

Intro

The Ramp generator JGA2003 is a universal control print with two digital inputs and two analog outputs:

- Open input
- Close input
- Current output (4 ... 20 mA)
- Voltage output (0...5 V or 0...10 V max 100 mA).



Liability and warranty

Every JGA2003 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 JGA2003 without permission from Boutronic.

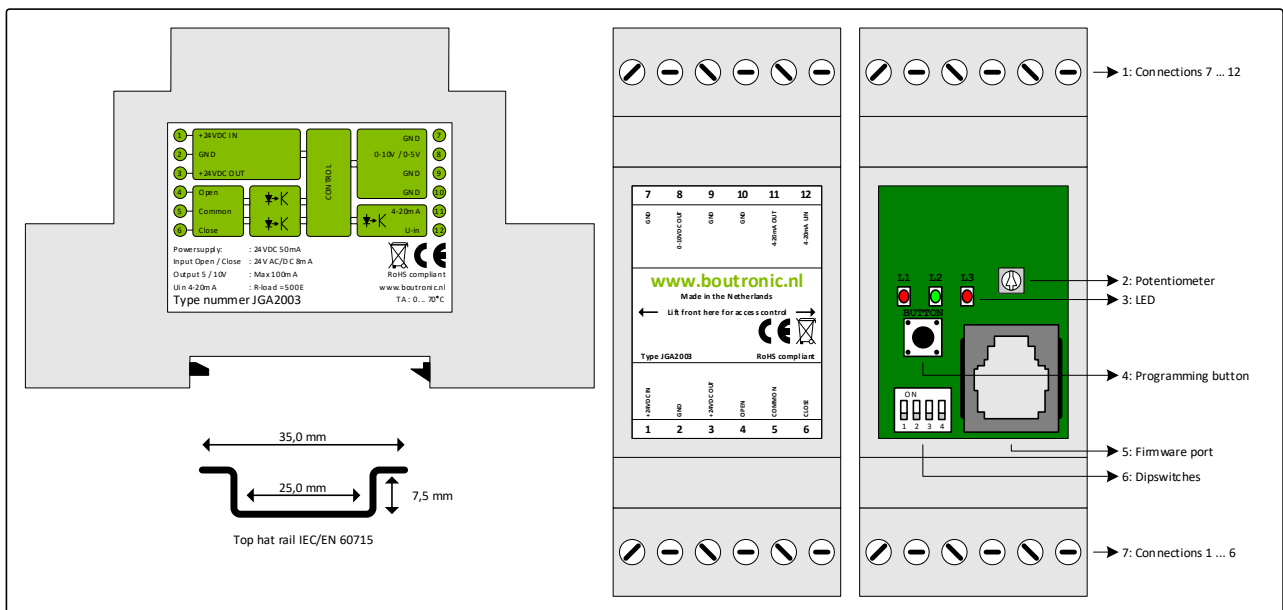
Boutronic is in no way liable for damage caused as a direct or indirect consequence by the use of the JGA2003.

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Connections

In the figure below, the JGA2003 is shown schematically:



Explanation

Nr	Unit	Description
1	Connection 7 ... 12	Connection 7 ... 12, see front for type of connections
2	Potentiometer	With this potentiometer you can set the total drive time for the outputs going from minimum to maximum output level (30 ... 240 sec)
3	LED's	L1: When this LED is on, the analog outputs are increased L2: When this LED is on, the analog outputs are decreased. L3: This LED is on when the button is pressed
4	Programming button	Programming button to change program settings.
5	Firmware port	Connection to PCB (with a Boutronic dongle) for firmware update or programming settings
6	Dipswitches	DIP 1: Maximum output voltage DIP 2: Start-up voltage and current output DIP 3: Fast to minimum output levels DIP 4: Minimum and maximum calibrate levels See chapter change settings
7	Connection 1 ... 6	Connection 1 ... 6, see front for type of connections

Power supply input

The power supply for the JGA2003 is 20 ... 30VDC or 20 ... 24 VAC, internally single-sided rectified and feeds the internal controller and the voltage output. Taking into account that one of the AC is connected to the GND and that the voltage output functions with respect to the GND.

Power supply output

The power out is the same as the power input (single-sided rectified and with capacitor buffered) and has an internal resettable fuse. This power supply can be used to power the 4... 20 mA output.

Inputs: Open and Close

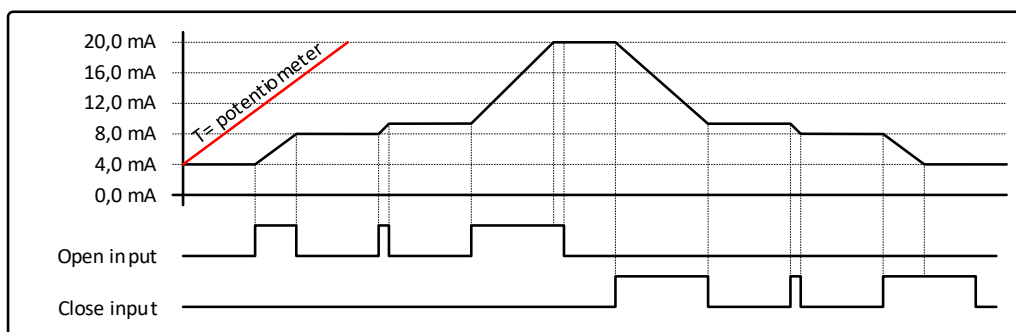
Inputs for driving the output signals are 10 ... 30 VAC/DC (5 ... 20 mA) and optically separated.

OPEN: Increase output signal(s)

CLOSE: Decrease output signal(s)

4 ... 20 mA output

The 4 ... 20 mA output is optically isolated. In this way, a connection can easily be made with a system that has a different supply potential than the JGA2003. The 4 ... 20 mA output is increased or decreased through the open and close input. The total run time from 4 ... 20 mA can be set from 30 to 240 seconds with the potentiometer. The potentiometer is set to 115 seconds by default.

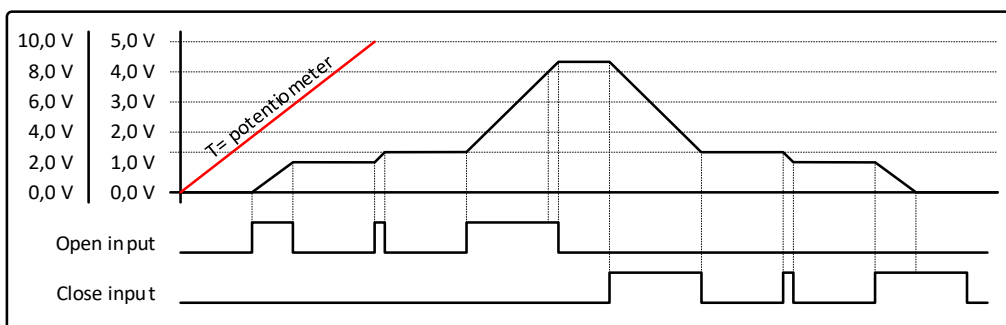


0 ... 5 or 0 ... 10 V output

The voltage output can be set through DIP-switch 1 whether the output voltage is 0 ... 5 V or 0 ... 10 V.

The voltage output is increased or decreased through the open and close input.

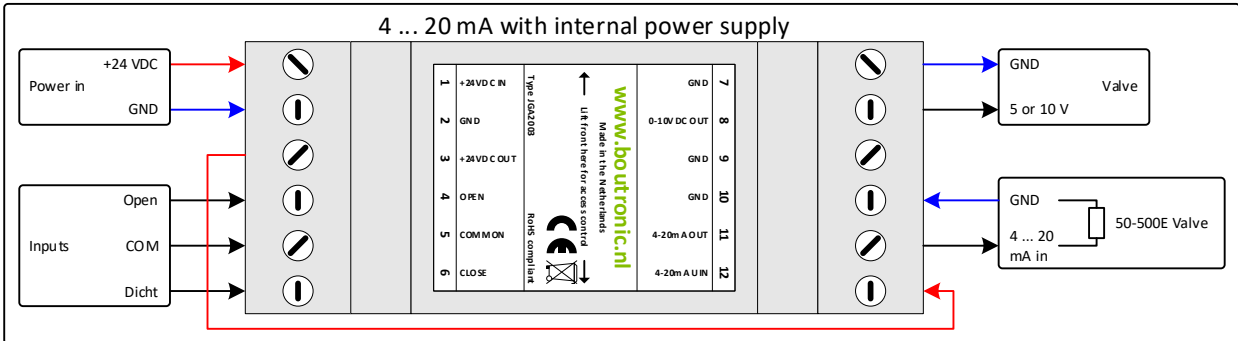
The total run time from 0 ... 5 or 0 ... 10 V can be set from 30 to 240 seconds with the potentiometer. The potentiometer is set to 115 seconds by default.



Connection example with internal or external power supply

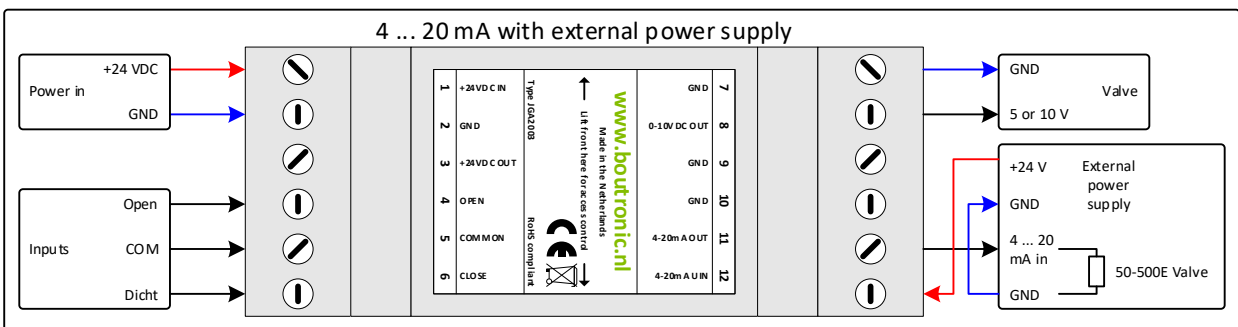
Internal power supply

Below is the connection diagram using the internal power supply. Due to this method, there is no optical separation between the JGA2003 and the external system to which the 4 ... 20 mA is connected. The 0 ... 5 V or 0 ... 10 V has no optical isolation.



External power supply

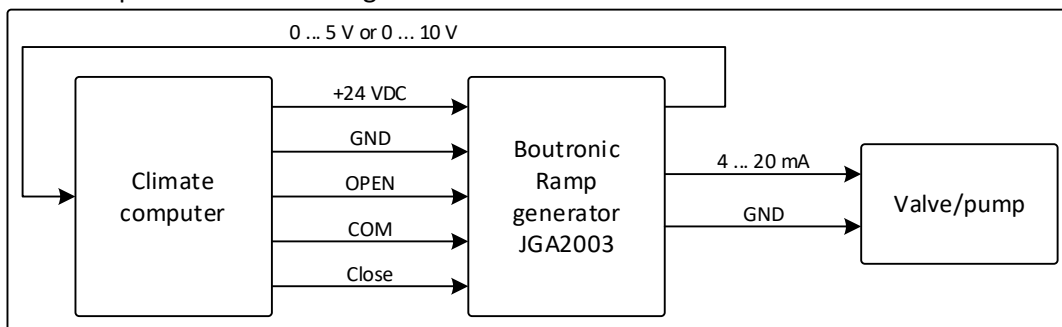
Below is the connection diagram using the external power supply. Due to this method, there is an optical separation between the JGA2003 and the external system to which the 4 ... 20 mA is connected. The 0 ... 5 V or 0 ... 10 V has no optical isolation.



Control with climate computer with feedback

The JGA2003 can be used to convert the OPEN and CLOSE control from a climate computer to a 4 ... 20 mA signal. For a feedback signal the JGA2003 can send a voltage back to the climate computer (0 ... 5 V or 0 ... 10 V max 100 mA).

This example is shown in the figure below:



Change settings

This chapter describes how you can change the settings.

Drive time

You can set the total drive time of the outputs (0 ... 100%) with the potentiometer. When you turn the potentiometer CCW you set the minimum time (30 sec), when you turn the potentiometer CW you set the maximum time (240 sec).

DIP-switch 1: Maximum output voltage

The maximum output voltage can be set with DIP-switch 1:

- Set to off, the maximum output voltage is 5 V.
- Set to on, the maximum output voltage is 10 V.

DIP-switch 2: start-up current and voltage output

When the JGA2003 starts up the output value is set standard to 4mA and 0V.

This can be changed as followed:

- Set DIP-switch 2 to on. (activate memory)
- As soon as the outputs have the desired output levels you must activate the OPEN and CLOSE inputs simultaneous (the Open and Close LED both turn on).
- As soon as the LED's Open and Close turn off the value is being stored.
- When the JGA2003 starts up the outputs are as stored.

DIP-switch 3: fast to minimum output levels

When DIP-switch 3 is on, the outputs will drop from maximum to minimum in 1 second.

This function can be set as followed:

- Set DIP-switch 3 to on and leave it in this position. (activate)
- Activate both Open and Close inputs to set to minimum values. As soon as the LED's Open and Close turn off and on, the value is at the minimum level.

*Note: When DIP-switch 2 is **also** activated, the saved value is set on start-up. (The value of the output cannot be saved anymore)*

DIP-switch 4: Minimum and maximum calibrate levels

When you set DIP-switch 4 to on you can (by the menu of the USB port with a special Boutronic Dongle) set the maximum output level for calibrating

- Current: Normally the calibrate level for min (4 mA) are between 2 mA and 6 mA and the calibrate level max (20 mA) are between 18 mA and 21 mA. When DIP-switch 4 is activated the calibrate levels can be set between 1 mA and 21 mA.
- Voltage: Normally the calibrate level for min (0 V) are between 0 V and 1 V and the calibrate level max (5/10 V) are between 4 ... 6 or 9 ... 11 V. When DIP-switch 4 is activated the calibrate levels can be set between 0 and 5/10 V.

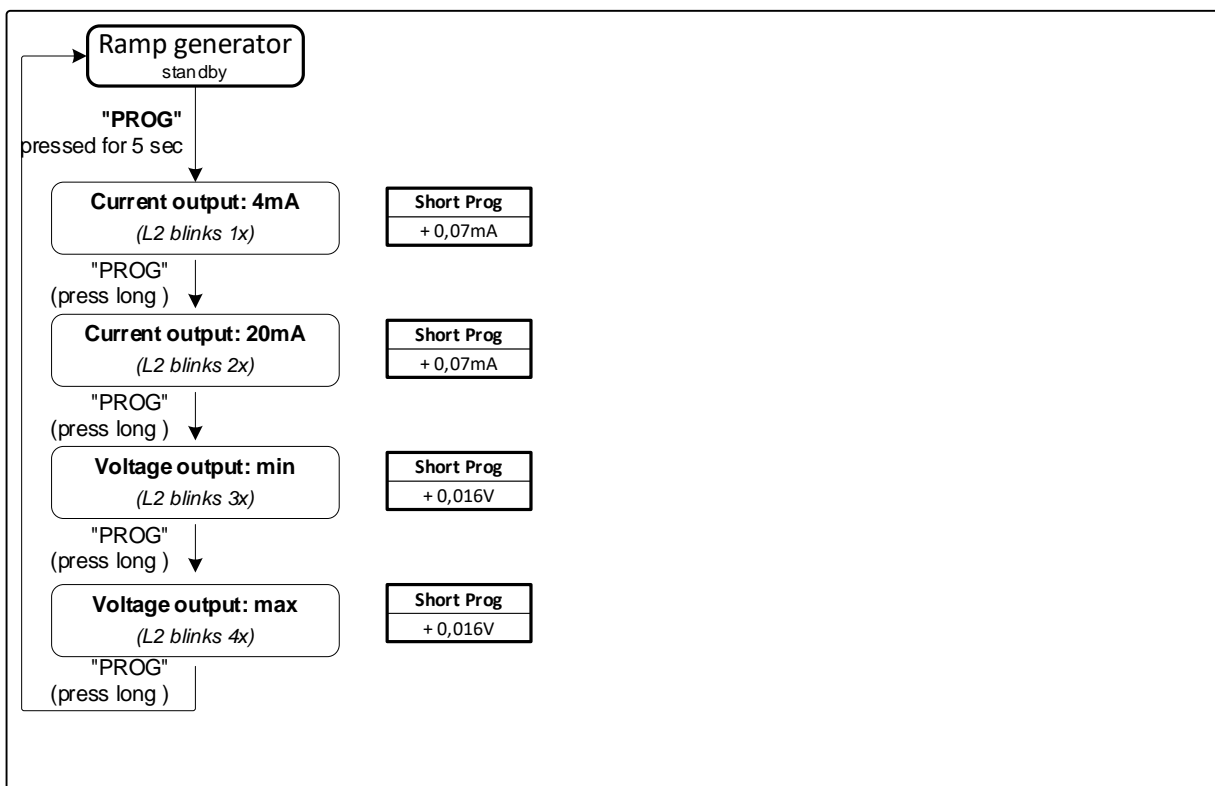
With the Programming button: calibrate outputs levels

Press the Programming button switch and keep this for 5 seconds until all led's turn on. Then release the switch and L2 will start blinking.

- By pressing shortly the Programming button you'll increase the value.
(When the value exceeds the maximum value, the value will be set the minimum value)
- By pressing the Programming button long (until all led's turn on) you'll store the current value in the memory. (This setting will be remembered after power loss).

Note: If you don't press the Programming button for more than 1 minute, you will leave the menu automatically.

Menu structure



Setting with the serial menu

You can change the settings with the USB port and the Boutronic Studio. The Boutronic Studio can be downloaded from the website www.boutronic.nl

1. Connect the JGA2003 to your PC by a Boutronic USB dongle.
2. Open the Boutronic Studio 2 with the tab 'Terminal', set the baud rate to 9600 and connect.
3. Click on the black screen with the mouse and press three times the + (+++)

The following text is given on the screen:

```
*** CONFIGMENU ***
- iCFG_4mA
```

The current output will be set to 4 mA.

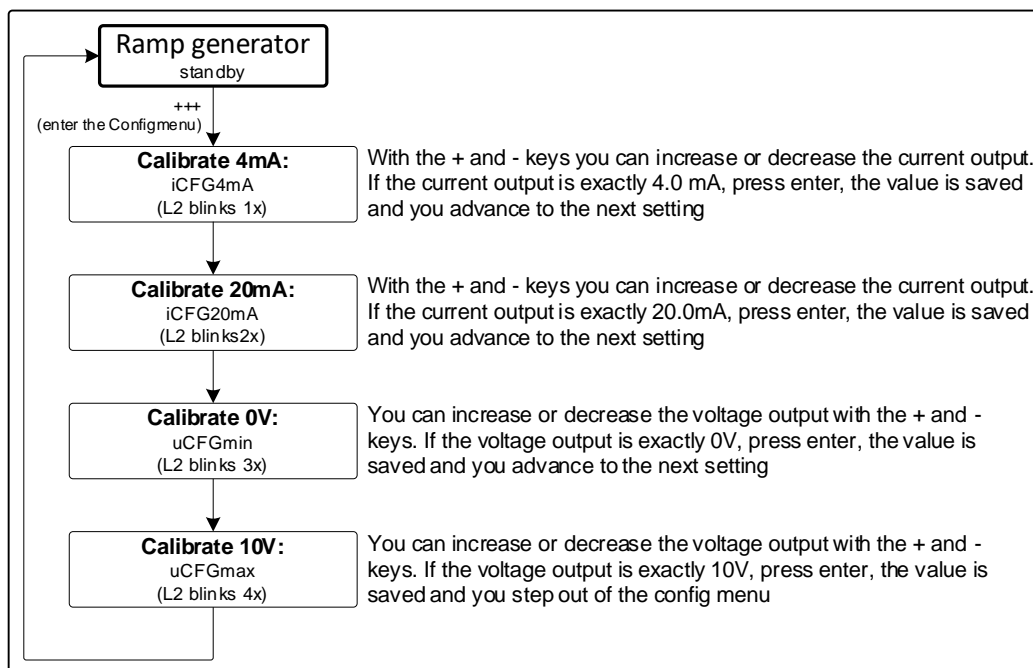
With the '+' key the output level will be increased

With the '-' key the output level will be decreased

With the '**enter**' key the value will be stored.

With the '**esc**' key the programming will be stopped.

*With the '**F**' key you will set all setting to factory levels.*



4. When you press the '**enter**' switch you confirm the set value and it will be stored:
_SAVE : 4mA
5. You can change the next settings
6. After the last setting you'll leave the menu. When there isn't a key pressed for over a minute you'll leave automatically the menu, You'll see:
- RUN

Technical specifications

General

Description	Value	Unit	Remarks
Measurement	90 x 36 x 57	mm	L x B x H
Mounting	DIN-rail (Top hat rail)		IEC/EN 60715
Material	Plastic ABS		
Weight	80	gram	
Temperature storage	-20 ... +60	°C	
Temperature operational	0 ... +55	°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	24	VAC	1
	-	35	-	mA	
Power out	20	-	30	VDC	2
	-	-	150	mA	3

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

Inputs

Open and close inputs

Description	Min	Typ.	Max	Unit	Remarks
Separation	-	-	3750	Vrms	Optical
Input voltage	10	-	30	VAC/DC	
Input current	5	-	20	mA	

Outputs

Description	Min	Typ.	Max	Unit	Remarks
Increase and decrease time with potentiometer	30	135	240	sec	

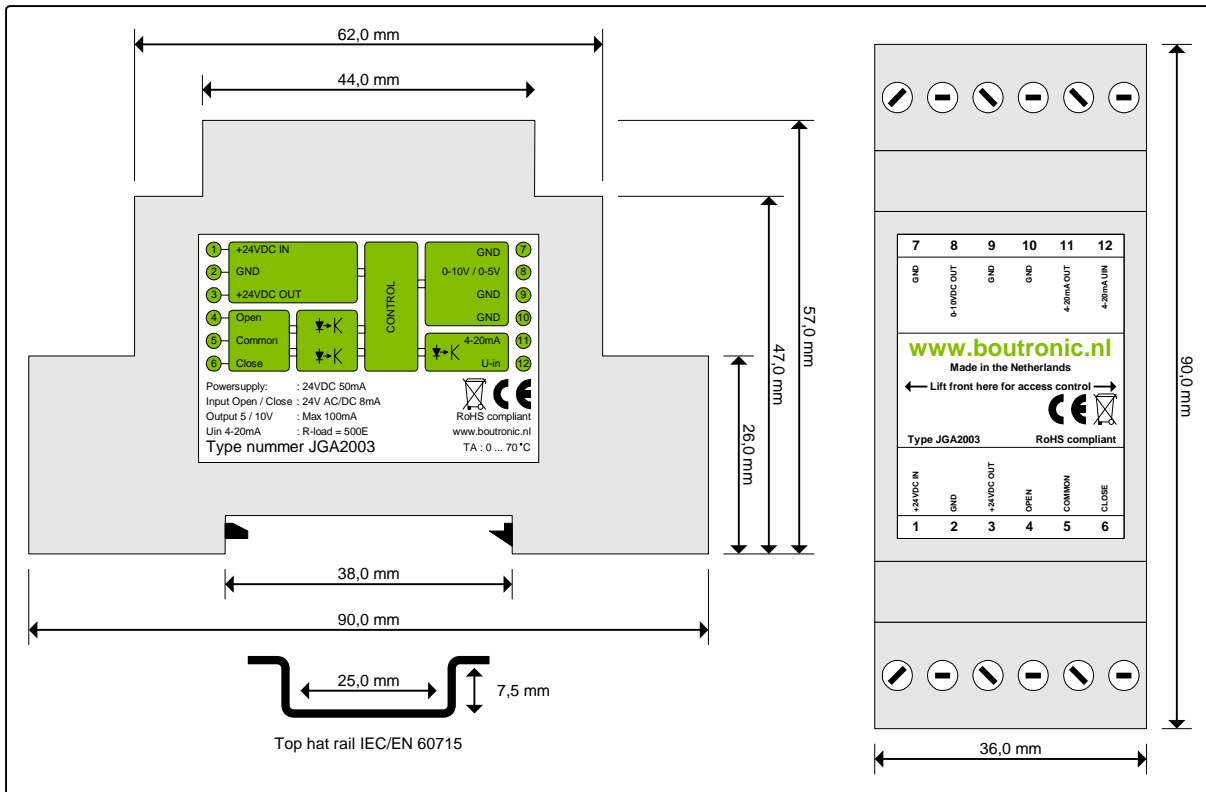
Current output

Description	Min	Typ.	Max	Unit	Remarks
Separation	-	-	2500	Vrms	Optical
Output current	4	-	20	mA	
Input voltage	20	24	30	VDC	
Resolution		0,07		mA/step	
Impedance	50	-	500	Ω	

Voltage output

Description	Min	Typ.	Max	Unit	Opmerkingen
Output voltage	0,1	-	6,0	V	DIP-switch 1 off
	0,1	-	10,5	V	DIP-switch 1 on
Resolution	-	0,016	-	V/stap	
Output current	-	-	100	mA	

Measurements



Software versions

Software versie	Datum	Wijzigingen
v1.0a	15-07-2019	First version
v1.0b	02-08-2019	Changing for fabric test
v1.0c	16-11-2020	Optimising handling of AC inputs
v1.0d	30-07-2021	When calibrating with push button, driving the output optimized

Checking the software version

You can check the software version by looking at the LEDs when starting the power board.

v1.0a & v1.0b

When the power print is energized, all 3 LEDs will light up. Then the LEDs go out 1 by 1. The sequence is L1, L2, L3.

v1.0c and higher

When the power print is energized, all 3 LEDs will light up. Then the LEDs go out 1 by 1. The sequence is L3, L2, L1.