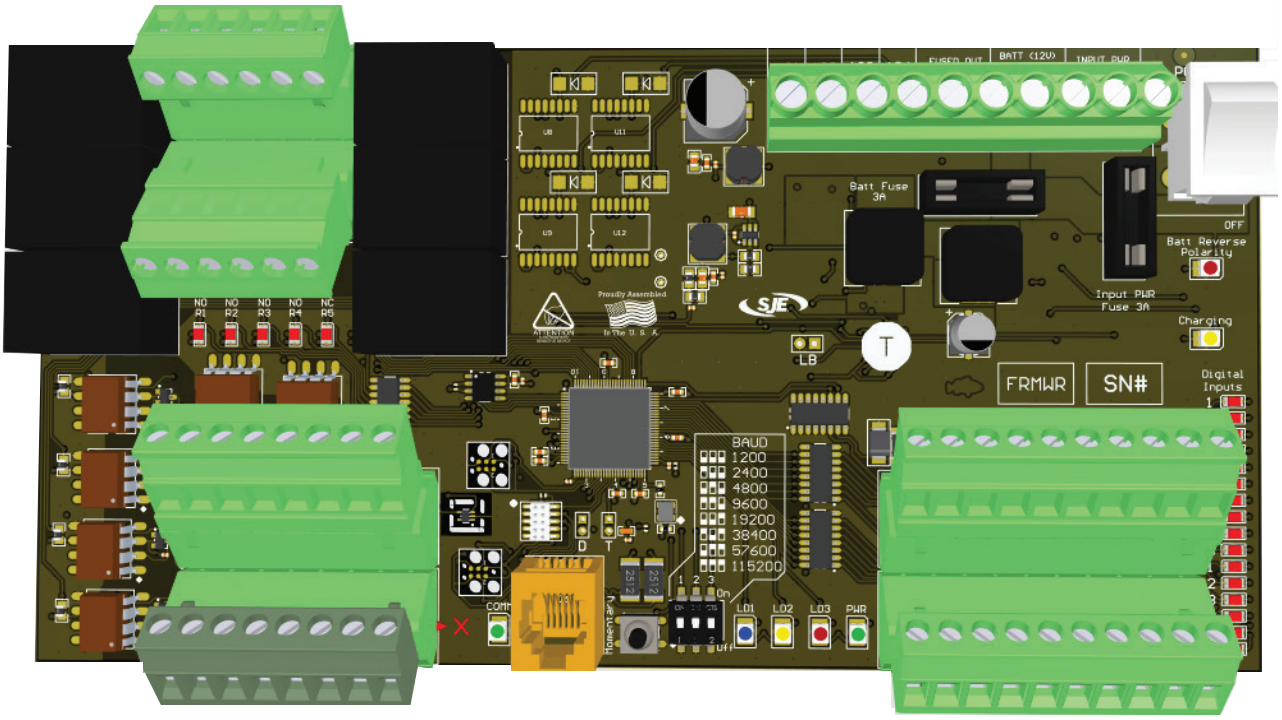
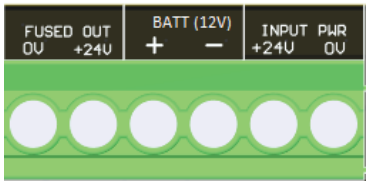
iON28 MODULE

INSTALLATION INSTRUCTIONS



POWER CONNECTIONS/OPERATIONS



INPUT PWR: The I/O module requires 24Vdc, 2.5A (60W power supply) for operation.
The acceptable range is 19~28Vdc. An alarm notification can be sent after a programmable delay if the input power is no longer present.

BATT (12V): A single 12V lead acid battery is required for backup operation and to receive Power Loss alarm notification. Do not use Li ion or other battery technology. Only use Sealed Lead Acid (SLA) type batteries 2Ah to 10Ah. The 12V from the battery is converted to 24Vdc internally.

FUSED OUT: A 24V, 650mA auxiliary output power is available for external devices. This ouput will continue to deliver 24V after the power is removed from the INPUT PWR terminals and operate off the battery. (DC-UPS) The autonomy will depend on the battery capactiy and load. This circuit has an electronic fuse with an auto-reset feature.

POWER ON/OFF switch and indications:

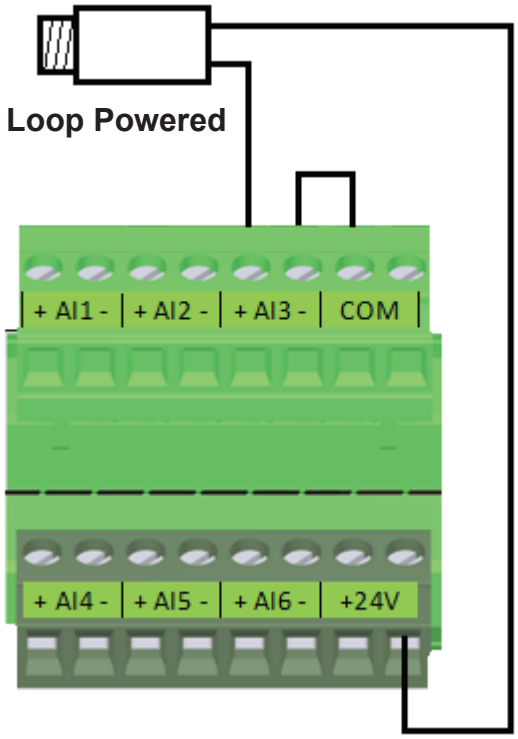
Batt Fuse: 3A battery fuse (automotive type - ATOF).

Input PWR Fuse: 3A 24Vdc incoming power fuse. (automotive type - ATOF).

Fuses are removed during shipping. They are kept in a small bag with the schematics.

ANALOG INPUTS

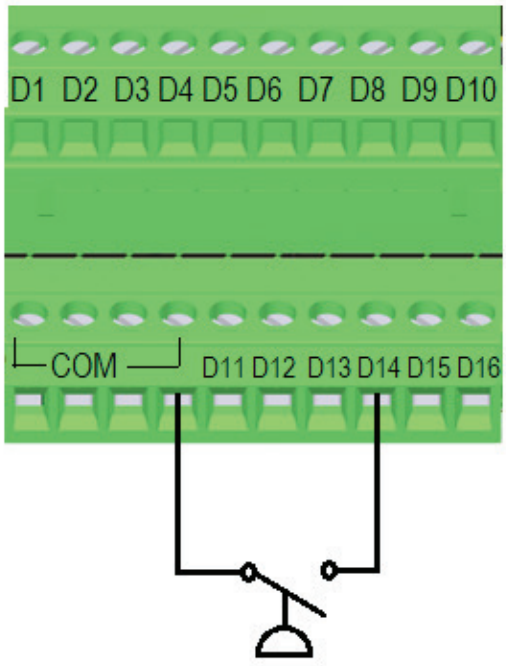
6 analog inputs: 4-20mA differential and optically isolated.
12-bit resolution: (4-20mA = 800-4000 counts)
For loop powered instruments, use the +24V terminal for excitation voltage.
Connect the signal to AIx+, and connect the AIx-terminal to COM.



DIGITAL INPUTS

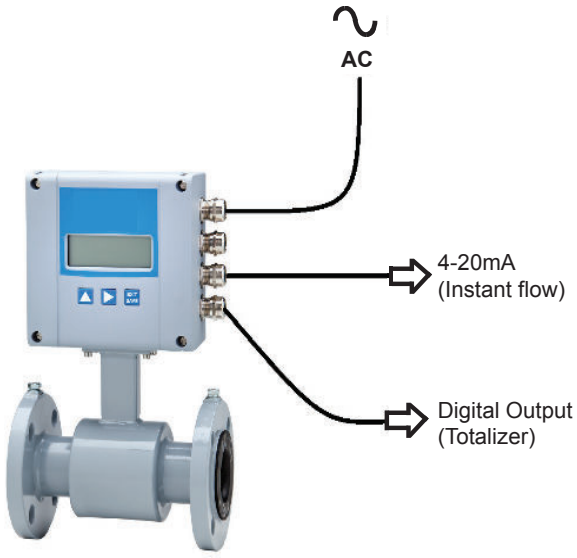
NPN circuitry. (Inputs are at 12Vdc, and COMs are Signal ground)
Connect to COM to activate the input.
Only use potential free contacts to trigger the inputs (dry contacts)
Digital input assignments:

D1	PUMP 1 RUNNING (RUN TIMES/CYCLES)
D2	PUMP 2 RUNNING (RUN TIMES/CYCLES)
D3	PUMP 3 RUNNING (RUN TIMES/CYCLES)
D4	PUMP 4 RUNNING (RUN TIMES/CYCLES)
D5	FLOW TOTALIZER 1
D6	FLOW TOTALIZER 2
D7	ALARM 1
D8	ALARM 2
D9	ALARM 3
D10	ALARM 4
D11	ALARM 5
D12	ALARM 6
D13	ALARM 7
D14	ALARM 8
D15	ALARM 9
D16	ALARM 10

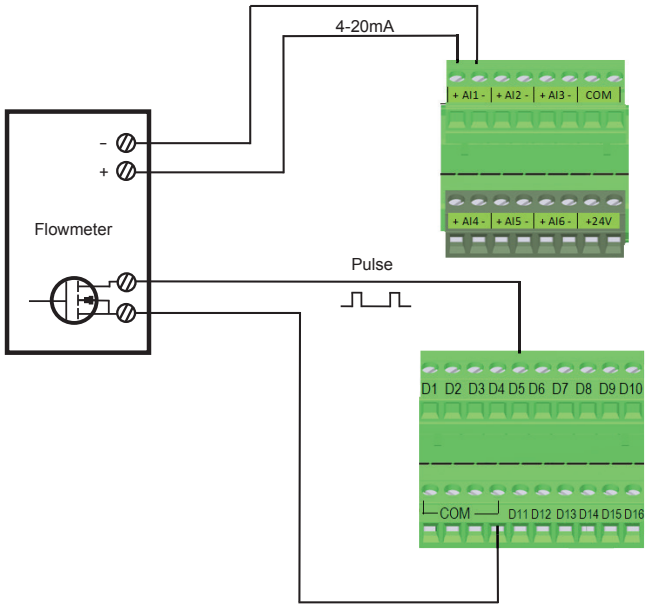


FLOWMETER CONNECTION

It is possible to monitor both the instantaneous flow (4-20mA) and the accumulated volume (Digital inputs D5, D6). Below is a connection example of a magnetic flowmeter. Please refer to your flowmeter manual and/or contact your supplier for setup and wiring assistance.



The **4-20mA signal** can be connected to any of the open Analog inputs (AI1~AI6). This signal from the flowmeter is typically not loop powered.
A ***pulse*** output from the flowmeter is required for volume totalization.
There are 2 digital inputs on the iON28 Module (D5 & D6) designed for volume totalizer derived from a ***gallons/pulse*** signal (example 100 gal = 1 pulse). The max input frequency is 100 Hz. The minimum pulse width is 0.5ms.
Note: These 2 inputs are not for monitoring a frequency output proportional to the flow. When the wiring and flowmeter configuration is complete, the value for the ***gallons/pulse*** found in "Parameters" screen on the web portal must also be changed to match the flowmeter.



Flowmeter Wiring Example

RELAY OUTPUTS

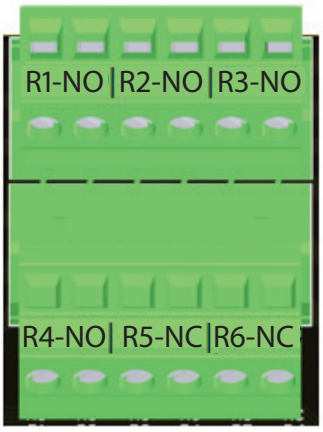
Rated for 250V, 5A (resistive)*
R5 and R6 are Normally Closed (NC) and open upon activation.
Each relay will only activate for 2 seconds (momentary) when the button is pressed on the web portal.

⚠ CAUTION/DANGER

Machine may start unexpectedly and cause serious injury or death. You must have confirmation that all personnel are free and clear from moving parts and the electrical panel before activating the relay remotely.

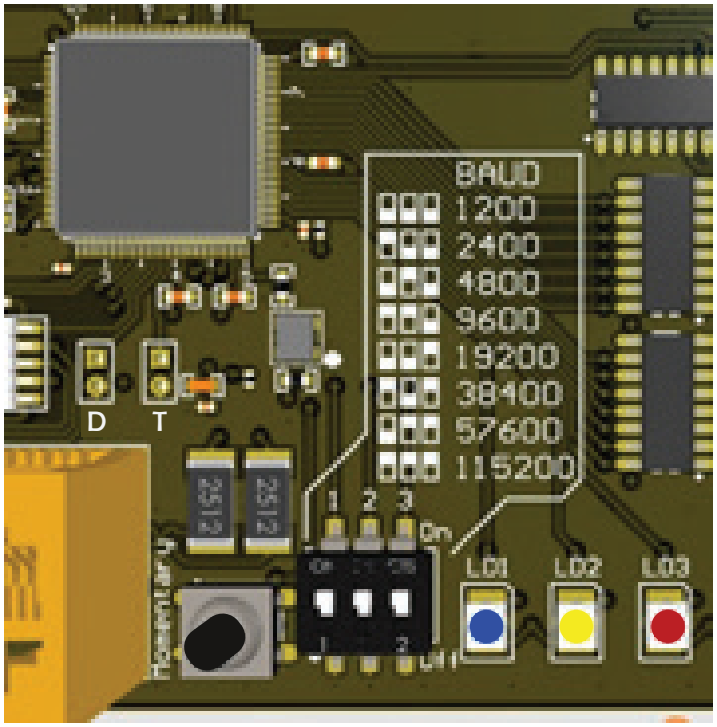
Only allow qualified operators to remotely activate the relay. The relay remote operation must be part of a fail safe electrical circuit that would shutdown the equipment before failing or cause damage/injury.

Local and National safety codes must be followed.



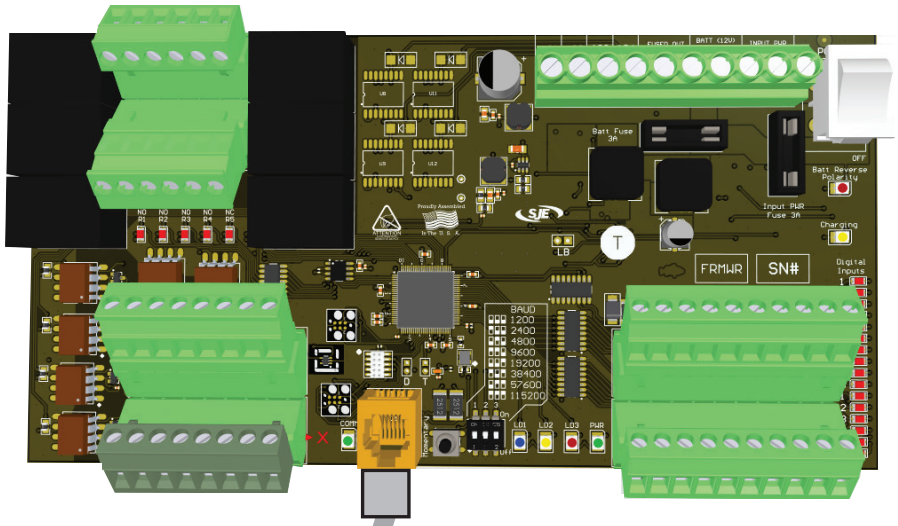
RS 485 PORT BAUD RATE

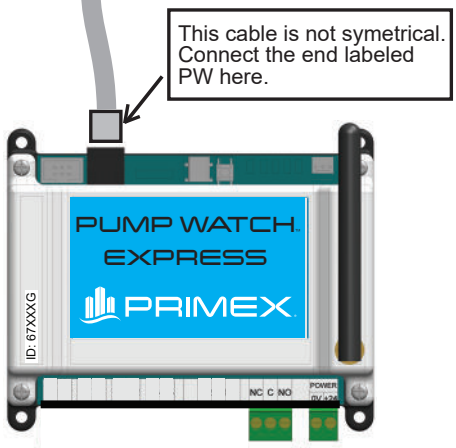
The baud rate can be set via the dip switches on the iON28 Module.
The default is 9600 (required for communication with the Pump Watch™ Express Gateway).



* To meet UL 508A, a Class 2 circuit must be used.

CONNECTING TO THE CELLULAR GATEWAY MODEL

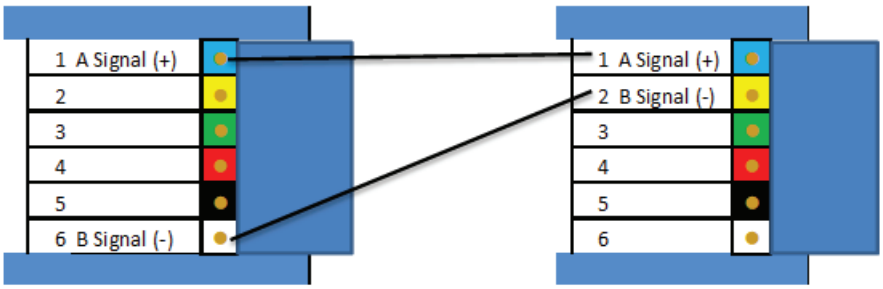




CABLE CONFIGURATION

I/O Board RJ11
MODBUS Slave

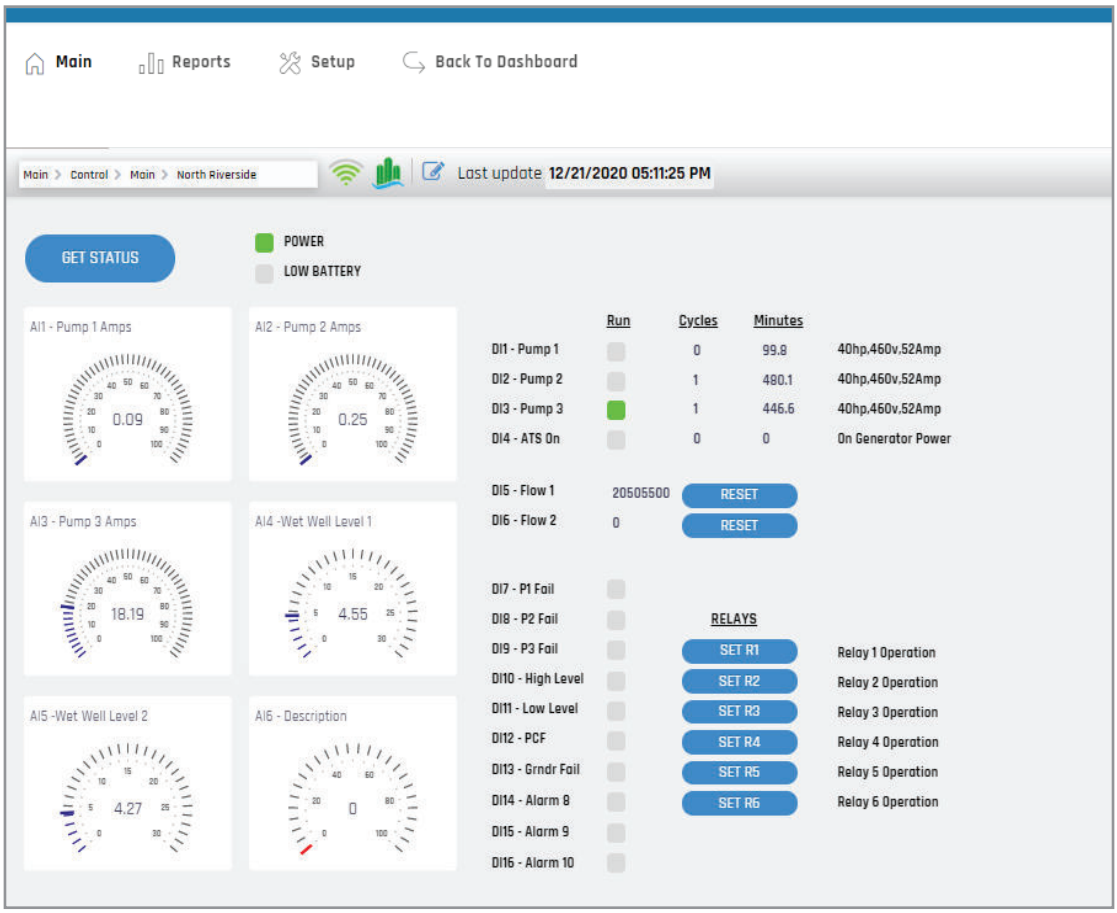
PUMPWATCH RJ11
MODBUS MASTER



Baud: 9600
Parity: None
Data bits: 8
Stop bit: 1
Node Address: 1

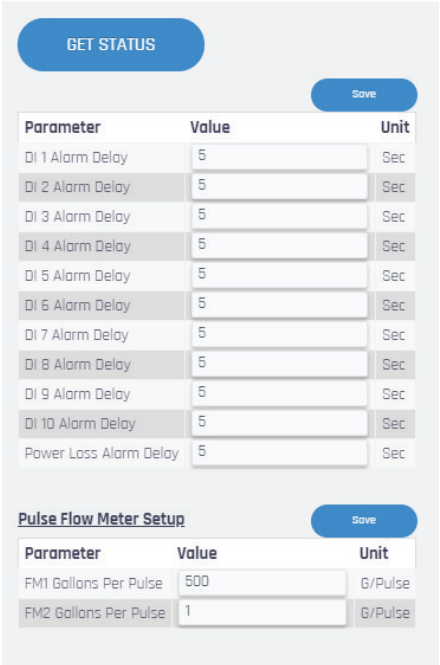
Serial cable Part Numbers:
1038522 CABLE ASSY, PUMP WATCH, SERIAL 6 ft
1038335 CABLE ASSY, PUMP WATCH, SERIAL 6"

GENERIC – WEB PORTAL

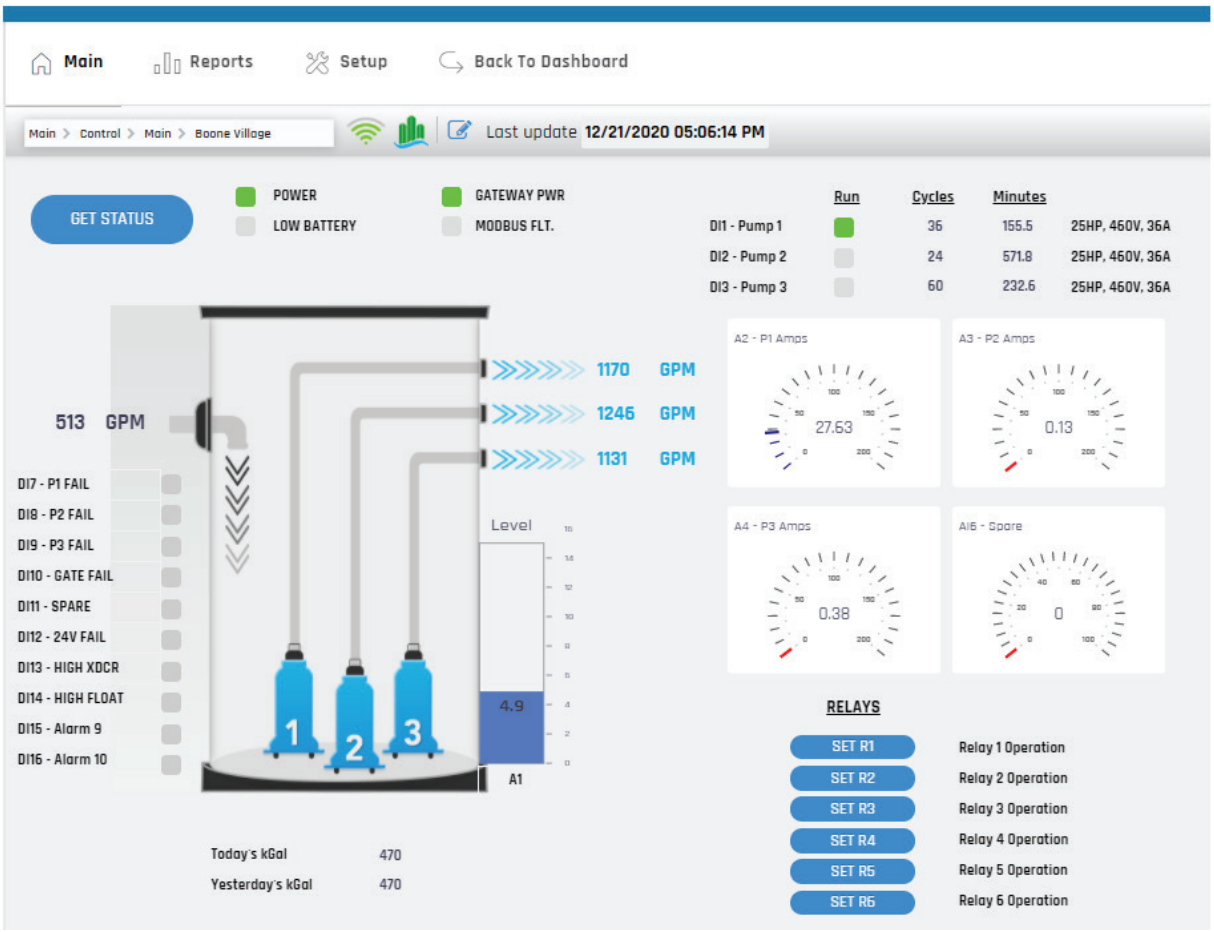


INPUT SCAN TIMES

The odd number analog inputs AI1, AI3, AI5 have a scan time of 30s or less from the Pump Watch™ Express Gateway. The even number analog inputs AI2, AI4, AI6 have an update time of 90~120s update time. Choose even number AIs for alarms requiring a longer time delay. Digital inputs have a 10s or less scan time. Digital inputs also have a programmable time delay function that can be accessed in the “Parameters” screen.



LIFT STATION - WEB PORTAL

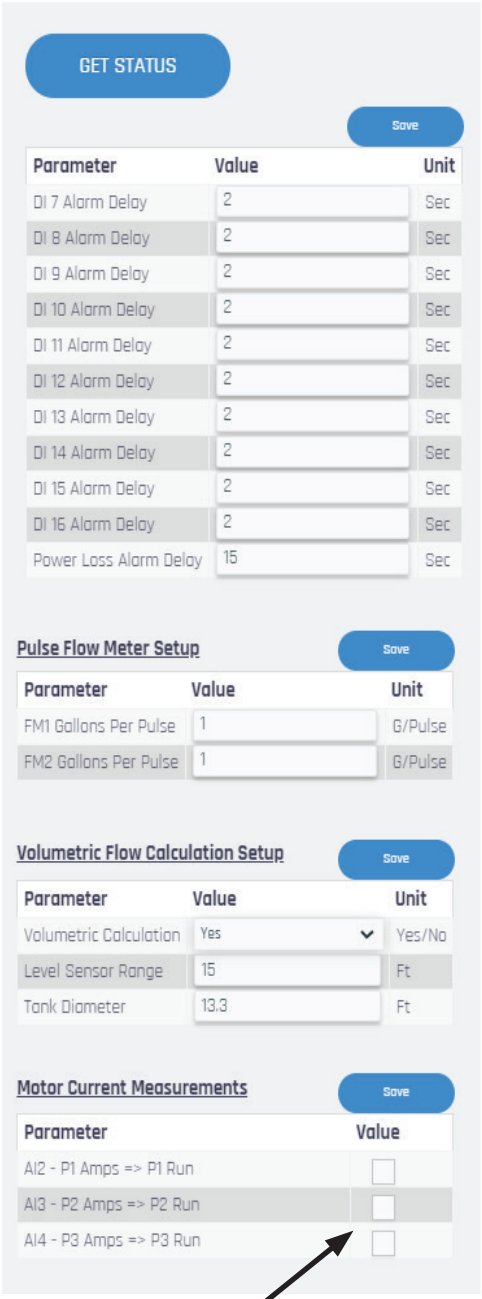


The lift station web portal can be applied to the iON28 to monitor a duplex or triplex lift station. In addition to the graphic change, it can monitor pump and station flows via volumetric flow calculations. The current monitoring can be configured to only update when the pump is running. The analog inputs are assigned as follows:

	Duplex lift station	**Triplex lift station**
AI1	Level transmitter	Level transmitter
AI2	Pump1 current transmitter (A)	Pump1 current transmitter (A)
AI3	Pump2 current transmitter (A)	Pump2 current transmitter (A)
AI4	Spare analog input	Pump3 current transmitter (A)
AI5	Spare analog input	Spare analog input
AI6	Not used	Not used

The level and current gauges can be configured and a high and low threshold alarm setup. Note: DI5 and DI6 (pulse flow monitoring) are enabled when the volumetric flow is not enabled.

Lift Station Web Portal
Parameter setup screen



The Pulse Flow meter is disabled if the Volumetric Flow calculation is enabled.

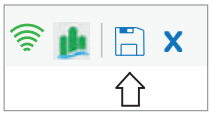
Check box to mointor motor current only when the Pump is running.

SCALING THE ANALOG INPUTS

The raw data range is 800-4000 counts. To scale the input, click on the edit symbol then on the gauge.

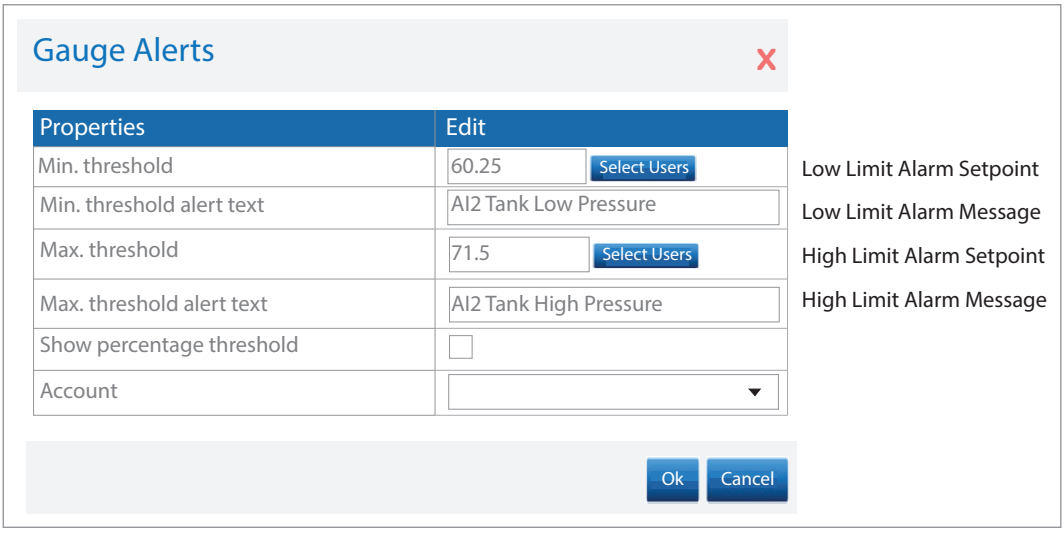
Properties	Edit	
Name	AI2 Tank (Psi)	Edit the name of the gauge
Min. Value	0	Set the Gauge display Min Value (Does not scale the input)
Max. Value	100	Set the Gauge display Max Value (Scales the input value for 20mA)
Step	20	Sets the number of ticks around the dial. (Max-Min)/Step

Click to save.



SETTING UP HIGH & LOW ALARMS FOR EACH ANALOG INPUTS

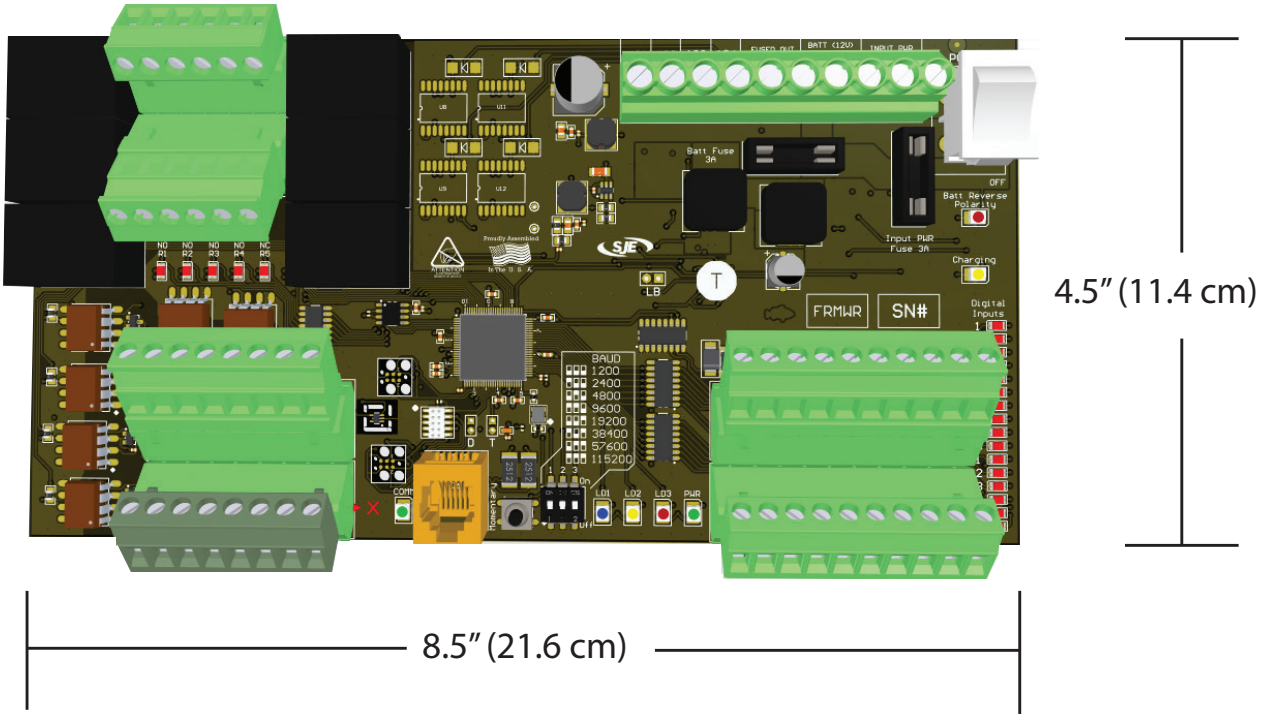
Click on the gauge and the window below will appear.



WEB PORTAL UPDATE FREQUENCY

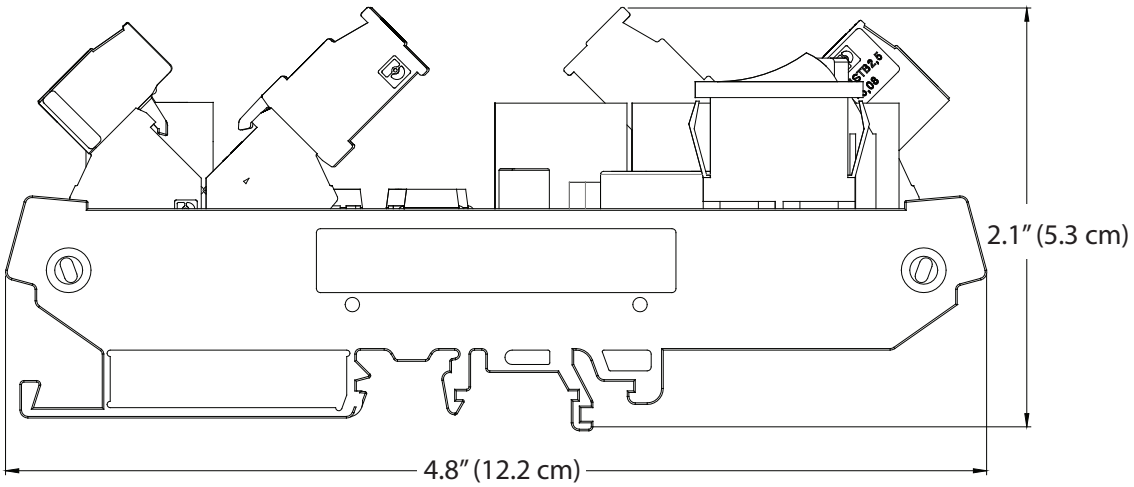
The data is sent from the Gateway to the cloud server via cellular communication every 10 minutes for updating the values on the portal and for data logging. This time period is interrupted if there is an alarm or if the user presses “Get Status” on the web portal, in which case the data is sent immediately.

DIMENSIONS



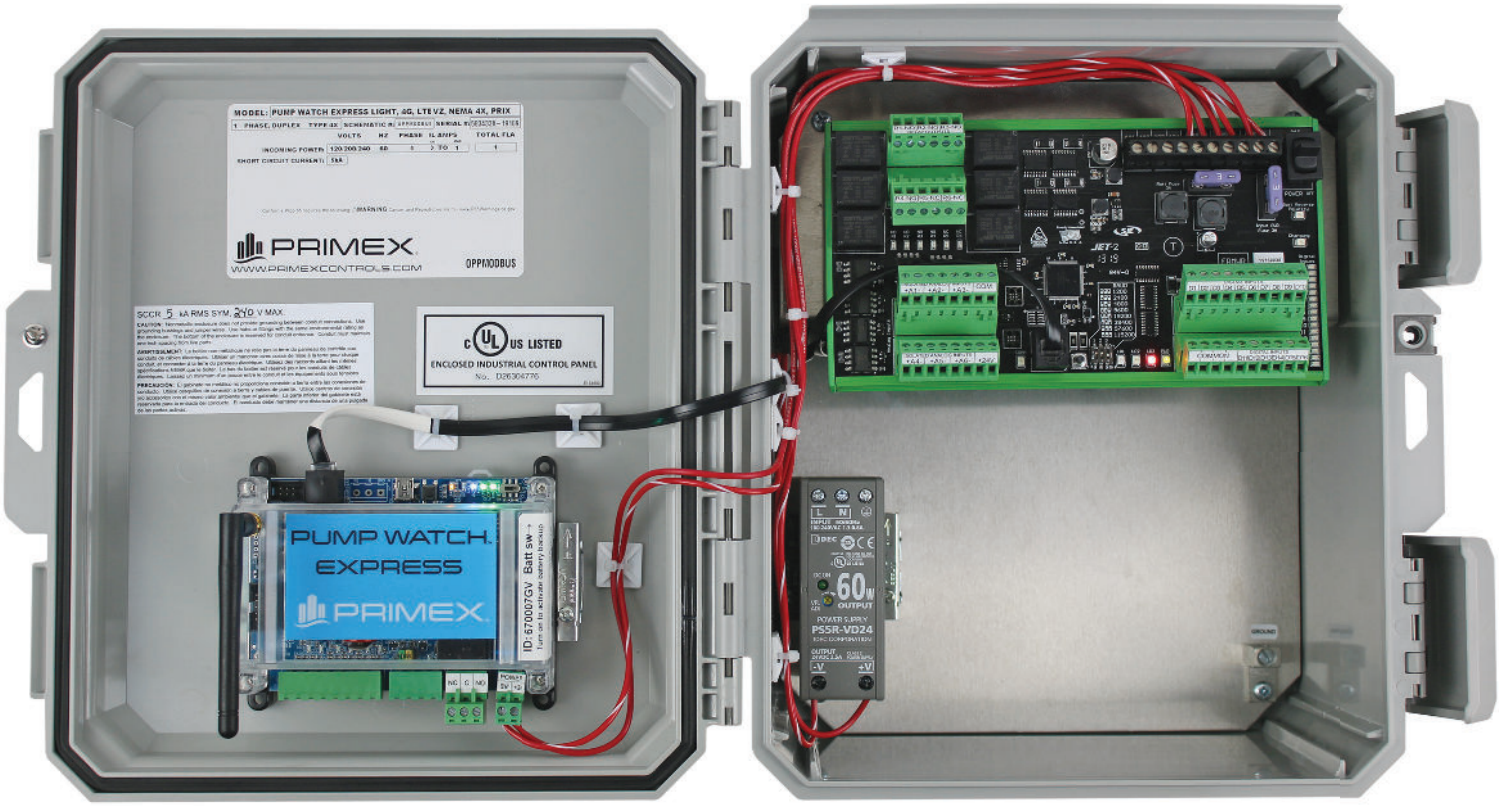
MOUNTING

Din rail mount.

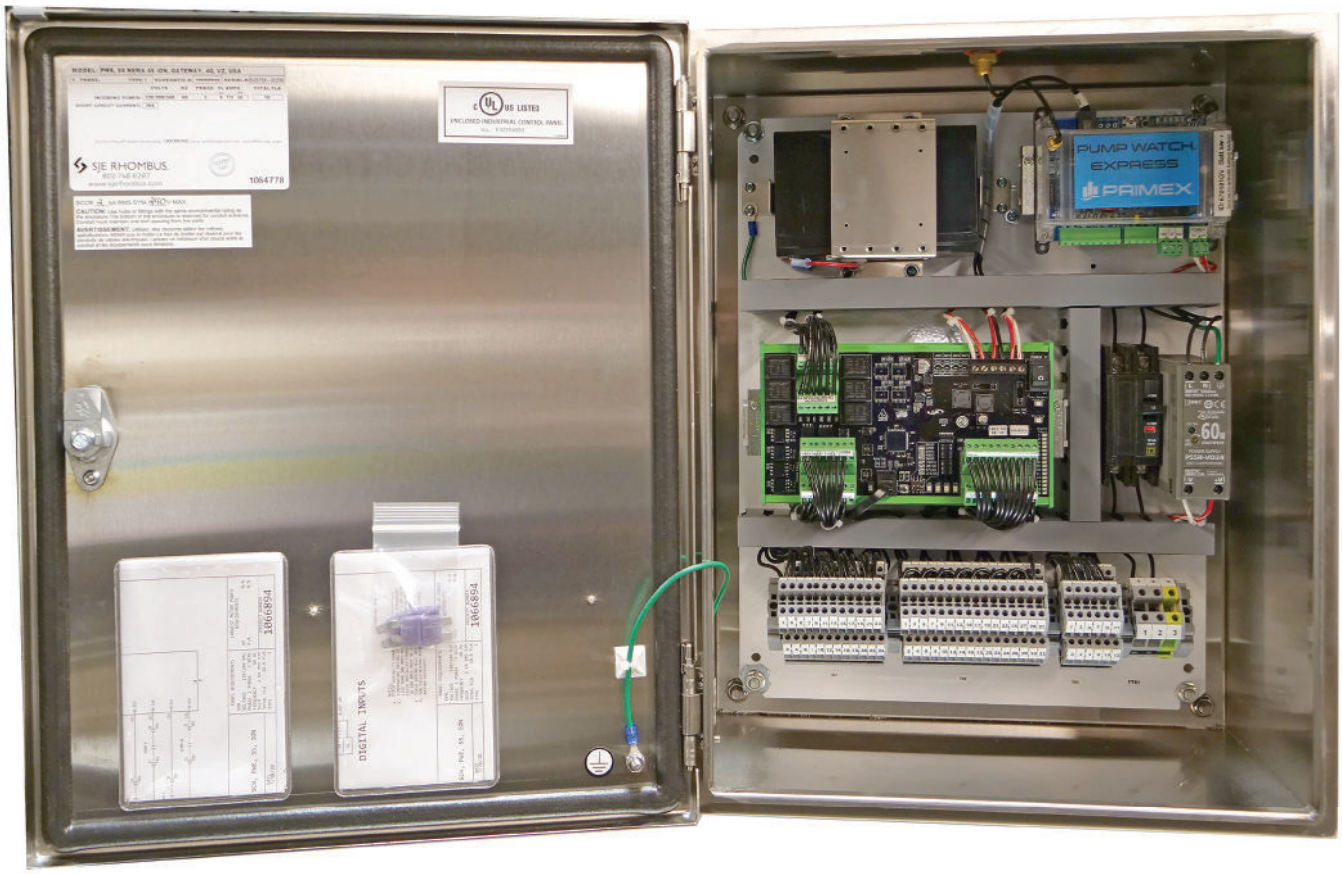


NEMA 4X PANEL

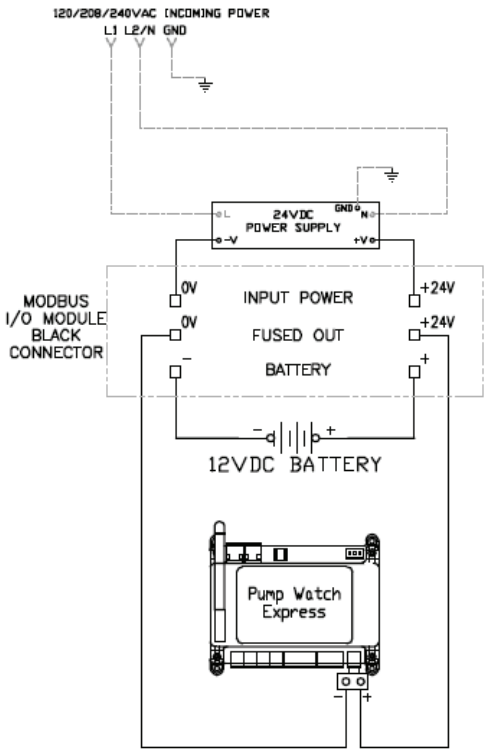
The iON28 Module is available in a NEMA 4X enclosure with the cellular Gateway, power supply and battery backup.

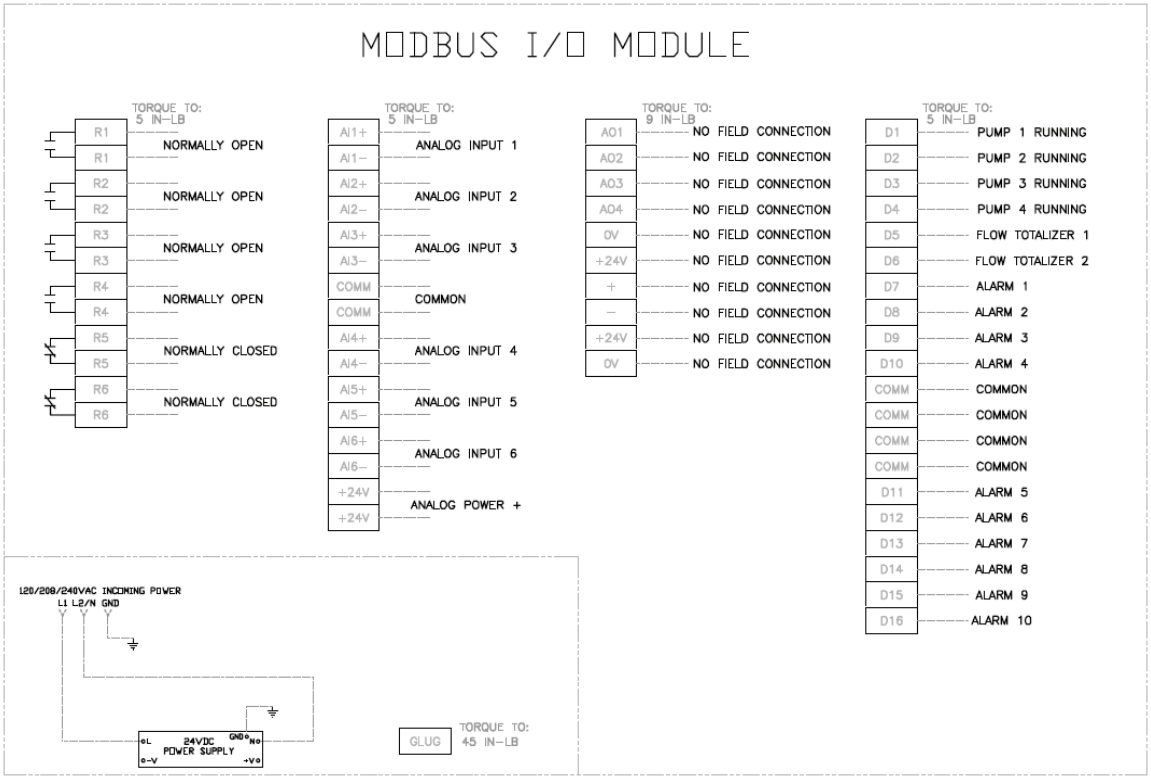


STAINLESS STEEL PANEL



SCHEMATIC


120/208/240VAC INCOMING POWER
L1 L2/N GND
24VDC POWER SUPPLY
MODBUS I/O MODULE BLACK CONNECTOR
0V
0V
INPUT POWER
FUSED OUT
BATTERY
+24V
+24V
12VDC BATTERY
Pump Watch Express


MODBUS I/O MODULE
TORQUE TO: 5 IN-LB
R1 NORMALLY OPEN
R2 NORMALLY OPEN
R3 NORMALLY OPEN
R4 NORMALLY OPEN
R5 NORMALLY CLOSED
R6 NORMALLY CLOSED
TORQUE TO: 5 IN-LB
AI1+ ANALOG INPUT 1
AI2+ ANALOG INPUT 2
AI3+ ANALOG INPUT 3
COMM COMMON
AI4+ ANALOG INPUT 4
AI5+ ANALOG INPUT 5
AI6+ ANALOG INPUT 6
+24V ANALOG POWER +
TORQUE TO: 9 IN-LB
AO1 NO FIELD CONNECTION
AO2 NO FIELD CONNECTION
AO3 NO FIELD CONNECTION
AO4 NO FIELD CONNECTION
0V NO FIELD CONNECTION
+24V NO FIELD CONNECTION
+ NO FIELD CONNECTION
– NO FIELD CONNECTION
+24V NO FIELD CONNECTION
0V NO FIELD CONNECTION
TORQUE TO: 5 IN-LB
D1 PUMP 1 RUNNING
D2 PUMP 2 RUNNING
D3 PUMP 3 RUNNING
D4 PUMP 4 RUNNING
D5 FLOW TOTALIZER 1
D6 FLOW TOTALIZER 2
D7 ALARM 1
D8 ALARM 2
D9 ALARM 3
D10 ALARM 4
COMM COMMON
COMM COMMON
COMM COMMON
COMM COMMON
D11 ALARM 5
D12 ALARM 6
D13 ALARM 7
D14 ALARM 8
D15 ALARM 9
D16 ALARM 10
120/208/240VAC INCOMING POWER
L1 L2/N GND
24VDC POWER SUPPLY
GLUG
TORQUE TO: 45 IN-LB

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