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JUMO Ex-i Power Supply/Input Isolating Amplifier

Brief description

The JUMO Ex-i power supply/input isolating amplifier 707530 is designed for operating intrinsically safe transmitters (Ex-i) and mA current sources installed in potentially explosive (Ex) areas. The connected 2-wire transmitters are supplied with energy and analog 0/4 to 20 mA measured values are transmitted from the potentially explosive area to the non-explosive area.

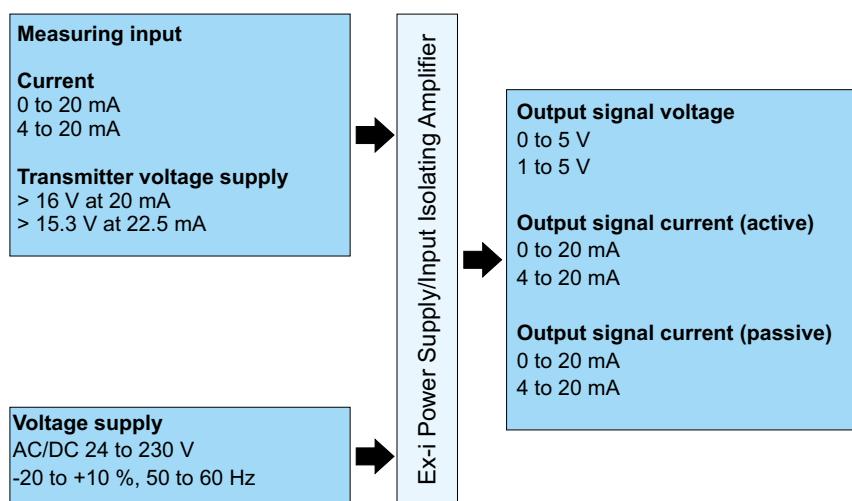
The external connection defines whether the device operates in supply isolating amplifier mode or isolating amplifier mode. The output of the module can be operated in active or passive mode. Digital (HART) communication signals can be superimposed over the analog measured value on the Ex or non Ex side and transmitted bidirectional.

To increase the HART impedance in low-resistance systems an additional resistor can be activated in the output circuit using the switch on the device's front. The device provides a 3-way electrical isolation and the energy supply is designed as wide range power supply (24 to 230 V).



Type 707530

Block diagram



Special features

- HART capable
- SIL2 approval
- Wide range power supply

Approvals/approval marks (see "Technical data")



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Technical data

Measuring input

Input signal current	0 to 20 mA 4 to 20 mA
Transmitter supply voltage	> 16 V (at 20 mA) > 15.3 V (at 22.5 mA)

Measuring output

Signal output	Current output
Output signal voltage	0 to 5 V (internal resistance, 250 Ω, 0,1 %) 1 to 5 V (internal resistance, 250 Ω, 0,1 %)
Output signal current	0 to 20 mA (active) 4 to 20 mA (active) 0 to 20 mA (passive, external source voltage 14 to 26 V) 4 to 20 mA (passive, external source voltage 14 to 26 V)
Burden/output load current output	< 600 Ω (at 20 mA) < 525 Ω (at 22.5 mA)

General information

Number of channels	1
Transmission error max.	< 0,1 % (of end value)
Transmission error typical	< 0,05 % (of end value)
Temperature coefficient max.	< 0,01 %/K
Ambient temperature (operation)	-20 to +60 °C (any installation position)
Ambient temperature (storage/transport)	-40 to +80 °C
Admissible air humidity (operation)	10 to 95 % (no condensation)
Step response (10 to 90 %)	< 600 µs (for step 4 to 20 mA)
Status display	LED green (voltage supply)
Width	17.5 mm
Height	99 mm
Depth	114.5 mm
Flammability class according to UL 94	V0
Material of case	Polyamide (PA 6.6)
Color	Gray
EMC	EN 61326-1

Voltage supply

Range of voltage supply	AC/DC 24 to 230 V, -20 to +10 %, 50 to 60 Hz
Current consumption	< 80 mA (at DC 24 V)
Power consumption	< 1.6 W

Data communication (bypass)

HART function	Yes
Supported protocols	HART

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Connection

Conductor cross section rigid min.	0.2 mm ²
Conductor cross section rigid max.	2.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	2.5 mm ²
Conductor cross section AWG/kcmil min.	24
Conductor cross section AWG/kcmil max.	14
Stripping length	7 mm
Thread	M3
Connection type	Screw connection
Tightening torque min.	0.5 Nm
Tightening torque max.	0.6 Nm

Electrical isolation

Operating mode	Repeater power supply operation and input isolating amplifier operation
Input/output Peak value according to EN 60079-11	375 V _{peak}
Input/supply Peak value according to EN 60079-11	375 V _{peak}
Input/output/supply Test voltage Rated insulation voltage (overvoltage category II, pollution degree 2, safe isolating according to EN 61010-1)	AC 2.5 kV, 50 Hz, 1 min. 300 V _{eff}

Safety data

	Supply isolation amplifier operation	Input isolating amplifier operation
Max. voltage U _o	25.2 V	-
Max. current I _o	93 mA	-
Max. power P _o	587 mW	-
Max. voltage U _i	-	30 V
Max. current I _i	-	150 mA
Max. internal inductance L _i	-	negligible
Max. internal capacitance C _i	-	negligible
Gas group	IIC	-
Max. external inductance L _o	2 mH	-
Max. external capacitance C _o	107 nF	-
Max. voltage U _m for output	AC 253 V (DC 125 V)	-
Max. voltage U _m for supply	AC/DC 253 V	-

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Approvals/approval marks

Approval marks	Testing agency	Certificates/ certification numbers	Inspection basis	Valid for
Ex II (1) G [Ex ia Ga] IIC/IIB	DEKRA EXAM	BVS 12 ATEX E 090 X	EN 60079-0:2012 + A11:2013	
Ex II (1) D [Ex ia Da] IIIC			EN 60079-11:2012	
Ex II 3 (1) G Ex nA [ia Ga] IIC/IIB T4 Gc			EN 60079-15:2010	
SIL2	DEKRA EXAM	BVS PB 04/12	EN 61508	
UL us	Underwriters Laboratories	E354603 C.D.-No 83135047	UL 61010-1 UL 913	USA

Connection diagram

The connection diagram in the data sheet provides preliminary information about the connection options. For the electrical connection, only use the installation instructions or the operating manual. The knowledge and the correct technical compliance with the safety information and warnings contained in these documents are mandatory for mounting, electrical connection, and startup as well as for safety during operation.

Input (Ex-i)

Connection for	Terminals
Supply isolating amplifier mode (2-wire transmitter)	4.1 (+) and 4.2 (-)
Input isolating amplifier mode (4-wire transmitter or power sources)	4.2 (+) and 4.3 (-)

Output of current without HART communication

Connection for	Terminals	DIP-switch position ^a	
		S1	S2
Source (passiv input card)	3.1 (+) and 3.2 (-)	I	II
Sink (active input card)	3.2 (+) and 3.3 (-)	I	II

^a The two DIP-switches are located at the front of the device. Settings made to the device with DIP-switches must occur in a voltage-free state.

Output of current with HART communication

Connection for	Electrical cir- cuit impend- ance	Connection of the input card at ter- minal	of the HART communicator	DIP-switch position ^a	
				S1	S2
Source (passiv input card)	≥ 250 Ω	3.1 (+) and 3.2 (-)	3.1 and 3.2	I	II
	< 250 Ω	3.1 (+) and 3.2 (-)	3.2 and 3.3	I	I
Sink (active input card)	≥ 250 Ω	3.2 (+) and 3.3 (-)	3.2 and 3.3	I	II
	< 250 Ω	3.2 (+) and 3.3 (-)	-	I	II

^a The two DIP-switches are located at the front of the device. Settings made to the device with DIP-switches must occur in a voltage-free state.

Output Voltage

Connection for	Connection of the input card at the terminal	DIP-switch position ^a	
		S1	S2
Source – passive input card	3.1 (+) and 3.2 (-)	II	II

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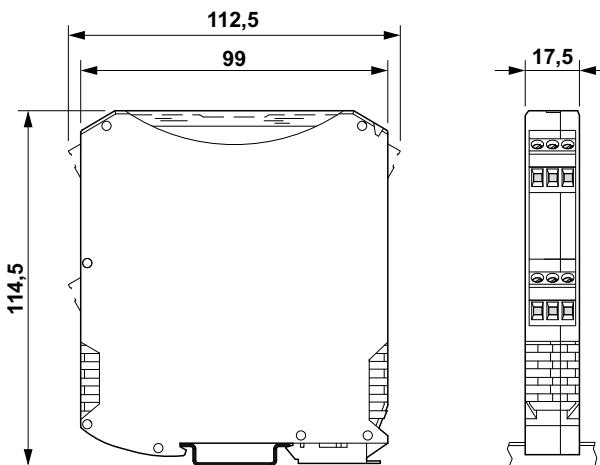
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Voltage supply

Connection for	Connection at terminals
AC/DC 24 to 230 V, 50/60 Hz	1.1 and 1.2

Dimensions



Order details

(1) Basic type
707530 Ex-i power supply/input isolating amplifier
(2) Voltage supply
38 AC/DC 24 to 230 V, -20 to +10 %, 50 to 60 Hz

Order code (1) / (2)
 Order example 707530 / 38

Scope of delivery

1 Ex-i power supply/input isolating amplifier in the ordered version
1 Operating manual

Accessories

Description	Part no.
JUMO dTRANS T01 Ex	00372362
JUMO dTRANS T01 Ex HART	00391004