1218C External Input/Output Expansion Module

Installation, Operation, and Maintenance Instructions

The 1218C External Input/Output Expansion Module is an accessory to the 1218C Electronic Tank Gauge. This module provides an additional 6 digital inputs, and 6 relay outputs when connected to a 1218C Electronic Tank Gauge

Failure to follow any or all of the warnings and instructions in this document could result in a hazardous liquid spill, which could result in property damage, environmental contamination, fire, explosion, serious injury or death.

Le fait de ne pas se conformer à l'un ou l'autre des avertissements ou à l'une ou l'autre des directives apparaissant dans ce document pourrait donner lieu à des déversements de liquides dangereux, lesquels pourraient engendrer des dommages matériels, des risques de contamination environnementale, d'incendie ou d'explosion, des blessures graves ou la mort.

Specifications

Input Power
100 – 240 VAC, 50/60Hz

Operating Temperature
-40°F to 140°F (-40°C to 60°C)

Enclosure Rating
NEMA 4X

Digital Inputs (6)
Dry Contact (DI to GND) – ON: Closed / OFF: Open

Relay Outputs (6)
2 Amp maximum at up to 250 VAC or 30 VDC

Maximum Wiring Distance
Ethernet – 330ft (CAT5e cable recommended)
Inputs – 500ft (22 AWG wire recommended)
Outputs – 500ft (18 AWG wire recommended

Installation

WARNINGS

- **Fire Hazard –** Death or serious injury could result from spilled liquids.
- You must be trained to install or maintain this Electronic Tank Gauge. **Stop** now if you have not been trained.
- Any modification of this unit beyond what is outlined in this instruction will void product warranty.
- For your safety, it is important to follow local, state, federal and/or OSHA rules that apply to working inside, above, or around the storage tank and piping area. Use all personal protective equipment required for working in the specific environment.
- Tanks could be under pressure. Vapors could be expelled from tank vents, piping, valves or fittings while performing maintenance. Vapors could catch fire or cause an explosion. **Avoid** sparks, open flame, or hot tools when working on tank system.
- Use a dampened cloth when cleaning the alarm enclosure to prevent static buildup and discharge.
- In the event of malfunction, contact Morrison Bros. Co. Customer Service.

AVERTISSEMENTS

- **Risque d'incendie –** Un déversement de liquide pourrait entraîner des blessures graves ou la mort.
- Vous devez avoir reçu une formation pour installer cette jauge de réservoir électronique ou en assurer la maintenance. Arrêtez-vous immédiatement si vous n'avez reçu aucune formation à cet effet.
- Toutes les modifications apportées à cette unité autres que celles indiquées dans ces directives engendreront l'annulation de la garantie du produit.
- Pour assurer votre sécurité, il est important de vous conformer à la réglementation locale, d'État, fédérale ou OSHA régissant les travaux à l'intérieur, au-dessus ou autour du réservoir de stockage et de la zone de canalisation. Utilisez tout l'équipement de protection individuelle exigé pour travailler dans l'environnement spécifique.
- Les réservoirs pourraient être sous pression. Des vapeurs pourraient être expulsées des conduits d'aération, des canalisations, des soupapes ou des raccords du réservoir durant la maintenance. Les vapeurs pourraient s'enflammer ou engendrer une explosion. Évitez les étincelles, les flammes nues ou les outils chauds lors de travaux menés dans le système du réservoir.
- Utilisez un linge humide pour nettoyer l'enceinte de l'alarme afin de prévenir l'accumulation d'électricité statique et les décharges.
- En cas de défaillance, communiquez avec le service à la clientèle de Morrison Bros. Co.

WARNING: This device is intended to be installed in an Ordinary Location (Unclassified Location) and be used with other Ordinary Location devices.

Mounting

To maintain the NEMA 4X rating

- Three openings have been provided in the bottom of the NEMA 4X enclosure for connection and wiring. Only use Thomas & Betts Cat. No. H050GR-TB or H050-TB or equivalent hubs in the one opening for ½" conduit and Thomas & Betts Cat. No. H075GR-TB or H075-TB or equivalent hubs in the two openings for ¾" conduit.
- Mounting tabs have been provided with the product to mount the enclosure; do not make additional holes in this enclosure.
- Ensure that both cover latches are latched at all times.

Failure to follow these instructions voids any assurance that the enclosure is NEMA 4X.

Wiring

The 1218C External Input/Output Expansion Module (I/O Module) communicates with the 1218C Electronic Tank Gauge (1218C) over an Ethernet connection. The I/O Module contains a 2-port Ethernet switch that can be used to daisy chain the Ethernet connection to a network allowing both devices to be accessible from the network. This is especially useful for new installations to reduce the amount of Ethernet cabling and/or networking devices required to connect the I/O Module and 1218C to a computer or network.

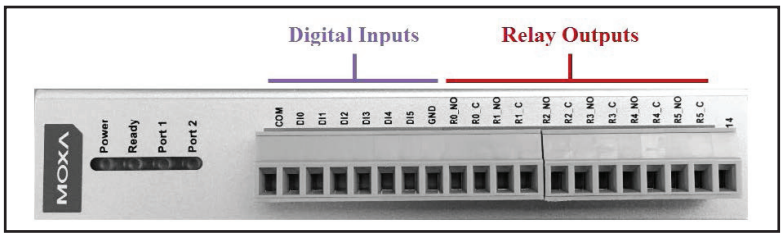


Figure 1— I/O Module Input and Relay Connections

Figure 1 shows the digital input and relay output connections of the Moxa E1214-T device contained within the I/O Module. Up to six dry or wet contact devices (see specifications section) can be connected to the digital input channels (DI). The dry contact inputs must share a common ground connection (GND), and the wet contact inputs must share a common source/return (COM). The proper connections for dry contact and wet contact devices are illustrated in Figure 2 and Figures 3 and 4, respectively.

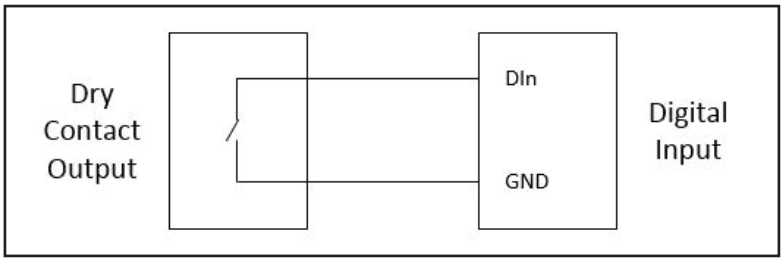


Figure 2— Digital Input connection to Dry Contact Output

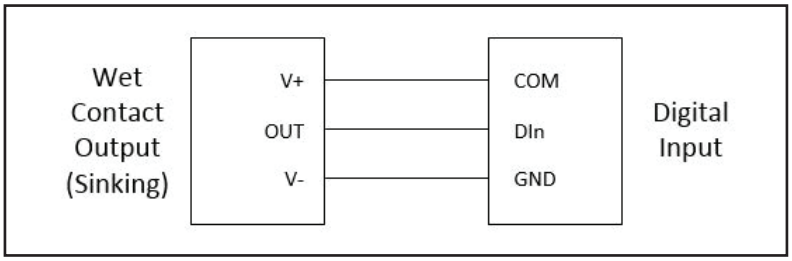


Figure 3—Digital Input wiring to Sinking Wet Contact Output (NPN)

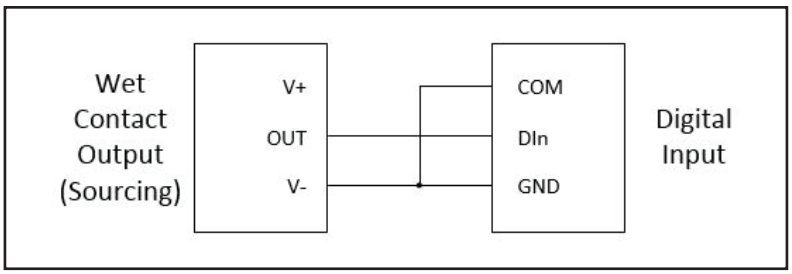


Figure 4—Digital Input wiring to Sourcing Wet Contact Output (PNP)

Up to six relay outputs can be connected to AC or DC loads (see specifications section). The I/O Module does not provide power to the loads. The loads being driven must supply their own power. Figure 5 shows the proper connection of a relay output to a power source and load.

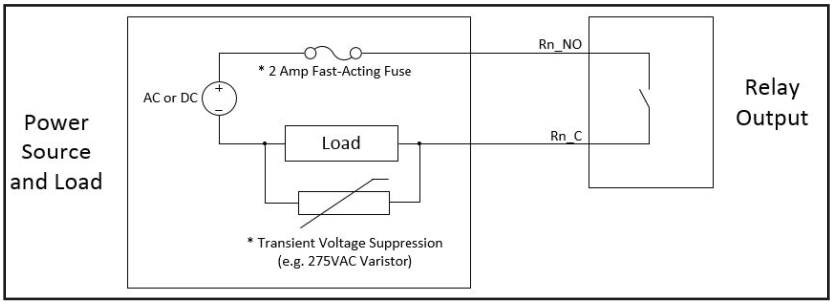


Figure 5—Relay Output Connection

The input power should be wired to the power supply connections labelled ‘L’, ‘N’, and Ground (symbol) in the I/O Module as shown in Figure 6. A grounding stud is provided to tie all ground connections together.

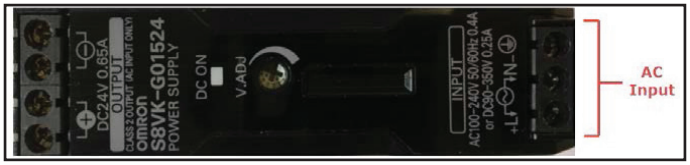


Figure 6—AC Input Connections

IMPORTANT: To prevent premature failure of the relay contacts it is strongly recommended to use a fuse and transient voltage suppressor (e.g. varistor, TVS diode). See Figure 5 for details.

Preparation

Before starting the configuration process find the static IP address of the 1218C Electronic Tank Gauge and record this address below as it will be used during the configuration process. If the 1218C Console is using DHCP you will need to configure it with a static IP address before continuing. Refer to 'Configuring Your 1218C' of the 'Steps to Configure the 1218C' section in the '1218C Electronic Tank Gauge IOM' for details on configuring a static IP address.

Next you will need to obtain a static IP address for the I/O Module. Record this IP address below for reference throughout the configuration process.

IMPORTANT: The 1218C External I/O Module and 1218C Electronic Tank Gauge must be allocated static IP addresses by the network administrator and must not conflict with any other devices on the network.

Static IP Address Assignments:

1218C External I/O Module __ __ __ . __ __ __ . __ __ __ . __ __ __

1218C Electronic Tank Gauge __ __ __ . __ __ __ . __ __ __ . __ __ __

Finally, you will need to download and install the Moxa ioSearch Configuration Utility to your PC. The software can be downloaded by going to the product webpage.

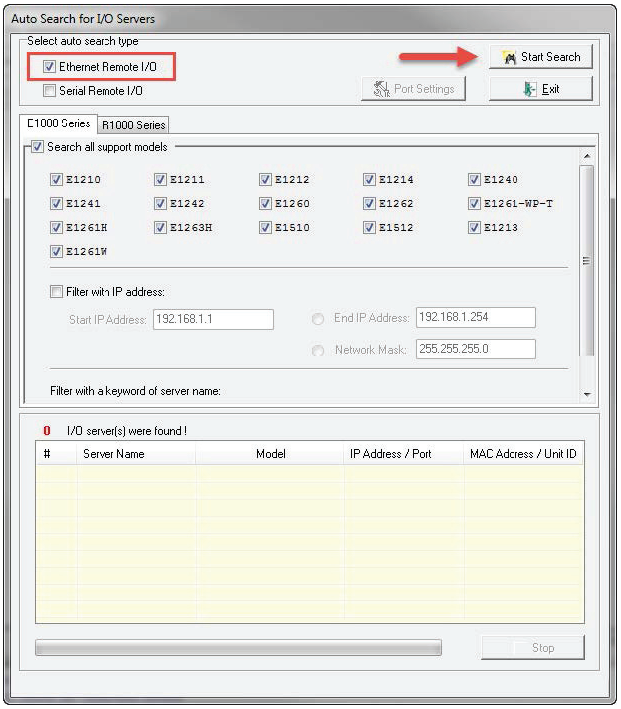
https://www.moxa.com/product/ioLogik_E1214.htm

Next select 'Drivers & Software'. The ioSearch Configuration Utility can be found under 'Software→Utilities'.

Initial Configuration

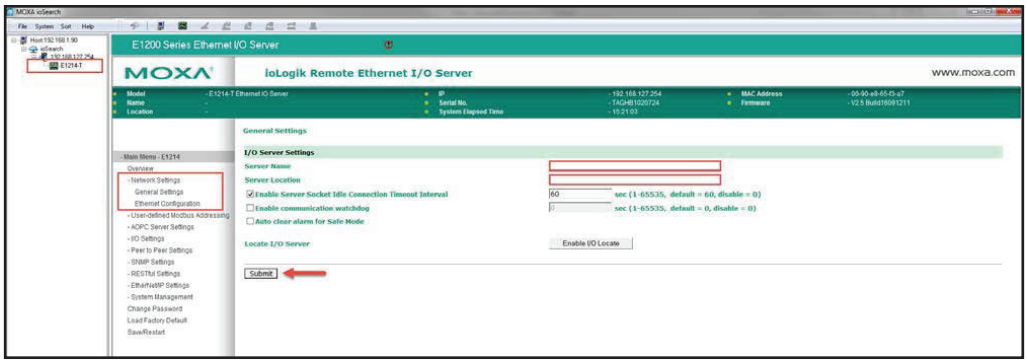
The I/O Module must be configured using the Moxa ioSearch Configuration Utility before it can communicate with the 1218C Electronic Tank Gauge.

1. Ensure power is applied to the I/O Module
2. Run the Moxa IoSearch Utility from a computer "direct connected" or "network connected" to the I/O Module.
3. Select only 'Ethernet Remote I/O' and click 'Start Search'

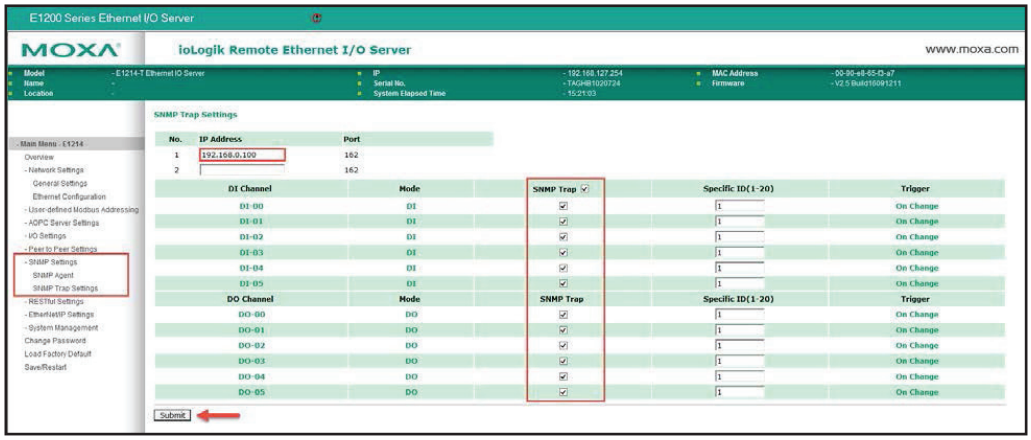


4. Start by configuring the ‘Network Settings’…
    a. Click on the ‘E1214-T’ device in the navigation pane on the left side of the screen to open the configuration page. If no devices were found verify the E1214-T lights for ‘Power’, ‘Ready’, and ‘Port’ are illuminated/flashing. See the “ioLogik E1200 Series User’s Manual” for help troubleshooting.
    b. Under ‘General Settings’ set the ‘Server Name’ and ‘Server Location’ and click ‘Submit’ to save the changes. These fields will help identify this device from other devices on the network.
    c. Under ‘Ethernet Configuration’ set the static ‘IP Address’, ‘Subnet Mask’, and ‘Gateway’ then click ‘Submit’ to save the changes.

NOTE: Submitting configuration changes to the device requires a restart. However, this restart can be postponed until all configuration changes have been made.



5. Next configure the ‘SNMP Settings’…
    a. Under ‘SNMP Agent’ ensure ‘SNMP’ is set to ‘Enable’ and click ‘Submit’ to save the change (if necessary).
    b. Under ‘SNMP Trap Settings’ enter the 1218C Electronic Tank Gauge IP Address (recorded above) in the first text box.
    c. Click the checkbox next to ‘SNMP Trap’ to select all traps and click ‘Submit; to save the changes.



6. Next, click ‘Change Password’ and enter a new password for the device. Leave the ‘Old Password’ blank and click ‘Submit’.
7. Finally, click the ‘Save/Restart’ to reboot the device for the changes to take effect.
8. Wait for the device to reboot and verify all settings are correct.

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Operation

WARNINGS

- **Fire Hazard –** Death or serious injury could result from spilled liquids.
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AVERTISSEMENTS

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- Toutes les modifications apportées à cette unité autres que celles indiquées dans ces directives engendreront l'annulation de la garantie du produit.
- Pour assurer votre sécurité, il est important de vous conformer à la réglementation locale, d'État, fédérale ou OSHA régissant les travaux à l'intérieur, au-dessus ou autour du réservoir de stockage et de la zone de canalisation. Utilisez tout l'équipement de protection individuelle exigé pour travailler dans l'environnement spécifique.
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- Utilisez un linge humide pour nettoyer l'enceinte de l'alarme afin de prévenir l'accumulation d'électricité statique et les décharges.
- En cas de défaillance, communiquez avec le service à la clientèle de Morrison Bros. Co.

The operation of the 1218C External I/O Module is configured through the web interface of the 1218C Electronic Tank Gauge. Each of the I/O Module's digital inputs can be configured to generate alarm conditions that can sound the buzzer, activate relay outputs, send email or text notifications, and/or create event log entries. In addition the I/O Module's relay outputs can be configured to activate on any combination of alarm conditions within the 1218C Electronic Tank Gauge.

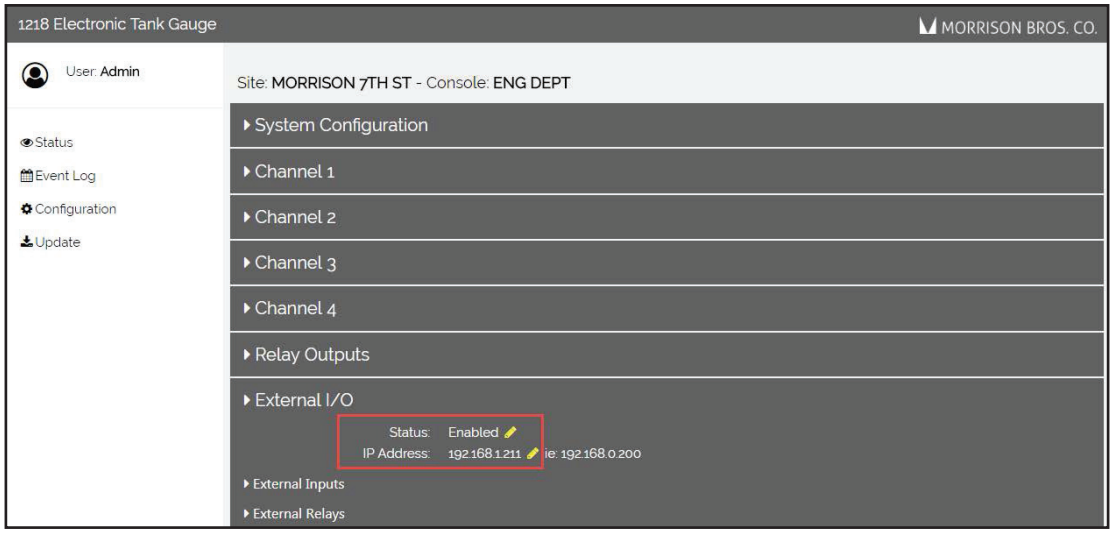
Before configuring the operation of the I/O Module, ensure the 1218C Electronic Tank Gauge firmware is up-to-date. Refer to 'Firmware Upgrades' of the 'Maintenance' section in the '1218C Electronic Tank Gauge IOM' for details on updating the 1218C firmware. The latest firmware and documentation can be found under 'Downloads' on the 1218C product webpage.

http://morbros.com/1218

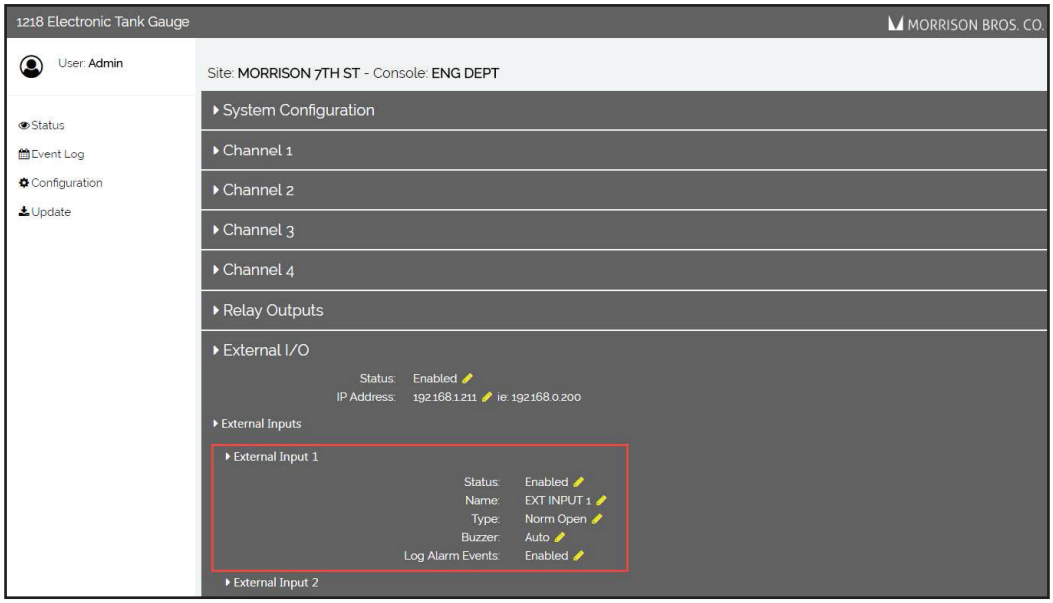
Configuration

Once the 1218C firmware is up-to-date, open a web browser and go to the 1218C configuration web page to begin configuring the operation of the I/O Module.

1. Expand the 'External I/O' section and set the 'IP Address' of the I/O Module (recorded above) and then set the 'Status' to 'Enabled'.

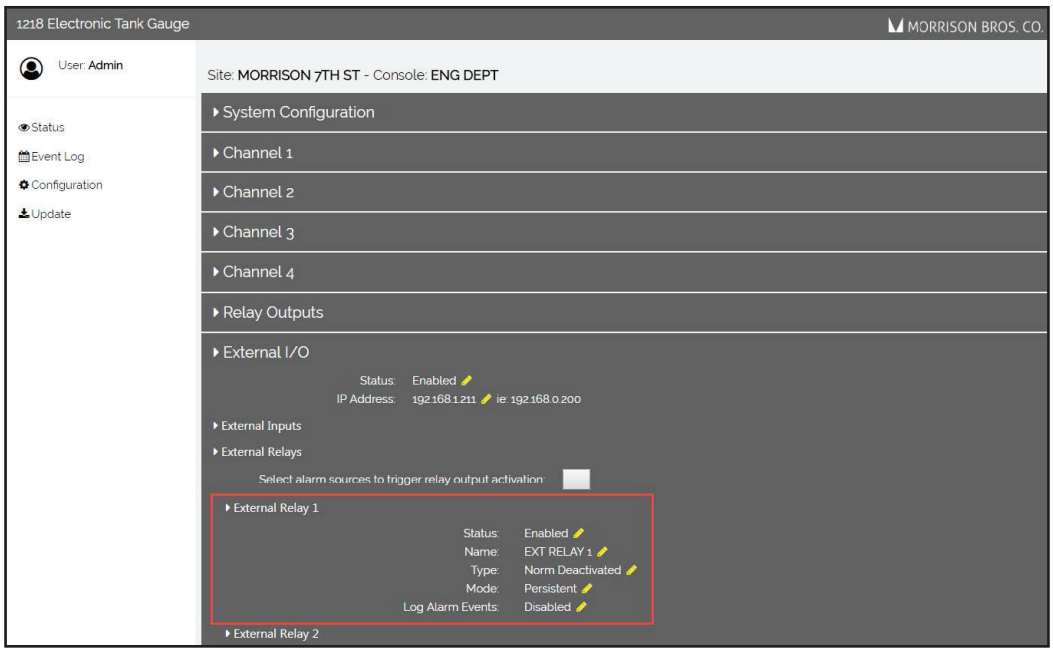


2. Expand the 'External Inputs' section and select an External Input that is to be enabled…
   a. Set the 'Name' setting (up to 14 characters)
   b. Set the 'Type' setting (Normally Open or Normally Closed)
   c. Set the 'Buzzer' setting (Auto-Silence, On, or Off)
   d. Set the 'Log Alarm Events' setting (Enabled or Disabled)
   e. Set the 'Status' setting to 'Enabled'

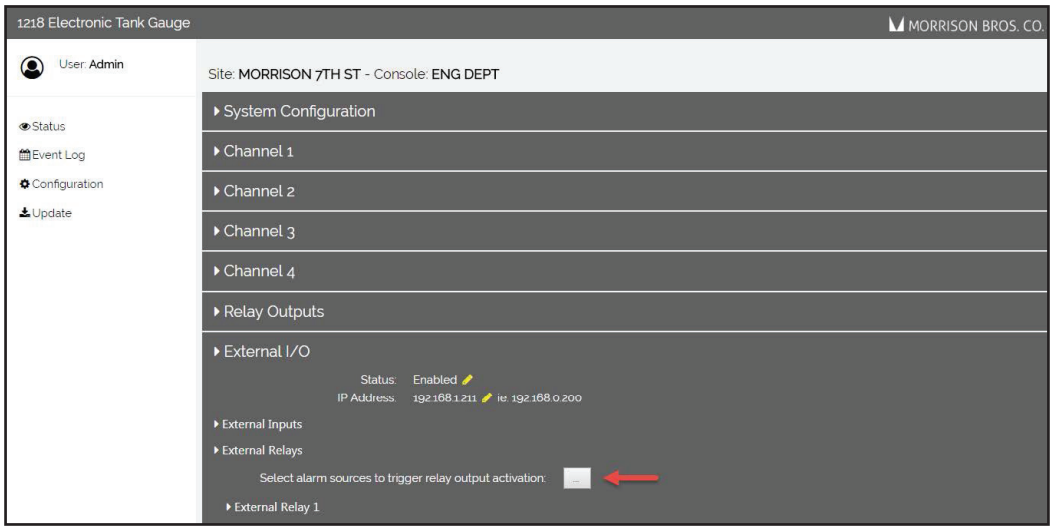


3. Repeat the previous step for any other inputs that are to be enabled.
4. Expand the 'External Relays' section and select an External Relay that is to be enabled…
   a. Set the 'Name' setting (up to 14 characters)
   b. Set the 'Type' setting (Normally Activated or Normally Deactivated)
   c. Set the 'Mode' setting (Persistent, Non-Persistent, or Auto-Timeout)
   d. Set the 'Log Alarm Events' setting (Enabled or Disabled)

e. Set the ‘Status’ setting to ‘Enabled’

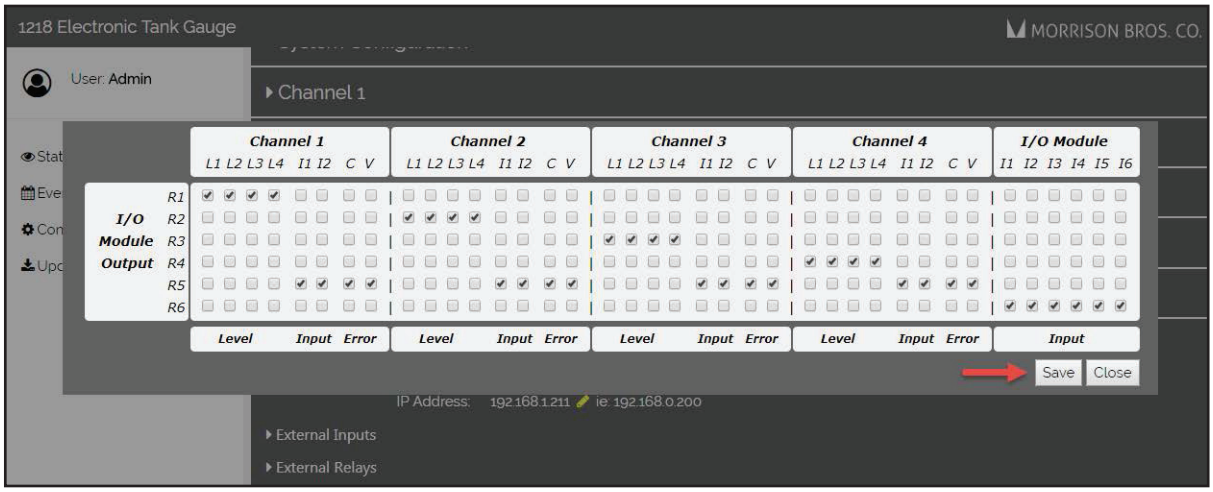


5. Repeat the previous step for any other relays that are to be enabled.
6. Next, you must assign alarm sources to each of the previously configured External Relays. Click on the button to ‘Select alarm sources to trigger relay output activation’

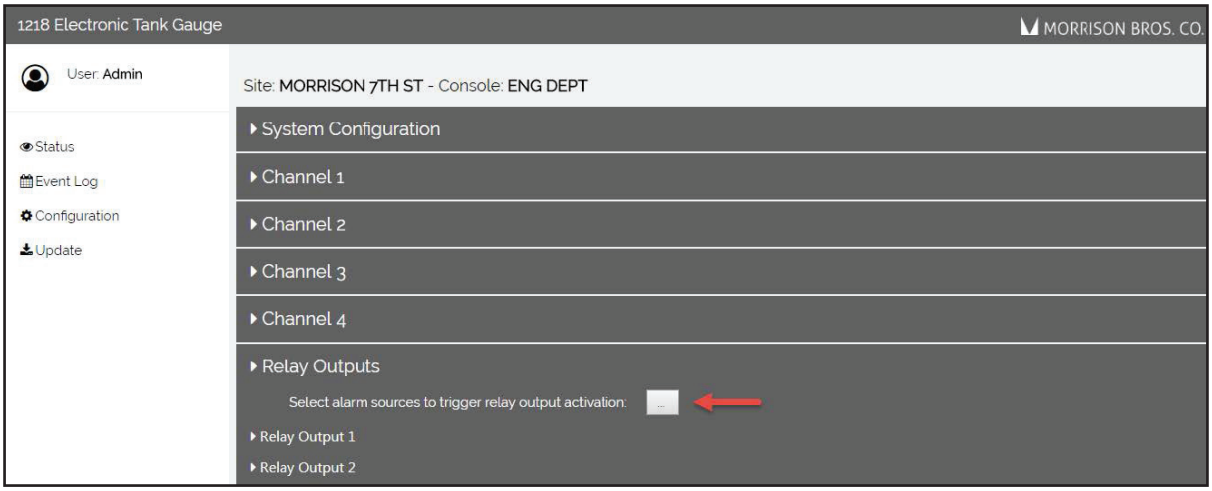


7. For each I/O Module Output (rows of table) select the desired alarm source(s) and click the ‘Save’ button to finish.

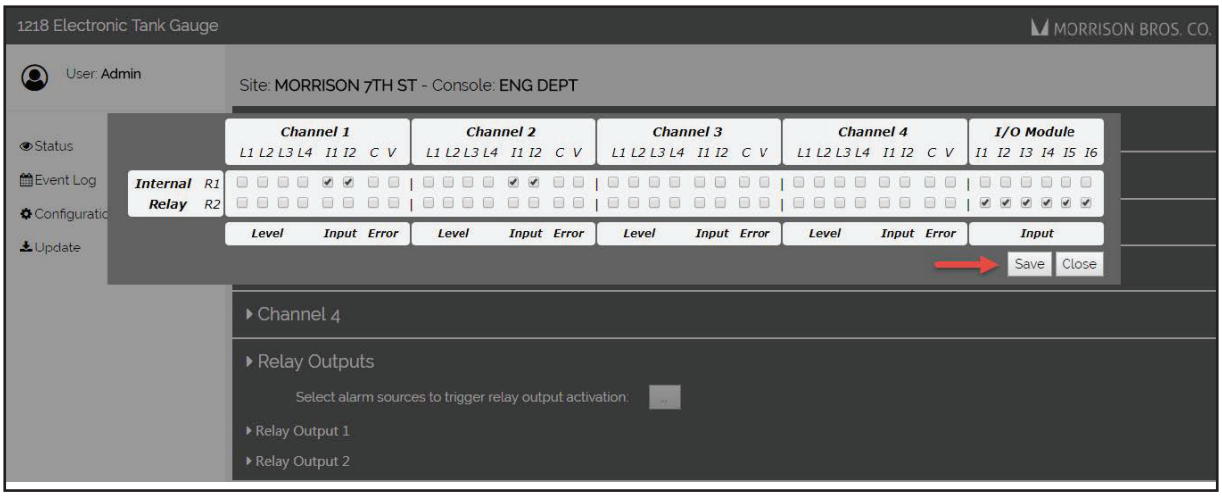
NOTE: Level alarms are designated L1-L4, input alarms are designated I1-I6, while communication and low voltage alarms are designated C and V, respectively.



8. To use any of the previously configured External Inputs to trigger an internal 1218C relay output, expand the 'Relay Outputs' section and click on the button to 'Select alarm sources to trigger relay output activation.'



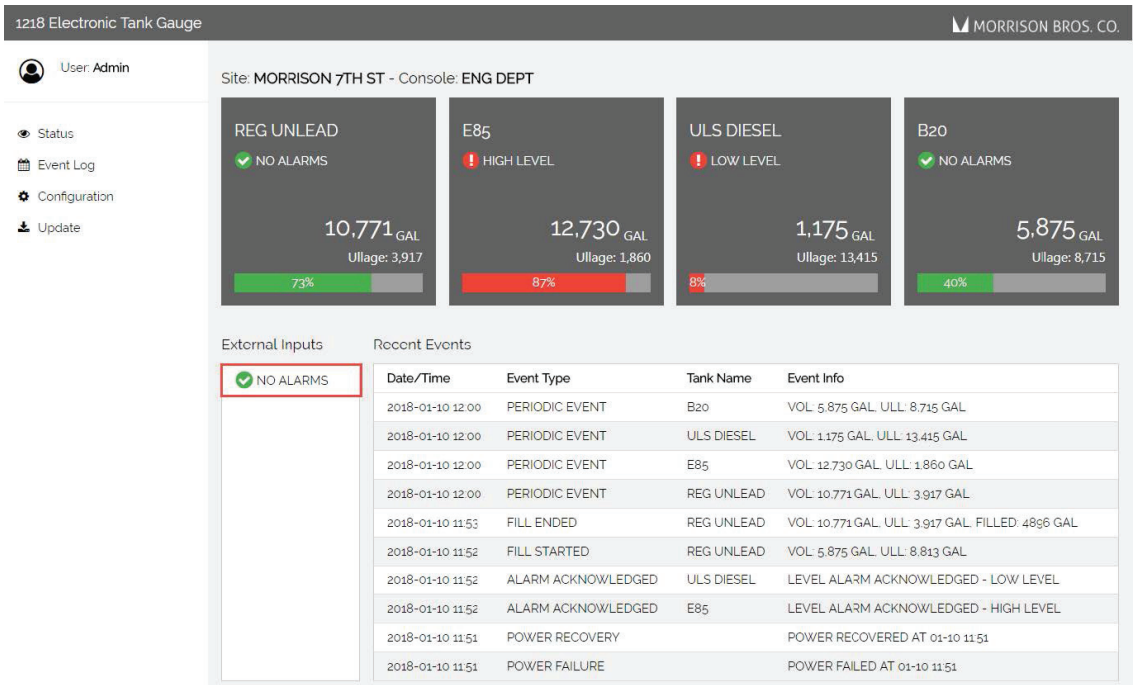
9. For each Internal Relay (rows of table) select the desired alarm source(s) and click the 'Save' button to finish.



10. To enable Email or Text notifications, expand the ‘Email Notifications’ section…
    a. Set the ‘Type’ setting (Email or Text)
    b. Set the ‘Email Address’ (make sure it is correct before proceeding)
    c. Set the ‘Input Alarms’ setting to ‘Enabled’
    d. Set the ‘Email Status’ setting to ‘Enabled’

Verification

After completing the configuration of the I/O Module you must verify that it is operating as intended. Start by verifying that the I/O Module is enabled and communicating properly with the 1218C. Open the status web page and verify that the ‘External Inputs’ section does not show “DISABLED” or “COM ERROR”. Instead it should display “NO ALARMS” or any active alarms if the sensors are connected and in the active state.



Next verify that each input is being detected by the 1218C by activating the input and verifying the External Input alarm shows up on the status web page, or alternatively, look for the flashing LED on the front of the 1218C console. If you have enabled any of the External Relays you must also verify that the relays activate when the configured input alarm is active. Refer to ‘Configuring Your 1218C’ of the ‘Steps to Configure the 1218C’ section in the ‘1218C Electronic Tank Gauge IOM’ for details on the configuration of input sensor alarms and output relays.

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Maintenance

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Refer to the Maintenance section of the '1218C Electronic Tank Gauge IOM'. The latest version can be download from the product webpage under 'Downloads'…

http://morbros.com/1218

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