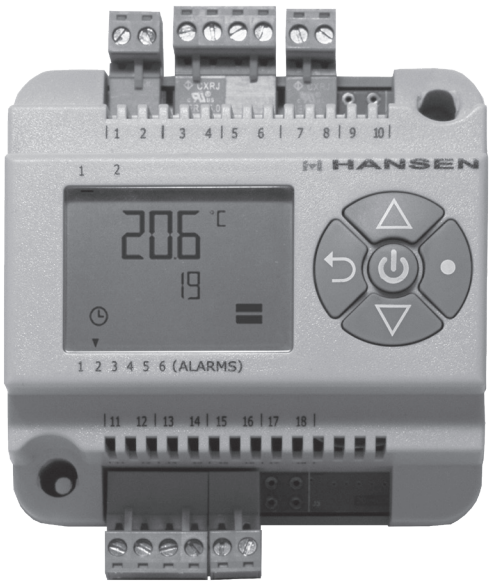
HANSEN

Bulletin PXVC
AUGUST 2018



PXVC

Specifications, Applications, Service Instructions & Parts

PXVC UNIVERSAL CONTROLLER

PXVC-PT, PXVC-DX, PXVC-T, PXVC-L, PXVC-P, PXVC-CI

INTRODUCTION

Hansen PXVC controllers offer a robust, flexible line of controllers to meet a variety of application needs. Primarily, the PXVC is an intelligent single-loop PI controller designed for use with Hansen Motorized Control Valves and Pulse Expansion Valves. The PXVC is ordered pre-configured for the following applications:

- PXVC-PT refrigerant superheat/sub-cooling control
- PXVC-DX single point precision refrigerant superheat/ sub-cooling control
- PXVC-T temperature control
- PXVC-L refrigerant level control
- PXVC-P refrigerant pressure control
- PXVC-CI controller interface for connecting Hansen pulse expansion valves to external control system.

KEY FEATURES

Highlights

Remote alarm output

Pre-configured temperature and pressure alarms

(Other options available contact factory for information)

Intuitive button interface

Large backlit lcd

Alternate menus to visually monitor set point and sensor readings

Displays output signal in 10% incremental resolution

All controllers feature a two minute ramp up delay where the controller reaction speed is slowed down.

ADVANTAGES

1. AC or DC power rated
2. Digital, pulse or analog output
3. User friendly interface
   - A. Intuitive easy to navigate menu buttons
   - B. Easy to read multi-character display
     - I. Ability to monitor set point and sensor values
     - II. Visual alarm notification
4. Optional remote interlock
5. Plug style terminal block connectors allows for Quick connections
6. Versatile configuration options

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APPLICATIONS

1. Superheat Control (PT or DX)
2. Level Control
3. Temperature Control
4. Pressure Control
5. Controller Interface for PXV

TECHNICAL SPECIFICATIONS

1. Connections
   a. Power Supply Requirements 24VDC 3A
   b. Signal Requirements
   c. Output
      I. Digital Output 1(Pulse Width) – D24-250VAC 3A Max
      II. Digital Output 2 (Alarm) – 24-250VAC 3A Max
      III. Analogue – 0-20mA, 0-10VDC

2. Product Certifications
   a. CE 2004/108/EC
   b. CE 2006/95/EC
   c. EN60 730-1
   d. EN60 730-2-9
   e. EN 60 259 IP30
   f. NEMA 1 /IEC 60536 class II

3. General
   a. System:
      I. Operating temperature range -76F – 250F
      II. Refrigerants R717, R22, R134a, R507
   b. Ambient Environment (IEC 721-3-3 Class 3K5):
      I. operating temperature range 32F to 122F
      II. <95%RH (noncondensing)

Inputs

1. Pressure
2. Temperature
3. Interlock (optional)
   I. Univeral Input Configured Based on Application (Pressure, temperature, level, etc)
   II. Remote Interlock

Outputs

1. Two Digital (Pulse Width or Binary)
2. One Analogue (4-20mA, 0-20mA, 2-10V or 0-10V) outputs

Sensors

1. Platinum RTD (PXVC-PT)
2. NTC 10K Thermistor (PXVC-T)
3. PT2 Pressure Transducer 0 – 100 PSIA (PXVC-PT standard, contact factory for other pressures)
4. PT3 Pressure Transducer 0-300 PSIA (PXVC-P standard)

Selection of Control Valves

1. PXV Control Valves Hansen
2. PXV5, PXV15, PXVW60
3. Motorized Control Valves (MCV)

Wiring Diagrams –Refer to pages 7-16 for typical wiring diagram. Also, refer to www.hantech.com for latest wiring and support documentation

All Models Controller information

INSTALLATION

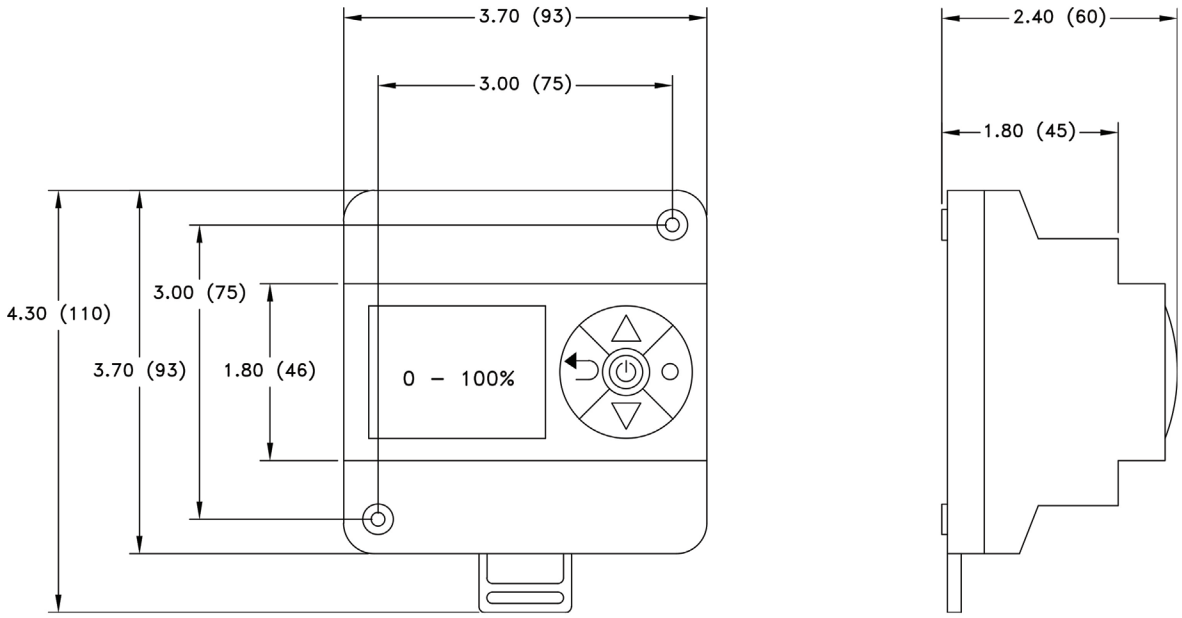


FIGURE 1.

PXVC (-T,-L,-P,-CI,-DX) PINOUT

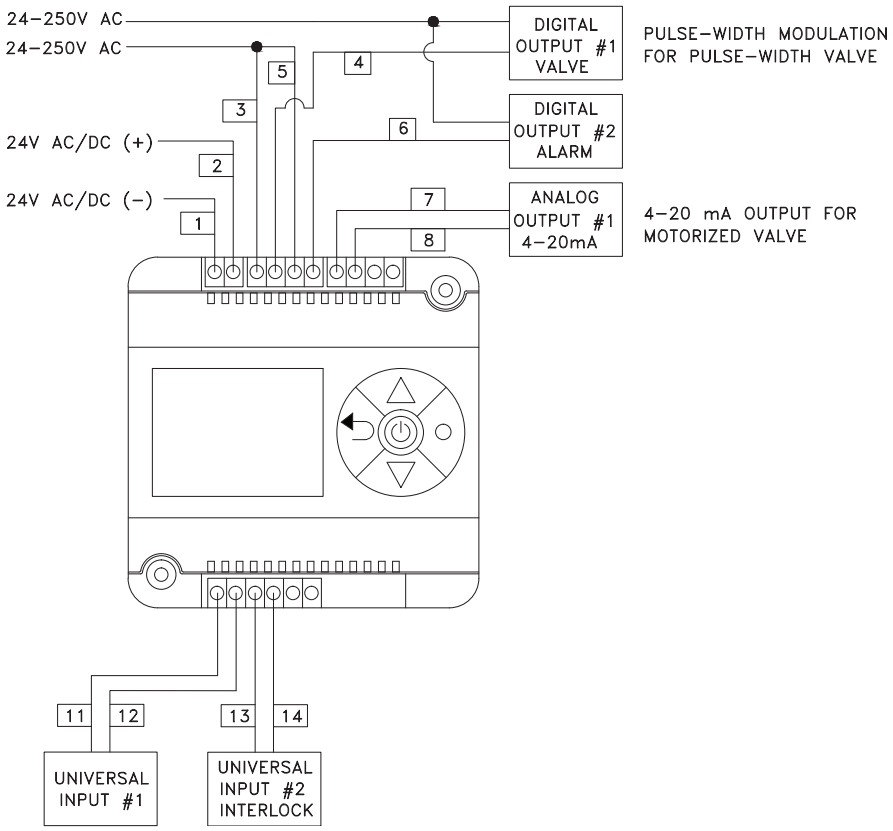


FIGURE 2.

INSTALLATION:

The PXVC model controllers require careful attention to the wiring diagrams based on the application to prevent damage to the equipment. Failure to follow the diagrams as presented may result in damage to the controller and voidance of product warranty.

Review the controller specific applications and select the application based upon your controller and application needs for additional applications contact factory. Motorized Control Valve Applications are available in bulletin R649b

WIRING NOTES (refer to controller specific applications for detailed diagrams):

The controller power pins 1 and 2 accepts 24 volts DC, refer to Hansen drawing Figure 2 for reference.

INPUTS / OUTPUTS

Digital Output #1 is set up for pulse width operation and requiring a 24-250VAC 3A power source. The output acts as a switch, stopping and starting the valve (pins 3 and 4)

Digital Output #2 is setup to be the user alarms and requires a 24-250VAC 3VA power source. The output acts as a switch, stopping and starting the electricity flow (pins 5 and 6)

The analog output control signal does not require a power source and should be connected directly to the Motorized Control Valve as shown in Figure 2 (pins 7 and 8)

Universal Input #1 must be setup to properly and when used as an analog (4-20mA) input a 24VDC power source must be applied to the sensor as indicated in the diagrams (pins 11 and 12)

(Excludes PXVC-PT) Universal Input #2 must be a continuous circuit (switch closed) to operate as a remote interlock pins (13 and 14).

SENSOR INSTALLATION:

Pressure Transducers – Hansen recommends all pressure transducers to be installed into a gauge valve which is installed into the pressure port. This line of controller is designed to work with transducers with a 4-20mA signal. Pressure transducers are imprecise below -60F, and standoffs are recommended. It is important that the pressure transducer is installed as close to the outlet of the heat exchanger (evaporator, shell and tube, plate and frame, etc.) as possible to attain a precise reading.

Temperature Sensors – Sensor should be installed as close to the pressure sensing element as possible (where applicable), or the outlet of the heat exchanger. Thermal compound should be used to ensure sensor lag is kept to a minimum. Immersion wells are highly recommended for all applications.

Superheat / Temperature Applications – When attempting to read saturated vapor, intermittent liquid contacting the sensing element will result in unstable sensor readings, causing system instability. When operating a system where liquid is present an immersion well should be used for precise measurement. The well should be installed so that it is constantly immersed in the liquid. Plumbing traps are necessary to stabilize the flow of liquid and reduce imprecision in the measurement. This is crucial for all applications dependent on temperature measurements for liquid or superheat control. Sensors should be installed per wiring diagrams and as shown on the pipe at the 4'oclock or 8'clock position as shown in Figure 5. For DX evaporator setup, and the entire length of the pipe must be insulated.

Other Sensors – Refer to the sensorproduct bulletin (Pressure and Temp Sensor (HPT) bulletin PT100c, Techni-Level probes P109, Vari-Level Probes P112)

SETTING UP THE CONTROLLER:

1. Verify jumpers on back of controller are set as follows:

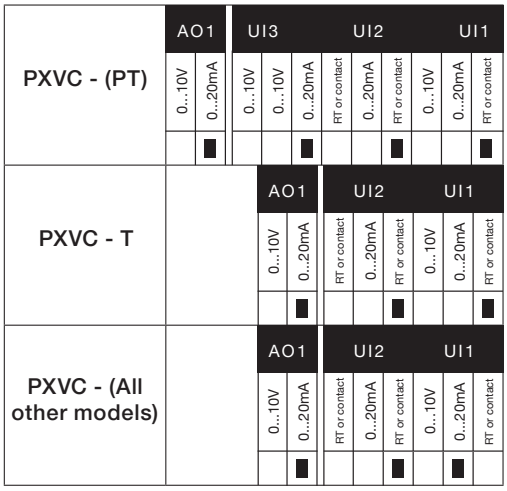


FIGURE 3.

2. Connect sensors and power. In superheat applications. The pressure and temperature sensors should be placed as close to one another as possible.
3. (Optional) Configure user desired alarms. Alarms close the circuit between pins 4 and 6, and may be linked to any device with a power rating between 24 - 250VAC and 3A Max Current.
4. (Optional) Connect remote interlock. Interlock is active when switch is closed and deactivated when switch is open.
5. Best practice is to test function the unit, verifying output matches expectations, using a process calibrator (4-20mA by default) measuring analog signal output.
6. Switch off power
7. Connect outputs to valves and place into service

Contact Hansen if errors are encountered

MOUNTING CONSIDERATIONS:

Ensure the controller has adequate protective enclosure for the environment, enclosure required for wet or condensation prone environments. Ensure the controller has adequate heating if the environment is below 32°F (0°C). Controller may be surface mounted with two #4 screws or controller may be mounted to a DIN rail

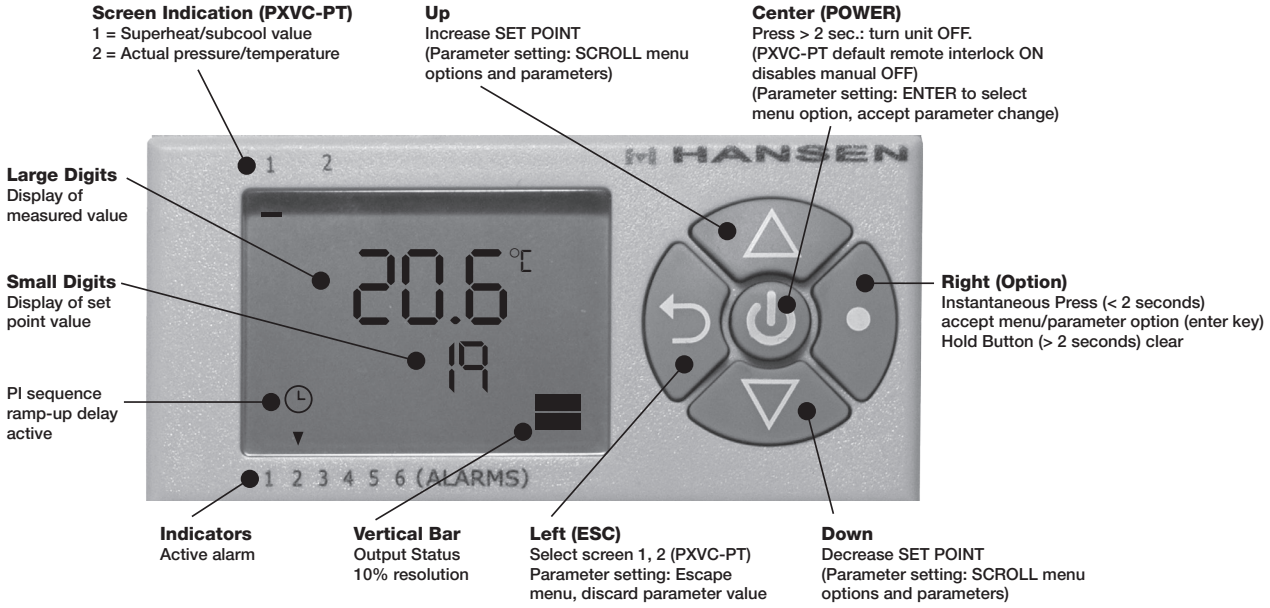
SYSTEM STARTUP:

1. During operation the power button is not available to be used to stop the system, so before starting the controller connect a remote interlock and close the circuit to disable the controller.
2. Power on the controller and verify the screen is flashing to indicate the controller is not active. If the interlock is not active, try operating the switch, if this does not work power down the system and check the controller jumpers, switch and wiring, contact Hansen for further support.
3. Once interlock is disabled, verify the screen indicator displays an underscore under the number "1," as shown in the user menus section. Screen #1, the default screen, displays the measured value and the set point. Screen two is available on all of the controllers, however only the PXVC-PT offers additional information in the form of temperature and pressure readings.
4. Pressing the up or down arrows will increase or decrease the set point
5. Pressing the left arrow will either escape (go back) from a menu or if at the main menu show the second screen on PXVC-PT models. On other models Hansen recommends only utilizing screen 1.
6. Set the controller to the desired set point, and wait for the controller to approach the desired set point (%, degrees, PSI).
7. Operating conditions should be monitored closely during startup, and the interlock may be used if necessary to stop the controller
8. The remote interlock should be connected to the control system and used to disable the controller for any applicable conditions, including but not limited to: Defrost cycles, System Shutdown, etc.

CHANGING PARAMETERS:

1. Press UP/DOWN buttons simultaneously for three seconds. The display will show firmware version and hardware revision number. Press the OPTION button to start login.
2. CODE is shown in small digits display.
3. Select the relevant Parameter Access Code using UP/DOWN (refer to controller subsections with parameter listings)
4. Press OPTION button after selecting the correct code.
5. Select the parameter required with the UP/DOWN buttons. Change a parameter value by pressing the OPTION button. Three arrows are displayed to indicate that the parameter may be modified. Use UP/DOWN buttons to adjust the value.
6. Upon completion press the OPTION button to save the new value and return to menu selections (three arrows should disappear), pressing the POWER button will discard changes without saving, press the esc button to return to the next highest level menu
7. The POWER button may be used to exit the menu as well, otherwise the unit will return to the default screen when no button has been pressed for longer than 5 minutes.
8. **It is recommended that only personnel experienced in control loops adjust control settings.** There are sets of control parameters (P and I values) for direct acting and reverse acting controllers, if adjusting the control parameters ensure you select the correct parameter
   a. PXVC-(PT,DX,T) are direct acting controllers meaning the output is directly related to the input (temperature increases and valve opens)
   b. PXVC-(P,L) are reverse acting controllers meaning the output is inversely related to the input (level or pressure drops and valve opens)

USER MENUS



PARAMETER ACCESS CODE 0241

TABLE 1.

PARAMETER	DESCRIPTION	RANGE	DX	LEVEL	PRESS	TEMP
1u 00	Input signal type: 0 = input not active 1 = 0…10V or 0…20mA 2 = 4…20mA 3 = Temperature	0 – 3	2	2	2	3
1u 01	Signal display minimum value	50…205	-30	0	0	-40°F
1u 02	Signal display maximum value	50…205	+30	100	205	284°F
1u 04	Unit of universal input (For analog inputs only): 0 = no unit 1 = % 2 = °C/ °F 3 = PSIA	0 – 3	2	1	3	2
1u 05	Samples taken for averaging control signal	0...100	30	30	15	30
Fu 12	Remote Interlock 0 = disable 2 = enable	0 or 2	2	2	2	2
1L 27	Startup Delay	0-255	2	0	0	0
1L 11	P – band reverse acting XPH	Acc Input	10.0°F	10.0%	10.0PSIa	10.0°F
1L 12	P – band direct acting XPC	Acc Input	10.0°F	10.0%	10.0PSIa	10.0°F
1L 13	KIH, Integral gain reverse acting, in 0.1 steps low value = slow reaction high value = fast reaction	0…25.5	8.0	0.1	0.1	0.1
1L 14	KIC, Integral direct acting, in 0.1 steps	0…25.5	8.0	0.1	0.1	0.1
1L 15	TI, measuring interval integral low value = fast reaction high value = slow reaction	0…255 sec	30	15	15	30

Note: Hansen controller is factory programmed to provide precise control in refrigeration applications when used in conjunction with the PXV valve or Hansen Motorized Control Valves. If control difficulties occur during startup, it is recommended to thoroughly check system and components for proper installation, operation, and sensor location before attempting to modify and/or tune the controller. Hansen controller is a multi-use controller and only the listed parameters should be accessed/changed. Any other parameter changes may result in unsafe operation. Consult factory for further details if needed.

MODEL SPECIFIC CONTROLLER DETAILS:

PXVC-PT

The PXVC-PT controller measures the superheat temperature of the refrigerant by measuring the pressure and temperature, from which the superheat is calculated. The PXVC-PT controller is different from the other controllers in that it uses the second screen to show pressure and temperature readings from the sensors and it has an additional universal input to accommodate measuring pressure and temperature simultaneously as shown in Figure 5. The controller provides proportional control with integral error correction to digital and analog outputs for use with Hansen Motorized Control Valves and Pulse Expansion Valves. The PXVC-PT allows for monitoring of the refrigerant temperature and pressure by the secondary display screen as shown in the user menus (please note that the pressure displayed is in PSIA pressure and convert to PSIG appropriately).

Follow the startup instructions as written in the section on startup, however note that the second screen (as shown in the section on user menus) may be used to set the suction pressure regulator pressure to control the system superheat, please note that the pressure displayed is in PSIA pressure and convert to PSIG appropriately.

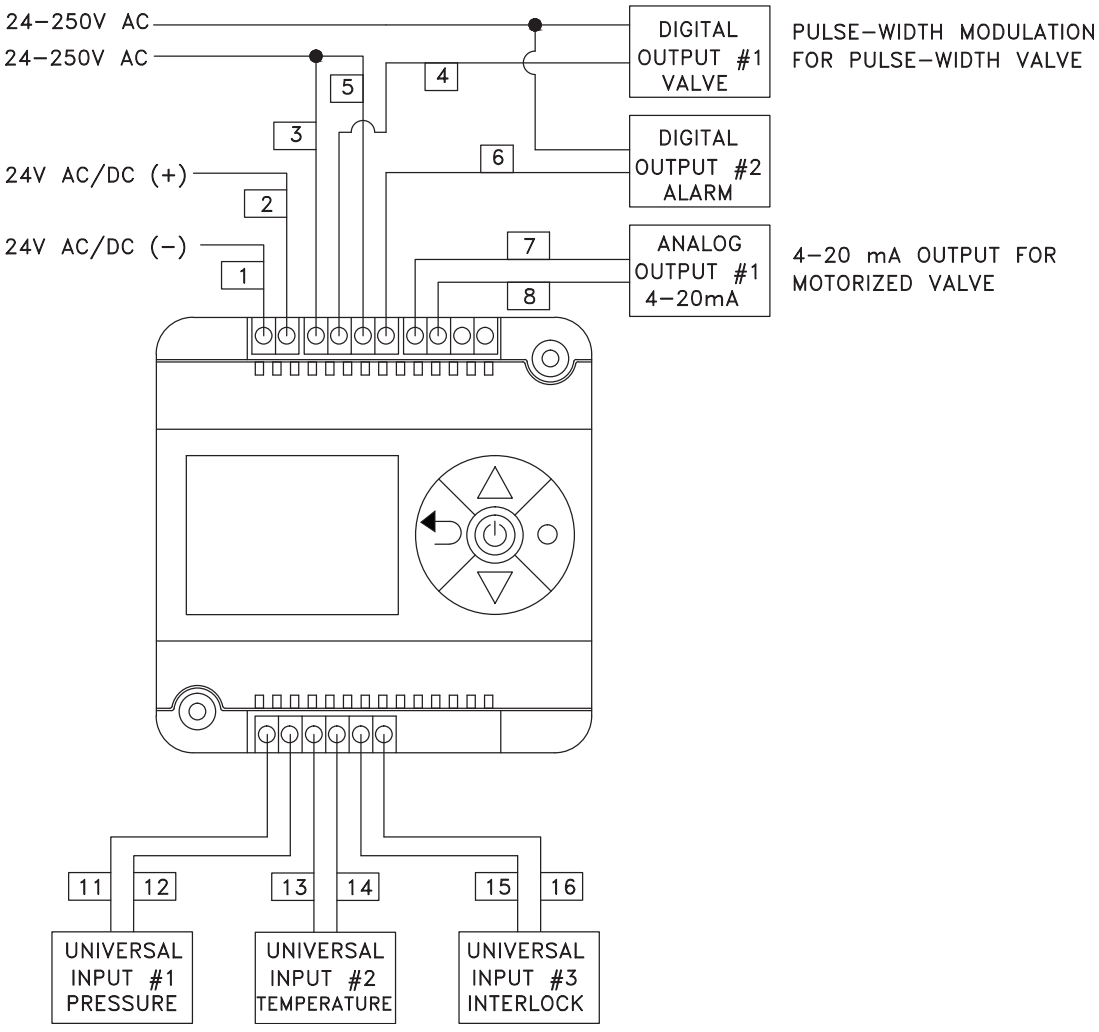


FIGURE 5.

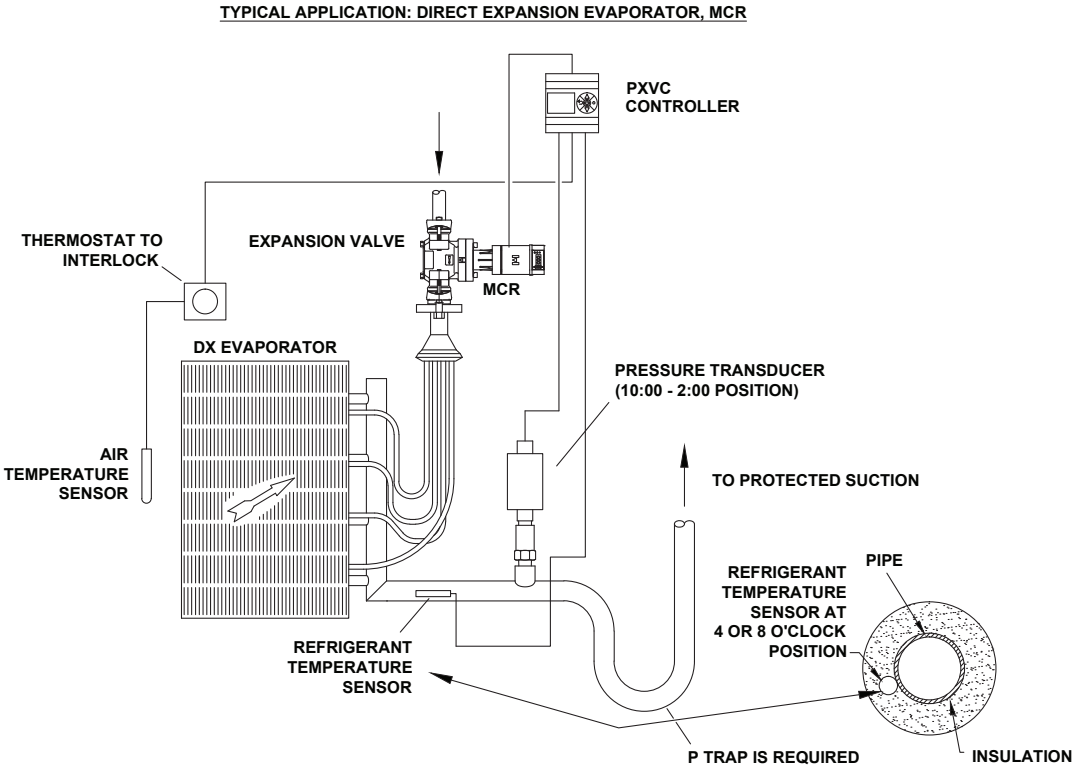


FIGURE 6.

SYSTEM STARTUP:

1. During operation the power button is not available to be used to stop the system, so before starting the controller connect a remote interlock and close the circuit to disable the controller.
2. Power on the controller and verify the screen is flashing "OFF" to indicate the controller is not active. If the interlock is not active, try operating the switch, if this does not work power down the system and check the controller jumpers, switch and wiring, contact Hansen for further support.
3. Once interlock is disabled, verify the screen indicator displays an underscore under the number "1," as shown in the user menus section. Screen #1, the default screen, displays the measured value and the set point. Screen two is only utilized on the PXVC-PT which provides additional information in the form of temperature and pressure readings.
4. Pressing the up or down arrows will increase or decrease the set point
5. Pressing the left arrow will show the second screen on applicable models.
6. Review the specifications for the evaporator or heat exchanger and determine the necessary refrigerant temperature for the equipment to function properly, set suction pressure to appropriate value, observe that the superheat set-point must be less than the temperature differential between the media and the refrigerant to attain stability.
7. Set the controller to the desired set point, and wait for the controller to approach the desired set point (%, degrees, PSI).
8. Replace interlock with temperature control interlock (thermostat (dry contact) or system closed contact control) to pins 15 and 16. Failure to do so will result in inability to precisely control temperature and undesirable operation. A manual interlock may be used to override the system when wired in parallel with the media temperature control interlock as shown in Figure 6.
9. While controller is in operation and valve partially open adjust the suction line pressure to attain the desired refrigerant temperature, NOTE this will not directly control media temperature, see step 8 for media temperature control
10. Operating conditions should be monitored closely during startup.

System design considerations: Where liquid may be present, to precisely measure temperature, a trap is required to be installed in the piping directly after the sensing unit and an immersion well installed in the line to allow the sensor to contact the working fluid when sensing superheat or temperature. This allows the saturated gas/liquid mixture level to stabilize in the trap and the sensor to read the temperature of the liquid which conducts heat much more readily than gas, as shown in drawing Figure 6. Either the PXV or Motorized Control Valve may be used in this configuration refer to Figure 7 for details.

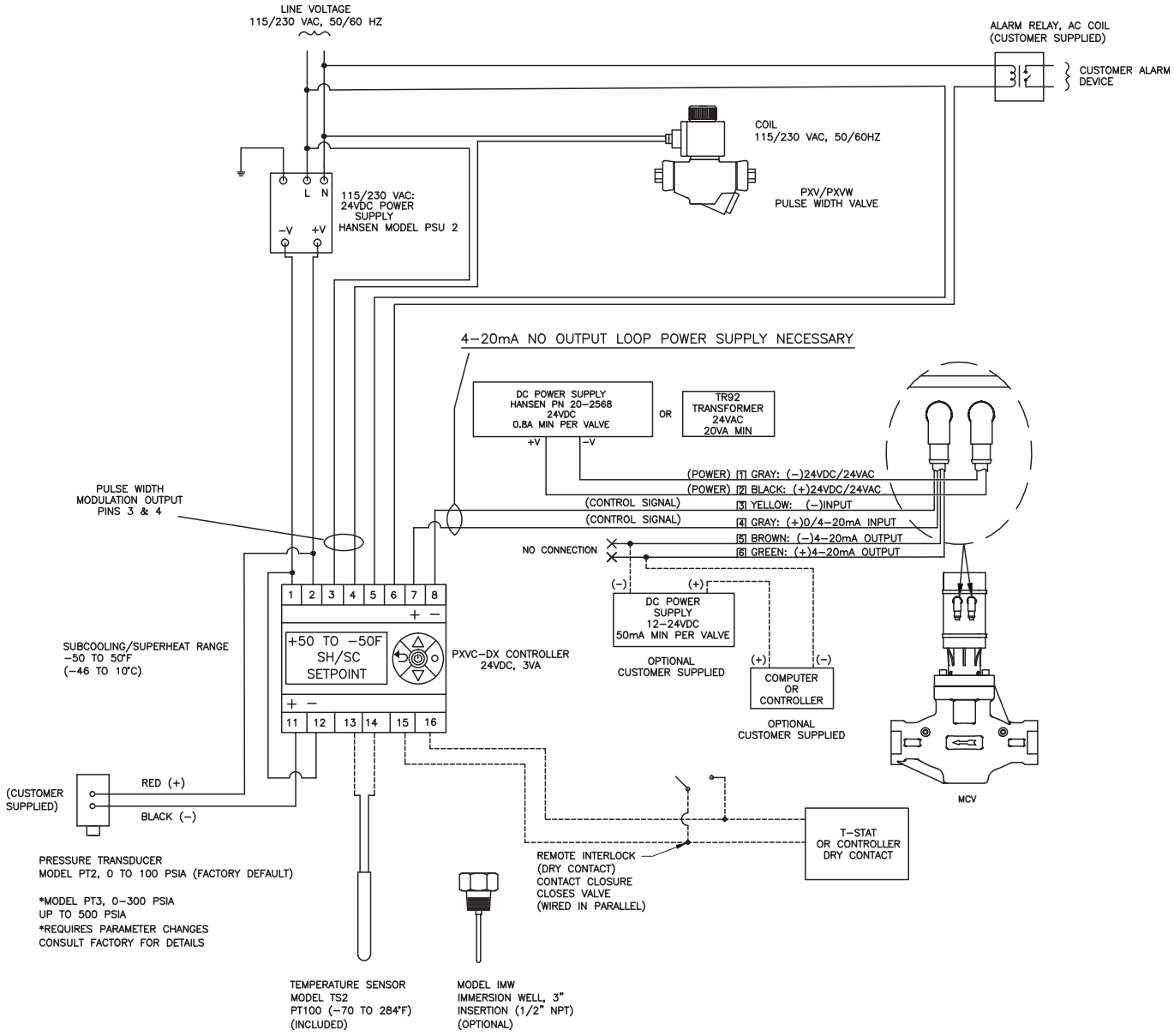

LINE VOLTAGE
115/230 VAC, 50/60 HZ
ALARM RELAY, AC COIL
(CUSTOMER SUPPLIED)
CUSTOMER ALARM DEVICE
COIL
115/230 VAC, 50/60HZ
PXV/PXVW
PULSE WIDTH VALVE
L N
115/230 VAC:
24VDC POWER
SUPPLY
HANSEN MODEL PSU 2
–V +V
4–20mA NO OUTPUT LOOP POWER SUPPLY NECESSARY
DC POWER SUPPLY
HANSEN PN 20–2568
24VDC
0.8A MIN PER VALVE
OR
TR92
TRANSFORMER
24VAC
20VA MIN
+V
–V
(POWER) [1] GRAY: (–)24VDC/24VAC
(POWER) [2] BLACK: (+)24VDC/24VAC
(CONTROL SIGNAL) [3] YELLOW: (–)INPUT
(CONTROL SIGNAL) [4] GRAY: (+)0/4–20mA INPUT
[5] BROWN: (–)4–20mA OUTPUT
NO CONNECTION
[6] GREEN: (+)4–20mA OUTPUT
PULSE WIDTH
MODULATION OUTPUT
PINS 3 & 4
1 2 3 4 5 6 7 8
+ –
+50 TO –50F
SH/SC
SETPOINT
PXVC–DX CONTROLLER
24VDC, 3VA
SUBCOOLING/SUPERHEAT RANGE
–50 TO 50°F
(–46 TO 10°C)
(–)
(+)
DC POWER
SUPPLY
12–24VDC
50mA MIN PER VALVE
OPTIONAL
CUSTOMER SUPPLIED
(+)
(–)
COMPUTER
OR
CONTROLLER
OPTIONAL
CUSTOMER SUPPLIED
MCV
11 12 13 14 15 16
(CUSTOMER
SUPPLIED)
RED (+)
BLACK (–)
PRESSURE TRANSDUCER
MODEL PT2, 0 TO 100 PSIA (FACTORY DEFAULT)
*MODEL PT3, 0–300 PSIA
UP TO 500 PSIA
*REQUIRES PARAMETER CHANGES
CONSULT FACTORY FOR DETAILS
REMOTE INTERLOCK
(DRY CONTACT)
CONTACT CLOSURE
CLOSES VALVE
(WIRED IN PARALLEL)
T–STAT
OR CONTROLLER
DRY CONTACT
TEMPERATURE SENSOR
MODEL TS2
PT100 (–70 TO 284°F)
(INCLUDED)
MODEL IMW
IMMERSION WELL, 3"
INSERTION (1/2" NPT)
(OPTIONAL)

FIGURE 7.

Parameters

Alarms

Alarms can be used for a variety of needs, default configurations allow operation of external equipment, send a signal back to a programmable logic controller, or any combination thereof. By default alarms are configured to operate on digital output 2 and have no effect on the control system. By Default the alarm will be enabled until the controller is reset or the value rises to an increment of 10 (degrees F , PSI, %,etc) above its set-point. this can be modified, contact Hansen for configuration instructions.

PARAMETER ACCESS CODE 0015

TABLE 2.

PARAMETER	DESCRIPTION	RANGE	DEFAULT
AL00	Subcooling Temperature out of Range	OFF ON	OFF
AL01	Subcooling Temperature Limit	-76°F – 250°F	-76°F
AL02	Superheat out of Range	OFF ON	OFF
AL03	Superheat Temperature Limit	-76°F – 250°F	125°F
AL04	Superheat /Subcooling Differential Alarm	0°F – 100°F	10°F
AL05	Input #1 out of range (low)	OFF ON	ON
AL06	Input #1 Lower Limit	0 PSIA	0 PSIA
AL07	Input #1 Out of Range (high)	OFF ON	OFF
AL08	Input #1 Upper Limit	0 PSIA	100 PSIA
AL09	Input #1 Differential Alarm	0 PSI – 100 PSI	10 PSI
AL10	Input #2 Out of Range (low)	OFF ON	OFF
AL11	Input #2 Lower Limit	-76°F – 250°F	-76°F
AL12	Input # 2 Out of range(high)	OFF ON	OFF
AL13	Input #2 Upper limit	-76°F – 250°F	250°F
AL14	Input #2 Differential Alarm	0°F – 100°F	10°F

Refrigerant Selection

PARAMETER ACCESS CODE 0030

TABLE 3.

PARAMETER	DESCRIPTION	VALUE	DEFAULT
FS00	R717	0	0
	R22	1	
	R134a	2	
	R507	3	

Manual Controls

When necessary to manually operate a valve the controller can be operated by the diagnostic menu options as below. The range column refers to the available selections of the setting, specifically for dIA0 this represents the valve duty cycle on pulse applications or percent open on MCV applications.

PARAMETER ACCESS CODE 0020

TABLE 4.

PARAMETER	DESCRIPTION	RANGE	DEFAULT
dIA0	Solenoid (Pulse output) Manual Control	0-100	0
dIA1	Alarm Output Manual Control	ON - OFF	OFF
dIA2	MCV (Analogue Output) Manual Control	0-100%	0

Tuning

The Hansen PXVC-PT controller provides reasonably good control out of the box, and i**t is recommended that only personnel experienced in control loops adjust these settings.**

PARAMETER ACCESS CODE 0005

TABLE 5.

PARAMETER	DESCRIPTION	RANGE	DEFAULT
Pid0	P Band (Output Increases Linearly within this range of set point)	-76°F to 250°F	10°F
Pid1	Integral Gain (Ki) (Output increases as multiple of P-band based on time away from set point)	0-25.5	8.0
Pid2	Measuring (Integral Reset) Interval	0-255 Secs	30 Secs

Note: Hansen controller is factory programmed to provide precise control in refrigeration applications when used in conjunction with the PXV valve or Hansen Motorized Control Valves. If control difficulties occur during startup, it is recommended to thoroughly check system and components for proper installation, operation, and sensor location before attempting to modify and/or tune the controller. Hansen controller is a multi-use controller and only the listed parameters should be accessed/changed. Any other parameter changes may result in unsafe operation. Consult factory for further details if needed.

PXVC-DX

The PXVC –DX controller is a precision controller for applications where superheat control is critical; offering single point temperature and pressure sensing (sensor sold separately), or customer supplied superheat values via analog (4-20mA) input (Range 30°F subcooled liquid to 30°F superheated vapor). Refer to the bulletin PT100c for compatible superheat sensors (not included).

SYSTEM STARTUP:

1. During operation the power button is not available to be used to stop the system, so before starting the controller connect a remote interlock and close the circuit to disable the controller.
2. Power on the controller and verify the screen is flashing "OFF" to indicate the controller is not active. If the interlock is not active, try operating the switch, if this does not work power down the system and check the controller jumpers, switch and wiring, contact Hansen for further support.
3. Once interlock is disabled, verify the screen indicator displays an underscore under the number "1," as shown in the user menus section. Screen #1, the default screen, displays the measured value and the set point. Screen two is only utilized on the PXVC-PT which provides additional information in the form of temperature and pressure readings.
4. Pressing the up or down arrows will increase or decrease the set point
5. Pressing the left arrow will show the second screen on applicable models.
6. Review the specifications for the evaporator or heat exchanger and determine the necessary refrigerant temperature for the equipment to function properly, set suction pressure to appropriate value, observe that the superheat set-point must be less than the temperature differential between the media and the refrigerant to attain stability.
7. Set the controller to the desired set point, and wait for the controller to approach the desired set point (%, degrees, PSI).
8. Replace interlock with temperature control interlock (thermostat (dry contact) or system closed contact control) to pins 13 and 14. Failure to do so will result in inability to precisely control temperature and undesirable operation. A manual interlock may be used to override the system when wired in parallel with the media temperature control interlock as shown in Figure 6.
9. While controller is in operation and valve partially open adjust the suction line pressure to attain the desired refrigerant temperature, NOTE this will not directly control media temperature, see step 8 for media temperature control
10. Operating conditions should be monitored closely during startup

System design considerations: Where liquid may be present, to precisely measure temperature, a trap is required to be installed in the piping directly after the sensing unit. This allows the saturated gas/liquid mixture level to stabilize in the trap and the sensor to read the temperature of the liquid which conducts heat much more readily than gas, as shown in drawing Figure 8.

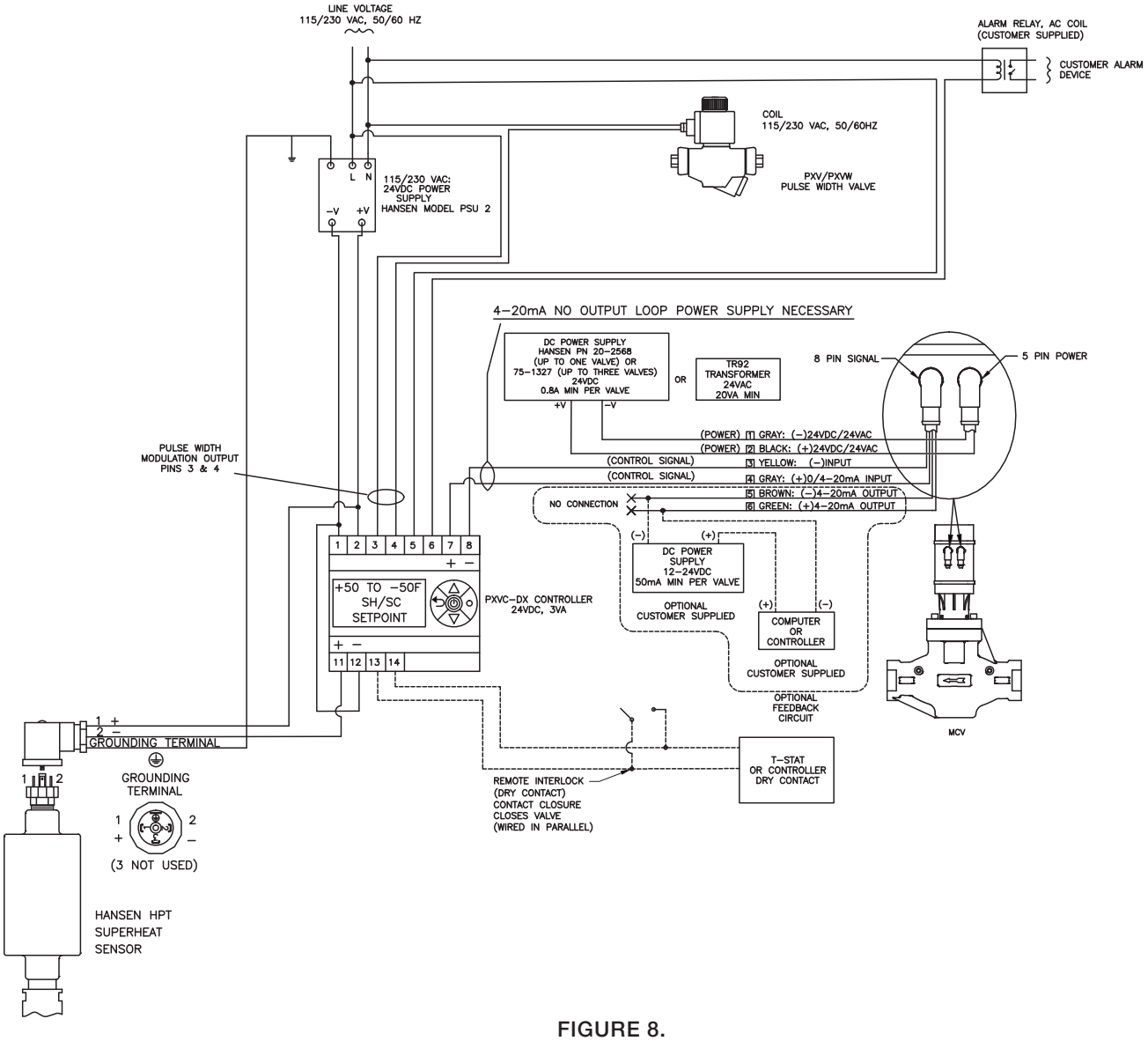

LINE VOLTAGE
115/230 VAC, 50/60 HZ
ALARM RELAY, AC COIL
(CUSTOMER SUPPLIED)
CUSTOMER ALARM
DEVICE
COIL
115/230 VAC, 50/60HZ
PXV/PXVW
PULSE WIDTH VALVE
115/230 VAC:
24VDC POWER
SUPPLY
HANSEN MODEL PSU 2
L N
-V +V
4-20mA NO OUTPUT LOOP POWER SUPPLY NECESSARY
DC POWER SUPPLY
HANSEN PN 20-2568
(UP TO ONE VALVE) OR
75-1327 (UP TO THREE VALVES)
24VDC
0.8A MIN PER VALVE
OR
TR92
TRANSFORMER
24VAC
20VA MIN
8 PIN SIGNAL
5 PIN POWER
(POWER) [1] GRAY: (-)24VDC/24VAC
(POWER) [2] BLACK: (+)24VDC/24VAC
(CONTROL SIGNAL) [3] YELLOW: (-)INPUT
(CONTROL SIGNAL) [4] GRAY: (+)0/4-20mA INPUT
[5] BROWN: (-)4-20mA OUTPUT
[6] GREEN: (+)4-20mA OUTPUT
NO CONNECTION
PULSE WIDTH
MODULATION OUTPUT
PINS 3 & 4
1 2 3 4 5 6 7 8
+50 TO -50F
SH/SC
SETPOINT
PXVC-DX CONTROLLER
24VDC, 3VA
11 12 13 14
DC POWER
SUPPLY
12-24VDC
50mA MIN PER VALVE
OPTIONAL
CUSTOMER SUPPLIED
COMPUTER
OR
CONTROLLER
OPTIONAL
CUSTOMER SUPPLIED
OPTIONAL
FEEDBACK
CIRCUIT
MCV
GROUNDING TERMINAL
GROUNDING
TERMINAL
(3 NOT USED)
HANSEN HPT
SUPERHEAT
SENSOR
REMOTE INTERLOCK
(DRY CONTACT)
CONTACT CLOSURE
CLOSES VALVE
(WIRED IN PARALLEL)
T-STAT
OR CONTROLLER
DRY CONTACT

FIGURE 8.

PXVC-L

The PXVC-L controller is used for liquid level control in vessels, flooded evaporators or wherever control of liquid level is needed and is designed to integrate easily with the Hansen VLT line of probes. The Hansen PXVC-L controller is optimized to control liquid within +/- 10% of the set point.

It is important to note that the PXVC-L reacts opposite of the input, quite simply this means as the level drops below set point the valve opens, this is critical to remember when adjusting set point. The possibility for liquid slugs to present themselves in this application exist, if not properly set. Upon startup or shutdown Hansen recommends setting the level with adequate room for overfeed as on initial startup the controller may overshoot the set point.

Either the PXV or Motorized Control Valve may be used in this configuration, for wiring diagram, refer to Figure 9.

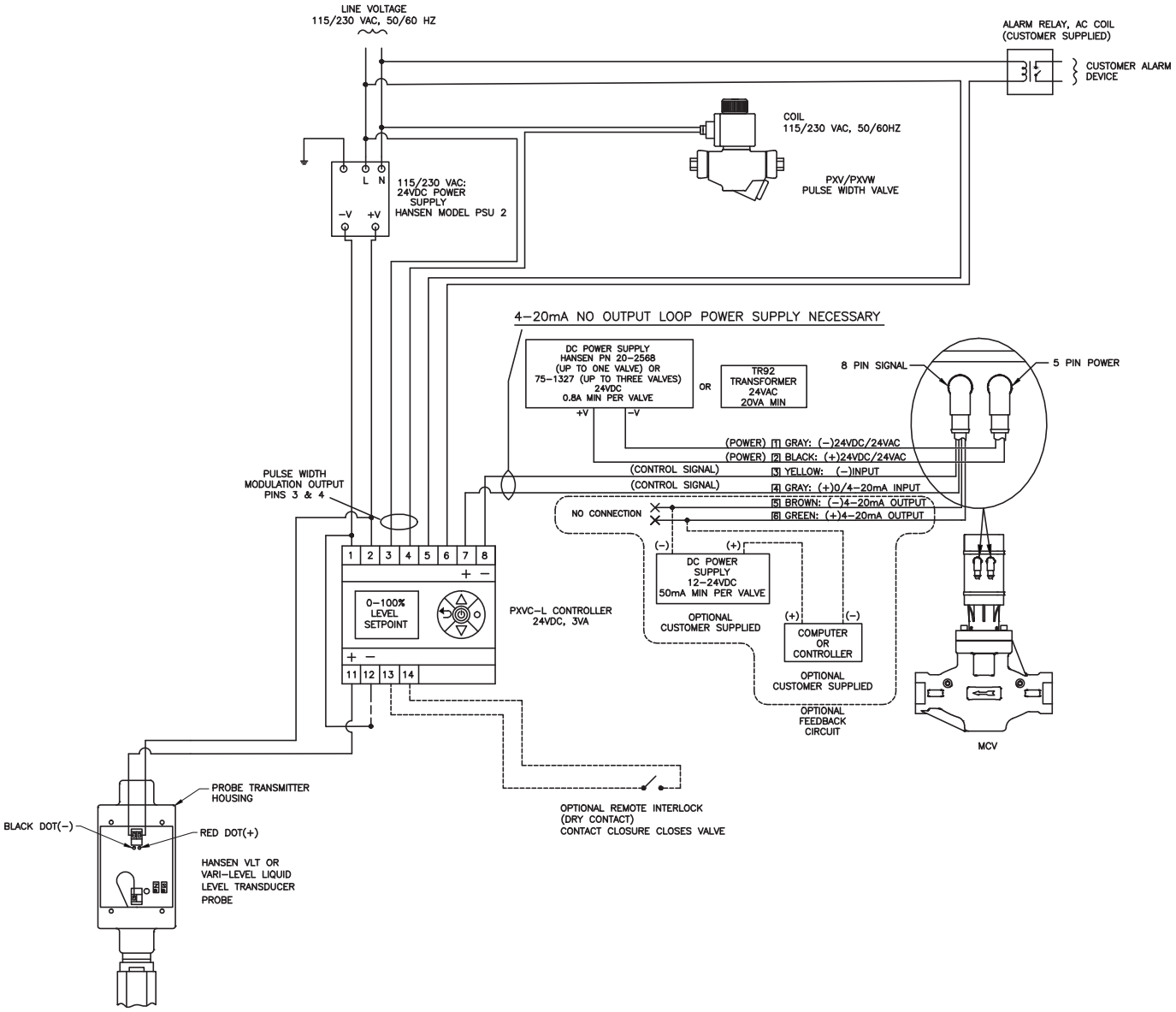


FIGURE 9.

PXVC-P

The Hansen PXVC-P pressure controller is preconfigured to provide precise control of pressure for applications such as compressor hot gas bypass. The controller is preconfigured for the Hansen PT3 transducer, which is a 4-20mA transducer rated for 0-300psia. The PXVC-P Controller is preconfigured to work with either the pulse expansion valve (signal on digital output 1) or the Motorized Control Valve (signal on analog output 1) It is important to note that the PXVC-P controller reacts opposite of the input, quite simply this means as the pressure drops below set point the valve opens. Either the PXV or Motorized Control Valve may be used in this configuration, for wiring diagram, refer to Figure 10.

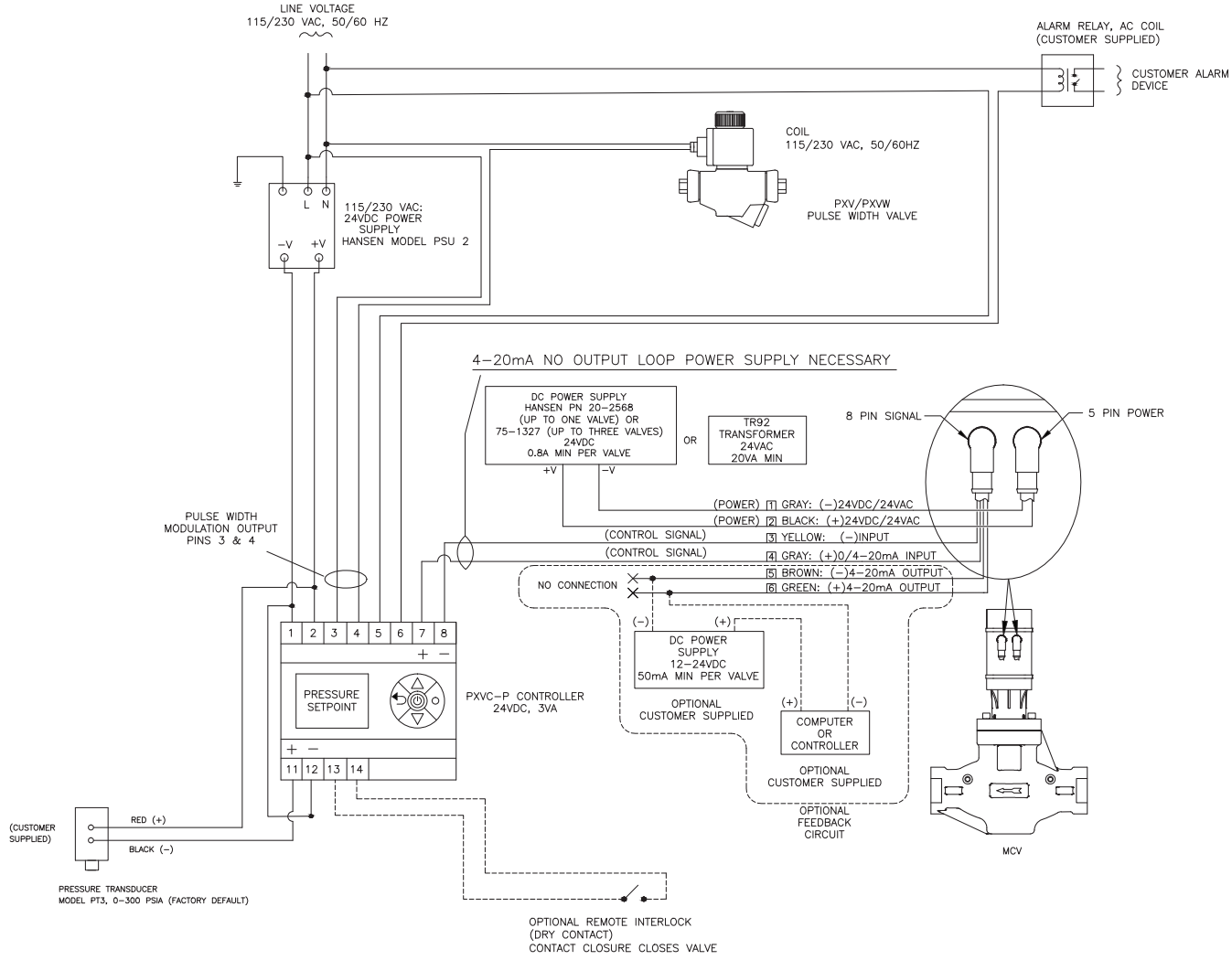


FIGURE 10.

PXVC-T

The Hansen PXVC-T Controller is factory programmed to provide precise control of temperature in applications such as Heat Exchangers, or Liquid Injection for screw compressors. A temperature sensor, NTC 10K included, provides a temperature input to the Hansen PXVC-T controller which pulses the Hansen PXV valve, or sends an analog signal to the Hansen Motorized Control Valve. The valve opens and closes at a rate equal to the refrigerant flow necessary to maintain discharge gas temperature. Either the PXV or Motorized Control Valve may be used in this configuration, for wiring diagram, refer to Figure 11.

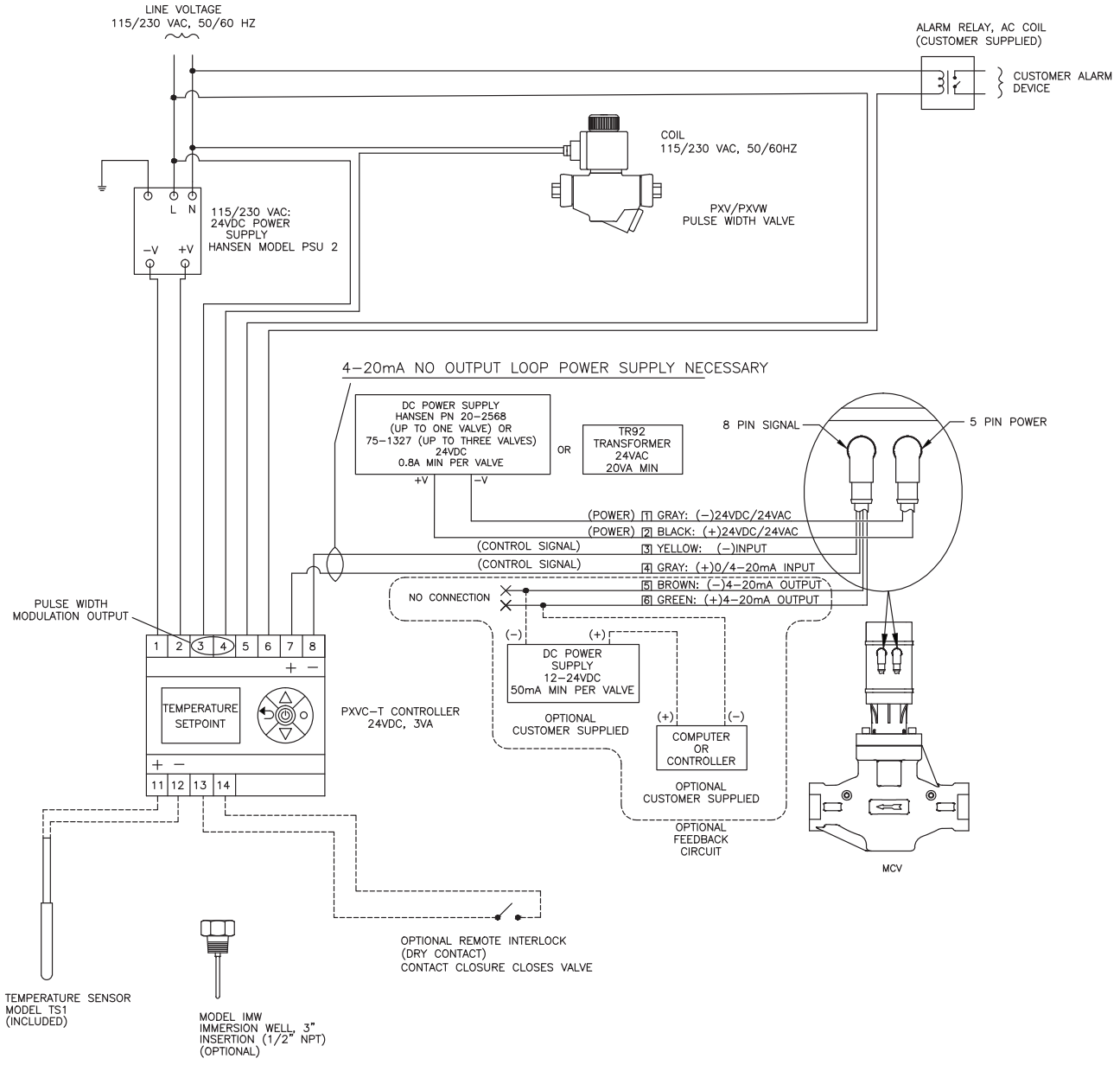


FIGURE 11.

PXVC-CI

The PXVC-CI (Controller Interface) controller is designed to allow an electronic system such as microcontroller or PLC to interface with a Pulse Width Expansion Valve. The Controller accepts a 4-20mA analog input and provides pulse width signal to the PXV valve as shown in Figure 12.

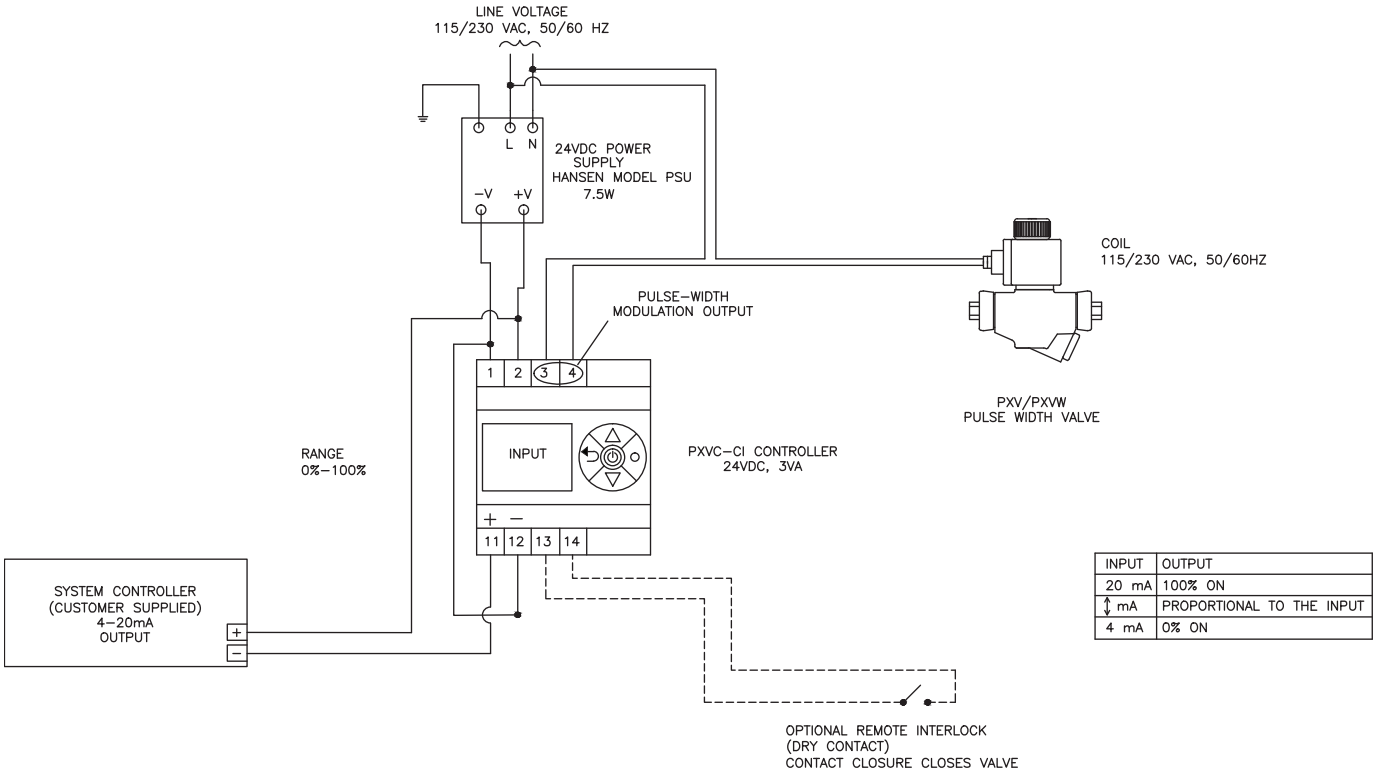


FIGURE 12.

ORDERING INFORMATION

CONTROLLERS

PXVC-PT	Superheat/Supercooling Controller (includes TS2 temp sensor; requires PT2 pressure transducer, not included)
PXVC-DX	DX Controller for PXV, PXVW (HPT not included, see below)
PXVC-T	Temperature Controller for PXV, PXVW (includes TS1 temp sensor)
PXVC-L	Level Controller for PXV, PXVW (level sensor not included)
PXVC-P	Pressure Controller for PXV, PXVW (transducer not included, see PT3 below)
PXVC-CI	Control Interface Module for PXV, PXVW (4-20mA input, pulse-width output)

SENSORS

HPT717	Pressure/Temperature Transducer, NH3, 3/4" NPT
HPT507	Pressure/Temperature Transducer, R-507, 3/4" NPT
HPT134	Pressure/Temperature Transducer, R-134a, 3/4" NPT
PT2	Pressure Transducer, 15" - 85 psig, 4-20mA, 1/4" MPT
PT3	Pressure Transducer, 15" - 285 psig, 4-20mA (for PXVC-P)
IMW	Immersion Well for above, SS, 4" insert, 1/2" MPT

ACCESSORIES

WTE3	Water tight Enclosure (NEMA4), for above controllers
PSU2	Compact Power Supply (100-240VAC: 24VDC) for above enclosure
TR40*	AC Transformer 115/230 VAC:24VAC (40 VA), powers PXVC only (75-0718)
TR92	AC Transformer 115/230VAC:24VAC (92 VA), powers PXVC +24V coil (35-0037)

CAUTION

These instructions must be completely read and understood before selecting, using or servicing Hansen valves and electronics. Only knowledgeable, trained refrigeration service personnel should install, operate, or service. Stated temperature and pressure limits should not be exceeded. When dealing with electricity considerable caution should be exercised and only trained electricians should install wiring for this component. See also Safety Precautions supplied with product.

WARRANTY

All Hansen products, except electronics, are guaranteed against defective materials or workmanship for one year F.O.B. factory. Electronics are guaranteed against defective materials or workmanship for 90 days F.O.B. factory. No consequential damages or field labor is included.

HANSEN

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