

VMBELPIR

**Edge-lit Motion detector with one
touch button module for VELBUS
system**

Binary 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)

The module can transmit the following messages:

- Power up message
- Channel status
- Thermostat channel status
- Module status
- Temperature sensor status
- Thermostat settings
- Current temperature
- Module type and subtype
- Bus error counter status
- First, second and third part of the channel names
- Memory data
- Memory data block (4 bytes)
- Program step info
- Real-time clock status
- Date status
- Daylight savings status
- 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 messages:

- Power up

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)
- Read program step info
- Write program step
- Bus error counter status request
- Real-time clock status request
- Set real-time clock
- Set date
- Set daylight savings
- Enable/disable global sunrise/sunset related actions
- Enable/disable local sunrise/sunset related actions
- Set local alarm clock
- Set global alarm clock
- Lock channel
- Unlock channel
- Disable channel program
- Enable channel program
- Select program
- Temperature request
- Thermostat settings request
- Set thermostat heating mode
- Set thermostat cooling mode
- Set temperature sensor zone
- Set thermostat default sleep time
- Set thermostat target, safe, night, day, comfort and alarm1 to alarm 4 temperature set
- Set thermostat hysteresis
- Set thermostat temperature difference for boost output
- Set temperature sensor calibration offset and gain
- Enable/disable valve and pump unjamming
- Reset minimum and maximum temperature
- Set thermostat temperature range
- Set thermostat minimum switching time
- Switch thermostat to safe, night, day or comfort mode
- Switch the open collector output off or on
- Start a timer on the open collector output
- Set edge custom palette colors
- Set edge color

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 channel switch 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 just pressed

DATABYTE3 = Channel just released

DATABYTE4 = Channel long pressed

Contents	Channel number
B'00000001'	Button 1
B'00000010'	Virtual button 1
B'00000100'	Dark output
B'00001000'	Light output
B'00010000'	Motion output
B'00100000'	Light depending motion 1 output
B'01000000'	Light depending motion 2 output
B'10000000'	Absence output

Transmits the sensor output switch status:

SID10-SID9 = 00 (highest priority)

SID8...SID1 = Sub-address

RTR = 0

DLC3...DLC0 = 4 data bytes to send

DATABYTE1 = COMMAND_OUTPUT_STATUS (0x00)

DATABYTE2 = Output channel just activated (1 = just activated)

Contents	Output channel
xxxxxx1	Heater just activated
xxxxxx1x	Boost heater/cooler just activated
xxxx1xx	Pump just activated
xxx1xxx	Cooler just activated
xxx1xxxx	Temperature alarm 1 just activated
xx1xxxx	Temperature alarm 2 alarm activated
x1xxxxx	Temperature alarm 3 just activated
1xxxxxx	Temperature alarm 4 alarm activated

DATABYTE3 = Outputs just deactivated (1 = just deactivated)

Contents	Output channel
xxxxxx1	Heater just deactivated
xxxxxx1x	Boost heater/cooler just deactivated
xxxx1xx	Pump just deactivated
xxx1xxx	Cooler just deactivated
xxx1xxxx	Temperature alarm 1 just deactivated
xx1xxxx	Temperature alarm 2 alarm deactivated
x1xxxxx	Temperature alarm 3 just deactivated
1xxxxxx	Temperature alarm 4 alarm deactivated

DATABYTE4 = always zero

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 (0x38 = VMBELPIR)

DATABYTE3 = High byte of serial number

DATABYTE4 = Low byte of serial number

DATABYTE5 = Memory map version

DATABYTE6 = Build year

DATABYTE7 = Build week

DATABYTE8 = Terminator (0 = open / 1 = closed)

Transmits the module subtype:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes to send
DATABYTE1 = COMMAND_SUBTYPE (0xB0)
DATABYTE2 = type (0x38 = VMBELPIR)
DATABYTE3 = High byte of serial number
DATABYTE4 = Low byte of serial number
DATABYTE5 = Subaddress1 (H'FF' sub-address disabled)
DATABYTE6 = Subaddress2 (H'FF' sub-address disabled)
DATABYTE7 = Subaddress3 (H'FF' sub-address disabled)
DATABYTE8 = Subaddress4 (H'FF' sub-address disabled)

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 0x06BB

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 0x06B8

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 number 1...2 or 18 (channel 9 = temperature sensor, channel 18 = output)
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 number 1...2 or 18 (channel 9 = temperature sensor, channel 18 = output)

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 number 1...2 or 18 (channel 9 = temperature sensor, channel 18 = output)

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 module status:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 8 data bytes to send

DATABYTE1 = COMMAND_MODULE_STATUS (0xED)

DATABYTE2 = channel 1 to 8 status (1 = pressed / 0 = released)

Contents	Channel number
B'00000001'	Button 1
B'00000010'	Virtual button 1
B'00000100'	Dark output
B'00001000'	Light output
B'00010000'	Motion output
B'00100000'	Light depending motion 1 output
B'01000000'	Light depending motion 2 output
B'10000000'	Absence output

DATABYTE3 = test modus, button enabled/disable

Contents	
B'xxxxxxxx0'	Button 1 disabled
B'xxxxxxxx1'	Button 1 enabled
B'xxxxxx0x'	Virtual button 1 disabled
B'xxxxxx1x'	Virtual button 1 enabled
B'0xxxxxxx'	Test modus disabled
B'1xxxxxxx'	Test modus enabled

DATABYTE4 = open collector locked & temperature sensor

Contents	open collector & temperature sensor
B'xxxx0xxx'	Edge color not inhibited
B'xxxx1xxx'	Edge color inhibited
B'xxx0xxxx'	Temperature sensor program enabled
B'xxx1xxxx'	Temperature sensor program disabled
B'xx0xxxxx'	Open collector output program enabled
B'xx1xxxxx'	Open collector output program disabled
B'x0xxxxxx'	Open collector output unlocked
B'x1xxxxxx'	Open collector output locked
B'0xxxxxxxx'	Open collector output off
B'1xxxxxxxx'	Open collector output on

DATABYTE5 = locked channel status (0 = unlocked / 1 = locked)

DATABYTE6 = disabled channel program status (0 = program enabled / 1 = program disabled)

DATABYTE7 = 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'0xxxxxxxx'	Sunset disabled
B'1xxxxxxxx'	Sunset enabled

DATABYTE8 = light value auto send interval time

(Valid range: 10...255s)

(5...9 = auto send on light value change with min interval 5...9s)

(<5 = auto send disabled)

Transmit the sensor status:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 8 data bytes to send

DATABYTE1 = COMMAND_TEMP_SENSOR_STATUS (0xEA)

DATABYTE2 = Operating mode

Contents	Operating mode
xxxxxx1	Mode push button locked (not used)
xxxxxx0	Mode push button unlocked (not used)
xxxxx11x	Forced to safe mode (locked)
xxxxx01x	Manual mode
xxxxx10x	Sleep timer mode
xxxxx00x	Run mode
xxxx1xxx	Auto send sensor temperature enabled
xxxx0xxx	Auto send sensor temperature disabled
x100xxxx	Comfort mode
x010xxxx	Day mode
x001xxxx	Night mode
x000xxxx	Safe temp mode (anti frost)
1xxxxxxxx	Cooler mode
0xxxxxxxx	Heater mode

DATABYTE3 = Program step mode

Contents	Program step mode
xxxxx0xx	No sensor program group 1
xxxxx1xx	Sensor program group 1 available
xxxx0xxx	No sensor program group 2
xxxx1xxx	Sensor program group 2 available
0xxxxxxxx	No sensor program group 3
1xxxxxxxx	Sensor program group 3 available
x100xxxx	Comfort program step received
x010xxxx	Day program step received
x001xxxx	Night program step received
x000xxxx	Safe temperature program step received
xxxxxx1x	Enable unjamming heater valve
xxxxxx0x	Disable unjamming heater valve
xxxxxx1	Enable unjamming pump
xxxxxx0	Disable unjamming pump

DATABYTE4 = Output status (1 = activated)

Contents	Output channel
xxxxxx0	Heater off
xxxxxx1	Heater on
xxxxxx0x	Boost heater/cooler off
xxxxx1x	Boost heater/cooler on
xxxxx0xx	Pump off
xxxxx1xx	Pump on
xxxx0xxx	Cooler off
xxxx1xxx	Cooler on
xxx0xxxx	Temperature alarm 1 off
xxx1xxxx	Temperature alarm 1 on
xx0xxxxx	Temperature alarm 2 off
xx1xxxxx	Temperature alarm 2 on
x0xxxxxx	Temperature alarm 3 off
x1xxxxxx	Temperature alarm 3 on
0xxxxxxxx	Temperature alarm 4 off
1xxxxxxxx	Temperature alarm 4 on

DATABYTE5 = Current sensor temperature into two's complement format (resolution 0.5°)

Contents	Current sensor temperature
01111111	63.5°C
00000001	0.5°C
00000000	0°C

11111111	-0.5°C
10010010	-55°C

DATABYTE6 = Current temperature set (resolution 0.5°)

Contents	Current temperature set
01101100	54°C
00101000	20°C
00000010	1°C
00000001	0.5°C
00000000	0°C
11111111	-0.5°C
11000000	-32°C

DATABYTE7 = High byte of the sleep timer

DATABYTE8 = Low byte of the sleep timer into minutes

Remark:

[DATABYTE7][DATABYTE8] contains a 16-bit sleep timer into minutes (1 to 65.279min).

If the sleep timer contains H'0000', the sleep timer is deactivated.

If the sleep timer contains a value between H'0001' and H'FEFF' (1 to 65.279min), the sleep timer is running for that time.

If the sleep timer contains 0xFFFF, manual mode is selected.

Transmit the sensor temperature:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 7 data bytes to send

DATABYTE1 = COMMAND_SENSOR_TEMPERATURE (0xE6)

DATABYTE2 = High byte current sensor temperature

DATABYTE3 = Low byte current sensor temperature into two's complement format (resolution 0.0625°)

DATABYTE4 = High byte minimum sensor temperature

DATABYTE5 = Low byte minimum sensor temperature into two's complement format (resolution 0.0625°)

DATABYTE6 = High byte maximum sensor temperature

DATABYTE7 = Low byte maximum sensor temperature into two's complement format (resolution 0.0625°)

High byte	Low byte	Current sensor temperature
01111111	111xxxxx	63.5°C
00000001	000xxxxx	0.5°C
00000000	100xxxxx	0.25°C
00000000	010xxxxx	0.125°C
00000000	001xxxxx	0.0625°C
00000000	000xxxxx	0°C
11111111	111xxxxx	-0.0625°C
11111111	110xxxxx	-0.125°C
11111111	100xxxxx	-0.25°C
11111110	000xxxxx	-0.5°C
10010010	000xxxxx	-55°C

Remark:

The 5 least significant bits of the low byte are don't care.

Transmit the first part of the sensor settings:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 8 data bytes to send

DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_PART1 (0xE8)

DATABYTE2 = Current temperature set (resolution 0.5°)

DATABYTE3 = Comfort temperature set for heating mode (resolution 0.5°)

DATABYTE4 = Day temperature set for heating mode (resolution 0.5°)
 DATABYTE5 = Night temperature set for heating mode (resolution 0.5°)
 DATABYTE6 = Anti frost temperature set for heating mode (resolution 0.5°)
 DATABYTE7 = Boost temperature difference set (resolution 0.5°)
 DATABYTE8 = Hysteresis temperature set

Contents	Hysteresis
xxx11111	15.5°C
Xxx00001	0.5°C
Xxx00000	0°C

Transmit the second part of the sensor settings:

SID10-SID9 = 11 (lowest priority)
 SID8...SID1 = Module address
 RTR = 0
 DLC3...DLC0 = 8 data bytes to send
 DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_PART2 (0xE9)
 DATABYTE2 = Comfort temperature set for cooling mode (resolution 0.5°)
 DATABYTE3 = Day temperature set for cooling mode (resolution 0.5°)
 DATABYTE4 = Night temperature set for cooling mode (resolution 0.5°)
 DATABYTE5 = Safe temperature set for cooling mode (resolution 0.5°)
 DATABYTE6 = High byte of the default sleep timer
 DATABYTE7 = Low byte of the default sleep timer into minutes (1 to 65.279min)
 DATABYTE8 = Default auto send temperature time interval into seconds
 (Valid range: 10...255s)
 (5...9 = auto send on temperature change with min interval 5...9s)
 (<4 = auto send disabled)

Transmit the third part of the sensor settings:

SID10-SID9 = 11 (lowest priority)
 SID8...SID1 = Module address
 RTR = 0
 DLC3...DLC0 = 8 data bytes to send
 DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_PART3 (0xC6)
 DATABYTE2 = Temperature alarm 1 setting (resolution 0.5°)
 DATABYTE3 = Temperature alarm 4 setting (resolution 0.5°)
 DATABYTE4 = Lower temperature range cool mode (resolution 0.5°)
 DATABYTE5 = Upper temperature range heat mode (resolution 0.5°)
 DATABYTE6 = Calibration offset factor (resolution 0.5°)

Contents	Calibration factor
00001111	Calibration factor +7.5°C
00000001	Calibration factor +0.5°C
00000000	Calibration factor +0°C
11111111	Calibration factor -0.5°C
11110000	Calibration factor -8°C

DATABYTE7 = Zone number
 DATABYTE8 = Calibration gain factor

Transmit the fourth part of the sensor settings:

SID10-SID9 = 11 (lowest priority)
 SID8...SID1 = Module address
 RTR = 0
 DLC3...DLC0 = 8 data bytes to send
 DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_PART4 (0xB9)
 DATABYTE2 = Minimum switching time (0...255s)
 DATABYTE3 = Pump delayed on time (0...255s)
 DATABYTE4 = Pump delayed off time (0...255s)
 DATABYTE5 = Temperature alarm 2 setting (resolution 0.5°)
 DATABYTE6 = Temperature alarm 3 setting (resolution 0.5°)
 DATABYTE7 = Lower temperature range heat mode (resolution 0.5°)
 DATABYTE8 = Upper temperature range cool mode (resolution 0.5°)

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 the light raw value:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 data bytes to send
DATABYTE1 = COMMAND_SENSOR_RAW_DATA (0xA9)
DATABYTE4 = High byte current light value
DATABYTE5 = Low byte current light value

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...66 / 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
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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	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
...	...
245	17h Pulse
246	Press
247	Long Press
248	Release
249	Lock
250	Unlock
251	Set color
252	Thermostat safe mode
253	Thermostat night mode
254	Thermostat day mode
255	Thermostat comfort mode

DATABYTE8 = Channel

Contents	Channel
1	Button 1
2	Virtual button 1

3	Dark channel (only lock/unlock action)
4	Light channel (only lock/unlock action)
5	Motion channel (only lock/unlock action)
6	Light depending motion 1 channel (only lock/unlock action)
7	Light depending motion 2 channel (only lock/unlock action)
8	Absence channel (only lock/unlock action)
9	Temperature sensor (only lock/unlock & thermostat actions)
18	Open collector output (only lock/unlock action)

'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
 DATA BYTE1 = COMMAND_PUSH_BUTTON_STATUS (0x00)
 DATA BYTE2 = Linked push buttons just pressed (1 = just pressed)
 DATA BYTE3 = Linked push buttons just released (1 = just released)
 DATA BYTE4 = 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
 DATA BYTE1 = COMMAND_POWER_UP (0xAB)
 DATA BYTE2 = module address

'Real time clock status request' command received:

SID10-SID9 = 11 (lowest priority)
 SID8...SID1 = 0x00
 RTR = 0
 DLC3...DLC0 = 1 data byte to send
 DATA BYTE1 = 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
 DATA BYTE1 = COMMAND_SET_REALTIME_CLOCK (0xD8)
 DATA BYTE2 = Day of week

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

DATA BYTE3 = Hours (0...23)
 DATA BYTE4 = Minutes (0...59)

'Set date' command received:

SID10-SID9 = 11 (lowest priority)
 SID8...SID1 = 0x00
 RTR = 0
 DLC3...DLC0 = 5 data bytes received
 DATA BYTE1 = COMMAND_SET_REALTIME_DATE (0xB7)
 DATA BYTE2 = Day (1...31)
 DATA BYTE3 = Month (1...12)
 DATA BYTE4 = High byte of Year
 DATA BYTE5 = 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
 DATA BYTE1 = COMMAND_SET_DAYLIGHT_SAVING (0xAF)
 DATA BYTE2 = 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'xxxxxxxx0'	Disable sunrise related actions
B'xxxxxxxx1'	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'xxxxxxxx0'	Disable sunrise related actions
B'xxxxxxxx1'	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 number 1...2 or 18 (9 for temperature sensor name, 18 for output name)

Remark: channel = 0xFF for all 2 channel names, temperature sensor name & output channel name

'Light value request' command received:

SID10-SID9 = 11 (lowest priority)
 SID8...SID1 = Module address
 RTR = 0
 DLC3...DLC0 = 2 data bytes to send
 DATABYTE1 = COMMAND_LIGHT_VALUE_REQUEST (H'AA')
 DATABYTE2 = Auto send interval time into seconds
 (valid range: 10...255s)
 (5...9 = auto send on change)
 (1...4 = auto send disabled)
 (0 = no change on auto send interval time)

'Set or Clear test mode' command received:

SID10-SID9 = 11 (lowest priority)
 SID8...SID1 = Module address
 RTR = 0
 DLC3...DLC0 = 2 data bytes received
 DATABYTE1 = COMMAND_SET_CLR_LEARN_MODE (H'B5')
 DATABYTE2 = Operating mode

<i>Contents</i>	<i>Operating mode</i>
B'00000000'	Normal
B'00000010'	PIR sensor test mode

Remark:

After changing the operating mode, the module sends his status.
 There is a timeout of 30 minutes for the test mode.

'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 0x06BB

'Read data block from memory' command received:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 3 data bytes received

DATABYTE1 = COMMAND_READ_MEMORY_BLOCK (0xC9)

DATABYTE2 = High memory address

DATABYTE3 = LOW memory address

Remark: address range: 0x0000 to 0x06B8

'Memory dump request' command received:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 1 data bytes received

DATA BYTE1 = 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

DATA BYTE1 = COMMAND_WRITE_DATA_TO_MEMORY (0xFC)

DATA BYTE2 = High memory address

DATA BYTE3 = LOW memory address

DATA BYTE4 = memory data to write

Remark:

Wait at least 10ms for sending a next command on the velbus.

Address range: 0x0000 to 0x06BB

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

DATA BYTE1 = COMMAND_WRITE_MEMORY_BLOCK (0xCA)

DATA BYTE2 = High memory address

DATA BYTE3 = LOW memory address

DATA BYTE4 = memory databyte1 to write

DATA BYTE5 = memory databyte2 to write

DATA BYTE6 = memory databyte3 to write

DATA BYTE7 = memory databyte4 to write

Remark:

Wait for 'memory data block' feedback before sending a next command on the velbus.

Terminate always with a write command at the last memory location.

Address range: 0x0000 to 0x06B8

'Bus error counter status request' command received:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 1 data byte received

DATA BYTE1 = 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 data bytes received

DATA BYTE1 = COMMAND_CANCEL_FORCED_OFF (0x13)

DATA BYTE2 = Channel number 1...8, 9 or 18 (9 for temperature sensor, 18 for open collector output)

Remark: channel number = 0xFF for all channels

'Lock channel' 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 number 1...8, 9 or 18 (9 for temperature sensor, 18 for open collector output)

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 0xFFFFFFF 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 data bytes received

DATABYTE1 = COMMAND_ENABLE_PROGRAM (0xB2)

DATABYTE2 = Channel number 1...8, 9 or 18 (9 for temperature sensor name, 18 for open collector output)

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 number 1...8, 9 or 18 (9 for temperature sensor name, 18 for open collector output)

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 0xFFFFFFF 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

<i>Contents</i>	<i>Selected program</i>
0	None
1	Program group 1 (Summer)
2	Program group 2 (Winter)
3	Program group 3 (Holiday)

'Sensor temperature request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_SENSOR_TEMP_REQUEST (0xE5)
DATABYTE2 = Auto send time interval into seconds
(Valid range: 10...255s)
(5...9 = auto send on temperature change $\geq 0.5^\circ$)
(1...4 = auto send disabled)
(0 = no change on auto send interval)

'Sensor settings request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_REQUEST (0xE7)
DATABYTE2 = don't care

'Set heating mode' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_SET_HEATING_MODE (0xE0)
DATABYTE2 = don't care

'Set cooling mode' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_SET_COOLING_MODE (0xDF)
DATABYTE2 = don't care

'Set sensor zone number' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_SET_SENSOR_ZONE_NUMBER (0xC5)
DATABYTE2 = Zone number (0= no zone / 1...7 = valid zone)

'Set default sleep time' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 data bytes received
DATABYTE1 = COMMAND_SET_DEFAULT_SLEEP_TIME (0xE3)
DATABYTE2 = High byte of the default sleep time
DATABYTE3 = Low byte of the default sleep time into minutes
(Valid range 0x0001 to 0xFEFF or 1min to 65.279min)

Remark: Wait at least 20ms for sending a next command on the velbus

'Set temperature' command received:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 3 data bytes received

DATABYTE1 = COMMAND_SET_TEMP (0xE4)

DATABYTE2 = Pointer to temperature variable (0...20)

Contents	Temperature variable
0	Current target temperature set
1	Comfort temperature set for heating
2	Day temperature set for heating
3	Night temperature set for heating
4	Safe temperature set for heating
5	Temperature difference for turbo output
6	Hysteresis (0°...15.5°C)
7	Comfort temperature set for cooling
8	Day temperature set for cooling
9	Night temperature set for cooling
10	Safe temperature set for cooling
11	Calibration offset factor (-8°...+7.5°C)
12	Reset minimum/maximum temperature
14	enable/disable anti-block valve/pump
15	Temperature alarm 1 set
16	Temperature alarm 4 set
17	Lower temperature range cool mode
18	Upper temperature range heat mode
21	Minimum switching time
22	Pump delayed on time (0...255 s)
23	Pump delayed off time (0...255 s)
24	Temperature alarm 2 set
25	Temperature alarm 3 set
26	Lower temperature range heat mode
27	Upper temperature range cool mode
28	Calibration gain factor

DATABYTE3 = Temperature set (resolution 0.5°)

Contents	Temperature set
01111111	63.5°C
00101000	20°C
00000010	1°C
00000001	0.5°C
00000000	0°C
11111111	-0.5°C
10010010	-55°C

DATABYTE3 = Reset minimum/maximum temperature

Contents	Reset temperature
xxxxxx1	Reset minimum temperature
xxxxx1x	Reset maximum temperature

DATABYTE3 = Enable/disable unjamming heater valve & pump

Contents	Enable/disable unjamming valve and pump
xxxxx00	Disable unjamming heater valve & pump
xxxxx01	Disable unjamming heater valve & enable unjamming pump
xxxxx10	Enable unjamming heater valve & disable unjamming pump
xxxxx11	Enable unjamming heater valve & pump

DATABYTE3 = Minimum switching or pump delayed on/off time:

Contents	Operating mode
00000000	No switching time protection
00000001	1 seconds switching time protection
00000010	2 seconds switching time protection

...	...
11111110	254 seconds switching time protection
11111111	255 seconds switching time protection

Remark:

Valid hysteresis range = 0 ... 15.5°C

Valid calibration factor range = -8 ... 7.5°C

Wait at least 10ms for sending a next command on the velbus.

'Switch to comfort mode' command received:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 3 data bytes received

DATABYTE1 = COMMAND_SWITCH_TO_COMFORT_MODE (0xDB)

DATABYTE2 = High byte of the sleep time

DATABYTE3 = Low byte of the sleep time into minutes

Remark:

If the sleep time contains 0xFF00, the command is a program step.

A sleep time between 0x0001 and 0xFEFF (1 to 65.279min) starts the sleep timer for that time and program steps will not be executed during that time.

A sleep time of 0xFFFF puts the sensor into manual mode. Program steps will not be executed anymore and local control is disabled.

A value of zero for the sleep time cancels the manual mode or sleep timer.

'Switch to day mode' command received:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 3 data bytes received

DATABYTE1 = COMMAND_SWITCH_TO_DAY_MODE (0xDC)

DATABYTE2 = High byte of the sleep time

DATABYTE3 = Low byte of the sleep time into minutes

Remark:

If the sleep time contains 0xFF00, the command is a program step.

A sleep time between 0x0001 and 0xFEFF (1 to 65.279min) starts the sleep timer for that time and program steps will not be executed during that time.

A sleep time of 0xFFFF puts the sensor into manual mode. Program steps will not be executed anymore and local control is disabled.

A value of zero for the sleep time cancels the manual mode or sleep timer.

'Switch to night mode' command received:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 3 data bytes received

DATABYTE1 = COMMAND_SWITCH_TO_NIGHT_MODE (0xDD)

DATABYTE2 = High byte of the sleep time

DATABYTE3 = Low byte of the sleep time into minutes

Remark:

If the sleep time contains 0xFF00, the command is a program step.

A sleep time between 0x0001 and 0xFEFF (1 to 65.279min) starts the sleep timer for that time and program steps will not be executed during that time.

A sleep time of 0xFFFF puts the sensor into manual mode. Program steps will not be executed anymore and local control is disabled.

A value of zero for the sleep time cancels the manual mode or sleep timer.

'Switch to safe temperature mode' command received:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 3 data bytes received

DATABYTE1 = COMMAND_SWITCH_TO_SAFE_MODE (0xDE)

DATABYTE7 = High byte of the sleep time

DATABYTE8 = Low byte of the sleep time into minutes

Remark:

If the sleep time contains 0xFF00, the command is a program step.

A sleep time between 0x0001 and 0xFEFF (1 to 65.279min) starts the sleep timer for that time and program steps will not be executed during that time.

A sleep time of 0xFFFF puts the sensor into manual mode. Program steps will not be executed anymore and local control is disabled.

A value of zero for the sleep time cancels the manual mode or sleep timer.

'Switch open collector output off' command received:

SID10-SID9 = 00 (highest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 2 data bytes received

DATABYTE1 = COMMAND_SWITCH_RELAY_OFF (0x01)

DATABYTE2 = channel bit = don't care

'Switch open collector output on' command received:

SID10-SID9 = 00 (highest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 2 data bytes received

DATABYTE1 = COMMAND_SWITCH_RELAY_ON (0x02)

DATABYTE2 = channel bit = don't care

'Start open collector timer' command received:

SID10-SID9 = 00 (highest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 5 data bytes received

DATABYTE1 = COMMAND_START_RELAY_TIMER (0x03)

DATABYTE2 = channel bit = don't care

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 0xFFFFFFF then the open collector output are permanently switched on.

'Set Custom Color' command received:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 6 data bytes received

DATABYTE1 = COMMAND_SET_PB_BACKLIGHT (0xD4)

DATABYTE2 = custom palette index (0...31)

DATABYTE3 = white/saturation

Contents	Description
0xxxxxxx	RGB-color
1xxxxxxx	White (r=g=b)
x0000000	Minimum saturation
...	...
x1111111	Maximum saturation

DATABYTE4 = red value (0...255)

DATABYTE5 = green value (0...255)

DATABYTE6 = blue value (0...255)

'Set Edge Color' command received:

SID10-SID9 = 11 (lowest priority)

SID8...SID1 = Module address

RTR = 0

DLC3...DLC0 = 4 data bytes received

DATABYTE1 = COMMAND_SET_PB_BACKLIGHT (0xD4)

DATABYTE2 = background/feedback color

Contents	Description
xxxxxx0	do not apply to background color
xxxxxx1	apply to background color
xxxxx0x	do not apply to continuous feedback color
xxxxx1x	apply to continuous feedback color
xxxx0xx	do not apply to slow blinking feedback color
xxxx1xx	apply to slow blinking feedback color
xxxx0xx	do not apply to fast blinking feedback color
xxxx1xx	apply to fast blinking feedback color
0xxxxxxx	Default color palette
1xxxxxxx	Custom color palette

DATABYTE3 = Page/edge

Contents	Description
xxxxxx0	do not apply to left edge
xxxxxx1	apply to left edge
xxxxx0x	do not apply to top edge
xxxxx1x	apply to top edge
xxxx0xx	do not apply to right edge
xxxx1xx	apply to right edge
xxxx0xx	do not apply to bottom edge
xxxx1xx	apply to bottom edge
0000xxxx	apply to button page 1 (only for feedback light)
0001xxxx	apply to button page 2 (only for feedback light)
0010xxxx	apply to button page 3 (only for feedback light)
0011xxxx	apply to button page 4 (only for feedback light)
0100xxxx	apply to button page 5 (only for feedback light)
0101xxxx	apply to button page 6 (only for feedback light)
0110xxxx	apply to button page 7 (only for feedback light)
0111xxxx	apply to button page 8 (only for feedback light)
1000xxxx	Apply to all button pages (only for feedback light)
...	...
1111xxxx	Apply to all button pages (only for feedback light)

DATABYTE4 = blink/priority/color palette index

<i>Contents</i>	<i>Description</i>
0xxxxxxx	Background not blinking/Feedback not blinking
1xxxxxxx	Background blinking/Feedback blinking
x00xxxxx	Default color palette & feedback blinking mode
x01xxxxx	Custom color with lowest priority
x10xxxxx	Custom color with mid priority
x11xxxxx	Custom color with highest priority
xxx00000	Color palette index 0
xxx00001	Color palette index 1
...	...1
xxx11111	Color palette index 31

'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...66)

DATABYTE3 = Program group number (1...3)

DATABYTE4 = Channel number 1...8, 9 or 18 (9 for temperature sensor name, 18 for open collector output)

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...66)

DATABYTE3 = Program reference

<i>Contents</i>	<i>Description</i>
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

<i>Contents</i>	<i>Description</i>
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
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	Thermostat safe mode
253	Thermostat night mode
254	Thermostat day mode
255	Thermostat comfort mode

DATABYTE8 = Channel

Contents	Channel
1	Channel 1
2	Channel 2
3	Dark channel (only lock/unlock action)
4	Light channel (only lock/unlock action)
5	Motion channel (only lock/unlock action)
6	Light depending motion 1 channel (only lock/unlock action)
7	Light depending motion 2 channel (only lock/unlock action)
8	Absence channel (only lock/unlock action)
9	Temperature sensor (only lock/unlock & thermostat actions)
18	Open collector output (only lock/unlock action)

Remark:

Erase program step if channel parameter is equal with zero.

Memory map version 1:

Address	Contents	Address	Contents
0x0000	Touch init: main control	0x0001	Touch init: sensitivity
0x0002	Touch init: config 1	0x0003	Touch init: sensor enable
0x0004	Touch init: sensor config 1	0x0005	Touch init: sensor config 2
0x0006	Touch init: average sampling	0x0007	Touch init: interrupt enable
0x0008	Touch init: repeat enable	0x0009	Touch init: mtp config
0x000A	Touch init: mtp pattern config	0x000B	Touch init: mtp pattern
0x000C	Touch init: recal config	0x000D	Touch init: sensor 1 threshold
0x000E	Touch init: sensor 2 threshold	0x000F	Touch init: sensor 3 threshold
0x0010	Touch init: sensor 4 threshold	0x0011	Touch init: sensor 5 threshold
0x0012	Touch init: sensor 6 threshold	0x0013	Touch init: sensor 7 threshold
0x0014	Touch init: sensor 8 threshold	0x0015	Touch init: noise threshold
0x0016	Touch init: standby channel	0x0017	Touch init: standby config
0x0018	Touch init: standby sensitivity	0x0019	Touch init: standby threshold
0x001A	Touch init: config 2	0x001B	Touch init: not used
0x001C	Channel 1 name character 1	0x001D	Channel 1 name character 2
...
0x002A	Channel 1 name character 15	0x002B	Channel 1 name character 16
0x002C	Channel 1 reaction time	0x002D	Channel 1 start function
0x002E	Channel 1 end function	0x002F	Channel 1 mode
0x0030	Channel 2 name character 1	0x0031	Channel 2 name character 2
...
0x003E	Channel 2 name character 15	0x003F	Channel 2 name character 16
0x0040	Channel 2 reaction time	0x0041	Channel 2 start function
0x0042	Channel 2 end function	0x0043	Channel 2 mode
0x0044	Long pressed delay	0x0045	Dual function long pressed time
0x0046	Key beep (1 = enabled)	0x0047	Not used
0x0048	Dark value low byte	0x0049	Dark value high byte
0x004A	Light value low byte	0x004B	Light value high byte
0x004C	Light to dark reaction time (default 1 min)	0x004D	Dark timer mode = non restartable timer (fixed)
0x004E	Dark timeout (default momentary)	0x004F	Dark flags: Bit 0: cycling protect non-restartable timer (default on) Bit 1: external overwrite non-restartable timer (default off)
0x0050	Dark to light reaction time (default 1 min)	0x0051	Light timer mode = non restartable timer (fixed)
0x0052	Light timeout (default momentary)	0x0053	Light flags: Bit 0: cycling protect non-restartable timer = off (fixed) Bit 1: external overwrite non-restartable timer (default off)
0x0054	Motion reaction time = 0 sec (fixed)	0x0055	Motion timer mode = restartable timer (fixed)
0x0056	Motion timeout (default 2 min)	0x0057	Motion flags: Bit 0: cycling protect Bit 1: external overwrite restartable timer (default off)
0x0058	Dark value low byte for light depending motion 1	0x0059	Dark value high byte for light depending motion 1
0x005A	Light value low byte for light depending motion 1 (0.98*motion 1 dark value)	0x005B	light value high byte for light depending motion 1
0x005C	Dark reaction time for light depending motion 1 = 0 sec (fixed)	0x005D	Dark timer mode for light depending motion 1 = non restartable timer (fixed)
0x005E	Dark timeout for light depending motion 1 = momentary (fixed)	0x005F	Dark flags for light depending motion 1: Bit 0: cycling protect = off (fixed) Bit 1: external overwrite off (fixed)
0x0060	Light depending motion 1 reaction time = 0 sec (fixed)	0x0061	Light depending motion 1 timer mode = restartable timer (fixed)
0x0062	Light depending motion 1 timeout (default 2 min)	0x0063	Light depending motion 1 flags: Bit 0: cycling protect Bit 1: external overwrite (default off)
0x0064	Dark value low byte for light depending motion 2	0x0065	Dark value high byte for light depending motion 2
0x0066	Light value low byte for light depending motion 2 (0.98*motion 2 dark value)	0x0067	Light value high byte for light depending motion 2
0x0068	Dark reaction time for light depending motion 2 = 0 sec (fixed)	0x0069	Dark timer mode for light depending motion 2 = non restartable timer (fixed)
0x006A	Dark timeout for light depending motion 2 = momentary (fixed)	0x006B	Dark flags for light depending motion 2: Bit 0: cycling protect = off (fixed) Bit 1: external overwrite off (fixed)
0x006C	Light depending motion 2 reaction time = 0 sec (fixed)	0x006D	Light depending motion 2 timer mode = restartable timer (fixed)

0x006E	Light depending motion 2 timeout (default 2 min)	0x006F	Light depending motion 2 flags: Bit 0: cycling protect Bit 1: external overwrite (default off)
0x0070	Absence timeout	0x0071	Absence output mode
0x0072	Not used	0x0073	Not used
0x0074	Color time (into seconds) byte 0	0x0075	Color time byte 1
0x0076	Color time low byte 2	0x0077	Color time byte 3
0x0078	Color palette color 0: saturation (0...127) - white (on/off)	0x0079	Color palette color 0: red-value (0...255)
0x007A	Color palette color 0: green-value (0...255)	0x007B	Color palette color 0: blue-value (0...255)
0x007C	Color palette 0 name character 1	0x007D	Color palette 0 name character 2
...
0x008A	Color palette 0 name character 15	0x008B	Color palette 0 name character 16
...
0x02E4	Color palette color 31: saturation (0...127) - white (on/off)	0x02E5	Color palette color 31: red-value (0...255)
0x02E6	Color palette color 31: green-value (0...255)	0x02E7	Color palette color 31: blue-value (0...255)
0x02E8	Color palette 31 name character 1	0x02E9	Color palette 31 name character 2
...
0x02F6	Color palette 31 name character 15	0x02F7	Color palette 31 name character 16
0x02F8	Left edge dark backlight color (palette 0...31)	0x02F9	Top edge dark backlight color (palette 0...31)
0x02FA	Right edge dark backlight color (palette 0...31)	0x02FB	Bottom edge dark backlight color (palette 0...31)
0x02FC	Left edge backlight color (palette 0...31)	0x02FD	Top edge backlight color (palette 0...31)
0x02FE	Right edge backlight color (palette 0...31)	0x02FF	Bottom edge backlight color (palette 0...31)
0x0300	Left edge continuous feedback color (palette 0...31)	0x0301	Top edge continuous feedback color (palette 0...31)
0x0302	Right edge continuous feedback color (palette 0...31)	0x0303	Bottom edge continuous feedback color (palette 0...31)
0x0304	Left edge slow blinking feedback color (palette 0...31)	0x0305	Top edge slow blinking feedback color (palette 0...31)
0x0306	Right edge slow blinking feedback color (palette 0...31)	0x0307	Bottom edge slow blinking feedback color (0...31)
0x0308	Left edge fast blinking feedback color (palette 0...31)	0x0309	Top edge fast blinking feedback color (palette 0...31)
0x030A	Right edge fast blinking feedback color (palette 0...31)	0x030B	Bottom edge fast blinking feedback color (0...31)
0x030C	Not used	0x030D	Not used
0x030E	Not used	0x030F	Alarm clock configuration
0x0310	Wake up 1 hour (0...23)	0x0311	Wake up 1 minutes (0...59)
0x0312	Go to bed 1 hour (0...23)	0x0313	Go to bed 1 minutes (0...59)
0x0314	Wake up 2 hour (0...23)	0x0315	Wake up 2 minutes (0...59)
0x0316	Go to bed 2 hour (0...23)	0x0317	Go to bed 2 minutes (0...59)
0x0318	Sunrise hour at 21 December (0...23)	0x0319	Sunrise minutes at 21 December (0...59)
0x031A	Sunrise 21 January – sunrise 5 January (-128'...127')	0x031B	Sunrise 5 February – sunrise 21 January (-128'...127')
0x031C	Sunrise 21 February – sunrise 5 February (-128'...127')	0x031D	Sunrise 5 March – sunrise 21 February (-128'...127')
0x031E	Sunrise 21 March – sunrise 5 March (-128'...127')	0x031F	Sunrise 5 April – sunrise 21 March (-128'...127')
0x0320	Sunrise 21 April – sunrise 5 April (-128'...127')	0x0321	Sunrise 5 May – sunrise 21 April (-128'...127')
0x0322	Sunrise 21 May – sunrise 5 May (-128'...127')	0x0323	Sunrise 5 June – sunrise 21 May (-128'...127')
0x0324	Sunrise 21 June – sunrise 5 June (-128'...127')	0x0325	Sunrise 5 July – sunrise 21 June (-128'...127')
0x0326	Sunrise 21 July – sunrise 5 July (-128'...127')	0x0327	Sunrise 5 August – sunrise 21 July (-128'...127')
0x0328	Sunrise 21 August – sunrise 5 August (-128'...127')	0x0329	Sunrise 5 September – sunrise 21 August (-128'...127')
0x032A	Sunrise 21 September – sunrise 5 September (-128'...127')	0x032B	Sunrise 5 October – sunrise 21 Sept. (-128'...127')
0x032C	Sunrise 21 October – sunrise 5 October (-128'...127')	0x032D	Sunrise 5 November – sunrise 21 Oct. (-128'...127')
0x032E	Sunrise 21 November – sunrise 5 November (-128'...127')	0x032F	Sunrise 5 December – sunrise 21 Nov. (-128'...127')
0x0330	Sunrise 21 December – sunrise 5 December (-128'...127')	0x0331	Sunrise 5 January – sunrise 21 December (-128'...127')
0x0332	Not used	0x0333	Not used
0x0334	Sunset hour at 21 December (0...23)	0x0335	Sunset minutes at 21 December (0...59)
0x0336	Sunset 21 January – sunset 5 January (-128'...127')	0x0337	Sunset 5 February – sunset 21 January (-128'...127')
0x0338	Sunset 21 February – sunset 5 February (-128'...127')	0x0339	Sunset 5 March – sunset 21 February (-128'...127')
0x033A	Sunset 21 March – sunset 5 March (-128'...127')	0x033B	Sunset 5 April – sunset 21 March (-128'...127')
0x033C	Sunset 21 April – sunset 5 April (-128'...127')	0x033D	Sunset 5 May – sunset 21 April (-128'...127')
0x033E	Sunset 21 May – sunset 5 May (-128'...127')	0x033F	Sunset 5 June – sunset 21 May (-128'...127')
0x0340	Sunset 21 June – sunset 5 June (-128'...127')	0x0341	Sunset 5 July – sunset 21 June (-128'...127')
0x0342	Sunset 21 July – sunset 5 July (-128'...127')	0x0343	Sunset 5 August – sunset 21 July (-128'...127')
0x0344	Sunset 21 August – sunset 5 August (-128'...127')	0x0345	Sunset 5 September – sunset 21 August (-128'...127')
0x0346	Sunset 21 September – sunset 5 September (-128'...127')	0x0347	Sunset 5 October – sunset 21 September (-128'...127')
0x0348	Sunset 21 October – sunset 5 October (-128'...127')	0x0349	Sunset 5 November – sunset 21 October (-128'...127')
0x034A	Sunset 21 November – sunset 5 November (-128'...127')	0x034B	Sunset 5 December – sunset 21 Nov. (-128'...127')
0x034C	Sunset 21 December – sunset 5 December (-128'...127')	0x034D	Sunset 5 January – sunset 21 December (-128'...127')
0x034E	Not used	0x034F	Not used
0x0350	Sensor name character 1	0x0351	Sensor name character 2
...
0x035E	Sensor name character 15	0x035F	Sensor name character 16
0x0360	Temp. sensor: zone	0x0361	Temp. sensor: calibration offset
0x0362	Temp. sensor: calibration gain	0x0363	Temp. sensor: hysteresis

0x0364	Temp. sensor: boost difference	0x0365	Temp. sensor: Pump delayed on
0x0366	Temp. sensor: pump delayed off	0x0367	Temp. sensor: min switching time
0x0368	Temp. sensor: default sleep time byte 0 (low)	0x0369	Temp. sensor: default sleep time byte 1 (high)
0x036A	Temp. sensor: default sleep time byte 2	0x036B	Temp. sensor: default sleep time byte 3 (msb)
0x036C	Temp. sensor: heater lower temperature range low byte	0x036D	Temp. sensor: heater lower temperature range high byte
0x036E	Temp. sensor: heater upper temperature range low byte	0x036F	Temp. sensor: heater lower temperature range high byte
0x0370	Temp. sensor: heater safe temperature set	0x0371	Temp. sensor: heater night temperature set
0x0372	Temp. sensor: heater day temperature set	0x0373	Temp. sensor: heater comfort temperature set
0x0374	Temp. sensor: cooler lower temperature range low byte	0x0375	Temp. sensor: cooler upper temp. range high byte
0x0376	Temp. sensor: cooler upper temperature range low byte	0x0377	Temp. sensor: cooler upper temp. range high byte
0x0378	Temp. sensor: cooler safe temperature set	0x0379	Temp. sensor: cooler night temperature set
0x037A	Temp. sensor: cooler day temperature set	0x037B	Temp. sensor: cooler comfort temperature set
0x037C	Temp. sensor: alarm 1 temperature set	0x037D	Temp. sensor: alarm 2 temperature set
0x037E	Temp. sensor: alarm 3 temperature set	0x037F	Temp. sensor: alarm 4 temperature set
0x0380	Temp. sensor settings	0x0381	Temp. sensor alarm 1 & 2 settings
0x0382	Temp. sensor alarm 3 & 4 settings	0x0383	Not used
0x0384	Open collector output name character 1	0x0385	Open collector output name character 2
...
0x0392	Open collector output name character 15	0x0393	Open collector output name character 16

Remark:

Unused locations contain H'FF'

Valid reaction times

Contents	Reaction time
0x01	immediately (default)
0x1C	1s
0x38	2s
0x54	3s
0xFF	Channel disabled

Channel x start/end function

Contents	Function
1	Channel 1 (default)
2	Channel 2 (default)
...	...
7	Channel 7 (default)
8	Channel 8 (default)

Remark:

For a normal one button function, 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.

Channels mode

Contents	Description
B'xxxxxxxx0'	Dual function disabled (default)
B'xxxxxxxx1'	Dual function enabled
B'xxxxxx0x'	Multi-function auto reset disabled (default)
B'xxxxxx1x'	Multi-function auto reset enabled
B'xxxxx0xx'	Led backlight off
B'xxxxx1xx'	Led backlight on
B'xxxx0xxx'	Led monitor mode
B'xxxx1xxx'	Led feedback mode (default)
B'xxx0xxxx'	Slow blinking led feedback disabled
B'xxx1xxxx'	Slow blinking led feedback enabled (default)
B'xx0xxxxx'	Fast blinking led feedback disabled
B'xx1xxxxx'	Fast blinking led feedback enabled (default)
B'x0xxxxxx'	Very fast blinking led feedback disabled
B'x1xxxxxx'	Very fast blinking led feedback enabled (default)

Remark:

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

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 long pressed delay

Contents	Reaction time
0x17	0.8s (default)
0x2E	1.6s

Valid dual function long pressed times

Contents	Long pressed time
0x1C	1s
0x38	2s (default)
0x54	3s

Alarm clock configuration

Contents	Channel locked/unlocked
B'xxxxxxxx0'	Alarm 1 disabled (default)
B'xxxxxxxx1'	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)

Temp. sensor zone

Contents	Zone
0'	No zone
1.	Zone 1...
...	...
7	Zone 7

Temperature sensor flags

Contents	Description
B'xxxxxxxx0'	Pump unjamming disabled (default)
B'xxxxxxxx1'	Pump unjamming enabled
B'xxxxxx0x'	Heater valve unjamming disabled (default)
B'xxxxxx1x'	Heater valve unjamming enabled
B'xxxxx0xx'	Independent temperature alarms (default)
B'xxxxx1xx'	Dependent temperature alarms

Temperature sensor calibration offset (resolution 0.5°):

Contents	Calibration offset
00001111	Calibration offset +7.5°C
...	...
00000001	Calibration offset +0.5°C
00000000	Calibration offset +0°C (default)
11111111	Calibration offset -0.5°C
...	...
11110000	Calibration offset -8°C

Temperature sensor calibration gain:

Contents	Calibration gain
0	Calibration gain
...	...

128	Calibration gain (default)
...	...
255	Calibration gain

Calibrated Temperature = (gain/128) * sensortemperature + offset

Temperature sensor hysteresis (resolution 0.5°):

Contents	Hysteresis
00011111	15.5°C
00000001	0.5°C
00000000	0°C

Temperature sensor boost difference (resolution 0.5°):

Contents	Temperature difference
00010100	+10°C
00000001	+0.5°C
00000000	0°C
11111111	-0.5°C
11101100	-10°C

Temperature sensor pump delayed on, pump delayed off & valve minimum switching time:

Contents	Time
00000000	0
00000001	1 sec
00000010	2 sec
...	...
11111110	254 sec
11111111	255 sec

Temperature sensor default sleep time into minutes

valid range 0x0001 to 0xFEFF or 1min to 65.279min

Temperature sensor lower range, upper range, safe, night, day, comfort or alarm set (resolution 0.5°):

Contents	Temperature set
01111000	60°C
00101000	20°C
00000010	1°C
00000001	0.5°C
00000000	0°C
11111111	-0.5°C
11000000	-32°C

Temperature sensor Alarm1 & 2 modes

Contents	Description
B'xxxxx000'	Low temperature alarm 1
B'xxxxx001'	High temperature alarm 1 (default)
B'xxxxx010'	Anti-frost mode alarm 1
B'xxxxx011'	Night mode alarm 1
B'xxxxx100'	Day mode alarm 1
B'xxxxx101'	Comfort mode alarm 1
B'xxxxx110'	Night, Day or Comfort mode alarm 1
B'xxxxx111'	Day or Comfort mode alarm 1
B'xxxx0xxx'	Temperature alarms 1 absolute (default)
B'xxxx1xxx'	Temperature alarms 1 relative
B'x000xxxx'	Low temperature alarm 2
B'x001xxxx'	High temperature alarm 2 (default)
B'x010xxxx'	Anti-frost mode alarm 2

B'x011xxxx'	Night mode alarm 2
B'x100xxxx'	Day mode alarm 2
B'x101xxxx'	Comfort mode alarm 2
B'x110xxxx'	Night, Day or Comfort mode alarm 2
B'x111xxxx'	Day or Comfort mode alarm 2
B'0xxxxxxxx'	Temperature alarms 2 absolute (default)
B'1xxxxxxxx'	Temperature alarms 2 relative

Temperature sensor Alarm3 & 4 modes

Contents	Description
B'xxxxx000'	Low temperature alarm 3
B'xxxxx001'	High temperature alarm 3 (default)
B'xxxxx010'	Anti-frost mode alarm 3
B'xxxxx011'	Night mode alarm 3
B'xxxxx100'	Day mode alarm 3
B'xxxxx101'	Comfort mode alarm 3
B'xxxxx110'	Night, Day or Comfort mode alarm 3
B'xxxxx111'	Day or Comfort mode alarm 3
B'xxxx0xxx'	Temperature alarms 3 absolute (default)
B'xxxx1xxx'	Temperature alarms 3 relative
B'x000xxxx'	Low temperature alarm 4
B'x001xxxx'	High temperature alarm 4 (default)
B'x010xxxx'	Anti-frost mode alarm 4
B'x011xxxx'	Night mode alarm 4
B'x100xxxx'	Day mode alarm 4
B'x101xxxx'	Comfort mode alarm 4
B'x110xxxx'	Night, Day or Comfort mode alarm 4
B'x111xxxx'	Day or Comfort mode alarm 4
B'0xxxxxxxx'	Temperature alarms 4 absolute (default)
B'1xxxxxxxx'	Temperature alarms 4 relative

Color palette saturation - white

Contents	Description
B'x0000000'	Minimum saturation (no light)
...	...
B'x1111111'	Maximum saturation
B'0xxxxxxxx'	RGB-color
B'1xxxxxxxx'	White (R-value = G-value = B-value)

Color palette Red – Green – Blue values

Contents	Description
0	Minimum color value
...	...
255	Maximum color value

Remark:

Color palette index 0 is always black (saturation = R = G = B = 0)

Color palette index 31 is same as ambient (saturation = R = G = B = don't care)

The RGB values must be equal for white

Reaction time (light to dark, dark to light, motion & light depending motion)

Contents	Reaction time
0	0s (factory default for motion & light depending motion)
1	1s
2	2s
...	...
59	59s
60	1min (factory default for light to dark & dark to light)
61	1min1s
...	...

...	
119	1min59s
120	2min
121	2min15s
...	
131	4min45s
132	5min
133	5min30s
...	
181	29min30s
182	30min
183	31min
...	
211	59min
212	1h

Timer mode (dark, light, motion & light depending motion)

Contents	Timer mode
0x00	non restartable timer (for dark & light)
0xFF	restartable timer (for motion & light depending motion)

Timeout (light to dark, dark to light, motion & light depending motion)

Contents	Timeout
0	0 = momentary (factory default for dark, light & motion)
1	1s
2	2s
...	
119	1min59s
120	2min (factory default for light depending motion)
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

Absence timeout

Time parameter	Timeout
60	1min
61	1min1s
62	1min2s
...	
119	1min59s
120	2min
121	2min15s
...	
131	4min45s
132	5min

133	5min30s
...	
152	15min (default)
...	
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

Absence output mode

Contents	Absence output mode
0x00	Momentary (default)
0xFF	1 second pulse

Dark flags

Contents	Timer mode
B'xxxxxx0'	Cycling protection non-restartable timer disabled
B'xxxxxx1'	Cycling protection non-restartable timer enabled (default)
B'xxxxx0x'	External overwrite disabled (default)
B'xxxxx1x'	External overwrite enabled

Light flags

Contents	Timer mode
B'xxxxxx0'	Cycling protection non-restartable timer disabled (fixed)
B'xxxxxx1'	Cycling protection non-restartable timer enabled
B'xxxxx0x'	External overwrite disabled (default)
B'xxxxx1x'	External overwrite enabled

Motion flags

Contents	Timer mode
B'xxxxxx0'	Cycling protection disabled -> time-out interruptable
B'xxxxxx1'	Cycling protection enabled -> time-out not interruptable
B'xxxxx0x'	External overwrite disabled (default)
B'xxxxx1x'	External overwrite enabled

Light depending motion flags

Contents	Timer mode
B'xxxxxx0'	Cycling protection disabled -> time-out interruptable
B'xxxxxx1'	Cycling protection enabled -> time-out not interruptable
B'xxxxx0x'	External overwrite disabled (default)
B'xxxxx1x'	External overwrite enabled

Address	Contents	Address	Contents
0x0394	Linked Push button 1 module address	0x0395	Linked Push button 1 bit number
0x0396	Linked Push button 1 action	0x0397	Linked Push button 1 parameter 1
0x0398	Linked Push button 1 parameter 2
...
...	...	0x04E3	Linked Push button 68 address
0x04E4	Linked Push button 68 bit number	0x04E5	Linked Push button 68 action
0x04E6	Linked Push button 68 parameter 1	0x04E7	Linked Push button 68 parameter 2

Remark: Unused locations contain 0xFF

Action

Action number	Action	Parameter 1	Parameter 2
0	Switch status led indication	-	Channel 1...8
1	Lock channel at closed switch	-	Channel 1...8 or 18
2	Lock channel at opened switch	-	Channel 1...8 or 18
3	Lock channel	Timeout	Channel 1...8 or 18
4	Lock/unlock channel	Timeout	Channel 1...8 or 18
5	Unlock channel	-	Channel 1...8 or 18
6	Disable channel program at closed switch	-	Channel 1...8 or 18
7	Disable channel program at opened switch	-	Channel 1...8 or 18
8	Disable channel program channel	Timeout	Channel 1...8 or 18
9	Disable/enable channel program	Timeout	Channel 1...8 or 18
10	Enable channel program	-	Channel 1...8 or 18
11	Select no programs	-	-
12	Select program group 1	-	-
13	Toggle program group 1	-	-
14	Select program group 2	-	-
15	Toggle program group 2	-	-
16	Select program group 3	-	-
17	Toggle program group 3	-	-
18	Enable Alarm 1 at closed switch	-	-
19	Enable Alarm 1 at open switch	-	-
20	Disable Alarm 1 at closed switch	-	-
21	Disable Alarm 1 at open switch	-	-
22	Enable Alarm 1	-	-
23	Enable/Disable Alarm 1	-	-
24	Disable Alarm 1	-	-
25	Enable Alarm 2 at closed switch	-	-
26	Enable Alarm 2 at open switch	-	-
27	Disable Alarm 2 at closed switch	-	-
28	Disable Alarm 2 at open switch	-	-
29	Enable Alarm 2	-	-
30	Enable/Disable Alarm 2	-	-
31	Disable Alarm 2	-	-
32	Enable Sunrise at closed switch	-	-
33	Enable Sunrise at open switch	-	-
34	Disable Sunrise at closed switch	-	-
35	Disable Sunrise at open switch	-	-
36	Enable Sunrise	-	-
37	Enable/Disable Sunrise	-	-
38	Disable Sunrise	-	-
39	Enable Sunset at closed switch	-	-
40	Enable Sunset at open switch	-	-
41	Disable Sunset at closed switch	-	-
42	Disable Sunset at open switch	-	-
43	Enable Sunset	-	-
44	Enable/Disable Sunset	-	-
45	Disable Sunset	-	-
46	Output momentary	-	-
47	Output off	-	-
48	Output on	-	-
49	Output toggle	-	-
50	Output start/stop timer	timeout	-
51	Output restartable timer	timeout	-
52	Output non retriggerable timer	timeout	-

53	Output trigger on release timer	timeout	-
54	Sensor: Comfort mode	Short press sleep time	Long press sleep time
55	Sensor: Day mode	Short press sleep time	Long press sleep time
56	Sensor: Night mode	Short press sleep time	Long press sleep time
57	Sensor: Safe mode	Short press sleep time	Long press sleep time
58	Sensor: Heating mode	-	-
59	Sensor: Cooling mode	-	-
60	Override color at closed switch	Edge	Color number/priority/blink
61	Override color at open switch	Edge	Color number/priority/blink
62	Override color	Edge	Color number/priority/blink
63	Override color timer	Edge	Color number/priority/blink
64	Undo override color	Edge	-
65	Set ambient color at closed switch	Edge	Color number/priority/blink
66	Set ambient color at open switch	Edge	Color number/priority/blink
67	Set ambient color	Edge	Color number/priority/blink
68	Set ambient color timer	Edge	Color number/priority/blink
69	Set ambient default color	Edge	-
70	Set feedback color at closed switch	Edge	Color number/priority/blink
71	Set feedback color at open switch	Edge	Color number/priority/blink
72	Set feedback color	Edge	Color number/priority/blink
73	Set feedback color timer	Edge	Color number/priority/blink
74	Set feedback default color	Edge	-
75	Set continuous feedback color at closed switch	Page/Edge	Color number/priority/blink
76	Set continuous feedback color at open switch	Page/Edge	Color number/priority/blink
77	Set continuous feedback color	Page/Edge	Color number/priority/blink
78	Set continuous feedback color timer	Page/Edge	Color number/priority/blink
79	Set continuous feedback default color	Page/Edge	-
80	Set slow blink feedback color at closed switch	Page/Edge	Color number/priority/blink
81	Set slow blink feedback color at open switch	Page/Edge	Color number/priority/blink
82	Set slow blink feedback color	Page/Edge	Color number/priority/blink
83	Set slow blink feedback color timer	Page/Edge	Color number/priority/blink
84	Set slow blink feedback default color	Page/Edge	-
85	Set fast blink feedback color at closed switch	Page/Edge	Color number/priority/blink
86	Set fast blink feedback color at open switch	Page/Edge	Color number/priority/blink
87	Set fast blink feedback color	Page/Edge	Color number/priority/blink
88	Set fast blink feedback color timer	Page/Edge	Color number/priority/blink
89	Set fast blink feedback default color	Page/Edge	-
90	Sensor: Forced Safe mode at closed switch	-	-
91	Sensor: Forced Safe mode at open switch	-	-
92	Sensor: Forced Safe mode	Timeout	-
93	Sensor: Forced or Cancel Forced Safe mode	Timeout	-
94	Sensor: Cancel Forced Safe mode	-	-
95	Toggle override color	Edge	Color number/priority/blink
96	Inhibit side leds at closed switch	-	-
97	Inhibit side leds mode at open switch	-	-
98	Inhibit side leds	Timeout	-
99	Inhibit side leds or cancel inhibit side leds	Timeout	-
100	Cancel inhibit side leds	-	-
101	Reset Absence timer at closed switch	-	-
102	Output pulse	Timeout (multiple of 10ms)	-
103	Output logical OR		
104	Output logical NOR		
105	Output logical AND		
106	Output logical NAND		
107	Output logical XOR		
108	Output logical XNOR		
109	Output pulse interval at closed switch	Pulse time (multiple of 10ms)	Pause time (multiple of 10ms)

Time parameter

Time parameter	Timeout
0	0s (no timer)
1	1s
2	2s
3	3s
...	
119	1min59s
120	2min

Sleep time parameter	Action
0	No action
1	Select until next program step execution
2	Select for default sleep time (see sensor config.)
3	Select for 15 min (auto return to program)
4	Select for 30 min (auto return to program)
...	...
17	Select for 3h45 min (auto return to program)

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

18	Select for 4h min (auto return to program)
19	Select for 4h30 min (auto return to program)
...	...
33	Select for 11h30 min (auto return to program)
34	Select for 12h (auto return to program)
35	Select for 13h (auto return to program)
...	...
45	Select for 23h (auto return to program)
46	Select for 1 day (auto return to program)
47	Select for 1 day 12h (auto return to program)
...	...
57	Select for 6 days 12h (auto return to program)
58	Select for 7 days (auto return to program)
59	Select for 8 days (auto return to program)
...	...
96	Select for 45 days (auto return to program)
97	Select and ignore all program steps

Edge parameter

Contents	Page/edge
00000001	Left edge
00000010	Top edge
00000100	Right edge
00001000	bottom edge

Blinking/Priority/color palette index

Contents	Blinking/priority/color
0xxxxxxx	Background not blinking/feedback not blinking
1xxxxxxx	Background blinking/feedback blinking
x00xxxxx	Default color palette & feedback blinking mode
x01xxxxx	Color lowest priority
x10xxxxx	Color mid priority
x11xxxxx	Color highest priority
xxx00000	Color palette index 0
xxx00001	Color palette index 1
...	...
xxx11111	Color palette index 31

Channel

Contents	Channel
1	Channel 1
2	Channel 2
3	Dark channel
4	Light channel
5	Motion channel
6	Light depending motion 1 channel
7	Light depending motion 2 channel
8	Absence channel
18	Open collector output (only lock/unlock action)

Address	Contents	Address	Contents
0x04E8	Program step 1 byte1	0x04E5	Program step 1 byte2
0x04EA	Program step 1 byte3	0x04E7	Program step 1 byte4
0x04EC	Program step 1 byte5	0x04E9	Program step 1 byte6
...
0x066E	Program step 66 byte1	0x066F	Program step 66 byte2
0x0670	Program step 66 byte3	0x0671	Program step 66 byte4
0x0672	Program step 66 byte5	0x0673	Program step 66 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

<i>Contents program byte4</i>	<i>Contents program byte2</i>	<i>Description</i>
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

<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	Thermostat safe mode
253	Thermostat night mode
254	Thermostat day mode
255	Thermostat comfort mode

<i>Contents program byte6</i>	Channel
1	Button 1
2	Virtual button 1
3	Dark channel (only action 250 & 251 allowed)
4	Light channel (only action 250 & 251 allowed)
5	Motion channel (only action 250 & 251 allowed)
6	Light depending motion 1 channel (only action 250 & 251 allowed)
7	Light depending motion 2 channel (only action 250 & 251 allowed)
8	Absence channel (only action 250 & 251 allowed)
9	Temperature sensor (only action 252...255 allowed)
18	Open collector output (only action 250 & 251 allowed)

<i>Address</i>	<i>Contents</i>	<i>Address</i>	<i>Contents</i>
0x0674	Location id low byte	0x0675	Location id high byte
0x0676	Group id low byte	0x0677	Group id high byte
0x0678	Module name character 1	0x0679	Module name character 2
...
0x06B6	Module name character 63	0x06B7	Module name character 64
0x06B8	Not used	0x06B9	Not used
0x06BA	Not used	0x06BB	Used for flash writing