GAI-TRONICS®
A HUBBELL COMPANY

Model 12614-001
ADVANCE to Modbus I/O Module

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Confidentiality Notice

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General Information

The Model 12614-001 ADVANCE to Modbus I/O Module is a gateway device to connect GAI-Tronics ADVANCE systems to third party control systems utilizing the Modbus RTU protocol. The ADVANCE system functions as a Modbus Slave to the external control system that is the Modbus Master.

The Modbus I/O Module communicates with both the ADVANCE system and the Modbus control system using RS485 serial data lines that connect to RJ45 jacks on the module. If using Modbus TCP, an additional third party gateway is needed for Modbus TCP to Modbus RTU conversion.

The Modbus I/O Module utilizes one-bit registers (known as coils) to activate input points in the ADVANCE system and read output contact activation from the ADVANCE system rather than from numerous contacts located on physical MIM and MRM devices.

The Modbus I/O Module functions as a single Modbus RTU device in the third party control system, defined by the address of the Modbus port. In an ADVANCE system; it operates as multiple (0–10) MIM and MRM devices, defined by the address configured for the ADVANCE port. The number of logical I/O devices available in the ADVANCE system (8–80) depends on the address (5-E) assigned to the ADVANCE port on the Modbus I/O Module.

The module is designed to be installed in an ADVANCE system control cabinet but can be installed on any DIN mounting rail or on PC board mounting track. It is installed in its enclosure when secured directly to a DIN rail or can be removed from its enclosure for mounting in standard 3-inch or 4-inch PC board mounting track.

Installation

Important Safety Instructions

- Read, follow, and retain instructions—All safety and operating instructions should be read and followed before operating the unit. Retain instructions for future reference.

- Heed warnings—Adhere to all warnings on the unit and in the operating instructions.

- Attachments—Attachments not recommended by the product manufacturer should not be used, as they may cause hazards.

- Servicing—Do not attempt to service this unit by yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Warning: Observe precautions for handling electrostatic sensitive devices.

Installation Safety Guidelines

Adhere to all warnings, safety instructions, and operating instructions on the unit and in the installation manual. The following instructions assume a horizontal orientation of DIN rail. The PCBA must be reoriented if the DIN rail is positioned vertically.

DANGER

- Do not use this apparatus near water.

- To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

- Use only with the enclosure specified by the manufacturer.

- Disconnect power before servicing, installing, or removing the module.

- Do not disconnect the equipment while the circuit is energized.

- Avoid servicing the unit during electrical storms.

- Do not touch uninsulated wires.

- Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

Installation Methods

The ADVANCE to Modbus Module comes preinstalled in an aluminum enclosure. The module can be installed on standard DIN rail using the DIN rail clips located on the rear of the enclosure or it can be installed on 3-inch or 4-inch PC board mounting track after removing the PCBA from the enclosure.

Enclosure Removal and Installation

Enclosure faceplate removal:

1. Unscrew the four screws from the front corners of the enclosure.

2. Gently pull off the cover.

Rear enclosure removal:

1. Unscrew the four standoffs holding the PCBA to the back plate.

2. Remove the PCBA from the rear mounting plate.

Rear enclosure installation:

1. Place the PCBA onto the four studs on the back plate.

3. Secure the PCBA to the back plate using four ½-inch standoffs.

Enclosure faceplate installation:

1. Orient the cover on the enclosure so that the LEDs, switches, and connectors of the PCBA match the holes on the front cover.

2. Screw the four screws back through the front cover to secure.

DIN Rail Mounting

Module Orientation

The module can be mounted directly onto a DIN rail using the DIN rail clips on the rear of the enclosure. The module can be mounted horizontally or vertically by rotating the DIN rail clip on the back of the module prior to mounting the module onto the DIN rail. To rotate the DIN rail clip on the module:

1. Unscrew the three screws securing the clip to the module.

   To determine which way to orient the clip:

2. Match the clip to the DIN rail without applying pressure.

   The clip channel will be perpendicular to the DIN rail channel when the module is mounted to the DIN rail.

   To attach the clip to the module:

3. Screw the clip onto the module housing in the required orientation using the three screws removed in step one.

   The module must be removed from the DIN rail if it must be rotated after installation.

Installation

There are two edges of the DIN rail clip that directly attach to the DIN rail; one fixed, and one that slides to expand the clip's opening. To mount the enclosure onto the DIN rail:

1. Set the sliding side of the clip onto the top or bottom edge of the DIN rail.

2. Firmly pull the module in the opposite direction to expand the clip.

3. Gently press the other side of the clip onto the opposite edge of the DIN rail and release pressure.

   The module should snap into place.

Removing the front cover does not affect the DIN rail mounting stability.

Removal

To remove the module from the DIN rail:

1. Firmly pull the module away from the expanding side of the DIN rail clip.

2. Pull the non-sliding edge off of the DIN rail and lift the module off of the DIN rail.

PC-Board Track Mounting

The printed circuit board inside the module may be mounted onto 3 inch or 4 inch pc board mounting track (Snaptrack) if DIN rail mounting is not available. The size of the mounting track will determine the horizontal or vertical mounting arraignment.

Installation

1. Remove the PCBA from the enclosure (see Enclosure Removal and Installation).

For installation on 3-inch PC board track:

2. Insert either side of the PCBA into the groove on one side of the Snaptrack.

3. Press the remaining two corners of the PCBA into the opposite side of the Snaptrack until the module snaps into the channel

For installation on 4-inch PC board track:

2. Slide either the top or bottom edge of the PCBA into the groove on one side of the Snaptrack.

3. Press the remaining two corners of the PCBA into the opposite side of the Snaptrack until the module snaps into the channel.

The module can be slid up or down in the channel to adjust the vertical position of the PCBA.

Removal

To remove the PCBA from the PC board mounting track:

1. Push out the left or right side of the Snaptrack and lift out the corresponding edge of the PCBA.

    Do not use force.

2. If the PCBA does not come out of the track easily, slide the module out through the top or bottom opening of the Snaptrack.

    Do not use tools to remove the module from the Snaptrack.

Hardware Configuration

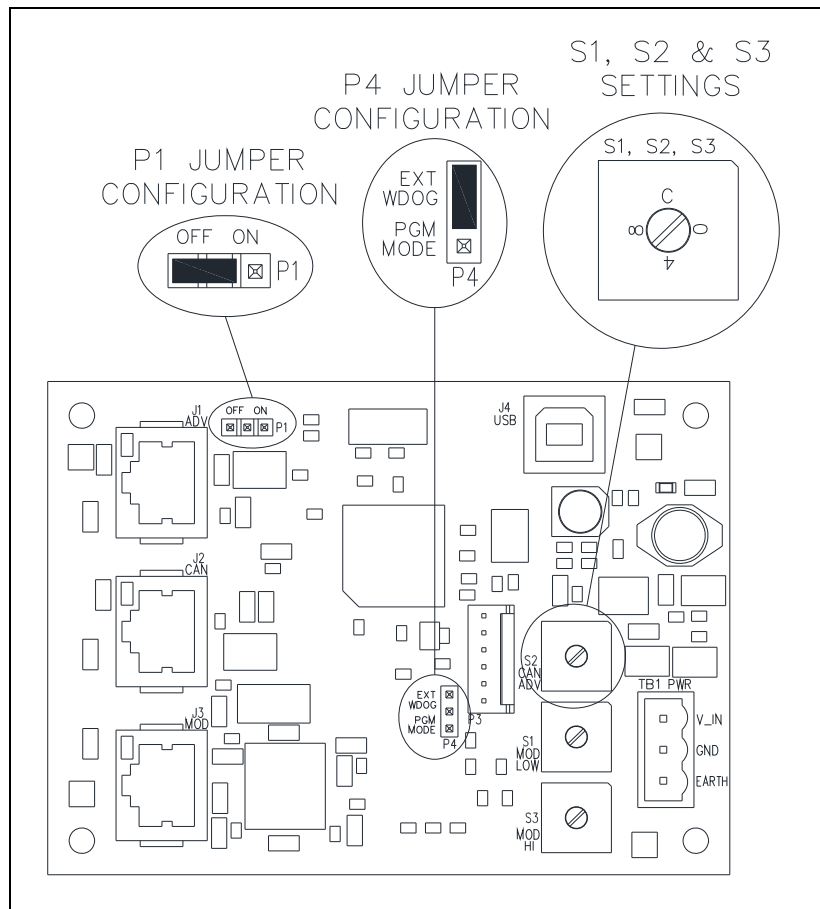Refer to the following figures when configuring the Modbus to ADVANCE module:

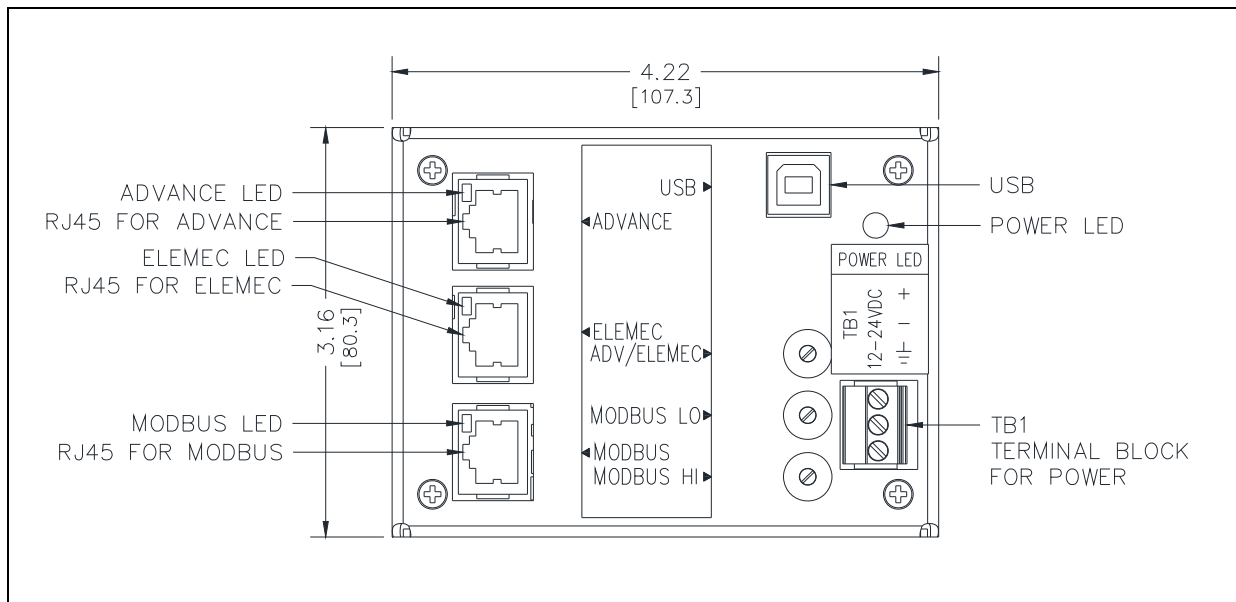

Figure 1. Modbus I/O Module PCBA

Figure 2. Module Front View—Dimensions are in inches [mm]

LED Indicators

The ADVANCE to Modbus I/O Module is equipped with four LED indicators (see Figure 2 and Table 1)

The LEDs serve to indicate proper operation of the module and should remain visible for diagnostic purposes.

Three RJ45 connector LEDs located at the upper-right corners of jacks J1, J2, and J3 indicate data transmission between the connected system and the module. The connector LEDs are not illuminated if data is not being transmitted.

The power LED, located on the upper-right corner of the module, remains illuminated while the voltage regulator is delivering power to the rest of the module. Failure of the power LED to illuminate indicates a problem with the module.

Table 1. LED Indicators

LED Indicator	Location	LED is Illuminated:
Power LED	Upper-right corner of module	at all times (if module is powered)
ADVANCE LED	Upper-right corner of ADVANCE RJ45 (J1)	when ADVANCE system is connected and receiving data
Elemec3 LED	Upper-right corner of *Elemec3* RJ45 (J2)	LED is not used
Modbus LED	Upper-right corner of Modbus RJ45 (J3)	Modbus interface is connected and transmitting data

The ADVANCE to Modbus I/O Module contains switches and jumpers that must be configured for proper operation.

Table 2. Switch/Jumper Summary

Component	Fuction
S1, S2, S3	Data Line Address Setting
P1	Testing Mode Selection
P4	Operating Mode

Address Switch Settings

The I/O Module contains three rotary hexadecimal switches that set the addresses of the ADVANCE and Modbus interface ports. Switches S1 and S3 set the address of the Modbus interface port. Switch S2 sets the address of the ADVANCE system interface port (see Table 4 and Table 5 for the ADVANCE I/O address settings).

Example Switch Configuration (S2, S3, S1):

System Interface	Address	S2	S3	S1
ADVANCE	5	5	N/A	N/A
Modbus	02	N/A	0	2

Test Mode Jumper (P1)

Test Mode jumper P1 configures the I/O module for testing and should not be adjusted in the field. P1-2 and P1-3 must be shunted for normal operation.

Watchdog Jumper (P4)

External Watchdog jumper P4 enables a watchdog feature for software purposes and should not be adjusted in the field. The default setting is installed.

I/O Mapping

The I/O module can simulate up to 10 MIMs (Monitored Input Modules) or MRMs (Monitored Relay Modules) for each AZI card in the ADVANCE System. In an ADVANCE System, each MIM and MRM has a unique address. Valid addressing is 5-E.

For example, if the ADVANCE address is set to 5, the module will respond to MIM addresses 5–E. If the ADVANCE address is set to 7, the module will respond to MIM addresses 7–E. In summary, whatever the ADVANCE address is set to, the module will simulate MIM cards of that address and higher. Valid addressing is 5-E.

The corresponding inputs & outputs (1-8) for each MIM & MRM address in the ADVANCE system have been assigned to a unique Modbus Coil number (1-bit register). There are 80 possible coil numbers (40-119).

The Modbus system can set coils to the ON state which in turn will activate input points in the ADVANCE system. The ADVANCE system can activate relay outputs which will in turn set coils to the ON state for the Modbus control system.

Table 4 and Table 5 identify the Modbus Coil Numbers and the corresponding ADVANCE system I/O points:

Table 3. Example Configurations

ADVANCE Address	Modbus to ADVANCE coils	ADVANCE to Modbus coils
5	40 through 119	40 through 119
8	64 through 119	64 through 119
B	88 through 119	88 through 119

Table 4. Input Mapping from Modbus Port to ADVANCE System

MOD Coil	ADV Address	Input	MOD Coil	ADV Address	Input	MOD Coil	ADV Address	Input
40	5	1	72	9	1	104	D	1
41	5	2	73	9	2	105	D	2
42	5	3	74	9	3	106	D	3
43	5	4	75	9	4	107	D	4
44	5	5	76	9	5	108	D	5
45	5	6	77	9	6	109	D	6
46	5	7	78	9	7	110	D	7
47	5	8	79	9	8	111	D	8
48	6	1	80	A	1	112	E	1
49	6	2	81	A	2	113	E	2
50	6	3	82	A	3	114	E	3
51	6	4	83	A	4	115	E	4
52	6	5	84	A	5	116	E	5
53	6	6	85	A	6	117	E	6
54	6	7	86	A	7	118	E	7
55	6	8	87	A	8	119	E	8
56	7	1	88	B	1			
57	7	2	89	B	2			
58	7	3	90	B	3			
59	7	4	91	B	4			
60	7	5	92	B	5			
61	7	6	93	B	6			
62	7	7	94	B	7			
63	7	8	95	B	8			
64	8	1	96	C	1			
65	8	2	97	C	2			
66	8	3	98	C	3			
67	8	4	99	C	4			
68	8	5	100	C	5			
69	8	6	101	C	6			
70	8	7	102	C	7			
71	8	8	103	C	8			

Examples: Setting Modbus Coil 40 to the ON state will activate MIM address 5—Input #1.

Setting Modbus Coil 65 to the ON state will activate MIM address 8—Input #2.

Table 5. Output Mapping from ADVANCE System to Modbus Port

ADV Address	Output	MOD Coil	ADV Address	Output	MOD Coil	ADV Address	Output	MOD Coil
5	1	40	9	1	72	D	1	104
5	2	41	9	2	73	D	2	105
5	3	42	9	3	74	D	3	106
5	4	43	9	4	75	D	4	107
5	5	44	9	5	76	D	5	108
5	6	45	9	6	77	D	6	109
5	7	46	9	7	78	D	7	110
5	8	47	9	8	79	D	8	111
6	1	48	A	1	80	E	1	112
6	2	49	A	2	81	E	2	113
6	3	50	A	3	82	E	3	114
6	4	51	A	4	83	E	4	115
6	5	52	A	5	84	E	5	116
6	6	53	A	6	85	E	6	117
6	7	54	A	7	86	E	7	118
6	8	55	A	8	87	E	8	119
7	1	56	B	1	88			
7	2	57	B	2	89			
7	3	58	B	3	90			
7	4	59	B	4	91			
7	5	60	B	5	92			
7	6	61	B	6	93			
7	7	62	B	7	94			
7	8	63	B	8	95			
8	1	64	C	1	96			
8	2	65	C	2	97			
8	3	66	C	3	98			
8	4	67	C	4	99			
8	5	68	C	5	100			
8	6	69	C	6	101			
8	7	70	C	7	102			
8	8	71	C	8	103			

Examples: Activating MIM address 5—Output #1 will set Modbus Coil 40 to the ON state.

Activating MIM address 7—Output #8 will set Modbus Coil 63 to the ON state.

Terminations

Input/Output

The ADVANCEto Modbus I/O Module includes RJ45 connectors for connecting the ADVANCE and the Modbus systems' serial data lines to/from the module. The ADVANCE system and the third-party Modbus interface must be connected to the correct jacks on the module for proper translation to occur. The ADVANCE system connects to the module at RJ45 jack J1. The third-party Modbus interface connects to RJ45 jack J3.

NOTE: Jack J2, labeled *Elemec3* must not be connected (refer to Figure 2).

The individual pinouts for the module and the associated Modbus system must match before making any connections between the systems (refer to Table 6). Category 5 or better twisted pair cable (CAT5) is recommended for connecting each system to the module. It may be necessary to strip the CAT5 cable and connect the individual wires to the appropriate terminals of the external system.

Table 6. RJ45 Connector Pinouts

Connector	System	Pin	Label	Description
J1	ADVANCE	1	GND	Ground
		2	GND	Ground
		3	NC	No Connection
		4	ADV_B_Z	Data ($-$)
		5	ADV_A_Y	Data ($+$)
		6	GND	Ground
		7	NC	No Connection
		8	NC	No Connection
J3	Modbus	1	PGND	Ground
		2	PGND	Ground
		3	PGND	Ground
		4	MOD_A_Y	Data ($+$)
		5	MOD_B_Z	Data ($-$)
		6	NC	No connection
		7	NC	No connection
		8	PGND	Ground

Power

The module operates from a 12–24 V dc power source. DC Power is connected at terminal block TB1 (refer to Figure 2 for the terminal block location and Table 7 for the connector pinout).

After mounting the module:

1. Connect TB1 (PWR) to a 12–24 V dc power source.

2. Connect the positive leg to TB1-1 (V_IN).

3. Connect the return leg to TB1-2 (GND).

4. Connect the earth ground to TB1-3 (EARTH).

NOTE: Do not power this module from existing power supplies installed in an ADVANCE card rack. An additional power supply must be installed in the cabinet to power this module.

Table 7. TB1—DC Power In Pinout

Terminal	Label	Function
1	**+**	DC Positive
2	**–**	DC Negative
3	⏚	Earth Ground

Configuring the Modbus Serial Comport

The Modbus port must be configured to match the connected system. Port Speed, data bits, stop bits, parity, and flow control must be defined:

1. Energize the I/O module.

2. Connect a USB cable between the administrative PC (Windows 7 or later) and the I/O module.

   The USB cable must be a USB-A to USB-B type as shown.

   Upon connection to the I/O module, the serial port drivers will be automatically loaded and a COM port number will be assigned to the USB port on the Administrative PC.

1. Open Windows *Device Manager* Console from the control panel.

2. Locate the COM port assigned to this connection.

   The COM port number assigned to this connection must be entered into the PuTTY application later.

NOTE: If Windows doesn't automatically locate and install the proper Virtual COM Port (VCP) driver then it will need to be downloaded from: www.gai-tronics.com.

NOTE: Windows may assign a new COM port each time an I/O module is connected to the administrative PC. To avoid this, the registry can be modified to reuse the same COM port each time. See Appendix A—Preventing Windows from Assigning Multiple COM Ports for instructions.
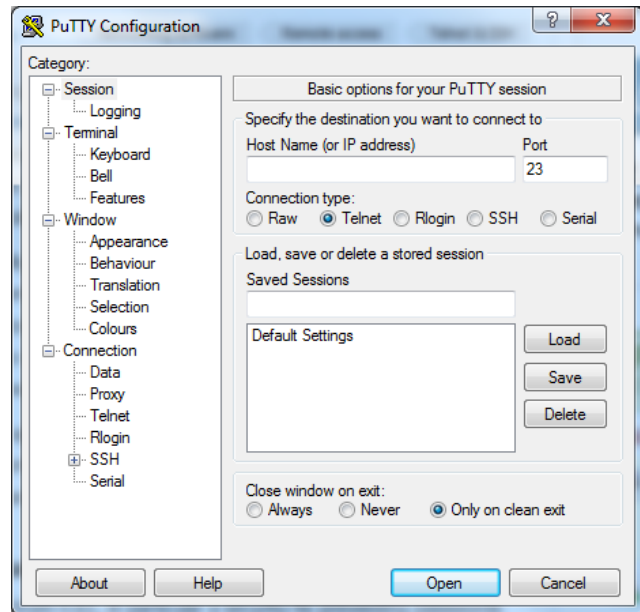
Using PuTTY

PuTTY (version 0.59 or later) is a program which supports serial data connections.

PuTTY can be downloaded from various Internet sites. After downloading, install PuTTY on the administrative computer and then run the application.

1. Run the PuTTY software

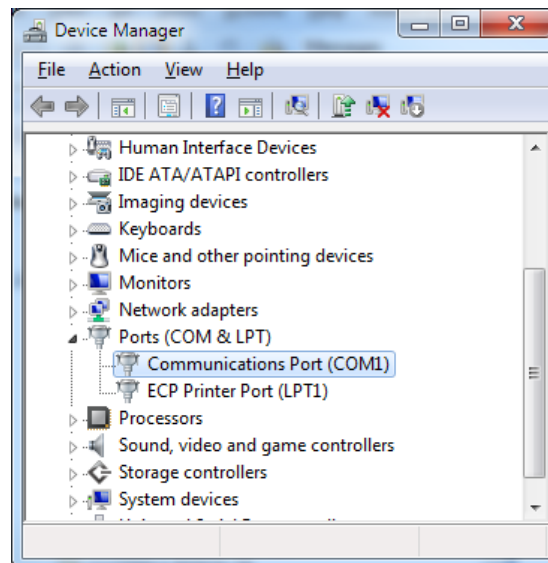   Upon start-up, the PuTTY configuration screen will appear as shown:

2. In the SESSION settings page in the CATEGORY panel select SERIAL for the connection type. Do not worry about the remaining serial port settings here; they will be set in the next screen. Note that sessions can be named and saved for future use when connecting I/O modules.
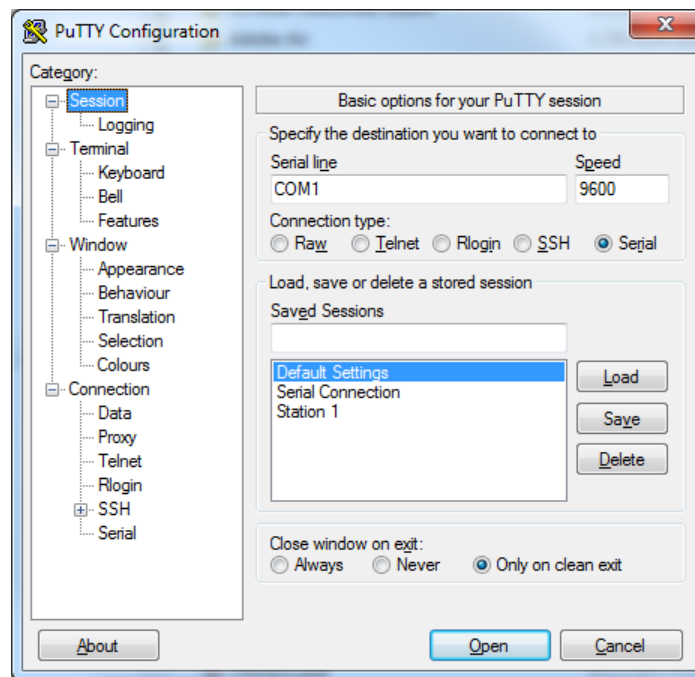
3. Navigate to the SERIAL settings page under the CONNECTION group in the CATEGORY panel.
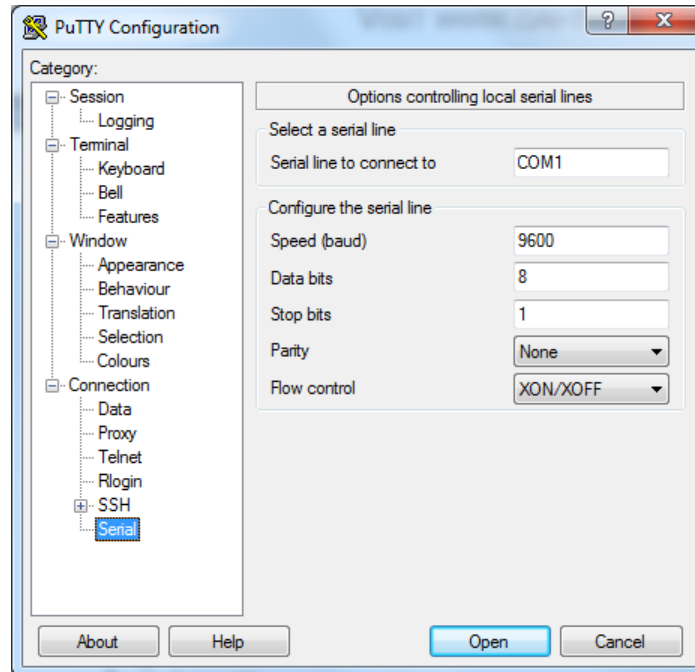

4. Enter the COM port number in the SERIAL LINE TO CONNECT TO field of the PuTTY Serial
    configuration screen. (The COM port number is found on the Device Manager screen below).

5. Enter the I Factory Default serial data line parameters in the PuTTY configuration screen above as
    follows:

    - Speed (Baud): 19200   - Parity: None

    - Data Bits: 8   - Follow Control: None

    - Stop Bit: 1

6. Select OPEN. The following log-in screen will appear upon successful connection to the I/O Module.
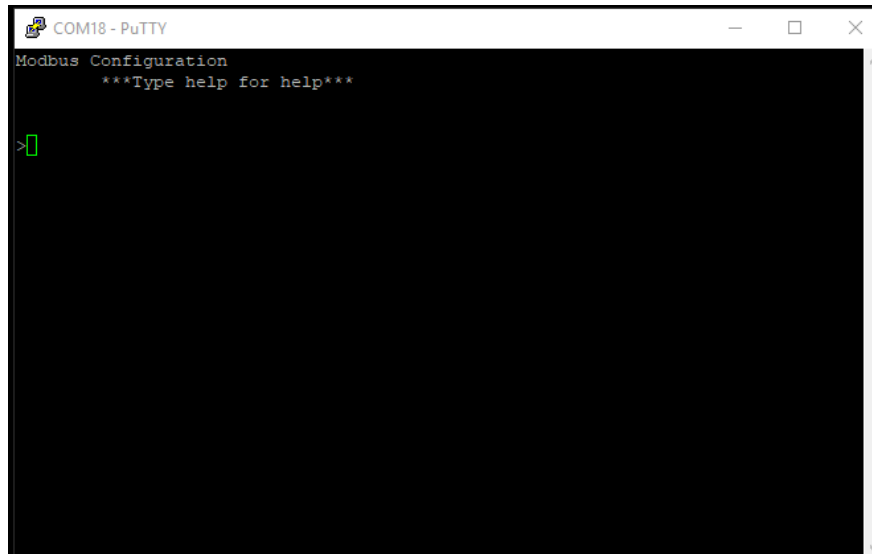
Upon successful connection to the module, the Modbus serial port can be configured to match the parameter of the Modbus Control system being connected to the I/O module.

Checking the Firmware Version

To check the firmware version of the I/O module, enter the command:

getversion

The firmware version is returned.

Setting the Baud Rate for Modbus

To set the baud rate, enter the command:

setbaudrate xxxxx

where *xxxxx* represents the baud rate (Valid baud rate entries are: **2400, 4800, 9600, & 19200**.)

To check the current baud rate setting enter the command:

getbaudrate

Setting the Data Bits, Stop Bits, Parity and Line Control for Modbus

To set the serial line data parameters, enter the command:

setlinecontrol usart_xyz

Where x=data bits, y=parity and z=stop bits.

Examples: *setlinecontrol usart_8n1* = **8** data bits, **no** party , *1* stop bit
    setlinecontrol usart_8o1 = **8** data bits, **odd** party , **1** stop bit
    setlinecontrol usart_8e2 = **8** data bits, **even** party , **2** stop bits

To check the current setting of the line parameters, enter the command:

getlinecontrol

Setting the Modbus Mode

The I/O Module works in two Modbus Modes (ASCII and RTU). Select the desired operating mode by entering either of the following commands:

- *setmode ascii*—ASCII Mode

- *setmode rtu*—RTU Mode

To check the current setting of the Modbus operating mode, enter the command:

   getmode

Troubleshooting

To simplify the troubleshooting process, refer to the following table. If the problem cannot be solved through the use of the verification methods below, contact the GAI-Tronics Customer Service.

Table 8. Troubleshooting

Symptom	Possible Cause
J1 or J3 LED not illuminated	- systems are not connected to the correct RJ45 connectors (Figure 2) - the pinouts of the module and the connected systems must match (Table 6) - J1 is not connected - power is not applied to the module - connected systems are not energized and/or operating normally - switches (S1, S2, and S3) configured with incorrect addresses (Table 2)
3V3 LED not illuminated	power is not applied to the module (Figure 1)
No apparent connection between ADVANCE and third-party Modbus interface	- systems are not connected to the correct RJ45 connectors (Figure 2) - the pinouts of the module and the connected systems must match (Table 6) - J1 is not connected - power is not applied to the module - connected systems are energized and operating normally - switches (S1, S2, and S3) configured with incorrect addresses (Table 2)

Service and Spare Parts

If the equipment requires service or spare parts, contact your Regional Service Center for assistance. If service is required, a return authorization number (RA#) will be issued. 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 GAI-Tronics' warranty policy. 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 with identifying the Regional Service Center closest to you.

Specifications

Electrical

Power requirements .... 12–24 V dc (12 V dc nominal)

Current draw .... 79 mA maximum @ 12 V dc

                                                                              40 mA maximum @ 24 V dc

Number of Modbus RTU devices 1

Number of simulated ADVANCE I/O Modules 1–10

Terminations:

        Power .... 3-pt Terminal Block

        Comport Programming .... USB

        ADVANCE RS485 Serial Data RJ45

        Modbus RTU RS485 Serial Data RJ45

Mechanical

PCBA Dimensions .... 2.90 H × 4.0 W in (73.6 H × 101.6 W mm)

Enclosure Dimensions .... 3.16 H × 4.22 W × 1.89 D in (80.28 H × 107.19 W × 48.01 D mm)

Weight (with enclosure) .... 0.44 lb

Environmental

Temperature range (operating/storage) .... 0 °C to 50 °C

Approvals

Title 47, Part 15 (47 CFR 15) Class A device

Appendix A—Preventing Windows from Assigning Multiple COM Ports

⚠**WARNING**⚠ —Serious problems might occur if you modify the registry incorrectly. These problems might require that you reinstall the operating system.

To prevent Windows from assigning a new COM port number each time a new device with a FT232RL IC is plugged into a USB port, the FTDI enumeration instructions must be DISABLED. This is done by editing the registry on the Administrative computer. Two entries must be set in the following key: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\UsbFlags register.

They are:

- IgnoreHWSerNum04036001

- IgnoreHWSerNum04036010

    Each entry must have a value of *01*.

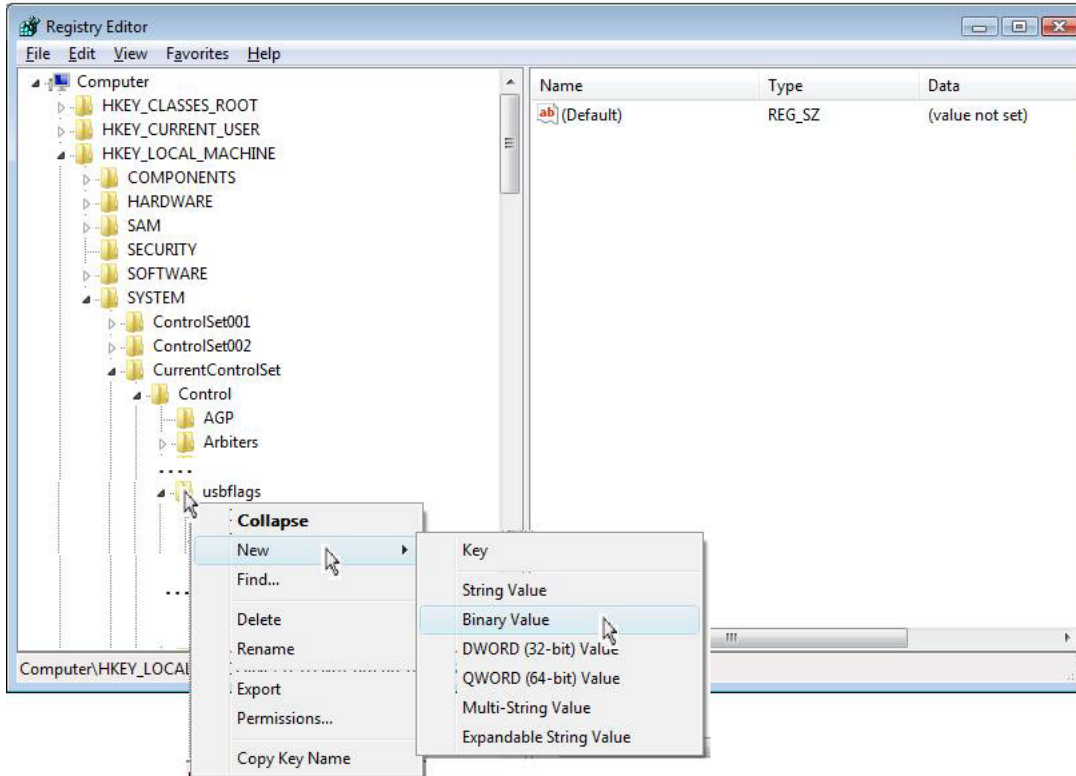Perform the following steps to edit the registry:

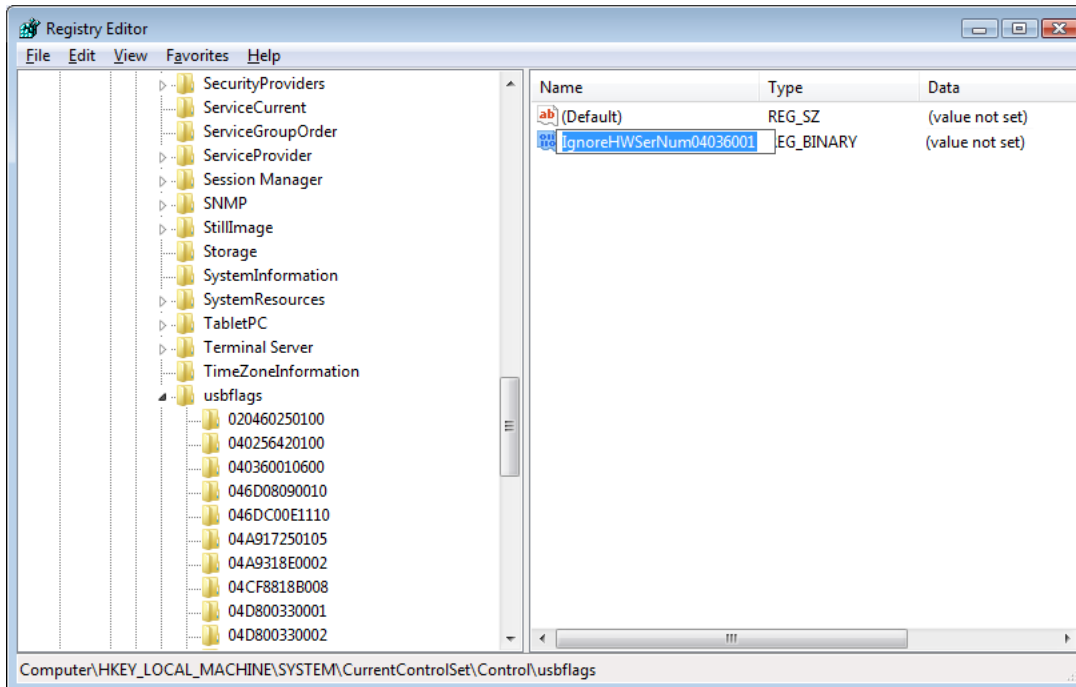1. Click the START MENU, select RUN and type *regedit*.
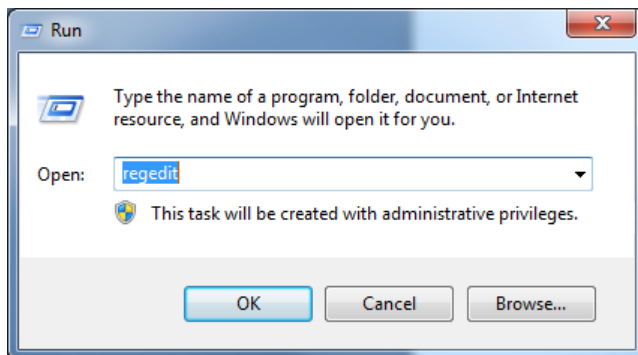
2. Navigate to HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\usbflags.
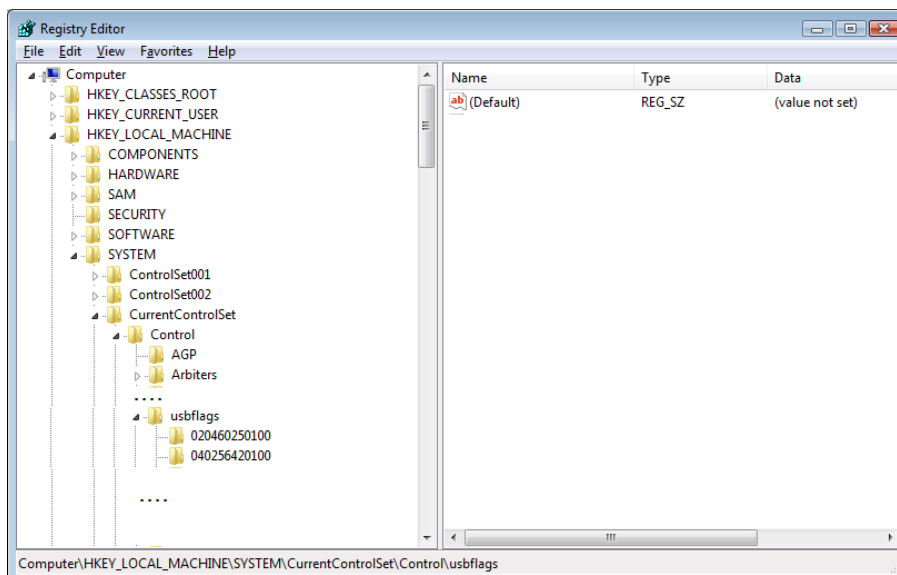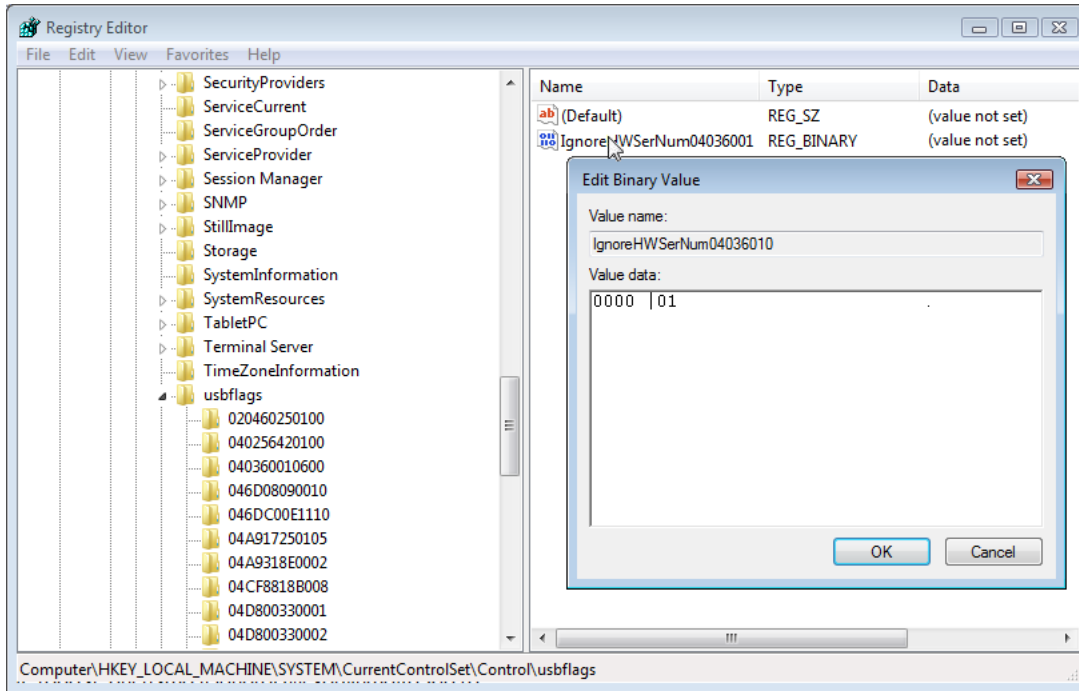
3. Right-click usbflags.
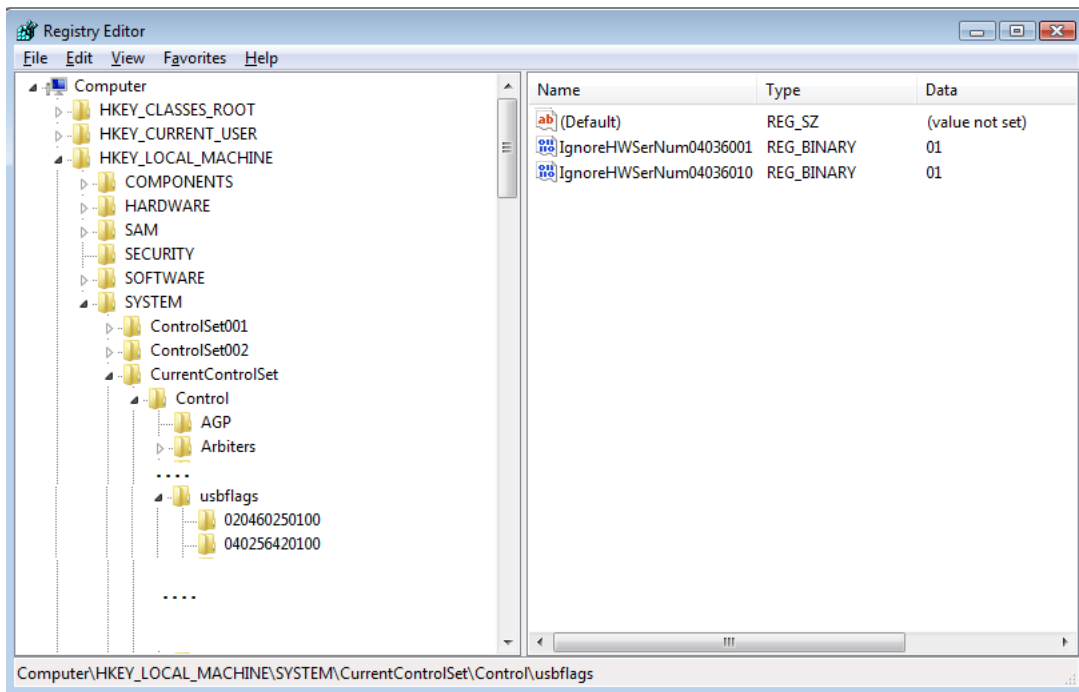
    1. Select NEW.

    2. Select BINARY VALUE.

4. Name the new entry: *IgnoreHWSerNum04036001*.

5. Double-click the new entry
   Enter: *01* then click OK.

6. Add another new Binary Value entry to usbflags as described above.

   1. Name the new entry: *IgnoreHWSerNum04036010*.

   2. Assign the value: *01*.

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.