

Control Panels for XDF Duct Heaters - CPXD Series

Caloritech™ XDF duct heaters are normally supplied with a CPXD control panel. These control panels are available in two basic types - Type 4 moisture resistant or explosion-proof, and with four different control packages as listed.

Standard Features

All CPXD control panels are supplied with magnetic contactor, HRC fusing, fused 120V control transformer, high limit controls, control circuit, **“ON/OFF”** switch, control **“ON”** light, high-limit indicator light, high-limit push-to-reset, terminals for connection of temperature controls and differential air pressure switch.

Enclosure Types

CPXD control panels are available for either type 4 moisture resistant locations or hazardous locations Class I, Div. 1 & 2, Groups C, D and Class II, Div. 1 & 2, Groups E, F, G.

Table 13 – Control Panel Specifications: Type 4 Moisture Resistant

No. of Circuits	kW	Package #1 Basic Unit without Disconnect				Catalog No.			
		208V 3Ø	240V 3Ø	480V 3Ø	600V 3Ø	Package #1	Package #2	Package #3	Package #4
1	2.5	✓				CPXD1-025R	CPXD1-025TR	CPX1-025SR	CPXD1-025STR
	3.75	✓				CPXD1-038R	CPXD1-038TR	CPX1-038SR	CPXD1-038STR
	5	✓				CPXD1-050R	CPXD1-050TR	CPX1-050SR	CPXD1-050STR
	6.25	✓				CPXD1-063R	CPXD1-063TR	CPX1-063SR	CPXD1-063STR
	7.5	✓				CPXD1-075R	CPXD1-075TR	CPX1-075SR	CPXD1-075STR
	10	✓	✓	✓		CPXD1-100R	CPXD1-100TR	CPX1-100SR	CPXD1-100STR
	12.5	✓				CPXD1-125R	CPXD1-125TR	CPX1-125SR	CPXD1-125STR
	15	✓				CPXD1-150R	CPXD1-150TR	CPX1-150SR	CPXD1-150STR
	20	✓				CPXD1-200R	CPXD1-200TR	CPX1-200SR	CPXD1-200STR
	25	-				CPXD1-250R	CPXD1-250TR	CPX1-250SR	CPXD1-250STR
2	5	✓	✓	✓	✓	CPXD2-050R	CPXD2-050TR	CPX2-050SR	CPXD2-050STR
	7.5	✓	✓	✓		CPXD2-075R	CPXD2-075TR	CPX2-075SR	CPXD2-075STR
	10	✓	✓	✓		CPXD2-100R	CPXD2-100TR	CPX2-100SR	CPXD2-100STR
	12.5	✓	✓	✓		CPXD2-125R	CPXD2-125TR	CPX2-125SR	CPXD2-125STR
	15	✓	✓	✓		CPXD2-150R	CPXD2-150TR	CPX2-150SR	CPXD2-150STR
	20	✓	✓	✓		CPXD2-200R	CPXD2-200TR	CPX2-200SR	CPXD2-200STR
	25	-	✓	✓		CPXD2-250R	CPXD2-250TR	CPX2-250SR	CPXD2-250STR
	30	-	-	✓		CPXD2-300R	CPXD2-300TR	CPX2-300SR	CPXD2-300STR
	40	-	-	✓		CPXD2-400R	CPXD2-400TR	CPX2-400SR	CPXD2-400STR
	50	-	-	✓		CPXD2-500R	CPXD2-500TR	CPX2-500SR	CPXD2-500STR

Note: For optional disconnect switch, add 'D' to end of catalog number.

Control Packages

Package #1 - Basic Unit (“ON/OFF” Control)

All standard features. Terminals are provided for connection to a remote “ON/OFF” temperature control and connection of differential air pressure switch.

Package #2 - Built-in Temperature Controller

Same features as Package #1 except with factory installed digital temperature controller for control of outlet air temperature.

Package #3 - SCR with Remote Temperature Controller

All standard features and a factory installed full load zero fired SCR with terminals provided for remote 4-20 mA temperature control signal and connection of differential air pressure switch.

Package #4 - SCR with Built-in Temperature Controller

Same features as Package #3 except with factory installed digital temperature controller for control of outlet air temperature.

Table 14 – Control Panel Specifications: Explosion-Proof Class I, Div. 1 & 2, Group C, D, Class II, Div. 1 & 2, Group E, F, G

No. of Circuits	kW	Package #1 Basic Unit without Disconnect				Catalog No.			
		208V 3Ø	240V 3Ø	480V 3Ø	600V 3Ø	Package #1	Package #2	Package #3	Package #4
1	2.5	✓	✓			CPXD1-025X	CPXD1-025TX	CPXD1-025SX	CPXD1-025STX
	3.75	✓	✓			CPXD1-038X	CPXD1-038TX	CPXD1-038SX	CPXD1-038STX
	5	✓	✓			CPXD1-050X	CPXD1-050TX	CPXD1-050SX	CPXD1-050STX
	6.25	✓	✓			CPXD1-063X	CPXD1-063TX	CPXD1-063SX	CPXD1-063STX
	7.5	✓	✓			CPXD1-075X	CPXD1-075TX	CPXD1-075SX	CPXD1-075STX
	10	✓	✓	✓	✓	CPXD1-100X	CPXD1-100TX	CPXD1-100SX	CPXD1-100STX
	12.5	✓	✓			CPXD1-125X	CPXD1-125TX	CPXD1-125SX	CPXD1-125STX
	15	✓	✓			CPXD1-150X	CPXD1-150TX	CPXD1-150SX	CPXD1-150STX
	20	✓	✓			CPXD1-200X	CPXD1-200TX	CPXD1-200SX	CPXD1-200STX
	25	-	-			CPXD1-250X	CPXD1-250TX	CPXD1-250SX	CPXD1-250STX
2	5	✓	✓	✓	✓	CPXD2-050X	CPXD2-050TX	CPXD2-050SX	CPXD2-050STX
	7.5	✓	✓	✓	✓	CPXD2-075X	CPXD2-075TX	CPXD2-075SX	CPXD2-075STX
	10	✓	✓	✓	✓	CPXD2-100X	CPXD2-100TX	CPXD2-100SX	CPXD2-100STX
	12.5	✓	✓	✓	✓	CPXD2-125X	CPXD2-125TX	CPXD2-125SX	CPXD2-125STX
	15	✓	✓	✓	✓	CPXD2-150X	CPXD2-150TX	CPXD2-150SX	CPXD2-150STX
	20	✓	✓	✓	✓	CPXD2-200X	CPXD2-200TX	CPXD2-200SX	CPXD2-200STX
	25	-	✓	✓	✓	CPXD2-250X	CPXD2-250TX	CPXD2-250SX	CPXD2-250STX
	30	-	-	-	✓	CPXD2-300X	CPXD2-300TX	CPXD2-300SX	CPXD2-300STX
	40	-	-	-	-	CPXD2-400X	CPXD2-400TX	CPXD2-400SX	CPXD2-400STX
	50	-	-	-	-	CPXD2-500X	CPXD2-500TX	CPXD2-500SX	CPXD2-500STX

Note: For optional disconnect switch, add 'D' to end of catalog number.

Wiring Diagrams

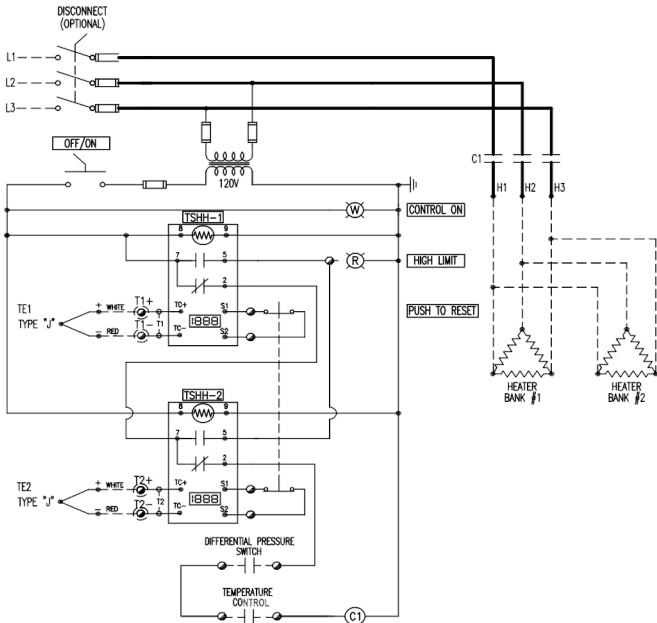


Figure 21 – Package #1 Basic Unit (“ON/OFF” Control)

Note:

- One high limit control provided on single bank heaters.
- Two high limit controls provided on double bank heaters.

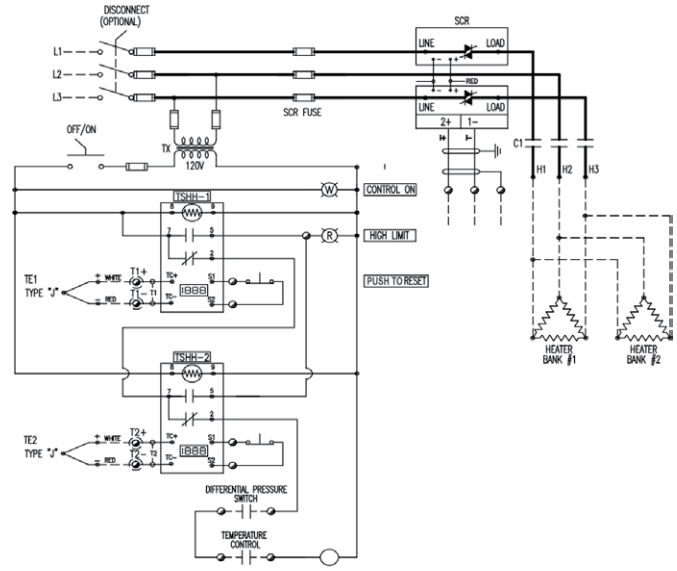


Figure 23 – Package #3 SCR with Remote Temperature Controller

Note:

- One high limit control provided on single bank heaters.
- Two high limit controls provided on double bank heaters.

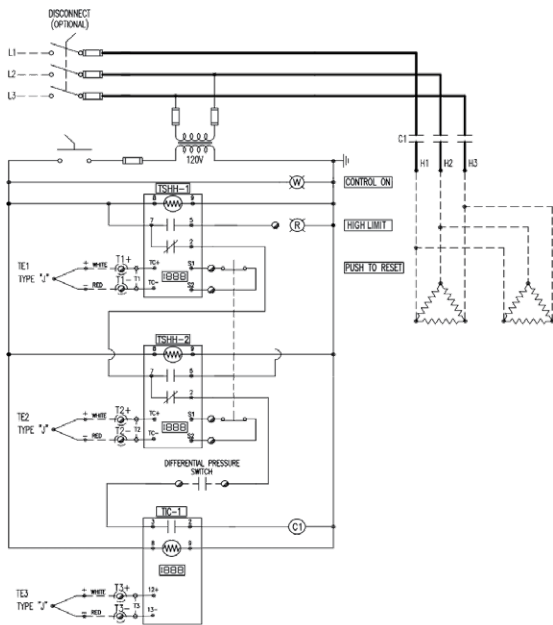


Figure 22 – Package #2 Built-in Temperature Controller

Note:

- One high limit control provided on single bank heaters.
- Two high limit controls provided on double bank heaters.

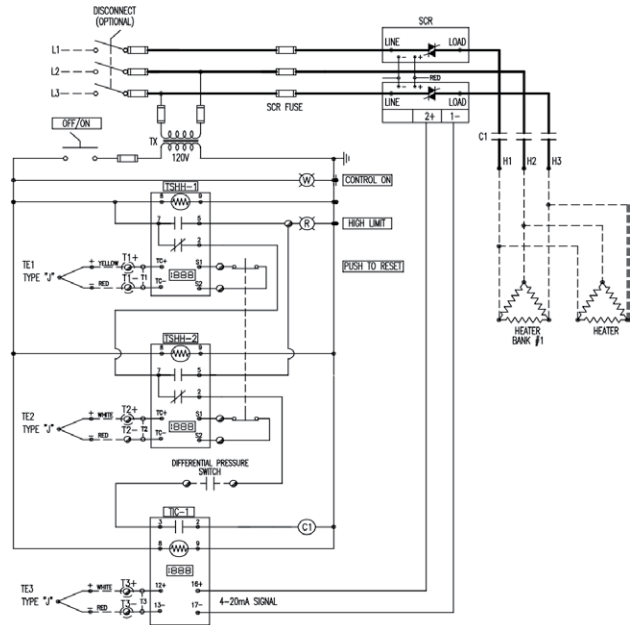


Figure 24 – Package #4 SCR with Built-in Temperature Controller

Note:

- One high limit control provided on single bank heaters.
- Two high limit controls provided on double bank heaters.

Specification Sheets

Scope

Electric explosion-proof duct heaters shall be Caloritech™ type XDF, from Thermon Heating Systems, Inc., complete with all standard equipment and optional features as specified in this section.

General

1. The heater is to be c_CSA_{US} certified with ratings as specified in Specifications & Ratings.
2. The heater shall be provided with standard features and optional features as outlined in: Standard Heater Features and Optional Features & Equipment.

Specifications & Ratings

1. The duct heater shall be designed to heat air at:
_____SCFM from _____°F to _____°F (_____°C to _____°C)
2. The heater shall be of the explosion-proof, duct type, catalog number _____, rated _____ V, _____ Ø, _____ Hz, _____ kW.
 Class _____, Divisions _____, Groups; _____,
 Class _____, Divisions _____, Groups; _____,
3. The duct heater shall be marked with a _____ temperature code, or maximum surface temperature of _____.
4. The minimum rated airflow through the duct heaters shall be _____SCFM.
5. The maximum outlet temperature of the duct heater shall not exceed _____°F (_____°C).
6. The duct heater is to be mounted in a horizontal duct section:
 Downstream
 Upstream from the customer supplied blower.
7. The duct heater shall be suitable for operation in a -40°F (-40°C) min. to 104°F (40°C) max. ambient temperature.

Standard Features - Duct Heater

1. The duct heater shall be supplied with a:
_____ " (W) x _____ " (H) x _____ " (L), or
_____ mm (W) x _____ mm (H) x _____ mm (L) carbon steel duct section with 1" (25 mm) wide mounting flange and painted ASA61 gray epoxy outside and high temperature aluminium inside.
2. The heating elements shall be (0.475"/12 mm) dia., extra heavy wall (0.095"/2.4 mm) finned tubular steel with nickel plated finish. Fins are to be fully brazed to the element sheath for maximum performance and efficiency.
3. The heating elements shall extend through Thermon Heating Systems certified explosion-proof compression fittings in a patented **x-Max**® explosion-proof, extruded copper-free aluminium terminal housing(s) with _____" NPT power conduit entry and _____" NPT conduit entry for high limit thermocouple connection.

Standard Features - Duct Heater (cont'd)

4. The heating elements shall be mounted as _____ removable heating bank(s) and wired to terminal blocks for _____ x _____ kW, _____ V, _____ phase heating circuits to be
 - Fully SCR controlled
 - "ON/OFF" control.
5. The duct heater shall be supplied with _____ 'J' type sheathed thermocouples welded or brazed to the element sheath for connection to:
 - Customer supplied
 - Factory installed certified high limit controllers. High limit set points will be factory preset.
6. Explosion-proof differential pressure switch shall be factory installed on the heater to prove that air is moving. Customer must ensure that the minimum airflow is maintained at all times. The differential pressure switch is to be:
 - Field wired to the remote control panel
 - Factory mounted onto the heater
7. The duct heater shall be mounted in a horizontal duct section with the terminal box(es) at the side.
8. The approximate weight of the duct heater shall be _____ lbs (_____ kg).

Standard Features - Control Package

1. Enclosure type (check one):
 - Type 4 - moisture proof
 - Explosion-proof
2. Temperature control (check one):
 - Basic unit - customer supplied temperature control signal
 - Built-in temperature controller
 - SCR controller - customer supplied 4-20 mA control signal
 - SCR controller with built-in temperature controller

Optional Features & Equipment (check as desired):

- Stainless steel duct section
- Transition sections to _____" (W) x _____" (H) duct or _____" round duct, or _____ mm (W) x _____ mm (H) duct or _____ mm round duct
- Special temperature code of _____