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JUMO mTRON T Measuring, Control, and Automation System

Analog input module 8-channel

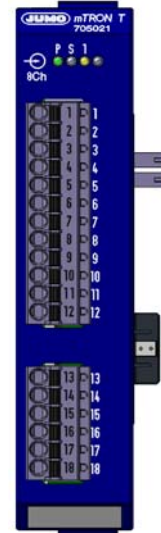
Brief description

The analog input module 8-channel is equipped with eight analog inputs for RTD temperature probes in 2-wire circuit as well as one digital input (DC 0/24 V). The analog inputs are not electrically isolated from each other. The digitized input values/states are available in the system for further processing.

LEDs are used to indicate applied voltage supply, the module operating status, as well as the digital input status.

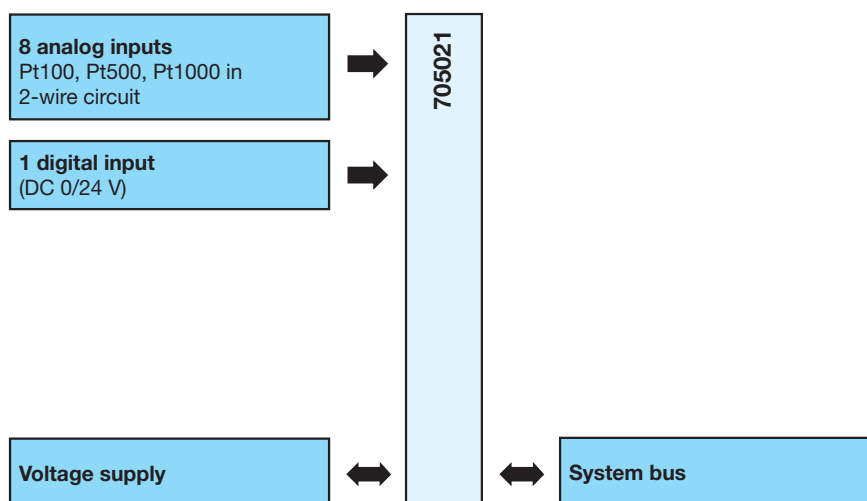
A setup program or the multifunction panel 840 can be used to comfortably configure the analog input module.

For service work, the module insert can be easily pulled out of the case at the front. The case including the bus PCB remains mounted on the DIN rail.



Type 705021/...

Block diagram



Features

- Eight analog inputs for RTD temperature probe in 2-wire circuit
- Limit value monitoring
- One digital input DC 0/24 V
- Automatic configuration after the module insert has been exchanged (hot swappable)
- Connection of the inputs at the front
- Removable terminal strips with Push-In technology
- Quick wiring of operating voltage and system bus due to easy module connection

Approval/approval marks (see “Technical data”)



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Description

Limit value monitoring

For each analog input, two separate alarms (min/max alarm) can be activated; each alarm has its own limit value. Alarm type, event text, collective alarm, alarm suppression, and alarm delay are configurable.

Analog inputs

The eight analog inputs are measuring inputs for RTD temperature probes in 2-wire circuit. Linearizations for Pt100, Pt500, and Pt1000 are saved. A measured value offset or a fine adjustment can be carried out to compensate for plant-specific deviations. Due to the measuring circuit monitoring, a measuring range that is too high or too low, probe/cable break, and probe/cable short circuit are detected so that the system is switched to an operational safe status in the event of an error.

Digital input

In addition, a digital input DC 0/24 V is available. The signal status can be used in the system in a flexible manner.

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Technical data

Analog inputs

General information

Number	8
A/D converter	Resolution 16 bit

RTD temperature probe

Designation	Standard	Measuring range	Measuring accuracy ^a	Ambient temperature influence
Pt100 2-wire circuit	DIN EN 60751	-200 to +850 °C	≤ 0.08 %	50 ppm/K
Pt500 2-wire circuit	DIN EN 60751	-200 to +850 °C	≤ 0.08 %	50 ppm/K
Pt1000 2-wire circuit	DIN EN 60751	-200 to +850 °C	≤ 0.08 %	50 ppm/K
Pt100 2-wire circuit	JIS 1604	-200 to +650 °C	≤ 0.08 %	50 ppm/K
Pt100 2-wire circuit	GOST 6651-94	-200 to +850 °C	≤ 0.08 %	50 ppm/K
Measuring current	Pt100 approx. 380 µA, Pt 500, and Pt1000 approx. 150 µA; not constant			
Lead compensation	A lead resistance can be compensated in the software by correcting the process value.			

^a The accuracy values refer to the maximum measuring range. Smaller measuring ranges lead to reduced linearization accuracy.

Measuring circuit monitoring

In the event of an error the digitized output values move to a defined status.

Measuring element	Out of range	Probe/cable short circuit	Probe/cable break
RTD temperature probe	Is detected	Is detected	Is detected

Digital input

Number	1
Input signal	DC 0/24 V (PLC level; logical "0" = -3 to +5 V; logical "1" = +15 to +30 V)

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Electrical data

Voltage supply	
Connection	Lateral (feed via base unit or router module)
Voltage	DC 24 V +25/-20 %
Residual ripple	5 %
Current consumption	80 mA (at DC 19.2 V)
Power consumption	2 W
Inputs (terminals 1 to 18)	
Connection	At the front (removable terminal strips with Push-In technology)
Conductor cross section on terminals 1 to 18	
Wire or strand without ferrule	Min. 0.14 mm ² , max. 1.5 mm ²
Strand with ferrule	Without plastic collar: Min. 0.25 mm ² , max. 1.5 mm ² With plastic collar: Min. 0.25 mm ² , max. 0.5 mm ²
Stripping length on terminals 1 to 18	9 mm
Electrical safety	Acc. to DIN EN 61010-1 Overvoltage category III, pollution degree 2
Electromagnetic compatibility	Acc. to DIN EN 61326-1
Interference emission	Class A – only for industrial use –
Interference immunity	Industrial requirements

Case and ambient conditions

Case type	Plastic case for DIN rail mounting in the control cabinet (indoor use); DIN rail acc. to DIN EN 60715, 35 mm x 7.5 mm x 1 mm
Dimensions (W x H x D)	22.5 mm x 103.6 mm x 101.5 mm (without connection elements)
Weight	Approx. 125 g
Protection type	IP20, acc. to DIN EN 60529
Ambient temperature range	-20 to +55 °C
Storage temperature range	-40 to +70 °C
Resistance to climatic conditions	Relative humidity ≤ 90 % annual average without condensation (climatic class 3K3 acc. to DIN EN 60721-3-3 with extended temperature and humidity range)
Site altitude	Up to 2000 m above sea level
Mechanical ambient conditions ^a	Classification acc. to DIN EN 60721-3-3, table 6, class 3M2

^a Test conditions are listed in the System Descripton B 705000.8.

Approval/approval marks

Approval mark	Testing agency	Certificate/certification number	Inspection basis	Valid for
c UL us	Underwriters Laboratories	E201387	UL 61010-1 (3. Ed.), CAN/CSA-22.2 No. 61010-1 (3. Ed.)	all types
DNV GL	DNV GL	TAA000016N	Class Guideline DNVGL-CG-0339	all types; a power supply unit with DNV GL or GL type approval is required (e.g. type 705090)

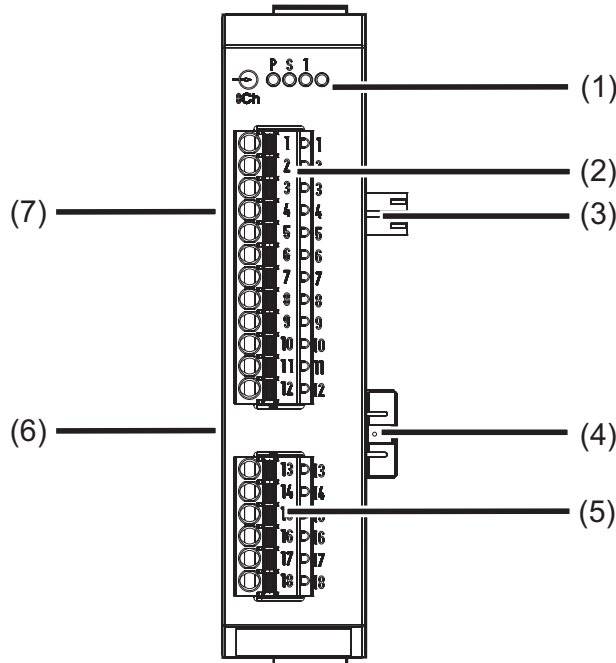
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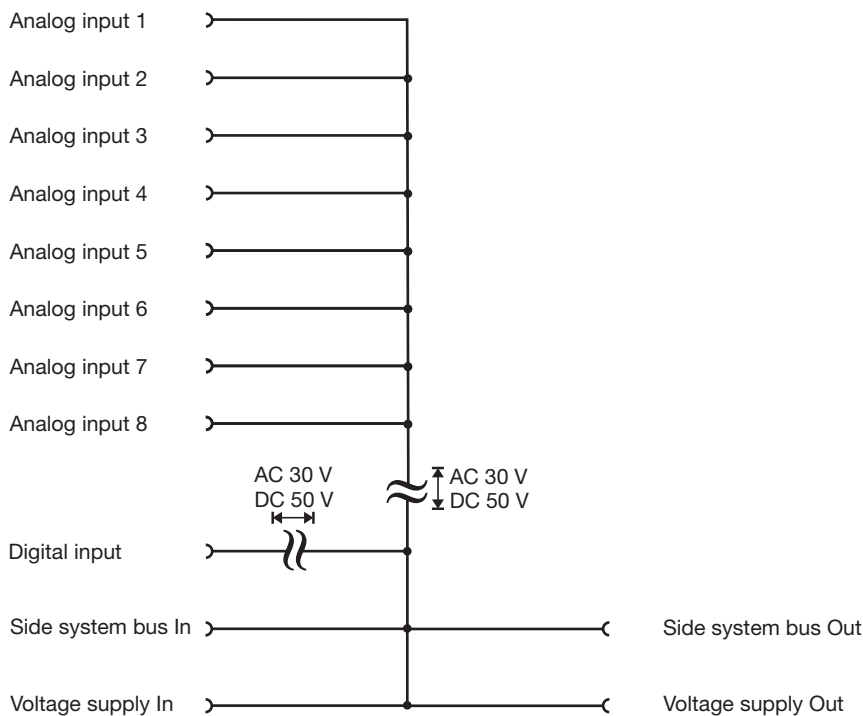


Display and connection elements



- (1) Status displays (LED)
 P = Voltage supply
 S = Status
 1 = Digital input
 (LED is lit: Active)
- (2) Analog input 1 to 6
- (3) Voltage supply Out, DC 24 V
- (4) Side system bus Out
- (5) Analog input 7, 8;
 digital input
- (6) Side system bus In
- (7) Voltage supply In, DC 24 V

Electrical isolation



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Connection diagram

The connection diagram included in the data sheet provides initial information about the connection options. Only use the installation instructions or the operating manual for the electrical connection. The know-how and the correct technical implementation of the safety warnings/instructions contained in these documents are the prerequisite for the installation, electrical connection, and initial start as well as for the safety during operation.

Analog inputs

Connection	Input	Terminals	Symbol and terminal designation
RTD temperature probe 2-wire circuit	1	1 and 2	
	2	3 and 4	
	3	5 and 6	
	4	7 and 8	
	5	9 and 10	
	6	11 and 12	
	7	13 and 14	
	8	15 and 16	

Digital input

Connection	Input	Terminals	Symbol and terminal designation
Digital input DC 0/24 V	1	17 and 18	

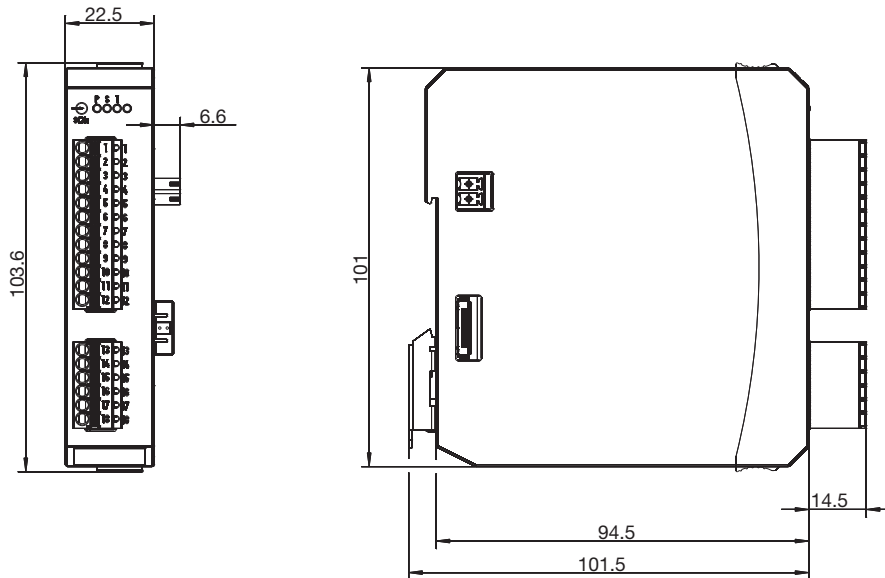
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Dimensions



Module overview

Base units

- Central processing unit
Data sheet 705001

Input/output modules

- Multichannel controller module
Data sheet 705010
- Relay module 4-channel
Data sheet 705015
- Analog input module 4-channel
Data sheet 705020
- Analog input module 8-channel
Data sheet 705021
- Analog output module 4-channel
Data sheet 705025
- Digital input/output module 12-channel
Data sheet 705030
- Thyristor power controller type 70906x
Data sheet 709061, 709062, 709063

Special modules

- Router module
Data sheet 705040

Operating, visualization, recording

- Multifunction panel 840
Data sheet 705060
- Operating panels
Data sheet 705065

Power supply units

- 705090/05-33
Data sheet 705090
- 705090/10-33
Data sheet 705090

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Order details

(1) Basic type	
705021	Analog input module 8-channel
(2) Voltage supply	
36	DC 24 V +25/-20 %
(3) DNV GL approval	
000	Without approval
062	With DNV GL approval ^a

^a The power supply unit used must also have a DNV GL or GL type approval (e.g. type 705090).

Order code	<input type="text" value="(1)"/>	/	<input type="text" value="(2)"/>	/	<input type="text" value="(3)"/>
Order example	705021	/	36	/	000

Scope of delivery

1 analog input module, 8-channel
1 Installation Instructions

General accessories

Description	Part no.
JUMO mTRON T system manual, English	00575577
Setup program with program editor JUMO mTRON T (on MiniDVD), incl. USB cable (A-plug to mini-B-plug, 3 m)	00569494
Program editor JUMO mTRON T (on MiniDVD), incl. USB cable (A-plug to mini-B-plug, 3 m)	00622333
PCA3000/PCC JUMO software package	00431884
PC Evaluation Software PCA3000	00431882
Release automatic print for PC Evaluation Software PCA3000	00505548
PCA Communication Software PCC	00431879
Plant Visualization Software JUMO SVS3000: See data sheet 700755	-
USB cable A-plug mini-B-plug 3 m	00506252

Content of the Mini-DVD:

- Setup program with program editor JUMO mTRON T in case of part no. 00569494
- Program editor JUMO mTRON T in case of part no. 00622333
- CODESYS programming software (free version)
- CODESYS Repository Package - Operating panels (free version)
- GSD file JUMO mTRON T - CPU (free version)
- PC Evaluation Software PCA3000 (30-day trial version)
- PCA Communication Software PCC (30-day trial version)
- Documentation in PDF format