

WAGO-I/O-SYSTEM 750

Manual



750-491(/xxxx-xxxx)

1AI DMS

1-Channel Analog Input Module

for Resistor Bridges (DMS)

Version 1.2.0

© 2016 by WAGO Kontakttechnik GmbH & Co. KG
All rights reserved.

WAGO Kontakttechnik GmbH & Co. KG

Hansastraße 27
D-32423 Minden

Phone: +49 (0) 571/8 87 – 0
Fax: +49 (0) 571/8 87 – 1 69

E-Mail: info@wago.com

Web: <http://www.wago.com>

Technical Support

Phone: +49 (0) 571/8 87 – 5 55
Fax: +49 (0) 571/8 87 – 85 55

E-Mail: support@wago.com

Every conceivable measure has been taken to ensure the accuracy and completeness of this documentation. However, as errors can never be fully excluded, we always appreciate any information or suggestions for improving the documentation.

E-Mail: documentation@wago.com

We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally protected by trademark or patent.

Table of Contents

1	Notes about this Documentation.....	5
1.1	Validity of this Documentation.....	5
1.2	Copyright.....	5
1.3	Symbols.....	6
1.4	Number Notation.....	8
1.5	Font Conventions.....	8
2	Important Notes	9
2.1	Legal Bases	9
2.1.1	Subject to Changes	9
2.1.2	Personnel Qualifications.....	9
2.1.3	Use of the WAGO-I/O-SYSTEM 750 in Compliance with Underlying Provisions.....	9
2.1.4	Technical Condition of Specified Devices.....	10
2.2	Safety Advice (Precautions).....	11
3	Device Description	13
3.1	View	14
3.2	Connectors.....	15
3.2.1	Data Contacts/Internal Bus.....	15
3.2.2	Power Jumper Contacts/Field Supply	15
3.2.3	CAGE CLAMP® Connectors	16
3.3	Display Elements	17
3.4	Operating Elements	17
3.5	Schematic Diagram	18
3.6	Technical Data	19
3.6.1	Device Data	19
3.6.2	Power Supply.....	19
3.6.3	Communication	19
3.6.4	Inputs	19
3.6.5	Connection Type	20
3.6.6	Climatic Environmental Conditions	20
3.7	Approvals	21
3.8	Standards and Guidelines.....	21
4	Process Image.....	22
4.1	Application Example.....	23
5	Mounting.....	24
5.1	Mounting Sequence.....	24
5.2	Inserting and Removing Devices	25
5.2.1	Inserting the I/O Module	25
5.2.2	Removing the I/O Module.....	26

6 Connect Devices 27

6.1 Connecting a Conductor to the CAGE CLAMP® 27

6.2 Connection Examples..... 28

List of Figures 30

List of Tables..... 31

1 Notes about this Documentation

Note



Always retain this documentation!

This documentation is part of the product. Therefore, retain the documentation during the entire service life of the product. Pass on the documentation to any subsequent user. In addition, ensure that any supplement to this documentation is included, if necessary.

1.1 Validity of this Documentation

This documentation is only applicable to the I/O module 750-491 (1AI DMS) and the variants listed in the table below.

Table 1: Versions

Item Number	Designation
750-491	1AI DMS
750-491/000-001	1AI DMS/125 ms

Note



Documentation Validity for Variants

Unless otherwise indicated, the information given in this documentation applies to listed variants.

The I/O module 750-491 shall only be installed and operated according to the instructions in this manual and in the manual for the used fieldbus coupler/controller.

NOTICE

Consider power layout of the WAGO-I/O-SYSTEM 750!

In addition to these operating instructions, you will also need the manual for the used fieldbus coupler/controller, which can be downloaded at www.wago.com. There, you can obtain important information including information on electrical isolation, system power and supply specifications.

1.2 Copyright

This Manual, including all figures and illustrations, is copyright-protected. Any further use of this Manual by third parties that violate pertinent copyright provisions is prohibited. Reproduction, translation, electronic and phototechnical filing/archiving (e.g., photocopying) as well as any amendments require the written consent of WAGO Kontakttechnik GmbH & Co. KG, Minden, Germany. Non-observance will involve the right to assert damage claims.

1.3 Symbols

 **DANGER****Personal Injury!**

Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **DANGER****Personal Injury Caused by Electric Current!**

Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING****Personal Injury!**

Indicates a moderate-risk, potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION****Personal Injury!**

Indicates a low-risk, potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE**Damage to Property!**

Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

NOTICE**Damage to Property Caused by Electrostatic Discharge (ESD)!**

Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

Note**Important Note!**

Indicates a potential malfunction which, if not avoided, however, will not result in damage to property.



Information

Additional Information:

Refers to additional information which is not an integral part of this documentation (e.g., the Internet).

1.4 Number Notation

Table 2: Number Notation

Number Code	Example	Note
Decimal	100	Normal notation
Hexadecimal	0x64	C notation
Binary	'100' '0110.0100'	In quotation marks, nibble separated with dots (.)

1.5 Font Conventions

Table 3: Font Conventions

Font Type	Indicates
<i>italic</i>	Names of paths and data files are marked in italic-type. e.g.: <i>C:\Program Files\WAGO Software</i>
Menu	Menu items are marked in bold letters. e.g.: Save
>	A greater-than sign between two names means the selection of a menu item from a menu. e.g.: File > New
Input	Designation of input or optional fields are marked in bold letters, e.g.: Start of measurement range
“Value”	Input or selective values are marked in inverted commas. e.g.: Enter the value “4 mA” under Start of measurement range .
[Button]	Pushbuttons in dialog boxes are marked with bold letters in square brackets. e.g.: [Input]
[Key]	Keys are marked with bold letters in square brackets. e.g.: [F5]

2 Important Notes

This section includes an overall summary of the most important safety requirements and notes that are mentioned in each individual section. To protect your health and prevent damage to devices as well, it is imperative to read and carefully follow the safety guidelines.

2.1 Legal Bases

2.1.1 Subject to Changes

WAGO Kontakttechnik GmbH & Co. KG reserves the right to provide for any alterations or modifications that serve to increase the efficiency of technical progress. WAGO Kontakttechnik GmbH & Co. KG owns all rights arising from the granting of patents or from the legal protection of utility patents. Third-party products are always mentioned without any reference to patent rights. Thus, the existence of such rights cannot be excluded.

2.1.2 Personnel Qualifications

All sequences implemented on WAGO-I/O-SYSTEM 750 devices may only be carried out by electrical specialists with sufficient knowledge in automation. The specialists must be familiar with the current norms and guidelines for the devices and automated environments.

All changes to the coupler or controller should always be carried out by qualified personnel with sufficient skills in PLC programming.

2.1.3 Use of the WAGO-I/O-SYSTEM 750 in Compliance with Underlying Provisions

Fieldbus couplers, fieldbus controllers and I/O modules found in the modular WAGO-I/O-SYSTEM 750 receive digital and analog signals from sensors and transmit them to actuators or higher-level control systems. Using programmable controllers, the signals can also be (pre-) processed.

The devices have been developed for use in an environment that meets the IP20 protection class criteria. Protection against finger injury and solid impurities up to 12.5 mm diameter is assured; protection against water damage is not ensured. Unless otherwise specified, operation of the devices in wet and dusty environments is prohibited.

Operating the WAGO-I/O-SYSTEM 750 devices in home applications without further measures is only permitted if they meet the emission limits (emissions of interference) according to EN 61000-6-3. You will find the relevant information in the section “Device Description” > “Standards and Guidelines” in the manual for the used fieldbus coupler/controller.

Appropriate housing (per 94/9/EG) is required when operating the WAGO-I/O-SYSTEM 750 in hazardous environments. Please note that a prototype test certificate must be obtained that confirms the correct installation of the system in a housing or switch cabinet.

2.1.4 Technical Condition of Specified Devices

The devices to be supplied ex works are equipped with hardware and software configurations, which meet the individual application requirements. WAGO Kontakttechnik GmbH & Co. KG will be exempted from any liability in case of changes in hardware or software as well as to non-compliant usage of devices.

Please send your request for modified and new hardware or software configurations directly to WAGO Kontakttechnik GmbH & Co. KG.

2.2 Safety Advice (Precautions)

For installing and operating purposes of the relevant device to your system the following safety precautions shall be observed:



DANGER

Do not work on devices while energized!

All power sources to the device shall be switched off prior to performing any installation, repair or maintenance work.

DANGER

Install the device only in appropriate housings, cabinets or in electrical operation rooms!

The WAGO-I/O-SYSTEM 750 and its components are an open system. As such, install the system and its components exclusively in appropriate housings, cabinets or in electrical operation rooms. Allow access to such equipment and fixtures to authorized, qualified staff only by means of specific keys or tools.

NOTICE

Replace defective or damaged devices!

Replace defective or damaged device/module (e.g., in the event of deformed contacts), since the long-term functionality of device/module involved can no longer be ensured.

NOTICE

Protect the components against materials having seeping and insulating properties!

The components are not resistant to materials having seeping and insulating properties such as: aerosols, silicones and triglycerides (found in some hand creams). If you cannot exclude that such materials will appear in the component environment, then install the components in an enclosure being resistant to the above-mentioned materials. Clean tools and materials are imperative for handling devices/modules.

NOTICE

Clean only with permitted materials!

Clean soiled contacts using oil-free compressed air or with ethyl alcohol and leather cloths.

NOTICE**Do not use any contact spray!**

Do not use any contact spray. The spray may impair contact area functionality in connection with contamination.

NOTICE**Do not reverse the polarity of connection lines!**

Avoid reverse polarity of data and power supply lines, as this may damage the devices involved.

NOTICE**Avoid electrostatic discharge!**

The devices are equipped with electronic components that may be destroyed by electrostatic discharge when touched. Please observe the safety precautions against electrostatic discharge per DIN EN 61340-5-1/-3. When handling the devices, please ensure that environmental factors (personnel, work space and packaging) are properly grounded.

3 Device Description

The analog input module enables the direct connection of a resistor measurement bridge. The bridge voltage U_D and supply voltage U_{ref} of the bridge are digitized with a resolution of 16 bits.

The input channels are available as two 16 bit values for further processing. The measurement result can be calculated by the following formula:

$$\text{Measured value} = U_D / U_{ref}$$

By acquiring the supply voltage accurately together with the bridge voltage in a transformer, long-term drift and temperature drift are compensated.

If the internal supply voltage (U_V) is overloaded ($I_{Load} > 20 \text{ mA}$), an external supply voltage is required.

The assignment of the connections is described in the “Connectors” section. Connection examples are shown in section “Connecting Devices” > ... > “Connection Example(s)”.

The operational readiness and the trouble-free internal data bus communication of the channels are indicated via a green function LED.

A red fault LED per channel indicates a wire break or that the signal is outside the measuring range.

The meaning of the LEDs is described in the “Display Elements” section.

Both the potential groups and the individual modules within these groups can be arranged in any combination when designing the field bus node.

Power to the internal electronics is supplied via internal data bus.

Note



Use a supply module!

Use a supply module for field-side power supply of downstream I/O modules.

The I/O module 750-491 can be used with all fieldbus couplers/controllers of the WAGO-I/O-SYSTEM 750 (except for the economy types 750-320, -323, -324 and -327).

3.1 View

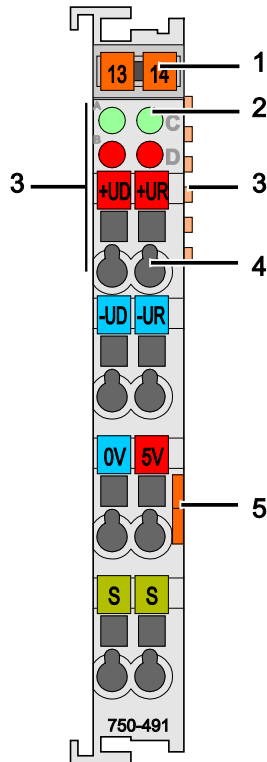


Figure 1: View of device

Table 4: Legend for Figure “View”

Pos.	Description	Details See Section
1	Marking possibility with Mini-WSB	---
2	Status LEDs	“Device Description” > “Display Elements”
3	Data contacts	“Device Description” > “Connectors”
4	CAGE CLAMP [®] connectors	“Device Description” > “Connectors”
5	Release tab	“Mounting” > ”Inserting and Removing Devices”

3.2 Connectors

3.2.1 Data Contacts/Internal Bus

Communication between the fieldbus coupler/controller and the I/O modules as well as the system supply of the I/O modules is carried out via the internal bus. It is comprised of 6 data contacts, which are available as self-cleaning gold spring contacts.

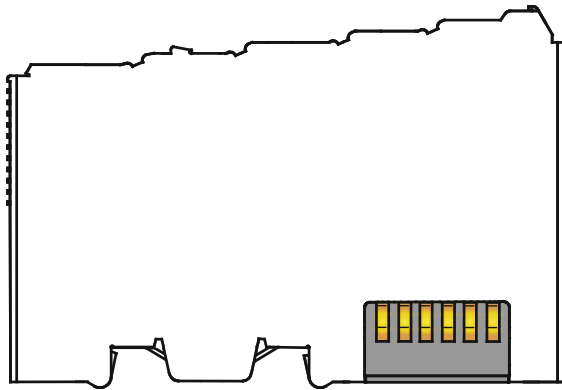


Figure 2: Data Contacts

NOTICE

Do not place the I/O modules on the gold spring contacts!

Do not place the I/O modules on the gold spring contacts in order to avoid soiling or scratching!

NOTICE



Ensure that the environment is well grounded!

The devices are equipped with electronic components that may be destroyed by electrostatic discharge. When handling the devices, ensure that the environment (persons, workplace and packing) is well grounded. Avoid touching conductive components, e.g. data contacts.

3.2.2 Power Jumper Contacts/Field Supply

The I/O module 750-491 has no power jumper contacts.

3.2.3 CAGE CLAMP® Connectors

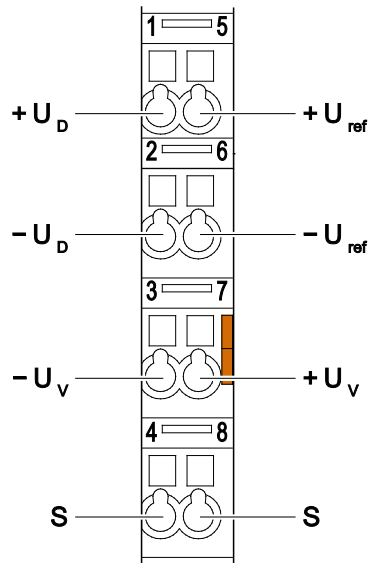


Figure 3: CAGE CLAMP® Connections

Table 5: Legend for “CAGE CLAMP® Connections” Figure

Channel	Designation	Connection	Function
1	+U _D	1	Bridge voltage +
	-U _D	2	Bridge voltage -
	-U _V	3	Supply voltage, internal -
	S	4	Shield termination
	+U _{ref}	5	Supply voltage, external +
	-U _{ref}	6	Supply voltage, external -
	+U _V	7	Supply voltage, internal +
	S	8	Shield termination

Note



Use shielded signal lines!

Only use shielded signal lines for analog signals and I/O modules which are equipped with shield clamps. Only then can you ensure that the accuracy and interference immunity specified for the respective I/O module can be achieved even in the presence of interference acting on the signal cable.

3.3 Display Elements

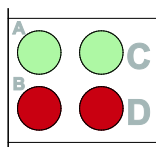


Figure 4: Display elements 750-491

Table 6: Legend for the “Display Elements” Figure 750-491

Channel	Designation	LED	State	Function
1	Function U_D	A	OFF	Not ready for operation or no or interrupted internal bus communication
			Green	Ready for operation and uninterrupted internal bus communication
	Error U_D	W	OFF	Normal operation
			Red	Bridge voltage U_D out of range or wire break
	Function U_{ref}	C	OFF	Not ready for operation or no or interrupted internal bus communication
			Green	Ready for operation and uninterrupted internal bus communication
	Error U_{ref}	D	OFF	Normal operation
			Red	Supply voltage U_{ref} out of range

3.4 Operating Elements

The I/O module 750-491 has no operating elements.

3.5 Schematic Diagram

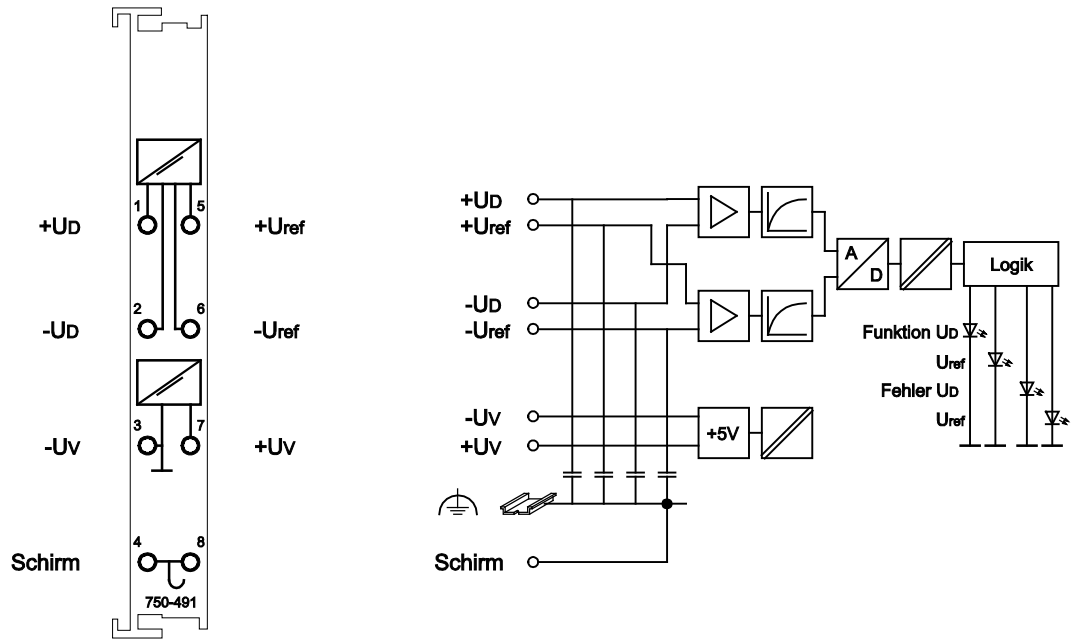


Figure 5: Schematic Switching Diagram

3.6 Technical Data

3.6.1 Device Data

Table 7: Technical Data — Device

Width	12 mm
Height (from top edge of DIN rail)	64 mm
Depth	100 mm
Weight	approx. 60 g

3.6.2 Power Supply

Table 8: Technical Data – Power Supply

Power supply	Via system voltage DC/DC
Current consumption, system voltage _{typ.} (5 VDC)	65 mA
Supply voltage U_V	5 VDC, 20 mA

3.6.3 Communication

Table 9: Technical Data – Communication

Data width, internal (internal data bus)	2 × 16 bit data, 2 × 8 bit control/status (option)
--	---

3.6.4 Inputs

Table 10: Technical Data – Inputs

Number of inputs	2, for bridge connection
Signal voltage U_D	-15 mV ... +15 mV
Signal voltage U_{ref}	+2 V ... +6 V
Inner flow resistance U_D	> 1 M Ω
Inner flow resistance U_{ref}	> 200 k Ω
Common mode voltage U_{ref}/U_V	± 35 V
Measuring error U_D	± 30 μ V
Measuring error U_{ref}	± 10 mV
Resolution	16 bits
Conversion time	
	750-491 500 ms
	750-491/000-001 125 ms
Filter	
	750-491 50 Hz
	750-491/000-001 200 Hz
Isolation (peak value)	500 V system/supply

3.6.5 Connection Type

Table 11: Technical Data – Field Wiring

Wire connection	CAGE CLAMP®
Cross section	0.08 mm ² ... 2.5 mm ² , AWG 28 ... 14
Stripped lengths	8 mm ... 9 mm / 0.33 in

Table 12: Technical Data – Data Contacts

Data contacts	Slide contact, hard gold plated, self-cleaning
---------------	--

3.6.6 Climatic Environmental Conditions

Table 13: Technical Data – Climatic Environmental Conditions

Operating temperature range	0 °C ... 55 °C
Storage temperature range	-25 °C ... +85 °C
Relative humidity without condensation	Max. 95 %
Resistance to harmful substances	Acc. to IEC 60068-2-42 and IEC 60068-2-43
Maximum pollutant concentration at relative humidity < 75 %	SO ₂ ≤ 25 ppm H ₂ S ≤ 10 ppm
Special conditions	Ensure that additional measures for components are taken, which are used in an environment involving: – dust, caustic vapors or gases – ionizing radiation

3.7 Approvals

Information



More information about approvals.

Detailed references to the approvals are listed in the document “Overview Approvals **WAGO-I/O-SYSTEM 750**”, which you can find via the internet under: www.wago.com > SERVICES > DOWNLOADS > Additional documentation and information on automation products > WAGO-I/O-SYSTEM 750 > System Description.

The following approvals have been granted to the basic version and all variants of 750-491 I/O modules:



Conformity Marking



Korea Certification

MSIP-REM-W43-AIM750

The following approvals have been granted to the basic version of 750-491 I/O modules:



Federal Maritime and Hydrographic Agency

3.8 Standards and Guidelines

All variations of 750-491 I/O modules meet the following requirements on emission and immunity of interference:

EMC CE-Emission of interference acc. to EN 61000-6-4

EMC CE-Immunity to interference acc. to EN 61000-6-2

4 Process Image

Note



Mapping of process data in the process image of fieldbus systems

The representation of the I/O modules' process data in the process image depends on the fieldbus coupler/controller used. Please take this information as well as the particular design of the respective control/status bytes from the section "Fieldbus Specific Design of the Process Data" included in the description concerning the process image of the fieldbus coupler/controller used.

Note



Evaluation of Status Byte

Some fieldbus systems can process status information of process value by means of a status byte.

This status byte can be displayed via the commissioning tool **WAGO-I/O-CHECK**.

However, processing via the fieldbus coupler/controller is optional, which means that accessing or parsing the status information depends on the fieldbus system.

The bridge voltage between $+U_D$ and $-U_D$ is output at a resolution of 500 nV/digit, i.e., 10 mV corresponds to an output value of 20000 in data bytes D0 and D1.

The supply voltage of the measuring bridge is output at a resolution of 500 μ V/digit, i.e., 10 V corresponds to an output value of 20000 in data bytes D2 and D3.

Table 14: Process Image – Signal Voltage U_D

Signal voltage U_D ± 15 mV	Numeric value			Status Byte Hex.	LED
	Binary Output value	Hex.	Dec.		
< ca. -15.5000	'0111.1111.1111.1111'	0x7FFF	32767	0x41	ON
ca. -15.5000	'0000.0000.0000.0000'	0x0000	0	0x00	OFF
-15.0000	'1000.1010.1101.0000'	0x8AD0	-30000	0x00	OFF
-10.0000	'1011.0001.1110.0000'	0xB1E0	-20000	0x00	OFF
-5.0000	'1101.1000.1111.0000'	0xD8F0	-10000	0x00	OFF
-0.0005	'1111.1111.1111.1111'	0xFFFF	-1	0x00	OFF
0.0000	'0000.0000.0000.0000'	0x0000	0	0x00	OFF
0.0005	'0000.0000.0000.0001'	0x0001	1	0x00	OFF
5.0000	'0010.0111.0001.0000'	0x2710	10000	0x00	OFF
10.0000	'0100.1110.0010.0000'	0x4E20	20000	0x00	OFF
15.0000	'0111.0101.0011.0000'	0x7530	30000	0x00	OFF
> ca. 15.5000	'0111.1111.1111.1111'	0x7FFF	32767	0x41	ON
Wire break	'0111.1111.1111.1111'	0x7FFF	32767	0x41	ON

Table 15: Process Image – Signal Voltage V_{ref}

Signal voltage U_{ref} ± 10 V	Numeric value			Status Byte Hex.	LED
	Binary Output value	Hex.	Dec.		
< ca. -13.0000	'0111.1111.1111.1111'	0x7FFF	32767	0x41	ON
-10.0000	'1011.0001.1110.0000'	0xB1E0	-20000	0x00	OFF
-5.0000	'1101.1000.1111.0000'	0xD8F0	-10000	0x00	OFF
-1.0000	'1111.1000.0011.0000'	0xF830	-2000	0x00	OFF
-0.0003	'1111.1111.1111.1111'	0xFFFF	-1	0x00	OFF
0.0000	'0000.0000.0000.0000'	0x0000	0	0x00	OFF
0.0003	'0000.0000.0000.0001'	0x0001	1	0x00	OFF
1.0000	'0000.0111.1101.0000'	0x07D0	2000	0x00	OFF
5.0000	'0010.0111.0001.0000'	0x2710	10000	0x00	OFF
10.0000	'0100.1110.0010.0000'	0x4E20	20000	0x00	OFF
> ca. 13.0000	'0111.1111.1111.1111'	0x7FFF	32767	0x41	ON

4.1 Application Example

In the test setup, a load cell is connected to the I/O module.

The load cell has a 5V supply voltage (U_V) from the I/O module. The reference voltage (U_{ref}) is detected by the U_{ref} channel and the bridge voltage by the U_D channel.

Technical data of the load cell: 5 kg corresponds to 2 mV/V

The weight is calculated as follows: $g = (U_D / 2 \text{ mV}) / (U_{ref} / 1 \text{ V}) \times 5 \text{ kg}$

With $U_D = D1D0 / 20000 \times 10 \text{ mV}$ and $U_{ref} = D3D2 / 20000 \times 10 \text{ V}$
follows $g = D1D0 / D3D2 \times 2.5 \text{ kg}$.

5 Mounting

5.1 Mounting Sequence

Fieldbus couplers/controllers and I/O modules of the WAGO-I/O-SYSTEM 750/753 are snapped directly on a carrier rail in accordance with the European standard EN 50022 (DIN 35).

The reliable positioning and connection is made using a tongue and groove system. Due to the automatic locking, the individual devices are securely seated on the rail after installation.

Starting with the fieldbus coupler/controller, the I/O modules are mounted adjacent to each other according to the project design. Errors in the design of the node in terms of the potential groups (connection via the power contacts) are recognized, as the I/O modules with power contacts (blade contacts) cannot be linked to I/O modules with fewer power contacts.

NOTICE

Insert I/O modules only from the proper direction!

All I/O modules feature grooves for power jumper contacts on the right side. For some I/O modules, the grooves are closed on the top. Therefore, I/O modules featuring a power jumper contact on the left side cannot be snapped from the top. This mechanical coding helps to avoid configuration errors, which may destroy the I/O modules. Therefore, insert I/O modules only from the right and from the top.

Note



Don't forget the bus end module!

Always plug a bus end module 750-600 onto the end of the fieldbus node! You must always use a bus end module at all fieldbus nodes with WAGO-I/O-SYSTEM 750 fieldbus couplers/controllers to guarantee proper data transfer.

5.2 Inserting and Removing Devices

NOTICE

Perform work on devices only if they are de-energized!

Working on energized devices can damage them. Therefore, turn off the power supply before working on the devices.

5.2.1 Inserting the I/O Module

1. Position the I/O module so that the tongue and groove joints to the fieldbus coupler/controller or to the previous or possibly subsequent I/O module are engaged.

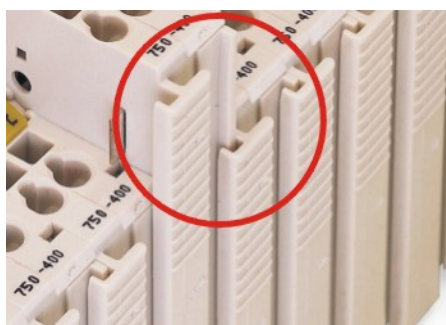


Figure 6: Insert I/O Module (Example)

2. Press the I/O module into the assembly until the I/O module snaps into the carrier rail.

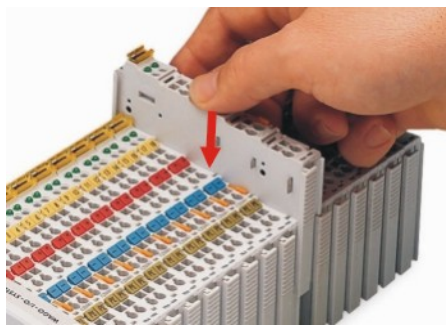


Figure 7: Snap the I/O Module into Place (Example)

With the I/O module snapped in place, the electrical connections for the data contacts and power jumper contacts (if any) to the fieldbus coupler/controller or to the previous or possibly subsequent I/O module are established.

5.2.2 Removing the I/O Module

1. Remove the I/O module from the assembly by pulling the release tab.

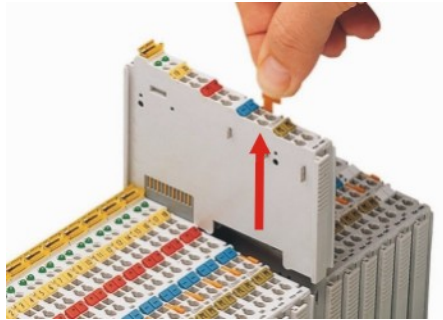


Figure 8: Removing the I/O Module (Example)

Electrical connections for data or power jumper contacts are disconnected when removing the I/O module.

6 Connect Devices

6.1 Connecting a Conductor to the CAGE CLAMP®

The WAGO CAGE CLAMP® connection is appropriate for solid, stranded and finely stranded conductors.

Note



Only connect one conductor to each CAGE CLAMP®!

Only one conductor may be connected to each CAGE CLAMP®.

Do not connect more than one conductor at one single connection!

If more than one conductor must be routed to one connection, these must be connected in an up-circuit wiring assembly, for example using WAGO feed-through terminals.

Exception:

If it is unavoidable to jointly connect 2 conductors, then you must use a ferrule to join the wires together. The following ferrules can be used:

Length:	8 mm
Nominal cross section _{max.} :	1 mm ² for 2 conductors with 0.5 mm ² each
WAGO product:	216-103 or products with comparable properties

1. For opening the CAGE CLAMP® insert the actuating tool into the opening above the connection.
2. Insert the conductor into the corresponding connection opening.
3. For closing the CAGE CLAMP® simply remove the tool. The conductor is now clamped firmly in place.

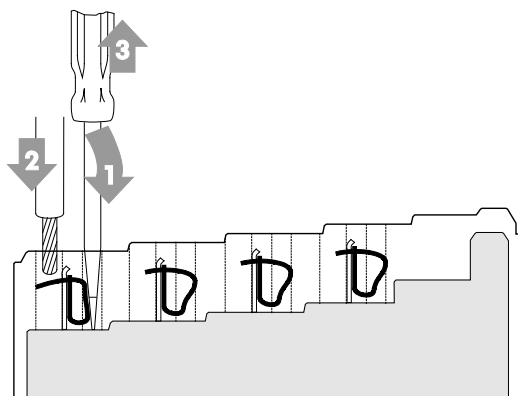


Figure 9: Connecting a Conductor to a CAGE CLAMP®

6.2 Connection Examples



Note

Use shielded signal lines!

Only use shielded signal lines for analog signals and I/O modules which are equipped with shield clamps. Only then can you ensure that the accuracy and interference immunity specified for the respective I/O module can be achieved even in the presence of interference acting on the signal cable.

The measuring bridge connected to the 750-491 I/O module can be powered by the I/O module via the $+U_V$ and $-U_V$ connections or by an external voltage source (see figures below).

If the measuring bridge is powered by an external voltage supply, a common ground potential must be established by a bridge from $-U_V$ of the I/O module to $-U_V$ of the external voltage supply.

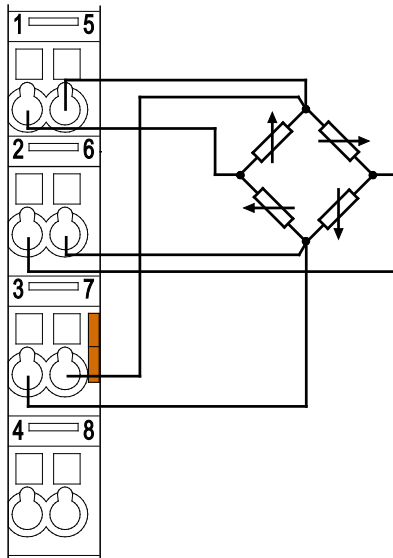


Figure 10: Connection of a Measuring Bridge to a Supply Voltage via the I/O Module

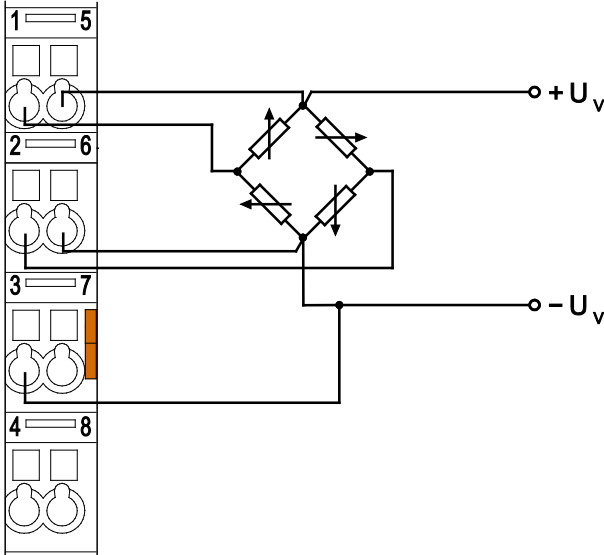


Figure 11: Connection of a Measuring Bridge to an External Supply Voltage

List of Figures

Figure 1: View of device	14
Figure 2: Data Contacts	15
Figure 3: CAGE CLAMP® Connections	16
Figure 4: Display elements 750-491	17
Figure 5: Schematic Switching Diagram	18
Figure 6: Insert I/O Module (Example)	25
Figure 7: Snap the I/O Module into Place (Example)	25
Figure 8: Removing the I/O Module (Example)	26
Figure 9: Connecting a Conductor to a CAGE CLAMP®	27
Figure 10: Connection of a Measuring Bridge to a Supply Voltage via the I/O Module	28
Figure 11: Connection of a Measuring Bridge to an External Supply Voltage	29

List of Tables

Table 1: Versions.....	5
Table 2: Number Notation.....	8
Table 3: Font Conventions	8
Table 4: Legend for Figure “View”	14
Table 5: Legend for “CAGE CLAMP® Connections” Figure	16
Table 6: Legend for the “Display Elements” Figure750-491.....	17
Table 7: Technical Data — Device	19
Table 8: Technical Data – Power Supply.....	19
Table 9: Technical Data – Communication.....	19
Table 10: Technical Data – Inputs	19
Table 11: Technical Data – Field Wiring.....	20
Table 12: Technical Data – Data Contacts	20
Table 13: Technical Data – Climatic Environmental Conditions	20
Table 14: Process Image – Signal Voltage U_D	22
Table 15: Process Image – Signal Voltage V_{ref}	23

WE! INNOVATE!

WAGO Kontakttechnik GmbH & Co. KG
Postfach 2880 • D-32385 Minden
Hansastraße 27 • D-32423 Minden
Phone: 05 71/8 87 – 0
Fax: 05 71/8 87 – 1 69
E-Mail: info@wago.com
Internet: <http://www.wago.com>

