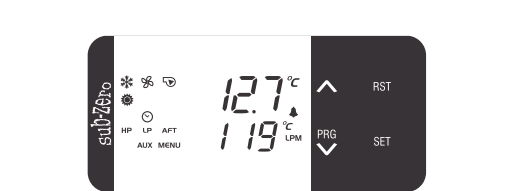


PiCOCHILL (PiC-165)

Operating Instructions



Chiller Controller

Introduction :
The PiCOCHILL (PiC-165) is a single set point chiller controller.

Their IP ratings are greatly improved and have an excellent iconic display. The touch feature whilst increasing reliability also gives a great user experience.

Their operation is very user friendly and is easily understood with the examples in the instructions below.

Various parameters help set up the instruments functions for different applications.

The PiC-165 can be used for several applications with a measuring range from -40.0°C to 80.0°C.

CAUTION

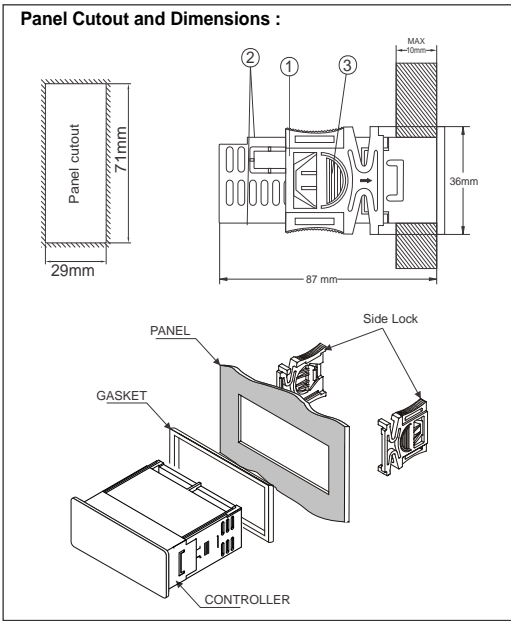
WIRING: The probe and its corresponding wires should never be installed in a conduit next to control or power supply lines. The electrical wiring should be done as shown in the diagram. The power supply circuit should be connected to a protection switch. The terminals admit wires of upto 2.5sq mm.

WARNING: Improper wiring may cause irreparable damage and personal injury. Kindly ensure that wiring is done by qualified personnel only.

Maintenance: Cleaning: Clean the surface of the controller with a soft moist cloth. Do not use abrasive detergents, petrol, alcohol or solvents.
Notice: The information in this document is subject to change in order to improve reliability , design or function without prior notice and does not represent a commitment on the part of the company. In no event will the company be liable for direct, indirect, special, incidental or consequential damage arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages. No part of this manual may be reproduced or transmitted in any form or by any means without the prior written permission of the company.
Installation : Fixing and dimensions of panel models:
To fix the unit, slide the fastener ① through the guides ② as per the position shown in the figure. Move the fastener in the direction of the arrow, pressing tab ③ it permits to move the fastener in the opposite direction of the arrow.

Controller :Controller should be installed in a place protected by vibration, water and corrosive gasses and where ambient temperature does not exceed the values specified in the technical data.

Probe :To give a correct reading, the probe must be installed in a place protected from thermal influences, which may affect the temperature to be controlled.




TECHNICAL DATA	
Housing	: Black ABS Plastic, Auto-extinguish
Front Cover	: Polycarbonate Plastic
Dimensions	: Frontal : 78 X 36mm, Depth : 87mm
Panel Cutout	: 29 X 71mm
Mounting	: Flush panel mounting with fasteners
Protection	: IP65 Front (with gasket)
Connections	: Screw terminal blocks ≤ 2.5sq mm terminal only + Minifit connector.
Display	: 4 X 8.6mm (0.33") 7 segment display 4 X 4.9mm(0.27") 7 segment display & 13 LEDs for Indication
Data storage	: Non-volatile EEPROM memory
Power input	: 9Vac (From External Transformer) External Transformer Input 230Vac, +/- 20%, 50Hz/60Hz
Relay output	: Comp SPST relay 20(8)A,250VAC Fan SPST relay 10A, 250VAC Pump SPST relay 10A, 250VAC Alarm SPST relay 5A,250VAC
Operating temp.	: 0°C to 60°C (non-condensing)
Operating humidity	: 20% to 85% (non-condensing)
Storage temp	: -25°C to 60°C (non-condensing)
Measuring Range	: -40.0°C to 80.0°C
Input	: NTC probe, SZ-T75
Resolution	: +/- 0.5°C
Accuracy	: +/- 1°C
Flow Sensor Input	: Resolution : 0.1 LPM Range : 2 to 30 LPM (for 1/2" & 3/4") : 1 to 60 LPM (for 1")
Digital Input (Potential free):	Accuracy : +/- 10% HP, LP, AUX/WFS, COMP O/L, FAN O/L, PUMP O/L, SPP, Water Level

USER INTERFACE	
UP	In Program mode: Scroll through parameters & Increases parameter value. In Set mode : Increases parameter value.
Down/ Program	Touch and hold for 2sec to enter into program mode. In program mode and set mode: Decreases parameter value
Reset	Touch and hold for 2sec to Mute the Alarm Relay.
Set	Touch and hold for 2sec to enter into set mode. In program mode and set mode: set/save the changed value of parameter.

INDEX		
Sr. No.	Para.	Description
		Set Mode
1	<i>St 2</i>	Cut out set point of controller.
		Program Mode
2		Set other parameter.
3	<i>St 1</i>	Heating or cooling mode
4	<i>St 3</i>	Differential
5	<i>St 4</i>	Hi Temp. Alarm
6	<i>St 5</i>	Lo Temp. Alarm
7	<i>St 6</i>	High Set Limit
8	<i>St 7</i>	Low Set Limit
9	<i>St 8</i>	Ht Power On Dly
10	<i>St 9</i>	HT-LT Normal Dly
11	<i>St 11</i>	Comp Time Delay
12	<i>St 12</i>	Comp Min ON Delay
13	<i>St 14</i>	Pump Output
14	<i>St 16</i>	Fan Output
15	<i>St 17</i>	Fan start delay before compressor ON.
16	<i>St 18</i>	Liquid Probe Cal.
17	<i>RF 1</i>	AFT Probe Status
18	<i>RF 2</i>	AFT Set Temp.
19	<i>RF 3</i>	AFT Differential
20	<i>RF 4</i>	AFT Probe Cal.
21	<i>RF 5</i>	AFT Sense Delay
22	<i>FL 1</i>	To enable/disable flow sensor
23	<i>FL 2</i>	To set Low LPM set point for flow sensor
24	<i>FL 3</i>	Flow sensor calibration.
25	<i>RL 1</i>	HP Fault Sensing Logic
26	<i>RL 2</i>	Fault Sensing Delay for (HP/Comp O/L/Fan O/L/ PUMP O/L)

27	<i>RL 3</i>	HP/AFT Reset
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29	<i>RL 5</i>	LP Fault Sensing Logic
30	<i>RL 6</i>	LP Sensing Delay
31	<i>RL 7</i>	LP Fault Reset
32	<i>RL 8</i>	No. of retrials of LP
33	<i>RL 9</i>	Comp O/L Sensing Logic
34	<i>RL 10</i>	Comp O/L Reset
35	<i>RL 11</i>	No.of retrials of Comp O/L
36	<i>RL 12</i>	Pump O/L Sensing Logic
37	<i>RL 13</i>	Pump O/L Reset
38	<i>RL 14</i>	No of retrials of Pump O/L
39	<i>RL 15</i>	Fan O/L Sensing Logic
40	<i>RL 16</i>	Fan O/L Reset
41	<i>RL 17</i>	No of retrials of Fan O/L
42	<i>RL 21</i>	SPPR Logic
43	<i>RL 22</i>	AUX/EWFS Logic
44	<i>RL 27</i>	Level Switch Logic
45	<i>RL 28</i>	Level Switch Delay
46	<i>RL 29</i>	To Configure Alarm Relay
47	<i>CS 1</i>	EWFS Startup Delay
48	<i>CS 2</i>	Normal delay for EWFS fault sensing
49	<i>CS 12</i>	Second Line Display
50	<i>CS 15</i>	Password
51	<i>CS 16</i>	Keypad Lock
52	<i>CS 17</i>	Factory Defaults
53	<i>CS 18</i>	Comp. Run Hrs
54	<i>CS 19</i>	Pump Run Hrs.
55	<i>CS 20</i>	Fan Run Hrs.
56	<i>CS 22</i>	Clr. Comp. Run Hrs.
57	<i>CS 23</i>	Clr. Pump. Run Hrs.
58	<i>CS 24</i>	Clr. Fan Run Hrs.
59	<i>CS 26</i>	Software Version.
60	<i>End P</i>	End Programming.

Parameter List :


SET MODE								
1	St2 Parameter	Function: To set cut out set point of controller.						
Touch & hold  SET key for 2 seconds.								
Display will show set value. Touch SET key again and set value will flash. The set point value can now be modified by using the UP/DOWN key. After selecting the desired value, touch the set key and user can see " - - - " which confirms that the set point has been stored in memory.								
<table><tr><td>Min</td><td>Max</td><td>Fac.</td></tr><tr><td>ST7+ 1.0</td><td>ST6- 1.0</td><td>10.0°C</td></tr></table>			Min	Max	Fac.	ST7+ 1.0	ST6- 1.0	10.0°C
Min	Max	Fac.						
ST7+ 1.0	ST6- 1.0	10.0°C						

PROGRAM MODE

2

To set other Parameters.

Touch & hold



key for 2 seconds.

To enter into program mode touch DOWN key for 2 seconds, Display will ask for Password. After entering correct password "ST1" parameter will be displayed.

To go to other parameters, use UP/DOWN keys.

3

St 1 Parameter


Function: To set controller for heating or cooling.

Use UP/DOWN keys to set desired value.

Cooling Mode - If this is set then controller will function in the cooling mode i.e compressor will be ON if control temperature goes above set point + differential .

Heating Mode - If this is set then controller will function in the heating mode i.e compressor will be ON if control temperature goes below set point - differential .

Min	Max	Fac.
COOL	HEAT	COOL

4	St 3 Parameter	Function: To set temperature differential for compressor restart.						
Touch & hold  key for 2 seconds.								
Display will show set value. The set point value can now be modified by using the UP/DOWN key. After selecting the desired value, touch the set key and user can see " - - " which confirms that the set point has been stored in memory.								
Example: If the set point is set at 10.0°C and differential is set as 2.0°C, then when the system reaches 10.0°C, the compressor will cutout. Since differential is 2.0°C, the compressor will cut in (restart) at 12.0°C (10.0°C + 2.0°C).								
<table><tr><td>Min</td><td>Max</td><td>Fac.</td></tr><tr><td>1.0°C</td><td>10.0°C</td><td>2.0°C</td></tr></table>			Min	Max	Fac.	1.0°C	10.0°C	2.0°C
Min	Max	Fac.						
1.0°C	10.0°C	2.0°C						

5	<i>St 4</i> Parameter
Function : To set maximum allowable high temperature alarm.	

Example : If this parameter is set to 70.0°C, then once chiller temperature goes above 50.0°C, then controller will show "Ht" And alarm will be ON.

Min	Max	Fac.
St5+ 1.0	70.0°C	70.0°C

6	<i>St 5</i> Parameter
Function: To set minimum allowable low temperature alarm.	

Example: Setting this parameter at 5.0°C will not allow the set point to go below 5.0°C. Also, if the temperature reaches or goes below 5.0°C the display will show Low Temp. Alarm and at this point the alarm will activate.

Min	Max	Fac.
-40.0°C	ST4-1.0	5.0°C

7	<i>St 6</i> Parameter
Function: To set maximum set point limit.	

Once set at a particular value, this will not allow the set point to go above this value.

Example: Setting this parameter at 50.0°C will not allow the set point to go above 49.0°C (ST6-1.0).

Min	Max	Fac.
St2 + 1.0	70.0°C	70.0°C

8	<i>St 7</i> Parameter
Function: To set minimum set point limit.	

Once set at a particular value, this will not allow the set point to go below this value.

Example: Setting this parameter at -10.0°C will not allow the set point to go below -9.0°C (ST7+1.0).

Min	Max	Fac.
AF2+ 1.0	St2 - 1.0	5.0°C

9	<i>St 8</i> Parameter
Function : To set Power ON delay for high temperature alarm to avoid false alarms.	

Example : If this parameter is set to 20minutes then after power on controller will ignore HT alarm for 20 minutes.

Min	Max	Fac.
0Min	20Min	20Min

10	<i>St 9</i> Parameter
Function: To sets sensing delay for high and low temperature alarms.	

Example : If this parameter is set to 5 seconds then controller will ignore HT-LT alarms for 5 seconds.

Min	Max	Fac.
0Sec	180Sec	5Sec

11	<i>St 11</i> Parameter
Function : To set compressor restart delay.	

Example: If this parameter is set at 3 minutes, the compressor will cut off at the set temperature, but will not restart for a minimum of 3 minutes. This time delay is also effective at 'Power On' of the system. This safety feature is used to protect the compressor from restarting within a short period due to power fluctuations.

Min	Max	Fac.
0 Min	20 Min	3 Min

12	<i>St 12</i> Parameter
Function : To set time delay for which compressor has to run once cut in.	

This parameter is used to protect the compressor so that there is enough time for oil to return back to the compressor. This delay starts once the compressor relay is ON.

Example: If this parameter is set at 2 minute and if the temperature is achieved before 2 minute, then the compressor relay will remain ON for minimum 2 minute, though set point is achieved.

Min	Max	Fac.
0 Min	20 Min	2 Min

13	<i>St 14</i> Parameter
Function : To configure Pump O/P.	

$d15$ = Pump is Disable
 $R-on$ = Pump will remain always ON.
 $\ell-on$ = Pump will switch ON/OFF with compressor.

Min	Max	Fac.
$d15$	$\ell-on$	$R-on$

14	<i>St 16</i> Parameter
Function : To configure Fan O/P.	

d 15 = Fan is Disable
R-on = Fan will remain always ON.
ℓ-on = Fan will switch ON/OFF with compressor.

Min	Max	Fac.
<i>d 15</i>	<i>ℓ-on</i>	<i>ℓ-on</i>

15	<i>St 17</i> Parameter
Function: To set Fan start delay before compressor ON.	

Example : If fan is running with compressor and if this delay is set to 10seconds then fan will switch ON 10seconds before compressor..

Min	Max	Fac.
10sec	20sec	10 sec

16	<i>St 18</i> Parameter
Function : To set Liquid probe calibration.	

Example : If the actual temperature is 20.0°C and the temperature on the controller shows 22.0°C set this parameter to -2.0°C and once out of this mode, the temperature will display 20.0°C. (22.0°C-2.0°C).

Min	Max	Fac.
-10.0°C	10.0°C	0.0°C

17	<i>RF 1</i> Parameter
Function : To enable / disable Antifreeze function.	

<i>d 15</i> = It disables the Antifreeze Trip function of the controller. <i>Enb</i> = It enables the Antifreeze Trip function of the controller.		
Min	Max	Fac.
<i>d 15</i>	<i>Enb</i>	<i>d 15</i>

18	<i>RF 2</i> Parameter
Function: To set Antifreeze tripping point.	

Example: If this parameter is set to -6.0°C controller will trip the compressor on Antifreeze fault if the AFT sensor goes below -6.0°C.		
Min	Max	Fac.
-40.0°C	St7 - 1.0	4.0°C

19	<i>RF 3</i> Parameter
Function : To set fault resetting differential once it tripped of AFT set point.	

Example : If the AFT set point is set at 4.0°C and differential is set to 2.0°C then after tripping on AFT fault controller will clear the AFT fault only when the AFT Temperature goes above 6.0°C (4.0°C+2.0°C).

Min	Max	Fac.
1.0°C	10.0°C	2.0°C

20	<i>RF 4</i> Parameter
Function : To set Antifreeze probe calibration.	

EXAMPLE : If the actual temperature is 20.0°C and the temperature on the controller shows 22.0°C set this parameter to -2.0°C and once out of this mode, the temperature will display 20.0°C. (22.0°C-2.0°C).

Min	Max	Fac.
-10.0°C	10.0°C	0.0°C

21	<i>RF 5</i> Parameter
Function: To set AFT fault sensing delay on compressor ON.	

Example: If this delay is set to 60 seconds then the controller will ignore AFT fault for 60 seconds after compressor ON it avoid false tripping of Compressor.

Min	Max	Fac.
0 sec	60 sec	60 sec

22	<i>FL 1</i> Parameter
Function : To enable/disable flow sensor.	

<i>d 15</i> = Disable Flow Sensor.		
<i>ℓ = 1/2"</i> Sensor selected.		
<i>ℓ = 3/4"</i> Sensor selected.		
<i>ℓ = 1"</i> Sensor selected.		
Min	Max	Fac.
<i>d 15</i>	<i>ℓ</i>	<i>d 15</i>

23	<i>FL 2</i> Parameter
Function : To set Low LPM set point for Flow sensor	

Example: if this parameter is set to 12 LPM controller will generate FL fault and system will trip.

CS1 and CS2 delay are also applicable for this fault.

$F_L \ell = 1 \ \& \ 2$			$F_L \ell = 3$		
Min	Max	Fac.	Min	Max	Fac.
2 LPM	30 LPM	12 LPM	1 LPM	60 LPM	12 LPM

24	<i>FL 3</i> Parameter
Function : To set flow sensor calibration.	

Example : If the actual flow is 20.0 LPM and the flow on the controller shows 22.0 LPM set this parameter to -2.0 LPM and once out of this mode, the flow will display 20.0 LPM (22.0 LPM - 2.0 LPM).

Min	Max	Fac.
-10.0	10.0	0.0

25	<i>RL 1</i> Parameter
Function : To set logic for HP fault sensing.	

d 15 = HP fault sensing disabled.
OPEN = Controller will sense HP fault when switch is open.
CLOS = Controller will sense HP fault when switch is closed.

Min	Max	Fac.
<i>d 15</i>	<i>CLOS</i>	<i>CLOS</i>

26	<i>RL2</i> Parameter	Function: To set fault sensing delay on compressor ON for (HP / Comp O/L / Fan O/L / Pump O/L).
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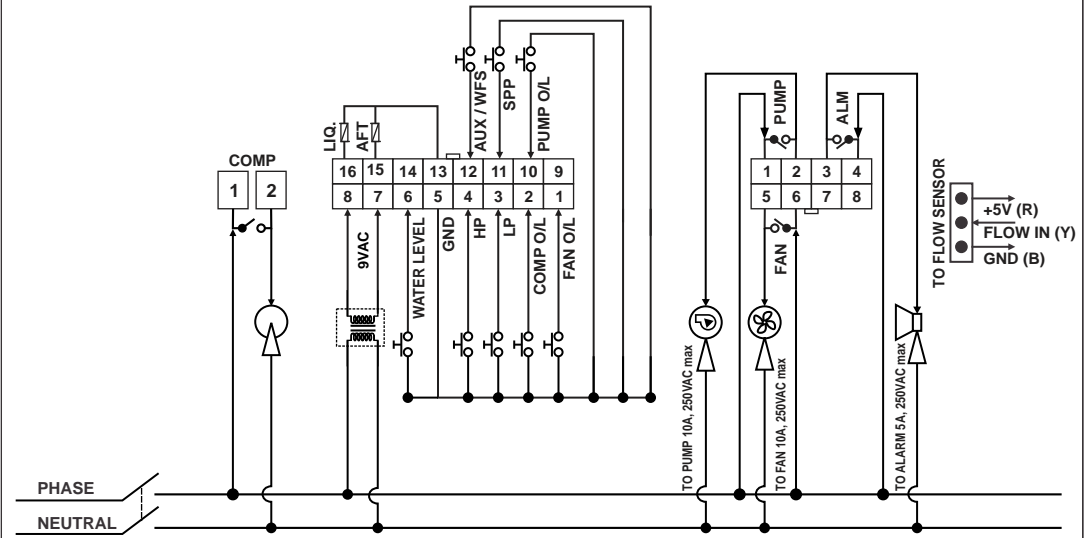
31	RL 7 Parameter	Function : This parameter will set LP fault to Auto or Manual reset.						
R_{uto} = Sets LP faults as Auto resettable. \bar{R}_{An} = Sets LP faults as Manual resettable. User need to press RST key To clear these faults.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>R_{uto}</td><td>\bar{R}_{An}</td><td>R_{uto}</td></tr> </table>	Min	Max	Fac.	R_{uto}	\bar{R}_{An}	R_{uto}
Min	Max	Fac.						
R_{uto}	\bar{R}_{An}	R_{uto}						
32	RL8 Parameter	Function : No. of retrials of LP.						
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>0</td><td>5</td><td>3</td></tr> </table>	Min	Max	Fac.	0	5	3
Min	Max	Fac.						
0	5	3						
33	RL9 Parameter	Function : To set logic for Comp O/L fault sensing.						
d_{15} = Comp O/L fault sensing disabled. \bar{OPE}_n = Controller will sense Comp O/L fault when switch is open. \bar{CLO}_5 = Controller will sense Comp O/L fault when switch is closed.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>d_{15}</td><td>\bar{CLO}_5</td><td>\bar{CLO}_5</td></tr> </table>	Min	Max	Fac.	d_{15}	\bar{CLO}_5	\bar{CLO}_5
Min	Max	Fac.						
d_{15}	\bar{CLO}_5	\bar{CLO}_5						
34	RL 10 Parameter	Function : This parameter will set Comp O/L fault to Auto or Manual reset.						
R_{uto} = Sets Comp O/L faults as Auto resettable. \bar{R}_{An} = Sets Comp O/L faults as Manual resettable. User need to press RST key To clear these faults.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>R_{uto}</td><td>\bar{R}_{An}</td><td>R_{uto}</td></tr> </table>	Min	Max	Fac.	R_{uto}	\bar{R}_{An}	R_{uto}
Min	Max	Fac.						
R_{uto}	\bar{R}_{An}	R_{uto}						
35	RL 11 Parameter	Function : No. of retrials of Comp O/L.						
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>0</td><td>5</td><td>3</td></tr> </table>	Min	Max	Fac.	0	5	3
Min	Max	Fac.						
0	5	3						
36	RL 12 Parameter	Function : To set logic for Pump O/L fault sensing.						
d_{15} = Pump O/L fault sensing disabled. \bar{OPE}_n = Controller will sense Pump O/L fault when switch is open. \bar{CLO}_5 = Controller will sense Pump O/L fault when switch is closed.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>d_{15}</td><td>\bar{CLO}_5</td><td>\bar{CLO}_5</td></tr> </table>	Min	Max	Fac.	d_{15}	\bar{CLO}_5	\bar{CLO}_5
Min	Max	Fac.						
d_{15}	\bar{CLO}_5	\bar{CLO}_5						
37	RL 13 Parameter	Function : This parameter will set Pump O/L fault to Auto or Manual reset.						
R_{uto} = Sets Pump O/L faults as Auto resettable. \bar{R}_{An} = Sets Pump O/L faults as Manual resettable. User need to press RST key To clear these faults.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>R_{uto}</td><td>\bar{R}_{An}</td><td>R_{uto}</td></tr> </table>	Min	Max	Fac.	R_{uto}	\bar{R}_{An}	R_{uto}
Min	Max	Fac.						
R_{uto}	\bar{R}_{An}	R_{uto}						
38	RL 14 Parameter	Function : No. of retrials of Pump O/L.						
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>0</td><td>5</td><td>3</td></tr> </table>	Min	Max	Fac.	0	5	3
Min	Max	Fac.						
0	5	3						
39	RL 15 Parameter	Function : To set logic for Fan O/L fault sensing.						
d_{15} = Fan O/L fault sensing disabled. \bar{OPE}_n = Controller will sense Fan O/L fault when switch is open. \bar{CLO}_5 = Controller will sense Fan O/L fault when switch is closed.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>d_{15}</td><td>\bar{CLO}_5</td><td>\bar{CLO}_5</td></tr> </table>	Min	Max	Fac.	d_{15}	\bar{CLO}_5	\bar{CLO}_5
Min	Max	Fac.						
d_{15}	\bar{CLO}_5	\bar{CLO}_5						
40	RL 16 Parameter	Function : This parameter will set Fan O/L fault to Auto or Manual reset.						
R_{uto} = Sets Fan O/L faults as Auto resettable \bar{R}_{An} = Sets Fan O/L faults as Manual resettable. User need to press RST key To clear these faults.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>R_{uto}</td><td>\bar{R}_{An}</td><td>R_{uto}</td></tr> </table>	Min	Max	Fac.	R_{uto}	\bar{R}_{An}	R_{uto}
Min	Max	Fac.						
R_{uto}	\bar{R}_{An}	R_{uto}						
41	RL 17 Parameter	Function : No. of retrials of Fan O/L.						
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>0</td><td>5</td><td>3</td></tr> </table>	Min	Max	Fac.	0	5	3
Min	Max	Fac.						
0	5	3						
42	RL21 Parameter	Function : To set logic for SPFR fault sensing.						
d_{15} = SPP fault sensing disabled. \bar{OPE}_n = Controller will sense SPP fault when switch is open. \bar{CLO}_5 = Controller will sense SPP fault when switch is closed.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>d_{15}</td><td>\bar{CLO}_5</td><td>\bar{CLO}_5</td></tr> </table>	Min	Max	Fac.	d_{15}	\bar{CLO}_5	\bar{CLO}_5
Min	Max	Fac.						
d_{15}	\bar{CLO}_5	\bar{CLO}_5						
43	RL22 Parameter	Function : To set logic for AUX/EWFS fault sensing.						
d_{15} = Disable. \bar{OPE}_n = Switch is open. \bar{CLO}_5 = Switch is closed.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>d_{15}</td><td>\bar{CLO}_5</td><td>\bar{CLO}_5</td></tr> </table>	Min	Max	Fac.	d_{15}	\bar{CLO}_5	\bar{CLO}_5
Min	Max	Fac.						
d_{15}	\bar{CLO}_5	\bar{CLO}_5						
44	RL27 Parameter	Function : To set logic for Level Switch fault sensing.						
d_{15} = Disable. \bar{OPE}_n = Controller will sense Level switch fault when switch is open. \bar{CLO}_5 = Controller will sense Level switch fault when switch is closed.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>d_{15}</td><td>\bar{CLO}_5</td><td>d_{15}</td></tr> </table>	Min	Max	Fac.	d_{15}	\bar{CLO}_5	d_{15}
Min	Max	Fac.						
d_{15}	\bar{CLO}_5	d_{15}						
45	RL28 Parameter	Function : To set liquid level switching delay.						
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>1 Sec</td><td>90 Sec</td><td>10 Sec</td></tr> </table>	Min	Max	Fac.	1 Sec	90 Sec	10 Sec
Min	Max	Fac.						
1 Sec	90 Sec	10 Sec						
46	RL29 Parameter	Function : To configure alarm relay.						
$n\bar{O}$: Alarm will activate at nO. $n\bar{C}$: Alarm will activate at nC.								
		<table border="1"> <tr> <td>Min</td><td>Max</td><td>Fac.</td></tr> <tr> <td>$n\bar{O}$</td><td>$n\bar{C}$</td><td>$n\bar{O}$</td></tr> </table>	Min	Max	Fac.	$n\bar{O}$	$n\bar{C}$	$n\bar{O}$
Min	Max	Fac.						
$n\bar{O}$	$n\bar{C}$	$n\bar{O}$						

47 <i>CS 1</i> Parameter	Function : It sets power ON delay for EWFS fault sensing.						
Example :If this delay is set to 30 sec then at power ON controller will ignore EWFS fault for 30seconds .							
<table><tr><th>Min</th><th>Max</th><th>Fac.</th></tr><tr><td>0 Sec</td><td>120 Sec</td><td>10 Sec</td></tr></table>		Min	Max	Fac.	0 Sec	120 Sec	10 Sec
Min	Max	Fac.					
0 Sec	120 Sec	10 Sec					
48 <i>CS2</i> Parameter	Function : It sets normal delay for EWFS fault sensing. This avoids false tripping due to water splashing.						
Example : If this delay is set to 5 sec then controller will trip on EWFS fault only if it persists for more than 5 seconds .							
<table><tr><th>Min</th><th>Max</th><th>Fac.</th></tr><tr><td>0 Sec</td><td>90 Sec</td><td>5 Sec</td></tr></table>		Min	Max	Fac.	0 Sec	90 Sec	5 Sec
Min	Max	Fac.					
0 Sec	90 Sec	5 Sec					
49 <i>CS i2</i> Parameter	Function: Second line display.						
Example : Whether Set Point or Antifreeze or LPM or Both(AFT/LPM).							
<i>SEtP</i> = It will display set point value.							
<i>RfL</i> = It will display antifreeze value.							
<i>L Pn</i> = It will display LPM value.							
<i>boTn</i> = It will flash both AFT/LPM values alternative.							
<table><tr><th>Min</th><th>Max</th><th>Fac.</th></tr><tr><td><i>SEtP</i></td><td><i>boTn</i></td><td><i>SEtP</i></td></tr></table>		Min	Max	Fac.	<i>SEtP</i>	<i>boTn</i>	<i>SEtP</i>
Min	Max	Fac.					
<i>SEtP</i>	<i>boTn</i>	<i>SEtP</i>					
NOTE :If any of the parameters i.e. (AF1 or FL1) corresponding to second line display parameter is not selected, then it will display the value of cut out Set Point of the controller (St2 parameter).							
50 <i>CS 15</i> Parameter	Function: To change Password.						
User cannot enter into program mode, if correct password is not entered.							
<table><tr><th>Min</th><th>Max</th><th>Fac.</th></tr><tr><td>0</td><td>9999</td><td>0</td></tr></table>		Min	Max	Fac.	0	9999	0
Min	Max	Fac.					
0	9999	0					
51 <i>CS 16</i> Parameter	Function: To lock keypad.						
This parameter is used to lock the keypad so that tampering is not possible by by-standers.							
<i>d 15</i> = keypad unlocked							
<i>Enb</i> = keypad locked							
When locked all parameters can only be viewed, but not modified.							
Note : If LP parameter is set to ENB and if user tries to change any parameter value, " LP" will flash on the display.							
<div><i>LP</i> Flashing</div> <table><tr><th>Min</th><th>Max</th><th>Fac.</th></tr><tr><td><i>d 15</i></td><td><i>Enb</i></td><td><i>d 15</i></td></tr></table>		Min	Max	Fac.	<i>d 15</i>	<i>Enb</i>	<i>d 15</i>
Min	Max	Fac.					
<i>d 15</i>	<i>Enb</i>	<i>d 15</i>					
52 <i>CS 17</i> Parameter	Function : To restore default settings of the controller.						
When set to YES all parameters are programmed to factory values.							
Useful to debug setting related Problems.							
<table><tr><th>Min</th><th>Max</th><th>Fac.</th></tr><tr><td><i>no</i></td><td><i>YES</i></td><td><i>no</i></td></tr></table>		Min	Max	Fac.	<i>no</i>	<i>YES</i>	<i>no</i>
Min	Max	Fac.					
<i>no</i>	<i>YES</i>	<i>no</i>					
53 <i>CS 18</i> Parameter	Function : To display total Compressor working hours.						
54 <i>CS 19</i> Parameter	Function : To display total Pump working hours.						
55 <i>CS20</i> Parameter	Function : To display total Fan working hours.						
56 <i>CS22</i> Parameter	Function : To clear Compressor run hours.						
If it is set to YES, it will clear all previous compressor run hours.							
<table><tr><th>Min</th><th>Max</th><th>Fac.</th></tr><tr><td><i>no</i></td><td><i>YES</i></td><td><i>no</i></td></tr></table>		Min	Max	Fac.	<i>no</i>	<i>YES</i>	<i>no</i>
Min	Max	Fac.					
<i>no</i>	<i>YES</i>	<i>no</i>					
57 <i>CS23</i> Parameter	Function : To clear Pump run hours.						
If it is set to YES, it will clear all previous Pump run hours.							
<table><tr><th>Min</th><th>Max</th><th>Fac.</th></tr><tr><td><i>no</i></td><td><i>YES</i></td><td><i>no</i></td></tr></table>		Min	Max	Fac.	<i>no</i>	<i>YES</i>	<i>no</i>
Min	Max	Fac.					
<i>no</i>	<i>YES</i>	<i>no</i>					
58 <i>CS24</i> Parameter	Function : To clear Fan run hours.						
If it is set to YES, it will clear all previous Fan run hours.							
<table><tr><th>Min</th><th>Max</th><th>Fac.</th></tr><tr><td><i>no</i></td><td><i>YES</i></td><td><i>no</i></td></tr></table>		Min	Max	Fac.	<i>no</i>	<i>YES</i>	<i>no</i>
Min	Max	Fac.					
<i>no</i>	<i>YES</i>	<i>no</i>					
59 <i>CS26</i> Parameter	Function : To display Software version.						
60 <i>EndP</i> Parameter	Function: To end programming.						
To end programming press "SET" key	Once the key is pressed, the controller goes into the normal mode and displays the temperature and all settings are recorded.						

LEDS	
Compressor(Cooling Mode) ON: Compressor is ON. OFF: Compressor is OFF.	Fan ON: Fan is ON. OFF: Fan is OFF. FLASHING : Fan is in time delay.
Compressor(Heating Mode) ON: Compressor is ON. OFF: Compressor is OFF.	Alarm ON: Alarm relay ON. OFF: Alarm relay OFF. FLASHING : Fault is present.
Pump ON: Pump is ON. OFF: Pump is OFF. FLASHING : Pump is in time delay.	HP FLASHING : HP Fault present.
	LP FLASHING : LP Fault present.
	AFT FLASHING : AFT Fault present.
	AUX FLASHING : WFS Fault present.
Time Delay ON: Compressor is ON and in time delay for switching OFF. (ST12 parameter) FLASHING: Compressor is in time delay and about to start.	MENU ON : Controller is in Programe mode or set mode
	LPM ON : LPM value will display in second line. (CS12 Parameter)
ON: When temperature is displayed.	

OPERATING MESSAGES	
H_L High temperature alarm	L_L Low temperature alarm
Temperature above the maximum high temperature limit.	Temperature below the minimum low temperature limit.
P_P Probe fail	R-P_P Antifreeze Probe fail
Probe short circuit, circuit open or without probe, or temperature is > 80.0°C or <-40.0°C	AFT Probe short circuit, circuit open or without probe, or temperature is > 80.0°C or <-40.0°C
S_{PP} SPPR fault present.	L-o_L Compressor over load fault.
P-o_L Pump over load fault.	F-o_L Fan over load fault.
L_{UL} Water level switch fault.	F_LL LPM fault.

Suggested Wiring Diagram PiC-165



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