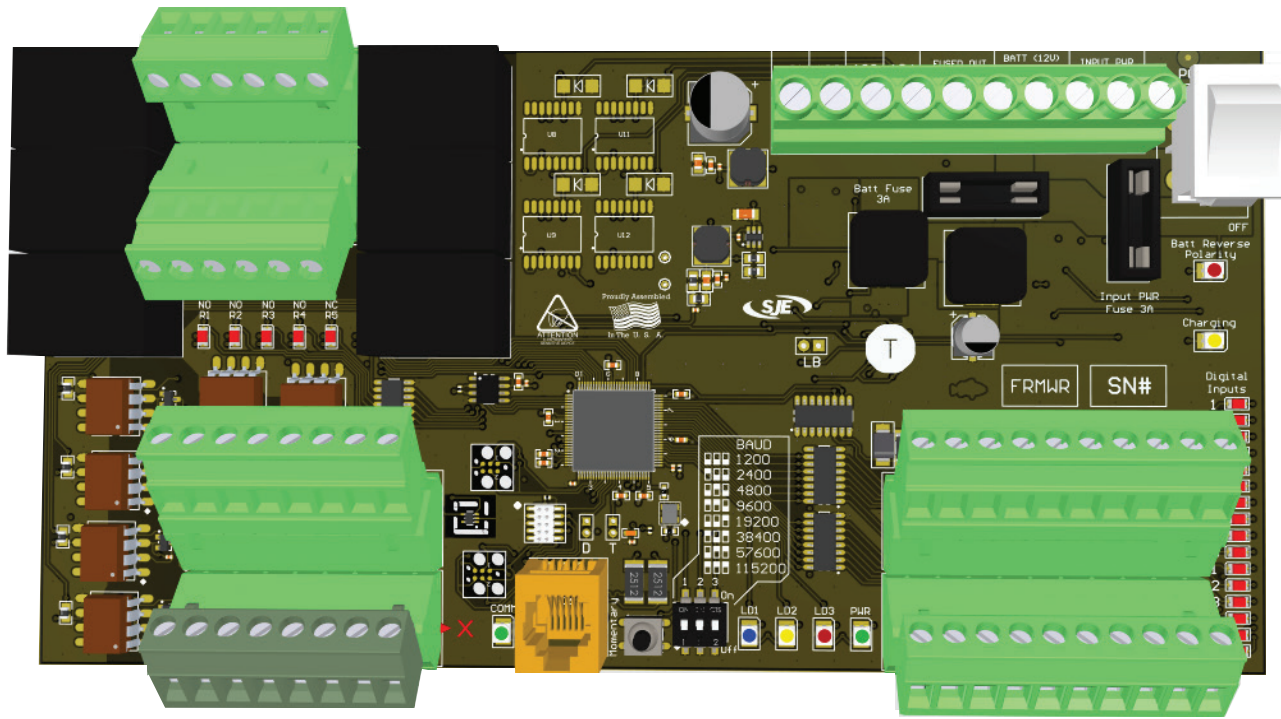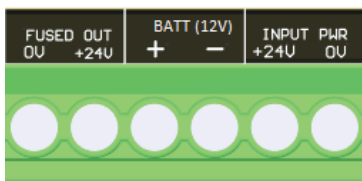# iON28 MODULE
INSTALLATION INSTRUCTIONS

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).
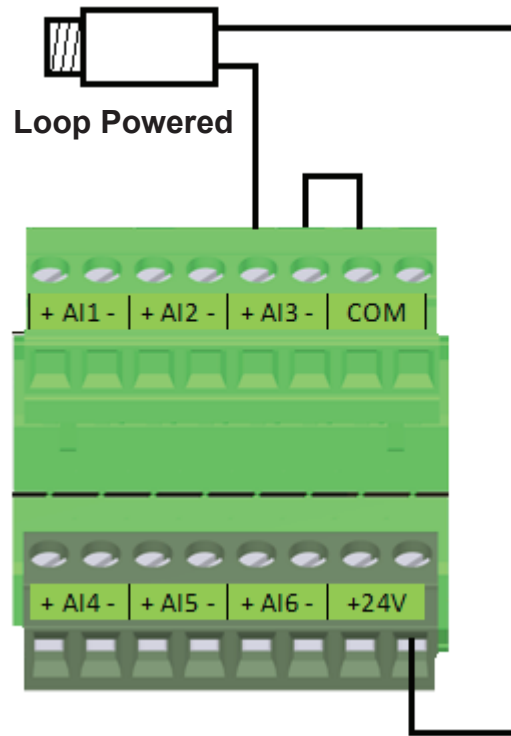
ANALOG INPUTS

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.

Loop Powered

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
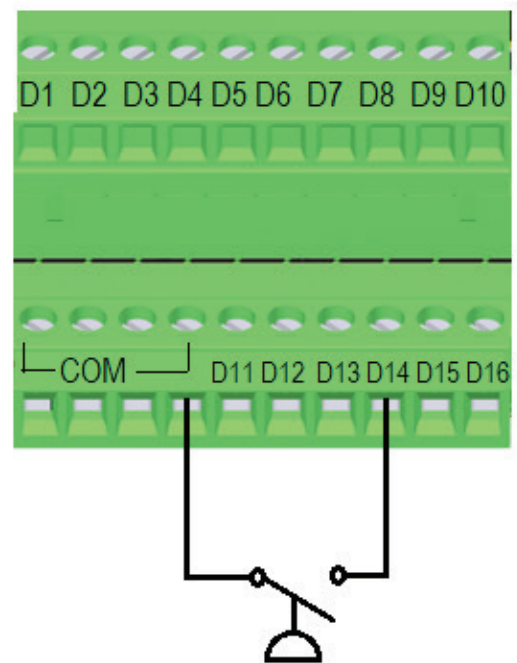
FLOWMETER CONNECTION

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.
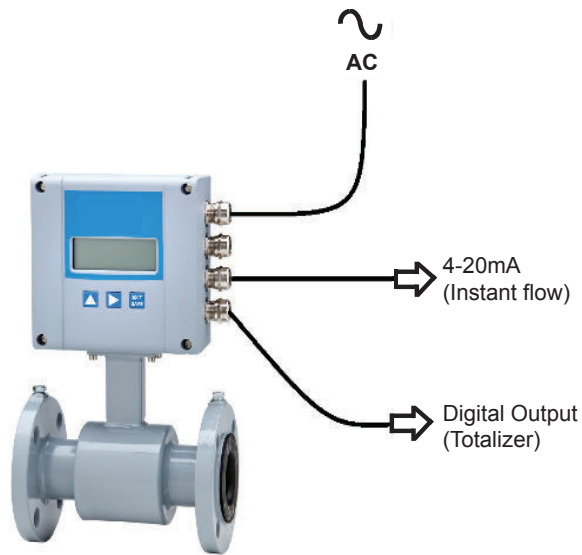

The **4-20mA signal** can be connected to any of the open Analog inputs (AI1~AI6). This signal from the flowmeter is typically not loop powered.

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.
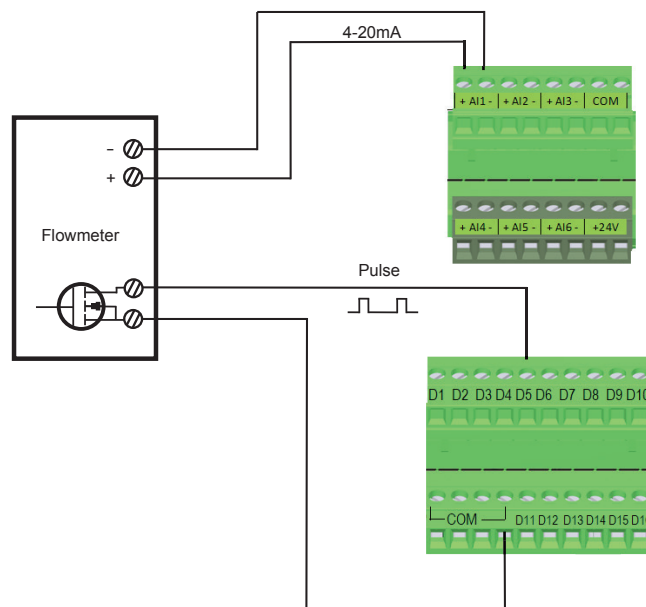
Flowmeter Wiring Example

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.
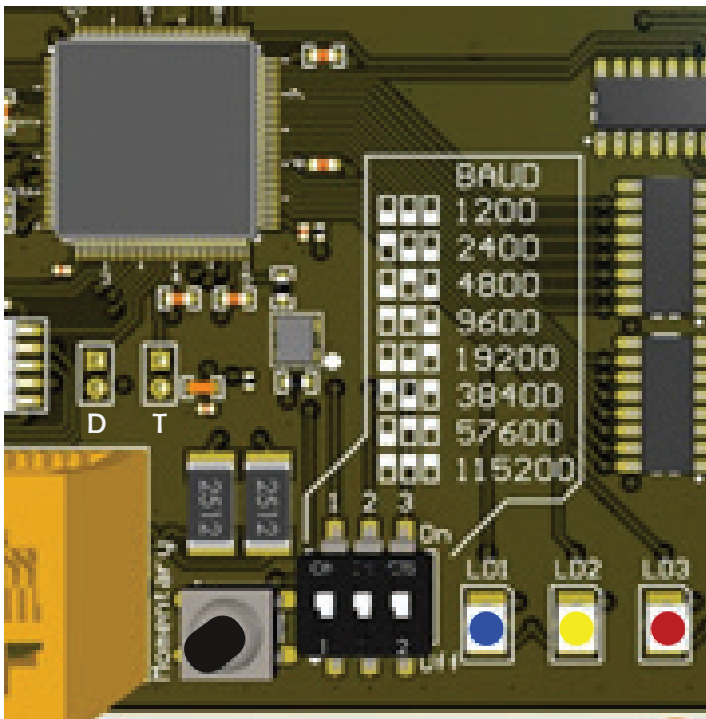
Local and National safety codes must be followed.

R1-NO | R2-NO | R3-NO
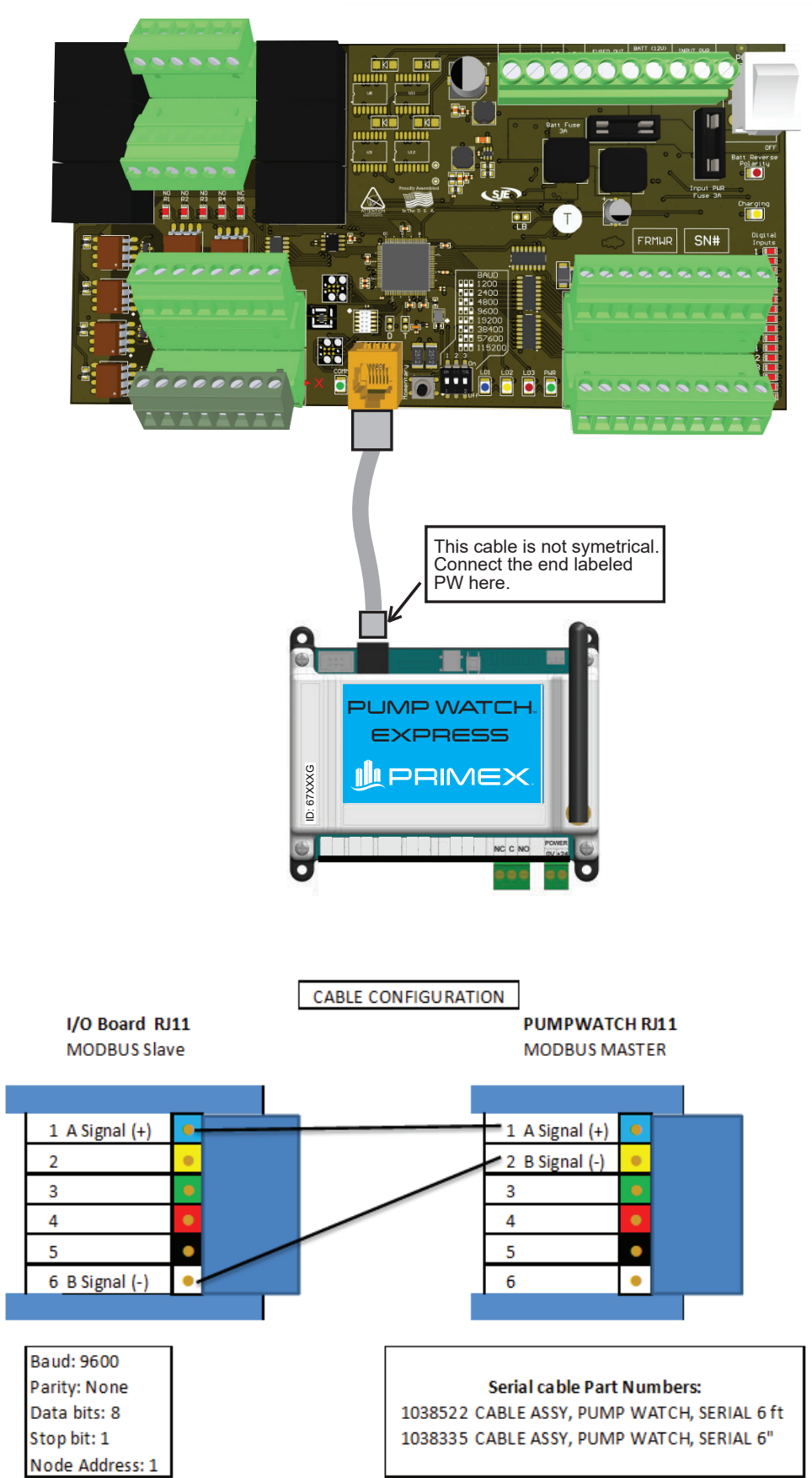
R4-NO | R5-NC | R6-NC
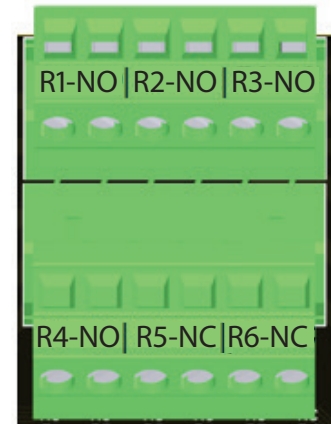
RS 485 PORT BAUD RATE

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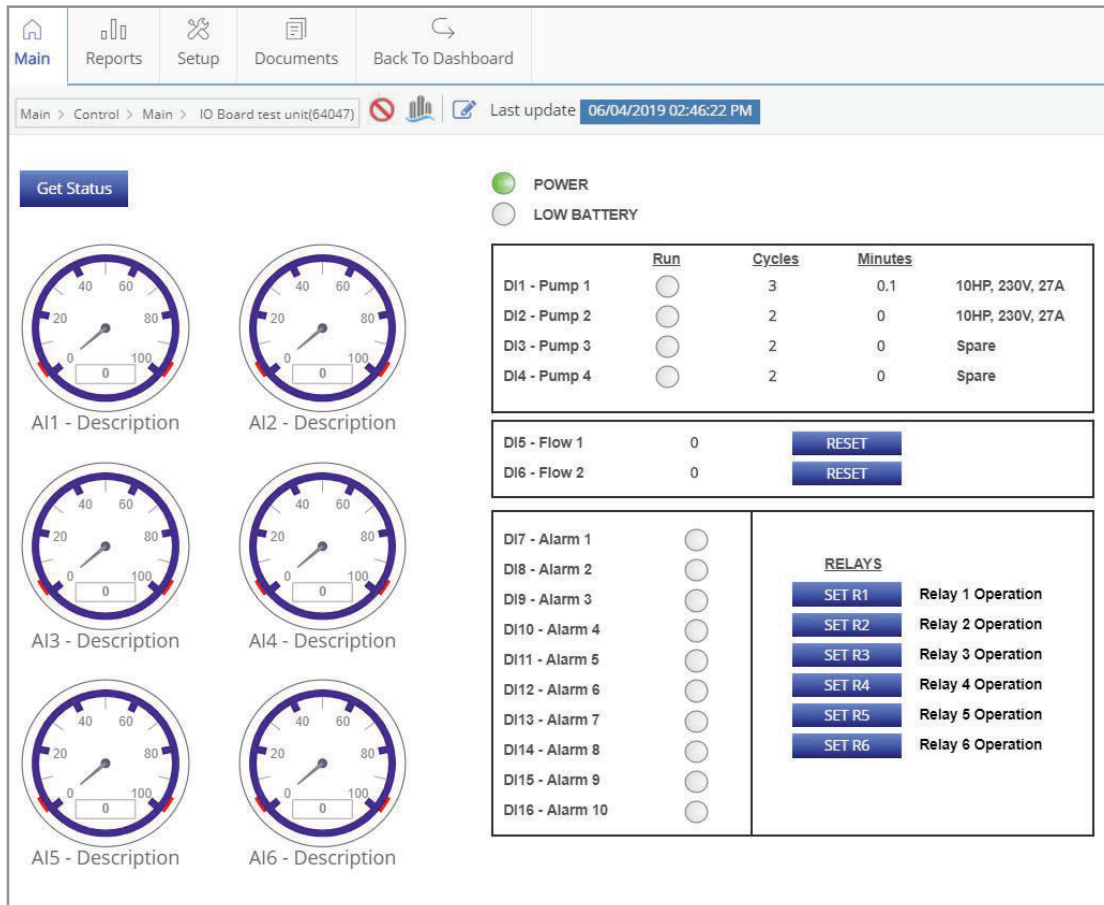The default is 9600 (required for communication with the Pump Watch™ Express Gateway).

BAUD
1200
2400
4800
9600
19200
38400
57600
115200

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

CONNECTING TO THE
CELLULAR GATEWAY MODEL

This cable is not symetrical. Connect the end labeled PW here.

PUMP WATCH EXPRESS

PRIMEX

CABLE CONFIGURATION

I/O Board RJ11
MODBUS Slave

PUMPWATCH RJ11
MODBUS MASTER

I/O Board RJ11		PUMPWATCH RJ11	
1 A Signal (+)		1 A Signal (+)	
2		2 B Signal (-)	
3		3	
4		4	
5		5	
6 B Signal (-)		6	

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"

INPUT SCAN TIMES (How often are the input values updated for alarm notification?)

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.

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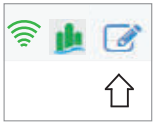
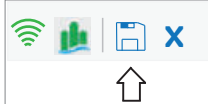| Properties	Edit	
Name	AI2 Tank (Psi)	Edit the name of the gauge
Min. Value	0	Set the Gauge display Min Value (Does not scale the input)
Max. Value	100	Set the Gauge display Max Value (Scales the input value for 20mA)
Step	20	Sets the number of ticks around the dial. (Max-Min)/Step

Click to save.

SETTING UP HIGH & LOW ALARMS FOR EACH ANALOG INPUTS

Click on the gauge and the window below will appear.

Gauge Alerts

Properties	Edit		
Min. threshold	60.25	Select Users	Low Limit Alarm Setpoint
Min. threshold alert text	AI2 Tank Low Pressure		Low Limit Alarm Message
Max. threshold	71.5	Select Users	High Limit Alarm Setpoint
Max. threshold alert text	AI2 Tank High Pressure		High Limit Alarm Message
Show percentage threshold	☐		
Account	▼		

Ok   Cancel

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

8.5" (21.6 cm)

4.5" (11.4 cm)
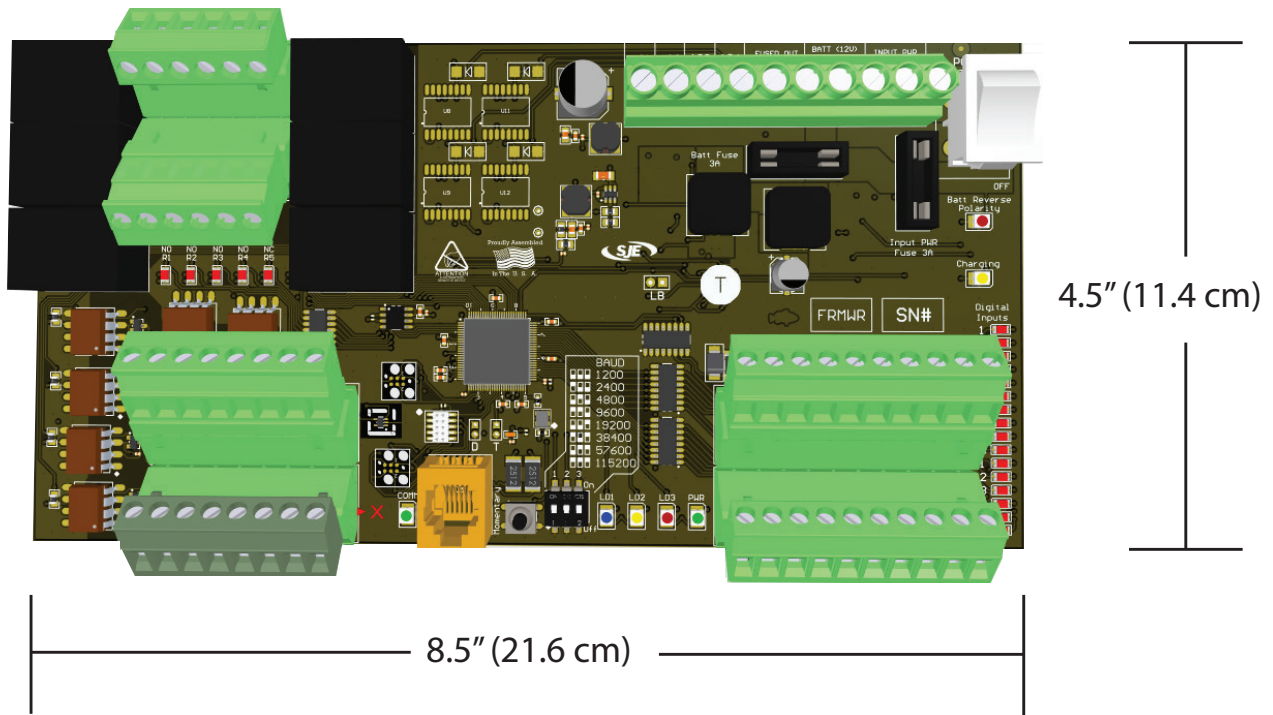
MOUNTING

Din rail mount.

2.1" (5.3 cm)

4.8" (12.2 cm)
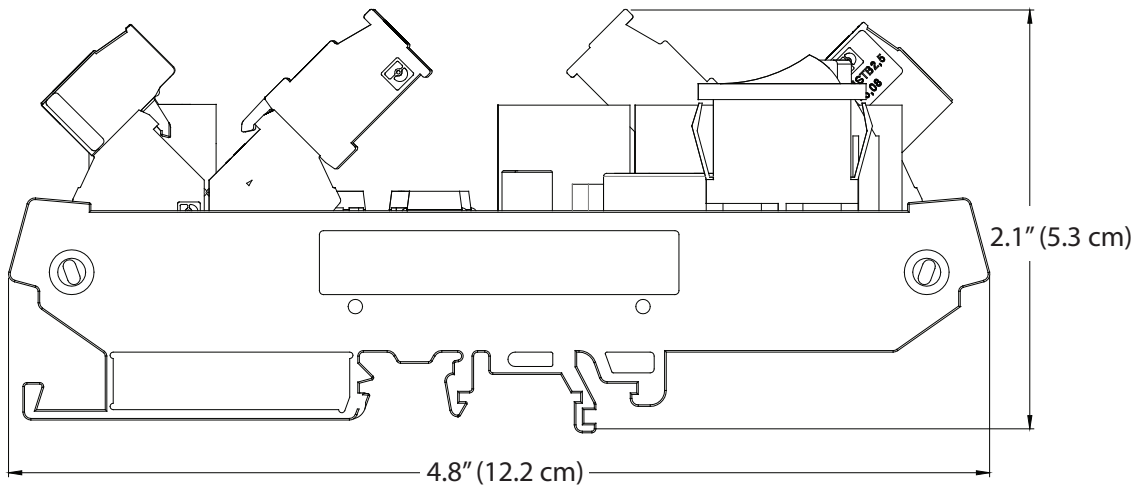
NEMA 4X PANEL

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

SCHEMATIC

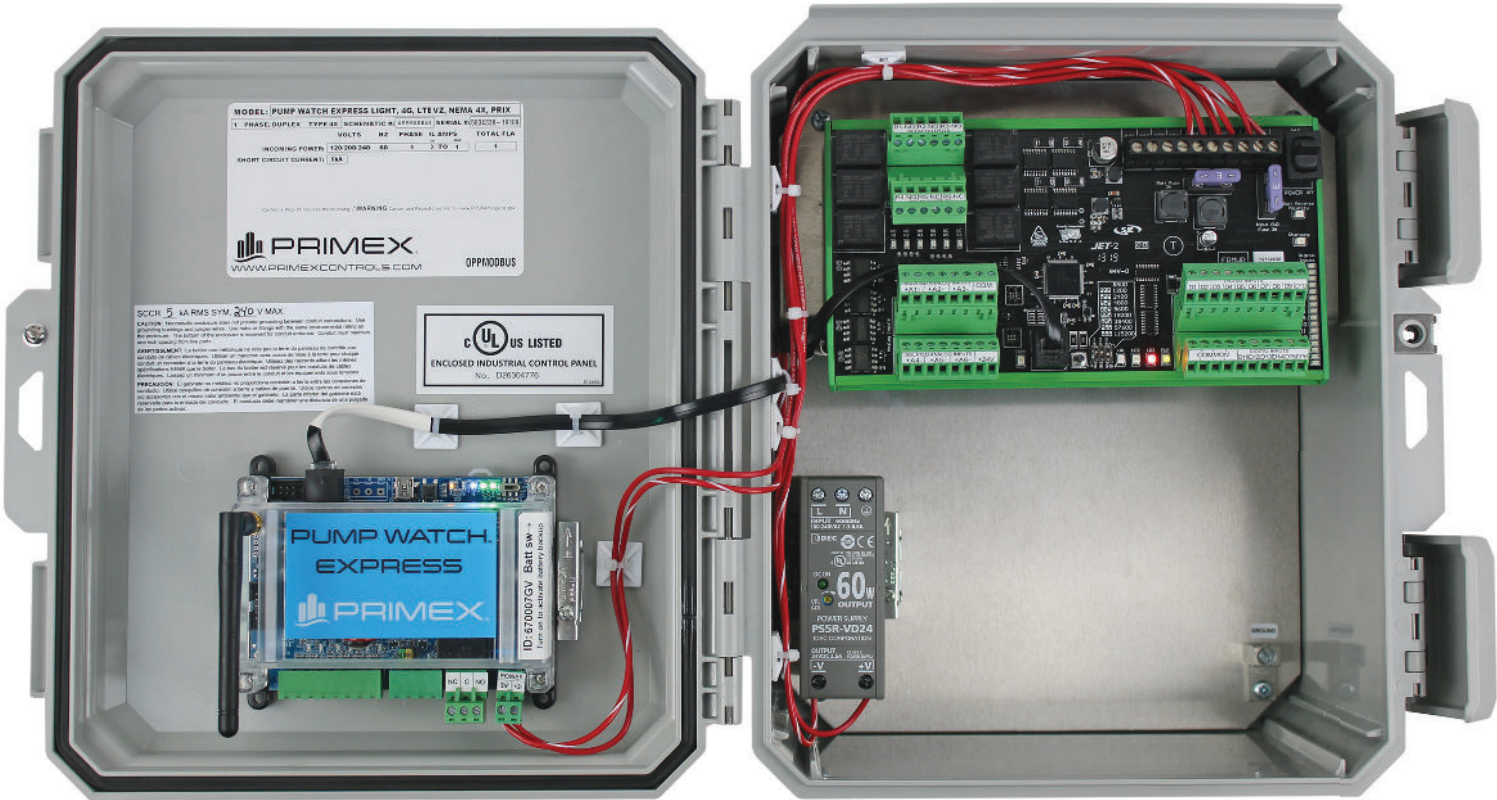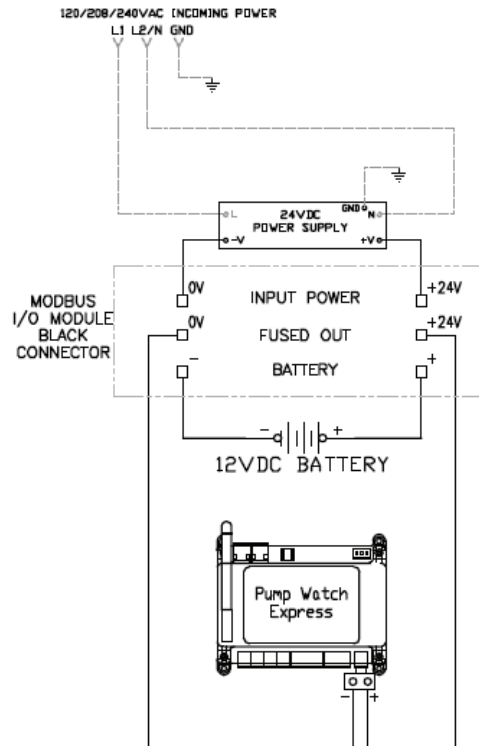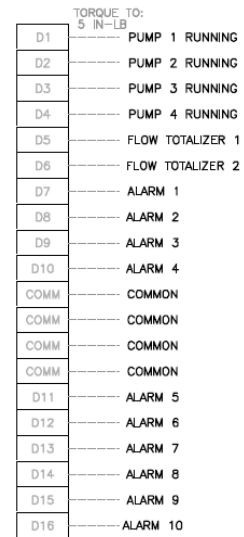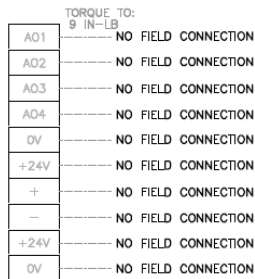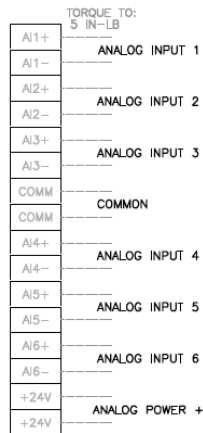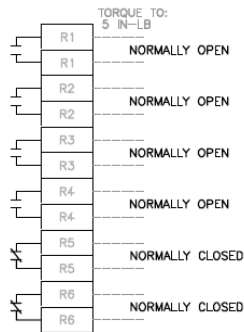120/208/240VAC INCOMING POWER
L1 L2/N GND

24VDC POWER SUPPLY

MODBUS I/O MODULE BLACK CONNECTOR

0V — INPUT POWER — +24V
0V — FUSED OUT — +24V
− — BATTERY — +

12VDC BATTERY

Pump Watch Express

MODBUS I/O MODULE

TORQUE TO: 5 IN-LB		
R1	NORMALLY OPEN	
R1		
R2	NORMALLY OPEN	
R2		
R3	NORMALLY OPEN	
R3		
R4	NORMALLY OPEN	
R4		
R5	NORMALLY CLOSED	
R5		
R6	NORMALLY CLOSED	
R6		

TORQUE TO: 5 IN-LB	
AI1+	ANALOG INPUT 1
AI1−	
AI2+	ANALOG INPUT 2
AI2−	
AI3+	ANALOG INPUT 3
AI3−	
COMM	COMMON
COMM	
AI4+	ANALOG INPUT 4
AI4−	
AI5+	ANALOG INPUT 5
AI5−	
AI6+	ANALOG INPUT 6
AI6−	
+24V	ANALOG POWER +
+24V	

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

NOTES