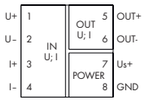
WAGO Kontakttechnik GmbH & Co. KG
Hansastr. 27
D-32423 Minden
www.wago.com

GB

c UL us LISTED GL pending CE

JUMPFLEX®, 857 Series



Bipolar isolation amplifier, configurable
857-409

Before installation and operation, please read the following instructions thoroughly and carefully. Incorrect installation may compromise safety in the event of a failure.

1. Safety Information

Please observe the following:
- the applicable laws, standards and regulations
- the current, accepted technology standards and practices at the time of installation
- the operating instructions
- the engineering regulations
- the fact that operating instructions can only mention general regulations and that these must be observed

Before start-up, please check the device for any damage that may have occurred during shipping. The device shall not be put into operation in the event of mechanical damage.
The devices described in these instructions must only be installed by a qualified electrician and must only be installed in electrical switchgear or in sealed enclosures. Improper use or failure to follow this application note will render the warranty or guarantee null and void.
The devices shall only be installed in dry, indoor areas.
Do not install the devices on or in the vicinity of easily flammable materials.

2. Short Description

The bipolar isolation amplifier records bipolar analog signals (e.g., ±10 V or ± 20 mA) and converts them into bipolar, analog standard signals. After conversion, the isolated signals are transmitted with high accuracy to the output where they are available in an amplified form. In addition, unipolar signals (e.g., 0-20 mA or 0-10 V) and live zero signals (e.g., 4-20 mA or 2-10 V) can be adjusted independently of one another at both input and ouput via DIP switches. Adjusting the limiting frequency is also performed via DIP switches.
Measured distance adjustment is carried out via zero/span potentiometers on the front of the device, while signal switching is performed in a calibrated way, which requires no adjustment when switching to another range.
The device is supplied with 24 VDC, which can be efficiently commoned using lateral push-in type jumper bars.
A green LED on the front panel indicates normal operation.
The bipolar isolation amplifier provides safe isolation of input, output and supply circuits with 2.5 kV test voltage to EN 61140.
The current input is protected against overloading by a reversible fuse. The fuse switches back automatically as soon as the overload is no longer active.

3. Installation

CAUTION: High voltage can cause electric shock or burns.
De-energize the system and the device before installation.

Caution: Take protective measures against electrostatic discharge (ESD) when operating the modules!

The devices snap onto DIN 35 rails without tools. A simple screwdriver is required to unlock the snap-on mounting foot and remove the device from the carrier rail. Potentials can be commoned using 859 Series 2- to 10-way push-in type jumper bars (see accessories). The jumpers must be inserted prior to connecting the conductors for ease of installation. Push down the jumpers until fully inserted (see installation instructions). Use separators (item no. 209-191) between adjacent contacts for safe electrical isolation if the modules are alternately rotated 180 degrees when snapped onto the rail.

For secure fixing on the carrier rail, end stops (e.g., WAGO 249-116) must be mounted at the ends of a module assembly.

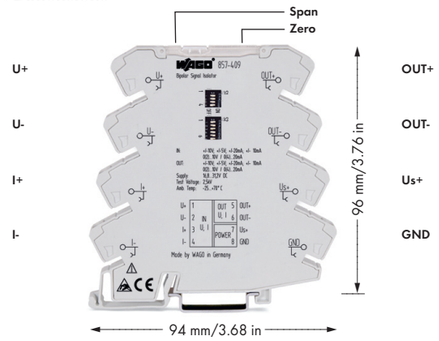
Observe the maximum admissible conductor cross-sections of the signal and power wires.

4. Zero/span adjustment

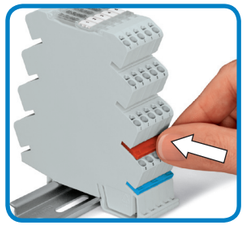
Always use an insulated screwdriver when performing a zero/span adjustment (e.g. WAGO 210-619)
The zero/span potentiometers are used to adjust the output signal when analog signals are too low or too high.

Example: A sensor, which is connected to the input of the isolation amplifier, delivers a analog signal of maximum 9.7 V. Using the zero/span potentiometer, the signal can be readjusted to 10.0 V.

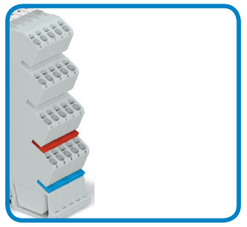
5. Dimensions



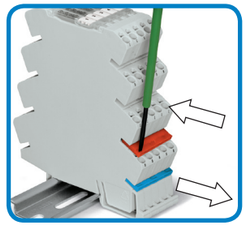
6. Installation Instructions



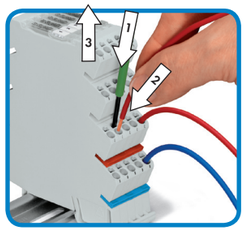
1. Push down jumper until fully inserted



2. Jumper is inserted



3. Remove the jumper *



4. Connect the wire *

*** Please only use insulated actuating tool (use item no. 210-720) 3.5 mm x 0.5 mm!**

7. Technical Data

Input signal	± 10 V, ± 5 V, ± 10 mA, ± 20 mA
(switchable in a calibrated way)	0...10 V, 0...5 V, 0...10 mA, 0...20 mA 2...10 V, 1...5 V, 2...10 mA, 4...20 mA
Input resistance	
I Input	approx. 50 Ω
U input	approx. 1 MΩ
Overload capacity	32 V / 50 mA
Default setting	± 10V
Output signal	± 10 V, ± 5 V, ± 10 mA, ± 20 mA
(switchable in a calibrated way)	0...10 V, 0...5 V, 0...10 mA, 0...20 mA 2...10 V, 1...5 V, 2...10 mA, 4...20 mA
Load impedance I output	≤ 600 Ω
Load impedance V output	≥ 2 kΩ
Residual ripple	< 10 mV_{eff}
Default setting	± 10V
Max. operating frequency (switchable)	≤ 100 Hz / > 5 kHz
Default setting of max. operating frequency	≥ 5 kHz
Response time (T_{10-90})	3.5 ms / 60 µs
Zero/span adjustment	± 5 % of upper range value
Supply voltage U_N	DC 24 V
Supply voltage range	16.8 V - 31.2 V
Current consumption at V_N	approx. 25 mA
Transmission error	< 0.1 % of upper range value
Temperature coefficient	< 100 ppm / K
Test voltage (input / output / supply)	AC 2.5 kV, 50 Hz, 1 min
Permissible ambient operating temperature	-25 °C...+70 °C
Storage temperature	-40 °C...+85 °C
Width	6,0 mm / 0,236 in
Dimensions (HxD)	96 mm / 3.76 in x 94 mm / 3.68 in
Connection technology	Modules with CAGE CLAMP®S
Solid „s“	0,08 mm^2 - 2,5 mm^2 / AWG 28-12
Fine-stranded „f-st“	0.34 mm^2 - 2.5 mm^2 / AWG 22-12
Strip length	9-10 mm / 0.37 in
Approvals	1, UL508 (E175199)
Standards	
EMC / CE	DIN EN 61326-1 EN 61000-6-2 Immunity to interference EN 61000-6-4 Emission of interference
Safe isolation	acc. to DIN EN 61140 by increased isolation acc. to DIN EN 61010 part 1 up to AC/DC 300 V for overvoltage category II and pollution degree 2 between all circuits
Galvanic isolation	AC/DC 600 V for overvoltage category II and pollution degree 2 acc. to DIN EN 61010 part 1 between all circuits.

8. LEDs and Error Indication

The LED (green), which is visible on the front, displays the following status:

Green LED lights:	Operating voltage applied

9. DIP Switch Adjustability

● = ON

code IN	DIP switch S1 (4-fold) 1	2	3	4	Input
a	●				±20mA
b	●	●			±10mA
c	●				± 10V
d	●	●			± 5V
e					0...20 mA
f			●		4...20 mA
g		●			0...10 mA
h		●	●		2...10 mA
i					0...10 V
k			●		2...10 V
l		●			0...5 V
st		●	●		1...5 V

code OUT	DIP switch S2 (6-fold) 1	2	3	4	5	Output	Max. operating frequency 6	
A				●		±20mA	●	≤ 100 Hz
B			●	●		±10mA		≥ 5 kHz
C	●	●		●		± 10V		
D	●	●	●	●		± 5V		
E						0...20 mA		
F					●	4...20 mA		
G			●			0...10 mA		
H			●		●	2...10 mA		
J	●	●				0...10 V		
K	●	●			●	2...10 V		
L	●	●	●			0...5 V		
M	●	●	●		●	1...5 V		

Default settings
- Input: ± 10 V
- Output: ± 10 V
- Max. Operating frequency: ≥ 5 kHz

9970-0966/0857-0409 · 2010-08-12
Subject to design changes