

Electrical Installation Requirements

Care should be taken to separate the power and signal cables to prevent electrical interference and possible damage due to inadvertent connection.

The power outputs are fitted with suppressors to protect against electrical interference when switching off solenoid valves or contactors. It is therefore essential to observe the output polarity. The line voltage should be connected to the terminals marked **LN** and the switched loads to **LD**.

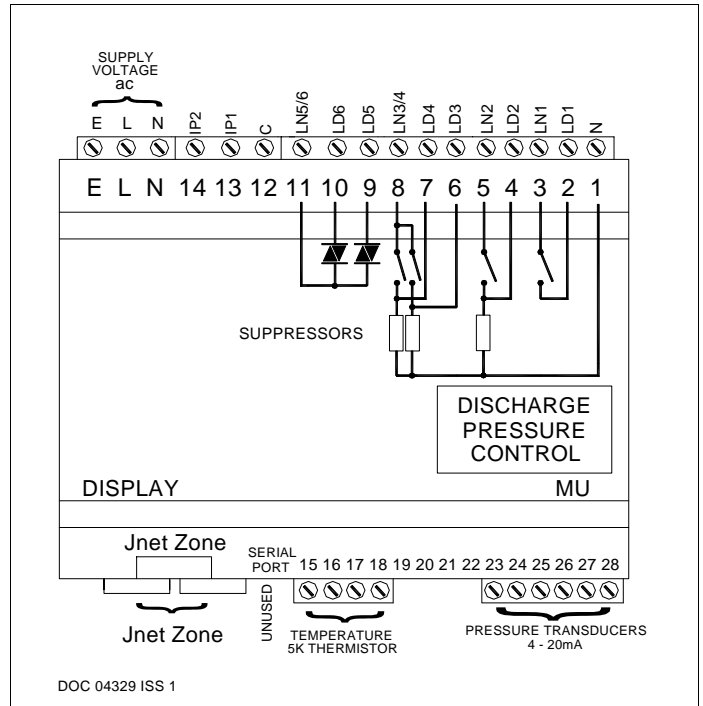
The plant inputs are electrically isolated. A volt free contact should be connected for the logical conditions stated below between the input and common **C** (12).

The control supply neutral must be connected to terminal 1 for EMC operation.

CE Conformance

This unit conforms with the relevant EU standards when installed according to the JTL Installation Requirements for this product.

Digital Outputs				
1	LN LD	3 2	Unsuppressed	High discharge pressure
2	LN LD	5 4	Suppressed	Unused
3	LN LD	8 6	Suppressed	Watchdog
4	LN LD	8 7	Suppressed	1 st stage (Gas cooler)
5	LN LD	11 9	Solid state	Pulsed expansion valve 1 OR stage 2 control
6	LN LD	11 10	Solid state	Pulsed expansion valve 2 OR stage 2 control
Digital Inputs				
1		12 13	Volt Free	Auto
2		12 14	Volt Free	Unused
Pressure Inputs				
1	+ -	20 19	4-20 mA	Heat exchanger 1
2	+ -	18 17	4-20 mA	Heat exchanger 2
3	+ -	16 15	4-20 mA	Discharge pressure
Temperature Inputs				
1	+ -	28 27	5k Thermistor	Heat exchanger 1
2	+ -	26 25	5k Thermistor	Heat exchanger 2



Use of Maintenance Unit

The controller can be checked and the operation adjusted using a JTL portable maintenance unit which plugs into the controller. Each item of information has an item number. The more important items are listed in the tables overleaf. Examples:

To read item 22 press: **ITEM** **2** **2** **ENTER**

To set item 50 to &150.0 press: **ITEM** **5** **0** **ENTER** **SET** **1** **5** **0** **0** **ENTER**

To correct errors press: **CANCEL**

To select next or previous items press: **+** and **-**

Initial Commissioning and Bitswitch Settings

The controller has 1 set of data built in to its program for use during commissioning. Initialize to this data by setting item 9 to 1234. This loads into the controller a suitable set of data, adjustments should then be made as necessary.

If a JTL communications network is connected to the controller then the unit number should be set on item 1.

Pressure Display

The pressure can be displayed in psi, bar or kPa as selected by item 179. This also affects pressure readings on the maintenance unit.

The HP230 controller drives the JTL LCD14 display using a CAB75 cable. Various cable lengths are available.

Temperature units

The temperature on the maintenance unit can be displayed in Celsius or Fahrenheit by setting item 122.

Discharge Pressure Control Strategy

The HP230 is essentially a 2 stage controller using two setpoints. When the discharge pressure exceeds the lower set point (Item 79), the first stage of control is applied. When the discharge pressure exceeds the next setpoint (Item 70), then the second stage of control is applied. A deadband (Item 73) is applied in each case.

To ensure stable control the discharge pressure error integrated against time. The larger the time constant (Item 74) the slower the stage changes occur. There is also a time delay (Item 77) which delays the change between the stages.

Stage 1 control

Stage 1 enables output 4 which enables the gas cooler.

Stage 2 control options.

There is a choice of control for stage 2 on item 40.

- 1) Output 5 & 6 are energised to enable other equipment to control the discharge pressure.
- 2) As 1) except superheat monitoring of externally controlled plate heat exchange is enabled.
- 3) Superheat control of the two plate heat exchanger using pulsed expansion valves on outputs 5 & 6.

Pressure Healthy

The HP230 can be used in conjunction with other controllers. There is an output which indicates if the discharge pressure is within acceptable limits which can be connected to other systems. The acceptable pressure level is set as item 75.

Pressure Alarms

The discharge suction pressure is constantly monitored and compared with the high alarm level (item 72) and low alarm level (item 71).

If the current pressure goes outside the set range for a short time period then an alarm is given.

The time delay is achieved by integrating the difference between the alarm level and the actual pressure over a period of 30 seconds. This means that the larger the difference the faster the alarm occurs.

Pressure Transducer Alarm

The pressure transducer is constantly checked and if, after a 15 minute time delay, the output goes outside the acceptable range an alarm is given (item 91).

If there is a pressure transducer fault, the number of condenser steps is set to the maximum available.

Alarm Display

Various alarms are indicated on the pressure displays. Typical messages displayed are:

P.FlT	Plant fault (auto input not present) - (highest priority)
Hi.dP	High discharge pressure
FAn	Condenser fan failure (lowest priority)

The alarm conditions are flashed alternately with the pressure. In the event of there being more than one alarm the highest priority alarm is displayed.

Daylight Saving

When connected to a JTL network this controller can operate by displaying daylight saving time for its time. Daylight saving operation is selected by setting item 18. The connected network controller then adjusts the times automatically during the daylight saving period.

ADJUSTABLE PARAMETER				HP230
	Item	Function	Range	Units
PRESSURE CONTROL	70	Discharge pressure setpoint (2 nd stage)	350 - 550	psi
	73	Discharge pressure deadband	0 - 20	psi
	157	Refrigeration type	3=404A, 4=407A, 5=407B,6=507,7=408	
	79	Discharge pressure (1 st Stage)	300 - 350	psi
	74	Discharge pressure time constant	1 - 250	
	77	Stage delay	10 - 60	s
	75	Discharge safety level	465 - 550	psi
390	Number of stages	0 - 2		
SUPERHEAT CONTROL	40	Strategy	0=none 1=stage control 2=superheat monitoring 3=superheat control	
	41	Superheat setpoint	4.0 - 12.0	psi
	45	Valve proportional gain	0 - 100	
	46	Valve time constant	0=disabled 1 - 250	
	47	Rate of change of output	1 - 20	%/sec
	42	Minimum Superheat	0 - 5.0	
	43	Maximum valve opening	10 - 100	%
44	Minimum valve opening	0 - 50	%	
PRESSURE ALARM	72	High discharge pressure	450 - 580	psi
	71	Low discharge pressure	250 - 350	psi
PRESSURE TRANSDUCERS	121	Suction transducer	0=disable 1 = enable	
	421	Suction transducer full scale (at 20 mA)	100 - 200	psi
	426	Suction transducer zero scale (at 4mA)	-15 to 0	psi
	123	Discharge transducer	0=Disabled 1=Enabled	
	423	Discharge transducer full scale (at 20 mA)	550 - 900	psi
	423	Discharge transducer zero scale (at 4mA)	-15 to 0	psi
TEMPERATURE	131	Suction Temperature 1	0=disable 1=enable	
	132	Suction Temperature 2	0=disable 1=enable	
DISPLAY	122	Temperature Units (MU)	0 - Celsius 1 - Fahrenheit	
	179	Display units	1 - psi, 2 - bar, 3- kPa	
JNET FUNCTION	1	Unit number	0,1 - 899.7	
	18	Daylight saving operation	0= standard time, 1 daylight saving time	

OTHER USEFUL ITEMS					
Item	Function	Item	Function	Item	Suction Valves
21	PRESSURES	31	TEMPERATURES		SUCTION VALVES
22	Suction Pressure 1	31	Suction	51,61	Current opening (%)
23	Suction Pressure 2	32	Temperature 1	52,62	Proportional output (P)
148	Discharge Pressure		Suction	53,63	Integral output (I)
	Average discharge pressure (1hr)		Temperature 2	54,64	Forced output (%)
				391	DISCHARGE CONTROL
					Stages running

Relay Output Rating

2A resistive

Applicable Documentation

Item Numbers
Doc No.03803

Firmware Variations
Doc No. 03804

Connections Diagram
Doc No. 03903

Supply Requirements

230 V ac 48-62 Hz Supply 6 VA maximum inputs
2 mA maximum

Installation Information
Doc No. 04257

24 Vac (optional)

Note: The information contained in this document applies to the current version of the unit supplied with it. Full operating manuals, item number and software variation information can be obtained from the supplier JTL Systems.



This unit conforms with the relevant EU standards when fitted in accordance with its installation instructions.

PREDICT® is the patented JTL pattern recognition algorithm for providing defrost on demand for the cabinets on a system.