VMBMETEO

Meteo station
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:

- Channel status
- Module status
- Module type
- Transmits the first part of alarm channel name
- Bus error counter status
- Memory data
- Memory data block (4 bytes)
- 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
- Temperature value
- Transmit the rain, light and wind raw value:
- Transmit the rain, light and wind value as text string

The module can receive the following commands:

- Linked push button status
- Module type request
- Module status request
- Alarm channel name request
- Clear channel led
- 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
- Enable/disable global sunrise/sunset related actions
- Enable/disable local sunrise/sunset related actions
- Set local alarm clock
- Set global alarm clock
- Lock alarm output channel
- Unlock alarm output channel
- Disable alarm output channel program
- Enable alarm output channel program
- Select program
- Set temperature calibration offset
- Set temperature calibration gain
- Reset minimum and maximum temperature
- Temperature request
- Sensor readout request

Transmits real time clock status request:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = H'00'
RTR = 0
DLC3...DLC0 = 1 data byte 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 data bytes 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 data bytes 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:

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

Transmits the alarm output 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 (H'00')
DATABYTE2 = Channel just pressed
DATABYTE3 = Channel just released
DATABYTE4 = Channel long pressed

Contents	***Alarm output number***
B'00000001'	Alarm output 1
B'00000010'	Alarm output 2
B'00000100'	Alarm output 3
B'00001000'	Alarm output 4
B'00010000'	Alarm output 5
B'00100000'	Alarm output 6
B'01000000'	Alarm output 7
B'10000000'	Alarm output 8

Transmits the module type:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 7 data bytes to send
DATABYTE1 = COMMAND_MODULE_TYPE (H'FF')
DATABYTE2 = VMBMETEO type (H'31')
DATABYTE3 = High byte of serial number
DATABYTE4 = Low byte of serial number
DATABYTE5 = Memory map version
DATABYTE6 = Build year
DATABYTE7 = Build week

Transmits the module status:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 7 databytes to send
DATABYTE1 = COMMAND_MODULE_STATUS (H'ED')
DATABYTE2 = alarm output status (1 = pressed / 0 = released)

Contents	***Alarm output status***
B'xxxxxxx0'	Alarm output 1 off
B'xxxxxxx1'	Alarm output 1 on
B'xxxxxx0x'	Alarm output 2 off
B'xxxxxx1x'	Alarm output 2 on
B'xxxxx0xx'	Alarm output 3 off
B'xxxxx1xx'	Alarm output 3 on
B'xxxx0xxx'	Alarm output 4 off
B'xxxx1xxx'	Alarm output 4 on
B'xxx0xxxx'	Alarm output 5 off
B'xxx1xxxx'	Alarm output 5 on
B'xx0xxxxx'	Alarm output 6 off
B'xx1xxxxx'	Alarm output 6 on
B'x0xxxxxx'	Alarm output 7 off
B'x1xxxxxx'	Alarm output 7 on
B'0xxxxxxx'	Alarm output 8 off
B'1xxxxxxx'	Alarm output 8 on

DATABYTE3 = locked alarm output status (0 = unlocked / 1 = locked)

Contents	***Locked/unlocked alarm output status***
B'xxxxxxx0'	Alarm output 1 unlocked
B'xxxxxxx1'	Alarm output 1 locked
B'xxxxxx0x'	Alarm output 2 unlocked
B'xxxxxx1x'	Alarm output 2 locked
B'xxxxx0xx'	Alarm output 3 unlocked
B'xxxxx1xx'	Alarm output 3 locked
B'xxxx0xxx'	Alarm output 4 unlocked
B'xxxx1xxx'	Alarm output 4 locked
B'xxx0xxxx'	Alarm output 5 unlocked
B'xxx1xxxx'	Alarm output 5 locked
B'xx0xxxxx'	Alarm output 6 unlocked
B'xx1xxxxx'	Alarm output 6 locked
B'x0xxxxxx'	Alarm output 7 unlocked
B'x1xxxxxx'	Alarm output 7 locked
B'0xxxxxxx'	Alarm output 8 unlocked
B'1xxxxxxx'	Alarm output 8 locked

DATABYTE4 = disabled alarm output program (0 = program enabled / 1 = program disabled)

Contents	*Alarm output program enabled/disabled*
B'xxxxxxx0'	Alarm output 1 program enabled
B'xxxxxxx1'	Alarm output 1 program disabled
B'xxxxxx0x'	Alarm output 2 program enabled
B'xxxxxx1x'	Alarm output 2 program disabled
B'xxxxx0xx'	Alarm output 3 program enabled
B'xxxxx1xx'	Alarm output 3 program disabled
B'xxxx0xxx'	Alarm output 4 program enabled
B'xxxx1xxx'	Alarm output 4 program disabled
B'xxx0xxxx'	Alarm output 5 program enabled
B'xxx1xxxx'	Alarm output 5 program disabled
B'xx0xxxxx'	Alarm output 6 program enabled
B'xx1xxxxx'	Alarm output 6 program disabled
B'x0xxxxxx'	Alarm output 7 program enabled
B'x1xxxxxx'	Alarm output 7 program disabled
B'0xxxxxxx'	Alarm output 8 program enabled
B'1xxxxxxx'	Alarm output 8 program disabled

DATABYTE5 = clock alarm & program selection

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

DATABYTE6 = auto send time interval into seconds
(Valid range: 10…255s)
(5 = auto send when changed with minimum 1 minute time interval)
(6 = auto send when 3.125% changed on rain, light or wind with minimum 1 minute time interval)
(7 = auto send when 6.25% changed on rain, light or wind with minimum 1 minute time interval)
(8 = auto send when 12.5% changed on rain, light or wind with minimum 1 minute time interval)
(9 = auto send when 25% changed on rain, light or wind with minimum 1 minute time interval)
(1…4 = auto send disabled)
(0 = no change auto send interval)

DATABYTE7 = test modus

Contents	*Test modus*
B'0xxxxxxx'	Test modus inactive
B'10xxxxxx'	Test modus active

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: 0x0000 to 0x03FF

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: 0x0000 to 0x03FC

Transmits the first part of alarm 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

Contents	***Channel***
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 alarm 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

Contents	*Channel*
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 alarm 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

Contents	*Channel*
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 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 (H'E6')
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	11100000	63.5°C
00000000	00100000	0.0625°C
00000000	00000000	0°C
11111111	11100000	-0.0625°C
10010010	00000000	-55°C

Transmit the rain, light and wind raw value:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 7 data bytes to send
DATABYTE1 = COMMAND_SENSOR_RAW_DATA (H'A9')
DATABYTE2 = High byte current rain value
DATABYTE3 = Low byte current rain value (value x 0.1mm/h)
DATABYTE4 = High byte current light value
DATABYTE5 = Low byte current light value (lux)
DATABYTE6 = High byte current wind value
DATABYTE7 = Low byte current wind value (value x 0.1km/h)

Transmit the rain, light and wind value as a text string:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = number of databytes to send
DATABYTE1 = COMMAND_TEXT (H'AC')
DATABYTE2 = remote analog sensor channel

Contents	***Sensor***
B'00000010'	Rain
B'00000100'	Light
B'00001000'	Wind

DATABYTE3 = text start position
DATABYTE4 = character 1
DATABYTE5 = character 2
DATABYTE6 = character 3
DATABYTE7 = character 4
DATABYTE8 = character 5

Remark:
valid text start position: 0…15
maximum 15 characters are allowed
shorter text stings must be ended with a zero value

'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

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

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

'Set date' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 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:

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:

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

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

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

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 databytes to send
DATABYTE1 = COMMAND_ENA_DIS_SUNRISE_SUNSET (H'AE')
DATABYTE2 = Channel (FF)
DATABYTE3 = enable/disable flags

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

'Set global clock alarm' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = 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

'Alarm 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

Contents	***Channel***
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

'Temperature request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes to send
DATABYTE1 = COMMAND_SENSOR_TEMP_REQUEST (H'E5')
DATABYTE2 = Auto send time interval into seconds
(valid range: 10…255s)
(5 = auto send when changed with minimum 1 minute time interval)
(6 = auto send when 3.125% changed on rain, light or wind with minimum 1 minute time interval)
(7 = auto send when 6.25% changed on rain, light or wind with minimum 1 minute time interval)
(8 = auto send when 12.5% changed on rain, light or wind with minimum 1 minute time interval)
(9 = auto send when 25% changed on rain, light or wind with minimum 1 minute time interval)
(1…4 = auto send disabled)
(0 = no change on auto send interval)

'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 (H'E4')
DATABYTE2 = Pointer to temperature variable (0…20)

Contents	Temperature variable
11	Calibration offset (-8°…+7.5°C)
12	Reset minimum/maximum temperature
28	Calibration gain factor

DATABYTE3 = calibration offset (resolution 0.5°)

Contents	Callibration offset
00001111	+7.5°C
00000001	+0.5°C
00000000	0°C
11111111	-0.5°C
11110000	-8°C

DATABYTE3 = Reset minimum/maximum temperature

Contents	Reset temperature
00000001	Reset minimum temperature
00000010	Reset maximum temperature

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

'Sensor readout request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 databytes to send
DATABYTE1 = COMMAND_SENSOR_VALUE_REQUEST (H'E5')
DATABYTE2 =Sensor channel

Contents	***Sensor***
B'00000010'	Rain
B'00000100'	Light
B'00001000'	Wind

DATABYTE3 = Autosend time interval into seconds
(valid range: 10…255s)
(5 = auto send when changed with minimum 1 minute time interval)
(6 = auto send when 3.125% changed on rain, light or wind with minimum 1 minute time interval)
(7 = auto send when 6.25% changed on rain, light or wind with minimum 1 minute time interval)
(8 = auto send when 12.5% changed on rain, light or wind with minimum 1 minute time interval)
(9 = auto send when 25% changed on rain, light or wind with minimum 1 minute time interval)
(1…4 = auto send disabled)
(0 = no change on auto send interval)

'Set or Clear test mode' command received:

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

Contents	***Operating mode***
B'00000000'	Normal
B'00000001'	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 databytes received
DATABYTE1 = COMMAND_CLEAR_LED (H'F5')
DATABYTE2 = LEDs to clear (a one clears the corresponding LED of channel 1 to 8)

'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_CONTER_STATUS_REQUEST (H'D9')

'Unlock alarm output 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

Contents	*Alarm output channel*
B'xxxxxxx1'	Alarm output 1
B'xxxxxx1x'	Alarm output 2
B'xxxxx1xx'	Alarm output 3
B'xxxx1xxx'	Alarm output 4
B'xxx1xxxx'	Alarm output 5
B'xx1xxxxx'	Alarm output 6
B'x1xxxxxx'	Alarm output 7
B'1xxxxxxx'	Alarm output 8

'Lock alarm output 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

Contents	*Alarm output channel*
B'xxxxxxx1'	Alarm output 1
B'xxxxxx1x'	Alarm output 2
B'xxxxx1xx'	Alarm output 3
B'xxxx1xxx'	Alarm output 4
B'xxx1xxxx'	Alarm output 5
B'xx1xxxxx'	Alarm output 6
B'x1xxxxxx'	Alarm output 7
B'1xxxxxxx'	Alarm output 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 alarm output 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

Contents	*Alarm output channel*
B'xxxxxxx1'	Alarm output 1
B'xxxxxx1x'	Alarm output 2
B'xxxxx1xx'	Alarm output 3
B'xxxx1xxx'	Alarm output 4
B'xxx1xxxx'	Alarm output 5
B'xx1xxxxx'	Alarm output 6
B'x1xxxxxx'	Alarm output 7
B'1xxxxxxx'	Alarm output 8

'Disable alarm output 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

Contents	***Channel***
B'xxxxxxx1'	Alarm output 1
B'xxxxxx1x'	Alarm output 2
B'xxxxx1xx'	Alarm output 3
B'xxxx1xxx'	Alarm output 4
B'xxx1xxxx'	Alarm output 5
B'xx1xxxxx'	Alarm output 6
B'x1xxxxxx'	Alarm output 7
B'1xxxxxxx'	Alarm output 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

Contents	***Selected programl***
0	None
1	Group 1 (ex. Summer)
2	Group 2 (ex. Winter)
3	Group 3 (ex. Holiday)

Memory map version 1:

Address	*Contents*	*Address*	*Contents*
0x0000	Alarm output 1 name character 1	0x0001	Alarm output 1 name character 2
...	...	...	...
0x000E	Alarm output 1 name character 15	0x000F	Alarm output 1 name character 16
0x0010	Alarm output 2 name character 1	0x0011	Alarm output 2 name character 2
...	...	...	...
0x001E	Alarm output 2 name character 15	0x001F	Alarm output 2 name character 16
0x0020	Alarm output 3 name character 1	0x0021	Alarm output 3 name character 2
...	...	...	...
0x002E	Alarm output 3 name character 15	0x002F	Alarm output 3 name character 16
0x0030	Alarm output 4 name character 1	0x0031	Alarm output 4 name character 2
...	...	...	...
0x003E	Alarm output 4 character 15	0x003F	Alarm output 4 name character 16
0x0040	Alarm output 5 name character 1	0x0041	Alarm output 5 name character 2
...	...	...	...
0x004E	Alarm output 5 name character 15	0x004F	Alarm output 5 name character 16
0x0050	Alarm output 6 name character 1	0x0051	Alarm output 6 name character 2
...	...	...	...
0x005E	Alarm output 6 name character 15	0x005F	Alarm output 6 name character 16
0x0060	Alarm output 7 name character 1	0x0061	Alarm output 7 name character 2
...	...	...	...
0x006E	Alarm output 7 name character 15	0x006F	Alarm output 7 name character 16
0x0070	Alarm output 8 name character 1	0x0071	Alarm output 8 name character 2
...	...	...	...
0x007E	Alarm output 8 character 15	0x007F	Alarm output 8 name character 16
0x0080	Temperature calibration offset	0x0081	Temperature calibration gain
0x0082	Module terminator	0x0083	Clock alarm configuration
0x0084	Wake up 1 hour (0…23)	0x0085	Wake up 1 minutes (0…59)
0x0086	Go to bed 1 hour (0…23)	0x0087	Go to bed 1 minutes (0…59)
0x0088	Wake up 2 hour (0…23)	0x0089	Wake up 2 minutes (0…59)
0x008A	Go to bed 2 hour (0…23)	0x008B	Go to bed 2 minutes (0…59)
0x008C	Sunrise hour at 21 December (0…23)	0x008D	Sunrise minutes at 21 December (0…59)
0x008E	Sunrise 21 January – sunrise 5 January (-128'..127')	0x008F	Sunrise 5 February – sunrise 21 January (-128'..127')
0x0090	Sunrise 21 February – sunrise 5 February (-128'..127')	0x0091	Sunrise 5 March – sunrise 21 February (-128'..127')
0x0092	Sunrise 21 March – sunrise 5 March (-128'..127')	0x0093	Sunrise 5 April – sunrise 21 March (-128'..127')
0x0094	Sunrise 21 April – sunrise 5 April (-128'..127')	0x0095	Sunrise 5 May – sunrise 21 April (-128'..127')
0x0096	Sunrise 21 May – sunrise 5 May (-128'..127')	0x0097	Sunrise 5 June – sunrise 21 May (-128'..127')
0x0098	Sunrise 21 June – sunrise 5 June (-128'..127')	0x0099	Sunrise 5 July – sunrise 21 June (-128'..127')
0x009A	Sunrise 21 July – sunrise 5 July (-128'..127')	0x009B	Sunrise 5 August – sunrise 21 July (-128'..127')
0x009C	Sunrise 21 August – sunrise 5 August (-128'..127')	0x009D	Sunrise 5 September – sunrise 21 August (-128'..127')
0x009E	Sunrise 21 September – sunrise 5 September (-128..127')	0x009F	Sunrise 5 October – sunrise 21 September (-128'..127')
0x00A0	Sunrise 21 October – sunrise 5 October (-128'..127')	0x00A1	Sunrise 5 November – sunrise 21 October (-128'..127')
0x00A2	Sunrise 21 November – sunrise 5 November (-128'..127')	0x00A3	Sunrise 5 December – sunrise 21 November (-128'..127')
0x00A4	Sunrise 21 December – sunrise 5 December (-128'..127')	0x00A5	Sunrise 5 January – sunrise 21 December (-128'..127')
0x00A6	Sunset hour at 21 December (0…23)	0x00A7	Sunset minutes at 21 December (0…59)
0x00A8	Sunset 21 January – sunrise 5 January (-128'..127')	0x00A9	Sunset 5 February – sunrise 21 January (-128'..127')
0x00AA	Sunset 21 February – sunrise 5 February (-128'..127')	0x00AB	Sunset 5 March – sunrise 21 February (-128'..127')
0x00AC	Sunset 21 March – sunrise 5 March (-128'..127')	0x00AD	Sunset 5 April – sunrise 21 March (-128'..127')
0x00AE	Sunset 21 April – sunrise 5 April (-128'..127')	0x00AF	Sunset 5 May – sunrise 21 April (-128'..127')
0x00B0	Sunset 21 May – sunrise 5 May (-128'..127')	0x00B1	Sunset 5 June – sunrise 21 May (-128'..127')
0x00B2	Sunset 21 June – sunrise 5 June (-128'..127')	0x00B3	Sunset 5 July – sunrise 21 June (-128'..127')
0x00B4	Sunset 21 July – sunrise 5 July (-128'..127')	0x00B5	Sunset 5 August – sunrise 21 July (-128'..127')
0x00B6	Sunset 21 August – sunrise 5 August (-128'..127')	0x00B7	Sunset 5 September – sunrise 21 August (-128'..127')
0x00B8	Sunset 21 September – sunrise 5 September (-128'..127')	0x00B9	Sunset 5 October – sunrise 21 September (-128'..127')
0x00BA	Sunset 21 October – sunrise 5 October (-128'..127')	0x00BB	Sunset 5 November – sunrise 21 October (-128'..127')
0x00BC	Sunset 21 November – sunrise 5 November (-128'..127')	0x00BD	Sunset 5 December – sunrise 21 November (-128'..127')
0x00BE	Sunset 21 December – sunrise 5 December (-128'..127')	0x00BF	Sunset 5 January – sunrise 21 December (-128'..127')
0x00C0	Rain sensor name character 1	0x00C1	Rain sensor name character 2
...	...	...	...
0x00CE	Rain sensor name character 15	0x00CF	Rain sensor name character 16
0x00D0	Light sensor name character 1	0x00D1	Light sensor name character 2
...	...	...	...
0x00DE	Light sensor name character 15	0x00DF	Light sensor name character 16
0x00E0	Wind sensor name character 1	0x00E1	Wind sensor character 2
...	...	...	...
0x00EE	Wind sensor name character 15	0x00EF	Wind sensor name character 16

0x00F0	Not used	0x00F1	Not used
0x00F2	Not used	0x00F3	Not used
0x00F4	Auto send time interval	0x00F5	Program selection (none/group1/group2/group3)
0x00F6	Output alarms program disable/enable flags	0x00F7	Output alarms locked/unlocked flags
0x00F8	Current day (1…31)	0x00F9	Current month (1…12)

Address	*Contents*	*Address*	*Contents*
0x00FA	Current year high byte	0x00FB	Current year low byte
0x00FC	Zone address	0x00FD	Module address
0x00FE	Serial number high	0x00FF	Serial number low

Remark:
Unused locations contain H'FF'
Do not overwrite the following address location:

0x00F4	auto send time interval
0x00F5	program selection
0x00F6	output alarms program enable/disable
0x00F7	output alarms locked/unlocked
0x00F8'	current day of month
0x00F9'	current month
0x00FA & 0x00FB	current year
0x00FC'	zone address
0x00FD'	module address
0x00FE & 0x00FF	module serial number

Temperature 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 calibration gain:

Contents	Calibration gain
0	Calibration gain
…	…
128	Calibration gain (default)
…	…
255	Calibration gain

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

Clock alarm configuration

Contents	*Clock alarm flags*
B'xxxxxxx0'	Clock alarm 1 disabled
B'xxxxxxx1'	Clock alarm 1 enabled
B'0xxxxx0x'	Local clock alarm 1
B'1xxxxx1x'	Global clock alarm 1
B'xxxxx0xx'	Clock alarm 2 disabled
B'xxxxx1xx'	Clock alarm 2 enabled
B'xxxx0xxx'	Local clock alarm 2
B'xxxx1xxx'	Global clock 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

Auto send time interval into seconds
valid range: 10…255s fixed interval

(5 = auto send when changed with minimum 1 minute time interval)
(6 = auto send when 3.125% changed on rain, light or wind with min. 1minute time interval)
(7 = auto send when 6.25% changed on rain, light or wind with min. 1 minute time interval)
(8 = auto send when 12.5% changed on rain, light or wind with min. 1 minute time interval)
(9 = auto send when 25% changed on rain, light or wind with minimum 1 minute time interval)
1…4 = auto send disabled
0 = no change on auto send interval

Program selection

Contents	*Selected program*
0	None
1	Group 1
2	Group 2
3	Group 3

Alarm output program disabled/enabled flags

Contents	*program enabled/disabled for alarm output*
B'xxxxxxx0'	Programs enabled for alarm output 1
B'xxxxxxx1'	Programs disabled for alarm output 1
B'xxxxxx0x'	Programs enabled for alarm output 2
B'xxxxxx1x'	Programs disabled for alarm output 2
B'xxxxx0xx'	Programs enabled for alarm output 3
B'xxxxx1xx'	Programs disabled for alarm output 3
B'xxxx0xxx'	Programs enabled for alarm output 4
B'xxxx1xxx'	Programs disabled for alarm output 4
B'xxx0xxxx'	Programs enabled for alarm output 5
B'xxx1xxxx'	Programs disabled for alarm output 5
B'xx0xxxxx'	Programs enabled for alarm output 6
B'xx1xxxxx'	Programs disabled for alarm output 6
B'x0xxxxxx'	Programs enabled for alarm output 7
B'x1xxxxxx'	Programs disabled for alarm output 7
B'0xxxxxxx'	Programs enabled for alarm output 8
B'1xxxxxxx'	Programs disabled for alarm output 8

Alarm output locked/unlocked flags

Contents	*Alarm output locked/unlocked*
B'xxxxxxx0'	Alarm output 1 unlocked
B'xxxxxxx1'	Alarm output 1 locked
B'xxxxxx0x'	Alarm output 2 unlocked
B'xxxxxx1x'	Alarm output 2 locked
B'xxxxx0xx'	Alarm output 3 unlocked
B'xxxxx1xx'	Alarm output 3 locked
B'xxxx0xxx'	Alarm output 4 unlocked
B'xxxx1xxx'	Alarm output 4 locked
B'xxx0xxxx'	Alarm output 5 unlocked
B'xxx1xxxx'	Alarm output 5 locked
B'xx0xxxxx'	Alarm output 6 unlocked
B'xx1xxxxx'	Alarm output 6 locked
B'x0xxxxxx'	Alarm output 7 unlocked
B'x1xxxxxx'	Alarm output 7 locked
B'0xxxxxxx'	Alarm output 8 unlocked
B'1xxxxxxx'	Alarm output 8 locked

Address	*Contents*	*Address*	*Contents*
0x0100	Linked Push button 1 module address	0x0101	Linked Push button 1 bit number
0x0102	Linked Push button 1 action	0x0103	Linked Push button 1 time parameter
0x0104	Linked Push button 1 channel parameter	...	
...	...	...	...
0x01FA	Linked Push button 51 module address	0x01FB	Linked Push button 51 bit number
0x01FC	Linked Push button 51 action	0x01FD	Linked Push button 51 time parameter
0x01FE	Linked Push button 51 channel parameter	0x01FF	Not used

Remark: Unused locations contain H'FF'

Action

Action number	**Action**	**Time parameter**	**Bit number**
0	Lock channel at closed switch	-	Channel bit
1	Lock channel at opened switch	-	Channel bit
2	Lock channel	Timeout	Channel bit
3	Lock/unlock channel	Timeout	Channel bit
4	Unlock channel	-	Channel bit
5	Disable channel program at closed switch	-	Channel bit
6	Disable channel program at opened switch	-	Channel bit
7	Disable channel program	Timeout	Channel bit
8	Disable/enable channel program	Timeout	Channel bit
9	Enable channel program	-	Channel bit
10	Select no programs	-	-
11	Select program group 1 (e.g. summer programs)	-	-
12	Select/deselect program group 1 (e.g. summer programs)	-	-
13	Select program group 2 (e.g. winter programs)	-	-
14	Select/deselect program group 2 (e.g. winter programs)	-	-
15	Select program group 3 (e.g. holiday programs)	-	-
16	Select/deselect program group 3 (e.g. holiday programs)	-	-
17	Enable Clock Alarm 1 at closed switch	-	-
18	Enable Clock Alarm 1 at open switch	-	-
19	Disable Clock Alarm 1 at closed switch	-	-
20	Disable Clock Alarm 1 at open switch	-	-
21	Enable Clock Alarm 1	-	-
22	Enable/Disable Clock Alarm 1	-	-
23	Disable Clock Alarm 1	-	-
24	Enable Clock Alarm 2 at closed switch	-	-
25	Enable Clock Alarm 2 at open switch	-	-
26	Disable Clock Alarm 2 at closed switch	-	-
27	Disable Clock Alarm 2 at open switch	-	-
28	Enable Clock Alarm 2	-	-
29	Enable/Disable Clock Alarm 2	-	-
30	Disable Clock Alarm 2	-	-
31	Enable Sunrise at closed switch	-	-
32	Enable Sunrise at open switch	-	-
33	Disable Sunrise at closed switch	-	-
34	Disable Sunrise at open switch	-	-
35	Enable Sunrise	-	-
36	Enable/Disable Sunrise	-	-
37	Disable Sunrise	-	-
38	Enable Sunset at closed switch	-	-
39	Enable Sunset at open switch	-	-
40	Disable Sunset at closed switch	-	-
41	Disable Sunset at open switch	-	-
42	Enable Sunset	-	-
43	Enable/Disable Sunset	-	-
44	Disable Sunset	-	-

Bit Number

Contents	*Bit number*
B’00000001’	Alarm output 1
B’00000010’	Alarm output 2
B’00000100’	Alarm output 3
B’00001000’	Alarm output 4
B’00010000’	Alarm output 5
B’00100000’	Alarm output 6
B’01000000’	Alarm output 7
B’10000000’	Alarm output 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

Address	*Contents*	*Address*	*Contents*
0x0200	Program step 1 byte1	0x0201	Program step 1 byte2
0x0202	Program step 1 byte3	0x0203	Program step 1 byte4
0x0204	Program step 1 byte5	0x0205	Program step 1 byte6
…	…	…	…
0x02F6	Program step 42 byte1	0x02F7	Program step 42 byte2
0x02F8	Program step 42 byte3	0x02F9	Program step 42 byte4
0x02FA	Program step 42 byte5	0x02FB	Program step 42 byte6
0x02FC	Not used	0c02FD	Not used
0x02FE	Not used	0x02FF	Not used

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
B’x1xxxxxx’	Program group 2
B’1xxxxxxx’	Program group3

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

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

Contents program byte5	**Action**
0	Unlock
1	Lock

Contents program byte6	**Channel**
B’00000001’	Alarm output 1
B’00000010’	Alarm output 2
B’00000100’	Alarm output 3
B’00001000’	Alarm output 4
B’00010000’	Alarm output 5
B’00100000’	Alarm output 6
B’01000000’	Alarm output 7
B’10000000’	Alarm output 8

0x0300	Alarm condition 1 flags	0x0301	Alarm condition 1 ‘On’ limit low byte
0x0302	Alarm condition 1 ‘On’ limit high byte	0x0303	Alarm condition 1 ‘Off’ limit low byte
0x0304	Alarm condition 1 ‘Off’ limit high byte	0x0305	Alarm condition 1 ‘Off-to-On’ reaction time
0x0306	Alarm condition 1 ‘On-to-Off’ reaction time	0x0307	…
	…		…
0x03A0	…	0x03A1	Alarm condition 24 setting flags
0x03A2	Alarm condition 24 ‘On’ limit low byte	0x03A3	Alarm condition 24 ‘On’ limit high byte
0x03A4	Alarm condition 24 ‘Off’ limit low byte	0x03A5	Alarm condition 24 ‘Off’ limit high byte
0x03A6	Alarm condition 24 ‘Off-to-On’ reaction time	0x03A7	Alarm condition 24 ‘On-to-Off’ reaction time

Alarm condition flag

Contents	***Alarm settings flags***
B’xxxxxx00’	Temperature alarm type
B’xxxxxx01’	Rain intensity alarm type
B’xxxxxx10’	Light alarm type
B’xxxxxx11’	Wind speed alarm type
B’xxxxx0xx’	‘Greater or equal than’ alarm type (normal)
B’xxxxx1xx’	‘Less than’ alarm type (inverted)
B’xxxx0xxx’	Logical OR alarm operator
B’xxxx1xxx’	Logical AND alarm operator
B’0000xxxx’	Assigned to alarm output 1
B’0001xxxx’	Assigned to alarm output 2
B’0010xxxx’	Assigned to alarm output 3
B’0011xxxx’	Assigned to alarm output 4
B’0100xxxx’	Assigned to alarm output 5
B’x101xxxx’	Assigned to alarm output 6
B’0110xxxx’	Assigned to alarm output 7
B’0111xxxx’	Assigned to alarm output 8
B’1xxxxxxx’	End of alarm

Temperature alarm ‘On’ and ‘Off’ limit setting = (TempAlarm + 55)*512

High byte	Low byte	Temperature alarm
11101101	11100000	63.5°C
01101110	00100000	0.0625°C
01101110	00000000	0°C
01101101	11100000	-0.0625°C
00000000	00000000	-55°C

Rain alarm ‘On’ and ‘Off’ limit setting = RainAlarm*10

High byte	Low byte	Rain alarm
0x00	0x00	0.0 mm/h
0x00	0x01	0.1 mm/h
0x00	0x02	0.2 mm/h
…	…	…
0x00	0x64	10.0 mm/h
…	…	

Light alarm ‘On’ and ‘Off’ limit setting

High byte	Low byte	Light alarm
0x00	0x00	0 lux
0x00	0x01	1 lux
0x00	0x02	2 lux
…	…	…
0x00	0x64	100 lux
…	…	
0xFF	0xFF	65535 lux

Wind alarm 'On' and 'Off' limit setting = WindAlarm * 10

High byte	Low byte	Wind alarm
0x00	0x00	0.0 km/h
0x00	0x01	0.1 km/h
0x00	0x02	0.2 km/h
…	…	…
0x00	0x64	10.0 km/h
…	…	

Alarm condition 'Off-to-On' and 'On-to-Off' reaction times

contents	***Reaction time***
0	0s
1	1s
2	2s
...	
59	59s
60	1min
61	1min1s
...	
…	
119	1min59s
120	2min
121	2min15s
...	
131	4min45s
132	5min
133	5min30s
...	
181	29min30s
182	30min
183	31min
...	
211	59min
212	1h

0x03A8	Location id low byte	0x03A9	Location id high byte
0x03AA	Group id low byte	0x03AB	Group id high byte
0x03AC	Not used	0x03AD	Not used
0x03AE	Not used	0x03AF	Not used
0x03B0	Temperature sensor name character 1	0x03B1	Temperature sensor name character 2
…	..	..	..
0x03BE	Temperature sensor e name character 51	0x03BF	Temperature sensor name character 52
0x03C0	Module name character 1	0x03C1	Module name character 2
…	..	..	..
0x03FE	Module name character 63	0x03FF	Module name character 64