sub-Zero®
INDIA
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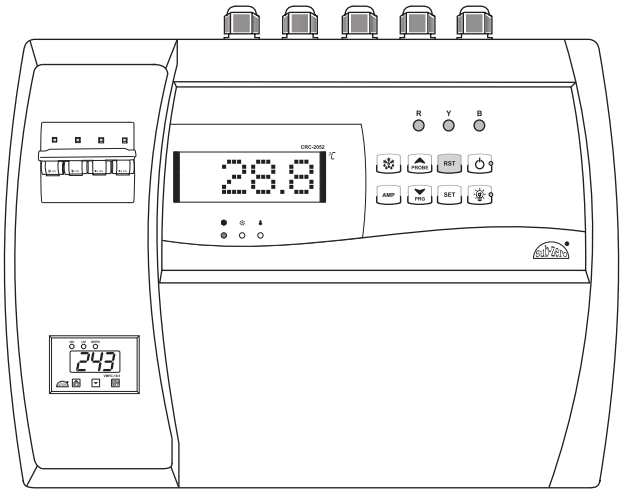
COLD ROOM ELECTRICAL PANEL

User Manual



sub-Zero®

CRC-2020

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Introduction

The CRC-2020 is single set point cold room controller. The Sub-Zero CRC-2020 is aesthetically superior versions of their predecessors.

Features:

The controller controls the defrost in the system based on time based where the compressor is stopped. It is also possible to select the interval between defrosts and a maximum time out after which the defrost is interrupted.

There are safety features which include shutting down the system incase of a fault from a pressure control or similar device.

A series of “safety controls” (delay at start-up, minimum disable time, minimum time between activation) protects the compressors from close starts. In case of probe error or temperature alarm, the instrument signals the event through acoustic signal and by closing the relay contact. By pressing the mute key, the buzzer is silenced.

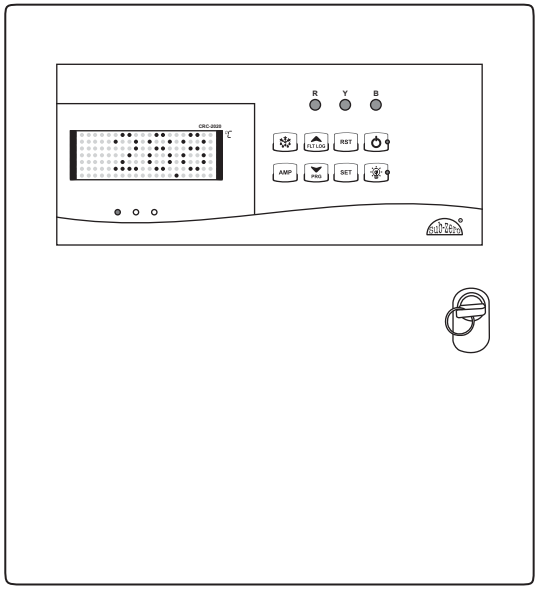
A number of parameters are displayed alphanumerically to set up the instrument for each specific function.

The CRC-2020 controller can be used for several applications with a measuring range from

-50.0°C to 50.0°C.

Computer Connectivity over RS485 and Remote monitoring(Optional).

Get to Know Your Controller



Items included

NO.	ITEMS	QTY
1.	CONTROLLER	1
2.	NTC SENSOR 5 METER	1
3.	CATALOGUE	1
4.	8 X 38 SCREW WITH RAWL PLUG	4

Key Introduction

	Used to enter in manual defrost and to stop defrost if defrosting is ON.
	Used to increment/scroll in Program Mode. When not in any mode if this key is pressed for 2 secs controller will enter in fault log mode.
	Used to come mute the buzzer/Alarm & to exit any mode.
	Used to switch OFF/ON the controller.
	Used to decrement/scroll in Program mode. Used to enter into the program mode.
	Used to enter into the Set mode. Also used as enter key if controller is in Set mode/program mode.
	Used to enter into the Amp. mode where compressor current can be viewed.
	Used to switch OFF/ON the light.

Fault Messages :

Ht	High temperature alarm for Room means, room temperature is equal or above the set value of P2 parameter.
Lt	Low temperature alarm for Room means, room temperature is equal or below the set value of P3 parameter.
PP	Room temperature fail means, Room sensor not connected or out of range.
SPPR	SPPR Fault.
C-OL	Compressor over load fault.
C-UL	Compressor under load fault.
HP	HP fault.
LP	LP fault.
AUX / CTH	Auxiliary fault / Compressor Thermal Fault .
DO	Door Open fault.
OPS	Oil Pressure Switch Fault.

LED Indication

Messages	Mode	Discription
❄	On Off Flashing	Comp. Relay On. Comp. Relay Off. Comp. Relay Timedelay.
❄	On Off Flashing	Defrost On. Defrost Off. Defrost in Timedelay.
🔔	On Off	Alarm Relay On. Alarm Relay Off.
⏻	Off On	Power Off. Power On.
💡	On Off	Light Relay On. Light Relay Off.
R	On Off	R-phase present. R-phase absent.
Y	On Off	Y-phase present. Y-phase absent.
B	On Off	B-phase present. B-phase absent.

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

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
To set other parameter		
Press & hold SET key for 2 seconds 		Display will show 'SET' and scroll the description of the parameter. To go to other parameters, use UP / DOWN keys.
01	SP	To set the cut-out point of the controller.
To change Set Point parameter, press the set key.		Display will change to set value. The set point value can now be changed by using the UP/DOWN key. After desired value, press the SET key & you will see "--" which confirms that the set point has been stored in memory.

Range		
Min	**Max**	**Fact. Set**
P3+0.5ºC	P2-0.5ºC	0.0ºC

To set other parameter		
Press & hold PRG key for 2 seconds 		Display will show 'P2' and scroll the description of the parameter. To go to other parameters, use UP / DOWN keys.

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
01	P2 Parameter	Function : To set allowable high temperature limit.
To change P2 parameter, press the set key.		Use UP/DOWN key to set desired value. Once set at a particular value, this will not allow the set point to go above this value and below P3 setting.
Range		
Min	Max / Fact. Set	
SP+0.5ºC	50.0ºC / 50.0ºC	
HT (Message on Display)		**Example :** Setting this parameter at 50.0°C will not allow the set point to go above 50.0°C also if the temperature reaches 50.0°C, the display will show HT (High Temperature). The alarm will be ON. But at power on till the AL delay is over controller will not generate HT Alarm.
02	P3 Parameter	Function : To set allowable low temperature limit.
To change P3 parameter, press the set key.		Use UP/DOWN key to set desired value. Once set at a particular value, this will not allow the set point to go below this value and above P2 setting.
Range		
Min	Max / Fact. Set	
-50.0ºC	SP-0.5ºC / -50.0ºC	
LT (Message on Display)		**Example :** Setting this parameter at -50.0°C will not allow the set point to go below -50.0°C also if the temperature reaches -50.0°C, the display will show LT (Low Temperature). The alarm will be ON.

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
03	P4 Parameter	Function : To set the differential for compressor restart.
To change P4 parameter, press the set key.		Use UP/DOWN keys to set desired value.
Range		
Min	Max / Fact. Set	
0.5ºC	20.0ºC / 2.0ºC	**Example(Cooling Mode) :** If the set point is set at 10.0°C and differential is set at 2.0°C, then when the system reaches 10.0°C, the comp. relay will cutout. Since the differential is 2.0°C, the comp. Relay will cutin at 12.0°C (10.0°C + 2.0°C).
04	P5 Parameter	Function : To set probe calibration.
To change P5 parameter, press the set key.		Use UP/DOWN keys to set desired value. In time it may be possible that the display may be offset by a degree or so. To compensate for this error, you may need to add or minus the degrees required to achieve the correct temperature.
Range		
Min	Max / Fact. Set	
-10.0ºC	10.0ºC / 0.0ºC	**Example :** The temperature on the display is 28.0°C, whereas the actual temperature is 30.0°C. You will need to set this parameter to 2.0°C, which means that once out of the programming parameter, the display will show the temperature 30.0°C (28.0°C + 2.0°C).
05	P6 Parameter	Function : To set time delay between relay restart time.
To change P6 parameter, press the set key.		Use UP/DOWN keys to set desired value. This parameter is used to protect the fan from restarting in a short period of time and can be set between 0 to 20 minutes.
Range		
Min	Max / Fact. Set	
1 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, even if the differential is achieved earlier. This

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
		parameter is good to protect the life of the compressor when there are power fluctuations and the compressor is switched off and on within a few seconds.
06	P7 Parameter	Function : To set duration of defrost.
To change the P7 Parameter parameter, press the set key.		Use UP/DOWN keys to set desired value. This is maximum amount of time allowed for defrost. If set to 0, there will be no defrost cycle. **Example :** If P7 is set to 30 Mins and P8 parameter is set to 1 Hr. then after every 1 Hr defrosting will take place for 15 mins.
Range		
Min	**Max**	**Fact. Set**
0 Min	99 Min	30 Min
07	P8 Parameter	Function : To set defrost frequency.
To change the P8 Parameter parameter, press the set key.		Use UP/DOWN keys to set desired value. This is the amount of time between two defrost cycles. **Example :** same as P7 parameter.
Range		
Min	**Max**	**Fact. Set**
1 Hr	31 Hrs	6 Hr
08	P9 Parameter	Function : To set power on defrost delay.
To change the P9 Parameter parameter, press the set key.		Use UP/DOWN keys to set desired value. This is the amount of time at power on after which defrosting will take place once. **Example :** If P9 parameter is 30 mins then at power after 30 mins defrosting will take place once.
Range		
Min	**Max**	**Fact. Set**
0 Min	99 Min	30 Min

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
09	BUZ Parameter	Function : To enable / disable buzzer.
To change the BUZ Parameter parameter, press the set key.		Use UP/DOWN keys to set desired value. **Example:** ENB : Buzzer enabled. DIS : Buzzer disabled.
Range		
Min	**Max**	**Fact. Set**
DIS	ENB	ENB
10	AL Parameter	Function : This parameter is used to set power on delay for alarm.
To change the AL Parameter parameter, press the set key.		Use UP/DOWN keys to set desired value. **Example :** If you set this parameter to 30, once the power is switched on, the alarm will not activate for 30 minutes after the power is switched on. This is most useful to avoid the nuisance alarms when the ambients are high when the machine is switched on after a long time.
Range		
Min	**Max**	**Fact. Set**
0 Min	99 Min	30 Min
11	C-UL Parameter	Function : Under load limit for compressor current.
To change the C-UL parameter, press the set key.		Use UP/DOWN keys to set desired value. **Example :** If C-UL= 1.0A and compressor current is less than 1.0A then and exists till C2 current sensing delay then it is registered as UL fault. Compressor will get OFF on this fault. If after 3 retries within 1 Hour current drawn is still less than 1.0Amp the controller will trip the compressor on fault and activate respective alarm relay. Also display will flash 'C-UL'. Controller will go in manual reset mode.
Range		
Min	**Max**	**Fact. Set**
0.0A	(C-OL -1.0)A	1.0A

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
12	C-OL Parameter	Function : Over load limit for compressor current.
To change the C-OL parameter, press the set key.		Use UP/DOWN keys to set desired value. **Example :** If C-OL= 10 A and compressor current is greater than 10 A then and exist till C2 current sensing delay then C-OL fault exists and flash on display. Compressor will be tripped on this fault. **NOTE : According to the compressor current, set Overload value.**
Range		
Min	**Max** / **Fact. Set**	
(C-UL +1.0) A	30.0A / 10.0A	
13	C2 Parameter	Function : Current sensing delay.
To change the C2 parameter, press the set key.		Use UP/DOWN keys to set desired value. **Example :** If C2 = 5 sec then, any current fault will be valid only when it exists for more than 5 sec.
Range		
Min	**Max** / **Fact. Set**	
5 Sec	60 Sec / 5 Sec	
14	D0 Parameter	Function : To enable or Disable HP sensing.
To change the D0 parameter, press the set key.		Use UP/DOWN keys to set desired value. **Example :** If this parameter is set to ENB : HP sensing is enabled. DIS : HP sensing is disabled Setting this parameter to disable will ignore HP fault for compressor. If this parameter is set to Enable then controller will detect HP trip.
Range		
Min	**Max** / **Fact. Set**	
DIS	ENB / ENB	

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
15	D1 Parameter	Function : To enable or disable LP sensing.
To change D1 parameter, press the set key.		Use UP/DOWN keys to set desired value. **Example:** If this parameter is set to ENB : LP sensing is enabled. DIS : LP sensing is disabled. Setting this parameter to disable will ignore LP fault for compressor. If this parameter is set to Enable then controller will detect LP trip.
Range		
Min	**Max** / **Fact. Set**	
DIS	ENB / ENB	
16	D2 Parameter	Function : Fault sensing logic.
To change D2 parameter, press the set key.		Use UP/DOWN keys to set desired value. 0V : 0V at HP/LP/AUX input will be sensed as fault and trip the compressor. 230V : 230V at HP/LP/AUX input will be sensed as fault and trip the compressor.
Range		
Min	**Max** / **Fact. Set**	
0V	230V / 0V	
17	D3 Parameter	Function : To set LP sensing delay.
To change D3 parameter, press the set key.		Use UP/DOWN keys to set desired value. **Example :** If this parameter is set to 30 sec, then LP fault will be sensed only when it present continuously for 30 Secs.
Range		
Min	**Max** / **Fact. Set**	
0 Sec	180 Sec / 30 Sec	

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
18	D4 Parameter	Function : To set reset mode for HP fault.
To change D4 parameter, press the set key.		Use UP/DOWN keys to set desired value. MAN : Manual Mode. AUTO : Auto mode. If this parameter set to “MAN” mode HP fault will be cleared only after pressing reset key for 2 seconds. If this parameter is set to “AUTO” mode HP fault will be cleared automatically when it is healthy.
Range		
Min	**Max** / **Fact. Set**	
MAN	AUTO / AUTO	
19	DI-D Parameter	Function : To select AUX or compressor thermal trip digital I/P
To change the DI Parameter parameter, press the set key.		Use UP/DOWN keys to set desired value. If Selected as “AUX” then at fault it will display "AUX” on display. If Selected as “CTH” then at fault it will display “CTH”.
Range		
Min	**Max** / **Fact. Set**	
AUX	CTH / AUX	
20	OPS Parameter	Function : To Enable / Disable OPS I/P.
To change the OPS Parameter parameter, press the set key.		Use UP/DOWN keys to set desired value. ENB : OPS I/P is enabled. DIS : OPS I/P is disabled.
Range		
Min	**Max** / **Fact. Set**	
DIS	ENB / ENB	

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
21	E1 Parameter	Function : To set Compressor Relay status on Probe Failure.
To change E1 parameter, press the set key.		Use UP/DOWN keys to set desired value. When set to ON : Relay will stay ON. CYC : Relay performs a duty cycle of as per TON & TOFF . OFF : Relay will stay OFF.
Range		
Min	**Max** / **Fact. Set**	
ON	OFF / CYC	
22	TON Parameter	Function : To set On cycle at room probe fail.
To change TON parameter, press the set key.		Use UP/DOWN keys to set desired value. At room probe fail condition when E1 parameter is selected as 'CYC' then the on cycle is specified by Ton parameter.
Range		
Min	**Max** / **Fact. Set**	
1 Min	30 Min / 10 Min	
23	TOFF Parameter	Function : To set Off cycle at room probe fail.
To change TON parameter, press the set key.		Use UP/DOWN keys to set desired value. At room probe fail condition when E1 parameter is selected as 'CYC' then the Off cycle is specified by Ton parameter.
Range		
Min	**Max** / **Fact. Set**	
1 Min	30 Min / 4 Min	
24	E7 Parameter	Function : To set Display at defrosting.
To change E7 parameter, press the SET key.		Use UP/DOWN keys to set desired value. TEMP : At defrosting temperature will be dispalyed. DEFR : At Defrosting 'Defrost ON' will scroll.
Range		
Min	**Max** / **Fact. Set**	
TEMP	DEFR / TEMP	

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
25	LD Parameter	Function : To set time delay to switch off the light .
To change LD parameter, press the SET key.		Use UP/DOWN keys to set desired value. This parameter is used set the time delay to automatically switch off the light. If LD is set to 0 then this parameter is disabled. **Example :** If this parameter is set to 7 mins then, when light is switched on after 7 mins it will be switch off automatically.

Range		
Min	**Max**	**Fact. Set**
0 Min	30 Min	7 Min

Sr. No.	Parameter	Parameter setting method
26	PW Parameter	Function : To change password.
To change the PW parameter, press the set key.		Use UP/DOWN key to change the password. User can enter into program mode only if correct password is entered. If the password is wrong it will show 'INVALID PASSWORD'.

Range		
Min	**Max**	**Fact. Set**
0	9999	0000

Sr. No.	Parameter	Parameter setting method
27	CRH Parameter	Function : To view Compressor run Hours.
		It will display compressor run hours. It's a read only parameter.
28	CCRH	Function : Clear Compressor Run Hours.
		If this parameter is set to 'YES' compressor run hours (CRH) are cleared.

Range		
Min	**Max**	**Fact. Set**
NO	YES	NO

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
29	ID Parameter	Function : To set Unit ID.
To change Unit ID parameter, press the SET key.		This parameter is used to set the Unit ID of the device.

Range		
Min	**Max**	**Fact. Set**
1	240	-

Sr. No.	Parameter	Parameter setting method
30	LP	Function: To activate Keypad Lock.
To change LP parameter, press the set key.		This parameter can lock the keypad so that tempering is not possible by by-standers. NO : deactivates keypad lock. YES : activates keypad lock. On activation, all the parameters can only be viewed, but not modified. If the keypad is locked "LOCK" message will be displayed..

Range		
Min	**Max**	**Fact. Set**
NO	YES	NO

Sr. No.	Parameter	Parameter setting method
31	PO Parameter	Function : To enable/disable Power Switch.
To change PO parameter, press the SET key.		Use UP/DOWN keys to get desired value & press SET key to confirm. DIS : Disable power switch ENB : Enables power switch Controller has power switch, which if enable puts controller in active or stand by state. If press foe 2 seconds controller will go in stand by state. if press for 2 seconds controller will go in stand by mode, display will be as per "PDIS" parameter. To again switch to ACTIVE WORKING

Range		
Min	**Max**	**Fact. Set**
DIS	ENB	DIS

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
		MODE, press power switch again for 2 seconds. All leds and display will flash and enter into NORMAL WORKING MODE.
32	PDIS Parameter	Function : To set display at power OFF mode.
To change PDIS parameter, press the SET key.		Use UP/DOWN keys to set desired value. At power OFF mode power OFF LED will glow & display will be as below, LED : Display Will be Blank. OFF : Display will show OFF. TEMP : Display will show Temperature.
Range		
Min: LED	Max: TEMP	Fact. Set: LED
33	FS Parameter	Function : To restore default settings of the controller.
To change FS parameter, press the SET key.		Use UP/DOWN keys to set desired value. When set to YES all parameters are programmed to factory values. Useful to debug setting related problems.
Range		
Min: NO	Max: YES	Fact. Set: NO
34	EP Parameter	Function: To exit programming.
To exit programming parameter, press the SET key.		Once the set key is pressed, the controller goes into the normal mode and displays the Room Temperature and all settings are recorded.

Technical Data

Housing : Plastic / Sheet Metal (as per customer requirement)
Dimensions : **Plastic :** (H)400 x (W) 300 x (D)135 mm
Sheet Metal : (H)450 x (W) 400 x (D)200 mm
Mounting : Wall mounting.
Connection : Spring clamp terminal block. 4 sq. mm wire.
Display : 4 Digit, 1" Dot matrix Display and 8 LEDs for indication.
Data Storage : Non-Volatile EEPROM Memory.
Power Input (Options) : 415Vac +/-10%, 50-60Hz. 3Phase Supply with Neutral
Operating Temp : 5°C to 50°C(non-condensing).
Storage temp : -20°C to 70°C(non-condensing).
Output :
Compressor Relay : 5A/230vac
Evap. Relay : 5A/230vac
Light Relay : 5A/230Vac.
Alarm Relay : 5A/230Vac.

Sensors :
1) Temperature sensor:
Sensor Type : NTC Thermistor.
Resolution : 0.1°C.
Accuracy : +/-1°C.
Probe Tolerance at 25°C : +/-0.3°C.
Range : -50.0°C to 50.0°C.

Analog I/p:
Compressor current (R,Y,B)
Resolution : 0.1Amp.
Accuracy : +/-1 Amp.

Digital Inputs:
HP, LP, Auxillary, Door, Sppr, OPS, R-Ph, Y-Ph, B- Ph.

Buzzer : Internal

RS485 Connectivity : Modbus RTU Protocol
Baud Rate : 9600
Device ID : 1 (By Default)

Instruction Manual

LVM (Line Voltage Monitor) Three Phase VMRC-10/3

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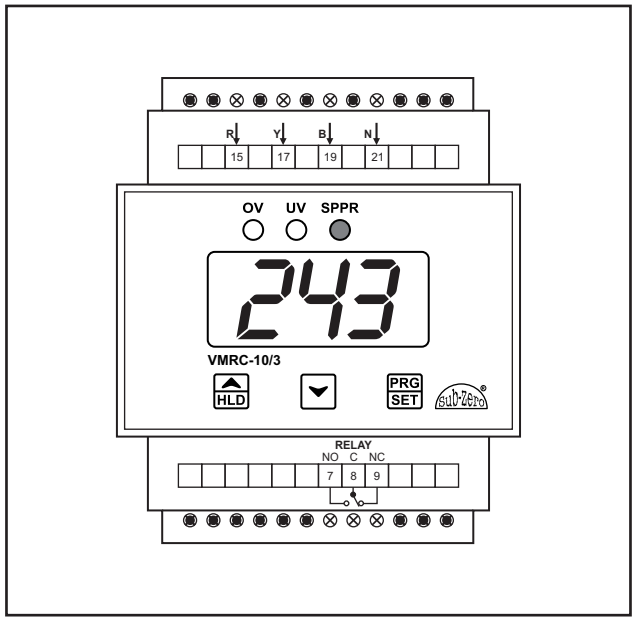
Introduction

VMRC-10/3 is three phase Line voltage monitor (LVM) used to protect device from Single Phasing, voltage unbalance, phase reversal and under/over voltage. It shows real time voltages between phase and neutral.

There is an Output of alaram relay is given to the controller as SPPR input. Features are easily understood by examples in the instruction below.

Get to Know Your Controller



Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
	To set other parameter	
	Press & hold PRG key for 2 seconds PRG SET	Display will show 'rEF' and scroll the description of the parameter. To go to other parameters, use up / down keys.
01	rEF PARAMETER	Function : To set Reference voltage.
	To change the rEF Parameter, press the set key.	Use UP/DOWN keys to set desired value. Base reference voltage to calculate under voltage and over voltage values.

Range		
Min	**Max**	**Fact. Set**
381V	415V	415V

Min and Max value will change according to display type for settings.

Example : If dsP is L-L then Min= 381V, Max= 415V.

02	oU PARAMETER	Function : To set Overvoltage Limits.
	To change the oV parameter, press the set key.	Use UP/DOWN keys to set desired value. If the a/c voltages goes above this limit will trip respective a/c on Overvoltage("Ov") fault.

Range		
Min	**Max**	**Fact. Set**
5V	75V	35V

Example : Over voltage is calculated depending on Reference voltage + Ov value**.** i.e, Ov Set Point = Ref + Ov , When controller trip on Ov Fault it will recover when input voltage fall below (Ref - (Ov /2)**.**

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
03	uU PARAMETER	Function : To set Undervoltage Limits.
	To change the uV parameter, press the set key.	Use UP/DOWN keys to set desired value. If the a/c voltages goes below this limit will trip respective a/c on undervoltage("Uv") fault.

Range		
Min	**Max**	**Fact. Set**
5V	75V	35V

Example : Under voltage is calculated depending on Reference voltage - Uv value**.** i.e Uv Set Point = Ref - Uv , When controller trip on Uv Fault it will recover when input voltage above (Ref – (Uv /2)**.**

04	unb PARAMETER	Function : To set Un Balance value.
	To change the unb parameter, press the set key.	Use UP/DOWN keys to set desired value. Unbalance fault raised when voltage difference between any of two phases goes above Unb value and recovers when the difference is less than (UNB/2).

Range		
Min	**Max**	**Fact. Set**
10V	120V	60V

05	ttd PARAMETER	Function : To set time delay.
	To change the ttd parameter, press the set key.	Use UP/DOWN keys to set desired value. Time delay provided to avoid false triggering, when any fault last more than TTD value then only fault is raised and this fault is applicable to Under voltage, Over voltage and Unbalance fault.(i.e., In case of Phase Loss or Phase sequence fault alarm will come immediately).

Range		
Min	**Max**	**Fact. Set**
0Sec	60Sec	10Sec

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
06	tdr PARAMETER	Function : To set fault recover delay.
To change the tdr parameter, press the set key.		Use UP/DOWN keys to set desired value. Time delay provided to add delay in fault recover time, to avoid sudden fault triggering and reset.
Range		
Min: 0Sec	Max: 240Sec	Fact. Set: 10Sec
07	CrY PARAMETER	Function : To set calibration of voltage for r-y or r-n phase.
To change the CrY Parameter, press the set key.		Use UP/DOWN keys to set desired value. This parameter provided to calibration voltage reading. When dsP is L-L then it sets calibration for r-y. When dsP is L-n then it sets calibration for r-n.
Range		
Min: -15V	Max: 15V	Fact. Set: 0V
08	Cyb PARAMETER	Function : To set calibration of voltage for y-b or y-n phase.
To change the Cyb parameter, press the set key.		Use UP/DOWN keys to set desired value. This parameter provided to calibration voltage reading. When dsP is L-L then it sets calibration for y-b. When dsP is L-n then it sets calibration for y-n.
Range		
Min: -15V	Max: 15V	Fact. Set: 0V

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
09	Crb PARAMETER	Function : To set calibration of voltage for r-b or b-n phase.
To change the Crb parameter, press the set key.		Use UP/DOWN keys to set desired value. This parameter provided to calibration voltage reading. When dsP is L-L then it sets calibration for r-b. When dsP is L-n then it sets calibration for b-n.
Range		
Min: -15V	Max: 15V	Fact. Set: 0V
10	dSP PARAMETER	Function : To set view display mode.
To change the dsP parameter, press the set key.		Use UP/DOWN keys to set desired value. There are two type of display output, Line to Line Voltage (L-L) and Line to Neutral (L-n), Depending on this parameter REF parameter also changes.
Range		
Min: L-L	Max: L-n	Fact. Set: L-L
11	FS PARAMETER	Function : To restore the default settings of the controller.
To change the FS parameter, press the set key.		Use UP/DOWN keys to set desired value. When set to 1, all parameters are programmed to factory values.
Range		
Min: nO	Max: YES	Fact. Set: nO

Description of parameters and functions.

Sr. No.	Parameter	Parameter setting method
12	End PARAMETER	Function :To end programming.
To change the end parameter, press the set key.		Once the set key is pressed, the controller goes into the normal mode and displays the voltage readings.

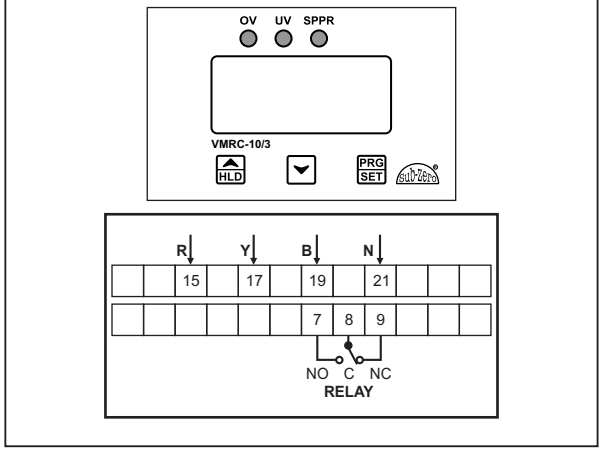
Technical Data

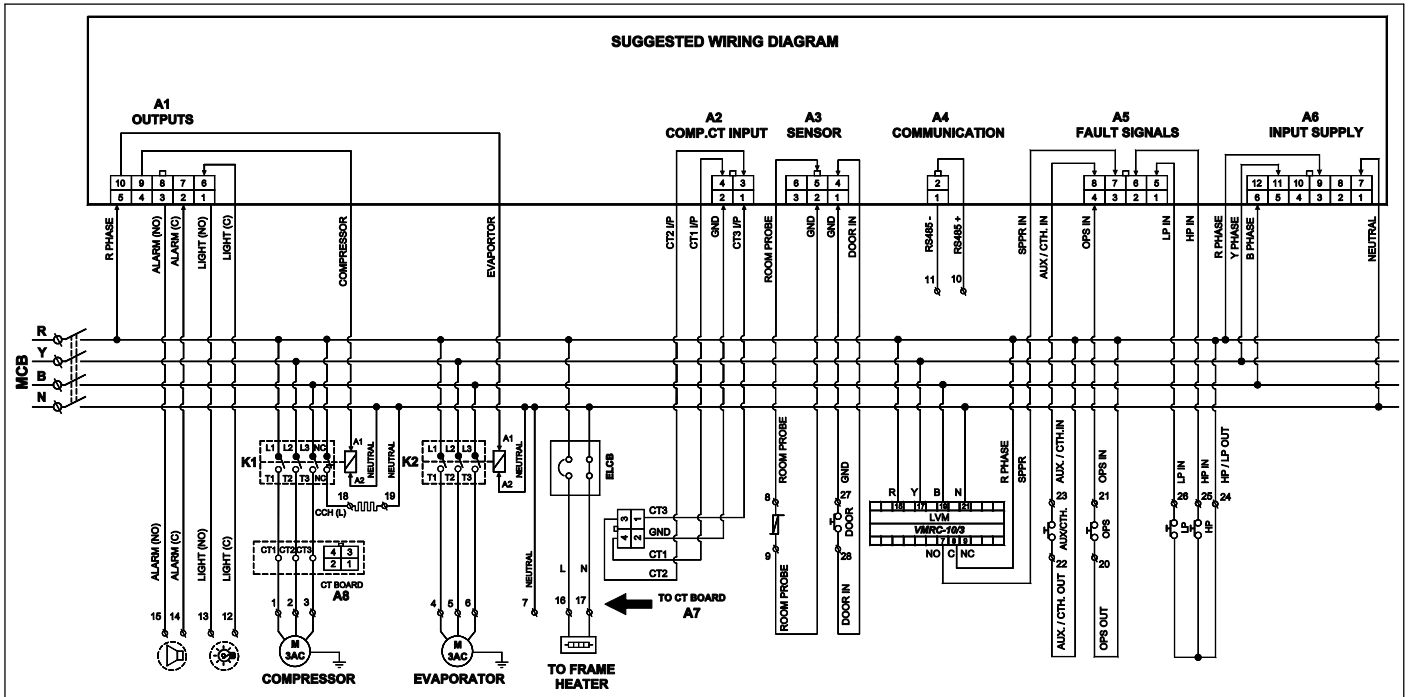
Main Functions : Voltage Monitoring.
Phase Sequence Monitoring.
Phase Loss and Phase Unbalance detection.
Uv and Ov Detection.
Settable Uv and Ov Parameter.
Dimensions : Front : 69.3mm X 44.3mm,
Depth : 72.3 mm
Input : R, Y, B Phases and Neutral Input.
Output : Alarm Relay : 5A Resistive.

Application :Voltage and phase sequence monitoring and controlling.
Under voltage and Over voltage detection.

General Specification :
Input Voltage Range from 100VAC to 265VAC.
Mounting : Din rail mounting.
Connections : Screw terminals : ≤ 2.5sqmm one wire/terminal only.

Front View & Connetion Diagram for Three Phase Voltage Monitor (VMRC- 10/3)





ABBREVIATIONS :
R : R PHASE
Y : Y PHASE
B : B PHASE
N : NEUTRAL
LVM: LINE VOLTAGE MONITOR
OPS : OIL PRESSURE SWITCH
CTH : COMPRESSOR THERMISTOR
ELCB : EARTH LEAKAGE CIRCUIT BREAKER

BOQ : (Switch gear usage and rating as per requirement)
1. MCB : 4 POLE, 400VAC,
2. K1 : 3 POLE + 1AUX , 400V,
3. K2 : 3 POLE + 1AUX, 400V,
4. LVM(VMRC-10/3) : LINE VOLTAGE MONITOR
5. CT : EACH CT UPTO 20 A
6. ELCB : 1P + N , 230 V

NOTES : Auxiliary contact in K1 provided for CCH (crankcase heater)
: Panel Terminal Block
: Earthing
: Heater

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
R	Y	B	R	Y	B	N			+	-	L	N	L	N	L	N	L	N	OUT	IN	OUT	IN				GND	IN
COMP.			EVAP.				ROOM PROBE		RS485		LIGHT		ALARM		FRAME HEATER		CCH		OPS		AUX. / CTH		HP / LP OUT		HP IN LP IN	DOOR	

SUGGESTED CONNECTOR STICKER FOR PANEL WITH CRC-2020

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.

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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