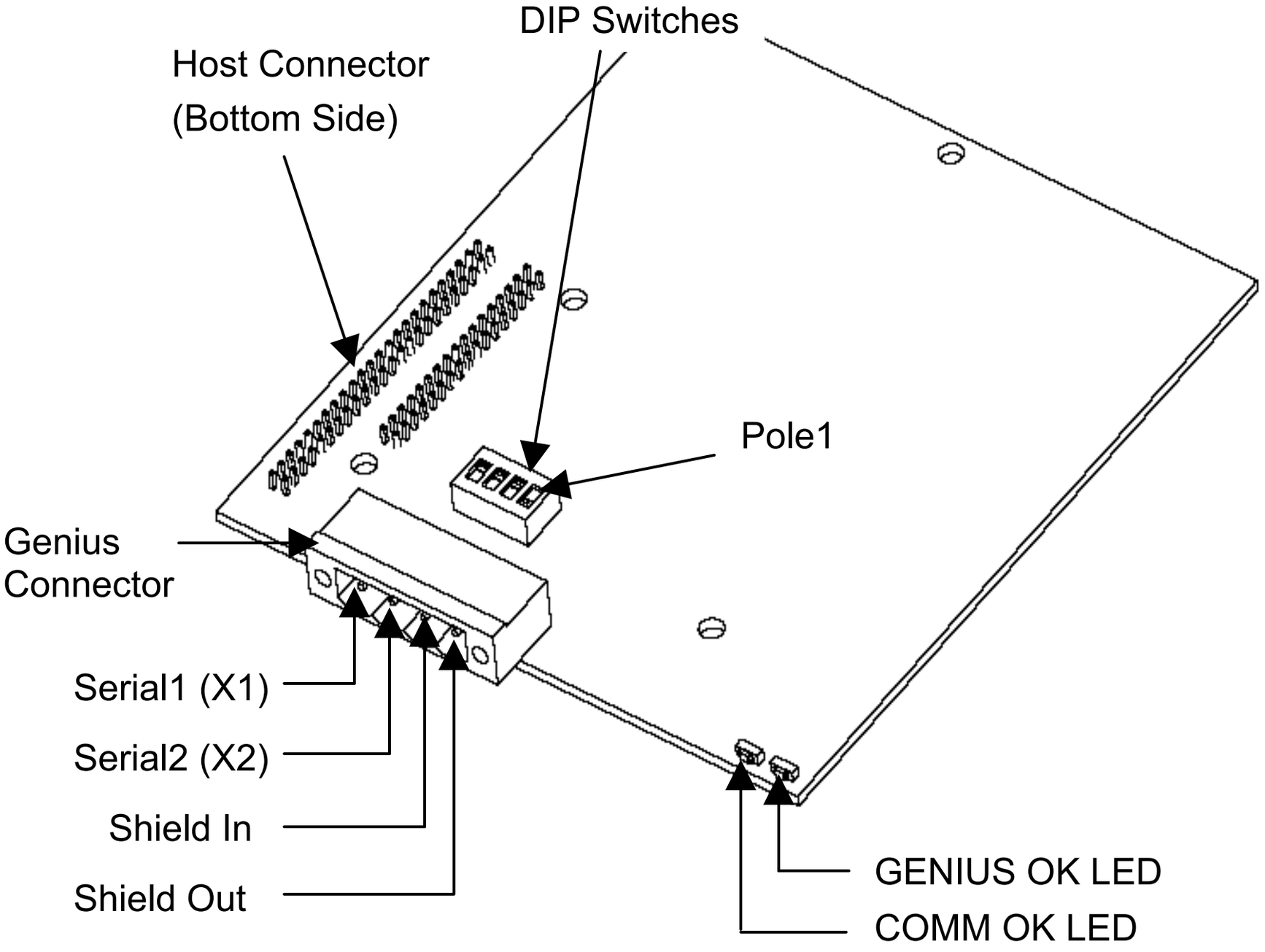
   Caution: Be sure to properly align pins in the dual connector upon insertion to avoid damage to the card or the QuickPanel Control or View unit.
4. Install the four screws to secure the card in the unit.
5. Close the cover.

Note: To use this card with QuickPanel Control or View, CIMPLICITY Machine Edition software, version 4.0 or later is required.

Please refer to the GE Intelligent Platforms Support web page www.ge-ip.com/support *for latest service pack upgrades and specials*.

Overview

The Genius interface module is shown on the next page. It provides a host connector that connects the module with your QuickPanel Control or View operator interface. The Genius bus connector is where the Genius bus cable is *connected* to the module. DIP switches are used to set the termination resistor for the Genius bus. LED indicators display the status of the module.


DIP Switches
Host Connector
(Bottom Side)
Pole1
Genius
Connector
Serial1 (X1)
Serial2 (X2)
Shield In
Shield Out
GENIUS OK LED
COMM OK LED

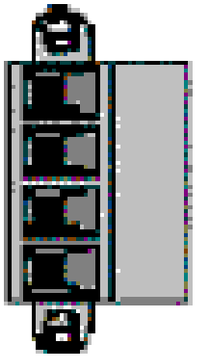
Indicators

The Genius Interface module has two LED indicators on the front of the module. These are used for displaying the status of the module.

LED	*LED Status*	*Description*
Comm OK	ON	The Genius Interface can send and receive data on the serial bus.
	OFF (Flashing)	An error has been detected in communications on the serial bus.
Genius OK	ON	Power is available to the Genius Interface, and the onboard self-diagnostics passed.
	OFF	The watchdog timer has timed out, indicating a board failure.

Genius Bus Connector

The Genius Interface card has a four pin connection. The pin out is as follows:

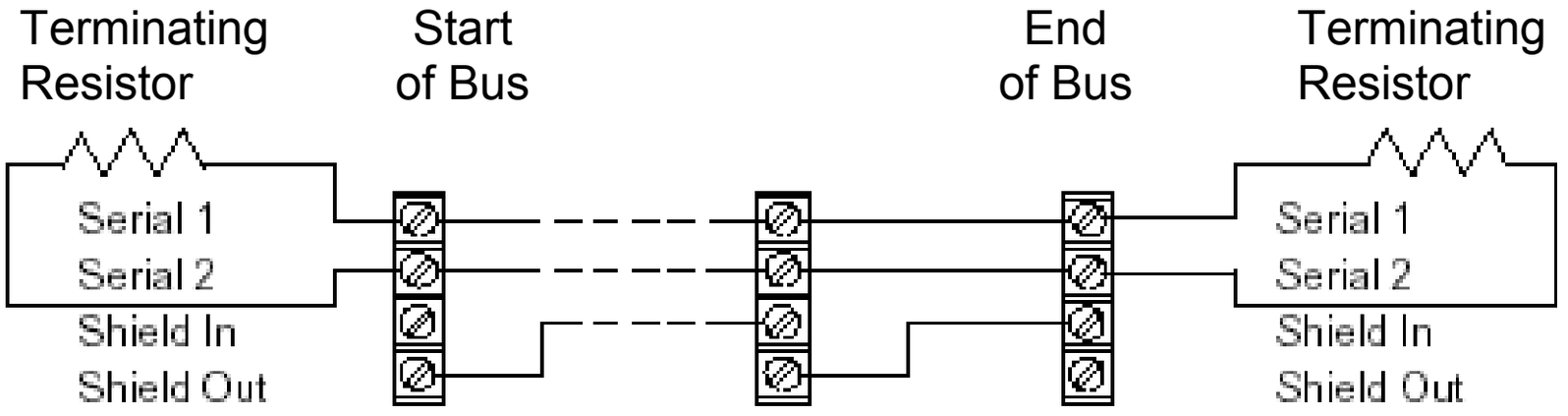


Connecting the Bus

Devices can be connected in any physical sequence on the bus. The Genius bus connector has four terminals for the bus cable: (Serial 1 (X1), Serial 2 (X2), Shield In, and Shield Out).

Connect the Serial 1 terminal of each connector to the Serial 1 terminals of the previous device and the next device. Connect the Serial 2 terminal of each connector to the Serial 2 terminals of the previous device and the next device. Shield In of each connector must be connected to Shield Out of the preceding device. For the first device on the bus, Shield In can be left unconnected. For the last device on the bus, Shield Out can be left unconnected.

Sample Bus Configuration



Caution: When making bus connections, the maximum exposed length of bare wires should be two inches. For added protection, each shield drain wire should be insulated with spaghetti tubing to prevent the Shield In and Shield Out wires from touching each other .

Refer to *The Genius I/O System and Communications User's Manual, GEK-90486-1* for additional details on Genius bus connection.

DIP Switch Setting

Bus Termination Resistor Setting

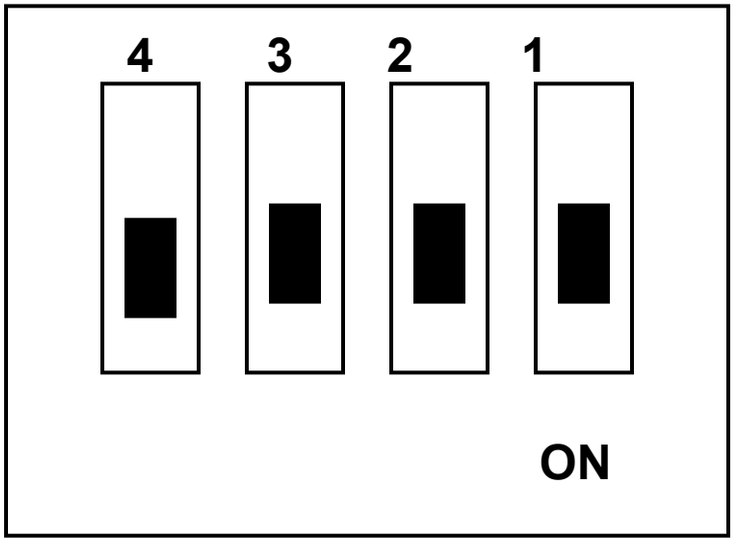
A bus must be terminated at each end by the correct impedance for that cable type. Impedance will be 75, 100, 120, or 150 ohms. Install the appropriate terminating resistor across the Serial 1 and Serial 2 terminals.

The Genius Interface has on-board termination resistors that can be selected by the DIP switch setting. Up to four termination resistors can be set, depending upon the Genius cable. The default switch setting is none. You must set the DIP switch to the proper termination value, unless your Genius cable already has a terminating resistor installed, in which case you should keep the DIP switch default setting.

“Bus Cable Type and Maximum Cable Length” on page 17 lists appropriate terminating resistors for each recommended bus cable type.

The DIP switch configuration is set according to the description on the next page.

DIP Switch Settings



Pole1	*Pole 2*	*Pole3*	*Pole 4*	*Resistor Value*
ON	OFF OF	F	OFF 150	OHM
ON ON		OFF	OFF	125 OHM
ON ON		ON	OFF	100 OHM
ON	ON ON		ON 75	OHM
OFF*	OFF*	OFF*	OFF*	NONE*

* Default setting.

Bus Cable Type and Maximum Cable Length

Cable # & Make	Terminating Resistor –10%to+20% 1/2 Watt	Maximum Length Cable Run, feet/meters at baud rate			
		153.6s	**153.6e**	**76.8**	**38.4 •**
(A)9823 (B)9182 (C)4596 (M)M39240	150 ohms	2000ft 606m	3500ft 1061m	4500ft 1364m	7500ft 2283m
(B)89182 150	ohms	2000ft 606m	3500ft 1061m	4500ft 1364m	7500ft 2283m
(B)9841 (M)M3993	120 ohms	1000ft 303m	1500ft 455m	2500ft 758m	3500ft 1061m
(A)9818C (B)9207 (M)M4270	100 ohms	1500ft 1818m	2500ft 455m	3500ft 758m	6000ft 1061m
(A)9109 (B)89207 (C)4798 (M)M44270	100 ohms	1500ft 1818m	2500ft 455m	3500ft 758m	6000ft 1061m
(A)9818D (B)9815	100 ohms	1500ft 1818m	2500ft 455m	3500ft 758m	6000ft 1061m

Cable # & Make	Terminating Resistor –10%to+20% 1/2 Watt	Maximum Length Cable Run, feet/meters at baud rate			
		153.6s	153.6e	76.8	38.4 •
(A)9818 (B)9855 (M)M4230	100 ohms	1200ft 364m	1700ft 516m	3000ft 909m	4500ft 1364m
(A)9110 (B)89696 (B)89855 (M)M64230	100 ohms	1200ft 364m	1700ft 516m	3000ft 909m	4500ft 1364m
(A)9814C) (B)9463 (M)M4154	75 ohms	800ft 242m	1500ft 455m	2500ft 758m	3500ft 1061m
(A)5902C (B)9302 (M)M17002	75 ohms	800ft 242m	1500ft 455m	2500ft 758m	3500ft 1061m

Notes: A = Alpha, B = Belden, C = Consolidated, M = Manhattan

• = Limited to 16 taps at 38.4 Kbaud

s = standard, e = extended

Refer to *The Genius I/O System and Communications User's Manual, GEK-90486-1* for details on selection and installation of the bus cable.

Specifications

Board Specifications:

Environmental:	
Operating:	
Operating temperature at board	0°C to +60°C, 32°F to + 140°F
Humidity	5% to 95% noncondensing
Vibration	.012" peak-peak displacement 10 to 57Hz; 1.0G acceleration 57 - 500 Hz per IEC68-2-6, JISC0911.
Shock	15G, 11ms sinusoidal duration per IEC68-2-27, JISC0912.
Nonoperating:	
Ambient Temperature at board	–40°C to +85°C, –40°F to +185°F
Humidity	5% to 95% non–condensing
Vibration	0.2 inch displacement 5 to 10 Hz 1G acceleration 10 to 200 Hz
Shock	Board packed in shipping container: 15 G, 10mS duration per MIL–STD 810C, method 516.2

Network Specification:

Bus Type	Daisy-chained bus cable; single twisted pair plus shield or Twinax
Bus Termination	On board DIP switch selectable: None, 75, 100, 120, or 150 ohms.
Baud Rate	Configurable 153.6 Kbaud standard, 153.6 Kbaud extended, 76.8 Kbaud, or 38.4 Kbaud. (See page 17 for bus cable type and maximum cable length.)
Max. Number of Devices	32 devices at 153.6 Kbaud standard, 153.6 Kbaud extended, or 76.8 Kbaud. 16 devices at 38.4 Kbaud.

Troubleshooting

Troubleshooting involves thinking logically of the function of each part of the system, and understanding how these functions interrelate. When problems occur, the total system must be considered. All the devices on the bus must be connected and operating properly.

A malfunction causing improper operation of Genius Interface board can usually be isolated by checking the board LEDs on the module. These indicate the status of the board itself, and of its communications with the Genius bus. During proper operation, both the LEDs will be on. (See the LED description on page 12.)

Troubleshooting Steps

The module should be plugged in and powered up, and the proper software application should be running:

Indication	*Troubleshooting Steps*
Genius OK LED is off COMM OK LED is on	Make sure the correct parameters are entered using the configuration software. Ensure that the Genius interface Module is completely inserted in the host backplane connector, and that all connector pins are properly aligned. If these steps do not correct the problem, replace the Genius Interface Module.
Genius OK LED is on COMM OK LED is off	Ensure correct cable type and length *(see Genius I/O System and communications User's Manual, GEK-90486-1).* Ensure correct terminating resistors are installed at both ends of the bus length *(see Genius I/O System and communications User's Manual, GEK-90486-1).* Ensure the serial bus is wired in a daisy-chain fashion. Make sure cabling is not in proximity to high voltage runs. Make sure cable is not broken.

Indication	***Troubleshooting Steps***
Both LEDs are off	Make sure the Genius interface Module is plugged in, seated properly, and receiving power.
	Make sure the proper software application is loaded and running. (Try reloading the application).
Both LEDS are flashing together	Two devices on the same bus have probably been configured with the same Device Number (serial bus address). Check the bus address, and if necessary correct them, using the Genius Hand-held Monitor.
Repeated bus errors occur	Ensure that cable shielding is properly installed and Grounded *(see Genius I/O System and communications User's Manual, GEK-90486-1).* Unplug the bus communications cable from the Interface Module, refer to the Device number sheets from which you configured the system, and use the Hand-held Monitor to read the configuration and compare device numbers and I/O reference numbers.
Bus errors--can't get the Interface Module up and running.	Ensure that the Serial 1 and Serial 2 wires are ***not*** crossed. Correct the bus wiring (see "Sample Bus Configuration" on page 14.

Indication	***Troubleshooting Steps***
Intermittent or total lack of communications	Mixed baud rates Power up blocks one at a time and confirm the baud rate for each. Any changes to baud rate in a block will not take effect until block power is cycled.