Intro

The SinkDriver JGA2058 is a universal control print that converts a 0 … 10 V signal to a 0 … 10V sink output.

For e.g., with LED-drivers the 0 … 10V signal is supplied by the LED-driver. This signal has to be altered and is then measured by the LED-driver. Depending on the voltage level the LED's will be dimmed.

To achieve this, a SINK output is necessary. The output of the JGA2058 is optically separated from the input and has settable acceleration and deceleration.

The JGA2058 is powered by a power supply of 20 … 24 VAC or
20 … 30 VDC.

The following settings can be viewed and changed with the DIP-switches, the potentiometer and via the USB port on the PC in conjunction with the Boutronic USB dongle:

- Acceleration and deceleration of the output signal;
- Calibration of the in- and output signals;
- Input 0 … 10VDC;
- Output 0 … 10V or 10 … 0V;
- Test mode, the output can be driven with the potentiometer from 0 … 100%.

The JGA2058 is sold in a DIN-rail housing.

Liability and warranty

Every JGA2058 is checked before sending for correct operation.
Therefore Boutronic has a warranty period of 1 year.

The warranty expires if:

- The defect is caused by gross negligence or by improper installation
- Repairs and/or modifications to the JGA2058 without permission from Boutronic.

Boutronic is in no way liable for damage caused as a direct or indirect consequence by the use of the JGA2058.

For more information see: http://www.boutronic.nl/producten

Manual JGA2058 Voltage Sink Driver
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Connections

In the figure below, the JGA2058 is shown schematically:

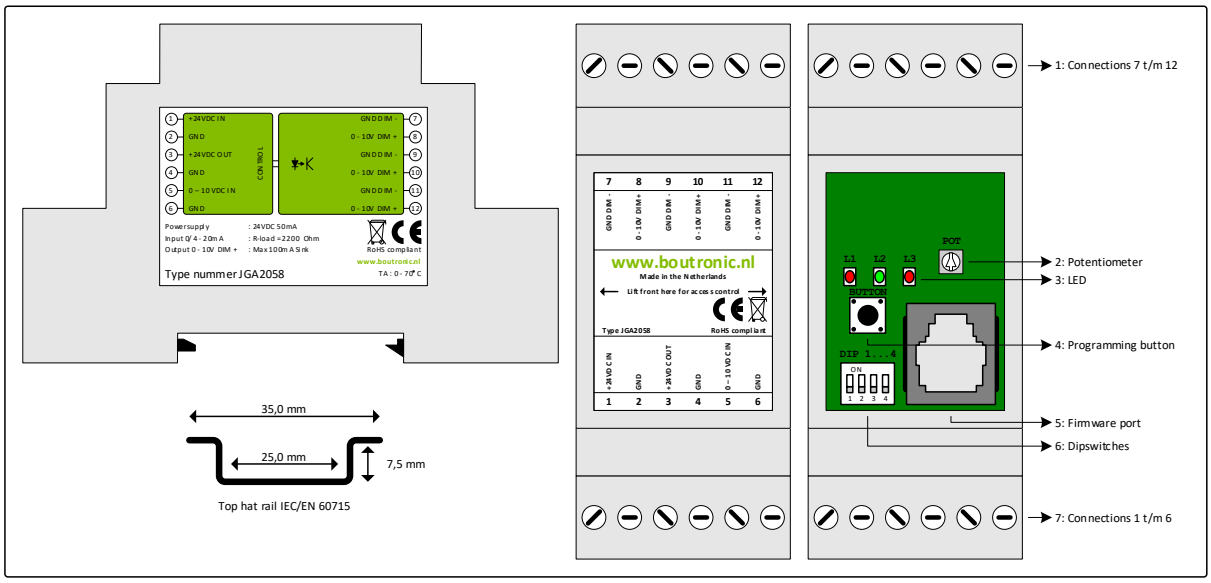

Figure 1: Schematic overview JGA2058

Nr	Unit	Description
1	Connections	Connection 7 … 12, see front for type of connection Connections 7, 9 and 11 are parallel Connections 8, 10 and 12 are parallel
2	Potentiometer	With the potentiometer you can set the acceleration and deceleration time of the sink output (0 ... 20 sec) In test mode the 0-10V sink output can be driven using the potentiometer
3	LED's	L1: Power supply L2: When this LED is on, the analog outputs are increasing or decreasing. L3: This LED is on when the button is pressed
4	Programming button	No function
5	Firmware port	Connection to PCB (with a Boutronic dongle) for firmware update or programming settings with the BoutronicStudio
6	DIP-switches	Turning options on or off See chapter ***Change settings***
7	Connection 1 … 6	Connection 1 … 6, see front for type of connection

Power supply input and output

The power supply for the JGA2058 is internally single-sided rectified and feeds the internal controller and the voltage output. The power supply can be 24VDC or 24VAC, taking into account that one of the 24VAC is connected to the GND and that the voltage output functions with respect to the GND.

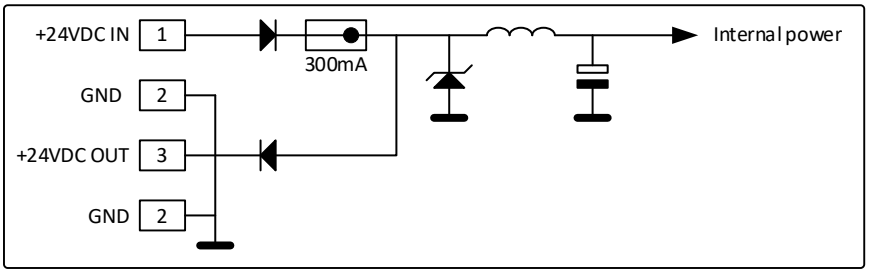

Figure 2: Simplified overview of the power supply

Connection example

An example for the connections is given in the figure below. A more in-depth explanation of the connections can be found below.

- The climate computer applies a voltage of 0 … 10 VDC. This voltage determines the amount that the LED-drivers have to be dimmed, this signal will be connected to the input of the JGA2058.
- The output will send a voltage of 0 … 10VDC to the LED-drivers. The combined current of the outputs is 100mA. (All outputs of the JGA2058 are parallel to each other, see figure 4).

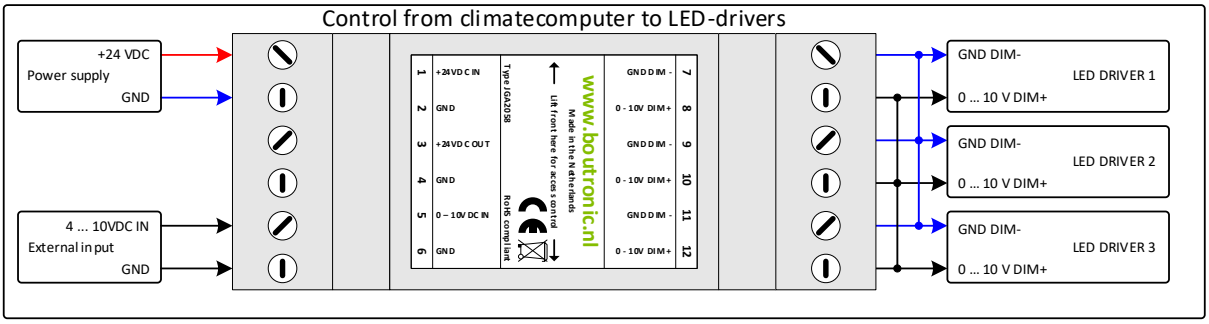

Figure 3: Simple connection example

Maximum LED drivers

The JGA2058 can drive a maximum of 100mA. Every connected unit (assimilation LED of e.g. a ventilator) has a current source via 0 … 10 V control. The value can change depending on the type of unit.

For example: A current source supplies 0,33mA (330uA), then a total of 303 assimilation lamps connected in parallel, can be driven with a single JGA2058. For optimal security we advise to keep the current under 75% of the maximum load when driven 24/7. This means that for the calculation above a maximum of 225 assimilation lamps can be connected at ones.

Operation

Below is the connection diagram with an explanation overview.

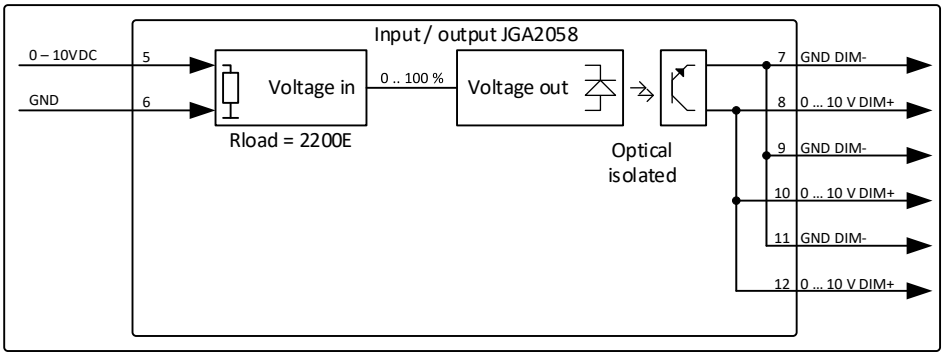

Figure 4: Simplified operation overview

Voltage input

A signal of 0 … 10 VDC is applied to the voltage input. This signal is captured and converted to a 0 ... 100% value. If the voltage input is less than or equal to 0 mA, the JGA2058 will limit the value to 0%, if the voltage input is greater or equal than 10 V, the JGA2058 will limit the value to 100%.

Note: The maximum voltage that may be applied to the voltage input is 12 V.

Voltage output vs voltage input

The optically isolated voltage output is scaled between 0 and 10V. The moment the desired output signal becomes higher than 97%, the output will then drive the maximum output value. The moment the desired output signal becomes lower than 95%, the output is driven to 9,5V. This creates a hysteresis of 2%.

Example 1: at 0 … 10V (DIP switch 2=OFF, control 0 … 10V)
The Voltage input measures a signal of 2,5 V, this is converted to a value of 25%.
The voltage output will also go to 25%. The voltage output will become 2,5 V.

Example 2: at 0 … 10V (DIP switch 2=ON, control 10 … 0V)
The Voltage input measures a signal of 2,5 V, this is converted to a value of 75%.
The voltage output will also go to 75%. The voltage output will become 7,5 V.

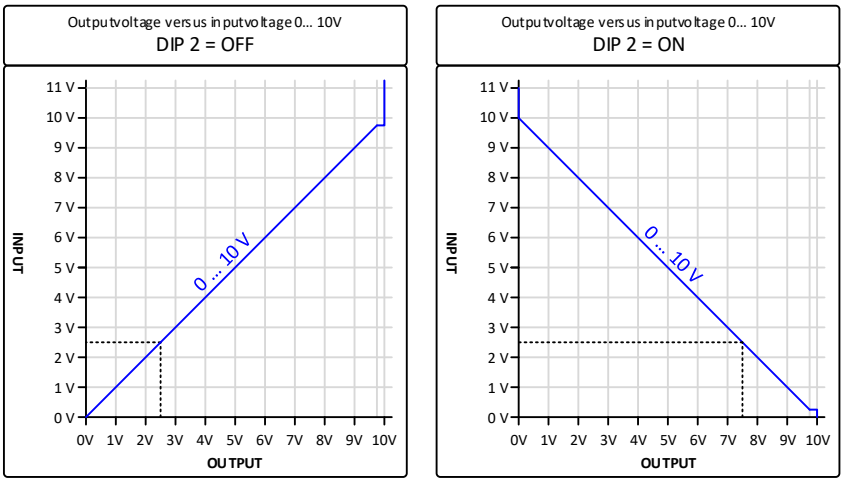

Figure 5: Output versus input

Output delay

The delay with which the output voltage accelerates or decelerates to the desired value can be determined by:

- The potentiometer (0 … 20 seconds);
- The software setting (1 … 6000 seconds).

Potentiometer delay

With the potentiometer and DIP switch 3, the delay of the output voltage can be set.

		Deceleration	
Potentiometer	**Acceleration**	DIP switch 3 OFF	DIP switch 3 ON
Minimum	0 seconds (Output changes directly with the input)	0 seconds (Output changes directly with the input)	0 seconds (Output changes directly with the input)
Greater than minimum to maximum	1 … 20 seconds Depends on the position of the potentiometer	1 … 20 seconds Depends on the position of the potentiometer	0 seconds (Output changes directly with the input)

Standard the potentiometer is set to half (10 seconds) and DIP switch 3 is OFF.

Software delay

The delay of the voltage output can also be set with the BoutronicStudio software, see chapter "BoutronicStudio" for further explanation about the BoutronicStudio software.

Acceleration	Description
0	The acceleration time is determined by the potentiometer and DIP switch 3
1 … 6000	The acceleration time is equal to this value

Deceleration	Description
0	The acceleration time is determined by the potentiometer and DIP switch 3
1 … 6000	The acceleration time is equal to this value

Standard the value of the acceleration and deceleration time is set to 0. This means that the potentiometer is used for the delay.

A schematic example of the delay for the voltage input versus the voltage output is shown below.

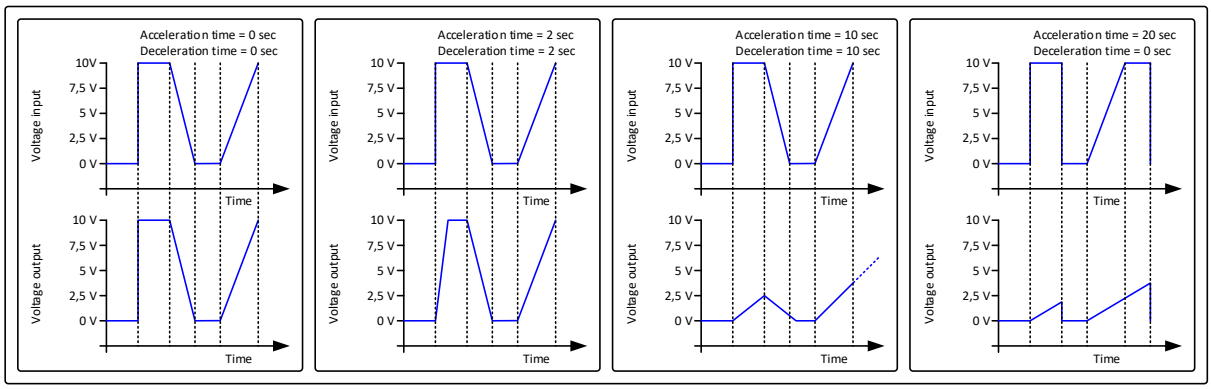

Figure 6: Example delay

Change settings

The settings of the JGA2058 can be changed in two ways:

1. With the potentiometer and the DIP-switches;
2. With the USB port of the PC in combination with the Boutronic USB dongle and the BoutronicStudio.

Potentiometer

The acceleration and deceleration time of the output voltage can be set from 0 … 20 seconds.
The standard value of the potentiometer is 10 seconds.

DIP-switches

4 DIP-switches are available on the JGA2058 that can be used to activate or deactivated functions:

	OFF	ON
DIP-switch 1	No function	No function
DIP-switch 2	Output driven from 0 … 10V	Output driven from 10 … 0V
DIP-switch 3	Acceleration and Deceleration according to the value of the potentiometer or software	Acceleration according to the value of the potentiometer or software Deceleration is always 1 second with the potentiometer or the software value
DIP-switch 4	Standard operation	Test mode. The 10V output is driven with the potentiometer from minimum to maximum.

Push button

The push button does not currently have a function.

BoutronicStudio

You can change the settings with the USB port and the Boutronic Studio. The BoutronicStudio can be downloaded from our website:
www.boutronic.nl/product/boutronic-studio

Settings

The JGA2058 can be connected to the PC with the following steps:

1. Connect the JGA2058 to the computer by using a Boutronic USB dongle;
2. Start the BoutronicStudio software and click on the COM port to which the JGA2058 is connected. After the tabs have loaded in, select the tab ***Autodetect*** and klick on ***Activate***;
3. All tabs with the settings are automatically loaded in and all settings can be changed.

Technical specifications

General

Description	Value	Unit	Remarks
Measurement	90 x 36 x 58	mm	L x B x H
Mounting	DIN-rail (Top hat rail)		IEC/EN 60715
Material	Plastic ABS		
Weight	80	gram	
Temperature storage	-20 … +80	˚C	
Temperature operational	0 … +60	˚C	
Relative humidity	10 ~ 95% RH @ 40 ˚C, non-condensing		
Protecting range	IP20		

Power

Description	Min	Typ.	Max	Unit	Remarks
Power in	20	24	30	VDC	
	20	-	24	VAC	1
	-	50	-	mA	
Power out	20	-	30	VDC	2
	-	-	50	mA	3

1. Note: one of the phases is directly connected to the GND;
2. This voltage is equal to the power supply minus 1V (single-sided rectified and with capacitor buffered);
3. With a resettable fuse.

Voltage input

Description	Min	Typ.	Max	Unit	Remarks
Input voltage	-	-	12	VDC	
Input current	0	0…4,5	5,5	mA	
Input impedance	-	2200	-	Ω	
Calibration 0 V	0	0	4095		
Calibration 10 V	0	3914	4095		

Voltage output

Description	Min	Typ.	Max	Unit	Remarks
Output voltage	0,3	-	10,5	V	
Resolution	-	0,016	-	V/step	
Output current	-	-	100	mA	
Acceleration and deceleration using the potentiometer	1	10	20	Sec	
Acceleration and deceleration using software	0	0	6000	Sec	0 = use potentiometer
Calibration 0V	0	0	4095		
Calibration 10V	0	3528	4095		

Software versions

The following software versions are there for the VoltageSinkDriver JGA2058

Version	Date	Changes
v1.0a	1-11-2023	First version
V1.0b	5-11-2024	

Product shipped after the release date contain the according software version.

Measurements