Procon
MelcoBEMS MINI(A1M) for ecodan ATW

User manual ver.1.00

January 2016

This manual specifically explains the general operation of Ecodan ATW as additional information to the A1M installation manual. For in depth information and safety precautions, please refer to separate manuals provided with A1M and the ecodan unit .

[Applicable models]

ecodan B generation (FTC4)

Cylinder	EHST20C-VM6HB	Hydrobox	EHSC-VM2B
	EHST20C-YM9HB		EHSC-VM6B
	EHST20C-TM9HB		EHSC-YM9B
	EHST20C-VM2B		EHSC-TM9B
	EHST20C-VM6B		EHSC-VM6EB
	EHST20C-YM9B		EHSC-YM9EB
	EHST20C-VM6EB		EHPX-VM2B
	EHST20C-YM9EB		EHPX-VM6B
	EHST20C-VM6SB		EHPX-YM9B
	EHPT20X-VM2HB		ERSC-VM2B
	EHPT20X-VM6HB	PCB box	PAC-IF051B-E
	EHPT20X-YM9HB		PAC-IF052B-E
	EHPT20X-TM9HB		PAC-SIF051B-E
	EHPT20X-VM6B		
	EHPT20X-YM9B		

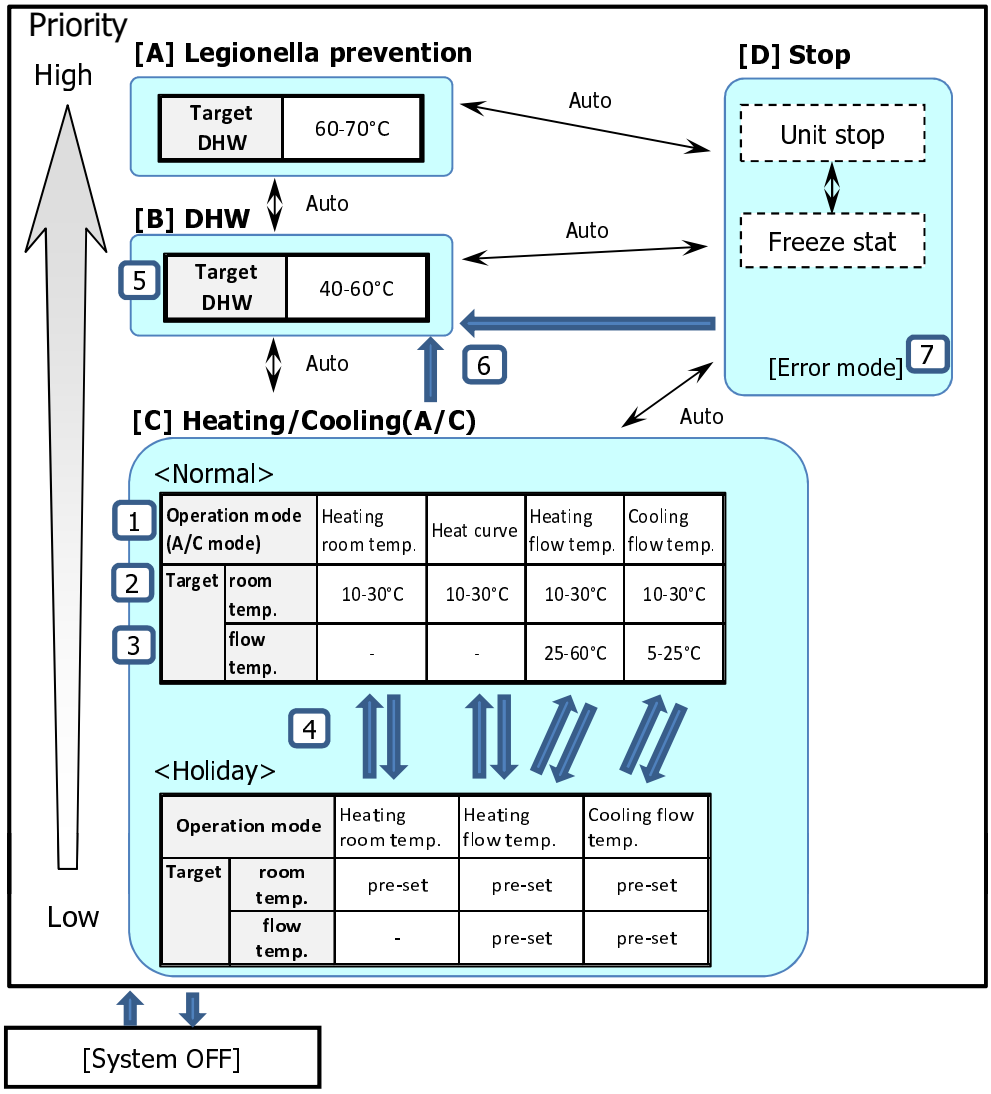
* PAC-SIF051B-E: only 'error code display' is possible

ecodan C generation (FTC5)

Cylinder	EHST20C-VM2C	Hydrobox	EHSD-MEC
	EHST20C-VM6C		EHSD-VM2C
	EHST20C-YM9C		EHSD-YM9C
	EHST20C-TM9C		EHSD-MC
	EHST20C-VM2EC		EHSC-MEC
	EHST20C-VM6EC		EHSC-VM2C
	EHST20C-YM9EC		EHSC-VM2EC
	EHST20C-MEC		EHSC-VM6C
	EHST20D-VM2C		EHSC-VM6EC
	EHST20D-MEC		EHSC-YM9C
	EHST20D-MHC		EHSC-YM9EC
	EHST20C-MHCW		EHSC-TM9C
	EHST20D-MHCW		EHPX-VM2C
	EHST20D-VM2EC		EHPX-YM9C
	EHST20D-YM9C		EHPX-VM6C
	EHPT20X-VM2C		ERSD-VM2C
	EHPT20X-VM6C		ERSC-MEC
	EHPT20X-YM9C		ERSC-VM2C
	EHPT20X-TM9C		ERSE-MEC
	EHPT20X-MHCW		ERSE-YM9EC
	ERST20C-VM2C		EHSE-MEC
	ERST20C-MEC		EHSE-YM9EC
	ERST20D-VM2C	PCB box	PAC-IF061B-E
	ERST20D-MEC		PAC-IF062B-E
			PAC-IF063B-E
			PAC-SIF051B-E

Contents

[System ON]



& 1 - 7

High

Low

Auto

1) Blue arrows and numbers in square (from 1 to 7) show the functions which are available to change or to be read via Modbus.
2) During [SystemOFF], self protection is disabled. Please ALWAYS make sure to keep [SystemON].
3) This big arrow shows the priority between each operation mode.
The mode with higher priority is shown first (at higher position):
e.g.) [A] Legionella prevention > [B] DHW > [C] Heating/Cooling > [D] Stop

4) This small arrow shows how Ecodan switches operation mode automatically:
*As far as there is demand for either [A],[B] or [C], the system switches its operation mode automatically according to the priority and the schedule/time limit settings which is pre-set to the system.
*If there is no demand of either [A],[B] or [C], the system switches to [D](Stop), and automatically runs in its minimum self protection mode such as freeze stat and pump-lock prevention etc.

1. How to change operation mode?

1) For 1 zone system:

Function code

(a) READ the setting : 03

(b) WRITE the setting :06 (Pre-set single register)

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
A/C Mode – Zone 1	28	40029	0= Heating Room Temp 1 = Heating Flow Temp 2 = Heating Heat Curve (3 = Cooling Room Temp) *1 4 = Cooling Flow Temp *2 (5 = Floor Dryup) *1

Important note:

*1 item 3 = cooling room temp control (auto adaptation) is NOT allowed to be used
item 5 = floor dry up mode is NOT allowed to be used (not valid)

*2 item 4 = cooling (fixed) flow temp mode is available only for reversible models

1. How to change operation mode?

2) For 2 zone system

Zone 1:

Function code

(a) READ the setting : 03

(b) WRITE the setting :06 (Pre-set single register)

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
A/C Mode – Zone 1	28	40029	0= Heating Room Temp *3 1 = Heating Flow Temp 2 = Heating Heat Curve (3 = Cooling Room Temp) *1 4 = Cooling Flow Temp *2 (5 = Floor Dryup) *1

Important note:

*1 item 3 = cooling room temp control (auto adaptation) is NOT allowed to be used
item 5 = floor dry up mode is NOT allowed to be used (not valid)

*2 item 4 = cooling (fixed) flow temp mode is available only for reversible models

*3 item 0 = heating room temp control (auto adaptation) can NOT be written for both zones at the same time

Zone 2:

Function code

(a) READ the setting : 03

(b) WRITE the setting :06 (Pre-set single register)

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
A/C Mode – Zone 2	29	40030	0= Heating Room Temp *3 1 = Heating Flow Temp 2 = Heating Heat Curve (3 = Cooling Room Temp) *1 4 = Cooling Flow Temp *2 (5 = Floor Dryup) *1

Important note:

Cooling and Heating can NOT be set together.

*1 item 3 = cooling room temp control (auto adaptation) is NOT allowed to be used
item 5 = floor dry up mode is NOT allowed to be used (not valid)

*2 item 4 = cooling (fixed) flow temp control is available only for reversible models

*3 item 0 = heating room temp control (auto adaptation) can NOT be written for both zones

2. How to change target room temperature?

First of all , check the operation mode.(refer to page 2 or 3)

<Mode : heating room temp. >

1) For 1 zone system:

Function code

(a) READ the setting :03

(b) WRITE the setting :06 (Pre-set single register)

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
H/C Thermostat Target Temperature - Zone 1	33	40034	Set the target temperature in the following. Heating room temp.: 10°C - 30°C ,0.5 °C step Temperature in °C multiplied by 100. (e.g.) 20°C = 2000(0x07D0)

2) For 2 zone system

Function code

(a) READ the setting :03

(b) WRITE the setting :06 (Pre-set single register)

Zone 1:

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
H/C Thermostat Target Temperature - Zone 1	33	40034	Set the target temperature in the following. Heating room temp.: 10°C - 30°C ,0.5 °C step Temperature in °C multiplied by 100. (e.g.) 20°C = 2000(0x07D0)

Zone 2:

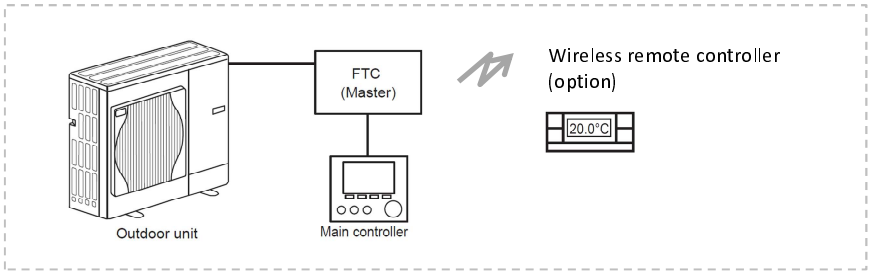
Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
H/C Thermostat Target Temperature - Zone 2	35	40036	Set the target temperature in the following. Heating room temp.: 10°C - 30°C ,0.5 °C step Temperature in °C multiplied by 100. (e.g.) 20°C = 2000(0x07D0)

2. How to change target room temperature?

<Mode : heating heat curve or heating flow temp. or cooling flow temp. >

You can change target room temperature if use our wireless RC as room thermostat.



1) For 1 zone system:

Function code

(a) READ the setting : 03

(b) WRITE the setting :06 (Pre-set single register)

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
Thermostat Target Temperature - Zone 1	55	40056	Set the target temperature in the following. Target room temp.: 10°C - 30°C ,0.5 °C step Temperature in °C multiplied by 100. (e.g.) 20°C = 2000(0x07D0)

2. How to change target room temperature?

<Mode : heating heat curve or heating flow temp. or cooling flow temp. >

2) For 2 zone system

Function code

(a) READ the setting : 03

(b) WRITE the setting :06 (Pre-set single register)

Zone1:

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
Thermostat Target Temperature - Zone 1	55	40056	Set the target temperature in the following. Target room temp.: 10°C - 30°C ,0.5 °C step Temperature in °C multiplied by 100. (e.g.) 20°C = 2000(0x07D0)

Zone 2:

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
Thermostat Target Temperature - Zone 2	57	40058	Set the target temperature in the following. Target room temp.: 10°C - 30°C ,0.5 °C step Temperature in °C multiplied by 100. (e.g.) 20°C = 2000(0x07D0)

3. How to change target flow temperature?

First of all , check the operation mode.(refer to page 2 or 3)

You can change target flow temperature when you select "heating flow temp. mode" or "cooling flow temp. mode".

1) For 1 zone system:

Function code

(a) READ the setting : 03

(b) WRITE the setting :06 (Pre-set single register)

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
H/C Thermostat Target Temperature - Zone 1	33	40034	Set the target temperature in the following. Heating flow temp. : 25°C - 60°C ,1 °C step Cooling flow temp. : 5°C - 25°C ,1 °C step Temperature in °C multiplied by 100. (e.g.) 40°C = 4000(0x0FA0) 5°C = 500(0x01F4)

2) For 2 zone system

Function code

(a) READ the setting : 03

(b) WRITE the setting :06 (Pre-set single register)

Zone 1:

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
H/C Thermostat Target Temperature - Zone 1	33	40034	Set the target temperature in the following. Heating flow temp. : 25°C - 60°C ,1 °C step Cooling flow temp. : 5°C - 25°C ,1 °C step Temperature in °C multiplied by 100. (e.g.) 40°C = 4000(0x0FA0) 5°C = 500(0x01F4)

Zone 2:

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
H/C Thermostat Target Temperature - Zone 2	35	40036	Set the target temperature in the following. Heating flow temp. : 25°C - 60°C , 1 °C step Cooling flow temp. : 5°C - 25°C ,1 °C step Temperature in °C multiplied by 100. (e.g.) 40°C = 4000(0x0FA0) 5°C = 500(0x01F4)

4. How to be in holiday mode?

This can be used to remotely set Ecodan system into Holiday mode.

Regardless of single or 2 zone system:

Function code

(a) READ the setting : 03

(b) WRITE the setting :06 (Pre-set single register)

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
Holiday	38	40039	0 = Normal 1 = Holiday

5. How to change target DHW temperature?

Regardless of single or 2 zone system:

Function code

(a) READ the setting : 03

(b) WRITE the setting :06 (Pre-set single register)

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
Set Tank Water Temperature	31	40032	Set the target temperature in the following. Tank water temp.: 40°C - 60°C ,1 °C step Temperature in °C multiplied by 100. (e.g.) 50°C = 5000(0x1388)

6. How to force DHW operation?

Regardless of single or 2 zone system:

Function code

(a) READ the setting : 03

(b) WRITE the setting :06 (Pre-set single register)

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
Force DHW	37	40038	0 = Auto(Normal) *1 1 = Heat now(Force DHW)*2

*1 Auto :Uses Ecodan settings to determine when to activate water cylinder heat up cycle.

*2 Heat now :Overrides Ecodan settings and starts water cylinder heat up cycle.

7. How to read error code?

Regardless of single or 2 zone system:

1) Check the status of the system

Function code

(a) READ the setting : 03

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
Refrigerant Error Info [READ ONLY]	69	40070	0 = Normal 1 = Error (System) 2 = Error (Startup) (3 = Maintenance Error)*

* item 3 = maintenance error is NOT valid.

2) Read error code

Check the error code , if the system is NOT "Normal".

Function code

(a) READ the setting : 03

Holding register (Analogue output) :

Register Name	Addr	Modicon Address	Details
7-Segment Display Error Code Digit 1 [READ ONLY]	70	40071	0 = A 4 = J 1 = b 5 = L 2 = E 6 = P 3 = F 7 = U

Register Name	Addr	Modicon Address	Details
7-Segment Display Error Code Digit 2 [READ ONLY]	71	40072	1-15= 1-F 19 = L 16 = O 20 = P 17 = H 21 = U 18 = J

Table 1 Error code

Digit1	Digit2	Code	O/U	I/U	Error
5	3	L3		✓	Circulation water temperature overheat protection
5	4	L4		✓	DHW tank water temperature overheat protection Check the immersion heater and it's contactor
5	5	L5		✓	Indoor unit temperature thermistor (THW1, THW2, THW5, THW6, THW7, THW8,THW9)
5	6	L6		✓	Circulation water freeze protection
5	7	L8		✓	Heating operation error Re-attach any thermistors that have become dislodged.
5	8	L9		✓	Low primary circuit flow rate detected by flow sensor or flow switch (flow switches 1, 2, 3)
5	12	LC		✓	Boiler circulation water temperature overheat protection
5	13	LD		✓	Boiler temperature thermistor (THWB1, THWB2) failure
5	14	LE		✓	Boiler operation error
5	15	LF		✓	Flow sensor failure
5	17	LH		✓	Boiler circulation water freeze protection
5	18	LJ		✓	DHW operation error (type of external plate HEX)
5	19	LL		✓	Setting errors of DIP switches on FTC control board
4	16	JO		✓	Communication failure between FTC and wireless receiver
6	1	P1		✓	Thermistor (Room temp.) (TH1) failure
6	2	P2		✓	Thermistor (Ref. liquid temp.) (TH2) failure
6	6	P6	✓	✓	Freezing/overheating protection is working.
6	8	P8	✓		Abnormality of pipe temperature
4	1-8	J1-J8		✓	Communication failure between wireless receiver and wireless remote controller
2	1-5	E1-E5		✓	Communication failure between main controller and FTC
2	16	EO			
2	6-15	E6-EF	✓	✓	Communication failure between FTC and outdoor unit
2	9	E9	✓	✓	Outdoor unit receives no signal from indoor unit
7	1	U1	✓		Abnormal high pressure (63H operated)
7	2	U2	✓		Abnormal high discharging temperature, high comp. surface temperature,shortage of
7	3	U3	✓		Open/short of outdoor unit thermistors (TH4, TH34)
7	4	U4	✓		Open/short of outdoor unit thermistors (TH3, TH32, TH33, TH6, TH7 and TH8)
7	5	U5	✓		Abnormal temperature of heatsink
7	6	U6	✓		Abnormality of power module
7	7	U7	✓		Abnormality of superheat due to low discharge temperature
7	8	U8	✓		Abnormality in outdoor fan motor
7	13	Ud	✓		Overheat protection
7	14	UE	✓		Abnormal pressure of pressure sensor
7	15	UF	✓		Compressor overcurrent interruption (When Comp. locked)
7	17	UH	✓		Current sensor error
7	19	UL	✓		Abnormal low pressure (63L operated)
7	20	UP	✓		Compressor overcurrent interruption
6	14	PE	✓		Abnormality of inlet water temperature
6	19	PL	✓		Abnormality of refrigerant
0	1-7	A1-A7	✓		Communication error of M-NET system
0	16	AO			
3	3	F3	✓		63L connector(red) is open.
3	5	F5	✓		63H connector(yellow) is open.
3	9	F9	✓		2 connectors(63H/63L) are open

O/U: Outdoor unit , I/U:Indoor unit