

# JAKKA CONTROL KIT 5

## USER MANUAL



# 1. ROOM THERMOSTATE

- 3.1" Screen
- 6 Steps control of exhaust and supply fans
- Working of the unit in Automatic/Manual Modes
- Heating/Cooling /Fan Modes
- Room Temperature Sensor
- User Friendly Design
- Minimum ve Maximum Set Temperature Limit
- Constant HVAC-R Images
- Weekly Programming

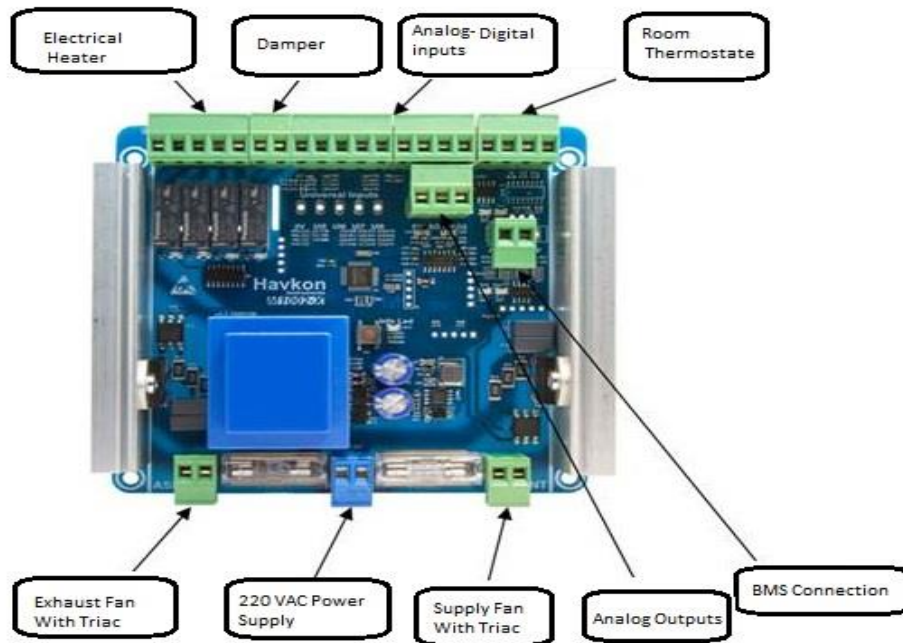
## 2. CONTROL PANEL

### Control Panel

**Control Panel** run the heat recovery units by controlling supply and exhaust fans separately and controlling electrical heater in steps.. It is also possible to control pre and after heater, fresh air damper, bypass damper, heating coil, cooling coil and also EC fans

#### Main Features:

- Filter Alarm According to Pre-set Time counter (Pre-set Service Time)
- Pre programmed scenario selection via room thermostat
- Adjustable Mode selection (Auto Heating, Auto Cooling, , Manual Heating , Manual Cooling, Fan Mode)
- Restart with the last parameters in case of power shortage
- Connection to building management system (Modbus-RTU)
- Weekly Programming



# 3. SPECIFICATIONS

## Environmental Specs

Working and Storage Temperature: 0 ... +50°C

Protection Class: EN 60529 - IP00

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## Electrical Specs

Control : Room Thermostate/BMS

Relay Current Capacity: Resistive 5A (Heating Contactor)

Power Supply: 230V AC

PhaseShut Down : 10A (6 Steps)

Consumption: Max 5VA, Connection 1,5mm<sup>2</sup> clips

## Functional Specs

On/ Off via BMS

Embedden temperature sensor to room thermostate

Control Of;

- Duct Type Temperature Sensor
- Fresh Air Damper
- Bypass Air Damper
  - External Sensor Connection (NTC 10K)
  - 6 Steps Manuael or Auto Speed Selection for Exhaust and Supply Fans seperately

Unit On/Off info

Weekly Programming

Carbondioxide/Air Quality Sensor Control (0-10V)

Proportional Valve Control

EC Fan Control

## FEATURES OF ROOM THERMOSTATE:

### A.) HOW TO MAKE WEEKLY PROGRAMMING:

- Press **FAN** button for two (2) seconds while the unit is on.
- You will see “00” at the upper-right part of the screen, then press **Mode / OK** button.
- You can select starting and stopping time for each day of the week with **UP** and **DOWN** buttons on the weekly programming screen. Go on by pressing **Mode/OK** button.
- To go back to previous screen and/ or to exit , use **ON/OFF** button.

Note1 : Unit will not work if starting time is later than stopping time.

Note2 : Unit will not work if starting time is same with stopping time.

Note3 : There will be a clock symbol on the screen, if unit works in weekly programmed hours.

Note4 : There will be a clock deleting symbol on the screen, if unit works out of weekly programmed hours.

### B.) SETTING DATE AND TIME:

- Press **Fan** button for two (2) seconds while the unit is on.
- You will see “00” at the upper-right part of the screen, then change it to “01” by using **UP** and **DOWN** buttons, then press **Mode/OK** button.
- Set hour/minute by pressing **UP** and **DOWN** buttons then go on by pressing **Mode/OK**
- Set day/month by pressing **UP** and **DOWN** buttons then go on by pressing **Mode/OK**
- Set year by pressing **UP** and **DOWN** buttons then go on by pressing **Mode/OK**
- Set name of the day by pressing **UP** and **DOWN** buttons then go on by pressing **Mode/OK**

### C.) CHANGING UNIT MODE:

- The mode can be selected by pressing **Mode/OK** button when the unit is on.
- When the unit is at manual heating, manual cooling or fan mode, by pressing **Mode/OK** button fan speed and set temperature can be adjusted. You can go to next screen by pressing **Mode/OK** button
- When the unit is at auto mode, passing to the next mode is possible by pressing **Mode/OK** button

### D.) CHANGING SET TEMPERATURE:

- When unit is on and in **auto mode**, using **UP** and **DOWN** buttons ,set temperature number will start blinking. Set temperature can be selected by pressing **UP** and **DOWN** buttons.
- When unit is on and in **manual mode**, using **UP** and **DOWN** buttons ,set temperature number will start blinking. Set temperature can be selected by pressing **UP** and **DOWN** buttons.

## **E.) HOW TO ACTIVATE KEYLOCK:**

- Press **FAN** and **DOWN** buttons simultaneously when the unit is on.

There will be a lock symbol on screen after 2 seconds.

All of the buttons will be locked when keylock is on.

## **F.) HOW TO DEACTIVATE KEYLOCK:**

- Press **FAN** and **DOWN** buttons simultaneously when the unit is on.
- Lock symbol on the screen will be deleted after 2 seconds. Then press any button.
- All buttons will be functional again.

## **G.) HOW TO RESET ALARM CODE:**

- If “Err 0001” alarm (or any other alarm) code blinking on screen
- Press **FAN** and **UP** buttons simultaneously

## **H.) HOW TO RESET FILTER DIRTINESS COUNTER:**

- When you got “0001” warning on the screen ,
- You can reset it by pressing **FAN** and **Mode/OK** buttons simultaneously.

Note: You can change filter dirtiness alarm period on Parameter 177 . You can follow the remaining time from Parameter 115 .

## I.) ENTERING TO SERVICE MENU:

To Enter:

- Press **UP** and **DOWN** buttons simultaneously
- Enter service menu password by using **UP** and **DOWN** and press **Mode/OK**.

Note: The Service menu password is “**58**”

- Then go to Parameter you want to change by using **UP** and **DOWN** buttons then press **Mode/OK** button
- Change the parameter by using **UP** and **DOWN** buttons then press **Mode/OK** button.
- Get out of menu by pressing **ON/OFF** button



**Caution :** All the changes on the service menu should be done by authorized personnel. The damage and problems causing by unauthorized changes on the service menu will be on user's responsibility.

## J.) SELECTING TEMPERATURE CONTROL POINT

There are 4 options that unit can check the temperature;

-Room thermostate

-Return Air

-Supply Air

-Outside Air

To select one of these;

- Press **UP** and **DOWN** buttons simultaneously
- Enter service menu password by using **UP** and **DOWN** and press **Mode/OK**.
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Note: Service menu password is **“58”**

- Then go to Parameter “118” by using **UP** and **DOWN** buttons then press **Mode/OK** button
- Change the parameter by using **UP** and **DOWN** buttons then press **Mode/OK** button.

*Parameter 118 could be one of below numbers*

0-Room thermostate  
1-Return Air  
2-Supply Air  
3-Outside Air

- Get out of menu by pressing **ON/OFF** button

Note: Selected sensor should be connected to the card . If not, there will be “- -” symbol on the screen.



## K. SETTING FAN STEP PARAMETERS

Each 6 steps of supply and exhaust fans could be set separately..

To set step value of the fans

- When the unit is connected to power supply , press **UP** and **DOWN** buttons simultaneously
- Enter service menu password by using **UP** and **DOWN** and press **Mode/OK**.
- Go to step needed to be changed **by using UP and DOWN** and press **Mode/OK**.
- Change the value according to table below **by using UP and DOWN** and press **Mode/OK**.
- Check out from the menu by using **ON/OFF** button

Fan Step Parameters			
	130	Exhaust Fan 0. Step Value	0-100
	131	Exhaust Fan 1. Step Value	
	132	Exhaust Fan 2. Step Value	
	133	Exhaust Fan 3. Step Value	
	134	Exhaust Fan 4. Step Value	
	135	Exhaust Fan 5. Step Value	
	136	Exhaust Fan 6. Step Value	
	137	Supply Fan 0. Step Value	0-100
	138	Supply Fan 1. Step Value	
	139	Supply Fan 2. Step Value	
	140	Supply Fan 3. Step Value	
	141	Supply Fan 4. Step Value	
	142	Supply Fan 5. Step Value	
	143	Supply Fan 6. Step Value	

## L. SETTING FRESH AIR DAMPER OPENING TIME

- When the unit is connected to power supply , press **UP** and **DOWN** buttons simultaneously
- Enter service menu password “58”by using **UP** and **DOWN** and press **Mode/OK**.
  
- Go to parameter “199” by using **UP** and **DOWN** and press **Mode/OK**.
- Change the value by using **UP** and **DOWN** and press **Mode/OK**.
- Check out from the menu by using **ON/OFF** button

Note: Parameter 119 values as seconds



**Caution;**If the fans run before damper opens, fan motors could be broken..

## M. ADDING PRE-HEATER

You can add preheater by configuring the below parameters ;

- When the unit is connected to power supply , press **UP** and **DOWN** buttons simultaneously
- Enter service menu password “58”by using **UP** and **DOWN** and press **Mode/OK**.
  
- Go and change to below parameter by using **UP** and **DOWN** and press **Mode/OK**.
- Change the value by using **UP** and **DOWN** and press **Mode/OK**.
- Check out from the menu by using **ON/OFF** button

PARAMETER	SET VALUE	EXPLANATION
423	1	After Heater Relay Selection
152	10	Hysterisis(1C=10)
154	3	PreHetaer Step Quantity

N.		ERROR CODES	TROUBLE SHOOTING
CODE		EXPLANATION	
E	0001	Exhaust Fan Error	Check the fan,connection cables and filter.If 11Ila re fine, reset the alarm by pressing <b>FAN</b> and <b>UP</b> buttons_ <u>simultaneously</u> <u>If there is a broken component replace it with a new one.</u>
E	0002	Supply Fan Error	Check the fan,connection cables and filter.If 11Ila re fine, reset the alarm by pressing <b>FAN</b> and <b>UP</b> buttons_ <u>simultaneously</u> <u>If there is a broken component replace it with a new one.</u>
E	0004	Electrical Heater Error	Check the electrical heater and connection cables ..If 11Ila re fine, reset the alarm by pressing <b>FAN</b> and <b>UP</b> buttons_ <u>simultaneously</u> <u>If there is a broken component replace it with a new one.</u>
E	0008	Exhaust Air Flow Error	Check the exhaust fan,connection cables ,filter and ducting..If 11Ila re fine, reset the alarm by pressing <b>FAN</b> and <b>UP</b> buttons <u>simultaneously</u> <u>If there is a broken component replace it with a new one.If there is an obstacle at the duct systemi, clean it a for a better air flow.</u>
E	0016	Supply Air Flow Error	Check the exhaust fan,connection cables ,filter and ducting..If 11Ila re fine, reset the alarm by pressing <b>FAN</b> and <b>UP</b> buttons <u>simultaneously</u> <u>If there is a broken component replace it with a new one.If there is an obstacle at the duct systemi, clean it a for a better air flow.</u>
E	0099	Connection Error between Controller and Card	Check connection cables between controller and the board
E	0256	Fire Alarm	Check if there is fire or not.. If the alarm is because of a heat transmitter close to room thermostate , or another factor that increases the temperature at the room artificially, make sure that the room thermostate reads the temperature at the normal conditions. Also check the electrical heater at the duct system. If everything is controlled then reset the alarm by pressing <b>FAN</b> and <b>UP</b> buttons simultaneously.

## O. MODBUS – RTU SETTINGS

Enter to Sevice Menu as it is described above (I. Entering To Service Menu)

- For Modbus ID's go to parameter 111 . Go to Modbus ID by using **UP** and **DOWN** buttons Set and confirm by using Mode/Ok

For Modbus Baudrate go to parameter 112 and change Modbus Baudrate by using **UP** and **DOWN** buttons . Set and confirm by using Mode/Ok

0: 1200 Bps

1: 2400 Bps

2: 4800 Bps

3: 9600 Bps

4: 19200 Bps

5: 38400 Bps

6: 57600 Bps

Note1: All Modbus parameters are Holding register.

Note2: All Modbus parameters are Signed Integer16.

## P. MODBUS REGISTER LIST

PLC Register				
<b>Parameters for Controlling the Unit</b>				
4001	0	Unit On/Off	0...1	0: Unit On 1: Unit Off
4002	1	Unit Set Temperature	0...999	280 value means 28 °C
4003	2	Conditioning Mode	0...4	0: Manual Heating 1: Manual Cooling 2: Auto Heating 3: Auto Cooling 4: Auto
4004	3	Exhaust Fan Manual Speed Value	0...6	
4005	4	Supply Fan Manual Speed Value	0...6	
<b>Temperature Parameters</b>				
4006	5	Unit Ambient Temperature	-400...999	280 value means 28 °C
4007	6	Panel Ambient Temperature	-400...999	Temperatire on the propanel
4008	7	Exhaust air temperature	-400...999	Exhaust air temperature
4009	8	Supply air temperarure	-400...999	If there is no temperature value on the unit, the value will be shown as <b>"32767"</b>
4010	9	Outside air temperature	-400...999	
4011	10	Water Coil temperature	-400...999	
4012	11	Evaporator Temperature	-400...999	
4013	12	Condenser Temperature	-400...999	
4014	13	Exchanger Temperature	-400...999	
<b>Unit Performance Parameters</b>				
4015	14	Bms Entry	0...1	0: Unit On 1: UnitOff
4016	15	Boost Entry	0...1	0: Works as prgrammed 1: Fans work in full speed.
4017	16	Exhaust Fan Air Blowing Info	0...1	Info Exhaust Fan
4018	17	Supply Fan Air Blowing Info	0...1	Info for Supply Fan
4019	18	Filter 1 Dirtiness Info	0...1	
4020	19	Filter 2 Dirtiness Info	0...1	
4021	20	Electrical Heater Safety Thermostat Info	0...1	Safety Thermostate Info

4022	21	Exhaust Fan Thermal Error Info	0...1	Exhaust Fan Error Info
4023	22	Supply Fan Thermal Error Info	0...1	Supply Fan Error Info
4024	23	Emergency Stop Button Info	0...1	Emergency Stop Button Info
4025	24	Low Pressure Info	0...1	Low Pressure Info
4026	25	High Pressure Info	0...1	High Pressure Info
4027	26	Fire Info	0...1	Fire Info Entry
4028	27	Frost Thermostate Info	0...1	Frost Thermostate Info (Valves are open and fans are closed during water coil application)
4029	28	Compressor Thermal Error Info	0...1	Compressor Thermal Info (If there is an error on the compressor, it will be stopped.)
4030	29	Phase Error Info	0...1	Phase error Info (Unit will be stopped.)
4031	30	Exchanger Frost Info	0...1	
4032	31	VRF Error	0...1	
4033	32	VRF Defrost	0...1	

Unit Analog Entry Registers				
4034	33	Humidity Value	0...1000	The value should be between 321 to 340 .
4035	34	Air Quality Value	0...1000	
4036	35	CO2 Value	0...1000	
4037	36	Return Pressure Value	0...1000	
4038	37	Blowing Pressure value	0...1000	
4039	38	Analog 1 Set Value		
4040	39	Analog 2 Set Value		
4041	40	Analog 3 Set Value		
Mixing Damper Registers				
4042	41	Mixing Damper Mode	0...1	
4043	42	Mixing Damper Manual Value		
Digital Putput Online Registers				
4044	43	Fresh Air/Suction Damper Motor	0...1	0:Off 1:On
4045	44	ByPass Damper Motor	0...1	0:Off 1:On
4046	45	Heating/Cooling Coil Valve Exit	0...1	0:Off 1:On
4047	46	Heating Coil On/Off Exit	0...1	0:Off 1:On
4048	47	Cooling Coil On/Off Exit	0...1	0:Off 1:On
4049	48	Compressor Exit	0...1	0:Off 1:On
4050	49	Compressor 4 way Valve Exit	0...1	0:Off 1:On
4051	50	Unit Working Info Exit	0...1	0:Off 1:On
4052	51	Unit Error Info Exit	0...1	0:Off 1:On
4053	52	Unit Warning Info Exit	0...1	0:Off 1:On
4054	53	Exhaust Fan Run Exit	0...1	0:Off 1:On
4055	54	Supply Fan Run Exit	0...1	0:Off 1:On
4056	55	VRF On Off EXit	0...1	0:Off 1:On
4057	56	VRF Heating EXit	0...1	0:Off 1:On
4058	57	VRF Soğutma Çıkışı	0...1	0:Off 1:On
4059	58	Rotary Exchanger Exit	0...1	0:Off 1:On
4060	59	Humidifier Exit	0...1	0:Off 1:On
4061	60	Exhaust Fan Instant Exit Value	0...6	Shows instant values of fan and electrical heater
4062	61	Supply Fan Instant Exit Value	0...6	
4063	62	Last-Electrical Heater Instant Exit Value	0...3	
4064	63	Pre-Electrical Heater Instant Exit Value	0...3	
Instant Accessories Registers				
4065	64	Exhaust Fan Analog Exit Value	0...100	Shows proportional exit values.
4066	65	Supply Fan Analog Exit Value	0...100	
4067	66	Proportional Heating Valve Exit Value	0...100	
4068	67	Proportional Cooling Valve Exit Value	0...100	
4069	68	Proportional Heating/Cooling Valve Exit Value	0...100	

4070	69	Proportional ByPass Damper Exit Value	0...100	
4071	70	Mixing Damper Exit Value	0...100	
4072	71	VRF Exit Value	0...100	
<b>Weekly Programming Parameter Registers</b>				
4073	72	Sunday Starting Time Hour/Minute	0...2359	Unit works between starting and stopping time.
4074	73	Sunday Stopping Time Hour/Minute	0...2359	
4075	74	Monday Starting Time Hour/Minute	0...2359	If starting and stopping times are same, unit will work all day.
4076	75	Monday Stopping Time Hour/Minute	0...2359	
4077	76	Tuesday Starting Time Hour/Minute	0...2359	If starting time is later than stopping time , unit will not work.
4078	77	Tuesday Stopping Time Hour/Minute	0...2359	
4079	78	Wednesday Starting Time Hour/Minute	0...2359	
4080	79	Wednesday Stopping Time Hour/Minute	0...2359	
4081	80	Thursday Starting Time Hour/Minute	0...2359	<b>The setting should be done as → Hour:Minute</b>
4082	81	Thursday Stopping Time Hour/Minute	0...2359	
4083	82	Friday Starting Time Hour/Minute	0...2359	
4084	83	Friday Stopping Time Hour/Minute	0...2359	
4085	84	Saturday Starting Time Hour/Minute	0...2359	
4086	85	Saturday Starting Time Hour/Minute	0...2359	
4087	86	Day Setting	1...31	
4088	87	Month Setting	1...12	
4089	88	Year Setting	0...99	
4090	89	Hour setting	0...23	
4091	90	Minute Setting	0...59	
4092	91	Seconds setting	0...59	
4093	92	Setting day of the week	1...7	1:Sunday 2:Monday 3:Tuesday 4:Wednesday 5:Thursday 6:Friday 7:Saturday
4094	93	Instant Weekly Programming Check	0...2	0:No weekly Programming
4095	94	RTC Module	0...1	1:Unit Works and it has a weekly programming
4096	95	Error Value	0...99	
<b>4097</b>	96	Warning Value	0...99	
<b>Menu Setting Parameters</b>				
4098	97	Show Fan Mod Menu	0...1	The menus needs to be shown when the unit is on should be selected as 1
4099	98	Show Manual Heating Menu	0...1	
4100	99	Show Manual Cooling Menu	0...1	
4101	100	Show Auto Heating Menu	0...1	
4102	101	Show Auto Cooling Menu	0...1	
4103	102	Show Full Auto Menu	0...1	
<b>KeyLock</b>				
4104	103	KeyLock	0...1	0: Key Lock Active 1: Key Lock de-Active
<b>Error Parameters</b>				
4105	104	Critical Error Info	0...1	0:No Error 1: An Error resulting complete shut down of the unit.
4106	105	Compressor Error Info	0...1	0:No Error at compressor 1: An Error resulting complete shut down of the compressor.
<b>Set Temperature Parameters</b>				
4107	106	Set Temoerature Min Value	0...999	Value of 280 means 28 °C
4108	107	Set Temperature Max Value	0...999	Value of 280 means 28 °C
<b>Fan Setting Parameters</b>				
4109	108	Fan Quantity	1...2	1Single 2Double
4110	109	Fan Step Value	1...6	
<b>Password Parameters</b>				

4111	110	Service Setting Password	0...9999	Main card password is "58"
<b>Building Management Modbus-RTU Parameters</b>				
4112	111	Modbus ID	1...254	
4113	112	Modbus Baudrate	0...7	
<b>Screen Value Registers</b>				
4114	113	Show Temperature Value	0...3	0:Do Not Show 1:OutsideTemperature 2:Supplied Air Temperature 3:Show both temperatures
4115	114	Show Analog Inlet	0...3	0:Do not show 1:CO2 2:Air Quality 3:Humidity
<b>Filter Time Counter Parameters</b>				
4116	115	Filter Dirtiness Counter	0-9999hour	Counter increases due to working hour of supply fan
4117	116	Unit Mode Info	0-100	0:Unit Off 1:Damper is opening 2:Fan Starts Working 3:Main Function 4:Valve Closing 5:Fan Stops 6:Frost 7:Defrost 99>Error Mode (Waiting for Reset)
<b>Boost Mode Setting Registers</b>				
4118	117	Activate Boost	0-1	0:Deaktive 1:Aktive
<b>Parameters for Temperature Check Point</b>				
4119	118	Temperature Check Point	0-3	0:Controller 1:Return Air Temperature 2:Supply Air Teperature 3:Outside Air Temperature
4120	119	Exhaust/Fresh Air Damper Opening Period	0-999sec.	Opens damper and start fans and other components after waiting for the period defined here
<b>Auto Mode Fan Setting Parameters</b>				
4121	120	Auto Mod Fan Min. Speed	0-6	The minimum speed for fans at auto mod
4122	121	Full Auto Mod Fan Working Stage	0-1	0: Normal 1: Working Continously
4123	122	Full Auto Mod Exhaust Fan Value	0-100	Working value for Exhaust Fan
4124	123	Full Auto Mod Supply Fan Value	0-100	Working value for Supply Fan
4125	124	Full Performance of the Fans at the start	0-1	Full Performance for the fans or not at the start
4126	125	Passage time between fan steps	0—999sec.	Passage time between fan steps
4127	126	Fan Hysteresis Value	0-999	If fans work thermostatically, the hysteresis value between step changing..
4128	127	The difference value between the fans	0-999	
4129	128	Fan delay time at the start	0-999sec.	Waiting time for the fan to start
4130	129	Fan working time after stop command	0-999sec.	Waiting time for fans to stop after stop command (Cools electrical heater and other components after they stop during the delay time.)
4131	130	Exhaust Fan 0. Step Value	0-100	It is recommended not to work motor , at a value of exit voltage under 120 V.
4132	131	Exhaust Fan 1. Step Value		
4133	132	Exhaust Fan 2. Step Value		
4134	133	Exhaust Fan 3. Step Value		
4135	134	Exhaust Fan 4. Step Value		

4136	135	Exhaust Fan 5. Step Value		
4137	136	Exhaust Fan 6. Step Value		
4138	137	Supply Fan 0. Step Value	0-100	It is recommended not to work motor , at a value of exit voltage under 120 V.
4139	138	Supply Fan 1. Step Value		
4140	139	Supply Fan 2. Step Value		
4141	140	Supply Fan 3. Step Value		
4142	141	Supply Fan 4. Step Value		
4143	142	Supply Fan 5. Step Value		
4144	143	Supply Fan 6. Step Value		
<b>Pressure Error Parameters</b>				
4145	144	Fire Scenario Selection	0-3	0: Shut down both fans 1: Exh. Fan Full Supp. Fan.Off 2: Exh. Fan Off Supp. Fan.Full 3: Both fans are working
4146	145	Cooling and Heating Hysteresis Value	0-999	
<b>Boost ve Heater Limiting Parameters</b>				
4147	146	Pressure Error Quantity	0-10 each	For instance, if the value is 5 and there happens 5 pressure error ,unit shuts down. F the values is 0 then unit will shut down with the first pressure error.
4148	147	Pressure Error Period	1-30min.	
<b>Pre Heater Setting Parameters</b>				
4149	148	Maximum working time for boost	0-999min	Boost will close at the end of this period
4150	149	Heater Limiting according to Fan	0-1	
<b>Last Heater Setting Parameters</b>				
4151	150	Pre Heater Delay time at Start	1-999 Sec.	
4152	151	Pre Heater Delay time at Stop	1-999 Sec.	
4153	152	Pre Heater Hysteresis Value	1...100	100 value means 10.0°C
4154	153	Pre Heater Steps as Temperature		
4155	154	Pre Heater Step Quantity	0-3	
<b>Accessories Setting Parameters</b>				
4156	155	After Heater Opening Delay Time	1-999 Sn	
4157	156	After Heater Stopping Delay Time	1-999 Sn	
4158	157	After Heater Hysteresis Value	1...100	100 value means 10.0°C
4159	158	After Heater Steps as Temperature		
4160	159	After Heater Step Quantity		
<b>PID Setting Parameters</b>				
4161	160	Pre Heater Set Temperature	-400...999	
4162	161	ByPass Histeresis Value	1...999	
4163	162	Rotary Exchanger Histerezsis Value	1...999	
<b>Compressor Setting Parameters</b>				
4164	163	Valve P Value		
4165	164	Valve I Value		
<b>Compressor Defrost Setting Parameters</b>				
4166	165	Compressor Starting Time	1...999	Starting and Stopping Time of Compressor can be set.
4167	166	Compressor Stopping Time	1...999	
4168	167	Compressor Histeresis Value	1...100	
<b>Compressor Defrost Setting Parameters</b>				
4169	168	Fan Step in case of defrost	0..6	
4170	169	Min. Temperature Value for defrost	-400...999	



[Buraya yazın]

4171	170	Max. Temperature Value for defrost	-400...999	
4172	171	Max.Defrost Period	1...100	
4173	172	Waiting Time between two defrosts	1...100	
<b>Frost Protection Setting Parameters</b>				
4174	173	Heating Coil min Temp. Value in case of Frost	-400...999	
4175	174	Heating Coil max. Temp. Value in case of Frost	-400...999	
4176	175	Exchanger min Temp. Value in case of Frost	-400...999	
4177	176	Exchanger max. Temp. Value in case of Frost	-400...999	
4178	177	Dirty Filter Warning Time	1...9999	After working for 1200 hours,,this alarm will appear on screen.
4179	178	Exhaust Fan Air Blowing Control Period	1...9999	
4180	179	Supply Fan Air Blowing Control Period	1...9999	
<b>Universal Input Check Parameters</b>				
4182	181	Number 1 Universal Inlet	-400...999	
4183	182	Number 2 Universal Input	-400...999	
4184	183	Number 3 Universal Input	-400...999	
4185	184	Number 4 Universal Input	-400...999	
4186	185	Number 5 Universal Input	-400...999	
4187	186	Number 6 Universal Input	-400...999	
4188	187	Number 7 Universal Input	-400...999	
4189	188	Number 8 Universal Input	-400...999	
4190	189	Number 9 Universal Input	-400...999	
4191	190	Number10 Universal Input	-400...999	
4192	191	Number 11 Universal Input	-400...999	
4193	192	Number 12 Universal Input	-400...999	
4194	193	Number 13 Universal Input	-400...999	
4195	194	Number 14 Universal Input	-400...999	
4196	195	Number 15 Universal Input	-400...999	
4197	196	Number 16 Universal Input	-400...999	
4198	197	Number 17 Universal Input	-400...999	
4199	198	Number 18 Universal Input	-400...999	
4200	199	Number 19 Universal Input	-400...999	

Digital Output Check Parameters				
4202	201	Number 1 Digital Output	0...1	
4203	202	Number 2 Digital Output	0...1	
4204	203	Number 3 Digital Output	0...1	
4205	204	Number 4 Digital Output	0...1	
4206	205	Number 5 Digital Output	0...1	
4207	206	Number 6 Digital Output	0...1	
4208	207	Number 7 Digital Output	0...1	
4209	208	Number 8 Digital Output	0...1	
4210	209	Number 9 Digital Output	0...1	
4211	210	Number 10 Digital Output	0...1	
4212	211	Number 11 Digital Output	0...1	
4213	212	Number 12 Digital Output	0...1	
4214	213	Number 13 Digital Output	0...1	
4215	214	Number 14 Digital Output	0...1	
4216	215	Number 15 Digital Output	0...1	
4217	216	Number 16 Digital Output	0...1	
4218	217	Number 17 Digital Output	0...1	
4219	218	Number 18 Digital Output	0...1	
4220	219	Number 19 Digital Output	0...1	
Analog Input Check Parameters				
4222	221	Number 1 Analog Input	-9999...9999	
4223	222	Number 2 Analog Input	-9999...9999	
4224	223	Number 3 Analog Input	-9999...9999	
4225	224	Number 4 Analog Input	-9999...9999	
4226	225	Number 5 Analog Input	-9999...9999	
4227	226	Number 6 Analog Input	-9999...9999	
4228	227	Number 7 Analog Input	-9999...9999	
4229	228	Number 8 Analog Input	-9999...9999	
Analog Output Check Parameters				
4232	231	Number 1 Analog Output	-9999...9999	
4233	232	Number 2 Analog Output	-9999...9999	
4234	233	Number 3 Analog Output	-9999...9999	
4235	234	Number 4 Analog Output	-9999...9999	
4236	235	Number 5 Analog Output	-9999...9999	
4237	236	Number 6 Analog Output	-9999...9999	
4238	237	Number 7 Analog Output	-9999...9999	
4239	238	Number 8 Analog Output	-9999...9999	
Universal Input Calibration Setting Parameters				
4242	241	Number 1 Universal Input Calibration	-9999...9999	
4243	242	Number 2 Universal Input Calibration	-9999...9999	
4244	243	Number 3 Universal Input Calibration	-9999...9999	
4245	244	Number 4 Universal Input Calibration	-9999...9999	
4246	245	Number 5 Universal Input Calibration	-9999...9999	
4247	246	Number 6 Universal Input Calibration	-9999...9999	
4248	247	Number 7 Universal Input Calibration	-9999...9999	
4249	248	Number 8 Universal Input Calibration	-9999...9999	
4250	249	Number 9 Universal Input Calibration	-9999...9999	
4251	250	Number 10 Universal Input Calibration	-9999...9999	
4252	251	Number 11 Universal Input Calibration	-9999...9999	
4253	252	Number 12 Universal Input Calibration	-9999...9999	
4254	253	Number 13 Universal Input Calibration	-9999...9999	
4255	254	Number 14 Universal Input Calibration	-9999...9999	

4256	255	Number 15 Universal Input Calibration	-9999...9999	
4257	256	Number 16 Universal Input Calibration	-9999...9999	
4258	257	Number 17 Universal Input Calibration	-9999...9999	
4259	258	Number 18 Universal Input Calibration	-9999...9999	
4260	259	Number 19 Universal Input Calibration	-9999...9999	
<b>Universal On/Off Selection Setting Parameters</b>				
4262	261	Uin1 Input On/Off Selection	0...1	
4263	262	Uin2 Input On/Off Selection		
4264	263	Uin3 Input On/Off Selection		
4265	264	Uin4 Input On/Off Selection		
4266	265	Uin5 Input On/Off Selection		
4267	266	Uin6 Input On/Off Selection		
4268	267	Uin7 Input On/Off Selection		
4269	268	Uin8 Input On/Off Selection		
4270	269	Uin9 Input On/Off Selection		
4271	270	Uin10 Input On/Off Selection		
4272	271	Uin11 Input On/Off Selection		
4273	272	Uin12 Input On/Off Selection		
4274	273	Uin13 Input On/Off Selection		
4275	274	Uin14 Input On/Off Selection		
4276	275	Uin15 Input On/Off Selection		
4277	276	Uin16 Input On/Off Selection		
4278	277	Uin17 Input On/Off Selection		
4279	278	Uin18 Input On/Off Selection		
4280	279	Uin19 Input On/Off Selection		
<b>Universal(Digital) Input Signal Detecting Delay Setting Parameters</b>				
4282	281	Uin1 Input Signal Detecting Delay	0...999	
4283	282	Uin2 Input Signal Detecting Delay		
4284	283	Uin3 Input Signal Detecting Delay		
4285	284	Uin4 Input Signal Detecting Delay		
4286	285	Uin5 Input Signal Detecting Delay		
4287	286	Uin6 Input Signal Detecting Delay		
4288	287	Uin7 Input Signal Detecting Delay		
4289	288	Uin8 Input Signal Detecting Delay		
4290	289	Uin9 Input Signal Detecting Delay		
4291	290	Uin10 Input Signal Detecting Delay		
4292	291	Uin11 Input Signal Detecting Delay		
4293	292	Uin12 Input Signal Detecting Delay		
4294	293	Uin13 Input Signal Detecting Delay		
4295	294	Uin14 Input Signal Detecting Delay		
4296	295	Uin15 Input Signal Detecting Delay		
4297	296	Uin16 Input Signal Detecting Delay		
4298	297	Uin17 Input Signal Detecting Delay		
4299	298	Uin18 Input Signal Detecting Delay		
4300	299	Uin19 Input Signal Detecting Delay		
<b>Digital Output On/Off Selection Setting Parameters</b>				
4302	301	Din1 Output On/Off Selection	0...1	
4303	302	Din2 Output On/Off Selection		
4304	303	Din3 Output On/Off Selection		
4305	304	Din4 Output On/Off Selection		
4306	305	Din5 Output On/Off Selection		
4307	306	Din6 Output On/Off Selection		

4308	307	Din7 Output On/Off Selection		
4309	308	Din8 Output On/Off Selection		
4310	309	Din9 Output On/Off Selection		
4311	310	Din10 Output On/Off Selection		
4312	311	Din11 Output On/Off Selection		
4313	312	Din12 Output On/Off Selection		
4314	313	Din13 Output On/Off Selection		
4315	314	Din14 Output On/Off Selection		
4316	315	Din15 Output On/Off Selection		
4317	316	Din16 Output On/Off Selection		
4318	317	Din17 Output On/Off Selection		
4319	318	Din18 Output On/Off Selection		
4320	319	Din19 Output On/Off Selection		
<b>Analog Input Minimum Value Calibration Setting Parameters</b>				
4322	321	Analog Input 1 Minimum Value	-9999...9999	
4323	322	Analog Input 2 Minimum Value	-9999...9999	
4324	323	Analog Input 3 Minimum Value	-9999...9999	
4325	324	Analog Input 4 Minimum Value	-9999...9999	
4326	325	Analog Input 5 Minimum Value	-9999...9999	
4327	326	Analog Input 6 Minimum Value	-9999...9999	
4328	327	Analog Input 7 Minimum Value	-9999...9999	
4329	328	Analog Input 8 Minimum Value	-9999...9999	
4330	329	Analog Input 9 Minimum Value	-9999...9999	
<b>Analog Input Maximum Value Calibration Setting Parameters</b>				
4332	331	Analog Input 1 Maximum Value	-9999...9999	
4333	332	Analog Input 2 Maximum Value	-9999...9999	
4334	333	Analog Input 3 Maximum Value	-9999...9999	
4335	334	Analog Input 4 Maximum Value	-9999...9999	
4336	335	Analog Input 5 Maximum Value	-9999...9999	
4337	336	Analog Input 6 Maximum Value	-9999...9999	
4338	337	Analog Input 7 Maximum Value	-9999...9999	
4339	338	Analog Input 8 Maximum Value	-9999...9999	
4340	339	Analog Input 9 Maximum Value	-9999...9999	
<b>Analog Output Minimum Value Calibration Setting Parameters</b>				
4342	341	Analog Output 1 Minimum Value	-9999...9999	
4343	342	Analog Output 2 Minimum Value	-9999...9999	
4344	343	Analog Output 3 Minimum Value	-9999...9999	
4345	344	Analog Output 4 Minimum Value	-9999...9999	
4346	345	Analog Output 5 Minimum Value	-9999...9999	
4347	346	Analog Output 6 Minimum Value	-9999...9999	
4348	347	Analog Output 7 Minimum Value	-9999...9999	
4349	348	Analog Output 8 Minimum Value	-9999...9999	
4350	349	Analog Output 9 Minimum Value	-9999...9999	
<b>Analog Output Maximum Value Calibration Setting Parameters</b>				
4352	351	Analog Output 1 Maximum Value	-9999...9999	
4353	352	Analog Output 2 Maximum Value	-9999...9999	
4354	353	Analog Output 3 Maximum Value	-9999...9999	
4355	354	Analog Output 4 Maximum Value		
4356	355	Analog Output 5 Maximum Value	-9999...9999	
4357	356	Analog Output 6 Maximum Value	-9999...9999	
4358	357	Analog Output 7 Maximum Value	-9999...9999	

4359	358	Analog Output 8 Maximum Value	-9999...9999
4360	359	Analog Output 9 Maximum Value	-9999...9999

Modbus Parameters				
4361	360	Modbus Data	0...1	
4362	361	Modbus Parity	0...1	
4363	362	Modbus Stop	0...1	
Auto Mode Dead Area Setting Parameters				
4364	363	Auto Mod Cooling Dead Area	0...999	
4365	364	Auto Mod Heating Dead Area	0...999	
Humidifier Parameters				
4366	365	Humidifier Hysterisis		
Mixing Damper Parameters				
4367	366	Mixing Damper Minimum Value	0...999	
4368	367	Mixing Damper Entalpy Value	0...999	
4369	368	Mixing Damper Fan Mode Value	0...999	
VRF Setting Registers				
4370	369	VRF Termostatics Working Condition	0...1	0: Continuous 1: Termostatics
4371	370	VRF Hysterisis		
4372	371	VRF Min Set Temperature Value	0...999	
4373	372	VRF Max Set Temperature Value	0...999	
4374	373	VRF Min Analog Output Value	0...100	
4375	374	VRF Max Analog Output Value	0...100	
4376	375	VRF Passage Waiting Time		
Universal Input Type Selection (Temperature Sensor or Digital Input )				
4402	401	UI 1 Input Type Selection	0...26	0: Empty
4403	402	UI 2 Input Signal Detecting Delay		1: Return Air Temperature
4404	403	UI 3 Input Signal Detecting Delay		2: Supply Air Temperature
4405	404	UI 4 Input Signal Detecting Delay		3: Fresh Air Temperature
4406	405	UI 5 Input Signal Detecting Delay		4: Water Coil Temperature
4407	406	UI 6 Input Signal Detecting Delay		5: Evaporator Temperature
4408	407	UI 7 Input Signal Detecting Delay		6: Condensor Temperature
4409	408	UI 8 Input Signal Detecting Delay		7: Exchanger Temperature
4410	409	UI 9 Input Signal Detecting Delay		8: BMS Entry
4411	410	UI 10 Input Signal Detecting Delay		9: Boost Entry
4412	411	UI 11 Input Signal Detecting Delay		10: Exhaust Fan Air Flow Info
4413	412	UI 12 Input Signal Detecting Delay		11: Supply Fan Air Flow Info
4414	413	UI 13 Input Signal Detecting Delay		12: Filter 1 Dirty
4415	414	UI 14 Input Signal Detecting Delay		13: Filter 2 Dirty
4416	415	UI 15 Input Signal Detecting Delay		14: Electrical Heater Safety Thermostate
4417	416	UI 16 Input Signal Detecting Delay		15: Exhaust Fan Error
4418	417	UI 17 Input Signal Detecting Delay		16: Supply Fan Error
4419	418	UI 18 Input Signal Detecting Delay		17: Emergency Stop Entry
4420	419	UI 19 Input Signal Detecting Delay		18: Low Pressure Error
				19: Low Pressure Error
				20: Fire Entry
				21: Frost Thermostate
				22: Compressor Error
				23: Phase Error
				24: Exchanger Frost Thermostate
				25: VRF Error
			26: VRF De-frost	

Applications Digital Output Selection Parameters			
4421	420	Exhaust Fan Exit Number	0...12 Relay Selection
4422	421	Supply Fan Exit Number	
4423	422	After El.Heater Exit Number	
4424	423	Pre El. Heater Exit Number	
4425	424	Fresh Air Damper On Exit Number	
4426	425	Fresh Air Damper Off Exit Number	
4427	426	ByPass Damper On Exit Number	
4428	427	ByPass Damper Off Exit Number	
4429	428	Exhaust Fan On/Off Exit Number	
4430	429	Supply Fan On/Off Exit Number	
4431	430	Heating Valve On/Off Exit Number	
4432	431	Cooling Valve On/Off Exit Number	
4433	432	Cooling/Heating Valve On/Off Exit Number	
4434	433	Compressor Exit Number	
4435	434	Compressor 4 Way Valve Exit Number	
4436	435	Unit On Exit Number	
4437	436	Unit in Error Mode Exit Number	
4438	437	VRF On/Off Exit Number	
4439	438	VRF Heating Exit Number	
4440	439	VRF Cooling Soğutma Exit Number	
4441	440	Humidifier Exit Number	
4442	441	Warning Exit Number	
Analog Output Parameters			
4451	450	Supply Fan Analog Exit Number	0...10
4452	451	Heating Valve Analog Exit Number	
4453	452	Cooling Valve Analog Exit Number	
4454	453	Heating/Cooling Valve Analog Exit Number	
4455	454	Mixing Damper Analog Exit Number	
4456	455	VRF Set Analog Exit Number	
4457	456	VRF On/Off Exit Number	

## R. PRE-PROGRAMMED HEAT RECOVERY SCENARIOS

There are 16 preprogrammed scenarios embedded to electronical card:

1. Standard Heat Recovery
2. Heat Recovery with 3 Steps Electrical Heater (With Fresh Air Damper)
3. Heat Recovery with 3 Steps Electrical Heater (With By-Pass Damper)
4. Advanced Heat Recovery with 3 Steps Electrical Heater (With Fresh Air Damper)
5. Heat Recovery with 1 Step Pre-Heater 2 Step After Heater
6. Heat Recovery with 2 Steps Pre Heater 1 Step After Heater
7. Heat Recovery with 3 Steps Pre Heater
8. Heat Recovery with Proportional Valved Water Coil (2Pipe)
9. Heat Recovery with Proportional Valved Water Coil (2Pipe)
10. Heat Recovery with heat pump
11. Heat Recovery with advanced heat pump
12. Heat Recovery with Dx Coil(VRF)
13. Heat Recovery with On/Off Valved Water coil(4Pipe)
14. Heat Recovery with EC Fan and 3 Steps Electrical Heater
15. Heat Recovery with EC Fan and On/Off Valved Water Coil (2Pipe)
16. Heat Recovery with EC Fan and On/Off Valved Water Coil (4Pipe)

## S. CHANGING THE SCENARIOS

To change the scenario::

- **When the unit is connected to power supply , press **UP** and **DOWN** buttons simultaneously**
- **Enter service menu password “58”by using **UP** and **DOWN** and press **Mode/OK**.**
  
- **Go parameter “480” by using **UP** and **DOWN** and press **Mode/OK**.**
- **Change the number to desired scenario(above list (1-16) by using **UP** and **DOWN** and press **Mode/OK**.**
- **Check out from the menu by using **ON/OFF** button**
- **When the unit is on manual heating,manual cooling or fan mode , fan steps and set temperature can be adjusted. In manual mode, when in set temperature screen, if you press **Mode/OK** then it will switch to next scenario.**
- **When the unit is in auto mode, switching to next mode will be done by pressing **Mode/OK****

## Scenario **1. Standard Heat Recovery**

In this scenario, unit supplies fresh air to environment and exhaust stall air. This scenario has only manual mode. Supply and exhaust fans can be set separately in 6 different speeds via room thermostat. Room thermostat shows temperature of inner space where it is already located.

Note;

The electrical board comes with Scenario Number 4 as default.  
To change the scenario please follow the steps defined in **“Changing the Scenario”**

When Scenario 1 is selected, unit is ready to work as standard heat recovery.

## Scenario **2. Heat Recovery with 3 Steps Electrical Heater (With Fresh Air Damper)**

In this mode; exhaust and supply fans and after heater can be controlled.

Temperature is measured by room thermostat

- If room temperature is measured below set value, temperature will be increased by using after heater
- If room temperature is measured above set value, temperature will be decreased by shutting down the steps of after heater till room thermostat reads room temperature equal to set value

Note;

The electrical board comes with Scenario Number 4 as default.  
To change the scenario please follow the steps defined in **“Changing the Scenario”**

When Scenario 2 is selected, unit is ready to work as Heat Recovery with 3 Steps Electrical Heater (With Fresh Air Damper)

## Scenario **3. Heat Recovery with 3 Steps Electrical Heater (With By-Pass Damper)**

In this mode; exhaust and supply fans and after heater can be controlled.

Temperature is measured by room thermostat

- If room temperature is measured below set value, temperature will be increased by using after heater
- If room temperature is measured above set value, temperature will be decreased by shutting down the steps of after heater till room thermostat reads room temperature equal to set value

Note;

The electrical board comes with Scenario Number 4 as default.  
To change the scenario please follow the steps defined in **“Changing the Scenario”**

When Scenario 3 is selected, unit is ready to work as Heat Recovery with 3 Steps Electrical Heater (With By-Pass Damper)



## Scenario **4. Advanced Heat Recovery with 3 Steps Electrical Heater (With By-Pass Damper)**

In this mode; exhaust and supply fans and after heater can be controlled.

Temperature is measured by room thermostat

- If room temperature is measured below set value, temperature will be increased by using after heater
- If room temperature is measured above set value,, temperature will be dcreased by shutting down the steps of after heater till room thermostate readsroom temperature equal to set value

Note;

The electrical board comes with Scenario Number 4 as default.

To change the scenario please follow the steps defined in "**Changing the Scenario**"

When Scenario 4 is selected , unit is ready to work as Advanced Heat Recovery with 3 Steps Electrical Heater (With By-Pass Damper)

## Scenario **5. HEAT RECOVERY WITH 1 STEP PRE-HEATER 2 STEPS AFTER HEATER**

Heat Recovery with 1 Step Pre Heater 2 Steps After Heater mode Works according to set temepareture and control exhaust ans supply fans and after heater. Pre-heater works according to fresh air sensor.

Inside air temperature is measured by room thermostat

- If room temperature is measured below set value, temperature will be increased by using after heater
- If room temperature is measured above set value,, temperature will be decreased by shutting down the steps of after heater till room thermostate reads room temperature equal to set value
- The fresh air temperature read by NtC10K sensor will be compared with set value of pre-heater to open or shut down pre-heater.

**Notes;**

The electrical board comes with Scenario Number 4 as default.

To change the scenario please follow the steps defined in **“S.Changing the Scenarios”**

When Scenario 5 is selected , unit is ready to work as Heat Recovery with 1 Step Pre heater 2 Steps After Heater .

Default Values for Pre Heater;

Parameter	Description	Default Value	Detail
152	Pre Heater Hysterises Value	2 °C	Shows 20 on the screen
153	Pre Heater Step Difference as Temperature	5 °C	Shows 50 on the screen
160	Pre Heater Set Temperature	5 °C	Shows 50 on the screen

The connection of the fresh air temperature sensor and the electrical heater should be done to the electrical board.

Below parameters should be set as follows from the service parameters menu. Please follow the instructions described at **“I: Entering to Service Menu”** to enter Service Menu

Parameter	Description	Value	Detail
154	Pre Heater Step Quantity	1	
159	After Heater Step Quantity	2	
422	After Heater Relay Selection	2	
423	Pre Heater Relay Selection	1	

## Scenario 6. HEAT RECOVERY WITH 2 STEPS PRE-HEATER 1STEP AFTER HEATER

Heat Recovery with 2 Steps Pre Heater 1 Step After Heater mode works according to set temperature and control exhaust fans and after heater. Pre-heater works according to fresh air sensor.

Temperature is measured by room thermostat

- If room temperature is measured below set value, temperature will be increased by using after heater
- If room temperature is measured above set value,, temperature will be decreased by shutting down the steps of after heater till room thermostat reads room temperature equal to set value
- The fresh air temperature read by NtC10K sensor will be compared with set value of pre-heater to open or shut down pre-heater.

### Notes;

The electrical board comes with Scenario Number 4 as default.

To change the scenario please follow the steps defined in **"S.Changing the Scenarios"**

Default Values for Pre Heater;

Parameter	Description	Default Value	Detail
152	Pre Heater Hysterises Value	2 °C	Shows 20 on the screen
153	Pre Heater Step Difference as Temperature	5 °C	Shows 50 on the screen
160	Pre Heater Set Temperature	5 °C	Shows 50 on the screen

When Scenario 6 is selected , unit is ready to work as Heat Recovery with 2 Steps Pre heater 1 Step After Heater

The connection of the fresh air temperature sensor and the pre-heater should be done to the electrical board.

Below parameters should be set from the service parameters menu. Please follow the instructions described at **"I: Entering to Service Menu"** to enter Service Menu

Parameter	Description	Value	Detail
154	Pre Heater Step Quantity	2	
159	After Heater Step Quantity	1	
422	After Heater Relay Selection	<b>2</b>	
423	Pre Heater Relay Selection	<b>1</b>	

## Scenario 7. HEAT RECOVERY WITH 3 STEPS PREHEATER

Heat Recovery with 3 Steps Pre Heater mode works according to set temperature and control exhaust and supply fans and pre heater. Pre-heater works according to fresh air sensor.

- The fresh air temperature read by NtC10K sensor will be compared with set value of pre-heater to open or shut down pre-heater.

### Notes;

The electrical board comes with Scenario Number 4 as default.

To change the scenario please follow the steps defined in **“S.Changing the Scenarios”**

Default Values for Pre Heater;

Parameter	Description	Default Value	Detail
152	Pre Heater Hysterises Value	2 °C	Shows 20 on the screen
153	Pre Heater Step Difference as Temperature	5 °C	Shows 50 on the screen
160	Pre Heater Set Temperature	5 °C	Shows 50 on the screen

When Scenario 7 is selected, unit is ready to work as Heat Recovery with 3 Steps Pre heater.

The connection of the fresh air temperature sensor and the pre-heater should be done to the electrical board.

Below parameters should be set from the service parameters menu. Please follow the instructions described at **“I: Entering to Service Menu”** to enter Service Menu

Parameter	Description	Value	Detail
154	Pre Heater Step Quantity	3	
422	After Heater Relay Selection	0	
423	Pre Heater Relay Selection	<b>1</b>	

**Please contact For Scenarios with heat pump, EC fan, DX Coil and water coil ...**