VMB2DC-20

2 channel 0 to 10 V dimmer control module for VELBUS system

Binairy format:

<SOF-SID10...SID0-RTR-IDE-r0-DLC3...0-DATABYTE1...DATABYTEn-CRC15...CRC1-CRCDEL-ACK-ACKDEL-EOF7...EOF1-IFS3...IFS1>

bits	***Description***
SOF	Start Of Frame (always 0)
SID10 & SID9	Priority (00: highest … 11: lowest priority)
SID8…SID1	Address
SID0	Always 0
RTR	Remote Transmit Request
IDE	Identifier Extension (always 0)
r0	reserved (always 0)
DLC3…DLC0	Data Length Code (0…8)
Databyte1	Command
Databyte2	Parameter
Databyte3	Parameter
Databyte4	Parameter
Databyte5	Parameter
Databyte6	Parameter
Databyte7	Parameter
Databyte8	Parameter
CRC15…CRC1	Cyclic Redundancy Checksum
CRCDEL	CRC Delimiter (always 1)
ACK	Acknowledge slot (transmit 1 readback 0 if received correctly)
ACKDEL	Acknowledge Delimiter (always 1)
EOF7...EOF1	End Of Frame (always 1111111)
IFS3...IFS1	InterFrame Space (always 111)

Transmits power up message:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 0x00
RTR = 0
DLC3...DLC0 = 2 data byte to send
DATABYTE1 = COMMAND_POWER_UP (0xAB)
DATABYTE2 = module address

Transmits real time clock status request:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 0x00
RTR = 0
DLC3...DLC0 = 1 data byte to send
DATABYTE1 = COMMAND_REALTIME_CLOCK_STATUS_REQUEST (0xD7)

Transmits the real time clock status:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes to send
DATABYTE1 = COMMAND_REALTIME_CLOCK_STATUS (0xD8)
DATABYTE2 = Day

Contents	Day
0	Monday
1	Tuesday
2	Wednesday
3	Thursday
4	Friday
5	Saturday
6	Sunday

DATABYTE3 = Hour (0…23)
DATABYTE4 = Minute (0…59)

Transmits the date status:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes to send
DATABYTE1 = COMMAND_DATE_STATUS (0xB7)
DATABYTE2 = Day (1…31)
DATABYTE3 = Month (1…12)
DATABYTE4 = High byte of Year
DATABYTE5 = Low byte of Year

Transmits the daylight savings status:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes to send
DATABYTE1 = COMMAND_DAYLIGHT_SAVING_STATUS (0xAF)
DATABYTE2 = 0 =disabled / 1 = enabled

Transmits the module type:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes to send
DATABYTE1 = COMMAND_MODULE_TYPE (0xFF)
DATABYTE2 = type (0x24 = VMB2DC-20)
DATABYTE3 = High byte of serial number
DATABYTE4 = Low byte of serial number
DATABYTE5 = Memory map version
DATABYTE6 = Build year
DATABYTE7 = Build week
DATABYTE8 = Properties

Contents	Output channel
B'xxxxxxx0'	Terminator open
B'xxxxxxx1'	Terminator closed
B'xxxx000x'	Hardware version number
B'xxx0xxxx'	Velbus connection type
B'xx0xxxxx'	Only standard CAN allowed
B'xx1xxxxx'	CAN FD support

Transmit: Bus error counter status

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes to send
DATABYTE1 = COMMAND_BUSERROR_COUNTER_STATUS (0xDA)
DATABYTE2 = Transmit error counter
DATABYTE3 = Receive error counter
DATABYTE4 = Bus off counter

Transmits the memory data:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes to send
DATABYTE1 = COMMAND_MEMORY_DATA (0xFE)
DATABYTE2 = High memory address
DATABYTE3 = LOW memory address
DATABYTE4 = memory data

Remark: address range: 0x0000 to 0x07FF

Transmits memory data block (4 bytes):

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 7 data bytes to send
DATABYTE1 = COMMAND_MEMORY_DATA_BLOCK (0xCC)
DATABYTE2 = High start address of memory block
DATABYTE3 = LOW start address of memory block
DATABYTE4 = memory data1
DATABYTE5 = memory data2
DATABYTE6 = memory data3
DATABYTE7 = memory data4

Remark: address range: 0x0000 to 0x07FC

Transmits memory data block (5...60 bytes)(only allowed for CAN FD frames):

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = number of data bytes to send

Contents	*Number of data bytes*
0x09	12 data bytes
0x0A	16 data bytes
0x0B	20 data bytes
0x0C	24 data bytes
0x0D	32 data bytes
0x0E	48 data bytes
0x0F	64 data bytes

DATABYTE1 = COMMAND_MEMORY_DATA_BLOCK (0xCC)
DATABYTE2 = High start address of memory block
DATABYTE3 = LOW start address of memory block
DATABYTE4 = memory block length (5…60)
DATABYTE5 = memory data 1
…
DATABYTE12 = memory data 8 (end of data for DLC3...DLC0 = 0x09)
…
DATABYTE16 = memory data 12 (end of data for DLC3...DLC0 = 0x0A)
…
DATABYTE20 = memory data 16 (end of data for DLC3...DLC0 = 0x0B)
…
DATABYTE24 = memory data 20 (end of data for DLC3...DLC0 = 0x0C)
…
DATABYTE32 = memory data 28 (end of data for DLC3...DLC0 = 0x0D)
…
DATABYTE48 = memory data 44 (end of data for DLC3...DLC0 = 0x0E)
…
DATABYTE64 = memory data 60 (end of data for DLC3...DLC0 = 0x0F)

Remark:
Contents of unused data bytes = 0x55
Address range: 0x0000 to (0x0800 – memory block length)

Transmits the first part of channel name:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes to send
DATABYTE1 = COMMAND_CHANNEL_NAME_PART1 (0xF0)
DATABYTE2 = Channel 1…2
DATABYTE3 = Character 1 of the channel name
DATABYTE4 = Character 2 of the channel name
DATABYTE5 = Character 3 of the channel name
DATABYTE6 = Character 4 of the channel name
DATABYTE7 = Character 5 of the channel name
DATABYTE8 = Character 6 of the channel name

Transmits the second part of the channel name:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes to send
DATABYTE1 = COMMAND_CHANNEL_NAME_PART2 (0xF1)
DATABYTE2 = Channel 1…2
DATABYTE3 = Character 7 of the channel name
DATABYTE4 = Character 8 of the channel name
DATABYTE5 = Character 9 of the channel name
DATABYTE6 = Character 10 of the channel name
DATABYTE7 = Character 11 of the channel name
DATABYTE8 = Character 12 of the channel name

Transmits the third part of the channel name:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 6 data bytes to send
DATABYTE1 = COMMAND_CHANNEL_NAME_PART3 (0xF2)
DATABYTE2 = Channel 1…2
DATABYTE3 = Character 13 of the channel name
DATABYTE4 = Character 14 of the channel name
DATABYTE5 = Character 15 of the channel name
DATABYTE6 = Character 16 of the channel name

Remarks:
Unused characters contain H'FF'.

Transmits the channel status:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes to send
DATABYTE1 = COMMAND_PUSH_BUTTON_STATUS (0x00)
DATABYTE2 = Channel 1…2 just pressed
DATABYTE3 = Channel 1…2 just released
DATABYTE4 = 0

	Databyte2	***Databyte3***	***Databyte4***
Ch1 just switched on	B'000000x1'	B'000000x0'	B'00000000'
Ch1 just switched off	B'000000x0'	B'000000x1'	B'00000000'
Ch2just switched on	B'0000001x'	B'0000000x'	B'00000000'
Ch2 just switched off	B'0000000x'	B'0000001x'	B'00000000'

Transmits channel slider status:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes to send
DATABYTE1 = COMMAND_SLIDER_STATUS (0x0F)
DATABYTE2 = slider channel 1…4
DATABYTE3 = dim raw value 0...254 (slider status)
DATABYTE4 = 0x00

Transmits the module status:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes to send
DATABYTE1 = COMMAND_DIMMER_STATUS (0xEE)
DATABYTE2 = channel 1…2 status
DATABYTE3 = channel 1…2 inhibited status (1 = inhibited)
DATABYTE4 = channel 1…2 forced on status (1 = forced on)

DATABYTE5 = channel 1…2 forced off (locked) status (1 = forced off)
DATABYTE6 = disabled channel 1…2 program status (0 = program enabled / 1 = program disabled)
DATABYTE7 = channel 1…2 error status (0 = normal / 1 = error)
DATABYTE8 = alarm & program selection

Contents	*Selected program*
B'xxxxxx00'	None
B'xxxxxx01'	Program group 1 (Summer)
B'xxxxxx10'	Program group 2 (Winter)
B'xxxxxx11'	Program group 3 (Holiday)
B'xxxxx0xx'	Clock alarm 1 off
B'xxxxx1xx'	Clock alarm 1 on
B'xxxx0xxx'	Local clock alarm 1
B'xxxx1xxx'	Global clock alarm 1
B'xxx0xxxx'	Clock alarm 2 off
B'xxx1xxxx'	Clock alarm 2 on
B'xx0xxxxx'	Local clock alarm 2
B'xx1xxxxx'	Global clock alarm 2
B'x0xxxxxx'	Sunrise disabled
B'x1xxxxxx'	Sunrise enabled
B'0xxxxxxx'	Sunset disabled
B'1xxxxxxx'	Sunset enabled

Transmits the dim value status:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3…4 data bytes to send
DATABYTE1 = COMMAND_DIMVALUE_STATUS (0xA5)
DATABYTE2 = Channel 1…2
DATABYTE3 = dim value (0…254) of channel x (linear curve)
DATABYTE4 = dim value (0…254) of channel x+1 (optional) (linear curve)

Remark: dimvalue of 255 = unchanged

Transmit: Clears LEDs on a linked push button module:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the linked push button module for clearing LEDs
RTR = 0
DLC3...DLC0 = 2 data bytes to send
DATABYTE1 = COMMAND_CLEAR_LED (0xF5)
DATABYTE2 = LED bit numbers (1 = clear LED)

Transmit: Sets LEDs on a linked push button module:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the linked push button module for setting LEDs on
RTR = 0
DLC3...DLC0 = 2 data bytes to send
DATABYTE1 = COMMAND_SET_LED (0xF6)
DATABYTE2 = LED bit numbers (1 = set LED)

Transmit: Blinks LEDs slowly on a linked push button module:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the linked push button module for slowly blinking LEDs
RTR = 0
DLC3...DLC0 = 2 data bytes to send
DATABYTE1 = COMMAND_SLOW_BLINKING_LED (0xF7)
DATABYTE2 = LED bit numbers (1 = slow blink LED)

Transmit: Blinks LEDs fast on a linked push button module:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the linked push button module for fast blinking LEDs
RTR = 0
DLC3...DLC0 = 2 data bytes to send
DATABYTE1 = COMMAND_FAST_BLINKING_LED (0xF8)

DATABYTE2 = LED bit numbers (1 = fast blink LED)

Transmit device settings:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = data bytes to send
DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_P1 (0xE8)
DATABYTE2 = Channel 1…2
DATABYTE3 = setting index (0…28)

index	Configuration	DLC3…0 (# of data bytes)
0	Scene S0 level (+ RGBW for color control device)	4 (or 8 for color control device)
1	Scene S1 level (+ RGBW for color control device)	4 (or 8 for color control device)
2	Scene S2 level (+ RGBW for color control device)	4 (or 8 for color control device)
3	Scene S3 level (+ RGBW for color control device)	4 (or 8 for color control device)
4	Scene S4 level (+ RGBW for color control device)	4 (or 8 for color control device)
5	Scene S5 level (+ RGBW for color control device)	4 (or 8 for color control device)
6	Scene S6 level (+ RGBW for color control device)	4 (or 8 for color control device)
7	Scene S7 level (+ RGBW for color control device)	4 (or 8 for color control device)
8	Scene S8 level (+ RGBW for color control device)	4 (or 8 for color control device)
9	Scene S9 level (+ RGBW for color control device)	4 (or 8 for color control device)
10	Scene S10 level (+ RGBW for color control device)	4 (or 8 for color control device)
11	Scene S11 level (+ RGBW for color control device)	4 (or 8 for color control device)
12	Scene S12 level (+ RGBW for color control device)	4 (or 8 for color control device)
13	Scene S13 level (+ RGBW for color control device)	4 (or 8 for color control device)
14	Scene S14 level (+ RGBW for color control device)	4 (or 8 for color control device)
15	Scene S15 level (+ RGBW for color control device)	4 (or 8 for color control device)
16	*Power-on level (+ RGBW for color control device)*	*4 (or 8 for color control device)*
17	*System failure level (+ RGBW for color control device)*	*4 (or 8 for color control device)*
18	Minimum level	4
19	Maximum level	4
20	Fade time & fade rate	4
21	*Group members G0…15*	*5*
22	*Group Gx members A0…31 (only allowed for group addresses)*	*7*
23	*Group Gx members A32…63 (only allowed for group addresses)*	*7*
24	-	-
25	Device type	4
26	Actual level (+ RGBW for color control device)	4 (or 8 for color control device)

DATABYTE4 = linear level (raw data 0…254, 255 = no change, linear curve)
DATABYTE5 = red value (0…254, 255 = no change, linear curve)
DATABYTE6 = green value (0…254, 255 = no change, linear curve)
DATABYTE7 = blue value (0…254, 255 = no change, linear curve)
DATABYTE8 = white value (0…254, 255 = no change, linear curve)
DATABYTE4 = fade time (raw data 0…15)

Fade raw data	Fade time / rate
H'0x'	No fade
H'1x'	Fade time 0.7 s
H'2x'	Fade time 1.0 s
H'3x'	Fade time 1.4 s
H'4x'	Fade time 2.0 s
H'5x'	Fade time 2.8 s
H'6x'	Fade time 4.0 s
H'7x'	Fade time 5.7 s
H'8x'	Fade time 8.0 s
H'9x'	Fade time 11.3 s
H'Ax'	Fade time 16.0 s
H'Bx'	Fade time 22.6 s
H'Cx'	Fade time 32.0 s
H'Dx'	Fade time 45.3 s
H'Ex'	Fade time 64.0 s
H'Fx'	Fade time 90.5 s
H'x0'	Fade rate not applicable
H'x1'	Fade rate 358.0 steps/s

H'x2'	Fade rate 253.0 steps/s
H'x3'	Fade rate 179.0 steps/s
H'x4'	Fade rate 127.0 steps/s
H'x5'	Fade rate 89.4 steps/s
H'x6'	Fade rate 63.3 steps/s
H'x7'	Fade rate 44.7 steps/s
H'x8'	Fade rate 31.6 steps/s
H'x9'	Fade rate 22.4 steps/s
H'xA'	Fade rate 15.8 steps/s
H'xB'	Fade rate 11.2 steps/s
H'xC'	Fade rate 7.9 steps/s
H'xD'	Fade rate 5.6 steps/s
H'xE'	Fade rate 4.0 steps/s
H'xF'	Fade rate 2.8 steps/s

DATABYTE4 = device type

contents	Device type
0	Fluorescent lamp
1	Emergency lamp
2	Discharge lamp
3	Low voltage lamp
4	Dimmer
5	Conversion to dc
6	Led module
7	Relay
8	Color control
9	Sequencer
254	Device present
255	No device present

Transmits program step info:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes to send
DATABYTE1 = COMMAND_PROGRAM_STEP_INFO (0xC1)
DATABYTE2 = Program step number (1…72 / 255 step not found)
DATABYTE3 = Program reference

Contents	Description
000xxxxx	Disable program step
001xxxxx	Absolute time
010xxxxx	Wake up time 1 + relative time
011xxxxx	Go to bed time 1 + relative time
100xxxxx	Wake up time 2 + relative time
101xxxxx	Go to bed time 2 + relative time
110xxxxx	Sunrise + relative time
111xxxxx	Sunset + relative time
xxx01111	Rel. time = 3h45min
…	
xxx00001	Rel. time = 15min
xxx00000	Rel. time = 0
xxx11111	Rel. time = -15min
…	
xxx10000	Rel. time = -4h

DATABYTE4 = Program step month & four least significant bits of day

Contents	Description
xxxx0000	Weekly program
xxxx0001	January
xxxx0010	February
xxxx0011	March
xxxx0100	April

xxxx0101	May
xxxx0110	June
xxxx0111	July
xxxx1000	August
xxxx1001	September
xxxx1010	October
xxxx1011	November
xxxx1100	December
xxxx1101	Monthly program
xxxx1110	Monthly program
xxxx1111	Monthly program

Contents byte6	Contents byte4	Description
00xxxxxx	0000xxxx	Never
00xxxxxx	0001xxxx	Day 1of the month
00xxxxxx	0010xxxx	Day 2of the month
…	…	…
01xxxxxx	1111xxxx	Day 31of the month
10xxxxxx	0000xxxx	Never
10xxxxxx	0001xxxx	Every Monday
10xxxxxx	0010xxxx	Every Tuesday
…	…	…
10xxxxxx	0111xxxx	Every Sunday
10xxxxxx	1000xxxx	Every weekend (sa & su)
10xxxxxx	1001xxxx	Every working day (mo…fr)
10xxxxxx	1010xxxx	Every day except Sunday
10xxxxxx	1011xxxx	Every day
10xxxxxx	1100xxxx	Never
…	…	…
11xxxxxx	1111xxxx	Never

DATABYTE5 = Program step hour & group number

Contents	Description
xxx00000	0h
xxx00001	1h
…	…
xxx10111	23h
xx1xxxxx	Program group 1 (Summer program)
x1xxxxxx	Program group 2 (Winter program)
1xxxxxxx	Program group 3 (Holiday program)

DATABYTE6 = Program step minute & every flag & msb of day

Contents	Description
xx000000	0min
xx000001	1min
…	…
xx111011	59min

Contents byte6	Contents byte4	Description
00xxxxxx	0000xxxx	Never
00xxxxxx	0001xxxx	Day 1of the month
00xxxxxx	0010xxxx	Day 2of the month
…	…	…
01xxxxxx	1111xxxx	Day 31of the month
10xxxxxx	0000xxxx	Never
10xxxxxx	0001xxxx	Every Monday
10xxxxxx	0010xxxx	Every Tuesday
…	…	…
10xxxxxx	0111xxxx	Every Sunday
10xxxxxx	1000xxxx	Every weekend (sa & su)
10xxxxxx	1001xxxx	Every working day (mo…fr)

10xxxxxx	*1010xxxx*	*Every day except Sunday*
10xxxxxx	*1011xxxx*	*Every day*
10xxxxxx	*1100xxxx*	*Never*
…	*…*	*…*
11xxxxxx	*1111xxxx*	*Never*

DATABYTE7 = Program step action

Contents	*Action*
0	*Not yet implemented*

DATABYTE8 = Channel

Contents	*Channel*
1	*Channel 1*
…	*…*
8	*Channel 8*

'Linked push button status' received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Address of the linked push button module
RTR = 0
DLC3...DLC0 = 4 data bytes received
DATABYTE1 = COMMAND_PUSH_BUTTON_STATUS (0x00)
DATABYTE2 = Linked push buttons just pressed (1 = just pressed)
DATABYTE3 = Linked push buttons just released (1 = just released)
DATABYTE4 = linked push buttons long pressed (1 = longer than 0.85s pressed)

Power up message' received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 0x00
RTR = 0
DLC3...DLC0 = 2 data byte received
DATABYTE1 = COMMAND_POWER_UP (0xAB)
DATABYTE2 = module address

'CAN FD enable command' received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 0x00
RTR = 0
DLC3...DLC0 = 2 data byte received
DATABYTE1 = COMMAND_SET_CLR_LEARN_RF_CODE (0xB5)
DATABYTE2 = enable/disable (0 = disable CAN FD / 1 = enable CAN FD)

'Real time clock status request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 0x00
RTR = 0
DLC3...DLC0 = 1 data byte to send
DATABYTE1 = COMMAND_REALTIME_CLOCK_STATUS_REQUEST (0xD7)

'Real time clock status request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 1 data byte to send
DATABYTE1 = COMMAND_REALTIME_CLOCK_STATUS_REQUEST (0xD7)

'Set real time clock' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 0x00
RTR = 0
DLC3...DLC0 = 4 data bytes received
DATABYTE1 = COMMAND_SET_REALTIME_CLOCK (0xD8)
DATABYTE2 = Day of week

Contents day of week'	*Description*
H'00'	Monday
H'01'	Tuesday
H'02'	Wednesday
H'03'	Thursday
H'04'	Friday
H'05'	Saterday
H'06'	Sunday

DATABYTE3 = Hours (0…23)
DATABYTE4 = Minutes (0…59)

'Set date' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 0x00
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_SET_REALTIME_DATE (0xB7)
DATABYTE2 = Day (1…31)
DATABYTE3 = Month (1…12)
DATABYTE4 = High byte of Year
DATABYTE5 = Low byte of Year

'Set daylight savings' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 0x00
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_SET_DAYLIGHT_SAVING (0xAF)
DATABYTE2 = 0 =disabled / 1 = enabled

'Enable/disable global sunrise/sunset related actions' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 0x00
RTR = 0
DLC3...DLC0 = 3 data bytes received
DATABYTE1 = COMMAND_ENA_DIS_SUNRISE_SUNSET (0xAE)
DATABYTE2 = Channel (0xFF)
DATABYTE3 = enable/disable flags

Contents	*Description*
B'xxxxxxx0'	Disable sunrise related actions
B'xxxxxxx1'	Enable sunrise related actions
B'xxxxxx0x'	Disable sunset related actions
B'xxxxxx1x'	Enable sunset related actions

'Enable/disable local sunrise/sunset related actions' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 data bytes received
DATABYTE1 = COMMAND_ENA_DIS_SUNRISE_SUNSET (0xAE)
DATABYTE2 = Channel (0xFF)
DATABYTE3 = enable/disable flags

Contents	*Description*
B'xxxxxxx0'	Disable sunrise related actions
B'xxxxxxx1'	Enable sunrise related actions
B'xxxxxx0x'	Disable sunset related actions
B'xxxxxx1x'	Enable sunset related actions

'Set global clock alarm' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 0x00
RTR = 0
DLC3...DLC0 = 7 data bytes received
DATABYTE1 = COMMAND_SET_ALARM_CLOCK (0xC3)
DATABYTE2 = Alarm number (1 or 2)
DATABYTE3 = Wake up hour (0…23)
DATABYTE4 = Wake up minute (0…59)
DATABYTE5 = Go to bed hour (0…23)
DATABYTE6 = Go to bed minute (0…59)
DATABYTE7 = Clock alarm enable flag (0 = disabled / 1 = enabled)

'Set local clock alarm' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 7 data bytes received
DATABYTE1 = COMMAND_SET_ALARM_CLOCK (0xC3)
DATABYTE2 = Alarm number (1 or 2)
DATABYTE3 = Wake up hour (0…23)
DATABYTE4 = Wake up minute (0…59)
DATABYTE5 = Go to bed hour (0…23)
DATABYTE6 = Go to bed minute (0…59)
DATABYTE7 = Clock alarm enable flag (0 = disabled / 1 = enabled)

'Module type request' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 1
DLC3...DLC0 = 0 data bytes received

'Module status request' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_MODULE_STATUS_REQUEST (0xFA)
DATABYTE2 = don't care

'Channel name request' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_CHANNEL_NAME_REQUEST (0xEF)
DATABYTE2 = Channel 1…2

Remark: channel = 0xFF for all channels

'Clear channel LED' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Linked module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_CLEAR_LED (0xF5)
DATABYTE2 = LEDs to clear (a one clears the corresponding LED of channel 1 to 8)

'Clear channel LED' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_CLEAR_LED (0xF5)
DATABYTE2 = LEDs to clear (a one clears the corresponding LED of channel 1 to 8)

'Set channel LED' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_SET_LED (0xF6)
DATABYTE2 = LEDs to set (a one sets the corresponding LED of channel 1 to 8)

'Slow blink channel LED' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0

DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_SLOW_BLINK_LED (0xF7)
DATABYTE2 = LEDs to blink slow (a one blinks slow the corresponding LED of channel 1 to 8)

'Fast blink channel LED' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_FAST_BLINK_LED (0xF8)
DATABYTE2 = LEDs to blink fast (a one blinks fast the corresponding LED of channel 1 to 8)

'Very fast blink channel LED' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_VERY_FAST_BLINK_LED (0xF9)
DATABYTE2 = LEDs to blink very fast (a one blinks very fast the corresponding LED of channel 1 to 8)

'Update channel LEDs' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes received
DATABYTE1 = COMMAND_UPDATE_LED_STATUS (0xF4)
DATABYTE2 = LEDs to set (a one sets the corresponding LED of channel 1 to 8)
DATABYTE3 = LEDs to blink slow (a one blinks slow the corresponding LED of channel 1 to 8)
DATABYTE4 = LEDs to blink fast (a one blinks very fast the corresponding LED of channel 1 to 8)

Remark:
The 'LEDs to set' status overrides the blinking modes.
Very fast blinking if slow & fast blinking are set.

'Read data from memory' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 data bytes received
DATABYTE1 = COMMAND_READ_DATA_FROM_MEMORY (0xFD)
DATABYTE2 = High memory address
DATABYTE3 = LOW memory address

Remark: address range: 0x0000 to 0x07FF

'Read data block from memory' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 data bytes received / 4 data bytes for CAN FD response
DATABYTE1 = COMMAND_READ_MEMORY_BLOCK (0xC9)
DATABYTE2 = High memory address
DATABYTE3 = LOW memory address
DATABYTE4 = memory block length (5…60)

Remark:
address range: 0x0000 to 0x07FC
address range: 0x0000 to (0x0800 – memory block length) for CAN FD response

'Memory dump request' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 1 data bytes received
DATABYTE1 = COMMAND_MEMORY_DUMP_REQUEST (0xCB)

'Write data to memory' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes received
DATABYTE1 = COMMAND_WRITE_DATA_TO_MEMORY (0xFC)
DATABYTE2 = High memory address
DATABYTE3 = LOW memory address
DATABYTE4 = memory data to write

Remark:
Wait for 'memory data' feedback before sending a next command on the velbus.
Address range: 0x0000 to 0x07FF
Read only location cannot be changed
Terminate always with a write command at the last memory location.

'Write memory block' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 7 data bytes received
DATABYTE1 = COMMAND_WRITE_MEMORY_BLOCK (0xCA)
DATABYTE2 = High memory address
DATABYTE3 = LOW memory address
DATABYTE4 = memory databyte1 to write
DATABYTE5 = memory databyte2 to write
DATABYTE6 = memory databyte3 to write
DATABYTE7 = memory databyte4 to write

Or

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the module
RTR = 0
DLC3...DLC0 = number of data bytes to send

Contents	*Number of data bytes*
0x09	12 data bytes
0x0A	16 data bytes
0x0B	20 data bytes
0x0C	24 data bytes
0x0D	32 data bytes
0x0E	48 data bytes
0x0F	64 data bytes

DATABYTE1 = COMMAND_WRITE_MEMORY_BLOCK (0xCA)
DATABYTE2 = High memory address
DATABYTE3 = LOW memory address

DATABYTE4 = memory block length (5…60)
DATABYTE5 = memory data 1 to write
…
DATABYTE12 = memory data 8 to write (end of data for DLC3...DLC0 = 0x09)
…
DATABYTE16 = memory data 12 to write (end of data for DLC3...DLC0 = 0x0A)
…
DATABYTE20 = memory data 16 to write (end of data for DLC3...DLC0 = 0x0B)
…
DATABYTE24 = memory data 20 to write (end of data for DLC3...DLC0 = 0x0C)
…
DATABYTE32 = memory data 28 to write (end of data for DLC3...DLC0 = 0x0D)
…
DATABYTE48 = memory data 44 to write (end of data for DLC3...DLC0 = 0x0E)
…
DATABYTE64 = memory data 60 to write (end of data for DLC3...DLC0 = 0x0F)

Remark:
Wait for 'memory data block' feedback before sending a next command on the velbus.
address range: 0x0000 to 0x07FC for standard CAN response
address range: 0x0000 to (0x0800 – memory block length) for CAN FD response
Contents of unused data bytes = 0x55
Terminate always with a write command at the last memory location.

'Bus error counter status request' command received:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 1 data byte received
DATABYTE1 = COMMAND_BUS_ERROR_COUNTER_STATUS_REQUEST (H'D9')

'Set dim value' command received:
SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_SET_DIMVALUE (0x07)
DATABYTE2 = Channel 1…2
DATABYTE3 = Dim value (0 to 254, 255 = unchanged, linear curve)
DATABYTE4 = fade mode (0 = direct / 1 = use fade rate / 2 = use fade time)
DATABYTE5 = don't care

'Set to last used dim value' command received:
SID10-SID9 = 00 (highest priority)
SID8...SID1 = Address of the module
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_RESTORE_LAST_DIMVALUE (0x11)
DATABYTE2 = Channel 1…2
DATABYTE3 = don't care
DATABYTE4 = high byte of dim speed = don't care
DATABYTE5 = low byte of dim speed = don't care

'Start timer' command received:
SID10-SID9 = 00 (highest priority)
SID8...SID1 = Address of the module
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_START_DIMMER_TIMER (0x08)
DATABYTE2 = Channel 1…2
DATABYTE3 = high byte of time-out time
DATABYTE4 = mid byte of time-out time
DATABYTE5 = low byte of time-out time

Remark: [DATABYTE3][DATABYTE4][DATABYTE5] contains a 24-bit time-out time in seconds.

If the time-out parameter contains zero then no timer starts.
If the time-out parameter contains 0xFFFFFF then the light switches permanently on (no time-out).

'Stop channel dimming' command received:
SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_STOP_DIMMING (0x10)
DATABYTE2 = Channel 1…2

'Go to scene' command received:
SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 data bytes received
DATABYTE1 = COMMAND_SET_DIMSCENE (0x1D)
DATABYTE2 = Channel 1…2
DATABYTE3 = Scene number (0 to 15)

'Set color value' command received:
SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 7 data bytes received
DATABYTE1 = COMMAND_SET_COLOR (0x1E)
DATABYTE2 = Channel 1…2
DATABYTE3 = Dim value (0 to 254, 255 = unchanged)
DATABYTE4 = Red value 0…254, 255 = unchanged)
DATABYTE5 = Green value 0…254, 255 = unchanged)
DATABYTE6 = Blue value 0…254, 255 = unchanged)
DATABYTE7 = White value 0…254, 255 = unchanged)

'Forced off' command received:
SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_FORCED_OFF (0x12)
DATABYTE2 = Channel 1…2
DATABYTE3 = high byte of delay time
DATABYTE4 = mid byte of delay time
DATABYTE5 = low byte of delay time

Remark:
Channel number = 0xFF for all channels
[DATABYTE3][DATABYTE4][DATABYTE5] contain a 24-bit time in seconds
The command will be skipped when the time parameter contains zero.
When the time parameter contains 0xFFFFFF then the dimmer is permanently forced off.

'Cancel forced off' command received:
SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_CANCEL_FORCED_OFF (0x13)
DATABYTE2 = Channel 1…2

Remark:
Channel number = 0xFF for all channels

'Forced on' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_FORCED_ON (0x14)
DATABYTE2 = Channel 1…2
DATABYTE3 = high byte of delay time
DATABYTE4 = mid byte of delay time
DATABYTE5 = low byte of delay time

Remark:
Channel number = 0xFF for all channels
[DATABYTE3][DATABYTE4][DATABYTE5] contain a 24-bit time in seconds
The command will be skipped when the time parameter contains zero or the channels are already forced off.
When the time parameter contains 0xFFFFFF then the dimmer is permanently forced on.

'Cancel forced on' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_CANCEL_FORCED_ON (0x15)
DATABYTE2 = Channel 1…2

Remark:
Channel number = 0xFF for all channels

'Inhibit' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_INHIBIT (0x16)
DATABYTE2 = Channel 1…2
DATABYTE3 = high byte of delay time
DATABYTE4 = mid byte of delay time
DATABYTE5 = low byte of delay time

Remark:
Channel number = 0xFF for all channels
[DATABYTE3][DATABYTE4][DATABYTE5] contain a 24-bit time in seconds
The command will be skipped when the time parameter contains zero or the channels are already forced off/on.
When the time parameter contains 0xFFFFFF then the dimmer is permanently inhibited.

'Cancel inhibit' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_CANCEL_INHIBIT (0x17)
DATABYTE2 = Channel 1…2

Remark:
Channel number = 0xFF for all channels

'Write device settings' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4, 5, 7 or 8 data bytes received
DATABYTE1 = COMMAND_SET_TEMP (0xE4)
DATABYTE2 = Channel 1…2
DATABYTE3 = setting index (0…28)

index	Configuration	DLC3…0 (# of data bytes)
0	Scene S0 level (+ RGBW for color control device)	4 (or 8 for color control device)
1	Scene S1 level (+ RGBW for color control device)	4 (or 8 for color control device)
2	Scene S2 level (+ RGBW for color control device)	4 (or 8 for color control device)
3	Scene S3 level (+ RGBW for color control device)	4 (or 8 for color control device)
4	Scene S4 level (+ RGBW for color control device)	4 (or 8 for color control device)
5	Scene S5 level (+ RGBW for color control device)	4 (or 8 for color control device)
6	Scene S6 level (+ RGBW for color control device)	4 (or 8 for color control device)
7	Scene S7 level (+ RGBW for color control device)	4 (or 8 for color control device)
8	Scene S8 level (+ RGBW for color control device)	4 (or 8 for color control device)
9	Scene S9 level (+ RGBW for color control device)	4 (or 8 for color control device)
10	Scene S10 level (+ RGBW for color control device)	4 (or 8 for color control device)
11	Scene S11 level (+ RGBW for color control device)	4 (or 8 for color control device)
12	Scene S12 level (+ RGBW for color control device)	4 (or 8 for color control device)
13	Scene S13 level (+ RGBW for color control device)	4 (or 8 for color control device)
14	Scene S14 level (+ RGBW for color control device)	4 (or 8 for color control device)
15	Scene S15 level (+ RGBW for color control device)	4 (or 8 for color control device)
16	*Power-on level (+ RGBW for color control device)*	*4 (or 8 for color control device)*
17	*System failure level (+ RGBW for color control device)*	*4 (or 8 for color control device)*
18	Minimum level	4
19	Maximum level	4
20	Fade time & fade rate	4
21	*Group members G0…G15*	*5*
22	*Group Gx member A31…0 (only allowed for group addresses)*	*7*
23	*Group Gx member A63…32 (only allowed for group addresses)*	*7*
24	*Start addressing devices (only allowed for broadcast address)*	*4*
25	-	4
26	-	4
27	*Config Dali power supply (only allowed for broadcast address)*	*4*
28	*Config Substitute 'Go to Last Active Level' (only allowed for broadcast address)*	*4*

DATABYTE4 = linear level (raw data 0…254, 255 = no change) (linear curve)
DATABYTE5 = red value (0…254, 255 = no change) (linear curve)
DATABYTE6 = green value (0…254, 255 = no change) (linear curve)
DATABYTE7 = blue value (0…254, 255 = no change) (linear curve)
DATABYTE8 = white value (0…254, 255 = no change) (linear curve)
DATABYTE4 = fade time / rate

Fade raw data	Fade time / rate
H'0x'	No fade
H'1x'	Fade time 0.7 s
H'2x'	Fade time 1.0 s
H'3x'	Fade time 1.4 s
H'4x'	Fade time 2.0 s
H'5x'	Fade time 2.8 s
H'6x'	Fade time 4.0 s
H'7x'	Fade time 5.7 s
H'8x'	Fade time 8.0 s
H'9x'	Fade time 11.3 s
H'Ax'	Fade time 16.0 s
H'Bx'	Fade time 22.6 s
H'Cx'	Fade time 32.0 s
H'Dx'	Fade time 45.3 s
H'Ex'	Fade time 64.0 s
H'Fx'	Fade time 90.5 s
H'x0'	Fade rate not applicable
H'x1'	Fade rate 358.0 steps/s
H'x2'	Fade rate 253.0 steps/s
H'x3'	Fade rate 179.0 steps/s
H'x4'	Fade rate 127.0 steps/s
H'x5'	Fade rate 89.4 steps/s
H'x6'	Fade rate 63.3 steps/s
H'x7'	Fade rate 44.7 steps/s
H'x8'	Fade rate 31.6 steps/s
H'x9'	Fade rate 22.4 steps/s
H'xA'	Fade rate 15.8 steps/s
H'xB'	Fade rate 11.2 steps/s
H'xC'	Fade rate 7.9 steps/s
H'xD'	Fade rate 5.6 steps/s
H'xE'	Fade rate 4.0 steps/s
H'xF'	Fade rate 2.8 steps/s

'Device settings request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 data bytes received for all settings request
4 data bytes received for individual setting request
DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_REQUEST (0xE7)
DATABYTE2 = Channel 1…2
DATABYTE3 = access settings from the devices

Contents	Access
0	Access the settings stored in the gateway (fast way)
1	*Access the settings from the Dali devices (only allowed for all settings)*

DATABYTE4 = individual setting request index (0…26)

index	Configuration
0	Scene S0 level (+ RGBW for color control device) (linear curve)
1	Scene S1 level (+ RGBW for color control device) (linear curve)
2	Scene S2 level (+ RGBW for color control device) (linear curve)
3	Scene S3 level (+ RGBW for color control device) (linear curve)
4	Scene S4 level (+ RGBW for color control device) (linear curve)
5	Scene S5 level (+ RGBW for color control device) (linear curve)
6	Scene S6 level (+ RGBW for color control device) (linear curve)
7	Scene S7 level (+ RGBW for color control device) (linear curve)
8	Scene S8 level (+ RGBW for color control device) (linear curve)
9	Scene S9 level (+ RGBW for color control device) (linear curve)
10	Scene S10 level (+ RGBW for color control device) (linear curve)
11	Scene S11 level (+ RGBW for color control device) (linear curve)
12	Scene S12 level (+ RGBW for color control device) (linear curve)
13	Scene S13 level (+ RGBW for color control device) (linear curve)
14	Scene S14 level (+ RGBW for color control device) (linear curve)

15	Scene S15 level (+ RGBW for color control device) (linear curve)
16	*Power-on level (+ RGBW for color control device)*
17	*System failure level (+ RGBW for color control device)*
18	Minimum level (linear curve)
19	Maximum level (linear curve)
20	Fade time & fade rate
21	*Group members G0…G15*
22	-
23	-
24	-
25	Device type
26	Actual level (+ RGBW for color control device) (linear curve)

'Enable Channel Program' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_ENABLE_PROGRAM (0xB2)
DATABYTE2 = Channel 1…2

Remark: channel number = 0xFF for all channels

'Disable Channel Program' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_DISABLE_PROGRAM (0xB1)
DATABYTE2 = Channel 1…2
DATABYTE3 = high byte of delay time
DATABYTE4 = mid byte of delay time
DATABYTE5 = low byte of delay time

Remark:
Channel number = 0xFF for all channels
[DATABYTE3][DATABYTE4][DATABYTE5] contain a 24-bit time in seconds
The command will be skipped when the time parameter contains zero.
When the time parameter contains 0xFFFFFF then the channel program will be permanently disabled.

'Select Program' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_SELECT_PROGRAM (0xB3)
DATABYTE2 = Program mode

Contents	*Selected program*
0	None
1	Program group 1 (Summer)
2	Program group 2 (Winter)
3	Program group 3 (Holiday)

'Read program step' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_READ_PROGRAM_STEP (0xC0)
DATABYTE2 = Start program step number (1…72)
DATABYTE3 = Program group number (1…3)
DATABYTE2 = Channel 1…2
DATABYTE5 = Search direction (1 = search for next matched step / 0 = search for previous matched program step)

'Write program step' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes received
DATABYTE1 = COMMAND_WRITE_PROGRAM_STEP (0xC2)
DATABYTE2 = Program step number (1…72)
DATABYTE3 = Program reference

Contents	Description
000xxxxx	Disable program step
001xxxxx	Absolute time
010xxxxx	Wake up time 1 + relative time
011xxxxx	Go to bed time 1 + relative time
100xxxxx	Wake up time 2 + relative time
101xxxxx	Go to bed time 2 + relative time
110xxxxx	Sunrise + relative time
111xxxxx	Sunset + relative time
xxx01111	Rel. time = 3h45min
…	
xxx00001	Rel. time = 15min
xxx00000	Rel. time = 0
xxx11111	Rel. time = -15min
…	
xxx10000	Rel. time = -4h

DATABYTE4 = Program step month & four least significant bits of day

Contents	Description
xxxx0000	Weekly program
xxxx0001	January
xxxx0010	February
xxxx0011	March
xxxx0100	April
xxxx0101	May
xxxx0110	June
xxxx0111	July
xxxx1000	August
xxxx1001	September
xxxx1010	October
xxxx1011	November
xxxx1100	December
xxxx1101	Monthly program
xxxx1110	Monthly program
xxxx1111	Monthly program

Contents_byte6	Contents byte4	Description
00xxxxxx	0000xxxx	Never
00xxxxxx	0001xxxx	Day 1of the month
00xxxxxx	0010xxxx	Day 2of the month
…	…	…
01xxxxxx	1111xxxx	Day 31of the month
10xxxxxx	0000xxxx	Never

10xxxxxx	0001xxxx	Every Monday
10xxxxxx	0010xxxx	Every Tuesday
...	…	…
10xxxxxx	0111xxxx	Every Sunday
10xxxxxx	1000xxxx	Every weekend (sa & su)
10xxxxxx	1001xxxx	Every working day (mo…fr)
10xxxxxx	1010xxxx	Every day except Sunday
10xxxxxx	1011xxxx	Every day
10xxxxxx	1100xxxx	Never
…	…	…
11xxxxxx	1111xxxx	Never

DATABYTE5 = Program step hour & group number

Contents	*Description*
xxx00000	0h
xxx00001	1h
…	…
xxx10111	23h
xx1xxxxx	Program group 1 (Summer program)
x1xxxxxx	Program group 2 (Winter program)
1xxxxxxx	Program group 3 (Holiday program)

DATABYTE6 = Program step minute & msb of day & every flag

Contents	*Description*
xx000000	0min
xx000001	1min
…	…
xx111011	59min

Contents byte6	*Contents byte4*	*Description*
00xxxxxx	0000xxxx	Never
00xxxxxx	0001xxxx	Day 1of the month
00xxxxxx	0010xxxx	Day 2of the month
…	...	…
01xxxxxx	1111xxxx	Day 31of the month
10xxxxxx	0000xxxx	Never
10xxxxxx	0001xxxx	Every Monday
10xxxxxx	0010xxxx	Every Tuesday
...	…	…
10xxxxxx	0111xxxx	Every Sunday
10xxxxxx	1000xxxx	Every weekend (sa & su)
10xxxxxx	1001xxxx	Every working day (mo…fr)
10xxxxxx	1010xxxx	Every day except Sunday
10xxxxxx	1011xxxx	Every day
10xxxxxx	1100xxxx	Never
…	…	…
11xxxxxx	1111xxxx	Never

DATABYTE7 = Program step action

Contents	Action

DATABYTE8 = Channel

Contents	Channel
1	Channel 1
2	Channel 2

Remark:
Erase program step if channel parameter is equal with zero.

'Change master address and serial number' command received:

SID10-SID9 = 01 (firmware priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 7 data bytes received
DATABYTE1 = COMMAND_WRITE_ADDR_SERIALNR (0x6A)
DATABYTE2 = Module type (0x24 = VMB2DC-20)
DATABYTE3 = Current serial nr high byte
DATABYTE4 = Current serial nr low byte
DATABYTE5 = New module address
DATABYTE6 = New serial nr high byte
DATABYTE7 = New serial nr low byte

Memory map version 1:

Address	*Contents*	*Address*	*Contents*
0x0000	Channel 1 name character 1	0x0001	Channel 1 name character 2
...	...	...	...
0x000E	Channel 1 name character 15	0x000F	Channel 1 name character 16
0x0010	Channel 2 name character 1	0x0011	Channel 2 name character 2
...	...	...	...
0x001F	Channel 2 name character 15	0x001F	Channel 2 name character 16
0x0020	Not used	0x0021	Not used
0x0022	Not used	0x0023	Alarm clock configuration
0x0024	Wake up 1 hour (0…23)	0x0025	Wake up 1 minutes (0…59)
0x0026	Go to bed 1 hour (0…23)	0x0027	Go to bed 1 minutes (0…59)
0x0028	Wake up 2 hour (0…23)	0x0029	Wake up 2 minutes (0…59)
0x002A	Go to bed 2 hour (0…23)	0x002B	Go to bed 2 minutes (0…59)
0x002C	Sunrise hour at 21 December (0…23)	0x002D	Sunrise minutes at 21 December (0…59)
0x002E	Sunrise 21 January – sunrise 5 January (-128'...127')	0x002F	Sunrise 5 February – sunrise 21 January (-128'...127')
0x0030	Sunrise 21 February – sunrise 5 February (-128'...127')	0x0031	Sunrise 5 March – sunrise 21 February (-128'...127')
0x0032	Sunrise 21 March – sunrise 5 March (-128'…127')	0x0033	Sunrise 5 April – sunrise 21 March (-128'...127')
0x0034	Sunrise 21 April – sunrise 5 April (-128'…127')	0x0035	Sunrise 5 May – sunrise 21 April (-128'...127')
0x0036	Sunrise 21 May – sunrise 5 May (-128'…127')	0x0037	Sunrise 5 June – sunrise 21 May (-128'...127')
0x0038	Sunrise 21 June – sunrise 5 June (-128'…127')	0x0039	Sunrise 5 July – sunrise 21 June (-128'...127')
0x003A	Sunrise 21 July – sunrise 5 July (-128'…127')	0x003B	Sunrise 5 August – sunrise 21 July (-128'...127')
0x003C	Sunrise 21 August – sunrise 5 August (-128'...127')	0x003D	Sunrise 5 September – sunrise 21 August (-128'...127')
0x003E	Sunrise 21 September – sunrise 5 September (-128...127')	0x003F	Sunrise 5 October – sunrise 21 Sept. (-128'...127')
0x0040	Sunrise 21 October – sunrise 5 October (-128'…127')	0x0041	Sunrise 5 November – sunrise 21 Oct. (-128'...127')
0x0042	Sunrise 21 November – sunrise 5 November (-128'...127')	0x0043	Sunrise 5 December – sunrise 21 Nov. (-128'...127')
0x0044	Sunrise 21 December – sunrise 5 December (-128'...127')	0x0045	Sunrise 5 January – sunrise 21 December (-128'...127')
0x0046	Not used	0x0047	Not used
0x0048	Sunset hour at 21 December (0…23)	0x0049	Sunset minutes at 21 December (0…59)
0x004A	Sunset 21 January – sunset 5 January (-128'...127')	0x004B	Sunset 5 February – sunset 21 January (-128'...127')
0x004C	Sunset 21 February – sunset 5 February (-128'...127')	0x004D	Sunset 5 March – sunset 21 February (-128'...127')
0x004E	Sunset 21 March – sunset 5 March (-128'...127')	0x004F	Sunset 5 April – sunset 21 March (-128'...127')
0x0050	Sunset 21 April – sunset 5 April (-128'...127')	0x0051	Sunset 5 May – sunset 21 April (-128'...127')
0x0052	Sunset 21 May – sunset 5 May (-128'...127')	0x0053	Sunset 5 June – sunset 21 May (-128'...127')
0x0054	Sunset 21 June – sunset 5 June (-128'...127')	0x0055	Sunset 5 July – sunset 21 June (-128'...127')
0x0056	Sunset 21 July – sunset 5 July (-128'...127')	0x0057	Sunset 5 August – sunset 21 July (-128'...127')
0x0058	Sunset 21 August – sunset 5 August (-128'...127')	0x0059	Sunset 5 September – sunset 21 August (-128'...127')
0x005A	Sunset 21 September – sunset 5 September (-128'...127')	0x005B	Sunset 5 October – sunset 21 September (-128'...127')
0x005C	Sunset 21 October – sunset 5 October (-128'...127')	0x005D	Sunset 5 November - sunset 21 October (-128'...127')
0x005E	Sunset 21 November – sunset 5 November (-128'...127')	0x005F	Sunset 5 December - sunset 21 Nov. (-128'...127')
0x0060	Sunset 21 December – sunset 5 December (-128'...127')	0x0061	Sunset 5 January – sunset 21 December (-128'...127')
0x0062	Not used	0x0063	Not used

Remark:
Unused locations contain H'FF'

Alarm clock configuration

Contents	*Channel locked/unlocked*
B'xxxxxxx0'	Alarm 1 disabled (default)
B'xxxxxxx1'	Alarm 1 enabled
B'0xxxxx0x'	Local alarm 1 (default)
B'1xxxxx1x'	Global alarm 1
B'xxxxx0xx'	Alarm 2 disabled (default)
B'xxxxx1xx'	Alarm 2 enabled
B'xxxx0xxx'	Local alarm 2 (default)
B'xxxx1xxx'	Global alarm 2
B'xxx0xxxx'	Sunrise disabled
B'xxx1xxxx'	Sunrise enabled (default)
B'xx0xxxxx'	Sunset disabled
B'xx1xxxxx'	Sunset enabled (default)
B'x0xxxxxx'	Day light savings disabled
B'x1xxxxxx'	Day light savings enabled (default)

Address	*Contents*	*Address*	*Contents*
0x0064	Links in use byte 0 (LSB)	0x0065	Links in use high byte1
0x0066	Links in use low byte 2	0x0067	Links in use low byte 3 (MSB)
0x0068	Linked Push button 1 module address	0x0069	Linked Push button 1 bit number
0x006A	Linked Push button 1 action	0x006B	Linked Push button 1 parameter 1
0x006C	Linked Push button 1 parameter 2	0x006D	Linked Push button 1 parameter 3
...	...	...	...
0x039E	Linked Push button 138 address	0x039F	Linked Push button 138 bit number
0x03A0	Linked Push button 138 action	0x03A1	Linked Push button 138 parameter 1
0x03A2	Linked Push button 138 parameter 2	0x03A3	Linked Push button 138 parameter 3

Remark: Unused locations contain 0xFF

Action

Action Byte	Action
B'0xxxxxxx'	Execute action at button pressed or during closed switch
B'1xxxxxxx'	Execute action at button released or during open switch*
B'x0000000'	Action number 0
…	…
B'x1111111'	Action number 127

Action nr	Action	Parameter 1	Parameter 2	Parameter 3
0	No action	-		
1	Forced Off (lock) channel at closed/open switch	-	-	Bit7-3: unused Bit2…0: Channel (1…2)
2	Forced Off (lock) channel	Time-out	-	Bit7-3: unused Bit2…0: Channel (1…2)
3	Toggle Forced Off (lock/unlock) channel	Time-out	-	Bit7-3: unused Bit2…0: Channel (1…2)
4	Cancel Forced Off (unlock) channel	-	-	Bit7-3: unused Bit2…0: Channel (1…2)
5	Forced On channel at closed/open switch	-	-	Bit7-3: unused Bit2…0: Channel (1…2)
6	Forced On channel	Time-out	-	Bit7-3: unused Bit2…0: Channel (1…2)
7	Toggle Forced On channel	Time-out	-	Bit7-3: unused Bit2…0: Channel (1…2)
8	Cancel Forced On channel	-	-	Bit7-3: unused Bit2…0: Channel (1…2)
9	Inhibit channel at closed/open switch	-	-	Bit7-3: unused Bit2…0: Channel (1…2)
10	Inhibit channel	Time-out	-	Bit7-3: unused Bit2…0: Channel (1…2)
11	Toggle Inhibit channel	Time-out	-	Bit7-3: unused Bit2…0: Channel (1…2)
12	Cancel Inhibit channel	-	-	Bit7-3: unused Bit2…0: Channel (1…2)
13	Disable channel program at closed/open switch	-	-	Bit7-3: unused Bit2…0: Channel (1…2)
14	Disable channel program channel	Time-out	-	Bit7-3: unused Bit2…0: Channel (1…2)
15	Disable/enable channel program	Time-out	-	Bit7-3: unused Bit2…0: Channel (1…2)
16	Enable channel program	-	-	Bit7-3: unused Bit2…0: Channel (1…2)
17	Select no programs	-	-	-
18	Select program group 1	-	-	-
19	Toggle program group 1	-	-	-
20	Select program group 2	-	-	-
21	Toggle program group 2	-	-	-
22	Select program group 3	-	-	-
23	Toggle program group 3	-	-	-
24	Enable Alarm 1 at closed/open switch	-	-	-
25	Disable Alarm 1 at closed/open switch	-	-	-
26	Enable Alarm 1	-	-	-
27	Enable/Disable Alarm 1	-	-	-
28	Disable Alarm 1	-	-	-
29	Enable Alarm 2 at closed/open switch	-	-	-
30	Disable Alarm 2 at closed/open switch	-	-	-
31	Enable Alarm 2	-	-	-
32	Enable/Disable Alarm 2	-	-	-
33	Disable Alarm 2	-	-	-
34	Enable Sunrise at closed/open switch	-	-	-
35	Disable Sunrise at closed/open switch	-	-	-

36	Enable Sunrise			
37	Enable/Disable Sunrise			
38	Disable Sunrise			
39	Enable Sunset at closed/open switch			
40	Disable Sunset at closed/open switch			
41	Enable Sunset			
42	Enable/Disable Sunset			
43	Disable Sunset			
44	Off	-	-	Bit7-5: unused Bit4-3: Fade mode at press 0=direct/1=use fade rate/2=use fade time Bit2…0: Channel (1…2)
45	On	-	-	Bit7-5: unused Bit4-3: Fade mode at press 0=direct/1=use fade rate/2=use fade time Bit2…0: Channel (1…2)
46	Toggle	-	-	Bit7-5: unused Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
47	Delayed-on at closed/open switch (momentary value)	Delay-on time	Target	Bit7-5: unused Bit4-3: Fade mode 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
48	Restartable delayed-on	Delay-on time	Target	Bit7-5: unused Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
49	Non-restartable delayed-on	Delay-on time	Target	Bit7-5: unused Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
50	Start-stop delayed-on	Delay-on time	Target	Bit7-5: unused Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
51	Restartable delayed-off	Delay-off time	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct/1=use fade rate/2=use fade time Bit4-3: unused Bit2…0: Channel (1…2)
52	Non-restartable delayed-off	Delay-off time	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct/1=use fade rate/2=use fade time Bit4-3: unused Bit2…0: Channel (1…2)
53	Start-stop delayed-off	Delay-off time	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct/1=use fade rate/2=use fade time Bit4-3: unused Bit2…0: Channel (1…2)
54	Restartable timer	Time-out	Target	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct/1=use fade rate/2=use fade time Bit4-3: Fade mode at press 0=direct/1=use fade rate/2=use fade time Bit2…0: Channel (1…2)
55	Non-restartable timer	Time-out	Target	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct/1=use fade rate/2=use fade time Bit4-3: Fade mode at press 0=direct/1=use fade rate/2=use fade time Bit2…0: Channel (1…2)
56	Start-stop timer	Time-out	Target	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct/1=use fade rate/2=use fade time Bit2…0: Channel (1…2)
57	Dim up*	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct/1=use fade rate/2=use fade time Bit4-3: unused Bit2…0: Channel (1…2)
58	Dim up/on at short press*	Time-out	Target	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct/1=use fade rate/2=use fade time Bit4-3: Fade mode at short press 0=direct/1=use fade rate/2=use fade time Bit2…0: Channel (1…2)

59	Dim down*	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct/1=use fade rate/2=use fade time Bit4-3: unused Bit2…0: Channel (1…2)
60	Dim down/off at short press*	Time-out	-	Bit7: dim down to minimum level 0=dim to 0% / 1=dim to minimum level Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at short press 0=direct/1=use fade rate/2=use fade time Bit2…0: Channel (1…2)
61	Dim up-down*	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct/1=use fade rate/2=use fade time Bit4-3: unused Bit2…0: Channel (1…2)
62	Dim up-down/toggle at short press*	Time-out	Target	Bit7: dim down to minimum level 0=dim to 0% / 1=dim to minimum level Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at short press 0=direct/1=use fade rate/2=use fade time Bit2…0: Channel (1…2)
63	Go to scene 0	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
64	Go to scene 1	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
65	Go to scene 2	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
66	Go to scene 3	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
67	Go to scene 4	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
68	Go to scene 5	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
69	Go to scene 6	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
70	Go to scene 7	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
71	Go to scene 8	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
72	Go to scene 9	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out

				0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
73	Go to scene 10	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
74	Go to scene 11	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
75	Go to scene 12	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
76	Go to scene 13	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
77	Go to scene 14	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
78	Go to scene 15	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
79	Toggle scene 0	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
80	Toggle scene 1	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
81	Toggle scene 2	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
82	Toggle scene 3	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
83	Toggle scene 4	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
84	Toggle scene 5	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
85	Toggle scene 6	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode (at go to scene)

				0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
86	Toggle scene 7	Time-out	-	Bit7: unused Bit6-5: Fade out mode (at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
87	Toggle scene 8	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
88	Toggle scene 9	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
89	Toggle scene 10	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
90	Toggle scene 11	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
91	Toggle scene 12	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
92	Toggle scene 13	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
93	Toggle scene 14	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
94	Toggle scene 15	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
95	Multi step dimmer	Time-out	-	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press (next step/scene) 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)
96	Go to dim value	Time-out	Target	Bit7: unused Bit6-5: Fade out mode at time-out 0=direct / 1=use fade rate / 2=use fade time Bit4-3: Fade mode at press 0=direct / 1=use fade rate / 2=use fade time Bit2…0: Channel (1…2)

* Execute action at button released or during open switch not applicable

Parameter 1: delay & time-out

Parameter 1	Delay/time-out
0	0s (no timer)
1	1s
2	2s
3	3s
...	
119	1min59s

120	2min
121	2min15s
...	
131	4min45s
132	5min
133	5min30s
...	
181	29min30s
182	30min
183	31min
...	
211	59min
212	1h
213	1h15min
...	
227	4h45min
228	5h
229	5h30min
...	...
237	9h30min
238	10h
239	11h
...	
251	23h
252	1d
253	2d
254	3d
255	Infinite

Parameter 2: Target (linear curve)

Parameter 2	**Dim value**
0	Last actual 0%
1	0,4%
…	…
253	99.6%
254	Maximum level
255	Unchanged

Parameter 3: Channel (0-index based)

Parameter 3	**Channel**
000	1
001	2

Parameter 3: Fade mode

Parameter 3	Fade mode
0	Direct
1	Use fade rate
2	Use fade time

Address	*Contents*	*Address*	*Contents*
0x03A4	Program steps used byte 0 (LSB)	0x03A5	Program steps used byte 1
0x03A6	Program steps used byte 2	0x03A7	Program steps used byte 3 (MSB)
0x03A8	Program step 1 byte1	0x03A9	Program step 1 byte2
0x03AA	Program step 1 byte3	0x03AB	Program step 1 byte4
0x03AC	Program step 1 byte5	0x03AD	Program step 1 byte6
…	..	..	..
0x06EA	Program step 140 byte1	0x06EB	Program step 140 byte2
0x06EC	Program step 140 byte3	0x06ED	Program step 140 byte4
0x06EE	Program step 140 byte5	0x06EF	Program step 140 byte6

Contents program byte1	*Description*
B'000xxxxx'	Disable program step
B'001xxxxx'	Absolute time
B'010xxxxx'	Wake up time 1 + relative time
B'011xxxxx'	Go to bed time 1 + relative time
B'100xxxxx'	Wake up time 2 + relative time
B'101xxxxx'	Go to bed time 2 + relative time
B'110xxxxx'	Sunrise + relative time
B'111xxxxx'	Sunset + relative time
B'xxx01111'	Rel. time = 3h45min
…	
B'xxx00001'	Rel. time = 15min
B'xxx00000'	Rel. time = 0
B'xxx11111'	Rel. time = -15min
…	
B'xxx10000'	Rel. time = -4h

Remark: Wake up, Go to bed, sunrise & sunset time are only allowed for weekly programs

Contents program byte2	*Description*
B'xxxx0000'	Weekly program
B'xxxx0001'	January
B'xxxx0010'	February
B'xxxx0011'	March
B'xxxx0100'	April
B'xxxx0101'	May
B'xxxx0110'	June
B'xxxx0111'	July
B'xxxx1000'	August
B'xxxx1001'	September
B'xxxx1010'	October
B'xxxx1011'	November
B'xxxx1100'	December
B'xxxx1101'	Monthly program
B'xxxx1110'	Monthly program
B'xxxx1111'	Monthly program

Contents program byte3	*Description*
B'xxx00000'	0h
B'xxx00001'	1h
…	…
B'xxx10111'	23h
B'xx1xxxxx'	Program group 1 (Summer program)
B'x1xxxxxx'	Program group 2 (Winter program)
B'1xxxxxxx'	Program group 3 (Holiday program)

Contents program byte4	*Description*
B'xx000000'	0min
B'xx000001'	1min
…	…
B'xx111011'	59min

Contents program byte4	*Contents program byte2*	*Description*
B’00xxxxxx’	B’0000xxxx’	Never
B’00xxxxxx’	B’0001xxxx’	Day 1of the month
B’00xxxxxx’	B’0010xxxx’	Day 2of the month
…	…	…
B’01xxxxxx’	B’1111xxxx’	Day 31of the month
B’10xxxxxx’	B’0000xxxx’	Never
B’10xxxxxx’	B’0001xxxx’	Every Monday
B’10xxxxxx’	B’0010xxxx’	Every Tuesday
…	…	…
B’10xxxxxx’	B’0111xxxx’	Every Sunday
B’10xxxxxx’	B’1000xxxx’	Every weekend (sa & su)
B’10xxxxxx’	B’1001xxxx’	Every working day (mo…fr)
B’10xxxxxx’	B’1010xxxx’	Every day except Sunday
B’10xxxxxx’	B’1011xxxx’	Every day
B’10xxxxxx’	B’1100xxxx’	Never
…	…	…
B’11xxxxxx’	B’1111xxxx’	Never

Contents program byte5	**Action**
0	Not yet implemented

Contents program byte6	**Channel**
0	Program step = empty
1	Channel 1
...	…
8	Channel 8
255	Program step = empty

Address	*Contents*	*Address*	*Contents*
0x06F0	Location id low byte	0x06F1	Location id high byte
0x06F2	Group id low byte	0x06F3	Group id high byte
0x06F4	Module name character 1	0x06F5	Module name character 2
…	..	..	..
0x0732	Module name character 63	0x0733	Module name character 64

Address	*Contents*	*Address*	*Contents*
0x0734	Device type of channel 1	0x0735	Minimum level of channel 1 (linear)
0x0736	Maximum level of channel 1 (linear)	0x0737	Fade time & fade rate of channel 1
0x0738	Scene 0 intensity of channel 1 (linear)	*0x0739*	*Scene 0 red of channel 1 (linear)*
0x073A	*Scene 0 green of channel 1 (linear)*	*0x073B*	*Scene 0 blue of channel 1 (linear)*
0x073C	*Scene 0 white of channel 1 (linear)*	…	…
…	…	…	…
…	…	0x0783	Scene 15 intensity of channel 1 (linear)
0x0784	*Scene 15 red of channel 1 (linear)*	*0x0785*	*Scene 15 green of channel 1 (linear)*
0x0786	*Scene 15 blue of channel 1 (linear)*	*0x0787*	*Scene 15 white of channel 1 (linear)*
0x0788	*Power-on intensity of channel 1 (linear)*	*0x0789*	*Power-on red of channel 1 (linear)*
0x078A	*Power-on green of channel 1 (linear)*	*0x078B*	*Power-on blue of channel 1 (linear)*
0x078C	*Power-on white of channel 1 (linear)*	*0x078D*	*System failure intensity of channel 1*
0x078E	*System failure red of channel 1 (linear)*	*0x078F*	*System failure green of channel 1*
0x0790	*System failure blue of channel 1 (linear)*	*0x0791*	*System failure white of channel 1*
0x0792	*Group G0…G7 member of channel 1*	*0x0793*	*Group G8…G15 member of channel 1*
0x0794	Minimum control voltage of channel 1	*0x0795*	*Reserved*
0x0796	*Reserved*	*0x0797*	*Reserved*
0x0798	Device type of channel 2	0x0799	Minimum level of channel 2 (linear)
0x079A	Maximum level of channel 2 (linear)	0x079B	Fade time & fade rate of channel 2
0x079C	Scene 0 intensity of channel 2 (linear)	*0x079D*	*Scene 0 red of channel 2 (linear)*
0x079E	*Scene 0 green of channel 2 (linear)*	*0x079F*	*Scene 0 blue of channel 2 (linear)*
0x07A0	*Scene 0 white of channel 2 (linear)*	…	…
…	…	…	…
…	…	0x07E7	Scene 15 intensity of channel 2 (linear)
0x07E8	*Scene 15 red of channel 2 (linear)*	*0x07E9*	*Scene 15 green of channel 2 (linear)*
0x07EA	*Scene 15 blue of channel 2 (linear)*	*0x07EB*	*Scene 15 white of channel 2 (linear)*
0x07EC	*Power-on intensity of channel 2 (linear)*	*0x07ED*	*Power-on red of channel 2 (linear)*
0x07EE	*Power-on green of channel 2 (linear)*	*0x07EF*	*Power-on blue of channel 2 (linear)*
0x07F0	*Power-on white of channel 2 (linear)*	*0x07F1*	*System failure intensity of channel 2*
0x07F2	*System failure red of channel 2 (linear)*	*0x07F3*	*System failure green of channel 2*
0x07F4	*System failure blue of channel 2 (linear)*	*0x07F5*	*System failure white of channel 2*
0x07F6	*Group G0…G7 member of channel 2*	*0x07F7*	*Group G8…G15 member of channel 2*
0x07F8	Minimum control voltage of channel 2	*0x07F9*	*Reserved*
0x07FA	*Reserved*	*0x07FB*	*Reserved*
0x07FC	Not used	0x07FD	Not used
0x07FE	Not used	0x07FF	Used for flash writing

Remark:
Unused locations contain H'FF'

Device type

Contents	*Type*
0x00	*Fluorescent lamps*
0x01	*Emergency lamps*
0x02	*Discharge lamps*
0x03	*Low voltage lamps*
0x04	*Dimmer for incandescent lamps*
0x05	Conversion to dc voltage (1…10 V)
0x06	*Led module*
0x07	*Switching device (relay)*
0x08	*Color controls (RGBW)*
0x09	*Sequencer*

0xFE	*Device present but type unknown*
0xFF	Device not present (default)

Minimum control voltage

Contents	***Minimum control voltage***
0	0 V
1	0.01 V
…	…
100	1 V (factory default)
…	…
255	2.55 V