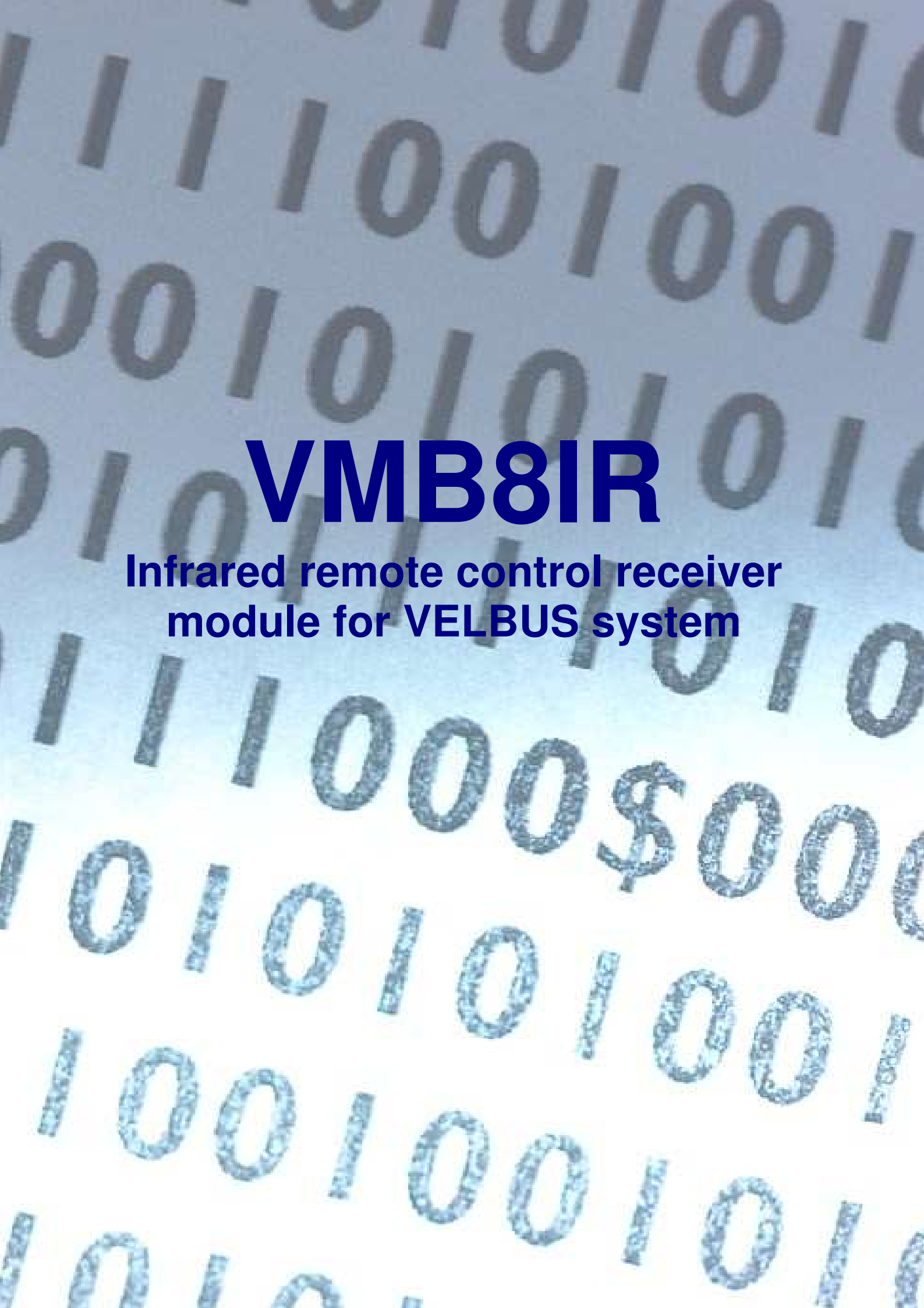

VMB8IR

Infrared remote control receiver module for VELBUS system

Binairy format:

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

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

The module can transmit the following messages:

- Channel 1 to 40 switch status
- Led and channel 1 to 8 status
- Module type
- Bus error counter status
- First, second and third part of the channel 1 to 8 names
- Memory data
- Memory data block (4 bytes)

The module can receive the following commands:

- 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 blink channel led
- Update channel 1 to 8 leds
- Read memory data
- Read memory data block (4 bytes)
- Memory dump request
- Write memory data
- Write memory data block (4 bytes)
- Bus error counter status request

Transmits the channel switch status:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Channel button address
RTR = 0
DLC3...DLC0 = 4 databytes to send
DATABYTE1 = COMMAND_PUSH_BUTTON_STATUS (H'00')
DATABYTE2 = channel just pressed
DATABYTE3 = channel just released
DATABYTE4 = channel long pressed

Transmits led & channel 1 to 8 status:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 databytes to send
DATABYTE1 = COMMAND_IR-RECEIVER_STATUS (H'EB')
DATABYTE2 = channel 1 to 8 status (1 = pressed / 0 = released)
DATABYTE3 = led on status
DATABYTE4 = led slow blink status
DATABYTE5 = led fast blink status

Remark: very fast blinking if slow & fast blinking are set.

Transmits the module type:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 7 databytes to send
DATABYTE1 = COMMAND_MODULE_TYPE (H'FF')
DATABYTE2 = VMB8IR type (H'0A')
DATABYTE3 = High byte of serial number
DATABYTE4 = Low byte of serial number
DATABYTE5 = Memorymap version
DATABYTE6 = Build year
DATABYTE7 = Build week

Transmits the first part of channel 1 to 8 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

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

DATABYTE3 = Character 1 of the channel name
DATABYTE4 = Character 2 of the channel name
DATABYTE5 = Character 3 of the channel name
DATABYTE6 = Character 4 of the channel name
DATABYTE7 = Character 5 of the channel name
DATABYTE8 = Character 6 of the channel name

Transmits the second part of the channel 1 to 8 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

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

DATABYTE3 = Character 7 of the channel name
DATABYTE4 = Character 8 of the channel name
DATABYTE5 = Character 9 of the channel name
DATABYTE6 = Character 10 of the channel name
DATABYTE7 = Character 11 of the channel name
DATABYTE8 = Character 12 of the channel name

Transmits the third part of the channel 1 to 8 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

Contents	*Channel number*
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: 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 (must be zero)
DATABYTE3 = LOW memory address (H'00'...H'FF')
DATABYTE4 = memory data

Transmits memory data block (4 bytes):

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

Remark: address range: H'0000' to H'00FC'

'Module type request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 1
DLC3...DLC0 = 0 databytes received

'Module status request' command received:

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

'Channel 1 to 8 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

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

'Clear LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_CLEAR_LED (H'F5')
DATABYTE2 = LEDs to clear (a one clears the corresponding LED of channel 1 to 8)

'Set LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_SET_LED (H'F6')
DATABYTE2 = LEDs to set (a one sets the corresponding LED of channel 1 to 8)

'Slow blink LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_SLOW_BLINK_LED (H'F7')
DATABYTE2 = LEDs to blink slow (a one blinks slow the corresponding LED of channel 1 to 8)

'Fast blink LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_FAST_BLINK_LED (H'F8')
DATABYTE2 = LEDs to blink fast (a one blinks fast the corresponding LED of channel 1 to 8)

'Very fast blink LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_VERY_FAST_BLINK_LED (H'F9')
DATABYTE2 = LEDs to blink very fast (a one blinks very fast the corresponding LED of channel 1 to 8)

'Update LEDs' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 databytes received
DATABYTE1 = COMMAND_UPDATE_LED_STATUS (H'F4')
DATABYTE2 = LEDs to set (a one sets the corresponding LED of channel 1 to 8)
DATABYTE3 = LEDs to blink slow (a one blinks slow the corresponding LED of channel 1 to 8)
DATABYTE4 = LEDs to blink fast (a one blinks very fast the corresponding LED of channel 1 to 8)

Remark: very fast blinking if slow & fast blinking are set.

'Read data from memory' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 databytes received
DATABYTE1 = COMMAND_READ_DATA_FROM_MEMORY (H'FD')
DATABYTE2 = High memory address (must be zero)
DATABYTE3 = LOW memory address (H'00'...H'FF')

'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'00FC'

'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.

'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'00FC'

'Bus error counter status request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 1 databytes to send
DATABYTE1 = COMMAND_BUS_ERROR_COUNTER_STATUS_REQUEST (H'D9')

Memory map:

Address	*Contents*	*Address*	*Contents*
H'0000'	Channel 1 name character 1	H'0001'	Channel 1 name character 2
...	...	...	...
H'000E'	Channel 1name character 15	H'000F'	Channel 1 name character 16
H'0010'	Channel 2 name character 1	H'0011'	Channel 2 name character 2
...	...	...	...
H'001E'	Channel 2name character 15	H'001F'	Channel 2 name character 16
H'0020'	Channel 3 name character 1	H'0021'	Channel 3 name character 2
...	...	...	...
H'002E'	Channel 3name character 15	H'002F'	Channel 3 name character 16
H'0030'	Channel 4 name character 1	H'0031'	Channel 4 name character 2
...	...	...	...
H'003E'	Channel 4name character 15	H'003F'	Channel 4 name character 16
H'0040'	Channel 5 name character 1	H'0041'	Channel 5 name character 2
...	...	...	...
H'004E'	Channel 5name character 15	H'004F'	Channel 5 name character 16
H'0050'	Channel 6 name character 1	H'0051'	Channel 6 name character 2
...	...	...	...
H'005E'	Channel 6name character 15	H'005F'	Channel 6 name character 16
H'0060'	Channel 7 name character 1	H'0061'	Channel 7 name character 2
...	...	...	...
H'006E'	Channel 7name character 15	H'006F'	Channel 7 name character 16
H'0070'	Channel 8 name character 1	H'0071'	Channel 8 name character 2
...	...	...	...
H'007E'	Channel 8name character 15	H'007F'	Channel 8 name character 16
H'0080'	Channel 1 reaction time	H'0081'	Channel 1 button address
H'0082'	Channel 1 button number	H'0083'	Channel 2 reaction time
H'0084'	Channel 2 button address	H'0085'	Channel 2 button number
...	…	…	…
H'00F2'	Channel 39 reaction time	H'00F3'	Channel 39 button address
H'00F4'	Channel 39 button number	H'00F5'	Channel 40 reaction time
H'00F6'	Channel 40 button address	H'00F7'	Channel 40 button number
H'00F8'	Led backlight on/off	H'00F9'	Led backlight intensity
H'00FA'	Led feedback on/off	H'00FB'	Enable/disable slow blinking led feedback
H'00FC'	Enable/disable fast blinking led feedback	H'00FD'	Module address
H'00FE'	Serial number high byte	H'00FF'	Serial number low byte

Remark: Unused locations contain H'FF'

Valid reaction times

Contents	*Reaction time*
H'05'	0.3s
H'26'	0.5s
H'4C'	1s
H'99'	2s
H'E0'	3s
H'FF'	Channnel disabled

Led Backlight on/off

Contents	*Led backlight*
B'xxxxxxx0'	Channel 1 off
B'xxxxxxx1'	Channel 1 on
...	...
B'0xxxxxxx'	Channel 8 off
B'1xxxxxxx'	Channel 8 on

REMARK: MUST ALWAYS BE OFF because of the interference with the infrared receiver module

Led backlight intensity

Contents	*Led backlight intensity*
H'01'	Minimum
...	...
H'FF'	Maximum

Led feedback on/off

Contents	*Led feedback*
B’xxxxxxx0’	Channel 1 off
B’xxxxxxx1’	Channel 1 on
...	...
B’0xxxxxxx’	Channel 8 off
B’1xxxxxxx’	Channel 8 on

Slow blinking Led feedback on/off

Contents	*Slow blinking Led feedback*
B’xxxxxxx0’	Channel 1 off
B’xxxxxxx1’	Channel 1 on
...	...
B’0xxxxxxx’	Channel 8 off
B’1xxxxxxx’	Channel 8 on

Fast blinking Led feedback on/off

Contents	*Fast blinking Led feedback*
B’xxxxxxx0’	Channel 1 off
B’xxxxxxx1’	Channel 1 on
...	...
B’0xxxxxxx’	Channel 8 off
B’1xxxxxxx’	Channel 8 on