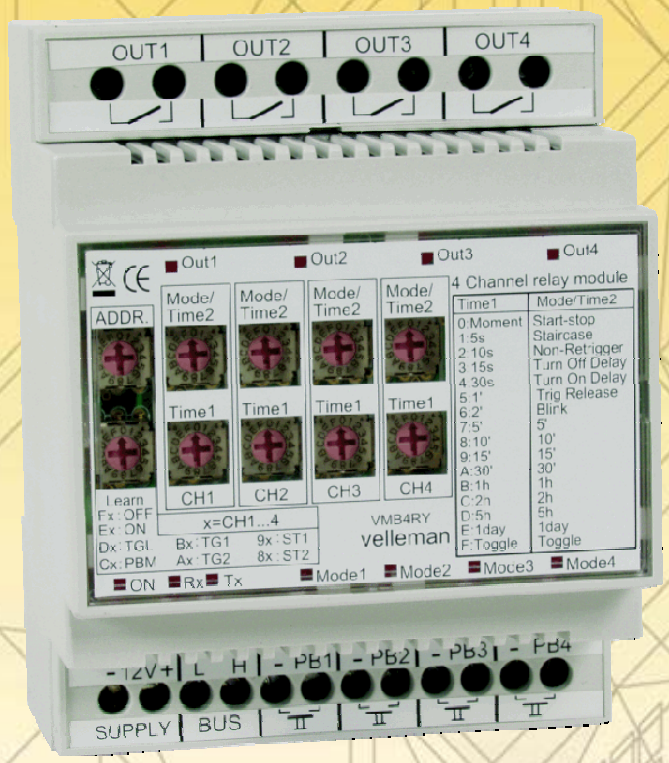
velleman®

VELBUS

Velleman Home Automation System



VMB4RY

4-channel Relay Module for VELBUS system

INDEX

Features:

◊ Relay outputs: 4 independent N.O. contacts
◊ Switching capacity with a resistive load: 16A/230VAC max.
◊ Switching capacity with an inductive load: 8A/230VAC max.
◊ Suppressed relay contacts.
◊ Manual control on the module.
◊ LED indications for:
- The relay outputs
- The operation modes (slow, fast, very fast or 2 x blinking and continuously ON)
- The power voltage
- Data reception and forwarding through VELBUS

◊ 10 different operation modes independently adjustable (through the 'mode' rotary switch) per channel:
- Moment control
- On/off control
- Start/stop timer
- Staircase lighting timer
- Non-restartable timer
- Switch-off delay
- Switch-on delay
- Starting the timer by push button release
- Timer with blinking effect
- 2-way timer (short press will start timer 1/ long press will start timer 2)

◊ 16 different time settings (adjustable through 'time1' rotary switch): moment - 5s - 10s - 15s - 30s - 1min - 2 min - 5min - 10min - 15min - 30min – 1h – 2h – 5h - 1day – on/off
◊ 9 different time settings for timer 2 (adjustable through 'time2' rotary switch): 5min - 10min - 15min - 30min – 1h – 2h – 5h - 1day – on/off
◊ Controllable by connecting several push buttons in parallel.
◊ Push button input debounce: 65ms.
◊ Control through VELBUS.
◊ Programmable without PC.
◊ Easy learning process by operating the desired push buttons in the learning mode.
◊ 8 different operation possibilities:
- Using push buttons turning on the relay.
- Using push buttons turning off the relay.
- Using push buttons turning the relay on or off.
- Using push buttons activating the set mode on the module.
- Using push buttons starting or stopping the timer.
- Using push buttons starting or stopping the 2nd timer.
- Using push buttons starting or restarting the timer.
- Using push buttons starting or restarting the 2nd timer.

◊ Memory for 15 different push buttons per command.
◊ Learned push buttons are saved in case of a power failure.
◊ Report to control modules for LED status modification.
◊ 223 different addresses (adjustable through 'ADDR' rotary switches)
◊ Required power voltage: 12 to 18VDC
◊ Consumption in standby: 70mA at 18V (50mA at 16V)
◊ Consumption all relays activated: 270mA at 18V (225mA at 16VDC)
◊ Max. consumption (activated relay and push button inputs): 330mA at 18V (285mA at 16VDC)
◊ Standard DIN-rail housing (4 modules)
◊ Dimensions (L x W x H): 90 x 71 x 58mm.
◊ Weight: 210g

VELBUS:

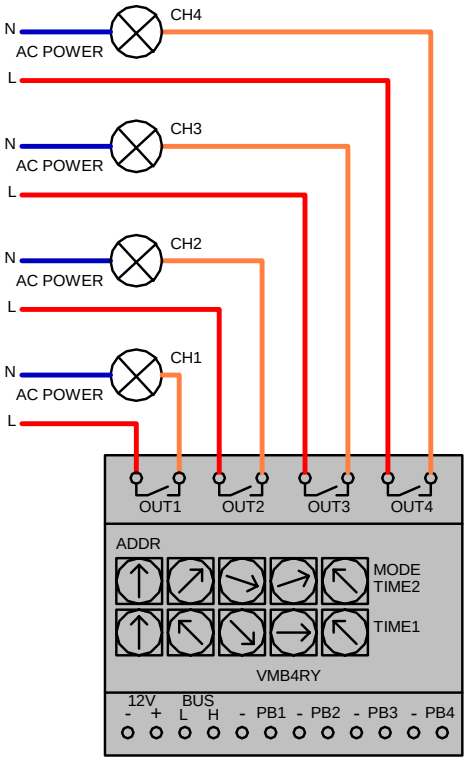
2-wire communication for VELBUS data and 2 wires for power.
Data transfer: 16,6Kbit/s.
Serial data protocol: CAN (Controller Area Network)
Short-circuit proof (towards negative or positive of power)
Bus error indication: 2 x short flash of the operation mode LED.
Self restoring after 25 seconds in case of a bus error.

Possibility to assign a name (max. 16 characters) which can be saved in the non-volatile memory.
The module can react to push button messages sent over the VELBUS.

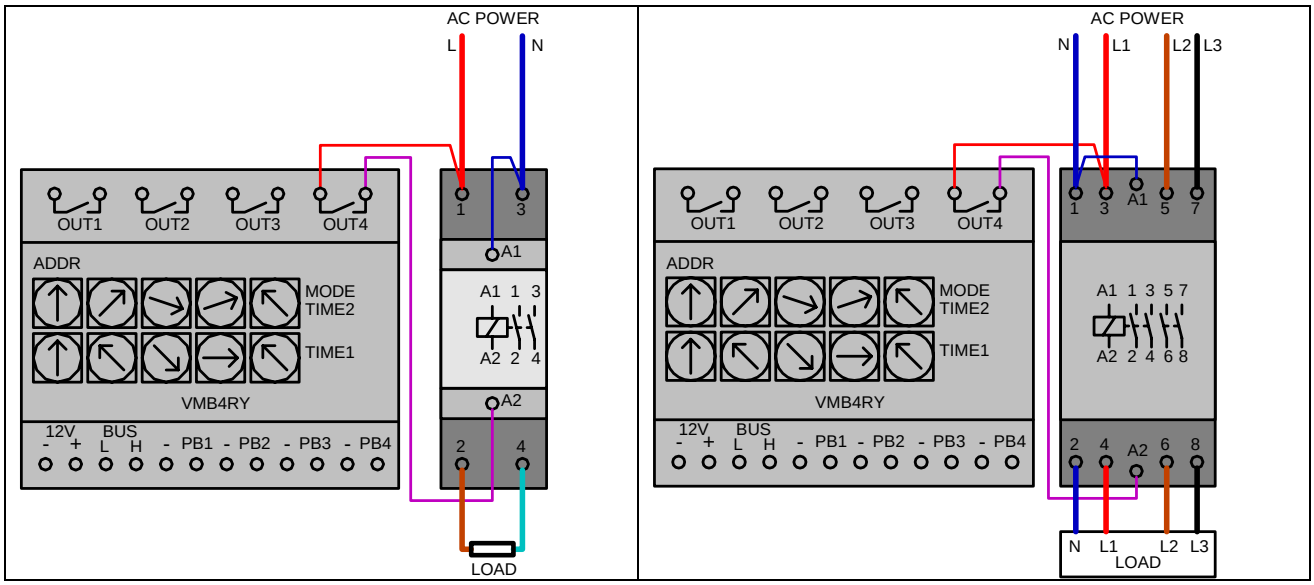
A modification of the relay status will be reported on the VELBUS.
When modifying the relay status, the module will send instructions to adjust the status of the LEDs on the control modules.
Instructions will be accepted when calling up the module type, module name, module status, reading from or writing to the non-volatile memory, switching on or off the relay and when starting or stopping the timer.
The module can respond with the module type, module name, module status or the contents from the memory.

CONNECTION

To control a load, you can use the relay module's normal open, normal closed or relay contact.

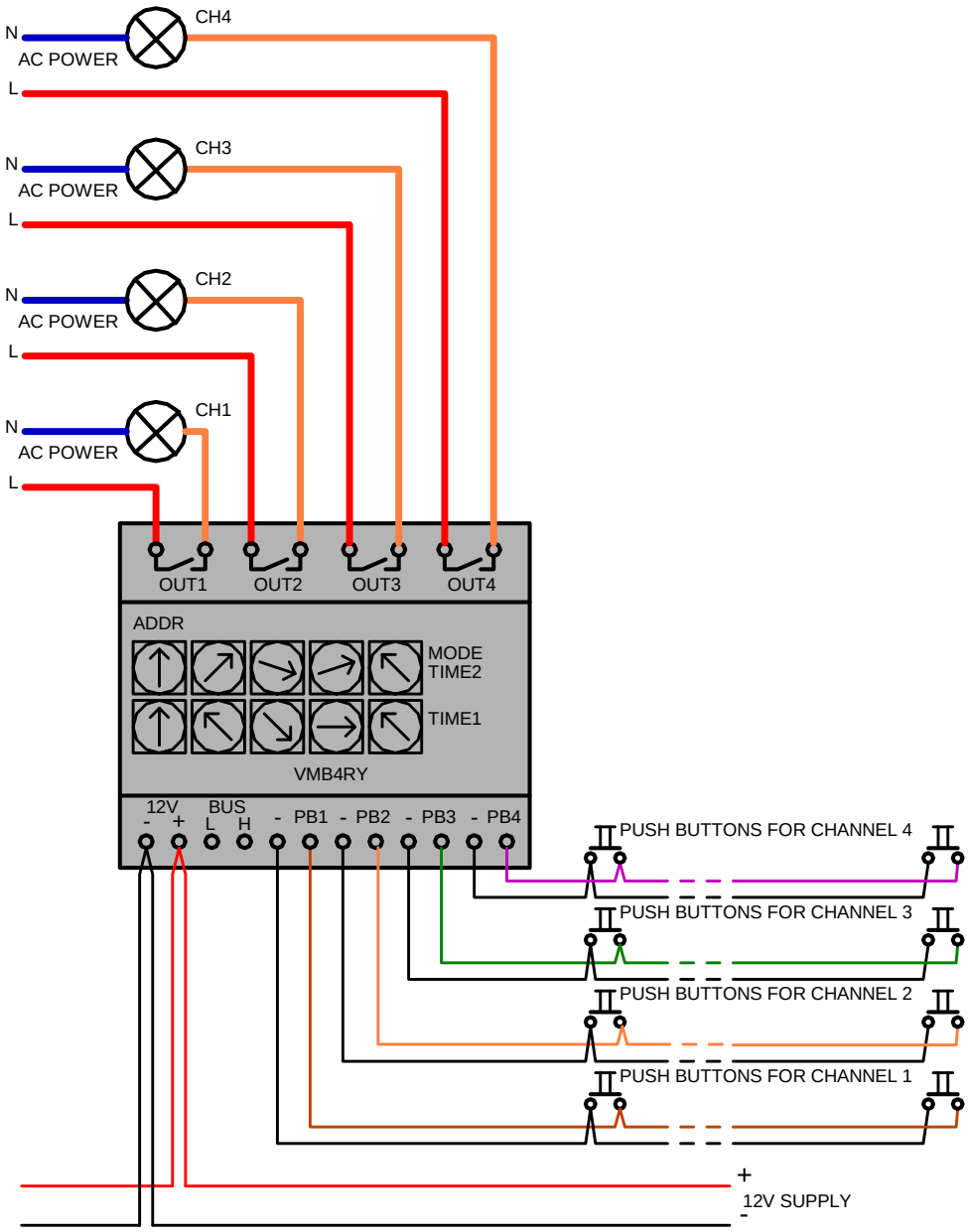


If the consumer needs a 2-pole interruption (e.g. outdoor lighting, pump) or the consumption exceeds 1000W (e.g. wall outlets, electric heating, water heater), you need to use an additional 2-pole relay. A 3-phase consumer (e.g. accumulation heater) has to be controlled through a 4-pole relay.



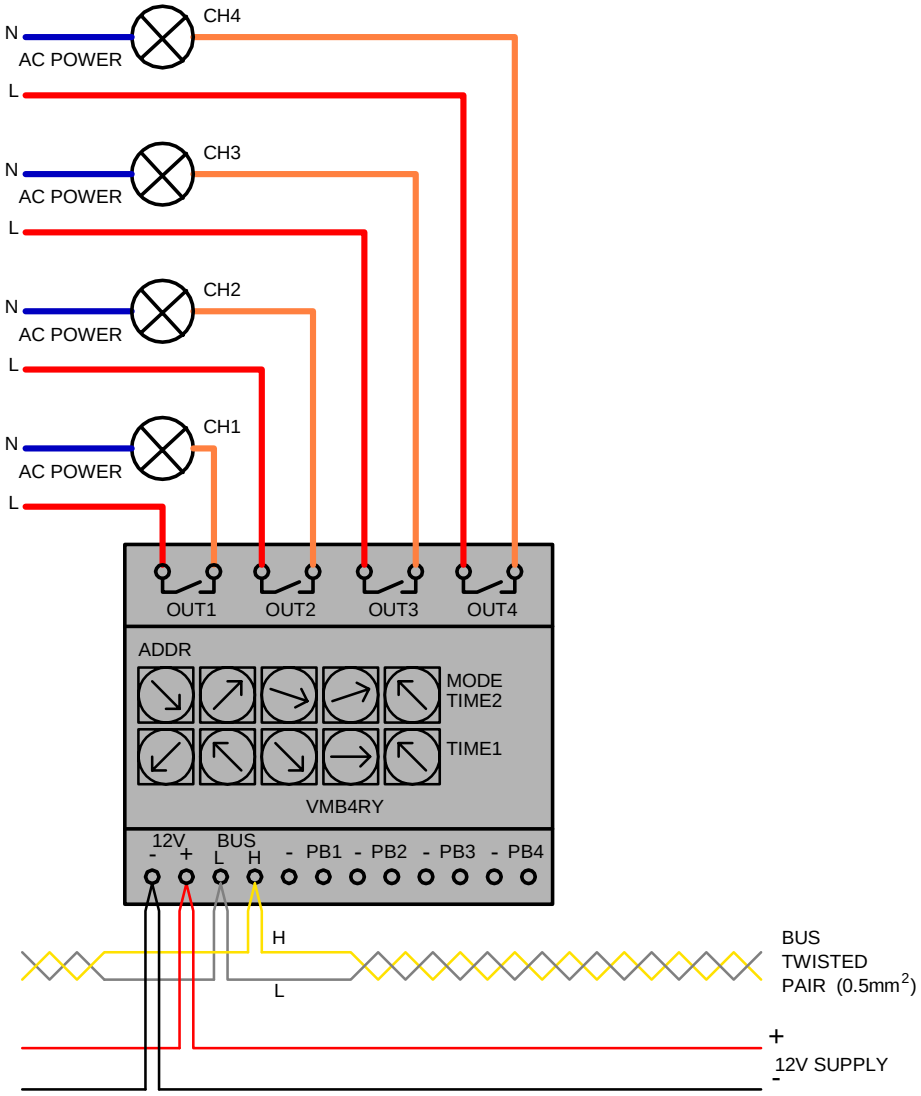
Connect the 12 … 18VCC (mind the polarity) to the module. Make sure to use a heavier wire gauge (1mm^2) with long connections. You can use the relay output's normal open, normal closed or relay contact. The relay module can be controlled via push buttons which are directly connected to the push button input by using the VELBUS or a combination of both possibilities.

Direct control with several push buttons:



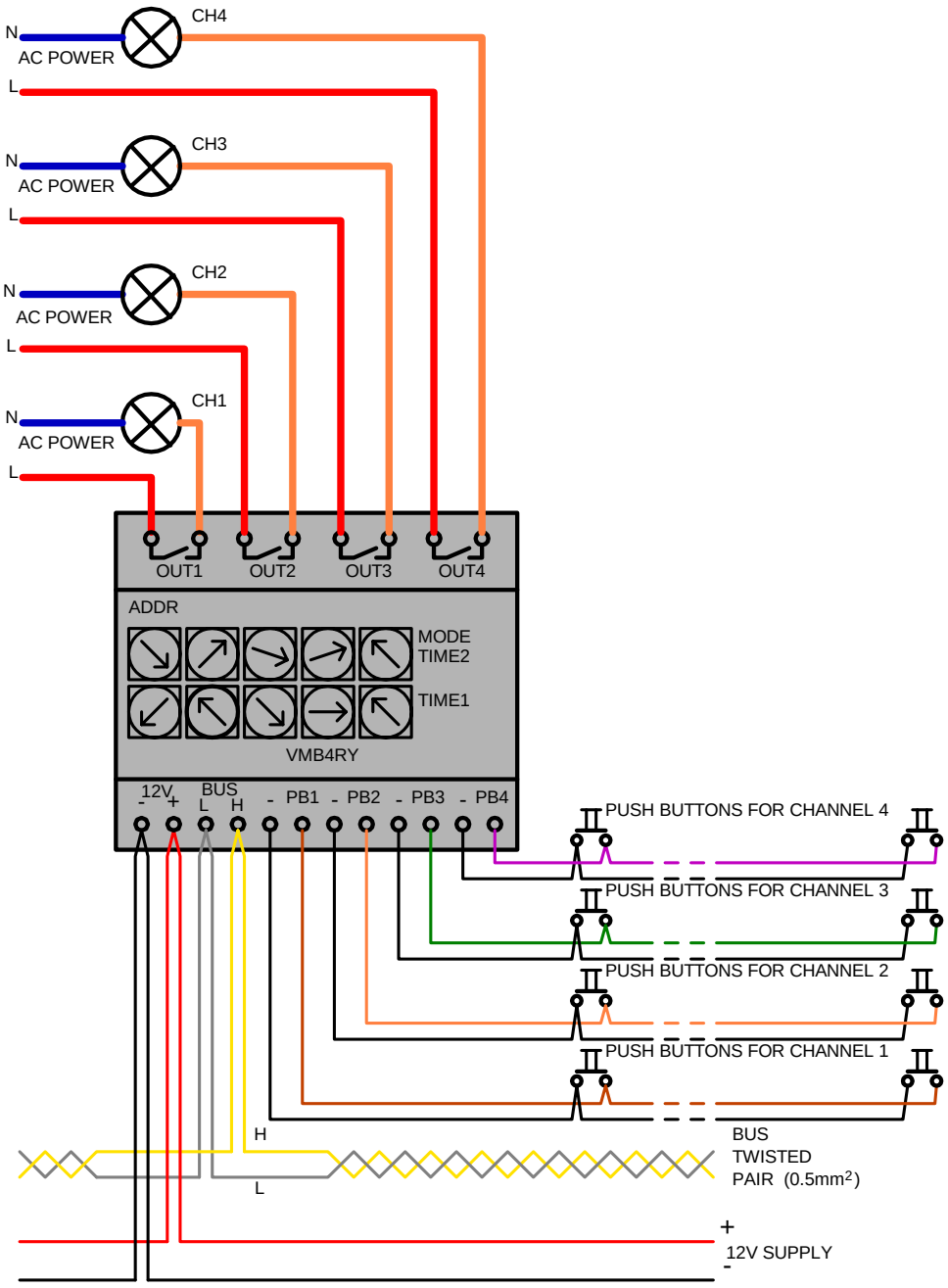
Remark: To break off communication with the VELBUS system, set the address on '00' so no status modifications will be reported. All learned push buttons must be deleted (see learning mode) so no instructions will be sent over the VELBUS to control the push button indication LEDs.
In the other case, de relay module will cause a bus error with every status modification.

Control through the VELBUS system:



Remark: For connection between the modules, use twisted pair cable (ex. EIB 2x2x0.8mm2, UTP 8x0.51mm - CAT5 or other). Use minimum 0.5mm² cable. For long wiring (>50m) or if a lot of modules (> 10) are connected to one wire, use 1mm² cable.
Connect the bus (mind the polarity) to the module.

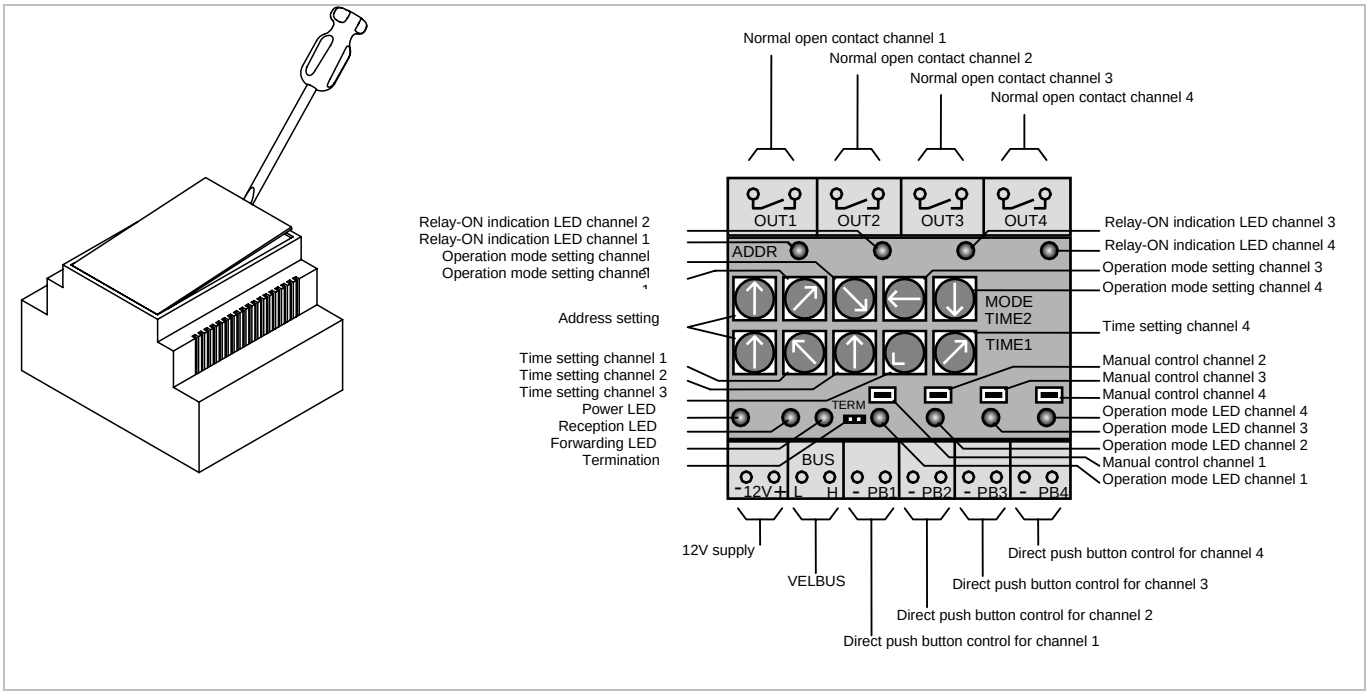
Combination of direct push button control and VELBUS control:



Remark: For connection between the modules, use twisted pair cable (ex. EIB 2x2x0.8mm2, UTP 8x0.51mm - CAT5 or other). Use minimum 0.5mm² cable. For long wiring (>50m) or if a lot of modules (> 10) are connected to one wire, use 1mm² cable.
Connect the bus (mind the polarity) to the module.

USE

Remove the lid from the dimmer module using a small screwdriver and modify the configuration.



Replace the lid.

Termination:

If the module is connected at the start or end of a cable on the VELBUS, place the 'TERM' jumper.

Remove the jumper in all other cases.

Remark: If different cable wiring topologies (tree, star, loop, ...) are used, place a jumper on the end module of the longest cable only, NOT on each end point.

Addressing:

Enter a unique address (from '00' to 'FE' except for '81'…'84', '91'…'94', 'A1'…'A4', 'B1'...'B4', 'C1'...'C4', 'D1'...'D4', 'E1'...'E4', 'F1' … 'F4' and 'FF') for each module through the 'ADDR' rotating switches. These addresses can be used to learn the push buttons.
In case of a modification of the addresses, the lamp will be switched off and all LEDs of the corresponding control push buttons will be turned off.

Timer time setting:

A timer time will be chosen depending of the setting of the 'TIME1' rotary switch:

TIME1	***Description***
0	Moment control (the relay is switched on as long as the push button is pressed)
1	5s timer
2	10s timer
3	15 timer
4	30s timer
5	1min timer
6	2min timer
7	5min timer
8	10min timer
9	15min timer

A	***30min timer***
B	1h timer
C	2h timer
D	5h timer
E	1day timer
F	On/off control (the relay is switched on while pressed and switched off with a next press)

Operation mode/time2:

The relay module will operate as follows, depending on the setting of the 'MODE/TIME2' rotary switch:

MODE/ TIME2	***Operation mode***	***Description***
0	Start/stop timer	Operating the push button will switch on the relay. After the set time has elapsed (see 'TIME1' rotating switch), the relay turns off. Operating the push button when the relay is switched on will immediately switch off the relay.
1	Staircase lighting timer	Operating the push button will switch on the relay. After the set time has elapsed (see 'TIME1' rotating switch), the relay will turns off. Operating the push button when the relay is switched on will restart the timer.
2	Non-restartable timer	Operating the push button will switch on the relay. After the set time has elapsed (see 'TIME1' rotating switch), the relay turns off. Operating the push button when the relay is switched on has no effect.
3	Switch-off delay	The relay will be switched on as long as the push button is operated. Releasing the push button will start the timer. After the set time has elapsed, the relay turns off (see 'TIME1' rotating switch).
4	Switch-on delay	Operating the push button will start the switch-on delay. The relay will only be switched on after this switch-on delay has elapsed (see 'TIME1' rotating switch). Operating the push button when the switch-on delay is running will immediately switch off the switch-on delay. Operating the push button when the relay is on will immediately switch off the relay.
5	Start timer with push button release	The relay switches on during the set time (see 'TIME1' rotating switch) by releasing the push button.
6	Blink timer	Operating the push button will make the relay blink. After the set time has elapsed (see 'TIME1' rotating switch), the relay turns off. Operating the push button while the relay is blinking will immediately switch off the relay.

7	*2-way timer (time 2 = 5min)*	*A short press will switch on the relay during the set time* (see 'TIME1' rotating switch)*.* *A long press will switch on the relay for 5 minutes.* *Operating the push button when the relay is on will immediately switch off the relay.*
8	2-way timer (time 2 = 10min)	A short press will switch on the relay during the set time (see 'TIME1' rotating switch). A long press will switch on the relay for 10 minutes. Operating the push button when the relay is on will immediately switch off the relay.
9	2-way timer (time 2 = 15min)	A short press will switch on the relay during the set time (see 'TIME1' rotating switch). A long press will switch on the relay for 15 minutes. Operating the push button when the relay is on will immediately switch off the relay.
A	2-way timer (time 2 = 30min)	A short press will switch on the relay during the set time (see 'TIME1' rotating switch). A long press will switch on the relay for 30 minutes. Operating the push button when the relay is on will immediately switch off the delay.
B	2-way timer (time 2 = 1h)	A short press will switch on the relay during the set time (see 'TIME1' rotating switch). A long press will switch on the relay for 1 hour. Operating the push button when the relay is on will immediately switch off the delay.
C	2-way timer (time 2 = 2h)	A short press will switch on the relay during the set time. A long press will switch on the relay for 2 hours. Operating the push button when the relay is on will immediately switch off the delay.
D	2-way timer (time 2 = 5h)	A short press will switch on the relay during the set time. A long press will switch on the relay for 5 hours. Operating the push button when the relay is on will immediately switch off the delay.
E	2-way timer (time 2 = 1day)	A short press will switch on the relay during the set time (see 'TIME1' rotating switch). A long press will switch on the relay for 24 hours. Operating the push button when the relay is on will immediately switch off the delay.
F	2-way timer (time 2 = on/off)	A short press will switch on the relay during the set time (see 'TIME1' rotating switch). A long press will switch off the relay for an undetermined time. Operating the push button when the relay is on will immediately switch off the relay.

Remarks:
The set mode is only applicable on push buttons connected to the direct push button input and to push buttons connected via the Velbus® which were attributed the mode function in the learning mode (see learning mode).
If the TIME rotary switch is set on 0, the operating mode will always operate in moment control, regardless of the position of the MODE rotary switch.
If the TIME rotary switch is set on F, the relay module will operate in on/off mode.

Operation:

The relay module can be operated in different ways:

- Using push buttons connected to the direct push button input:
    - activating the set mode on the module.
- Using push buttons connected to the Velbus® through a push button interface or control module:
    - switching on the relay.
    - switching off the relay.
    - switching the relay on or off.
    - activating the set mode on the module.
    - starting or stopping the timer.
    - starting or stopping the 2nd timer.
    - starting or restarting the timer.
    - starting or restarting the 2nd timer.

LED indication:

The control module LEDs and the mode LED on the relay module indicate the status of the relay:

- The LED will not light if the relay is switched off.
- The LED lights if the relay is switched on and the timer is not activated.
- The LED blinks rapidly if the timer is activated.
- The LED blinks slowly if the 2nd timer is activated.

A short press will only be distinguished from a long press in the 2-way timer mode. A short press will activate the 1st timer (TIME1) while a long press will activate the 2nd (TIME2) timer.

Learning mode:

Only push buttons connected to the Velbus® via a push button interface or a control panel are appropriate for the procedure below. Each command can accept up to 7 different push buttons.
Memorize he unique address of the module.

Set the module address on:

Address	***Command Channel 1***
F1	OFF: Learning push buttons switching off the relay of channel 1
E1	ON: Learning push buttons switching on the relay of channel 1
D1	TGL: Learning push buttons switching the relay of channel 1 on or off
C1	PBM: Learning push buttons activating the set mode of channel 1 on the module
B1	TG1: Learning push buttons starting or stopping the timer of channel 1
A1	TG2: Learning push buttons starting or stopping the 2nd timer of channel 1
91	ST1: Learning push buttons starting or restarting the timer of channel 1
81	ST2: Learning push buttons starting or restarting the 2nd timer of channel 1

Address	***Command Channel 2***
F2	OFF: Learning push buttons switching off the relay of channel 2
E2	ON: Learning push buttons switching on the relay of channel 2
D2	TGL: Learning push buttons switching the relay of channel 2 on or off
C2	PBM: Learning push buttons activating the set mode of channel 2 on the module
B2	TG1: Learning push buttons starting or stopping the timer of channel 2
A2	TG2: Learning push buttons starting or stopping the 2nd timer of channel 2
92	ST1: Learning push buttons starting or restarting the timer of channel 2
82	ST2: Learning push buttons starting or restarting the 2nd timer of channel 2

Address	***Command Channel 3***
F3	OFF: Learning push buttons switching off the relay of channel 3
E3	ON: Learning push buttons switching on the relay of channel 3
D3	TGL: Learning push buttons switching the relay of channel 3 on or off
C2	PBM: Learning push buttons activating the set mode of channel 3 on the module
B3	TG1: Learning push buttons starting or stopping the timer of channel 3
A3	TG2: Learning push buttons starting or stopping the 2nd timer of channel 3
92	ST1: Learning push buttons starting or restarting the timer of channel 3
82	ST2: Learning push buttons starting or restarting the 2nd timer of channel 3

Address	Command Channel 4
F4	OFF: Learning push buttons switching off the relay of channel 4
E4	ON: Learning push buttons switching on the relay of channel 4
D4	TGL: Learning push buttons switching the relay of channel 4 on or off
C4	PBM: Learning push buttons activating the set mode of channel 4 on the module
B4	TG1: Learning push buttons starting or stopping the timer of channel 4
A4	TG2: Learning push buttons starting or stopping the 2nd timer of channel 4
94	ST1: Learning push buttons starting or restarting the timer of channel 4
84	ST2: Learning push buttons starting or restarting the 2nd timer of channel 4

The relays will be switched off and the operation mode LED of the corresponding channel will blink very rapidly to indicate the learning mode. The indication LEDs of the learned push buttons will also blink very rapidly. In this way it is possible to see which push buttons for the corresponding group have already been learned.
You can add a specific push button by maintaining it pressed until the relay switches on. When releasing the push button the relay will switch off and the push button indication LED will blink very rapidly as a confirmation. If this does not work then the maximum amount of push buttons has been reached.
To delete a learned push button, maintain it pressed. When releasing the push button the indication LED will be turned off.
You can delete all learned push buttons for a specific control group by maintaining the manual control on the relay module pressed until the relay switches on. When releasing the manual control push button the relay and the indication LEDs of all corresponding push buttons will turn off.
Repeat the procedure above to learn other commands to the push buttons.
Quit the learning mode by resetting the relay module's original address.
When using firmware version 0735 you will be able to delete all push buttons saved into the memory of the relay module at once. Set the address to one of the learning addresses. Maintain the manual control on the relay module pressed for 10 seconds. The relay will activate and deactivate again after 7 seconds to confirm the push buttons have been erased. Set the address back to its original value.

velleman® MODULES

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Velleman Home Automation System

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In-house training & demonstration facility.