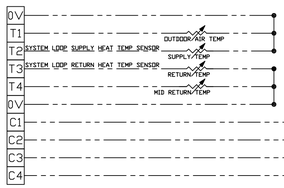
BOILER WIRING

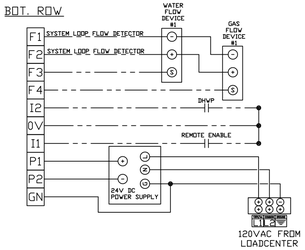
SYSTEM ADMINISTRATOR

ADMINISTRATOR DEVICE (WIRING BLOCK #1)

TOP ROW

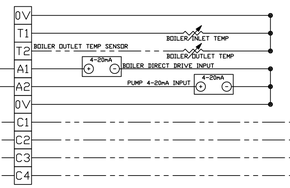


BOT. ROW

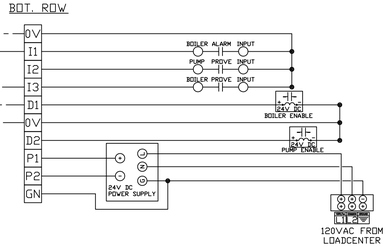


BOILER DEVICE FIELD WIRING

TOP ROW

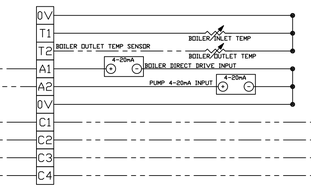


BOT. ROW

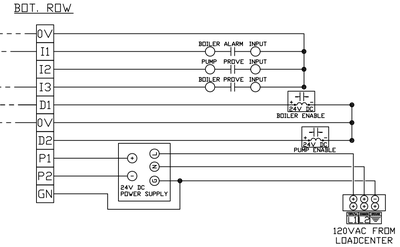


BOILER DEVICE FIELD WIRING

TOP ROW

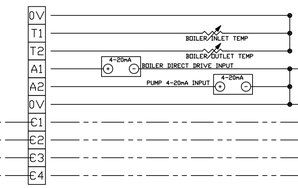


BOT. ROW

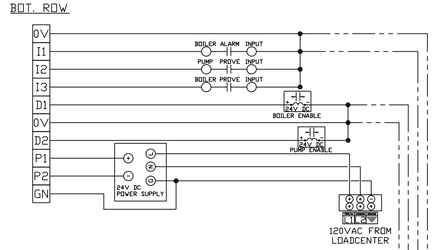


BOILER DEVICE FIELD WIRING

TOP ROW

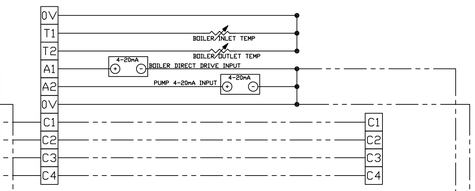


BOT. ROW

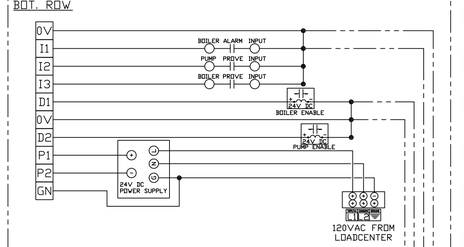


BOILER DEVICE FIELD WIRING

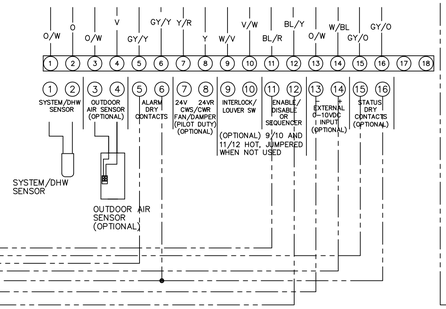
TOP ROW



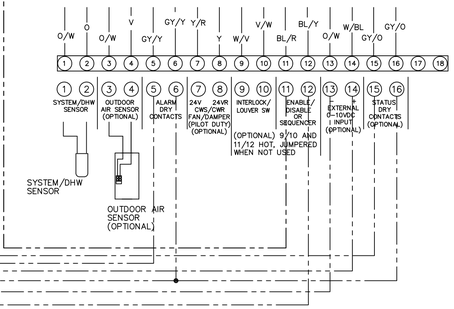
BOT. ROW



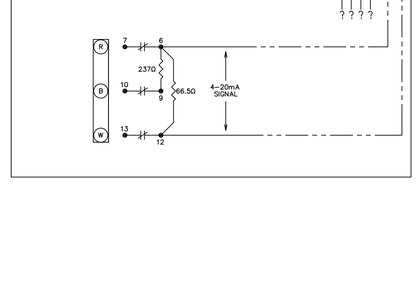
XTHERM FRONT PANEL LOW VOLTAGE TERMINAL BLOCK



XTHERM FRONT PANEL LOW VOLTAGE TERMINAL BLOCK



BRYAN BOILER



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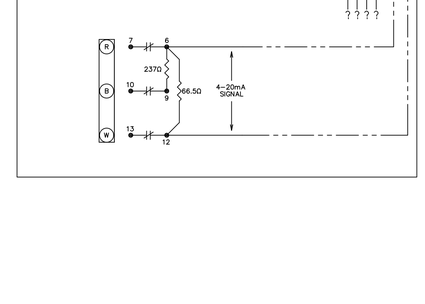


FIELD WIRING

WIRING DIAGRAM

SCALE: NONE

CONSULTANTS:
JOHNSON & WOOD
BURTON MICHIGAN

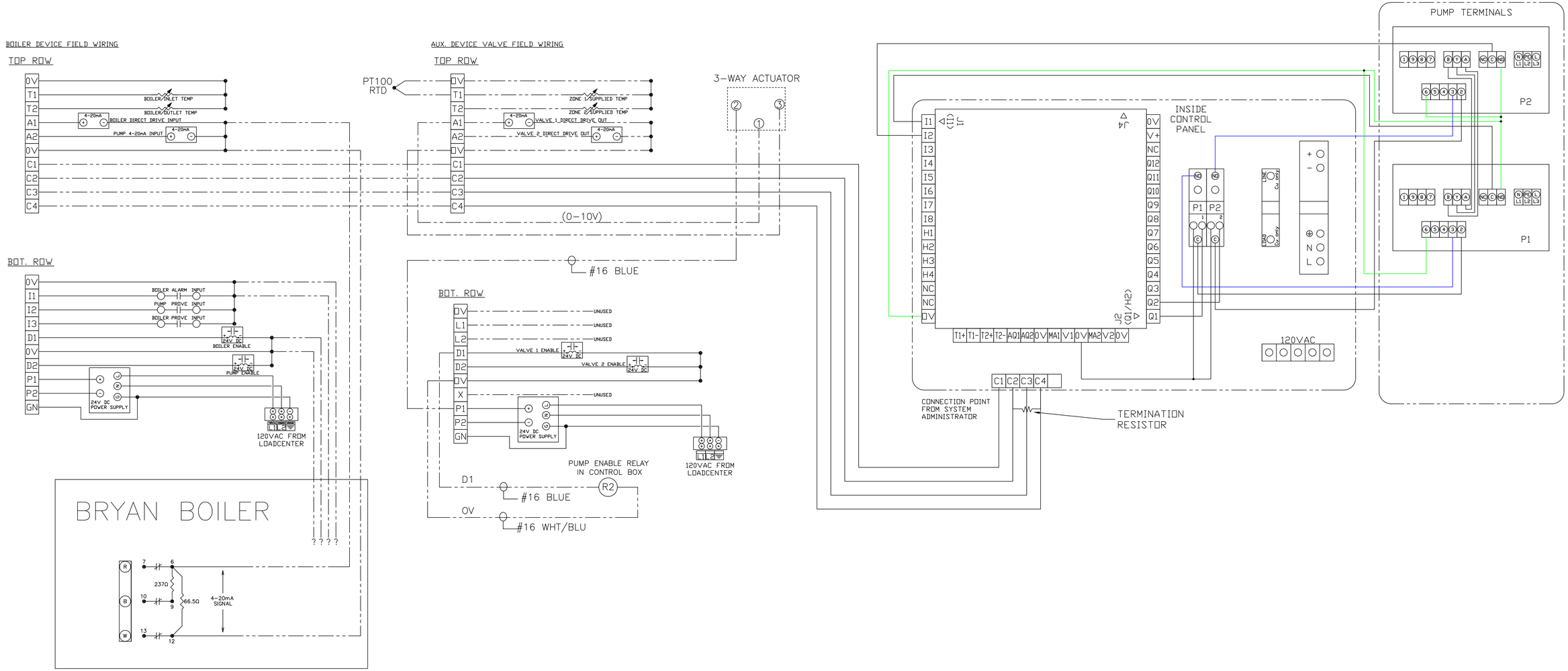
PROJECT NAME:
WARREN WOODS TOWER HIGH SCHOOL
WARREN MI

THAW-PAK DISTRIBUTOR:
PERFORMANCE engineering group

DRAWN BY: *Gordon Faustich*	
REVIEWED BY: *AD*	
APPROVED BY: *AD*	
ISSUED FOR	
05/29/12	SUBMITTED
08/27/12	UPDATED PER TPC
10/10/12	ADDED PUMPS

DRAWING NO.
WARREN WOODS CONTROLS TOWER_B

SHEET NO.
E1



PUMP WIRING DIAGRAM

SCALE: NONE

CONSULTANTS:
JOHNSON & WOOD
BURTON MICHIGAN

PROJECT NAME:
WARREN WOODS TOWER HIGH SCHOOL
WARREN MI

THAW-PAK DISTRIBUTOR:
PERFORMANCE engineering group

DRAWN BY: *Gordon Faustich*	
REVIEWED BY: *AD*	
APPROVED BY: *AD*	
ISSUED FOR	
05/29/12	SUBMITTED
08/27/12	UPDATED PER TPC
10/10/12	ADDED PUMPS

DRAWING NO.
WARREN WOODS CONTROLS TOWER_B

SHEET NO.
E2

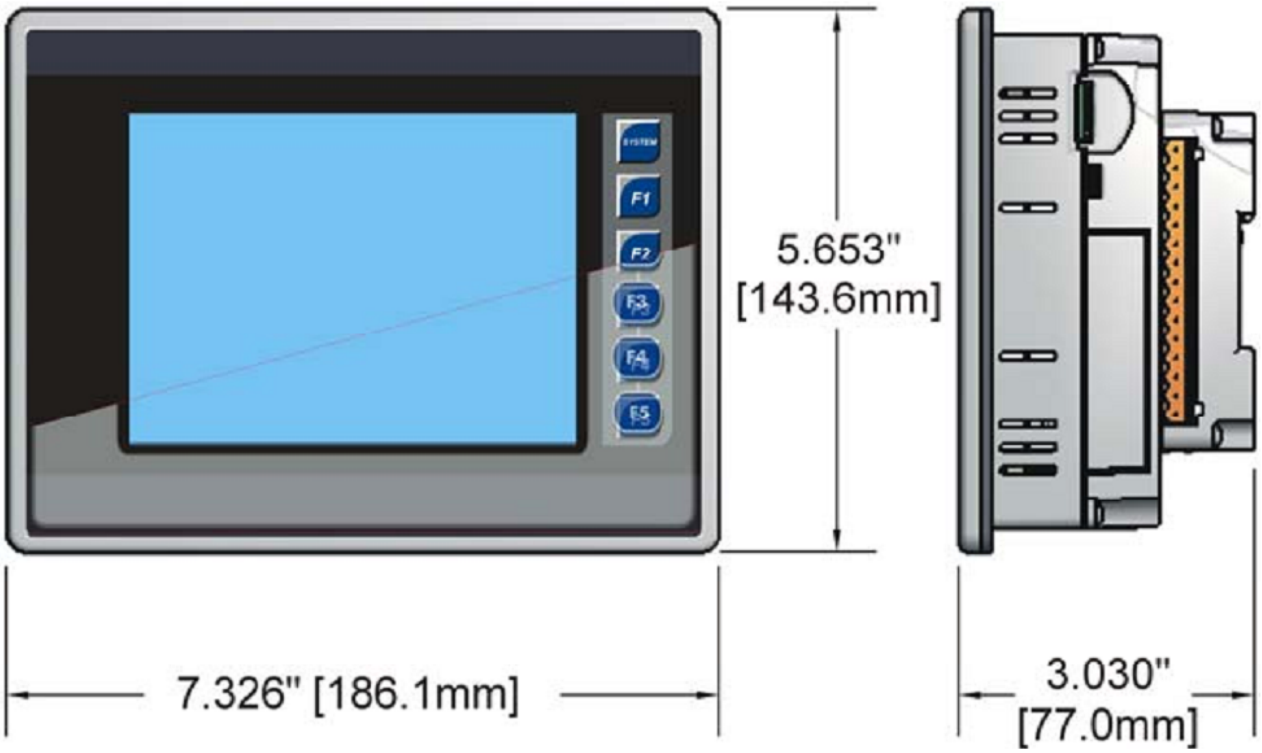
THERMODYNAMIC PROCESS CONTROL

TPC-FI-FDP CanNet
ADMINISTRATOR 6" TOUCH SCREEN
WIRING INSTRUCTIONS

01 MAR 2012
Rev. 3.0

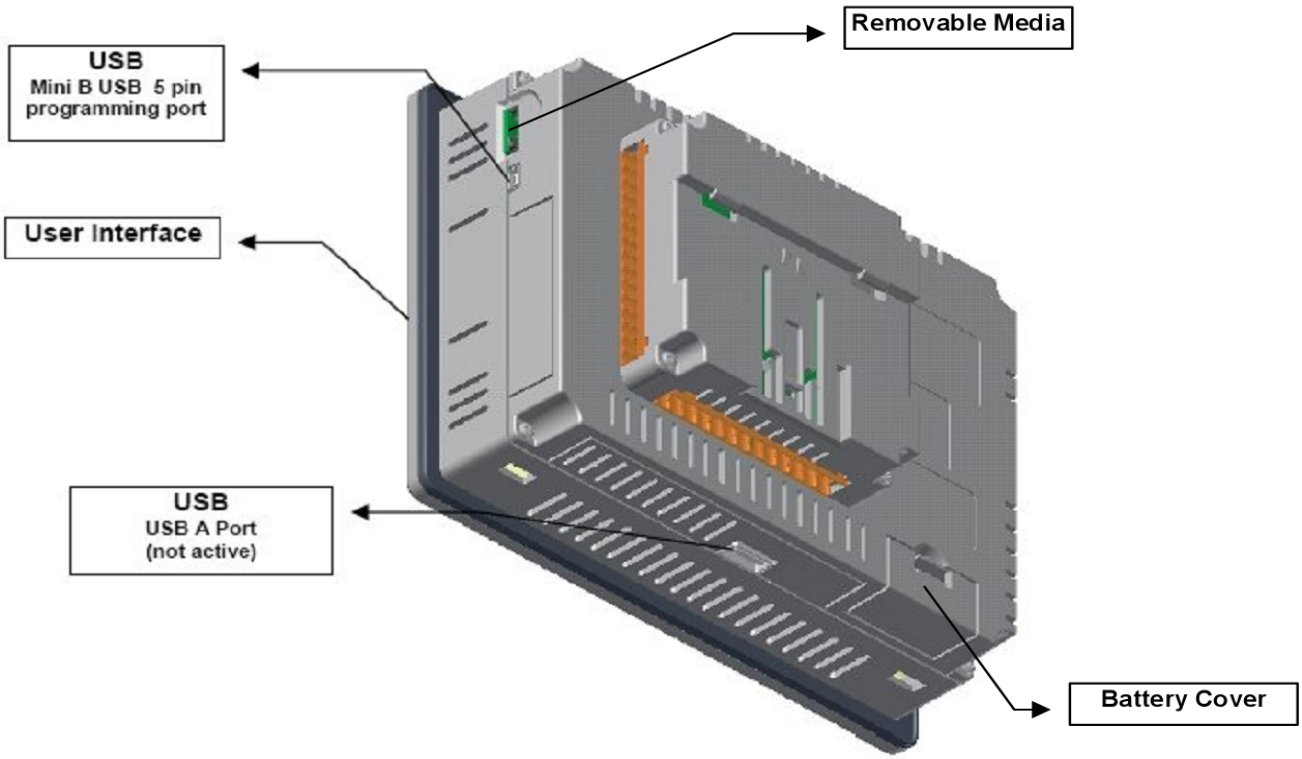
Warning: The TPC-FI-CP CanNet hydronic mechanical room control system is a staging and modulation control designed for use in hydronic heating systems. THIS IS NOT A SAFETY OR LIMIT CONTROL. All boilers connected to this control for staging and modulation must have all required safety limits and controls required by all applicable codes and jurisdictions. This control must be installed by a qualified electrician. Further, Thermodynamic Process Control reserves the right to upgrade functionality or features of the control at any time without prior notice. For more information visit www.flowintel.com.

SCREEN DIMENSIONS

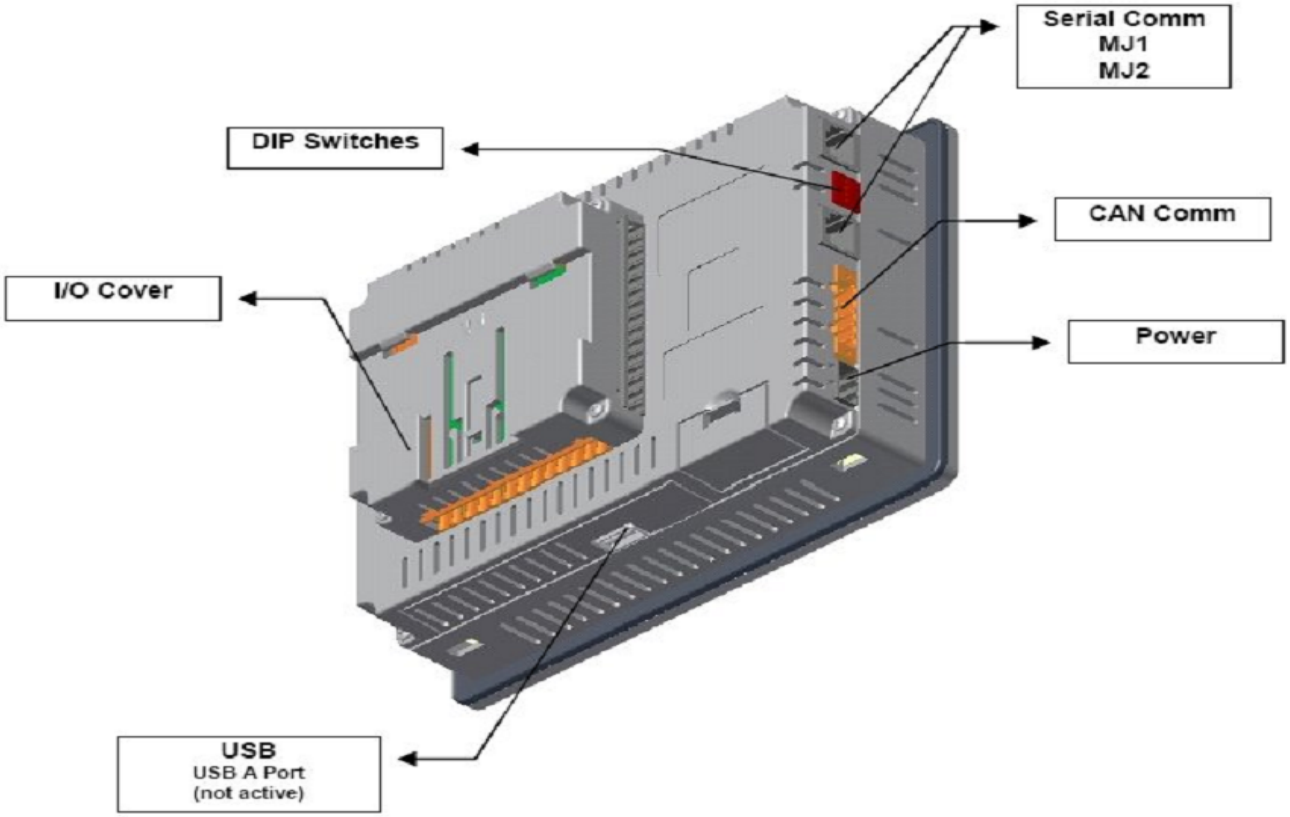


FRONT VIEW

REAR RIGHT SIDE VIEW



REAR LEFT SIDE VIEW



POWER WIRING

24VDC + Factory Wired

24VDC - Factory Wired

120VAC Factory Wired

120VAC Common Factory Wired

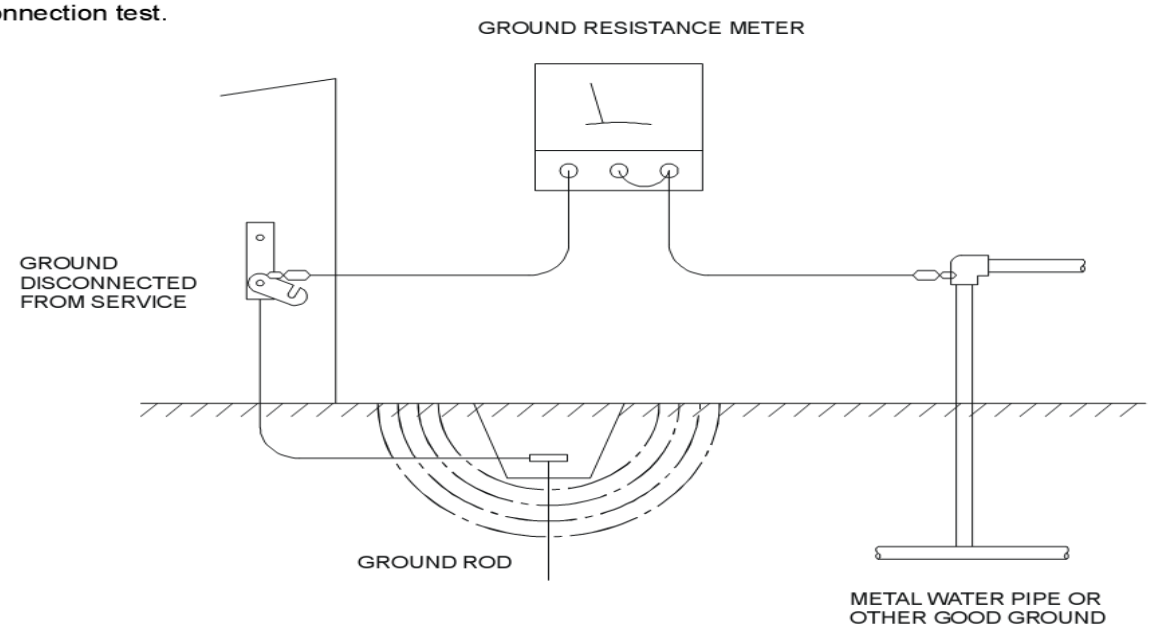
120VAC Neutral Factory Wired

120VAC Power Factory Wired

120VAC Power to 24VDC Power supply, Factory Wired

GROUNDING

In order to test ground resistance, a Ground Resistance Tester must be used. A typical Ground Resistance Meter Kit contains a meter, two or three wire leads, and two ground rods. Instructions are supplied for either a two-point or three-point ground test. **Figure 4.1** shows a two-point ground connection test.



Wiring Specifications

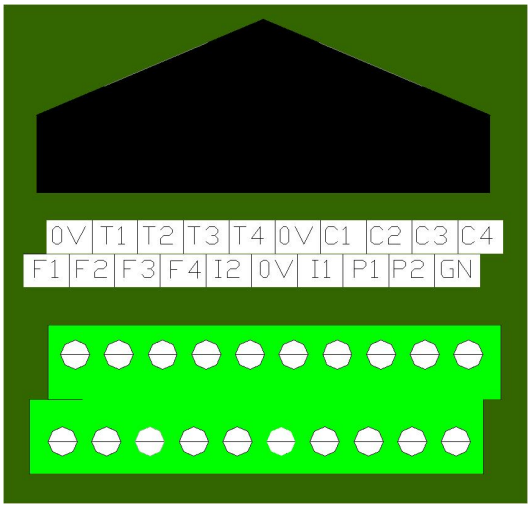
- For I/O wiring (discrete), use the following wire type or equivalent: Belden 9918, 18 AWG (0.8 mm^2) or larger.

- For shielded Analog I/O wiring, use the following wire type or equivalent: Belden 8441, 18 AWG (0.8 mm^2) or larger.

- For CAN wiring, use the following wire type or equivalent: Belden 3084, 24 AWG (0.2 mm^2) or larger.

Use copper conductors in field wiring only, 60/75° C

CONTROL WIRING



ADMINISTRATOR WIRING BLOCK #1									
TOP ROW									
0V-	T1+	T2+	T3+	T4+	0V-	C1	C2	C3	C4
COM	Outdoor	Supply	Return	Mid	COM	CsCan Network			
BOTTOM ROW									
F1-	F2+	F3 (water)	F4 (gas)	I2+	0V-	I1+	P1+	P2-	GND
Water & Gas Flow Device Connections				DHWP	COM	RM Enable	24 VDC Power		

TOP ROW:

T1+: Outside temperature. Connect to T1+ and 0V- to the left.

T2+: Supply temperature. Connect to T2+ and 0V- to the left.

T3+: Return temperature. Connect to T3+ and 0V- to the right.

T4+: Mid Return temperature (optional). Connect to T4+ and 0V- to the right.

CAN: Connect all CAN on network together accordingly, in bus topology (see image below)

BOTTOM ROW:

F1: Flow Devices. Connect to power negative (-) on the water and gas flow devices.

F2: Flow Devices. Connect to power positive (+) on the water and gas flow devices.

F3: Flow Device. Connect to the Signal output on the water flow device.

F4: Flow Device. Connect to the Signal output on the gas flow device.

I2: Domestic Hot Water Priority input. Wire to I2+ and 0V- to the right. (field dry contacts)

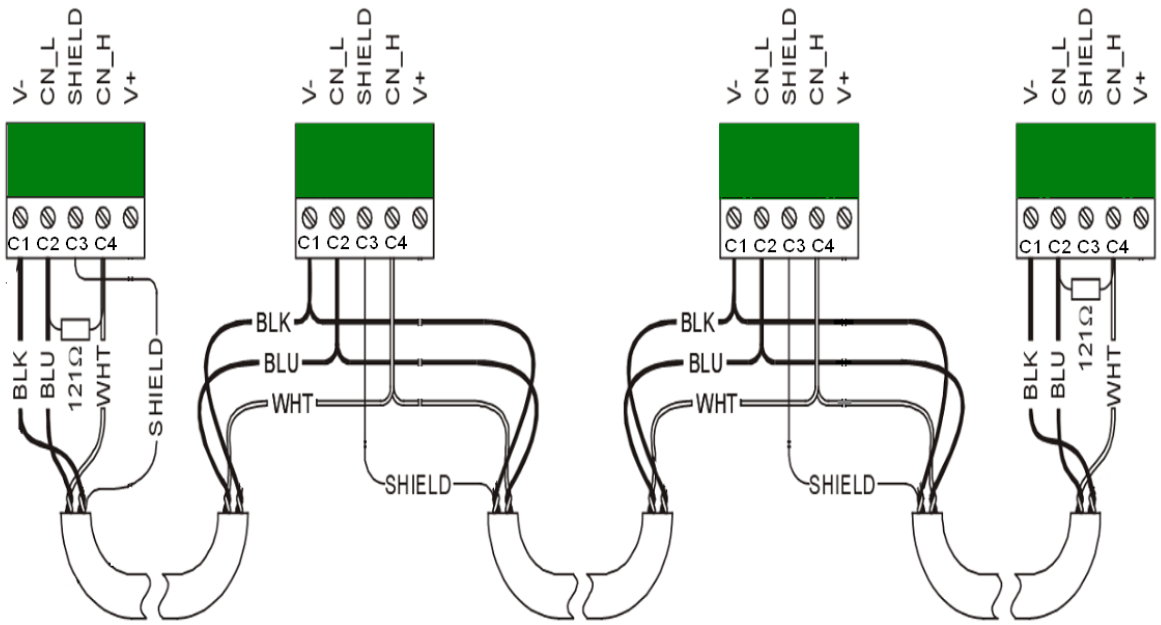
I1: Remote Enable input. Wire to I1+ and 0V- to the left. (field dry contacts)

P1: 24 VDC + : Factory wired

P2: 24 VDC - : Factory wired

GND: GROUND : Factory wired

CAN NETWORK WIRING

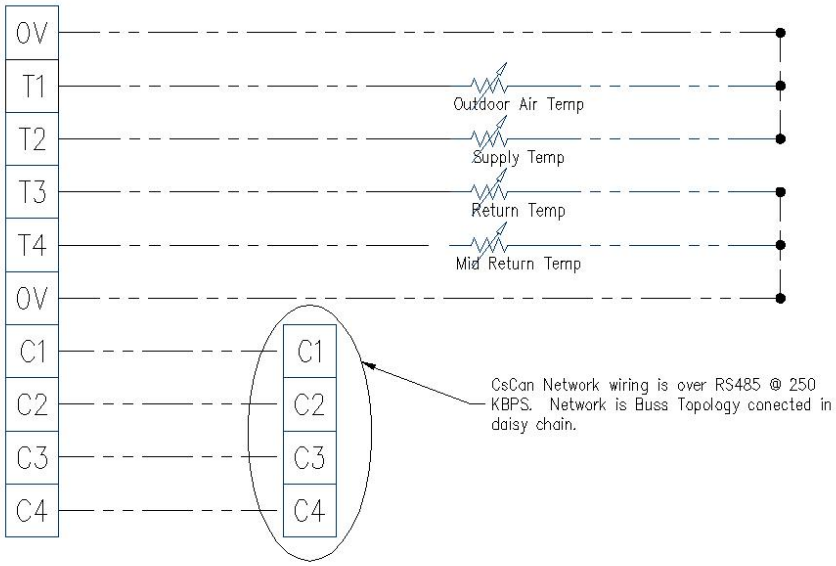


CAN NOTES:

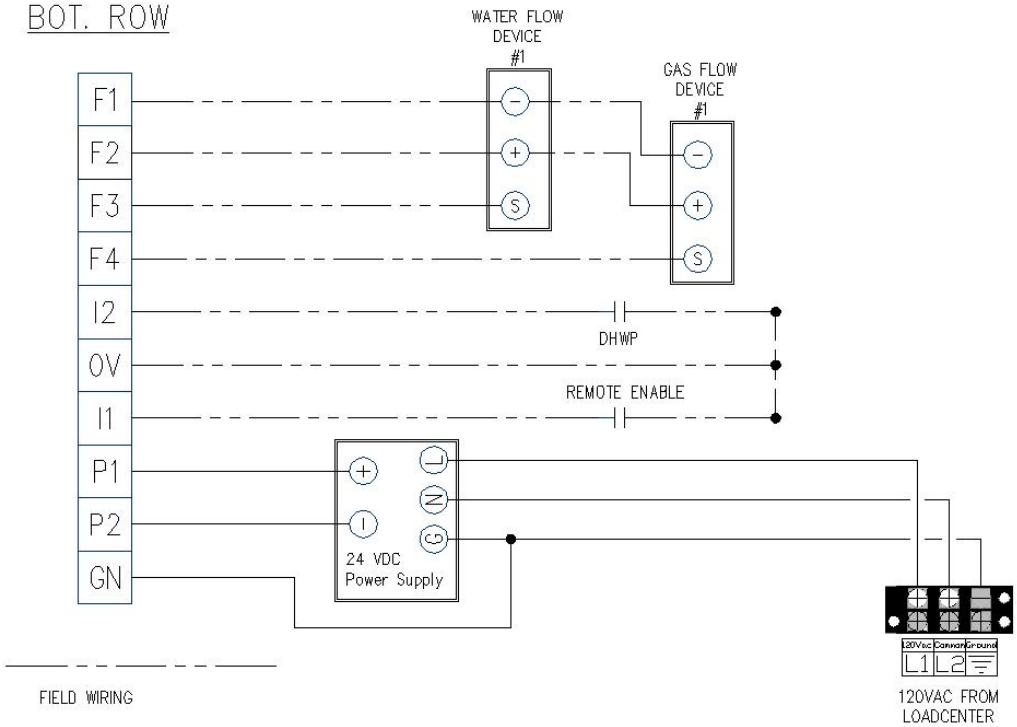
1) **Use 3 wire shielded cable with bare ground.**
2) **Wire "Daisy Chain style connecting all like terminals in a buss network as shown above**
3) **Shield bare wire should be grounded on one end only**
4) **Connect one (1) 121 Ohm resister (provided) at each end of buss as shown**
5) **Maximum network length is 600 feet using 18ga cable (200 feet using 24 ga)**
6) **Maximum network nodes without repeater equals 64 devices..**

ADMINISTRATOR DEVICE (WIRING BLOCK #1)

TOP ROW



BOT. ROW



DATE	BY	REV	DATE	BY	REV	DATE	BY	REV	DATE	BY	REV

THERMODYNAMIC PROCESS CONTROL
5935 Suite C Kopetsky Dr. Indianapolis IN 46217
TEL: 317-780-5743 FAX: 317-780-0988

JOB:	PAGE OF		
NAME:	JOB NUMBER	DATE	BY
			DJ

THERMODYNAMIC PROCESS CONTROL

TPC-FI-FDP CanNet
BOILER DEVICE
WIRING INSTRUCTIONS

01 MAR 2012
Rev. 3.0

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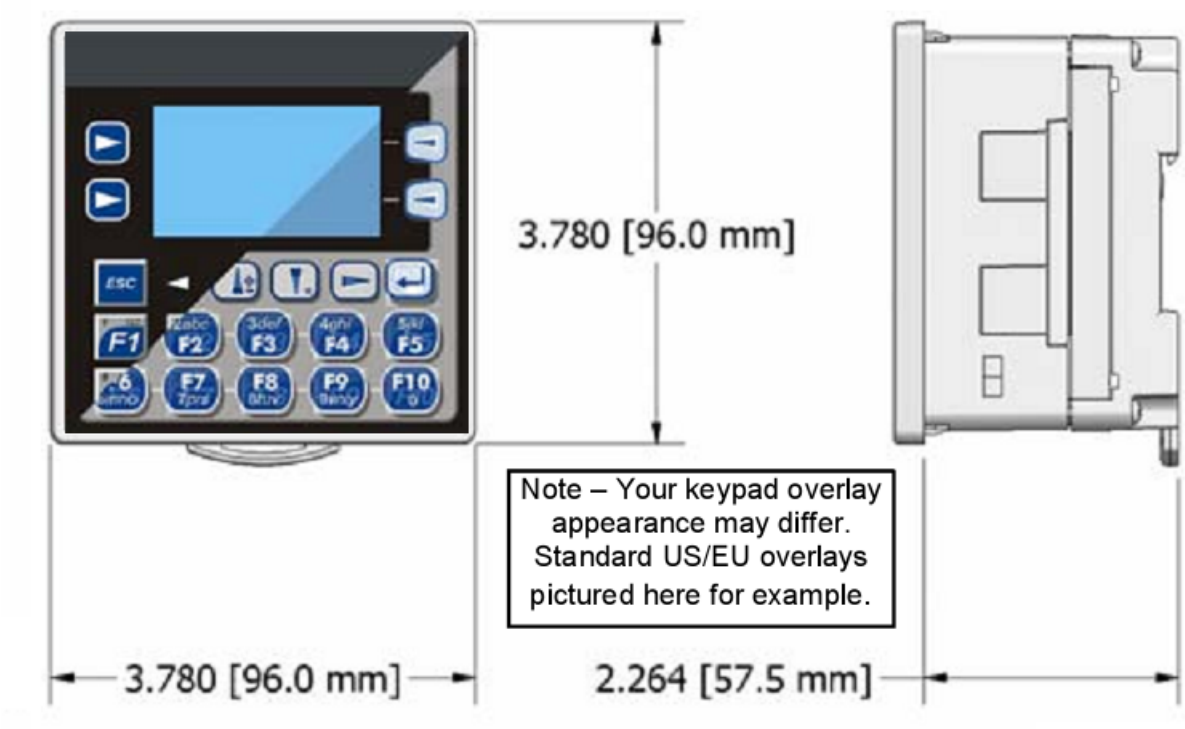
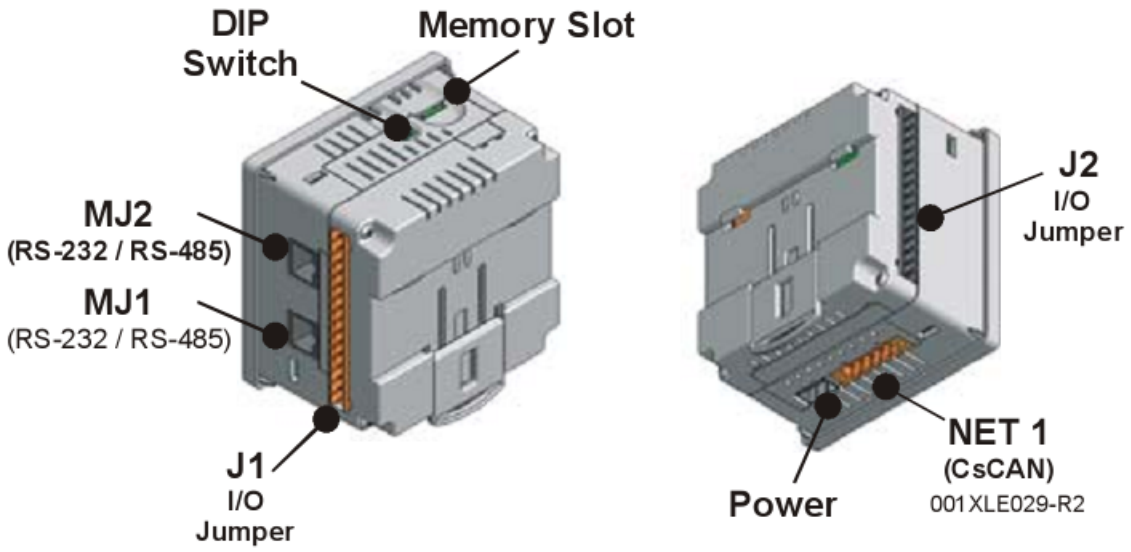
SCREEN DIMENSIONS



SIDE VIEWS



POWER WIRING

24VDC + Factory Wired

24VDC - Factory Wired

120VAC Factory Wired

120VAC Common Factory Wired

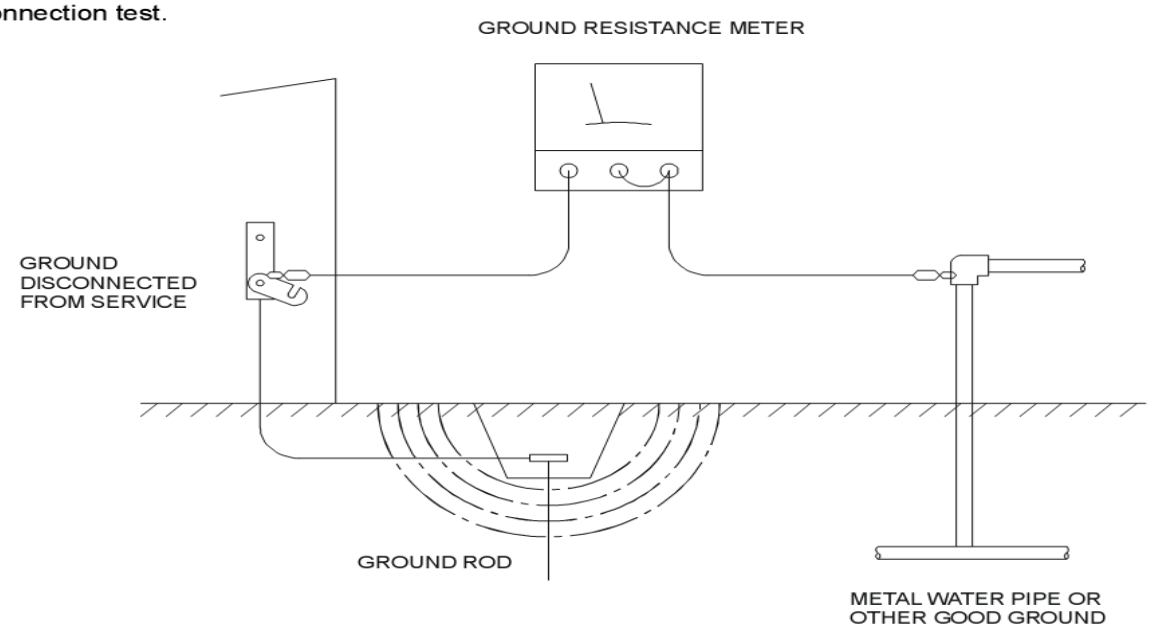
120VAC Neutral Factory Wired

120VAC Power Factory Wired

120VAC Power to 24VDC Power supply, Factory Wired

GROUNDING

In order to test ground resistance, a Ground Resistance Tester must be used. A typical Ground Resistance Meter Kit contains a meter, two or three wire leads, and two ground rods. Instructions are supplied for either a two-point or three-point ground test. **Figure 4.1** shows a two-point ground connection test.



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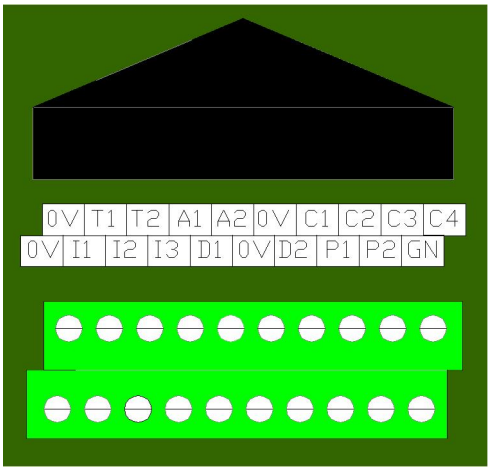
CONTROL WIRING



BOILER WIRING BLOCK									
TOP ROW									
0V-	T1+	T2+	A1+	A2+	0V-	C1	C2	C3	C4
COM	Inlet	Outlet	Boiler	Pump	COM	CsCan Network			
Temperature Inputs			Modulation Output						
BOTTOM ROW									
0V-	I1+	I2+	I3+	D1+	0V-	D2+	P1+	P2-	GND
Alarm Inputs		Prove Inputs		Relay Coils			24 VDC Power		
COM	Boiler	Pump	Boiler	Boiler	COM	Pump			

TOP ROW:

T1+: Boiler inlet temperature. Wire to T1+ and 0V- on left.

T2+: Boiler outlet temperature. Wire to T2+ and 0V- on left.

A1+: 4-20mA modulation signal to boiler. Wire to A1+ and 0V- on right.

A2+: 4-20mA modulation signal to boiler secondary pump. Wire to A1+ and 0V- on right.

CAN: Connect all CAN on network together in bus topology accordingly (see image below)

BOTTOM ROW:

I1+: 24VDC Boiler alarm input. Wire to I1+ and 0V- to left. Connect to dry contacts only.

I2+: 24VDC Boiler Pump prove. Wire to I2+ and 0V- to left. Connect to dry contacts only.

I3+: 24VDC Boiler prove. Wire to I3+ and 0V- to left. Connect to dry contacts only.

D1+: Boiler enable coil circuit: Factory wired

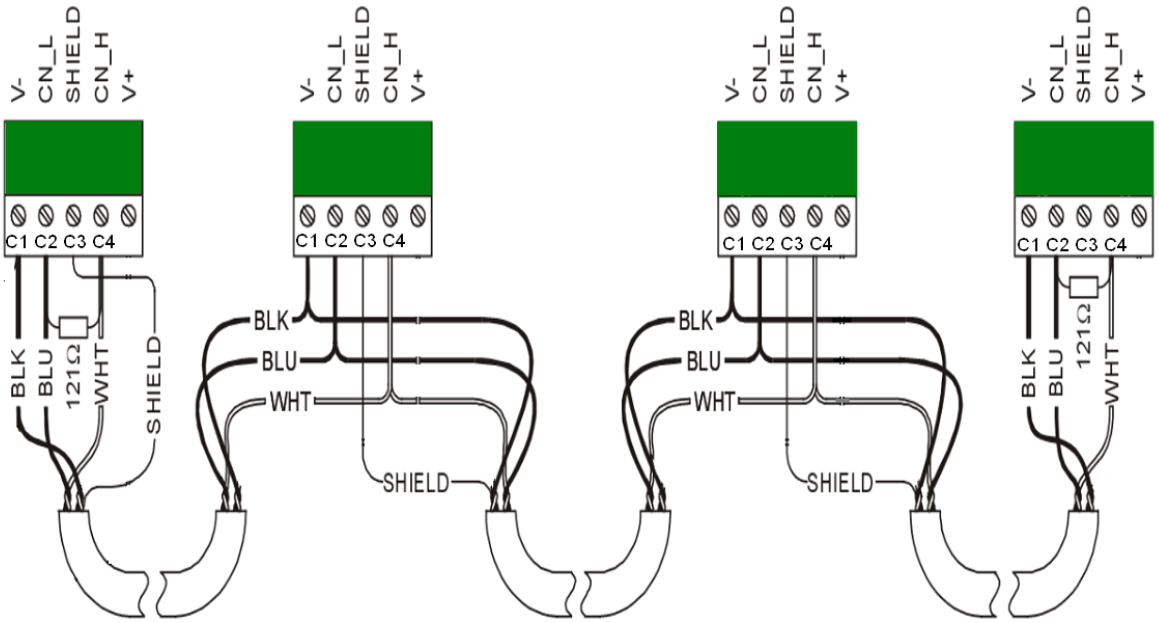
D2+: Boiler pump enable coil circuit: Factory wired

24 VDC + : Factory wired

24 VDC - : Factory wired

GROUND : Factory wired

CAN NETWORK WIRING



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3) **Shield bare wire should be grounded on one end only**
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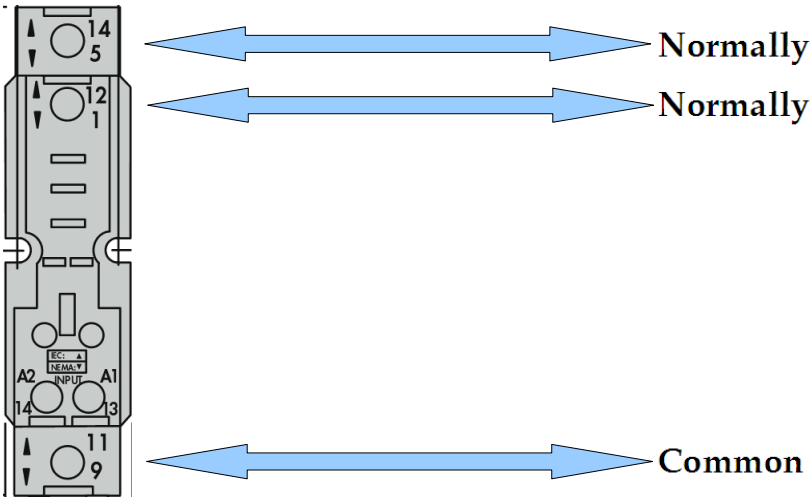
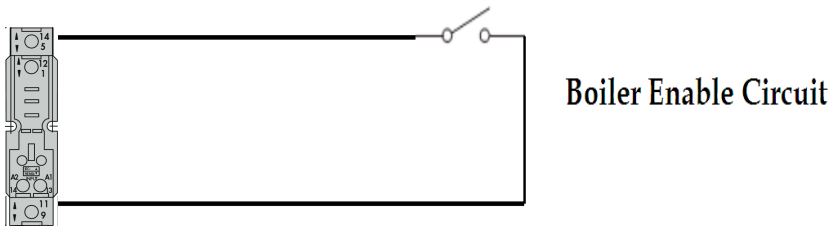
5) **Maximum network length is 600 feet using 18ga cable (200 feet using 24 ga)**
6) **Maximum network nodes without repeater equals 64 devices..**

RELAY CONTACT WIRING

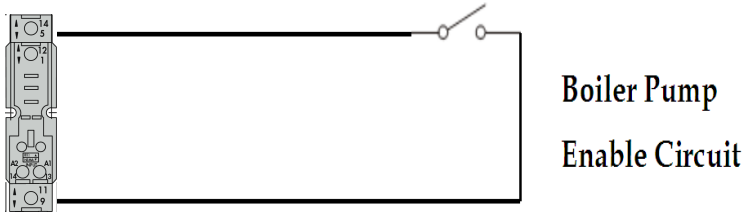
RELAY TYPICAL



RELAY 1

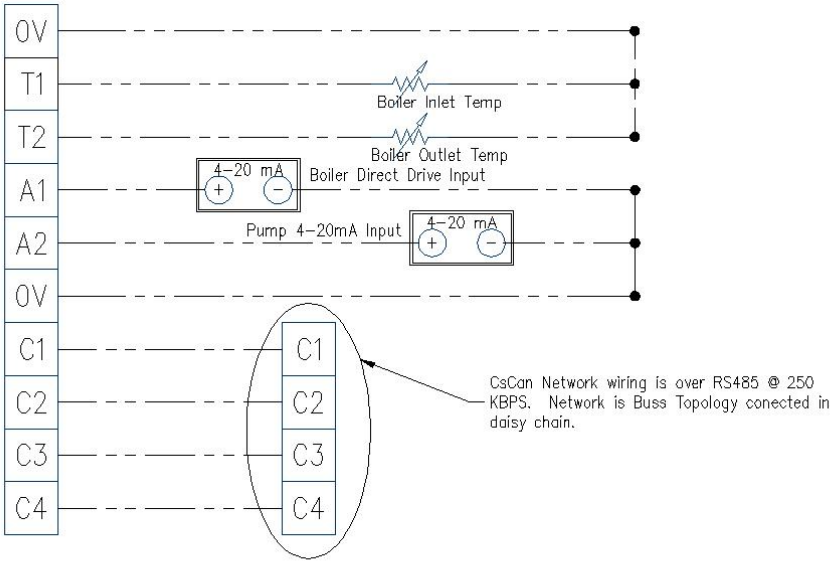


RELAY 2

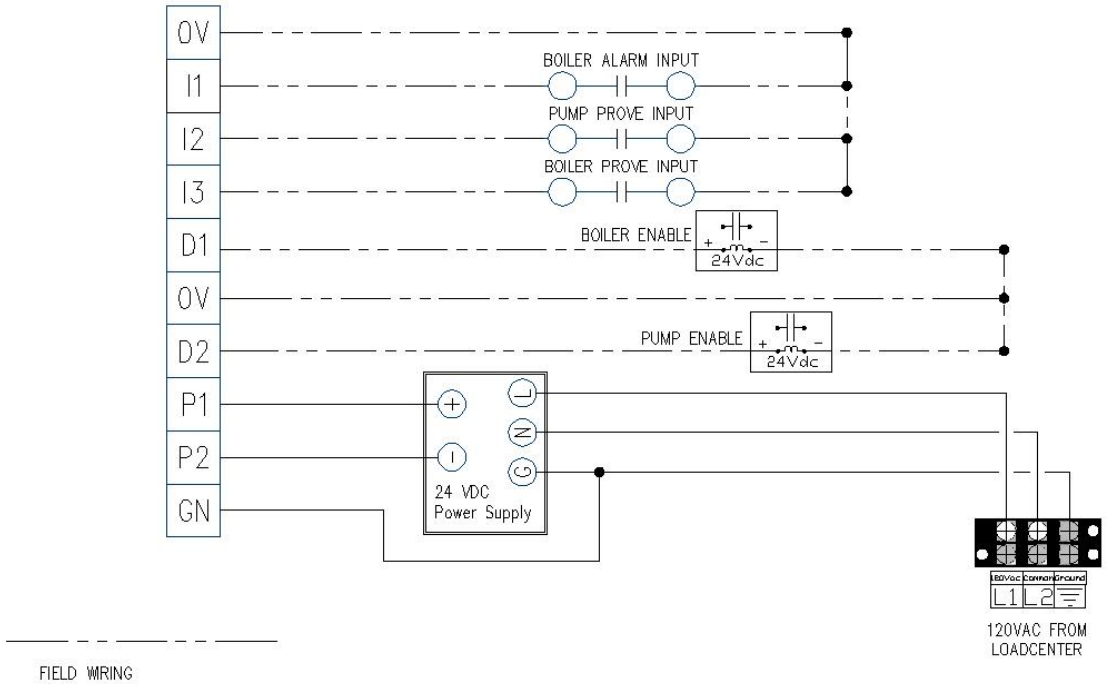


BOILER DEVICE FIELD WIRING

TOP ROW



BOT. ROW



FIELD WIRING

DATE	BY	REV	DATE	BY	REV	DATE	BY	REV	DATE	BY	REV

THERMODYNAMIC PROCESS CONTROL
5935 Suite C Kopetsky Dr. Indianapolis IN 46217
TEL: 317-780-5743 FAX: 317-780-0988

JOB:	PAGE OF		
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THERMODYNAMIC PROCESS CONTROL

TPC-FI-FDP CanNet
SYSTEM PUMP DEVICE
WIRING INSTRUCTIONS

01 MAR 2012
Rev. 3.0

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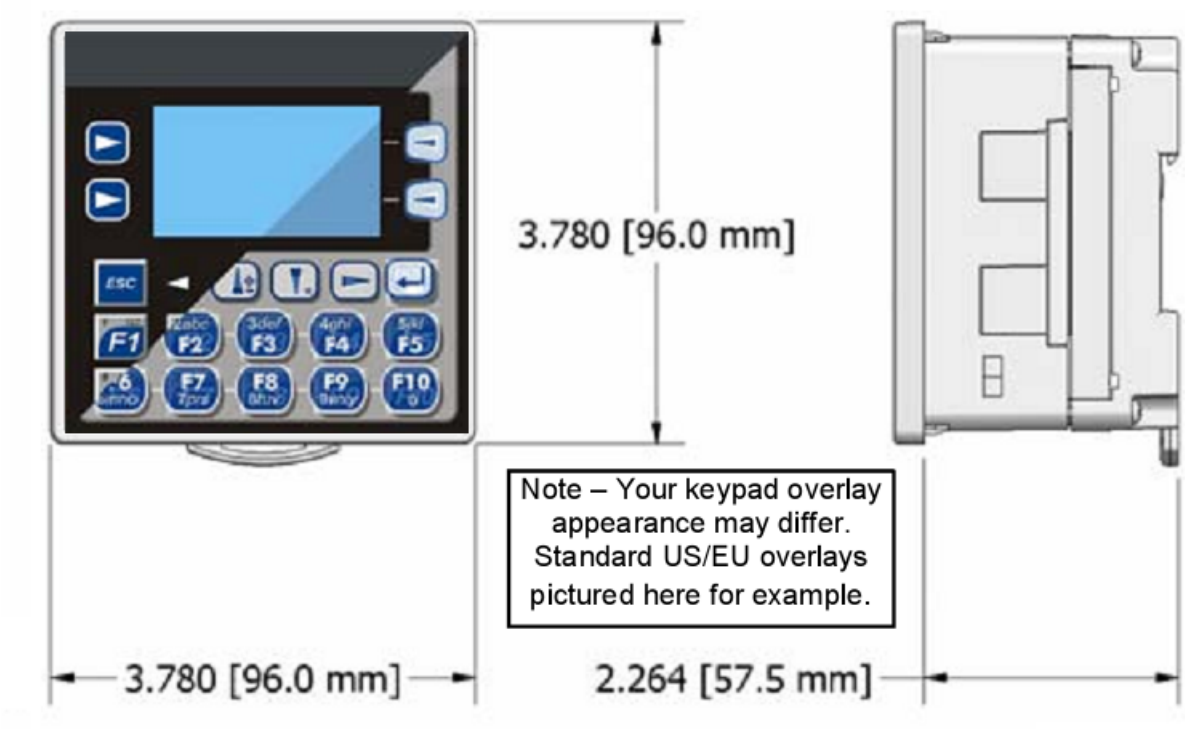
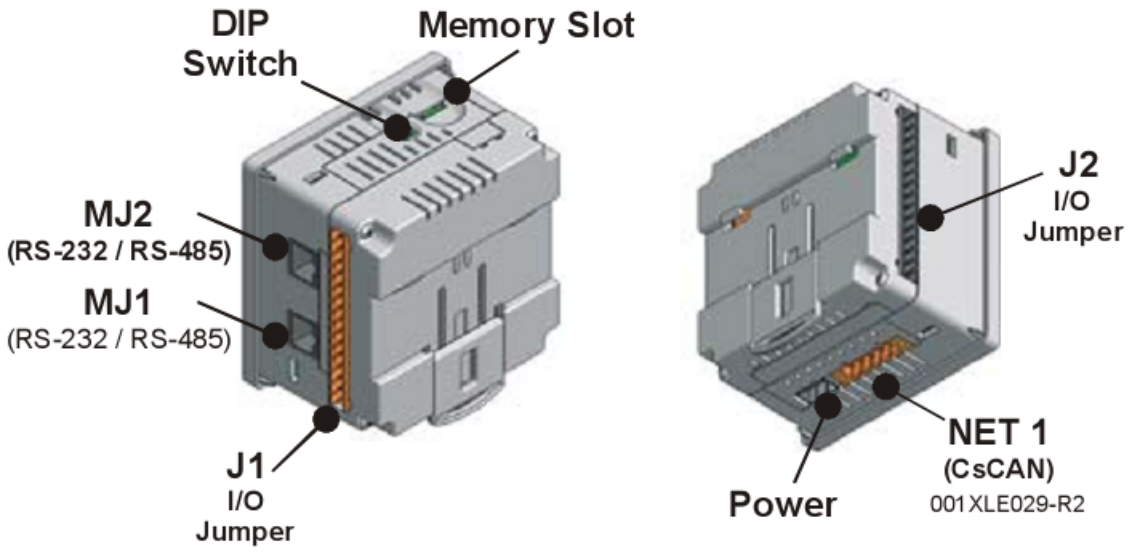
SCREEN DIMENSIONS



SIDE VIEWS



POWER WIRING

24VDC + Factory Wired

24VDC - Factory Wired

120VAC Factory Wired

120VAC Common Factory Wired

120VAC Neutral Factory Wired

120VAC Power Factory Wired

120VAC Power to 24VDC Power supply, Factory Wired

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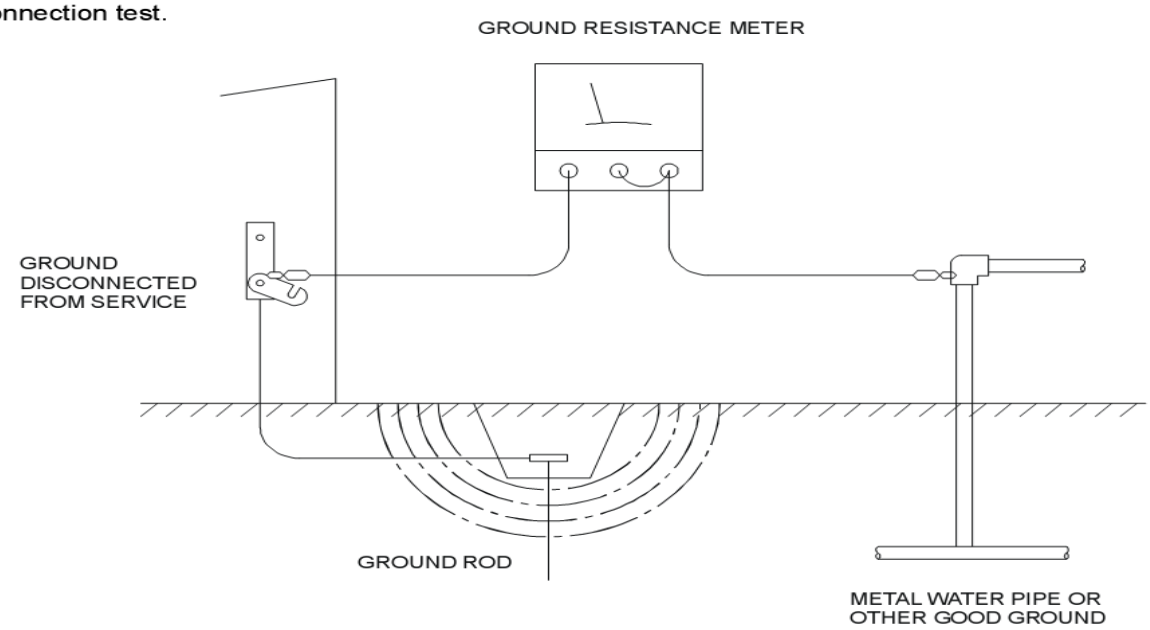

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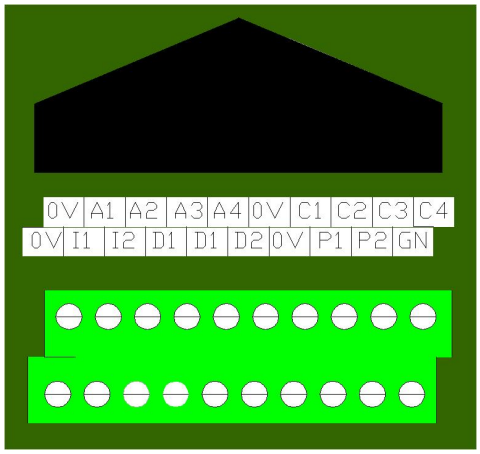
- For shielded Analog I/O wiring, use the following wire type or equivalent: Belden 8441, 18 AWG (0.8 mm^2) or larger.

- For CAN wiring, use the following wire type or equivalent: Belden 3084, 24 AWG (0.2 mm^2) or larger.

Use copper conductors in field wiring only, 60/75° C

CONTROL WIRING



PUMP WIRING BLOCK									
TOP ROW									
0V-	A1+	A2+	A3+	A4+	0V-	C1	C2	C3	C4
COM	Pump1	Pump2	Pump1	Pump2	COM	CsCan Network			
Pressure Inputs			Modulation Output						
BOTTOM ROW									
0V-	I1+	I2+	D1+	D2+	0V-	X	P1+	P2-	GND
Prove Inputs			Relay Coils			UNUSED	24 VDC Power		
COM	Pump1	Pump2	Pump1	Pump2	COM				

TOP ROW:

A1+: Pump (1) and/or 2 4-20mA pressure input. Wire to A1+ and 0V- on left.

A2+: Pump (2) 4-20mA pressure input. Wire to A2+ and 0V- on left.

A3+: 4-20mA modulation signal to pump (1). Wire to A3+ and 0V- on right.

A4+: 4-20mA modulation signal to pump (2). Wire to A4+ and 0V- on right.

CAN: Connect all CAN on network together in bus topology accordingly (see image below)

BOTTOM ROW:

I1+: 24VDC Pump (1) prove input. Wire to I1+ and 0V- to left. Connect to dry contacts only.

I2+: 24VDC Pump (2) prove input. Wire to I2+ and 0V- to left. Connect to dry contacts only.

D1+: Pump (1) enable coil circuit: Factory wired

D2+: Pump (2) enable coil circuit: Factory wired

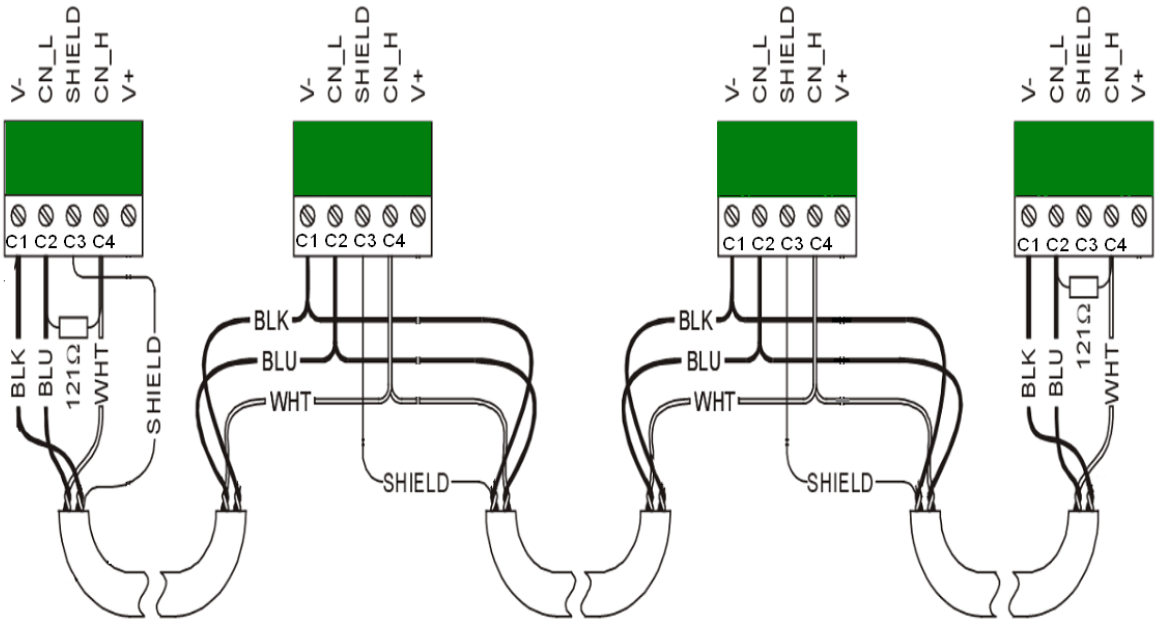
X: Unused.

24 VDC + : Factory wired

24 VDC - : Factory wired

GROUND : Factory wired

CAN NETWORK WIRING

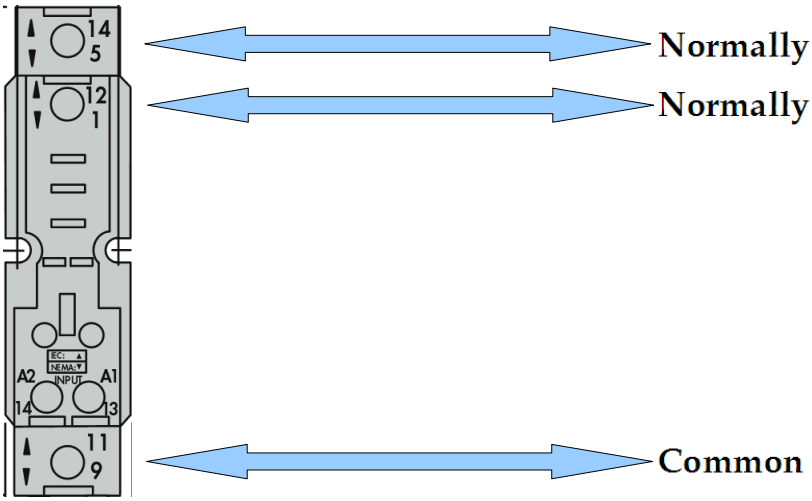


CAN NOTES:

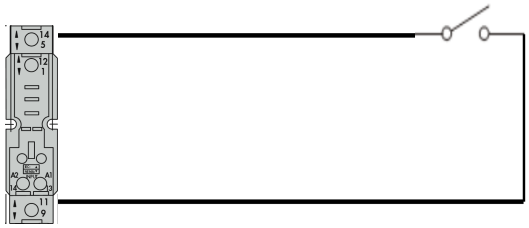
1) **Use 3 wire shielded cable with bare ground.**
2) **Wire "Daisy Chain style connecting all like terminals in a buss network as shown above**
3) **Shield bare wire should be grounded on one end only**
4) **Connect one (1) 121 Ohm resister (provided) at each end of buss as shown**
5) **Maximum network length is 600 feet using 18ga cable (200 feet using 24 ga)**
6) **Maximum network nodes without repeater equals 64 devices..**

RELAY CONTACT WIRING

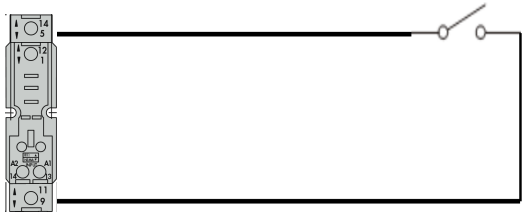
RELAY TYPICAL



RELAY 1 **PUMP (1)**

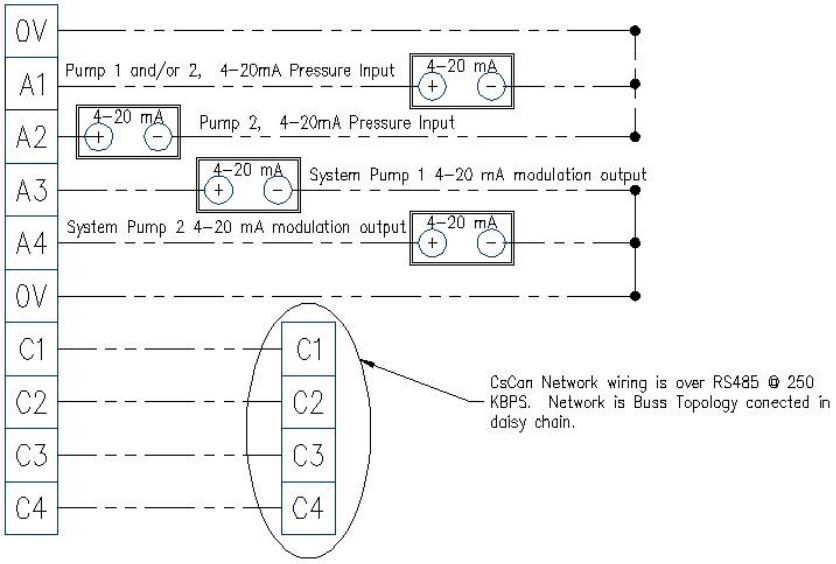


RELAY 2 **PUMP (2)**

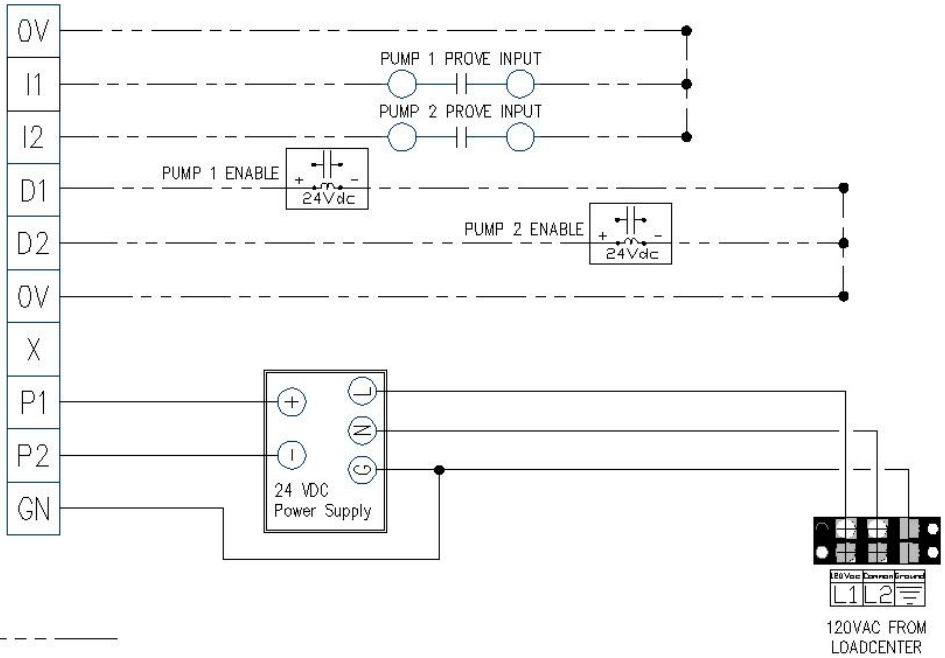


PUMP DEVICE FIELD WIRING

TOP ROW



BOT. ROW



FIELD WIRING

DATE	BY	REV	DATE	BY	REV	DATE	BY	REV	DATE	BY	REV

THERMODYNAMIC PROCESS CONTROL
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