Procon
MelcoBEMS MINI (A1M)

ATW MODBUS REGISTER TABLES

Document version 1.0.3

Firmware version 3.0.23

For safe and correct use of the PROCON MelcoBEMS MINI please read the *MelcoBEMS MINI (A1M) - Installation Instructions* document.

Preface

Disclaimer

⚠ **Warning:**

Mitsubishi Electric UK assumes no liability for damages consequent to the user of this product. We reserve the right to change this manual at any time without notice. The information furnished by us is believed to be accurate and reliable. However, no responsibility is assumed by us for its use, nor for any infringements of patents or other rights of third parties resulting from its use.

Amendment Register

Document Version	Latest Firmware Version	Date	Author	Notes
1.0.0	3.0.18	21/01/19	GD	Initial version
1.0.1	3.0.19	01/05/19	GD	Latest firmware version is now V3.0.19
1.0.2	3.0.19	27/09/19	NB	Update to Holding Registers 39, 40 and 42
1.0.3	3.0.23	10/08/20	NB	Firmware version updated to 3.0.23

Any additional notes since printing will be appended to the rear of this document on separate sheets of paper.

Contents

1. Modbus tables – Air-To-Water systems

Some BMS controllers can only read Modbus Holding Registers, so the MelcoBEMS MINI (A1M) also exposes all Discrete, Coil and Input Registers as Holding Registers. The Discrete Input registers and Input registers are not writable so their equivalent Holding Register is read only and marked [**READ ONLY**].

Some BMS controllers may not be able to read signed register values (i.e. values which can be negative in value), so the A1M also exposes an unsigned version of those registers (these registers will not return a negative value).

1.1. Holding registers

Holding Registers are read using function code 03 and written to using either function code 06 or 16. Function code 06 is used when writing to a single holding register, function code 16 is used for writing to multiple holding registers in the same command.

Holding Register (Analogue Output)				**Applicable Unit Type**										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Modbus Slave ID	4	40005	Values 1 – 247 valid	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Modbus RS-485 Baud Rate	5	40006	0 = 9600 1 = 1200 2 = 2400 3 = 4800 4 = 9600 5 = 14400 6 = 19200 7 = 28800 8 = 38400 9 = 56000 10 = 57600 11 = 115200	✓	✓	✓	✓	✓	✓	✓	✓	✓	
RS-485 Parity Type	6	40007	0 = None 1 = Even 2 = Odd	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Fault/Error Code (hex) [**READ ONLY**]	9	40010	0x8000 = No error 0x6999 = Bad communication with unit (Refer to indoor unit documentation for description of other fault code values)	✓	✓	✓		✓		✓	✓		
MelcoBEMS MINI (A1M) Firmware Version [**READ ONLY**]	10	40011	MelcoBEMS MINI (A1M) Firmware Version	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Modbus Comms Counter [**READ ONLY**]	11	40012	Value of a counter which increments upon every valid Modbus command received. Counter is reset to zero when value exceeds 65535.	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Fault Code (decimal) [**READ ONLY**]	12	40013	8000 = No error 6999 = Bad communication between A1M and unit (Refer to unit documentation for description of other fault code values)	✓	✓	✓		✓		✓	✓		
System Type Detected [**READ ONLY**]	13	40014	0 = ATA unit connected 1 = ATW system connected 2 = Lossnay system connected 255 = Undetermined (no unit detected yet)	✓	✓	✓	✓	✓	✓	✓	✓	✓	
System On/Off	25	40026	0 = System OFF 1 = System ON 2 = Emergency Run (read only value) 3 = Test Run (read only value)	✓	✓	✓ #14	(✓) #18	✓ #14	(✓) #18	✓	✓ #14	(✓) #18	
Operating Mode	26	40027	0 = Stop 1 = Hot Water 2 = Heating 3 = Cooling 4 = No voltage contact input (hot water storage) 5 = Freeze Stat 6 = Legionella 7 = Heating-Eco 8 = Mode 1 9 = Mode 2 10 = Mode 3 11 = No voltage contact input (heating up)			✓#4	(✓) #18	✓#5	(✓) #18	✓	✓ #13	(✓) #18	
Operating Mode (DHW)	27	40028	0 = Normal 1 = Eco		✓								

Holding Register (Analogue Output)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
A/C Mode – Zone 1	28	40029	0 = Heating Room Temp 1 = Heating Flow Temp 2 = Heating Heat Curve 3 = Cooling Room Temp (not on 13K model) 4 = Cooling Flow Temp 5 = Floor Dryup	✓	✓								
A/C Mode – Zone 2	29	40030	0 = Heating Room Temp 1 = Heating Flow Temp 2 = Heating Heat Curve 3 = Cooling Room Temp (not on 13K model) 4 = Cooling Flow Temp 5 = Floor Dryup	✓	✓								
Set Tank Water Temperature (signed)	30	40031	Temperature value in ºC multiplied by 100. (see note *)	✓#6	✓								
Thermo-off Temperature (signed)			Temperature value in ºC multiplied by 100. (see note *)							✓			
Set Tank Water Temperature	31	40032	Temperature value in ºC multiplied by 100. (see note **)	✓#6	✓								
Thermo-off Temperature			Temperature value in ºC multiplied by 100. (see note **)							✓			
H/C Thermostat Target Temperature – Zone 1 (signed)	32	40033	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
H/C Thermostat Target Temperature – Zone 1	33	40034	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
H/C Thermostat Target Temperature – Zone 2 (signed)	34	40035	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
H/C Thermostat Target Temperature – Zone 2	35	40036	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
MRC Prohibit	36	40037	Bit packed value: Bit 0 – System On/Off (0 = ON, 1 = Prohibit) Bit 1 – Running Mode (0 = ON, 1 = Prohibit) Bit 2 – Setting Temp (0 = ON, 1 = Prohibit) Bit 3 – Undefined (always 0) Bit 4 – Function Setting (0 = Normal, 1 = Function Setting) Bits 5, 6 and 7 – Undefined (always 0) (Before using this register see note ††)	✓	✓	✓#7		✓#7		✓	✓#7		
Force DHW	37	40038	0 = Normal 1 = Force DHW	✓	✓								
Holiday	38	40039	0 = Normal 1 = Holiday	✓	✓								
DHW On Prohibit **[READ ONLY]**	39	40040	0 = On 1 = Prohibit	✓	✓								
Heating On Prohibit – Zone 1 **[READ ONLY]**	40	40041	0 = On 1 = Prohibit	✓	✓								
Cooling On Prohibit – Zone 1	41	40042	0 = On 1 = Prohibit	✓#6	✓								
Heating On Prohibit – Zone 2 **[READ ONLY]**	42	40043	0 = On 1 = Prohibit	✓	✓								
Cooling On Prohibit – Zone 2	43	40044	0 = On 1 = Prohibit		✓								
Unused	44	40045	Value 0 always returned										
Capacity Mode	45	40046	0 = COP priority 1 = Capacity priority			✓		✓#8		✓	✓		
Capacity Control Ratio	46	40047	Value in %. 0 = 0% ... 100 = 100%			✓		✓		✓	✓		
Fan Mode	47	40048	0 = Ordinary 1 = Coercion					✓		✓	✓		

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Current Hour	48	40049	0 … 23			✓	(✓) #18	✓	(✓) #18	✓	✓	(✓) #18	
Current Minute	49	40050	0 … 59			✓	(✓) #18	✓	(✓) #18	✓	✓	(✓) #18	
Outdoor Temperature By BMS (signed)	50	40051	Temperature value in ºC multiplied by 10. 0xFE70 = -40ºC … 0x036B = 87.5ºC			✓ #9		✓ #9			✓#9		
Outdoor Temperature By BMS	51	40052	Temperature value in ºC multiplied by 10. 0x0000 = 0.0ºC ... 0x036B = 87.5ºC.			✓ #10		✓ #10			✓ #10		
Setting Water Temperature (signed)	52	40053	Temperature value in ºC multiplied by 100. (see note *)			✓ #11		✓ #12		✓ #15	✓ #16		
Setting Water Temperature	53	40054	Temperature value in ºC multiplied by 100. (see note **)			✓ #11		✓ #12		✓ #15	✓ #16		
Thermostat Target Temperature – Zone 1 (signed)	54	40055	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Thermostat Target Temperature – Zone 1	55	40056	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Thermostat Target Temperature – Zone 2 (signed)	56	40057	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Thermostat Target Temperature – Zone 2	57	40058	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
HC Control Type	58	40059	0 = Heating 1 = Cooling	✓	✓								
Own Refrigerant Address **[READ ONLY]**	66	40067	0 … 32	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Defrost **[READ ONLY]**	67	40068	0 = Normal 1 = Standby 2 = Defrost 3 = Waiting Restart	✓	✓	✓	✓			✓	✓	✓	
Residual Heat Removal **[READ ONLY]**	68	40069	0 = Normal 1 = Prepared 2 = Residual Heat Removal	✓	✓								

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Refrigerant Error Info [**READ ONLY**]	69	40070	0 = Normal 1 = Error (System) 2 = Error (Startup) 3 = Maintenance Error	✓	✓	✓ #17		✓ #17		✓ #17	✓		
7-Segment Display Error Code Digit 1 [**READ ONLY**]	70	40071	(see note ^)	✓	✓								
7-Segment Display Error Code Digit 2 **[READ ONLY]**	71	40072	(see note ^^)	✓	✓								
Status Of Heating **[READ ONLY]**	72	40073	0 = No type 1 = Heating C1 2 = Heating C2 3 = Heating C3	✓									
			0 = No type 1 = Heating/Cooling A1, Heating/Cooling B1, Heating/Cooling C1 2 = Heating/Cooling A2, Heating/Cooling B2, Heating/Cooling C2 3 = Heating/Cooling A3, Heating/Cooling B3, Heating/Cooling C3		✓								
Heat Pump Frequency – Master **[READ ONLY]**	73	40074	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 1 **[READ ONLY]**	74	40075	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 2 **[READ ONLY]**	75	40076	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 3 **[READ ONLY]**	76	40077	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 4 **[READ ONLY]**	77	40078	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 5 **[READ ONLY]**	78	40079	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 6 **[READ ONLY]**	79	40080	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓			

Holding Register (Analogue Output)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Heat Source Status **[READ ONLY]**	80	40081	0 = H/P 1 = IH 2 = BH 3 = IH + BH 4 = Boiler	✓	✓								
Temperature Setpoint – Zone 1 (signed) **[READ ONLY]**	81	40082	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Temperature Setpoint – Zone 1 **[READ ONLY]**	82	40083	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Temperature Setpoint – Zone 2 (signed) **[READ ONLY]**	83	40084	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Temperature Setpoint – Zone 2 **[READ ONLY]**	84	40085	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Flow Temperature Setpoint – Zone 1 (signed) **[READ ONLY]**	85	40086	Temperature value in ºC multiplied by 100. (see note *)	✓	✓	✓	✓	✓	✓		✓	✓	
Flow Temperature Setpoint – Zone 1 **[READ ONLY]**	86	40087	Temperature value in ºC multiplied by 100. (see note **)	✓	✓	✓	✓	✓	✓		✓	✓	
Flow Temperature Setpoint – Zone 2 (signed) **[READ ONLY]**	87	40088	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Flow Temperature Setpoint – Zone 2 **[READ ONLY]**	88	40089	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Legionella Temperature Setpoint (signed) **[READ ONLY]**	89	40090	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Legionella Temperature Setpoint **[READ ONLY]**	90	40091	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
DHW Temperature Drop (signed) **[READ ONLY]**	91	40092	Temperature value in ºC multiplied by 10. 0xFF38 = -20.0ºC … 0x0433 = 107.5ºC	✓	✓								
DHW Temperature Drop **[READ ONLY]**	92	40093	Temperature value in ºC multiplied by 10. 0x0000 = 0ºC … 0x0433 = 107.5ºC 0 = 0.0ºC … 1075 = 107.5ºC	✓	✓								

Holding Register (Analogue Output)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Room Temperature – Zone 1 (signed) **[READ ONLY]**	93	40094	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Room Temperature – Zone 1 **[READ ONLY]**	94	40095	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Room Temperature – Zone 2 (signed) **[READ ONLY]**	95	40096	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Room Temperature – Zone 2 **[READ ONLY]**	96	40097	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Refrigerant Liquid Temperature (signed) **[READ ONLY]**	97	40098	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Refrigerant Liquid Temperature **[READ ONLY]**	98	40099	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Outdoor Ambient Temperature (signed) **[READ ONLY]**	99	40100	Temperature value in ºC multiplied by 10. 0xFE70 = -40.0ºC … 0x036B = 87.5ºC	✓	✓	✓		✓	✓	✓	✓	✓	
Outdoor Ambient Temperature **[READ ONLY]**	100	40101	Temperature value in ºC multiplied by 10. 0x0000 = 0.0ºC ... 0x036B = 87.5ºC.	✓	✓	✓		✓	✓	✓	✓	✓	
Flow Temperature (signed) **[READ ONLY]**	101	40102	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Water Outlet Temperature (signed) **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓	✓	✓	✓	
Flow Temperature **[READ ONLY]**	102	40103	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Water Outlet Temperature **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓	✓	✓	✓	
Return Temperature (signed) **[READ ONLY]**	103	40104	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Water Inlet Temperature (signed) **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓	✓	✓	✓	

Holding Register (Analogue Output)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Return Temperature **[READ ONLY]**	104	40105	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Water Inlet Temperature **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓	✓	✓	✓	
Tank Water Temperature (signed) **[READ ONLY]**	105	40106	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Tank Water Temperature **[READ ONLY]**	106	40107	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Flow Temperature – Zone 1 (signed) **[READ ONLY]**	107	40108	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
External Water Temperature 1 (signed) **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note *)			✓		✓		✓	✓		
Flow Temperature – Zone 1 **[READ ONLY]**	108	40109	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
External Water Temperature 1 **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note **)			✓		✓		✓	✓		
Return Temperature – Zone 1 (signed) **[READ ONLY]**	109	40110	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
External Water Temperature 3 (signed) **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note *)							✓			
Return Temperature – Zone 1 **[READ ONLY]**	110	40111	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
External Water Temperature 3 **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note **)							✓			
Flow Temperature – Zone 2 (signed) **[READ ONLY]**	111	40112	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
External Water Temperature 2 (signed) **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note *)			✓		✓					

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
External Water Temperature 4 (signed) **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note *)							✓			
Flow Temperature – Zone 2 **[READ ONLY]**	112	40113	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
External Water Temperature 2 **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note **)			✓		✓					
External Water Temperature 4 **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note **)							✓			
Return Temperature – Zone 2 (signed) **[READ ONLY]**	113	40114	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
External Water Temperature 6 (signed) **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note **)							✓			
Return Temperature – Zone 2 **[READ ONLY]**	114	40115	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
External Water Temperature 6 **[READ ONLY]**			Temperature value in ºC multiplied by 100. (see note **)							✓			
Boiler Flow Temperature (signed) **[READ ONLY]**	115	40116	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Boiler Flow Temperature **[READ ONLY]**	116	40117	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Boiler Return Temperature (signed) **[READ ONLY]**	117	40118	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Boiler Return Temperature **[READ ONLY]**	118	40119	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Room Thermo 1 (IN1) **[READ ONLY]**	119	40120	0 = OFF, 1 = ON	✓	✓								
Room Thermo 2 (IN6) **[READ ONLY]**	120	40121	0 = OFF, 1 = ON	✓	✓								

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Flow SW1 (IN2) **[READ ONLY]**	121	40122	0 = OFF, 1 = ON	✓	✓								
Flow SW2 (IN3) **[READ ONLY]**	122	40123	0 = OFF, 1 = ON	✓	✓								
Flow SW3 (IN7) **[READ ONLY]**	123	40124	0 = OFF, 1 = ON	✓	✓								
Demand (IN4) **[READ ONLY]**	124	40125	0 = OFF, 1 = ON	✓	✓								
Outdoor Thermo (IN5) **[READ ONLY]**	125	40126	0 = OFF, 1 = ON	✓	✓								
DIP Switch SW2 **[READ ONLY]**	126	40127	Bit 0 = Switch 2-1 (0 = OFF, 1 = ON) … Bit 9 = Switch 2-10 (0 = OFF, 1 = ON)	✓	✓								
Heat Pump Master ON/OFF **[READ ONLY]**	127	40128	0 = Stop, 1 = Run	✓	✓	✓		✓		✓	✓		
Heat Pump Slave 1 ON/OFF (address 2 for CAHV/CRHV) **[READ ONLY]**	128	40129	0 = Stop, 1 = Run	✓	✓	✓		✓		✓	✓		
Heat Pump Slave 2 ON/OFF (address 3 for CAHV/CRHV) **[READ ONLY]**	129	40130	0 = Stop, 1 = Run	✓	✓	✓		✓					
Heat Pump Slave 3 ON/OFF (address 4 for CAHV/CRHV) **[READ ONLY]**	130	40131	0 = Stop, 1 = Run	✓	✓	✓		✓					
Heat Pump Slave 4 ON/OFF (address 5 for CAHV/CRHV) **[READ ONLY]**	131	40132	0 = Stop, 1 = Run	✓	✓	✓		✓					
Heat Pump Slave 5 ON/OFF (address 6 for CAHV/CRHV) **[READ ONLY]**	132	40133	0 = Stop, 1 = Run	✓	✓	✓		✓					
Heat Pump Slave 6 ON/OFF (address 7 for CAHV/CRHV) **[READ ONLY]**	133	40134	0 = Stop, 1 = Run	✓	✓	✓		✓					
Heat Pump Slave 7 ON/OFF (address 8 for CAHV/CRHV) **[READ ONLY]**	134	40135	0 = Stop, 1 = Run			✓		✓					

Holding Register (Analogue Output)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Heat Pump Slave 8 ON/OFF (address 9 for CAHV/CRHV) **[READ ONLY]**	135	40136	0 = Stop, 1 = Run			✓		✓					
Heat Pump Run Time (hours) **[READ ONLY]**	136	40137	Value in hours 0 = 0 Hours … 99 = 99 Hours	✓	✓	✓		✓					
Heat Pump Run Time (hours x100) **[READ ONLY]**	137	40138	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓	✓		✓					
Heat Pump Refrigerant Address 1 Run Time (hours x100) **[READ ONLY]**	138	40139	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Heat Pump Refrigerant Address 2 Run Time (hours x100) **[READ ONLY]**	139	40140	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Heat Pump Refrigerant Address 3 Run Time (hours x100) **[READ ONLY]**	140	40141	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Heat Pump Refrigerant Address 4 Run Time (hours x100) **[READ ONLY]**	141	40142	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Heat Pump Refrigerant Address 5 Run Time (hours x100) **[READ ONLY]**	142	40143	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Heat Pump Refrigerant Address 6 Run Time (hours x100) **[READ ONLY]**	143	40144	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Boiler ON/OFF **[READ ONLY]**	144	40145	0 = Stop, 1 = Run	✓	✓						✓	✓	
External Heater Operation 1 **[READ ONLY]**			0 = Stop, 1 = Run			✓		✓					

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Booster Heater 1 ON/OFF **[READ ONLY]**	145	40146	0 = Stop, 1 = Run	✓	✓								
Booster Heater 2 ON/OFF **[READ ONLY]**	146	40147	0 = Stop, 1 = Run	✓	✓								
Booster Heater 2+ ON/OFF **[READ ONLY]**	147	40148	0 = Stop, 1 = Run	✓	✓								
Immersion Heater ON/OFF **[READ ONLY]**	148	40149	0 = Stop, 1 = Run	✓	✓								
Water Pump 1 ON/OFF **[READ ONLY]**	149	40150	0 = Stop, 1 = Run	✓	✓	✓		✓	✓	✓	✓	✓	
Water Pump 2 ON/OFF **[READ ONLY]**	150	40151	0 = Stop, 1 = Run	✓	✓	✓							
Water Pump 3 ON/OFF **[READ ONLY]**	151	40152	0 = Stop, 1 = Run	✓	✓	✓							
3-Way Valve ON/OFF **[READ ONLY]**	152	40153	0 = Stop, 1 = Run	✓	✓								
2-Way Valve 2 ON/OFF **[READ ONLY]**	153	40154	0 = Stop, 1 = Run	✓	✓								
Mixing Valve Step **[READ ONLY]**	154	40155	0 = Step 0 … 10 = Step 10	✓	✓								
Refrigerant 1 Error Code Digit 1 **[READ ONLY]**	155	40156	(see note ^)	✓	✓								
Refrigerant 1 Error Code Digit 2 **[READ ONLY]**	156	40157	(see note ^^)	✓	✓								
Refrigerant 2 Error Code Digit 1 **[READ ONLY]**	157	40158	(see note ^)	✓	✓								
Refrigerant 2 Error Code Digit 2 **[READ ONLY]**	158	40159	(see note ^^)	✓	✓								

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Refrigerant 3 Error Code Digit 1 **[READ ONLY]**	159	40160	(see note ^)	✓	✓								
Refrigerant 3 Error Code Digit 2 **[READ ONLY]**	160	40161	(see note ^^)	✓	✓								
Refrigerant 4 Error Code Digit 1 **[READ ONLY]**	161	40162	(see note ^)	✓	✓								
Refrigerant 4 Error Code Digit 2 **[READ ONLY]**	162	40163	(see note ^^)	✓	✓								
Refrigerant 5 Error Code Digit 1 **[READ ONLY]**	163	40164	(see note ^)	✓	✓								
Refrigerant 5 Error Code Digit 2 **[READ ONLY]**	164	40165	(see note ^^)	✓	✓								
Refrigerant 6 Error Code Digit 1 **[READ ONLY]**	165	40166	(see note ^)	✓	✓								
Refrigerant 6 Error Code Digit 2 **[READ ONLY]**	166	40167	(see note ^^)	✓	✓								
Heat Pump Frequency – Slave 7 **[READ ONLY]**	167	40168	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 8 **[READ ONLY]**	168	40169	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 9 **[READ ONLY]**	169	40170	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 10 **[READ ONLY]**	170	40171	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 11 **[READ ONLY]**	171	40172	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 12 **[READ ONLY]**	172	40173	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Heat Pump Frequency – Slave 13 **[READ ONLY]**	173	40174	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 14 **[READ ONLY]**	174	40175	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 15 **[READ ONLY]**	175	40176	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump 10 ON/OFF **[READ ONLY]**	176	40177	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 11 ON/OFF **[READ ONLY]**	177	40178	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 12 ON/OFF **[READ ONLY]**	178	40179	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 13 ON/OFF **[READ ONLY]**	179	40180	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 14 ON/OFF **[READ ONLY]**	180	40181	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 15 ON/OFF **[READ ONLY]**	181	40182	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 16 ON/OFF **[READ ONLY]**	182	40183	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 17 ON/OFF **[READ ONLY]**	183	40184	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 18 ON/OFF **[READ ONLY]**	184	40185	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 19 ON/OFF **[READ ONLY]**	185	40186	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 20 ON/OFF **[READ ONLY]**	186	40187	0 = Stop, 1 = Run			✓#1		✓#1					

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Heat Pump 21 ON/OFF **[READ ONLY]**	187	40188	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 22 ON/OFF **[READ ONLY]**	188	40189	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 23 ON/OFF **[READ ONLY]**	189	40190	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 24 ON/OFF **[READ ONLY]**	190	40191	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 25 ON/OFF **[READ ONLY]**	191	40192	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 26 ON/OFF **[READ ONLY]**	192	40193	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 27 ON/OFF **[READ ONLY]**	193	40194	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 28 ON/OFF **[READ ONLY]**	194	40195	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 29 ON/OFF **[READ ONLY]**	195	40196	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 30 ON/OFF **[READ ONLY]**	196	40197	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 31 ON/OFF **[READ ONLY]**	197	40198	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 32 ON/OFF **[READ ONLY]**	198	40199	0 = Stop, 1 = Run			✓#1		✓#1					
	199 - 214	40200 - 40215	Reserved										
External Heater ON/OFF **[READ ONLY]**	215	40216	0 = Stop, 1 = Run					✓#1					
Water Pump 4 ON/OFF **[READ ONLY]**	216	40217	0 = Stop, 1 = Run			✓							

Holding Register (Analogue Output)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Water Pump 5 ON/OFF **[READ ONLY]**	217	40218	0 = Stop, 1 = Run			✓							
Water Pump 6 ON/OFF **[READ ONLY]**	218	40219	0 = Stop, 1 = Run			✓							
Water Pump 7 ON/OFF **[READ ONLY]**	219	40220	0 = Stop, 1 = Run			✓							
Water Pump 8 ON/OFF **[READ ONLY]**	220	40221	0 = Stop, 1 = Run			✓							
Water Pump 9 ON/OFF **[READ ONLY]**	221	40222	0 = Stop, 1 = Run			✓							
Water Pump 10 ON/OFF **[READ ONLY]**	222	40223	0 = Stop, 1 = Run			✓							
Water Pump 11 ON/OFF **[READ ONLY]**	223	40224	0 = Stop, 1 = Run			✓							
Water Pump 12 ON/OFF **[READ ONLY]**	224	40225	0 = Stop, 1 = Run			✓							
Water Pump 13 ON/OFF **[READ ONLY]**	225	40226	0 = Stop, 1 = Run			✓							
Water Pump 14 ON/OFF **[READ ONLY]**	226	40227	0 = Stop, 1 = Run			✓							
Water Pump 15 ON/OFF **[READ ONLY]**	227	40228	0 = Stop, 1 = Run			✓							
Water Pump 16 ON/OFF **[READ ONLY]**	228	40229	0 = Stop, 1 = Run			✓							
Drain Pan Heater ON/OFF **[READ ONLY]**	229	40230	0 = Stop, 1 = Run					✓	✓		✓	✓	
Antifreeze piping heater operation ON/OFF **[READ ONLY]**			0 = Stop, 1 = Run							✓			

Holding Register (Analogue Output)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Evaporating Temperature (signed) **[READ ONLY]**	230	40231	Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓	✓	✓	✓	
Evaporating Temperature **[READ ONLY]**	231	40232	Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓	✓	✓	✓	
Condensing Temperature (signed) **[READ ONLY]**	232	40233	Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓	✓	✓	✓	
Condensing Temperature **[READ ONLY]**	233	40234	Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓	✓	✓	✓	
Electric Energy 1 **[READ ONLY]**	234	40235	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 2 **[READ ONLY]**	235	40236	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 3 **[READ ONLY]**	236	40237	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 4 **[READ ONLY]**	237	40238	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 5 **[READ ONLY]**	238	40239	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 6 **[READ ONLY]**	239	40240	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 7 **[READ ONLY]**	240	40241	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 8 **[READ ONLY]**	241	40242	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 9 **[READ ONLY]**	242	40243	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 10 **[READ ONLY]**	243	40244	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Electric Energy 11 **[READ ONLY]**	244	40245	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 12 **[READ ONLY]**	245	40246	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 13 **[READ ONLY]**	246	40247	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 14 **[READ ONLY]**	247	40248	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 15 **[READ ONLY]**	248	40249	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 16 **[READ ONLY]**	249	40250	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Brine Inlet Temperature (signed) **[READ ONLY]**	250	40251	Temperature value in ºC multiplied by 100. (see note *)					✓	✓				
Brine Inlet Temperature **[READ ONLY]**	251	40252	Temperature value in ºC multiplied by 100. (see note **)					✓	✓				
Brine Outlet Temperature 1 (signed) **[READ ONLY]**	252	40253	Temperature value in ºC multiplied by 100. (see note *)					✓	✓				
Brine Outlet Temperature 1 **[READ ONLY]**	253	40254	Temperature value in ºC multiplied by 100. (see note **)					✓	✓				
Brine Outlet Temperature 2 (signed) **[READ ONLY]**	254	40255	Temperature value in ºC multiplied by 100. (see note *)					✓	✓				
Brine Outlet Temperature 2 **[READ ONLY]**	255	40256	Temperature value in ºC multiplied by 100. (see note **)					✓	✓				
Condensing Temperature 2 (signed) **[READ ONLY]**	256	40257	Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓		✓	✓	
Condensing Temperature 2 **[READ ONLY]**	257	40258	Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓		✓	✓	

Holding Register (Analogue Output)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Water Outlet Temperature 2 (signed) **[READ ONLY]**	258	40259	Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓		✓	✓	
Water Outlet Temperature 2 **[READ ONLY]**	259	40260	Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓		✓	✓	
Evaporating Temperature 2 (signed) **[READ ONLY]**	260	40261	Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓		✓	✓	
Evaporating Temperature 2 **[READ ONLY]**	261	40262	Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓		✓	✓	
Water Pump 1 – PWM Duty **[READ ONLY]**	262	40263	Duty value in % 0 = 0% … 100 = 100%							✓			
Water Pump 1 – PWM Duty Feedback **[READ ONLY]**	263	40264	Duty value in % 0 = 0% … 100 = 100%										
3-Way Valve 1 **[READ ONLY]**	264	40265	0 = OFF (stop) 1 = ON (run)			✓				✓			
Version of Protocol (upper) **[READ ONLY]**	265	40266	Version of Protocol is a value in BCD e.g. V3.01 = 3 (upper) and 1 (lower)	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Version of Protocol (lower) **[READ ONLY]**	266	40267	Version of Protocol is a value in BCD e.g. V3.01 = 3 (upper) and 1 (lower)	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Version of Model (upper) **[READ ONLY]**	267	40268	Version of Model is a value in BCD e.g. V2.00 = 2 (upper) and 0 (lower)	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Version of Model (lower) **[READ ONLY]**	268	40269	Version of Model is a value in BCD e.g. V2.00 = 2 (upper) and 0 (lower)	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Capacity of Supplying Electricity **[READ ONLY]**	269	40270	Value in Watts 0 = 0,0 W … 255 = 25,5 W	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Holding Register (Analogue Output)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Model Profile 1 **[READ ONLY]**	270	40271	0 = FTC2B 1 = FTC4 2 = FTC5 128 = CAHV1A 129 = CAHV1B 130 = CRHV1A 131 = CRHV1B 132 = EAHV1A 133 = EAHV1B 134 = QAHV1A 135 = QAHV1B 144 = PWFY1	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Model Profile 2 (refrigerant address) **[READ ONLY]**	271	40272	0 = Address 0 … 255 = Address 255 (addresses 7 – 255 not used for FTC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Energy Consumption Measured Date – Year **[READ ONLY]**	279	40280	Date of last energy consumption measurement – Year		✓								
Energy Consumption Measured Date – Month **[READ ONLY]**	280	40281	Date of last energy consumption measurement – Month		✓								
Energy Consumption Measured Date – Day **[READ ONLY]**	281	40282	Date of last energy consumption measurement – Day		✓								
Last Measured Heating Energy Consumption – kWh part **[READ ONLY]**	282	40283	Last measured heating energy consumption – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								
Last Measured Heating Energy Consumption – Wh part **[READ ONLY]**	283	40284	Last measured heating energy consumption – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured Cooling Energy Consumption – kWh part **[READ ONLY]**	284	40285	Last measured cooling energy consumption – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								
Last Measured Cooling Energy Consumption – Wh part **[READ ONLY]**	285	40286	Last measured cooling energy consumption – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured DHW Energy Consumption – kWh part **[READ ONLY]**	286	40287	Last measured DHW energy consumption – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								

Holding Register (Analogue Output)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Last Measured DHW Energy Consumption – Wh part **[READ ONLY]**	287	40288	Last measured DHW energy consumption – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured Total Energy Consumption – kWh **[READ ONLY]**	288	40289	Last measured total energy consumption in Kwh. 0 = 0kWh … 65535 = 65535kWh		✓								
Energy Produced Measured Date – Year **[READ ONLY]**	289	40290	Date of last energy produced measurement – Year		✓								
Energy Produced Measured Date – Month **[READ ONLY]**	290	40291	Date of last energy produced measurement – Month		✓								
Energy Produced Measured Date – Day **[READ ONLY]**	291	40292	Date of last energy produced measurement – Day		✓								
Last Measured Heating Energy Produced – kWh part **[READ ONLY]**	292	40293	Last measured heating energy produced – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								
Last Measured Heating Energy Produced – Wh part **[READ ONLY]**	293	40294	Last measured heating energy produced – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured Cooling Energy Produced – kWh part **[READ ONLY]**	294	40295	Last measured cooling energy produced – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								
Last Measured Cooling Energy Produced – Wh part **[READ ONLY]**	295	40296	Last measured cooling energy produced – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured DHW Energy Produced – kWh part **[READ ONLY]**	296	40297	Last measured DHW energy produced – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								
Last Measured DHW Energy Produced – Wh part **[READ ONLY]**	297	40298	Last measured DHW energy produced – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured Total Energy Produced – kWh **[READ ONLY]**	298	40299	Last measured total energy produced in Kwh. 0 = 0kWh … 65535 = 65535kWh		✓								
Flow Rate **[READ ONLY]**	299	40300	Litres per minute 0 = 0 l/min … 255 = 255 l/min		✓								

* Temperature in ºC multiplied by 100.
  0x8000 = -327.68ºC
  0x8001 = -327.67ºC
  …
  0xFFFF = -0.01ºC
  0x0000 = 0.00ºC
  …
  0x7FFE = 327.66ºC
  0x7FFF = 327.67ºC

** Temperature in ºC multiplied by 100.
  0x0000 = 0.00ºC
  0x0001 = 0.01ºC
  …
  0x7FFE = 327.66ºC
  0x7FFF = 327.67ºC

^ 7-Segment Display Error Code Digit 1
  0 = A
  1 = b
  2 = E
  3 = F
  4 = J
  5 = L
  6 = P
  7 = U

^^ 7-Segment Display Error Code Digit 2
  1 – 15 = 1 - F
  16 = O
  17 = H
  18 = J
  19 = L
  20 = P
  21 = U

† Electric Energy
0x0000 = 0.00 kWh
0x0001 = 0.01 kWh
…
0xFFFE = 655.34 kWh
0xFFFF = 655.35 kWh

†† MRC Prohibit command must NOT be written to Shizuoka designed models

#1 Value always read as 0 on CAHV/CRHV 2013 models
#2 Value always read as 0 on CAHV/CRHV 2013 models
#3 Value always read as 0 on CAHV/CRHV 2013 models
#4 Stop and Cooling modes not supported on CAHV 2013 models
#5 Stop, Cooling and Legionella modes not supported on CRHV 2013 models
#6 This value is read only on FTC4 models
#7 Bit 4 not supported on CAHV/CRHV 2013 models and EAHV 2015 models
#8 This setting is not supported on CAHV 2013 models
#9 Range is -30..+50ºC for CRHV/CAHV/EAHV models
#10 Range is 0..+50ºC for CRHV/CAHV/EAHV models
#11 Range is +30..+65ºC for CAHV models
#12 Range is +25..+65ºC for CRHV models
#13 For EAHV 2015 models the modes Stop, Hot Water, No-Voltage Contact and Legionella are unsupported
#14 For CAHV/CRHV 2013 models and EAHV 2015 models settings Emergency Run and Test Run are unsupported
#15 Range is +40..+90ºC for QAHV models
#16 Range is +30..+55ºC for EAHV models (Heating)
Range is +5..+25ºC for EAHV models (Cooling)
#17 “Error information of refrigerant system” for CAHV/CRHV/QAHV models
#18 Read only value

1.2. Input registers

Input Registers are read using function code 04.

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Fault/Error Code (hex)	1	30002	0x8000 = No error 0x6999 = Bad communication with unit (Refer to indoor unit documentation for description of other fault code values)	✓	✓	✓		✓		✓	✓		
MelcoBEMS MINI (A1M) Firmware Version	3	30004	MelcoBEMS MINI (A1M) Firmware Version	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Modbus Comms Counter	5	30006	Value of a counter which increments upon every valid Modbus command received. Value will automatically reset to zero when value exceeds 65535.	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Fault Code (decimal)	8	30009	8000 = No error 6999 = Bad communication between A1M and unit (Refer to unit documentation for description of other fault code values)	✓	✓	✓		✓		✓	✓		
System Type Detected	9	30010	0 = ATA unit connected 1 = ATW system connected 2 = Lossnay system connected 255 = Undetermined (no unit detected yet)	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Own Refrigerant Address	25	30026	0 … 32	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Defrost	26	30027	0 = Normal 1 = Standby 2 = Defrost 3 = Waiting Restart	✓	✓	✓	✓			✓	✓	✓	
Residual Heat Removal	27	30028	0 = Normal 1 = Prepared 2 = Residual Heat Removal	✓	✓								
Refrigerant Error Info	28	30029	0 = Normal 1 = Error (System) 2 = Error (Startup) 3 = Maintenance Error	✓	✓	✓#2		✓#2		✓#2	✓		

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
7-Segment Display Error Code Digit 1	29	30030	(see note ^)	✓	✓								
7-Segment Display Error Code Digit 2	30	30031	(see note ^^)	✓	✓								
Status Of Heating	31	30032	0 = No type 1 = Heating C1 2 = Heating C2 3 = Heating C3	✓									
			0 = No type 1 = Heating/Cooling A1, Heating/Cooling B1, Heating/Cooling C1 2 = Heating/Cooling A2, Heating/Cooling B2, Heating/Cooling C2 3 = Heating/Cooling A3, Heating/Cooling B3, Heating/Cooling C3		✓								
Heat Pump Frequency – Master	32	30033	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 1	33	30034	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 2	34	30035	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 3	35	30036	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 4	36	30037	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 5	37	30038	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓	✓		
Heat Pump Frequency – Slave 6	38	30039	Frequency value in Hz 0 = 0Hz … 255 = 255Hz	✓	✓	✓		✓		✓			
Heat Source Status	39	30040	0 = H/P 1 = IH 2 = BH 3 = IH + BH 4 = Boiler	✓	✓								

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Temperature Setpoint – Zone 1 (signed)	40	30041	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Temperature Setpoint – Zone 1	41	30042	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Temperature Setpoint – Zone 2 (signed)	42	30043	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Temperature Setpoint – Zone 2	43	30044	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Flow Temperature Setpoint – Zone 1 (signed)	44	30045	Temperature value in ºC multiplied by 100. (see note *)	✓	✓	✓	✓	✓	✓		✓	✓	
Flow Temperature Setpoint – Zone 1	45	30046	Temperature value in ºC multiplied by 100. (see note **)	✓	✓	✓	✓	✓	✓		✓	✓	
Flow Temperature Setpoint – Zone 2 (signed)	46	30047	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Flow Temperature Setpoint – Zone 2	47	30048	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Legionella Temperature Setpoint (signed)	48	30049	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Legionella Temperature Setpoint	49	30050	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
DHW Temperature Drop (signed)	50	30051	Temperature value in ºC multiplied by 10. 0xFF38 = -20.0ºC … 0x0433 = 107.5ºC	✓	✓								
DHW Temperature Drop	51	30052	Temperature value in ºC multiplied by 10. 0x0000 = 0ºC … 0x0433 = 107.5ºC 0 = 0.0ºC … 1075 = 107.5ºC	✓	✓								
Room Temperature – Zone 1 (signed)	52	30053	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Room Temperature – Zone 1	53	30054	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Room Temperature – Zone 2 (signed)	54	30055	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Room Temperature – Zone 2	55	30056	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Refrigerant Liquid Temperature (signed)	56	30057	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Refrigerant Liquid Temperature	57	30058	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Outdoor Ambient Temperature (signed)	58	30059	Temperature value in ºC multiplied by 10. 0xFE70 = -40.0ºC … 0x036B = 87.5ºC	✓	✓	✓		✓	✓	✓	✓	✓	
Outdoor Ambient Temperature	59	30060	Temperature value in ºC multiplied by 10. 0x0000 = 0.0ºC ... 0x036B = 87.5ºC.	✓	✓	✓		✓	✓	✓	✓	✓	
Flow Temperature (signed)	60	30061	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Water Outlet Temperature (signed)			Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓	✓	✓	✓	
Flow Temperature	61	30062	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Water Outlet Temperature			Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓	✓	✓	✓	
Return Temperature (signed)	62	30063	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Water Inlet Temperature (signed)			Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓	✓	✓	✓	
Return Temperature	63	30064	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Water Inlet Temperature			Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓	✓	✓	✓	
Tank Water Temperature (signed)	64	30065	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Tank Water Temperature	65	30066	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Flow Temperature – Zone 1 (signed)	66	30067	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
External Water Temperature 1 (signed)			Temperature value in ºC multiplied by 100. (see note *)			✓		✓		✓	✓		
Flow Temperature – Zone 1	67	30068	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
External Water Temperature 1			Temperature value in ºC multiplied by 100. (see note **)			✓		✓		✓	✓		
Return Temperature – Zone 1 (signed)	68	30069	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
External Water Temperature 3 (signed)			Temperature value in ºC multiplied by 100. (see note *)							✓			
Return Temperature – Zone 1	69	30070	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
External Water Temperature 3			Temperature value in ºC multiplied by 100. (see note **)							✓			
Flow Temperature – Zone 2 (signed)	70	30071	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
External Water Temperature 2 (signed)			Temperature value in ºC multiplied by 100. (see note *)			✓		✓					
External Water Temperature 4 (signed)			Temperature value in ºC multiplied by 100. (see note *)							✓			
Flow Temperature – Zone 2	71	30072	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
External Water Temperature 2			Temperature value in ºC multiplied by 100. (see note **)			✓		✓					
External Water Temperature 4			Temperature value in ºC multiplied by 100. (see note **)							✓			

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Return Temperature – Zone 2 (signed)	72	30073	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
External Water Temperature 6 (signed)			Temperature value in ºC multiplied by 100. (see note **)							✓			
Return Temperature – Zone 2	73	30074	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
External Water Temperature 6			Temperature value in ºC multiplied by 100. (see note **)							✓			
Boiler Flow Temperature (signed)	74	30075	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Boiler Flow Temperature	75	30076	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
Boiler Return Temperature (signed)	76	30077	Temperature value in ºC multiplied by 100. (see note *)	✓	✓								
Boiler Return Temperature	77	30078	Temperature value in ºC multiplied by 100. (see note **)	✓	✓								
DIP Switch SW2	78	30079	Bit 0 = Switch 2-1 (0 = OFF, 1 = ON) … Bit 9 = Switch 2-10 (0 = OFF, 1 = ON)	✓	✓								
Heat Pump Run Time (hours)	79	30080	Value in hours 0 = 0 Hours … 99 = 99 Hours	✓	✓	✓		✓					
Heat Pump Run Time (hours x100)	80	30081	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓	✓		✓					
Heat Pump Refrigerant Address 1 Run Time (hours x100)	81	30082	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Heat Pump Refrigerant Address 2 Run Time (hours x100)	82	30083	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Heat Pump Refrigerant Address 3 Run Time (hours x100)	83	30084	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Heat Pump Refrigerant Address 4 Run Time (hours x100)	84	30085	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Heat Pump Refrigerant Address 5 Run Time (hours x100)	85	30086	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Heat Pump Refrigerant Address 6 Run Time (hours x100)	86	30087	Value in hours multiplied by 100 0 = 0 hours … 65535 = 6553500 hours	✓	✓								
Mixing Valve Step	87	30088	0 = Step 0 … 10 = Step 10	✓	✓								
Refrigerant 1 Error Code Digit 1	88	30089	(see note ^)	✓	✓								
Refrigerant 1 Error Code Digit 2	89	30090	(see note ^^)	✓	✓								
Refrigerant 2 Error Code Digit 1	90	30091	(see note ^)	✓	✓								
Refrigerant 2 Error Code Digit 2	91	30092	(see note ^^)	✓	✓								
Refrigerant 3 Error Code Digit 1	92	30093	(see note ^)	✓	✓								
Refrigerant 3 Error Code Digit 2	93	30094	(see note ^^)	✓	✓								
Refrigerant 4 Error Code Digit 1	94	30095	(see note ^)	✓	✓								
Refrigerant 4 Error Code Digit 2	95	30096	(see note ^^)	✓	✓								

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Refrigerant 5 Error Code Digit 1	96	30097	(see note ^)	✓	✓								
Refrigerant 5 Error Code Digit 2	97	30098	(see note ^^)	✓	✓								
Refrigerant 6 Error Code Digit 1	98	30099	(see note ^)	✓	✓								
Refrigerant 6 Error Code Digit 2	99	30100	(see note ^^)	✓	✓								
Heat Pump Frequency – Slave 7	100	30101	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 8	101	30102	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 9	102	30103	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 10	103	30104	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 11	104	30105	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 12	105	30106	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 13	106	30107	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 14	107	30108	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Heat Pump Frequency – Slave 15	108	30109	Frequency value in Hz 0 = 0Hz … 255 = 255Hz			✓		✓		✓			
Evaporating Temperature (signed)	109	30110	Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓	✓	✓	✓	
Evaporating Temperature	110	30111	Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓	✓	✓	✓	

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Condensing Temperature (signed)	111	30112	Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓	✓	✓	✓	
Condensing Temperature	112	30113	Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓	✓	✓	✓	
Electric Energy 1	113	30114	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 2	114	30115	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 3	115	30116	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 4	116	30117	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 5	117	30118	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 6	118	30119	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 7	119	30120	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 8	120	30121	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 9	121	30122	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 10	122	30123	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 11	123	30124	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 12	124	30125	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 13	125	30126	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	

Input Register (Analogue Input)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Electric Energy 14	126	30127	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 15	127	30128	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Electric Energy 16	128	30129	Electric Energy in kWh multiplied by 100 (see note †)			✓#1	✓#1	✓#1	✓#1		✓#1	✓#1	
Brine Inlet Temperature (signed)	129	30130	Temperature value in ºC multiplied by 100. (see note *)					✓	✓				
Brine Inlet Temperature	130	30131	Temperature value in ºC multiplied by 100. (see note **)					✓	✓				
Brine Outlet Temperature 1 (signed)	131	30132	Temperature value in ºC multiplied by 100. (see note *)					✓	✓				
Brine Outlet Temperature 1	132	30133	Temperature value in ºC multiplied by 100. (see note **)					✓	✓				
Brine Outlet Temperature 2 (signed)	133	30134	Temperature value in ºC multiplied by 100. (see note *)					✓	✓				
Brine Outlet Temperature 2	134	30135	Temperature value in ºC multiplied by 100. (see note **)					✓	✓				
Condensing Temperature 2 (signed)	135	30136	Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓		✓	✓	
Condensing Temperature 2	136	30137	Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓		✓	✓	
Water Outlet Temperature 2 (signed)	137	30138	Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓		✓	✓	
Water Outlet Temperature 2	138	30139	Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓		✓	✓	
Evaporating Temperature 2 (signed)	139	30140	Temperature value in ºC multiplied by 100. (see note *)			✓	✓	✓	✓		✓	✓	
Evaporating Temperature 2	140	30141	Temperature value in ºC multiplied by 100. (see note **)			✓	✓	✓	✓		✓	✓	

Input Register (Analogue Input)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Water Pump 1 – PWM Duty	141	30142	Duty value in % 0 = 0% … 100 = 100%							✓			
Water Pump 1 – PWM Duty Feedback	142	30143	Duty value in % 0 = 0% … 100 = 100%										
3-Way Valve 1	143	30144	0 = OFF (stop) 1 = ON (run)			✓				✓			
H/C Control Type	144	30145	0 = Heating 1 = Cooling	✓	✓								
MRC Prohibit	145	30146	Bit packed value: Bit 0 – System On/Off (0 = ON, 1 = Prohibit) Bit 1 – Running Mode (0 = ON, 1 = Prohibit) Bit 2 – Setting Temp (0 = ON, 1 = Prohibit) Bit 3 – Undefined (always 0) Bit 4 – Function Setting (0 = Normal, 1 = Function Setting) Bits 5, 6 and 7 – Undefined (always 0)	✓	✓	✓		✓					
Version of Protocol (upper)	146	30147	Version of Protocol is a value in BCD e.g. V3.01 = 3 (upper) and 1 (lower)	✓	✓	✓	✓	✓	✓	✓			
Version of Protocol (lower)	147	30148	Version of Protocol is a value in BCD e.g. V3.01 = 3 (upper) and 1 (lower)	✓	✓	✓	✓	✓	✓	✓			
Version of Model (upper)	148	30149	Version of Model is a value in BCD e.g. V2.00 = 2 (upper) and 0 (lower)	✓	✓	✓	✓	✓	✓	✓			
Version of Model (lower)	149	30150	Version of Model is a value in BCD e.g. V2.00 = 2 (upper) and 0 (lower)	✓	✓	✓	✓	✓	✓	✓			
Capacity of Supplying Electricity	150	30151	Value in Watts 0 = 0,0 W … 255 = 25,5 W	✓	✓	✓	✓	✓	✓	✓			

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Model Profile 1	151	30152	0 = FTC2B 1 = FTC4 2 = FTC5 128 = CAHV1A 129 = CAHV1B 130 = CRHV1A 131 = CRHV1B 132 = EAHV1A 133 = EAHV1B 134 = QAHV1A 135 = QAHV1B 144 = PWFY1	✓	✓	✓	✓	✓	✓	✓			
Model Profile 2 (refrigerant address)	152	30153	0 = Address 0 … 255 = Address 255 (addresses 7 – 255 not used for FTC)	✓	✓	✓	✓	✓	✓	✓			
Energy Consumption Measured Date – Year	153	30154	Date of last energy consumption measurement – Year		✓								
Energy Consumption Measured Date – Month	154	30155	Date of last energy consumption measurement – Month		✓								
Energy Consumption Measured Date – Day	155	30156	Date of last energy consumption measurement – Day		✓								
Last Measured Heating Energy Consumption – kWh part	156	30157	Last measured heating energy consumption – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								
Last Measured Heating Energy Consumption – Wh part	157	30158	Last measured heating energy consumption – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured Cooling Energy Consumption – kWh part	158	30159	Last measured cooling energy consumption – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								
Last Measured Cooling Energy Consumption – Wh part	159	30160	Last measured cooling energy consumption – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured DHW Energy Consumption – kWh part	160	30161	Last measured DHW energy consumption – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								

Input Register (Analogue Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Last Measured DHW Energy Consumption – Wh part	161	30162	Last measured DHW energy consumption – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured Total Energy Consumption – kWh	162	30163	Last measured total energy consumption in Kwh. 0 = 0kWh … 65535 = 65535kWh		✓								
Energy Produced Measured Date – Year	163	30164	Date of last energy produced measurement – Year		✓								
Energy Produced Measured Date – Month	164	30165	Date of last energy produced measurement – Month		✓								
Energy Produced Measured Date – Day	165	30166	Date of last energy produced measurement – Day		✓								
Last Measured Heating Energy Produced – kWh part	166	30167	Last measured heating energy produced – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								
Last Measured Heating Energy Produced – Wh part	167	30168	Last measured heating energy produced – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured Cooling Energy Produced – kWh part	168	30169	Last measured cooling energy produced – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								
Last Measured Cooling Energy Produced – Wh part	169	30170	Last measured cooling energy produced – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured DHW Energy Produced – kWh part	170	30171	Last measured DHW energy produced – kWh part of the value. 0 = 0kWh … 65535 = 65535kWh		✓								
Last Measured DHW Energy Produced – Wh part	171	30172	Last measured DHW energy produced – Wh part of the value multiplied by 10. 0 = 0Wh … 99 = 990Wh		✓								
Last Measured Total Energy Produced – kWh	172	30173	Last measured total energy produced in Kwh. 0 = 0kWh … 65535 = 65535kWh		✓								
Flow Rate	173	30174	Litres per minute 0 = 0 l/min … 255 = 255 l/min		✓								

* Temperature in ºC multiplied by 100.
  0x8000 = -327.68ºC
  0x8001 = -327.67ºC
  …
  0xFFFF = -0.01ºC
  0x0000 = 0.00ºC
  …
  0x7FFE = 327.66ºC
  0x7FFF = 327.67ºC

** Temperature in ºC multiplied by 100.
  0x0000 = 0.00ºC
  0x0001 = 0.01ºC
  …
  0x7FFE = 327.66ºC
  0x7FFF = 327.67ºC

^ 7-Segment Display Error Code Digit 1
  0 = A
  1 = b
  2 = E
  3 = F
  4 = J
  5 = L
  6 = P
  7 = U

^^ 7-Segment Display Error Code Digit 2
  1 – 15 = 1 - F
  16 = O
  17 = H
  18 = J
  19 = L
  20 = P
  21 = U

† Electric Energy
0x0000 = 0.00 kWh
0x0001 = 0.01 kWh
…
0xFFFE = 655.34 kWh
0xFFFF = 655.35 kWh

#1 Value always read as 0 on CAHV/CRHV 2013 models
#2 “Error information of refrigerant system” for CAHV/CRHV/QAHV models

1.3. Coils

Coils are read using function code 01 and written to using either function code 05 or 15. Function code 05 is used when writing to a single coil register, function code 15 is used for writing to multiple coil registers in the same command.

Coil (Digital Output)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
System ON/OFF	1	00002	0 = System OFF 1 = System ON (Note: Reading back value 1 could indicate the unit is in Emergency Run or Test Run mode)	✓	✓	✓	(✓) #1	✓	(✓) #1	✓	✓	(✓) #1	

#1 Read only value

1.4. Discrete Inputs

Discrete Inputs are read using function code 02.

Discrete Input (Digital Input)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Room Thermo 1 (IN1)	0	10001	0 = OFF, 1 = ON	✓	✓								
Room Thermo 2 (IN6)	1	10002	0 = OFF, 1 = ON	✓	✓								
Flow SW1 (IN2)	2	10003	0 = OFF, 1 = ON	✓	✓								
Flow SW2 (IN3)	3	10004	0 = OFF, 1 = ON	✓	✓								
Flow SW3 (IN7)	4	10005	0 = OFF, 1 = ON	✓	✓								
Demand (IN4)	5	10006	0 = OFF, 1 = ON	✓	✓								
Outdoor Thermo (IN5)	6	10007	0 = OFF, 1 = ON	✓	✓								
Heat Pump Master ON/OFF	7	10008	0 = Stop, 1 = Run	✓	✓	✓		✓		✓	✓		
Heat Pump Slave 1 ON/OFF (address 2 for CAHV/CRHV)	8	10009	0 = Stop, 1 = Run	✓	✓	✓		✓		✓	✓		
Heat Pump Slave 2 ON/OFF (address 3 for CAHV/CRHV)	9	10010	0 = Stop, 1 = Run	✓	✓	✓		✓					
Heat Pump Slave 3 ON/OFF (address 4 for CAHV/CRHV)	10	10011	0 = Stop, 1 = Run	✓	✓	✓		✓					
Heat Pump Slave 4 ON/OFF (address 5 for CAHV/CRHV)	11	10012	0 = Stop, 1 = Run	✓	✓	✓		✓					
Heat Pump Slave 5 ON/OFF (address 6 for CAHV/CRHV)	12	10013	0 = Stop, 1 = Run	✓	✓	✓		✓					

Discrete Input (Digital Input)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Heat Pump Slave 6 ON/OFF (address 7 for CAHV/CRHV)	13	10014	0 = Stop, 1 = Run	✓	✓	✓		✓					
Heat Pump Slave 7 ON/OFF (address 8 for CAHV/CRHV)	14	10015	0 = Stop, 1 = Run			✓		✓					
Heat Pump Slave 8 ON/OFF (address 9 for CAHV/CRHV)	15	10016	0 = Stop, 1 = Run			✓		✓					
Boiler ON/OFF	16	10017	0 = Stop, 1 = Run	✓	✓						✓	✓	
External Heater Operation 1			0 = Stop, 1 = Run			✓		✓					
Booster Heater 1 ON/OFF	17	10018	0 = Stop, 1 = Run	✓	✓								
Booster Heater 2 ON/OFF	18	10019	0 = Stop, 1 = Run	✓	✓								
Booster Heater 2+ ON/OFF	19	10020	0 = Stop, 1 = Run	✓	✓								
Immersion Heater ON/OFF	20	10021	0 = Stop, 1 = Run	✓	✓								
Water Pump 1 ON/OFF	21	10022	0 = Stop, 1 = Run	✓	✓	✓		✓	✓	✓	✓	✓	
Water Pump 2 ON/OFF	22	10023	0 = Stop, 1 = Run	✓	✓	✓							
Water Pump 3 ON/OFF	23	10024	0 = Stop, 1 = Run	✓	✓	✓							
3-Way Valve ON/OFF	24	10025	0 = Stop, 1 = Run	✓	✓								
2-Way Valve 2 ON/OFF	25	10026	0 = Stop, 1 = Run	✓	✓								
Heat Pump 10 ON/OFF	26	10027	0 = Stop, 1 = Run			✓		✓		✓			

Discrete Input (Digital Input)				Applicable Unit Type										
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Heat Pump 11 ON/OFF	27	10028	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 12 ON/OFF	28	10029	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 13 ON/OFF	29	10030	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 14 ON/OFF	30	10031	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 15 ON/OFF	31	10032	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 16 ON/OFF	32	10033	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 17 ON/OFF	33	10034	0 = Stop, 1 = Run			✓		✓		✓			
Heat Pump 18 ON/OFF	34	10035	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 19 ON/OFF	35	10036	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 20 ON/OFF	36	10037	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 21 ON/OFF	37	10038	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 22 ON/OFF	38	10039	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 23 ON/OFF	39	10040	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 24 ON/OFF	40	10041	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 25 ON/OFF	41	10042	0 = Stop, 1 = Run			✓#1		✓#1					

Discrete Input (Digital Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Heat Pump 26 ON/OFF	42	10043	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 27 ON/OFF	43	10044	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 28 ON/OFF	44	10045	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 29 ON/OFF	45	10046	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 30 ON/OFF	46	10047	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 31 ON/OFF	47	10048	0 = Stop, 1 = Run			✓#1		✓#1					
Heat Pump 32 ON/OFF	48	10049	0 = Stop, 1 = Run			✓#1		✓#1					
	49 - 64	10050 - 10065	Reserved										
External Heater ON/OFF	65	10066	0 = Stop, 1 = Run					✓#1					
Water Pump 4 ON/OFF	66	10067	0 = Stop, 1 = Run			✓							
Water Pump 5 ON/OFF	67	10068	0 = Stop, 1 = Run			✓							
Water Pump 6 ON/OFF	68	10069	0 = Stop, 1 = Run			✓							
Water Pump 7 ON/OFF	69	10070	0 = Stop, 1 = Run			✓							
Water Pump 8 ON/OFF	70	10071	0 = Stop, 1 = Run			✓							
Water Pump 9 ON/OFF	71	10072	0 = Stop, 1 = Run			✓							

Discrete Input (Digital Input)				Applicable Unit Type									
Register Name	**Addr**	**Modicon Address**	**Details**	**FTC4**	**FTC5**	**CAHV master**	**CAHV slave**	**CRHV master**	**CRHV slave**	**QAHV master**	**EAHV / EACV master**	**EAHV / EACV slave**	
Water Pump 10 ON/OFF	72	10073	0 = Stop, 1 = Run			✓							
Water Pump 11 ON/OFF	73	10074	0 = Stop, 1 = Run			✓							
Water Pump 12 ON/OFF	74	10075	0 = Stop, 1 = Run			✓							
Water Pump 13 ON/OFF	75	10076	0 = Stop, 1 = Run			✓							
Water Pump 14 ON/OFF	76	10077	0 = Stop, 1 = Run			✓							
Water Pump 15 ON/OFF	77	10078	0 = Stop, 1 = Run			✓							
Water Pump 16 ON/OFF	78	10079	0 = Stop, 1 = Run			✓							
Drain Pan Heater ON/OFF	79	10080	0 = Stop, 1 = Run					✓	✓		✓	✓	
Antifreeze piping heater operation ON/OFF			0 = Stop, 1 = Run							✓			

[#1] Value always read as 0 on CAHV/CRHV 2013 models

Electrical Safety E114220

Please be sure to put the contact address/telephone number on this manual before handing it to the customer.

MITSUBISHI ELECTRIC UK

MITSUBISHI ELECTRIC UK, TRAVELLERS LANE, HATFIELD, HERTFORDSHIRE, AL10 8XB