Lennox Climatic 50 and BMS

Modbus, Trend or BACnet.

Specification of the Bus:

Type:
- RS485

Speed: (Adjustable on Climatic 50 via display DS50; Setting 3933)
- 1200
- 2400
- 4800
- 9600
- 19200

Parity: Fixed
- no parity (**N**)

Length: Fixed
- 8 bits (**8**)

Stop bit: Fixed
- 2 bits (**2**)

Spécification du protocole:

Mode: Fixed
- R.T.U. for Modbus

Address of slave: (Adjustable on Climatic 50 via display DS50; Setting 3931)
- 1
- to 200

Supported functions, for Modbus:
- Reading Bits : 1 or 2
- Reading Words : 3 or 4
- Writing simple Bit : 5
- Writing simple Word : 6

Functionality `Watchdog' on Climatic 50.

The automat Climatic 50 being passive on the bus it cannot detect any cut of communication with the BMS. From where in the event of cut of communication the Roof-Top would continue to function with the last adjustments emitted by the BMS. To avoid operation, penalizing the correct operation of the Roof-Top, the BMS must regularly write in the word 01h a value different from 0. The automat Climatic 50 decreases the value of the word 01h of 5 units every 5 seconds.

If the BMS writes the value 1000 in the word 01h, in the event of cut of communication at the end of 16 minutes 40 seconds the instructions emitted by the BMS are not taken more into account by the software of the automat Climatic 50. I.e. the following points are not took into account by the program of the automat Climatic 50 if the word 01h is equal to 0

Points concerned with the word 01h

Words :
- 02H / 03H / 04H / 05H / 06H / 07H / 08H

Bits :
- 03H / 04H / 06H / 07H / 08H / 09H / 0AH / 0BH / 0CH / 0DH / 0EH

This functionality does not prohibit the writing of the bit or of the word, those are always readable on our display DS50 (show in mode BMS via the key `Prg')

Bits

@ (hexa)	@ (deci)				DS50
01H	**1**	R/W	L	[On / Off] Unit	**3111**
02H	**2**	R/W	L	[Reset] Discharges the safety measures of the unit	**3112**
03H	**3**	R/W	L	[Enable] Stopping and running of the Fan Blower.[Off] the blower is stopped, [On] the blower is running.	**3351 (BMS)**

@ (hexa)	@ (deci)				DS50
04H	**4**	R/W	L	[Enable] Stopping and running of the fan in the "Control Dead Zone". [Off] the blower is stopped, [On] the blower is running.	**3352 (BMS)**
05H	**5**	R/W	L	[BMS] Activation of the Inoccupation mode [Off] occupation mode - [On] inoccupation mode	**3935**
06H	**6**	R/W	L	[Room regulation] Choices of the priority of regulation in Heating - [Off] Heat Pump then Hot water coil or Electric or Gas [On] Hot water coil or Electric or Gas then Heat Pump	**3324 (BMS)**
07H	**7**	R/W	L	[F-Air Reheat] Activate reheating of the fresh air in the dead zone to maintain supply temperature.	**3331 (BMS)**
08H	**8**	R/W	L	[F-Air Reheat] Choices of the priority of regulation in Heating - [Off] Heat Pump then Hot water coil or Electric or Gas [On] Hot water coil or Electric or Gas then Heat Pump	**3332 (BMS)**
09H	**9**	R/W	L	[Enable] Run eco: [On] the Economiser is running, [Off] the Economiser if stopped.	**3353 (BMS)**
0AH	**10**	R/W	L	[Enable] Run CO2 Sensor: [On] Switch-on the CO2 control on a Zone, [Off] Stop the CO2 control on a zone.	**3354 (BMS)**
0BH	**11**	R/W	L	[Enable] [OFF] Force the unloading of compressors in cooling mode.	**3355 (BMS)**
0CH	**12**	R/W	L	[Enable] [OFF] Force the unloading of compressors in heating mode.	**3356 (BMS)**
0DH	**13**	R/W	L	[Enable] [OFF] Force the unloading of heating module (electric, gas or heat water coil)	**3357 (BMS)**
0EH	**14**	R/W	L	[Enable] [OFF] Force the unloading of humidity control.	**3358 (BMS)**
0FH	**15**	R/W	L	[Unloaded] Force the stop of half of the compressors moving has the moment of the activation of this point.	…
10H	**16**	R/W	L	[Clock] [OFF] read hour & minute [ON] write hour & minute	**…**
11H	**17**	R/W	L	[Dry contact] Digital Output, Free 1, BM50-J17-NO12	**2141**
12H	**18**	R/W	L	[Dry contact] Digital Output, Free 2, BE50-J5-NO1	**2142**
13H	**19**	R/W	L	[Dry contact] Digital Output, Free 3, BE50-J6-NO2	**2143**
14H	**20**	R/W	L	[Dry contact] Digital Output, Free 4, BE50-J7-NO3	**2144**
15H	**21**	R/W	L	[Dry contact] Digital Output, Free 5, BE50-J8-NO4	**2145**
16H	**22**	R/W	L	*not used*	
17H	**23**	R/W	L	*not used*	
18H	**24**	R/W	L	*not used*	
19H	**25**	R/W	L	*not used*	
1AH	**26**	R/W	L	*not used*	
1BH	**27**	R/W	L	*not used*	
1CH	**28**	R/W	L	*not used*	
1DH	**29**	R/W	L	*not used*	
1EH	**30**	R/W	L	*not used*	
1FH	**31**	R/W	L	*not used*	
20H	**32**	R/W	L	*not used*	
21H	**33**	R	L	[Alarm] General	**1000**
22H	**34**	R	L	[On/Off] Fan, Blower	**2315**
23H	**35**	R	L	[On/Off] Fan, Extraction	**2321**
24H	**36**	R	L	[On/Off] Compressor, 1	**2516**
25H	**37**	R	L	[On/Off] Compressor, Heat pump, 1	**2517**

@ (hexa)	@ (deci)				DS50
26H	**38**	R	L	[On/Off] Compressor, 2	**2526**
27H	**39**	R	L	[On/Off] Compressor, Heat pump, 2	**2527**
28H	**40**	R	L	[On/Off] Compressor, 3	**2536**
29H	**41**	R	L	[On/Off] Compressor, Heat pump, 3	**2537**
2AH	**42**	R	L	[On/Off] Compressor, 4	**2546**
2BH	**43**	R	L	[On/Off] Compressor, Heat pump, 4	**2547**
2CH	**44**	R	L	[On/Off] Gas, Burner, 1	**2615**
2DH	**45**	R	L	[On/Off] Gas, Burner, 2	**2616**
2EH	**46**	R	L	[On/Off] Gas, Burner, High power, 1	**2617**
2FH	**47**	R	L	[On/Off] Electrical heaters, 1	**2625**
30H	**48**	R	L	[On/Off] Electrical heaters, 2	**2626**
31H	**49**	R	L	[Dry contact] Digital Input, Free 1, BM50-J8-ID13	**2151**
32H	**50**	R	L	[Dry contact] Digital Input, Free 2, BM50-J8-ID14	**2152**
33H	**51**	R	L	[Dry contact] Digital Input, Free 3, BE50-J4-ID1	**2153**
34H	**52**	R	L	[Dry contact] Digital Input, Free 4, BE50-J4-ID2	**2154**
35H	**53**	R	L	[Dry contact] Digital Input, Free 5, BE50-J4-ID3	**2155**
36H	**54**	R	L	[Dry contact] Digital Input, Free 6, BE50-J4-ID4	**2156**
37H	**55**	R	L	*not used*	
38H	**56**	R	L	*not used*	
39H	**57**	R	L	*not used*	
3AH	**58**	R	L	*not used*	
3BH	**59**	R	L	*not used*	
3CH	**60**	R	L	*not used*	
3DH	**61**	R	L	*not used*	
3EH	**62**	R	L	[Room] Cool Mode	**…**
3FH	**63**	R	L	[Room] Dead zone Mode	**…**
40H	**64**	R	L	[Room] Heat Mode	**…**

Words

@ (hexa)	@ (deci)				DS50
01H	**1**	R/W	1 = 1 s	[BMS] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second	**3934**
02H	**2**	R/W	10 = 1.0°c	[Occupation][Room SP] Required maximum room temperature in °C. Cooling set point	**3322 (BMS)**
03H	**3**	R/W	10 = 1.0°c	[Occupation][Room SP] Required minimum room temperature in °C. Heating set point	**3323 (BMS)**
04H	**4**	R/W	10 = 1.0%	[Room SP] Required room minimum fresh air rate in % Middle of the dead zone.	**3312 (BMS)**
05H	**5**	R/W	10 = 1.0°c	[Inoccupation][Room SP] Required maximum room temperature in °C. Cooling set point	**3322 (Uno)**
06H	**6**	R/W	10 = 1.0°c	[Inoccupation][Room SP] Required minimum room temperature in °C. Heating set point	**3323 (Uno)**
07H	**7**	R/W	10 = 1.0%	[Humidity] Desired Maximum relative humidity in Room (in %). – Dehumidification set point.	**3341 (BMS)**

@ (hexa)	@ (deci)				DS50
08H	**8**	R/W	10 = 1.0%	[Humidity] Desired Minimum relative humidity in Room (in %). – Humidification set point.	**3342 (BMS)**
09H	**9**	R/W		*not used*	
0AH	**10**	R/W		*not used*	
0BH	**11**	R/W		*not used*	
0CH	**12**	R/W	1 = 1h	[Clock] Hour	**3121**
0DH	**13**	R/W	1 = 1m	[Clock] Minute	**3122**
0EH	**14**	R/W	1 = 1	[Clock] Day of the month	**3123**
0FH	**15**	R/W	1 = 1	[Clock] Month	**3124**
10H	**16**	R/W	1 = 2001	[Clock] Year	**3125**
11H	**17**	R/W	10 = 1.0°c	[BMS] Room temperature coming from the BMS	**2824**
12H	**18**	R/W	10 = 1.0%	[BMS] Room humidity coming from the BMS	**2828**
13H	**19**	R/W	10 = 1.0°c	[BMS] Outdoor temperature coming from the BMS	**2814**
14H	**20**	R/W	10 = 1.0%	[BMS] Outdoor humidity coming from the BMS	**2818**
15H	**21**	R/W	1 = 1ppm	[BMS] Air Quality (CO^2) coming from the BMS	**…**
16H	**22**	R/W		*not used*	
17H	**23**	R/W		*not used*	
18H	**24**	R/W		*not used*	
19H	**25**	R/W		*not used*	
1AH	**26**	R/W		*not used*	
1BH	**27**	R/W		*not used*	
1CH	**28**	R/W		*not used*	
1DH	**29**	R/W		*not used*	
1EH	**30**	R/W		*not used*	
1FH	**31**	R/W		*not used*	
20H	**32**	R/W		*not used*	
21H	**33**	R	1 = 1	[Alarm] Code Error	**1000**
22H	**34**	R	10 = 1.0°c	[Temperature] Room	**2112**
23H	**35**	R	10 = 1.0°c	[Temperature] Outdoor	**2111**
24H	**36**	R	10 = 1.0°c	[Temperature] Supply	**2113**
25H	**37**	R	10 = 1.0°c	[Temperature] Return	**2114**
26H	**38**	R	10 = 1.0%	[Relative Humidity] Room	**2122**
27H	**39**	R	10 = 1.0 g/Kg	[Absolute Humidity] Room	**2124**
28H	**40**	R	10 = 1.0%	[Relative Humidity] Outdoor	**2121**
29H	**41**	R	10 = 1.0 g/Kg	[Absolute Humidity] Outdoor	**2123**
2AH	**42**	R	1 = 1 pa	[Flow] Differential pressure on the air, in pascal	**2131**
2BH	**43**	R	1 = 1 ppm	[CO^2] Level in ppm	**2132**

@ (hexa)	@ (deci)				DS50
2CH	**44**	R	10 = 1.0%	[% of opening] Register of fresh air	**2413**
2DH	**45**	R	10 = 1.0%	[% of opening] Valve gas	**2618**
2EH	**46**	R	10 = 1.0%	[% of opening] Electrical heaters (Triac)	**2627**
2FH	**47**	R	10 = 1.0%	[% of opening] Hot water coil	**2633**
30H	**48**	R	10 = 1.0%	[% of opening] Humidifier	**2714**
31H	**49**	R	10 = 1.0°c	[Dry contact] Temperature, Free 1, BE50-J9-B1	**2161**
32H	**50**	R	10 = 1.0°c	[Dry contact] Temperature, Free 2, BE50-J9-B2	**2162**
33H	**51**	R	10 = 1.0°c	[Dry contact] Temperature, Free 3, BE50-J10-B3	**2163**
34H	**52**	R	10 = 1.0°c	[Dry contact] Temperature, Free 4, BE50-J10-B4	**2164**
35H	**53**	R	10 = 1.0%	[Dry contact] Humidity, Free 1, BE50-J9-B1	**2165**
36H	**54**	R	10 = 1.0%	[Dry contact] Humidity, Free 2, BE50-J9-B2	**2166**
37H	**55**	R	10 = 1.0%	[Dry contact] Humidity, Free 3, BE50-J10-B3	**2167**
38H	**56**	R	10 = 1.0%	[Dry contact] Humidity, Free 4, BE50-J10-B4	**2168**
39H	**57**	R	1 = 1 h	[Running Time, Count] Fan, Blower	**2318**
3AH	**58**	R	1 = 1 h	[Running Time, Count] Compressor, 1	**2519**
3BH	**59**	R	1 = 1 h	[Running Time, Count] Compressor, 2	**2529**
3CH	**60**	R	1 = 1 h	[Running Time, Count] Compressor, 3	**2539**
3DH	**61**	R	1 = 1 h	[Running Time, Count] Compressor, 4	**2549**
3EH	**62**	R	bit	[Alarm] bit.0 = Air Flow bit.1 = Dirty Filters bit.2 = No Filters bit.3 = Electrical heaters bit.4 = High Temperature, Supply bit.5 = Low Temperature, Room bit.6 = Gas Burner 1 bit.7 = Gas Burner 2 bit.8 = Low Temperature, Supply bit.9 = High Temperature, Room bit.10 = Humidifier bit.11 = Low Humidity, Room bit.12 = High Humidity, Room bit.13 = Pump bit.14 = Real Time Clock bit.15 = BE50	**...**

@ (hexa)	@ (deci)				DS50
3FH	**63**	R	bit	[Alarm] bit.0 = Probes & Sensors bit.1 = Fan, Blower bit.2 = Low Temperature, Condenser Water bit.3 = High Temperature, Condenser Water bit.4 = Flow Switch, Condenser Water bit.5 = Smoke Detector bit.6 = Fans, Condenser bit.7 = Compressor 1, H.P. & I.P. bit.8 = Compressor 1, L.P. bit.9 = Compressor 2, H.P. & I.P. bit.10 = Compressor 2, L.P. bit.11 = Compressor 3, H.P. & I.P. bit.12 = Compressor 3, L.P. bit.13 = Compressor 4, H.P. & I.P. bit.14 = Compressor 4, L.P. bit.15 =	**...**
40H	**64**	R		*not used*	