

MEGACHILL PRO USER MANUAL




Controlled cooling, **always**
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INTRODUCTION

The "MEGA CHILL PRO" is a two compressor chiller controller . It can be used as a single compressor chiller controller by just some parameter settings. This controller integrates all the required functions of the chiller.

It is very user friendly due to the User Interface provided which gives all the parameters, messages, alarms etc on the screen. User gets the benefit of instant status of all equipments running. Also actual temperature of all probes and the set points can be viewed in the home screen itself.

HARDWARE DESCRIPTION

The basic system comprises of :
- USER INTERFACE
- INPUT/OUTPUT Board

WARNING

HP, LP, Antifreeze faults are by default in manual reset mode. They remain in manual reset mode until the user resets to normal conditions by pressing the CLEAR button. These can be changed to auto reset by changing P4 parameter. (These are in AUTO Reset mode)

CONTROL ACTIONS

Regulation of Chiller temperature based on the control sensor location.

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ACCESSORIES IN BOX

Items Included

NO.	ITEMS	QTY
1.	HMI	1
2.	I/O Board (SZ-30035)	1
3.	Communication Cable (2 Mtr)	1
4.	NTC Sensors (1.5 Mtr)	2
5.	24VDC SMPS (1 Amp)	1

CAUTION FOR YOUR SAFETY

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

Probe : To give 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 2.5 mm².

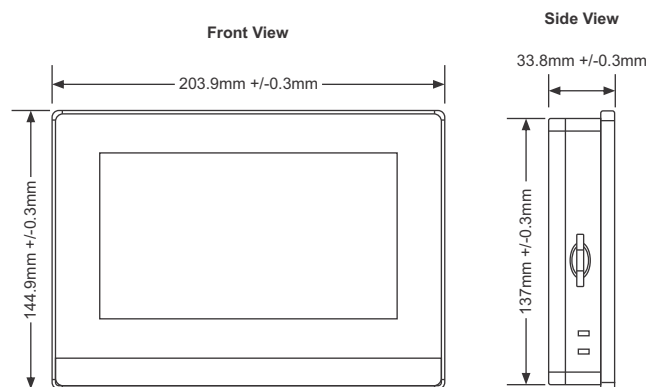
Maintenance

Cleaning : Clean the surface of the controller with a soft moist cloth. Do not use abrasive detergents, petrol, alcohol or solvents.

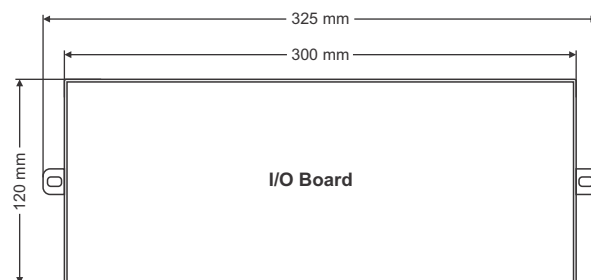
WARNING:

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

DIMENSIONS & PANEL CUTOUT



Panel Cutout (WxH):
192x138mm $\pm$ 1.5mm



TECHNICAL DETAILS

- Housing** : ABS Plastic (HMI).
- Dimensions** : Front : 203.9x144.5mm, Depth : 33.8mm (HMI)
I/O Board: 325x120mm
- Panel Cutout** : 192 X 138mm (HMI)
- Mounting** : Flush panel mounting with side clamps.
- Connections** : Screw terminal blocks.
 $\leq$ 2.5 sq mm one wire / terminal only.
- Display** : 7" HMI Touch Display
- Power input** : 24V ac/dc
- Operating temp.** : 5°C to 50°C (non-condensing).
- Storage temp** : -20°C to 70°C (non-condensing).
- Input** : NTC Probe, SZ-T75.
- Digital Input** : Potential (230Vac).
- ALL Relay** : 5A / 250VAC
- Range** : -30°C to 80°C.
- Resolution** : 0.1°C.
- Accuracy** : $\pm$ 1°C.
- Probe tolerance at 25°C** : $\pm$ 0.3°C

KEY FUNCTIONS

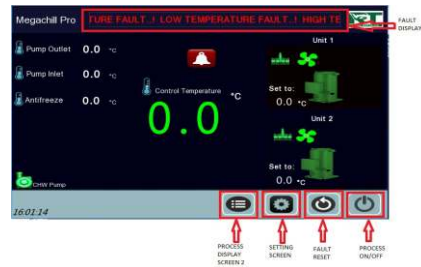
Button	Function	Available in
	Used to select Process display screen2	Process display screen 1
	Used to select Setting screen	Process display screen 1
	Used to reset Fault	Process display screen 1
	Used to switch ON/OFF the Process	Process display screen 1
	Used to switch ON/OFF the Process	Process display screen 2
	Used to reset Fault - touch and hold 1 sec	Process display screen 2
	Used to select setting screen	Process display screen 2
	Used to switch screen to Process display screen 1	Process display screen 2
	Used to enter into Parameters screens	Settings screen
	Used to enter into data logging screen	Settings screen
	Used to enter into Alarm logs screen	Settings screen
	Used to select User Login screen	Settings screen
	Used to select Status screen	Settings screen
	Used to enter into Configuration screen	Settings screen
	Used to enter into System settings screen (Time & Date , User privilege)	Settings screen
	Used to select Log out screen	Settings screen
	Used to go back to Process display screen 1	Settings screen
	Used to select Parameter screen 1	Parameter screen

	Used to select Parameter screen 2	Parameter screen
	Used to select Parameter screen 3	Parameter screen
	Used to select Parameter screen 4	Parameter screen
	Used to select Parameter screen 5	Parameter screen
	Used to go back to Settings screen	Parameter screen
	Used to Start/Pause data logging	Datalogger screen
	Used to clear all logged data	Datalogger screen
	Used to copy all logged data to USB (FAT32)	Datalogger screen
	Used to go back to Settings screen	Datalogger screen
	Used to go back to Configuration screen / Settings	Configuration screen
	Used to clear Compressor 1 run hours	Configuration screen
	Used to go back to previous screen	Configuration screen
	Used to go to next screen	Configuration screen
	Used to go to Use privilege screen	System settings screen
	Used to go back to previous screen	System setting (Time & date)
	Used to go to 'Add user privilege' screen	User privilege screen
	Used to go to 'Delete user privilege' screen	User privilege screen
	Used to go to 'Change password' screen	User privilege screen
	Used to quit 'User privilege' screen	User privilege screen

USER INTERFACE

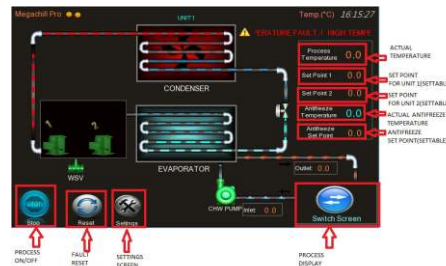
PROCESS DISPLAY SCREEN 1

This is the home page of Megachill Pro. It shows all four probe temperatures as well as Unit-1 & 2 set points. Fault if present will be displayed on the top of the screen. This screen also shows the current status of all equipments running. The buttons in the screen allows the user to do the following functions : Process ON/OFF, Fault reset and to view Menu (settings) and Process display screen 2.



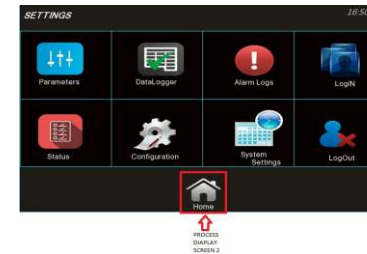
PROCESS DISPLAY SCREEN 2

This screen shows the actual temperature of Process & Antifreeze, set point of UNIT 1 /UNIT 2 / Antifreeze (all three settable). Fault if present will be displayed on the top of the screen. It also shows current status of all equipments running. The buttons in the screen allows the user to do the following functions : Process ON/OFF, Fault reset (hold 1sec) and to view Menu (settings) and to switch screen to Process display screen 1.



MENU SCREEN (Settings)

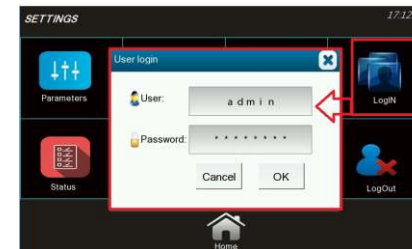
Menu can be selected by using 'Settings screen' button  or  available in Process display screen 1 & 2. Megachill Pro Menu is shown below. User must first Login to access some of the screens from the Menu.



LOGIN SCREEN

When user selects Login button the below given window will appear on screen. After entering correct User name & Password touch OK. One window will appear showing the operation is succeeded as given below. Once the user is logged in screens like Parameters, Configuration, System settings can be accessed.

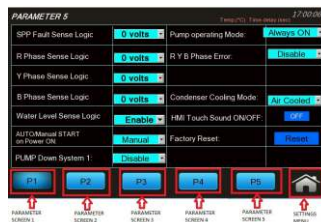
Default:
User : admin
Password : 888888



There are 5 Parameter screens with all the settable parameters required to be set before process run. User must be logged to access these screens. For default values, select Factory Reset in Parameter screen 5 to Reset.

User defined values can be set to parameters by using the numerical or by the selectable drop down as given against each parameter name.

Example: The drop down selection for HP1 Fault Reset Mode can be changed like this: Auto Mode means the HP fault will be reset automatically after clearing HP. Similar for other parameters also.

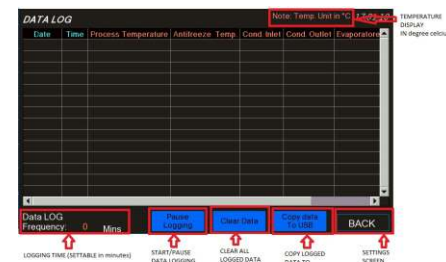


Example : The numeric value of Unit 1 set point can be changed as given. Other parameters value can be changed like this.



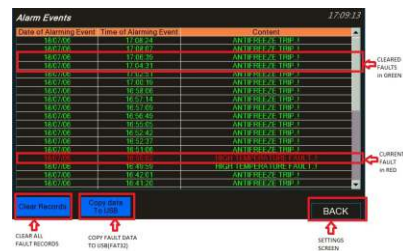
This screen shows the logs which can be turned ON/OFF and the data logging time is settable. The logged data can be cleared also. To Copy Data to USB, the USB must be of FAT32 format. In the log temperature is displayed in celsius. User can go back to setting screen using 'BACK' button.

The Data log frequency can be changed as given. Just select the number and the window given will appear on screen. Min & Max value are given on this window. Change value and select Enter.



ALARM LOG SCREEN

This screen shows the logs of Alarms which are currently ON or have been cleared. The cleared faults will be shown in Green and the current fault will be in Red. Buttons are given for clearing all fault records and for copying data to USB (FAT 32). User can go back to setting screen using 'BACK' button.



STATUS SCREEN

This screen shows the current status of all digital Inputs & Outputs. Faults in the digital inputs are shown red. In addition water level is also displayed in this screen.

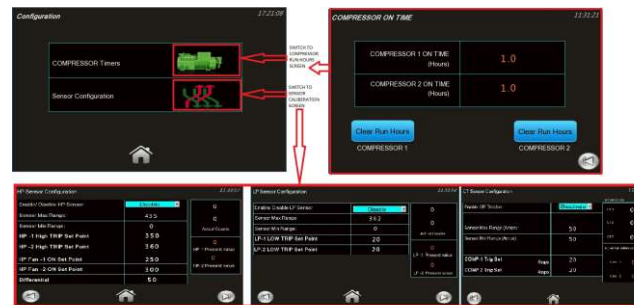


CONFIGURATION SCREEN

In the main screen of Configuration two selections are given. One for Compressor timers and another for Sensor configuration. By selecting 'Compressor Timers' user can change Compressor1 & 2 ON time. Also Compressor run hours can be cleared from this screen.

The Sensor configuration opens up to three more screens. HP, LP & CT sensor configuration screens.

User can enable / disable all three sensors through respective screens. Other related parameters of each can be varied at user's will. From each sensor configuration screen the user can go back to main configuration screen.



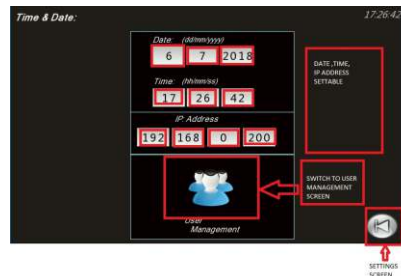
HP / LP/ CT parameter values can be changed by selecting the corresponding numerical or selecting value from drop down list.

Example: HP sensor Min value can be changed by selecting the numeric adjacent to it. A window as shown below will appear on screen. Min & Max value are shown in that. Set the required value there and Enter.



SYSTEM SETTINGS SCREEN

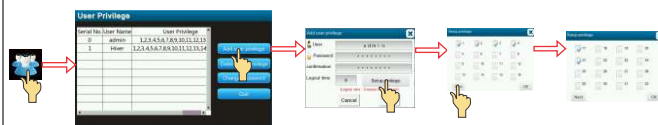
This screen allows the user to set Time, Date and IP address of User Interface and edit the user privileges.



USER PRIVILEGE

On selecting User Management 'User Privilege' window will appear on screen. From this window user can add or delete privileges for users. Also password for login can be changed from this window.

Example : Select 'Add User Privilege' and the below window will appear on screen.



Enter the correct User name & Password then select 'Setup Privilege'. Here user can select levels from 1 to 32 which gives permission for certain key functions. 'Operation succeeded' window will appear on screen after successful entry.

PARAMETER LIST

PARAMETER SETTINGS

User defined values can be set to parameters by using the numerical or by the selectable drop down as given against each parameter name present in the screens.

PARAMETER SCREEN 1

Parameter & Functions	Min	Max	Fac.
1 Control Probe Calibration It may so happen that during the course of time there may be a slight offset in the actual temperature and the temperature shown. For example if the actual temperature is 20°C and the temperature on the controller shows 22 °C, set this parameter to -2 °C and once out of this mode, the temperature will display 20°C (22-2oC)	-10.0°C	-10.0°C	0.0°C
2 AFT Probe Calibration Settings as in Control Probe Calibration.	-10.0°C	-10.0°C	0.0°C
3 UNIT 1 set point To set Compressor 1 relay set point (same for Heater).	-40.0°C	90.0°C	10.0°C
4 UNIT 1 differential To set the differential for compressor 1 relay ON condition (same for Heater).	1.0°C	10.0°C	2.0°C
5 UNIT 2 set point To set Compressor 2 relay set point.	-40.0°C	90.0°C	15.0°C
6 UNIT 2 differential To set the differential for compressor 2 relay ON condition.	0.0°C	50.0°C	2.0°C
7 High Temperature alarm To set maximum allowable high temperature limit. Example: If this parameter is set to 50°C and the temperature reaches or goes above 50°C, "High Temperature fault" will be displayed on the screen indicating that the temperature has reached or gone above the value set in this parameter.	-40.0°C	90.0°C	35.0°C

8 Low Temperature alarm To set minimum allowable low temperature limit. If this parameter is set to -100C and the temperature reaches or goes below -100C, the screens will show "Low temperature fault" indicating that the temperature has reached or gone below the value set in this parameter	-40.0°C	90.0°C	5.0°C
9 Antifreeze mode To activate Antifreeze probe function. Activate : enables Antifreeze function, Deactivate: disables the function.	Activate	Deactivate	-
10 Antifreeze Set Point Antifreeze set point for AFT probe	-30.0°C	5.0°C	4.0°C
11 Antifreeze Differential To set the differential for Antifreeze probe	1.0°C	10.0°C	2.0°C
12 Compressor START delay To set time delay for Compressor restart. Example: If this parameter is set to 3MIN, then after cutting off the compressor at set temperature compressor will not restart for a minimum of 3min. This time delay is also active at power ON of the system.	20 sec	600 sec	180 sec
13 HT/LT Power ON delay To set time delay for HT/LT at power ON. Example: If this parameter is set to 1200 sec, once the controller is powered ON, HT/LT fault indication will be activated after 1200 sec.	0 sec	6000 sec	1200 sec
14 Heating/Cooling Mode To select controller for Heating or Cooling	Cooling	Heating	-

PARAMETER SCREEN 2

Parameter & Functions	Min	Max	Fac.
15 HP Transmitter	Enable	Disable	-
16 HP 1 Fault Sense Logic 0V= fault at 0V, 230V= fault at 230V, Disable= disable fault sensing	0 volts	Disable	230 volts

17 HP 1 Fault Reset Mode If set to Auto, alarm will be cleared automatically once the HP1 fault is cleared and if set to Manual it will be cleared only when it is manually reset.	Auto Mode	Manual Mode	Auto Mode
18 LP Transmitter	Enable	Disable	-
19 LP1 Fault Sense Logic 0V= fault at 0V, 230V= fault at 230V, Disable= disable fault sensing	0 volts	Disable	230 volts
20 LP 1 Fault Reset Mode If set to Auto, alarm will be cleared automatically once the LP1 fault is cleared and if set to Manual it will be cleared only when it is manually reset.	Auto Mode	Manual Mode	Auto Mode
21 LP 1/HP 1 Fault Alarm delay To set time delay for alarm against LP1/HP1 faults. If this parameter is set at 30 seconds, the system will activate the low pressure switch alarm only if the error persists for or more than 30 seconds. In this manner a false alarm can be avoided due to low pressure at compressor start up.	5 sec	120 sec	40 sec
22 Comp 1 O/L Sense Logic 0V= fault at 0V, 230V= fault at 230V, Disable= disable fault sensing	0 volts	Disable	230 volts
23 Comp 1 O/L Fault Reset Mode If set to Auto, alarm will be cleared automatically once the Comp1 O/L fault is cleared and if set to Manual it will be cleared only when it is manually reset.	Auto Mode	Manual Mode	Auto Mode
24 Pump O/L Fault Sense Logic 0V= fault at 0V, 230V= fault at 230V, Disable= disable fault sensing	0 volts	Disable	230 volts
25 Pump O/L Fault Reset Mode If set to Auto, alarm will be cleared automatically once the Pump O/L fault is cleared and if set to Manual it will be cleared only when it is manually reset.	Auto Mode	Manual Mode	Auto Mode
26 Pump O/L no. of retrials This sets the number of retrials to be taken before acknowledging the Pump O/L fault and switching OFF the Pump.	0	5	3

27 Compressor selection 2 Comp= Controller will work as Two compressor chiller controller 1 Comp= Controller will work as Single compressor chiller controller	2 Comp	1 Comp	-
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PARAMETER SCREEN 3

Parameter & Functions	Min	Max	Fac.
28 HP 2 Fault Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	-
29 HP 2 Fault Reset Mode If set to Auto, alarm will be cleared automatically once the HP2 fault is cleared and if set to Manual it will be cleared only when it is manually reset.	Auto Mode	Manual Mode	-
30 LP2 Fault Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	-
31 LP 2 Fault Reset Mode If set to Auto, alarm will be cleared automatically once the LP2 fault is cleared and if set to Manual it will be cleared only when it is manually reset.	Auto Mode	Manual Mode	-
32 Comp 2 O/L Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	-
33 Comp 2 O/L Fault Reset Mode If set to Auto, alarm will be cleared automatically once the Comp2 O/L fault is cleared and if set to Manual it will be cleared only when it is manually reset.	Auto Mode	Manual Mode	-
34 HP no. of retrials This sets the number of retrials to be taken before acknowledging the HP fault and switching OFF the Compressor.	0	5	3
35 LP no. of retrials This sets the number of retrials to be taken before acknowledging the LP fault and switching OFF the Compressor.	0	5	3
36 Comp O/L no. of retrials This sets the number of retrials to be taken before acknowledging the Comp O/L fault and switching OFF the Compressor.	0	5	3

37 Compressor selection 2 Comp= Controller will work as Two compressor chiller controller 1 Comp= Controller will work as Single compressor chiller controller	0 sec	50 sec	10 sec
38 Comp Swap Selection	Both unit	Unit 2	Both unit
39 Comp Swap Interval	0.0 Hrs	99999.9 Hrs	4.0 Hrs

PARAMETER SCREEN 4

Parameter & Functions	Min	Max	Fac.
40 Cond-1 O/L Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	230 volts
41 Cond-2 O/L Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	-
42 Cond O/L Fault Reset Mode If set to Auto, alarm will be cleared automatically once the Cond O/L fault is cleared and if set to Manual it will be cleared only when it is manually reset.	Auto Mode	Manual Mode	Auto Mode
43 OSS1 Fault Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	230 volts
44 OSS2 Fault Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	-
45 AFT Fault Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	230 volts
46 OSS & AFT Fault Reset Mode If set to Auto, alarm will be cleared automatically once the OSS & AFT fault is cleared and if set to Manual it will be cleared only when it is manually reset	Auto Mode	Manual Mode	Auto Mode
47 CWFS Fault Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	230 volts
48 CWFS Alarm Delay To set time delay for alarm against CWFS fault.	5 sec	120 sec	5 sec

49 EWFS Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	230 volts
50 EWFS Alarm Delay To set time delay for alarm against EWFS fault.	5 sec	120 sec	5 sec
51 HP-AFT-OSS-OL Fault Delay To set time delay for alarm against HP/ AFT/OSS/ OL fault.	5 sec	20 sec	5 sec

PARAMETER SCREEN 5

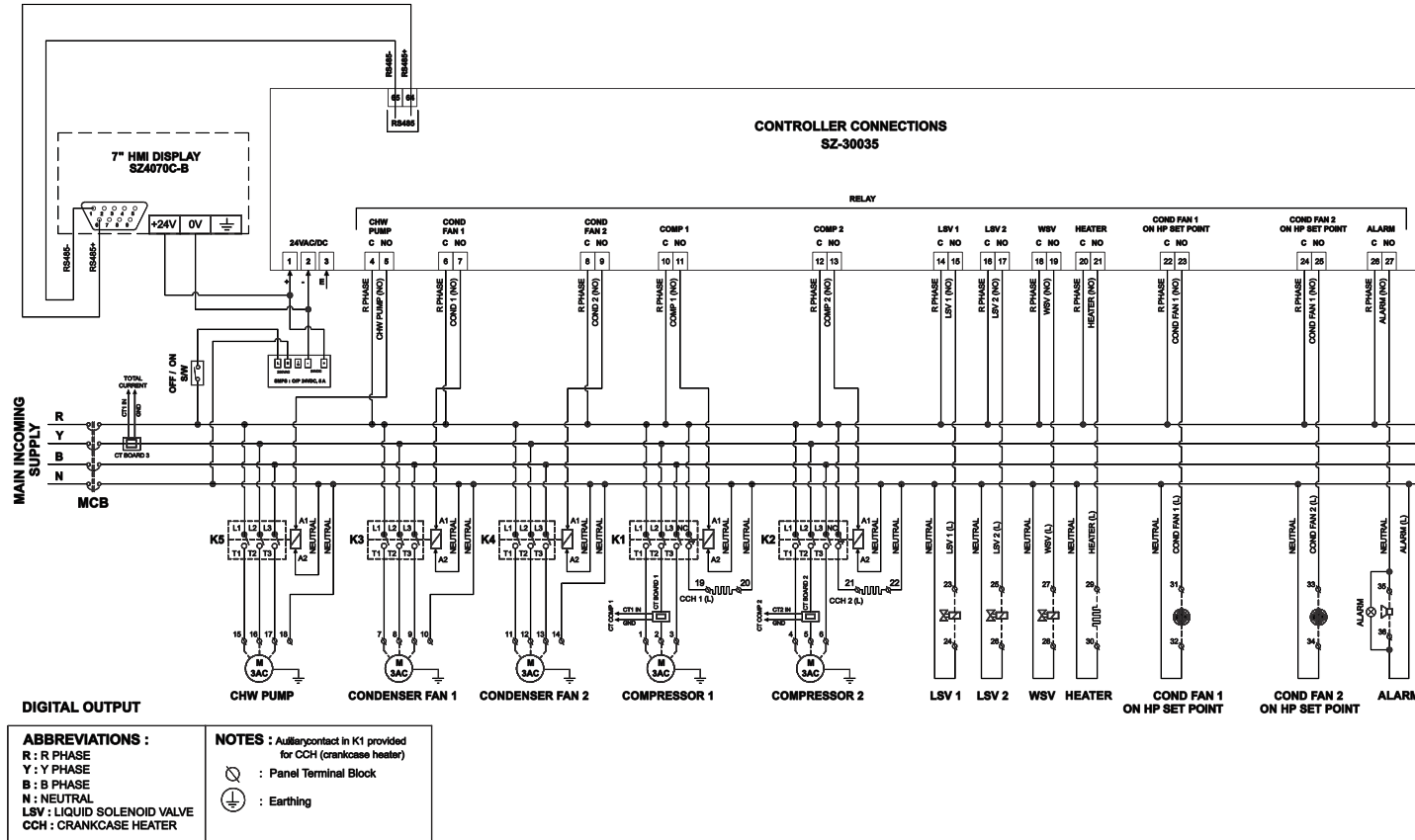
Parameter & Functions	Min	Max	Fac.
52 SPP Fault Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	230 volts
53 R Phase Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	0 volts
54 Y Phase Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	0 volts
55 B Phase Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	0 volts	Disable	0 volts
56 Water Level Sense Logic 0V= fault at 0V, 230V= fault at 230V,Disable= disable fault sensing	Enable	Disable	Enable
57 AUTO/Manual START on Power ON Manual = Manual start on Power ON. AUTO =Auto start on Power ON.	Manual	Auto	Manual
58 Pump Down System 1 This parameter is used to enable or disable pump down procedure at every refrigeration cycle.	Disable	Enable	Disable
59 Pump operating Mode It defines Pump working logic.	Always ON	with compressor	
60 RYB Phase error If set to disable system will ignore R Y B errors.	Disable	Enable	Enable
61 Condenser Cooling Mode	Air cooled	Water cooled	Air cooled

62 HMI Touch Sound ON/OFF	ON/OFF
63 Factory Reset All parameters are set to Factory set values when RESETTING done.	RESET

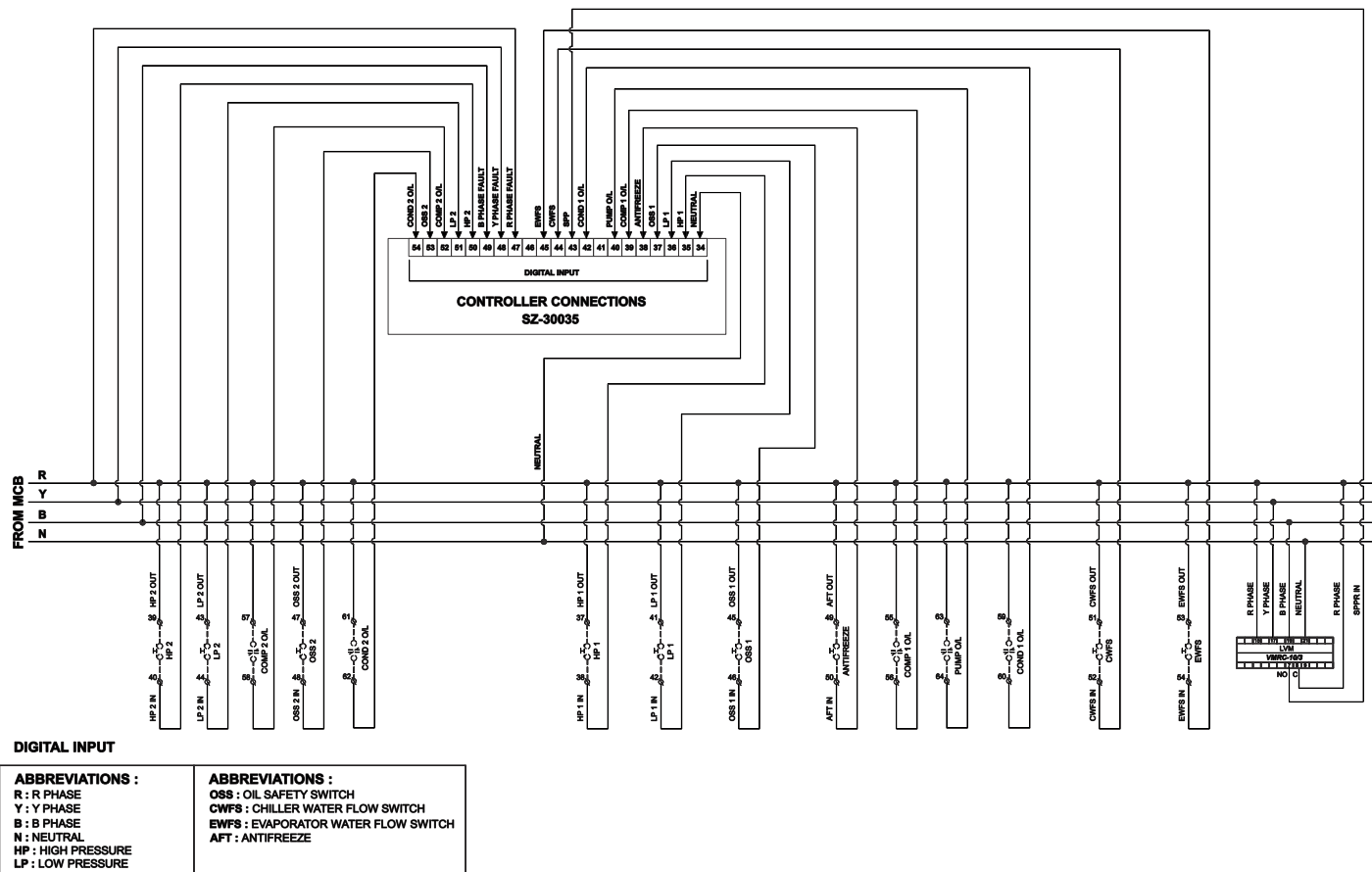
TROUBLE SHOOTING

- No temperature or operation on Display: Check for communication cable.
- IO board do not start or show any LED: Check for 24 VDC supply. Check for the fuse connected.

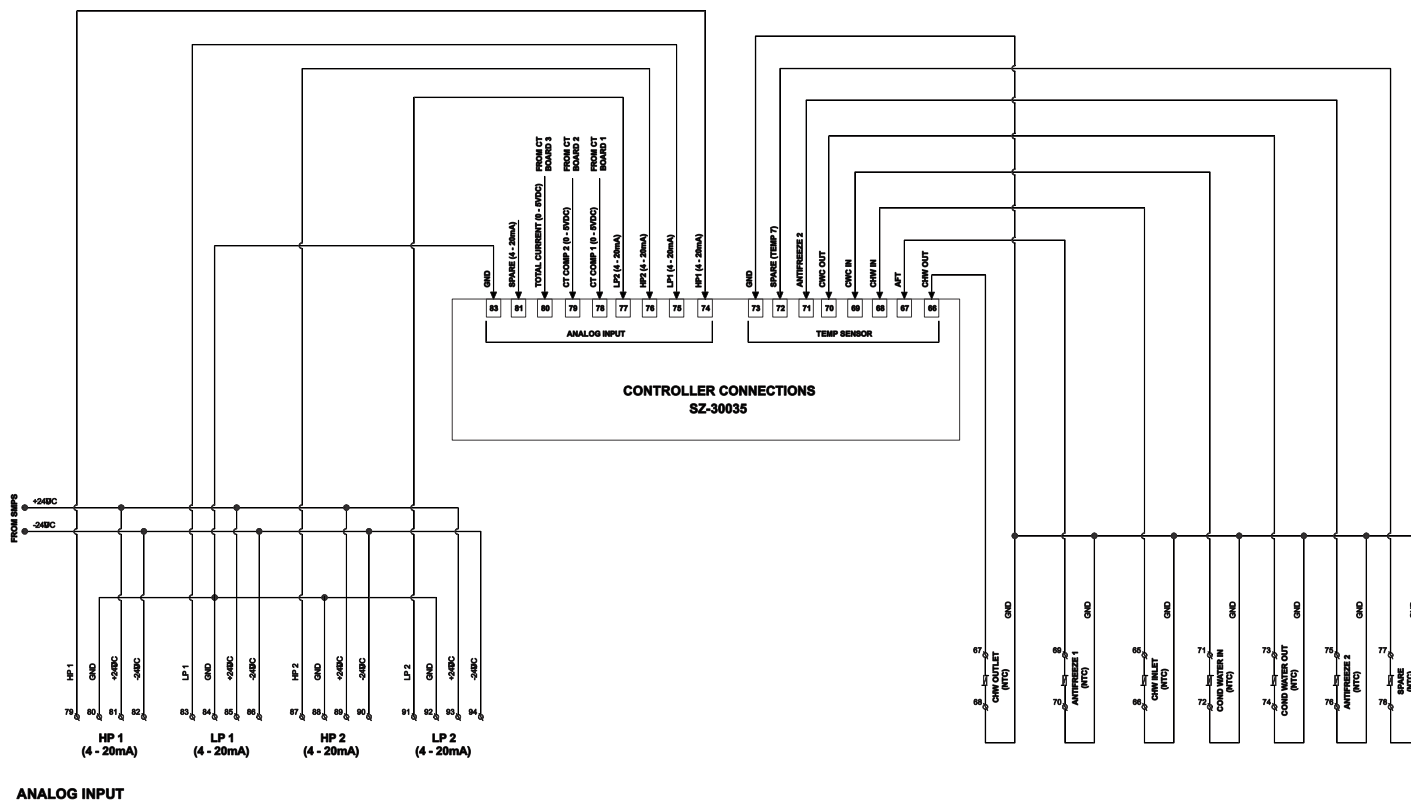
WIRING DIAGRAM



WIRING DIAGRAM



WIRING DIAGRAM



ANALOG INPUT

DISCLAIMER & WARRANTY

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REV0 - 20.02.2021

OUR OTHER PRODUCTS**INDIA**

Cold Room Controller
Two Compressors Controller
Heating Controller
Humidity Controller
Pressure Controller



Ball Valves
Globe Valves
Hand Valves
Flow Switches
Solenoid Valves