13. Modbus tables – Lossnay 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).

13.1. 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**	**Lossnay LGH Series**		
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**	**Lossnay LGH Series**		
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.	✓		
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)	✓		
Power On/Off	300	40301	0 = Power OFF 1 = Power ON	✓		
Operating Mode	301	40302	1 = Heat 3 = Cool 7 = Fan 8 = Auto			
Ventilation Mode	302	40303	0 = Lossnay mode 1 = Bypass mode 2 = Auto mode	✓		
Fan Speed A	303	40304	0 = Auto 1 = Speed 1 2 = Speed 2 3 = Speed 3 4 = Speed 4	✓#2		
Temperature Setpoint A	304	40305	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Supply Air Temperature [**READ ONLY**]	305	40306	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Supply Air Temperature Sensor' value = 1 (Equipped).			

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	**Addr**	**Modicon Address**	**Details**	**Lossnay LGH Series**		
Outdoor Temperature (signed) [**READ ONLY**]	306	40307	Temperature value in ºC multiplied by 10. (see note *) Note: Only available when 'Outdoor Temperature Sensor' value = 1 (Equipped).	✓		
Outdoor Temperature **[READ ONLY]**	307	40308	Temperature value in ºC multiplied by 10. (see note **) Note: Only available when 'Outdoor Temperature Sensor' value = 1 (Equipped).	✓		
Room Temperature A [**READ ONLY**]	308	40309	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Return Air Temperature Sensor' value = 1 (Equipped).	✓		
Room CO2 Level [**READ ONLY**]	309	40310	CO2 level divided by 10. 0 = 0ppm … 240 = 2400 and above. [Value 254 = Under detecting] [Value 255 = No sensor] Note: Only available when 'CO2 Level Sensor' value = 1 (Equipped).			
Fault/Error Code (hex) [**READ ONLY**]	310	40311	0x8000 = No error 0x6999 = Bad communication with unit (Refer to Lossnay unit documentation for description of other fault code values)	✓		
Fault/Error Code (decimal) [**READ ONLY**]	311	40312	8000 = No error 6999 = Bad communication with unit (Refer to Lossnay unit documentation for description of other fault code values)	✓		
Thermo On/Off [**READ ONLY**]	312	40313	0 = Thermo OFF 1 = Thermo ON			
Energy Consumption [**READ ONLY**]	313	40314	Value in kWh multiplied by 10. 0 = 0kWh … 65535 = 6553.5kWh	✓		
Actual Operation Mode [**READ ONLY**]	314	40315	0 = Not auto mode 1 = Determining 2 = Heating 3 = Cooling			

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	**Addr**	**Modicon Address**	**Details**	**Lossnay LGH Series**		
Auto Fan Speed Control Availability [**READ ONLY**]	315	40316	0 = Not available 1 = Available			
Night Purge [**READ ONLY**]	316	40317	0 = Normal operation 1 = In night purge operation During night-purge operation: - Pressing ON/OFF button starts normal operation. - When pressing the Ventilation button the Lossnay remains in bypass mode	✓		
Maintenance Sign [**READ ONLY**]	317	40318	0 = Inactive 1 = Active	✓		
Filter Sign [**READ ONLY**]	318	40319	0 = Inactive 1 = Active	✓		
Actual Ventilation Mode [**READ ONLY**]	319	40320	0 = Lossnay ventilation 1 = Bypass ventilation	✓		
Actual Supply Fan Speed [**READ ONLY**]	320	40321	0 = Stop 1 = Speed 1 2 = Speed 2 3 = Speed 3 4 = Speed 4	✓		
Actual Extract Fan Speed [**READ ONLY**]	321	40322	0 = Stop 1 = Speed 1 2 = Speed 2 3 = Speed 3 4 = Speed 4	✓		
Setpoint 0.5ºC Increments Availability [**READ ONLY**]	322	40323	0 = Not available 1 = Available			
Heat/Cool or Cool-Only [**READ ONLY**]	323	40324	0 = Heat and Cool 1 = Cool only			
Auto Operation Mode Availability [**READ ONLY**]	324	40325	0 = Not available 1 = Available			
Heat/Cool or Heat-Only [**READ ONLY**]	325	40324	0 = Heat and Cool 1 = Heat only			

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	**Addr**	**Modicon Address**	**Details**	**Lossnay LGH Series**		
Minimum Cooling Setpoint [**READ ONLY**]	326	40327	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Maximum Cooling Setpoint [**READ ONLY**]	327	40328	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Minimum Heating Setpoint [**READ ONLY**]	328	40329	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Maximum Heating Setpoint [**READ ONLY**]	329	40330	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Minimum Auto Setpoint [**READ ONLY**]	330	40331	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Maximum Auto Setpoint [**READ ONLY**]	331	40332	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Energy Consumption Data Available [**READ ONLY**]	332	40333	0 = Not available 1 = Available	✓		
Number of Fan Speeds [**READ ONLY**]	333	40334	Values 1 – 4 valid.	✓		
Bypass Damper Available [**READ ONLY**]	334	40335	0 = Not available 1 = Available	✓		

Holding Register (Analogue Output)				Applicable Unit Type		
Register Name	**Addr**	**Modicon Address**	**Details**	**Lossnay LGH Series**		
Auto Ventilation Mode Available [**READ ONLY**]	335	40336	0 = Not available 1 = Available	✓		
Operation Mode of Temperature Control Unit [**READ ONLY**]	336	40337	0 = Not available (not connected) 1 = Available (connected)			
Set Temperature on Temperature Control Unit [**READ ONLY**]	337	40338	0 = No set temperature display 1 = RA (Return Air) temperature 2 = SA (Supply Air) temperature			
Outdoor Temperature Sensor [**READ ONLY**]	338	40339	0 = Not equipped 1 = Equipped	✓		
Return Air Temperature Sensor [**READ ONLY**]	339	40340	0 = Not equipped 1 = Equipped	✓		
Supply Air Temperature Sensor [**READ ONLY**]	340	40341	0 = Not equipped 1 = Equipped			
CO2 Level Sensor [**READ ONLY**]	341	40342	0 = Not equipped 1 = Equipped			

* Temperature in ºC multiplied by 10.
0xFDD0 = -56.0ºC
0xFDD5 = -55.5 ºC
…
0xFFFB = -0.5ºC
0x0000 = 0.0ºC
0x0005 = 0.5 ºC
…
0x0271 = 62.5ºC
0x0276 = 63.0ºC

[0x7FFE = Under detecting]
[0x7FFF = No thermistor connected]

** Temperature in ºC multiplied by 10.
0x0000 = 0.0ºC
0x0005 = 5.0ºC
…
0x0271 = 62.5ºC
0x0276 = 63.0ºC

[0x7FFE = Under detecting]
[0x7FFF = No thermistor connected]

[#1] Lossnay ventilation mode supported only, Bypass and Auto modes not supported.
[#2] Auto fan speed (value 0) not supported.

13.1. Input registers

Input Registers are read using function code 04.

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	**Addr**	**Modicon Address**	**Details**	**Lossnay LGH Series**		
MelcoBEMS MINI Firmware Version	3	30004	MelcoBEMS MINI 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.	✓		
System Type Detected	9	30010	0 = ATA unit connected 1 = ATW system connected 2 = Lossnay system connected 255 = Undetermined (no unit detected yet)	✓		
Supply Air Temperature	174	30175	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Supply Air Temperature Sensor' value = 1 (Equipped).			
Outdoor Temperature (signed)	175	30176	Temperature value in ºC multiplied by 10. (see note *) Note: Only available when 'Outdoor Temperature Sensor' value = 1 (Equipped).	✓		
Outdoor Temperature	176	30177	Temperature value in ºC multiplied by 10. (see note **) Note: Only available when 'Outdoor Temperature Sensor' value = 1 (Equipped).	✓		
Room Temperature A	177	30178	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Return Air Temperature Sensor' value = 1 (Equipped).	✓		

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	**Addr**	**Modicon Address**	**Details**	**Lossnay LGH Series**		
Room CO2 Level	178	30179	CO2 level divided by 10. 0 = 0ppm … 240 = 2400 and above. [Value 254 = Under detecting] [Value 255 = No sensor] Note: Only available when 'CO2 Level Sensor' value = 1 (Equipped).			
Fault/Error Code (hex)	179	30180	0x8000 = No error 0x6999 = Bad communication with unit (Refer to Lossnay unit documentation for description of other fault code values)	✓		
Fault/Error Code (decimal)	180	30181	8000 = No error 6999 = Bad communication with unit (Refer to Lossnay unit documentation for description of other fault code values)	✓		
Energy Consumption	181	30182	Value in kWh multiplied by 10. 0 = 0kWh … 65535 = 6553.5kWh	✓		
Actual Operation Mode	182	30183	0 = Not auto mode 1 = Determining 2 = Heating 3 = Cooling			
Actual Supply Fan Speed	183	30184	0 = Stop 1 = Speed 1 2 = Speed 2 3 = Speed 3 4 = Speed 4	✓		
Actual Extract Fan Speed	184	30185	0 = Stop 1 = Speed 1 2 = Speed 2 3 = Speed 3 4 = Speed 4	✓		
Minimum Cooling Setpoint	185	30186	Temperature value in °C multiplied by 10. 0 = 0°C … 400 = 40°C Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			

Input Register (Analogue Input)				Applicable Unit Type		
Register Name	**Addr**	**Modicon Address**	**Details**	**Lossnay LGH Series**		
Maximum Cooling Setpoint	186	30187	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Minimum Heating Setpoint	187	30188	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Maximum Heating Setpoint	188	30189	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Minimum Auto Setpoint	189	30190	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Maximum Auto Setpoint	190	30191	Temperature value in ºC multiplied by 10. 0 = 0ºC … 400 = 40ºC Note: Only available when 'Set Temperature on Temperature Control Unit' value = 1 or 2.			
Number of Fan Speeds	191	30192	Values 1 – 4 valid.	✓		
Set Temperature on Temperature Control Unit	192	30193	0 = No set temperature display 1 = RA (Return Air) temperature 2 = SA (Supply Air) temperature			

13.1. 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**	**Lossnay LGH Series**		
Power On/Off	3	00004	0 = Power OFF 1 = Power ON	✓		

13.1. Discrete Inputs

Discrete Inputs are read using function code 02.

Discrete Input (Digital Input)				Applicable Unit Type		
Register Name	**Addr**	**Modicon Address**	**Details**	**Lossnay LGH Series**		
Thermo On/Off	80	10081	0 = Thermo OFF 1 = Thermo ON			
Auto Fan Speed Control Availability	81	10082	0 = Not available 1 = Available			
Night Purge	82	10083	0 = Normal operation 1 = In night purge operation During night-purge operation:	✓		

Discrete Input (Digital Input)				Applicable Unit Type		
Register Name	Addr	Modicon Address	Details	Lossnay LGH Series		
			- Pressing ON/OFF button starts normal operation. - When pressing the Ventilation button the Lossnay remains in bypass mode			
Maintenance Sign	83	10084	0 = Inactive 1 = Active	✓		
Filter Sign	84	10085	0 = Inactive 1 = Active	✓		
Actual Ventilation Mode	85	10086	0 = Lossnay ventilation 1 = Bypass ventilation	✓		
Setpoint 0.5ºC Increments Availability	86	10087	0 = Not available 1 = Available			
Heat/Cool or Cool-Only	87	10088	0 = Heat and Cool 1 = Cool only			
Auto Operation Mode Availability	88	10089	0 = Not available 1 = Available			
Heat/Cool or Heat-Only	89	10090	0 = Heat and Cool 1 = Heat only			
Energy Consumption Data Available	90	10091	0 = Not available 1 = Available	✓		
Bypass Damper Available	91	10092	0 = Not available 1 = Available	✓		
Auto Ventilation Mode Available	92	10093	0 = Not available 1 = Available	✓		
Operation Mode of Temperature Control Unit	93	10094	0 = Not available (not connected) 1 = Available (connected)			
Outdoor Temperature Sensor	94	10095	0 = Not equipped 1 = Equipped	✓		
Return Air Temperature Sensor	95	10096	0 = Not equipped 1 = Equipped	✓		

Discrete Input (Digital Input)				Applicable Unit Type		
Register Name	**Addr**	**Modicon Address**	**Details**	**Lossnay LGH Series**		
Supply Air Temperature Sensor	96	10097	0 = Not equipped 1 = Equipped			
CO2 Level Sensor	97	10098	0 = Not equipped 1 = Equipped			