1. GENERAL WARNING

1.1 PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described here under. It cannot be used as safety device.
- Check the application limit before proceeding.

⚠ 1.2 Safety Precaution

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- Fit the probe where it is not accessible by the End User. The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor.
- Consider the maximum current which can be applied to each relay.
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.

2. GENERAL DESCRIPTION

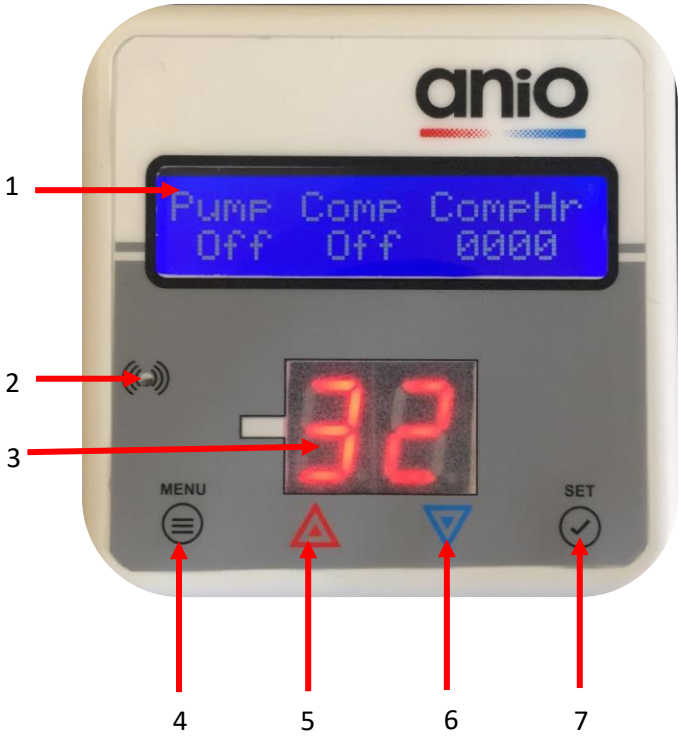
Three Phase Chiller/Heat pump Controller is a single unit for three phase voltage, current and refrigeration process. Capable of power monitoring (HV/LV/OL) and process temperature and protection (HP/LP/FS).

3. FEATUER & SPECIFICATION

- SPP and Phase Reverse Protection
- Phase Voltage Display
- Antifreeze Temperature Compensation*
- Cooling Transfer Function*
- Water/Oil/Coolant Temperature Display
- Block day mode
- HP and LP Protection
- Low Voltage Stabilization Sensing
- HV/LV protection
- Over Load Protection
- HT/LT Protection
- On Site Settable Parameter
- Suction and Discharge Temp sensing
- LCD Display
- Water temp lower limit lock
- Leakage Proof sensor
- Sensor Faulty alarm
- Password Protected Parameter

Feature	Specification
Display	2 Line LCD
Voltage Display	Line Voltage with LV, HV, SPP fault Trip & Display
Current Display	Three Phase Current with O/L fault Trip & Display
Temperature Display	7 Segment 0.56” LED Display
Parameter Display	Comp. ON/OFF, Pump ON/OFF, Comp running Hr.
Power Supply	230 V AC 50 Hz
Temperature Probe NTC	
Water Temp:	-10°C to 99°C
Antifreeze Temp:	-10°C to 99°C
Suction Temp:	-10°C to 99°C (Optional)
Digital Input	
HP	Potential Free NO/NC Type
LP	Potential Free NO/NC Type
Flow Switch	Potential Free NO/NC Type
Relay Output	
Compressor	7A
Pump	7A
Alarm Relay (Trip Relay)	5A
Solenoid	5A
Indication	
Fault indication with LED and Buzzer	Yes

4. DISPLAY



Sl. No.	Item	Function
1	2 Line LCD	Display all running parameter and fault message
2	LED Buzzer	RED LED for fault indication with buzzer beep
3	7 Segment Display	Display Temp
4	Menu Button	To enter menu screen to change parameter
5	Increment Button	To increase the parameter value in Menu screen and to scroll the screen during normal running.
6	Decrement Button	To decrease the parameter value in Menu screen and to scroll the screen during normal running.
7	Enter Button	To go to next parameter in Menu screen and Reset during fault

5. DISPLAY CONTENT

Sl No.	Parameter			Details
1	Water Temp 32			Display Water Temp on 7 Segment.
2	R-N	Y-N	B-N	Display Phase voltage
	230	230	230	
3	iR	Pmp	iY	Display R and Y phase Pump current.
	10.0		10.0	
4	iR	Cmp	iY	Display R and Y phase Compressor current
	10.0		10.0	
5	ScT	AfT	DisT	Display Anti-Freeze and Suction, Discharge Temp. (If Suction and Discharge sensor connected)
	22.2	22.2	22.2	
		22.2		
7	Pump	Comp	Comp .ON Hr	Display Pump and Compressor ON/OFF condition and Comp ON Hr.
	ON	ON	1234	
	1234			

Sl No.	Model Available	Description
1	AN-30-P	Panel Mount
2	AN-30-PTP	Panel Mount with Trip Relay
3	AN-30-W	Wall Mount
4	AN-30-WTP	Wall Mount with Trip Relay

5. PARAMETER

SR No.	Parameter	UOM	Default	Min	Max
	User Parameter				
1	Wtr.Temp Set (Chiller)	°C	15	AFT Set Point	40
	Wtr.Temp Set (Ht Pump)	°C	20	20	AhT Set Point
2	Wtr. Temp Diff	°C	3	0	10
3	Screen Auto scroll	-	NO	NO	YES
	Factory Parameter				
4	Application Type	-	Chiller	Chiller	Heat Pump
5	Pump Over Load (Per Phase)	A	4	1	30
6	Comp. Over Load (Per Phase)	A	15	4	30
7	Low Voltage Cut	V	370	350	400
8	High Voltage Cut	V	480	400	500
9	Water Temp Offset	°C	10	0	20
10	Antifreeze Temp. Set point (Chiller)	°C	10	0	20
	Antifreeze Temp. Set point (Ht Pump)	°C	60	45	80
11	Antifreeze Temp. Offset	°C	10	0	20
12	Flow Switch Type	NO/NC	NO	NO	NC
13	HP Switch Type	NO/NC	NO	NO	NC
14	LP Switch Type	NO/NC	NO	NO	NC
15	Pump ON Delay	Sec	60	1	240
16	Compressor ON Delay	Sec	60	1	240
17	Flow Switch Sense Delay	Sec	10	1	100
18	Discharge Temp Set	°C	90	50	105
19	Discharge Temp Offset	°C	10	0	20
20	Suction Temp Set	°C	5	0	50
21	Suction Temp Offset	°C	10	0	20
22	Pump always ON	-	NO	YES	NO
23	Pump OFF Delay	Sec	10	0	240
24	Low Temp Limit	°C	10	-20	99
25	High Temp Limit	°C	40	0	99
26	Temp. Control For?	-	Water	Oil	Coolant

User Parameter Setting

Procedure-

a. Press menu key
b. Enter user password (default password (***)
c. Press Enter key to see and change parameter

6. PARAMETER SETTING

Sl. No.	Parameter	Min	Max	Default	
	Water Temp Set (Chiller)				**Function**: To set the compressor turn OFF point at water temperature set point.
01	Wtr Set Point	50°C		15°C	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.

Sl. No.	Parameter	Min	Max	Default	
	Water Temp Set (Heat Pump)				**Function**: To set the compressor turn OFF point at water temperature set point.
01	20°C	50°C		60°C	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.

Sl. No.	Parameter	Min	Max	Default	
	Water Temp Differential				**Function**: To set the compressor turn ON point at water temperature increment from water temp set point.
02	0°C	10°C		03°C	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.

Sl. No.	Parameter	Min	Max	Default	
	Screen Auto Scroll				**Function**: To set the screen display auto scroll ON/OFF.
03	Yes	NO		NO	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.

Factory Parameter Setting

Procedure-

d. Press menu key
e. Enter user password (default password (***)
f. Press Enter key to see and change parameter

Sl. No.	Parameter: **Application Type**			**Function**: To set the controller application type.
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
04	Chiller	Heat Pump	Chiller	

Sl. No.	Parameter: **Pump Over Load**			**Function**: To set per phase Pump over load current trip limit.
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
05	1 A	30 A	4 A	

Sl. No.	Parameter: **Comp Over Load**			**Function**: To set per phase Compressor over load current trip limit.
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
06	1 A	30 A	10 A	

Sl. No.	Parameter: **Low Voltage**			**Function**: To set the Low voltage (Line to Line) trip limit.
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
07	300 V	400 V	370 V	

Sl. No.	Parameter: **High Voltage**			**Function**: To set the high voltage (Line to Line) trip limit.
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
08	440 V	500 V	480 V	

Sl. No.	Parameter: **Water Temp. Offset**			**Function**: To set the on-site water temperature sensor offset drift.
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
09	0°C	20°C	10°C	

Note-Please consider 10°C as center point and to compensate -1 set it to 9°C and for +1 set it to 11°C

Sl. No.	Parameter			**Function**: To set the AFT sensor cut off set point. (if Chiller Application Selected)
	AFT set Point			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
10	0°C	20°C	10°C	

Sl. No.	Parameter			**Function**: To set the Anti-Heat sensor cut off set point. (if Heat Pump Application Selected)
	AhT set Point			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
10	40°C	85°C	60°C	

Sl. No.	Parameter			**Function**: To set the on-site AFT sensor offset drift.
	AFT Temp. Offset			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
11	0°C	20°C	10°C	

Note-Please consider 10°C as center point and to compensate -1 set it to 9°C and for +1 set it to 11°C

Sl. No.	Parameter			**Function**: To set the Flow switch type.
	Flow Switch Type			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
12	NO	NC	NO	

Sl. No.	Parameter			**Function**: To set the HP switch type.
	HP Switch Type			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
13	NO	NC	NO	

Sl. No.	Parameter			**Function**: To set the LP switch type.
	LP Switch Type			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
14	NO	NC	NO	

Sl. No.	Parameter			**Function**: To set the Pump ON Delay.
	Pump ON Delay			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
15	NO	NC	NO	

Sl. No.	Parameter			**Function:** To set the Compressor ON Delay
	Compressor ON Delay			
	Min	Max	Default	**Procedure:** In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
16	1 Sec	240 Sec	10 Sec	

Sl. No.	Parameter			**Function**: To set the Flow switch sensing delay after Pump ON during starting.
	Flow Switch Sens Delay			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
17	1 Sec	100 Sec	10 Sec	

Sl. No.	Parameter			**Function**: To set the Discharge Temperature cut off point
	Discharge Temp. set			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
18	50°C	105°C	80°C	

Sl. No.	Parameter			**Function**: To set the on-site Discharge sensor offset.
	Discharge Temp. Offset			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
19	0°C	20°C	10°C	

Sl. No.	Parameter			**Function**: To set the Low limit of Suction Temperature cut off point.
	Suction Temp. set			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
20	0°C	50°C	5°C	

Sl. No.	Parameter			**Function**: To set the on-site Suction temperature sensor offset.
	Suction Temp. Offset			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
21	0°C	20°C	10°C	

Sl. No.	Parameter			**Function**: To set the Pump always ON (YES or NO) for continuous priming.
	Pump Always ON			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
22	Yes	NO	NO	

Sl. No.	Parameter			**Function**: To set the Pump Off delay if Pump Always ON is NO for delay time after compressor Off and Water Temp reach.
	Pump Off Delay			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
23	0 Sec	240 Sec	10 Sec	

Sl. No.	Parameter			**Function**: To set the Low Temp limit for protection purpose
	Low Temp Limit			
	Min	Max	Default	**Procedure**: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
24	0°C	Wtr Set Temp-1°C	0°C	

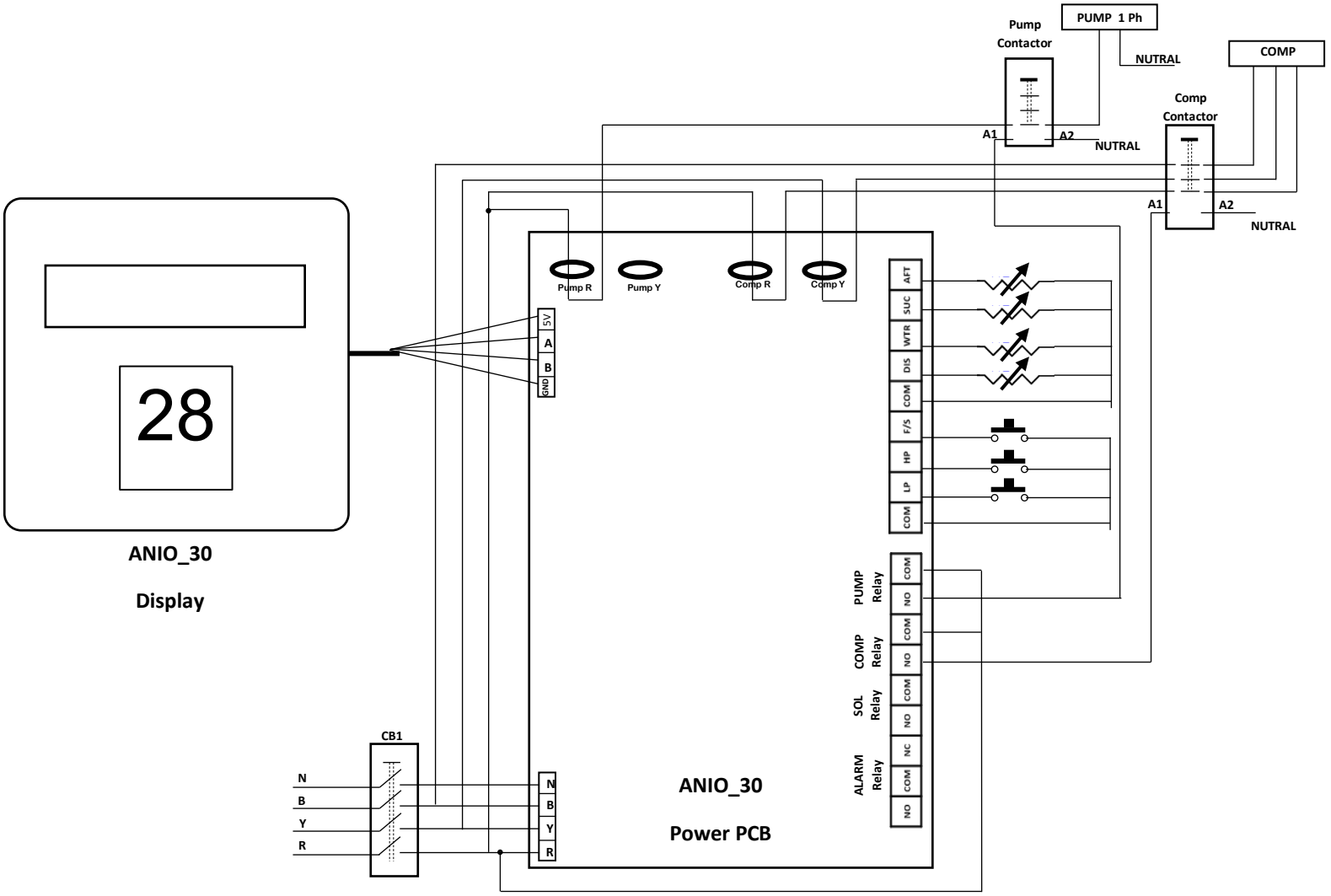
Sl. No.	Parameter			Function: To set the High Temp limit for protection purpose
	High Temp Limit			
	Min	Max	Default	Procedure: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
25	Wtr Temp Diff+2°C	40°C	18°C	

Sl. No.	Parameter			Function: To set the Temp Display for Water/Oil/Coolant.
	Temp. Control For?			
	Min	Max	Default	Procedure: In parameter screen press Up/Down key to increase/decrease value, then press Enter Key to save and moving to next parameter.
26	Oil	Coolant	Water	

7. Error Message

Sl. No.	Error Message	Description	Reset Option
1	Water Sensor Faulty	Water Temperature sensor not working	Manual
2	Voltage NOT OK	Input Voltage out of specification	Auto
3	Over Load	Total Load Current more than load current set limit.	Manual
4	Flow Switch Fault	Flow Switch trip.	Manual
5	HP Fault	HP Trip	Manual
6	LP Fault	LP Trip	Manual
7	Suc Temp Fault	Suction Temperature reached below to set limit	Manual
8	Dis Temp Fault	Discharge temperature reached above to set limit.	Manual
9	Wtr Snsr Opn/Shrt	Water Temperature sensor short/Open	Manual
10	AFT Snsr Opn/Shrt	AFT sensor short/Open	Manual
11	Dis Snsr Opn/Shrt	Discharge Temperature sensor short/Open	Manual
12	Suc Snsr Opn/Shrt	Suction Temperature sensor short/Open	Manual
13	Low Voltage Fault	Low Voltage Trip	Auto
14	Phase Seq NOT OK	RYB Phase sequence NO OK	Manual
15	Phase Loss	Any one phase of RYB is below 10 V	Auto
16	Low Temp Fault	Reaching low temp limit	Auto
17	High Temp Fault	Reaching high temp limit	Auto

8. Electrical Connection



Line Diagram ANIO_30

Contact Us

M/S Saayan Technologies, Pune

www.saayan.in

mob: +91-9632099005

niranjan.sahoo@saayan.in