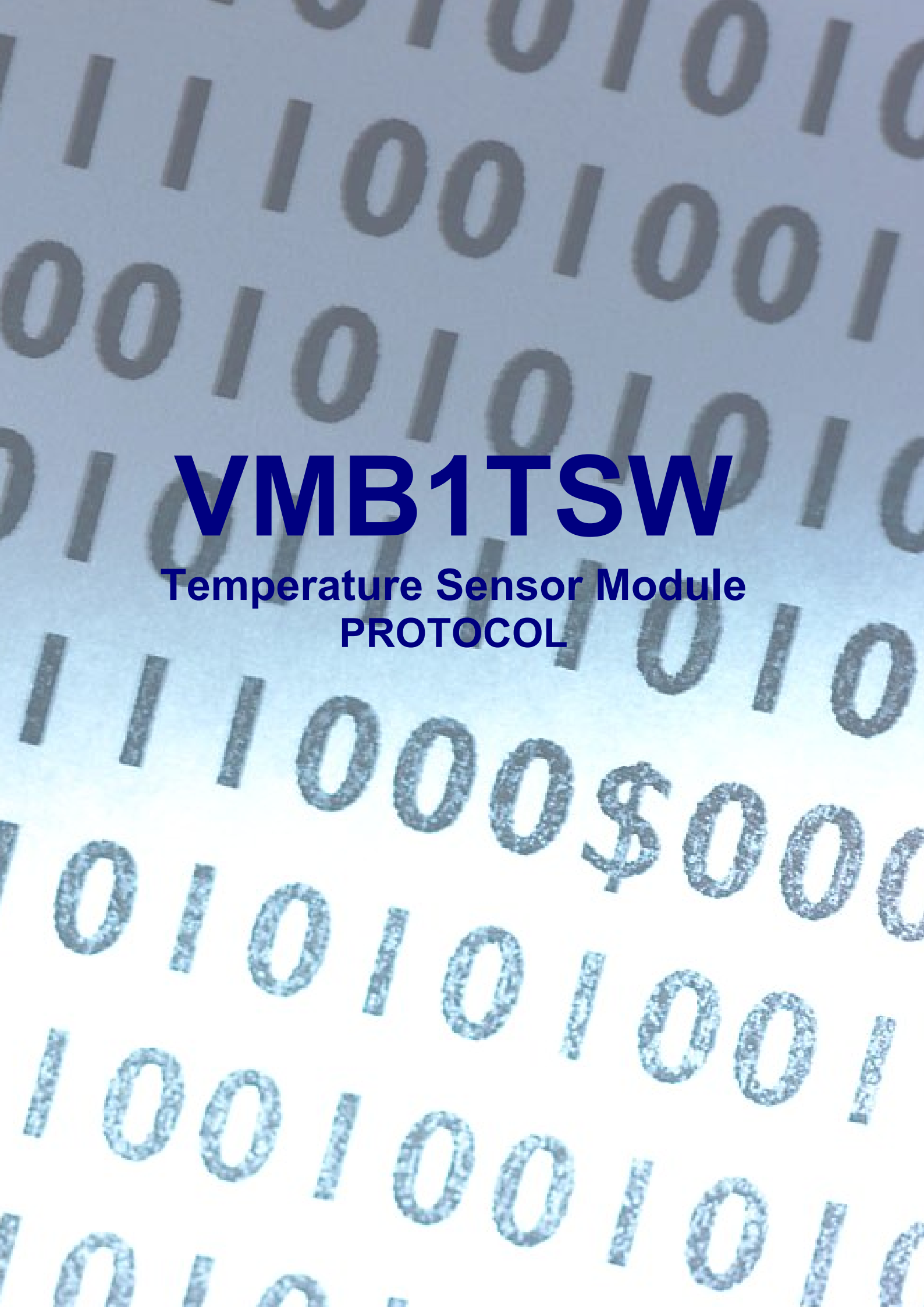

VMB1TSW

Temperature Sensor Module

PROTOCOL

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 temperature sensor module can transmit the following messages:

- Sensor output status
- Manual push buttons status
- Sensor status
- Sensor temperature (incl. minimum and maximum)
- Time statistics (heater/cooler operation time)
- First, second and third part of the sensor settings
- Sensor configuration data
- Module type
- Bus error counter status
- First, second and third part of the sensor name
- Memory data
- Memory data block (4 bytes)

The temperature sensor module can transmit the following commands:

- Updates LEDs on a push button module
- Clears LEDs on a push button module
- Sets LEDs on a push button module
- Blinks LEDs slowly on a push button module
- Blinks LEDs very fast on a push button module
- Set target temperature of the differential sensor

The temperature sensor module can receive the following message:

- Push button status

The temperature sensor module can receive the following commands:

- Update output LED
- Clear output LED
- Set output LED
- Blink output LED slowly
- Blink output LED fast
- Blink output LED very fast
- Clear Push button Led
- Module type request
- Bus error counter status request
- Sensor temperature request
- Reset min/max temperature
- Sensor status request
- Sensor settings request
- Sensor configuration data request
- Sensor name request
- Time statistics request
- Enable/disable anti block heating valve and pump
- Reset time statistics
- Lock local control
- Unlock local control
- Sensor zone number
- Set heating mode
- Set cooling mode
- Set temperature
- Switch to comfort mode
- Switch to day mode
- Switch to night mode
- Switch to safe temperature mode
- Set default sleep time
- Read memory data
- Read memory data block (4 bytes)
- Memory dump request
- Write memory data
- Write memory data block (4 bytes)
- Program availability

Transmits the sensor output status:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 4 databytes to send
DATABYTE1 = COMMAND_OUTPUT_STATUS (H'00')
DATABYTE2 = Output channel just activated (1 = just activated)

Contents	Output channel
0xx1xxx1	Heater just activated
0xxxxx1x	Turbo heater/cooler just activated
0xxxx1xx	Comfort or day mode just activated
0xxx1xxx	Cooler just activated
0x1xxxxx	Low temperature alarm activated
01xxxxxx	High temperature alarm activated

DATABYTE3 = Outputs just deactivated (1 = just deactivated)

Contents	Output channel
0xx1xxx1	Heater just deactivated
0xxxxx1x	Turbo heater/cooler just deactivated
0xxxx1xx	Comfort or day mode just deactivated
0xxx1xxx	Cooler just deactivated
0x0xxxxx	Low temperature alarm deactivated
00xxxxxx	High temperature alarm deactivated

DATABYTE4 = always zero

Transmits the manual push button status:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 4 databytes to send
DATABYTE1 = COMMAND_PUSHBUTTON_STATUS (H'00')
DATABYTE2 = Push buttons just pressed (1 = just pressed)

Contents	Manual push button channel
xxxxxxx1	Heater push button just pressed
xxxxxx1x	Turbo heater/cooler push button just pressed
xxxxx1xx	Day mode push button just pressed
xxxx1xxx	Cooler push button just pressed
xxx1xxxx	Mode & heater (pump) button just pressed
xx1xxxxx	Mode & turbo (low alarm) button just pressed
x1xxxxxx	Mode & day (high alarm) button just pressed

DATABYTE3 = Push buttons just released (1 = just released)

Contents	Manual push button channel
xxxxxxx1	Heater push button just released
xxxxxx1x	Turbo heater/cooler push button just released
xxxxx1xx	Day mode push button just released
Xxxx1xxx	Cooler push button just released
xxx1xxxx	Mode & heater (pump) button just released
xx1xxxxx	Mode & turbo (low alarm) button just released
x1xxxxxx	Mode & day (high alarm) button just released

DATABYTE4 = Push buttons long pressed (1 = longer than 0.85s pressed)

Contents	Manual push button channel
xxxxxxx1	Heater push button long pressed
xxxxxx1x	Turbo heater/cooler push button long pressed
xxxxx1xx	Day mode push button long pressed
Xxxx1xxx	Cooler push button long pressed
xxx1xxxx	Mode & heater (pump) button long pressed
xx1xxxxx	Mode & turbo (low alarm) button long pressed
x1xxxxxx	Mode & day (high alarm) button long pressed

Transmit the sensor status (Build 0949):

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 8 databytes to send
DATABYTE1 = COMMAND_TEMP_SENSOR_STATUS (H'EA')
DATABYTE2 = Operating mode

Contents	Operating mode
xxxxxxx1	Mode push button locked
xxxxxxx0	Mode push button unlocked
Xxxxx11x	Disable mode
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)
1000xxxx	Cooler mode
0xxxxxxx	Heater mode

DATABYTE3 = Program step mode

Contents	Program step mode
xxxxx0xx	No sensor program
xxxxx1xx	Sensor program available
xxxx0xxx	No zone program
xxxx1xxx	Zone program available
0xxxxxxx	No all rooms program
1xxxxxxx	All rooms program 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
xxxxxxx1	Enable unjamming pump
xxxxxxx0	Disable unjamming pump

DATABYTE4 = Output status (1 = activated)

Contents	Output channel
0xx0xxx0	Heater/pump off
0xx1xxx1	Heater/pump on
0xxxxx0x	Boost heater/cooler off
0xxxxx1x	Boost heater/cooler on
0xxxx0xx	Comfort and day mode off
0xxxx1xx	Comfort or day mode on
0xxx0xxx	Cooler off
0xxx1xxx	Cooler on
0x0xxxxx	Low alarm off
0x1xxxxx	Low alarm on
00xxxxxx	High alarm off
01xxxxxx	High alarm 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 H'FFFF', the sensor is in manual mode.

Transmit the sensor temperature:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 7 databytes 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
00000001	00000000	0.5°C
00000000	10000000	0.25°C
00000000	01000000	0.125°C
00000000	00100000	0.0625°C
00000000	00000000	0°C
11111111	11100000	-0.0625°C
11111111	11000000	-0.125°C
11111111	10000000	-0.25°C
11111110	00000000	-0.5°C
10010010	00000000	-55°C

Remark:
The 5 least significant bits of the low byte are always zero.
The low order bytes are not sending with the data length of 4 bytes (resolution 0.5°C)

Transmit time statistics

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 8 databytes to send
DATABYTE1 = COMMAND_TIME_STATISTICS (H'C8')
DATABYTE2 = statistics mode index

Contents	Time statistics
10000001	Heating antifreeze mode time statistics
10000010	Heating night mode time statistics
10000100	Heating day mode time statistics
10001000	Heating comfort mode time statistics
10010000	Heating global time statistics
01000001	Cooling standby mode time statistics
01000010	Cooling night mode time statistics
01000100	Cooling day mode time statistics
01001000	Cooling comfort mode time statistics
01010000	Cooling global time statistics

DATABYTE3 = 'ON' time (hours bcd digits 4 & 3)
DATABYTE4 = 'ON' time (hours bcd digits 2 & 1)
DATABYTE5 = 'ON' time (minutes bcd digits 2 & 1)
DATABYTE6 = Mode time (hours bcd digits 4 & 3)
DATABYTE7 = Mode time (hours bcd digits 2 & 1)
DATABYTE8 = Mode time (minutes bcd digits 2 & 1)

Remark:
The time is bcd formatted.
Databytes 3, 4 & 5 gives the total 'ON' time of the heater or cooler in the corresponding mode.
Databytes 6, 7 & 8 gives the total time of selected mode.

Transmit the first part of the sensor settings (Build 0949):

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 8 databytes to send
DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_PART1 (H'E8')
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 freeze temperature set for heating mode (resolution 0.5°)
DATABYTE7 = 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 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 8 databytes to send
DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_PART2 (H'E9')
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)
(1…9 = autosend when temperature changed)
(0 = autosend disabled)

Transmit the third part of the sensor settings:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 7 databytes to send
DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_PART3 (H'C6')
DATABYTE2 = Low temperature alarm setting (resolution 0.5°)
DATABYTE3 = High temperature alarm setting (resolution 0.5°)
DATABYTE4 = Lower temperature range cool mode (resolution 0.5°)
DATABYTE5 = Upper temperature range heat mode (resolution 0.5°)
DATABYTE6 = Calibration 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 = Differential (slave) sensor address (H'FF': no slave sensor)

Transmit the fourth part of the sensor settings (Build 0949):

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes to send
DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_PART4 (H'B9')
DATABYTE2 = Minimum switching time *(Build 0949)*:

Contents	Operating mode
00000000	No switching time protection
00000001	1 minute switching time protection
00000010	2 minute switching time protection
…	…
11111110	254 minute switching time protection
11111111	Default 1 minute switching time protection

Transmit the sensor configuration data:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 8 databytes to send
DATABYTE1 = COMMAND_SENSOR_CONFIG_DATA (H'BB')
DATABYTE2 = Sensor configuration byte

Contents	Configuration
0xxxxxxx	One shot disabled
1xxxxxxx	One shot enabled
x00xxxxx	9 bit adc resolution
x01xxxxx	10 bit adc resolution
x10xxxxx	11 bit adc resolution
x11xxxxx	12 bit adc resolution
xxx00xxx	1 fault queue
xxx01xxx	2 fault queue
xxx10xxx	4 fault queue
xxx11xxx	6 fault queue
xxxxx0xx	Active low output
xxxxx1xx	Active high output
xxxxxx0x	Comparator mode
xxxxxx1x	Interrupt mode (pulse)
xxxxxxx0	Shutdown disabled
xxxxxxx1	Shutdown enabled

DATABYTE3 = Sensor limit set high byte (bit 7 = sign bit)
DATABYTE4 = Sensor limit set low byte (bits 3…0 always zero)
DATABYTE5 = Sensor hysteresis set high byte (bit 7 = sign bit)
DATABYTE6 = Sensor hysteresis set low byte (bits 3…0 always zero)
DATABYTE7 = Sensor output status (0 = low / 1 = high)

DATABYTE8 = Output time-out timer (0 = timed out)

Transmits the module type:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 5 databytes to send
DATABYTE1 = COMMAND_MODULE_TYPE (H'FF')
DATABYTE2 = NODETYPE_TEMPERATURE_SENSOR (H'0C')
DATABYTE3 = Sensor zone number
DATABYTE4 = Build year
DATABYTE5 = Build week

Transmits the first part of the sensor name:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 8 databytes to send
DATABYTE1 = COMMAND_SENSOR_NAME_PART1 (H'F0')
DATABYTE2 = Sensor bit number ('00000001' = Sensor 1)
DATABYTE3 = Character 1 of the sensor name
DATABYTE4 = Character 2 of the sensor name
DATABYTE5 = Character 3 of the sensor name
DATABYTE6 = Character 4 of the sensor name
DATABYTE7 = Character 5 of the sensor name
DATABYTE8 = Character 6 of the sensor name

Transmits the second part of the sensor name:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 8 databytes to send
DATABYTE1 = COMMAND_SENSOR_NAME_PART2 (H'F1')
DATABYTE2 = Sensor bit number ('00000001' = Sensor 1)
DATABYTE3 = Character 7 of the sensor name
DATABYTE4 = Character 8 of the sensor name
DATABYTE5 = Character 9 of the sensor name
DATABYTE6 = Character 10 of the sensor name
DATABYTE7 = Character 11 of the sensor name
DATABYTE8 = Character 12 of the sensor name

Transmits the third part of the sensor name:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 6 databytes to send
DATABYTE1 = COMMAND_SENSOR_NAME_PART3 (H'F2')
DATABYTE2 = Sensor bit number ('00000001' = Sensor 1)
DATABYTE3 = Character 13 of the sensor name
DATABYTE4 = Character 14 of the sensor name
DATABYTE5 = Character 15 of the sensor name
DATABYTE6 = Character 16 of the sensor name

Remarks:
Unused characters contain H'FF'.

Transmits the memory data:
SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 4 databytes to send
DATABYTE1 = COMMAND_MEMORY_DATA (H'FE')
DATABYTE2 = High memory address (must be H'00')
DATABYTE3 = LOW memory address (H'00'...H'7F')
DATABYTE4 = memory data

Transmits memory data block (4 bytes):

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the module
RTR = 0
DLC3...DLC0 = 7 databytes to send
DATABYTE1 = COMMAND_MEMORY_DATA_BLOCK (H'CC')
DATABYTE2 = High start address of memory block (must be H'00')
DATABYTE3 = LOW start address of memory block (H'00'...H'FF')
DATABYTE4 = memory data1
DATABYTE5 = memory data2
DATABYTE6 = memory data3
DATABYTE7 = memory data4

Transmit: Updates LEDs on a push button module:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the push button module for updating the LEDs
RTR = 0
DLC3...DLC0 = 4 databytes to send
DATABYTE1 = COMMAND_UPDATE_LED (H'F4')
DATABYTE2 = LED continuous on status (1 = LED on)
DATABYTE3 = LED slow blinking status (1 = LED slow blinking)
DATABYTE4 = LED fast blinking status (1 = LED fast blinking)

Remarks: The continuous on bit overrides the blinking modes.
If the slow and fast blinking bits for a LED are both on, the LED blinks very fast.

Transmit: Clears LEDs on a push button module:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the 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 push button module:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the 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 push button module:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the push button module for slowly blinking LEDs
RTR = 0
DLC3...DLC0 = 2 databytes to send
DATABYTE1 = COMMAND_SLOW_BLINKING_LED (H'F7')
DATABYTE2 = LED bit numbers (1 = slow blink LED)

Transmit: Blinks LEDs very fast on a push button module:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the push button module for very fast blinking LEDs
RTR = 0
DLC3...DLC0 = 2 databytes to send
DATABYTE1 = COMMAND_VERYFAST_BLINKING_LED (H'F9')
DATABYTE2 = LED bit numbers (1 = very fast blink LED)

Transmit: Bus error counter status

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
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

Transmit: Set target temperature of the differential sensor

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Differential sensor address
RTR = 0
DLC3...DLC0 = 3 databytes to send
DATABYTE1 = COMMAND_SET_TEMP (H'E4')
DATABYTE2 = 20 (index for current temperature set)
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
11000000	-32°C

'Push button status' received:

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

'Clear Push button LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the push button module
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_CLEAR_LED (H'F5')
DATABYTE2 = LEDs to clear (a one clears the corresponding LED)

'Update output LED status' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 4 databytes received
DATABYTE1 = COMMAND_UPDATE_LED_STATUS (H'F4')
DATABYTE2 = LED continuous on status (1 = LED on)
DATABYTE3 = LED slow blinking status (1 = LED slow blinking)
DATABYTE4 = LED fast blinking status (1 = LED fast blinking)

Contents	Output LED
xxxxxxx1	Heater
xxxxxx1x	Turbo heater/cooler
xxxxx1xx	Comfort or day mode
xxxx1xxx	Cooler
xxx1xxxx	Pump
xx1xxxxx	Low temperature alarm
x1xxxxxx	High temperature alarm

Remarks:
The continuous on bit overrides the blinking modes.
If the slow and fast blinking bits for a LED are both on, the LED blinks very fast.

'Clear output LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_CLEAR_LED (H'F5')
DATABYTE2 = LEDs to clear (a one clears the corresponding LED)

Contents	Output LED
xxxxxxx1	Heater
xxxxxx1x	Turbo heater/cooler
xxxxx1xx	Comfort or day mode
xxxx1xxx	Cooler
xxx1xxxx	Pump
xx1xxxxx	Low temperature alarm
x1xxxxxx	High temperature alarm

'Set output LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_SET_LED (H'F6')
DATABYTE2 = LEDs to set (a one sets the corresponding LED)

Contents	Output LED
xxxxxxx1	Heater
xxxxxx1x	Turbo heater/cooler
xxxxx1xx	Comfort or day mode
xxxx1xxx	Cooler
xxx1xxxx	Pump
xx1xxxxx	Low temperature alarm
x1xxxxxx	High temperature alarm

'Slow blinking output LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_SLOW_BLINKING_LED (H'F7')
DATABYTE2 = LEDs to blink slow (1 = slow blinking)

Contents	Output LED
xxxxxxx1	Heater
xxxxxx1x	Turbo heater/cooler
xxxxx1xx	Comfort or day mode
xxxx1xxx	Cooler
xxx1xxxx	Pump
xx1xxxxx	Low temperature alarm
x1xxxxxx	High temperature alarm

'Fast blinking output LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_FAST_BLINKING_LED (H'F8')
DATABYTE2 = LEDs to blink fast (1 = fast blinking)

Contents	Output LED
xxxxxxx1	Heater
xxxxxx1x	Turbo heater/cooler
xxxxx1xx	Comfort or day mode
xxxx1xxx	Cooler
xxx1xxxx	Pump
xx1xxxxx	Low temperature alarm
x1xxxxxx	High temperature alarm

'Very fast blinking output LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_VERYFAST_BLINKING_LED (H'F9')
DATABYTE2 = LEDs to clear (1 = very fast blinking)

Contents	Output LED
xxxxxxx1	Heater
xxxxxx1x	Turbo heater/cooler
xxxxx1xx	Comfort or day mode
xxxx1xxx	Cooler
xxx1xxxx	Pump
xx1xxxxx	Low temperature alarm
x1xxxxxx	High temperature alarm

'Module type request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 1
DLC3...DLC0 = 0 databytes received

'Bus error counter status request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 1 databytes to send
DATABYTE1 = COMMAND_BUS_ERROR_CONTER_STATUS_REQUEST (H'D9')

'Sensor temperature request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes to send
DATABYTE1 = COMMAND_SENSOR_TEMP_REQUEST (H'E5')
DATABYTE2 = Autosend time interval into seconds
(valid range: 10…255s)
(1…9 = autosend when temperature changed)
(0 = autosend disabled)

'Sensor status request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes to send
DATABYTE1 = COMMAND_MODULE_STATUS_REQUEST (H'FA')
DATABYTE2 = don't care

'Sensor settings request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes to send
DATABYTE1 = COMMAND_TEMP_SENSOR_SETTINGS_REQUEST (H'E7')
DATABYTE2 = don't care

'Sensor configuration data request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes to send
DATABYTE1 = COMMAND_SENSOR_CONFIG_DATA _REQUEST (H'BA')
DATABYTE2 = don't care

'Sensor name request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_SENSOR_NAME_REQUEST (H'EF')
DATABYTE2 = don't care

'Time statistics request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes to send
DATABYTE1 = COMMAND_TIME_STATISTICS_REQUEST (H'C7')
DATABYTE2 = statistics mode index

Contents	Time statistics request
10000001	Heating antifreeze mode time statistics
10000010	Heating night mode time statistics
10000100	Heating day mode time statistics
10001000	Heating comfort mode time statistics
10010000	Heating global time statistics
01000001	Cooling standby mode time statistics
01000010	Cooling night mode time statistics
01000100	Cooling day mode time statistics
01001000	Cooling comfort mode time statistics
01010000	Cooling global time statistics

'Lock local control' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_LOCK_LOCAL_CONTROL (H'E1')
DATABYTE2 = don't care

'Unlock local control' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_UNLOCK_LOCAL_CONTROL (H'E2')
DATABYTE2 = don't care

'Set heating mode' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_SET_HEATING_MODE (H'E0')
DATABYTE2 = don't care

'Set cooling mode' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_SET_COOLING_MODE (H'DF')
DATABYTE2 = don't care

'Read data from memory' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 3 databytes received
DATABYTE1 = COMMAND_READ_DATA_FROM_MEMORY (H'FD')
DATABYTE2 = High memory address (must be H'00')
DATABYTE3 = LOW memory address (H'00'...H'7F')

'Read data block from memory' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 3 databytes received
DATABYTE1 = COMMAND_READ_MEMORY_BLOCK (H'C9')
DATABYTE2 = High memory address (must be H'00')
DATABYTE3 = LOW memory address (H'00'...H'FC')

'Memory dump request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the module
RTR = 0
DLC3...DLC0 = 1 databytes received
DATABYTE1 = COMMAND_MEMORY_DUMP_REQUEST (H'CB')

'Set sensor zone number' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 2 databytes to send
DATABYTE1 = COMMAND_SET_SENSOR_ZONE_NUMBER (H'C5')
DATABYTE2 = Zone number (0= no zone / 1…7 = valid zone)

Remark: The module answers with his type

'Write data to memory' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 4 databytes received
DATABYTE1 = COMMAND_WRITE_DATA_TO_MEMORY (H'FC')
DATABYTE2 = High memory address (must be H'00')
DATABYTE3 = LOW memory address (H'00'...H'FF')
DATABYTE4 = memory data to write

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

'Write memory block' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 7 databytes received
DATABYTE1 = COMMAND_WRITE_MEMORY_BLOCK (H'CA')
DATABYTE2 = High memory address (must be H'00')
DATABYTE3 = LOW memory address (H'00'...H'FC')
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.

'Set default sleep time' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 3 databytes received
DATABYTE1 = COMMAND_SET_DEFAULT_SLEEP_TIME (H'E3')
DATABYTE2 = High byte of the default sleep time
DATABYTE3 = Low byte of the default sleep time into minutes
(valid range H'0001' to H'FEFF' or 1min to 65.279min)

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

'Set temperature' command received (Build 0949):

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 3 databytes received
DATABYTE1 = COMMAND_SET_TEMP (H'E4')
DATABYTE2 = Pointer to temperature variable (0…20)

Contents	Temperature variable
0	Current 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 factor (-8°…+7.5°C)
12	Reset minimum/maximum temperature
13	Reset time statistics
14	enable/disable anti-block valve/pump
15	Low temperature alarm set
16	High temperature alarm set
17	Lower temperature range cool mode
18	Upper temperature range heat mode
19	Differential sensor address (H'FF' = no diff. sensor)
20	Target temperature set for the differential sensor
21	Minimum switching time

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
00000001	Reset minimum temperature
00000010	Reset maximum temperature

DATABYTE3 = Reset time statistics mode index

Contents	Reset time statistics
10000001	Reset heating antifreeze mode time statistics
10000010	Reset heating night mode time statistics
10000100	Reset heating day mode time statistics
10001000	Reset heating comfort mode time statistics
10010000	Reset heating global time statistics
01000001	Reset cooling standby mode time statistics
01000010	Reset cooling night mode time statistics
01000100	Reset cooling day mode time statistics
01001000	Reset cooling comfort mode time statistics
01010000	Reset cooling global time statistics

DATABYTE3 = Enable/disable unjamming heater valve & pump

Contents	Enable/disable unjamming valve and pump
00000000	Disable unjamming heater valve & pump
00000001	Disable unjamming heater valve & enable unjamming pump
00000010	Enable unjamming heater valve & disable unjamming pump
00000011	Enable unjamming heater valve & pump

DATABYTE3 = Minimum switching time *(Build 0949)*:

Contents	Operating mode
00000000	No switching time protection
00000001	1 minute switching time protection
00000010	2 minute switching time protection
…	…
11111110	254 minute switching time protection
11111111	Default 1 minute 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 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 3 databytes received
DATABYTE1 = COMMAND_SWITCH_TO_COMFORT_MODE (H'DB')
DATABYTE2 = High byte of the sleep time
DATABYTE3 = Low byte of the sleep time into minutes

Remark:
If the sleep time contains H'FF00', the command is a program step.
A sleep time between H'0001' and H'FEFF' (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 H'FFFF' puts the sensor into manual mode. Program steps will not be executed any more 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 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 3 databytes received
DATABYTE1 = COMMAND_SWITCH_TO_DAY_MODE (H'DC')
DATABYTE2 = High byte of the sleep time
DATABYTE3 = Low byte of the sleep time into minutes

Remark:
If the sleep time contains H'FF00', the command is a program step.
A sleep time between H'0001' and H'FEFF' (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 H'FFFF' puts the sensor into manual mode. Program steps will not be executed any more 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 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 3 databytes received
DATABYTE1 = COMMAND_SWITCH_TO_NIGHT_MODE (H'DD')
DATABYTE2 = High byte of the sleep time
DATABYTE3 = Low byte of the sleep time into minutes

Remark:
If the sleep time contains H'FF00', the command is a program step.
A sleep time between H'0001' and H'FEFF' (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 H'FFFF' 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 = Address set by hex switches
RTR = 0
DLC3...DLC0 = 3 databytes received
DATABYTE1 = COMMAND_SWITCH_TO_SAFE_MODE (H'DE')
DATABYTE7 = High byte of the sleep time
DATABYTE8 = Low byte of the sleep time into minutes

Remark:
If the sleep time contains H'FF00', the command is a program step.
A sleep time between H'0001' and H'FEFF' (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 H'FFFF' 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.

'Program availability' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = H'00'
RTR = 0
DLC3...DLC0 = 4 databytes to send
DATABYTE1 = COMMAND_SENSOR_PROGRAM_AVAILABILITY (H'BC')
DATABYTE2 = Program availabitlity (0 = no program ; 1 = program available)
DATABYTE3 = Program type

Contents	Day
0…32	Sensor program
33	All rooms program
34	Zone 1 program
35	Zone 2 program
36	Zone 3 program
37	Zone 4 program
38	Zone 5 program
39	Zone 6 program
40	Zone 7 program
40…255	Not valid

DATABYTE4 = Sensor address

Remark:
This command will be received every time a program step is added, modified or deleted by the temperature controller VMB1TC.

Memory map Build 0927 or 0947:

Address	*Contents*	*Address*	*Contents*
H'0000'	Push button module address	H'0001'	Comfort mode push button 1 bit numbers
...	...	...	...
H'0018'	Push button module address	H'0019'	Comfort mode push button 13 bit numbers
H'001A'	Push button module address	H'001B'	Day mode push button 1 bit numbers
...	...	...	...
H'0032'	Push button module address	H'0033'	Day mode push button 13 bit numbers
H'0034'	Push button module address	H'0035'	Night mode push button 1 bit numbers
...	...	...	...
H'004C'	Push button module address	H'004D'	Night mode push button 13 bit numbers
H'004E'	Push button module address	H'004F'	Safe mode push button 1 bit numbers
...	...	...	...
H'0066'	Push button module address	H'0067'	Safe mode push button 13 bit numbers
H'0068'	Push button module address	H'0069'	Heating mode push button 1 bit numbers
...	...	...	...
H'0080'	Push button module address	H'0081'	Heating mode push button 13 bit numbers
H'0082'	Push button module address	H'0083'	Cooling mode push button 1 bit numbers
...	...	...	...
H'009A'	Push button module address	H'009B'	Cooling mode push button 13 bit numbers
H'009C'	Push button module address	H'009D'	Lock local control push button 1 bit numbers
...	...	...	...
H'00B4'	Push button module address	H'00B5'	Lock local control push button 13 bit numbers
H'00B6'	Push button module address	H'00B7'	Unlock local control push button 1 bit numbers
...	...	...	...
H'00CE'	Push button module address	H'00CF'	Unlock local control push button 13 bit numbers
H'00D0'	Not used	H'00D1'	Not used
	…		…
H'00D8'	Not used	H'00D9'	Differential sensor address
H'00DA'	Calibration factor	H'00DB'	Lower temperature range cool mode
H'00DC'	Upper temp range heat mode	H'00DD'	Sensor zone number
H'00DE'	Low temperature alarm	H'00DF'	High temperature alarm
H'00E0'	Current program mode	H'00E1'	Current mode
H'00E2'	Current temperature set	H'00E3'	Comfort temp set for heating
H'00E4'	Day temp set for heating	H'00E5'	Night temp set for heating
H'00E6'	Safe temp set for heating	H'00E7'	Temp. difference for boost output or diff. sensor
H'00E8'	Hysteresis	H'00E9'	Comfort temp set for cooling
H'00EA'	Day temp set for cooling	H'00EB'	Night temp set for cooling
H'00EC'	Safe temp set for cooling	H'00ED'	Default sleep time high byte
H'00EE'	Default sleep time low byte	H'00EF'	Auto send time interval
H'00F0'	Sensor name character 1	H'00F1'	Sensor name character 2
...	...	...	...
H'00FE'	Sensor name character 15	H'00FF'	Sensor name character 16

Remark:
Unused locations in the push button location contain H'FF'.
Unused characters for the sensor name contain H'FF'.

Memory map Build 0949 or Build 1001:

Address	*Contents*	*Address*	*Contents*
H'0000'	Push button module address	H'0001'	Comfort mode push button 1 bit numbers
...	...	...	...
H'0012'	Push button module address	H'0013'	Comfort mode push button 10 bit numbers
H'0014'	Push button module address	H'0015'	Day mode push button 1 bit numbers
...	...	...	...
H'0026'	Push button module address	H'0027'	Day mode push button 10 bit numbers
H'0028'	Push button module address	H'0029'	Night mode push button 1 bit numbers
...	...	...	...
H'003A'	Push button module address	H'003B'	Night mode push button 10 bit numbers
H'003C'	Push button module address	H'003D'	Safe mode push button 1 bit numbers
...	...	...	...
H'004E'	Push button module address	H'004F'	Safe mode push button 10 bit numbers
H'0050'	Push button module address	H'0051'	Heating mode push button 1 bit numbers
...	...	...	...
H'0062'	Push button module address	H'0063'	Heating mode push button 10 bit numbers
H'0064'	Push button module address	H'0065'	Cooling mode push button 1 bit numbers
...	...	...	...
H'0076'	Push button module address	H'0077'	Cooling mode push button 10 bit numbers
H'0078'	Push button module address	H'0079'	Lock local control push button 1 bit numbers
...	...	...	...
H'008A'	Push button module address	H'008B'	Lock local control push button 10 bit numbers
H'008C'	Push button module address	H'008D'	Unlock local control push button 1 bit numbers
...	...	...	...
H'009E'	Push button module address	H'009F'	Unlock local control push button 10 bit numbers
H'00A0'	Push button module address	H'00A1'	Normal open disable switch 1 bit numbers
...	...	...	...
H'00B2'	Push button module address	H'00B3'	Normal open disable switch 10 bit numbers
H'00B4'	Push button module address	H'00B5'	Normal closed disable switch 1 bit numbers
...	...	...	...
H'00C6'	Push button module address	H'00C7'	Normal closed disable switch 10 bit numbers
H'00C8'	Not used	H'00C9'	Not used
	…		…
H'00D8'	Min switching time	H'00D9'	Differential sensor address
H'00DA'	Calibration factor	H'00DB'	Lower temperature range cool mode
H'00DC'	Upper temp range heat mode	H'00DD'	Sensor zone number
H'00DE'	Low temperature alarm	H'00DF'	High temperature alarm
H'00E0'	Current program mode	H'00E1'	Current mode
H'00E2'	Current temperature set	H'00E3'	Comfort temp set for heating
H'00E4'	Day temp set for heating	H'00E5'	Night temp set for heating
H'00E6'	Safe temp set for heating	H'00E7'	Temp. difference for boost output or diff. sensor
H'00E8'	Hysteresis	H'00E9'	Comfort temp set for cooling
H'00EA'	Day temp set for cooling	H'00EB'	Night temp set for cooling
H'00EC'	Safe temp set for cooling	H'00ED'	Default sleep time high byte
H'00EE'	Default sleep time low byte	H'00EF'	Auto send time interval
H'00F0'	Sensor name character 1	H'00F1'	Sensor name character 2
...	...	...	...
H'00FE'	Sensor name character 15	H'00FF'	Sensor name character 16

Remark:
Unused locations in the push button location contain H'FF'.
Unused characters for the sensor name contain H'FF'.

Differential sensor address:
Contains the address of the slave sensor to make a differential thermostat. The target temperature of the slave sensor follows the measured temperature of the current sensor plus or minus the value definied by the temperature difference for boost output.
The default is no differential thermostat (address set to H'FF').

Minimum switching time *(Build 0949)*:

Contents	Operating mode
00000000	No switching time protection
00000001	1 minute switching time protection
00000010	2 minute switching time protection
…	…
11111110	254 minute switching time protection
11111111	Default 1 minute switching time protection

Current program mode:

Contents	Operating mode
xxxxx0xx	No sensor program
xxxxx1xx	Sensor program available
xxxx0xxx	No zone program
xxxx1xxx	Zone program available
0xxxxxxx	No all rooms program
1xxxxxxx	All rooms program 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
xxxxxxx1	Enable unjamming pump
xxxxxxx0	Disable unjamming pump

Current mode:

Contents	Operating mode
xxxxxxx1	Mode push button locked
xxxxxxx0	Mode push button unlocked
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)
1000xxxx	Cooler mode
0xxxxxxx	Heater mode

Current, comfort, day, night, safe, low alarm, high alarm, lower cool, upper heat temperature set (resolution 0.5°) *(Build 1001)*:

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

Hysteresis (resolution 0.5°) *(Build 0949)*:

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

Temperature difference (resolution 0.5°):

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

Calibration 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

Default sleep time into minutes: valid range H'0001' to H'FEFF' or 1min to 65.279min
Auto send temperature time interval into seconds: valid range: 10…255s
1…9 = send if temperature is changed
0 = auto send disabled