



GAI-TRONICS®
A HUBBELL COMPANY

Model 12579-005

120 V AC Strobe Monitor (IP)

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Confidentiality Notice

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General Information

Application

The Model 12579-005 Strobe Monitor (IP) powers 120 V ac strobe lights in an *Elemec3* PA/GA (public address/general alarm) system. The onboard relays switch power to the strobe lights on command from an E3 controller. The module contains eight independently controlled relay outputs. LEDs indicate which outputs are active.

The strobe monitor (IP) consists of three PCBAs; the base relay PCBA, the Ethernet IP CPU PCBA, and the upper relay PCBA (see [Figure 1](#)).

The E3 controller communicates with the strobe monitor (IP) via Ethernet network. The controller monitors the network connection to verify device operation and obtain diagnostic information. The strobe monitor (IP) supervises the power cable to each strobe for open-circuits, ground faults, and wire-to-wire short circuits and reports trouble conditions to the system controller.

Use the E3 Console application to configure the operation of the strobe monitor (IP). Refer to GAI-Tronics Pub. 42004-550, *Elemec3* Console Manual—Version 3.0.

The Model 12579-005 strobe monitor (IP) differs from the Model 030-02-0099-0xx series MRMs in the following ways:

-  **Operate this device only with 120 V ac beacons or strobes.**
- tolerates discharge voltages produced by these devices when removing power.

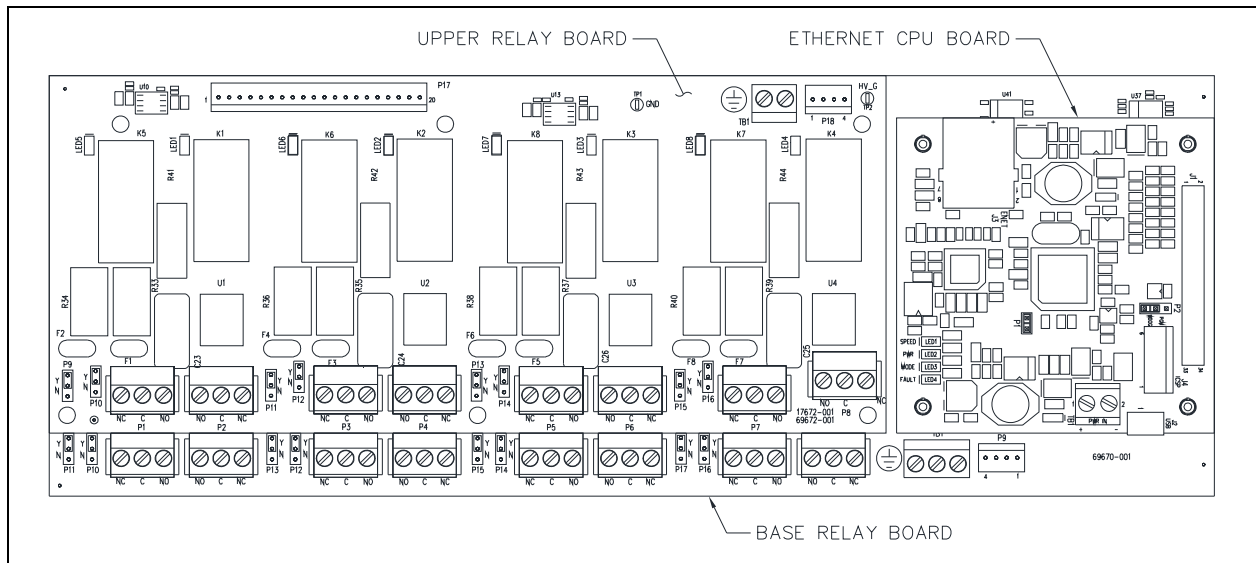


Figure 1. Model 12579-005 Strobe Monitor (IP)

Definitions

HIGH VOLTAGE—an electrical potential greater than 42.4 V_{PEAK} or 60 V dc

LOW VOLTAGE—an electrical potential less than or equal to 42.4 V_{PEAK} or 60 V dc

Abbreviations

CPU—Central Processing Unit

WDOG—Watchdog

PCBA—Printed Circuit Board Assembly

PGM—Program

EOL—End of Line

TST—Test

LOC—Local

Y—Yes, **N**—No

Block Diagrams

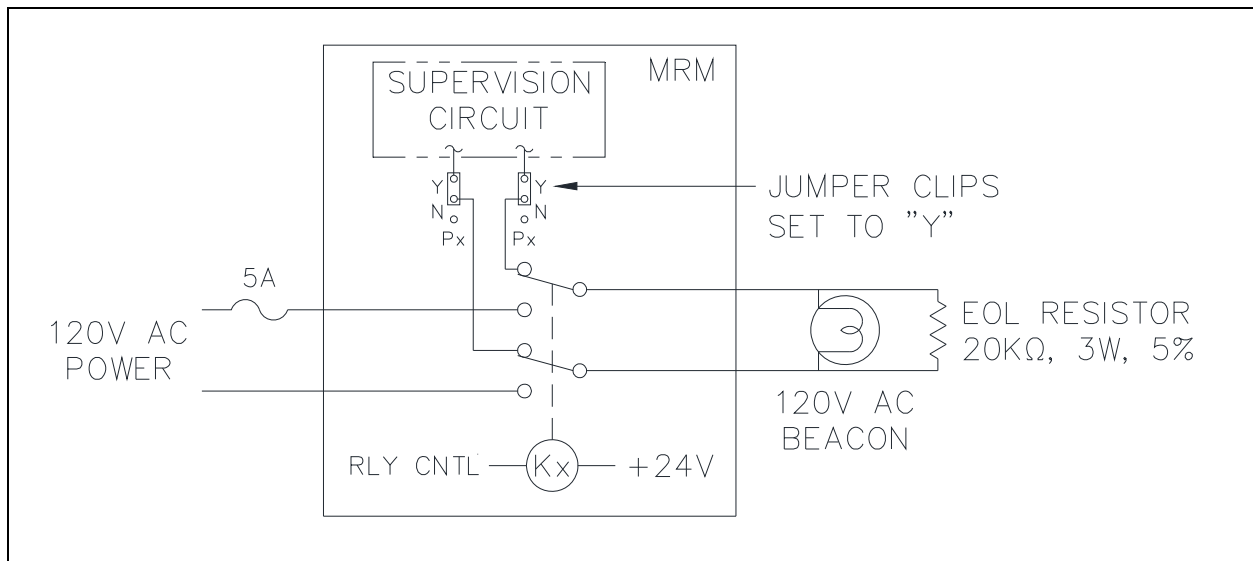


Figure 2. 12579-005 Strobe Monitor (IP) Block Diagram—Typical Supervised 120V ac Strobe

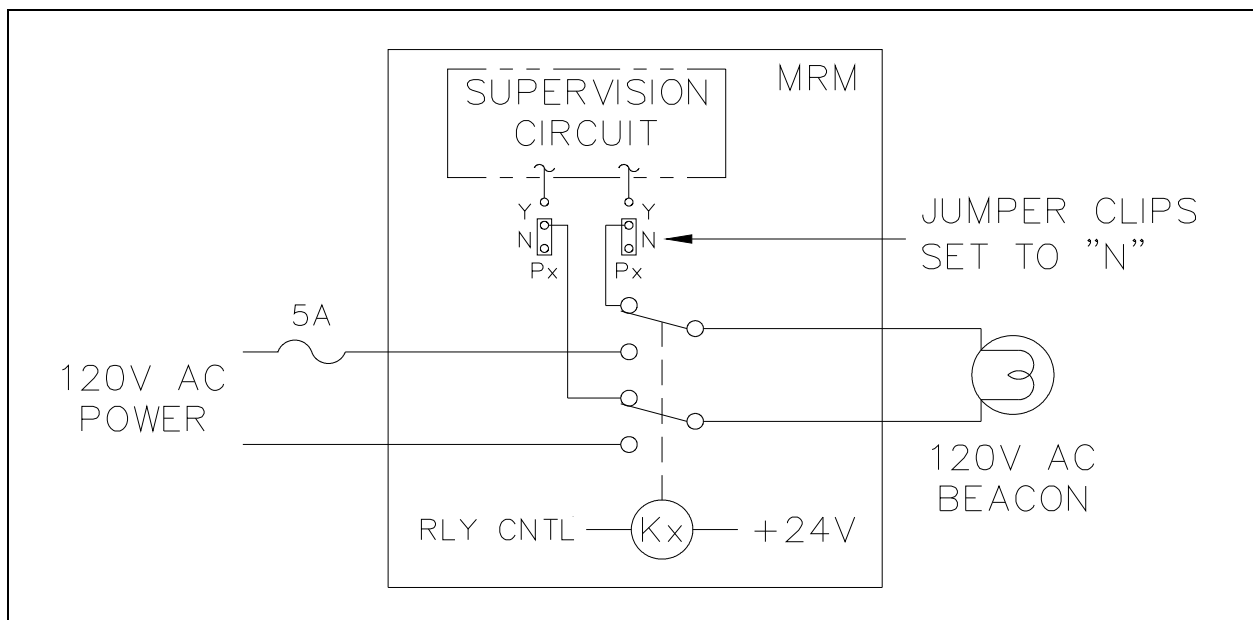


Figure 3. 12579-005 Strobe Monitor (IP) Block Diagram—Typical Unsupervised 120V ac Strobe

NOTES:

- The strobe monitor (IP) does not include the EOL (End-of-Line) resistors. The Model 12509-004 Kit (*ordered separately*) includes these items.
- The strobe monitor (IP) does not contain any current-limiting circuits for the beacon outputs. Install a 5-Amp maximum slow-blow fuse or 5 A Hi in-rush circuit breaker in each output circuit.
- Select the **STROBE MONITOR (IP)** module icon, in the *Elemec3* Console application, to configure this module.

Installation

Installation Safety Guidelines

Adhere to all warnings, safety, and operating instructions on the unit and in the installation manual.



- Disconnect power before servicing. Do not disconnect the equipment while the circuit is energized.
- Avoid servicing the unit during electrical storms.
- Do not touch uninsulated wires.



Warning: Observe precautions for handling electrostatic sensitive devices.

- Notify plant personnel of a system shutdown prior to servicing the unit.
- Disconnect power before installing or removing the MRM or any of the individual PCBs.

Mounting

Mount the strobe monitor (IP) on Tyco 6TK2 Snaptrack installed in an equipment rack. The track's grooved plastic channel allows securely *snapping* PCBAs onto the snaptrack. Install snaptrack inside a rack wherever it is convenient.

Wiring

Crimp properly sized ferrules on all conductors terminated to the terminal blocks to ensure proper termination. The ferrule size is dependent upon the conductor size used. Source the ferrules from any supplier (see [Figure 4](#) for the strobe monitor (IP)'s terminal and control locations).

Relay Contact Outputs

Make connections to field devices at terminal blocks P1 through P8 on the base relay PCBA, and P1 through P8 on the upper relay PCBA.

Each DPDT (double pole double throw) output contact has two terminal blocks for each power relay (i.e.—use terminal blocks P1 and P2 for output one, use terminal blocks P3 and P4 for output two, etc.) (see [Figure 4](#)). Use the relay-contact outputs in either supervised or unsupervised modes.

Power

Terminate 24 V dc power to terminal block TB1, on the CPU PCBA. Connect the positive leg to TB1-1 (+) and the return leg to TB1-2 (-).

Ground

Connect ground TB13 (CGND) to the chassis ground in the cabinet. When using a local power supply, connect the local power supply return leg to earth ground in the cabinet for proper operation.

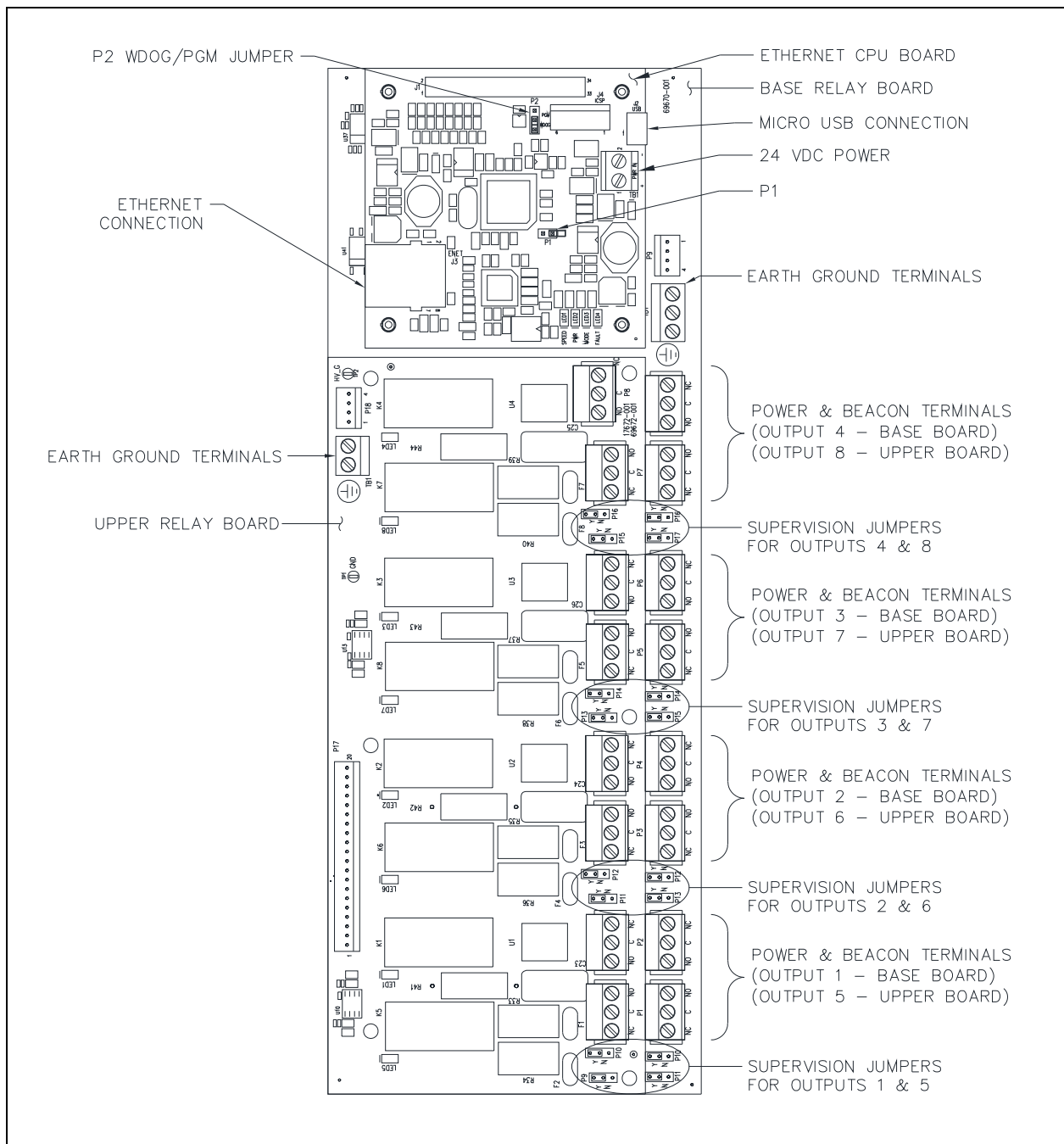


Figure 4. Strobe Monitor (IP) Jumper and Terminal Locations

Configuration

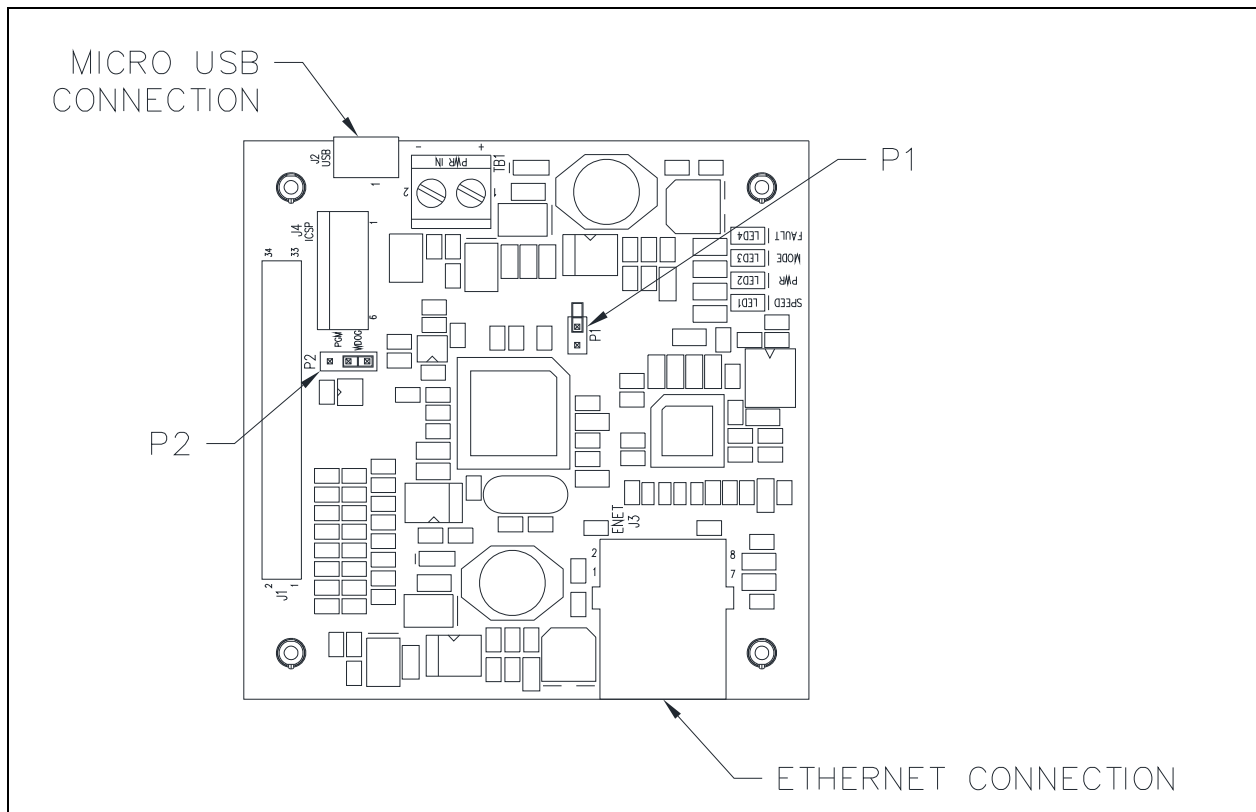


Figure 5. Ethernet CPU PC Board

Strobe Monitor (IP) Module Settings

To configure the settings on the strobe monitor (IP), obtain information from the *Elemec3* system administrator and from the Ethernet network administrator. It is also necessary to know if the *Elemec3* system is standalone or redundant (A-B or N+1) to correctly set the I/O CONTROL SOCKET address.

CPU PCBA Jumper Settings

Factory Reset

Short jumper P1 to reset the strobe monitor (IP) to the factory default configuration. Default: *open*.

PGM / WDOG MODE (P2)—*only for factory/service technician use:*

Keep this jumper in the WDOG position for normal operation. Factory or service technicians use the PGM position for CPU PCBA firmware installation.

LED Indicators for Relay Activation

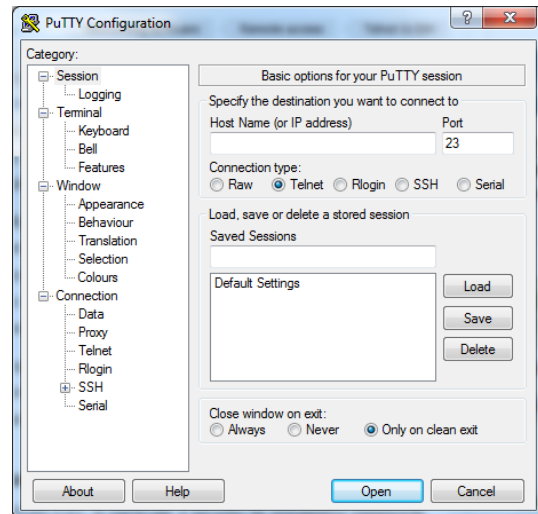
Each of the eight relay output circuits contains two relays. Relay one performs power switching to the strobe (see Figure 2 and Figure 3). A green LED (next to the relay) illuminates to provide indication of relay activation. The second relay (*not shown in Figure 2 and 3*) enables circuit supervision. A yellow LED (next to the relay), illuminates to provide indication of relay (*supervision circuit*) activation.

Using PuTTY for Strobe Monitor (IP) Configuration

Use PuTTY to configure the communication parameters that the terminal emulator, serial console application, and *Elemec3* controller use to communicate with the strobe monitor (IP). PuTTY displays and enables editing the strobe monitor (IP) communication settings via a PC serial connection.

Download PuTTY from various Internet sites. After downloading, install PuTTY on an administrative computer and run the application.

Upon start-up, the PuTTY configuration screen appears as shown:



Setup a serial connection to the strobe monitor (IP) on the SERIAL page, located under the CONNECTION group of the CATEGORY panel, in the PuTTY configuration window.

Serial Port Connection

Energize the strobe monitor (IP) station, then connect a USB cable between the administrative PC (Windows® 7 or later) and the Ethernet CPU PCBA. Use a USB-A to Micro-B type USB cable as shown.



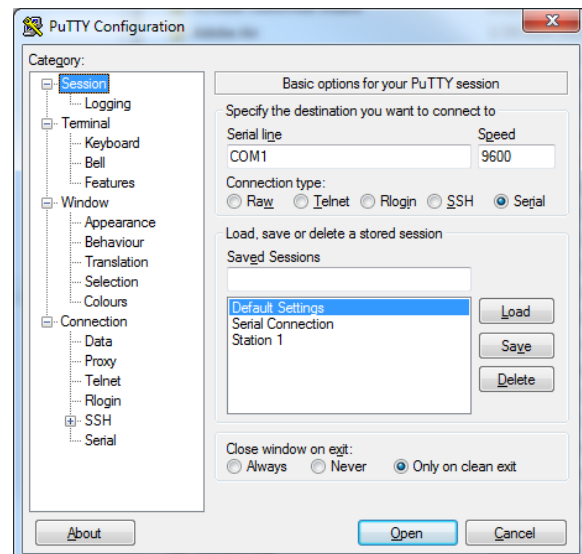
Upon connection to the strobe monitor (IP) station, the serial port drivers load and the microchip driver assigns a COM port number to the USB port on the administrative PC. Find the COM port number assigned to this connection by looking it up in *Device Manager*, located in Windows' control panel. Enter the COM port number into the PuTTY application in the next steps.

NOTE: Windows may assign a new COM port for each strobe monitor (IP) station connected to the administrative PC.

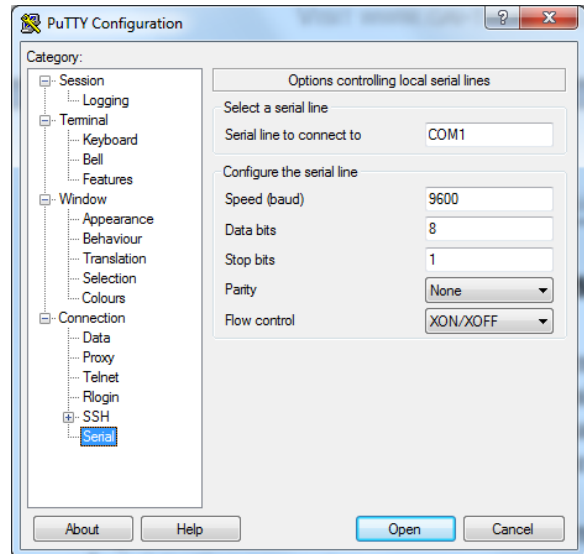
1. Run the PuTTY software.
2. In the SESSION settings page, in the CATEGORY panel, select SERIAL for the connection type.

Keep the existing serial port settings; they will be set in the next screen.

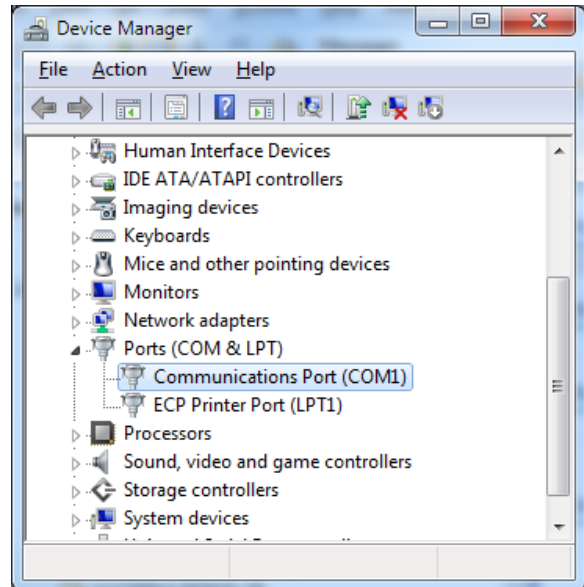
NOTE: Create a session name and save it for future connections to this strobe monitor (IP) station.



3. Navigate to the SERIAL settings page, under the CONNECTION group, in the CATEGORY panel.



4. Enter the COM port number in the SERIAL LINE TO CONNECT TO field of the PuTTY SERIAL configuration screen. Locate the COM port information in Windows Device Manager.

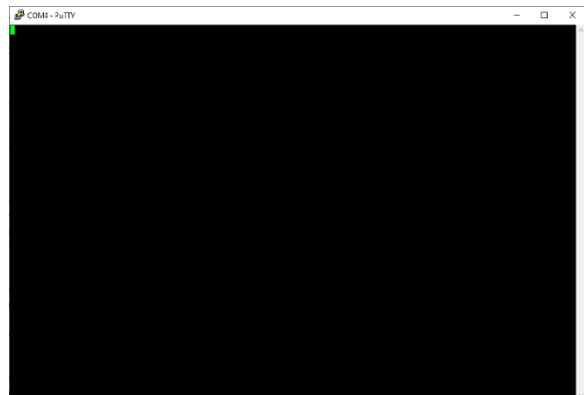


5. Enter the serial line parameters in the PuTTY configuration screen as follows:

NOTE: These values must match the values found on the port settings tab in the COM port properties dialog box in device manager.

- Speed (Baud): 9600
- Data Bits: 8
- Stop Bit: 1
- Parity: None
- Flow Control: None

6. Select OPEN. The following screen appears upon successful connection to the strobe monitor (IP) station.



7. Press **Enter**, the following screen appears (Command Line Interface).

```
TCP/IP Stack: Initialization Started
Address: 1
Multicast Settings:
  address: 239.238.238.238
  port: 50000
TCP/IP Stack: Initialization Ended - success
Joining multicast group: address: 239.238.238.238 - port: 50000
Waiting for Client Connection on port: 50000
CPU Firmware Version: 020255510

***** Network Settings *****
Hostname:      IPSTROBE-68-27-19-d8-37-94
IPv4 Address:  192.168.1.30 (If Static Addressing)
Netmask:      255.255.255.0
Gateway:      192.168.1.1
DNS Server:   192.168.1.1
MAC Address:  68:27:19:d8:37:94
DHCP in use
Network Link is INITIALIZING
*****
```

The Command Line Interface (CLI)

Alter a station's configuration parameters using the CLI (command line interface) after connecting to a strobe monitor (IP) station via a USB serial connection. Enter commands for the strobe monitor (IP) to execute via the command line. The strobe monitor (IP) carries out all commands it understands. The syntax of the strobe monitor (IP) commands have two or more parts: 1) the configuration parameter name, 2) the command name, and if required 3) the parameter values.

Manage two categories of settings through the CLI: *Elemec3* settings and general network settings.

The examples below show the command line syntax for all strobe monitor (IP) commands (see [Table 1](#)). Enter all spaces, as shown in the examples, for proper syntax of these commands. The CLI provides the leading > character shown in the examples. Some of the examples show *placeholder* angle brackets < >. Do not include the angle brackets when entering commands.

Elemec3 Settings

Strobe Monitor Address

An E3 system controller uses each strobe monitor's *Elemec3 address* to recognize the strobe monitor in the system. Assign each strobe monitor a unique address. Valid addresses are 0–F hex.

Enter the strobe monitor's *Elemec3* address in the E3 system configuration when configuring the strobe monitor in the E3 Console. Refer to the *Elemec3 Console Manual—Version 3.0* for configuration of the E3 controller I/O device addresses (see the [Reference Documents](#) section).

To set the device address, ENTER:

```
>address set <?> (? = 0–F)
```

To retrieve the device address, ENTER:

```
>address get
```

Table 1. Command Line Interface Commands

Command Name	Description
address set <?>	Sets the E3 device address where <?> can be a value of 0–F. This address corresponds to the value associated with this device in the <i>Elemec3</i> Console. (default: 1)
address get	Displays the current E3 device address.
multicast set <xxx>.<xxx>.<xxx>.<xxx>:<yyyyyy>	Sets the <i>Elemec3</i> I/O Control Socket (Multicast Group address & port number). Where xxx.xxx.xxx.xxx is the multicast group and yyyyyy is the port number. This must correspond to the value shown in <i>Elemec3</i> Console associated with the device. NOTE: Increment the port number by 1 for I/O devices that connect to the B system controller in redundant systems. (default: 239.238.238.238:50000)
multicast get	Displays the <i>Elemec3</i> I/O control socket (multicast group address & port number).
netsettings set dhcp on	Turns the DHCP function ON. The network's DHCP server provides the general network settings. (default: ON)
netsettings set dhcp off	Turns the DHCP function OFF and uses the static network settings.
netsettings set hostname <name>	Sets the device hostname where <name> can be a maximum of 32 characters consisting of a–z, 0–9 and -. (Default = IPSTROBE-xx-xx-xx-xx-xx-xx (xxxxxxxxxxxx = MAC address))
netsettings get hostname	Displays the hostname.
netsettings set ipaddress <xxx.xxx.xxx.xxx>	Sets the Pv4 address, where <xxx.xxx.xxx.xxx> is a valid IPv4 address. (Default: 192.168.1.30)
netsettings set netmask <xxx.xxx.xxx.xxx>	Sets the subnet mask, where <xxx.xxx.xxx.xxx> is a valid IPv4 subnet mask. (Default: 255.255.255.0)
netsettings get netmask	Displays the subnet mask
netsettings set gateway <xxx.xxx.xxx.xxx>	Sets the default gateway, where <xxx.xxx.xxx.xxx> is a valid IPv4 address. (Default: 192.168.1.1)
netsettings get gateway	Displays the default gateway.
netsettings set dns <xxx.xxx.xxx.xxx>	Sets the default gateway, where <xxx.xxx.xxx.xxx> is a valid IPv4 address. (default: 192.168.1.1)
netsettings get dns	Displays the default gateway.
netsettings get	Displays all network settings.
netsettings help	Displays a list of valid CLI commands.

Multicast Socket

The E3 controller uses the control socket (*multicast group address & port number*) to communicate with strobe monitor devices on the network.

The strobe monitor's control socket must match the control socket programmed in the E3 controller's configuration file. Refer to *Elemec3 Console Manual—Version 3.0* to program the E3 controller I/O device control socket.

In redundant systems or in systems containing multiple E3 controllers, each E3 controller' control socket is unique (Figure 6 shows a redundant system using A & B controllers).

NOTE: For a standalone system or for the primary Elemec 3 controller in a redundant system: Set the octets and port as displayed in the Elemec3 Console application.

NOTE: For the secondary Elemec3 controller, in a redundant system: Set the octets as displayed in the Elemec3 Console but increase the port number by 1 from the value displayed in the Elemec3 Console application.

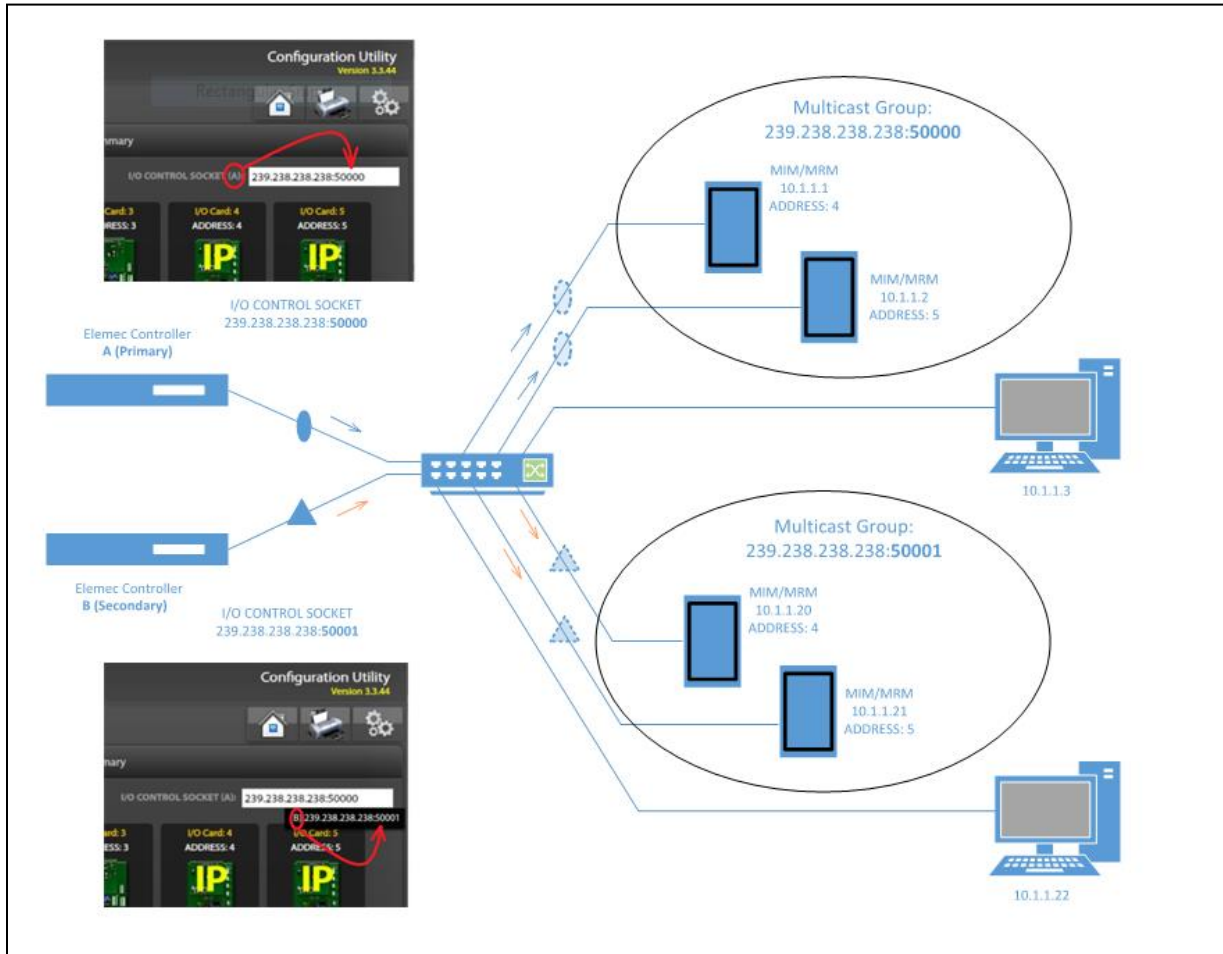


Figure 6. I/O Control Socket Parameters

To set I/O control socket ENTER:

>multicast set (XXX.XXX.XXX.XXX):<YYYYY>

- **XXX.XXX.XXX.XXX** = multicast address
- **YYYYY** = port number

To retrieve the I/O control socket setting ENTER:

>multicast get

```
>multicast get
>Multicast Settings:
  address: 239.238.238.238
  port: 50000
```

General Network Settings

General network settings consist of the hostname, IPv4 address, subnet mask, default gateway, and DNS server. There are two options to assign general network settings; use the default option to obtain general network settings via DHCP or manually configure each network setting and restart the device.

To see a complete list of general network setting commands, enter:

```
>netsettings help
```

The screen displays the following:

```
>netsettings help
Usage: netsettings <get / set / reset / help>
Ex: netsettings get //To get all in use Network Settings
Ex: netsettings get <hostname / ipaddress / netmask / gateway / dns / dhcp> //To
  get individual in use Network Settings
Ex: netsettings set hostname <new hostname> //To set a new hostname
Ex: netsettings set ipaddress <new ip address> //To set a new IPv4 Address
Ex: netsettings set netmask <new netmask> //To set a new Netmask
Ex: netsettings set gateway <new gateway> //To set a new Gateway
Ex: netsettings set dns <new dns> //To set a new DNS
Ex: netsettings set dhcp <on / off> //To enable or disable DHCP
Ex: netsettings reset //To apply the pending Network Settings
Ex: netsettings help //To display this help message
```

Option 1: DHCP—DHCP is the default option to obtain general network settings. Enter the following command to request the network settings from the DHCP server:

```
>netsettings get
```

If a DHCP server is not available, turn the feature OFF and configure static network settings using **Option 2** below.

```
>netsettings get
***** Network Settings *****
Hostname:      IPSTROBE-68-27-
IPv4 Address:  0.0.0.0
Netmask:      0.0.0.0
Gateway:      0.0.0.0
DNS Server:   192.168.1.1
MAC Address:  68:27:19:d8:37:94
DHCP in use
Network Link is DOWN
*****
```

Enter the following command to turn OFF the DHCP feature.

```
>netsettings set dhcp off
```

```
>netsettings set dhcp off
DHCP: disabled.
```

Option 2: Static Network Settings—Use the CLI to manually set each general network setting. Reset the device to activate the settings. Use the following commands for each setting.

Hostname:

```
>netsettings set <hostname> <desired hostname>
```

```
>netsettings set hostname STROBE-MONITOR-1
New, pending hostname: STROBE-MONITOR-1
```

IPv4 Address:

>netsettings set ipaddress <xxx.xxx.xxx.xxx>

```
>netsettings set ipaddress 192.168.1.30
IP Address set succeeded.
```

Subnet Mask:

>netsettings set netmask <xxx.xxx.xxx.xxx>

```
>netsettings set netmask 255.255.255.0
New, pending netmask: 255.255.255.0
```

Default Gateway:

>netsettings set gateway <xxx.xxx.xxx.xxx>

```
>netsettings set gateway 192.168.1.1
New, pending gateway: 192.168.1.1
```

Domain Name Server (DNS):

>netsettings set dns <xxx.xxx.xxx.xxx>

```
>netsettings set dns 0.0.0.0
New, pending DNS: 0.0.0.0
```

NOTE: Only the IP address updates immediately upon command entry. Changes to the remaining general network settings are *pending*. Reset the device to make pending network settings active.

Enter the following command to reset the device.

>netsettings reset

```
>netsettings reset
Pending network settings will be applied.
Device will reset in ~5 seconds.
This terminal window will become unresponsive.
```

NOTE: The PuTTY session disconnects when the device resets. Start a new session to reconnect.

Operation

An *Elemec3* controller controls all operation configured using the E3 Console application. See the E3 controller configuration details in the system manual for all operational information.

Fault Diagnostics

Table 2. Troubleshooting Guide

Symptom	Action
Strobe monitor (IP) does not communicate with E3 controller.	<p>Check the system fault status using E3 Portal software. If the Portal displays a fault message:</p> <ul style="list-style-type: none"> • Verify the strobe monitor (IP) is receiving power. • Verify correct connection of the CPU PCBA to the base board via connector J1. • Verify the strobe monitor (IP)'s Ethernet connection is active. • Verify the strobe monitor (IP)'s control socket agrees with the control socket in the system configuration running on the E3 controller. • Verify the strobe monitor (IP)'s E3 address agrees with the address in the system configuration running on the E3 controller. <p>If all the above is okay: Call for service of the strobe monitor (IP)</p>
Strobe monitor (IP) does not activate relay outputs.	<p>Check the I/O fault status using E3 Portal software. If the Portal displays a fault message:</p> <ul style="list-style-type: none"> • Verify proper installation of the end-of-line resistor on the affected relay output(s). • Verify the supervisor jumper clips are in the YES position for the affected relay output(s). • Verify total loop resistance of the strobe cable is at least 100 kilohms, excluding the end of line resistor. <p>If the Portal does NOT display a fault message: Verify correct configuration of the output relays in the system configuration file running on the E3 controller.</p> <p>If all the above is okay: Call for service of the strobe monitor (IP).</p>

Reference Documents

Title	Publication Number
Elemec3 Console Manual—Version 3.0.....	42004-550

Specifications

Electrical

Power requirements	24 V dc \pm 10%
Current draw	0.35 A maximum @ 24 V dc (does not include beacon power)
Maximum number of relay outputs.....	8 loops
Maximum devices per output.....	limited by maximum current draw

Switched Relay Outputs

Quantity	8
Maximum current draw (per output).....	5 A
Maximum ac switching voltage	120 V ac
Open fault detection.....	minimum 65 k Ω
Ground fault detection	less than 200 Ω to ground
Wire-to-wire short fault detection.....	less than 1 k Ω
End-of-line device.....	20 k Ω , 3 W, 5% (Supervised Mode) None (Unsupervised Mode)

Loop Supervision Limitations:

Cable limitations	100 Ω maximum loop resistance
Resistance across loop (excluding end-of-line device).....	100 k Ω minimum

Power Relay Module/Ethernet CPU Terminals:

Minimum conductor size	0.20 mm ²
Maximum conductor size.....	2.50 mm ²

Ethernet

Ethernet.....	100/1000 Base-T
Speed.....	100/1000 Mbps
Cable	Category 5e or better
Connection	RJ-45 T568B jack
Maximum cable length	100 m

Mechanical

Unit Dimensions

Model 12579-005.....	1.53 H \times 11.00 W \times 4.00 D in (38.9 \times 279.4 \times 101.6 mm)
Unit weight.....	1.75 lb maximum

Environmental

Temperature range (operating/storage).....	-30 $^{\circ}$ C to 50 $^{\circ}$ C (-22 $^{\circ}$ F to 122 $^{\circ}$ F)
Humidity	95% non-condensing relative humidity`

Warranty

Equipment. GAI-Tronics warrants for a period of one (1) year from the date of shipment, that any GAI-Tronics equipment supplied hereunder shall be free of defects in material and workmanship, shall comply with the then-current product specifications and product literature, and if applicable, shall be fit for the purpose specified in the agreed-upon quotation or proposal document. If (a) Seller's goods prove to be defective in workmanship and/or material under normal and proper usage, or unfit for the purpose specified and agreed upon, and (b) Buyer's claim is made within the warranty period set forth above, Buyer may return such goods to GAI-Tronics' nearest depot repair facility, freight prepaid, at which time they will be repaired or replaced, at Seller's option, without charge to Buyer. Repair or replacement shall be Buyer's sole and exclusive remedy. The warranty period on any repaired or replacement equipment shall be the greater of the ninety (90) day repair warranty or one (1) year from the date the original equipment was shipped. In no event shall GAI-Tronics warranty obligations with respect to equipment exceed 100% of the total cost of the equipment supplied hereunder. Buyer may also be entitled to the manufacturer's warranty on any third-party goods supplied by GAI-Tronics hereunder. The applicability of any such third-party warranty will be determined by GAI-Tronics.

Services. Any services GAI-Tronics provides hereunder, whether directly or through subcontractors, shall be performed in accordance with the standard of care with which such services are normally provided in the industry. If the services fail to meet the applicable industry standard, GAI-Tronics will re-perform such services at no cost to buyer to correct said deficiency to Company's satisfaction provided any and all issues are identified prior to the demobilization of the Contractor's personnel from the work site. Re-performance of services shall be Buyer's sole and exclusive remedy, and in no event shall GAI-Tronics warranty obligations with respect to services exceed 100% of the total cost of the services provided hereunder.

Warranty Periods. Every claim by Buyer alleging a defect in the goods and/or services provided hereunder shall be deemed waived unless such claim is made in writing within the applicable warranty periods as set forth above. Provided, however, that if the defect complained of is latent and not discoverable within the above warranty periods, every claim arising on account of such latent defect shall be deemed waived unless it is made in writing within a reasonable time after such latent defect is or should have been discovered by Buyer.

Limitations / Exclusions. The warranties herein shall not apply to, and GAI-Tronics shall not be responsible for, any damage to the goods or failure of the services supplied hereunder, to the extent caused by Buyer's neglect, failure to follow operational and maintenance procedures provided with the equipment, or the use of technicians not specifically authorized by GAI-Tronics to maintain or service the equipment. **THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES AND REMEDIES, WHETHER EXPRESS OR IMPLIED BY OPERATION OF LAW OR OTHERWISE, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

Return Policy

If the equipment requires service, contact your Regional Service Center for a return authorization number (RA#). Equipment should be shipped prepaid to GAI-Tronics with a return authorization number and a purchase order number. If the equipment is under warranty, repairs or a replacement will be made in accordance with the warranty policy set forth above. Please include a written explanation of all defects to assist our technicians in their troubleshooting efforts.

Call 800-492-1212 (inside the USA) or 610-777-1374 (outside the USA) for help identifying the Regional Service Center closest to you.