# VMB1LED
## PWM LED strip dimmer module
## for the Velbus system

# CONTENTS

# DESCRIPTION

LED illumination is getting more popular. By dimming the output of the LED strips (12V or 24V series) an attractive atmosphere can be created. A dimmer module is placed between the external LED power supply and the LED strip.
The use of Pulse Width Modulation (PWM) greatly reduces heat development inside the dimmer module compared to linear regulators.

# CHARACTERISTICS

*Dimmer:*
- Suitable for dimming 12 or 24V LED strips or low voltage lamps.
- Can also be used to regulate the speed of DC motors (10 to 30V)
- Not suitable for LED lamps with built-in driving electronics
- Maximum consumption: 5A (60W@12V or 150W@30V)
- High efficiency by using PWM
- PWM frequency: ca. 100Hz
- Gradually switching on and off (ca. 1.5s)
- Dimming from 0 to 100% in ca. 4 seconds
- Short-circuit proof
- Thermal protected
- Protected against wrongly connected power supply by a 20A fuse
- Required external power supply: 10 to 30Vdc / 5A
- Power supply dimmer galvanically separated from the Velbus power supply

*Operating modes (selectable through the 'MODE' rotary switch):*
- instant control
- Start/stop timer
- staircase lighting timer
- dimmer
- dimmer with memory
- multiple positions dimmer
- gradually-on dimmer
- gradually-off dimmer
- gradually on/off dimmer

*Time settings (adjustable through the 'TIME' rotary switch):*
- switch-off time (or dimming speed when gradually on/off dimming
- 16 possible time settings: instant - 5s - 10s - 15s - 30s - 1min - 2 min - 5min - 10min - 15min - 30min - 1u - 2u - 5u - 1dag – on/off

*Control:*
- by placing multiple pushbuttons in parallel
- de-chattering of the pushbutton input: 65ms
- local control on the module
- through Velbus instructions or through pushbuttons connected to the Velbus system
- Operating functions:
  - by pushbuttons that switch the LEDs on (full brightness)
  - by pushbuttons that switch off the LEDs
  - by pushbuttons that switch the LEDs on (full brightness) or off
  - by pushbuttons that activate the selected mode on the module
  - by pushbuttons that make the LEDs shine more bright
  - by pushbuttons that make the LEDs shine less bright
  - by pushbuttons that create a atmosphere
  - by slider controls that turn on the LEDs with the desired brightness

*Led indications:*
- to show the dim position (0...100%)
- to indicate the activated mode:
    - continue on: desired dim position reached
    - slow flash: the timer is running
    - fast flash: the dim position is changing
    - very fast flash: the module is in learning mode to assign pushbuttons
    - 2x short flash: a communication error occurred
- when power is supplied
- to send the status of the de dimmer to the control modules
- when receiving or transmitting data over the Velbus

*Configuration:*
- 247 possible addresses (selectable via the 'ADDR' rotary switches)
- storage capacity for 12 different pushbuttons per control function
- configurable via the Velbus pc interface (VMB1USB, VMB1RS of VMBRSUSB) en the Velbus link software
- also configurable without using a PC by  operating the desired pushbuttons in learning mode
- learned pushbuttons are memorized during power cuts

*Power supply module:*
- required power supply: 10...30VDC
- consumption in standby: 25mA @ 30VDC (20mA 2 16VDC)
- maximum consumption: 60mA @ 30VDC

*Dimensions:*
- standard DIN-rail housing: 2 modules wide
- length x depth x height: 90 x 36 x 58mm

# VELBUS CHARACTERISTICS

- 2-wire communication for Velbus data and 2 wires for power supply
- data transmission: 16.6 Kbit/s
- Serial data protocol: CAN (Controller Area Network)
- Short circuit proof (towards negative or positive pole of the power supply)
- bus error indication: 2 short flashes of the LEDs
- auto recovering after 25 seconds when a bus error occurs

The dimmer module can be given a designation with a maximum of 16 characters.

## *The dimmer module can transmit following messages:*

- dimmer status
- local pushbutton status
- dimmer type LED (including software version)
- dimmer name
- local pushbutton name
- the communication error counter
- memory content

## *The dimmer module can transmit following instructions:*

- to change the status of the LEDs on a pushbutton module
- to switch off the LEDs on a pushbutton module
- to switch on the LEDs on a pushbutton module
- to make the LEDs on a pushbutton module  flash slowly
- to make the LEDs on a pushbutton module  flash fast
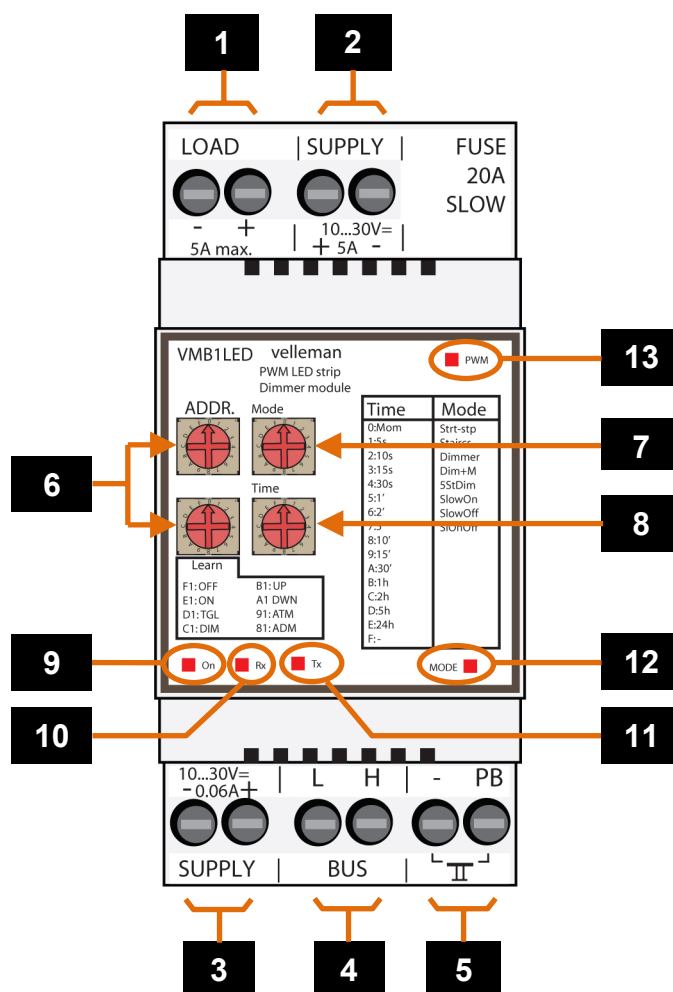- to make the LEDs on a pushbutton module  flash very fast

## *The dimmer module can receive following messages:*

- the status of a pushbutton module
- the status of a slider control

## *The dimmer module can receive following instructions:*

- set the dimming value
- start timer
- request dimmer status
- inquire module type and software version
- read the communication error counter
- request dimmer name and local push button name
- request memory content
- overwrite memory content
- switch off pushbutton indication LED

| LOAD | SUPPLY | FUSE 20A SLOW |

VMB1LED velleman
PWM LED strip Dimmer module

ADDR. Mode

Time

Learn

| F1:OFF | B1:UP |
| E1:ON | A1 DWN |
| D1:TGL | 91:ATM |
| C1:DIM | 81:ADM |

| Time | Mode |
|---|---|
| 0:Mom | Strt-stp |
| 1:5s | Stairs |
| 2:10s | Dimmer |
| 3:15s | Dim+M |
| 4:30s | 5StDim |
| 5:1' | SlowOn |
| 6:2' | SlowOff |
| 7:5 | SlOnOff |
| 8:10' | |
| 9:15' | |
| A:30' | |
| B:1h | |
| C:2h | |
| D:5h | |
| E:24h | |
| F:- | |

| 10...30V= -0.06A+ | L H | - PB |
| SUPPLY | BUS | |

| Wiring | |
|---|---|
| 1 | LED strip |
| 2 | LED strip power supply |
| 3 | Module or Velbus power supply |
| 4 | Velbus |
| 5 | Pushbutton |

| Settings | |
|---|---|
| 6 | Address |
| 7 | Mode |
| 8 | Time |

| LED indication | |
|---|---|
| 9 | Power supply |
| 10 | Receiving Velbus data |
| 11 | Sending Velbus data |
| 12 | Operating mode |
| 13 | Dim position (0 ~ 100%) |

LOAD | SUPPLY | FUSE
20A
SLOW

- + | 10...30V=
5A max. | + 5A -

VMB1LED velleman
PWM LED strip
Dimmer module

PWM

ADDR. Mode

Time

| Time | Mode |
|------|------|
| 0:Mom | Strt-stp |
| 1:5s | Staircs |
| 2:10s | Dimmer |
| 3:15s | Dim+M |
| 4:30s | 5StDim |
| 5:1′ | SlowOn |
| 6:2′ | SlowOff |
| 7:5′ | SlOnOff |
| 8:10′ | |
| 9:15′ | |
| A:30′ | |
| B:1h | |
| C:2h | |
| D:5h | |
| E:24h | |
| F:- | |

Learn
F1:OFF   B1:UP
E1:ON    A1 DWN
D1:TGL   91:ATM
C1:DIM   81:ADM

On   Rx   Tx                    MODE

10...30V
- 0.06A +   | L   H   | -   PB

SUPPLY | BUS

**PWM LED:**
brightness indication for dim position

**On LED:**
on when input power supply is present

**Rx LED:**
on when receiving Velbus data

**Tx LED:**
on when transmitting Velbus data

**Mode LED:**
- off when LED strip is off
- on when LED strip lit with steady brightness
- flashes fast while brighness of LED strip changes
- flashes slow when switch-off delay is active
- flashes very fast when dimmer module is in learning mode
- flashes 2x short upon detecting a communication error

The dimmer module can be used in combination with a direct current power supply (12 or 24V) to dim LED strips (12 or 24V).

The function of the connected pushbuttons is set via the 'Mode' rotary switch.

The switch-off time (or dim time in slowly on/off dimmer mode) is set via the 'Time' rotary switch.

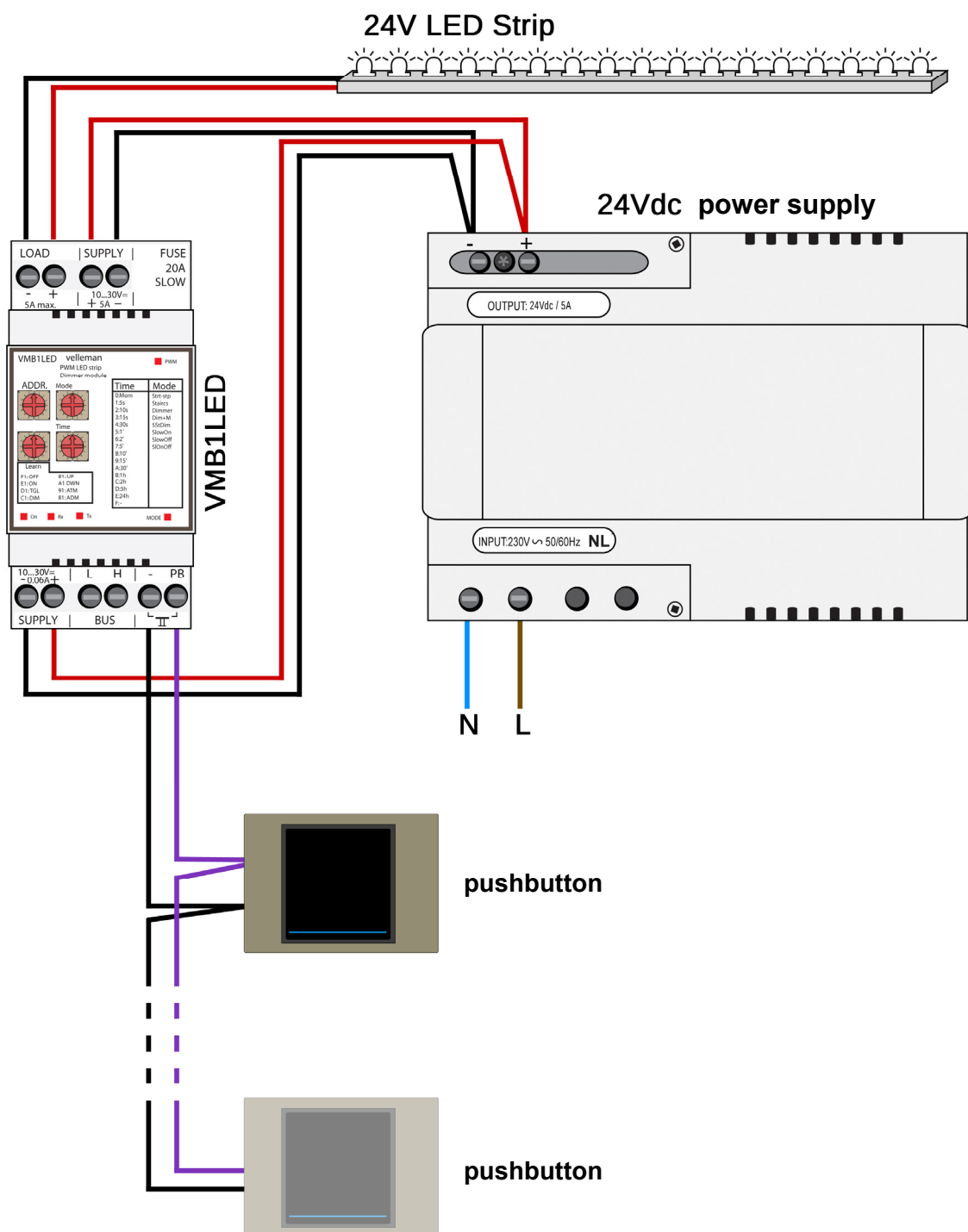The address must be set to '00' to disable communication with the Velbus system.

## *Wiring diagram for 12V LED strips*

Use a 12V direct current power supply for the LED strips.
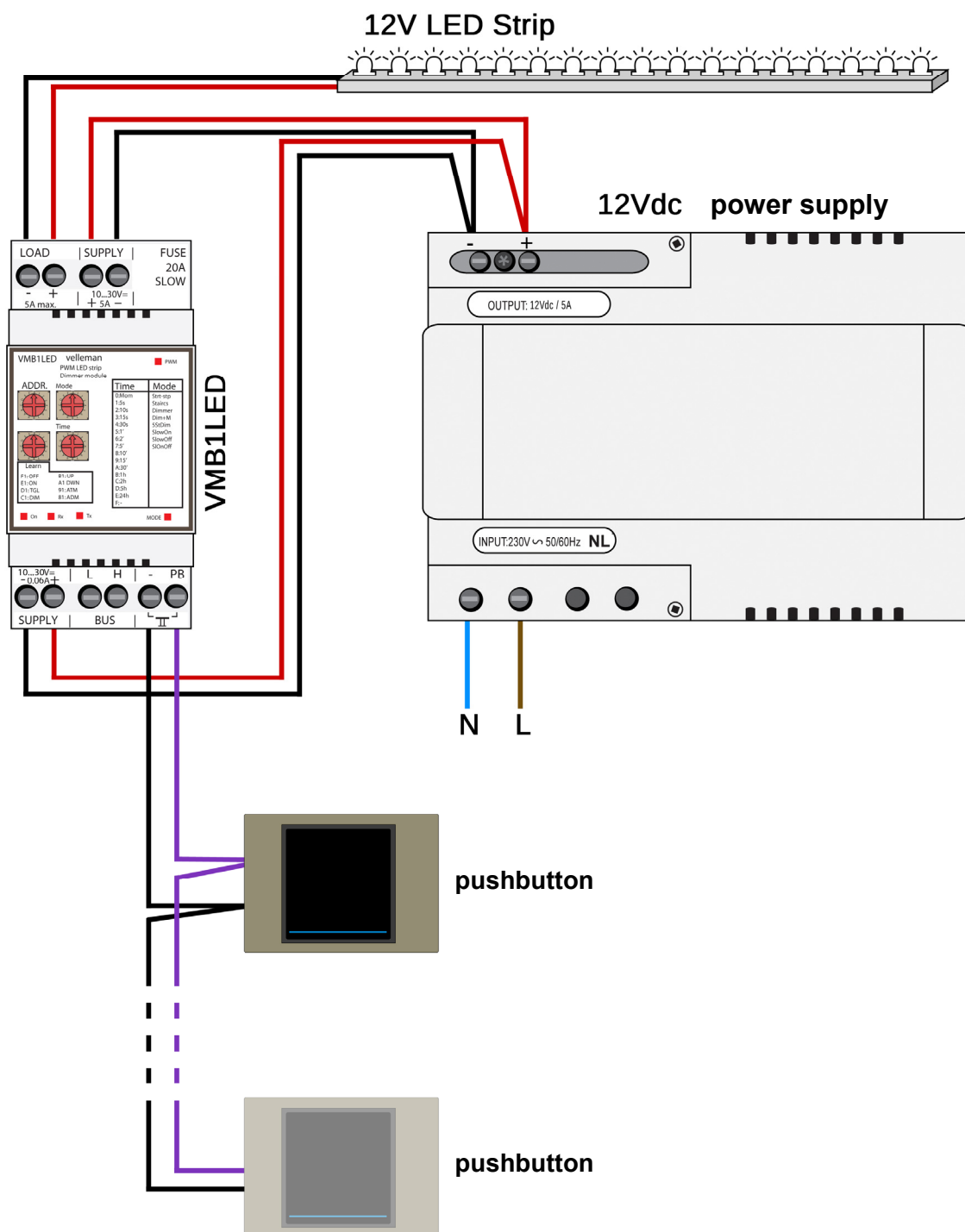
## *Wiring diagram for 24V LED strips*

Use a 24V direct current power supply for the LED strips.

## *Addressing*

When the Velbus is not used, the address must be set to '00' to disable communication with the Velbus system.

Remove the cover.
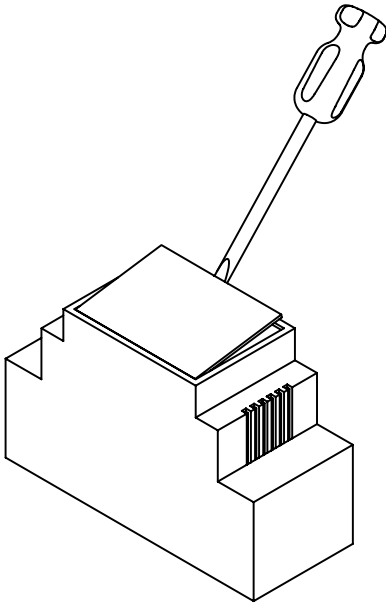


Set both 'ADDR' rotary switches to '0'.



ADDR = 00

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VMB1LED PWM LED strip dimmer Manual– edition 1_rev.2
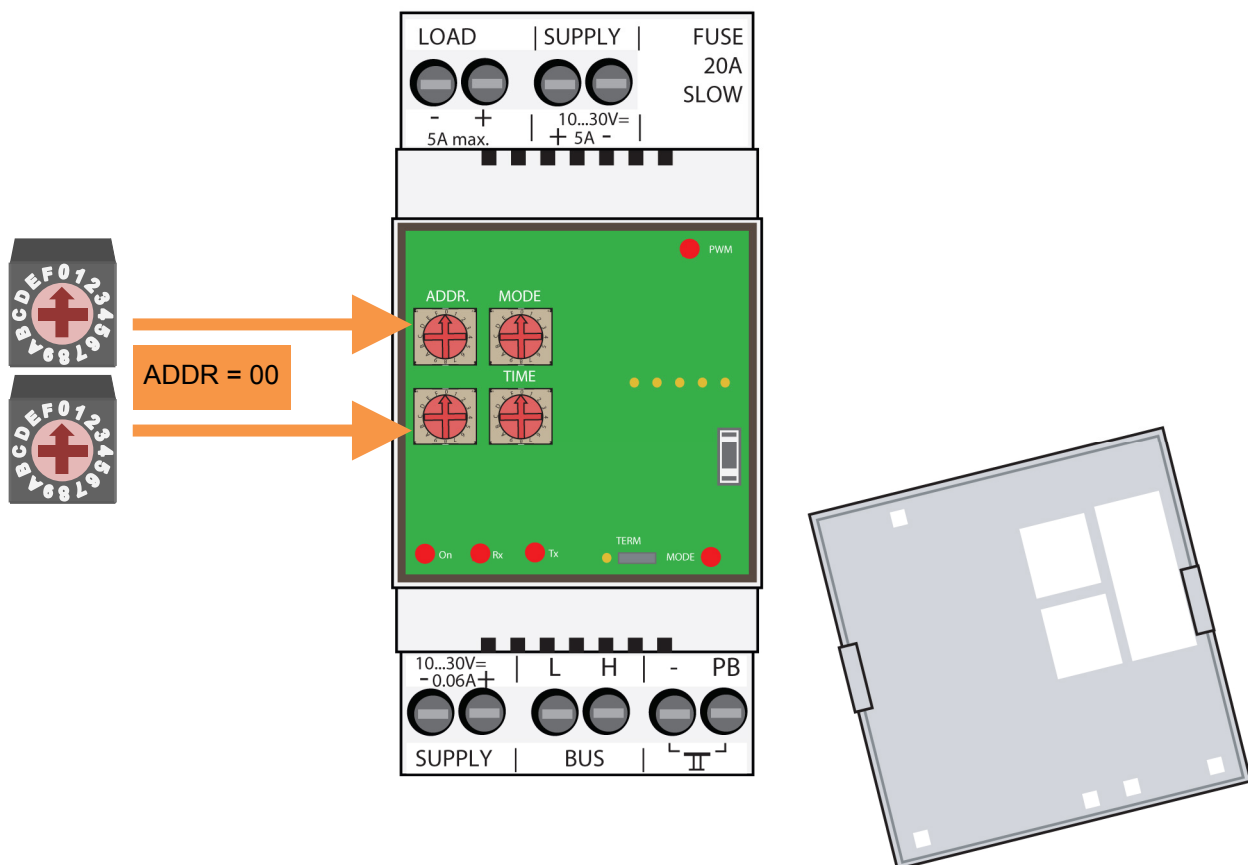
## *Setting the operating mode*

The function of the pushbuttons is determined by the position of the 'Mode' and 'Time' rotary switches.
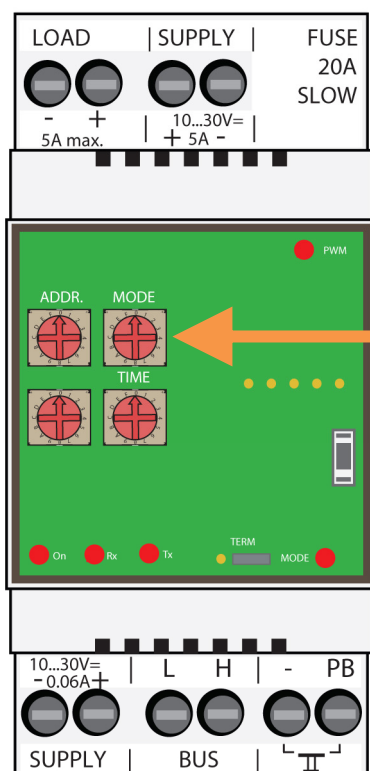


**MODE rotary switch**
0 : start/stop timer
1 : staircase lighting timer
2 : dimmer
3 : dimmer with memory function
4 : multiple position dimmer
5 : slowly on dimmer
6 : slowly off dimmer
7 : slowly on/off dimmer
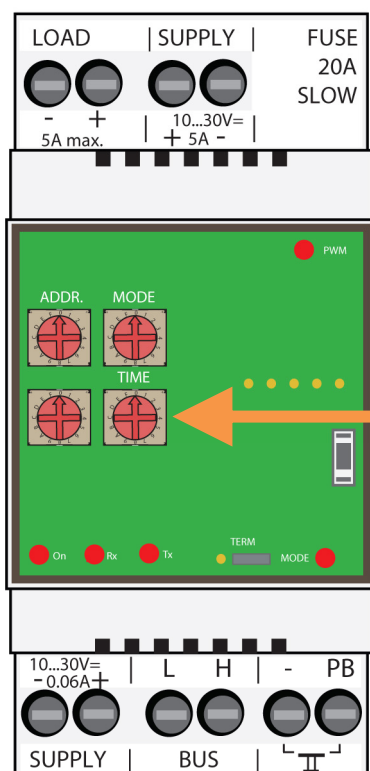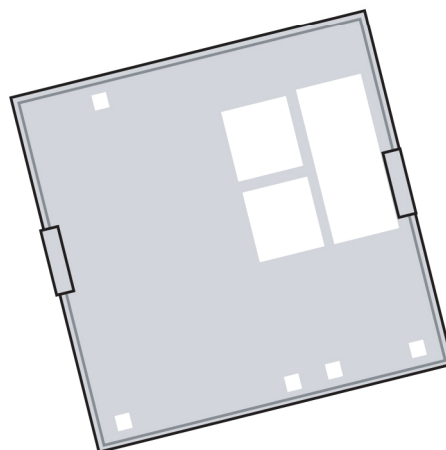


**TIME rotary switch**
0 : instant control
1 : 5 seconds
2 : 10 seconds
3 : 15 seconds
4 : 30 seconds
5 : 1 minute
6 : 2 minutes
7 : 5 minutes
8 : 10 minutes
9 : 15 minutes
A : 30 minutes
B : 1 hour
C : 2 hours
D : 5 hours
E : 24 hours
F : -
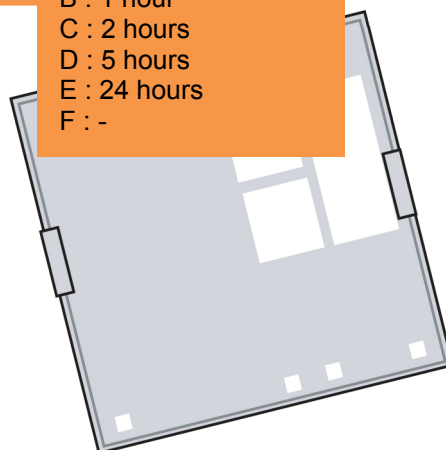
Depending on the setting of the 'MODE' rotary switch the dimmer module will act as follows:

| MODE | Operating mode | Description |
|---|---|---|
| 0 | Start/stop timer | Pushing the pushbutton will switch on the LED strip. When the set time (see 'TIME' switch) expires the LED strip is switched off. Pushing the pushbutton while the LED strip is already on will switch it off immediately. |
| 1 | Staircase lighting timer | Pushing the pushbutton will switch on the LED strip. When the set time (see 'TIME' switch) expires the LED strip brightness will slowly diminish to be completely off after 30 seconds. Pushing the pushbutton while the LED strip is already on will restart the timer. |
| 2 | Dimmer | A short push will switch on the LED strip (full brightness). Another short push when the LED strip is already on will switch it off. Push and hold will dim the LED strip up to maximum or down to minimum brightness. The next push will dim in the opposite direction When the set time (see 'TIME' switch) expires the LED strip is switched off. |
| 3 | Dimmer with memory function | A short push will switch on the LED strip (brightness as memorized since last use). Another short push when the LED strip is already on will switch it off. Push and hold will dim the LED strip up to maximum or down to minimum brightness. The next push will dim in the opposite direction. When the set time (see 'TIME' switch) expires the LED strip is switched off. |
| 4 | Multiple position dimmer | Pushing the pushbutton will switch on the LED strip (full brightness). Every next push within 5 seconds after the previous will change brightness by 25%. When the LED strip is on and the previous push occurred more than 5 seconds earlier, a push will switch off the LED strip. When the set time (see 'TIME' switch) expires the LED strip is switched off. |
| 5 | Slowly on dimmer | Pushing the pushbutton will slowly turn on the LED strip to full brightness. The duration to achieve maximum brightness is determined by the 'TIME' switch. Pushing the pushbutton while the LED strip is already on will switch it off immediately. |
| 6 | Slowly off dimmer | Pushing the pushbutton will switch on the LED strip to full brightness. Pushing the pushbutton when the LED strip is on will slowly decrease brightness until the LED strip is off. The duration to switch the LED strip to off is determined by the 'TIME' switch. Pushing the pushbutton during decreasing brightness will turn the LED strip back to full brightness. |
| 7 | Slowly on/off dimmer | Pushing the pushbutton will slowly turn on the LED strip to full brightness. Pushing the pushbutton when the LED strip is on will slowly decrease brightness until the LED strip is off. The duration to achieve maximum brightness or to switch the LED strip off is determined by the 'TIME' switch. |

**Remarks:**
When the 'TIME' rotary switch is set to '0' the dimmer module will always work in instant control, no matter what operating mode is set. On other words, the LED strip will light up as soon as the pushbutton is pushed.
When the 'TIME' rotary switch is set to 'F' the dimmer module will not automatically switch off or the dimming speed will be maximal when the module is set to slowly on, slowly off or slowly on/off mode.

Depending on the 'TIME' rotary switch the time will be set as follows:

| TIME | Description |
|---|---|
| 0 | Instant control (the LED strip lights up as soon as the pushbutton is pushed) |
| 1 | 5 seconds switch-off time or 5 seconds dimming time in slowly on/off dim mode |
| 2 | 10 seconds switch-off time or 10 seconds dimming time in slowly on/off dim mode |
| 3 | 15 seconds switch-off time or 15 seconds dimming time in slowly on/off dim mode |
| 4 | 30 seconds switch-off time or 30 seconds dimming time in slowly on/off dim mode |
| 5 | 1 minute switch-off time or 1 minute dimming time in slowly on/off dim mode |
| 6 | 2 minutes switch-off time or 2 minutes dimming time in slowly on/off dim mode |
| 7 | 5 minutes switch-off time or 5 minutes dimming time in slowly on/off dim mode |
| 8 | 10 minutes switch-off time or 10 minutes dimming time in slowly on/off dim mode |
| 9 | 15 minutes switch-off time or 15 minutes dimming time in slowly on/off dim mode |
| A | 30 minutes switch-off time or 30 minutes dimming time in slowly on/off dim mode |
| B | 1 hour switch-off time or 1 hour dimming time in slowly on/off dim mode |
| C | 2 hours switch-off time or 2 hours dimming time in slowly on/off dim mode |
| D | 5 hours switch-off time or 5 hours dimming time in slowly on/off dim mode |
| E | 24 hours switch-off time or 24 hours dimming time in slowly on/off dim mode |
| F | No switch-off time or maximal dimming speed in slowly on/off dim mode |

The dimmer module can be part of a Velbus system and controlled by a control panel (VMB4PD) or using pushbuttons connected to a pushbutton interface (VMB8PB).

To interconnect the Velbus modules the use of twisted-pair cable (EIB 2x2x0.8mm2, UTP 8x0.51mm - CAT5 or equivalent) is recommended.
When a lot of modules (more than 10) are connected to the cable or longer cable lengths (more than 50m) are used, it is important to use a cable with appropriate diameter (0.5mm² or higher).
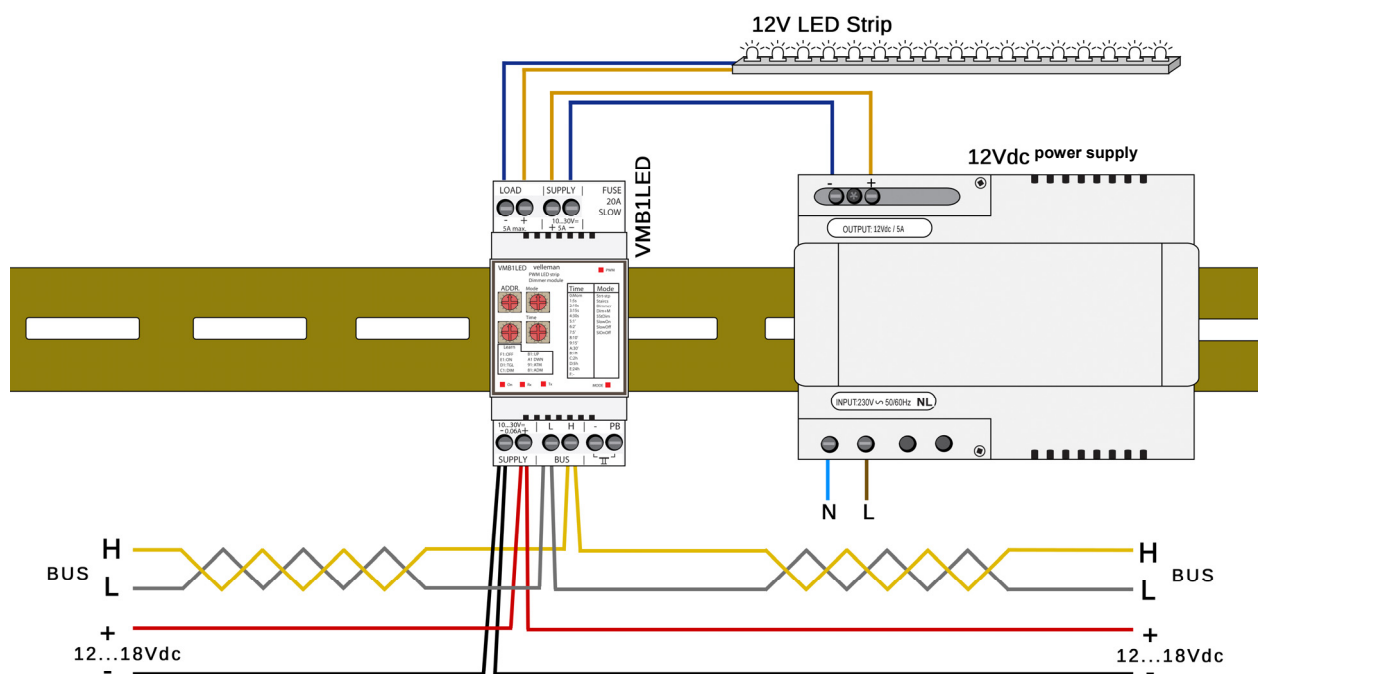Connect the bus to the module (beware of the polarity).
Connect the 12V to 18V direct current to the module (beware of the polarity).

A 12 or 24V direct current power supply is required for the LED strips. That power supply is completely separated from the Velbus power supply. When connecting, make sure to use the correct polarity, as using the wrong polarity will melt the internal fuse. The fuse can be replaced by removing the plastic power supply terminal guard.

## *Wiring diagram for 12V LED strips*

Use a 12V direct current power supply for the LED strips.

It is also possible to use the Velbus in combination with pushbuttons that are directly connected to the pushbutton input of the dimmer module.
The function of the directly connected pushbuttons is set via the 'Mode' and 'Time' rotary switches.

## Wiring diagram for 24V LED strips

Use a 24V direct current power supply for the LED strips.
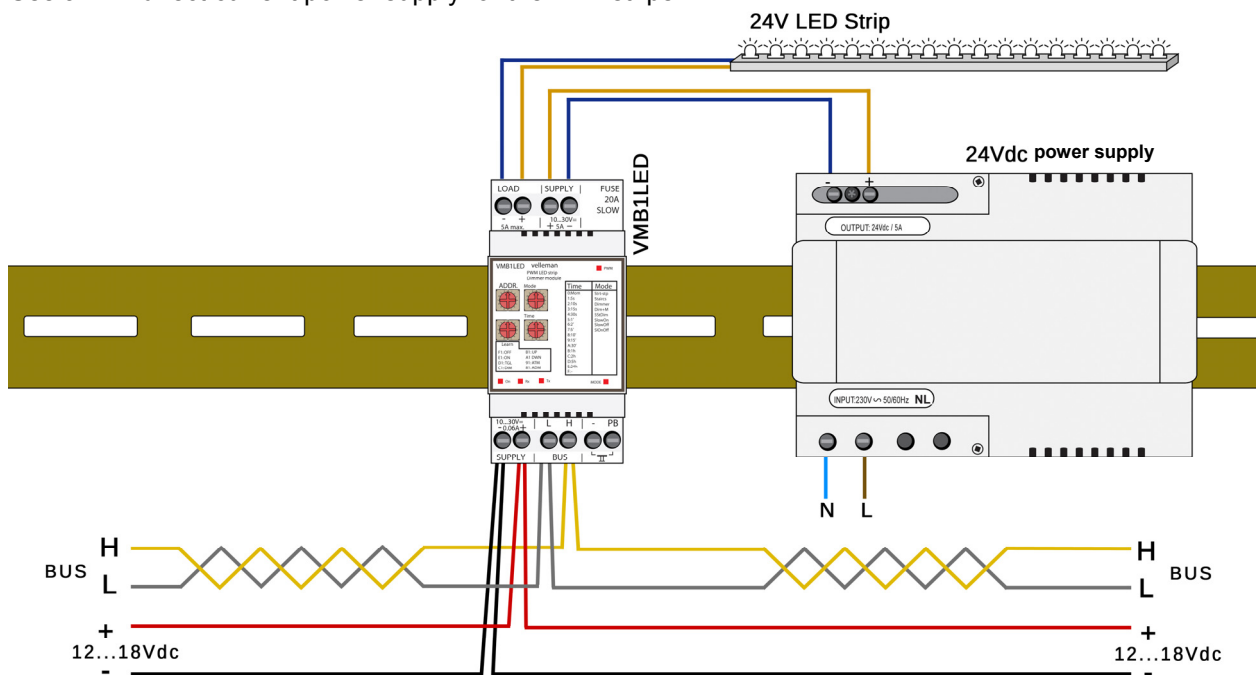


A combination of the Velbus with directly connected pushbuttons is also possible.
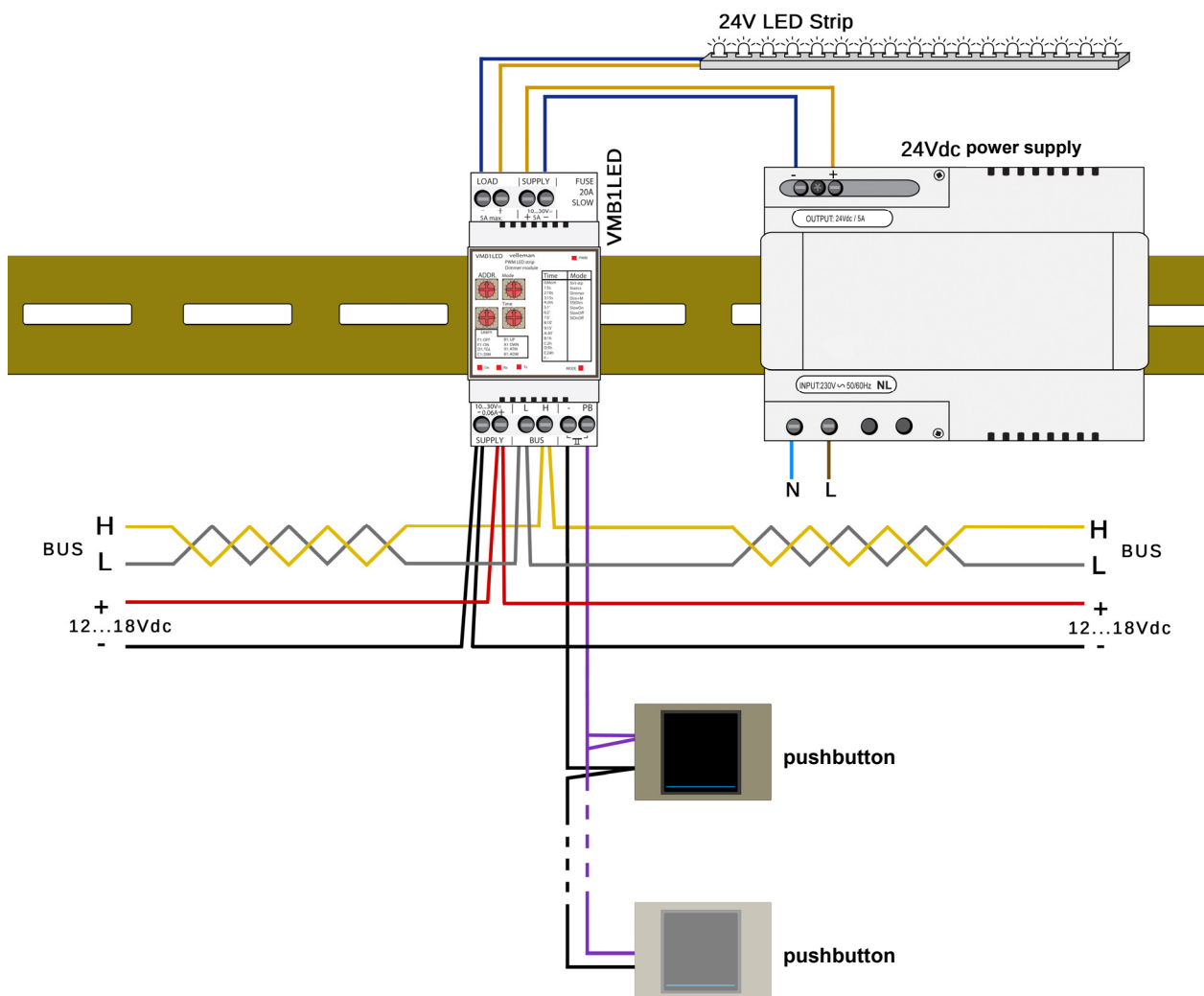
## *Addressing*

Every module in the Velbus system must have a unique address.
On modules with a rotary switch like this dimmer the address is set using the 'ADDR' rotary switch (also refer to the manual of the relevant module). For modules without rotary switches e.g. control panel VMB4PD or temperature controller VMB1TC the address is set via a menu (see manual of the VMB4PD or VMB1TC).
These addresses may not be altered afterwards.

Remove the cover.
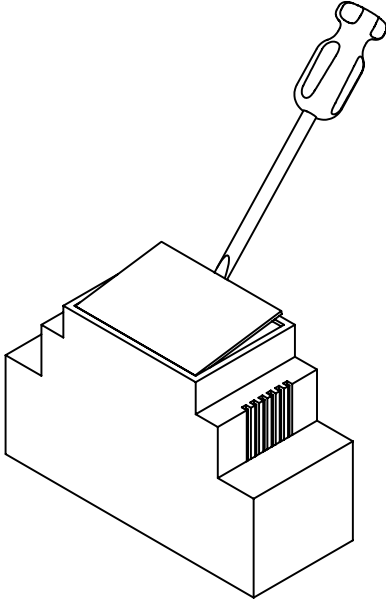


Select a unique address from '01' to 'FE' for the dimmer module using the 'ADDR' rotary switches, except addresses '81', '91', 'A1', 'B1', 'C1', 'D1', 'E1', 'F1' and 'FF'.

In the example below, the address is set to '12'.



ADDR = 12

---
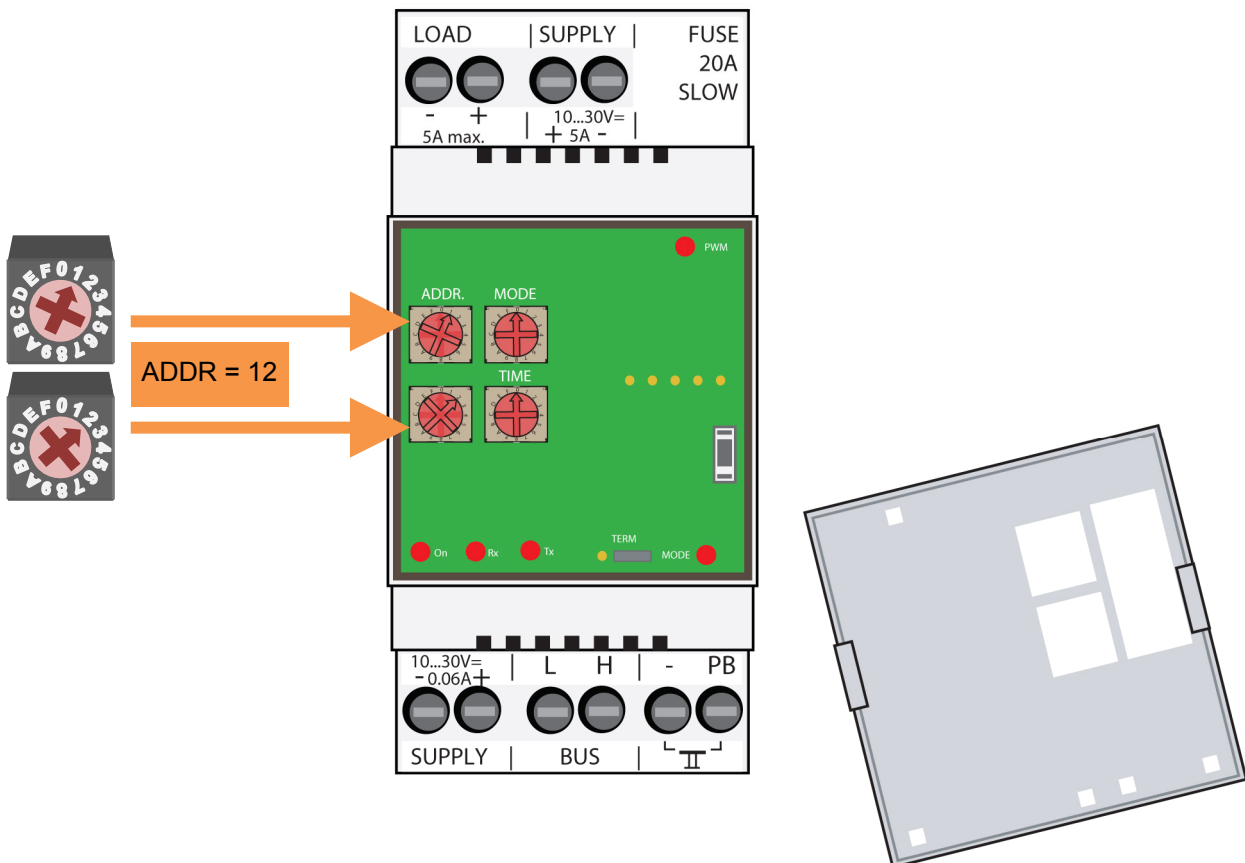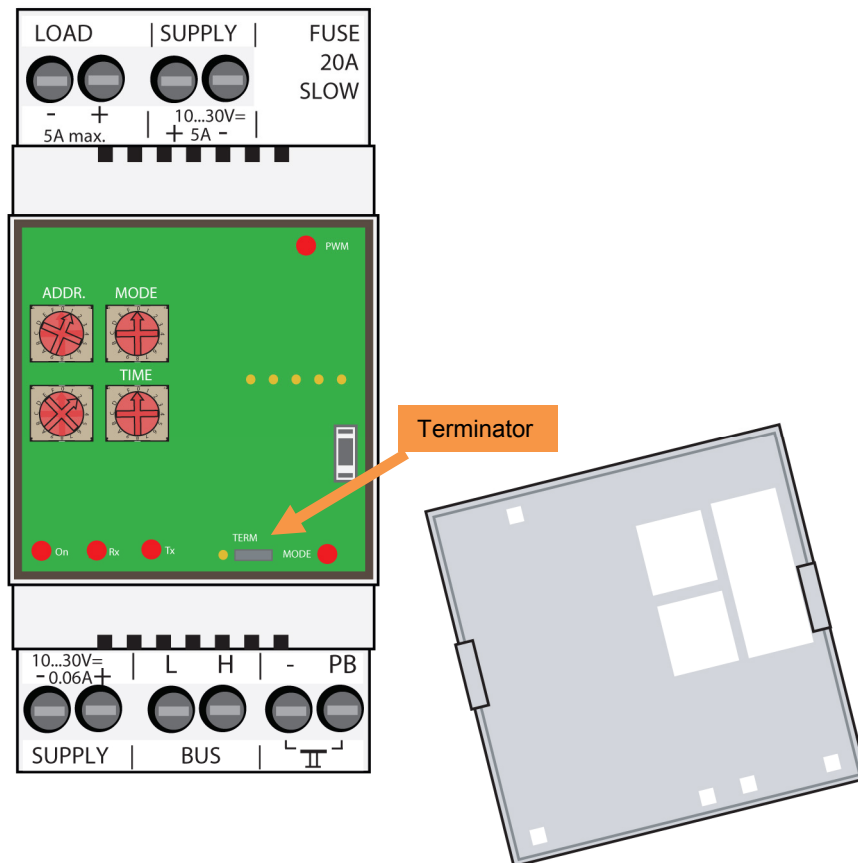
# *Terminator*



Normally only 2 'TERM' terminators must be used in a complete Velbus installation. Usually this will be on one module inside the distribution box and on the module which is physically located furthest from the distribution box.
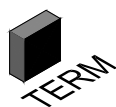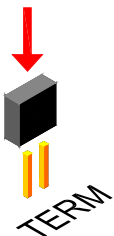


On all other modules, the terminator must be removed.
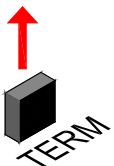


**Remark:**
In case the wiring contains a lot of branches, still only one terminator is placed on one module inside the distribution box and one on the module which is physically located furthest from the distribution box. When communication errors occur, an additional terminator can be used at the end of another branch. However, the number of terminators should be limited as more terminators place a heavy load on the bus.

## *Operation*

The dimmer module can be operated in different ways:

- using pushbuttons directly connected to the pushbutton input:
  - o that activates the mode as set by the rotary switches (see 'Use without Velbus').
- using pushbuttons connected to a Velbus via a  pushbutton interface VMB8PB or control panel VMB4PD:
  - o to switch on the LED strip (full brightness).
  - o to switch off the LED strip.
  - o to switch on (full brightness) or switch off the LED strip.
  - o to activate the mode as set by the rotary switches. Only for this pushbutton operation the mode and time settings will be applicable to the dimmer module (see operating mode).
  - o to increase brightness of the LED strip.
    - ▪ A short push will light up the LED strip to full brightness (or to the last used brightness in case of a dimmer wit memory function).
    - ▪ A long push will gradually increase the LED strip brightness until de pushbutton is released (or maximum brightness reached).
  - o to decrease brightness of the LED strip.
    - ▪ A short push will switch off the LED strip immediately.
    - ▪ A long push will gradually decrease the LED strip brightness until de pushbutton is released (or LED strip is off).
  - o to light op the LED strip at a certain brightness (atmosphere).
  - o by slider controls that light up the LED strip to the desired brightness.

The easiest way to assign an operating function to pushbuttons that are connected via a pushbutton interface or control panel to the Velbus is by using the Velbus link software.

Up to 12 different pushbuttons can be assigned to each operating function.

However, functions can be assigned without using a computer.

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to the function for which pushbuttons will be assigned.

| Address | Operating function | |
|---------|----------|---|
| F1 | OFF: | to link pushbuttons that switch off the LED strip |
| E1 | ON: | to link pushbuttons that switch on the LED strip (full brightness) |
| D1 | TGL: | to link pushbuttons that switch the LED strip on (full brightness) or off |
| C1 | DIM: | to link pushbuttons/sliding controls that activate the selected mode on the module |
| B1 | UP: | to link pushbuttons that increase the LED strip brightness |
| A1 | DWN: | to link pushbuttons that decrease the LED strip brightness |
| 91 | ATM: | to link pushbuttons that light op the LED strip at a certain brightness (atmosphere). |
| 81 | ADM: | to link brightness levels to the corresponding atmosphere pushbuttons |

Adding a certain pushbutton is done by pressing and holding it down until its indication LED starts flashing.
If this doesn't work, the maximum allowed pushbuttons is reached.

Reinstate the address of the dimmer module when finished.

In the following example a control panel VMB4PD is used from which 8 controls are linked to a dimmer module.

- The upper and lower left buttons are used to create atmospheres that are used when watching television or reading a book.
- The upper right button is used to increase LED strip brightness.
- The lower right button is used to decrease LED strip brightness.

On the second page:

- the upper left button is used to change the brightness of the LED strip (dimming).
- the lower left button is used to switch the LED strip on or off.
- the upper right button is used to switch the LED strip to full brightness.
- the lower right button is used to switch off the LED strip.

The labels on the display for the first page are as follows (see manual VMB4PD):

```
watch TV    Dim+
reading     Dim-
```

The labels on the display for the second page are as follows:

```
Dimming       On
On/Off       Off
```

## Linking switch-off pushbuttons

With these pushbuttons the LED strip is switched off.
In our example, we will use the lower right button on the second page of the control panel to switch off the LED strip.

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to 'F1'. The MODE LED on the dimmer module and the indication LED(s) of the already linked switch-off pushbutton(s) will flash (fast). This way it can easily be determined which pushbuttons already have the switch-off function assigned.
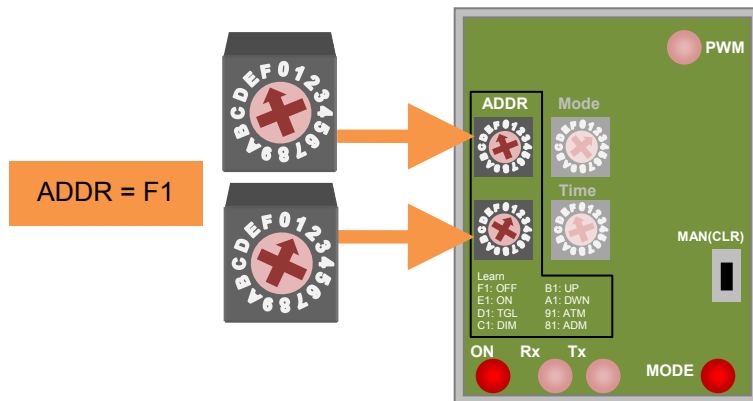


ADDR = F1

Select the second page of the control panel by pressing on the small pushbutton.
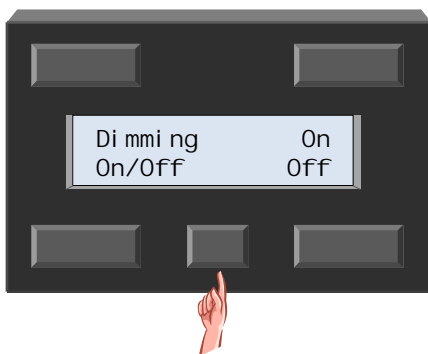


Press and hold the 'Off' pushbutton for at least 1 second until its indication LED starts flashing.
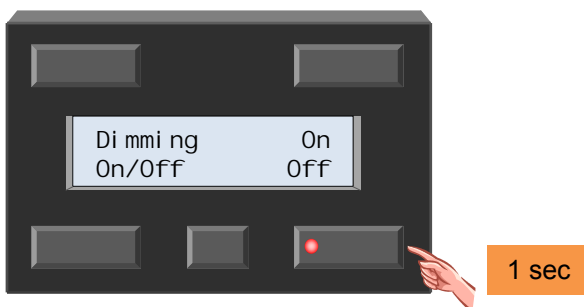


1 sec

Repeat the previous step in case other pushbuttons on the Velbus system must be linked to the switch-off function.
*Remark:*
- In case the indication LED of the pushbutton that you would like to link to the switch-off function is not flashing, the maximum number of switch-off pushbuttons is reached.
- Unlinking a pushbutton is done by pressing and holding the pushbutton until its indication LED switches off.

Reinstate the address of the dimmer module when finished.

## *Linking switch-on pushbuttons*

With these pushbuttons the LED strip is switched on to full brightness.
In our example, we will use the upper right button on the second page of the control panel to switch on the LED strip to full brightness.

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to 'E1'. The MODE LED on the dimmer module and the indication LED(s) of the already linked switch-on pushbutton(s) will flash (fast). This way it can easily be determined which pushbuttons already have the switch-on function assigned.
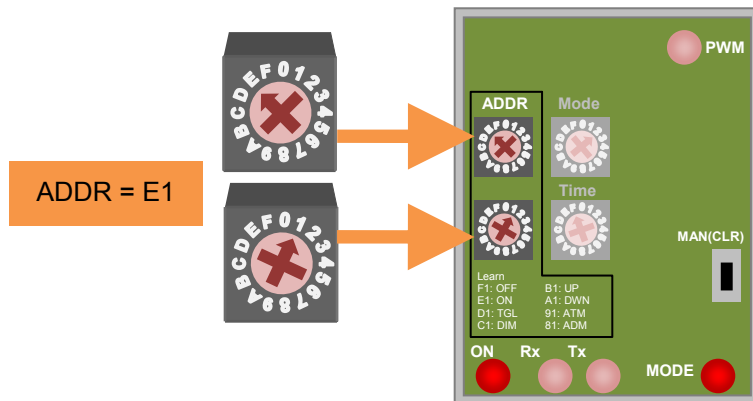


ADDR = E1

Select the second page of the control panel by pressing on the small pushbutton.
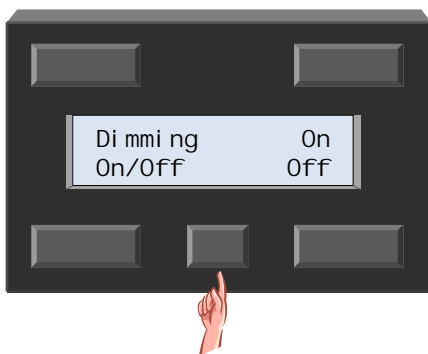


Press and hold the 'On' pushbutton for at least 1 second until its indication LED starts flashing.
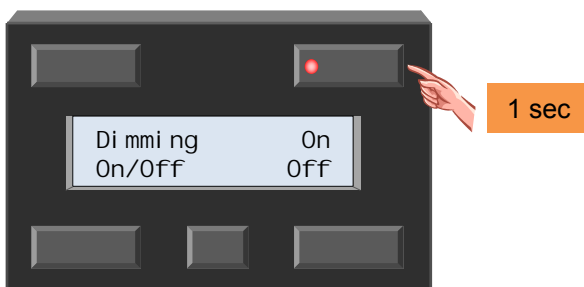


1 sec

Repeat the previous step in case other pushbuttons on the Velbus system must be linked to the switch-on function.
*Remark:*
- In case the indication LED of the pushbutton that you would like to link to the switch-on function is not flashing, the maximum number of switch-on pushbuttons is reached.
- Unlinking a pushbutton is done by pressing and holding the pushbutton until its indication LED switches off.

Reinstate the address of the dimmer module when finished.

## *Linking switch-on/off pushbuttons*

With these pushbuttons the LED strip is switched on to full brightness. Once lit, another push on the pushbutton will switch the LED strip off.
In our example, we will use the lower left button on the second page of the control panel to switch the LED strip on or off.

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to 'D1'. The MODE LED on the dimmer module and the indication LED(s) of the already linked switch-on/off pushbutton(s) will flash (fast). This way it can easily be determined which pushbuttons already have the switch-on/off function assigned.
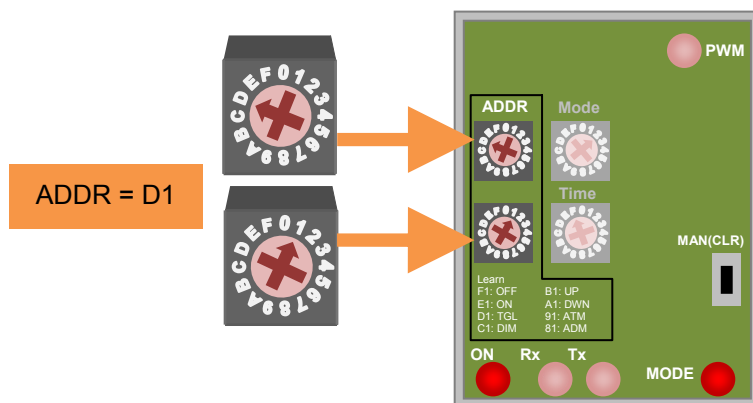


Select the second page of the control panel by pressing on the small pushbutton.
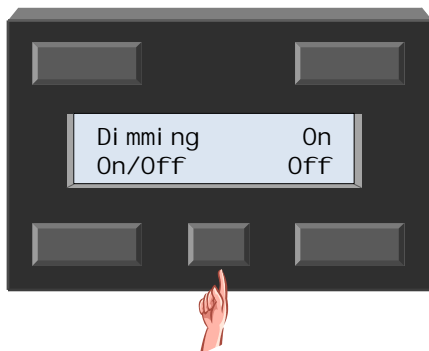


Press and hold the 'On/Off' pushbutton for at least 1 second until its indication LED starts flashing.
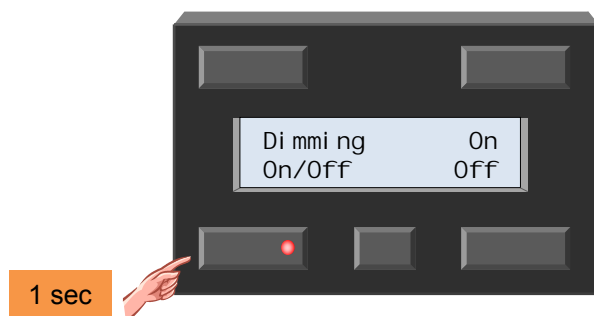


Repeat the previous step in case other pushbuttons on the Velbus system must be linked to the switch-on/off function.
*Remark:*
- In case the indication LED of the pushbutton that you would like to link to the switch-on/off function is not flashing, the maximum number of switch-on/off pushbuttons is reached.
- Unlinking a pushbutton is done by pressing and holding the pushbutton until its indication LED switches off.

Reinstate the address of the dimmer module when finished.

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## Linking dimming pushbuttons

With these pushbuttons the LED strip can be dimmed. The function of the dimming push buttons is determined by the settings of the 'Mode' and 'Time' rotary switches (see § Setting the operating mode).
In our example, we will use the upper left button on the second page of the control panel to dim the LED strip.

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to 'C1'. The MODE LED on the dimmer module and the indication LED(s) of the already linked dimming pushbutton(s) will flash (fast). This way it can easily be determined which pushbuttons already have dimming function assigned.
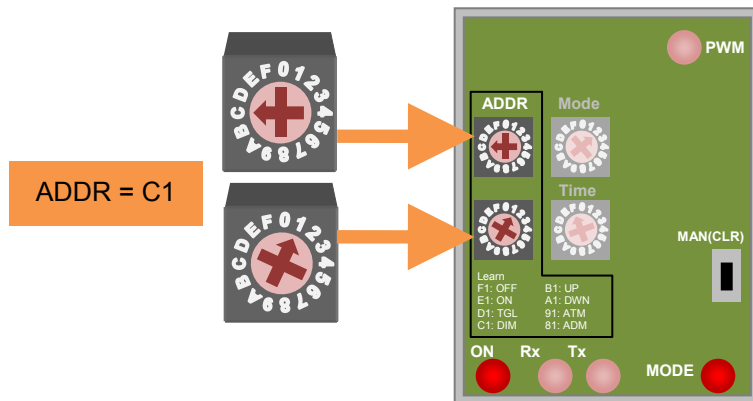


Select the second page of the control panel by pressing on the small pushbutton.
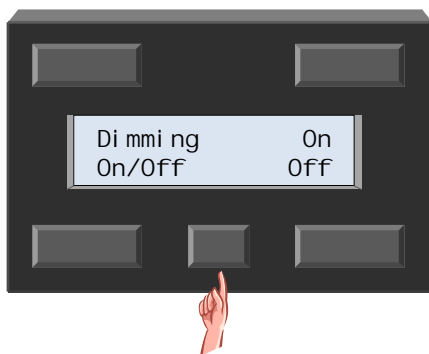


Press and hold the 'dimming' pushbutton for at least 1 second until its indication LED starts flashing.
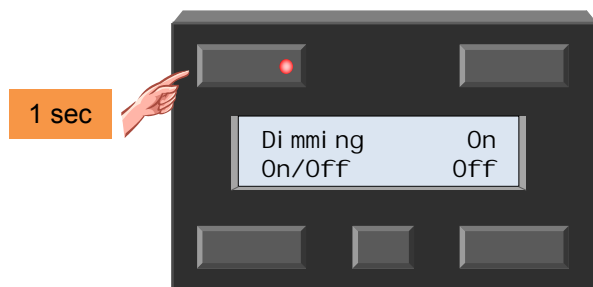


Repeat the previous step in case other pushbuttons on the Velbus system must be linked to the dimming function.
*Remark:*
- In case the indication LED of the pushbutton that you would like to link to the dimming function is not flashing, the maximum number of dimming pushbuttons is reached.
- Unlinking a pushbutton is done by pressing and holding the pushbutton until its indication LED switches off.
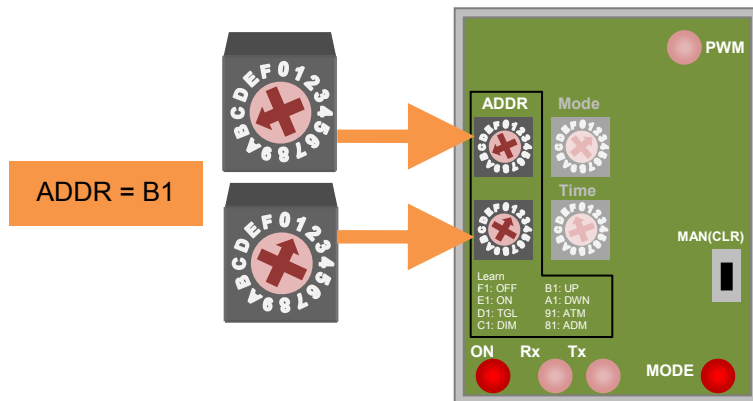
Reinstate the address of the dimmer module when finished.

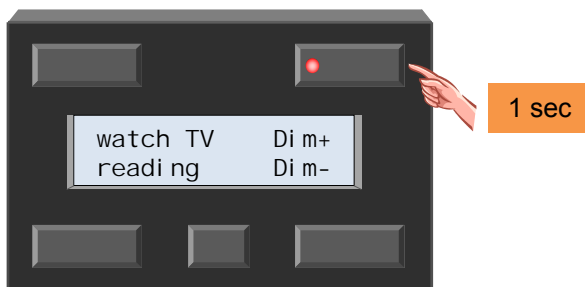## *Linking pushbuttons to increase brightness*

Push and hold these pushbuttons will increase the brightness of the LED strip.
A short press on these pushbuttons will light up the LED strip to full brightness.
In our example, we will use the upper right button to increase the brightness of the LED strip.

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to 'B1'. The MODE LED on the dimmer module and the indication LED(s) of the already linked dimming pushbutton(s) will flash (fast). This way it can easily be determined which pushbuttons already have the dimming function assigned.



Press and hold the 'Dim+' pushbutton for at least 1 second until its indication LED starts flashing.



Repeat the previous step in case other pushbuttons on the Velbus system must be linked to the same dimming function.
*Remark:*
- In case the indication LED of the pushbutton that you would like to link to the dimming function is not flashing, the maximum number of dimming pushbuttons is reached.
- Unlinking a pushbutton is done by pressing and holding the pushbutton until its indication LED switches off.

Reinstate the address of the dimmer module when finished.

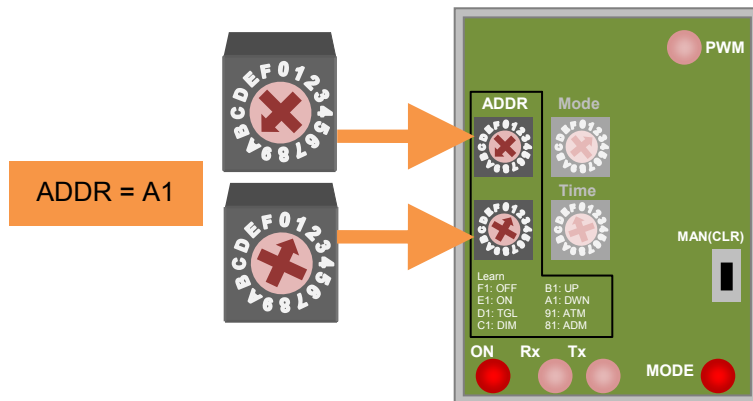## *Linking pushbuttons to decrease brightness*

Push and hold these pushbuttons will decrease the brightness of the LED strip.
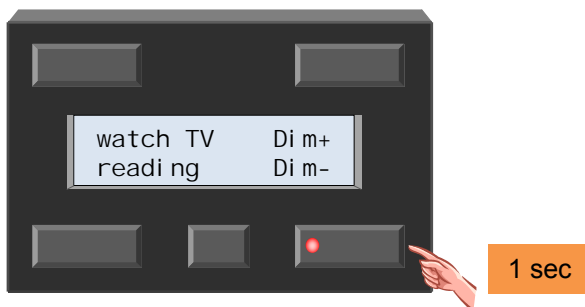A short press on these pushbuttons will switch off the LED strip.
In our example, we will use the lower right button to decrease the brightness of the LED strip.

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to 'A1'. The MODE LED on the dimmer module and the indication LED(s) of the already linked dimming pushbutton(s) will flash (fast). This way it can easily be determined which pushbuttons already have the dimming function assigned.



Press and hold the 'Dim-' pushbutton for at least 1 second until its indication LED starts flashing.



Repeat the previous step in case other pushbuttons on the Velbus system must be linked to the same dimming function.
*Remark:*
- In case the indication LED of the pushbutton that you would like to link to the dimming function is not flashing, the maximum number of dimming pushbuttons is reached.
- Unlinking a pushbutton is done by pressing and holding the pushbutton until its indication LED switches off.

Reinstate the address of the dimmer module when finished.

## Creating atmospheres

These pushbuttons can be linked to a certain brightness to create different atmospheres.
In this example we will use the upper left button of the control panel to create an ideal atmosphere for watching television (low brightness) while the lower left button will be used to create an atmosphere to read a book (high brightness).

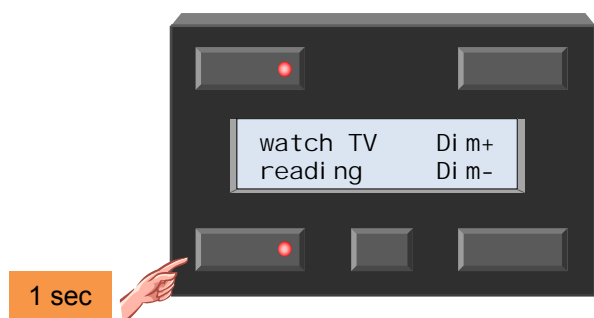Remember the address of the dimmer module to reinstate it later on.

First the atmosphere buttons must be linked. Set the address of the dimmer module to '91'. The MODE LED on the dimmer module and the indication LED(s) of the already linked atmosphere pushbutton(s) will flash (fast). This way it can easily be determined which pushbuttons already have an atmosphere function assigned.
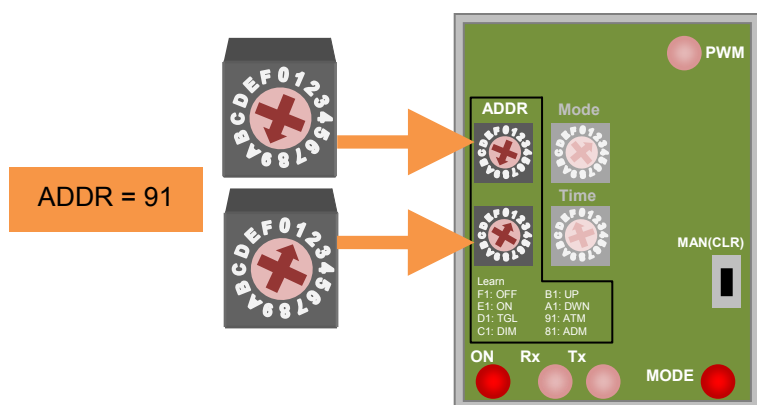


Press and hold the 'watch TV' pushbutton for at least 1 second until its indication LED starts flashing.
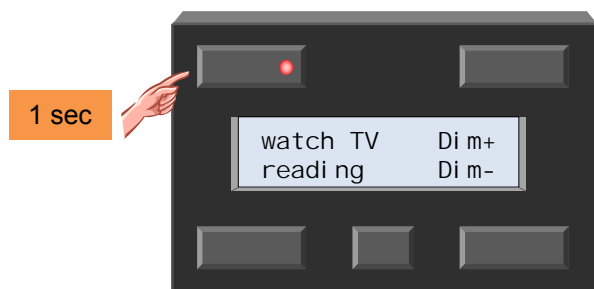


Press and hold the 'reading' pushbutton for at least 1 second until its indication LED starts flashing.



Repeat the previous step in case other pushbuttons on the Velbus system must be linked to an atmosphere.
*Remark:*
- In case the indication LED of the pushbutton that you would like to link to an atmosphere is not flashing, the maximum number of atmosphere pushbuttons is reached.
- Unlinking a pushbutton is done by pressing and holding the pushbutton until its indication LED switches off.

Next step is to assign brightness levels to those atmosphere pushbuttons. Set the address of the dimmer module to '81'. The MODE LED on the dimmer module and the indication LED(s) of the already linked atmosphere pushbutton(s) will flash (fast). This way it can easily be determined which pushbuttons already have an atmosphere function assigned.



ADDR = 81
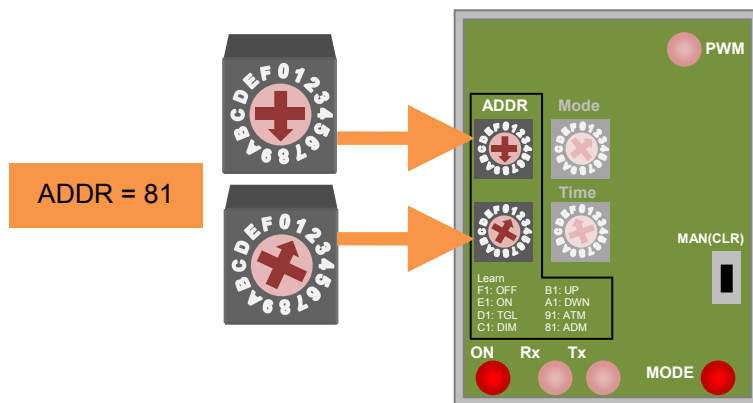
Set the desired brightness for watching television by pressing and holding the 'watch TV' pushbutton until the desired brightness is reached. Release and press again to change dimming direction (up or down).



watch TV    Dim+
reading     Dim-
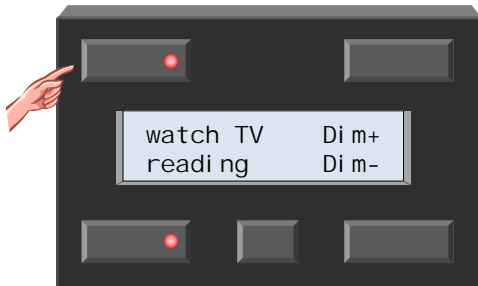
Set the desired brightness for reading light by pressing and holding the 'reading' pushbutton until the desired brightness is reached. Release and press again to change dimming direction (up or down).
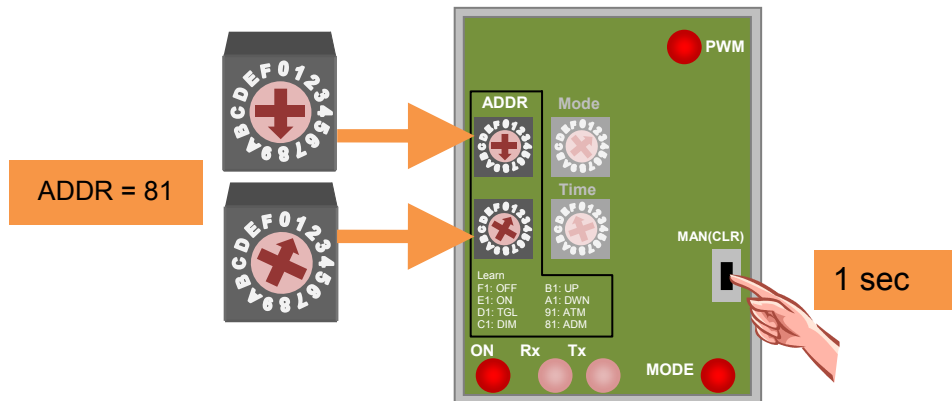


watch TV    Dim+
reading     Dim-
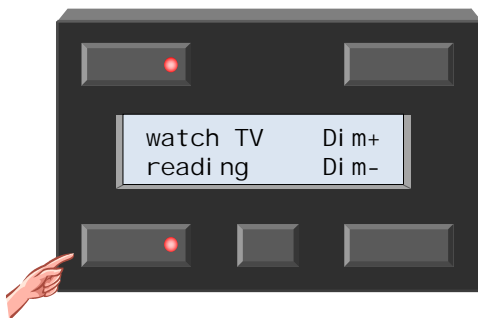
Reinstate the original address of the dimmer module.

## Set all atmospheres to maximum brightness

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to '81'. The MODE LED on the dimmer module will flash.

To set all linked atmospheres to full brightness, press and hold the manual control on the dimmer module until the PWM LED lights up.



Reinstate the original address of the dimmer module.

## *Deleting assigned pushbuttons*

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to the function for which the pushbuttons must be deleted.

| Address | Operating function | |
|---|---|---|
| F1 | OFF: | to delete pushbuttons that switch off the LED strip |
| E1 | ON: | to delete pushbuttons that switch on the LED strip (full brightness) |
| D1 | TGL: | to delete pushbuttons that switch the LED strip on (full brightness) or off |
| C1 | DIM: | to delete pushbuttons/sliding controls that activate the selected mode on the module |
| B1 | UP: | to delete pushbuttons that increase the LED strip brightness |
| A1 | DWN: | to delete pushbuttons that decrease the LED strip brightness |
| 91 | ATM: | to delete pushbuttons that light op the LED strip at a certain brightness (atmosphere) |

The indication LEDs of the pushbuttons that are linked to the selected function will flash.

Deleting an assigned pushbutton is done by pressing and holding it until its indication LED turns off.

Reinstate the original address of the dimmer module.

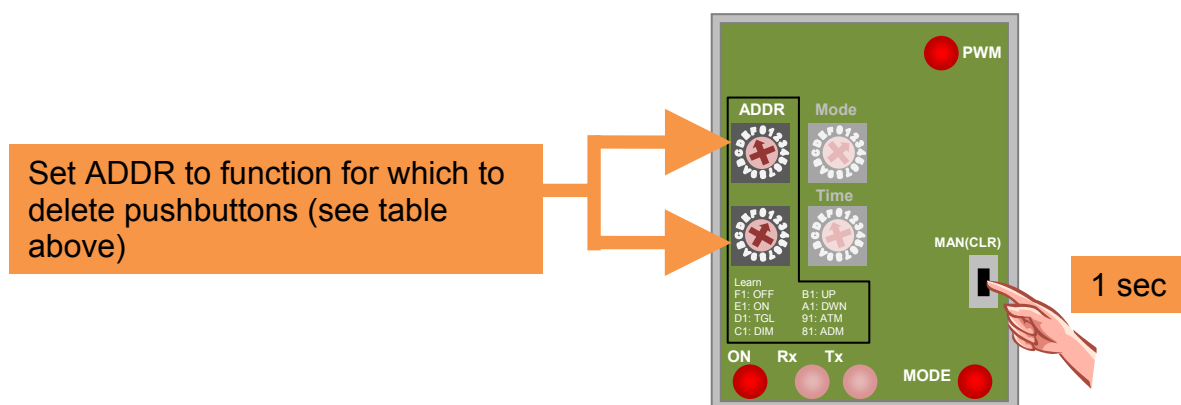## *Deleting assigned pushbuttons for a certain function*

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to the function for which the pushbuttons must be deleted.

| Address | Operating function |
|---------|--------------------|
| F1 | OFF: to delete pushbuttons that switch off the LED strip |
| E1 | ON: to delete pushbuttons that switch on the LED strip (full brightness) |
| D1 | TGL: to delete pushbuttons that switch the LED strip on (full brightness) or off |
| C1 | DIM: to delete pushbuttons/sliding controls that activate the selected mode on the module |
| B1 | UP: to delete pushbuttons that increase the LED strip brightness |
| A1 | DWN: to delete pushbuttons that decrease the LED strip brightness |
| 91 | ATM: to delete pushbuttons that light op the LED strip at a certain brightness (atmosphere) |

The MODE LED on the dimmer module and the indication LEDs of the pushbuttons that are linked to the selected function will flash (fast).

To delete all pushbuttons that are linked to the selected function, press and hold the manual control on the dimmer module until the PWM LED lights up and the indication LEDs on the linked buttons switch off.

Set ADDR to function for which to delete pushbuttons (see table above)

1 sec

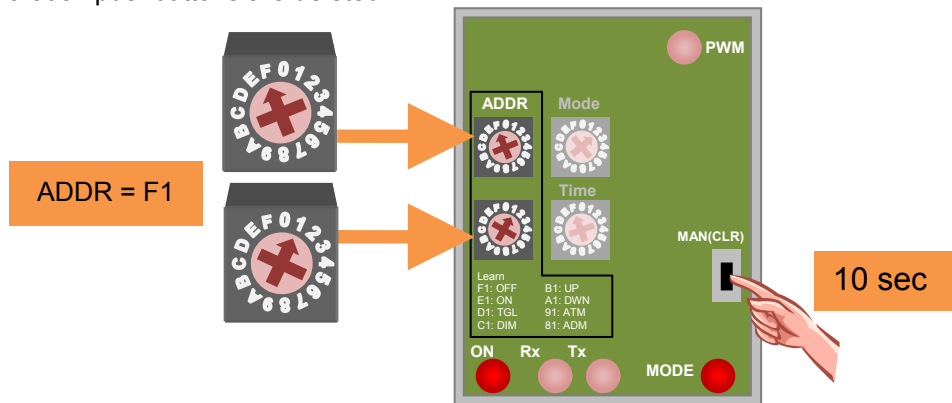Reinstate the original address of the dimmer module.

## *Deleting all assigned pushbuttons*

Remember the address of the dimmer module to reinstate it later on.

Set the address of the dimmer module to 'F1'. The MODE LED on the dimmer module will flash (fast).

Deleting all linked pushbuttons for all operating functions, press and hold the manual control on the dimmer module for 10 seconds.
First the PWM LED on the dimmer module will light up and about 7 seconds later it will switch off again to confirm that all pushbuttons are deleted.



Reinstate the original address of the dimmer module.

## Setting the operating mode

The function of the directly connected pushbuttons or linked 'DIM' Velbus pushbuttons is determined by the position of the 'Mode' and 'Time' rotary switches.
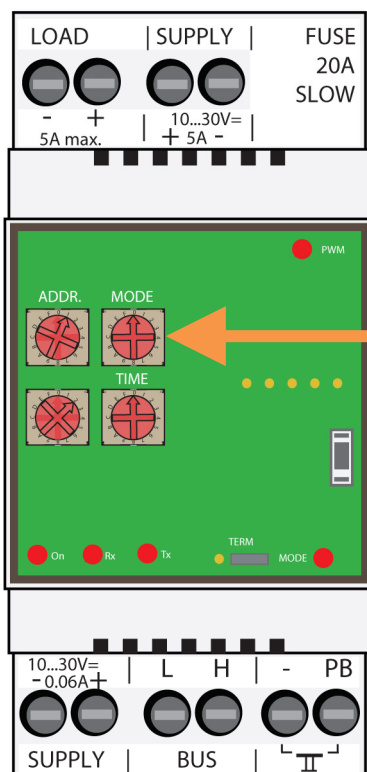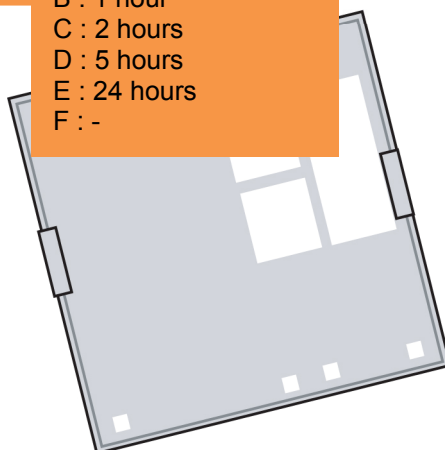
**MODE rotary switch**
0 : start/stop timer
1 : staircase lighting timer
2 : dimmer
3 : dimmer with memory function
4 : multiple position dimmer
5 : slowly on dimmer
6 : slowly off dimmer
7 : slowly on/off dimmer
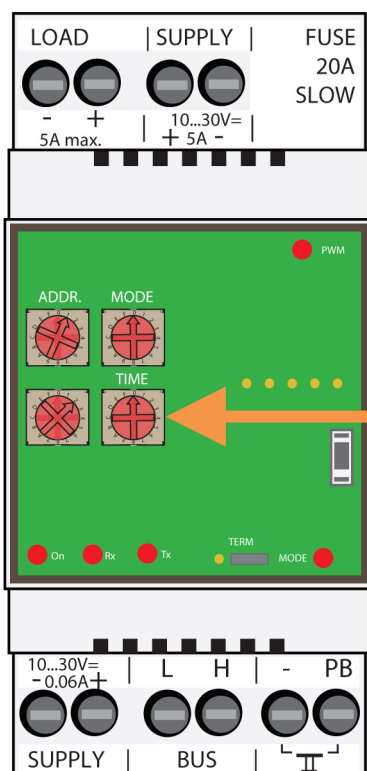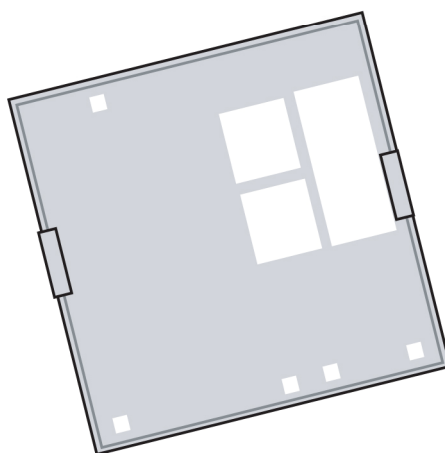
**TIME rotary switch**
0 : instant control
1 : 5 seconds
2 : 10 seconds
3 : 15 seconds
4 : 30 seconds
5 : 1 minute
6 : 2 minutes
7 : 5 minutes
8 : 10 minutes
9 : 15 minutes
A : 30 minutes
B : 1 hour
C : 2 hours
D : 5 hours
E : 24 hours
F : -

Depending on the setting of the 'MODE' rotary switch the directly connected pushbuttons or the learned 'DIM' Velbus pushbuttons will activate following function:

| MODE | Operating mode | Description |
|---|---|---|
| 0 | Start/stop timer | Pushing the pushbutton will switch on the LED strip. When the set time (see 'TIME' switch) expires the LED strip is switched off. Pushing the pushbutton while the LED strip is already on will switch it off immediately. |
| 1 | Staircase lighting timer | Pushing the pushbutton will switch on the LED strip. When the set time (see 'TIME' switch) expires the LED strip brightness will slowly diminish to be completely off after 30 seconds. Pushing the pushbutton while the LED strip is already on will restart the timer. |
| 2 | Dimmer | A short push will switch on the LED strip (full brightness). Another short push when the LED strip is already on will switch it off. Push and hold will dim the LED strip up to maximum or down to minimum brightness. The next push will dim in the opposite direction When the set time (see 'TIME' switch) expires the LED strip is switched off. |
| 3 | Dimmer with memory function | A short push will switch on the LED strip (brightness as memorized since last use). Another short push when the LED strip is already on will switch it off. Push and hold will dim the LED strip up to maximum or down to minimum brightness. The next push will dim in the opposite direction. When the set time (see 'TIME' switch) expires the LED strip is switched off. |
| 4 | Multiple position dimmer | Pushing the pushbutton will switch on the LED strip (full brightness). Every next push within 5 seconds after the previous will change brightness by 25%. When the LED strip is on and the previous push occurred more than 5 seconds earlier, a push will switch off the LED strip. When the set time (see 'TIME' switch) expires the LED strip is switched off. |
| 5 | Slowly on dimmer | Pushing the pushbutton will slowly turn on the LED strip to full brightness. The duration to achieve maximum brightness is determined by the 'TIME' switch. Pushing the pushbutton while the LED strip is already on will switch it off immediately. |
| 6 | Slowly off dimmer | Pushing the pushbutton will switch on the LED strip to full brightness. Pushing the pushbutton when the LED strip is on will slowly decrease brightness until the LED strip is off. The duration to switch the LED strip to off is determined by the 'TIME' switch. Pushing the pushbutton during decreasing brightness will turn the LED strip back to full brightness. |
| 7 | Slowly on/off dimmer | Pushing the pushbutton will slowly turn on the LED strip to full brightness. Pushing the pushbutton when the LED strip is on will slowly decrease brightness until the LED strip is off. The duration to achieve maximum brightness or to switch the LED strip off is determined by the 'TIME' switch. |

**Remarks:**
When the 'TIME' rotary switch is set to '0' the dimmer module will always work in instant control, no matter what operating mode is set. On other words, the LED strip will light up as long as the pushbutton is pushed.
When the 'TIME' rotary switch is set to 'F' the dimmer module will not automatically switch off or the dimming speed will be maximal when the module is set to slowly on, slowly off or slowly on/off mode.

Depending on the 'TIME' rotary switch the time will be set as follows:

| TIME | Description |
|------|-------------|
| 0 | Instant control (the LED strip lights up as soon as the pushbutton is pushed) |
| 1 | 5 seconds switch-off time or 5 seconds dimming time in slowly on/off dim mode |
| 2 | 10 seconds switch-off time or 10 seconds dimming time in slowly on/off dim mode |
| 3 | 15 seconds switch-off time or 15 seconds dimming time in slowly on/off dim mode |
| 4 | 30 seconds switch-off time or 30 seconds dimming time in slowly on/off dim mode |
| 5 | 1 minute switch-off time or 1 minute dimming time in slowly on/off dim mode |
| 6 | 2 minutes switch-off time or 2 minutes dimming time in slowly on/off dim mode |
| 7 | 5 minutes switch-off time or 5 minutes dimming time in slowly on/off dim mode |
| 8 | 10 minutes switch-off time or 10 minutes dimming time in slowly on/off dim mode |
| 9 | 15 minutes switch-off time or 15 minutes dimming time in slowly on/off dim mode |
| A | 30 minutes switch-off time or 30 minutes dimming time in slowly on/off dim mode |
| B | 1 hour switch-off time or 1 hour dimming time in slowly on/off dim mode |
| C | 2 hours switch-off time or 2 hours dimming time in slowly on/off dim mode |
| D | 5 hours switch-off time or 5 hours dimming time in slowly on/off dim mode |
| E | 24 hours switch-off time or 24 hours dimming time in slowly on/off dim mode |
| F | No switch-off time or maximal dimming speed in slowly on/off dim mode |

## Software version verification

The software version can be verified using the Velbus link program.

Check http://www.velbus.eu whether you have the latest version. If a newer version is available, download it.
Connect the Velbus interface to a PC and run the upgrade-software. Follow the instructions on the screen.

***Remark:***
Upgrading a module is not without risk. **Do not** interrupt the process!
If for any reason the upgrade should fail, the module will cease normal operation. The module will have to be returned to the manufacturer.

**Refer to our website for more information : www.velbus.be**