JUMO dTRANS S08 18

Bipolar signal converter/splitter

707218

Operating Manual

70721800T90Z001K000
V1.00/EN/00699052

Bipolar signal converter/splitter

JUMO dTRANS S08 18

Table of contents

Warning 3
Symbol identification 3
Safety instructions 3
Flexible supply 6
Mounting and demounting of JUMO dTRANS T/S08 7
Installation on DIN rail / power rail 8
Supply of power rail 8
Marking 8
Side label 9
Applications 10
Technical characteristics 10
Mounting / installation 10
Order 11
Accessories 11
Accessories for power rail devices 11
Technical data 11
Connections 13
LED indication 14
DIP-switch configuration 15

Warning

GENERAL

To avoid the risk of electric shock and fire, the safety instructions of this guide must be observed and the guidelines followed. The specifications must not be exceeded, and the device must only be applied as described in the following. Prior to the commissioning of the device, this installation guide must be examined carefully. Only qualified personnel (technicians) should install this device. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. Until the device is fixed, do not connect hazardous voltages to the device.

To avoid explosion and serious injury: Modules having mechanical failures must be returned to JUMO GmbH & Co. KG for repair or replacement.

Repair of the device must be done by JUMO GmbH & Co. KG only.

HAZARDOUS VOLTAGE

In applications where hazardous voltage is connected to in-/outputs of the device, sufficient spacing or isolation from wires, terminals and enclosure - to surroundings (incl. neighboring devices), must be ensured to maintain protection against electric shock.

The connector behind the front cover of JUMO dTRANS S08 18 is connected to the input terminals on which dangerous voltages can occur.

CAUTION

Potential electrostatic charging hazard. To avoid the risk of explosion due to electrostatic charging of the enclosure, do not handle the units unless the area is known to be safe, or appropriate safety measures are taken to avoid electrostatic discharge.

Symbol identification

Triangle with an exclamation mark: Read the manual before installation and commissioning of the device in order to avoid incidents that could lead to personal injury or mechanical damage.

The CE mark proves the compliance of the device with the essential requirements of the directives.

Ex devices have been approved acc. to the ATEX directive for use in connection with installations in explosive areas.

Safety instructions

Receipt and unpacking

Unpack the device without damaging it and check whether the device type corresponds to the one ordered. The packing should always follow the device until this has been permanently mounted.

Environment

Avoid direct sun light, dust, high temperatures, mechanical vibrations and shock, and rain and heavy moisture. If necessary, heating in excess of the stated limits for ambient temperatures should be avoided by way of ventilation.
The device can be used for Measurement Category II and Pollution Degree 2.
The device is designed to be safe at least under an altitude up to 2 000 m.

Mounting

Only technicians who are familiar with the technical terms, warnings, and instructions in the manual and who are able to follow these should connect the device.

Should there be any doubt as to the correct handling of the device, please contact your local distributor or, alternatively,

JUMO GmbH & Co. KG
www.jumo.net

Mounting and connection of the device should comply with national legislation for mounting of electric materials, i.e. wire cross section, protective fuse, and location.

Descriptions of input / output and supply connections are shown in this installation guide and on the side label.

The device is provided with field wiring terminals and shall be supplied from a Power Supply having double / reinforced insulation. A power switch should be easily accessible and close to the device. The power switch shall be marked as the disconnecting unit for the device.

JUMO dTRANS T/S08 must be mounted on a DIN rail according to EN 60715.

UL installation

Use 60/75°C copper conducters only.
Wire size . . . . . AWG 26-12
UL file number E201387

The device is an Open Type Listed Process Control Equipment. To prevent injury resulting from accessability to live parts the equipment must be installed in an enclosure.
The power Supply unit must comply with NEC Class 2, as described by the National Electrical Code® (ANSI / NFPA 70).

IECEx, ATEX installation in Zone 2

IECEx DEK 18.0006 X . . . . . Ex nA IIC T4 Gc
DEKRA 18ATEX0007 X . . . . . II 3G Ex nA IIC T4 Gc

For safe installation the following must be observed. The device shall only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

Year of manufacture can be taken from the first two digits in the serial number.

The devices shall be installed in a suitable enclosure providing a degree of protection of at least IP54 according to EN60529, taking into account the environmental conditions under which the equipment will be used.

When the temperature under rated conditions exceeds 70°C at the cable or conduit entry point, or 80°C at the branching point of the conductors, the temperature specification of the selected cable shall be in compliance with the actual measured temperature.

Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40%.

For installation on power rail in Zone 2, only Power rail profile (7.5 mm / 750 mm) (TN: 00697614) supplied by Power connector unit for dTRANS T/S08 XX (TN: 00697612) is allowed.

To prevent ignition of the explosive atmospheres, disconnect power before servicing and do not separate connectors when energised and an explosive gas mixture is present.

Do not mount or remove devices from the power rail when an explosive gas mixture is present.

Cleaning

When disconnected, the device may be cleaned with a cloth moistened with distilled water.

Liability

To the extent the instructions in this manual are not strictly observed, the customer cannot advance a demand against JUMO GmbH & Co. KG that would otherwise exist according to the concluded sales agreement.

Flexible supply

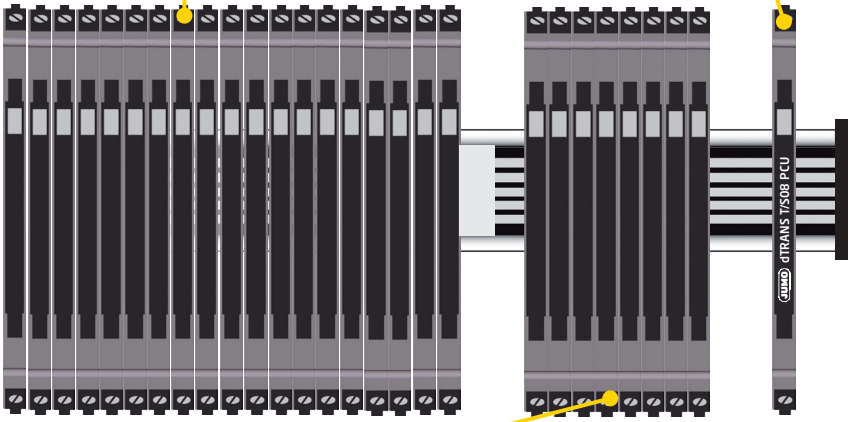
The technical specifications specifies the maximum required power at nominal operating values, e.g. 24 V supply voltage, 70°C ambient temperature, 600 Ω load, and 20 mA output current.

DIN rail solution - device daisy chain:
The units can be supplied with 24 VDC ±30% via direct wiring and a loop between the devices.

Protective fuse: 2.5 A.

Power rail solution #2:
The JUMO dTRANS T/S08 PCU power connector unit allows easy connection of a 24 VDC / 2.5 A source to the power rail.

Protective fuse: 2.5 A.

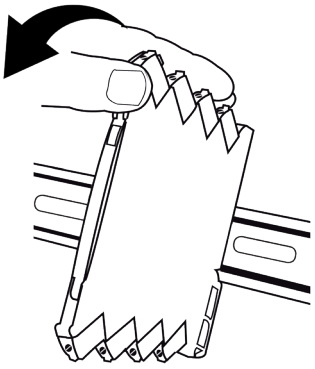


Protective fuse: 0.4 A.

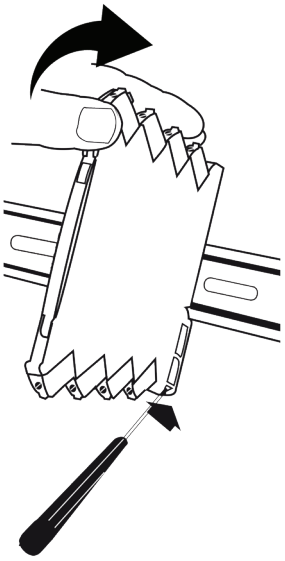
Power rail solution #1:
Alternately, you can connect 24 VDC to any one JUMO dTRANS T/S08 device with power rail connector which will then energize other units on the rail.

External fuse characteristics:
The 2.5 A fuse must break after not more than 120 seconds at 6.4 A.

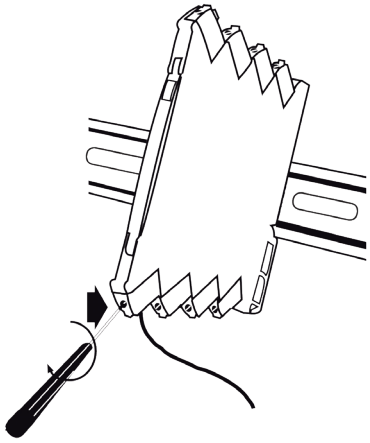
Mounting and demounting of JUMO dTRANS T/S08



Picture 1:
Mounting on DIN rail / power rail.
Click the device onto the rail.

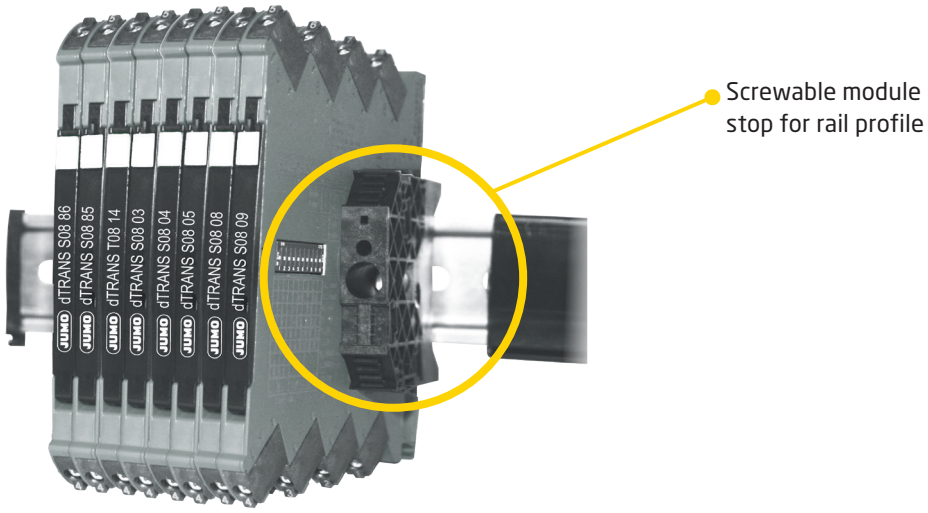


Picture 2:
Demounting from DIN rail / power rail.
First, remember to demount the connectors with hazardous voltages.
Detach the device from the DIN rail by lifting the bottom lock.



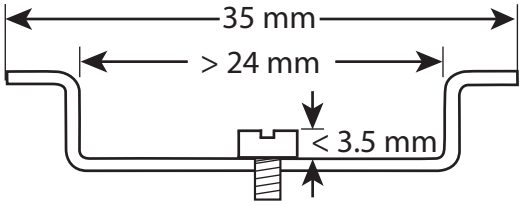
Picture 3:
Wire size AWG 26-12 / 0.13 x 2.5 mm^2 stranded wire.
Screw terminal torque 0.5 Nm.

Installation on DIN rail / power rail



JUMO dTRANS S08 18 can be installed on a DIN rail or on a power rail. For marine applications the devices must be supported by a module stop (TN: 00697615). Power supply units can be mounted on the power rail according to customer requirements.

If you want to install a JUMO dTRANS S08 18 device with power rail connectors on a standard DIN rail, the head of the screws holding the 7.5 mm DIN rail shall be no more than 3.5 mm high in order to avoid short circuit between the power rail connectors on the device and the screws.

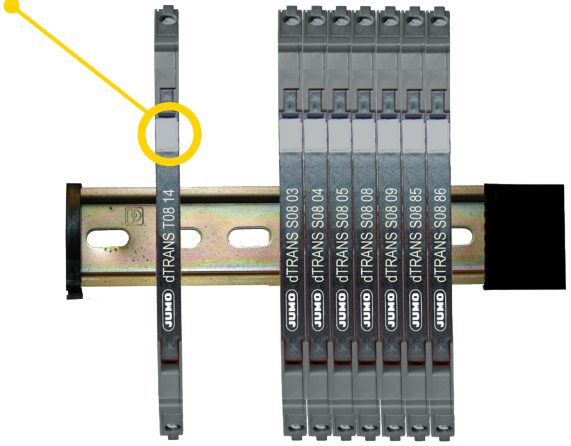


Supply of power rail

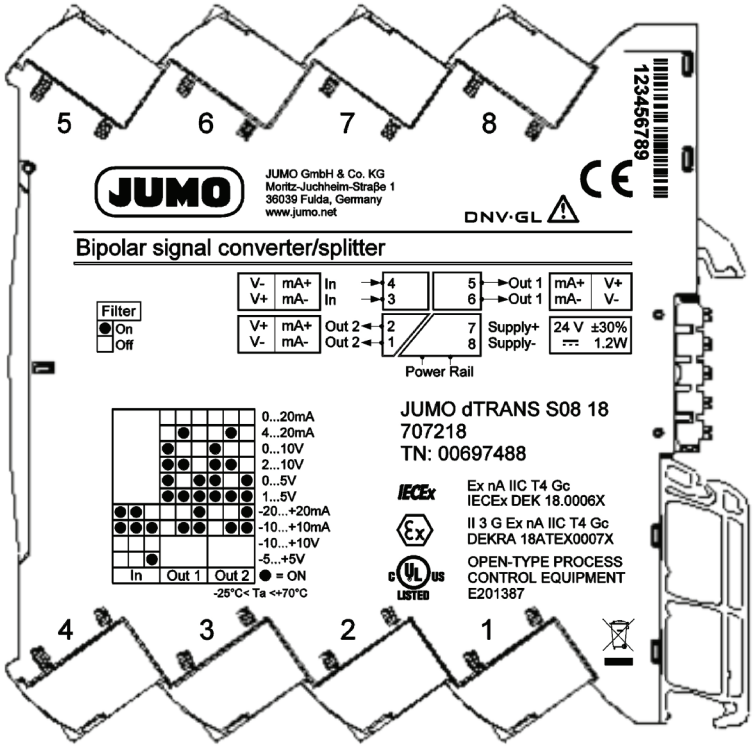
It is possible to supply the power rail via the supply terminals.
The terminals can pass a current of max. 400 mA.

Marking

The front cover of the JUMO dTRANS T/S08 devices has been designed with an area for affixation of a click-on marker. The area assigned to the marker measures 5 x 7.5 mm. Markers from Weidmüller's MultiCard System, type MF 5/7.5, are suitable.



Side label


5
6
7
8
123456789
JUMO
JUMO GmbH & Co. KG
Moritz-Juchheim-Straße 1
36039 Fulda, Germany
www.jumo.net
DNV·GL
Bipolar signal converter/splitter
V- mA+ In
V+ mA- In
4
3
5 Out 1
6 Out 1
mA+ V+
mA- V-
Filter
On
Off
V+ mA+ Out 2
V- mA- Out 2
2
1
7 Supply+
8 Supply-
24 V ±30%
1.2W
Power Rail
0...20mA
4...20mA
0...10V
2...10V
0...5V
1...5V
-20...+20mA
-10...+10mA
-10...+10V
-5...+5V
In Out 1 Out 2
● = ON
-25°C< Ta <+70°C
JUMO dTRANS S08 18
707218
TN: 00697488
IECEx
Ex nA IIC T4 Gc
IECEx DEK 18.0006X
II 3 G Ex nA IIC T4 Gc
DEKRA 18ATEX0007X
OPEN-TYPE PROCESS
CONTROL EQUIPMENT
E201387
4
3
2
1

Bipolar signal converter/splitter
JUMO dTRANS S08 18

- Conversion of voltage and current bipolar process signals to uni-/bipolar signals
- Multiple signal ranges are selectable via DIP-switches
- Splitter function: 1 signal in and 2 signals out
- Excellent accuracy, better than 0.05 % of selected range and high output load stability
- Slimline 6 mm housing

Applications

- The JUMO dTRANS S08 18 is an isolating converter and splitter which can be used for signal conversion of standard bipolar analogue process signals into two individual unipolar analogue signals.
- The unit offers 4-port isolation and provides surge suppression and protects control systems from transients and noise.
- The JUMO dTRANS S08 18 also eliminates ground loops and can be used for measuring floating signals.
- Mounting of the JUMO dTRANS S08 18 can be in Safe area or in Zone 2 and Cl. 1 Div 2 area and is approved for marine applications.
- The analogue output can be easily configured and programmed to be bipolar in the ranges ±10 mA and ±20 mA (See "DIP-switch configuration" on page 15).

Technical characteristics

- Flexible 24 VDC (±30%) supply via power rail or connectors.
- Excellent conversion accuracy, better than 0.05% of selected range.
- A green front LED indicates operation status for the device.
- All terminals are protected against overvoltage and polarity error.
- Meeting the NAMUR NE21 recommendations, the JUMO dTRANS S08 18 ensures top measurement performance in harsh EMC environments.
- High galvanic isolation of 2.5 kVAC.
- Fast response time < 7 ms / > 100 Hz bandwidth – 10 Hz bandwidth damping possible via DIP-switch.
- Excellent signal/noise ratio > 60 dB.

Mounting / installation

- Fast and easy configuration of factory calibrated measurement ranges via DIP-switches.
- A very low power consumption allows DIN rail mounting with up to 165 units per metre without the need for any air gap.
- Wide temperature operation range: -25...+70°C.

Order

Type	Product name	Description	Order code
707218	JUMO dTRANS S08 18	Bipolar signal converter/ splitter	00697488

Accessories

TN: 00697615 = Screwable module stop for rail profile

Accessories for power rail devices

TN: 00697612 = Power connector unit for dTRANS T/S08 XX
TN: 00697614 = Power rail profile (7.5 mm / 750 mm)

Technical data

Environmental conditions:

Operating temperature . . . . . -25°C to +70°C
Storage temperature . . . . . -40°C to +85°C
Calibration temperature . . . . . 20...28°C
Relative humidity . . . . . < 95% RH (non-cond.)
Protection degree IP20
Installation in pollution degree 2 & overvoltage category II.

Mechanical specifications:

Dimensions (HxWxD) . . . . . 113 x 6.1 x 115 mm
Weight approx. . . . . 70 g
DIN rail type . . . . . DIN EN 60715 - 35 mm
Wire size . . . . . 0.13...2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque . . . . . 0.5 Nm
Vibration . . . . . IEC 60068-2-6
2...25 Hz . . . . . ±1.6 mm
25...100 Hz . . . . . ±4 g

Common electrical specifications:

Supply voltage, universal . . . . . 16.8...31.2 VDC
Max. required power . . . . . 1.20 W
Max. power dissipation . . . . . 0.43 W
Max. required power is the maximum power needed at power supply terminals or rail connector.
Max. power dissipation is the maximum power dissipated at nominal operating values.
Isolation voltage, test . . . . . 2.5 kVAC
Isolation voltage working . . . . . 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
MTBF, acc. to IEC 61709 (SN29500) . . . . . > 187 years
Signal dynamics, input / output . . . . . Analog signal chain
Signal / noise ratio . . . . . Min. 60 dB (0...100 kHz)
Cut-off frequency (3 dB) . . . . . > 100 Hz or 10 Hz (selectable via DIP-switch)
Response time (0...90%, 100...10%) . . . . . < 7 ms or < 44 ms

Input specifications:

Current input:

Measurement range . . . . . -23...+23 mA
Programmable measurement ranges . . . . . ±10 and ±20 mA
Input voltage drop . . . . . < 1 VDC @ 23 mA

Voltage input:

Measurement range . . . . . -11.5 ... +11.5 V
Programmable measurement ranges . . . . . ±5 and ±10 V
Input resistance . . . . . ≥ 1 MΩ

Output specifications:

Current output:

Signal range (span) . . . . . 0...23 mA
Programmable signal ranges . . . . . 0...20 and 4...20 mA
(*) Bipolar wiring and programming set-up . . . . . ±10 and ±20 mA
Load . . . . . ≤ 300 Ω per channel
Load stability . . . . . ≤ 0.02% of span / 100 Ω
Current limit. . . . . ≤ 28 mA

Voltage output:

Signal range. . . . . 0...10 VDC
Programmable signal ranges . . . . . 0...5, 1...5, 0...10, 2...10 V
Load (min.) . . . . . >10 kΩ

of span = of the selected range

Accuracy values		
Input type	Absolute accuracy	Temperature coefficient
All	≤ ±0.05% of span	≤ ±0.01% of span / °C

EMC - immunity influence. . . . . < ±0.5% of span
Extended EMC immunity:
NAMUR NE 21, A criterion, burst . . . . . < ±1% of span

Observed authority requirements:

EMC. 2014/30/EU
LVD 2014/35/EU
RoHS 2011/65/EU

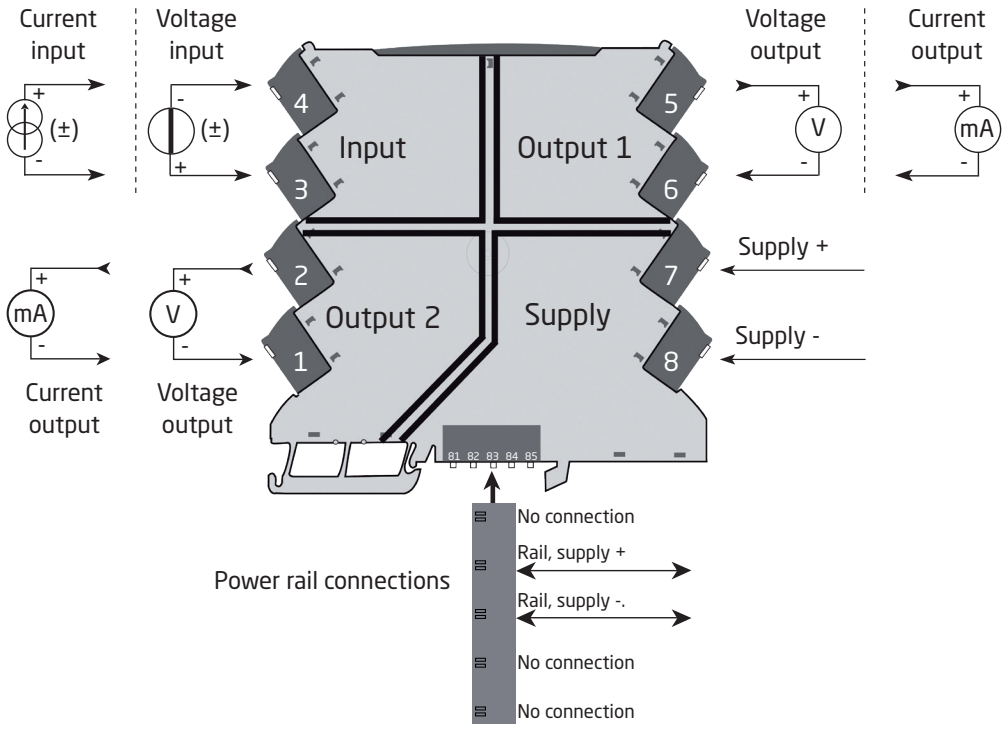
Approvals:

DNV-GL, Ships & Offshore DNVGL-CG-0339
UL, Standard for Safety . . . . . UL 61010-1
Safe Isolation . . . . . EN 61140

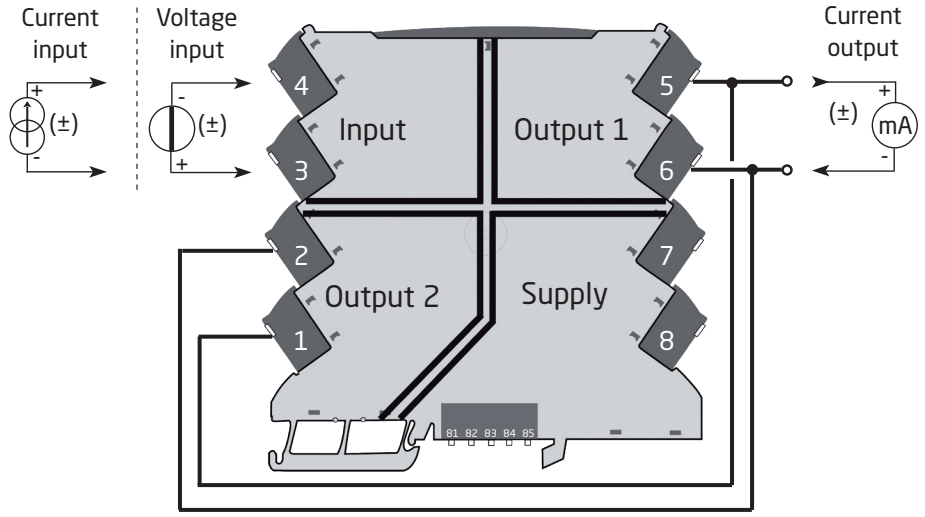
I.S. / Ex approvals:

ATEX 2014/34/EU . . . . . DEKRA 18ATEX0007 X
IECEx . . . . . DEK 18.0006 X

Connections

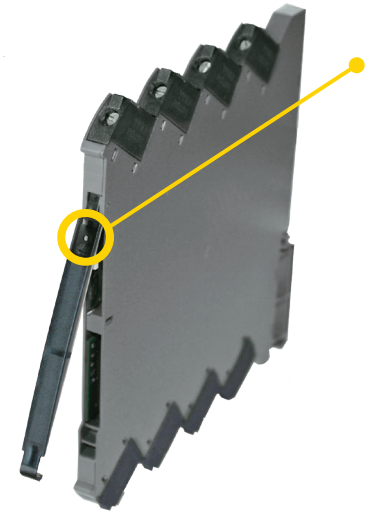


(*) Bipolar Input to bipolar output wiring set-up:



Safe Area or
Zone 2 & Cl. 1, Div. 2, gr. A-D

LED indication

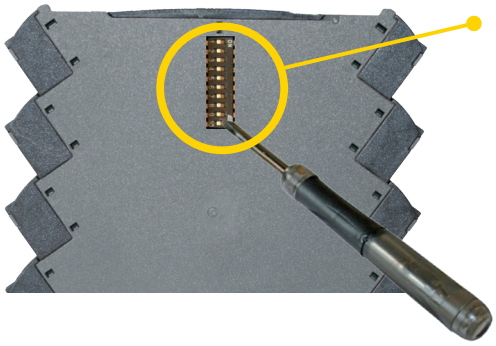


The device is equipped with a green power LED in the front to indicate the operation status, see the table below.

Condition	LED	Outputs	Action required
No supply / device error	OFF	De-energized	Connect supply / replace device
Power-up or restart	1 Flash (0.5 s OFF + 0.5 s ON)	De-energized	-
Device OK	Flashing 13 Hz (15 ms ON)	Energized	-
Incorrect DIP-switch setting	Flashing 1 Hz (15 ms ON)	De-energized	Correct setting and re-power device
Supply or hardware error	Flashing 13 Hz (0.5 s ON)	De-energized	Check supply/ replace device

DIP-switch configuration

JUMO dTRANS S08 18 can be configured via DIP-switches. The DIP-switches are located on the side of the device and can be adjusted with a small screwdriver or other implement.



DIP-switch positions are only read at power up.

(*) = bipolar wiring set-up

Filtre ON **Largeur de bande** **10 Hz**	**Sortie voie 1** Courant **0...20 mA**	**Sortie voie 2** Courant **0...20 mA**
Filtre OFF **Largeur de bande** **> 100 Hz**	**Sortie voie 1** Courant **4...20 mA**	**Sortie voie 2** Courant **4...20 mA**
Courant **entrée** **-10...+10 mA**	**Sortie voie 1** Courant **configuration +/- 20 mA ***	**Sortie voie 2** Courant **configuration +/- 20 mA ***
Courant **entrée** **-20...+20 mA**	**Sortie voie 1** Courant **configuration +/- 10 mA ***	**Sortie voie 2** Courant **configuration +/- 10 mA ***
Tension **entrée** **-5...+5 V**	**Sortie voie 1** Tension **0...10 V**	**Sortie voie 2** Tension **0...10 V**
Tension **entrée** **-10...+10 V**	**Sortie voie 1** Tension **2...10 V**	**Sortie voie 2** Tension **2...10 V**
	Sortie voie 1 Tension **0...5 V**	**Sortie voie 2** Tension **0...5 V**
	Sortie voie 1 Tension **1...5 V**	**Sortie voie 2** Tension **1...5 V**

JUMO GmbH & Co. KG
Street address:
Moritz-Juchheim-Straße 1
36039 Fulda, Germany
Delivery address:
Mackenrodtstraße 14
36039 Fulda, Germany
Postal address:
36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
Email: mail@jumo.net
Internet: www.jumo.net

JUMO Instrument Co. Ltd.
JUMO House
Temple Bank, Riverway
Harlow, Essex, CM20 2DY, UK
Phone: +44 1279 63 55 33
Fax: +44 1279 62 50 29
Email: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.
6733 Myers Road
East Syracuse, NY 13057, USA

Phone: +1 315 437 5866
Fax: +1 315 437 5860
Email: info.us@jumo.net
Internet: www.jumousa.com