

Procon

MelcoBEMS MINI (A1M)

FTC4 / FTC5 / FTC6 MODBUS REGISTER TABLES

Document version 1.0.4

Firmware version 3.0.25

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	04/02/19	GD	Initial version.
1.0.1	3.0.19	01/05/19	GD	Latest firmware version is 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 V3.0.23.
1.0.4	3.0.25	30/11/20	NB / SC	Firmware version updated to V3.0.25. FTC6 registers added. Added UKCA Logo

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

Contents

- Preface ii
 - Disclaimer..... ii
- Amendment Register iii
- 1. Modbus tables – FTC4 and FTC5 systems 6
 - 1.1. Holding registers 6
 - 1.2. Input registers..... 21
 - 1.3. Coils 33
 - 1.4. Discrete Inputs 34

1. Modbus tables – FTC4, FTC5 and FTC6 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	FTC6
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	✓	✓	✓
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)	✓	✓	✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
System On/Off	25	40026	0 = System OFF 1 = System ON 2 = Emergency Run (read only value) 3 = Test Run (read only value)	✓	✓	✓
Operating Mode (DHW)	27	40028	0 = Normal 1 = Eco		✓	✓
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 °C multiplied by 100. (see note *)	✓#1	✓	✓
Set Tank Water Temperature	31	40032	Temperature value in °C multiplied by 100. (see note **)	✓#1	✓	✓
H/C Thermostat Target Temperature – Zone 1 (signed)	32	40033	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
H/C Thermostat Target Temperature – Zone 1	33	40034	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
H/C Thermostat Target Temperature – Zone 2 (signed)	34	40035	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
H/C Thermostat Target Temperature – Zone 2	35	40036	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
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 ††)	✓	✓	✓
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	✓	✓	✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Cooling On Prohibit – Zone 1	41	40042	0 = On 1 = Prohibit	✓ #1	✓	✓
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			
Thermostat Target Temperature – Zone 1 (signed)	54	40055	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Thermostat Target Temperature – Zone 1	55	40056	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Thermostat Target Temperature – Zone 2 (signed)	56	40057	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Thermostat Target Temperature – Zone 2	57	40058	Temperature value in °C 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	✓	✓	✓
Refrigerant Error Info [READ ONLY]	69	40070	0 = Normal 1 = Error (System) 2 = Error (Startup) 3 = Maintenance Error	✓	✓	✓
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	✓	✓	✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
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	✓	✓	✓
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 °C multiplied by 100. (see note *)	✓	✓	✓
Temperature Setpoint – Zone 1 [READ ONLY]	82	40083	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Temperature Setpoint – Zone 2 (signed) [READ ONLY]	83	40084	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Temperature Setpoint – Zone 2 [READ ONLY]	84	40085	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Flow Temperature Setpoint – Zone 1 (signed) [READ ONLY]	85	40086	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Flow Temperature Setpoint – Zone 1 [READ ONLY]	86	40087	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Flow Temperature Setpoint – Zone 2 (signed) [READ ONLY]	87	40088	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Flow Temperature Setpoint – Zone 2 [READ ONLY]	88	40089	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Legionella Temperature Setpoint (signed) [READ ONLY]	89	40090	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Legionella Temperature Setpoint [READ ONLY]	90	40091	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
DHW Temperature Drop (signed) [READ ONLY]	91	40092	Temperature value in °C multiplied by 10. 0xFF38 = -20.0°C ... 0x0433 = 107.5°C	✓	✓	✓
DHW Temperature Drop [READ ONLY]	92	40093	Temperature value in °C multiplied by 10. 0x0000 = 0°C ... 0x0433 = 107.5°C 0 = 0.0°C ... 1075 = 107.5°C	✓	✓	✓
Room Temperature – Zone 1 (signed) [READ ONLY]	93	40094	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Room Temperature – Zone 1 [READ ONLY]	94	40095	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Room Temperature – Zone 2 (signed) [READ ONLY]	95	40096	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Room Temperature – Zone 2 [READ ONLY]	96	40097	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Refrigerant Liquid Temperature (signed) [READ ONLY]	97	40098	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Refrigerant Liquid Temperature [READ ONLY]	98	40099	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Outdoor Ambient Temperature (signed) [READ ONLY]	99	40100	Temperature value in °C multiplied by 10. 0xFE70 = -40.0°C ... 0x036B = 87.5°C	✓	✓	✓
Outdoor Ambient Temperature [READ ONLY]	100	40101	Temperature value in °C multiplied by 10. 0x0000 = 0.0°C ... 0x036B = 87.5°C.	✓	✓	✓
Flow Temperature (signed) [READ ONLY]	101	40102	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Flow Temperature [READ ONLY]	102	40103	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Return Temperature (signed) [READ ONLY]	103	40104	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Return Temperature [READ ONLY]	104	40105	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Tank Water Temperature (signed) [READ ONLY]	105	40106	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Tank Water Temperature [READ ONLY]	106	40107	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Flow Temperature – Zone 1 (signed) [READ ONLY]	107	40108	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Flow Temperature – Zone 1 [READ ONLY]	108	40109	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Return Temperature – Zone 1 (signed) [READ ONLY]	109	40110	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Return Temperature – Zone 1 [READ ONLY]	110	40111	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Flow Temperature – Zone 2 (signed) [READ ONLY]	111	40112	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Flow Temperature – Zone 2 [READ ONLY]	112	40113	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Return Temperature – Zone 2 (signed) [READ ONLY]	113	40114	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Return Temperature – Zone 2 [READ ONLY]	114	40115	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Boiler Flow Temperature (signed) [READ ONLY]	115	40116	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Boiler Flow Temperature [READ ONLY]	116	40117	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Boiler Return Temperature (signed) [READ ONLY]	117	40118	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Boiler Return Temperature [READ ONLY]	118	40119	Temperature value in °C 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	✓	✓	✓
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)	✓	✓	✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
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 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	✓	✓	✓
						✓
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	✓	✓	✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
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 ^^)	✓	✓	✓
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 ^^)	✓	✓	✓
	199 - 214	40200 - 40215	Reserved			
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)	✓	✓	✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
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	✓	✓	✓
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		✓	✓
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		✓	✓

[illegible]

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Date – Year [READ ONLY]	342	40343	Date(year): 0 = 2000 ... 99 = 2099			✓
Date – Month [READ ONLY]	343	40344	Date(month): 1 = January ... 12 = December			✓
Date – Day [READ ONLY]	344	40345	Date(day): 1 ... 31			✓
Time – Hour [READ ONLY]	345	40346	Time(hour): 0 ... 255			✓
Time – Minute [READ ONLY]	346	40347	Time(minute): 0 ... 59			✓
Time - Sec [READ ONLY]	347	40348	Time(sec): 0 ... 59			✓
Version of main software [READ ONLY]	348	40349	Version of Software: e.g. version 01.23 is entered as 0123			✓
Sub-version of software [READ ONLY]	349	40350	Sub-code Version of Software: e.g. "r01" = 0001, "t02" = 0102, "c03" = 0203			✓
Legionella Prevention [READ ONLY]	350	40351	Demand of Legionella Prevention; 0 = Normal, 1 = Legionella Prevention			✓
Emergency Operation Type [READ ONLY]	351	40352	Type of Emergency Prevention: 0 = Normal, 1 = Standby, 2 = Backup			✓
Sensor Setting – Zone 1 [READ ONLY]	352	40353	Zone 1 sensor setting: 0 = Main RC, 1-8 = RoomRC1-8, 15 = TH1			✓
Sensor Setting – Zone 2 [READ ONLY]	353	40354	Zone 2 sensor setting: 0 = Main RC, 1-8 = RoomRC1-8, 15 = TH1			✓
Outdoor Unit – Freeze Stat Func [READ ONLY]	354	40355	Freeze stat function for outdoor unit: 0 = Normal, 1 = Freeze stat			✓
Boiler Protection [READ ONLY]	355	40356	Boiler Protection: 0 = Normal, 1 = Prepared, 2 = Protected			✓
Auto Restart at Pwr Failure [READ ONLY]	356	40357	Auto restart at power failure: 0 = Normal, 1 = Standby, 2 = IT initial setting standby			✓
Demand of Heater [READ ONLY]	357	40358	Demand of heater operation: 0 = No demand, 1 = Run, 2 = Prohibit			✓
Type Heating / Cooling [READ ONLY]	358	40359	Type Heating / Cooling: 0 = Type A, 1 = Type B, 2 = Type C			✓
HP Thermo diff adj control – Zone 1 [READ ONLY]	359	40360	Zone1 H/P thermos diff. adjustment control: 0 = Normal, 1 = discriminating, 2 = adjustment ° 3 = β, 4 = γ			✓
HP Thermo diff adj control – Zone 2 [READ ONLY]	360	40361	Zone2 H/P thermos diff. adjustment control: 0 = Normal, 1 = discriminating, 2 = adjustment ° 3 = β, 4 = γ			✓
Slave Unit Connection Status [READ ONLY]	361	40362	Slave Unit Connection Status: Bit 0 = address 1..... Bit 5 = address 5 Value: 0 = unconnected, 1 = connected			✓
Slave Unit Operating status [READ ONLY]	362	40363	Slave Unit Operation Status: Bit 0 = address 1..... Bit 5 = address 5 Value: 0 = Stop, 1 = Running			✓
H/P Freq 4 Status [READ ONLY]	363	40364	Status of H/P frequency 4: 0 = 0 Hz ... 255 = 255 Hz			✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Heat Source Phase – DHW [READ ONLY]	364	40365	Heat Source Phase of DHW: 0 = Normal, 1 = H/P Phase, 2 = Heater Phase			✓
Heat Source Type [READ ONLY]	365	40366	Type of Heat Source: 0 = Fixed, 1 = Auto			✓
Heat Source – judgement condition [READ ONLY]	366	40367	1 = Boiler - Emergency operation 2 = Heater - Emergency operation 3 = Boiler - External input (IN5) 4 = Boiler - Heat source setting [Boiler] 5 = Heater - Heat source setting [Heater] 6 = Standard - Heatsource setting [Standard] 7 = Heater - External input (IN5) 8 = Heater - Backup operation 9 = Heater - Demand from outdoor unit 10 = Boiler - External input (IN4) 11 = Boiler - Backup operation 12 = Boiler - Heat source setting [Hybrid] 13 = Heater - Low outdoor temp. operation 14 = Standard - Pumpdown operation 15 = Standard - Floor dry up operation 16 = Boiler - Indoor unit only operation 17 = Heater - Indoor unit only operation			✓
Boiler Operation Hybrid Settings [READ ONLY]	367	40368	Boiler operation hybrid settings – Priority mode 0 = Ambient, 1 = Cost, 2 = CO2			✓
CP Boiler (Upper) [READ ONLY]	368	40369	CP boiler: (upper)(middle)(lower) 00h 00h 00h = 0.000 */kW			✓
CP Boiler (Middle) [READ ONLY]	369	40370	00h 00h 01h = 0.001 */kW .			✓
CP Boiler (Lower) [READ ONLY]	370	40371	FFh FFh FFh = 16777.215 */kW • – unit of user's currency			✓
CO2 Boiler (Upper) [READ ONLY]	371	40372	CO2 boiler: (upper)(middle)(lower) 00h 00h 00h = 0.000 kg-CO2			✓
CO2 Boiler (Middle) [READ ONLY]	372	40373	00h 00h 01h = 0.001 kg-CO2 .			✓
CO2 Boiler (Lower) [READ ONLY]	373	40374	FFh FFh FFh = 16777.215 kg-CO2			✓
Energy Price – Electricity(Upper) [READ ONLY]	374	40375	Energy Price Electricity: (upper)(middle)(lower) 00h 00h 00h = 0.000 */kW			✓
Energy Price – Electricity(Middle) [READ ONLY]	375	40376	00h 00h 01h = 0.001 */kW .			✓
Energy Price – Electricity(Lower) [READ ONLY]	376	40377	FFh FFh FFh = 16777.215 */kW • – unit of user's currency			✓
OC Connection Error [READ ONLY]	377	40378	OC Connection Error:			✓
RC Connection Error [READ ONLY]	378	40379	RC Connection Error:			✓
Consumed Electric Power [READ ONLY]	379	40380	Consumed electric power/energy: 0 = 0 kW or Wh 65535 = 65535 kW or Wh			✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Produced Power [READ ONLY]	380	40381	Produced heat power/energy: 0 = 0 kW or Wh 65535 = 65535 kW or Wh			✓
Calc Func Consumed Elec Energy [READ ONLY]	381	40382	Calculation function of consumed electrical energy: 0 = no function, 1 = with function			✓
Calc Func Produced Energy [READ ONLY]	382	40383	Calculation function of produced energy: 0 = no function, 1 = with function			✓
Heating Func On/Off [READ ONLY]	383	40384	Heating Function: 0 = OFF (inactive) 1 = ON (active)			✓
Ext Outdoor Ambient [READ ONLY]	384	40385	Extended Outdoor Ambient Temperature: 0 = OFF 1 = ON			✓
Mix Tank Water Temp (signed) [READ ONLY]	385	40386	Mixing tank water temperature: see note *			✓
Mix Tank Water Temp [READ ONLY]	386	40387	Mixing tank water temperature: see note *			✓
Condensing Temp (signed) [READ ONLY]	387	40388	Condensing temperature: see note *			✓
Condensing Temp [READ ONLY]	388	40389	Condensing temperature: see note *			✓
DipSwitch SW1 [READ ONLY]	389	40390	DipSW setting (SW1) lower byte: bit 0 = SW1-1..... bit 7 = SW1-8 upper byte: bit 0 = SW1-9 ... bit 1 = SW1-10			✓
DipSwitch SW3 [READ ONLY]	390	40391	DipSW setting (SW3) lower byte: bit 0 = SW3-1..... bit 7 = SW3-8 upper byte: bit 0 = SW3-9 ... bit 1 = SW3-10			✓
DipSwitch SW4 [READ ONLY]	391	40392	DipSW setting (SW4) lower byte: bit 0 = SW4-1..... bit 5 = SW4-6			✓
DipSwitch SW5 [READ ONLY]	392	40393	DipSW setting (SW5) lower byte: bit 0 = SW5-1..... bit 7 = SW5-8			✓
DipSwitch SW6 [READ ONLY]	393	40394	DipSW setting (SW6) lower byte: bit 0 = SW6-1..... bit 4 = SW6-5			✓
Flow Rate 2 [READ ONLY]	394	40395	Flow rate 2: 0 = 0.0 L/min, 1 = 1.0 L/min 255 = 255 L/min			✓
Water Pump 4 On/Off [READ ONLY]	395	40396	Water Pump 4 On/Off: 0 = Stop, 1 = Run			✓
2way Valve 2a On/Off [READ ONLY]	396	40397	2-way Valve 2a On/Off: 0 = Stop, 1 = Run			✓
2way Valve 2b On/Off [READ ONLY]	397	40398	2-way Valve 2b On/Off: 0 = Stop, 1 = Run			✓
Error Status 1 [READ ONLY]	398	40399	Error Status 1: 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 2 [READ ONLY]	399	40400	Error Status 2 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 3 [READ ONLY]	400	40401	Error Status 3 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 4 [READ ONLY]	401	40402	Error Status 4 0 = Normal, 1 = Error Standby, 2 = Error			✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Error Status 5 [READ ONLY]	402	40403	Error Status 5 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 6 [READ ONLY]	403	40404	Error Status 6 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 7 [READ ONLY]	404	40405	Error Status 7 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 8 [READ ONLY]	405	40406	Error Status 8 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 9 [READ ONLY]	406	40407	Error Status 9 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 10 [READ ONLY]	407	40408	Error Status 10 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 34 [READ ONLY]	408	40409	Error Status 34 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 11 [READ ONLY]	409	40410	Error Status 11: 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 12 [READ ONLY]	410	40411	Error Status 12 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 13 [READ ONLY]	411	40412	Error Status 13 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 14 [READ ONLY]	412	40413	Error Status 14 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 15 [READ ONLY]	413	40414	Error Status 15 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 16 [READ ONLY]	414	40415	Error Status 16 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 17 [READ ONLY]	415	40416	Error Status 17 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 18 [READ ONLY]	416	40417	Error Status 18 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 19 [READ ONLY]	417	40418	Error Status 19 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 20 [READ ONLY]	418	40419	Error Status 20 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 21 [READ ONLY]	419	40420	Error Status 21 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 22 [READ ONLY]	420	40421	Error Status 22 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 23 [READ ONLY]	421	40422	Error Status 11: 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 24 [READ ONLY]	422	40423	Error Status 12 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 25 [READ ONLY]	423	40424	Error Status 13 0 = Normal, 1 = Error Standby, 2 = Error			✓

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Error Status 26 [READ ONLY]	424	40425	Error Status 14 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status J* [READ ONLY]	425	40426	Error Status 15 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 27 [READ ONLY]	426	40427	Error Status 16 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 28 [READ ONLY]	427	40428	Error Status 17 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 29 [READ ONLY]	428	40429	Error Status 18 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 39 [READ ONLY]	429	40430	Error Status 39 0 = Normal, 1 = Error Standby, 2 = Error			✓

* Temperature in °C multiplied by 100.

0x8000 = -327.68°C

0x8001 = -327.67°C

...

0xFFFF = -0.01°C

0x0000 = 0.00°C

...

0x7FFE = 327.66°C

0x7FFF = 327.67°C

** Temperature in °C multiplied by 100.

0x0000 = 0.00°C

0x0001 = 0.01°C

...

0x7FFE = 327.66°C

0x7FFF = 327.67°C

^ 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

#6 This value is read only on FTC4 models

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	FTC6
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	✓	✓	✓
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	✓	✓	✓

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
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	✓	✓	✓
Temperature Setpoint – Zone 1 (signed)	40	30041	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Temperature Setpoint – Zone 1	41	30042	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Temperature Setpoint – Zone 2 (signed)	42	30043	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Temperature Setpoint – Zone 2	43	30044	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Flow Temperature Setpoint – Zone 1 (signed)	44	30045	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Flow Temperature Setpoint – Zone 1	45	30046	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Flow Temperature Setpoint – Zone 2 (signed)	46	30047	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Flow Temperature Setpoint – Zone 2	47	30048	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Legionella Temperature Setpoint (signed)	48	30049	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Legionella Temperature Setpoint	49	30050	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
DHW Temperature Drop (signed)	50	30051	Temperature value in °C multiplied by 10. 0xFF38 = -20.0°C ... 0x0433 = 107.5°C	✓	✓	✓
DHW Temperature Drop	51	30052	Temperature value in °C multiplied by 10. 0x0000 = 0°C ... 0x0433 = 107.5°C 0 = 0.0°C ... 1075 = 107.5°C	✓	✓	✓
Room Temperature – Zone 1 (signed)	52	30053	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Room Temperature – Zone 1	53	30054	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Room Temperature – Zone 2 (signed)	54	30055	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Room Temperature – Zone 2	55	30056	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Refrigerant Liquid Temperature (signed)	56	30057	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Refrigerant Liquid Temperature	57	30058	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Outdoor Ambient Temperature (signed)	58	30059	Temperature value in °C multiplied by 10. 0xFE70 = -40.0°C ... 0x036B = 87.5°C	✓	✓	✓
Outdoor Ambient Temperature	59	30060	Temperature value in °C multiplied by 10. 0x0000 = 0.0°C ... 0x036B = 87.5°C.	✓	✓	✓
Flow Temperature (signed)	60	30061	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Flow Temperature	61	30062	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Return Temperature (signed)	62	30063	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Return Temperature	63	30064	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Tank Water Temperature (signed)	64	30065	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Tank Water Temperature	65	30066	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Flow Temperature – Zone 1 (signed)	66	30067	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Flow Temperature – Zone 1	67	30068	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Return Temperature – Zone 1 (signed)	68	30069	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Return Temperature – Zone 1	69	30070	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Flow Temperature – Zone 2 (signed)	70	30071	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Flow Temperature – Zone 2	71	30072	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Return Temperature – Zone 2 (signed)	72	30073	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Return Temperature – Zone 2	73	30074	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Boiler Flow Temperature (signed)	74	30075	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Boiler Flow Temperature	75	30076	Temperature value in °C multiplied by 100. (see note **)	✓	✓	✓
Boiler Return Temperature (signed)	76	30077	Temperature value in °C multiplied by 100. (see note *)	✓	✓	✓
Boiler Return Temperature	77	30078	Temperature value in °C 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	✓	✓	✓
Heat Pump Refrigerant Address 3 Run Time (hours x100)	83	30084	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	FTC6
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 ^^)	✓	✓	✓
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 ^^)	✓	✓	✓
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)	✓	✓	✓

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
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	✓	✓	✓
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		✓	✓
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		✓	✓

[illegible]

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Date – Year	193	30194	Date(year): 0 = 2000 ... 99 = 2099			✓
Date – Month	194	30195	Date(month): 1 = January ... 12 = December			✓
Date – Day	195	30196	Date(day): 1 ... 31			✓
Time – Hour	196	30197	Time(hour): 0 ... 255			✓
Time – Minute	197	30198	Time(minute): 0 ... 59			✓
Time_Sec	198	30199	Time(sec): 0 ... 59			✓
Version of main software	199	30200	Version of Software: e.g. version 01.23 is entered as 0123			✓
Sub-version of software	200	30201	Sub-code Version of Software: e.g. "r01" = 0001, "t02" = 0102, "c03" = 0203			✓
Emergency Operation Type	201	30202	Type of Emergency Prevention: 0 = Normal, 1 = Standby, 2 = Backup			✓
Sensor Setting – Zone 1	202	30203	Zone 1 sensor setting: 0 = Main RC, 1-8 = RoomRC1-8, 15 = TH1			✓
Sensor Setting – Zone 2	203	30204	Zone 2 sensor setting: 0 = Main RC, 1-8 = RoomRC1-8, 15 = TH1			✓
Boiler Protection	204	30205	Boiler Protection: 0 = Normal, 1 = Prepared, 2 = Protected			✓
Auto Restart at Pwr Failure	205	30206	Auto restart at power failure: 0 = Normal, 1 = Standby, 2 = IT initial setting standby			✓
Demand of Heater	206	30207	Demand of heater operation: 0 = No demand, 1 = Run, 2 = Prohibit			✓
Type Heating / Cooling	207	30208	Type Heating / Cooling: 0 = Type A, 1 = Type B, 2 = Type C			✓
HP Thermo diff adj control – Zone 1	208	30209	Zone1 H/P thermos diff. adjustment control: 0 = Normal, 1 = discriminating, 2 = adjustment ° 3 = β, 4 = γ			✓
HP Thermo diff adj control – Zone 2	209	30210	Zone2 H/P thermos diff. adjustment control: 0 = Normal, 1 = discriminating, 2 = adjustment ° 3 = β, 4 = γ			✓
Slave Unit Connection Status	210	30211	Slave Unit Connection Status: Bit 0 = address 1..... Bit 5 = address 5 Value: 0 = unconnected, 1 = connected			✓
Slave Unit Operating status	211	30212	Slave Unit Operation Status: Bit 0 = address 1..... Bit 5 = address 5 Value: 0 = Stop, 1 = Running			✓
H/P Freq 4 Status	212	30213	Status of H/P frequency 4: 0 = 0 Hz ... 255 = 255 Hz			✓
Heat Source Phase – DHW	213	30214	Heat Source Phase of DHW: 0 = Normal, 1 = H/P Phase, 2 = Heater Phase			✓

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Heat Source – judgement condition	214	30215	1 = Boiler - Emergency operation 2 = Heater - Emergency operation 3 = Boiler - External input (IN5) 4 = Boiler - Heat source setting [Boiler] 5 = Heater - Heat source setting [Heater] 6 = Standard - Heatsource setting [Standard] 7 = Heater - External input (IN5) 8 = Heater - Backup operation 9 = Heater - Demand from outdoor unit 10 = Boiler - External input (IN4) 11 = Boiler - Backup operation 12 = Boiler - Heat source setting [Hybrid] 13 = Heater - Low outdoor temp. operation 14 = Standard - Pumpdown operation 15 = Standard - Floor dry up operation 16 = Boiler - Indoor unit only operation 17 = Heater - Indoor unit only operation			✓
Boiler Operation Hybrid Settings	215	30216	Boiler operation hybrid settings – Priority mode 0 = Ambient, 1 = Cost, 2 = CO2			✓
CP Boiler (Upper)	216	30217	CP boiler: (upper)(middle)(lower) 00h 00h 00h = 0.000 */kW			✓
CP Boiler (Middle)	217	30218	00h 00h 01h = 0.001 */kW .			✓
CP Boiler (Lower)	218	30219	FFh FFh FFh = 16777.215 */kW • - unit of user's currency			✓
CO2 Boiler (Upper)	219	30220	CO2 boiler: (upper)(middle)(lower) 00h 00h 00h = 0.000 kg-CO2			✓
CO2 Boiler (Middle)	220	30221	00h 00h 01h = 0.001 kg-CO2 .			✓
CO2 Boiler (Lower)	221	30222	FFh FFh FFh = 16777.215 kg-CO2			✓
Energy Price – Electricity(Upper)	222	30223	Energy Price Electricity: (upper)(middle)(lower) 00h 00h 00h = 0.000 */kW			✓
Energy Price – Electricity(Middle)	223	30224	00h 00h 01h = 0.001 */kW .			✓
Energy Price – Electricity(Lower)	224	30225	FFh FFh FFh = 16777.215 */kW • - unit of user's currency			✓
CO2 Boiler (Upper)	219	30220	CO2 boiler: (upper)(middle)(lower) 00h 00h 00h = 0.000 kg-CO2			✓
CO2 Boiler (Middle)	220	30221	00h 00h 01h = 0.001 kg-CO2 .			✓
CO2 Boiler (Lower)	221	30222	FFh FFh FFh = 16777.215 kg-CO2			✓

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Energy Price – Electricity(Upper)	222	30223	Energy Price Electricity: (upper)(middle)(lower) 00h 00h 00h = 0.000 */kW 00h 00h 01h = 0.001 */kW . . FFh FFh FFh = 16777.215 */kW • – unit of user's currency			✓
Energy Price – Electricity(Middle)	223	30224				✓
Energy Price – Electricity(Lower)	224	30225				✓
OC Connection Error	225	30226	OC Connection Error:			✓
RC Connection Error	226	30227	RC Connection Error:			✓
Consumed Electric Power	227	30228	Consumed electric power/energy: 0 = 0 kW or Wh 65535 = 65535 kW or Wh			✓
Produced Power	228	30229	Produced heat power/energy: 0 = 0 kW or Wh 65535 = 65535 kW or Wh			✓
Mix Tank Water Temp (signed)	229	30230	Mixing tank water temperature: see note *			✓
Mix Tank Water Temp	230	30231	Mixing tank water temperature: see note *			✓
Condensing Temp (signed)	231	30232	Condensing temperature: see note *			✓
Condensing Temp	232	30233	Condensing temperature: see note *			✓
DipSwitch SW1	233	30234	DipSW setting (SW1) lower byte: bit 0 = SW1-1..... bit 7 = SW1-8 upper byte: bit 0 = SW1-9 ... bit 1 = SW1-10			✓
DipSwitch SW3	234	30235	DipSW setting (SW3) lower byte: bit 0 = SW3-1..... bit 7 = SW3-8 upper byte: bit 0 = SW3-9 ... bit 1 = SW3-10			✓
DipSwitch SW4	235	30236	DipSW setting (SW4) lower byte: bit 0 = SW4-1..... bit 5 = SW4-6			✓
DipSwitch SW5	236	30237	DipSW setting (SW5) lower byte: bit 0 = SW5-1..... bit 7 = SW5-8			✓
DipSwitch SW6	237	30238	DipSW setting (SW6) lower byte: bit 0 = SW6-1..... bit 4 = SW6-5			✓
Flow Rate 2	238	30239	Flow rate 2: 0 = 0.0 L/min, 1 = 1.0 L/min 255 = 255 L/min			✓
Error Status 1	239	30240	Error Status 1: 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 2	240	30241	Error Status 2 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 3	241	30242	Error Status 3 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 4	242	30243	Error Status 4 0 = Normal, 1 = Error Standby, 2 = Error			✓

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Error Status 5	243	30244	Error Status 5 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 6	244	30245	Error Status 6 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 7	245	30246	Error Status 7 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 8	246	30247	Error Status 8 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 9	247	30248	Error Status 9 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 10	248	30249	Error Status 10 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 34	249	30250	Error Status 34 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 11	250	30251	Error Status 11: 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 12	251	30252	Error Status 12 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 13	252	30253	Error Status 13 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 14	253	30254	Error Status 14 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 15	254	30255	Error Status 15 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 16	255	30256	Error Status 16 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 17	256	30257	Error Status 17 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 18	257	30258	Error Status 18 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 19	258	30259	Error Status 19 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 20	259	30260	Error Status 20 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 21	260	30261	Error Status 21 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 22	261	30262	Error Status 22 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 23	262	30263	Error Status 11: 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 24	263	30264	Error Status 12 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 25	264	30265	Error Status 13 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 26	265	30266	Error Status 14 0 = Normal, 1 = Error Standby, 2 = Error			✓

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Error Status J*	266	30267	Error Status 15 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 27	267	30268	Error Status 16 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 28	268	30269	Error Status 17 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 29	269	30270	Error Status 18 0 = Normal, 1 = Error Standby, 2 = Error			✓
Error Status 39	270	30271	Error Status 39 0 = Normal, 1 = Error Standby, 2 = Error			✓

* Temperature in °C multiplied by 100.

0x8000 = -327.68°C

0x8001 = -327.67°C

...

0xFFFF = -0.01°C

0x0000 = 0.00°C

...

0x7FFE = 327.66°C

0x7FFF = 327.67°C

** Temperature in °C multiplied by 100.

0x0000 = 0.00°C

0x0001 = 0.01°C

...

0x7FFE = 327.66°C

0x7FFF = 327.67°C

^ 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

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	FTC6
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)	✓	✓	✓

1.4. 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	FTC6
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	✓	✓	✓
Heat Pump Slave 6 ON/OFF (address 7 for CAHV/CRHV)	13	10014	0 = Stop, 1 = Run	✓	✓	✓
Boiler ON/OFF	16	10017	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	✓	✓	✓

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Discrete Input (Digital Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	FTC4	FTC5	FTC6
Legionella Prevention	98	10099	Demand of Legionella Prevention; 0 = Normal, 1 = Legionella Prevention			✓
Outdoor Unit – Freeze Stat Func	99	10100	Freeze stat function for outdoor unit: 0 = Normal, 1 = Freeze stat			✓
Heat Source Type	100	10101	Type of Heat Source: 0 = Fixed, 1 = Auto			✓
Calc Func Consumed Elec Energy	101	10102	Calculation function of consumed electrical energy: 0 = no function, 1 = with function			✓
Calc Func Produced Energy	102	10103	Calculation function of produced energy: 0 = no function, 1 = with function			✓
Heating Func On/Off	103	10104	Heating Function: 0 = OFF (inactive) 1 = ON (active)			✓
Ext Outdoor Ambient	104	10105	Extended Outdoor Ambient Temperature: 0 = OFF 1 = ON			✓
Water Pump 4 On/Off	105	10106	Water Pump 4 On/Off: 0 = Stop, 1 = Run			✓
2way Valve 2a On/Off	106	10107	2-way Valve 2a On/Off: 0 = Stop, 1 = Run			✓
2way Valve 2b On/Off	107	10108	2-way Valve 2b On/Off: 0 = Stop, 1 = Run			✓



Electrical
Safety
E114220



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

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