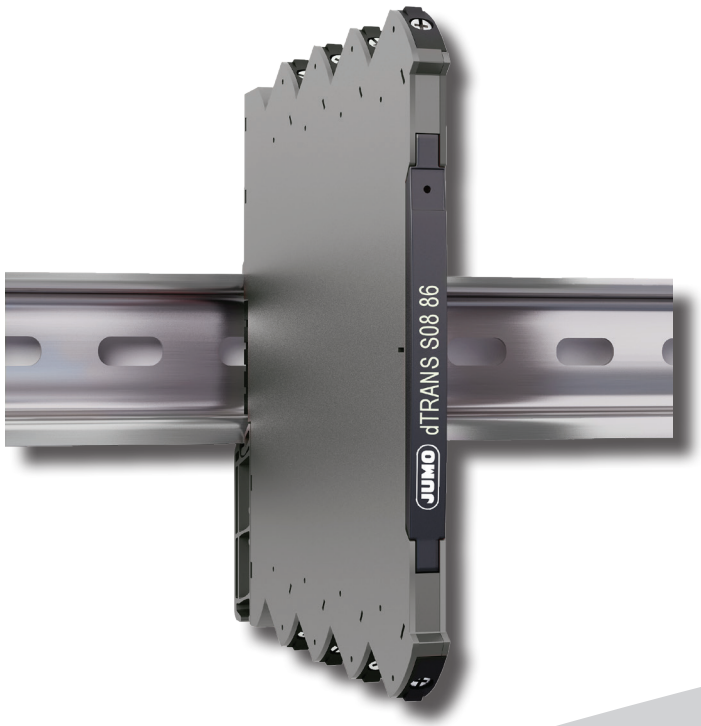
JUMO dTRANS S08 86A

Two-wire transmitter signal amplifier

JUMO dTRANS S08 86B

Two-wire current isolator

707286



Operating Manual

70728600T90Z001K000
V1.00/EN/00698829

JUMO dTRANS S08 86A

Two-wire transmitter signal amplifier

JUMO dTRANS S08 86B

Two-wire current isolator

Table of contents

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.

HAZARDOUS VOLTAGE

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.

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.

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 (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.

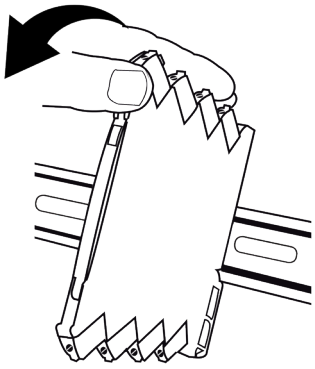
Cleaning

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

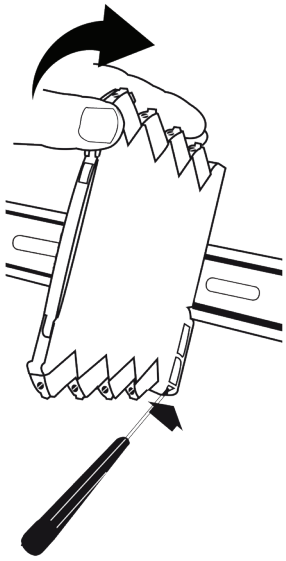
Liability

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.

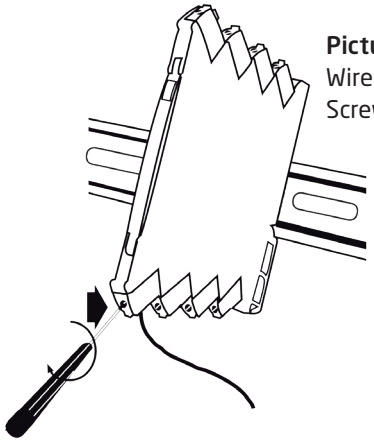
How to demount JUMO dTRANS T/S08



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

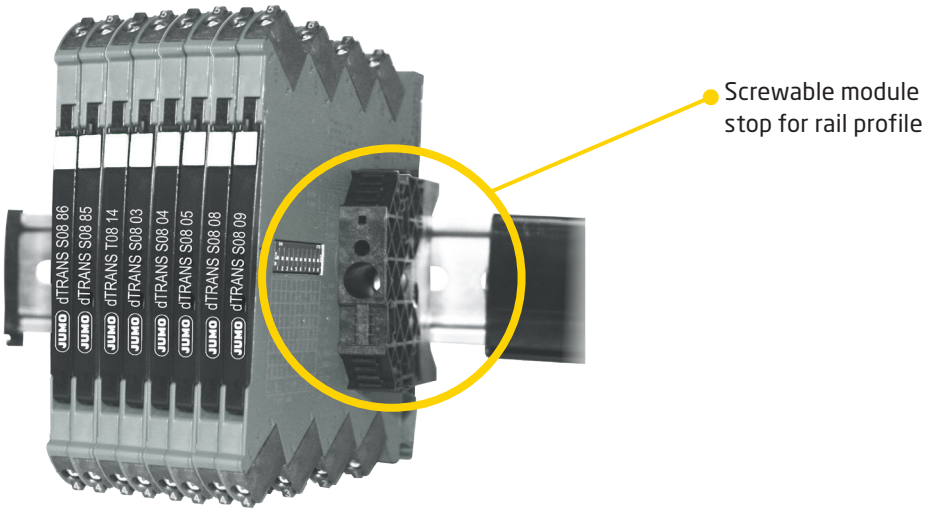


Picture 2:
Demounting from DIN rail.
First, remember to demount the connectors with hazardous voltages.
Detach the device from the DIN rail by lifting the bottom lock.



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

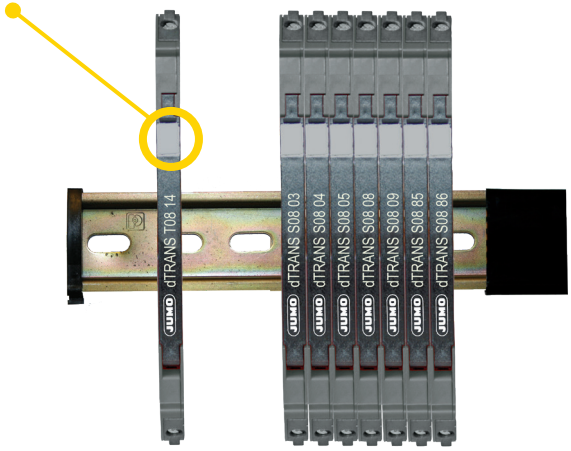
Installation on DIN rail



JUMO dTRANS S08 86 must be supported by a module stop for marine applications (TN: 00697615).

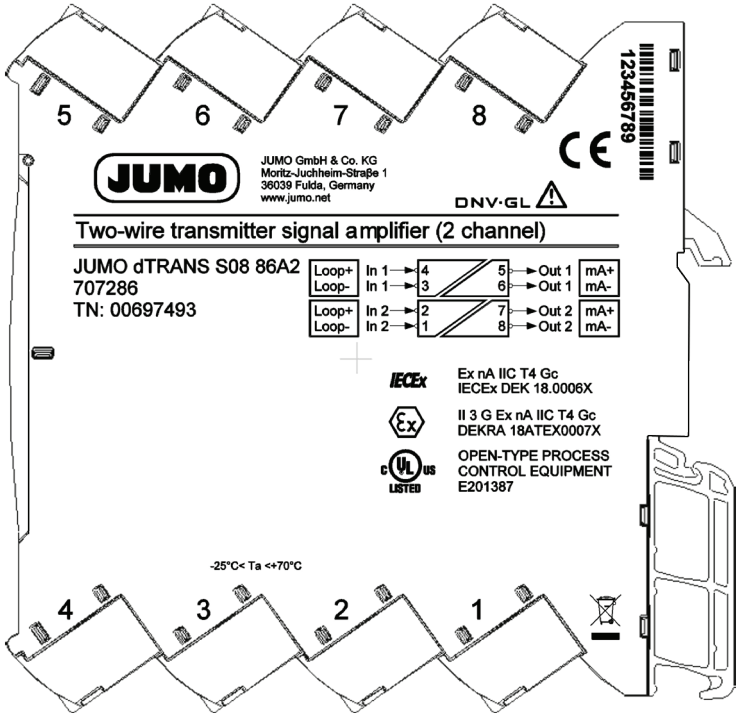
Marking

The front cover of the JUMO dTRANS T/S08 series 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.

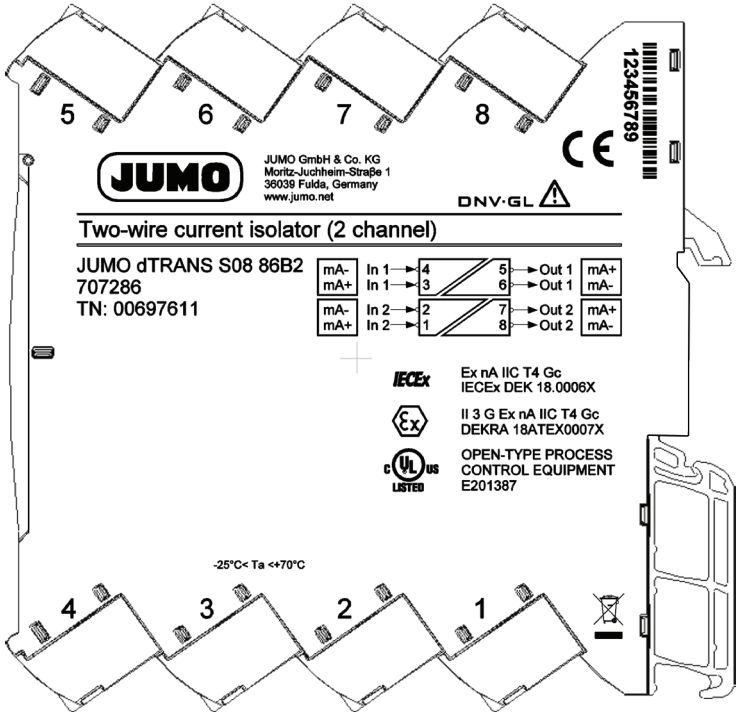


Side label

JUMO dTRANS S08 86A2



JUMO dTRANS S08 86B2



JUMO dTRANS S08 86A
Two-wire transmitter signal amplifier
JUMO dTRANS S08 86B
Two-wire current isolator

- 1 or 2 channel 2-wire transmitter isolator / current isolator
- 1:1 conversion in the range 3.5...23 mA
- Low voltage drop and fast response time < 5 ms
- Excellent accuracy, better than 0.05%
- Slimline 6 mm housing

Application

- JUMO dTRANS S08 86A is a 1:1 output loop-powered 2-wire transmitter isolator that excites and measures passive input signals.
- JUMO dTRANS S08 86B is a 1:1 output loop-powered 2-wire current isolator that measures active input signals.
- A very competitive choice in terms of both price and technology for galvanic isolation.
- Provides surge suppression and protects control systems from transients and noise.
- Elimination of ground loops and measurement of floating signals.
- The device can be mounted in Safe area or in Zone 2 and Cl. 1 Div 2. area.

Technical characteristics

- JUMO dTRANS S08 86 is powered by the host loop voltage.
- Wide supply range from 6...35 V.
- Low input to output voltage drop typ. 2.5 V (JUMO dTRANS S08 86A).
- Low input drop ≤ 3 V (JUMO dTRANS S08 86B), even when no loop power is applied to the output terminals.
- Excellent conversion accuracy, better than 0.05% in the range 3.8...20.5 mA.
- Signal range is 3.5...23 mA which means that JUMO dTRANS S08 86 is NAMUR NE43 compliant.
- Inputs and outputs are floating and galvanically separated.
- High galvanic isolation of 2.5 kVAC.
- Fast response time < 5 ms.
- Excellent signal/noise ratio > 60 dB.

Mounting / installation

- DIN rail mounting with up to 330 channels per metre.
- Extended operating temperature range from -25...+70°C.

Order

Type	Product name	Description	Order code
707286	JUMO dTRANS S08 86A1	Two-wire transmitter signal amplifier (1 channel)	00697492
707286	JUMO dTRANS S08 86A2	Two-wire transmitter signal amplifier (2 channel)	00697493
707286	JUMO dTRANS S08 86B1	Two-wire current isolator (1 channel)	00697610
707286	JUMO dTRANS S08 86B2	Two-wire current isolator (2 channel)	00697611

Accessories

TN: 00697615 = Screwable module stop for rail profile

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 : 2007
2...25 Hz. . . . . ±1.6 mm
25...100 Hz . . . . . ±4 g

Common electrical specifications:

Supply voltage . . . . . 6...35 VDC
Voltage drop, input to output typ. (JUMO dTRANS S08 86A) . . . . . 2.5 V
Input voltage drop typ. (JUMO dTRANS S08 86B)
Supplied and non-supplied unit . . . . . ≤ 3 V
Isolation voltage, test . . . . . 2.5 kVAC
Working isolation voltage. . . . . 300 VAC / 250 VAC (Ex)
Signal / noise ratio . . . . . > 60 dB
Response time (0...90%, 100...10%) . . . . . < 5 ms
Cut-off frequency (3 dB) . . . . . 100 Hz

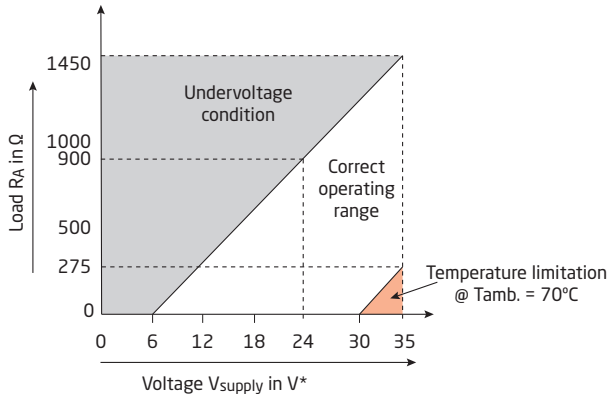
Power dissipation

JUMO dTRANS S08 86A. . . . . 50 mW per channel
JUMO dTRANS S08 86B. . . . . $V_{terminal}$ x I per channel

In order to ensure that the maximum internal temperature is not exceeded, the following exceptions must be followed for the JUMO dTRANS S08 86B1 & B2.

JUMO dTRANS S08 86B1

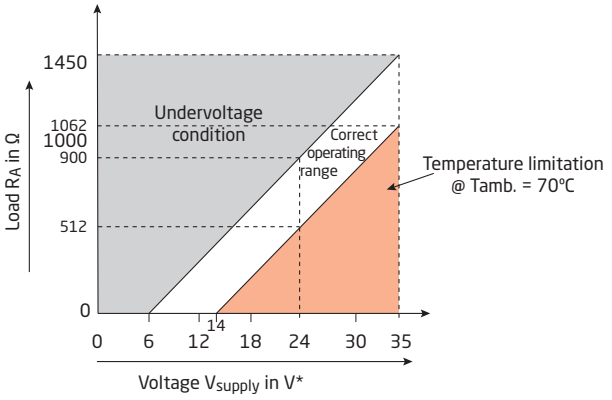
Power dissipation @ $T_{amb.}$ = 70°C:



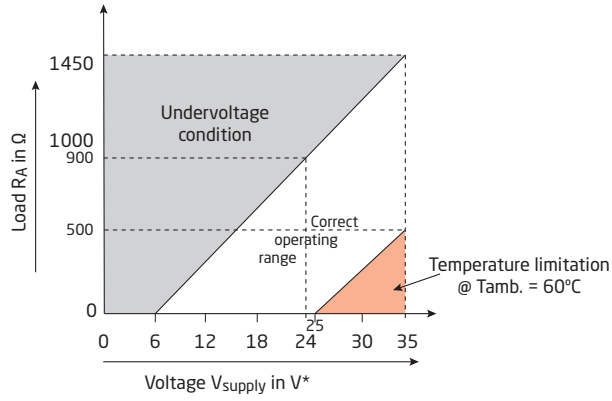
Power dissipation @ $T_{amb.}$ = 60°C. . . . . No limiting issues within operating range

JUMO dTRANS S08 86B2

Power dissipation @ $T_{amb.}$ = 70°C:



Power dissipation @ $T_{amb.}$ = 60°C:



Power dissipation @ $T_{amb.}$ = 50°C. . . . . No limiting issues within operating range

* V_{supply}: The supply voltage for the loop covering both the JUMO dTRANS S08 86 output terminal voltage and the voltage across the load resistor R_A.

R_A = The input impedance in the PLC + the load in the loop (incl. the cable resistance).

Input and Output specifications:

Available input transmitter (Tx) supply (JUMO dTRANS S08 86A) . . . . . 3.5...32.5 V
Signal range, input to output . . . . . 3.8...20.5 mA
Signal conversion 1:1
Signal range. . . . . 3.5...23 mA
Output loop current limitation, typ . . . . . 24 mA
Current output overload, max . . . . . 50 mA

Accuracy values - JUMO dTRANS S08 86A				
Input type	Absolute accuracy	Temperature coefficient Δ°C = [$T_{amb.}$ - 25°C]		
mA	≤ ± 8 µA		$T_{amb.}$ > 25°C	$T_{amb.}$ < 25°C
		For $V_{terminal}$ ≤ 24 V	$T_{coeff.}$ = ±0.48 µA/°C	$T_{coeff.}$ = ±1.68 µA/°C
		For $V_{terminal}$ > 24 V	$T_{coeff.}$ = ±0.02 µA/°C x $V_{terminal}$**	$T_{coeff.}$ = ±0.047µA/°C x $V_{terminal}$**

Accuracy values - JUMO dTRANS S08 86B				
Input type	Absolute accuracy	Temperature coefficient Δ°C = [$T_{amb.}$ - 25°C]		
mA	≤ ± 8 µA		$T_{amb.}$ > 25°C	$T_{amb.}$ < 25°C
		For $V_{terminal}$ ≤ 24 V	$T_{coeff.}$ = ±0.48 µA/°C	$T_{coeff.}$ = ±1.12 µA/°C
		For $V_{terminal}$ > 24 V	$T_{coeff.}$ = ±0.02 µA/°C x $V_{terminal}$**	$T_{coeff.}$ = ±0.047 µA/°C x $V_{terminal}$**

**$V_{terminal}$: Output terminal voltage measured in V at the JUMO dTRANS S08 86 device, i.e. voltage between terminal 5 and 6 for channel 1 and between terminal 7 and 8 for channel 2.

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

of span = 4...20 mA

Observed authority requirements:

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

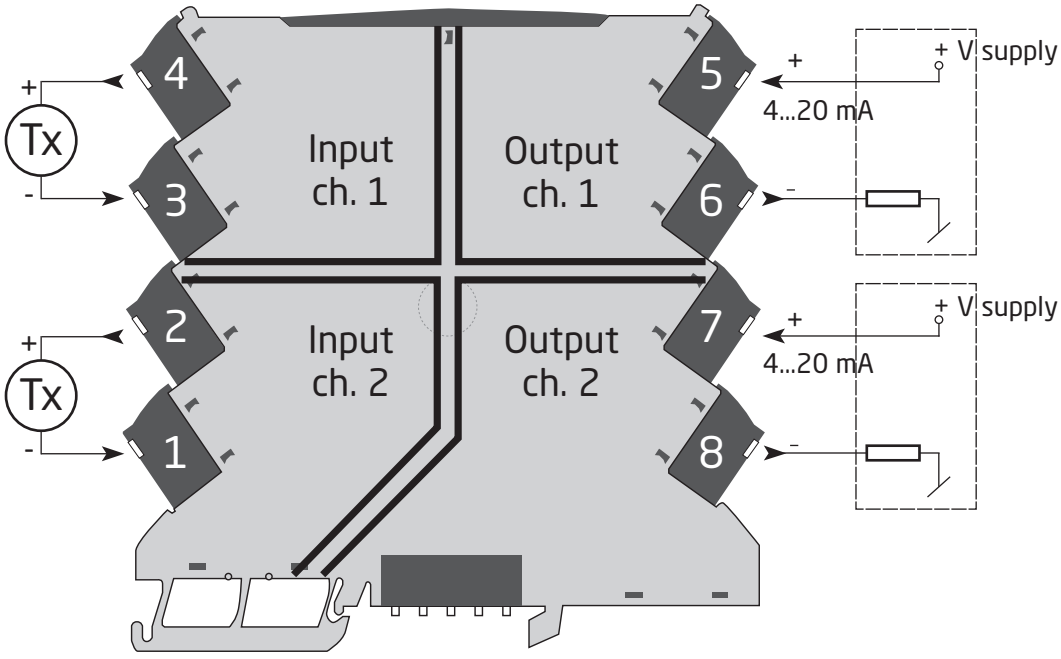
Approvals:

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

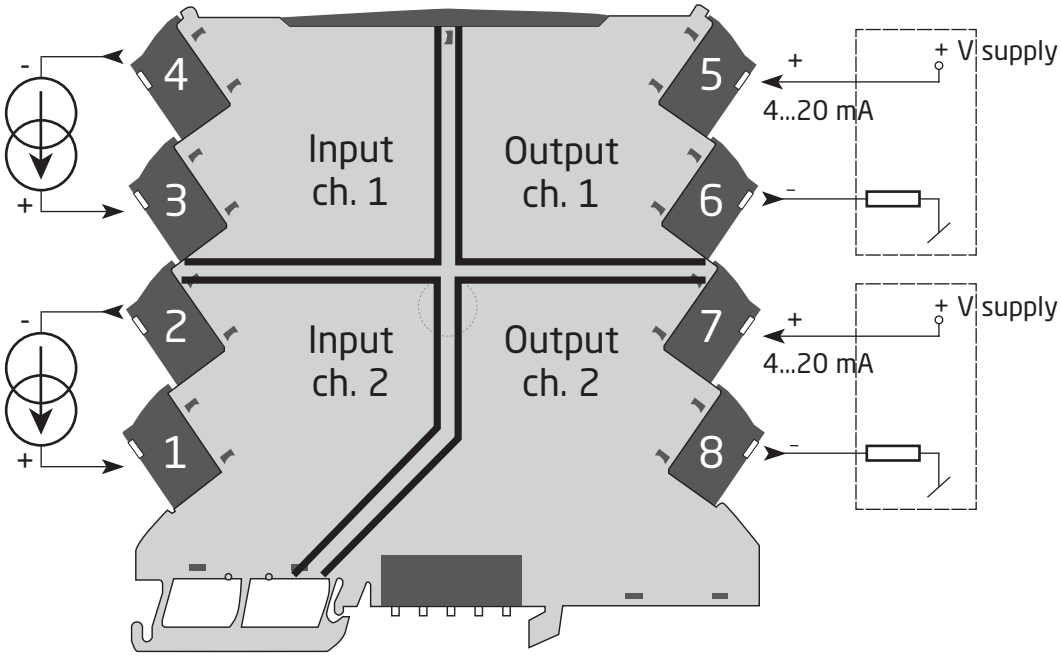
I.S. / Ex approvals:

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

JUMO dTRANS S08 86A



JUMO dTRANS S08 86B



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