

## Data Sheet | Item Number: 750-489

4-channel analog input; RTD/TC/Strain Gauge; 16 bits; Diagnostics; Intrinsically safe

<https://www.wago.com/750-489>



This analog input module enables direct connection of resistance temperature detectors (RTDs), thermocouples, millivolt sensors, resistors, strain gauge bridges, potentiometers, and PTC thermistors operating in hazardous areas classified as Zone 0 and Zone 1. Cold junction compensation for each channel is integrated into the module.

The WAGO I/O System 750 must be installed either in Zone 2 or in a non-hazardous area.

The 24 V supply is derived from the module's power jumper contacts.

The shield directly connects to the DIN-rail.

The parameters are set via the GSD file, **e!COCKPIT** or **WAGO-I/O-CHECK**.

### Indicators:

- Green LED (availability ON/OFF)
- Red LED (underflow, overflow, measurement range overflow/underflow)

Field and system levels are electrically isolated.

A functional galvanic isolation is provided between the channels.

### Notes

|      |                                                                                                                                                                                                                          |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note | The analog output module must only be operated with a 24 VDC Ex i power supply!<br>General information on explosion protection, including installation regulations, can be found in the WAGO I/O System 750/753 manuals! |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Technical data

|                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Item description                                                 | 4-Channel Analog Input; RTD/TC                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number of analog inputs                                          | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Total number of channels (module)                                | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Signal type                                                      | Potentiometer positions<br>Thermocouple<br>Resistive temperature device<br>Resistors<br>mV encoder                                                                                                                                                                                                                                                                                                                                                 |
| Signal type (configurable)                                       | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Sensor connection                                                | 4 x (2-wire, 3-wire, 4-wire)                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Measurement range                                                | <b>RTDs:</b> Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Ni1000-TK5000;<br><b>Resistors:</b> 250 Ω, 500 Ω, 1 kΩ, 2 kΩ, 4 kΩ, PTC;<br><b>Potentiometer setting:</b> 0 ... 100 %;<br><b>Thermocouples:</b> Type B; Type C; Type E; Type J; Type K; Type N; Type R, S; Type T;<br><b>mV sensors:</b> ±30 mV; ±60 mV; ±120 mV; ±250 mV; ±500 mV; ±1,000 mV; ±2,000 mV; PTC thermistor;<br><b>Resistor bridges (strain gauges)</b> |
| Resolution (over entire range)                                   | 0.1 K of full scale value; 0.01 K of full scale value (limited to -50 ... +150 °C [-58 ... +302 °F])                                                                                                                                                                                                                                                                                                                                               |
| Conversion time                                                  | ≥10 ms/2 wires (per channel)*;<br>≥20 ms/3 wires, 4 wires (per channel)*;<br>*for RTD/R; TC/U conversion time depends on module setting                                                                                                                                                                                                                                                                                                            |
| Reference for measurement error                                  | at 0 ≤ TA ≤ 55 °C                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Measurement error (reference temperature)                        | 25 °C                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Measurement error, deviation (max.) from the upper-range value   | ±0.2 %                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Reference for measurement error (2)                              | during user calibration                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Measurement error, reference temperature (2)                     | 25 °C                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Measurement error, deviation (max.) of the upper-range value (2) | ±0.05 %                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Temperature error (max.) of the upper-range value                | ±0.001 %/K                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Cold junction compensation                                       | integrated                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Intrinsically safe Ex i                                          | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Data width                                                       | 4 x 16-bit data; 4 x 8-bit control/status (optional)                                                                                                                                                                                                                                                                                                                                                                                               |
| Supply voltage (system)                                          | 5 VDC; via data contacts                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Current consumption (system supply)                              | 50 mA                                                                                                                                                                                                                                                                                                                                                                                                                                              |



| Technical data                                                   |                                                                                                                                                  |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply voltage (field)                                           | 24 VDC; (Ex i power supply: U <sub>o</sub> = max. 26.8 V); via power jumper contacts (supply via blade contact; distribution via spring contact) |
| Current consumption, field supply (module with no external load) | 50 mA                                                                                                                                            |
| Power consumption P <sub>max</sub>                               | 1.6 W (RTD/TC operation)                                                                                                                         |
| Power loss P <sub>I</sub>                                        | 1.6 W (RTD/TC operation)                                                                                                                         |
| Isolation                                                        | 300 VAC system/supply; 1200 VDC system/supply/channel                                                                                            |
| Number of incoming power jumper contacts                         | 2                                                                                                                                                |
| Number of outgoing power jumper contacts                         | 2                                                                                                                                                |
| Indicators                                                       | LED (A, C, E, G) green: Function AI 1 ... AI 4; LED (B, D, F, H) red: Error AI 1 ... AI 4                                                        |

| Explosion protection           |                                                                                                                                                                                                                                                          |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identification                 | <b>ATEX:</b> II 3 (1) G Ex ec [ia Ga] IIC T4 Gc; II (1) D [Ex ia Da] IIIC; I (M1) [Ex ia Ma] I<br><b>IECEX/INMETRO:</b> Ex ec [ia Ga] IIC T4 Gc; [Ex ia Da] IIIC; [Ex ia Ma] I<br><b>cULus (Devision classified):</b> Class I, Div. 2, Group A B C D, T4 |
| Ex standard                    | EN IEC 60079-0, -7, -11                                                                                                                                                                                                                                  |
| Safety-relevant data (circuit) | U <sub>o</sub> = 4 V; I <sub>o</sub> = 13.46 mA; P <sub>o</sub> = 13.46 mW; linear characteristic curve                                                                                                                                                  |
| Reactances Ex ia IIC           | L <sub>o</sub> = 0.19 H; C <sub>o</sub> = 100 µF                                                                                                                                                                                                         |
| Reactances Ex ia IIB           | L <sub>o</sub> = 0.78 H; C <sub>o</sub> = 1000 µF                                                                                                                                                                                                        |
| Reactances Ex ia IIA           | L <sub>o</sub> = 1.57 H; C <sub>o</sub> = 1000 µF                                                                                                                                                                                                        |
| Reactances Ex ia I             | L <sub>o</sub> = 2.57 H; C <sub>o</sub> = 1000 µF                                                                                                                                                                                                        |
| Reactances (note)              | Reactances, if the internal inductance L <sub>i</sub> or capacitance C <sub>i</sub> (without cable) of the connected device is ≤1 % of the specified values.                                                                                             |

| Connection Data                 |                                              |
|---------------------------------|----------------------------------------------|
| Connection technology: I/O      | 16 x CAGE CLAMP®                             |
| Connectable conductor materials | Copper                                       |
| Connection type                 | Inputs/outputs                               |
| Solid conductor                 | 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG |
| Fine-stranded conductor         | 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG |
| Strip length                    | 8 ... 9 mm / 0.31 ... 0.35 inches            |

| Physical data                     |                        |
|-----------------------------------|------------------------|
| Width                             | 24 mm / 0.945 inches   |
| Height                            | 100 mm / 3.937 inches  |
| Depth                             | 67.8 mm / 2.669 inches |
| Depth from upper-edge of DIN-rail | 60.6 mm / 2.386 inches |

| Mechanical data |             |
|-----------------|-------------|
| Mounting type   | DIN-35 rail |

| Material data      |                              |
|--------------------|------------------------------|
| Housing material   | Polycarbonate; polyamide 6.6 |
| Fire load          | 1.671 MJ                     |
| Weight             | 99.3 g                       |
| Conformity marking | CE                           |



| Environmental requirements               |                                                                                                        |  |
|------------------------------------------|--------------------------------------------------------------------------------------------------------|--|
| Ambient temperature (operation)          | 0 ... +55 °C                                                                                           |  |
| Ambient temperature (storage)            | -25 ... +85 °C                                                                                         |  |
| Protection type                          | IP20                                                                                                   |  |
| Pollution degree                         | 2 per IEC 61131-2                                                                                      |  |
| Operating altitude                       | 0 ... 2000 m / 0 ... 6562 ft                                                                           |  |
| Mounting position                        | Horizontal left, horizontal right, horizontal top, horizontal bottom, vertical top and vertical bottom |  |
| Relative humidity (without condensation) | 95 %                                                                                                   |  |
| Vibration resistance                     | 4g per IEC 60068-2-6                                                                                   |  |
| Shock resistance                         | 15g per IEC 60068-2-27                                                                                 |  |
| EMC immunity to interference             | per EN 61000-6-2, marine applications                                                                  |  |
| EMC emission of interference             | per EN 61000-6-3, marine applications                                                                  |  |
| Exposure to pollutants                   | per IEC 60068-2-42 and IEC 60068-2-43                                                                  |  |

| Commercial data       |               |  |
|-----------------------|---------------|--|
| PU (SPU)              | 1 pcs         |  |
| Packaging type        | Box           |  |
| Country of origin     | DE            |  |
| GTIN                  | 4055143948029 |  |
| Customs tariff number | 85437090990   |  |

| Product Classification |                      |  |
|------------------------|----------------------|--|
| UNSPSC                 | 32151705             |  |
| ETIM 9.0               | EC001596             |  |
| ETIM 10.0              | EC001596             |  |
| ECCN                   | NO US CLASSIFICATION |  |

| Environmental Product Compliance          |                                      |  |
|-------------------------------------------|--------------------------------------|--|
| RoHS Compliance Status                    | Compliant, No Exemption              |  |
| SCIP notification number (Austria)        | 2e967755-29fa-4c20-883b-b9085830cedb |  |
| SCIP notification number (Belgium)        | 2b743fd2-d462-4b6d-b4a1-7992ed6bca5f |  |
| SCIP notification number (Bulgaria)       | cd3136c4-5842-493a-a6c7-aaccbae35441 |  |
| SCIP notification number (Czech Republic) | 06e947da-9a5e-4f16-86d6-d6c3a2a72497 |  |
| SCIP notification number (Denmark)        | 7f96b952-ca60-43e7-b2df-fb463a8cb615 |  |
| SCIP notification number (Finland)        | 2d55b01b-e34c-4619-a37c-47e3d79f3158 |  |
| SCIP notification number (France)         | a325a1e0-ba65-4396-a8ab-1b4499385f8f |  |
| SCIP notification number (Germany)        | 85e3688e-39a6-447b-aa87-ad08b282a833 |  |
| SCIP notification number (Hungary)        | 5df6d0ea-10d7-4caf-85f2-5569529bf243 |  |
| SCIP notification number (Italy)          | 2616f35b-5661-4756-8961-a4f345a9e642 |  |
| SCIP notification number (Netherlands)    | f4f4df14-9da6-4e9c-b012-e425bf3a5b61 |  |
| SCIP notification number (Poland)         | 97af6679-bfe0-4362-bcc4-b2ff7c57ccfb |  |
| SCIP notification number (Romania)        | 5d2755b8-7838-4e0c-9775-0a99aa0c54a9 |  |
| SCIP notification number (Sweden)         | f00e1d03-d337-4ba2-94ea-69972672f649 |  |



Approvals / Certificates

General approvals



| Approval                                                  | Standard               | Certificate Name    |
|-----------------------------------------------------------|------------------------|---------------------|
| EAC<br>GZO Almaty Standart                                | TP TC 020/2011         | EAC CoC 03083       |
| KC<br>National Radio Research Agency                      | Article 58-2, Clause 3 | MSIP-REM-W43-AIM750 |
| UL<br>Underwriters Laboratories Inc. (ORDINARY LOCATIONS) | -                      | E175199             |

Declarations of conformity and manufacturer's declarations

| Approval                                              | Standard | Certificate Name |
|-------------------------------------------------------|----------|------------------|
| EU-Ex-Declaration of Conformity<br>WAGO GmbH & Co. KG | -        | -                |
| UK-Ex-Declaration of Conformity<br>WAGO GmbH & Co. KG | -        | -                |

Approvals for marine applications



| Approval                          | Standard               | Certificate Name  |
|-----------------------------------|------------------------|-------------------|
| DNV<br>DNV GL SE                  | DNV-CG-0339, Aug. 2021 | TAA0000194        |
| KR<br>Korean Register of Shipping | -                      | KR HMB05880-AC001 |
| PRS<br>Polski Rejestr Statków     | -                      | TE/1101/880590/23 |

Approvals for hazardous areas



| Approval                                                   | Standard                     | Certificate Name                                                         |
|------------------------------------------------------------|------------------------------|--------------------------------------------------------------------------|
| ATEX<br>TUEV Nord Cert GmbH                                | EN 60079-0                   | TUEV12ATEX106032X (Ex ec[iaGa] IIC T4 Gc, [Ex iaDa] IIIC, [Ex iaMa] I)   |
| CCC<br>CNEX                                                | CNCA-C23-01                  | 2020312310000211 (Ex ec [iaGa] IIC T4 Gc, [Ex iaDa] II-IC, [Ex iaMa] I)  |
| IECEx<br>TUEV Nord Cert GmbH                               | IEC 60079                    | IECEx TUN12.0039X (Ex ec [iaGa] IIC T4 Gc, [Ex iaDa] II-IC, [Ex iaMa] I) |
| INMETRO<br>TÜV Rheinland do Brasil Ltda.                   | -                            | TÜV_14.1911_X                                                            |
| KTL<br>Korea Testing Laboratory                            | KOSHA Article 34, IEC60079-0 | 21-KA4BO-0605X                                                           |
| UKEx<br>Element Materials Technology UK                    | -                            | EMA21UKEX0069X                                                           |
| UL<br>Underwriters Laboratories Inc. (HAZARDOUS LOCATIONS) | UL 121201                    | E198726                                                                  |

Subject to changes. Please also observe the further product documentation!

Current addresses can be found at: [www.wago.com](https://www.wago.com)