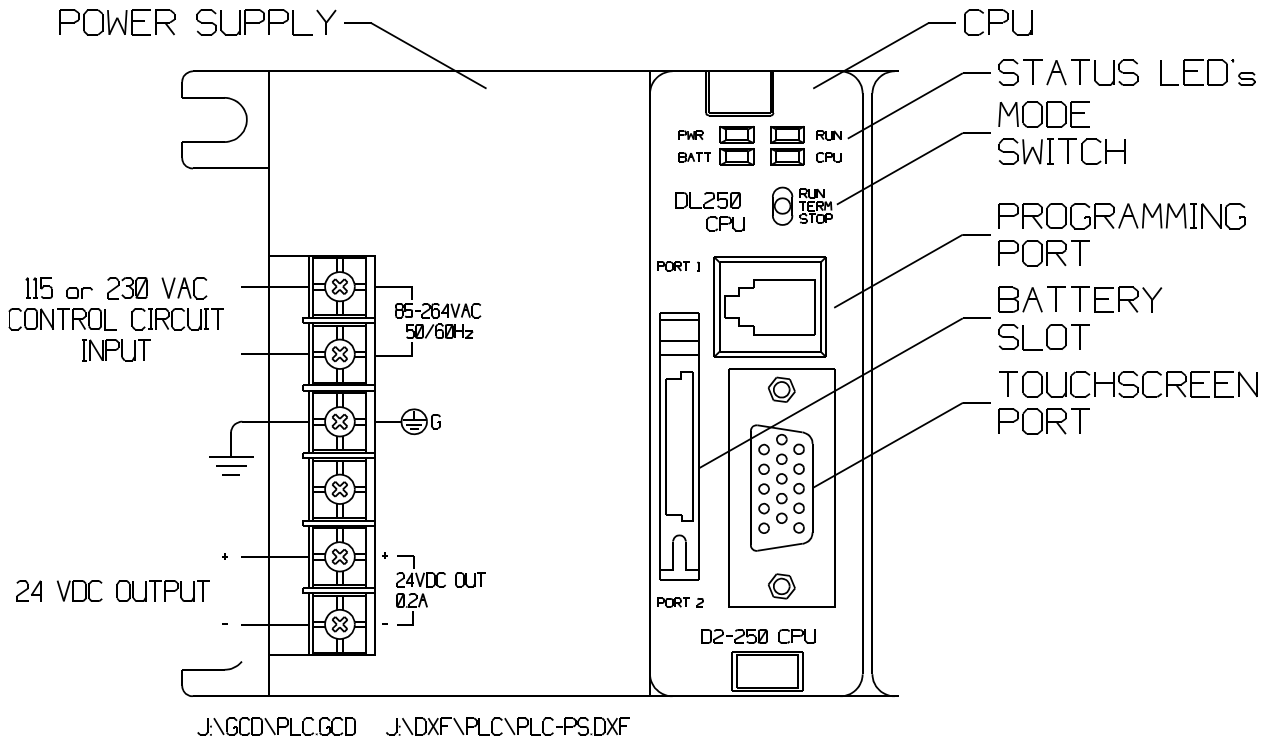
7

Component Troubleshooting

PLC Power Supply and CPU Troubleshooting



CPU Indicators

The DL250 CPU has indicators (Status LED's) on the front to help you diagnose problems with the system. The table below gives a quick reference of potential problems associated with each status indicator. Following the table will be a more detailed analysis of each of the indicator problems.

Indicator	Status	Potential Problems
PWR	off	1. Insufficient control circuit voltage to the Power Supply 2. Power Supply / CPU is faulty 3. Other component such as an I/O module has power supply shorted
RUN	off	1. CPU programming error 2. Mode switch in STOP position
CPU	on	1. Electrical noise interference 2. CPU defective
BATT	on	1. CPU battery low 2. CPU battery missing or disconnected

PWR Indicator

There are three general reasons for the CPU power status LED (PWR) to be OFF:

1. Power to the Power Supply is incorrect or is not applied

If the voltage to the Power Supply is not correct, the CPU and/or base may not operate properly or may not operate at all. Use the following guidelines to correct the problem.

- Disconnect the control circuit power and check all incoming wiring for loose connections.
- If all of the connections are tight, reconnect the control circuit power and measure the voltage at the power supply terminal strip to insure that it is within specifications. If the voltage is not correct shut the system down and correct the problem.
- If all wiring is properly connected and the incoming power is within specifications required, the base power supply should be returned for repair.

2. The CPU is faulty

There is not a good check to test for a faulty CPU other than substituting a known good one to see if this corrects the problem. If you have experienced major power surges, it is possible the CPU and power supply have been damaged.

3. Other component(s) have the power supply shut down

It is possible a faulty module or external device using the system 5V can shut down the power supply. This 5V can be coming from the base or from the CPU communication ports.

To test for an external device causing the problem:

- Turn off the power to the Power Supply
- Disconnect all external devices (i.e. communications cables) from the CPU
- Reapply power to the system

If the power supply operates normally you may have either a shorted device or a shorted cable. If the power supply does not operate normally then test for an I/O module causing the problem by following the steps below:

- Turn off the power to the Power Supply
- Remove a module from the base
- Reapply power to the power supply

Continue doing this, one module at a time until the PWR LED operates normally or you run out of modules.

Bent base connector pins on the module can cause this problem. Verify that the connector is not the problem

RUN Indicator

If the CPU will not enter the Run mode (the RUN indicator is off), the problem is usually program related unless the CPU has a fatal error.

The Mode Switch must be in the TERM (Terminal) position at all times because of the touchscreen.

CPU Indicator

If the CPU indicator is on, a fatal error has occurred in the CPU. Generally, this is not a programming problem but an actual hardware failure. You can try power cycling the system to clear the error. If the error clears, monitor the system and determine what caused the problem. If power cycling the system does not correct the problem or if the problem returns, you should replace the CPU.

I:\wordpfct\plc\power supply&cpu-ts.wpd

Touchscreen Troubleshooting

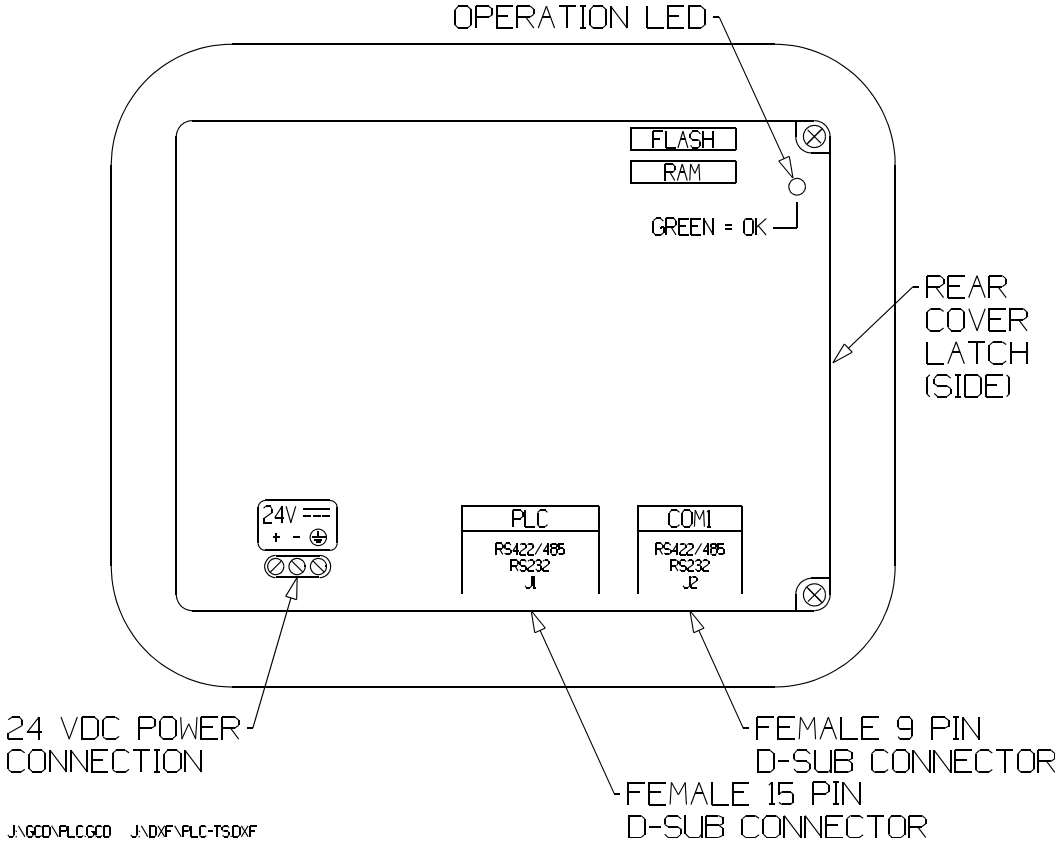
If the touchscreen will not power up...

1. Verify that the wires from the DC power supply are tightly connected to the 24 VDC + and - connections on the back of the screen.
2. Verify that there is 24 VDC at the 24 VDC + and - connections on the back of the touchscreen.
3. If the Operation LED does not light it means there is either no power to the touchscreen or the internal power supply has failed. Check the power source or replace panel.
4. If the LED turns RED and stays RED it means the touchscreen has failed and the panel must be replaced.
5. If the LED flashes RED and then turns GREEN this indicates normal operation. If the display does not light after 10 seconds see Blank Display section below. If the display lights, operation is normal.

If the display is blank...

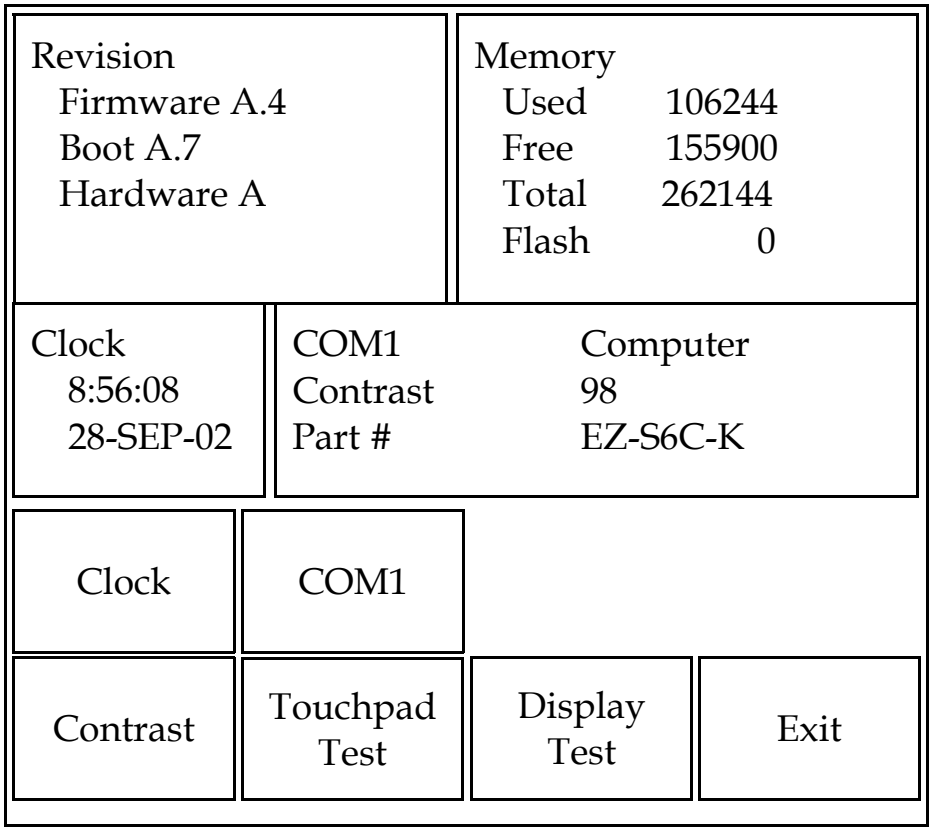
1. Display indicates NO SCREEN for 3 seconds after power-up. There is no program installed.
2. Push the extreme upper left and lower left corners of the touchscreen. If there is no change and the screen remains blank, replace the panel. If the SETUP screen appears and the screen is hard to read, adjust the contrast. If the SETUP screen appears normal, there is no program installed.

i:\wordpfct\plc\
tstroubleshooting.wpd



Touchscreen Setup Screen

After the touchscreen is powered up, you may enter the Setup Mode by pressing the upper left and lower left touch cells on the panel screen. The following screen is displayed:



Information is displayed in the upper left hand corner about the current revision of the Firmware, Hardware and Boot program. Also shown is the amount of RAM memory - Used, Free and Total, and Flash Memory. Below that is displayed the time and date, whether the COM1 port is connected to a computer or a printer, and the current Contrast Setting. There are six buttons at the bottom of the screen. They are labeled Clock, COM1, Contrast, Touchpad Test and Exit. DO NOT USE THE CONTRAST, CLOCK OR COM1 BUTTONS! The COM1 setting will never change and the clock and contrast settings are accessed from screen 16 (Time, Date and Contrast).

Touchpad Cell Test Screen

0,0	0,1	0,2	0,3	0,4	0,5	0,6	0,7
1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,7
2,0	2,1	2,2	2,3	2,4	2,5	2,6	2,7
3,0	3,1	3,2	3,3	3,4	3,5	3,6	3,7
4,0	4,1	4,2	4,3	4,4	4,5	4,6	4,7
5,0	5,1	5,2	5,3	5,4	5,5	5,6	Exit

J:\GCD\PLC.GCD J:\DXF\PLC-TSPD.DXF

Shown above is the Touchpad Cell Test Screen. There are 48 touch cells total (6x8). Each touch cell is numbered for reference. Press on each or any square to test that the cell is operating. It will beep and be highlighted after pressing to show that it has been tested. Press the cell again to deselect it. Press **Exit** in the lower right hand corner to quit.

Touchpad Display Test

J:\GCD\PLC.GCD J:\DXF\PLC-TSDT.DXF

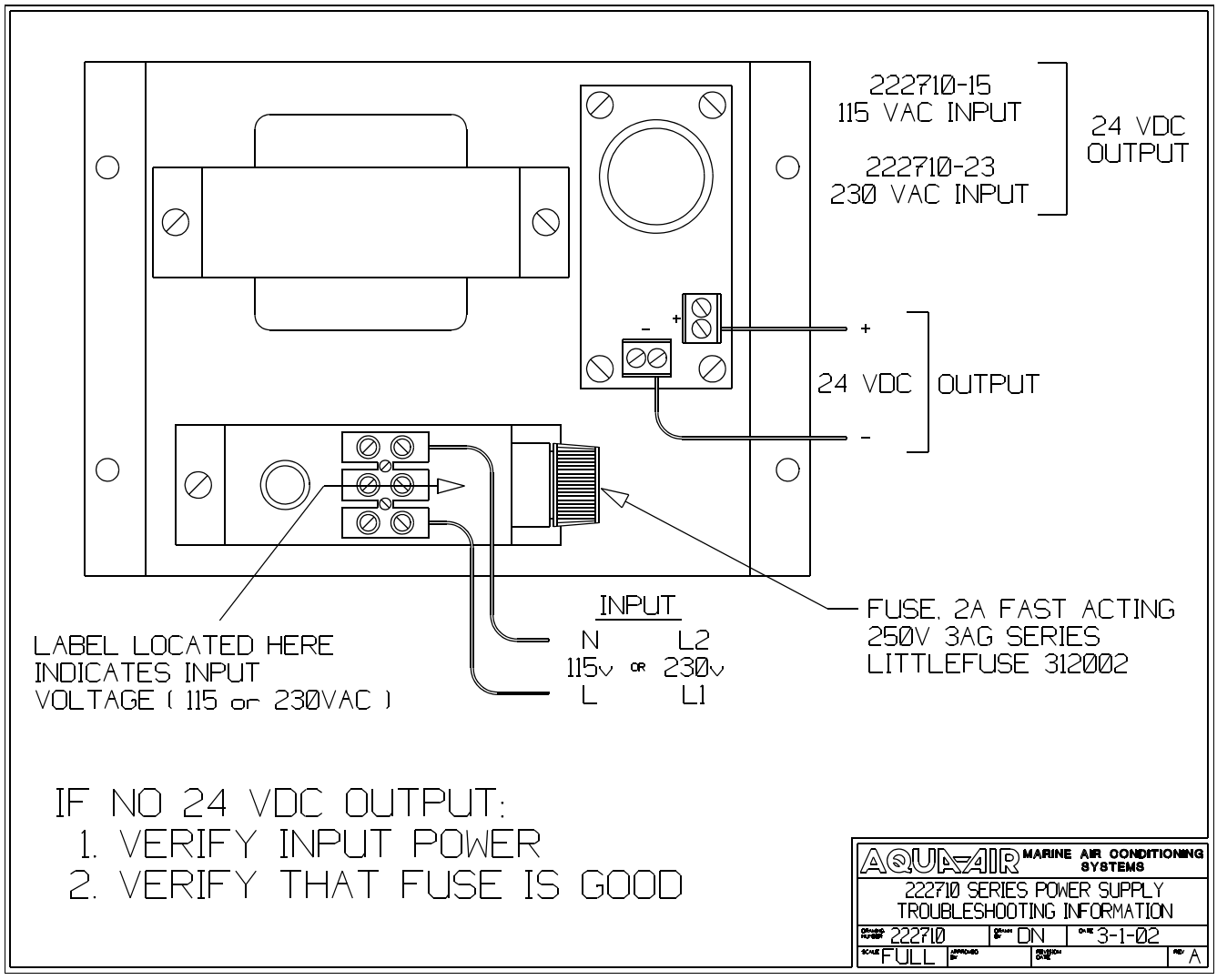
The Display Test button is primarily used for production testing at the factory. Bands scroll horizontally and vertically across the screen during this test. It is used to check the pixel quality of the display before shipping the unit.

Exit Button

Press the Exit button to return to the Main Screen at any time.

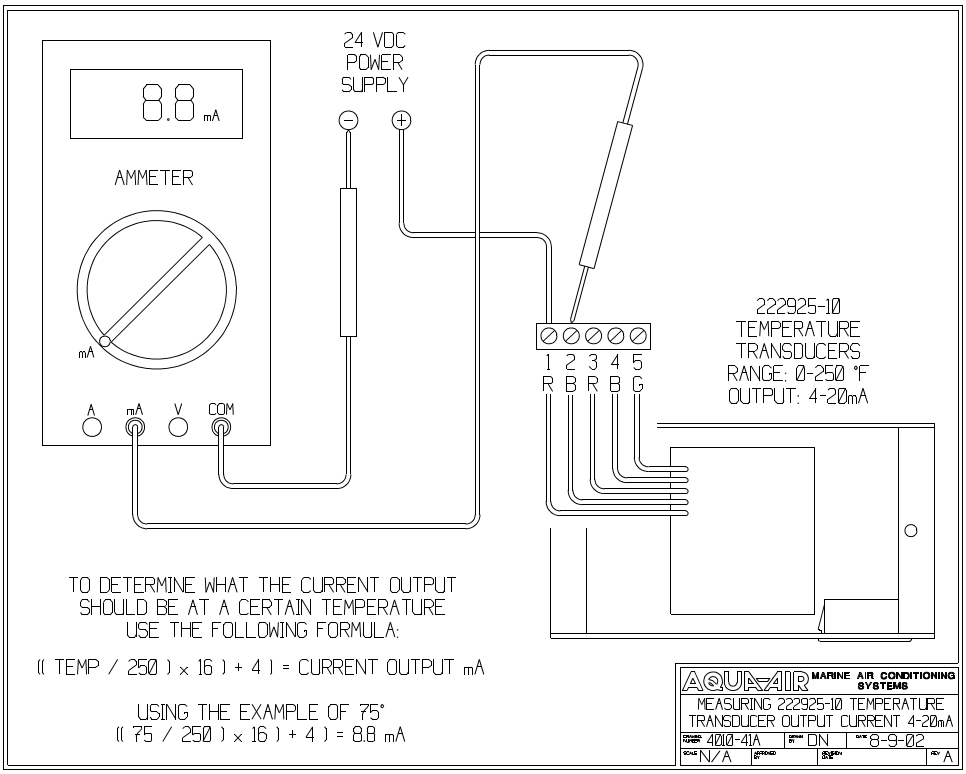
I:\wordpfct\plc\tssetupscreen.wpd

External Power Supply Troubleshooting

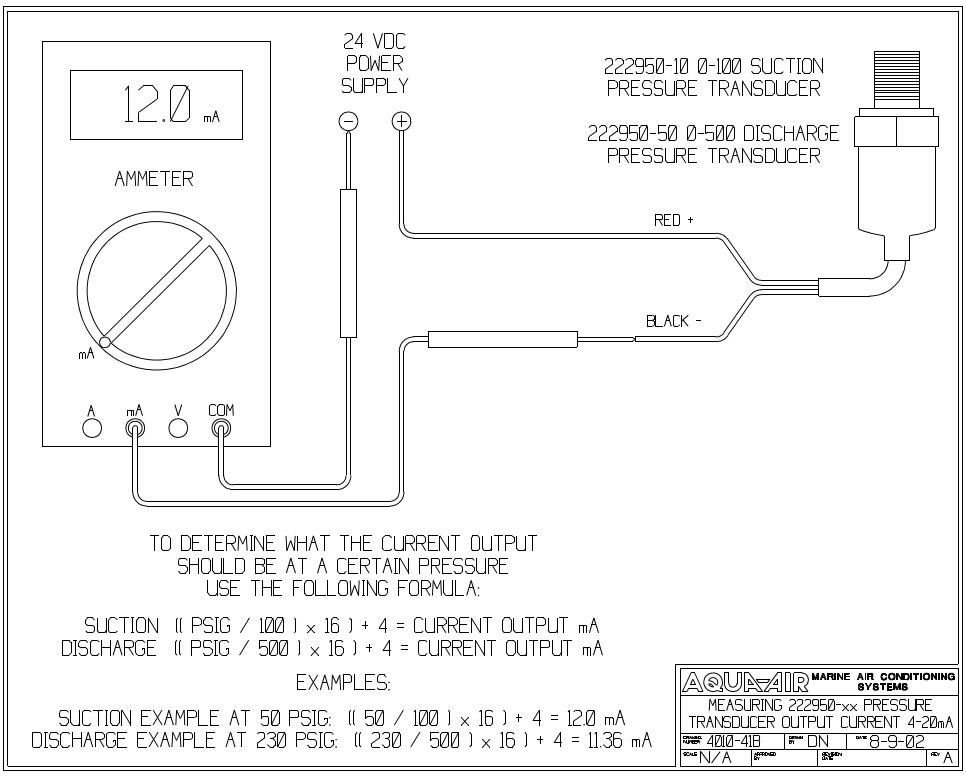


i:\wordpfct\plc\222710ts.wpd

Temperature & Pressure
4-20 mA Transducer Troubleshooting



Temperature Transducer



Pressure Transducer

I:\wordpfct\plc\transducer-ts.wpd

PLC Alarm Code Listing

ALARM #	*ALARM CODE*	*ALARM DESCRIPTION*
1	ERROR CODE VALUE	ERROR CODE VALUE
2	PLC ERROR	PLC ERROR
3	PUMP STARTER FAULT	PUMP STARTER OVERLOAD FAULT
4	C/W FLOW FAULT	FLOW SWITCH FAULT
5	H/W FLOW FAULT	HOT WATER CIRCUIT FLOW SWITCH FLT
6	FRZ FAULT 1	FREEZE THERMOSTAT FAULT 1
7	FRZ FAULT 2	FREEZE THERMOSTAT FAULT 2
8	FRZ FAULT 3	FREEZE THERMOSTAT FAULT 3
9	FRZ FAULT 4	FREEZE THERMOSTAT FAULT 4
10	FRZ FAULT 5	FREEZE THERMOSTAT FAULT 5
11	FRZ FAULT 6	FREEZE THERMOSTAT FAULT 6
12	INV FAULT 1	INVERTER FAULT 1
13	INV FAULT 2	INVERTER FAULT 2
14	INV FAULT 3	INVERTER FAULT 3
15	INV FAULT 4	INVERTER FAULT 4
16	INV FAULT 5	INVERTER FAULT 5
17	INV FAULT 6	INVERTER FAULT 6
18	LPS1 FAULT	LOW REFRIGERANT PRESSURE CHILLER 1
19	LPS2 FAULT	LOW REFRIGERANT PRESSURE CHILLER 2
20	LPS3 FAULT	LOW REFRIGERANT PRESSURE CHILLER 3
21	LPS4 FAULT	LOW REFRIGERANT PRESSURE CHILLER 4
22	LPS5 FAULT	LOW REFRIGERANT PRESSURE CHILLER 5
23	LPS6 FAULT	LOW REFRIGERANT PRESSURE CHILLER 6
24	HPS1 FAULT	HIGH REFRIGERANT PRESS. CHILLER 1
25	HPS2 FAULT	HIGH REFRIGERANT PRESS. CHILLER 2
26	HPS3 FAULT	HIGH REFRIGERANT PRESS. CHILLER 3
27	HPS4 FAULT	HIGH REFRIGERANT PRESS. CHILLER 4
28	HPS5 FAULT	HIGH REFRIGERANT PRESS. CHILLER 5
29	HPS6 FAULT	HIGH REFRIGERANT PRESS. CHILLER 6
30	CTO1 FAULT	COMPRESSOR STARTER OVERLOAD 1
31	CTO2 FAULT	COMPRESSOR STARTER OVERLOAD 2
32	CTO3 FAULT	COMPRESSOR STARTER OVERLOAD 3
33	CTO4 FAULT	COMPRESSOR STARTER OVERLOAD 4
34	CTO5 FAULT	COMPRESSOR STARTER OVERLOAD 5
35	CTO6 FAULT	COMPRESSOR STARTER OVERLOAD 6
36	HTT FAULT	HIGH TEMP THERMOSTAT FAULT

ALARM #	ALARM CODE	ALARM DESCRIPTION
37	FORCED RUN MODE	PLC CPU IS IN RUN MODE
38	FORCED STOP MODE	PLC CPU IS IN STOP MODE
39	CRITICAL ERROR	PLC CPU CRITICAL ERROR
40	BATTERY LOW	PLC CPU BATTERY LOW
41	PROGRAM MEMORY ERROR	PLC CPU PROGRAM MEMORY ERROR
42	I/O ERROR	PLC I/O ERROR
43	COMMUNICATIONS ERROR	PLC CPU COMMUNICATIONS ERROR
44	COMPRESSOR OVERLOAD 1	COMPRESSOR OVERLOAD 1
45	COMPRESSOR OVERLOAD 2	COMPRESSOR OVERLOAD 2
46	COMPRESSOR OVERLOAD 3	COMPRESSOR OVERLOAD 3
47	COMPRESSOR OVERLOAD 4	COMPRESSOR OVERLOAD 4
48	COMPRESSOR OVERLOAD 5	COMPRESSOR OVERLOAD 5
49	COMPRESSOR OVERLOAD 6	COMPRESSOR OVERLOAD 6
50	OIL PRESSURE FAULT 1	OIL PRESSURE FAULT 1
51	OIL PRESSURE FAULT 2	OIL PRESSURE FAULT 2
52	OIL PRESSURE FAULT 3	OIL PRESSURE FAULT 3
53	OIL PRESSURE FAULT 4	OIL PRESSURE FAULT 4
54	OIL PRESSURE FAULT 5	OIL PRESSURE FAULT 5
55	OIL PRESSURE FAULT 6	OIL PRESSURE FAULT 6

I:\WordPfct\PLC\PLC-Alarm Listing.wpd