Close Control Unit

Technical Data Book

WOLF INTERNATIONAL

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INTRODUCTION

Desinged to provide environmental close control tolerances within the conditioned space, such as Telecommunication Facilities, Computer Rooms and Clean Rooms, WOLF CTCH range is available with a choice of upflow, downflow configuration depending on position with direct expensing air cooled codensing unit includes quality proved and quite Copeland scroll compressor and comprises 13 models. Full function units provide full control of temperature, humidity and filtration.

FUNCTION

[1] ROTARY(SHIFTING) RUN FUNCTION

Distributing equal run-time to each step of Compressor, Re-Heater, Humid-Heater, it extends machine's durability to protect parts from excessive run. Besides, it is designed for a shift-run by time.

[2] RESTART IN ORDER RETURNING FROM BLACKOUT

It is designed to control the start time per each equipment in order to prevent the over-load which can be happened in case the several equipments work at the same time returning the blackout.

[3] COMPRESSOR PROTECTION FUNCTION

In cold ambient or long pipe connection, it protects the Compressor from damage by frequent motions at the first run.

[4] AUTOMATIC DISCONNECT IN CASE OF COMPRESSOR MALFUNCTION

In case of fault on compressor during running, it shifts the other compressor and disconnect the faulty compressory automatically.

[5] RUN/STOP STATE MEMORY FUNCTION

Memory function of the controller enable all condition to return back to the previous state when the power is on/off.

[6] AUTOMATIC RESET FUNCTION

In case the MICOM is suspended or malfunctioned by NOISE, SURGE VOLTAGE, LIGHTNING, VOLTAGE Drop(INPUT VOLTAGE below 98V) etc., it automatically reset.

[7] EXTRA-ALARM OUTPUT FUNCTION

In case of malfunction during operation, alarm output AC 220V is generated. If operator can not hear the MICOM warning buzzer by noise or it is necessary to know the alarm existence in distance, extra alarm or warning ramp can be equiped for additional.

[8] REMOTE SHUTDOWN FUNCTION

At the emergency such as a fire, it stops all the output connecting with Smoke detection.

[9] REMOTE OBSERVATION CONTROL FUNCTION(OPTIONAL)

It is designed for the observation control from remote through ON-LINE NETWORK. For example, the data of temperature·humidity, individual alarm state on working, automatic call(beeping the person in charge) in case of malfunction etc. In addition, it can control the machine on/off using point of contact from distance.

SPECIFICATIONS

Downflow Configuration		CTHD050
Cooling Capacity(w)		16300
Power Supply	Main	3PH, 380V, 50Hz
	Control	1PH, 200V, 50Hz
Dimension(mm)	H	1780
	W	915
	D	770
Construction		Electric Galvanised Sheet Steel, Epoxy Baked Powder Paint-Ivory
Evaporator	Coil	Inner Rippled Copper Tube/Corrogated Aluminum Fin
	Face Area(m^2)	52
Compressor	Type	Danfoss scroll compressor
	Q'ty	1
	Oil	Polyol Ester
Refrigerant		R-134A
Refrigerant Control		Thermostatic Expansion Valve
Holding Charge		Nigrogen charged
Fan & Motor	Fan Type	Sirocco Fan Single
	Size/Q'ty(kw)	0.5×1
	Airflow(CMM)	55
	Static Pressure(mmAq)	13
Humidifier	Type	Cleanable Cylinder & Electrods
	Electric(kw)	3.6
	Capacity(kg/hr)	5
Electric Heater	Type	Aerofin Heater
	Capacity(kw)	10
	Heating Step	4
Protection Device		High/Low Pressure Switch
		Overcurrency Relay, Fuse
		Overheating Protector
Connection(mm)	Suction	12.7
	Discharge	22.22
Included Accessories		Filter Drier. Sight Glass, Thermostatic Expansion Valve, Solenoide Valve, Air Filter High/Low Pressure Gauge, Polyurethan Insulation
Micro Controller		Run/Standby Operation, Local/Remote Networking, Automatic Compressor Rotation Audio-Visual Alarm, Automatic Reset, Occupied/Unoccupied Set point, Duty Rotation(network units) Remote Monitoring(Option), Remote On/Off(Option)
Matched Condening Unit	Coil	Inner Rippled Copper Tube/Corrogated Aluminum Fin
	Model No.	CNH100
		Single
	Fan	f 630×1
	Motor(kw)	0.4×1
	Airflow(CMM)	162
Applicable Condition	Entering Air	$16^{\circ}C$~$19^{\circ}C$±$1^{\circ}C$
	Ambient	$43^{\circ}C$
	RH	55±5%

Medium Temperature			CNH100
Noninal HP/KW			10/7.5
Power source	Main		3PH 230V 50HZ
	Control		1PH 220V 50HZ
Refrigerant			R404A
capacity(W) at CT 55°C, ambient 45°C	ET	15°C	25743
		10°C	21446
		5°C	17648
		0°C	14312
		-5°C	11398
		-10°C	8869
compressor	Model		SZ115-4
	Start current		–
	Operation current		11.08
	Displacement (°C/h)		27
	oil	Type	POLYOL ESTER
		Charge	4 liter
Condenser	Coil type		FIN AND TUBE(INNER RIPPLED COPPER TUBE & ALUMINUM FIN)
	Fan	Dia./No	630/1
		Motor w/No	400/1
		Airflow cmm	162
Condenser pressure control			High pressure switch
Protection			High/low pressure switch, compressor motor overload protector
Included Accessories			Receiver, filter drier, valve
Connection (mm)	Gas		34.9
	Liquid		15.88
Dimension		L	1033
		W	945
		H	1076
Bolt mount(L/W)			917/829

SPECIFICATIONS (50hZ)

Downflow Configuration		CTHD030S	CTHD050S	CTHD060S	CTHD075S	CTHD100D	CTHD150D	CTHD200D
Cooling Capacity (kW)		8.45	14.3	16.9	17.75	28.6	35.5	42.1
Power Supply	MAIN	3PH, 380V, 50Hz						
	Control	1PH, 200V, 50 Hz						
Dimension(mm)	H	1780	1780	1780	1780	1780	1780	1780
	W	730	915	1243	1243	1413	1695	1963
	D	720	720	720	720	770	820	820
Construction		Electric Galvanised Sheet steel, Epoxy Baked Powder Paint-Ivory						
Evaporator	Coil	Copper Tube / Corrogated Aluminium Fin						
	Face Area (m^2)	24	41	49	53	90	114	137
Compressor	Type	Hermetic-Reciprocation						
	Q'ty	1	1	2	1	2	2	2
Oil		SUNISO 4GS						
Refrigerant		R-22						
Refrigerant Control		Thermostatic Expansion Valve						
Holding Charge		Nitrogen Charged						
Fan & Motor	Fan type	Sirocco Fan Single						
	Size/Q'ty (kw)	0.3x1	0.5x1	0.3x2	0.4x2	0.5x2	0.75x2	1.1x2
	Airflow (CMM)	30	54	61	69	101	120	159
	Static Pressure(mmAq)	11-18						
Humidifier	Type	Cleanable Cylinder & Electrods						
	Electric(kw)	3.6	3.6	3.6	3.6	9.4	9.4	9.4
	Capacity(kg/hr)	5	5	5	5	13	13	13
Electric Heater	Type	Aerofin Heater						
	Capacity(kw)	7.5	10	12	14	16	20	24
	Heating Step	3	4	4	4	4	4	4
Protection Device		High/Low Pressure Switch						
		Over currency Relay, Fuse						
		Over heating Protector						
Connection	Suction	3/8"	1/2"	3/8"x2	5/8"	1/2"X 2	5/8"X2	5/8"X2
	Discharge	5/8"	7/8"	5/8"X2	11/8"	7/8"X2	11/8"2	11/8"X2
Included Accessories		Filter Drier, Sight Glass, Thermostatic Expansion Valve, Solenoide Valve, Air Filter, High/Low Pressure Gauge, Polyurethan Insulation						
Micro Controller		Run/Standby Operation, Local/Remote Networking, Automatic Compressor Rotation, Audio-Visual Alarm, Automatic Reset, Occupied/Unoccupied Set point, Duty Rotation (network units) Remote Monitoring (option), Remote On/Off (option)						
Matched Condensing Unit	Coil	Inner Rippled Copper Tube/Corrogated Aluminum Fin						
	Model No.	CNH030	CNH050	CNH030	CNH075	CNH050	CNH075	CNH100
		Single	Single	Dual	Single	Dual	Dual	Dual
	Fan	ϕ450X1	ϕ550X1	ϕ550X2	ϕ630X1	ϕ550X2	ϕ630X2	ϕ630X2
	Motors (kw)	0.2X1	0.2X1	0.2X2	0.4X1	0.2X2	0.4X2	0.4X2
	Airflow (CMM)	54	102	54X2	145	102X2	145X2	158X2
Applicable Condition	Entering Air	23±2°C						
	Ambient	46°C						
	RH	55±5%						

SPECIFICATIONS (50 hZ)

Upflow Configuration		CTHD030S	CTHD050S	CTHD060S	CTHD075S	CTHD100D	CTHD150D	CTHD200D
Cooling Capacity (kW)		8.45	14.3	16.9	17.75	28.6	35.5	42.1
Power Supply	MAIN	3PH, 380V, 50Hz						
	Control	1PH, 200V, 50Hz						
Dimension(mm)	H	1950	1950	1950	1950	1950	1950	1950
	W	730	915	1243	1243	1413	1693	1963
	D	700	700	700	700	750	800	800
Construction		Electric Galvanised Sheet steel, Epoxy Baked Powder Paint-Ivory						
Evaporator	Coil	Copper Tube / Corrogated Aluminium Fin						
	Face Area (m^2)	24	41	49	53	90	114	137
Compressor	Type	Hermetic-Reciprocation						
	Q'ty	1	1	2	1	2	2	2
Oil		SUNISO 4GS						
Refrigerant		R-22						
Refrigerant Control		Thermostatic Expansion Valve						
Holding Charge		Nitrogen Charged						
Fan & Motor	Fan type	Sirocco Fan Single						
	Size/Q'ty (kw)	0.3x1	0.5x1	0.3x2	0.4x2	0.5x2	0.75x2	1.1x2
	Airflow (CMM)	30	54	61	69	101	120	159
	Static Pressure(mmAq)	11-18						
Humidifier	Type	Cleanable Cylinder & Electrods						
	Electric(kw)	3.6	3.6	3.6	3.6	9.4	9.4	9.4
	Capacity(kg/hr)	5	5	5	5	13	13	13
Electric Heater	Type	Aerofin Heater						
	Capacity(kw)	7.5	10	12	14	16	20	24
	Heating Step	3	4	4	4	4	4	4
Protection Device		High/Low Pressure Switch						
		Over-currency Relay, Fuse						
		Over-heating Protector						
Connection	Suction	3/8"	1/2"	3/8"x2	5/8"	1/2"X 2	5/8"X2	5/8"X2
	Discharge	5/8"	7/8"	5/8"X2	11/8"	7/8"X2	11/8"2	11/8"X2
Included Accessories		Filter Drier, Sight Glass, Thermostatic Expansion Valve, Solenoide Valve, Air Filter, High/Low Pressure Gauge, Polyurethan Insulation						
Micro Controller		Run/Standby Operation, Local/Remote Networking, Automatic Compressor Rotation, Audio-Visual Alarm, Automatic Reset, Occupied/Unoccupied Set point, Duty Rotation (network units) Remote Monitoring (option), Remote On/Off (option)						
Matched Condensing Unit	Coil	Inner Rippled Copper Tube/Corrogated Aluminum Fin						
	Model No.	CNH030	CNH050	CNH030	CNH075	CNH050	CNH075	CNH100
		Single	Single	Dual	Single	Dual	Dual	Dual
	Fan	ϕ450X1	ϕ550X1	ϕ550X2	ϕ630X1	ϕ550X2	ϕ630X2	ϕ630X2
	Motors (kw)	0.2X1	0.2X1	0.2X2	0.4X1	0.2X2	0.4X2	0.4X2
	Airflow (CMM)	54	102	54X2	145	102X2	145X2	158X2
	Entering Air	23±2°C						
Applicable	Ambient	46°C						
Condition	RH	55±5%						

MICOM CONTROLLER OPERATING MANUAL

1 .INTRODUCTION

This Controller is designed for Micro Processor controlling system to economize the energy ,and is a Rotary Running System to extend the durability of each part .In addtion ,the Self -Diagnosis function including automatic disconnection within it adopts self -temporary -measures when the compressor malfunctions ,and this product can take remote observation control through unmanned control and tele -communication network using the personal computer .

2 .PRODUCT OVERVIEW

OUTLET : AC220V ,50 / 60Hz (±5%)

CPU : 89C52

INPUT : 10 POINT (AC15V)

OUTPUT : 15 POINT (AC220V)

TEMPERATURE SENSOR : LM35DZ (STANDARD) ,AD590 (OPTIONAL)

HUMIDITY SENSOR : HS - 220 (STANDARD) ,RHU - 21 (OPTIONAL)

DISPLAY : 16 CHARACTER LCD (BACK LIGHT)

KEY : RUN / STOP , MODE , UP , DOWN , RESET

STEP : COOLING 1 2 STEP COMBINATION ALARM OUT 1 STEP
HEATING 3 5 STEP COMBINATION WATER DRAIN VALVE OUT 1 STEP
HUMIDITY 1 2 STEP COMBINATION
DEHUMIDITY 1 2 STEP COMBINATION

USE TEMPERATURE RANGE : 5℃ 99℃ (STANDARD)
-40℃ 80℃ (OPTIONAL)

SET - UP TEMPERATURE RANGE : 5℃ 90℃ (STANDARD)
-40℃ 80℃ (OPTIONAL)

INDUCED TEMPERATURE RANGE : 1℃ 10℃

3. FUNCTIONS MENU

[1] ROTARY(SHIFTING) RUN FUNCTION

Distributing equal running time to each step of Compressor, Re-Heater, Humid-Heater, it extends machine's durability preventing a part from running excessively. Besides, it is designed for a shift-running by time.

[2] RUN IN ORDER RETURNING FROM BLACKOUT

It is designed to control the Start time per each equipment in order to prevent the over-loading which happens when the several equipments work at the same time returning to outlet after the blackout.

[3] COMPRESSOR PROTECTION FUNCTION

In winter or in the case of long pipes, it prevents the Compressor from being damaged with frequent motions at the first run.

[4] AUTOMATIC DISCONNECTION WHEN COMPRESSOR MALFUNCTIONS

When the Compressor malfunction happens while running, it runs another compressor by automatic disconnection.

[5] RUN/STOP STATE MEMORY FUNCTION

Because MICOM remembers the RUN/STOP State, it automatically returns to the previous state when the power is off.

[6] AUTOMATIC RESET FUNCTION

When the CPU within MICOM quits running or malfunctions by NOISE, SURGE VOLTAGE, LIGHTNING, VOLTAGE Drop(INPUT VOLTAGE below 98V) etc., MICOM is automatically reset.

[7] EXTRA-ALARM OUTPUT FUNCTION

When the machine malfunctions while running, alarm output AC220V is generated. When it is impossible to hear the MICOM buzzer because of the noises around you, and when you want to know the alarm existence or not by the distance between the manager and the unit, please connect the buzzer for 220V or light-weight lamp to output unit no.14 and use them only when consuming electricity is below 1A.

[8] REMOTE SHUTDOWN FUNCTION

At the emergency such as a fire, it stops all the output connecting with Smoke detection.

[9] REMOTE OBSERVATION CONTROL FUNCTION(OPTIONAL)

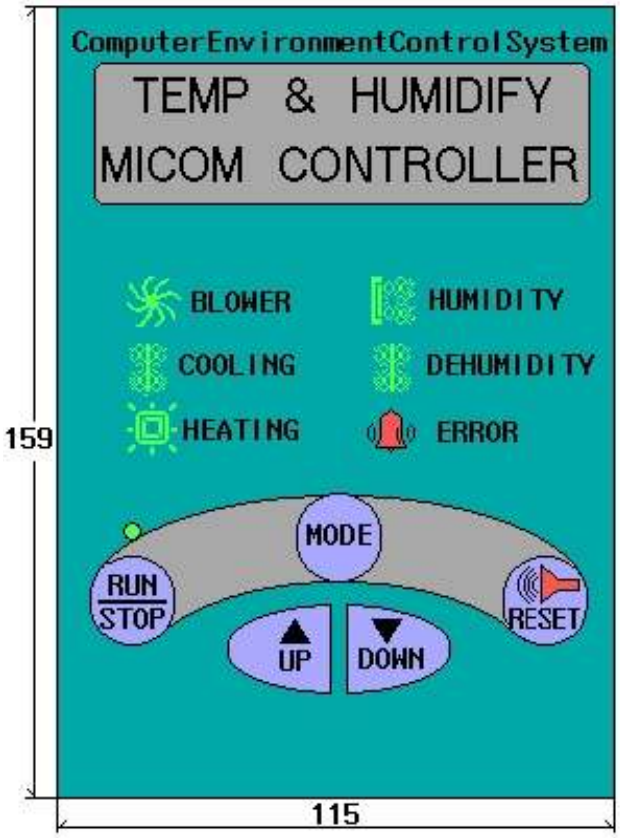
It is designed for the observation control from remote through ON-LINE NETWORK. For example, the data of temperature·humidity, individual alarm state on working, automatic call(beeping the person in charge) when malfunctions happen etc. In addition, it can control the machine on/off using point of contact from distance.

[10] PROPORTIONAL CONTROL FUNCTION (4 - 20mA OUTPUT)

Changing the proportion of present temperature to a certain cycle by the height of the set-up temperature endowing continuous loading electricity to it, such control as cooling, heating, humidity, dehumidity keep regular temperature and humidity indoors.

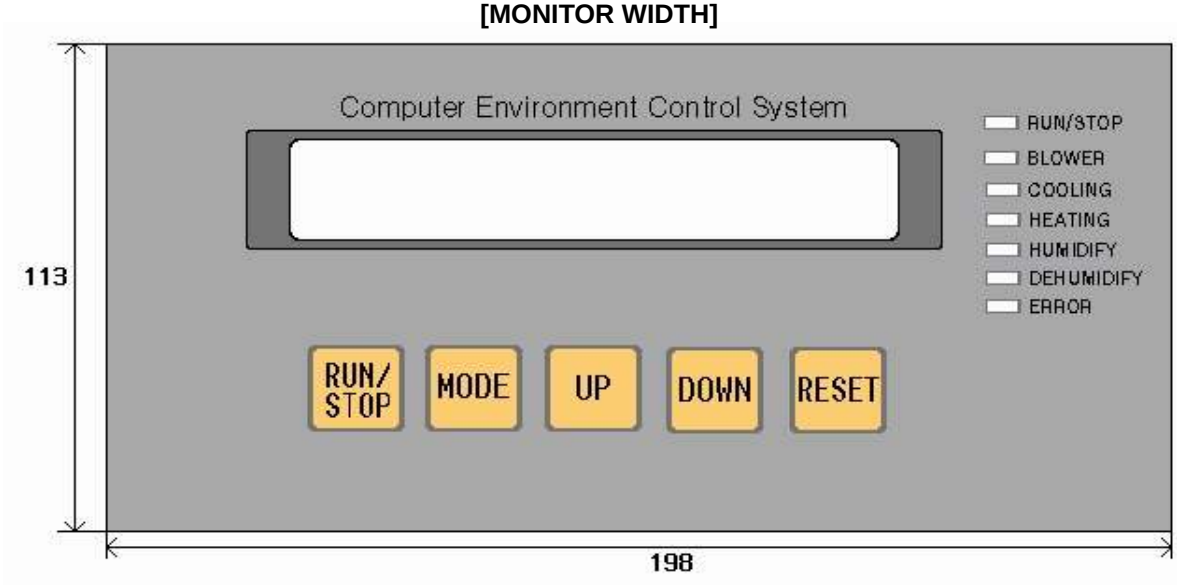
4. MONITOR DISPLAY DESCRIPTION

[MONITOR HEIGHT]



HOLE SIZE: WIDTH 92, HEIGHT 145

[MONITOR WIDTH]



HOLE SIZE: WIDTH 189, HEIGHT 93

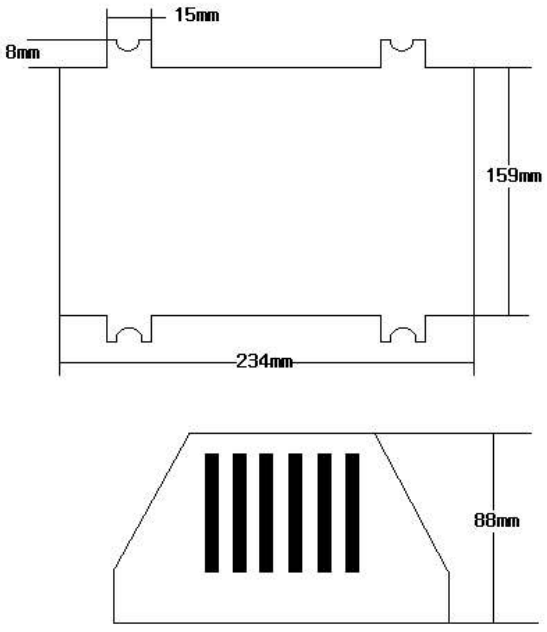
[1] LAMP DESCRIPTION

·RUN (GREEN LED) : MICOM'S RUN/STOP SIGNAL
·BLOWER (GREEN LED) : BLOWER'S ON/OFF SIGNAL
·COOLING (GREEN LED) : COOLING RUN SIGNAL
·HEATING (GREEN LED) : HEATING RUN SIGNAL
·HUMIDITY (GREEN LED) : HUMIDITY RUN SIGNAL
·DEHUMIDITY (GREEN LED) : DEHUMIDITY RUN SIGNAL
·ERROR (RED LED) : ALARM EXISTENCE OR NOT SIGNAL

[2] SWITCH DESCRIPTION

RUN/ STOP	CONTROLLER'S RUN/STOP SWITCH
MODE	OPTIONAL SWITCH TO SEE THE STATE FROM PRESENT TEMP·HUMID TO ALARM MESSAGE
UP	UP SWITCH TO INCREASE THE SET-UP CHARGE WHEN OPERATING SET-UP TEMP·HUMID, INDUCED TEMP·HUMID
DOWN	DOWN SWITCH TO DECREASE THE SET-UP CHARGE WHEN OPERATING THE SET-UP TEMP·HUMID, INDUCED TEMP·HUMID
RESET	ALARM SIREN STOP SWITCH

4-2. CASE SIZE



5. HOW TO RUN

- ONCE THE OUTLET IS PUT INTO MICOM, THE LIQUID-CRYSTAL MONITOR SHOWS THE NAME AND PHONE NUMBER OF THE COMPANY WHICH PRODUCED CONSTANT TEMP & HUMIDITY EQUIPMENT, TESTS THE LAMP BEHIND THE LIQUID-CRYSTAL AND INDICATES IMMEDIATELY THE PRESENT TEMPERATURE·HUMIDITY.

ABCD ENGINNERING
A/S:(0123)123-4567

ROOM TEMP & HUMI
[23.5 'C : 52.5%RH]

[1] STOP MODE

- If you press RUN/STOP KEY while running, FAN(or BLOWER) turn into off after 7 width FAN DELAY OFF TIME set-up.
- It makes all output off and indicates the temperature·humidity only in the room.
- It only perceives the RUN/STOP KEY, not the remaining KEYs.

[2] RUN MODE

- If you press the RUN/STOP KEY while running, it turns into the RUN MODE.
- Temperature·Humidity set-up is possible and turns into the normal running state.

[3] TEMPERATURE·HUMIDITY AND INDUCED TEMPERATURE·HUMIDITY SET-UP DIRECTION

- If you press the option KEY, it indicates the temperature·humidity signal set-up mode you intend to set up
- It fixes into the intended charge by pressing the UP or DOWN KEY.
- Then the fixed charge turns into 0.5% or 0.5 % per unit.

1.ESTABLISHMENT
.SET TEMP 23.5 'C **[SET-UP TEMPERATURE]**

2.SENSITIVITY
.SET TEMP 1'C **[INDUCED TEMPERATURE]**

3.ESTABLISHMENT
.SET HUMI 55.5 % **[SET-UP HUMIDITY]**

4.SENSITIVITY
.SET HUMI 3 % **[INDUCED HUMIDITY]**

[4] COMP OUTPUT ON DELAY TIME SET-UP

- This function is to set up the delay time that the solenoid valve ON and consequently COMP output becomes ON when cooling or dehumidity puts out, and prevents Compressor's Short Cycle.
- **If the pipe line is long ,please extend the DELAY time also .**
- If you press the option Key no.5 in the present temperature·humidity signal part, you can see the picture as below, and set up 1 second unit when you press the UP or DOWN Key here. Minimum 1 second through Maximum 90 seconds set-up possible.

5.COMP ON DELAY
.SET TIME 05 SEC

[4]-1 WATER DRAIN SOLENOID VALVE ON/OFF TIME

- Circulated water by humidity in the bucket becomes dirty with scail in it if staying for long This is a time set-up mode to change the water in the pail in order to prevent the scailing.
- If you press the option Key no.8 in the present temperature·humidity signal part, you can see the picture as below, and set up 1 hour unit when you press the UP or DOWN Key here. Minimum 1 hour through Maximum 23 hours set-up possible.

6.DRAIN S.V SRT
.SET TIME 2 HOUR

[4]-2 WATER DRAIN SOLENOID VALVE ON DELAY TIME

- TIME SET-UP MODE TO KEEP IT ON AFTER THE WATER DRAIN VALVE OPENS
- If you press the option Key no.7 in the present temperature·humidity signal part, you can see the picture as below, and set up 1 minute unit when you press the UP or DOWN Key here.

  Minimum 1 minute through Maximum 80 Minutes set-up possible.

7.DRAIN S.V SRT
.DLY TIME 05 MIN

[4]-3 FAN DELAY OFF TIME SET-UP

- When you stopped the machine under operating, the Blower stops after operating for a time being to cool the internal remnant heat. This is a mode to set up the time of that operating.
- If you press the option Key no.9 in the present temperature·humidity signal part, you can see the picture as below, and set up 1 second unit when you press the UP or DOWN Key here.

  Minimum 1 second through Maximum 99 seconds set-up possible.

8.FAN DELAY OFF
.SET TIME 30 SEC

[4]-4 REOPERATING TIME SET-UP

- DELAY TIME SET-UP MODE when the machine stops by sudden blackout under operating and reoperates itself after the blackout.
- If you press the option Key no.10 in the present temperature·humidity signal part, you can see the picture as below, and set up 1 minute unit when you press the UP or DOWN Key here.

  Minimum 1 minute through Maximum 5 minutes set-up possible.

9.RESTART MOVING
.SET TIME 01 MIN

[4]-5 AUTOMATIC SHIFT-RUNNING TIME SET-UP

- Only one compressor's keep-running when you have more than two puts itself beyond its power and influences the durability. It is an automatic shift-running time set-up mode to prevent this problem.
- If you press the option Key no.11 in the present temperature·humidity signal part, you can see the picture as below, and set up 1 hour unit when you press the UP or DOWN Key here.

  Minimum 00 hour through Maximum 23 hours set-up possible.

10.AUTO ROTARY
.SET TIME 02 H.R

[4]-6 COMPRESSOR RUNNING TIME CUMULATIVE CALCULATION MODE

- Once the compressor runs by the cooling condition, in consequence compressor 1,2 running time is cumulatively calculated and the counted time shows up.
- If you press the option Key no.12 in the present temperature·humidity signal part, you can see the picture as below.

[COMP1,2RUN TIME]
.TIME [999999HR]

[4]-7 COOLING, HEATING, HUMIDITY, DEHUMIDITY ON/OFF SET-UP MODE

- When each equipment malfunctions or is not used depending on the surrounding condition, you can choose the mode and control the equipment's ON/OFF.

  The ON/OFF decision then is selected as the UP/DOWN SWITCH.

11. COOL CONTROL "OUT STATUS ON" "OUT STATUS OFF"	12. HEAT CONTROL "OUT STATUS ON" "OUT STATUS OFF"	13.HUMI CONTROL "OUT STATUS ON" "OUT STATUS OFF"	14.DEHUM CONTROL "OUT STATUS ON" "OUT STATUS OFF"

[5] ALARM MESSAGE

- While it shows 12 monitor messages when the machine runs normal, 13 monitor messages show up when the alarm occurs when you press the option Key.
- Once alarm occurs, alarm message shows up with [ERROR MESSAGE] signal.

  Alarm has total 9 sorts, and when several alarms occur you can check all the alarm messages pressing the DOWN Key.

(1) Displays when the indoor FAN MG.OVERLOAD TRIP or AIR FLOW S/W causes over-wind. All outputs stop. To clear the alarm message, turn OFF the MICOM and turn it ON.

[ERROR MESSAGE]
BLOWER OVER LOAD

(2) Displays when the LP,HP,COMP OVERLOAD,C/FAN OVERLOAD of the Compressor 1 is tripped. Only Compressor 1 output stops. To clear the alarm message, turn OFF the MICOM and turn it ON.

[ERROR MESSAGE]
COMP1 OVER LOAD

(3) Displays when the LP,HP,COMP OVERLOAD,C/FAN OVERLOAD of the Compressor 2 is tripped. Only Compressor 2 output stops. To clear the alarm message, turn OFF the MICOM and turn it ON.

[ERROR MESSAGE]
COMP2 OVER LOAD

(4) Displays when the re-heating machine is over-heated.
Only re-heating machine output stops. Once the over-heated heater cools down, the alarm message automatically disappears.

[ERROR MESSAGE]
HEATER T.C ERROR

(5) Displays when the humidity heater is over-heated.
Only the humidity heater output stops. Once the over-heated heater cools down, the alarm message automatically disappears.

[ERROR MESSAGE]
HUMIDI T.C ERROR

(6) Displays when the water is detected in the bottom of the unit because of the leak-water in the condensation-water or humidifier.
Once the water is cleared, the alarm message automatically disappears.

[ERROR MESSAGE]
LEAK WATER ERROR

(7) On taking the input from Smoke detection, all outputs immediately turn off and alarm siren occurs. When the cause is cleared, it operates normally only when you turn the power OFF/ON.

FIRE DETECTION
NOW SYSTEM OFF!

(8) When you try to turn the machine ON/OFF without using communication from remote, this uses a common ON/OFF SWITCH as an ON/OFF control system using points of contact.
If the switch inputs, it works as if you pressed controller's RUN/STOP KEY.

REMOTE ON/OFF
NOW SYSTEM OFF!

6. PROPORTIONAL CONTROL TYPE, ROCK FUNCTION

- ONCE THE OUTLET IS PUT INTO MICOM, THE LIQUID-CRYSTAL MONITOR SHOWS THE NAME AND PHONE NUMBER OF THE COMPANY WHICH PRODUCED CONSTANT TEMP & HUMIDITY EQUIPMENT, TESTS THE LAMP BEHIND THE LIQUID-CRYSTAL AND INDICATES IMMEDIATELY THE PRESENT TEMPERATURE·HUMIDITY.

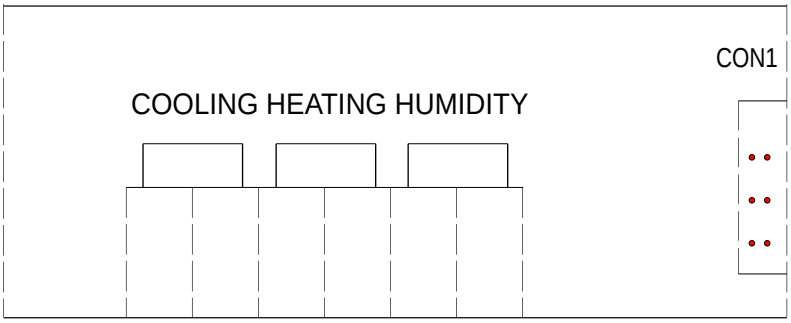
ABCD ENGINNERING
A/S:(0123)123-4567

ROOM TEMP & HUMI
[23.5 'C : 52.5%RH]

- Controller for proportional control consists of total 7 modes, the other signals are the DRAIN VALVE ON\OFF TIME set-up mode and AUTO ROTARY TIME set-up mode in the general ON/OFF TYPE AUTO ROTARY: Remaining time signal absent, and anything else is same as the general TYPE. Besides, you can set up the set-up and induced temperature for 0.5? unit.

- DIP S /W no 6 ON :COOLING & DEHUMIDITY PROPORTIONAL CONTROL OUTPUT no .8 OFF : COOLING & DEHUMIDITY STEP CONTROL

HEATING & HUMIDITY CONTROLS THE STEP AND THE PROPORTIONAL CONTROL AT THE SAME TIME .



(PROPORTIONAL CONTROL TYPE electric connection map)

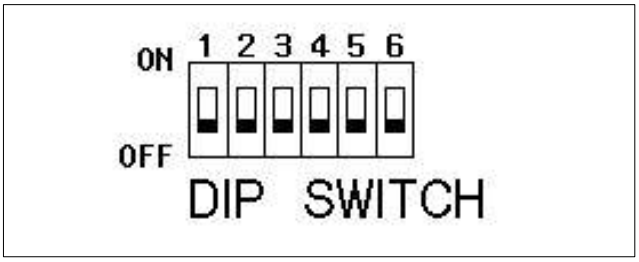
• LOCK FUNCTION (OPTIONAL)

? Allowed LOCK FUCTION so that those who are not the person in charge should not control the machine at random in the place where the CONSTANT TEMP & HUMIDITY EQUIPMENT installed .- In order to turn on the machine ,operate it or change the set -up charge at the beginning ,you can control only when you removed the LOCK function .Then press the RUN /STOP KEY ,and press the password number when you see 'PRESS PASSWORD ' 'CODE [ ] 'MESSAGE .When there is no Key -input for 15 seconds ,it returns to the original state ,and if this repeats 3 times ,you cannot unlock the LOCK .If you want to input again ,please turn the power OFF and ON .The LOCK automatically locks when there is no Key -input for 15 seconds .Password number KEY contents are as following :

.RUN /STOP KEY - - 1 ,MODE KEY - - 2 ,UP KEY - - 3 ,DOWN KEY - - 4 ,RESET KEY - - 5

• DIP SWITCH SET-UP DIRECTION

• DIP S/W is located in the middle of MICOM main body on the rightmost.



• HEATER STEP SET-UP DIRECTION(NO.1,NO.2)

NO.1 NO.2

ON OFF ----- 3 STEP

OFF ON ----- 4 STEP

OFF OFF ----- 5 STEP

COOLING STEP SET-UP DIRECTION(NO.3)

NO.3 ON ----- 1 STEP

NO.3 OFF ----- 2 STEP

· HUMIDIFYING-HEATER STEP SET-UP DIRECTION(NO.4)

NO.4 ON ----- 1 STEP

NO.4 OFF ----- 2 STEP

7. TEMPERATURE·HUMIDITY CONTROL FUNCTION

- ·Cooling· Heating, Humidity· Dehumidity outputs turn ON/OFF after time-delay because they perceive and indicate the temperature· humidity change within a second in the room.

[1] COOLING

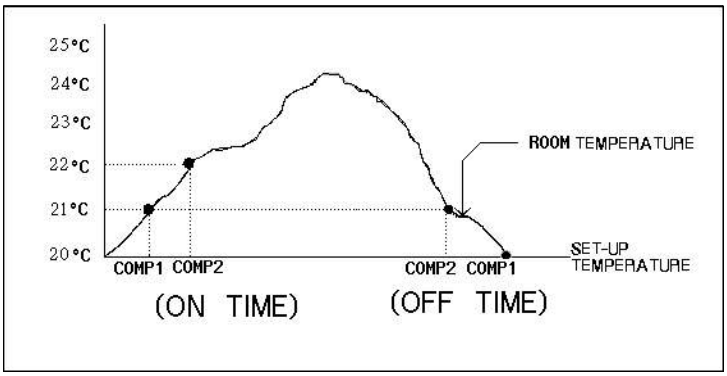
Runs when the ROOM temperature is higher than the fixed temperature, and compressor's operating point is decided by induced temperature.

The order that Compressor stops is always first turn-on turns off first.

When it turns off, CS(comp solenoid valve) immediately turns off, and C(COMP output) turns off after 30 seconds.

COMP 1,2's operating point and stop point
COMP 1 ON TEMPERATURE : SET-UP TEMPERATURE + INDUCED TEMPERATURE
COMP 2 ON TEMPERATURE : COMP 1 ON TEMPERATURE + INDUCED TEMPERATURE
COMP 1 OFF TEMPERATURE : COMP 2 ON TEMPERATURE - INDUCED TEMPERATURE
COMP 2 OFF TEMPERATURE: COMP 1 OFF TEMPERATURE - INDUCED TEMPERATURE(=SET-UP TEMPERATURE)

E.G.) WHEN SET-UP TEMPERATURE: 20°C AND INDUCED TEMPERATURE: 2°C
COMP 1 ON TEMPERATURE= 20°C + 2°C= 22°C
COMP 2 ON TEMPERATURE= 22°C + 2°C= 24°C
COMP 1 OFF TEMPERATURE= 24°C - 2°C= 22°C
COMP 2 OFF TEMPERATURE= 22°C - 2°C= 20°C



[2] HEATING

Operates when the room temperature is lower than the set-up temperature, and Heater's operating point is decided by the induced temperature.

The order that Heater stops is always first turn-on turns off first.

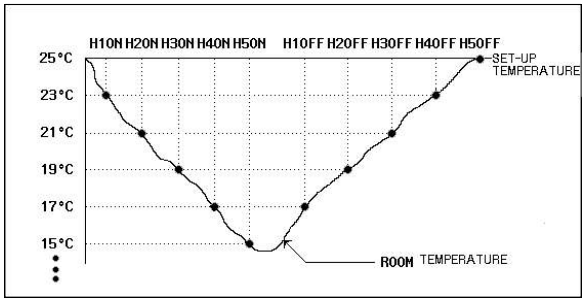
·HEATER 1 ~ 5's operating point and stop point
HEATER 1 ON TEMPERATURE :SET-UP TEMPERATURE - INDUCED TEMPERATURE
HEATER 2 ON TEMPERATURE :HEATER 1 ON TEMPERATURE - INDUCED TEMPERATURE
HEATER 3 ON TEMPERATURE :HEATER 2 ON TEMPERATURE - INDUCED TEMPERATURE
HEATER 4 ON TEMPERATURE :HEATER 3 ON TEMPERATURE - INDUCED TEMPERATURE
HEATER 5 ON TEMPERATURE :HEATER 4 ON TEMPERATURE - INDUCED TEMPERATURE

HEATER 1 OFF TEMPERATURE :HEATER 5 ON TEMPERATURE + INDUCED TEMPERATURE
HEATER 2 OFF TEMPERATURE :HEATER 1 OFF TEMPERATURE + INDUCED TEMPERATURE
HEATER 3 OFF TEMPERATURE :HEATER 2 OFF TEMPERATURE + INDUCED TEMPERATURE
HEATER 4 OFF TEMPERATURE :HEATER 3 OFF TEMPERATURE + INDUCED TEMPERATURE
HEATER 5 OFF TEMPERATURE :HEATER 4 OFF TEMPERATURE + INDUCED TEMPERATURE(SET-UP TEMPERATURE)

E.G.) WHEN SET-UP TEMPERATURE: 25°C AND INDUCED TEMPERATURE: 2?

HEATER 1 ON TEMPERATURE= 25°C - 2°C= 23°C
HEATER 2 ON TEMPERATURE= 23°C - 2°C= 21°C
HEATER 3 ON TEMPERATURE= 21°C - 2°C= 19°C
HEATER 4 ON TEMPERATURE= 19°C - 2°C= 17°C
HEATER 5 ON TEMPERATURE= 17°C - 2°C= 15°C

HEATER 1 OFF TEMPERATURE= 15°C + 2°C= 17°C
HEATER 2 OFF TEMPERATURE= 17°C + 2°C= 19°C
HEATER 3 OFF TEMPERATURE= 19°C + 2°C= 21°C
HEATER 4 OFF TEMPERATURE= 21°C + 2°C= 23°C
HEATER 5 OFF TEMPERATURE= 23°C + 2°C= 25°C



[3] HEATING

Operates when the room Humidity is lower than the set-up Humidity, and Humidifier's operating point is decided by the induced humidity.

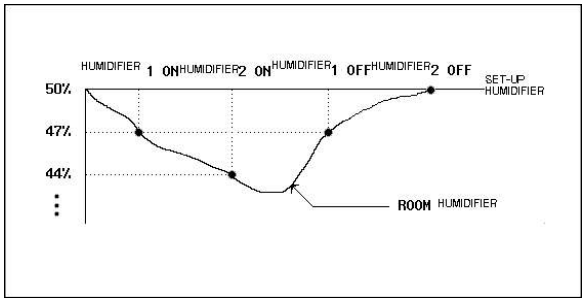
The order that Humidifying-Heater stops is always first turn-on turns off first.

Humidifying-Heater 1,2's operating point and stop point
Humidifying-HEATER 1 ON HUMIDITY : SET-UP HUMIDITY - INDUCED HUMIDITY
Humidifying-HEATER 2 ON HUMIDITY : Humidifying-HEATER 1 ON HUMIDITY - INDUCED HUMIDITY

Humidifying-HEATER 1 OFF HUMIDITY : Humidifying-HEATER 2 ON HUMIDITY + INDUCED HUMIDITY
Humidifying-HEATER 2 OFF HUMIDITY : Humidifying-HEATER 1 OFF HUMIDITY + INDUCED HUMIDITY(=SET-UP HUMIDITY)

E.G.) WHEN SET-UP HUMIDITY: 50% AND INDUCED HUMIDITY: 3%
Humidifying-HEATER 1 ON HUMIDITY= 50% - 3%= 47%
Humidifying-HEATER 2 ON HUMIDITY= 47% - 3%= 44%

Humidifying-HEATER 1 OFF HUMIDITY= 44% + 3%= 47%
Humidifying-HEATER 2 OFF HUMIDITY= 47% + 3%= 50%



[4] DEHUMIDITY

Operates when the room HUMIDITY is higher than the set-up HUMIDITY, and COMP's operating point is decided by the induced humidity.

The order that COMP stops is always first turn-on turns off first.

When it turns off, CS(electron) immediately turns off, and C(COMP output) turns off after 30seconds.

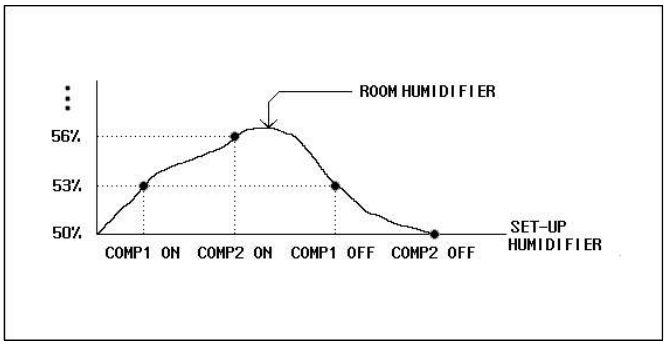
When the room temperature falls down by the dehumidity running ,Re -heating operator runs to compensate for the temperature .Then the Heater step -runs by hours regardless of the induced temperature .i $tep per 40 seconds)

COMP 1,2's operating point and stop point
COMP 1 ON HUMIDITY : SET-UP HUMIDITY + INDUCED HUMIDITY
COMP 2 ON HUMIDITY : COMP 1 ON HUMIDITY + INDUCED HUMIDITY

COMP 1 OFF HUMIDITY: COMP 2 ON HUMIDITY - INDUCED HUMIDITY
COMP 2 OFF HUMIDITY: COMP 1 OFF HUMIDITY - INDUCED HUMIDITY(=SET-UP HUMIDITY)

E.G.) WHEN SET-UP HUMIDITY: 50% AND INDUCED HUMIDITY: 3%
COMP 1 ON TEMPERATURE= 50% + 3%= 53%
COMP 2 ON TEMPERATURE= 53% + 3%= 56%

COMP 1 OFF HUMIDITY= 56% - 3%= 53%
COMP 2 OFF HUMIDITY= 53% - 3%= 50%



8. CONTROLLER INSTALLATION

[1] CONTROLLER INSTALLATION : INSTRUCTIONS

(1) HOW TO CONNECT THE CONTROLLER MAIN BODY

?BE CAUTIOUS TO WATER, MOISTURE PERMEATION

?NO DIRECT IMPACT ALLOWED FROM BLOWER'S WAVE

? BE CAUTIOUS NOT TO INHALE AN ALIEN SUBSTANCE(CHEAP) THAT OCCURS DURING DRILLING

?BE CAUTIOUS NOT TO CONFUSE ALARM LINE WITH 220V OUTLET LINE

* DO NOT HAVE MONITOR CABLE(DATA LINE) GO WITH 380,220V(A POWER LINE) TOGETHER(IT MAY CAUSE THE NOISE)

(2) TEMPERATURE·HUMIDITY SENSOR LOCATION

?Avoid the place where the SENSOR water can be sucked with Evaporator freezing

?Be not affected by Evaporator low temperature

?Avoid the suction of Evaporator frost·shaved ice

?Avoid the direct impact to the Humidifier's water

?Avoid the direct impact from HEATER's temperature

?Connect shield wire to G out of V,T,H,G among SENSOR lines

(3) WATER DETECTOR INSTALLATION (LEAKING WATER SENSOR)

? Cautious not to have the building's contact point reach the SENSOR line by insulating with the flat(concret)

(Install the cracked part between tiles not to be affected

?Test the interval between lines as 2 3Cm

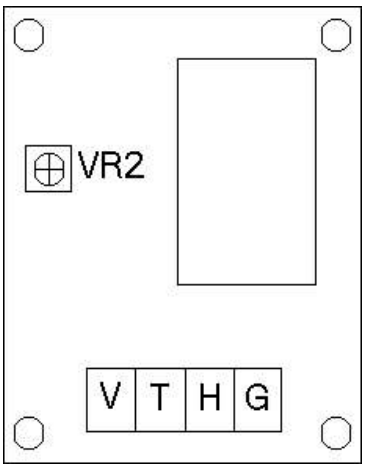
(4) CHECK -OUT AFTER INSTALLATION

?Make sure if DIP SWITCH chosen correctly

?Check out if Temperature· Humidity SETTING charge is correct

[2] TEMPERATURE·HUMIDITY VARIATION CONTROL

?When you open the SENSOR case, you can see a Variable Resistance which can be controlled by a small screwdriver as following picture



VR2 : Humidity control, Clockwise Increase, Counterclockwise Decrease

[3] TEMPERATURE • HUMIDITY SENSOR ERROR CHECK

- The outlet of the Temperature·Humidity SENSOR is DC 15V and outlet is DC 0 1V .
- Check if DC 15V flows out putting the Red probe to V and earthy colored probe to G by using the Digital Tester.
- You can read the temperature charge putting out of SENSOR when you put the Red probe to T and earthy colored probe to G.
- You can read the humidity charge putting out of SENSOR when you put the Red probe to H and earthy colored probe to G as following table.

TEMPERATURE HUMIDITY			
SENSOR OUTPUT	TEMP.	SENSOR OUTPUT	HUMID.
0.1V(=100mV)	10°C 0.	1V(=100mV)	10%
0.2V(=200mV)	20°C	0.2V(=200mV)	20%
0.3V(=300mV)	30°C	0.3V(=300mV)	30%
0.4V(=400mV)	40°C	0.4V(=400mV)	40%
0.5V(=500mV)	50°C	0.5V(=500mV)	50%
0.6V(=600mV)	60°C	0.6V(=600mV)	60%
0.7V(=700mV)	70°C	0.7V(=700mV)	70%
0.8V(=800mV)	80°C	0.8V(=800mV)	80%
0.9V(=900mV)	90°C	0.9V(=900mV)	90%

9. COMPARISON TABLE OF MICRO PROCESSOR SYSTEM WITH SEQUENCE SYSTEM

ITEMS	Micro Processor Control (ELECTRONIC WAY)	Sequence Control (ELECTRIC WAY)	ETC.
1. ECONOMICAL EFFICIENCY	1. Various functions are built in. Easy to add extra function with Program change	Carry-out function is limited and extra functional change is difficult	Additional function adds the parts and increases the prime cost
	2. Local wiring is simple to make wiring possible with about 1/3 of electric way on the basis of the practice use	Local wiring is intricate and takes long time.	Wiring is simple and malfunctioning parts are easy to check to save time.
	3. When error occurs, treatment is possible without a skilled worker	A skilled worker only can handle.	
2. WAY OF CONTROL	Partial Rotary run system extends the durability	Impossible to consist the Rotary run system	Often change is required for the continuously operating part
3. REMOTE WATCHING CONTROL SYSTEM	1. Easy to notice the temp/humid state in the room	Simple function is possible by using PLC but limited function	PLC TYPE costs much and less efficient. maintenance and repair is possible with small members
	2. Unmanned management of equipment, running condition, alarm state etc, is possible anywhere in the country	Not Available (Function limited)	Uncomparable difference in price
	3. When obstacle occurs, you can see the alarm of the region, equipment and the part.	Temperature use controller and Humidity use controller required to be attached to consist	
4. STATE OF TEMP/ HUMID SIGNAL	Indicates the state of temp/humid in Digital in one place.		
5. WAY OF TEMP/HUMID CONTROL	Temp/Humid set-up charge can be altered at random	Not Available	

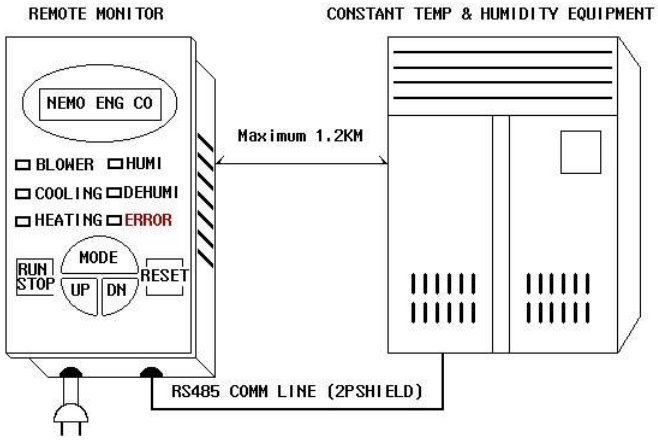
10. CHECK-UP FOR A/S

MALFUNCTIONING CONDITIONS	CHECK-UP ORDER	TREATMENT
1. POWER IS ON BUT DOES NOT WORK	AC 220V TERMINAL INPUT CHECK-UP FUSE(1A) ON BOARD CHECK-UP MONITOR CABLE CONNECTION CHECK-UP	OUTLET SUPPLY CHECK-UP CHANGE THE FUSE TIGHTEN THE CONNECTION BOLT
2. PRESS RUN/STOP KEY BUT BLOWER MG DOES NOT STICK TO (MONITOR'S RUNLED IS ON)	AC 220V TERMINAL R,S SHAPE CHECK-UP BLOWER MG. OVER LOAD'S TRIP CHECK-UP VOLTAGE OF COM1 TERMINAL AND FAN TERMINAL 2. CHECK-UP(22OV IS NORMAL) FUSE 3A CHECK-UP	CHANGE R,S SHAPE AND TEST IT RESET AND TEST SERVICE CALL(WHEN OUTPUT 0V)
3. NO SIGN ON LIQUID CRYSTAL DISPLAY	CABLE CONNECTION CHECK-UP DAMAGE BY SHOCK CHECK-UP	TIGHTEN THE CONNECTION BOLT SERVICE CALL
4. TEMP/HUMID IS EXTREMELY HIGH AS 99? ,99% AND SHOWS NO CHANGE	CHECK UP IF V,T,H,G OF TEMP/HUMID SENSOR CONNECTION LINE ARE CORRECTLY CONNECTED	
5. HEATER ALARM OCCURS	CONTACT POINT(NORMALLY CLOSED) OF OVER-HEATING PREVENTOR TC CHECK-UP CONNECTION OF ALARM SIGNAL LINE COM WITH RH TERMINAL CHECK-UP	SHOULD BE CONNECTED AT ORDINARY COM AND RH CONNECTED AT ORDINARY THE CONTACT POINT DISCONNECTS ONLY WHEN OVER-HEATING
6. HUMIDIFIER ALARM OCCURS	CONTACT POINT(NORMALLY CLOSED) OF HEAT-PREVENTOR TC CHECK-UP CONNECTION OF ALARM SIGNAL LINE COM WITH RH TERMINAL CHECK-UP	SHOULD BE CONNECTED AT ORDINARY COM AND HH CONNECTED AT ORDINARY THE CONTACT POINT DISCONNECTS ONLY WHEN OVER-HEATING
7. COMP ALARM OCCURS	COMP MG. OVERLOAD TRIP CONDITION CHECK-UP HIGH RESSURE S/W TRIP CONDITION CHECK-UP PRESSURE S/W AND PIPE LOW PRESSURE CHECK-UP(WHEN COMP RUNS, NORMAL PRESSURE) COMP MG. B CONDITION AND ALARM SIGNAL LINE 1,2 SHIFT CHECK-UP	TRIP RETURNS LOW PRESSOR S/W RUNNING CHECK-UP EXCHANGE THE ALARM SIGNAL LINE 1,2 WITH EACH OTHER
8. BLOWER ALARM (AIR LOSS) OCCURS	BLOWER BELT CHECK-UP CONTACT POINT OF AIR FLOW SWITCH OR THAT OF BLOWER MG. A CHECK-UP (M/G CHECK-UP)	CONTACT POINT SHOULD BE CONNECTED WHEN BLOWER NORMALLY RUNS
9. LEAK WATER ALARM OCCURS	LEAKING WATER SENSOR ON THE BOTTOM CHECK-UP SENSOR'S SHORT CONDITION CHECK-UP	AUTOMATIC ELIMINATION WHEN WATER IS CLEARED
10. TEMP/HUMID SENSOR ALARM OCCURS	SENSOR CABLE DISCONNECTION AND DISABILITY TO CONTACT	CABLE CONNECTION CHECK-UP

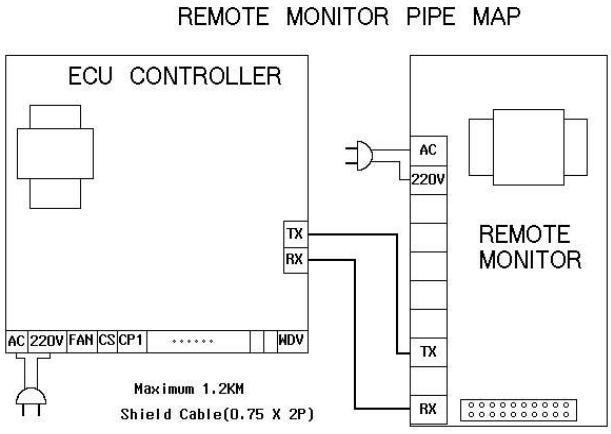
11. OPTIONS

[1] R.M (REMOTE MONITOR)

When the CONSTANT TEMP & HUMIDITY EQUIPMENT are apart, you can see the Temp/Humid set-up and Alarm condition with easy and simple installation for cheap price.



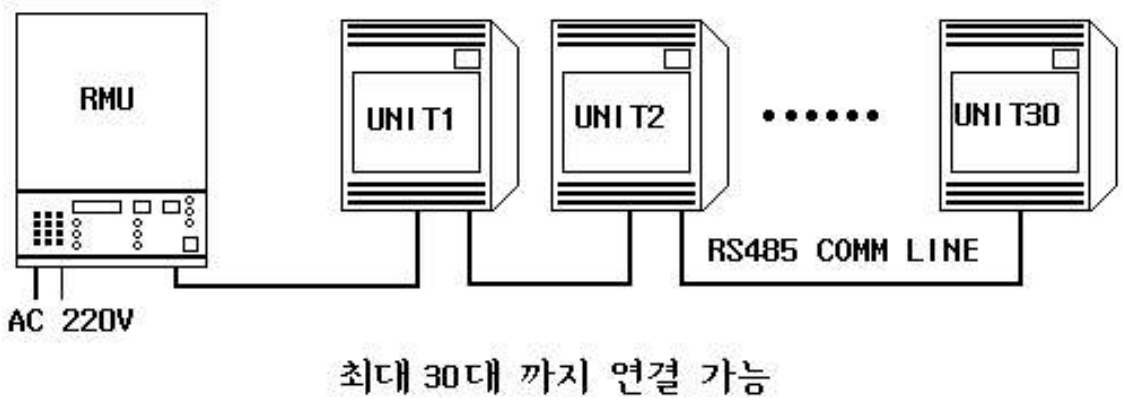
[2] REMOTE MONITOR WITH CONSTANT TEMP & HUMIDITY EQUIPMENT CONNECTION



[3] R.M.U (REMOTE MONITORING UNIT)

. IF YOU WANT TO RUN SEVERAL CONSTANT TEMP & HUMIDITY EQUIPMENTS IN ONE PLACE, FOLLOWING FUNCTIONS ARE BUILT IN TO MEET IT.

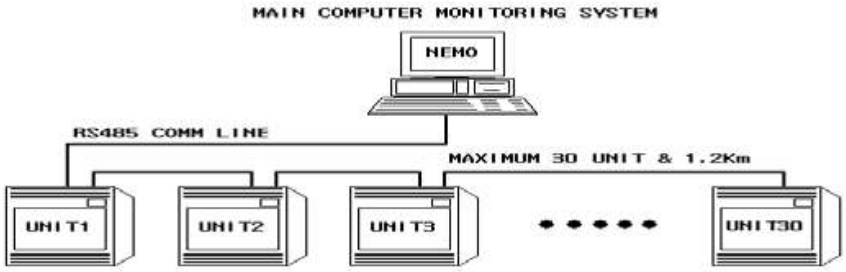
- CONNECTION WITH PC.(REMOTE OBSERVATION CONTROL FUNCTION)
- BEEPING FUNCTION TO INFORM THE ALARM CONDITION TO THE MANAGING DIRECTOR
- RESERVATION FOR EACH EQUIPMENT
- CONTROL AND OBSERVATION FUNCTION FOR EACH EQUIPMENT (DRY COOLER: POSSIBLE FOR OUTDOOR EQUIPMENT)
- ITEMS AVAILABLE FOR CONTROL AND OBSERVATION: CONSTANT TEMP & HUMIDITY EQUIPMENT, SIPHON, DRY COOLER, AIR CONDITIONER, CHILLER ETC.

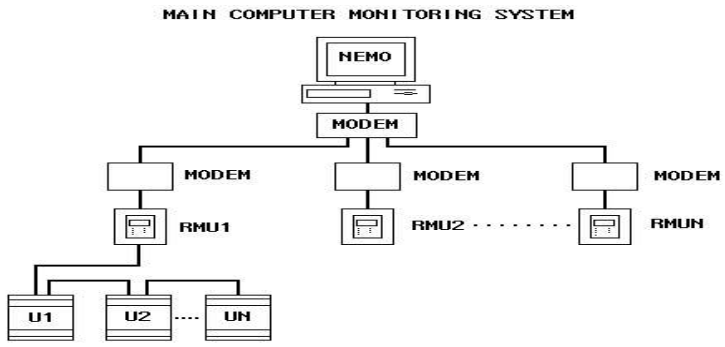


[4] HOST COMPUTER

A COMPUTER SYSTEM REQUIRED WHEN YOU WANT TO MANAGE THE DISPERSED CONSTANT TEMP & HUMIDITY EQUIPMENT IN A CERTAIN PLACE

- TEMP/HUMID CHANGE CHECK-UP FOR EACH EQUIPMENT.
- AUTOMATIC PRINTING OF ALARM STATE AND ALARM OCCURRENCE FOR EACH EQUIPMENT.





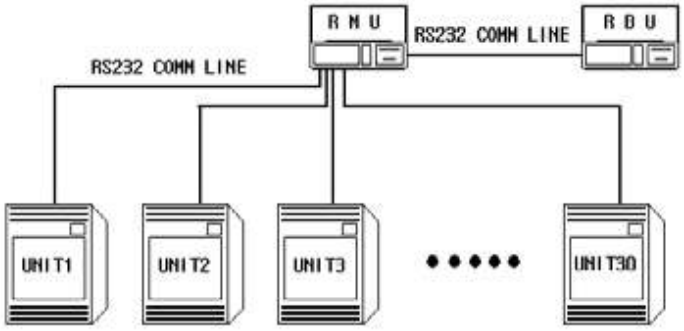
[5] RELAY BOARD

1. THIS RELAY BOARD IS DESIGNED TO USE THE COMMUNICATION NETWORK AND ANALYZE PRESENT DATA OF EQUIPMENT IN FAR DISTANCE, THEN OUTPUTS THE RUNNING OR MALFUNCTIONING CONDITION AS RELAY CONTACT POINT. IT MEETS THE OPTIMAL CONDITIONS FOR AN EQUIPMENT NEEDED CONTACT POINT INPUT.

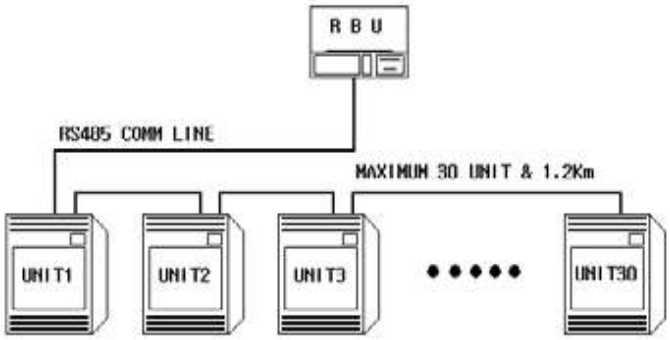
2. BASIC OPTION AND FUNCTION

- RATED INPUT VOLTAGE: AC220V ?OUTPUT CONTACT POINT: 60POINT(MAXIMUM TO 90POINT EXTENDED)
- COMMUNICATION PORT: RS485,RS232
- TEMP/HUMID CONDITION INSPECTION FOR EACH EQUIPMENT. CONTACT POINT RELAY OUTPUT OF OPERATING AND MALFUNCTIONING CONDITIONS RELAY

SYSTEM COMPOSITION #1



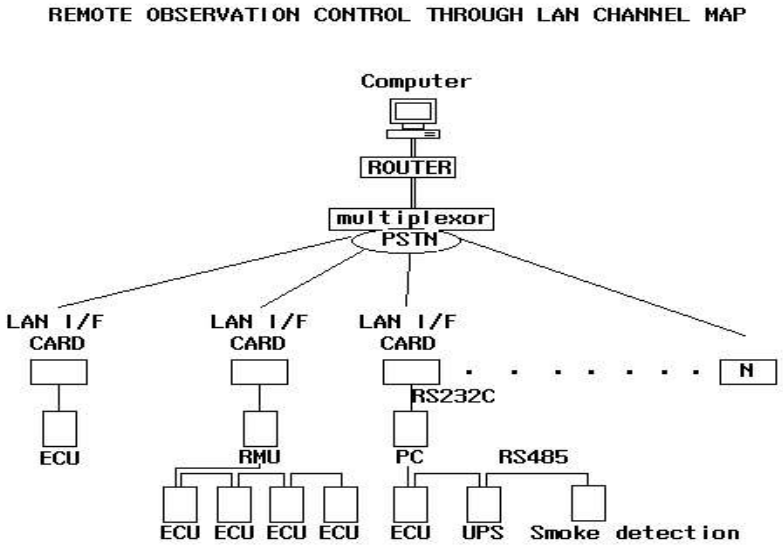
SYSTEM COMPOSITION #2



[6] REMOTE OBSERVATION CONTROL THROUGH LAN: CHANNEL MAP

A COMPUTER SYSTEM REQUIRED WHEN YOU WANT TO MANAGE THE DISPERSED CONSTANT TEMP & HUMIDITY EQUIPMENT IN A CERTAIN PLACE.

- TEMP/HUMID CHANGE CHECK-UP FOR EACH EQUIPMENT.
- AUTOMATIC PRINTING OF ALARM STATE AND ALARM OCCURRENCE FOR EACH EQUIPMENT.



– PRODUCTS IN SERVICE –

- ☆ FOR CONSTANT TEMP &HUMIDITY EQUIPMENT USE MICOM CONTROLLER (FOR PROPORTIONAL CONTROL USE ,COMMUNICATION USE ,AIR CONDITIONING USE ,DUCT USE)
- ☆ ELECTRON POLE FILLING MICOM CONTROLLER
- ☆ FOR LOW TEMPERATURE STOREHOUSE USE MICOM CONTROLLER
- ☆ FOR SHOW CASE USE MICOM CONTROLLER (COMPRESSOR MULTI FOR MANY ITEMS USE)
- ☆ FOR MUSHROOM CULTIVATION USE MICOM CONTROLLER
- ☆ FOR F F U USE MICOM CONTROLLER
- ☆ FOR VAPORIFIC HUMIDIFIER USE MICOM CONTROLLER
- ☆ FOR C P U CHILLER USE MICOM CONTROLLER
- ☆ FOR COOLING TOWER USE MICOM CONTROLLER
- ☆ FOR A BASE STATION COOLER USE MICOM CONTROLLER
- ☆ FOR WASHING MACHINE USE MICOM CONTROLLER
- ☆ FOR ENVIRONMENTAL SIGNAL OBSERVATION USE MICOM CONTROLLER
- ☆ RELAY BOARD SYSTEM &REMOTE MONITORING UNIT
- ☆ REMOTE OBSERVATION CONTROL SYSTEM
- ☆ PROPORTIONAL OUTPUT OF TEMPERATURE· HUMIDITY MODULE (4 - 20mA OR 0 - 10V)
- ☆ STEAM HUMIDIFIER MICOM CONTROLLER
- ☆ FOR FREEZING ,AIR CONDITIONING AND INDUSTRY USE ETC . MICOM CONTROLLER DESIGNED AND PRODUCED

QUALITY CERTIFICATE

PRODUCT NAME		
TYPE NAME		
STOCK NUMBER		
PURCHASE SPOT		PURCHASE DATE:
TERM OF GUARANTEE		

WOLF INTERNATIONAL HAS MADE EVERY EFFORT TO ENSURE THE ACCURACY OF THE SPECIFICATIONS CONTAINED IN THIS MANUAL AND TO GUARANTEE THE QUALITY OF PRODUCTS.

- IF YOU HAVE TROUBLE WITH OUR PRODUCTS SUCH AS INFERIORITY, NON STANDARDIZED ARTICLES AND ETC. WITHIN THE TERM OF GUARANTEE, WE IMMEDIATELY EXCHANGE THEM WITH NEW PRODUCTS.
- WE OFFER A FREE AFTER-SERVICE WITHIN THE TERM OF GUARANTEE EXCEPT FOR THE BREAKDOWN FROM CARELESS TREATMENT OR FOR EXTERNAL IMPACT.
- THE TERM OF GUARANTEE IS 1 YEAR FROM THE DATE OF PURCHASE
- FOR PRODUCT REPAIR, WE HOLD THE PRODUCT CONTENTS FOR 5 YEARS AFTER THE PRODUCT'S CEASE.

FOLLOWING CASES REQUIRE THE CUSTOMERS TO PAY FOR THE SERVICES

- IMPAIR OR READJUSTMENT NEEDED FOR WILLFUL NEGLIGENCE OR INFERIOR OUTLET
- FIRE, FLOOD, EARTHQUAKE, LIGHTNING ETC. CAUSED THE DAMAGE
- INFERIOR OPERATING, DAMAGE, INJURY NOT CAUSED BY ENGINEERS OF OUR COMPANY
- THE TERM OF GUARANTEE EXPIRED.
- BASIS OF COMPENSATION FOR PRODUCTS REPAIR AND EXCHANGE: IT FOLLOWS THE COMPENSATION REGULATIONS OF NOTIFICATION OF THE ECONOMIC PLANNING BOARD FOR CUSTOMERS.

PLEASE CONTACT THE AFTER SERVICE CENTER OF OUR COMPANY
IF YOU HAVE ANY TROUBLE WITH THE PRODUCTS.

Main Office :
WOLFrost International LLP
India & Far East

Regional Sales & After Sales Sevice Contact :
WOLF International - SAIF ZONE
Middle East & North Africa

for more information VISIT
www.wolfmep.com

Contact :
info@wolfmep.com

WI / CCU-TDB / KI / 09-11 / R1/03-13