

# **VMB8PBU**

**Push button interface module  
for VELBUS system**

Binary format:

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

<i>bits</i>	<i>Description</i>
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 111111)
IFS3...IFS1	InterFrame Space (always 111)

***The module can transmit the following messages:***

- Channel status
- Module status
- Module type
- Bus error counter status
- First, second and third part of the channel names
- Memory data
- Memory data block (4 bytes)
- Real-time clock status
- Date status
- Daylight savings status (Build1235 or higher)
- Real-time clock status request
- Clear linked push button led
- Set linked push button led
- Slow blink linked push button led
- Fast blink linked push button led

***The module can receive the following commands:***

- Linked push button status
- Module type request
- Module status request
- Channel name request
- Clear channel led
- Set channel led
- Slow blink channel led
- Fast blink channel led
- Very fast channel led
- Update channel leds
- Read memory data

- Read memory data block (4 bytes)
- Memory dump request
- Write memory data
- Write memory data block (4 bytes)
- Bus error counter status request
- Real-time clock status request
- Set real-time clock
- Set date
- Set daylight savings (Build 1235 or higher)
- Enable/disable global sunrise/sunset related actions (Build1235 or higher)
- Enable/disable local sunrise/sunset related actions (Build1235 or higher)
- Set local alarm clock
- Set global alarm clock
- Lock channel
- Unlock channel
- Disable channel program
- Enable channel program
- Select program

***Transmits real time clock status request:***

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = H'00'

RTR = 0

DLC3...DLC0 = 1 databyte to send

DATABYTE1 = COMMAND\_REALTIME\_CLOCK\_STATUS\_REQUEST (H'D7')

***Transmits the real time clock status:***

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 4 databytes to send

DATABYTE1 = COMMAND\_REALTIME\_CLOCK\_STATUS (H'D8')

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 databytes to send

DATABYTE1 = COMMAND\_DATE\_STATUS (H'B7')

DATABYTE2 = Day (1...31)

DATABYTE3 = Month (1...12)

DATABYTE4 = High byte of Year

DATABYTE5 = Low byte of Year

***Transmits the daylight savings status (Build1235 or higher):***

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 2 databytes to send

DATABYTE1 = COMMAND\_DAYLIGHT\_SAVING\_STATUS (H'AF')

DATABYTE2 = 0 =disabled / 1 = enabled

***Transmits the channel switch status:***

SID10-SID9 = 00 (highest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 4 databytes to send

DATABYTE1 = COMMAND\_PUSH\_BUTTON\_STATUS (H'00')

DATABYTE2 = Channel just pressed

DATABYTE3 = Channel just released

DATABYTE4 = Channel long pressed

**Transmits the module type:**

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = Module address  
 RTR = 0  
 DLC3...DLC0 = 7 databytes to send  
 DATABYTE1 = COMMAND\_MODULE\_TYPE (H'FF')  
 DATABYTE2 = VMB8PBU type (H'16')  
 DATABYTE3 = High byte of serial number  
 DATABYTE4 = Low byte of serial number  
 DATABYTE5 = Memorymap version  
 DATABYTE6 = Build year  
 DATABYTE7 = Build week

**Transmits the module status:**

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = Module address  
 RTR = 0  
 DLC3...DLC0 = 5 databytes to send  
 DATABYTE1 = COMMAND\_MODULE\_STATUS (H'ED')  
 DATABYTE2 = channel 1 to 8 status (1 = pressed / 0 = released)  
 DATABYTE3 = enabled/disable channel status (1 = enabled / 0 = disabled)  
 DATABYTE4 = normal/inverted channel status (1 = normal / 0 = inverted)  
 DATABYTE5 = locked channel status (0 = unlocked / 1 = locked)  
 DATABYTE6 = disabled channel program status (0 = program enabled / 1 = program disabled)  
 DATABYTE7 = alarm & program selection

<i>Contents</i>	<i>Selected programl</i>
B'xxxxxx00'	None
B'xxxxxx01'	Summer
B'xxxxxx10'	Winter
B'xxxxxx11'	Holiday
B'xxxxx0xx'	Alarm 1 off
B'xxxxx1xx'	Alarm 1 on
B'xxx0xxx'	Local alarm 1
B'xxx1xxx'	Global alarm 1
B'xx0xxxx'	Alarm 2 off
B'xx1xxxx'	Alarm 2 on
B'xx0xxxxx'	Local alarm 2
B'xx1xxxxx'	Global alarm 2
B'x0xxxxxx'	Sunrise disabled
B'x1xxxxxx'	Sunrise enabled
B'0xxxxxxx'	Sunset disabled
B'1xxxxxxx'	Sunset enabled

**Transmit: Bus error counter status**

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = Module address  
 RTR = 0  
 DLC3...DLC0 = 4 databytes to send  
 DATABYTE1 = COMMAND\_BUSERROR\_COUNTER\_STATUS (H'DA')  
 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 databytes to send  
 DATABYTE1 = COMMAND\_MEMORY\_DATA (H'FE')  
 DATABYTE2 = High memory address  
 DATABYTE3 = LOW memory address  
 DATABYTE4 = memory data

Remark: address range: H'0000' to H'03FF'

**Transmits memory data block (4 bytes):**

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = Module address  
 RTR = 0  
 DLC3...DLC0 = 7 databytes to send  
 DATABYTE1 = COMMAND\_MEMORY\_DATA\_BLOCK (H'CC')  
 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: H'0000' to H'03FC'

**Transmits the first part of channel name:**

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = Module address  
 RTR = 0  
 DLC3...DLC0 = 8 databytes to send  
 DATABYTE1 = COMMAND\_CHANNEL\_NAME\_PART1 (H'F0')  
 DATABYTE2 = channel bit

<i>Contents</i>	<i>Channel</i>
B'00000001'	channel 1
B'00000010'	channel 2
B'00000100'	channel 3
B'00001000'	channel 4
B'00010000'	channel 5
B'00100000'	channel 6
B'01000000'	channel 7
B'10000000'	channel 8

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 databytes to send  
 DATABYTE1 = COMMAND\_CHANNEL\_NAME\_PART2 (H'F1')  
 DATABYTE2 = Channel bit

<i>Contents</i>	<i>Channel</i>
B'00000001'	channel 1
B'00000010'	channel 2
B'00000100'	channel 3
B'00001000'	channel 4
B'00010000'	channel 5
B'00100000'	channel 6
B'01000000'	channel 7
B'10000000'	channel 8

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 databytes to send

DATABYTE1 = COMMAND\_CHANNEL\_NAME\_PART3 (H'F2')

DATABYTE2 = channel bit

<i>Contents</i>	<i>Channel</i>
B'00000001'	channel 1
B'00000010'	channel 2
B'00000100'	channel 3
B'00001000'	channel 4
B'00010000'	channel 5
B'00100000'	channel 6
B'01000000'	channel 7
B'10000000'	channel 8

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'.

***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 databytes to send

DATABYTE1 = COMMAND\_CLEAR\_LED (H'F5')

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 databytes to send

DATABYTE1 = COMMAND\_SET\_LED (H'F6')

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 databytes to send

DATABYTE1 = COMMAND\_SLOW\_BLINKING\_LED (H'F7')

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 databytes to send

DATABYTE1 = COMMAND\_FAST\_BLINKING\_LED (H'F8')

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



***‘Linked push button status’ received:***

SID10-SID9 = 00 (highest priority)  
 SID8...SID1 = Address of the linked push button module  
 RTR = 0  
 DLC3...DLC0 = 4 databytes received  
 DATABYTE1 = COMMAND\_PUSH\_BUTTON\_STATUS (H’00’)  
 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)

***‘Real time clock status request’ command received:***

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = Module address  
 RTR = 0  
 DLC3...DLC0 = 1 databyte to send  
 DATABYTE1 = COMMAND\_REALTIME\_CLOCK\_STATUS\_REQUEST (H’D7’)

***‘Set real time clock’ command received:***

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = H’00’  
 RTR = 0  
 DLC3...DLC0 = 4 databytes to send  
 DATABYTE1 = COMMAND\_SET\_REALTIME\_CLOCK (H’D8’)  
 DATABYTE2 = Day of week

<i><b>Contents day of week’</b></i>	<i><b>Description</b></i>
H’00’	Monday
H’01’	Tuesday
H’02’	Wednesday
H’03’	Thursday
H’04’	Friday
H’05’	Saturday
H’06’	Sunday

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

***‘Set date’ command received:***

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = H’00’  
 RTR = 0  
 DLC3...DLC0 = 5 databytes to send  
 DATABYTE1 = COMMAND\_SET\_REALTIME\_DATE (H’B7’)  
 DATABYTE2 = Day (1...31)  
 DATABYTE3 = Month (1...12)  
 DATABYTE4 = High byte of Year  
 DATABYTE5 = Low byte of Year

***‘Set daylight savings’ command received (Build1235 or higher):***

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = H’00’  
 RTR = 0  
 DLC3...DLC0 = 2 databytes to send  
 DATABYTE1 = COMMAND\_SET\_DAYLIGHT\_SAVING (H’AF’)  
 DATABYTE2 = 0 =disabled / 1 = enabled



***‘Enable/disable global sunrise/sunset related actions’ command received (Build1235 or higher):***

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = H'00'

RTR = 0

DLC3...DLC0 = 3 databytes to send

DATABYTE1 = COMMAND\_ENA\_DIS\_SUNRISE\_SUNSET (H'AE')

DATABYTE2 = Channel (FF)

DATABYTE3 = enable/disable flags

<b><i>Contents</i></b>	<b><i>Description</i></b>
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 (Build1235 or higher):***

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 3 databytes to send

DATABYTE1 = COMMAND\_ENA\_DIS\_SUNRISE\_SUNSET (H'AE')

DATABYTE2 = Channel (FF)

DATABYTE3 = enable/disable flags

<b><i>Contents</i></b>	<b><i>Description</i></b>
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 = H'00'

RTR = 0

DLC3...DLC0 = 7 databytes to send

DATABYTE1 = COMMAND\_SET\_ALARM\_CLOCK (H'C3')

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 databytes to send

DATABYTE1 = COMMAND\_SET\_ALARM\_CLOCK (H'C3')

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 databytes received

***‘Module status request’ command received:***

SID10-SID9 = 11 (lowest priority)  
SID8...SID1 = Module address  
RTR = 0  
DLC3...DLC0 = 2 databytes received  
DATABYTE1 = COMMAND\_MODULE\_STATUS\_REQUEST (H'FA')  
DATABYTE2 = don't care

***‘Channel name request’ command received:***

SID10-SID9 = 11 (lowest priority)  
SID8...SID1 = Module address  
RTR = 0  
DLC3...DLC0 = 2 databytes received  
DATABYTE1 = COMMAND\_CHANNEL\_NAME\_REQUEST (H'EF')  
DATABYTE2 = channel bit

<i>Contents</i>	<i>Channel</i>
B'00000001'	channel 1
B'00000010'	channel 2
B'00000100'	channel 3
B'00001000'	channel 4
B'00010000'	channel 5
B'00100000'	channel 6
B'01000000'	channel 7
B'10000000'	channel 8

***‘Clear channel LED’ command received:***

SID10-SID9 = 11 (lowest priority)  
SID8...SID1 = Module address  
RTR = 0  
DLC3...DLC0 = 2 databytes received  
DATABYTE1 = COMMAND\_CLEAR\_LED (H'F5')  
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 databytes received  
DATABYTE1 = COMMAND\_SET\_LED (H'F6')  
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 databytes received  
DATABYTE1 = COMMAND\_SLOW\_BLINK\_LED (H'F7')  
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 databytes received  
DATABYTE1 = COMMAND\_FAST\_BLINK\_LED (H'F8')  
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 databytes received  
DATABYTE1 = COMMAND\_VERY\_FAST\_BLINK\_LED (H'F9')  
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 databytes received  
DATABYTE1 = COMMAND\_UPDATE\_LED\_STATUS (H’F4’)  
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 databytes received  
DATABYTE1 = COMMAND\_READ\_DATA\_FROM\_MEMORY (H’FD’)  
DATABYTE2 = High memory address  
DATABYTE3 = LOW memory address

Remark: address range: H’0000’ to H’03FF’

***‘Memory dump request’ command received:***

SID10-SID9 = 11 (lowest priority)  
SID8...SID1 = Module address  
RTR = 0  
DLC3...DLC0 = 1 databytes received  
DATABYTE1 = COMMAND\_MEMORY\_DUMP\_REQUEST (H’CB’)

***‘Read data block from memory’ command received:***

SID10-SID9 = 11 (lowest priority)  
SID8...SID1 = Module address  
RTR = 0  
DLC3...DLC0 = 3 databytes received  
DATABYTE1 = COMMAND\_READ\_MEMORY\_BLOCK (H’C9’)  
DATABYTE2 = High memory address  
DATABYTE3 = LOW memory address

Remark: address range: H’0000’ to H’03FC’

***‘Write data to memory’ command received:***

SID10-SID9 = 11 (lowest priority)  
SID8...SID1 = Module address  
RTR = 0  
DLC3...DLC0 = 4 databytes received  
DATABYTE1 = COMMAND\_WRITE\_DATA\_TO\_MEMORY (H’FC’)  
DATABYTE2 = High memory address  
DATABYTE3 = LOW memory address (H’00’...H’FF’)  
DATABYTE4 = memory data to write

Remark:

Wait at least 10ms for sending a next command on the velbus.  
Address range: H’0000’ to H’03FF’

***‘Write memory block’ command received:***

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = Address of the module  
 RTR = 0  
 DLC3...DLC0 = 7 databytes received  
 DATABYTE1 = COMMAND\_WRITE\_MEMORY\_BLOCK (H'CA')  
 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

**Remark:**

Wait for ‘memory data block’ feedback before sending a next command on the velbus.  
 Address range: H'0000' to H'03FC'

***‘Bus error counter status request’ command received:***

SID10-SID9 = 11 (lowest priority)  
 SID8...SID1 = Module address  
 RTR = 0  
 DLC3...DLC0 = 1 databytes to send  
 DATABYTE1 = COMMAND\_BUS\_ERROR\_COUNTER\_STATUS\_REQUEST (H'D9')

***‘Unlock channel’ command received:***

SID10-SID9 = 00 (highest priority)  
 SID8...SID1 = Module address  
 RTR = 0  
 DLC3...DLC0 = 2 databytes received  
 DATABYTE1 = COMMAND\_CANCEL\_FORCED\_OFF (H'13')  
 DATABYTE2 = Channel bit

<i>Contents</i>	<i>Channel</i>
B'00000001'	Channel 1
B'00000010'	Channel 2
...	...
B'10000000'	Channel 8

***‘Lock channel’ command received:***

SID10-SID9 = 00 (highest priority)  
 SID8...SID1 = Module address  
 RTR = 0  
 DLC3...DLC0 = 5 databytes received  
 DATABYTE1 = COMMAND\_FORCED\_OFF (H'12')  
 DATABYTE2 = Channel bit

<i>Contents</i>	<i>Dimmer channel</i>
B'00000001'	Channel 1
B'00000010'	Channel 2
...	...
B'10000000'	Channel 8

DATABYTE3 = high byte of delay time  
 DATABYTE4 = mid byte of delay time  
 DATABYTE5 = low byte of delay time

**Remark:**

[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 H'FFFFFF' then the channel will be permanently locked.

***‘Enable Channel Program’ command received:***

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 2 databytes received

DATABYTE1 = COMMAND\_ENABLE\_PROGRAM (H'B2')

DATABYTE2 = Channel bit

<i>Contents</i>	<i>Channel</i>
B'00000001'	Channel 1
B'00000010'	Channel 2
...	...
B'10000000'	Channel 8

***‘Disable Channel Program’ command received:***

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 5 databytes received

DATABYTE1 = COMMAND\_DISABLE\_PROGRAM (H'B1')

DATABYTE2 = channel

<i>Contents</i>	<i>Channel</i>
B'00000001'	Channel 1
B'00000010'	Channel 2
...	...
B'10000000'	Channel 8

DATABYTE3 = high byte of delay time

DATABYTE4 = mid byte of delay time

DATABYTE5 = low byte of delay time

Remark:

[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 H'FFFFFF' 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 databytes received

DATABYTE1 = COMMAND\_SELECT\_PROGRAM (H'B3')

DATABYTE2 = Program mode

<i>Contents</i>	<i>Selected programl</i>
0	None
1	Summer
2	Winter
3	Holiday

## Memory map:

<i>Address</i>	<i>Contents</i>	<i>Address</i>	<i>Contents</i>
H'0000'	Channel name character 1	H'0001'	Channel 1 name character 2
...	...	...	...
H'000E'	Channel 1name character 15	H'000F'	Channel 1 name character 16
H'0010'	Channel 2 name character 1	H'0011'	Channel 2 name character 2
...	...	...	...
H'001E'	Channel 2name character 15	H'001F'	Channel 2 name character 16
H'0020'	Channel 3 name character 1	H'0021'	Channel 3 name character 2
...	...	...	...
H'002E'	Channel 3name character 15	H'002F'	Channel 3 name character 16
H'0030'	Channel 4 name character 1	H'0031'	Channel 4 name character 2
...	...	...	...
H'003E'	Channel 4name character 15	H'003F'	Channel 4 name character 16
H'0040'	Channel 5 name character 1	H'0041'	Channel 5 name character 2
...	...	...	...
H'004E'	Channel 5name character 15	H'004F'	Channel 5 name character 16
H'0050'	Channel 6 name character 1	H'0051'	Channel 6 name character 2
...	...	...	...
H'005E'	Channel 6name character 15	H'005F'	Channel 6 name character 16
H'0060'	Channel 7 name character 1	H'0061'	Channel 7 name character 2
...	...	...	...
H'006E'	Channel 7name character 15	H'006F'	Channel 7 name character 16
H'0070'	Channel 8 name character 1	H'0071'	Channel 8 name character 2
...	...	...	...
H'007E'	Channel 8name character 15	H'007F'	Channel 8 name character 16
H'0080'	Channel 1 reaction time	H'0081'	Channel 2 reaction time
...	...	...	...
H'0086'	Channel 7 reaction time	H'0087'	Channel 8 reaction time
H'0088'	Channels inverted/non inverted	H'0089'	Led backlight on/off
H'008A'	Led backlight intensity	H'008C'	Led feedback on/off
H'008C'	Enable/disable slow blinking led feedback	H'008D'	Enable/disable fast blinking led feedback
H'008E'	Enable/disable very fast blinking led feedback	H'008F'	Led intensity (Build 1204 or higher)
H'0090'	Program selection (none/summer/winter/holiday)	H'0091'	Channel 8...1 prog disable/enable flags
H'0092'	Channel 8...1 locked/unlocked flags	H'0093'	Alarm clock configuration
H'0094'	Wake up 1 hour (0...23)	H'0095'	Wake up 1 minutes (0...59)
H'0096'	Go to bed 1 hour (0...23)	H'0097'	Go to bed 1 minutes (0...59)
H'0098'	Wake up 2 hour (0...23)	H'0099'	Wake up 2 minutes (0...59)
H'009A'	Go to bed 2 hour (0...23)	H'009B'	Go to bed 2 minutes (0...59)
H'009C'	Channel 1 start function	H'009D'	Channel 1 end function
...	...	...	...
H'00AA'	Channel 8 start function	H'00AB'	Channel 8 end function
H'00AC'	Multi function channels 8...1 auto reset enable	H'00AD'	Dual function channels 8...1 enable
H'00AE'	Dual function long pressed time	H'00AF'	Long pressed delay (Build 1204 or higher)
H'00B0'	Sunrise hour at 21 December (0...23)	H'00B1'	Sunrise minutes at 21 December (0...59)
H'00B2'	Sunrise 21 January – sunrise 5 January (-128'..127')	H'00B3'	Sunrise 5 February – sunrise 21 January (-128'..127')
H'00B4'	Sunrise 21 February – sunrise 5 February (-128'..127')	H'00B5'	Sunrise 5 March – sunrise 21 February (-128'..127')
H'00B6'	Sunrise 21 March – sunrise 5 March (-128'..127')	H'00B7'	Sunrise 5 April – sunrise 21 March (-128'..127')
H'00B8'	Sunrise 21 April – sunrise 5 April (-128'..127')	H'00B9'	Sunrise 5 May – sunrise 21 April (-128'..127')
H'00BA'	Sunrise 21 May – sunrise 5 May (-128'..127')	H'00BB'	Sunrise 5 June – sunrise 21 May (-128'..127')
H'00BC'	Sunrise 21 June – sunrise 5 June (-128'..127')	H'00BD'	Sunrise 5 July – sunrise 21 June (-128'..127')
H'00BE'	Sunrise 21 July – sunrise 5 July (-128'..127')	H'00BF'	Sunrise 5 August – sunrise 21 July (-128'..127')
H'00C0'	Sunrise 21 August – sunrise 5 August (-128'..127')	H'00C1'	Sunrise 5 September – sunrise 21 August (-128'..127')
H'00C2'	Sunrise 21 September – sunrise 5 September (-128'..127')	H'00C3'	Sunrise 5 October – sunrise 21 September (-128'..127')
H'00C4'	Sunrise 21 October – sunrise 5 October (-128'..127')	H'00C5'	Sunrise 5 November – sunrise 21 October (-128'..127')
H'00C6'	Sunrise 21 November – sunrise 5 November (-128'..127')	H'00C7'	Sunrise 5 December – sunrise 21 November (-128'..127')
H'00C8'	Sunrise 21 December – sunrise 5 December (-128'..127')	H'00C9'	Sunrise 5 January – sunrise 21 December (-128'..127')

<b>Address</b>	<b>Contents</b>	<b>Address</b>	<b>Contents</b>
H'00CA'	Sunset hour at 21 December (0...23)	H'00CB'	Sunset minutes at 21 December (0...59)
H'00CC'	Sunset 21 January – sunrise 5 January (-128'..127')	H'00CD'	Sunset 5 February – sunrise 21 January (-128'..127')
H'00CE'	Sunset 21 February – sunrise 5 February (-128'..127')	H'00CF'	Sunset 5 March – sunrise 21 February (-128'..127')
H'00D0'	Sunset 21 March – sunrise 5 March (-128'..127')	H'00D1'	Sunset 5 April – sunrise 21 March (-128'..127')
H'00D2'	Sunset 21 April – sunrise 5 April (-128'..127')	H'00D3'	Sunset 5 May – sunrise 21 April (-128'..127')
H'00D4'	Sunset 21 May – sunrise 5 May (-128'..127')	H'00D5'	Sunset 5 June – sunrise 21 May (-128'..127')
H'00D6'	Sunset 21 June – sunrise 5 June (-128'..127')	H'00D7'	Sunset 5 July – sunrise 21 June (-128'..127')
H'00D8'	Sunset 21 July – sunrise 5 July (-128'..127')	H'00D9'	Sunset 5 August – sunrise 21 July (-128'..127')
H'00DA'	Sunset 21 August – sunrise 5 August (-128'..127')	H'00DA'	Sunset 5 September – sunrise 21 August (-128'..127')
H'00DC'	Sunset 21 September – sunrise 5 September (-128'..127')	H'00DC'	Sunset 5 October – sunrise 21 September (-128'..127')
H'00DE'	Sunset 21 October – sunrise 5 October (-128'..127')	H'00DF'	Sunset 5 November – sunrise 21 October (-128'..127')
H'00E0'	Sunset 21 November – sunrise 5 November (-128'..127')	H'00E1'	Sunset 5 December – sunrise 21 November (-128'..127')
H'00E2'	Sunset 21 December – sunrise 5 December (-128'..127')	H'00E3'	Sunset 5 January – sunrise 21 December (-128'..127')
H'00E4'	Not used	H'00E5'	Not used
...	...	...	...
H'00F8'	Not used	H'00F9'	Current day (1...31) (Build 1204 or higher)
H'00FA'	Current month (1...12) (Build 1204 or higher)	H'00FB'	Current year high byte (Build 1204 or higher)
H'00FC'	Current year low byte (Build 1204 or higher)	H'00FD'	Module Address
H'00FE'	Serial number high	H'00FF'	Serial number low

#### **Remark:**

Unused locations contain H'FF'

Do not overwrite the following address location:

H'0090'	program selection
H'0091'	channel program enable/disable
H'0092'	channel locked/unlocked
H'00F9'	current day of month
H'00FA'	current month
H'00FB' & H'00FC'	current year
H'00FD'	module address
H'00FE' & H'00FF'	module serial number

#### **Valid reaction times**

<b>Contents</b>	<b>Reaction time</b>
H'05'	0.065s
H'4C'	1s
H'99'	2s
H'E0'	3s
H'FF'	Channel disabled

#### **Valid long pressed delay (Build 1204 or higher)**

<b>Contents</b>	<b>Reaction time</b>
H'40'	0.8s
H'80'	1.6s
H'FF'	Default 0.8s

#### **Channels inverted**

<b>Contents</b>	<b>Led feedback</b>
B'xxxxxxxx0'	Channel 1 inverted
B'xxxxxxxx1'	Channel 1 not inverted
...	...
B'0xxxxxxxx'	Channel 8 inverted
B'1xxxxxxxx'	Channel 8 non inverted

#### **Led Backlight on/off**

<b>Contents</b>	<b>Led backlight</b>
B'xxxxxxxx0'	Channel 1 off
B'xxxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxxx'	Channel 8 off
B'1xxxxxxxx'	Channel 8 on



**Led backlight intensity**

<b>Contents</b>	<b>Led backlight intensity</b>
H'01'	Minimum
...	...
H'FF'	Maximum

**Led feedback on/off**

<b>Contents</b>	<b>Led feedback</b>
B'xxxxxxx0'	Channel 1 off
B'xxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxx'	Channel 8 off
B'1xxxxxxx'	Channel 8 on

**Led intensity (Build 1204 or higher)**

<b>Contents</b>	<b>Led intensity</b>
H'01'	Minimum
...	...
H'40'	Maximum

**Slow blinking Led feedback on/off**

<b>Contents</b>	<b>Slow blinking Led feedback</b>
B'xxxxxxx0'	Channel 1 off
B'xxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxx'	Channel 8 off
B'1xxxxxxx'	Channel 8 on

**Fast blinking Led feedback on/off**

<b>Contents</b>	<b>Fast blinking Led feedback</b>
B'xxxxxxx0'	Channel 1 off
B'xxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxx'	Channel 8 off
B'1xxxxxxx'	Channel 8 on

**Very fast blinking Led feedback on/off**

<b>Contents</b>	<b>Very Fast blinking Led feedback</b>
B'xxxxxxx0'	Channel 1 off
B'xxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxx'	Channel 8 off
B'1xxxxxxx'	Channel 8 on

**Program selection**

<b>Contents</b>	<b>Selected program</b>
0	None
1	Summer
2	Winter
3	Holiday

**Channel program disabled**

<b>Contents</b>	<b>Channel program enabled/disabled</b>
B'xxxxxxx0'	Channel 1 programs enabled
B'xxxxxxx1'	Channel 1 programs disabled
...	...
B'0xxxxxxx'	Channel 8 programs enabled
B'1xxxxxxx'	Channel 8 programs disabled

### **Channel locked**

<b>Contents</b>	<b>Channel locked/unlocked</b>
B'xxxxxxx0'	Channel 1 unlocked
B'xxxxxxx1'	Channel 1 locked
...	...
B'0xxxxxxx'	Channel 8 unlocked
B'1xxxxxxx'	Channel 8 locked

### **Alarm clock configuration**

<b>Contents</b>	<b>Channel locked/unlocked</b>
B'xxxxxxx0'	Alarm 1 disabled
B'xxxxxxx1'	Alarm 1 enabled
B'0xxxx0x'	Local alarm 1
B'1xxxx1x'	Global alarm 1
B'xxxx0xx'	Alarm 2 disabled
B'xxxx1xx'	Alarm 2 enabled
B'xxxx0xxx'	Local alarm 2
B'xxxx1xxx'	Global alarm 2
B'xxx0xxxx'	Sunrise disabled
B'xxx1xxxx'	Sunrise enabled
B'xx0xxxxx'	Sunset disabled
B'xx1xxxxx'	Sunset enabled
B'x0xxxxxx'	Summer time disabled
B'x1xxxxxx'	Summer time enabled

### **Channel x start/end function**

<b>Contents</b>	<b>Function</b>
B'00000001'	Channel 1
B'00000010'	Channel 2
...	...
B'01000000'	Channel 7
B'10000000'	Channel 8

#### **Remark:**

For a normal one function button, the start and end function channel are the same.

For a multi function button, the start function channel must be less than the end function. At every press the next channel will be send. When the end function channel is reached, the start channel will be send again at the next press.

For a dual function button, the start function channel will be send at a short press or the end function will be send at a long press.

### **Multi function auto reset**

<b>Contents</b>	<b>Multi function auto reset</b>
B'xxxxxxx0'	Channel 1 auto reset disabled
B'xxxxxxx1'	Channel 1 auto reset enabled
...	...
B'0xxxxxxx'	Channel 8 auto reset disabled
B'1xxxxxxx'	Channel 8 auto reset enabled

**Remark:** When auto reset is enabled, the start function will be loaded again after 3 seconds inactivity of the channel.

### **Dual function enable**

<b>Contents</b>	<b>Dual function</b>
B'xxxxxxx0'	Channel 1 dual function disabled
B'xxxxxxx1'	Channel 1 dual function enabled
...	...
B'0xxxxxxx'	Channel 8 dual function disabled
B'1xxxxxxx'	Channel 8 dual function enabled

#### **Remark:**

For a dual function button, the start function channel will be send at a short press or the end function will be send at a long press.

The dual function overwrites the multi function mode.

*Valid dual function long pressed times*

<i>Contents</i>	<i>Long pressed time</i>
H'4C'	1s
H'99'	2s
H'E0'	3s

<i>Address</i>	<i>Contents</i>	<i>Address</i>	<i>Contents</i>
H'0100'	Linked Push button 1 module address	H'0101'	Linked Push button 1 bit number
H'0102'	Linked Push button 1 action	H'0103'	Linked Push button 1 time parameter
H'0104'	Linked Push button 1 channel parameter	H'0105'	Linked Push button 2 module address
H'0106'	Linked Push button 2 bit number	H'0107'	Linked Push button 2 action
H'0108'	Linked Push button 2 time parameter	H'0109'	Linked Push button 2 channel parameter
H'010A'	...	H'010B'	...
...	...	...	...
...	...	H'01F5'	Linked Push button 50 module address
H'01F6'	Linked Push button 50 bit number	H'01F7'	Linked Push button 50 action
H'01F8'	Linked Push button 50 time parameter	H'01F9'	Linked Push button 50 channel parameter
H'01FA'	Linked Push button 51 module address	H'01FB'	Linked Push button 51 bit number
H'01FC'	Linked Push button 51 action	H'01FD'	Linked Push button 51 time parameter
H'01FE'	Linked Push button 51 channel parameter	H'01FF'	Not used

**Remark:** Unused locations contain H'FF'

#### Action

<b>Action number</b>	<b>Action</b>	<b>Time parameter</b>	<b>Bit number</b>
0	Switch status led indication	-	Channel bit
1	Lock channel at closed switch	-	Channel bit
2	Lock channel at opened switch	-	Channel bit
3	Lock channel	Timeout	Channel bit
4	Lock/unlock channel	Timeout	Channel bit
5	Unlock channel	-	Channel bit
6	Disable channel program at closed switch	-	Channel bit
7	Disable channel program at opened switch	-	Channel bit
8	Disable channel program channel	Timeout	Channel bit
9	Disable/enable channel program	Timeout	Channel bit
10	Enable channel program	-	Channel bit
11	Select no programs	-	-
12	Select summer programs	-	-
13	Select winter programs	-	-
14	Select holiday programs	-	-
15	Enable Alarm/Sunrise/Sunset at closed switch	-	Alarm/sunrise/sunset bit
16	Enable Alarm/Sunrise/Sunset at open switch	-	Alarm/sunrise/sunset bit
17	Disable Alarm/Sunrise/Sunset at closed switch	-	Alarm/sunrise/sunset bit
18	Disable Alarm/Sunrise/Sunset at open switch	-	Alarm/sunrise/sunset bit
19	Enable Alarm/Sunrise/Sunset	-	Alarm/sunrise/sunset bit
20	Enable/Disable Alarm/Sunrise/Sunset	-	Alarm/sunrise/sunset bit
21	Disable Alarm/Sunrise/Sunset	-	Alarm/sunrise/sunset bit

#### Bit Number

<i>Contents</i>	<i>Bit number</i>
B'00000001'	Channel 1 or Alarm1
B'00000010'	Channel 2
B'00000100'	Channel 3 or Alarm2
B'00001000'	Channel 4
B'00010000'	Channel 5 or Sunrise
B'00100000'	Channel 6 or Sunset
B'01000000'	Channel 7
B'10000000'	Channel 8

Time parameter

Time parameter	Timeout
0	0s (No timer)
1	1s
2	2s
...	
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

<i>Address</i>	<i>Contents</i>	<i>Address</i>	<i>Contents</i>
H'0200'	Program step 1 byte1	H'0201'	Program step 1 byte2
H'0202'	Program step 1 byte3	H'0203'	Program step 1 byte4
H'0204'	Program step 1 byte5	H'0205'	Program step 1 byte6
...	..	..	..
H'03F8'	Program step 85 byte1	H'03F9'	Program step 85 byte2
H'03FA'	Program step 85 byte3	H'03FB'	Program step 85 byte4
H'03FC'	Program step 85 byte5	H'03FD'	Program step 85 byte6
H'03FE'	Not used	H'03FF'	Not used

<i>Contents program byte1</i>	<i>Description</i>
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

<i>Contents program byte2</i>	<i>Description</i>
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

<i>Contents program byte3</i>	<i>Description</i>
B'xxx00000'	0h
B'xxx00001'	1h
...	...
B'xxx10111'	23h
B'xx1xxxxx'	Summer program
B'x1xxxxxx'	Winter program
B'1xxxxxxx'	Holiday program

<i>Contents program byte4</i>	<i>Description</i>
B'xx000000'	0min
B'xx000001'	1min
...	...
B'xx111011'	59min

<i>Contents program byte4</i>	<i>Contents program byte2</i>	<i>Description</i>
B'00xxxxxx'	B'0000xxxx'	Never
B'00xxxxxx'	B'0001xxxx'	Day 1 of the month
B'00xxxxxx'	B'0010xxxx'	Day 2 of the month
...	...	...
B'01xxxxxx'	B'1111xxxx'	Day 31 of 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

<i>Contents program byte5</i>	<i>Action</i>
0	0s25 Pulse
1	1s Pulse
2	2s Pulse
...	...
119	1min59s Pulse
120	2min Pulse
121	2min15s Pulse
...	...
131	4min45s Pulse
132	5min Pulse
133	5min30s Pulse
...	...
181	29min30s Pulse
182	30min Pulse
183	31min Pulse
...	...
211	59min Pulse
212	1h Pulse
213	1h15min Pulse
...	...
227	4h45min Pulse
228	5h Pulse
229	5h30min Pulse
...	...
237	9h30min Pulse
238	10h Pulse
239	11h Pulse
...	...
246	18h Pulse
247	Press
248	Long Press
249	Release
250	Lock
251	Unlock
252	No action
...	...
255	No action



<i>Contents program byte6</i>	<b>Channel</b>
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	Channel 4
B'00010000'	Channel 5
B'00100000'	Channel 6
B'01000000'	Channel 7
B'10000000'	Channel 8

## Memory map version 2 (Build 1409 or higher):

<i>Address</i>	<i>Contents</i>	<i>Address</i>	<i>Contents</i>
H'0000'	Channel name character 1	H'0001'	Channel 1 name character 2
...	...	...	...
H'000E'	Channel 1name character 15	H'000F'	Channel 1 name character 16
H'0010'	Channel 2 name character 1	H'0011'	Channel 2 name character 2
...	...	...	...
H'001E'	Channel 2name character 15	H'001F'	Channel 2 name character 16
H'0020'	Channel 3 name character 1	H'0021'	Channel 3 name character 2
...	...	...	...
H'002E'	Channel 3name character 15	H'002F'	Channel 3 name character 16
H'0030'	Channel 4 name character 1	H'0031'	Channel 4 name character 2
...	...	...	...
H'003E'	Channel 4name character 15	H'003F'	Channel 4 name character 16
H'0040'	Channel 5 name character 1	H'0041'	Channel 5 name character 2
...	...	...	...
H'004E'	Channel 5name character 15	H'004F'	Channel 5 name character 16
H'0050'	Channel 6 name character 1	H'0051'	Channel 6 name character 2
...	...	...	...
H'005E'	Channel 6name character 15	H'005F'	Channel 6 name character 16
H'0060'	Channel 7 name character 1	H'0061'	Channel 7 name character 2
...	...	...	...
H'006E'	Channel 7name character 15	H'006F'	Channel 7 name character 16
H'0070'	Channel 8 name character 1	H'0071'	Channel 8 name character 2
...	...	...	...
H'007E'	Channel 8name character 15	H'007F'	Channel 8 name character 16
H'0080'	Channel 1 reaction time	H'0081'	Channel 2 reaction time
...	...	...	...
H'0086'	Channel 7 reaction time	H'0087'	Channel 8 reaction time
H'0088'	Channels inverted/non inverted	H'0089'	Led backlight on/off
H'008A'	Led backlight intensity	H'008C'	Led feedback on/off
H'008C'	Enable/disable slow blinking led feedback	H'008D'	Enable/disable fast blinking led feedback
H'008E'	Enable/disable very fast blinking led feedback	H'008F'	Led intensity (Build 1204 or higher)
H'0090'	Program selection (none/summer/winter/holiday)	H'0091'	Channel 8...1 prog disable/enable flags
H'0092'	Channel 8...1 locked/unlocked flags	H'0093'	Alarm clock configuration
H'0094'	Wake up 1 hour (0...23)	H'0095'	Wake up 1 minutes (0...59)
H'0096'	Go to bed 1 hour (0...23)	H'0097'	Go to bed 1 minutes (0...59)
H'0098'	Wake up 2 hour (0...23)	H'0099'	Wake up 2 minutes (0...59)
H'009A'	Go to bed 2 hour (0...23)	H'009B'	Go to bed 2 minutes (0...59)
H'009C'	Channel 1 start function	H'009D'	Channel 1 end function
...	...	...	...
H'00AA'	Channel 8 start function	H'00AB'	Channel 8 end function
H'00AC'	Multi function channels 8...1 auto reset enable	H'00AD'	Dual function channels 8...1 enable
H'00AE'	Dual function long pressed time	H'00AF'	Long pressed delay (Build 1204 or higher)
H'00B0'	Sunrise hour at 21 December (0...23)	H'00B1'	Sunrise minutes at 21 December (0...59)
H'00B2'	Sunrise 21 January – sunrise 5 January (-128'..127')	H'00B3'	Sunrise 5 February – sunrise 21 January (-128'..127')
H'00B4'	Sunrise 21 February – sunrise 5 February (-128'..127')	H'00B5'	Sunrise 5 March – sunrise 21 February (-128'..127')
H'00B6'	Sunrise 21 March – sunrise 5 March (-128'..127')	H'00B7'	Sunrise 5 April – sunrise 21 March (-128'..127')
H'00B8'	Sunrise 21 April – sunrise 5 April (-128'..127')	H'00B9'	Sunrise 5 May – sunrise 21 April (-128'..127')
H'00BA'	Sunrise 21 May – sunrise 5 May (-128'..127')	H'00BB'	Sunrise 5 June – sunrise 21 May (-128'..127')
H'00BC'	Sunrise 21 June – sunrise 5 June (-128'..127')	H'00BD'	Sunrise 5 July – sunrise 21 June (-128'..127')
H'00BE'	Sunrise 21 July – sunrise 5 July (-128'..127')	H'00BF'	Sunrise 5 August – sunrise 21 July (-128'..127')
H'00C0'	Sunrise 21 August – sunrise 5 August (-128'..127')	H'00C1'	Sunrise 5 September – sunrise 21 August (-128'..127')
H'00C2'	Sunrise 21 September – sunrise 5 September (-128'..127')	H'00C3'	Sunrise 5 October – sunrise 21 September (-128'..127')
H'00C4'	Sunrise 21 October – sunrise 5 October (-128'..127')	H'00C5'	Sunrise 5 November – sunrise 21 October (-128'..127')
H'00C6'	Sunrise 21 November – sunrise 5 November (-128'..127')	H'00C7'	Sunrise 5 December – sunrise 21 November (-128'..127')
H'00C8'	Sunrise 21 December – sunrise 5 December (-128'..127')	H'00C9'	Sunrise 5 January – sunrise 21 December (-128'..127')

<b>Address</b>	<b>Contents</b>	<b>Address</b>	<b>Contents</b>
H'00CA'	Sunset hour at 21 December (0...23)	H'00CB'	Sunset minutes at 21 December (0...59)
H'00CC'	Sunset 21 January – sunrise 5 January (-128'..127')	H'00CD'	Sunset 5 February – sunrise 21 January (-128'..127')
H'00CE'	Sunset 21 February – sunrise 5 February (-128'..127')	H'00CF'	Sunset 5 March – sunrise 21 February (-128'..127')
H'00D0'	Sunset 21 March – sunrise 5 March (-128'..127')	H'00D1'	Sunset 5 April – sunrise 21 March (-128'..127')
H'00D2'	Sunset 21 April – sunrise 5 April (-128'..127')	H'00D3'	Sunset 5 May – sunrise 21 April (-128'..127')
H'00D4'	Sunset 21 May – sunrise 5 May (-128'..127')	H'00D5'	Sunset 5 June – sunrise 21 May (-128'..127')
H'00D6'	Sunset 21 June – sunrise 5 June (-128'..127')	H'00D7'	Sunset 5 July – sunrise 21 June (-128'..127')
H'00D8'	Sunset 21 July – sunrise 5 July (-128'..127')	H'00D9'	Sunset 5 August – sunrise 21 July (-128'..127')
H'00DA'	Sunset 21 August – sunrise 5 August (-128'..127')	H'00DA'	Sunset 5 September – sunrise 21 August (-128'..127')
H'00DC'	Sunset 21 September – sunrise 5 September (-128'..127')	H'00DC'	Sunset 5 October – sunrise 21 September (-128'..127')
H'00DE'	Sunset 21 October – sunrise 5 October (-128'..127')	H'00DF'	Sunset 5 November – sunrise 21 October (-128'..127')
H'00E0'	Sunset 21 November – sunrise 5 November (-128'..127')	H'00E1'	Sunset 5 December – sunrise 21 November (-128'..127')
H'00E2'	Sunset 21 December – sunrise 5 December (-128'..127')	H'00E3'	Sunset 5 January – sunrise 21 December (-128'..127')
H'00E4'	Not used	H'00E5'	Not used
...	...	...	...
H'00F8'	Module terminator (Build 1409 or higher)	H'00F9'	Current day (1...31) (Build 1204 or higher)
H'00FA'	Current month (1...12) (Build 1204 or higher)	H'00FB'	Current year high byte (Build 1204 or higher)
H'00FC'	Current year low byte (Build 1204 or higher)	H'00FD'	Module Address
H'00FE'	Serial number high	H'00FF'	Serial number low

#### **Remark:**

Unused locations contain H'FF'

Do not overwrite the following address location:

H'0090'	program selection
H'0091'	channel program enable/disable
H'0092'	channel locked/unlocked
H'00F9'	current day of month
H'00FA'	current month
H'00FB' & H'00FC'	current year
H'00FD'	module address
H'00FE' & H'00FF'	module serial number

#### **Valid reaction times**

<b>Contents</b>	<b>Reaction time</b>
H'05'	0.065s
H'4C'	1s
H'99'	2s
H'E0'	3s
H'FF'	Channel disabled

#### **Valid long pressed delay (Build 1204 or higher)**

<b>Contents</b>	<b>Reaction time</b>
H'40'	0.8s
H'80'	1.6s
H'FF'	Default 0.8s

#### **Channels inverted**

<b>Contents</b>	<b>Led feedback</b>
B'xxxxxxxx0'	Channel 1 inverted
B'xxxxxxxx1'	Channel 1 not inverted
...	...
B'0xxxxxxxx'	Channel 8 inverted
B'1xxxxxxxx'	Channel 8 non inverted

#### **Led Backlight on/off**

<b>Contents</b>	<b>Led backlight</b>
B'xxxxxxxx0'	Channel 1 off
B'xxxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxxx'	Channel 8 off
B'1xxxxxxxx'	Channel 8 on

**Led backlight intensity**

<b>Contents</b>	<b>Led backlight intensity</b>
H'01'	Minimum
...	...
H'FF'	Maximum

**Led feedback on/off**

<b>Contents</b>	<b>Led feedback</b>
B'xxxxxxx0'	Channel 1 off
B'xxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxx'	Channel 8 off
B'1xxxxxxx'	Channel 8 on

**Led intensity (Build 1204 or higher)**

<b>Contents</b>	<b>Led intensity</b>
H'01'	Minimum
...	...
H'40'	Maximum

**Slow blinking Led feedback on/off**

<b>Contents</b>	<b>Slow blinking Led feedback</b>
B'xxxxxxx0'	Channel 1 off
B'xxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxx'	Channel 8 off
B'1xxxxxxx'	Channel 8 on

**Fast blinking Led feedback on/off**

<b>Contents</b>	<b>Fast blinking Led feedback</b>
B'xxxxxxx0'	Channel 1 off
B'xxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxx'	Channel 8 off
B'1xxxxxxx'	Channel 8 on

**Very fast blinking Led feedback on/off**

<b>Contents</b>	<b>Very Fast blinking Led feedback</b>
B'xxxxxxx0'	Channel 1 off
B'xxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxx'	Channel 8 off
B'1xxxxxxx'	Channel 8 on

**Program selection**

<b>Contents</b>	<b>Selected program</b>
0	None
1	Summer
2	Winter
3	Holiday

**Channel program disabled**

<b>Contents</b>	<b>Channel program enabled/disabled</b>
B'xxxxxxx0'	Channel 1 programs enabled
B'xxxxxxx1'	Channel 1 programs disabled
...	...
B'0xxxxxxx'	Channel 8 programs enabled
B'1xxxxxxx'	Channel 8 programs disabled

### *Channel locked*

<i>Contents</i>	<i>Channel locked/unlocked</i>
B'xxxxxxx0'	Channel 1 unlocked
B'xxxxxxx1'	Channel 1 locked
...	...
B'0xxxxxxx'	Channel 8 unlocked
B'1xxxxxxx'	Channel 8 locked

### *Alarm clock configuration*

<i>Contents</i>	<i>Channel locked/unlocked</i>
B'xxxxxxx0'	Alarm 1 disabled
B'xxxxxxx1'	Alarm 1 enabled
B'0xxxx0x'	Local alarm 1
B'1xxxx1x'	Global alarm 1
B'xxxx0xx'	Alarm 2 disabled
B'xxxx1xx'	Alarm 2 enabled
B'xxxx0xxx'	Local alarm 2
B'xxxx1xxx'	Global alarm 2
B'xxx0xxxx'	Sunrise disabled
B'xxx1xxxx'	Sunrise enabled
B'xx0xxxxx'	Sunset disabled
B'xx1xxxxx'	Sunset enabled
B'x0xxxxxx'	Summer time disabled
B'x1xxxxxx'	Summer time enabled

### *Channel x start/end function*

<i>Contents</i>	<i>Function</i>
B'00000001'	Channel 1
B'00000010'	Channel 2
...	...
B'01000000'	Channel 7
B'10000000'	Channel 8

#### **Remark:**

For a normal one function button, the start and end function channel are the same.

For a multi function button, the start function channel must be less than the end function. At every press the next channel will be send. When the end function channel is reached, the start channel will be send again at the next press.

For a dual function button, the start function channel will be send at a short press or the end function will be send at a long press.

### *Multi function auto reset*

<i>Contents</i>	<i>Multi function auto reset</i>
B'xxxxxxx0'	Channel 1 auto reset disabled
B'xxxxxxx1'	Channel 1 auto reset enabled
...	...
B'0xxxxxxx'	Channel 8 auto reset disabled
B'1xxxxxxx'	Channel 8 auto reset enabled

**Remark:** When auto reset is enabled, the start function will be loaded again after 3 seconds inactivity of the channel.

### *Dual function enable*

<i>Contents</i>	<i>Dual function</i>
B'xxxxxxx0'	Channel 1 dual function disabled
B'xxxxxxx1'	Channel 1 dual function enabled
...	...
B'0xxxxxxx'	Channel 8 dual function disabled
B'1xxxxxxx'	Channel 8 dual function enabled

#### **Remark:**

For a dual function button, the start function channel will be send at a short press or the end function will be send at a long press.

The dual function overwrites the multi function mode.

*Valid dual function long pressed times*

<i>Contents</i>	<i>Long pressed time</i>
H'4C'	1s
H'99'	2s
H'E0'	3s

<i>Address</i>	<i>Contents</i>	<i>Address</i>	<i>Contents</i>
H'0100'	Linked Push button 1 module address	H'0101'	Linked Push button 1 bit number
H'0102'	Linked Push button 1 action	H'0103'	Linked Push button 1 time parameter
H'0104'	Linked Push button 1 channel parameter	H'0105'	Linked Push button 2 module address
H'0106'	Linked Push button 2 bit number	H'0107'	Linked Push button 2 action
H'0108'	Linked Push button 2 time parameter	H'0109'	Linked Push button 2 channel parameter
H'010A'	...	H'010B'	...
...	...	...	...
...	...	H'01F5'	Linked Push button 50 module address
H'01F6'	Linked Push button 50 bit number	H'01F7'	Linked Push button 50 action
H'01F8'	Linked Push button 50 time parameter	H'01F9'	Linked Push button 50 channel parameter
H'01FA'	Linked Push button 51 module address	H'01FB'	Linked Push button 51 bit number
H'01FC'	Linked Push button 51 action	H'01FD'	Linked Push button 51 time parameter
H'01FE'	Linked Push button 51 channel parameter	H'01FF'	Not used

**Remark:** Unused locations contain H'FF'

#### Action

<b>Action number</b>	<b>Action</b>	<b>Time parameter</b>	<b>Bit number</b>
0	Switch status led indication	-	Channel bit
1	Lock channel at closed switch	-	Channel bit
2	Lock channel at opened switch	-	Channel bit
3	Lock channel	Timeout	Channel bit
4	Lock/unlock channel	Timeout	Channel bit
5	Unlock channel	-	Channel bit
6	Disable channel program at closed switch	-	Channel bit
7	Disable channel program at opened switch	-	Channel bit
8	Disable channel program channel	Timeout	Channel bit
9	Disable/enable channel program	Timeout	Channel bit
10	Enable channel program	-	Channel bit
11	Select no programs	-	-
12	Select summer programs	-	-
13	Select winter programs	-	-
14	Select holiday programs	-	-
15	Enable Alarm/Sunrise/Sunset at closed switch	-	Alarm/sunrise/sunset bit
16	Enable Alarm/Sunrise/Sunset at open switch	-	Alarm/sunrise/sunset bit
17	Disable Alarm/Sunrise/Sunset at closed switch	-	Alarm/sunrise/sunset bit
18	Disable Alarm/Sunrise/Sunset at open switch	-	Alarm/sunrise/sunset bit
19	Enable Alarm/Sunrise/Sunset	-	Alarm/sunrise/sunset bit
20	Enable/Disable Alarm/Sunrise/Sunset	-	Alarm/sunrise/sunset bit
21	Disable Alarm/Sunrise/Sunset	-	Alarm/sunrise/sunset bit

#### Bit Number

<i>Contents</i>	<i>Bit number</i>
B'00000001'	Channel 1 or Alarm1
B'00000010'	Channel 2
B'00000100'	Channel 3 or Alarm2
B'00001000'	Channel 4
B'00010000'	Channel 5 or Sunrise
B'00100000'	Channel 6 or Sunset
B'01000000'	Channel 7
B'10000000'	Channel 8



Time parameter

Time parameter	Timeout
0	0s (No timer)
1	1s
2	2s
...	
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

<i>Address</i>	<i>Contents</i>	<i>Address</i>	<i>Contents</i>
H'0200'	Program step 1 byte1	H'0201'	Program step 1 byte2
H'0202'	Program step 1 byte3	H'0203'	Program step 1 byte4
H'0204'	Program step 1 byte5	H'0205'	Program step 1 byte6
...	..	..	..
H'03B6'	Program step 74 byte1	H'03B7'	Program step 74 byte2
H'03B8'	Program step 74 byte3	H'03B9'	Program step 74 byte4
H'03BA'	Program step 74 byte5	H'03BB'	Program step 74 byte6

<i>Contents program byte1</i>	<i>Description</i>
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

<i>Contents program byte2</i>	<i>Description</i>
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

<i>Contents program byte3</i>	<i>Description</i>
B'xxx00000'	0h
B'xxx00001'	1h
...	...
B'xxx10111'	23h
B'xx1xxxxx'	Summer program
B'x1xxxxxx'	Winter program
B'1xxxxxxx'	Holiday program

<i>Contents program byte4</i>	<i>Description</i>
B'xx000000'	0min
B'xx000001'	1min
...	...
B'xx111011'	59min

<i>Contents program byte4</i>	<i>Contents program byte2</i>	<i>Description</i>
B'00xxxxxx'	B'0000xxxx'	Never
B'00xxxxxx'	B'0001xxxx'	Day 1 of the month
B'00xxxxxx'	B'0010xxxx'	Day 2 of the month
...	...	...
B'01xxxxxx'	B'1111xxxx'	Day 31 of 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

<i>Contents program byte5</i>	<i>Action</i>
0	0s25 Pulse
1	1s Pulse
2	2s Pulse
...	...
119	1min59s Pulse
120	2min Pulse
121	2min15s Pulse
...	...
131	4min45s Pulse
132	5min Pulse
133	5min30s Pulse
...	...
181	29min30s Pulse
182	30min Pulse
183	31min Pulse
...	...
211	59min Pulse
212	1h Pulse
213	1h15min Pulse
...	...
227	4h45min Pulse
228	5h Pulse
229	5h30min Pulse
...	...
237	9h30min Pulse
238	10h Pulse
239	11h Pulse
...	...
246	18h Pulse
247	Press
248	Long Press
249	Release
250	Lock
251	Unlock
252	No action
...	...
255	No action

<i>Contents program byte6</i>	<b>Channel</b>
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	Channel 4
B'00010000'	Channel 5
B'00100000'	Channel 6
B'01000000'	Channel 7
B'10000000'	Channel 8

<i>Address</i>	<i>Contents</i>	<i>Address</i>	<i>Contents</i>
H'03BC'	Location id low byte (Build 1409 or higher)	H'03BD'	Location id high byte (Build 1409 or higher)
H'03BE'	Group id low byte (Build 1409 or higher)	H'03BF'	Group id high byte (Build 1409 or higher)
H'03C0'	Module name character 1 (Build 1409 or higher)	H'03C1'	Module name character 2 (Build 1409 or higher)
...	..	..	..
H'03FE'	Module name character 63 (Build 1409 or higher)	H'03FF'	Module name character 64 (Build 1409 or higher)