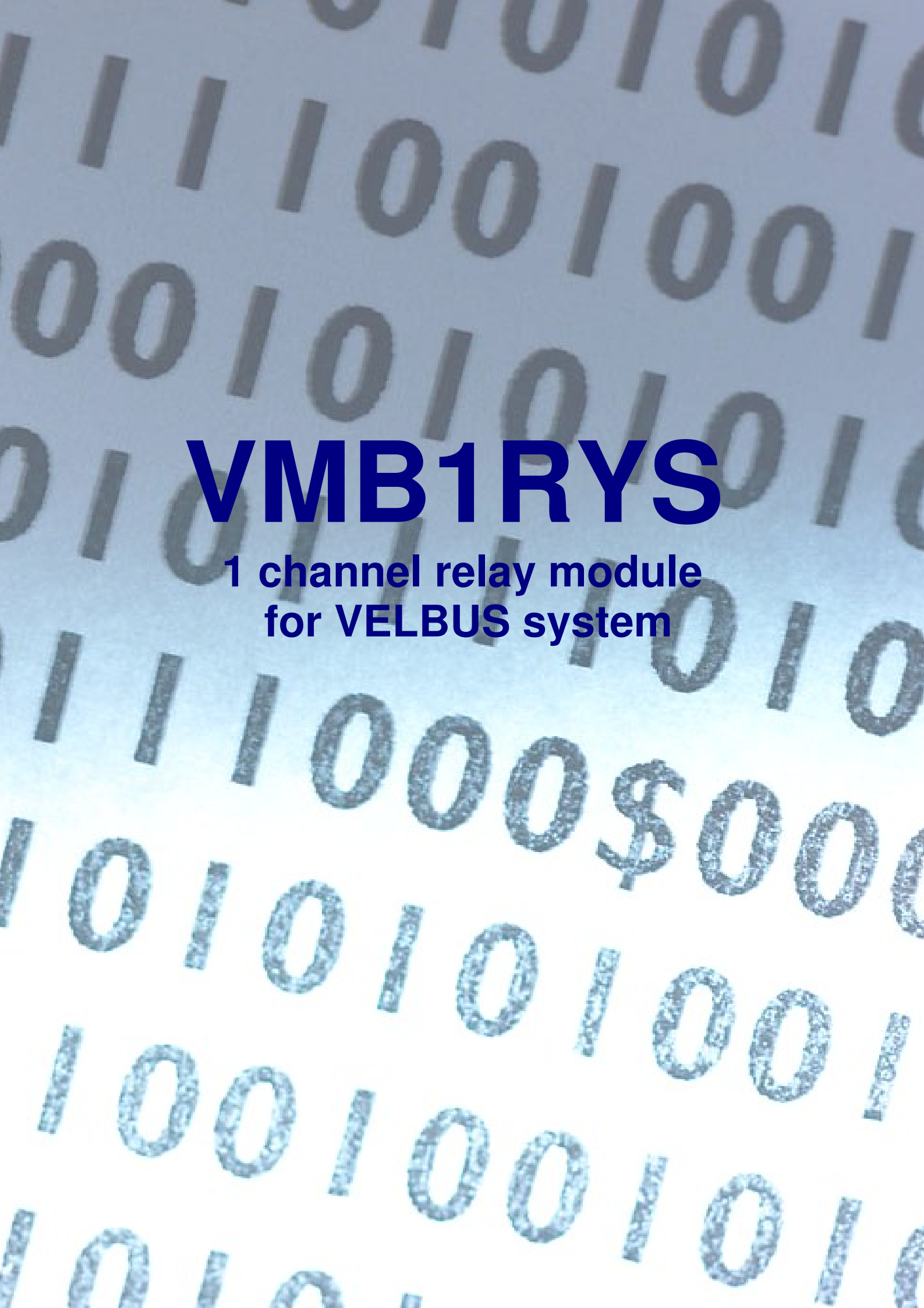

VMB1RYS

1 channel relay module for VELBUS system

Binairy format:
<SOF-SID10...SID0-RTR-IDE-r0-DLC3...0-DATABYTE1...DATABYTEn-CRC14...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
CRC14…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 relay module can transmit the following commands:

- Clears LEDs on a push button module
- Sets LEDs on a push button module
- Blinks LEDs slowly on a push button module
- Blinks LEDs fast on a push button module
- Blinks LEDs very fast on a push button module

The relay module can transmit the following messages:

- Relay status
- Relays switch status
- Module type
- Bus error counter status
- First, second and third part of the relay name
- Memory data
- Memory data block (4 bytes)

The relay module can receive the following messages:

- Push button status

The relay module can receive the following commands:

- Switch relay off
- Switch relay on
- Start relay timer
- Start relay blinking timer
- Forced off relay
- Cancel forced off relay
- Forced on relay
- Cancel forced on relay
- Inhibit relay
- Cancel inhibit relay
- Relay status request
- Clear Push button Led

- Module type request
- Bus error counter status request
- Relay name request
- Read memory data
- Read memory data block (4 bytes)
- Memory dump request
- Write memory data
- Write memory data block (4 bytes)
- Write module address and serial number

Transmits the push button & relay switch status:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes to send
DATABYTE1 = COMMAND_PUSH_BUTTON_STATUS (0x00)
DATABYTE2 = Input buttons just pressed / relays just switched on (1 = just pressed / switched on)
DATABYTE3 = Input push buttons just released / relays just switched off (1 = just released / switched off)
DATABYTE4 = Input push buttons long pressed (1 = longer than 0.85s pressed)

	Databyte2	***Databyte3***	***Databyte4***
Relay channel 1 just switched on	B'xxxxxxx1'	B'xxxxxxx0'	B'xxxxxxx0'
Relay channel 1 just switched off	B'xxxxxxx0'	B'000x0001'	B'xxxxxxx0'
Virtual relay channel 2 just switched on	B'xxxxxx1x'	B'xxxxxx0x'	B'xxxxxx0x'
Virtual relay channel 2 just switched off	B'xxxxxx0x'	B'xxxxxx1x'	B'xxxxxx0x'
Virtual relay channel 3 just switched on	B'xxxxx1xx'	B'xxxxx0xx'	B'xxxxx0xx'
Virtual relay channel 3 just switched off	B'xxxxx0xx'	B'xxxxx1xx'	B'xxxxx0xx'
Virtual relay channel 4 just switched on	B'xxxx1xxx'	B'xxxx0xxx'	B'xxxx0xxx'
Virtual relay channel 4 just switched off	B'xxxx0xxx'	B'xxxx1xxx'	B'xxxx0xxx'
Virtual relay channel 5 just switched on	B'xxx1xxxx'	B'xxx0xxxx'	B'xxx0xxxx'
Virtual relay channel 5 just switched off	B'xxx0xxxx'	B'xxx1xxxx'	B'xxx0xxxx'
Input button just pressed	B'xx1xxxxx'	B'xx0xxxxx'	B'xx0xxxxx'
Input button just long pressed	B'xx0xxxxx'	B'xx0xxxxx'	B'xx1xxxxx'
Input button just released	B'xx0xxxxx'	B'xx1xxxxx'	B'xx0xxxxx'

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 data bytes to send
DATABYTE1 = COMMAND_CLEAR_LED (0xF5)
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 data bytes to send
DATABYTE1 = COMMAND_SET_LED (0xF6)
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 data bytes to send
DATABYTE1 = COMMAND_SLOW_BLINKING_LED (0xF7)
DATABYTE2 = LED bit numbers (1 = slow blink LED)

Transmit: Blinks LEDs fast on a push button module:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Address of the push button module for fast blinking LEDs

RTR = 0
DLC3...DLC0 = 2 data bytes to send
DATABYTE1 = COMMAND_FAST_BLINKING_LED (0xF8)
DATABYTE2 = LED bit numbers (1 = fast blink LED)

Transmit: 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 data bytes to send
DATABYTE1 = COMMAND_VERYFAST_BLINKING_LED (0xF9)
DATABYTE2 = LED bit numbers (1 = very fast blink LED)

Transmit: Bus error counter status:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes to send
DATABYTE1 = COMMAND_BUSERROR_COUNTER_STATUS (0xDA)
DATABYTE2 = Transmit error counter
DATABYTE3 = Receive error counter
DATABYTE4 = Bus off counter

Transmits the relay status:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes to send
DATABYTE1 = COMMAND_RELAY_STATUS (0xFB)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Relay 1
B'00000010'	Virtual Relay 1
B'00000100'	Virtual Relay 2
B'00001000'	Virtual Relay 3
B'00010000'	Virtual Relay 4

DATABYTE3 = Disable/inhibit/Forced on setting

Contents	*Setting*
B'xxxxxx00'	Channel normal
B'xxxxxx01'	Channel inhibited
B'xxxxxx10'	Channel forced on
B'xxxxxx11'	Channel disabled

DATABYTE4 = Relay status

Contents	*Relay status*
B'xxxxxx00'	Relay channel off
B'xxxxxx01'	Relay channel on
B'xxxxxx11'	Relay channel interval timer on

DATABYTE5 = Led status

Contents	*Mode*
B'00000000'	LED off
B'10000000'	LED on
B'01000000'	LED slow blinking
B'00100000'	LED fast blinking
B'00010000'	LED very fast blinking

DATABYTE6 = high byte of current delay time
DATABYTE7 = mid byte of current delay time
DATABYTE8 = low byte of current delay time

Remark:
[DATABYTE6][DATABYTE7][DATABYTE8] contain a 24-bit time in seconds

Transmits the module type:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes to send
DATABYTE1 = COMMAND_MODULE_TYPE (0xFF)
DATABYTE2 = VMB1RYS_TYPE (0x41)
DATABYTE3 = High byte of serial number
DATABYTE4 = Low byte of serial number
DATABYTE5 = Memory map version
DATABYTE6 = Build year
DATABYTE7 = Build week
DATABYTE8 = Terminator (0 = open / 1 = closed)

Transmits the memory data:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes to send
DATABYTE1 = COMMAND_MEMORY_DATA (0xFE)
DATABYTE2 = High memory address

High address	*Memory bank*
0x00	For channel 1 data
0x01	For virtual channel 2 data
0x02	For virtual channel 3 data
0x03	For virtual channel 4 data
0x04	For virtual channel 5 data

DATABYTE3 = LOW memory address (0x00...0xFF)
DATABYTE4 = memory data

Transmits memory data block (4 bytes):

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes to send
DATABYTE1 = COMMAND_MEMORY_DATA_BLOCK (0xCC)
DATABYTE2 = High start address of memory block
DATABYTE3 = LOW start address of memory block
DATABYTE4 = memory data1
DATABYTE5 = memory data2
DATABYTE6 = memory data3
DATABYTE7 = memory data4

Remark: address range: 0x0000 to 0x04FC

Transmits the first part of the relay name:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes to send
DATABYTE1 = COMMAND_NAME_PART1 (0xF0)
DATABYTE2 = Relay bit number

Contents	*Channel*
B'00000001'	Relay
B'00000010'	Virtual Relay 1
B'00000100'	Virtual Relay 2
B'00001000'	Virtual Relay 3
B'00010000'	Virtual Relay 4
B'00100000'	Input button

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 relay name:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 data bytes to send
DATABYTE1 = COMMAND_NAME_PART2 (0xF1)
DATABYTE2 = Relay bit number

Contents	*Channel*
B'00000001'	Relay
B'00000010'	Virtual Relay 1
B'00000100'	Virtual Relay 2
B'00001000'	Virtual Relay 3
B'00010000'	Virtual Relay 4
B'00100000'	Input button

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 relay name:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 6 data bytes to send
DATABYTE1 = COMMAND_NAME_PART3 (0xF2)
DATABYTE2 = Relay bit number

Contents	*Channel*
B'00000001'	Relay
B'00000010'	Virtual Relay 1
B'00000100'	Virtual Relay 2
B'00001000'	Virtual Relay 3
B'00010000'	Virtual Relay 4
B'00100000'	Input button

DATABYTE3 = Character 13 of the channel name
DATABYTE4 = Character 14 of the channel name
DATABYTE5 = Character 14 of the channel name
DATABYTE6 = Character 16 of the channel name

Remarks:
Unused characters contain 0xFF

'Push button status' received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes received
DATABYTE1 = COMMAND_PUSH_BUTTON_STATUS (0x00)
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 LED' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_CLEAR_LED (0xF5)
DATABYTE2 = LEDs to clear (a one clears the corresponding LED)

'Switch relay off' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_SWITCH_RELAY_OFF (0x01)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

'Switch relay on' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_SWITCH_RELAY_ON (0x02)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

'Start relay timer' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_START_RELAY_TIMER (0x03)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

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 0xFFFFFF then the relays are permanently switched on.

'Start relay blinking timer' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_START_BLINK_RELAY_TIMER (0x0D)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

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 0xFFFFFF then the relays are permanently blinking.

'Forced off' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_FORCED_OFF (0x12)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

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 0xFFFFFF then the relays are permanently forced off.

'Cancel forced off' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_CANCEL_FORCED_OFF (0x13)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

'Forced on' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_FORCED_ON (0x14)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

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 or the channels are already forced off.
When the time parameter contains 0xFFFFFF then the relays are permanently forced on.

'Cancel forced on' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_CANCEL_FORCED_ON (0x15)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

'Inhibit' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 data bytes received
DATABYTE1 = COMMAND_INHIBIT (0x16)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

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 or the channels are already forced off/on.
When the time parameter contains 0xFFFFFF then the relays are permanently inhibited.

'Cancel inhibit' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_CANCEL_INHIBIT (0x17)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

'Relay status request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_RELAY_STATUS_REQUEST (0xFA)
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Virtual Channel 2
B'00000100'	Virtual Channel 3
B'00001000'	Virtual Channel 4
B'00010000'	Virtual channel 5

'Module type request' command received:

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

'Relay name request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 data bytes received
DATABYTE1 = COMMAND_RELAY_NAME_REQUEST (0xEF)
DATABYTE2 = Relay bit number

Contents	*channel number*
B'00000001'	Relay Channel 1
B'00000010'	Virtual relay Channel 2
B'00000100'	Virtual relay Channel 3
B'00001000'	Virtual relay Channel 4
B'00010000'	Virtual relay channel 5
B'00100000'	Input button name

'Read data from memory' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 data bytes received
DATABYTE1 = COMMAND_READ_DATA_FROM_MEMORY (0xFD)
DATABYTE2 = High memory address

High address	*Memory bank*
0x00	For channel 1 data
0x01	For virtual channel 2 data
0x02	For virtual channel 3 data
0x03	For virtual channel 4 data
0x04	For virtual channel 5 data

DATABYTE3 = LOW memory address (0x00...0xFF)

'Read data block from memory' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 3 data bytes received
DATABYTE1 = COMMAND_READ_MEMORY_BLOCK (0xC9)
DATABYTE2 = High memory address
DATABYTE3 = LOW memory address

Remark: Valid address range: 0x0000 to 0x04FC

'Memory dump request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 1 data bytes received
DATABYTE1 = COMMAND_MEMORY_DUMP_REQUEST (0xCB)

'Write data to memory' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 4 data bytes received
DATABYTE1 = COMMAND_WRITE_DATA_TO_MEMORY (0xFC)
DATABYTE2 = High memory address

High address	*Memory bank*
0x00	For channel 1 data
0x01	For virtual channel 2 data
0x02	For virtual channel 3 data
0x03	For virtual channel 4 data
0x04	For virtual channel 5 data

DATABYTE3 = LOW memory address (0x00...0xFF)
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 = Module address
RTR = 0
DLC3...DLC0 = 7 data bytes received
DATABYTE1 = COMMAND_WRITE_MEMORY_BLOCK (0xCA)
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:
Valid address range: 0x0000 to 0x04FC
Wait for 'memory data block' feedback before sending a next command on the velbus.

'Bus error counter status request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 1 data bytes to send
DATABYTE1 = COMMAND_BUS_ERROR_CONTER_STATUS_REQUEST (0xD9)

'Write module address & serial number' command received:

SID10-SID9 = 01 (firmware priority)
SID8...SID1 = Current module address
RTR = 0
DLC3...DLC0 = 7 data bytes received
DATABYTE1 = COMMAND_WRITE_ADDR_SERIALNR (0x6A)
DATABYTE2 = VMB4RYLD_MODULE_TYPE (0x10)
DATABYTE3 = current high byte SERIAL NUMBER
DATABYTE4 = current low byte SERIAL NUMBER
DATABYTE5 = new module address
DATABYTE6 = new high byte SERIAL NUMBER
DATABYTE7 = new low byte SERIAL NUMBER

Memory map version 0:

Address	*Contents*	*Address*	*Contents*
0x0000	Push button 1 module address	0x0001	Push button 1 bit number
0x0002	Push button 1 action for channel 1	0x0003	Push button 1 first time parameter
0x0004	Push button 1 second time parameter	0x0005	Push button 1 third time parameter
0x0006	Push button 2 module address	0x0007	Push button 2 bit number
0x0008	Push button 2 action for channel 1	0x0009	Push button 2 first time parameter
0x000A	Push button 2 second time parameter	0x000B	Push button 2 third time parameter
...	...	...	...
0x00CC	Push button 35 module address	0x00CD	Push button 35 bit number
0x00CE	Push button 35 action for virtual channel 1	0x00CF	Push button 35 first time parameter
0x00D0	Push button 35 second time parameter	0x00D1	Push button 35 third time parameter
0x00D2	Normal open contact CH1	0x00D3	CH1 location id low byte
0x00D4	CH1 location id high byte	0x00D5	CH1 group id low byte
0x00D6	CH1 group id high byte	0x00D7	CH1 circuit id low byte
0x00D8	CH1 circuit id high byte	0x00D9	CH1 load id low byte
0x00DA	CH1 load id high byte	0x00DB	Not used
0x00DC	Not used	0x00DD	Module name character 1
…	…	…	…
0x00E8	Module name character 12	0x00E9	Module name character 13
0x00EA	Input button name character 1	0x00EB	Input button name character 2
0x00EC	Input button name character 3	0x00ED	Input button name character 4
0x00EE	Input button name character 5	0x00EF	Input button name character 6
0x00F0	Relay channel 1 name character 1	0x00F1	Relay channel 1 name character 2
...	**...**	**...**	**...**
0x00FE	Relay channel 1name character 15	0x00FF	Relay channel 1 name character 16

Address	*Contents*	*Address*	*Contents*
0x0100	Push button 1 module address	0x0101	Push button 1 bit number
0x0102	Push button 1 action for channel 2	0x0103	Push button 1 first time parameter
0x0104	Push button 1 second time parameter	0x0105	Push button 1 third time parameter
0x0106	Push button 2 module address	0x0107	Push button 2 bit number
0x0108	Push button 2 action for channel 2	0x0109	Push button 2 first time parameter
0x010A	Push button 2 second time parameter	0x010B	Push button 2 third time parameter
...	...	...	...
0x01CC	Push button 35 module address	0x01CD	Push button 35 bit number
0x01CE	Push button 35 action for virtual channel 2	0x01CF	Push button 35 first time parameter
0x01D0	Push button 35 second time parameter	0x01D1	Push button 35 third time parameter
0x01D2	Normal open contact CH2	0x01D3	CH2 location id low byte
0x01D4	CH2 location id high byte	0x01D5	CH2 group id low byte
0x01D6	CH2 group id high byte	0x01D7	CH2 circuit id low byte
0x01D8	CH2 circuit id high byte	0x01D9	CH2 load id low byte
0x01DA	CH2 load id high byte	0x01DB	Module location id low byte
0x01DC	Module location id high byte	0x01DD	Module name character 14
…	…	…	…
0x01E8	Module name character 25	0x01E9	Module name character 26
0x01EA	Input button name character 7	0x01EB	Input button name character 8
0x01EC	Input button name character 9	0x01ED	Input button name character 10
0x01EE	Input button name character 11	0x01EF	Input button name character 12
0x01F0	Virtual relay channel 2 name character 1	0x01F1	Virtual relay channel 2 name character 2
...	...	...	...
0x01FE	Virtual relay channel 2name character 15	0x01FF	Virtual relay channel 2 name character 16

Address	*Contents*	*Address*	*Contents*
0x0200	Push button 1 module address	0x0201	Push button 1 bit number
0x0202	Push button 1 action for channel 3	0x0203	Push button 1 first time parameter
0x0204	Push button 1 second time parameter	0x0205	Push button 1 third time parameter
0x0206	Push button 2 module address	0x0207	Push button 2 bit number
0x0208	Push button 2 action for channel 3	0x0209	Push button 2 first time parameter
0x020A	Push button 2 second time parameter	0x020B	Push button 2 third time parameter
...	...	...	...
0x02CC	Push button 35 module address	0x02CD	Push button 35 bit number
0x02CE	Push button 35 action for virtual channel 3	0x02CF	Push button 35 first time parameter
0x02D0	Push button 35 second time parameter	0x02D1	Push button 35 third time parameter

0x02D2	Normal open contact CH3	0x02D3	CH3 location id low byte
0x02D4	CH3 location id high byte	0x02D5	CH3 group id low byte
0x02D6	CH3 group id high byte	0x02D7	CH3 circuit id low byte
0x02D8	CH3 circuit id high byte	0x02D9	CH3 load id low byte
0x02DA	CH3 load id high byte	0x02DB	Module group id low byte
0x02DC	Module group id high byte	0x02DD	Module name character 27
…	…	…	…
0x02E8	Module name character 38	0x02E9	Module name character 39
0x02EA	Input button name character 13	0x02EB	Input button name character 14
0x02EC	Input button name character 15	0x02ED	Input button name character 16
0x02EE	Input button reaction time	0x02EF	Long pressed delay
0x02F0	Virtual relay channel 3 name character 1	0x02F1	Virtual relay channel 3 name character 2
...	...	...	...
0x02FE	Virtual relay channel 3name character 15	0x02FF	Virtual relay channel 3 name character 16

Address	*Contents*	*Address*	*Contents*
0x0300	Push button 1 module address	0x0301	Push button 1 bit number
0x0302	Push button 1 action fo channel 4	0x0303	Push button 1 first time parameter
0x0304	Push button 1 second time parameter	0x0305	Push button 1 third time parameter
0x0306	Push button 2 module address	0x0307	Push button 2 bit number
0x0308	Push button 2 action fo channel 4	0x0309	Push button 2 first time parameter
0x030A	Push button 2 second time parameter	0x030B	Push button 2 third time parameter
...	...	...	...
0x03CC	Push button 35 module address	0x03CD	Push button 35 bit number
0x03CE	Push button 35 action for virtual channel 4	0x03CF	Push button 35 first time parameter
0x03D0	Push button 35 second time parameter	0x03D1	Push button 35 third time parameter
0x03D2	Normal open contact CH4	0x03D3	CH4 location id low byte
0x03D4	CH4 location id high byte	0x03D5	CH4 group id low byte
0x03D6	CH4 group id high byte	0x03D7	CH4 circuit id low byte
0x03D8	CH4 circuit id high byte	0x03D9	CH4 load id low byte
0x03DA	CH4 load id high byte	0x03DB	Module circuit id low byte
0x03DC	Module circuit id high byte	0x03DD	Module name character 40
…	…	…	…
0x03E8	Module name character 51	0x03E9	Module name character 52
0x03EA	Not used	0x03EB	Not used
0x03EC	Not used	0x03ED	Not used
0x03EE	Not used	0x03EF	Not used
0x03F0	Virtual relay channel 4 name character 1	0x03F1	Virtual relay channel 4 name character 2
...	...	...	...
0x03FE	Virtual relay channel 4name character 15	0x03FF	Virtual relay channel 4 name character 16

Address	*Contents*	*Address*	*Contents*
0x0400	Push button 1 module address	0x0401	Push button 1 bit number
0x0402	Push button 1 action for virtual channel 5	0x0403	Push button 1 first time parameter
0x0404	Push button 1 second time parameter	0x0405	Push button 1 third time parameter
0x0406	Push button 2 module address	0x0407	Push button 2 bit number
0x0408	Push button 2 action for virtual channel 5	0x0409	Push button 2 first time parameter
0x040A	Push button 2 second time parameter	0x040B	Push button 2 third time parameter
...	...	...	...
0x04CC	Push button 35 module address	0x04CD	Push button 35 bit number
0x04CE	Push button 35 action for virtual channel 5	0x04CF	Push button 35 first time parameter
0x04D0	Push button 35 second time parameter	0x04D1	Push button 35 third time parameter
0x04D2	Normal open contact CH5	0x04D3	CH5 location id low byte
0x04D4	CH5 location id high byte	0x04D5	CH5 group id low byte
0x04D6	CH5 group id high byte	0x04D7	CH5 circuit id low byte
0x04D8	CH5 circuit id high byte	0x04D9	CH5 load id low byte
0x04DA	CH5 load id high byte	0x04DB	Module load id low byte
0x04DC	Module load id high byte	0x04DD	Module name character 53
…	…	…	…
0x04E8	Module name character 64	0x04E9	Not used
0x04EA	Not used	0x04EB	Not used
0x04EC	Not used	0x04ED	Not used
0x04EE	Not used	0x04EF	Not used
0x04F0	Virtual relay channel 5 name character 1	0x04F1	Virtual relay channel 5 name character 2
...	...	...	...
0x04FE	Virtual relay channel 5name character 15	0x04FF	Virtual relay channel 5 name character 16

Remark:
Unused locations contain H'FF'

Normal open: 0xFF

Valid reaction times

Contents	***Reaction time***
0x05	0.065s
0x4C	1s
0x99	2s
0xE0	3s
0xFF	Channel disabled

Valid long pressed delay

Contents	***Reaction time***
0x40	0.8s
0x80	1.6s

Action	Description	First time parameter	Second time parameter	Third time parameter
H'00'	Momentary	H'FF'	H'FF'	H'FF'
H'01'	Off	H'FF'	H'FF'	H'FF'
H'02'	'Off' with timers disabled	H'FF'	H'FF'	H'FF'
H'03'	'Off' with timers disabled at short press	H'FF'	H'FF'	H'FF'
H'04'	'Off' with timers disabled at long press	H'FF'	H'FF'	H'FF'
H'05'	On	H'FF'	H'FF'	H'FF'
H'06'	'On' with timers disabled	H'FF'	H'FF'	H'FF'
H'07'	'On' with timers disabled at short press	H'FF'	H'FF'	H'FF'
H'08'	'On' with timers disabled at long press	H'FF'	H'FF'	H'FF'
H'09'	Toggle	H'FF'	H'FF'	H'FF'
H'0A'	'Toggle' with timers disabled	H'FF'	H'FF'	H'FF'
H'0B'	'Toggle' with timers disabled at short press	H'FF'	H'FF'	H'FF'
H'0C'	'Toggle' with timers disabled at long press	H'FF'	H'FF'	H'FF'
H'0D'	Start/stop timer	Time1 at short press	Time2 at long press	H'FF'
H'0E'	Restartable timer	Time1 at short press	Time2 at long press	H'FF'
H'0F'	Non retriggerable timer	Time	H'FF'	H'FF'
H'10'	Trigger on release timer	Time	H'FF'	H'FF'
H'11'	'On' at press, delayed 'Off' at release	Delayed 'Off' time	H'FF'	H'FF'
H'12'	Delayed 'Off' only when relay is on	Delayed 'Off' time	H'FF'	H'FF'
H'13'	Start/stop delayed 'On'	Delayed 'On' time	Timeout	H'FF'
H'14'	Restartable delayed 'On'	Delayed 'On' time	Timeout	H'FF'
H'15'	Non restartable delayed 'On'	Delayed 'On' time	Timeout	H'FF'
H'16'	Start/Stop interval timer	Timeout	Pulse time	Pauze time
H'17'	Restartable interval timer	Timeout	Pulse time	Pauze time
H'18'	Non restartable interval timer	Timeout	Pulse time	Pauze time
H'19'	Disable at closed switch	H'FF'	H'FF'	H'FF'
H'1A'	Disable at opened switch	H'FF'	H'FF'	H'FF'
H'1B'	Disable at pressing push button	Timeout	H'FF'	H'FF'
H'1C'	Toggle disable at pressing push button	Timeout	H'FF'	H'FF'
H'1D'	Cancel disable at pressing push button	H'FF'	H'FF'	H'FF'
H'1E'	Forced 'On' at closed switch	H'FF'	H'FF'	H'FF'
H'1F'	Forced 'On' at opened switch	H'FF'	H'FF'	H'FF'
H'20'	Forced 'On' at pressing push button	Timeout	H'FF'	H'FF'
H'21'	Toggle forced 'On' at pressing push button	Timeout	H'FF'	H'FF'
H'22'	Cancel Forced 'On' at pressing push button	H'FF'	H'FF'	H'FF'
H'23'	Inhibit at closed switch	H'FF'	H'FF'	H'FF'
H'24'	Inhibit at opened switch	H'FF'	H'FF'	H'FF'
H'25'	Inhibit at pressing push button	Timeout	H'FF'	H'FF'
H'26'	Toggle inhibit at pressing push button	Timeout	H'FF'	H'FF'
H'27'	Cancel inhibit at pressing push button	H'FF'	H'FF'	H'FF'

Time parameter	Time
0	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