

TS Series

TS... Touchscreen Kits

for use with LMV3, LMV5 and RWF... Controls



Touchscreen

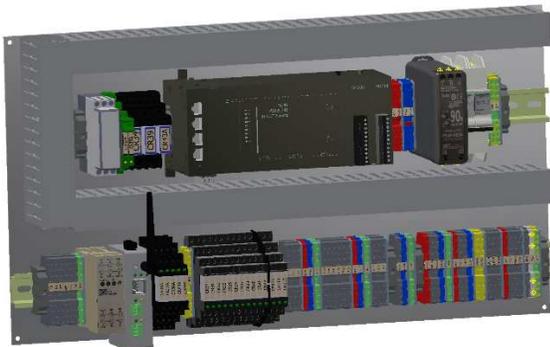


Plate Kit



Enclosure

Description

TS... series touchscreen kits provide a human machine interface (HMI) with a Siemens LMV3 or LMV5 linkageless control. Each kit provides data collection and trending for a hot water or steam boiler. An optional RWF55 control for load or water level modulation easily interfaces with TS... series touchscreen kit.

Each TS... touchscreen kit includes a 3", 6", 10", 12" or 15" touchscreen along with a plate kit. The touchscreen and plate kit can be pre-mounted in an enclosure, or mounted by others in a control panel.

A PLC first-out annunciator provides additional analog, digital, temperature, and/or draft controls inputs and outputs.

Flexible communication interface options to the building management system (BMS) provide streamlined data collection, monitoring and control.

Standard Features

- Local touchscreen interface with Siemens LMV/RWF controllers
- Schneider touchscreens available in 3", 6", 10", 12" or 15"
- Field configurable graphics and tags
- Complete lockout and error history in plain text.
- Fuel-air ratio control curve displayed
- Alarm history stored for most recent 100 faults/alarms
- Detailed annunciation of LMV... digital inputs and outputs
- Remote setpoint, firing rate and/or enable of the LMV... or RWF... via BMS
- Water level control option and status via RWF55, or PLC
- Single or three elements drum level control
- Circulating pump VFD control hot water boilers
- Metric or Standard units displayed
- English, Spanish, and Portuguese languages
- English, Spanish, and Portuguese text for alarms
- Circulating pump/isolation valve control outputs for hydronic boilers (option with expanded annunciator)
- Expanded annunciator options include:
 - Four analog inputs with field configurable label, span and type (0-10V, 2-10V, 0-20mA or 4-20mA), low and high alarm setpoints, with auto or manual reset. Totalization available per minute or per hour.
 - Two analog outputs with field configurable span and type (0-10V, 2-10V, 0- 20mA or 4-20mA); low and high alarm setpoints, with auto or manual reset. Totalization available per minute or per hour.
 - Two dedicated analog outputs for either circulating pump VFD control, or water level control, with field configurable span (4-20mA); low and high alarm setpoints, with auto or manual reset.
 - Twelve universal inputs to be field configured for either 1000 or 100 ohm RTD, or thermocouples type K, or J, analog inputs 4-20mA, with field configurable label, low and high alarm setpoints, with auto or manual reset.
 - Two digital outputs with field configurable logic, including on and off delays. Manual or automatic reset.
 - First-out annunciation option, including fourteen 120 VAC inputs with field labeling capability
 - Eight data logging variables stored

- Four selectable variables for trending up to seven days
- Economizer temperature monitoring
- Draft control
- Connection of two additional RWF55 controllers
- Variable Speed Drive information and setup when preprogrammed VFD (Yaskawa) provided by SCC Inc.
- Variable speed Drive information and setup when preprogrammed VFD (ABB, AB Power Flex, or Danfoss), when provided by others.
- Screen saver with PV, setpoint, demand and status
- Standard Modbus TCP/IP to BMS communications
 - Additional BMS communication options available
- Email communications and text messaging for up to six recipients including alarms, faults and screen shots (screen shot viewer via USB)
- Remote monitoring via smart phone or tablet
- Compatible with SCC Master Panel Lead Lag system

Application

TS... touchscreen kits are suited for hydronic boiler, steam boiler, and other applications utilizing an LMV3 or LMV5 linkageless control system.

Components

All TS... touchscreen kits include the following components:

- 3", 6", 10", 12", or 15" touchscreen
- Plate kit including power supply and branch circuit protection
- Cables for quick connections between the plate kit, touchscreen, and LMV... system
- Interconnect terminals for field wiring

The following optional features are available:

- Draft Control
- Annunciation Options Including:
 - 14 digital 120 VAC alarm annunciation inputs.
 - 4 analog inputs (0-20mA - 4-20mA - 0-10V - or 2-10V)
 - 2 analog outputs (0-20mA - 4-20mA - 0-10V - or 2-10V)
 - UP to 12 universal inputs field configured for (4-20ma, RTD1000- RTD100 Ohms, Thermocouple Type K, Thermocouple type J, for general purpose
 - 2 analog outputs for circulating pump VFD control, and or steam boilers water level control

- 5 output relays for:
 - Starting circulating pump on Hot water boilers
 - Monitoring a digital value (2 outputs)
 - Annunciation alarms
 - PLC normal operation indication
- BMS communication other than standard Modbus
- Open plate kit, or in enclosure

Product Part Numbers

	TS	-	KT	0	X	D	G	-	X	X	1	-	X	X	X	X	W
Touchscreen																	
Kit																	
Touchscreen Size																	
3	= 3" touchscreen																
6	= 6" touchscreen																
0	= 10" touchscreen																
2	= 12" touchscreen																
5	= 15" touchscreen																
Touchscreen Location 15 Feet or More Away From AZL																	
X	= No																
Y	= Yes																
Draft Control																	
X	= No draft control included																
D	= Draft control																
PLC Feedwater, water level or Circulating Pump VFD control																	
X	= No feedwater or circulating pump VFD control included																
3	= PLC three elements feedwater and level control (Steam boilers only)																
4	= PLC single element feedwater and level control (Steam boilers only)																
5	= PLC circulation pump VFD, and water level control																
Annunciations and Monitoring (Touchscreen Required)																	
X	= No annunciation inputs																
A	= Standard annunciation, (14) 120 VAC inputs																
B	= (14) 120 VAC inputs, (4) analog inputs with totalization, and (2) analog outputs																
C	= (14) 120 VAC inputs and (4) universal inputs* (AI, RTD, or TC)																
D	= (14) 120 VAC inputs and (8) universal inputs* (AI, RTD, or TC)																
E	= (14) 120 VAC inputs and (12) universal inputs* (AI, RTD, or TC)																
F	= (14) 120 VAC inputs, (4) analog inputs with totalization, (4) universal inputs* (AI, RTD, or TC), and (2) analog outputs																
G	= (14) 120 VAC inputs, (4) analog inputs with totalization, (8) universal inputs* (AI, RTD, or TC)*, and (2) analog outputs																
H	= (14) 120 VAC inputs, (4) analog inputs with totalization, (12) universal inputs* (AI, RTD, or TC)*, and (2) analog outputs																
Building Management Interface (BMS)																	
S	= Standard, Modbus TCP/IP																
B	= BACnet / IP, or Ethernet / IP																
M	= BACnet MS/TP, Modbus RTU, or Metasys N2																
L	= LonWorks																
N	= Profinet																
P	= Profibus																
Enclosure Option																	
X	= None - din rail kit on plate to be mounted into enclosure (Mounted by others)																
1	= NEMA 1																
2	= NEMA 12, includes cover over touchscreen and AZL/RWF																
4	= NEMA 4X (indoor), includes cover over touchscreen and AZL/RWF (if applicable) Cover will not be included if an AZL/RWF option is not selected																
Cooling Fan (Option with enclosure)																	
X	= No cooling fan																
Y	= Yes cooling fan																
Warrick Manual Reset Relay (Option with enclosure)																	
X	= No manual reset Warrick relay																
Y	= Yes manual reset Warrick relay																
AZL (Option with enclosure)																	
X	= No AZL included (Must be selected with din rail kit on plate)																
3	= AZL23.00A9 mounted to front of enclosure																
5	= AZL52.40B1 mounted to front of enclosure																
RWF (Option with enclosure)																	
X	= No RWF included																
L	= RWF55.50A9 for external load control																
W	= RWF55.50A9 for water level control with transformer																

2 = (2) RWF55.50A9 for external load control and water level control - includes 1 transformer

***Universal inputs:**

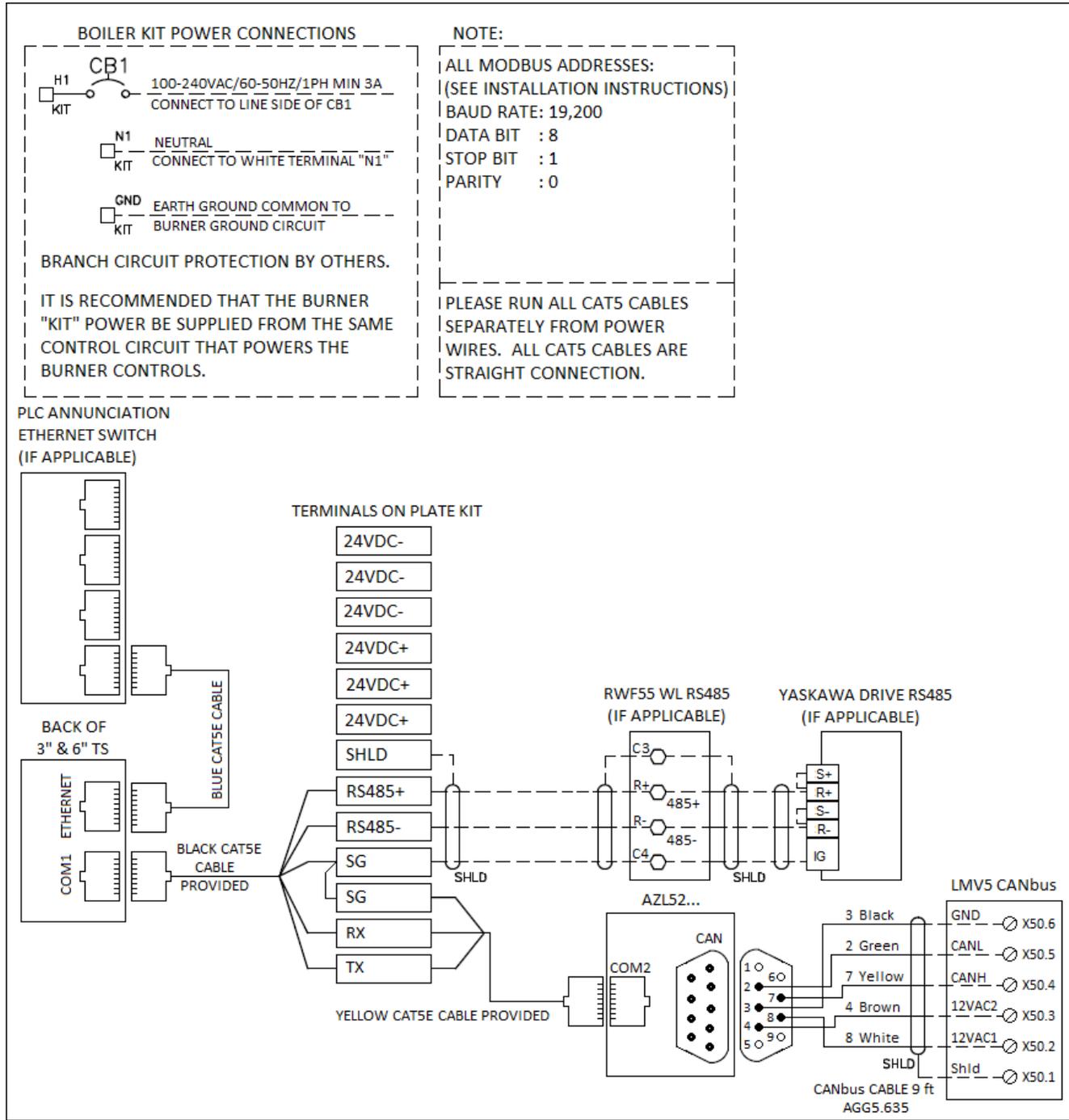
There are four universal inputs per input module. Each module must be configured for the same input, either 4-20 mA, Thermocouple type K or J, or RTD 1000 or 100 ohms. If the maximum of three universal modules are included, the first and second modules may each be configured for a different input type, and the third module will automatically be the same as the second universal module.

Specifications

		3"/6" TS	10" TS	12" TS	15" TS
Physical Characteristic	Main power	110-240 VAC	110-240 VAC	110-240 VAC	110-240 VAC
	Frequency	60-50 Hz	60-50 Hz	60-50 Hz	60-50 Hz
	Touchscreen Power	24 VDC	24 VDC	24 VDC	24 VDC
	Power Consumption	≤ 205 W	≤ 205 W	≤ 205 W	≤ 205 W
	Power Consumption With PLC Annunciation	≤ 460 W	≤ 460 W	≤ 460 W	≤ 460 W
	Dry Contacts	2 Amps	2 Amps	2 Amps	2 Amps
Operating Environment	Operating Temperature	32 to 122 °F [0 to 50 °C]	32 to 131 °F [0 to 55 °C]	32 to 131 °F [0 to 55 °C]	32 to 131 °F [0 to 55 °C]
	Humidity	Max. 80%, No condensation	Max. 85%, No condensation	Max. 85%, No condensation	Max. 85%, No condensation
	NEMA Rating (Indoor)	NEMA 4X	NEMA 4X	NEMA 4X	NEMA 4X

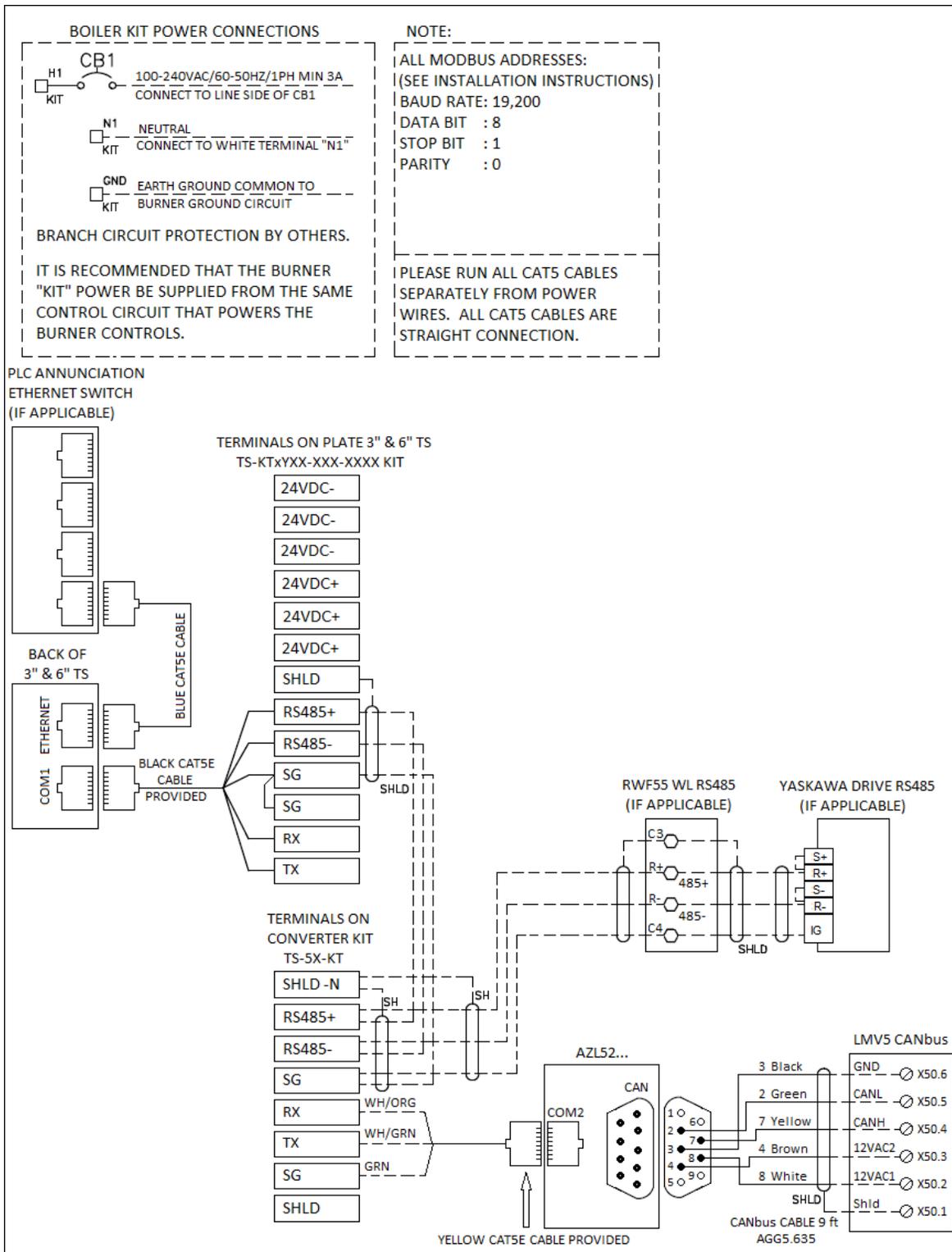
Connections

3" and 6" Touchscreen kit with LMV5 and optional RWF55 for water level control:



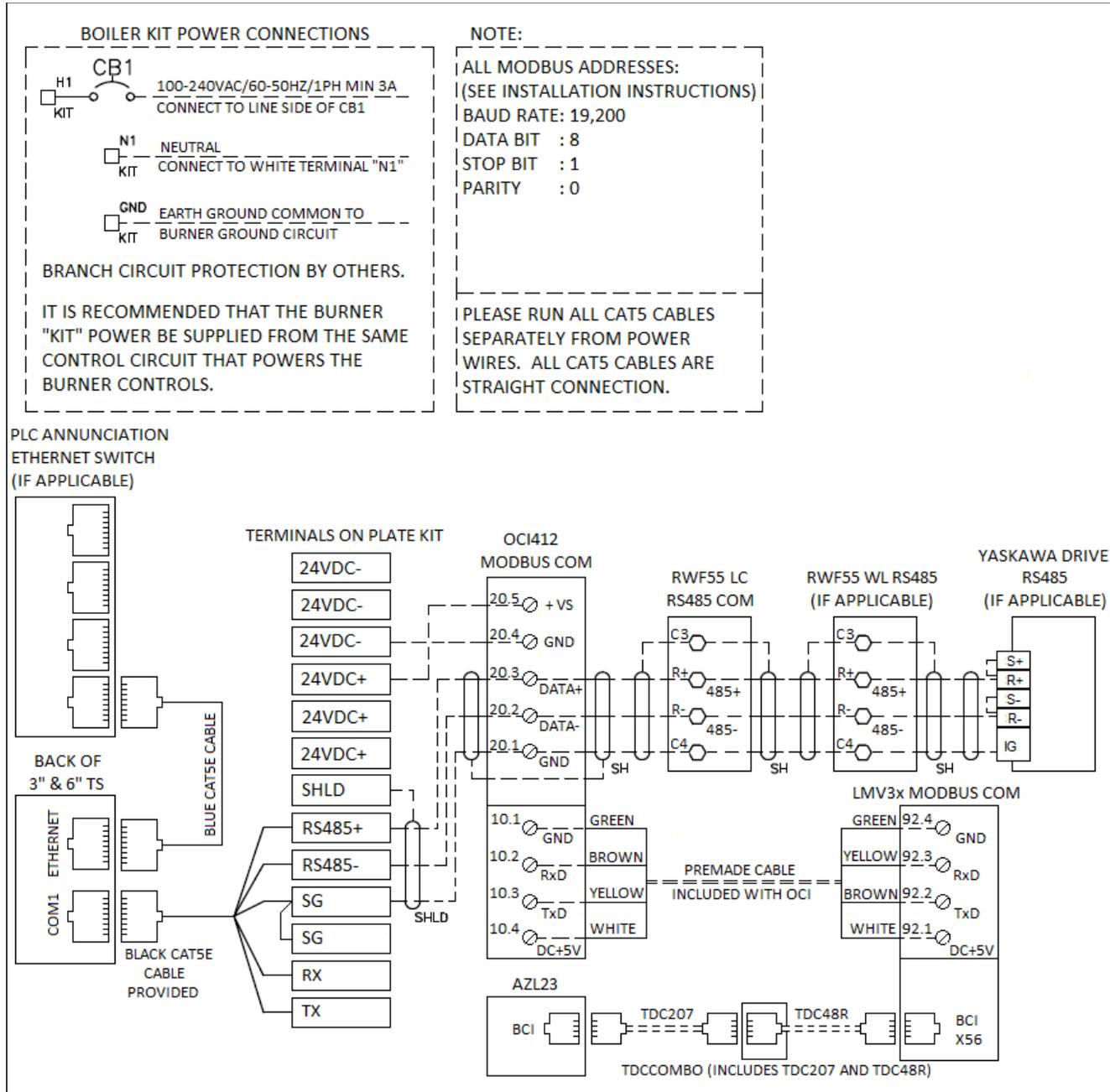
Connections (continued)

3" and 6" Touchscreen kit with LMV5 and optional RWF55 water level control: This diagram is to be used when the touchscreen is mounted more than 15ft away from the AZL



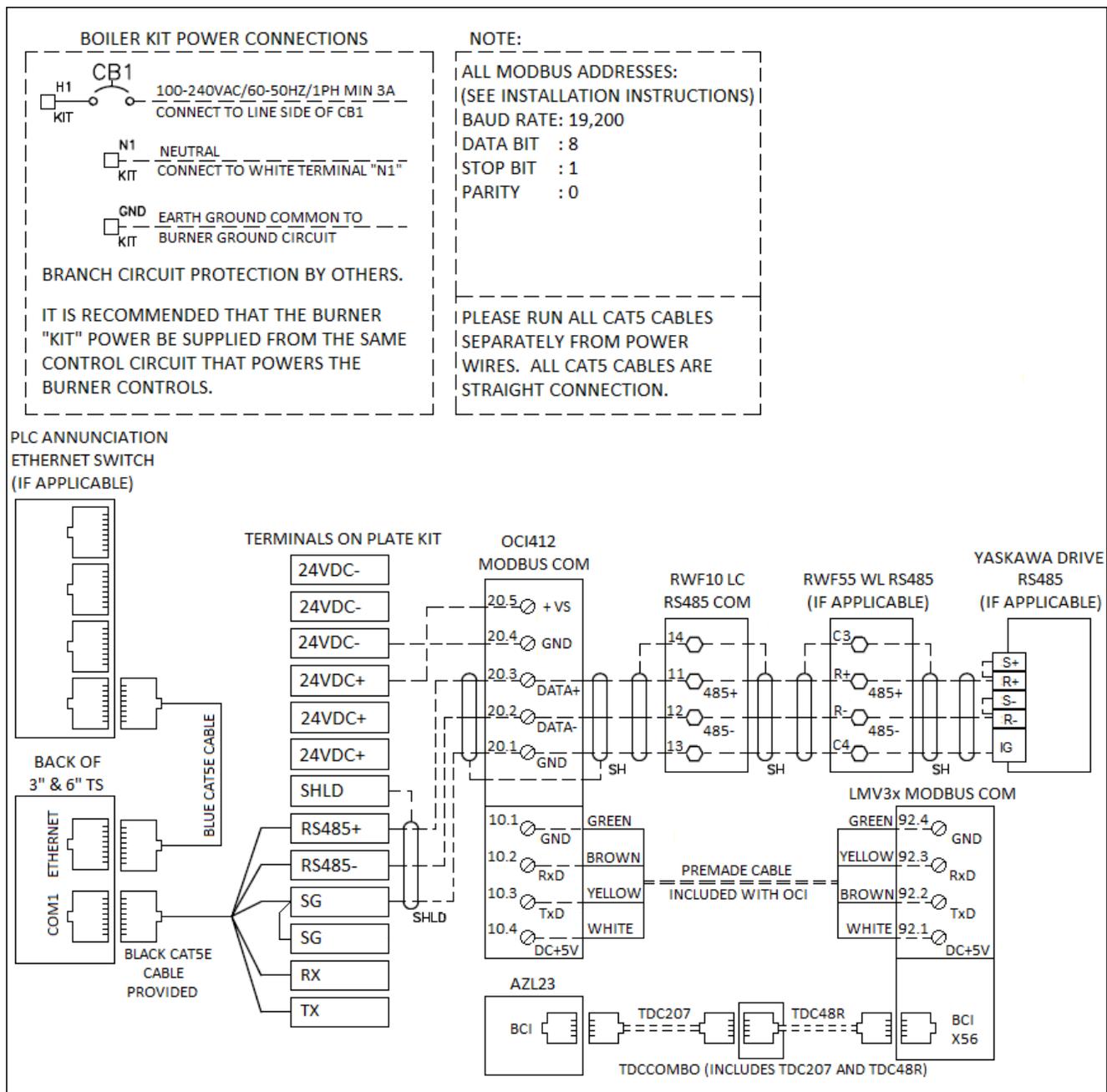
Connections (continued)

3" and 6" Touchscreen kit with LMV3, RWF55 for load control, and optional RWF55 for water level control:



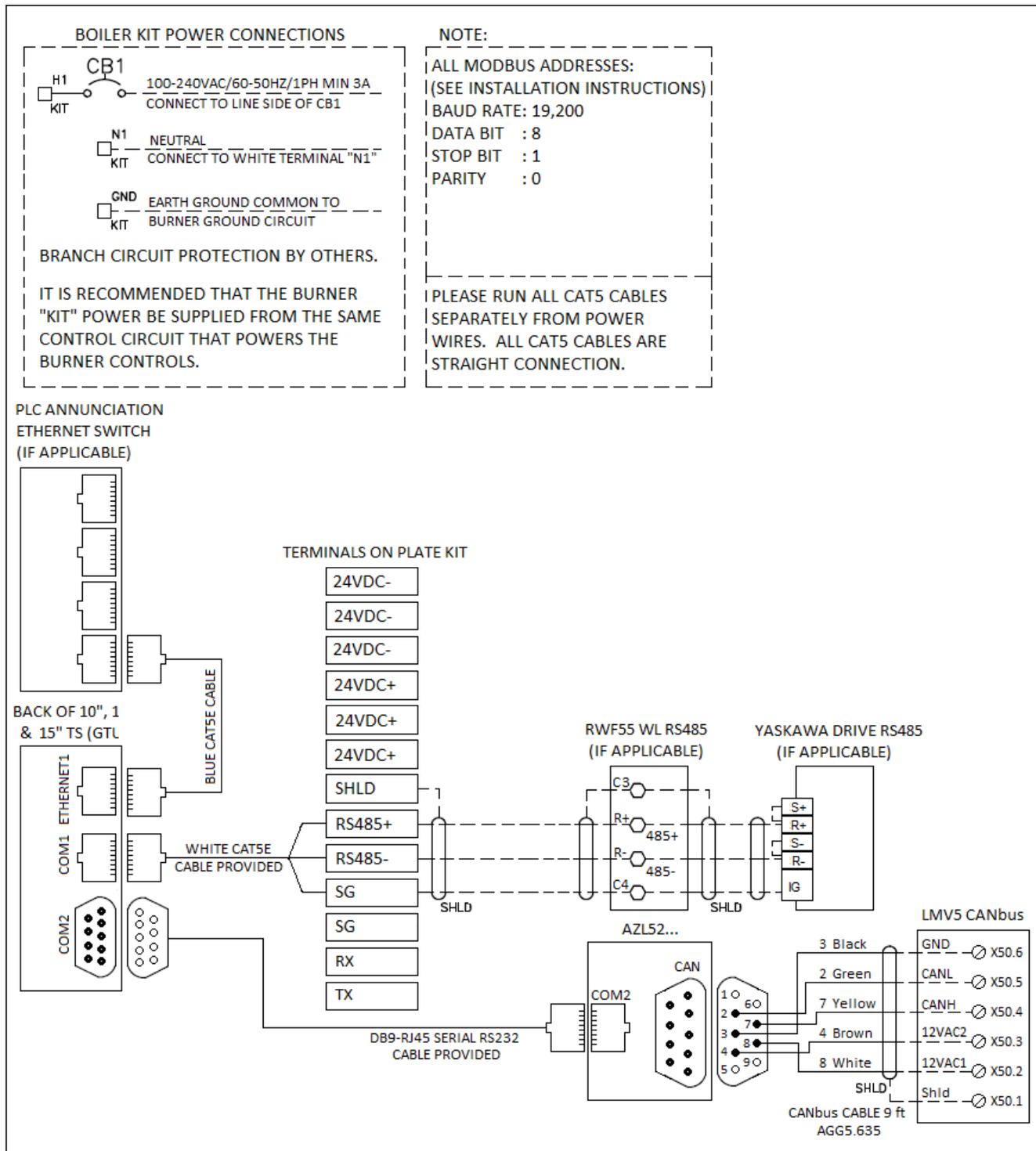
Connections (continued)

3" and 6" Touchscreen kit with LMV3, RWF10 for load control, and optional RWF55 for water level control:



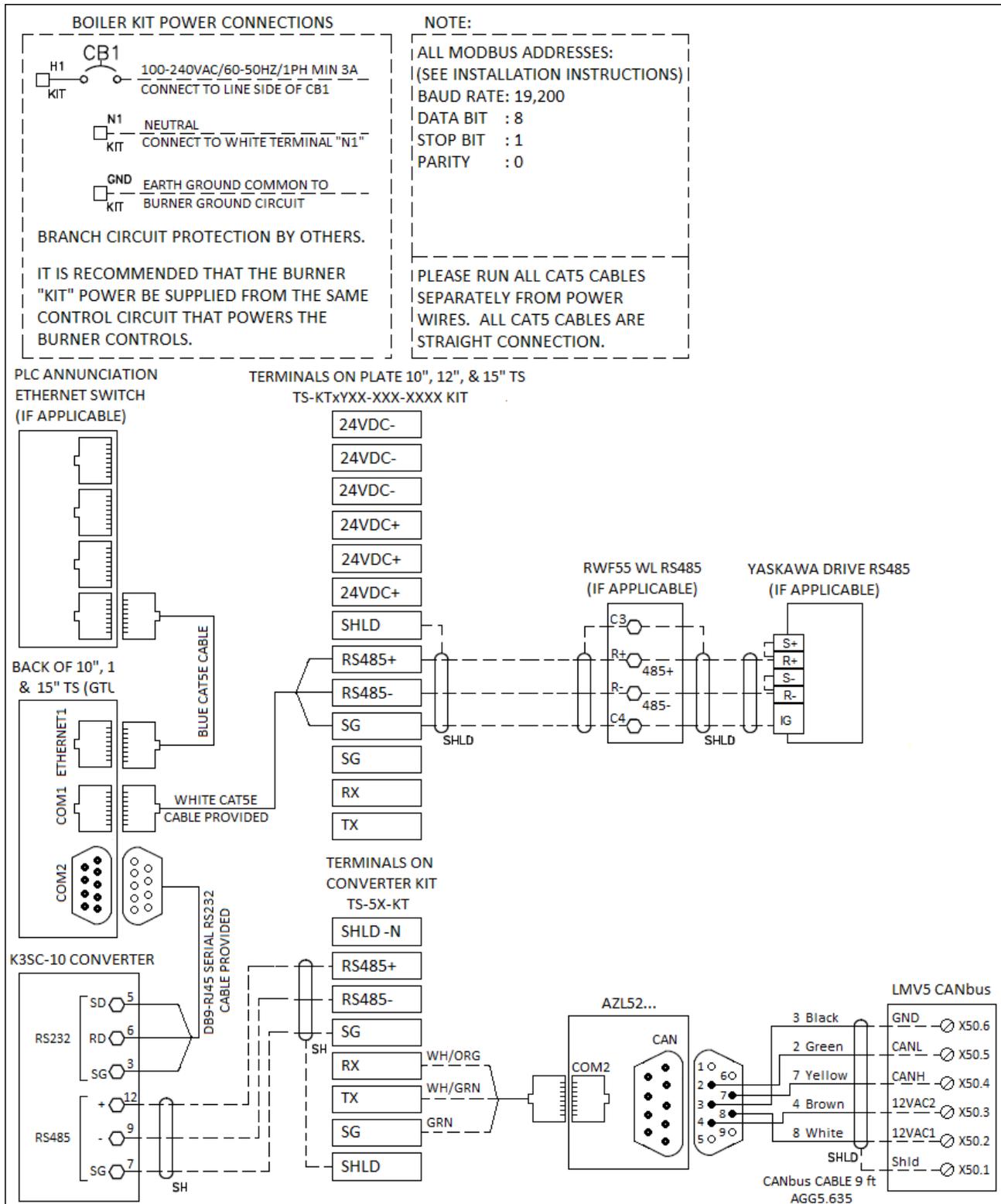
Connections (continued)

10" Touchscreen kit with LMV5 and optional RWF55 for water level control:



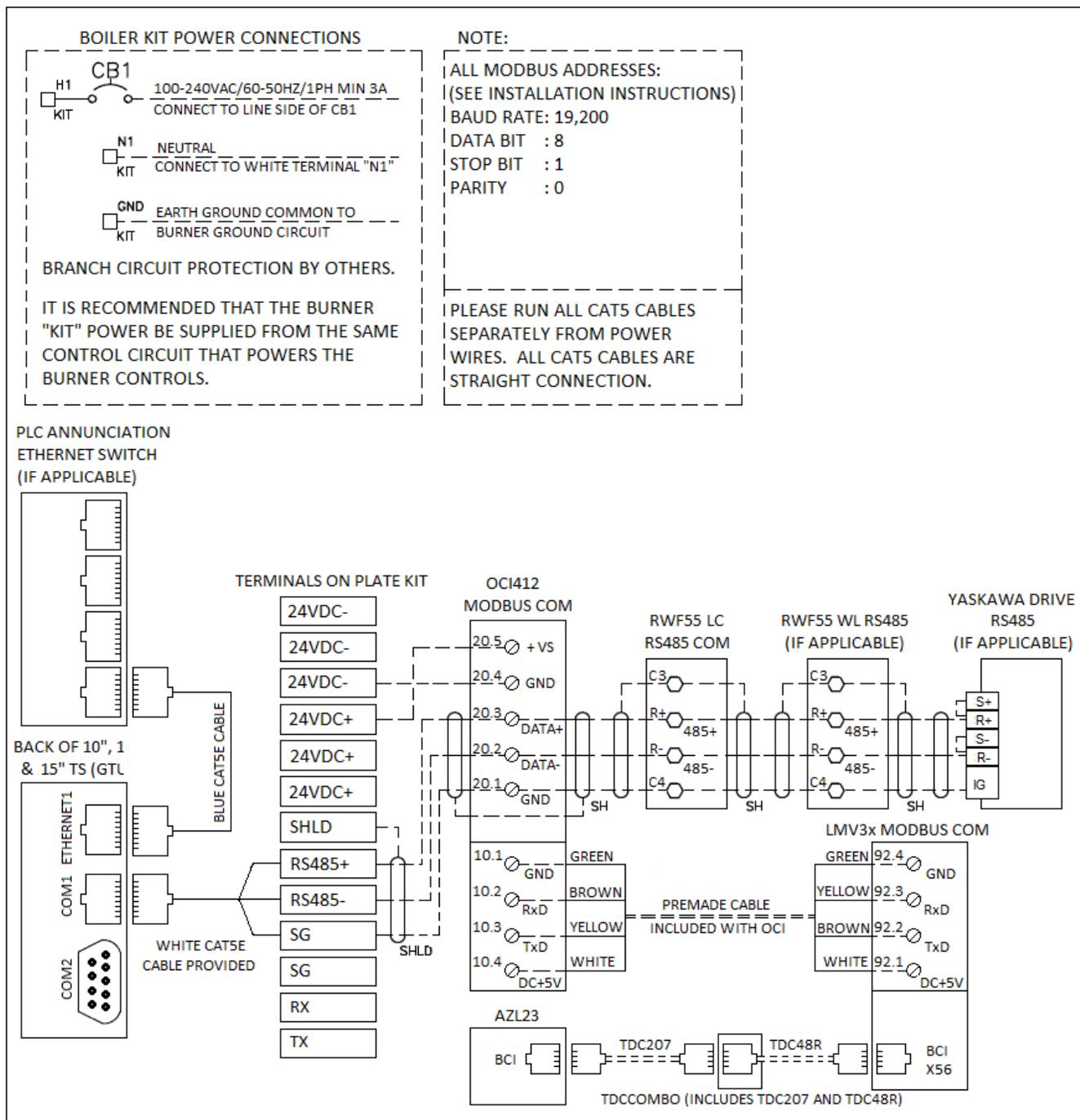
Connections (continued)

10" Touchscreen kit with LMV5 and optional RWF55 for water level control: This diagram is to be used when the touchscreen is mounted more than 15ft away from the AZL



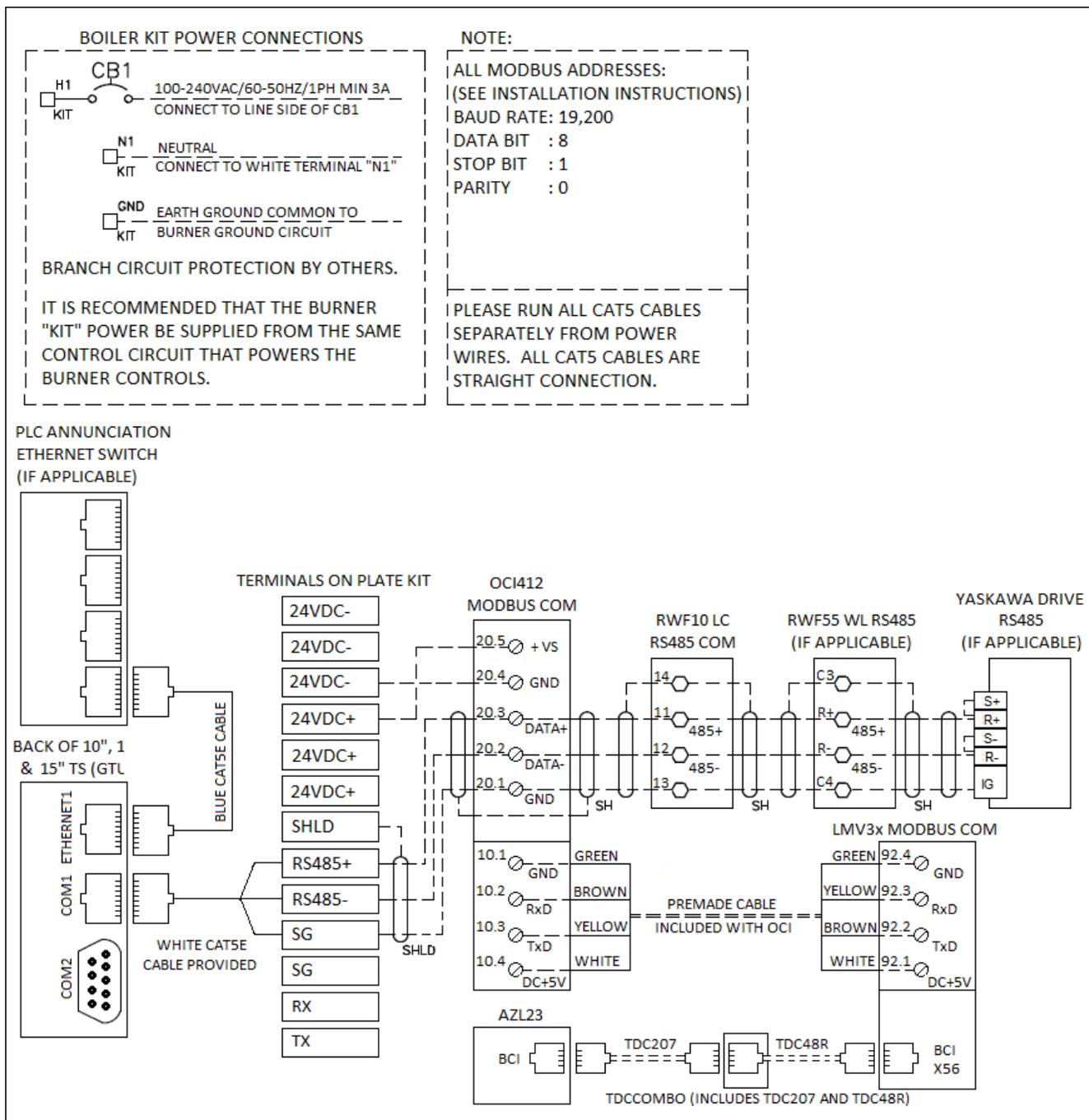
Connections (continued)

10" Touchscreen kit with LMV3, RWF55 for load control, and optional RWF55 for water level control:



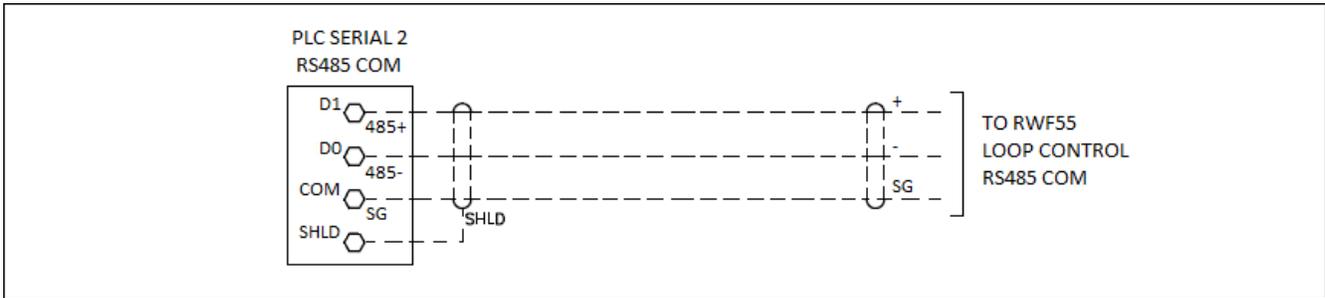
Connections (continued)

10" Touchscreen kit with LMV3, RWF10 for load control, and optional RWF55 for water level control:



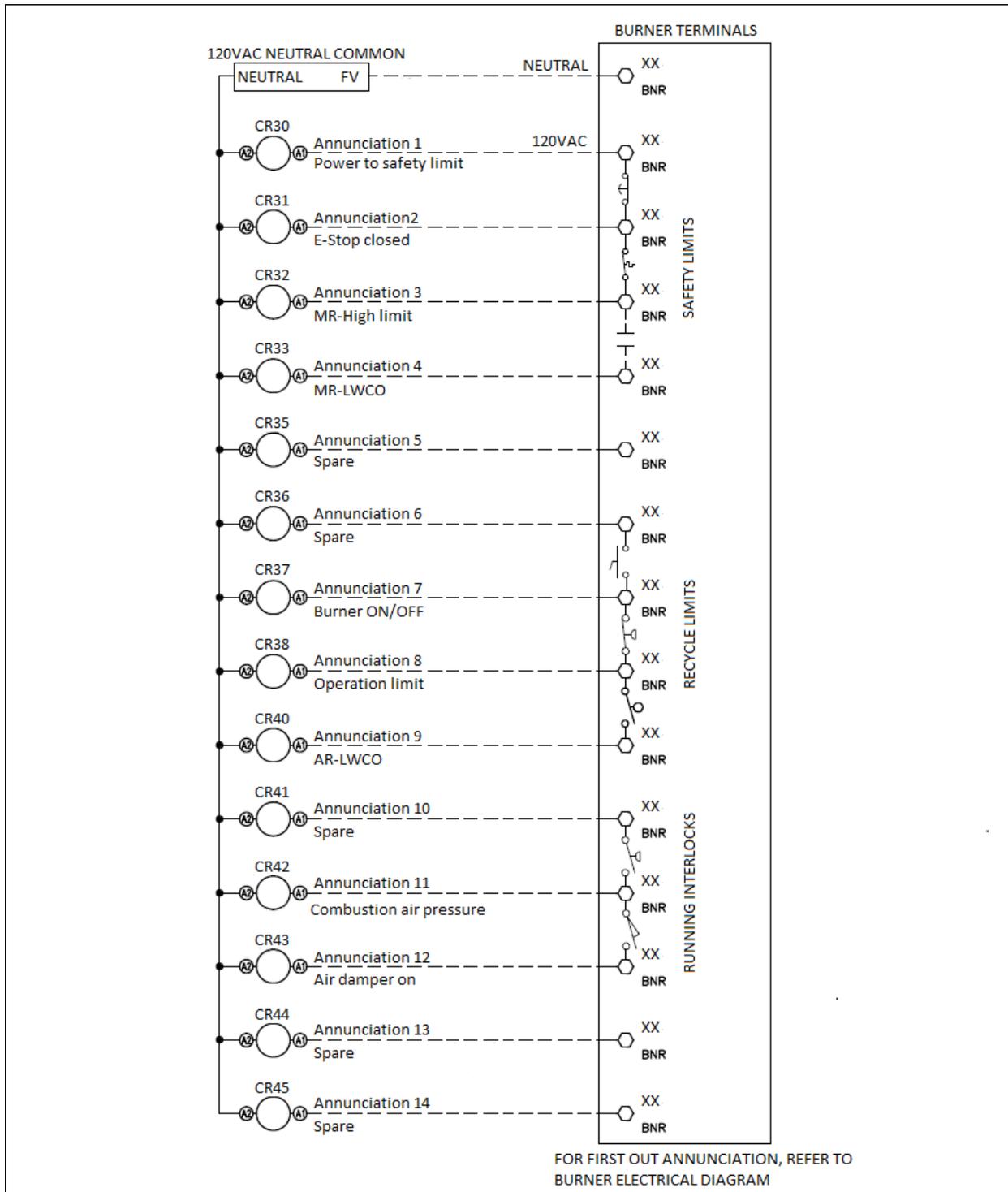
Connections (continued)

RS485 connection for additional RWF55 for loop control (If applicable)



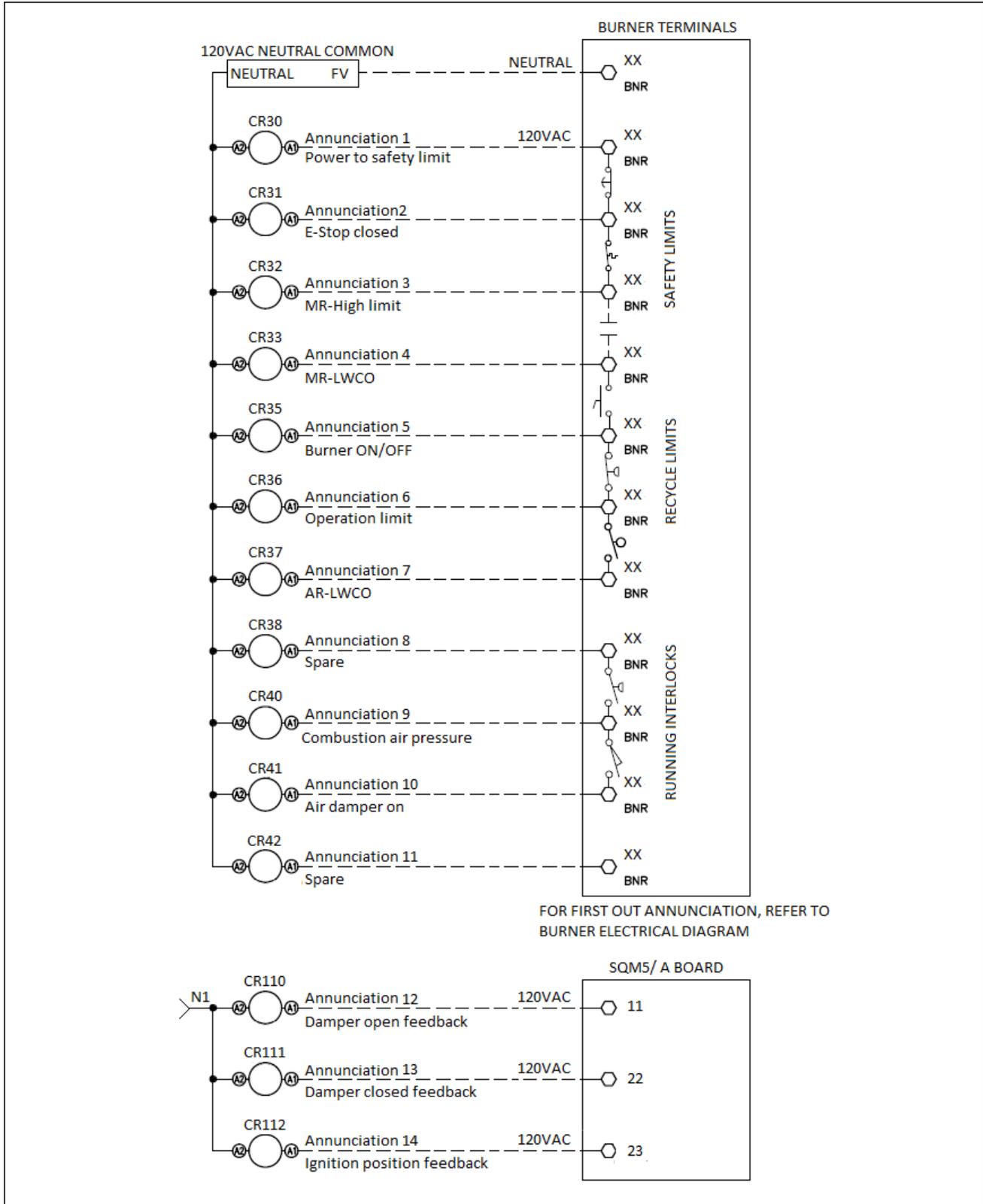
Connections (continued)

Standard annunciation fourteen 120VAC inputs:



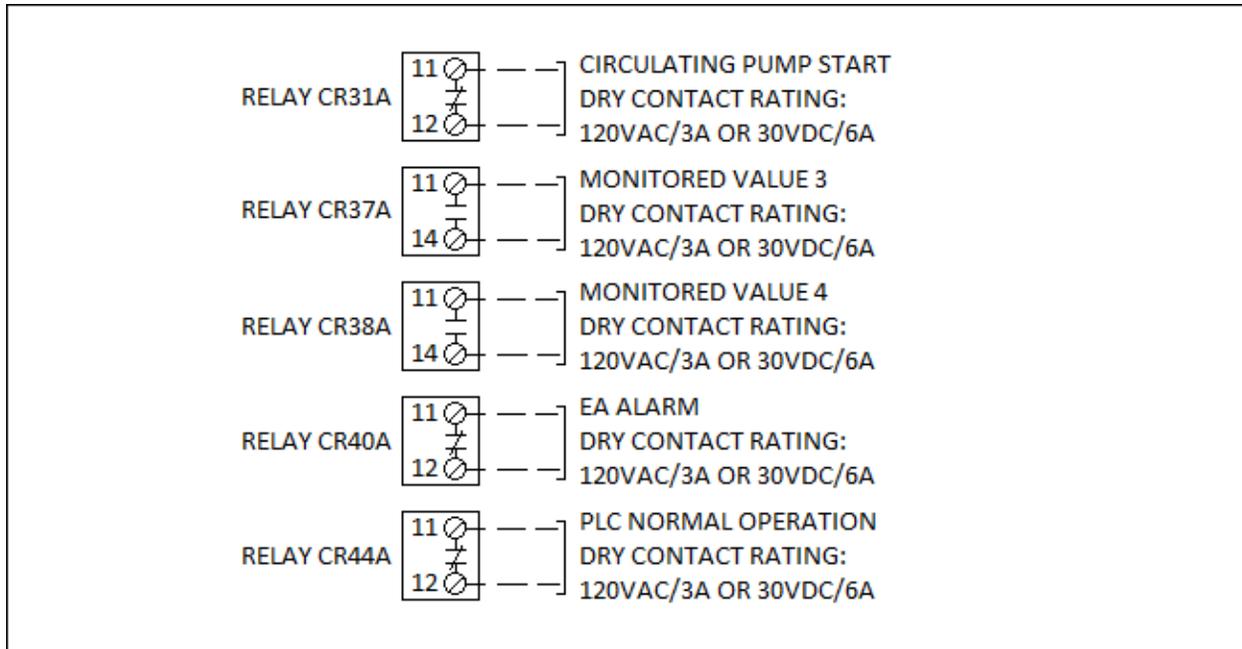
Connections (continued)

Standard annunciation fourteen 120VAC inputs with draft control:



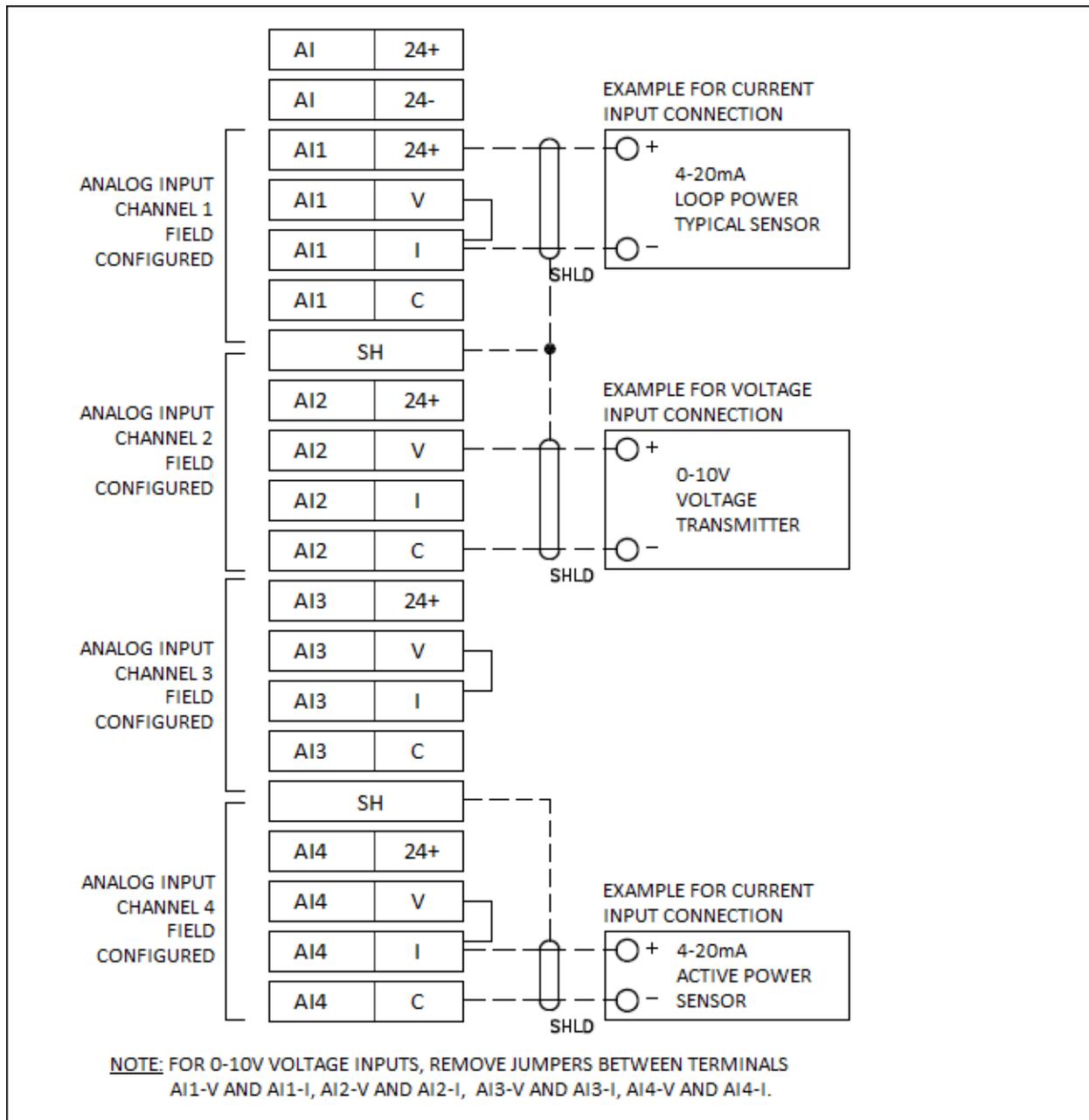
Connections (continued)

Outputs relay terminals:



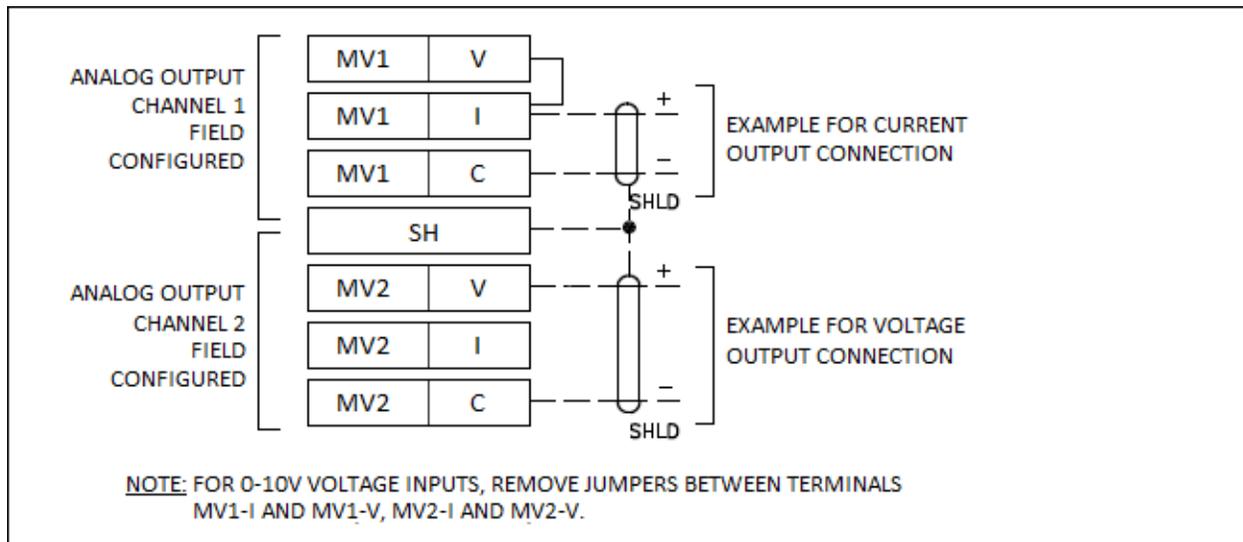
Connections (continued)

Analog input terminals:

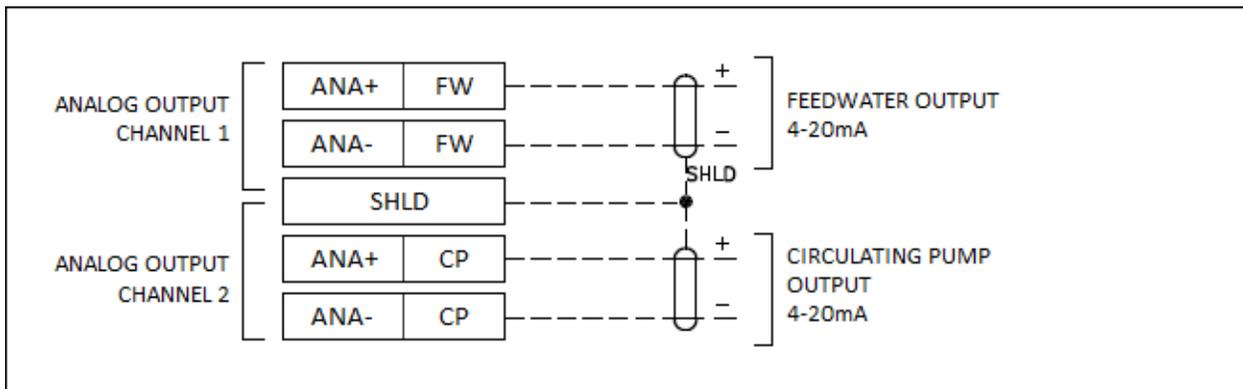


Connections (continued)

Analog output terminals:



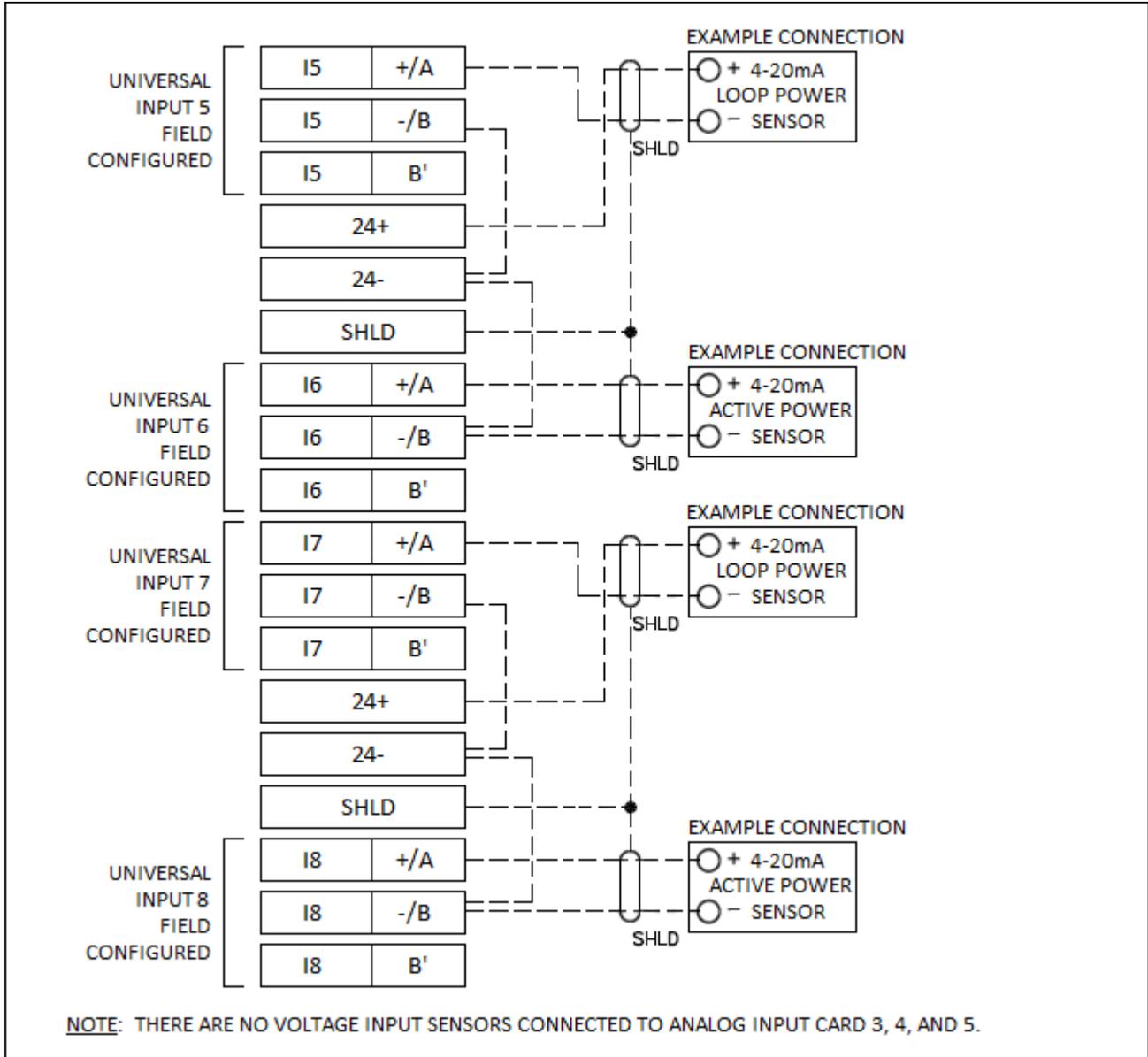
Analog outputs option used for feedwater output and circulating pump, 4-20mA only terminals:



Connections (continued)

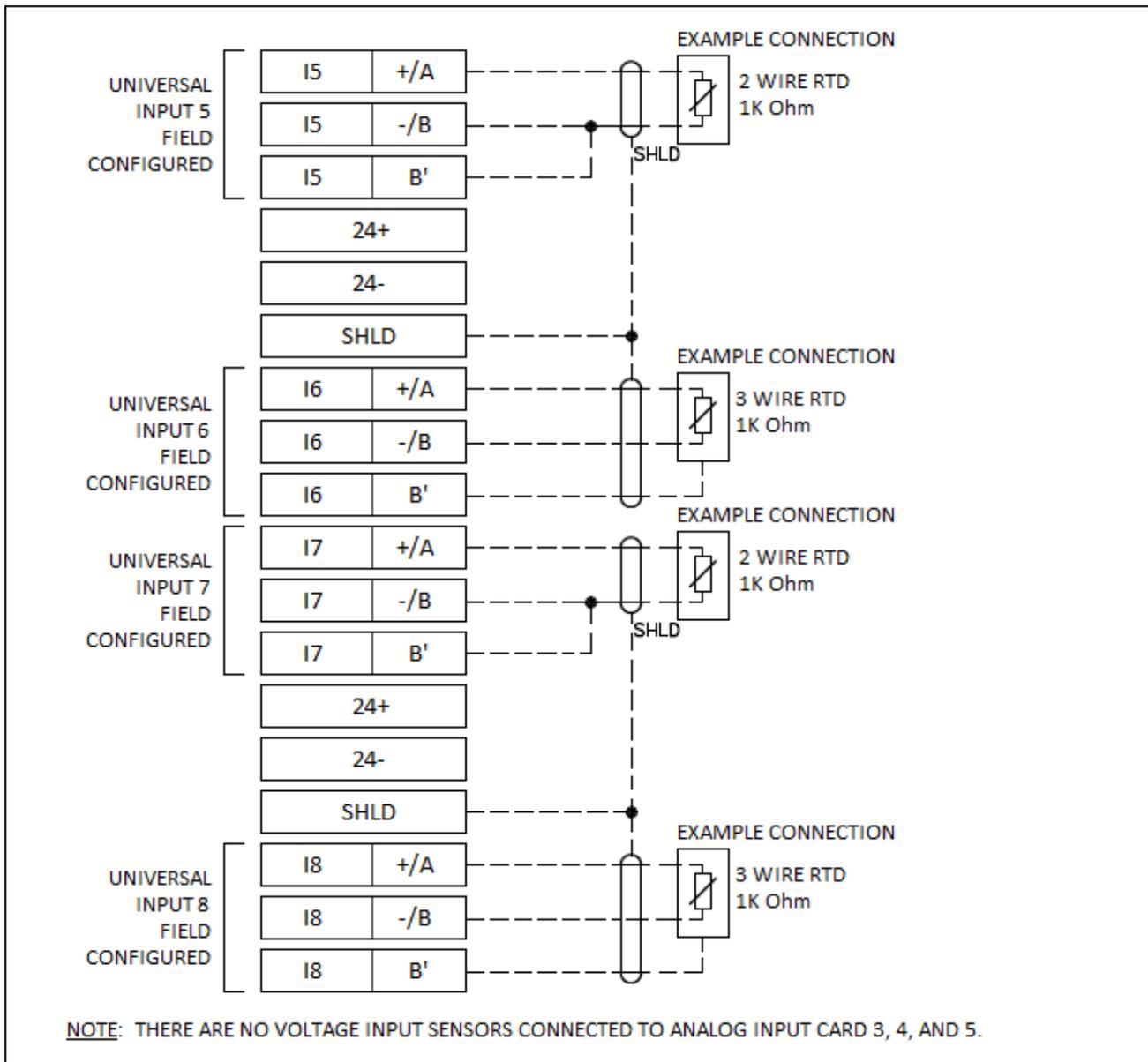
12 Universal inputs

The first four universal input terminals with current transmitter example connections:



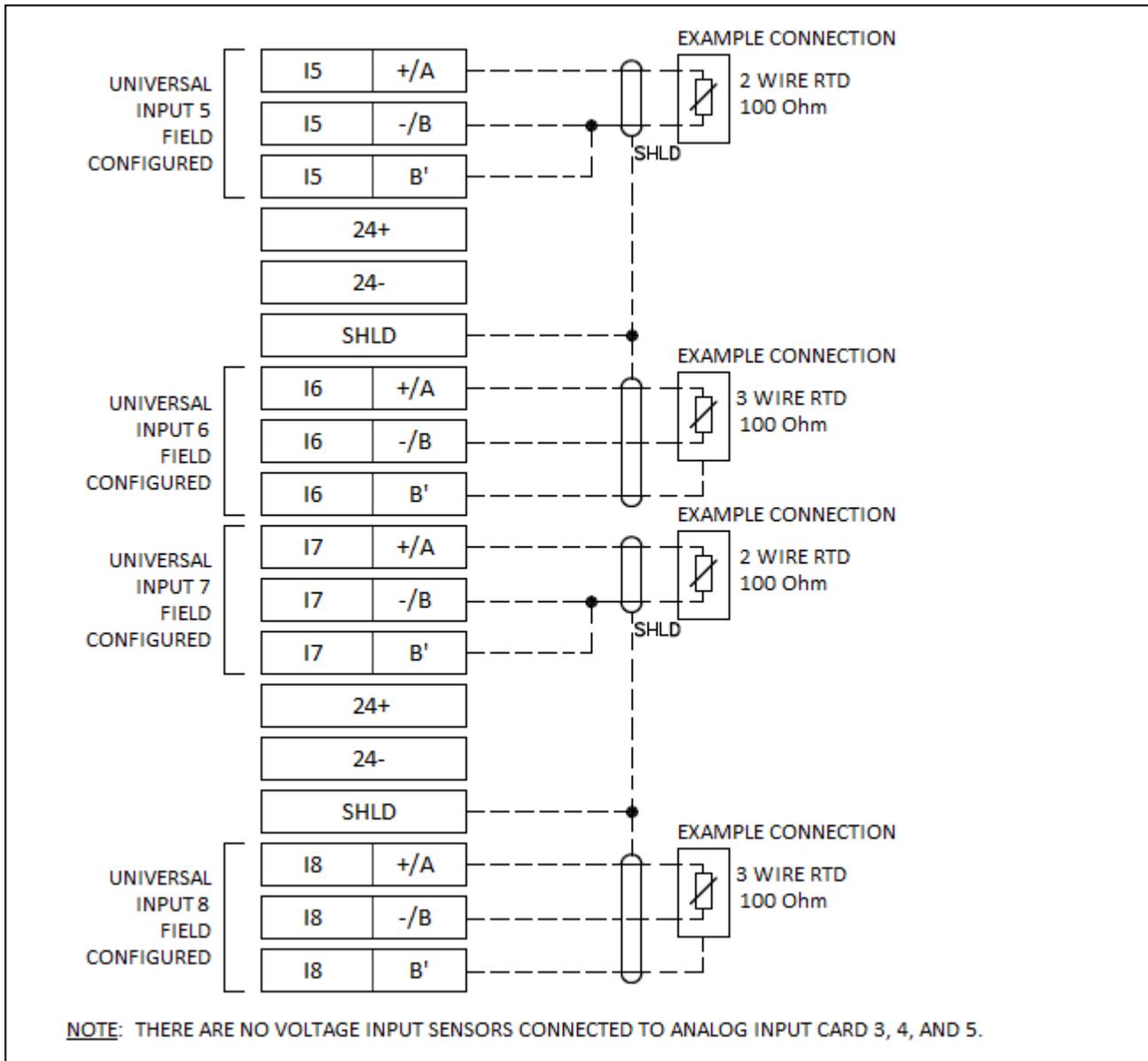
Connections (continued)

The first four universal input terminals with RTD 1000 Ohm example connections:



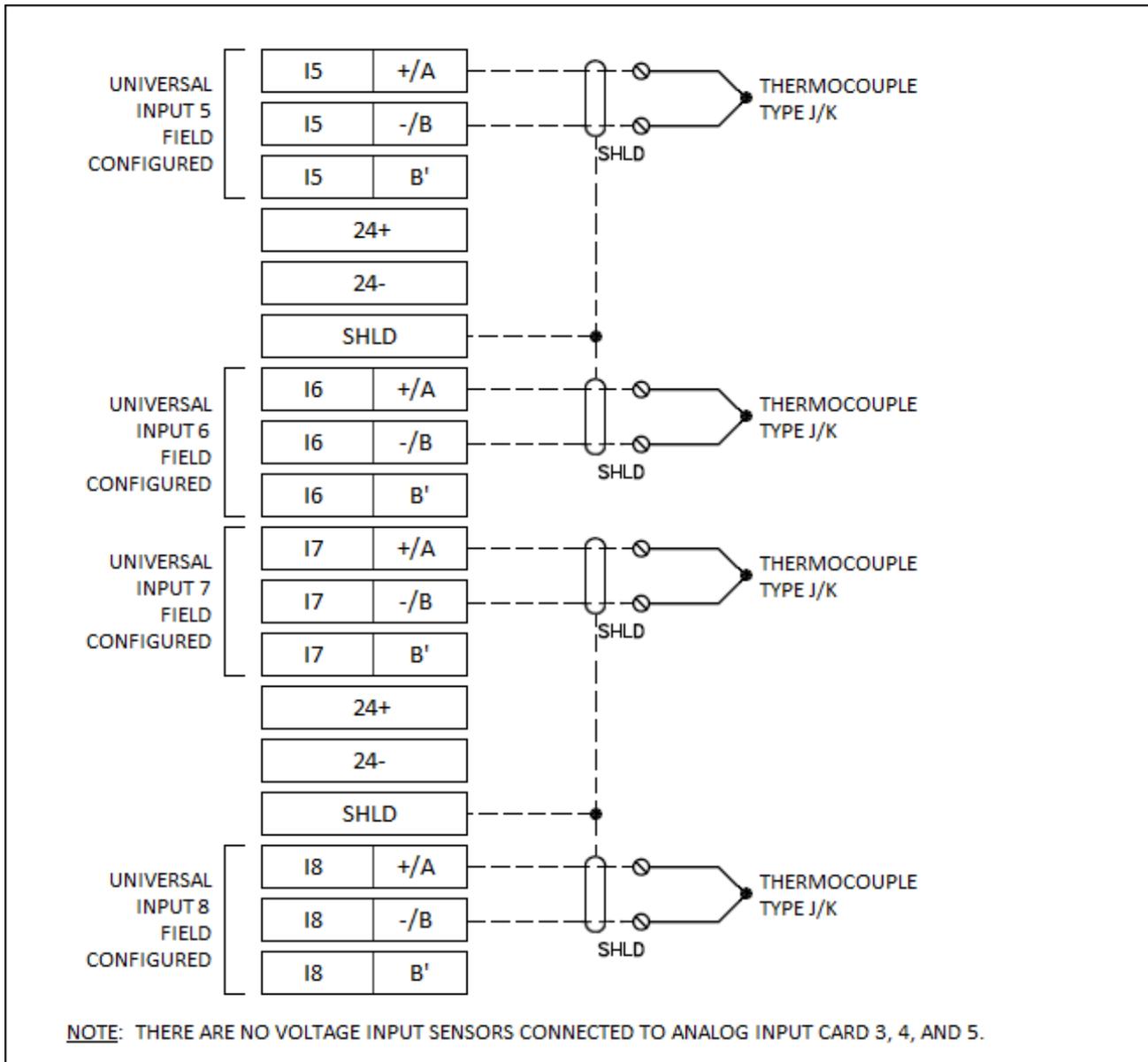
Connections (continued)

The first four universal input terminals with RTD 100 Ohm example connections:



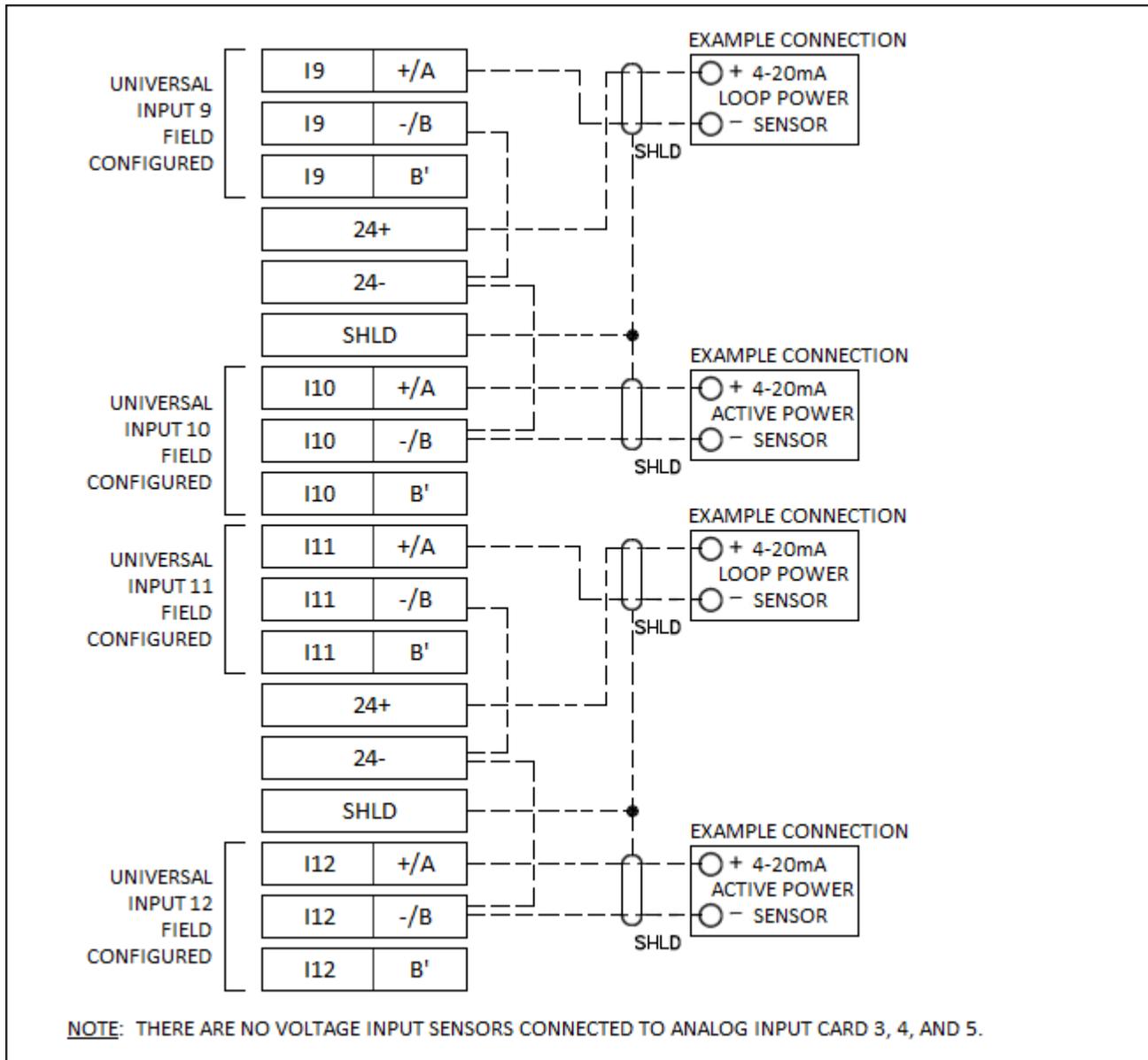
Connections (continued)

The first four universal input terminals with thermocouple type J/K example connections:



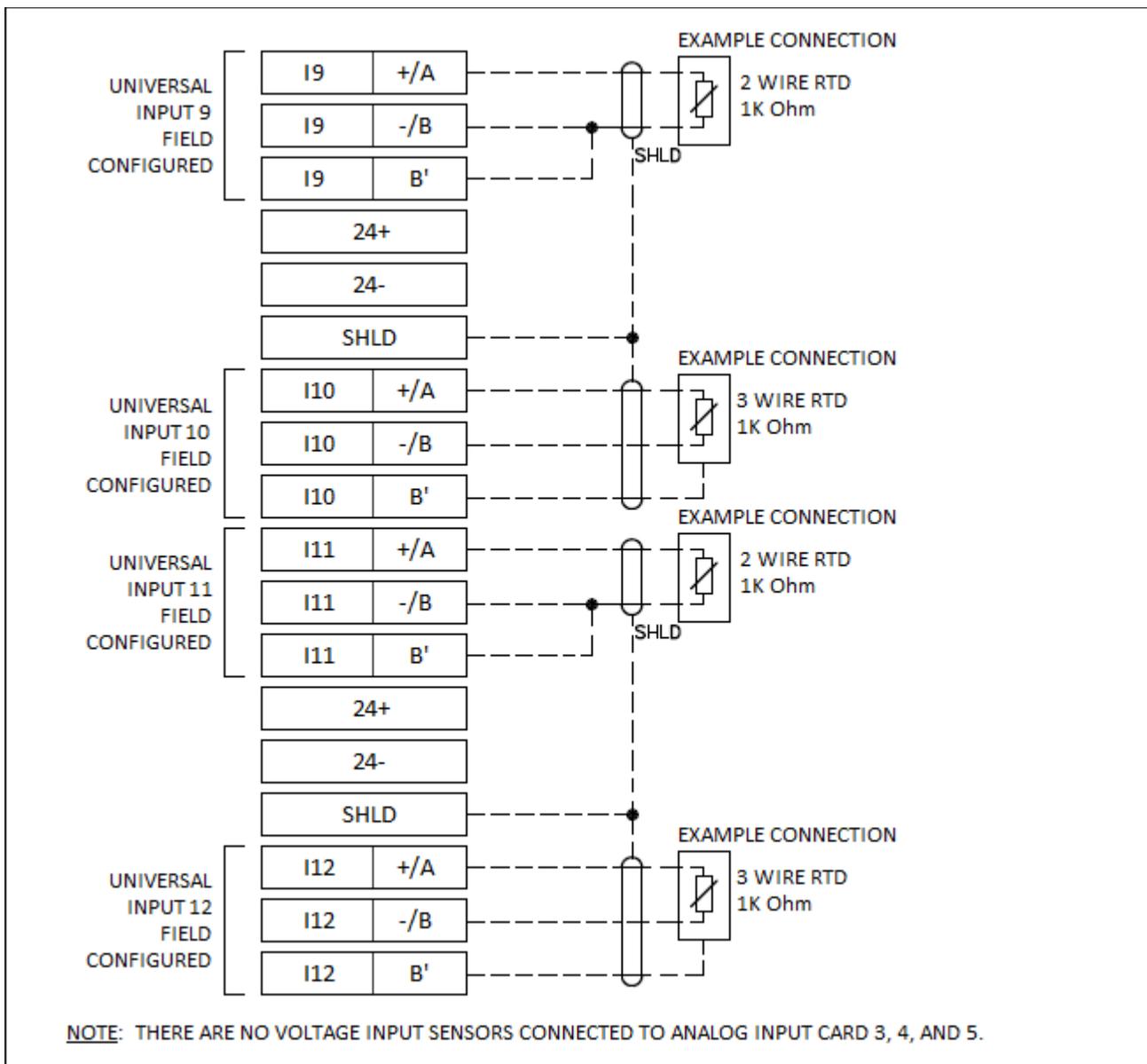
Connections (continued)

The second four universal input terminals with current transmitter example connections:



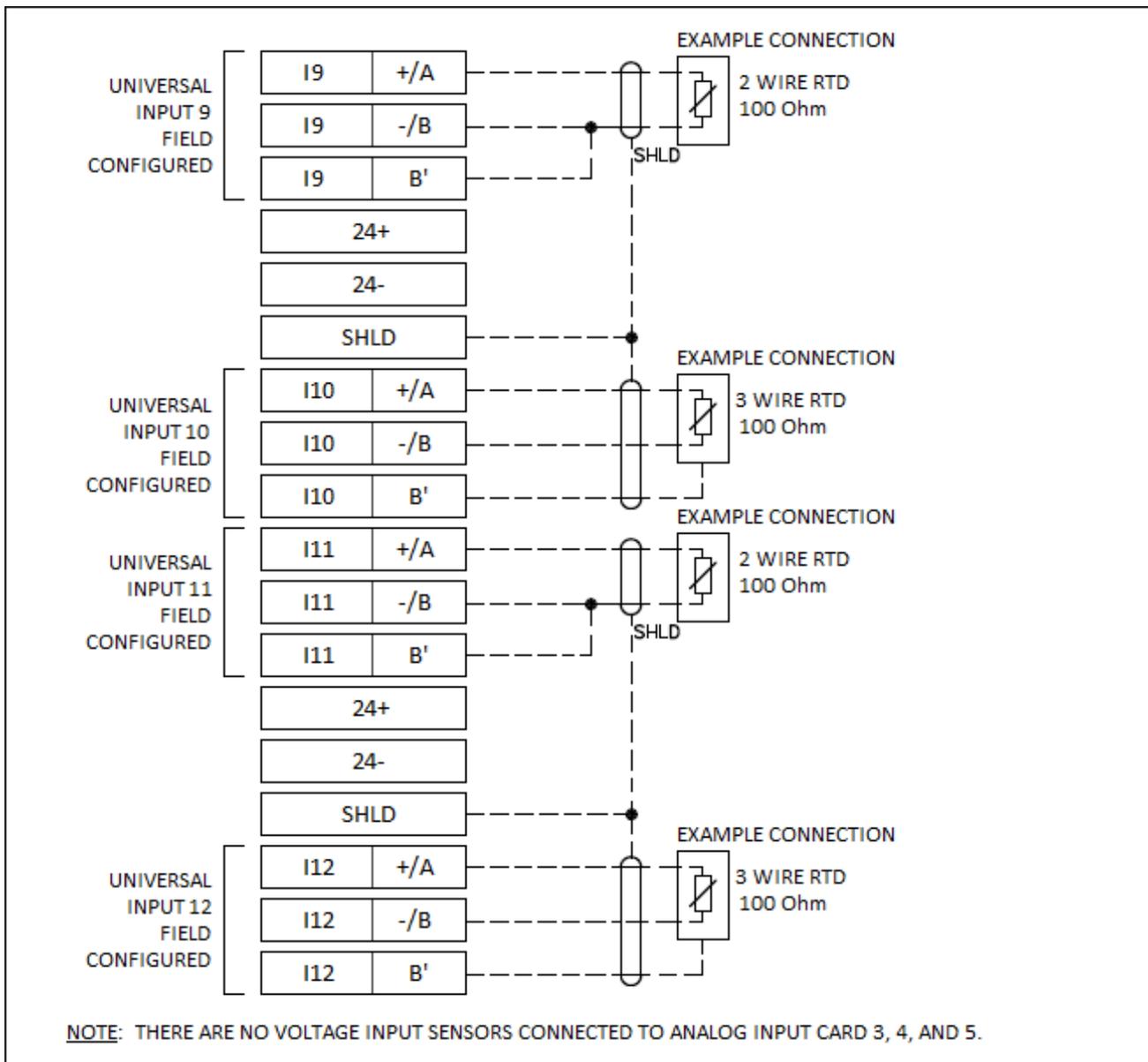
Connections (continued)

The second four universal input terminals with RTD 1000 Ohm connections:



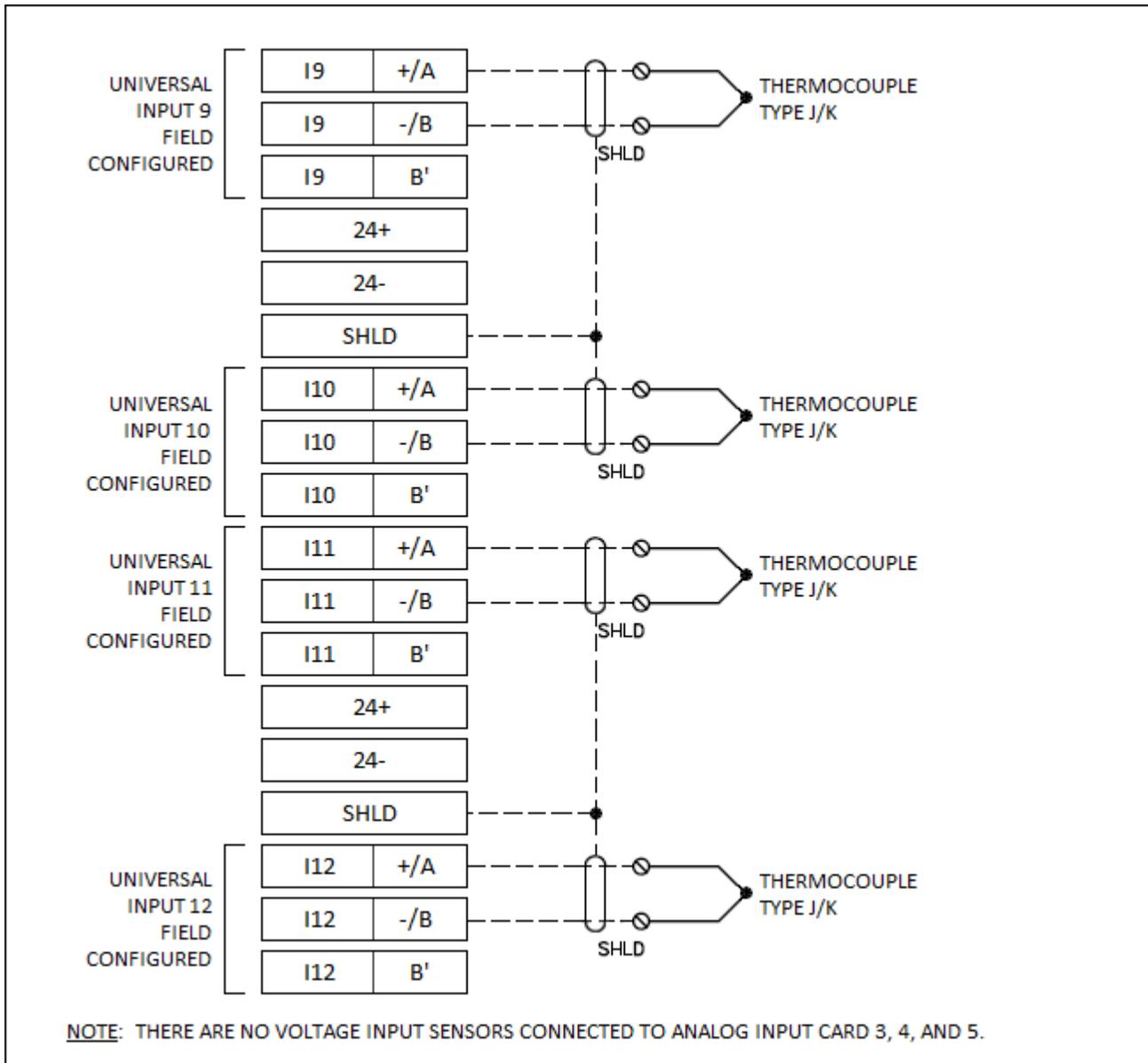
Connections (continued)

The second four universal input terminals with RTD 100 Ohm connections:



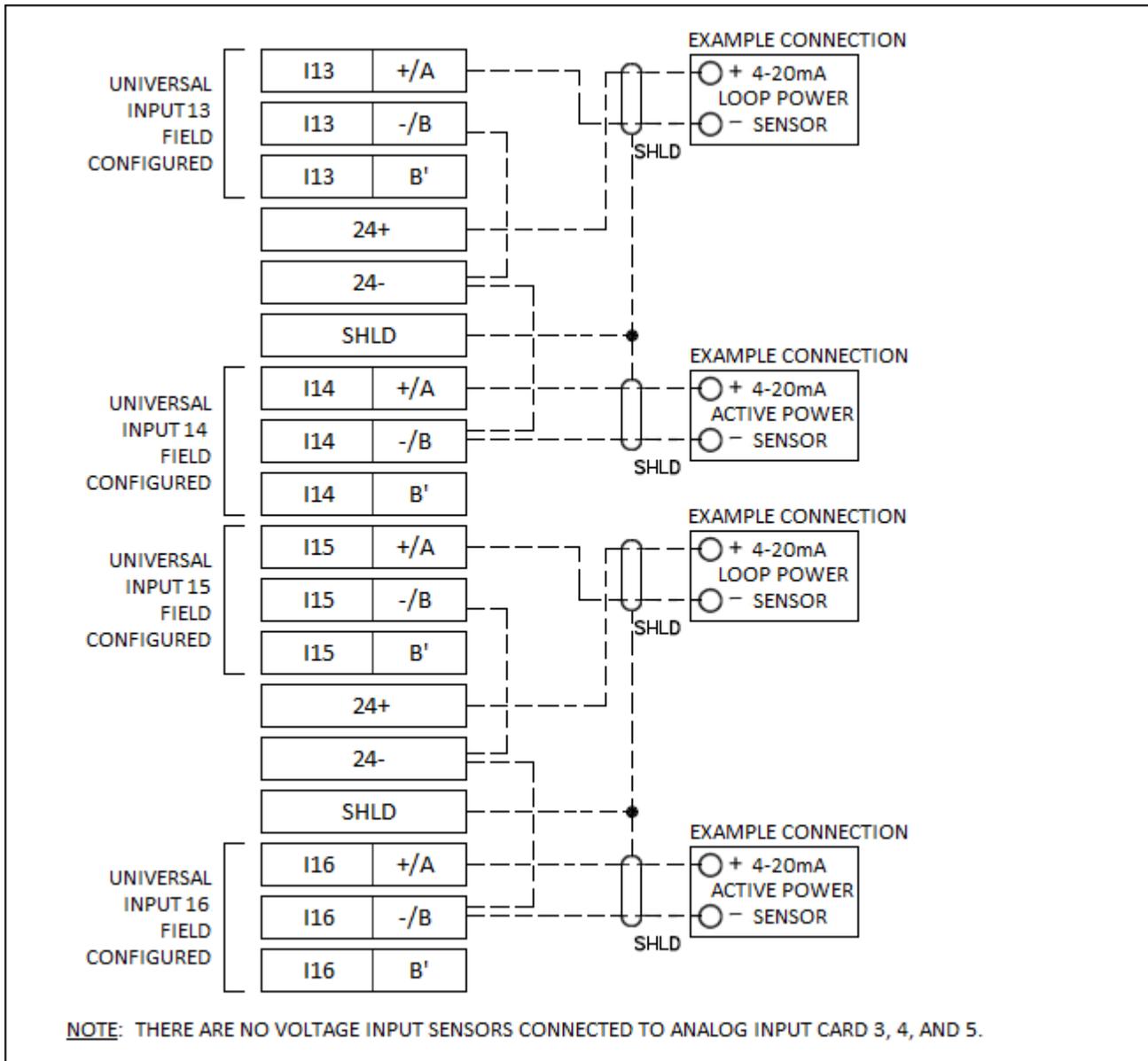
Connections (continued)

The second four universal input terminals with thermocouple type J/K example connections:



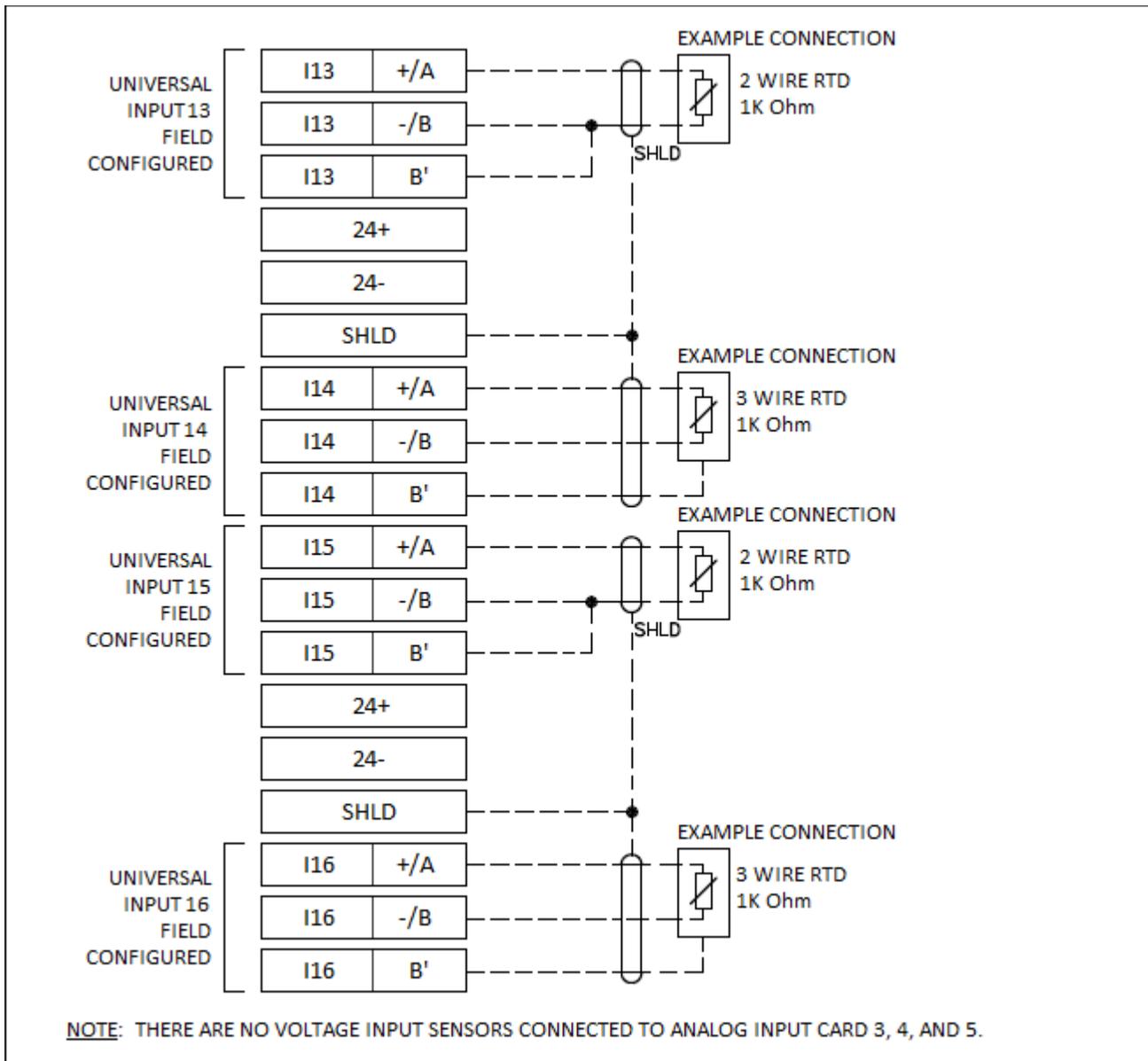
Connections (continued)

The third four universal input terminals with current transmitter connections:



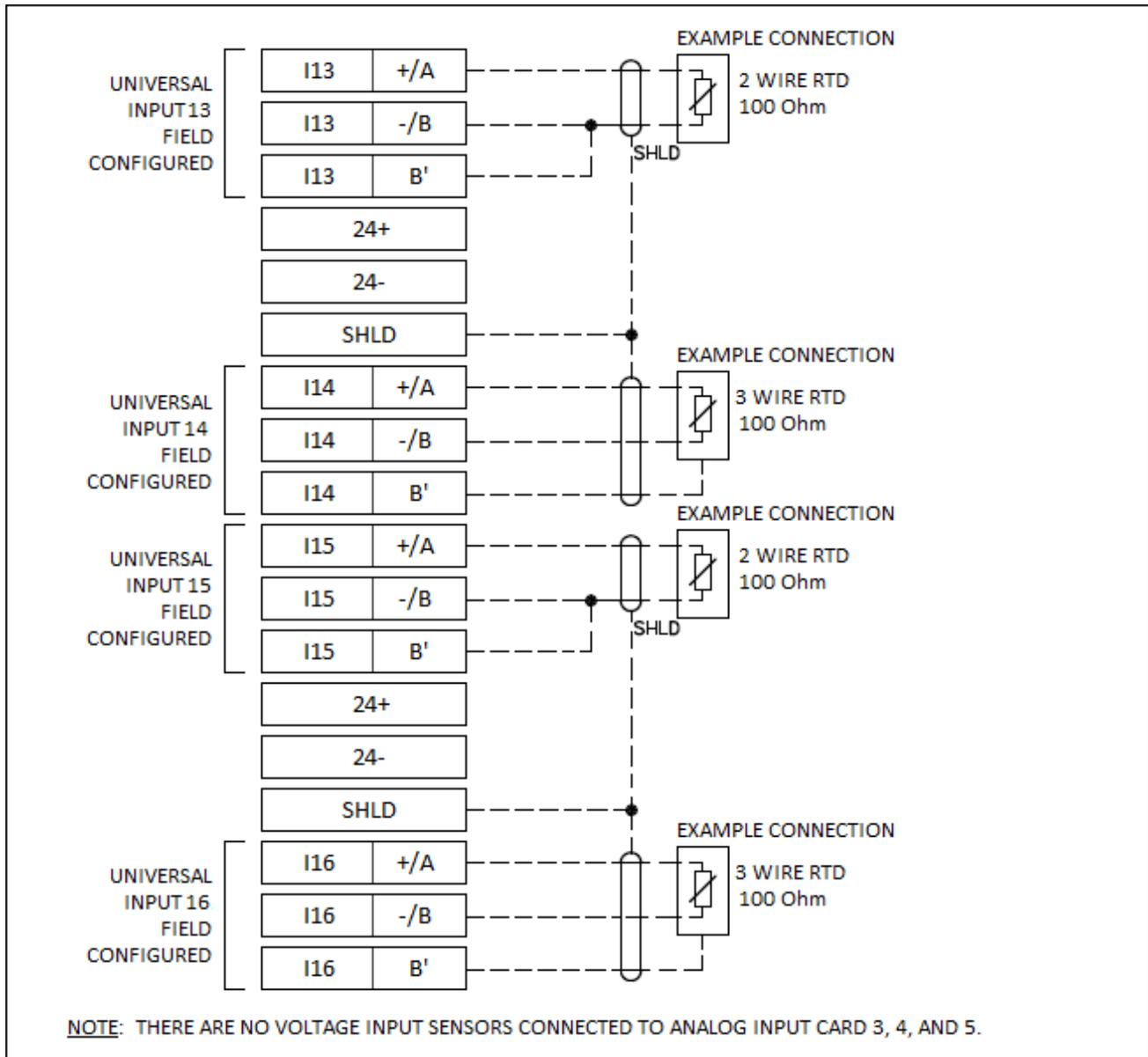
Connections (continued)

The third four universal input terminals with RTD 1000 Ohm connections:



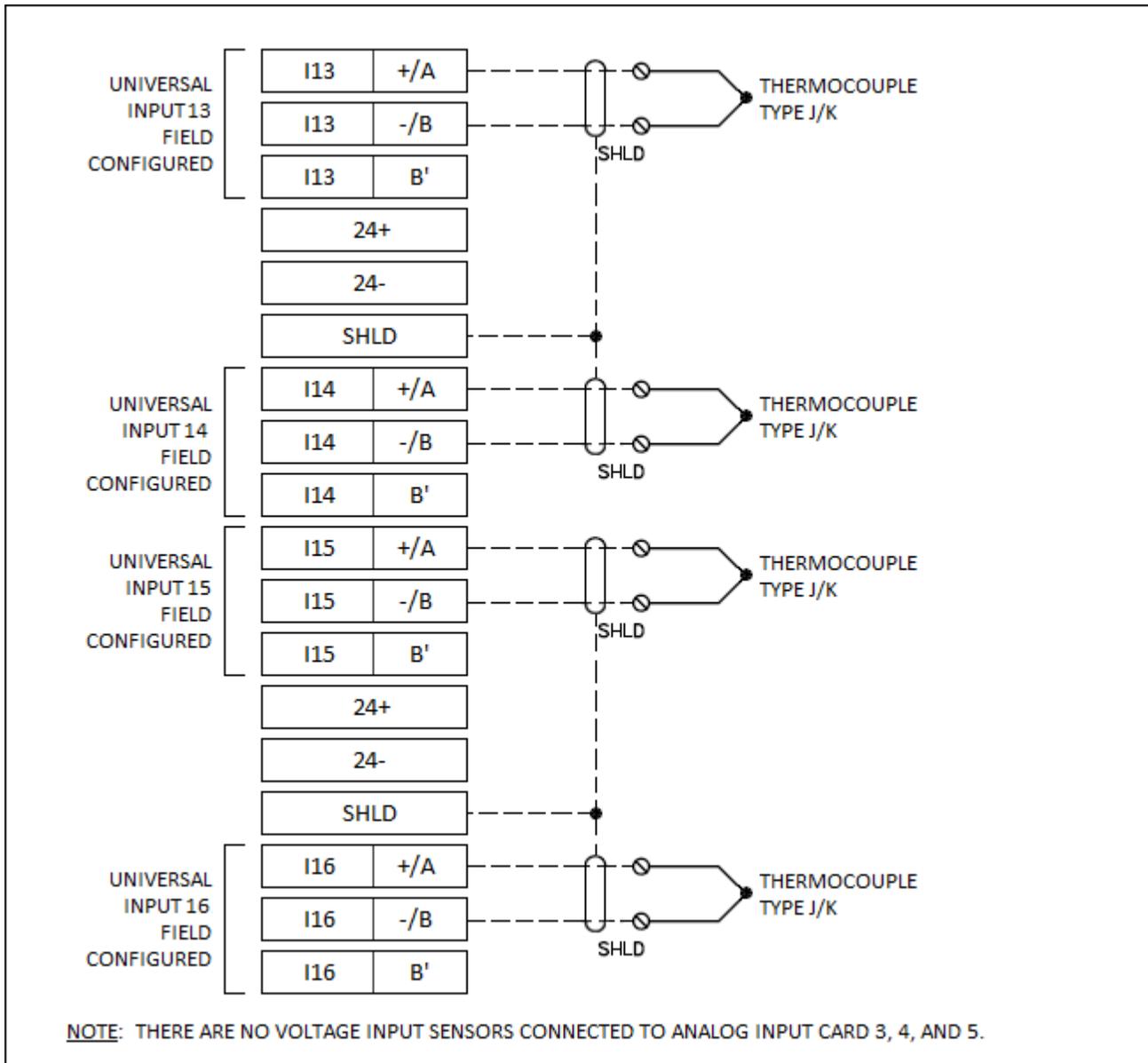
Connections (continued)

The third four universal input terminals with RTD 100 Ohm connections:



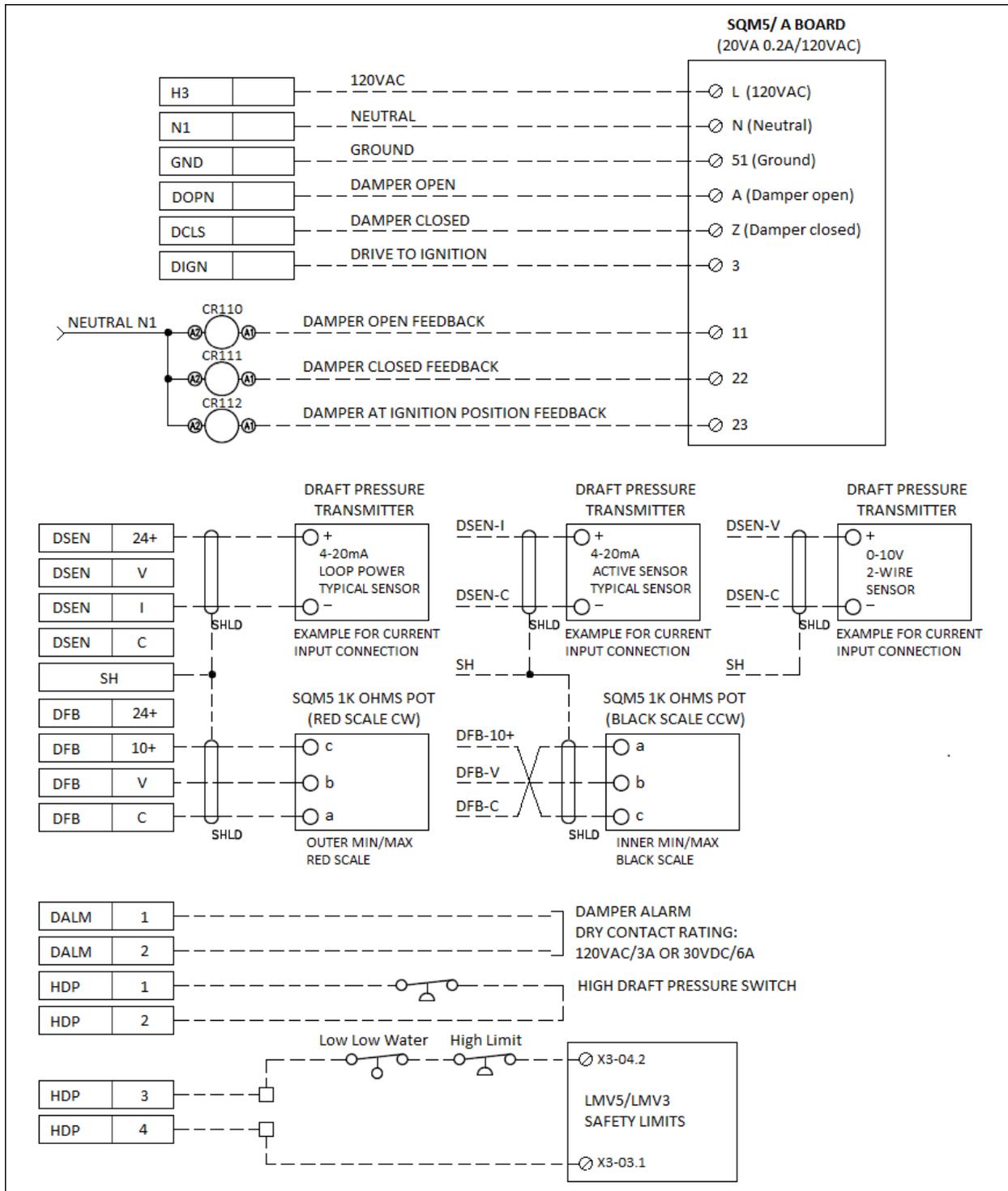
Connections (continued)

The third four universal input terminals with thermocouple type J/K example connections:



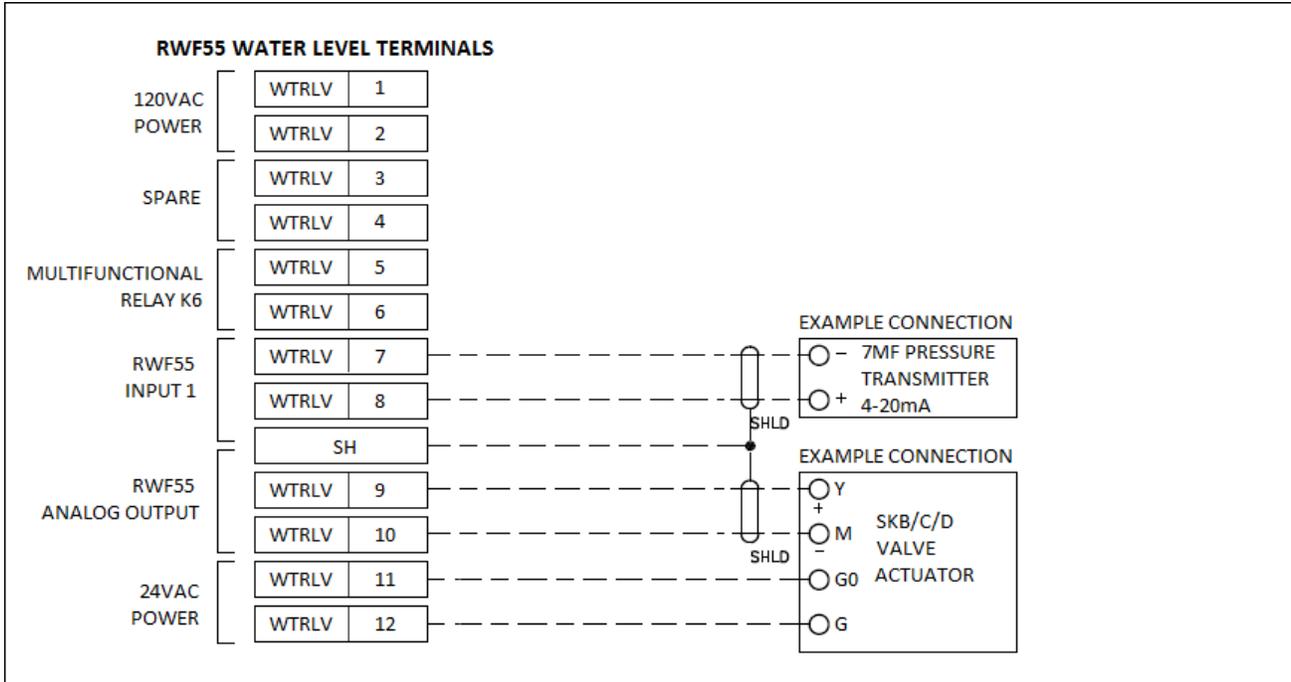
Connections (continued)

Draft Control:



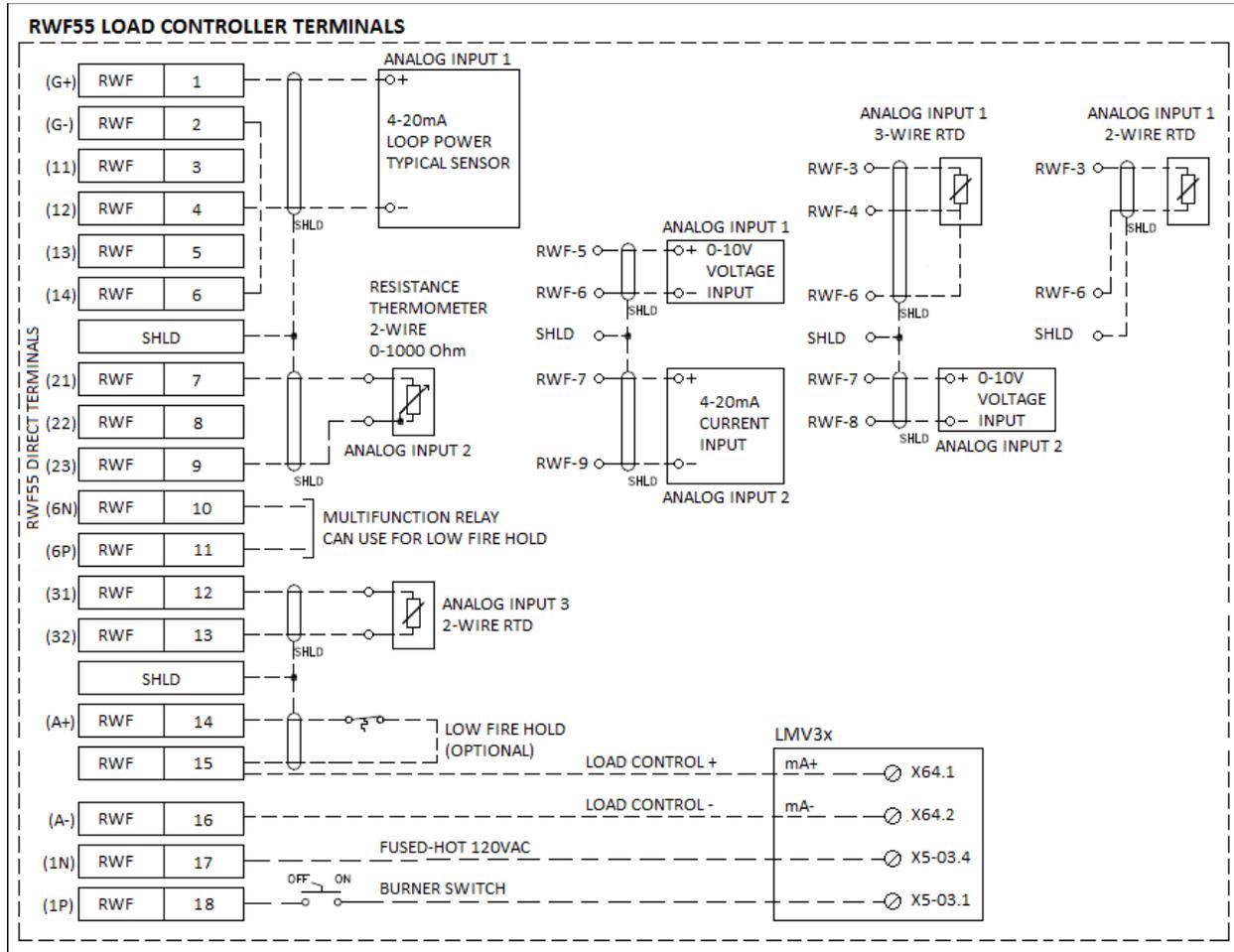
Connections (continued)

RWF55 Water level:



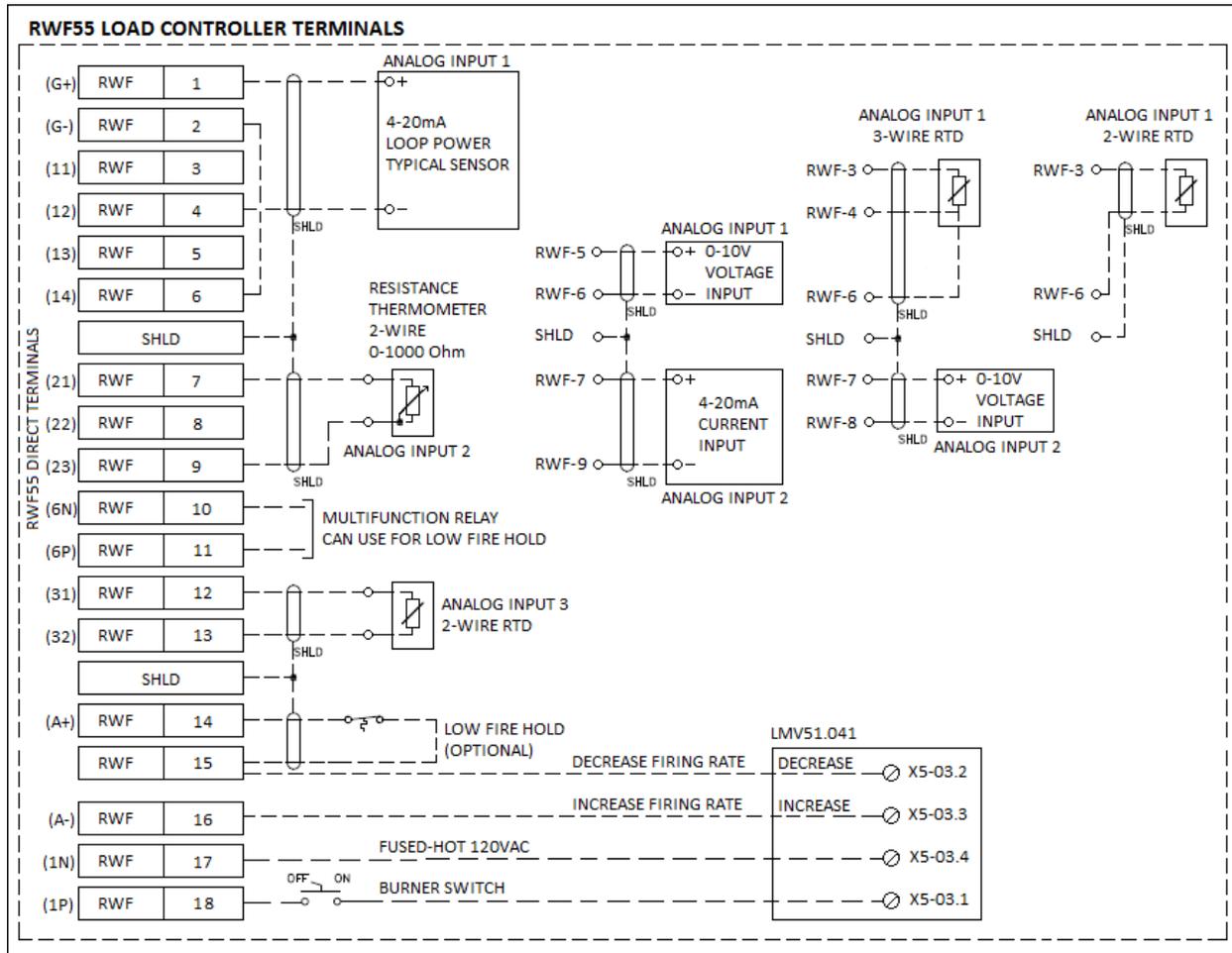
Connections (continued)

RWF55 Load Control with LMV3x:



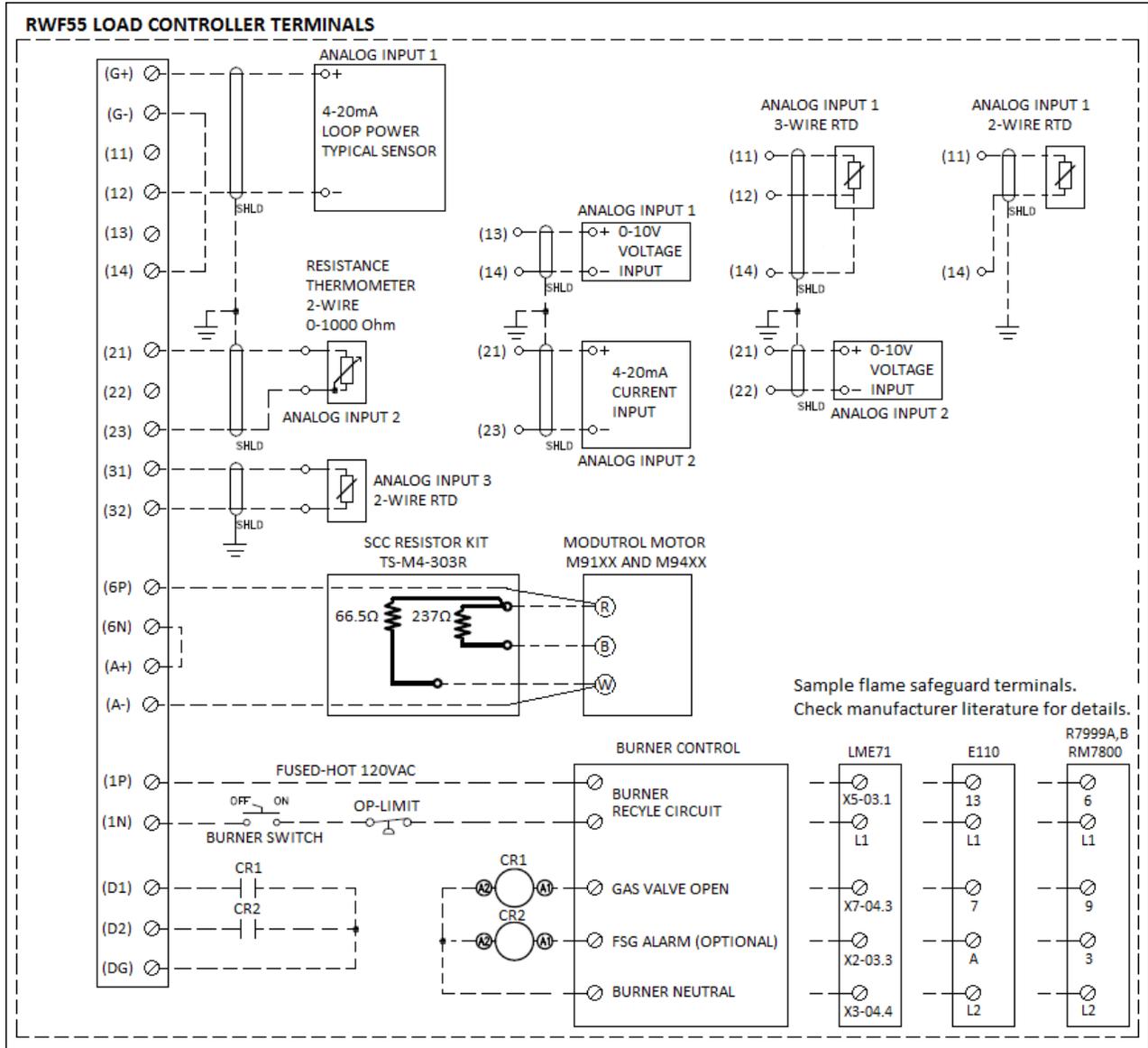
Connections (continued)

RWF55 Load Control with LMV51.040:

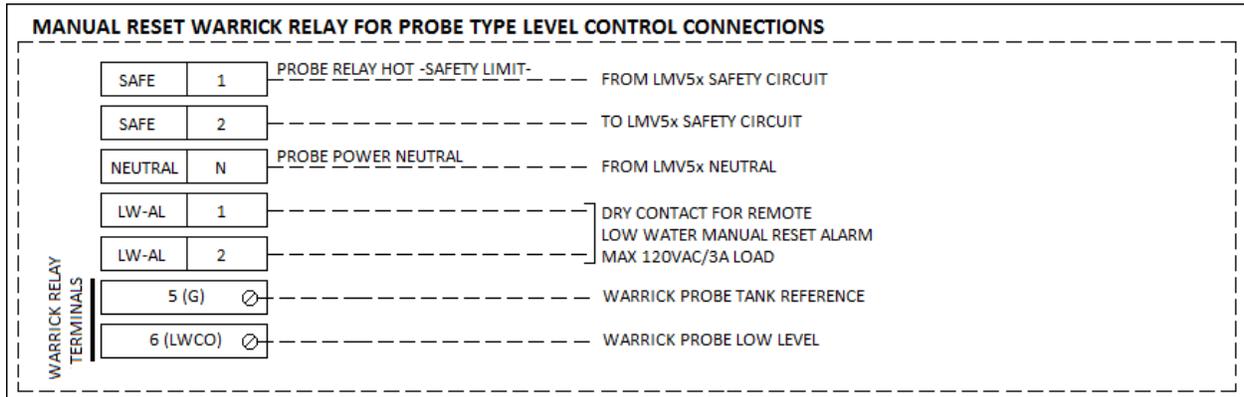


Connections (continued)

RWF55 Load Control only:



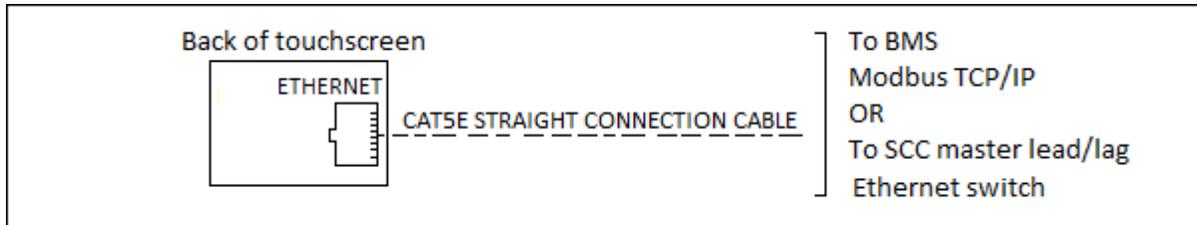
Manual Reset Warrick Relay LWCO



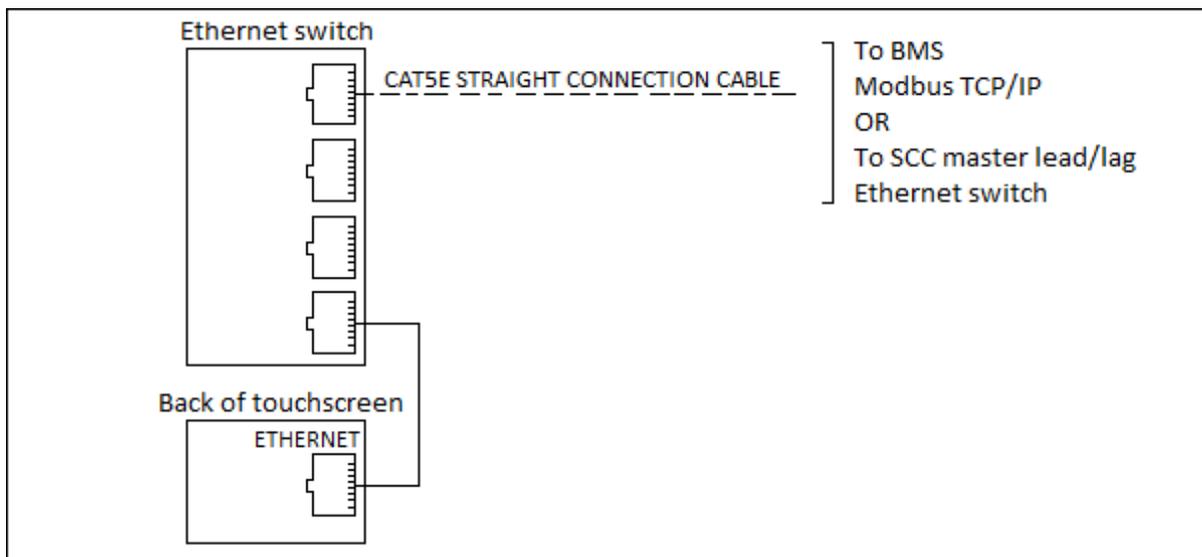
Connections (continued)

BMS Connections

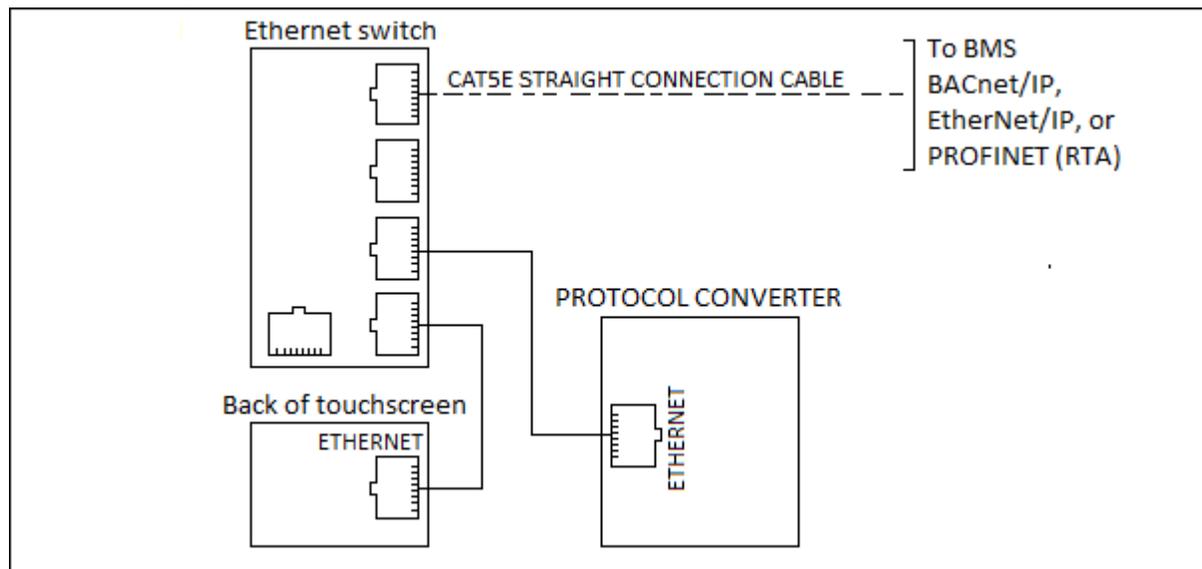
Standard Modbus TCP/IP:



Standard Modbus TCP/IP with PLC annunciation:

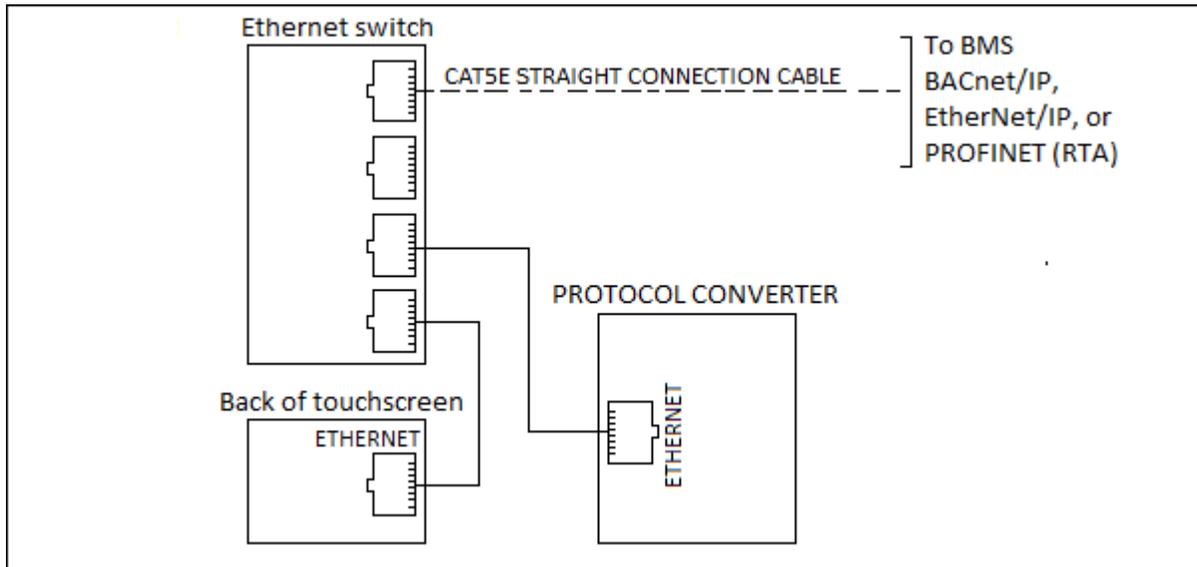


BACnet/IP, Ethernet/IP, or PROFINET (RTA):

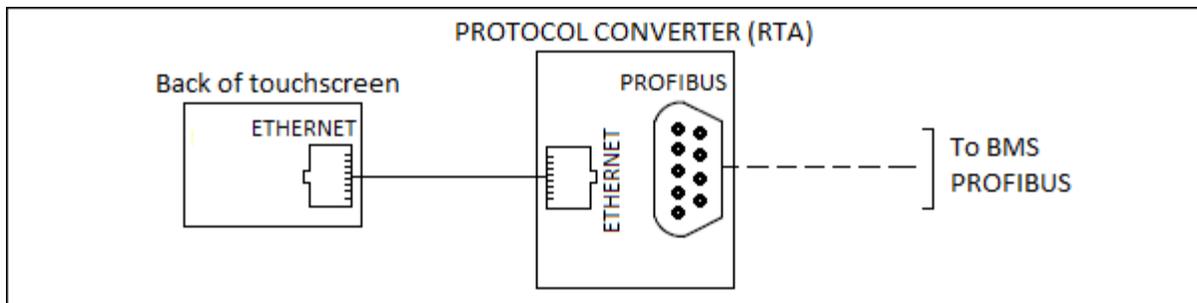


Connections (continued)

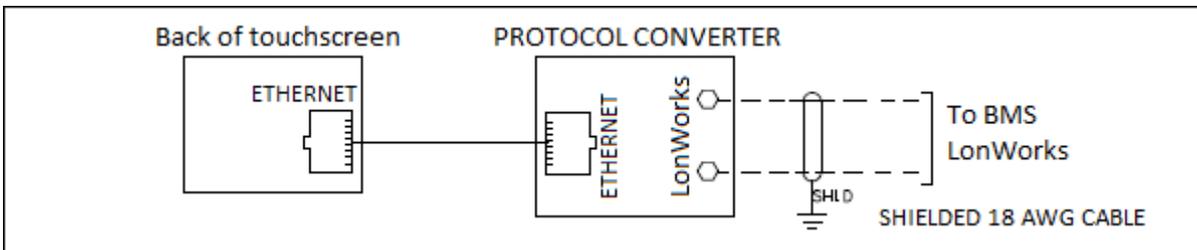
BACnet/IP, Ethernet/IP, or PROFINET (RTA) with PLC annunciation:



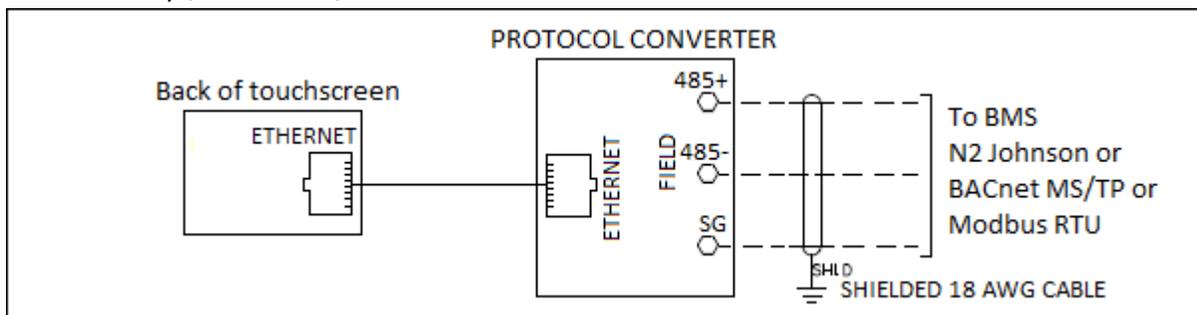
PROFIBUS:



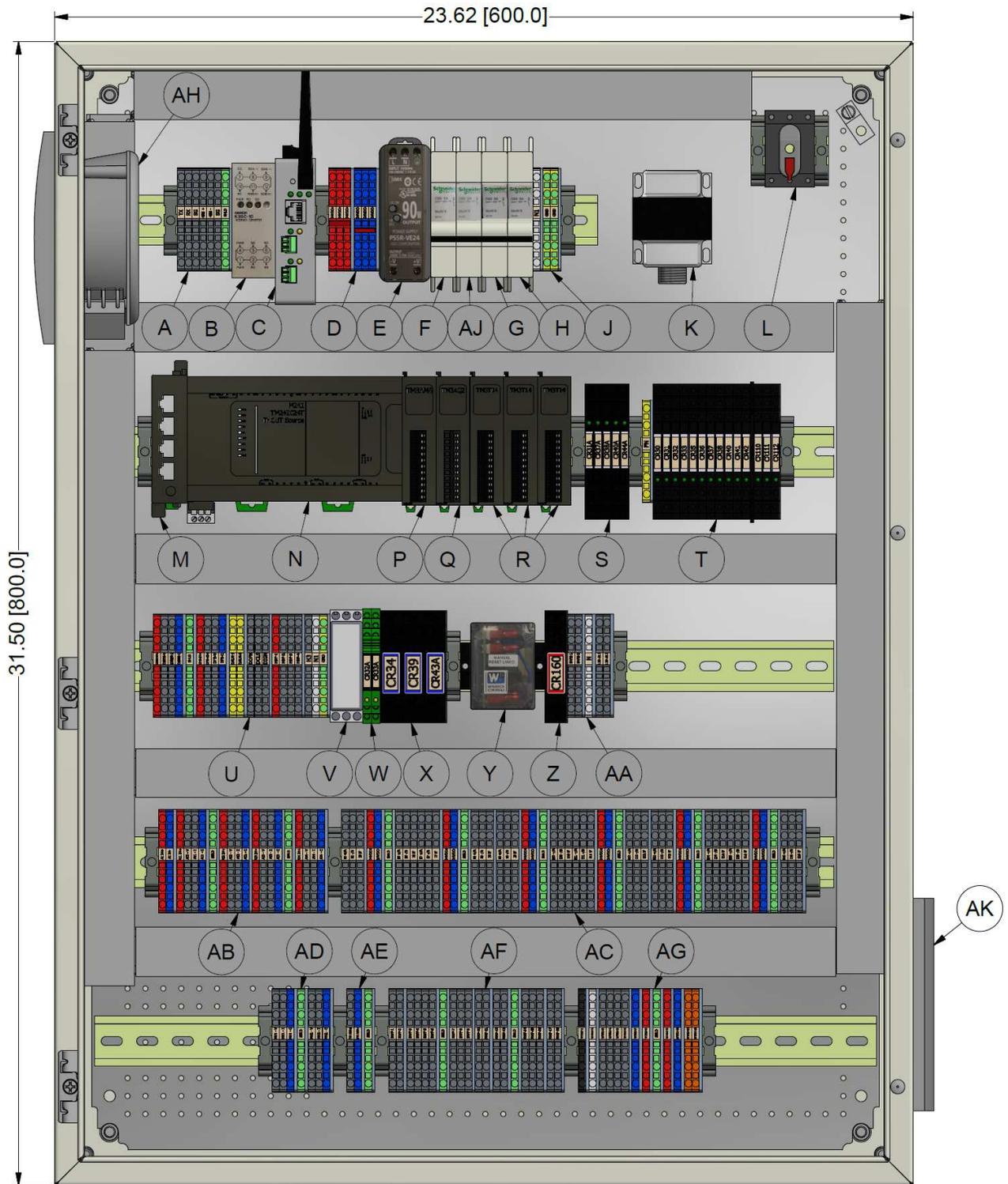
LonWorks:



N2 Johnson Metasys, BACnet MS/TP or Modbus RTU:



Parts Descriptions



Parts Descriptions (continued)

A	Modbus RS232 and RS485 Terminals	Standard Component	T	120 VAC SPDT Relays	Annunciation/Draft Control
B	RS232 to RS485 Converter	Touchscreen Location 15ft or More Away from AZL	U	Draft Control Terminals	Draft Control
C	BMS Communication BACnet/LON/N2/RTU	BMS Communication Other than Modbus TCP/IP	V	Off Delay Timer	Draft Control
D	24 VDC Terminals	Standard Component	W	24 VDC Solid State Relays	Draft Control
E	24 VDC Power Supply	Standard Component	X	24 VDC DPDT Relays	Draft Control
F	1 Amp Draft Control Circuit Breaker	Draft Control	Y	Manual Reset Warrick Relay	Manual Reset Warrick Relay
G	3 Amp Load Control and Water Level Control Circuit Breaker	Load Control/Water Level Control	Z	120VAC DPDT Relay	Manual Reset Warrick Relay
H	3 Amp Main Circuit Breaker	Standard Component	AA	Warrick Relay Terminals	Manual Reset Warrick Relay
J	Neutral and Ground Terminals	Standard Component	AB	Dedicated Analog Input Terminals	(4) Dedicated Analog Inputs and (2) Analog Outputs
K	24 VAC SKB/C or D Transformer	Water Level Control	AC	General Analog Input Terminals	(4), (8) or (12) additional Universal Input Terminals
L	16 Amp Non-Fused Disconnect	Standard Component	AD	Analog Output Terminals	(4) Dedicated Analog Inputs and (2) Analog Outputs
M	Ethernet Switch	Annunciation or BACnet/IP, or Ethernet/IP BMS Communication	AE	PLC Feedwater/Water Level or Circulating Pump VFD Control Terminals	PLC Feedwater/Water Level or Circulating Pump VFD Control
N	Programmable Logic Controller (PLC)	Annunciation or Draft Control	AF	Load Control Terminals	Load Control
P	Analog I/O Module	(4) Analog Inputs and (2) Analog Outputs	AG	Water Level Control Terminals	Water Level Control
Q	Analog Output Module	PLC Feedwater/Water Level or Circulating Pump VFD Control	AH	Cooling Fan	Cooling Fan
R	Analog Input Module(s)	(4) Universal Inputs per Module	AJ	2A Cooling Fan Breaker	Cooling Fan
S	24 VDC SPDT Output Relays	Annunciation	AK	Air Intake Filter	Cooling Fan

Touchscreen Dimensions and Cut-outs

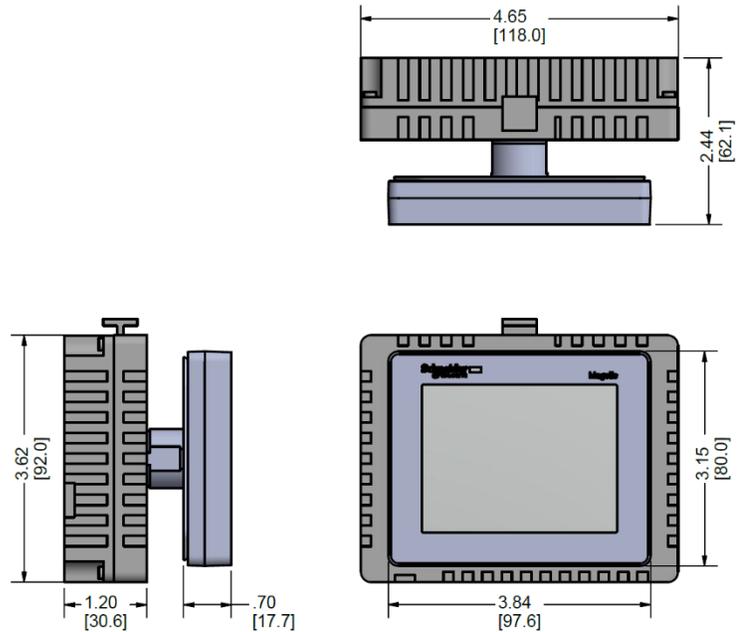
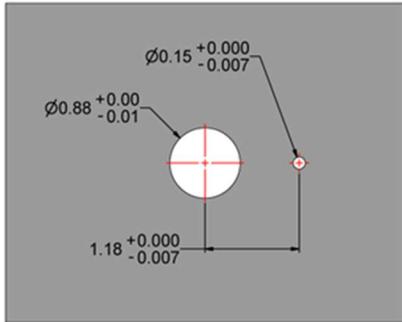
Dimensions in inches; millimeters in brackets

3" Touchscreen

TS-3xxx-xxx-xxxx

Installation:

Cutout required as shown below

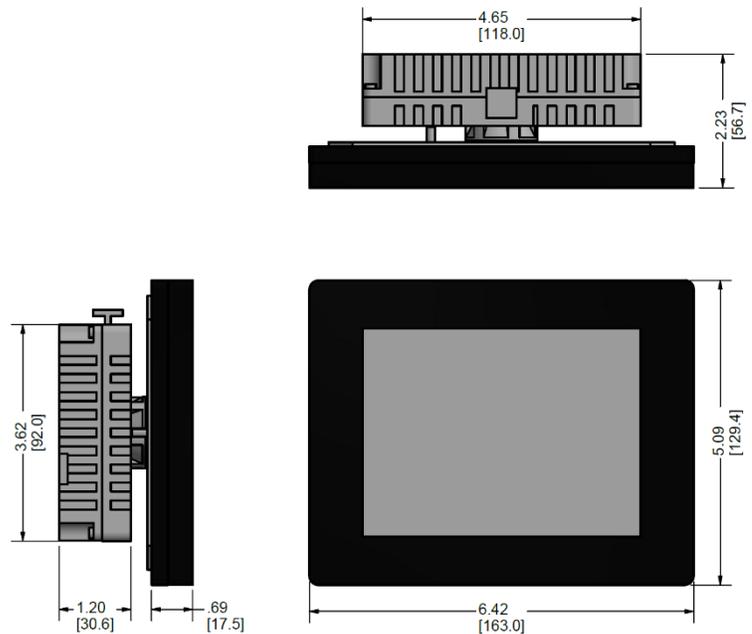
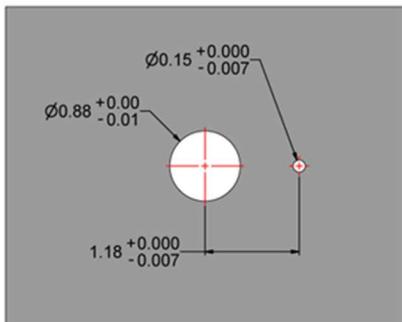


6" Touchscreen

TS-6xxx-xxx-xxxx

Installation:

Cutout required as shown below

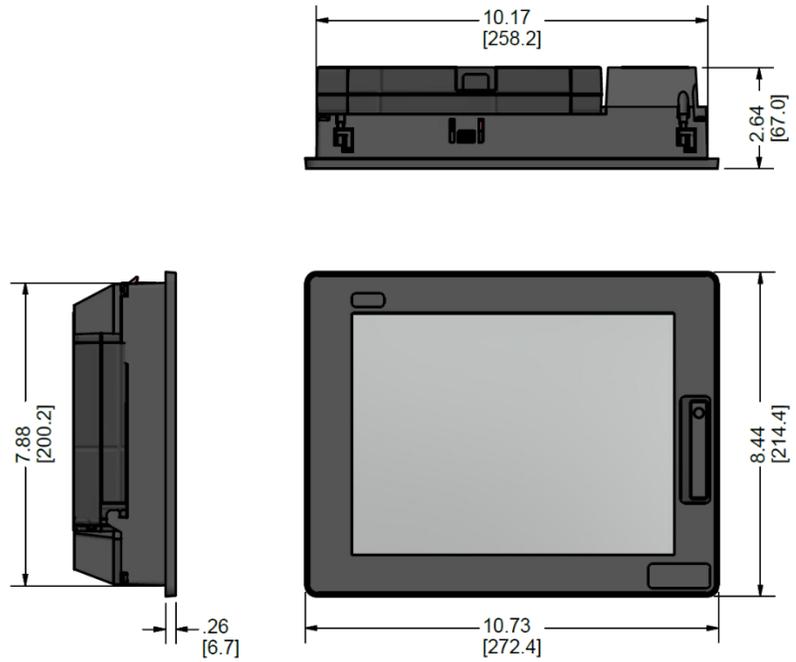
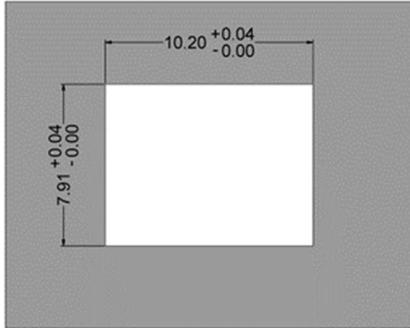


10" Touchscreen

TS-0xxx-xxx-xxxx

Installation:

Cutout required as shown below

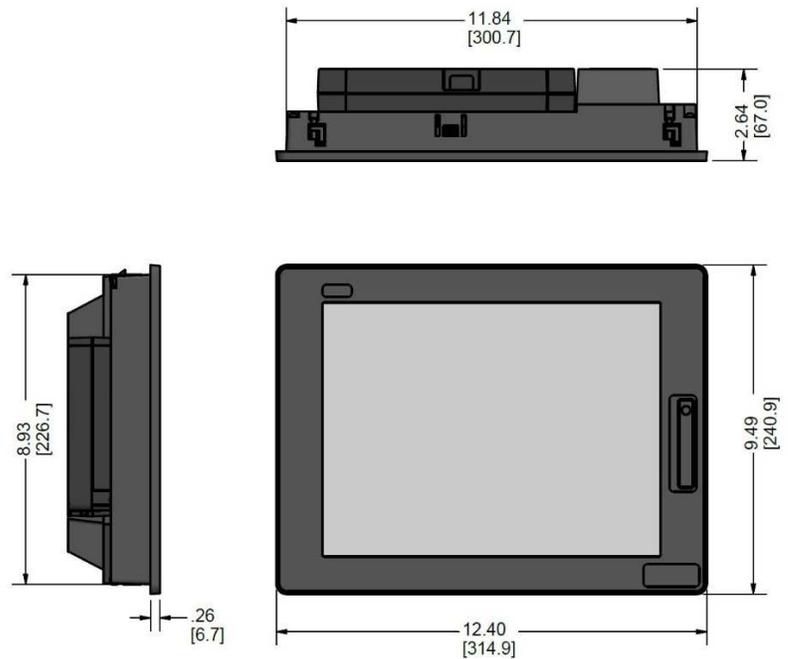
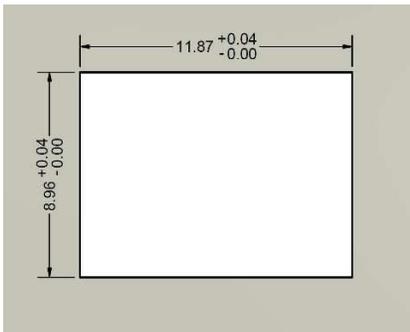


12" Touchscreen

TS-2xxx-xxx-xxxx

Installation:

Cutout required as shown below

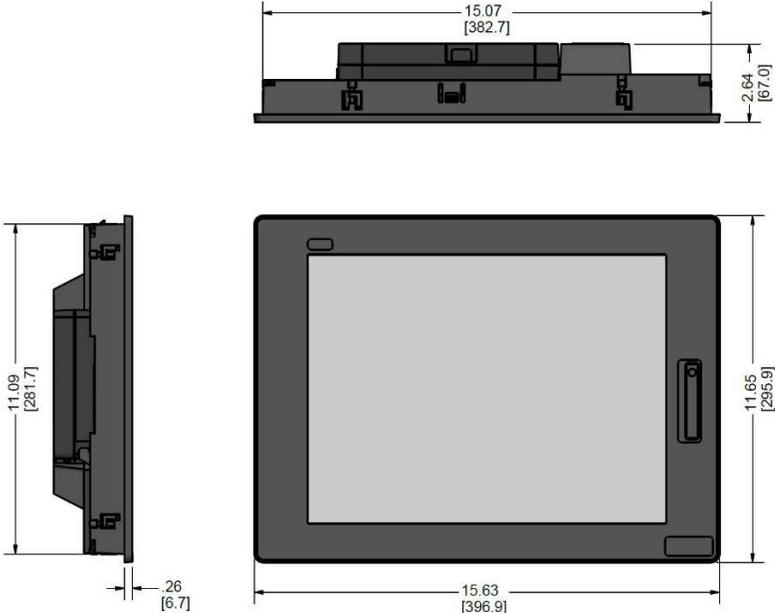
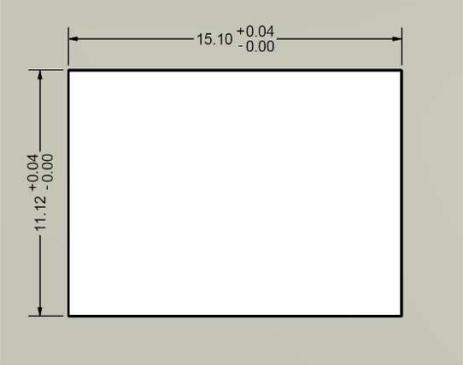


15" Touchscreen

TS-5xxx-xxx-xxx

Installation:

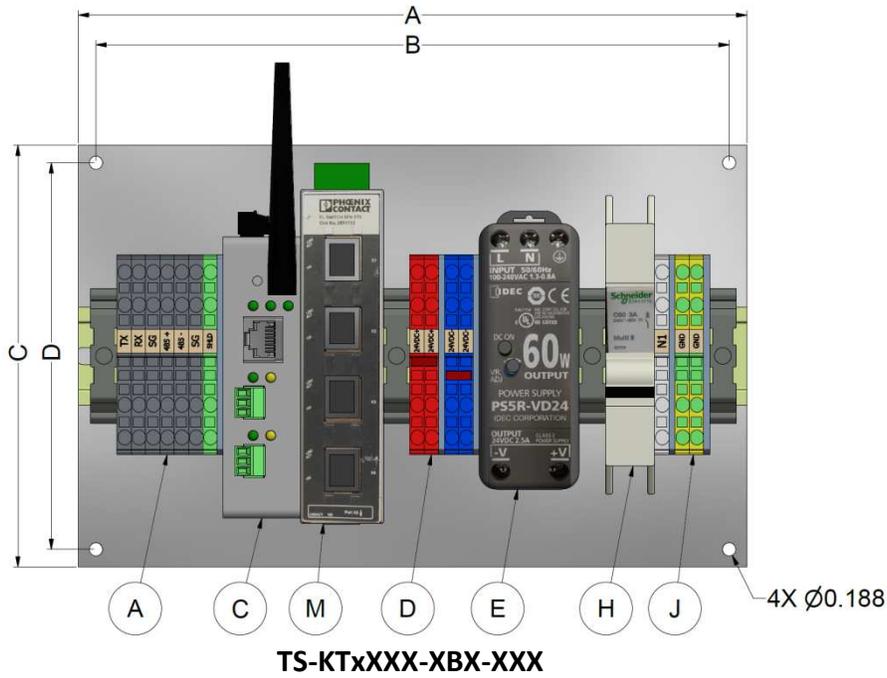
Cutout required as shown below



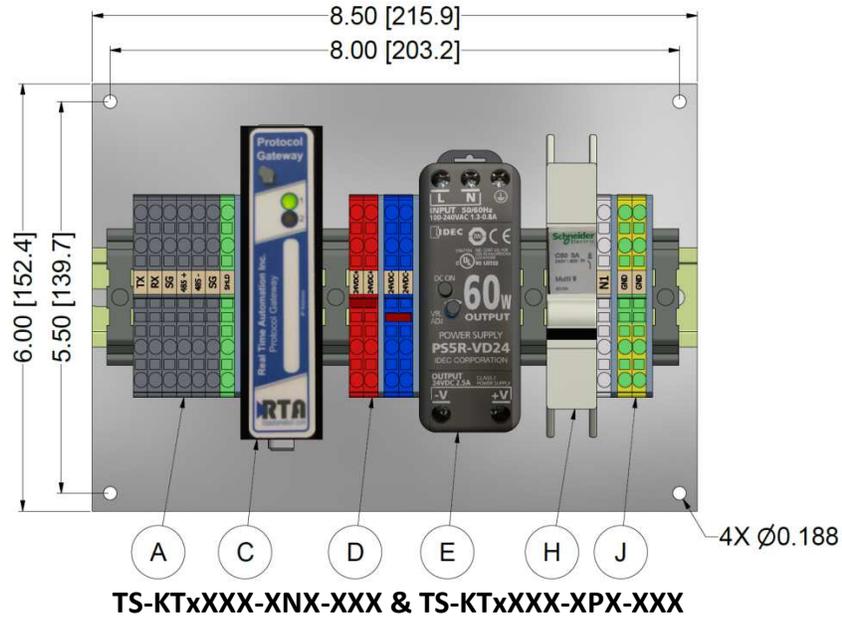
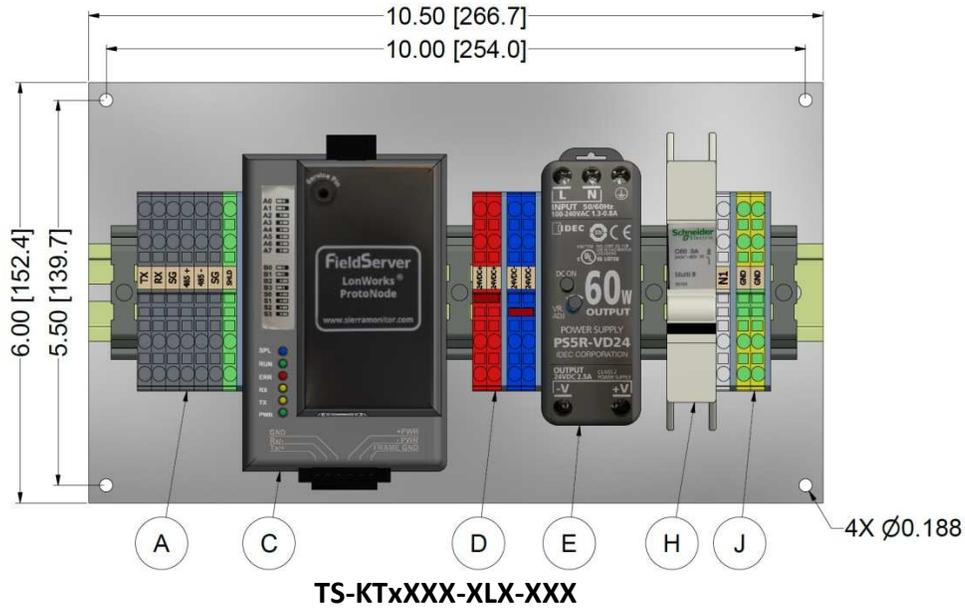
Kit Dimensions

Reference page 40 for item balloon descriptions
Lowercase “x” in part number denotes any selection
Dimensions in inches; millimeters in brackets

TS-KTxXXX-XBX-XXXX

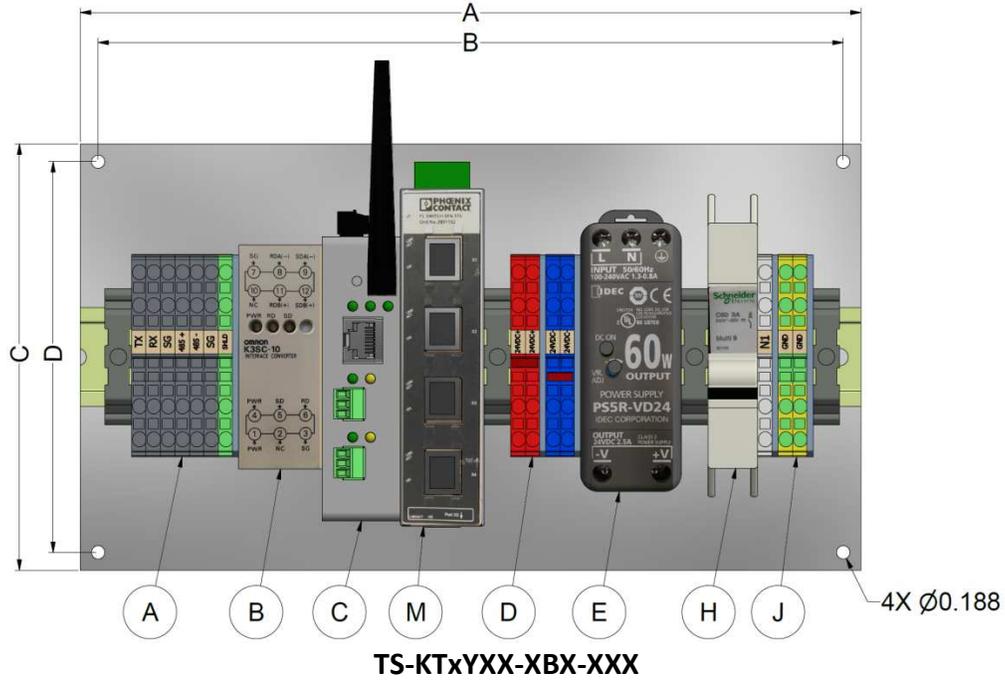


Kit on Plate	ProtoAir protocol converter (C)	Ethernet Switch (M)	Dim “A”	Dim “B”	Dim “C”	Dim “D”
TS-KTxXXX-XSX-XXX			7.50”	7.00”	4.50”	4.00”
TS-KTxXXX-XXM-XXX	X		8.50”	8.00”	6.00”	5.50”
TS-KTxXXX-XBX-XXX	X	X	9.50”	9.00”	6.00”	5.50”

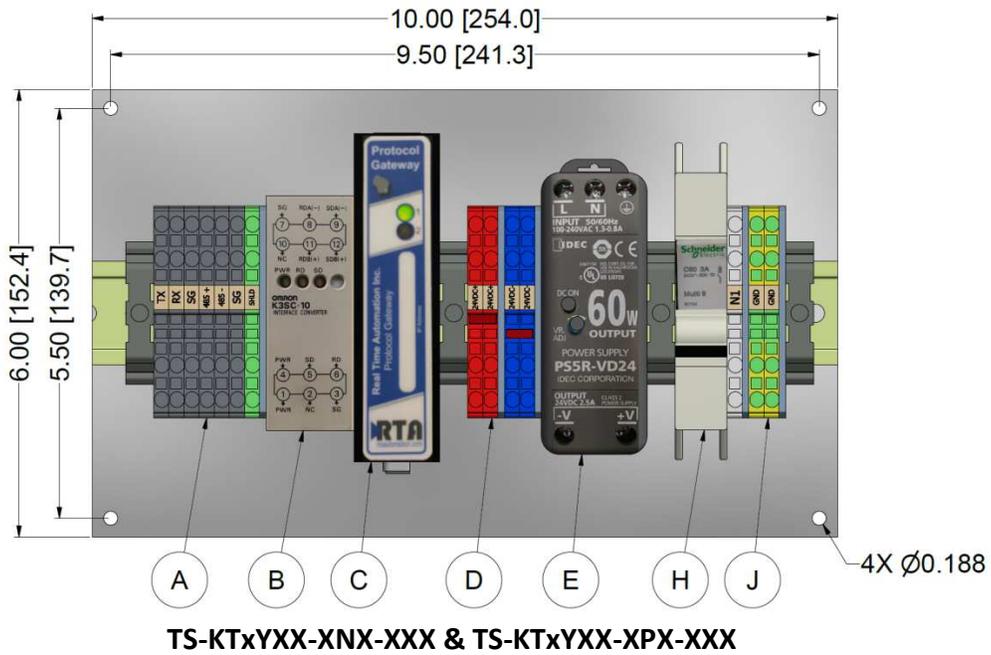
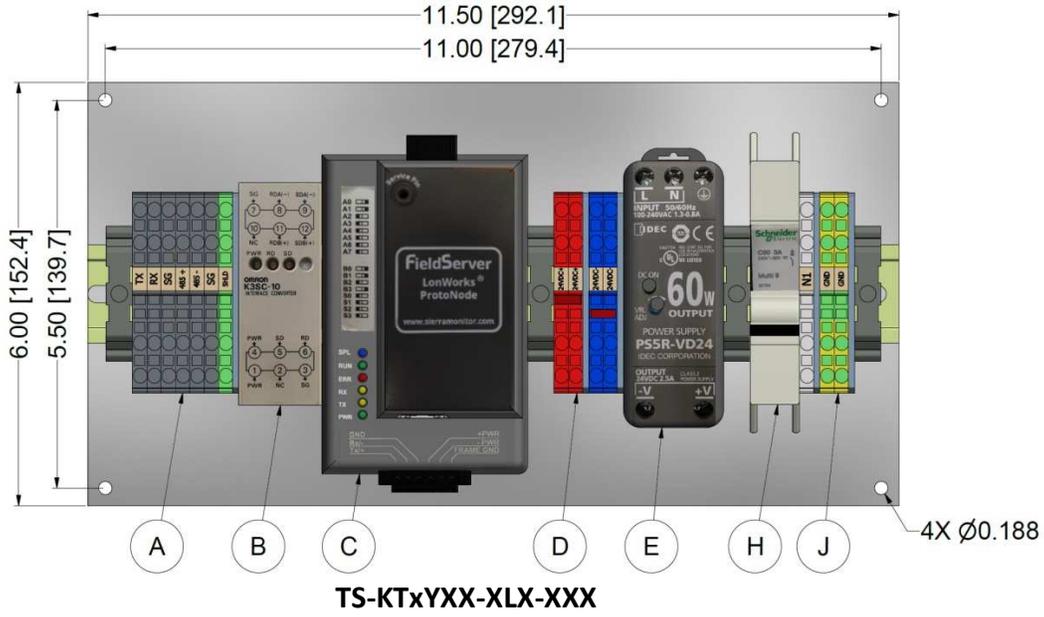


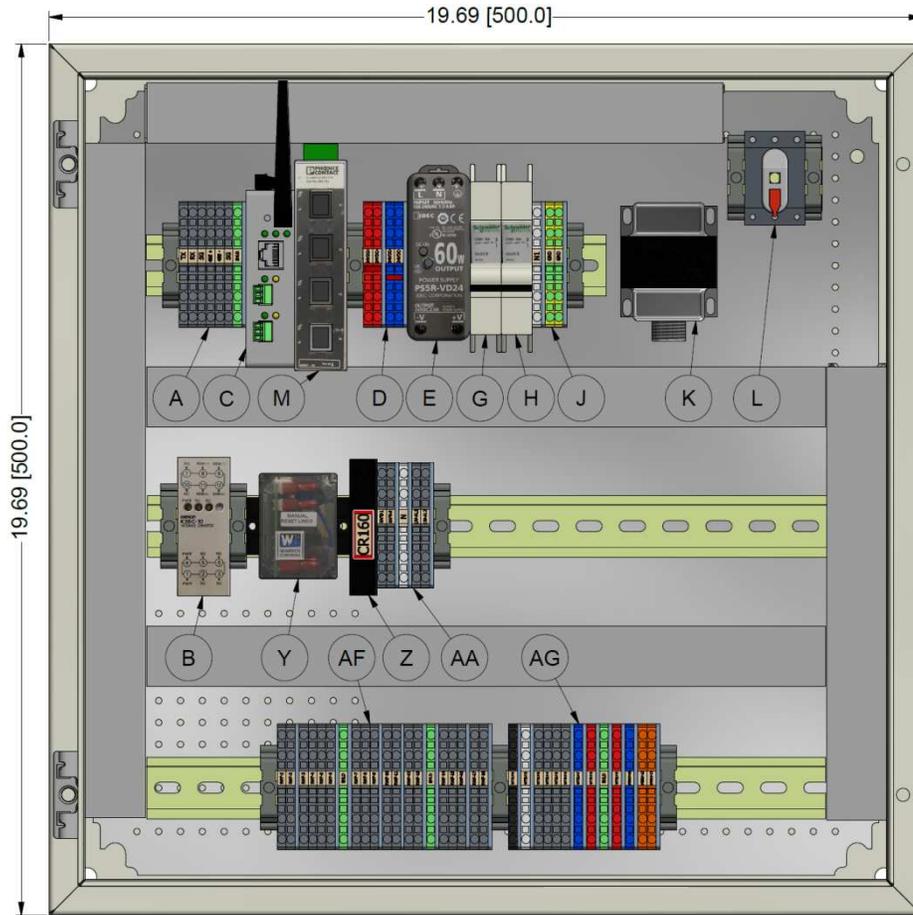
Kits Dimensions (continued)

TS-KTxYXX-XBX-XXXX



Kit on Plate	ProtoAir protocol converter (C)	Ethernet Switch (M)	Dim "A"	Dim "B"	Dim "C"	Dim "D"
TS-KTxYXX-XSX-XXX			8.50"	8.00"	4.50"	4.00"
TS-KTxYXX-XXM-XXX	X		9.50"	9.00"	6.00"	5.50"
TS-KTxYXX-XBX-XXX	X	X	11.00"	10.50"	6.00"	5.50"





TS-KTxYXX-XB1-XYx2

Options for Kit in Enclosure	Water Level Control Components (G, K, AG)	Load Control Components (G, AF)	Warrick Relay Components (Y, Z, AA)
TS-KTxYXX-XB1-XxxW	X		
TS-KTxYXX-XB1-XxxL		X	
TS-KTxYXX-XB1-XYxx			X

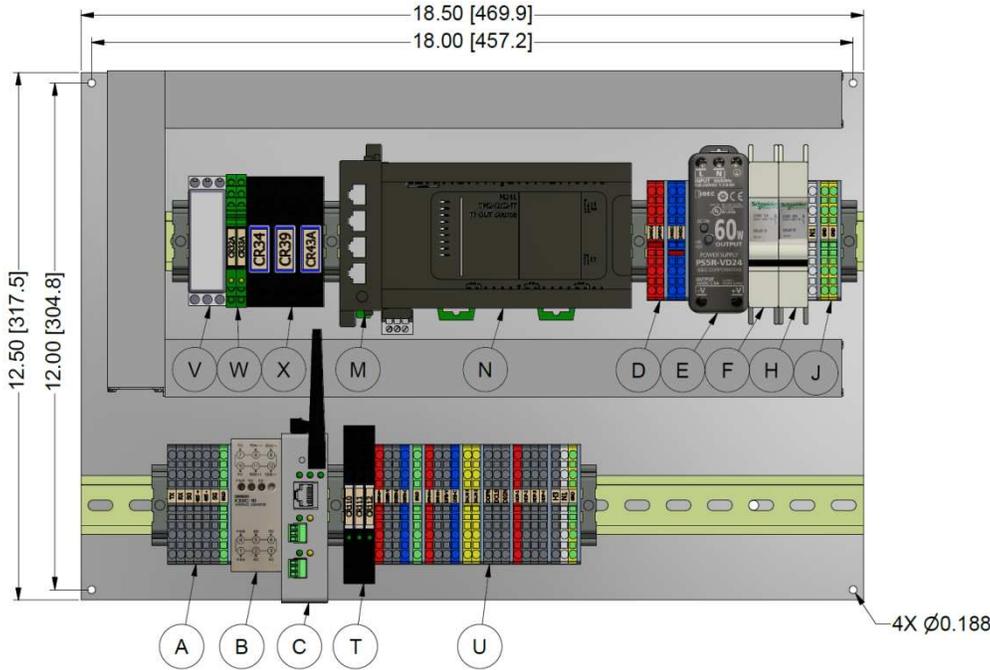
Notes:

16"x16" Enclosure used with (0-2) options

20"x20" Enclosure used with (3) options

Kit Layouts (continued)

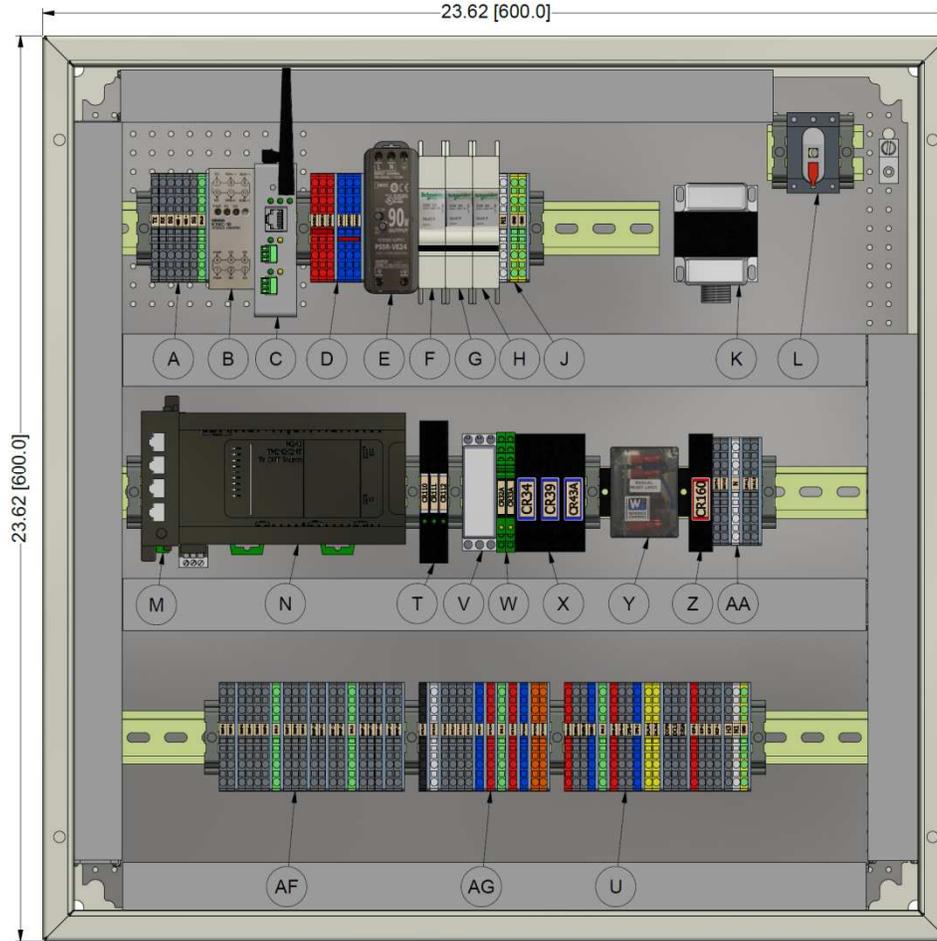
TS-KTxYDX-XXxx-Xxxx



TS-KTxYDX-XXBX-XXXX

Notes:

- Layout includes RS232 to RS485 converter used with TS-KTxYxx-xxx-xxxx (Item B)
- Layout includes ProtoAir wireless gateway used with TS-KTxxx-x(B/M)x-xxxx (Item C)



TS-KTxYDX-XB1-XYx2

Options for Kit in Enclosure	Water Level Control Components (G, K, AG)	Load Control Components (G, AF)	Warrick Relay Components (Y, Z, AA)
TS-KTxYDX-XB1-XxxW	X		
TS-KTxYDX-XB1-XxxL		X	
TS-KTxYDX-XB1-XYxx			X

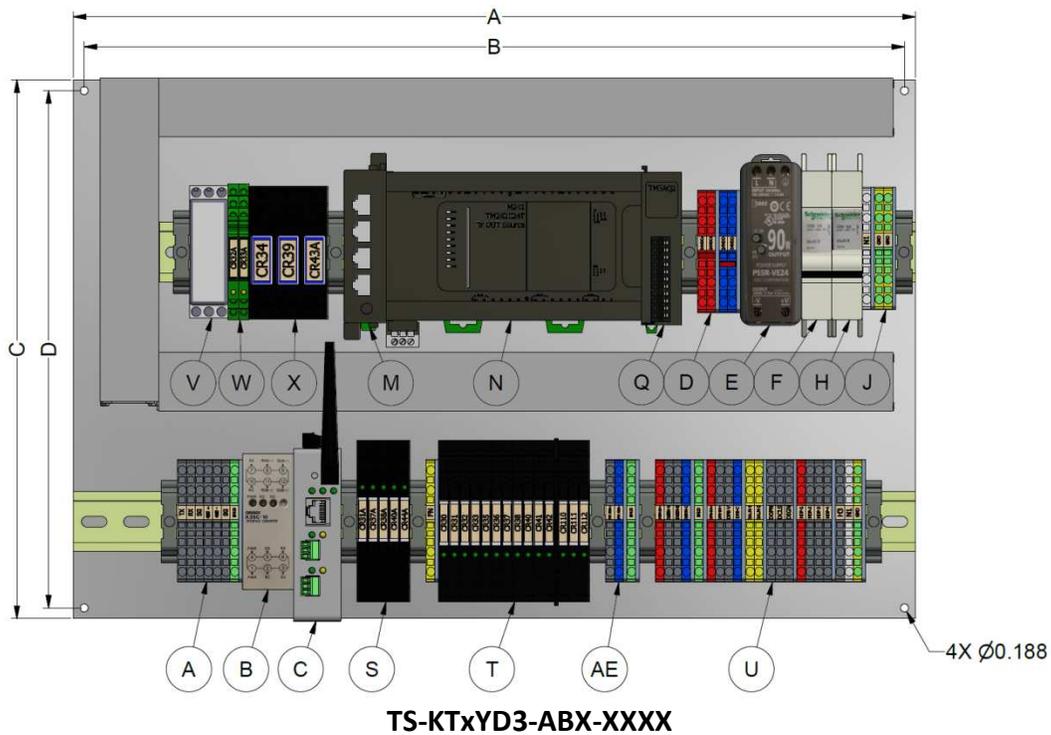
Notes:

20"x20" Enclosure used with (0-2) options

24"x24" Enclosure used with (3) options

Kit Layouts (continued)

TS-KTxxxx-AxX-XXXX

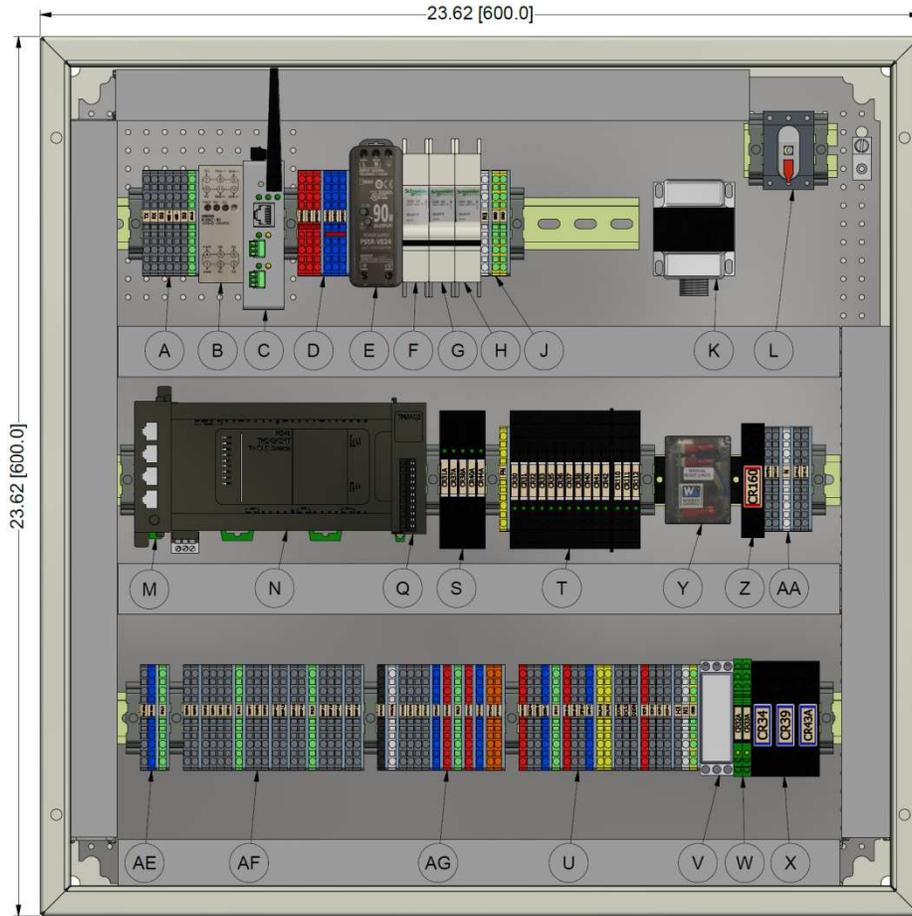


Options for Kit on Plate	Draft Control Components (F, U, V, W, X)	PLC Output Components (Q, AE)	Dim "A"	Dim "B"	Dim "C"	Dim "D"
TS-KT \times YXX-AxX-XXXX			14.50"	14.00"	12.50"	12.00"
TS-KT \times YDX-AxX-XXXX	X		18.50"	18.00"	12.50"	12.00"
TS-KT \times YX3-AxX-XXXX		X	15.50"	15.00"	12.50"	12.00"
TS-KT \times YD3-AxX-XXXX	X	X	19.50"	19.00"	12.50"	12.00"

Notes:

Layout includes RS232 to RS485 converter used with TS-KT \times Yxx-xxx-xxxx (Item B)

Layout includes ProtoAir wireless gateway used with TS-KTxxxx-x(B/M)x-xxxx (Item C)



TS-KTxYD3-AB1-XYx2

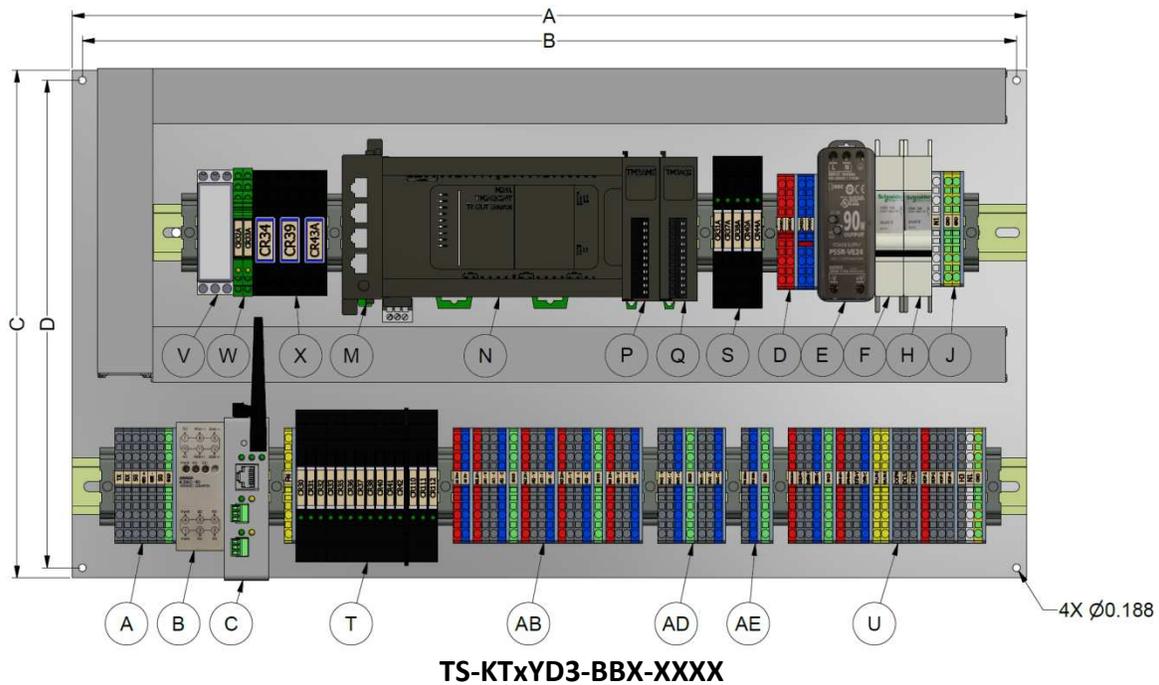
Options for Kit in Enclosure	Draft Control Components (F, U, V, W, X)	Water Level Control Components (G, K, AG)	Load Control Components (G, AF)	Warrick Relay Components (Y, Z, AA)	PLC Output Components (Q, AE)
TS-KTxYDx-AB1-Xxxx	X				
TS-KTxYxx-AB1-XxxW		X			
TS-KTxYxx-AB1-XxxL			X		
TS-KTxYxx-AB1-XYxx				X	
TS-KTxYx(3/4/5)-AB1-Xxxx					X

Notes:

- 16" x 16" Enclosure used with no options without Lonworks
- 20" x 20" Enclosure used with (1-3) options without Lonworks or (0-2) options with Lonworks
- 24" x 24" Enclosure used with (4) or more options without Lonworks or (3) or more options with Lonworks

Kits Dimensions (continued)

TS-KTxxxx-BxX-XXXX

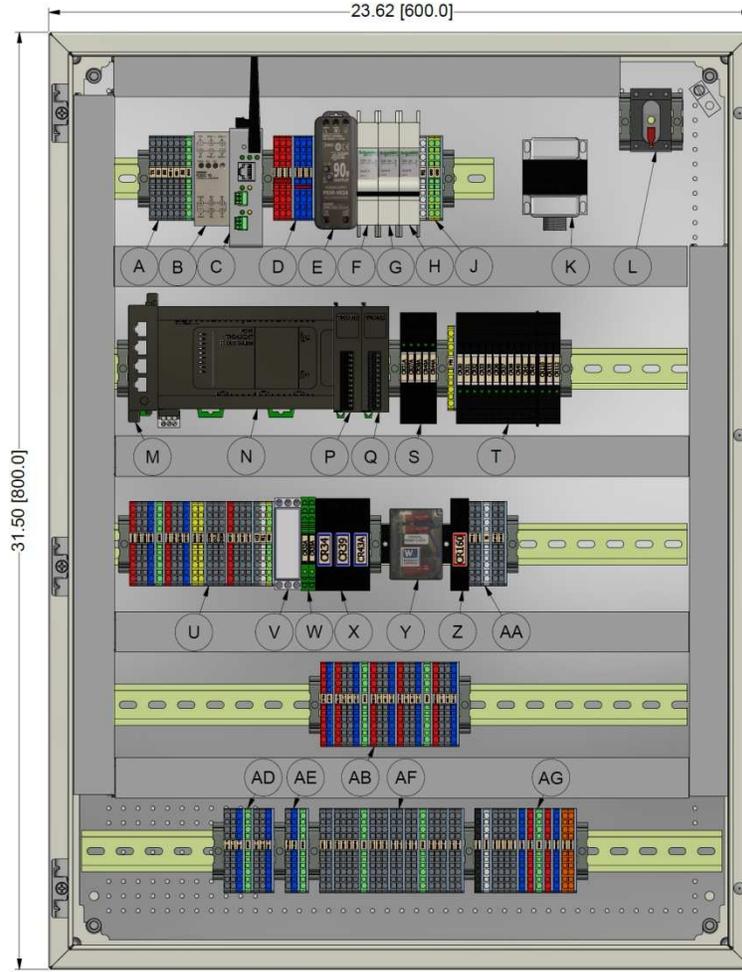


Options for Kit on Plate	Draft Control Components (F, U, V, W, X)	PLC Output Components (Q, AE)	Dim "A"	Dim "B"	Dim "C"	Dim "D"
TS-KTxYXX-BxX-XXXX			18.50"	18.00"	12.50"	12.00"
TS-KTxYDX-BxX-XXXX	X		22.50"	22.00"	12.50"	12.00"
TS-KTxYX3-BxX-XXXX		X	19.50"	19.00"	12.50"	12.00"
TS-KTxYD3-BxX-XXXX	X	X	23.50"	23.00"	12.50"	12.00"

Notes:

Layout includes RS232 to RS485 converter used with TS-KTxYxx-xxx-xxxx (Item B)

Layout includes ProtoAir wireless gateway used with TS-KTxxxx-x(B/M)x-xxxx (Item C)



TS-KTxYD3-BB1-XYx2

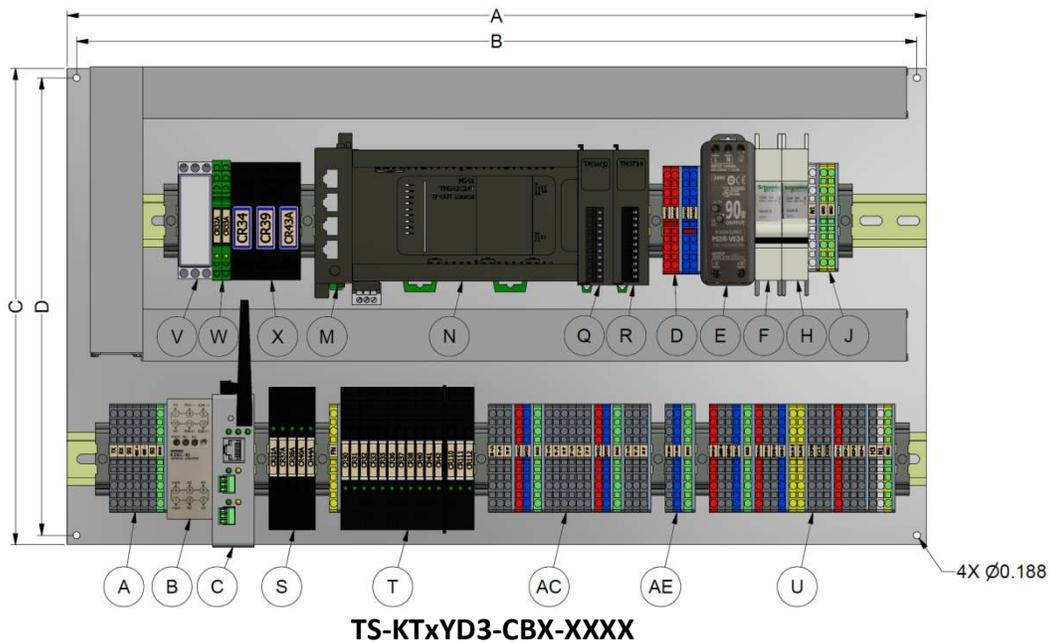
Options for Kit in Enclosure	Draft Control Components (F, U, V, W, X)	Water Level Control Components (G, K, AG)	Load Control Components (G, AF)	Warrick Relay Components (Y, Z, AA)	PLC Output Components (Q, AE)
TS-KTxYDx-BB1-Xxxx	X				
TS-KTxYxx-BB1-XxxW		X			
TS-KTxYxx-BB1-XxxL			X		
TS-KTxYxx-BB1-XYxx				X	
TS-KTxYx(3/4/5)-BB1-Xxxx					X

Notes:

- 20"x20" Enclosure used with (0-1) options
- 24"x24" Enclosure used with (2-3) options
- 32"x24" Enclosure used with (4) or more options

Kits Dimensions (continued)

TS-KTxxxx-CxX-XXXX

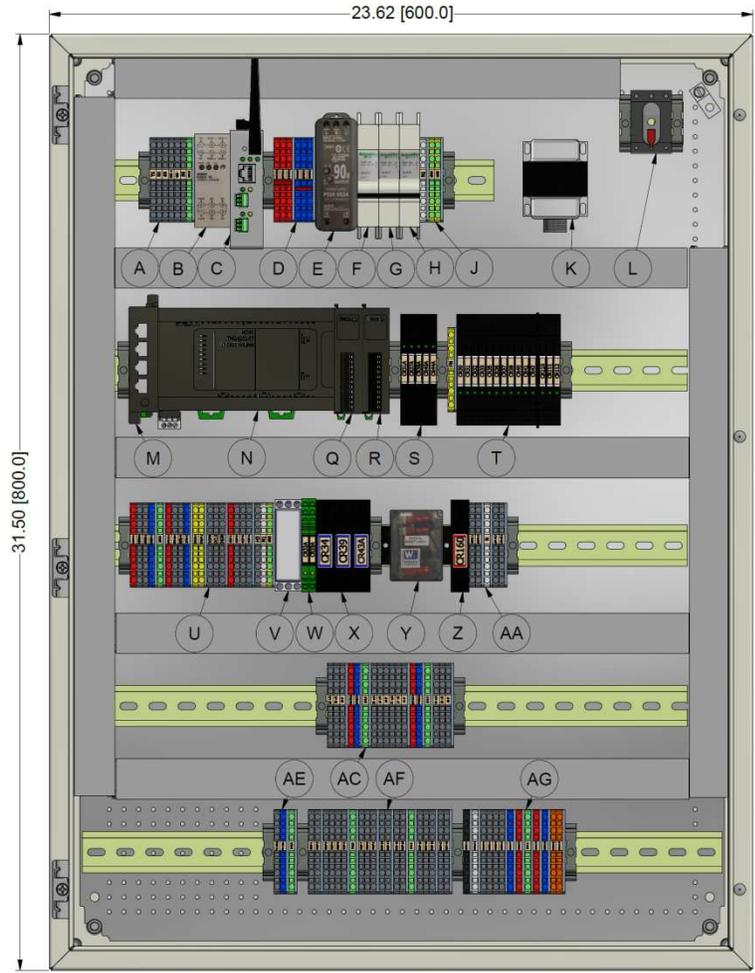


Options for Kit on Plate	Draft Control Components (F, U, V, W, X)	PLC Output Components (Q, AE)	Dim "A"	Dim "B"	Dim "C"	Dim "D"
TS-KT \mathbf{YXX} -CxX-XXXX			17.00"	16.50"	12.50"	12.00"
TS-KT \mathbf{YDX} -CxX-XXXX	X		21.50"	21.00"	12.50"	12.00"
TS-KT $\mathbf{YX3}$ -CxX-XXXX		X	17.50"	17.00"	12.50"	12.00"
TS-KT $\mathbf{YD3}$ -CxX-XXXX	X	X	22.50"	22.00"	12.50"	12.00"

Notes:

Layout includes RS232 to RS485 converter used with TS-KT \mathbf{Yxx} -xxx-xxxx (Item B)

Layout includes ProtoAir wireless gateway used with TS-KTxxxx-x(B/M)x-xxxx (Item C)



TS-KTxYD3-CB1-XYx2

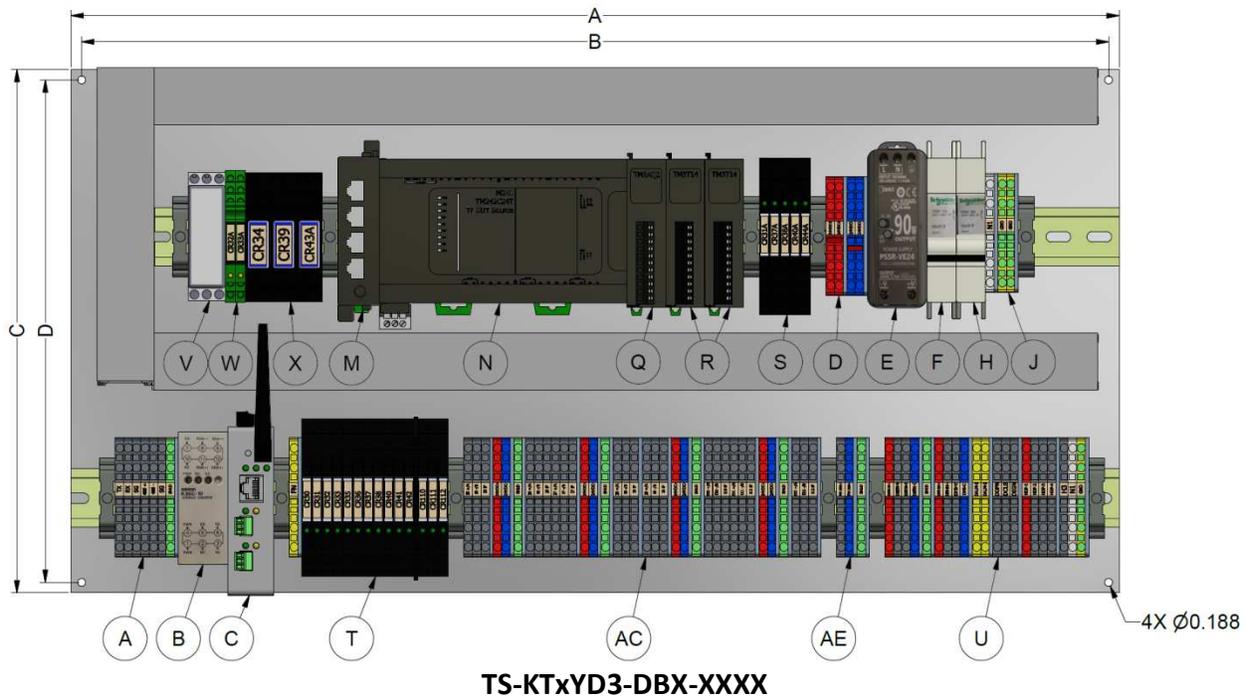
Options for Kit in Enclosure	Draft Control Components (F, U, V, W, X)	Water Level Control Components (G, K, AG)	Load Control Components (G, AF)	Warrick Relay Components (Y, Z, AA)	PLC Output Components (Q, AE)
TS-KTxYDx-CB1-Xxxx	X				
TS-KTxYxx-CB1-XxxW		X			
TS-KTxYxx-CB1-XxxL			X		
TS-KTxYxx-CB1-XYxx				X	
TS-KTxYx(3/4/5)-CB1-Xxxx					X

Notes:

- 20"x20" Enclosure used with (0-1) options
- 24"x24" Enclosure used with (2-3) options
- 32"x24" Enclosure used with (4) or more options

Kits Dimensions (continued)

TS-KTxxxx-DxX-XXXX

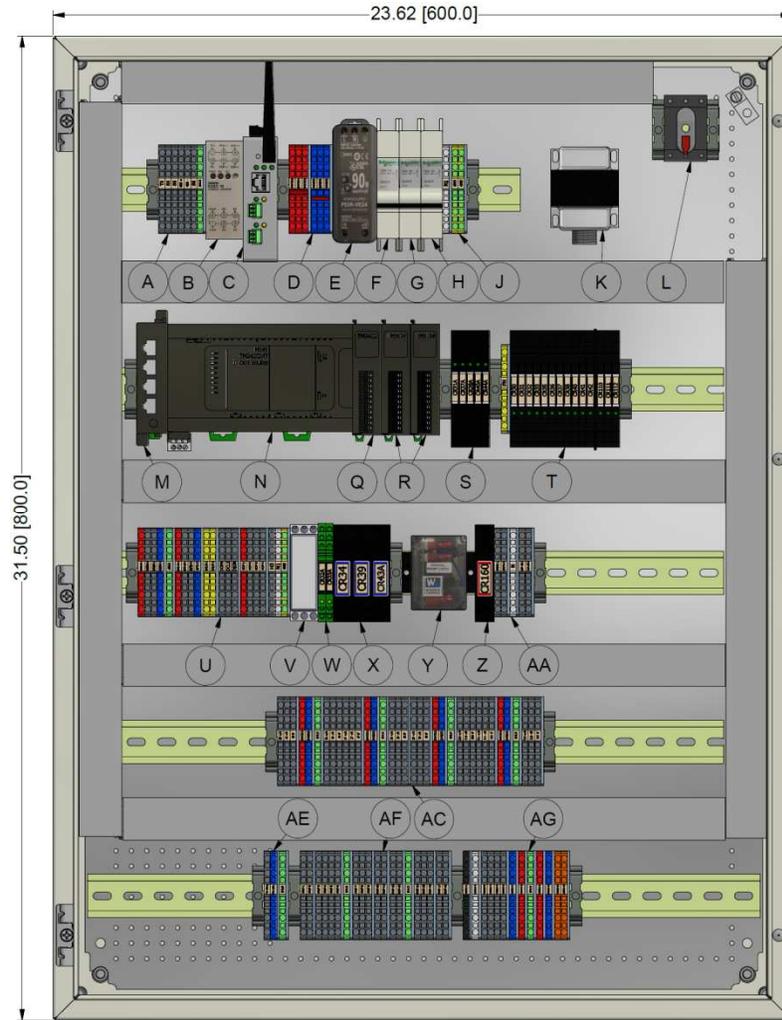


Options for Kit on Plate	Draft Control Components (F, U, V, W, X)	PLC Output Components (Q, AE)	Dim "A"	Dim "B"	Dim "C"	Dim "D"
TS-KTxYXX-DxX-XXXX			19.50"	19.00"	12.50"	12.00"
TS-KTxYDX-DxX-XXXX	X		24.00"	23.50"	12.50"	12.00"
TS-KTxYX3-DxX-XXXX		X	20.00"	19.50"	12.50"	12.00"
TS-KTxYD3-DxX-XXXX	X	X	25.00"	24.50"	12.50"	12.00"

Notes:

Layout includes RS232 to RS485 converter used with TS-KTxYxx-xxx-xxxx (Item B)

Layout includes ProtoAir wireless gateway used with TS-KTxxxx-x(B/M)x-xxxx (Item C)



TS-KTxYD3-DB1-XYx2

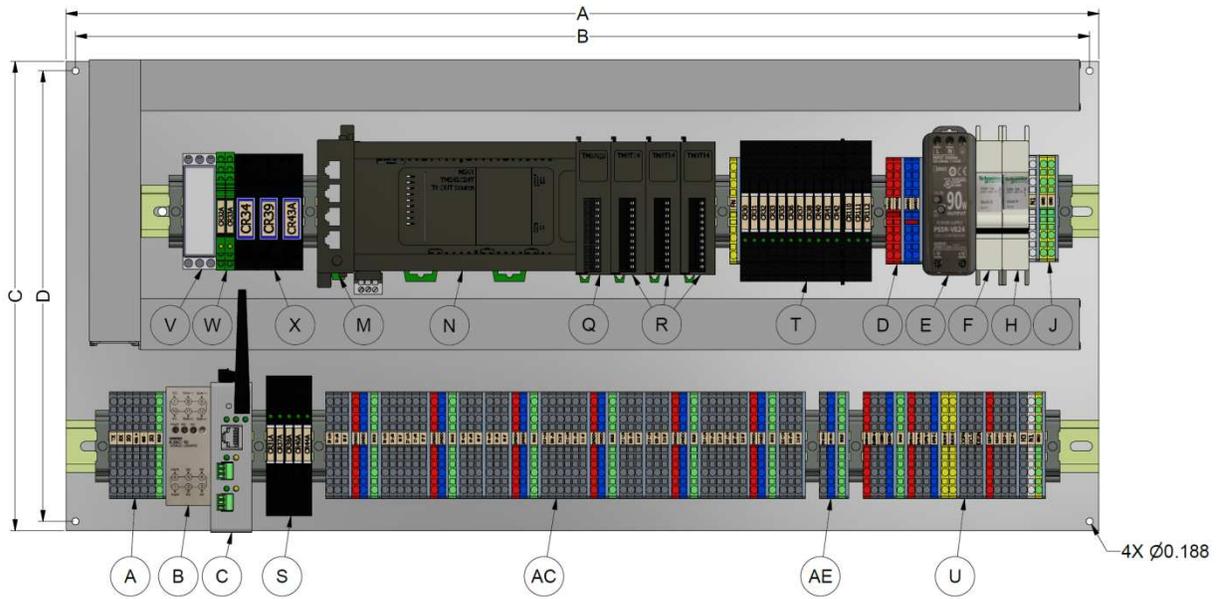
Options for Kit in Enclosure	Draft Control Components (F, U, V, W, X)	Water Level Control Components (G, K, AG)	Load Control Components (G, AF)	Warrick Relay Components (Y, Z, AA)	PLC Output Components (Q, AE)
TS-KTxYDx-DB1-Xxxx	X				
TS-KTxYxx-DB1-XxxW		X			
TS-KTxYxx-DB1-XxxL			X		
TS-KTxYxx-DB1-XYxx				X	
TS-KTxYx(3/4/5)-DB1-Xxxx					X

Notes:

- 20"x20" Enclosure used with no options
- 24"x24" Enclosure used with (1-2) options
- 32"x24" Enclosure used with (3) or more options

Kits Dimensions (continued)

TS-KTxxxx-ExX-XXXX



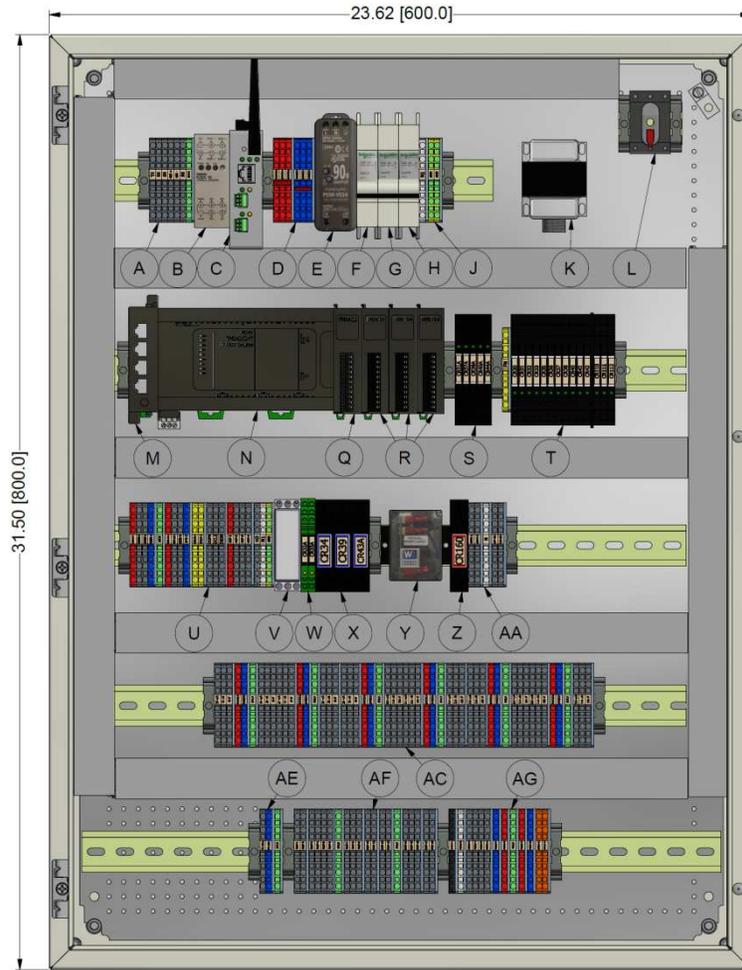
TS-KT_xYD3-EBX-XXXX

Options for Kit on Plate	Draft Control Components (F, U, V, W, X)	PLC Output Components (Q, AE)	Dim "A"	Dim "B"	Dim "C"	Dim "D"
TS-KT _x Y _{XX} -ExX-XXXX			22.00"	21.50"	12.50"	12.00"
TS-KT _x Y _{DX} -ExX-XXXX	X		27.00"	26.50"	12.50"	12.00"
TS-KT _x Y _{X3} -ExX-XXXX		X	23.00"	22.50"	12.50"	12.00"
TS-KT _x Y _{D3} -ExX-XXXX	X	X	27.50"	27.00"	12.50"	12.00"

Notes:

Layout includes RS232 to RS485 converter used with TS-KT_xY_{xx}-xxx-xxxx (Item B)

Layout includes ProtoAir wireless gateway used with TS-KT_{xxxx}-x(B/M)x-xxxx (Item C)



TS-KTxYD3-EB1-XYx2

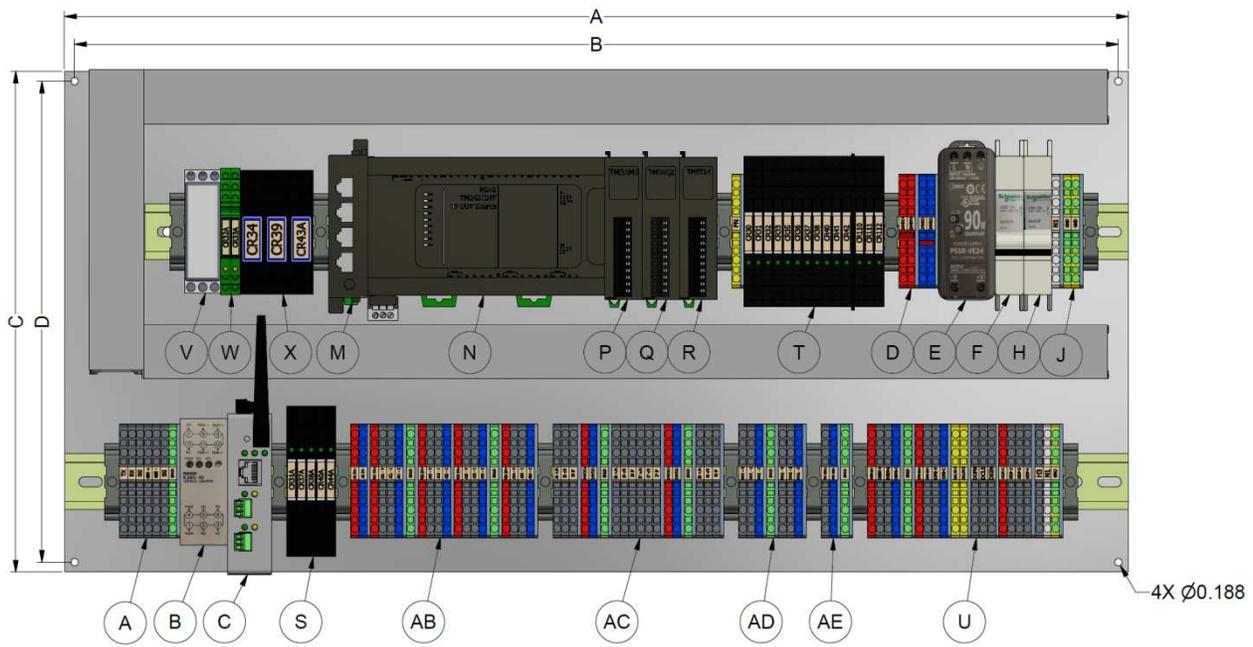
Options for Kit in Enclosure	Draft Control Components (F, U, V, W, X)	Water Level Control Components (G, K, AG)	Load Control Components (G, AF)	Warrick Relay Components (Y, Z, AA)	PLC Output Components (Q, AE)
TS-KTxY D x-EB1-Xxxx	X				
TS-KTxYxx-EB1-Xxx W		X			
TS-KTxYxx-EB1-Xxx L			X		
TS-KTxYxx-EB1-XYxx				X	
TS-KTxYx (3/4/5) -EB1-Xxxx					X

Notes:

- 20"x20" Enclosure used with no options
- 24"x24" Enclosure used with (1) option
- 32"x24" Enclosure used with (2) or more options

Kits Dimensions (continued)

TS-KTxxxx-FxX-XXXX



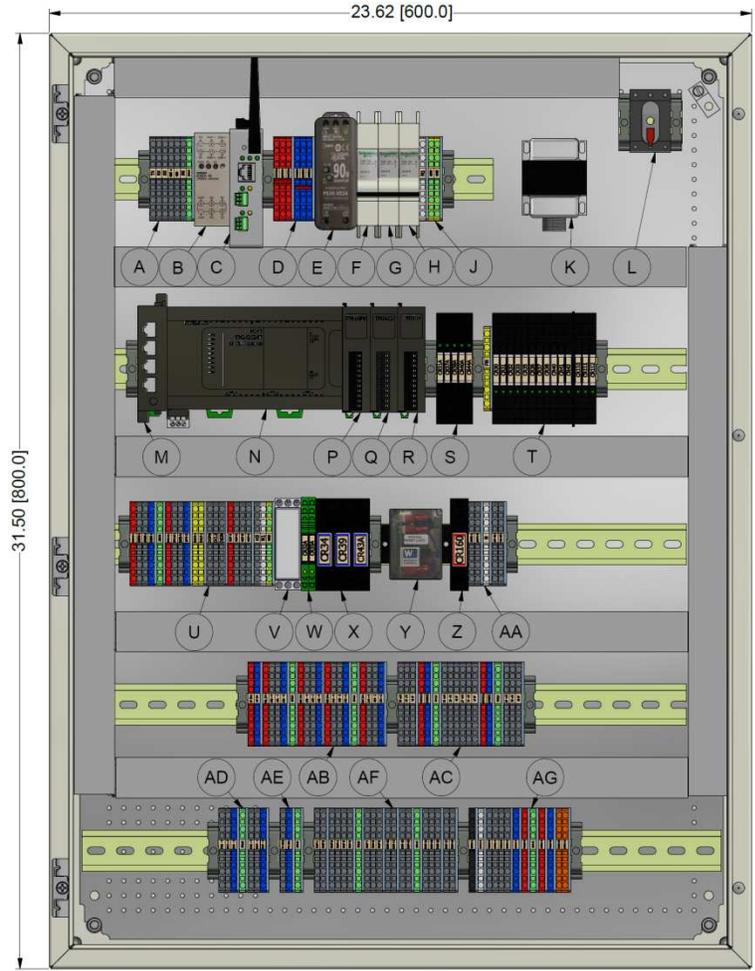
TS-KT_xYD3-FBX-XXXX

Options for Kit on Plate	Draft Control Components (F, U, V, W, X)	PLC Output Components (Q, AE)	Dim "A"	Dim "B"	Dim "C"	Dim "D"
TS-KT _x YXX-FxX-XXXX			20.50"	20.00"	12.50"	12.00"
TS-KT _x YDX-FxX-XXXX	X		25.50"	25.00"	12.50"	12.00"
TS-KT _x YX3-FxX-XXXX		X	21.50"	21.00"	12.50"	12.00"
TS-KT _x YD3-FxX-XXXX	X	X	26.50"	26.00"	12.50"	12.00"

Notes:

Layout includes RS232 to RS485 converter used with TS-KT_xYxx-xxx-xxxx (Item B)

Layout includes ProtoAir wireless gateway used with TS-KTxxxx-x(B/M)x-xxxx (Item C)



TS-KTxYD3-FB1-XYx2

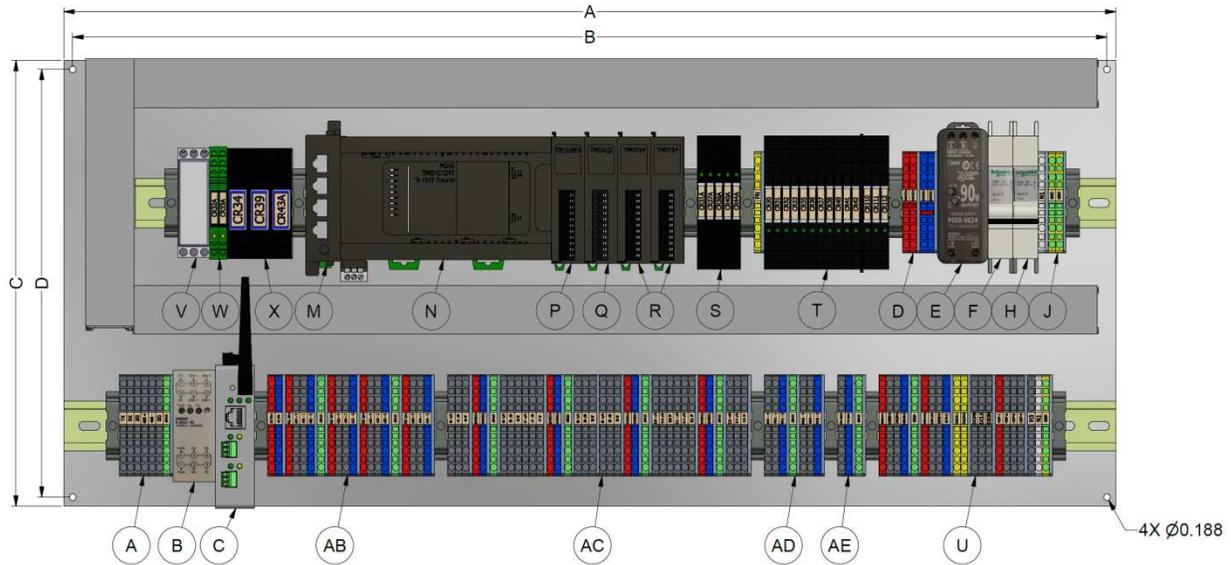
Options for Kit in Enclosure	Draft Control Components (F, U, V, W, X)	Water Level Control Components (G, K, AG)	Load Control Components (G, AF)	Warrick Relay Components (Y, Z, AA)	PLC Output Components (Q, AE)
TS-KTxYDx-FB1-Xxxx	X				
TS-KTxYxx-FB1-XxxW		X			
TS-KTxYxx-FB1-XxxL			X		
TS-KTxYxx-FB1-XYxx				X	
TS-KTxYx(3/4/5)-FB1-Xxxx					X

Notes:

- 20"x20" Enclosure used with no options
- 24"x24" Enclosure used with (1-2) options
- 32"x24" Enclosure used with (3) or more options

Kits Dimensions (continued)

TS-KTxxxx-GxX-XXXX



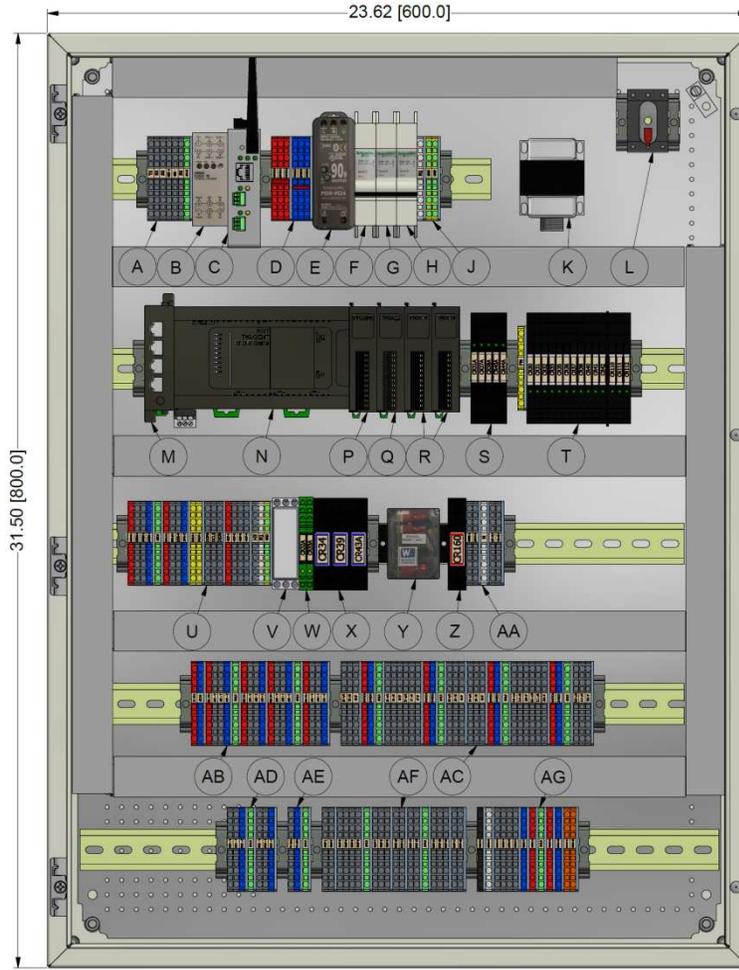
TS-KTxD3-GBX-XXXX

Options for Kit on Plate	Draft Control Components (F, U, V, W, X)	PLC Output Components (Q, AE)	Dim "A"	Dim "B"	Dim "C"	Dim "D"
TS-KT _x YXX-G _x X-XXXX			23.00"	22.50"	12.50"	12.00"
TS-KT _x YDX-G _x X-XXXX	X		28.50"	28.00"	12.50"	12.00"
TS-KT _x YX3-G _x X-XXXX		X	24.00"	23.50"	12.50"	12.00"
TS-KT _x YD3-G _x X-XXXX	X	X	29.50"	29.00"	12.50"	12.00"

Notes:

Layout includes RS232 to RS485 converter used with TS-KT_xYxx-xxx-xxxx (Item B)

Layout includes ProtoAir wireless gateway used with TS-KTxxxx-x(B/M)x-xxxx (Item C)



TS-KTxYD3-GB1-XYx2

Options for Kit in Enclosure	Draft Control Components (F, U, V, W, X)	Water Level Control Components (G, K, AG)	Load Control Components (G, AF)	Warrick Relay Components (Y, Z, AA)	PLC Output Components (Q, AE)
TS-KTxYDx-GB1-Xxxx	X				
TS-KTxYxx-GB1-XxxW		X			
TS-KTxYxx-GB1-XxxL			X		
TS-KTxYxx-GB1-XYxx				X	
TS-KTxYx(3/4/5)-GB1-Xxxx					X

Notes:

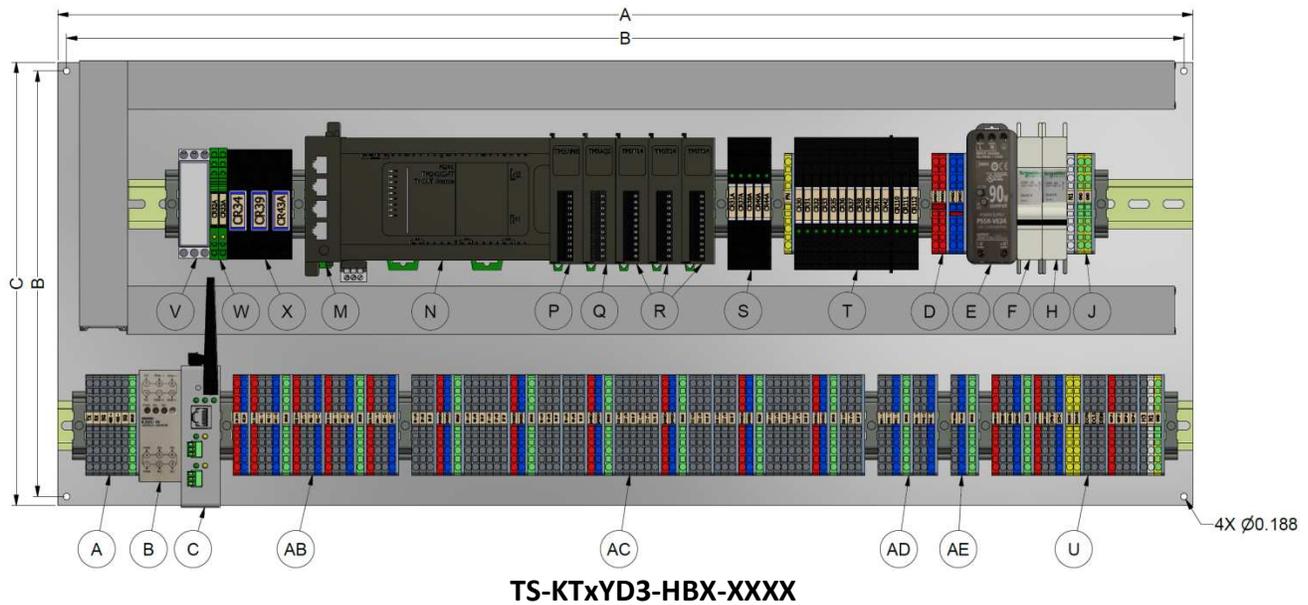
20"x20" Enclosure used with no options without Lonworks

24"x24" Enclosure used with (1) option without Lonworks or (0-1) options with Lonworks

32"x24" Enclosure used with (2) or more options

Kits Dimensions (continued)

TS-KTxxxx-HxX-XXXX

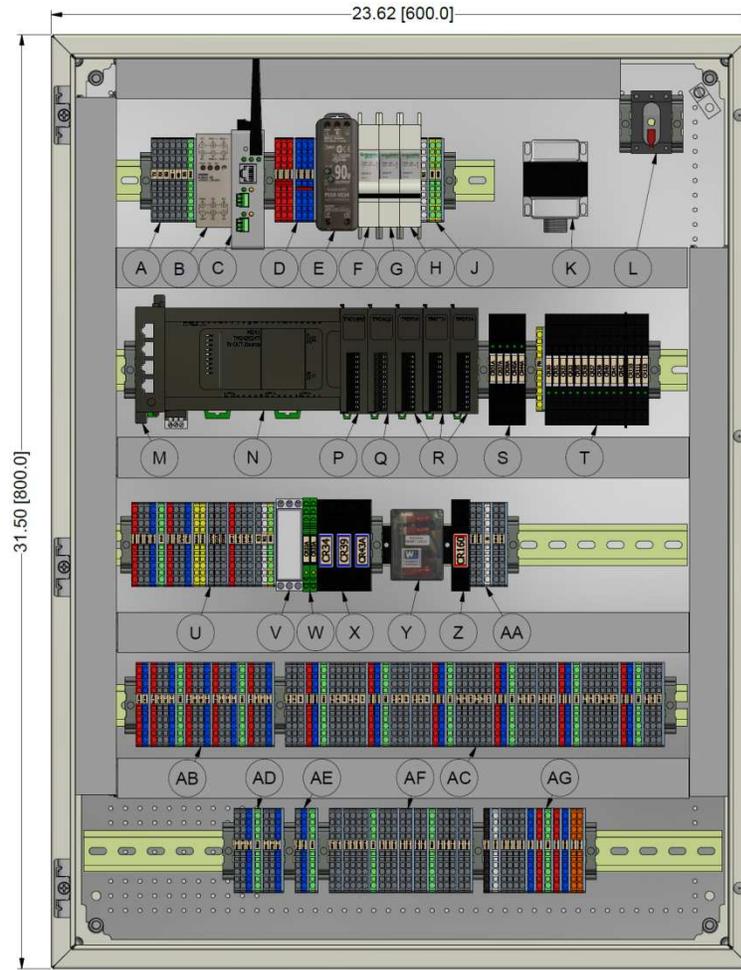


Options for Kit on Plate	Draft Control Components (F, U, V, W, X)	PLC Output Components (Q, AE)	Dim "A"	Dim "B"	Dim "C"	Dim "D"
TS-KT _x Y _{XX} -H _x X-XXXX			26.00"	25.50"	12.50"	12.00"
TS-KT _x Y _{DX} -H _x X-XXXX	X		31.00"	30.50"	12.50"	12.00"
TS-KT _x Y _{X3} -H _x X-XXXX		X	27.50"	27.00"	12.50"	12.00"
TS-KT _x Y _{D3} -H _x X-XXXX	X	X	32.00"	31.50"	12.50"	12.00"

Notes:

Layout includes RS232 to RS485 converter used with TS-KT_xY_{xx}-xxx-xxxx (Item B)

Layout includes ProtoAir wireless gateway used with TS-KT_{xxxx}-x(B/M)x-xxxx (Item C)



TS-KTxYD3-HB1-XYx2

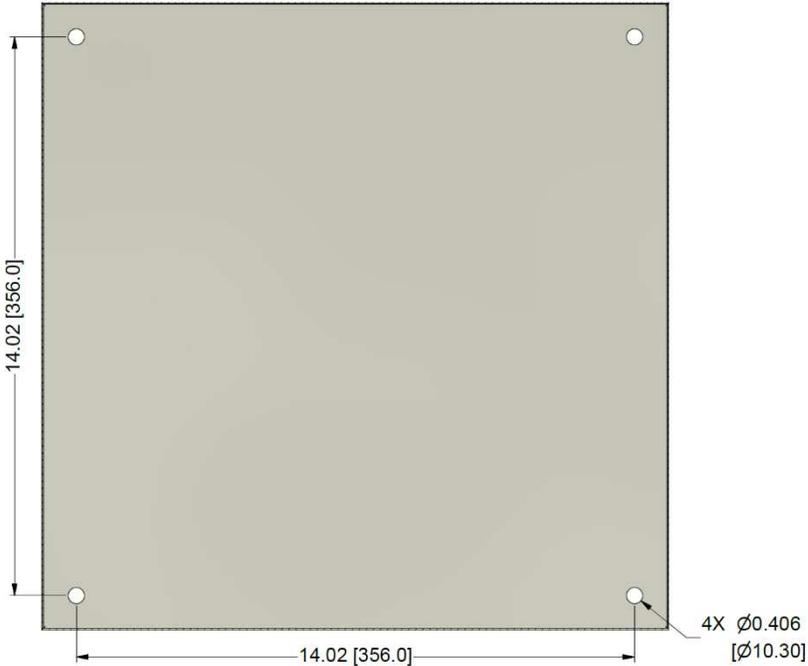
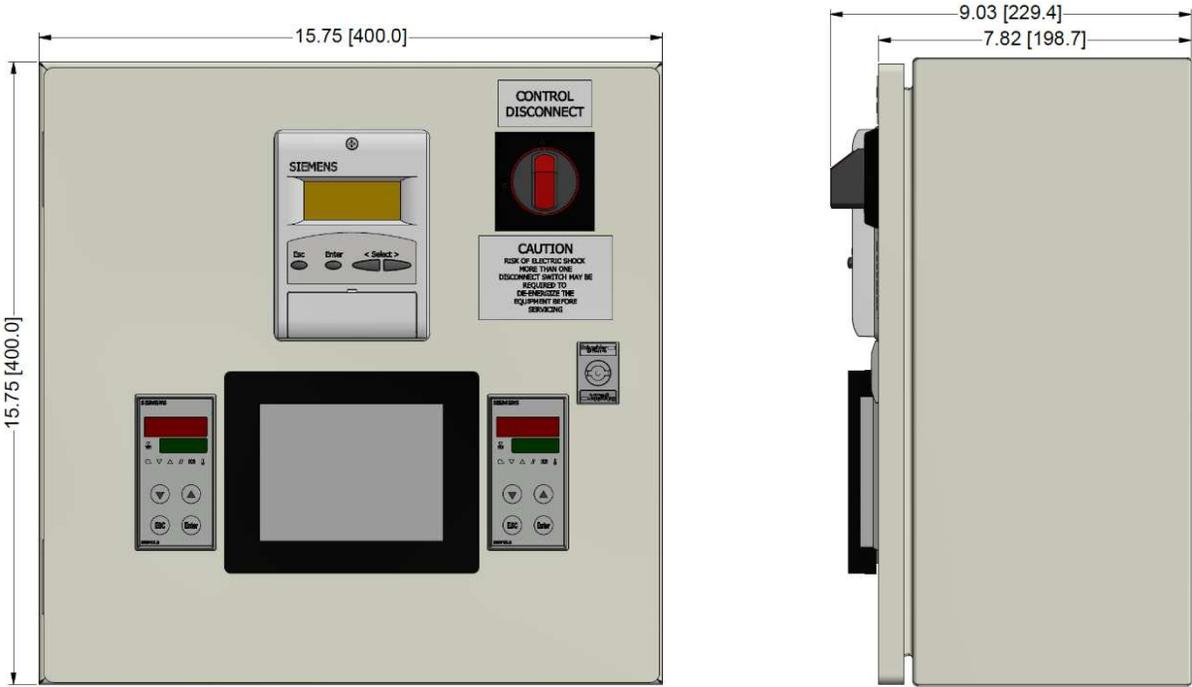
Options for Kit in Enclosure	Draft Control Components (F, U, V, W, X)	Water Level Control Components (G, K, AG)	Load Control Components (G, AF)	Warrick Relay Components (Y, Z, AA)	PLC Output Components (Q, AE)
TS-KTxYD x -HB1-Xxxx	X				
TS-KTxYxx-HB1-Xxx W		X			
TS-KTxYxx-HB1-Xxx L			X		
TS-KTxYxx-HB1-XYxx				X	
TS-KTxYx (3/4/5) -HB1-Xxxx					X

Notes:

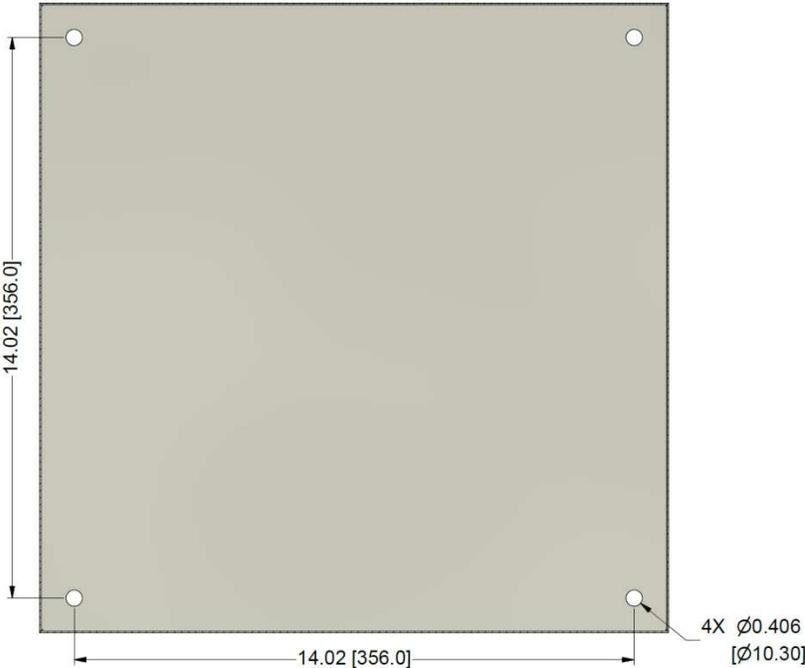
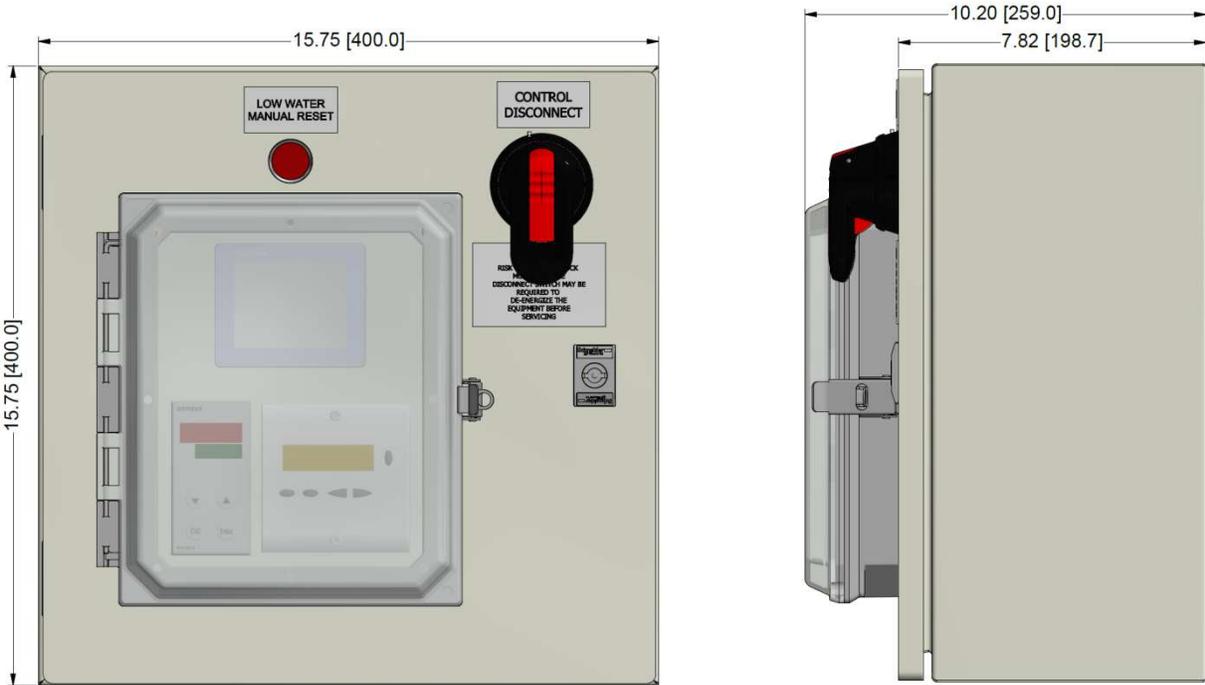
- 24"x24" Enclosure used with no options
- 32"x24" Enclosure used with (1) or more options

16"X 16" X 8" Enclosure Dimensions

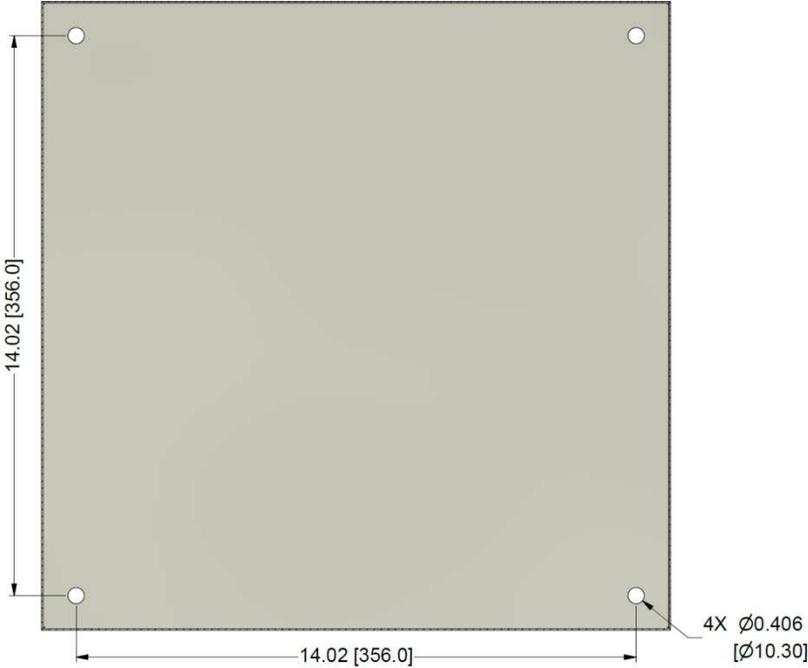
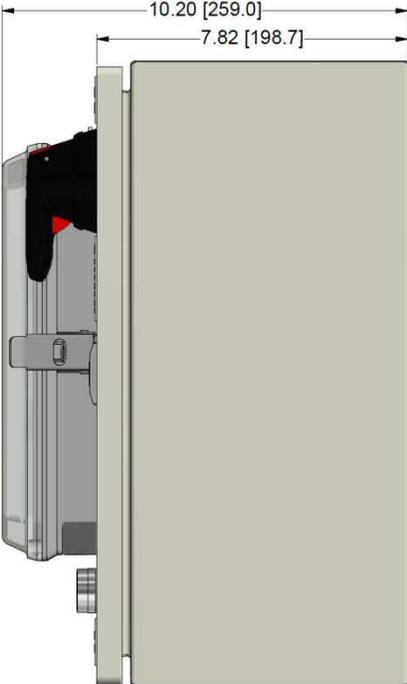
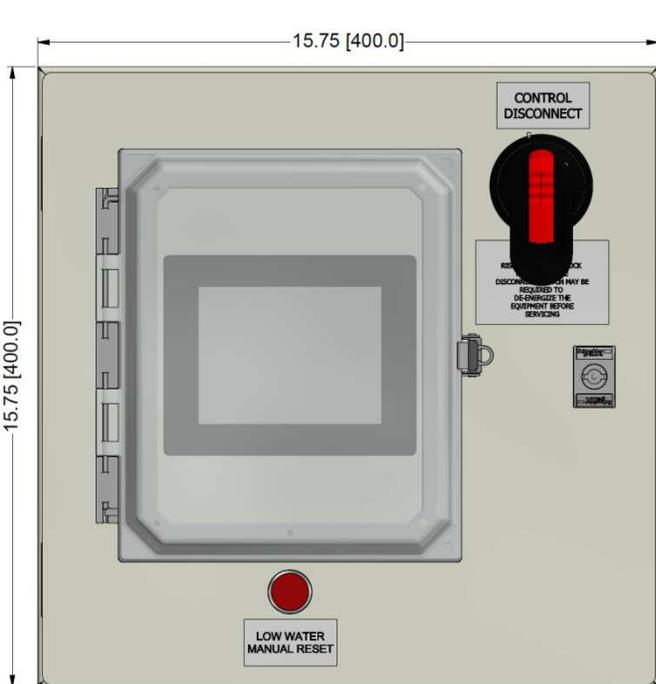
TS-KT6xxx-xx1-XX52



TS-KT3xxx-xx2-XY3(L/W)

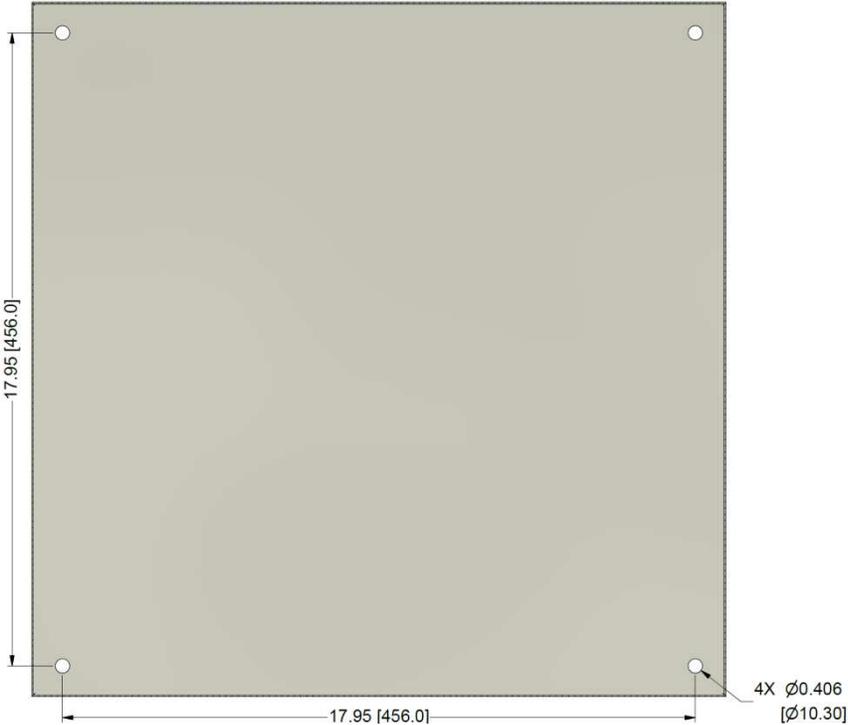
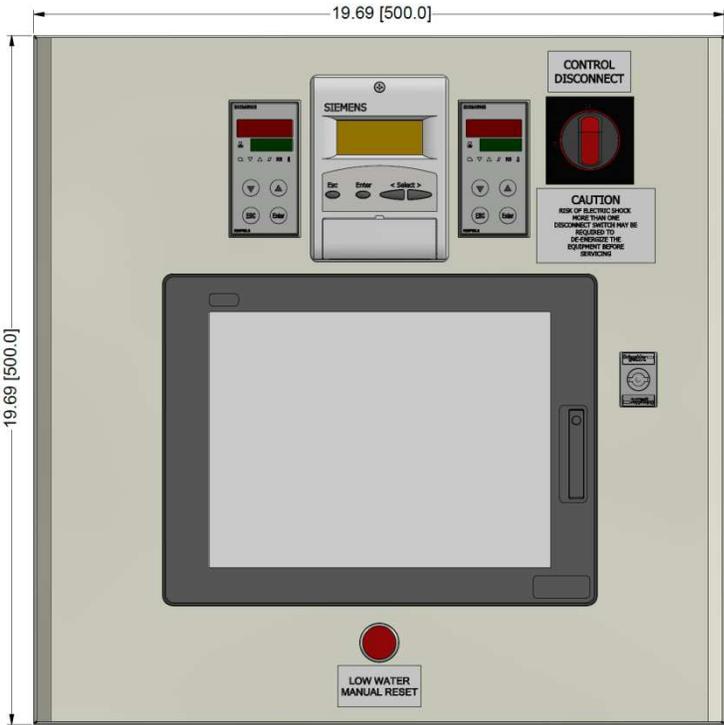


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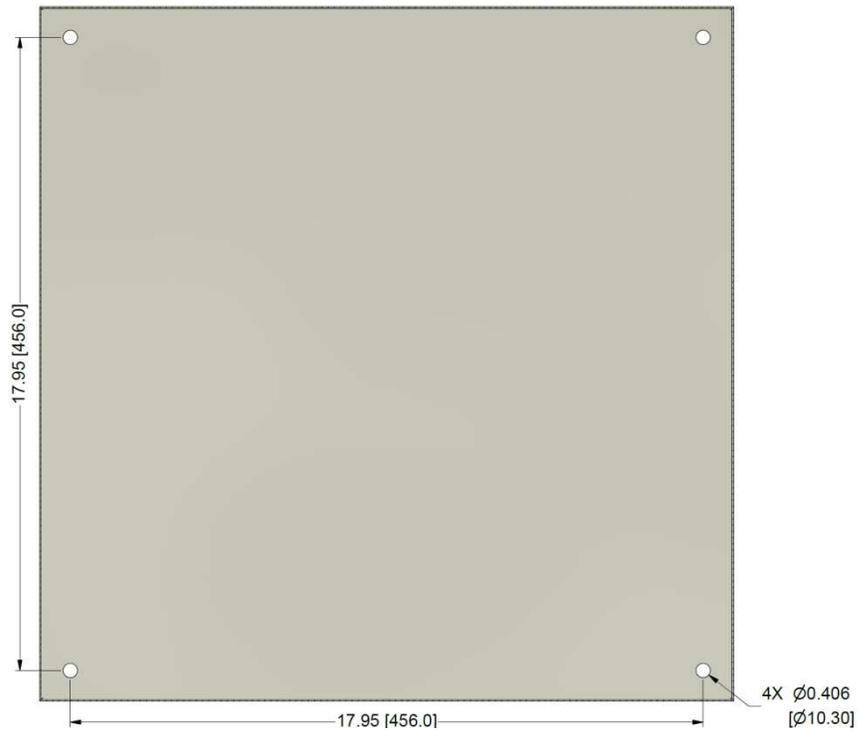
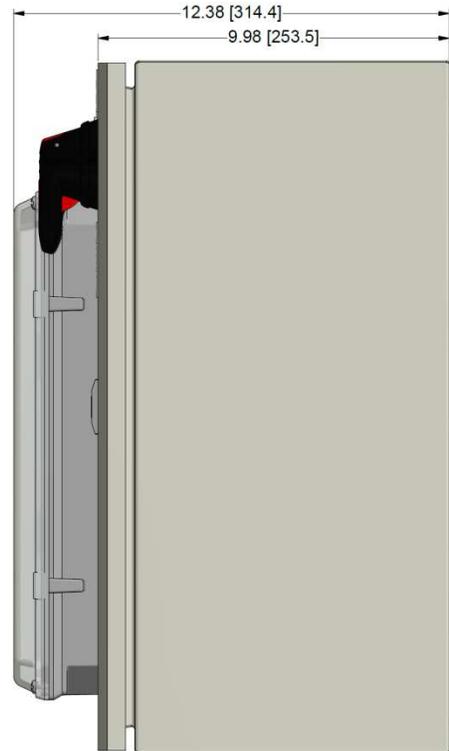
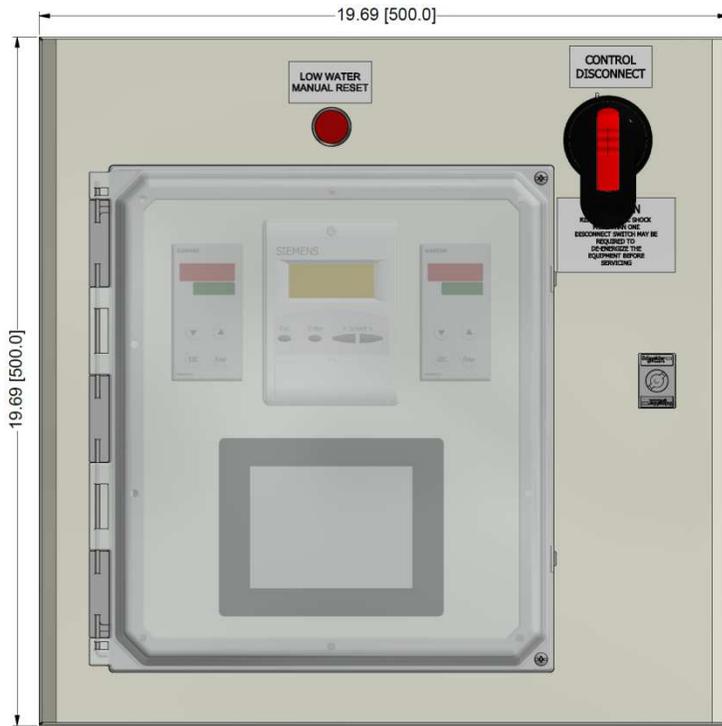


20"X 20" X 10" Enclosure Dimensions

TS-KT2xxx-xx1-XY52

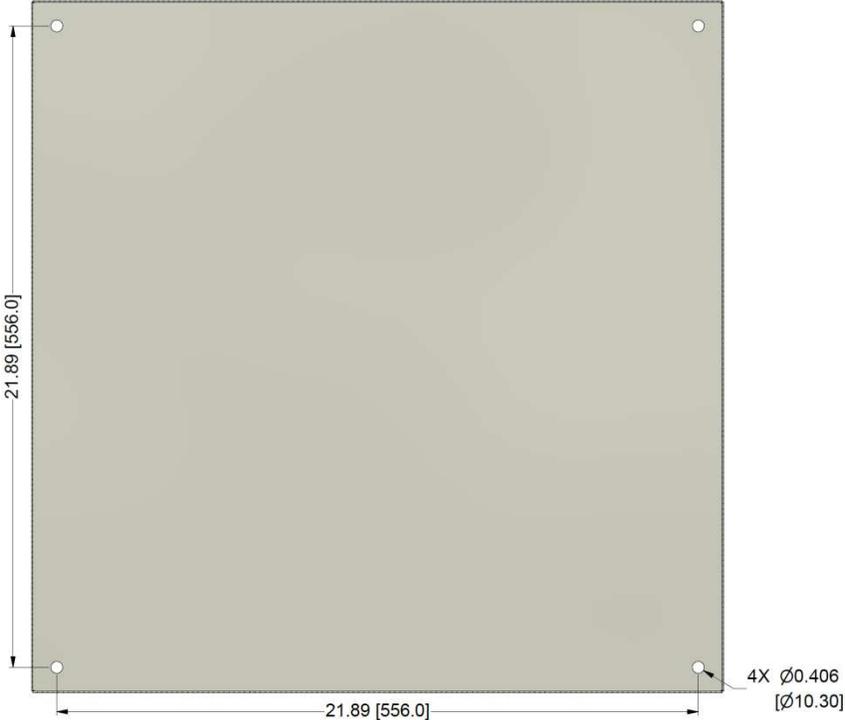
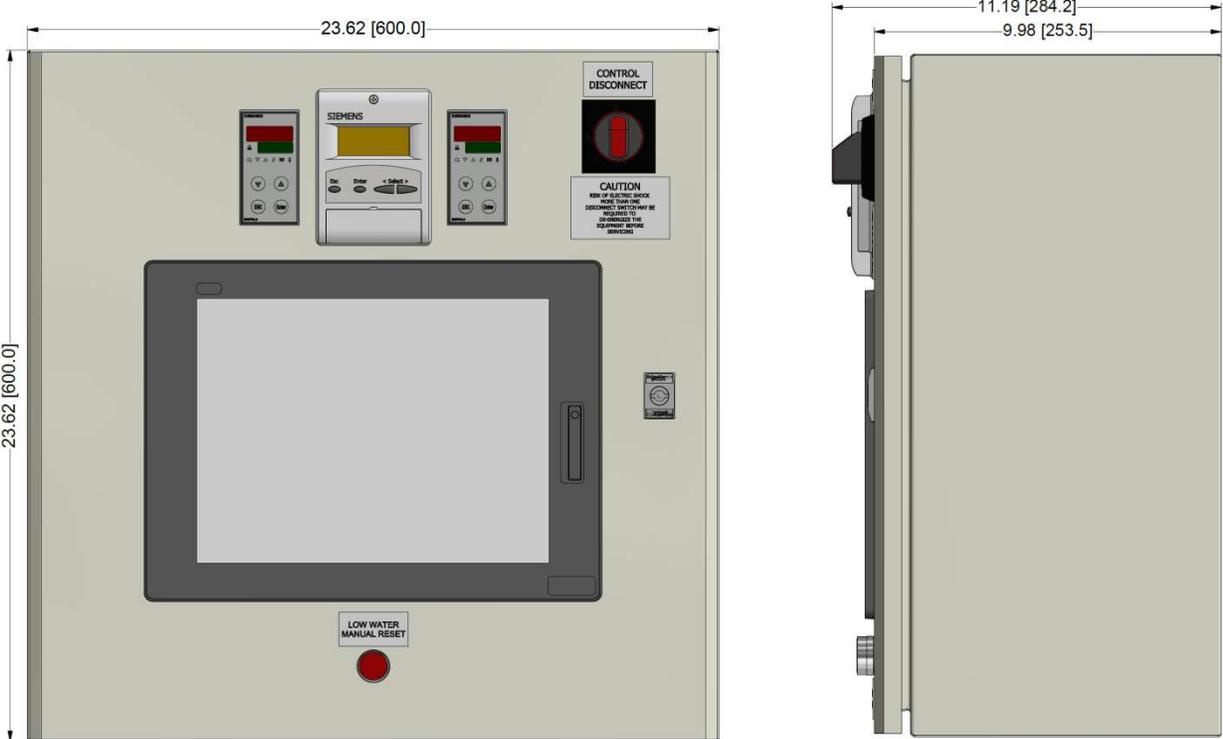


TS-KT6xxx-xx2-XY52

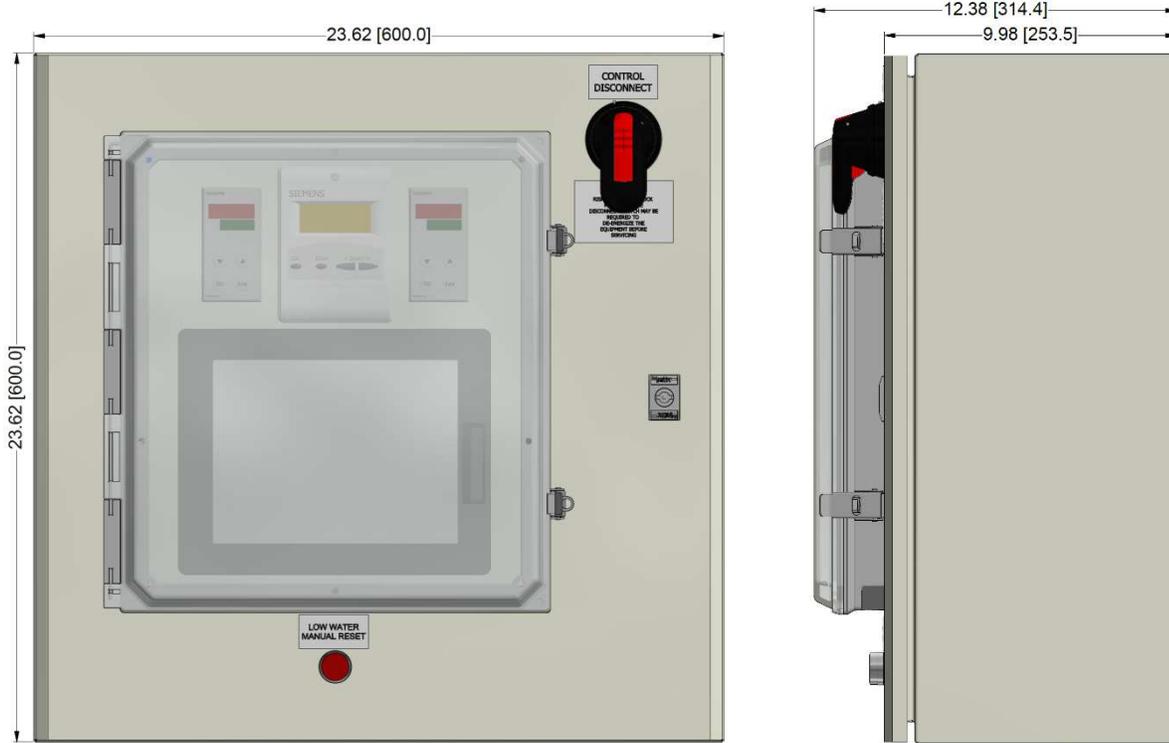


24" X 24" X 10" Enclosure Dimensions

TS-KT5xxx-xx1-XY52

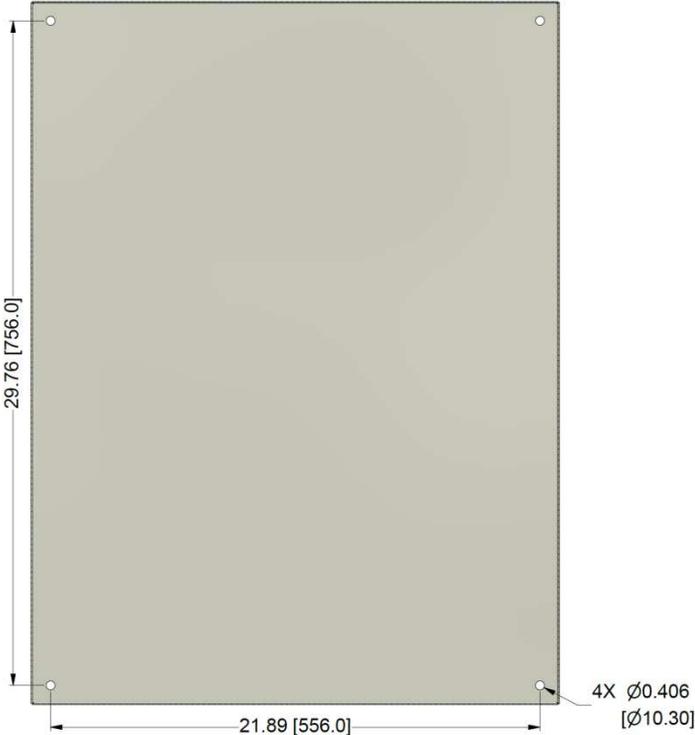
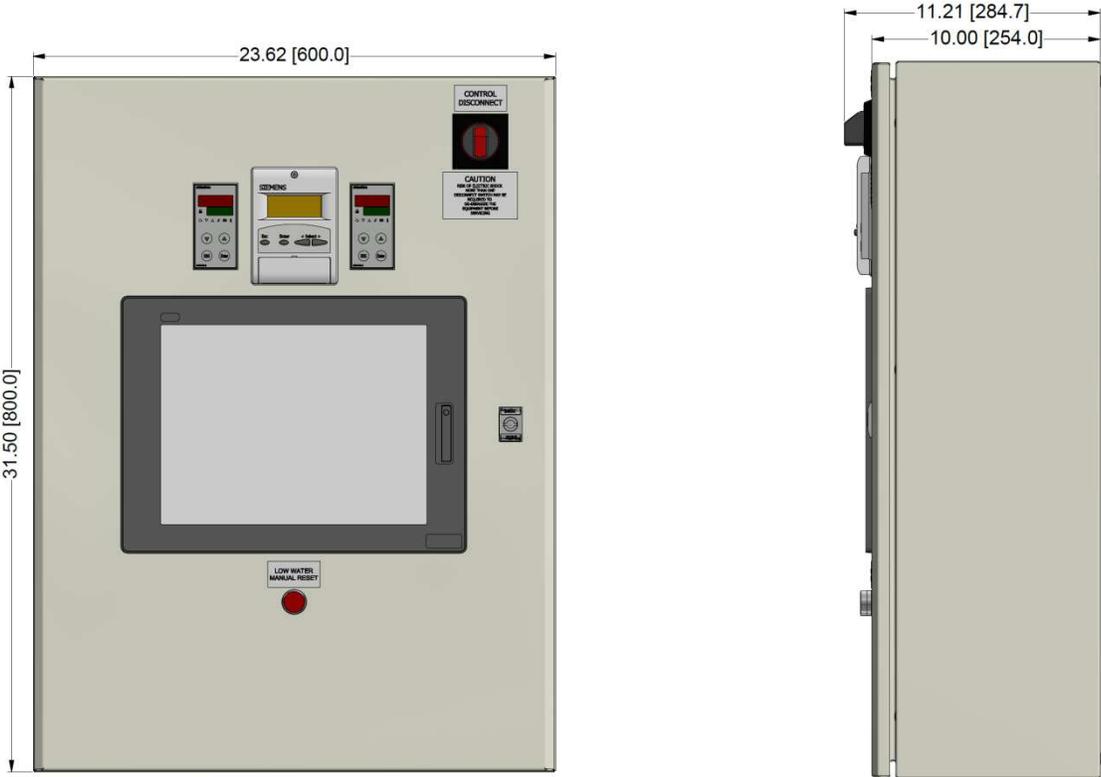


TS-KT0xxx-xx2-XY52

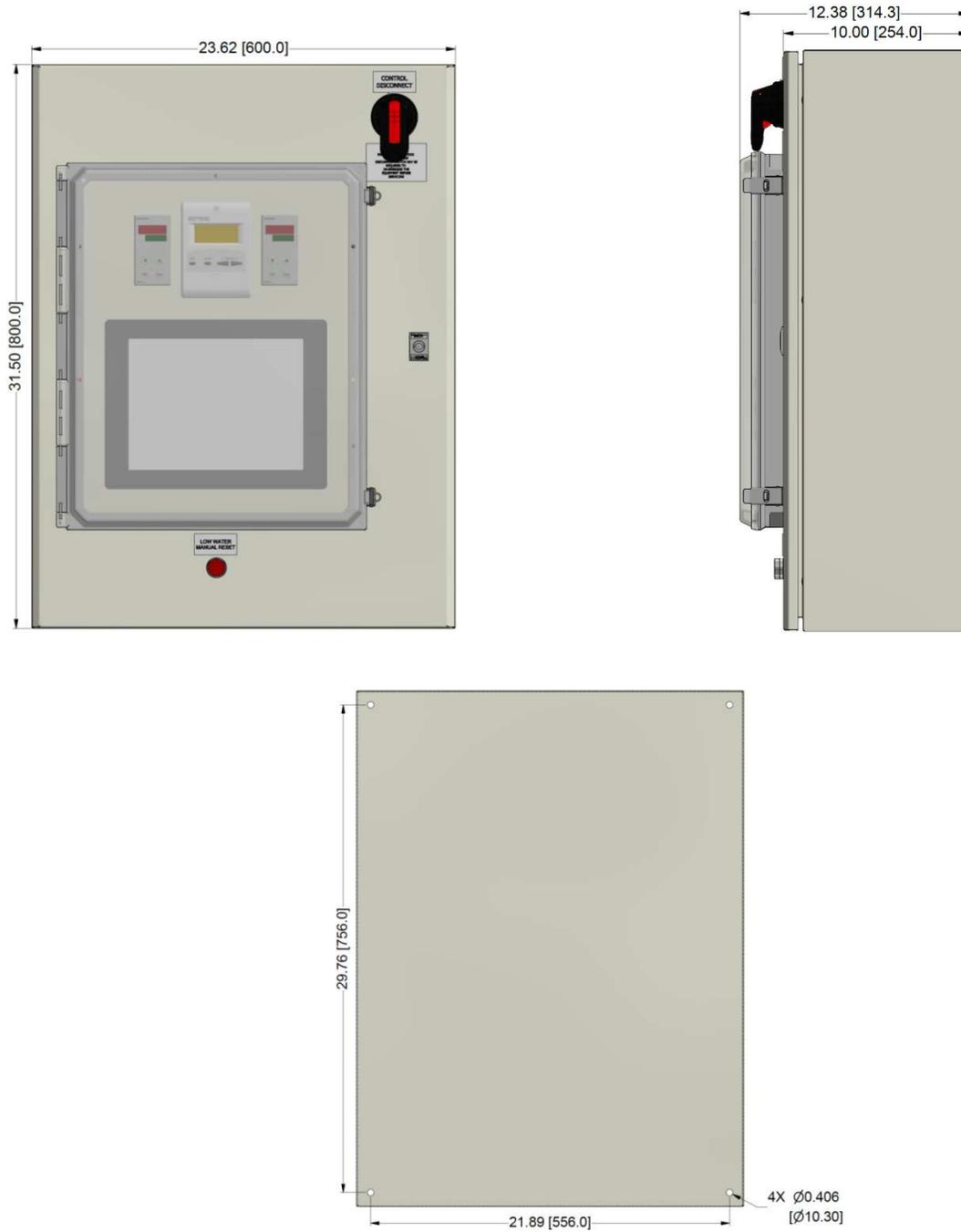


32"X 24" X 10" Enclosure Dimensions

TS-KT5xxx-xx1-XY52



TS-KT2xxx-xx2-XY52



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