VMB4RYNO-10

4 channel relay module with normal open contacts 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 databytes to send
DATABYTE1 = COMMAND_PUSH_BUTTON_STATUS (H'00')
DATABYTE2 = Local mode push buttons just pressed / relays just switched on (1 = just pressed / switched on)
DATABYTE3 = Local mode push buttons just released / relays just switched off (1 = just released / switched off)
DATABYTE4 = Local mode 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'
Relay channel 2 just switched on	B'xxxxxx1x'	B'xxxxxx0x'	B'xxxxxx0x'
Relay channel 2 just switched off	B'xxxxxx0x'	B'xxxxxx1x'	B'xxxxxx0x'
Relay channel 3 just switched on	B'xxxxx1xx'	B'xxxxx0xx'	B'xxxxx0xx'
Relay channel 3 just switched off	B'xxxxx0xx'	B'xxxxx1xx'	B'xxxxx0xx'
Relay channel 4 just switched on	B'xxxx1xxx'	B'xxxx0xxx'	B'xxxx0xxx'
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'

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 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 databytes to send
DATABYTE1 = COMMAND_FAST_BLINKING_LED (H'F8')
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 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 = 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 relay status:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 databytes to send
DATABYTE1 = COMMAND_RELAY_STATUS (H'FB')
DATABYTE2 = Relay bit number

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

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 = 7 databytes to send
DATABYTE1 = COMMAND_MODULE_TYPE (H'FF')
DATABYTE2 = VMB4RYNO-10_TYPE (H'49')
DATABYTE3 = High byte of serial number
DATABYTE4 = Low byte of serial number
DATABYTE5 = Memorymap 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 databytes to send
DATABYTE1 = COMMAND_MEMORY_DATA (H'FE')
DATABYTE2 = High memory address

High address	*Memory bank*
H'00'	For channel 1 data
H'01'	For channel 2 data
H'02'	For channel 3 data
H'03'	For channel 4 data
H'04'	For virtual channel 5 data

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 = 4 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'04FC'

Transmits the first part of the relay name:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 databytes to send
DATABYTE1 = COMMAND_RELAY_NAME_PART1 (H'F0')
DATABYTE2 = Relay bit number

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

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

Transmits the second part of the relay name:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 8 databytes to send
DATABYTE1 = COMMAND_RELAY_NAME_PART2 (H'F1')
DATABYTE2 = Relay bit number

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

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

Transmits the third part of the relay name:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 6 databytes to send
DATABYTE1 = COMMAND_RELAY_NAME_PART3 (H'F2')
DATABYTE2 = Relay bit number

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

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

Remarks:
Unused characters contain H'FF'.

'Push button status' received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
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 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)

'Switch relay off' command received:

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_SWITCH_RELAY_OFF (H'01')
DATABYTE2 = Relay bit number

Contents	***Relay number***
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	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 databytes received
DATABYTE1 = COMMAND_SWITCH_RELAY_ON (H'02')
DATABYTE2 = Relay bit number

Contents	***Relay number***
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	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 databytes received
DATABYTE1 = COMMAND_START_RELAY_TIMER (H'03')
DATABYTE2 = Relay bit number

Contents	***Relay number***
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	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 H'FFFFFF' 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 databytes received
DATABYTE1 = COMMAND_START_BLINK_RELAY_TIMER (H'0D')
DATABYTE2 = Relay bit number

Contents	***Relay number***
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	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 H'FFFFFF' then the relays are permanently blinking.

'Forced off' 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 = Relay bit number

Contents	***Relay number***
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	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 H'FFFFFF' 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 databytes received
DATABYTE1 = COMMAND_CANCEL_FORCED_OFF (H'13')
DATABYTE2 = Relay bit number

Contents	***Relay number***
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	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 databytes received
DATABYTE1 = COMMAND_FORCED_ON (H'14')
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	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 H'FFFFFF' 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 databytes received
DATABYTE1 = COMMAND_CANCEL_FORCED_ON (H'15')
DATABYTE2 = Relay bit number

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

'Inhibit' command received :

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 5 databytes received
DATABYTE1 = COMMAND_INHIBIT (H'16')
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	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 H'FFFFFF' then the relays are permanently inhibited.

'Cancel inhibit' command received :

SID10-SID9 = 00 (highest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_CANCEL_INHIBIT (H'17')
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	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 databytes received
DATABYTE1 = COMMAND_RELAY_STATUS_REQUEST (H'FA')
DATABYTE2 = Relay bit number

Contents	*Relay number*
B'00000001'	Channel 1
B'00000010'	Channel 2
B'00000100'	Channel 3
B'00001000'	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 databytes received

'Relay name request' command received:

SID10-SID9 = 11 (lowest priority)
SID8...SID1 = Module address
RTR = 0
DLC3...DLC0 = 2 databytes received
DATABYTE1 = COMMAND_RELAY_NAME_REQUEST (H'EF')
DATABYTE2 = Relay bit number

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

'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

High address	*Memory bank*
H'00'	For channel 1 data
H'01'	For channel 2 data
H'02'	For channel 3 data
H'03'	For channel 4 data
H'04'	For virtual channel 5 data

DATABYTE3 = LOW memory address (H'00'...H'FF')

'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: Valid address range: H'0000' to H'04FC'

'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')

'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

High address	*Memory bank*
H'00'	For channel 1 data
H'01'	For channel 2 data
H'02'	For channel 3 data
H'03'	For channel 4 data
H'04'	For virtual channel 5 data

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 = Module address
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:
Valid address range: H'0000' to H'04FC'
Wait for 'memory data block' feedback before sending a next command on the velbus.

'Bus error counter status request' command received: (Build 0647 or higher)

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')

'Write module address & serial number' command received:

SID10-SID9 = 01 (firmware priority)
SID8...SID1 = Current module address
RTR = 0
DLC3...DLC0 = 7 databytes received
DATABYTE1 = COMMAND_WRITE_ADDR_SERIALNR (H'6A')
DATABYTE2 = VMB4RYNO-10_TYPE (H'49')
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 1:

Address	*Contents*	*Address*	*Contents*
H'0000'	Push button 1 module address	H'0001'	Push button 1 bit number
H'0002'	Push button 1 action fo channel 1	H'0003'	Push button 1 first time parameter
H'0004'	Push button 1 second time parameter	H'0005'	Push button 1 third time parameter
H'0006'	Push button 2 module address	H'0007'	Push button 2 bit number
H'0008'	Push button 2 action fo channel 1	H'0009'	Push button 2 first time parameter
H'000A'	Push button 2 second time parameter	H'000B'	Push button 2 third time parameter
...	...	...	...
H'00D2'	Push button 36 module address	H'00D3'	Push button 36 bit number
H'00D4'	Push button 36 action for virtual channel 1	H'00D5'	Push button 36 first time parameter
H'00D6'	Push button 36 second time parameter	H'00D7'	Push button 36 third time parameter
H'00D8'	Normal open or normal closed contact CH1	H'00D9'	CH1 location id low byte
H'00DA'	CH1 location id high byte	H'00DB'	CH1 group id low byte
H'00DC'	CH1 group id high byte	H'00DD'	CH1 circuit id low byte
H'00DE'	CH1 circuit id high byte	H'00DF'	CH1 load id low byte
H'00E0'	CH1 load id high byte	H'00E1'	Terminator
H'00E2'	Not used	H'00E3'	Module name character 1
…	…	…	…
H'00EE'	Module name character 12	H'00EF'	Module name character 13
H'00F0'	Relay channel 1 name character 1	H'00F1'	Relay channel 1 name character 2
...	...	...	...
H'00FE'	Relay channel 1name character 15	H'00FF'	Relay channel 1 name character 16

Address	*Contents*	*Address*	*Contents*
H'0100'	Push button 1 module address	H'0101'	Push button 1 bit number
H'0102'	Push button 1 action fo channel 2	H'0103'	Push button 1 first time parameter
H'0104'	Push button 1 second time parameter	H'0105'	Push button 1 third time parameter
H'0106'	Push button 2 module address	H'0107'	Push button 2 bit number
H'0108'	Push button 2 action fo channel 2	H'0109'	Push button 2 first time parameter
H'010A'	Push button 2 second time parameter	H'010B'	Push button 2 third time parameter
...	...	...	...
H'01D2'	Push button 36 module address	H'01D3'	Push button 36 bit number
H'01D4'	Push button 36 action for virtual channel 2	H'01D5'	Push button 36 first time parameter
H'01D6'	Push button 36 second time parameter	H'01D7'	Push button 36 third time parameter
H'01D8'	Normal open or normal closed contact CH2	H'01D9'	CH2 location id low byte
H'01DA'	CH2 location id high byte	H'01DB'	CH2 group id low byte
H'01DC'	CH2 group id high byte	H'01DD'	CH2 circuit id low byte
H'01DE'	CH2 circuit id high byte	H'01DF'	CH2 load id low byte
H'01E0'	CH2 load id high byte	H'01E1'	Module location id low byte
H'01E2'	Module location id high byte	H'01E3'	Module name character 14
…	…	…	…
H'01EE'	Module name character 25	H'01EF'	Module name character 26
H'01F0'	Relay channel 2 name character 1	H'01F1'	Relay channel 2 name character 2
...	...	...	...
H'01FE'	Relay channel 2name character 15	H'01FF'	Relay channel 2 name character 16

Address	*Contents*	*Address*	*Contents*
H'0200'	Push button 1 module address	H'0201'	Push button 1 bit number
H'0202'	Push button 1 action fo channel 3	H'0203'	Push button 1 first time parameter
H'0204'	Push button 1 second time parameter	H'0205'	Push button 1 third time parameter
H'0206'	Push button 2 module address	H'0207'	Push button 2 bit number
H'0208'	Push button 2 action fo channel 3	H'0209'	Push button 2 first time parameter
H'020A'	Push button 2 second time parameter	H'020B'	Push button 2 third time parameter
...	...	...	...
H'02D2'	Push button 36 module address	H'02D3'	Push button 36 bit number
H'02D4'	Push button 36 action for virtual channel 3	H'02D5'	Push button 36 first time parameter
H'02D6'	Push button 36 second time parameter	H'02D7'	Push button 36 third time parameter
H'02D8'	Normal open or normal closed contact CH3	H'02D9'	CH3 location id low byte
H'02DA'	CH3 location id high byte	H'02DB'	CH3 group id low byte
H'02DC'	CH3 group id high byte	H'02DD'	CH3 circuit id low byte
H'02DE'	CH3 circuit id high byte	H'02DF'	CH3 load id low byte
H'02E0'	CH3 load id high byte	H'02E1'	Module group id low byte
H'02E2'	Module group id high byte	H'02E3'	Module name character 27
…	…	…	…

H’02EE’	Module name character 38	H’02EF’	Module name character 39
H’02F0’	Relay channel 3 name character 1	H’02F1’	Relay channel 3 name character 2
...	...	...	...
H’02FE’	Relay channel 3name character 15	H’02FF’	Relay channel 3 name character 16

Address	***Contents***	***Address***	***Contents***
H’0300’	Push button 1 module address	H’0301’	Push button 1 bit number
H’0302’	Push button 1 action fo channel 4	H’0303’	Push button 1 first time parameter
H’0304’	Push button 1 second time parameter	H’0305’	Push button 1 third time parameter
H’0306’	Push button 2 module address	H’0307’	Push button 2 bit number
H’0308’	Push button 2 action fo channel 4	H’0309’	Push button 2 first time parameter
H’030A’	Push button 2 second time parameter	H’030B’	Push button 2 third time parameter
...	...	...	...
H’03D2’	Push button 36 module address	H’03D3’	Push button 36 bit number
H’03D4’	Push button 36 action for virtual channel 4	H’03D5’	Push button 36 first time parameter
H’03D6’	Push button 36 second time parameter	H’03D7’	Push button 36 third time parameter
H’03D8’	Normal open or normal closed contact CH4	H’03D9’	CH4 location id low byte
H’03DA’	CH4 location id high byte	H’03DB’	CH4 group id low byte
H’03DC’	CH4 group id high byte	H’03DD’	CH4 circuit id low byte
H’03DE’	CH4 circuit id high byte	H’03DF’	CH4 load id low byte
H’03E0’	CH4 load id high byte	H’03E1’	Module circuit id low byte
H’03E2’	Module circuit id high byte	H’03E3’	Module name character 40
…	…	…	…
H’03EE’	Module name character 51	H’03EF’	Module name character 52
H’03F0’	Relay channel 4 name character 1	H’03F1’	Relay channel 4 name character 2
...	...	...	...
H’03FE’	Relay channel 4name character 15	H’03FF’	Relay channel 4 name character 16

Address	***Contents***	***Address***	***Contents***
H’0400’	Push button 1 module address	H’0401’	Push button 1 bit number
H’0402’	Push button 1 action for virtual channel 5	H’0403’	Push button 1 first time parameter
H’0404’	Push button 1 second time parameter	H’0405’	Push button 1 third time parameter
H’0406’	Push button 2 module address	H’0407’	Push button 2 bit number
H’0408’	Push button 2 action for virtual channel 5	H’0409’	Push button 2 first time parameter
H’040A’	Push button 2 second time parameter	H’040B’	Push button 2 third time parameter
...	...	...	...
H’04D2’	Push button 36 module address	H’04D3’	Push button 36 bit number
H’04D4’	Push button 36 action for virtual channel 5	H’04D5’	Push button 36 first time parameter
H’04D6’	Push button 36 second time parameter	H’04D7’	Push button 36 third time parameter
H’04D8’	Normal open or normal closed contact CH5	H’04D9’	CH5 location id low byte
H’04DA’	CH5 location id high byte	H’04DB’	CH5 group id low byte
H’04DC’	CH5 group id high byte	H’04DD’	CH5 circuit id low byte
H’04DE’	CH5 circuit id high byte	H’04DF’	CH5 load id low byte
H’04E0’	CH5 load id high byte	H’04E1’	Module load id low byte
H’04E2’	Module load id high byte	H’04E3’	Module name character 53
…	…	…	…
H’04EE’	Module name character 64	H’04EF’	Not used
H’04F0’	Virtual relay channel 5 name character 1	H’04F1’	Virtual relay channel 5 name character 2
...	...	...	...
H’04FE’	Virtual relay channel 5name character 15	H’04FF’	Virtual relay channel 5 name character 16

Remark:
Unused locations contain H’FF’

Normal open or normal closed contact:

- H’FF’ : normal open relay contact
- H’00’ : normal closed relay contact

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