MICRO CHILL

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user manual

sub-zero

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INDEX

INTRODUCTION

FEATURES

- 7-segment Display , Leds ,LCD with backlighting to display all parameters.
- 2 NTC probes for Liquid temp + Antifreeze temperature.
- Range : - 30ºC to + 50 ºC
- Relay outputs: Compressor + Pump + Alarm or Water Sv.
- HP,LP,Comp O/L,Pump O/L, SPP,Cond O/L, EWFS,CWFS trip protection for Compressor.
- Auto/Man reset for HP,LP and AFT .
- Last 10 Fault History.

ITEMS INCLUDED

NO.	ITEM	QTY
1.	CONTROLLER	1 No.
2.	SIDE CLAMPS	2 Nos
3.	TEMPERATURE SENSOR	1 No
4.	TRANSFORMER	1 No
5.	CATALOG	1 No

Optional :

NO.	ITEMS	QTY
1.	LIQUID LEVEL SENSOR	1 SET
2.	½" BSP SENSOR	1No.

Parameter List

Min: MINIMUM Max : MAXIMUM
Fact. Set : FACTORY SETTING(DEFAULT)

Description of parameters and functions.

Sr.No.	Parameter (LCD Message)	Parameter setting method.
01	CHILLER SET TEMP.	Function : To set the cutout point of the Controller.
Press and hold set key for 2 seconds and release. (SET ▶)		LCD will change to set mode and flash. Then press set key once & release .Set point will flash. Set point can now be changed by using UP/DOWN key. After achieving the desired value, press the SET key . LtºC Low temp Limit. HtºC High temp. Limit

Range		
Min	**Max**	**Fact. Set**
Lt +0.5ºC	Ht -0.5ºC	10.0ºC

02	To set other parameters.	LCD will show Program Mode and the Set Temperature to go to other parameters, use up/ down keys.
Hold (◀PRG) key for 2 seconds and release.		
03	CHILLER SET TEMP.	Function: To set Chiller Set point.
To change Chiller Set Temp parameter,press the set key.		Use UP/DOWN keys to set desired range.

Range		
Min	**Max**	**Fact. Set**
Lt +0.5ºC	Ht -0.5ºC	10ºC

04	COMP. TIME DELAY	Function: To set compressor restart delay.
To change Comp Time Delay parameter,press the set key.		Use UP/DOWN keys to set desired range.

Contd.

Description of parameters and functions.

Sr.No.	Parameter (LCD Message)	Parameter setting method.

Range		
Min	**Max**	**Fact. Set**
0 Min	20 Min	3 Min

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.

05	DIFFERENTIAL	Function: To set temperature differential for compressor restart.
To change DIFFERENTIAL parameter,press the set key.		Use UP/DOWN keys to set desired range. **EXAMPLE:** If the set point is set at 10°C and differential is set as 2°C, then when the system reaches 10°C,the compressor will cutout. Since differential is 2°C, the compressor will cut in (restart) at 12°C (10°C + 2°C).

Range		
Min	**Max**	**Fact. Set**
1ºC	10ºC	2ºC

06	HIGH TEMP. ALARM	Function: To set maximum allowable high temperature limit and alarm.
To change HI Temp Alarm parameter,press the set key.		Use UP/DOWN keys to set desired range. Once set at a particular range, this will not allow the set point to go above this range and below HI Temp Alarm setting. DD°C:- Set Point

Range		
Min	**Max**	**Fact. Set**
DD°C	50ºC	50ºC

EXAMPLE: Setting this parameter at 25.0°C will not allow the set point to go above 25.0°C. Also if the temperature reaches or goes above 25.0°C the display will show High Temp. Alarm & at this point the alarm will activate.

Description of parameters and functions.

Sr.No.	Parameter (LCD Message)	Parameter setting method.
07	HT PWR ON DELAY	Function: To set Power on delay for Ht alarm.
To change Ht Pwr On Delay. parameter,press the set key.		Use UP/DOWN keys to set desired range.

Range		
Min	**Max**	**Fact. Set**
0 Min	20 Min	1 Min

08	LOW TEMP ALARM	Function: To set minimum allowable low temperature limit and alarm.
To change Low Temp Alarm Parameter, press the set key.		Use UP/DOWN keys to set desired range. EEºC - Set Point. AT°C- AFT set point.

Range		
Min	**Max**	**Fact. Set**
At+1ºC	EEºC	6ºC

09	AFT PROBE STATUS	Function: To enable or disable Antifreeze function.
To change AFT PROBE STATUS parameter, press the set key.		Use UP/DOWN keys to set desired range.

Range		
Min	**Max**	**Fact. Set**
Disable	Enable	Disable

10	AFT SET TEMP	Function: To set Antifreeze tripping point.
To change AFT SET TEMP. parameter, press the set key.		Use UP/DOWN keys to set desired range.

Contd.

Description of parameters and functions.

Sr.No.	Parameter (LCD Message)	Parameter setting method.

Range		
Min	**Max**	**Fact. Set**
-30ºC	Lt-1ºC	5ºC

EXAMPLE: If this parameter is set to 5ºC controller will trip the compressor on Antifreeze fault if the AFT sensor goes below 5ºC.

11	AFT DIFFERENTIAL	Function: To set fault resetting differential once it tripped of Aft set point.
To change the AFT Differential parameter, press the set key.		Use UP/DOWN keys to set desired range.

Range		
Min	**Max**	**Fact. Set**
1ºC	10ºC	2ºC

EXAMPLE: If the AFT set point is set at 5ºC and differential is set to 2ºC then after tripping on AFT fault controller will clear the AFT fault only when the AFT Temperature goes above 7ºC(5ºC+2ºC).

12	LIQ. PROBE CAL	Function: To set Main(Liquid) probe calibration.
To change Liq. Probe Cal. parameter, press the set key.		Use UP/DOWN keys to set desired range. During the course of time there may be a slight offset in the actual temperature and the temperature displayed.

Range		
Min	**Max**	**Fact. Set**
-10ºC	10ºC	0ºC

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

13	AFT PROBE CAL	Function: To set Antifreeze (Liquid) probe calibration.
To change AFT Probe Cal. parameter, press the set key.		Use UP/DOWN keys to set desired range. Setting Procedure same as Liq. Probe Cal.

Range		
Min	**Max**	**Fact. Set**
-10ºC	10ºC	0ºC

Description of parameters and functions.

Sr.No.	Parameter (LCD Message)	Parameter setting method.
14	FAULT SENS LOGIC	Function: To set tripping voltage of digital inputs .
To change Fault Sens Logic parameter, press the set key.		Use UP/DOWN keys to set desired range. 0v- Trip the compressor if fault i/p is 0v. 230V-Trip the compressor if fault i/p is 230Vac.

Range		
Min	**Max**	**Fact. Set**
0V	230 V	0V

15	WFS PWR ON DLY	Function: To set WFS trip sensing delay on power up.
To change WFS Pwr on Dly parameter,Press the set key.		Use UP/DOWN keys to set desired range. **EXAMPLE:**If this parameter is set at 30 seconds, the system will ignore low pressure alarm for 30 sec from compressor on.In this manner, a false alarm can be avoided due to low pressure at compressor start up.

Range		
Min	**Max**	**Fact. Set**
1 Sec	90 Sec	5 Sec

16	WFS NORMAL DLY	Function: To set WFS trip sensing delay.
To change WFS Normal Dly Parameter,press the set key.		Use UP/DOWN keys to set desired range.

Range		
Min	**Max**	**Fact. Set**
1 Sec	120 Sec	10 Sec

17	LP SENSING	Function: To set LP fault sensing delay on compressor on.
To change LP Sensing Dly parameter, press the set key.		Use UP/DOWN keys to set desired range.

Contd.

Description of parameters and functions.

Sr.No.	Parameter (LCD Message)	Parameter setting method.

Range		
Min	**Max**	**Fact. Set**
1 Sec	90 Sec	30 Sec

18	HP / AFT RST	Function: This parameter will set HP and AFT fault to Auto or Manual reset.
To change HP / AFT reset Parameter, press the set key.		Use UP/DOWN keys to set desired range. Manual= it sets the HP- AFT faults for manual reset. Auto= it sets the HP- AFT faults for auto reset.

Range		
Min	**Max**	**Fact. Set**
Manual	Auto	Auto

19	LP FAULT RESET	Function: This parameter will set LP fault to Auto or Manual reset.
To change LP Fault Reset Parameter, press the set key.		Use UP/DOWN keys to set desired range. Manual= it sets the LP fault for manual reset. Auto= it sets the LP fault for auto reset.

Range		
Min	**Max**	**Fact. Set**
Manual	Auto	Auto

20	LIQ LEVEL SENSOR	Function: This parameter enable / disables liquid level sensing.
To change Liq Level Sensor Parameter, press the set key.		Use UP/DOWN keys to set desired range. Disable= This parameter disables Liquid level sensing in the controller. Enable= This parameter enables Liquid level sensing in the controller.

Range		
Min	**Max**	**Fact. Set**
Disable	Enable	Disable

Description of parameters and functions.

Sr.No.	Parameter (LCD Message)	Parameter setting method.
21	SYSTEM AUTOSTART	Function: This parameter configures syatem to auto start or manual start on power on.
To change System Autostart Parameter, press the set key.		Use UP/DOWN keys to set desired range. If set to Manual start Press set key for 4 seconds to start the system.
Range		
Min	**Max** / **Fact. Set**	
Disable	Enable / Enable	
22	PUMP RUN LOGIC	Function: This parameter configures pump to keep always or on or off with compressor.
To change Pump Run Logic Parameter, press the set key.		Use UP/DOWN keys to set desired range. Always On= it sets the pump to always on mode. With Pump=In this case pump will switch on and off with compressor.
Range		
Min	**Max** / **Fact. Set**	
Always On	With Comp / With Comp	
23	PUMP POWERON DLY	Function: This parameter is used to set delay for pump to start at power on. This is applicable if the pump is running with compressor.
To change the Pump Poweron Dly parameter, press the set key.		Use UP/DOWN keys to set desired range. Example: if this delay is set to 20 seconds then at system start pump will start after 20 sec and even if compressor time delay is 3 mins . Ater this it will always start with compressor.
Range		
Min	**Max** / **Fact. Set**	
1 Sec	Comp Dly-1 / 30 Sec	

Description of parameters and functions.

Sr.No.	Parameter (LCD Message)	Parameter setting method.
24	RELAY3 LOGIC	Function: This parameter configures Relay3.
To change Aux. Relay Logic parameter, press the set key.		Use UP/DOWN keys to set desired range. **EXAMPLE:** If set to water sv, Relay3 will switch on incase of liquid level is below mid level.If set to Alarm, Realy3 will switch on for all faults .
Range		
Min	**Max** / **Fact. Set**	
Alarm	Water SV / Alarm	
25	CLEAR FAULT LOG	Function: This parameter is used to clear all fault history.
To change Clear Fault Log Parameter, press the set key.		Use UP/DOWN keys to set desired range.
Range		
Min	**Max** / **Fact. Set**	
Clear	Store / Store	
26	KEYPAD LOCK	Function: To lock keypad.
To change Keypad Lock parameter, press the set key.		Use UP/DOWN keys to set desired range. Enable = all parameters are locked to set values. Disable= Use can change the values.
Range		
Min	**Max** / **Fact. Set**	
Enable	Disable / Disable	
27	FACTORY SET	Function: Revert to factory set parameter.
To change Factory Set parameter, press the set key.		Use UP/DOWN keys to set desired range.

Contd.

Description of parameters and functions.

Sr.No.	Parameter (LCD Message)	Parameter setting method.
	Range	To restore default settings of the controller. When set to Enable, all parameters are programmed to factory settings. Used to debug setting related problems.
	Min / **Max** / **Fact. Set**	
	Disable / Enable / Disable	
28	COMP RUN HRS	Function: This parameter is used to display actual compressor working Hours.
	To change Comp Run Hrs Parameter, press the set key.	Use UP/DOWN keys to set desired range.
29	PUMP RUN HRS	Function: This parameter is used to display actual pump working Hours.
	To change Pump Run Hrs Parameter, press the set key.	Use UP/DOWN keys to set desired range.
23	SET - EXIT	Function : To end programming
	To change Exit Program Mode Parameter, press the set key.	Use UP/DOWN keys to set desired range. Once the SET key is pressed the control goes into the normal mode and displays the Temperature.

Press UP key for 2 seconds to view AFT temperature.
Press Mute key to mute the buzzer.
Press mute key for 4seconds to reset HP, LP, AFT faults in manual reset.
Press START/stop key to start or stop the system.

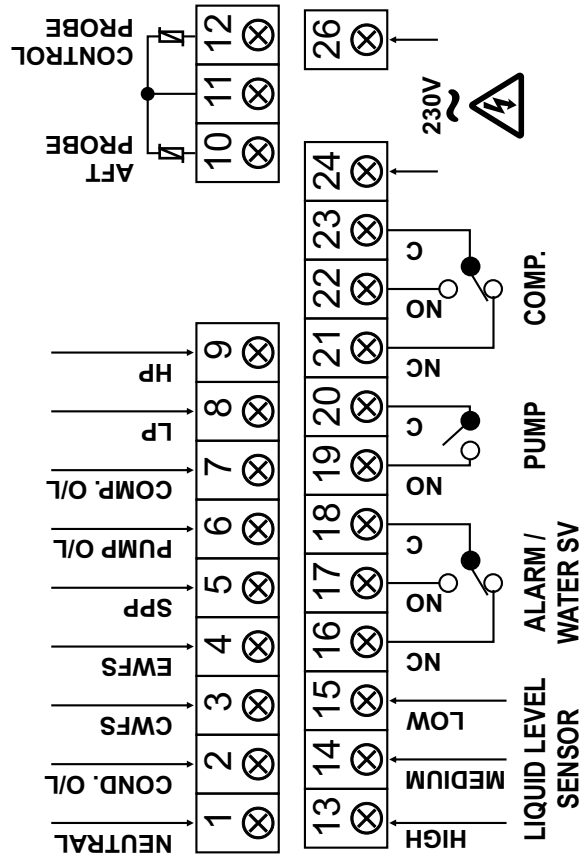
Fault Log

Press Down key to enter into Fault Log mode it will display last 10 faults.
Press up key to scroll through the all faults .
Press down key again to exit from fault log mode.

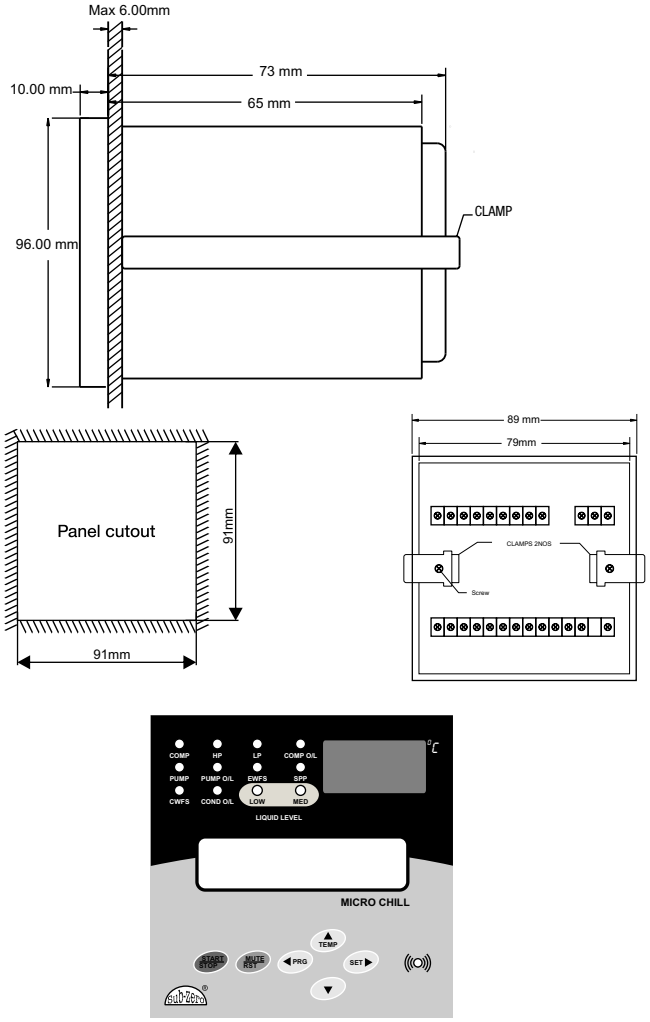
TECHNICAL DATA

Housing	White, ABS Plastic.
Dimensions	Front : 96x96 MM, Depth : 110 MM
Panel Cutout	91 X 91 MM
Mounting	Flush panel mounting with side clamps.
Connections	Screw terminal blocks. ≤ 2.5 sq mm one wire/ terminal only.
Display	16x2 LCD, 3X14mm (0.36") LED
Data storage	Non-volatile EEPROM memory.
Power input	230Vac +/-10%,50-60Hz. Others on request.
Operating temp.	5°C to 50°C (non-condensing).
Storage temp	-20°C to 70°C (non-condensing).
Input	NTC Probe, SZ-N75.
Digital Input	Potential (230Vac)
Range	-30°C to 50°C
Resolution	0.5°C
Accuracy	+/- 1°C
Probe tolerance	+/- 0.3°C at 25°C

CONNECTION DIAGRAM



PANEL CUTOUT & DIMENSIONS



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.

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.

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