

11. Modbus tables – Air-To-Air 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 MelcoBEMS MINI (A1M) also exposes an unsigned version of those registers (these registers will not return a negative value).

11.1. 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 Registers (Analogue Outputs)			
Register Name	Address	Modicon Address	Details
Drive Mode	0	40001	1 = Heating 2 = Humidity reduction 3 = Cooling 7 = Ventilation, clean air operation 8 = Auto Operation 9 = i-see heating operation* 10 = i-see humidity reduction* 11 = i-see cooling * * indicates a read only value, writing this value will have no effect
Temperature Setpoint	1	40002	Temperature value in °C multiplied by 10. e.g. value 200 = 20°C
Fan Speed	2	40003	0 = Auto 2 = Quiet 3 = Weak 5 = Strong 6 = Very strong (SH i)
Air Direction	3	40004	0 = Auto 1 = Position 1 2 = Position 2 3 = Position 3 4 = Position 4 5 = Position 5 7 = Swing
Modbus Slave ID	4	40005	Values 1 – 247 valid
BACnet Station ID			Values 1 -127 valid

Holding Registers (Analogue Outputs)			
Register Name	Address	Modicon Address	Details
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
BACnet RS-485 Baud Rate			0 = 9600 4 = 9600 6 = 19200 8 = 38400 10 = 57600
RS-485 Parity Type	6	40007	0 = None 1 = Even 2 = Odd
Drive On/Off	7	40008	0 = Drive OFF 1 = Drive ON
Room Temperature [READ ONLY]	8	40009	Temperature value in °C multiplied by 10. e.g. value 200 = 20°C
Fault Code (hex) [READ ONLY]	9	40010	0x8000 = No error 0x6999 = Bad communication with indoor 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. Value is automatically reset to zero when value exceeds 65535.
Fault Code (decimal) [READ ONLY]	12	40013	8000 = No error 6999 = Bad communication with indoor unit (Refer to indoor unit documentation for description of other fault code values)
System Type Detected [READ ONLY]	13	40014	0 = ATA 1 = ATW 2 = Lossnay 255 = Undetermined (no unit detected yet)
Deadband Enabled State [READ ONLY]	14	40015	0 = Deadband disabled (DIP switch 8 OFF) 1 = Deadband enabled (DIP switch 8 ON)
BMS Room Temperature (signed)	15	40016	Signed temperature value in °C multiplied by 10. 0xFF9C = -10°C ... 0x01F4 = 50°C
BMS Room Temperature	16	40017	Temperature value in °C multiplied by 10. 0 = 0°C ... 500 = 50°C
BMS Virtual Setpoint	17	40018	Temperature value in °C multiplied by 10. 100 = 10°C ... 400 = 40°C
Deadband Heating Setpoint	18	40019	Temperature in °C (default 19°C). Value must be at least 2°C lower than the Deadband Cooling Setpoint.
Deadband Cooling Setpoint	19	40020	Temperature in °C (default 23°C). Value must be at least 2°C higher than the Deadband Heating Setpoint.

Holding Registers (Analogue Outputs)			
Register Name	Address	Modicon Address	Details
BACnet Device Instance (most significant 16 bits)	272	40273	Most significant 16 bits of the 32-bit Device Instance
BACnet Device Instance (least significant 16 bits)	273	40274	Least significant 16 bits of the 32-bit Device Instance
BACnet Max Master	274	40275	Maximum number of masters to search for
BACnet Max Info Frames	275	40276	
BACnet APDU Timeout	276	40277	Timeout value in ms for client requests
BACnet APDU Retries	277	40278	Number of times to retry after timeout

11.2. Input registers

Input Registers are read using function code 04.

Note the values of all Input registers have corresponding Holding registers which can be used instead.

Input Registers (Analogue Inputs)			
Register Name	Address	Modicon Address	Details
Room Temperature	0	30001	Temperature value in °C multiplied by 10. e.g. value 200 = 20°C
Fault Code (hex)	1	30002	0x8000 = No error 0x6999 = Bad communication with indoor 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. Counter is reset to zero when value exceeds 65535.
Fault Code (decimal)	8	30009	8000 = No error 6999 = Bad communication with indoor unit (Refer to indoor unit documentation for description of other fault code values)
System Type Detected	9	30010	0 = ATA 1 = ATW 2 = Lossnay 255 = Undetermined (no unit detected yet)
Deadband Enabled State	10	30011	0 = Deadband disabled (DIP switch 8 OFF) 1 = Deadband enabled (DIP switch 8 ON)

11.3. Discrete Inputs

There are no Discrete Inputs for Air-To-Air systems.

11.4. 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. Note the values of all Coil registers have corresponding Holding registers which can be used instead.

Coils (Digital Outputs)			
Register Name	Address	Modicon Address	Details
Drive On/Off <i>(Note: Holding register address 7 can also be used to change the Drive)</i>	0	00001	0 = Drive OFF 1 = Drive ON