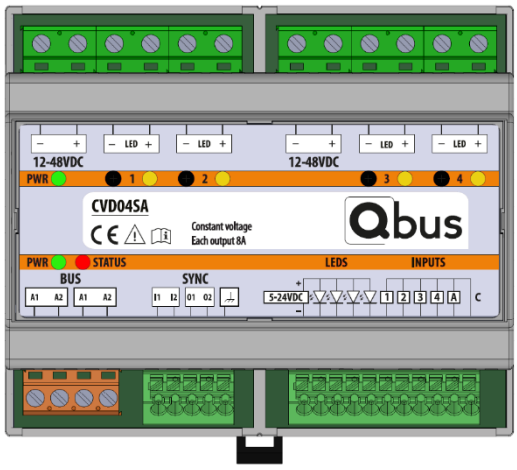
PRODUCTINFO

Technical product data sheet

Stand-alone Constant Voltage Dimmer CVD04SA



CVD04SA

1. Product description

This 4-channel PWM dimmer works with very high frequency, so that no flickering occurs, and no negative health consequences exist for the users. The module can work both in Stand-Alone (SA) and Qbus controller mode as part of a complete Qbus home automation installation.

The CVD04SA is suitable for dimming 4 circuits of 7A each, with a total load of 28A for direct voltage between 12V and 48VDC. The dimmers are digitally controlled with 8-bit precision. An optical separation between inputs and outputs guarantees the safe operation of the module. The dimmer is extremely suitable for dimming LED strips and LED modules made for constant voltage. Various combinations are possible for controlling LED strips, for example: 4x monochrome, 2x Warm white / Cold white, RGB + 1x monochrome, RGBW. The module also has an all ON/OFF input (terminal A).

If the dimmer is used as a Stand-Alone module, one can choose to activate the memory function (so that the dimmer automatically returns to the last position for the next use, for example) and the various combinations mentioned above can be set. You can achieve these settings by using the buttons on the module. See further under "Manual Configuration" in this technical sheet. When using the dimmer in a Qbus installation, all settings available in Systemmanager III can be used. If a different minimum dim level is set via this tool, the module also retains this percentage when used later on in stand-alone mode.

Two power terminals are provided to enable a total power of 28A. Via supply terminal 1 (PWR1), the module receives the necessary voltage for operation and to power PWM outputs 1 & 2. Via supply terminal 2 for PWM output 3 & 4, a different power supply can be connected. For example, it is possible to control 24VDC with outputs 1 & 2, and 48VDC with outputs 3 & 4. When using an RGB (W) LED strip, a wire bridge needs to be installed between supply terminals 1 and 2 (**WARNING: RESPECT THE POLARITY!**).

The module also has 5 potential-free inputs for connecting standard push buttons. Inputs 1 to 4 control respectively output 1 to 4, input A is a “mood” input that performs an ALL-OFF mood after a 0.7 seconds push (and then releasing) and a PANIC mood after a long press (3s) activating all outputs. The inputs for dimmer operation are only suitable for normally open push buttons. When the CVD04SA is connected to a Qbus controller, the function of input A can be adjusted from normally open to normally closed via the Qbus configuration software. Some settings can be adjusted for SA operation, see below.

The module contains 4 LED outputs for feedback to switches. For this purpose, an external DC power supply between 5V and 24V must be installed depending on the operating voltage of the LED feedback function of the selected switches. The power supply of a Qbus Controller can never be used for this!

The dimmer outputs can only be programmed as a one-button dimmer in stand-alone mode. With a 1-button dimmer, the cycle must always be completed: starting from 0% to 100% and back to 0% by continuously pressing the button. A short press (<0.3 sec) brings the dimmer from zero to maximum in 2.5 seconds.

When using a Qbus Controller:

- the dim start value of the dimmer is determined between 5% and 100%;
- when using the built-in astronomical clock, a daytime Dimstart percentage and a second nighttime Dimstart percentage can be set;
- when activated via a short pulse, the lights are automatically dimmed after a set time between 1 second and 255 minutes (TimeOff);
- if dimmers are controlled via a mood or TimeOff, the rising time and the descending time can be set independently between 0.3 seconds and 20 minutes.

The CVD04SA has a synchronization system, so that multiple CVD04SAs can be connected in a Master-Slave setup. When a next CVD04SA is connected to the Sync Out via its Sync In, this module will automatically become the Slave module of the previous one. In this case, the functions of the push button inputs and the Qbus bus are canceled! The module that receives a signal on the Sync In, will therefore no longer be controllable via the Qbus bus, nor will the inputs function.

Every output of the CVD04SA is protected against overloading and overheating. If the power supply can provide more than 20A, a suitable fuse of maximum 20A must be placed between the 12VDC-48VDC power supply(s) and the power supply connection terminals of the module. Ensure adequate ventilation in the distribution box. When loading one or more channels with 5A, active ventilation with a maximum temperature of 25°C is required. If the current per channel remains below 5A, the ambient temperature can be 30°C. Ventilation in the fuse box is always advisable to dissipate the heat generated by the power supply(s).

2. Safety rules

Read the complete manual before installing the module and activating the system.

ATTENTION

- The module must be installed, started and maintained by a licensed electrical installer in accordance with the applicable legal requirements of the country.

Stand-alone Constant Voltage Dimmer CVD04SA

- This module is only suitable for DIN rail installation EN50022. The module must be installed in a fireproof, closed distribution box with ventilation grids.
- The power must be turned off before working on the CVD04SA.
- Never connect alternating voltage (eg 230V ~) directly to the power terminals, Qbus bus or to the inputs! This will cause irreparable damage to the module and / or connected devices.
- Only to be used in combination with DC voltage between 12V and 48V.
- The module cannot be opened. The warranty expires if the module is opened!
- Never use the power supply of the Qbus Controller to power the LED feedback on stand-alone modules!

3. Installation and wiring

The CVD04SA can be used in various ways. However, the following features remain the same for each cabling method:

Placement: Click the module on a DIN rail DIN EN50022.

Inputs: Remove approximately 7mm of insulation from the cable and push the cable into terminals 1 to A. Both fixed and flexible cables between 0.5 - 1.5 mm2 can be used; if the wire is flexible, push the terminal with a screwdriver when pressing in the wire. input 1 to 4 are directly related to respectively output 1 to 4, input A is set by default as a mood input. By releasing the push button connected to this input after 0.7 seconds, all outputs go to the "off" status; by pressing the same push button for more than 3 seconds, all outputs go to the "on" status. By pushing the top of the terminal with a screwdriver, the wires can be removed from the terminals.

LED feedback: An external 5-24VDC power supply can be connected to the CVD04SA to provide LED feedback on 4 push buttons via the LED outputs.

Load: The CVD04SA has two power terminals with screws to which a maximum of 16A power can be connected per terminal. Remove approximately 7mm of insulation from the cable and push the cable into the terminals. Both fixed and flexible wire between 0.5 - 2.5 mm2 can be used and must be in accordance with the power of the consuming devices on the outputs. If flexible wire is used, we recommend using ferrules or tinning the wires.

Power supply: 1 or two power supplies can be used. The module has two power terminals. If an RGB or RGBW LED strip is connected, then both power terminals must be connected to the same power supply.

ATTENTION: DISCONNECT THE POWER SUPPLY TO THE UNIT BEFORE WORKING ON THE MODULE!

LED indication on the module:

- **Green**: power supply OK;
- **Red**: status LED flashes 3 times during start-up and then during programming. This LED will also flash when choosing the output mode and the minimum dim level. See below under Manual configuration;
- **Orange**: output active.

Manual configuration and operation: the buttons on the CVD04SA are used to directly control an output or to set other functions. By default, the outputs are set to Dimmer with minimum dim level of 10%. To change the configuration, the following procedure must always be followed:

1) Make sure that all outputs are OFF (= all orange LEDs are off).
2) Press buttons 1 and 2 simultaneously for five seconds.
3) The red STATUS LED on the module will flash quickly for 5 seconds and then slower.
4) After the STATUS LED has started to flash slowly, release 1 of both buttons, 2 seconds afterwards release the other button. The red STATUS LED will now continue to flash for 10s: the module is in configuration mode and the orange LEDs light up as a function of the programming as stated in the table below. Coupled channels will blink together.

Setting	LED Confirmation
Controlled via the Qbus bus	All Orange LEDs are all on
Standard 4x dim channel	Orange LEDs of the 4 output blink sequentially
Warm white + Cold withe	Orange LEDs of outputs 1 and 2 blink alternatingly with the LEDs of outputs 3 and 4.e
RGB + standard dim channel	Orange LEDs of the 3 first channels blink briefly together followed by a blink of the LED of output 4
RGBW	Orange LEDs of the 4 channels blink together

5) The outputs are set as standard to a minimum dimming level of 10%. To use a memory function, press the button of the respective output a number of times while the red status LED is flashing slowly. The table below shows the number of times the button has to be pressed to recall a memory set setting, the orange LED lights up each time the button is pressed. The red status LED flashes 10 times fast after selecting the desired mode, afterwards the configuration mode stops automatically.

Number of presses	Memory function
1	Standard 4x dim channel
2	Warm white + cold white
3	RGB + standard dim Channel
4	RGBW
5	Memory function OFF
6	Memory function if >20%

Beware: if a CVD04SA is connected in slave mode the programming buttons of that module cannot be used.

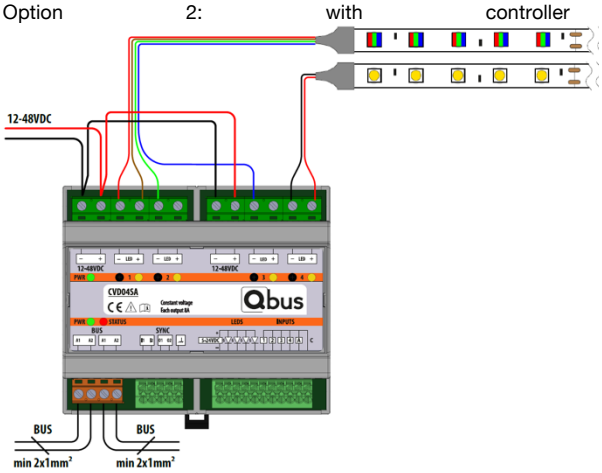
Cabling methods:

Stand-alone Constant Voltage Dimmer CVD04SA

Option 1: stand-alone

Note: Multiple stand-alone modules can be linked together.

Option 2: with controller



4. Technical data

General Specification

- Power supply: 12VDC – 48VDC - +/-5%
- Breakdown voltage: tested up to 3 kVac
- Consumption: 1,15VA unloaded
- Temperature range:
  Operational temperature: 10°C tot 70°C
  - Warehouse temperature: -10°C tot 70°C
- Maximum humidity: 93%, no condensation
- Bus load: 10mA (peak) at 3,8V nominal tension
- Maximum installation altitude: 2.000 meter

Outputs

- 4 channels PWM on cathode (-) with common anode (+).

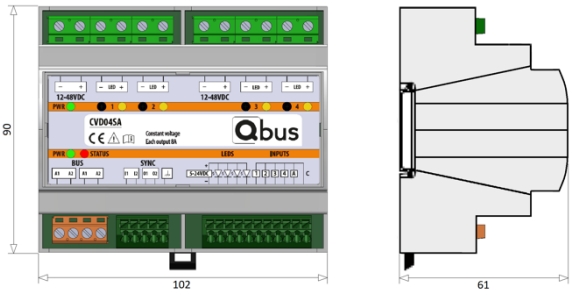
Physical specifications

- Housing: plastic, self-extinguishing in accordance withUL94-V0
- Protection: IP20, EN 60529
- Installation: quick mount on DIN-rail, width 6 modules
- Dimensiions (h x w x l): 61mm x 90mm x 102mm
- Weight: approximately 0,145 kg

Electrical safety

- Bus: 13,8VDC low voltage
- In accordance with EN60950 – 1: 2006
- Non-toxic, in accordance with WEEE/RoHS
- In accordance with EMC low voltage directives and HBES – EN50090-2-2 and EN60950 – 1: 2006 +A11:2009 + A1:2010 + A12:2011 + A2:2013

5. Dimensions



6. Guarantee provisions

Period of guarantee: 2 years from date of delivery. Guarantee will not be accepted if the device has been opened!

Faulty units should be sent postage-free with a description of the defect to our central customer service center:

QBUS N.V.
Joseph Cardijnstraat 19
9420 Erpe-Mere
Belgium

T +32 53 60 72 10
F +32 53 60 72 19
Email: support@qbus.be