



WAGO-I/O-SYSTEM 750

16DO 24V DC 0.5A

750-1504

16-Channel Digital Output Module 24 V DC, High-side switching

Version 1.0.1

© 2012 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 750 Series 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	15
3.2	Connectors.....	16
3.2.1	Data Contacts/Internal Bus.....	16
3.2.2	Power Contacts/Field Supply	17
3.2.3	CAGE CLAMP® Connections	18
3.3	Display Elements	19
3.4	Operating Elements.....	19
3.5	Schematic Diagram	20
3.6	Technical Data	21
3.6.1	Device data	21
3.6.2	Communication	21
3.6.3	Supply.....	21
3.6.4	Outputs	21
3.6.5	Wire Connection.....	22
3.7	Approvals	23
3.8	Standards and Guidelines.....	23
4	Assembly	24
4.1	Assembly Sequence	24
4.2	Inserting and Removing Devices	25
4.2.1	Inserting I/O Module	25
4.2.2	Removing the I/O Module.....	26
5	Connect Devices	27
5.1	Connecting a conductor to the CAGE CLAMP® S.....	27
6	Process Image	28
7	Using Interference-Free IO Modules in Safety Related Applications...	29
7.1	Important Notes.....	30
7.2	Connecting the IO Module to Safety Switching Devices or Safety Modules.....	31
7.2.1	General Structure of a Potential Group	31

7.2.2	Examples of Connection.....	32
	List of Figures	33
	List of Tables.....	34

1 Notes about this Documentation



Note

Keep this documentation!

The operating instructions are part of the product and shall be kept for the entire lifetime of the device. They shall be transferred to each subsequent owner or user of the device. Care must also be taken to ensure that any supplement to these instructions are included, if applicable.

1.1 Validity of this Documentation

This documentation is only applicable to the I/O module 750-1504 (16DO 24V DC 0.5A) of the WAGO-I/O-SYSTEM 750 series.

The I/O module 750-1504 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 1: 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 2: Font Conventions

Font type	Indicates
<i>italic</i>	Names of paths and data files are marked in italic-type. e.g.: <i>C:\Programme\WAGO-I/O-CHECK</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 Series 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 750 Series in Compliance with Underlying Provisions

Couplers, 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 the actuators or higher-level control systems. Using programmable controllers, the signals can also be (pre-)processed.

The components 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 components in wet and dusty environments is prohibited.

Operating 750 Series components 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 on "WAGO-I/O-SYSTEM 750" → "System Description" → "Technical Data" 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 components 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 components.

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 components while energized!

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

DANGER

Installation 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

Cleaning 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 you may destroy by electrostatic discharge when you touch. Pay attention while handling the devices to good grounding of the environment (persons, job and packing).

3 Device Description

The 750-1504 Digital Output Module transmits binary control signals from the automation device to the connected actuators (e.g., solenoid valves, contactors, transmitters, relays or other electrical loads).

The I/O module has 16 output channels, providing a direct connection to single-wire actuators.

The output signals are connected to the CAGE CLAMP® connections DO 1 ... DO 16.

The assignment of the connections is described in the "Connections" section.



Note

Use field side connection modules!

Where required, use the appropriate field side connection modules for power supply to the actuators.

NOTICE

Limit all induced voltage!

The electronic components of the I/O module can be damaged by the induced voltage produced when inductive loads are de-activated.

An appropriate protection circuit, e.g., a recovery diode, must be installed in parallel to the load to limit this induced voltage.

NOTICE

Provide for overload protection!

Overloading can damage the electronic components of the I/O module.

A fused supply module (750-601) must be installed upstream of the I/O module to protect it against overloading!

The I/O module outputs provide high-side switching. If the signal status of an output channel is at "high" the 24V potential for field power will be switched to the appropriate output connection.

A green LED indicates the switched status of each channel.

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

The I/O module receives the 24V voltage supply for the field level from an upstream I/O module or from the fieldbus coupler/controller via the power contacts used as blade contacts. It then provides this potential to subsequent I/O modules via the power contacts used as spring contacts.

NOTICE

Do not exceed maximum current via power contacts!

The maximum current to flow through the power contacts is 10 A.

Greater currents can damage the power contacts.

When configuring the system, ensure that this current is not exceeded. If exceeded, an additional potential feed module must be used.

Note

**Use potential feed module for Ground (earth)!**

The I/O module has no power contacts for PE intake and transfer. Use a potential feed module when a PE feed is needed for the subsequent I/O modules.

The field level and the system level are electrically isolated from one another.

With consideration of the power jumper contacts, the individual modules can be arranged in any combination when configuring the fieldbus node. An arrangement in groups within the group of potentials is not necessary.

The I/O module 750-1504 can be used with all fieldbus couplers/controllers of the WAGO-I/O-SYSTEM 750.

3.1 View

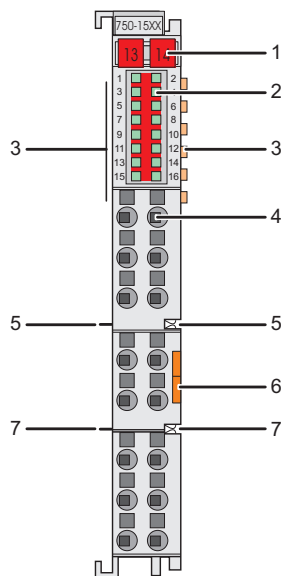


Figure 1: View

Table 3: Caption acc. to figure “View”

No.	Designation	Description	Details see chapter
1	---	Marking possibility with Mini-WSB	---
2	1 ... 16	Status-LEDs Outputs DO 1 ... DO 16	“Device description” > “Display elements”
3	---	Data contacts	“Assembly” > “Mounting device”
4	1 ... 16	CAGE CLAMP®-supplies Outputs DO 1 ... DO 16	“Device description” > “Connections”
5	---	Power jumper contacts +24 V	“Device description” > “Connections”
6	---	Release clip	“Assembly” > “Mounting device”
7	---	Power jumper contacts 0 V	“Device description” > “Connections”

3.2 Connectors

3.2.1 Data Contacts/Internal Bus

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

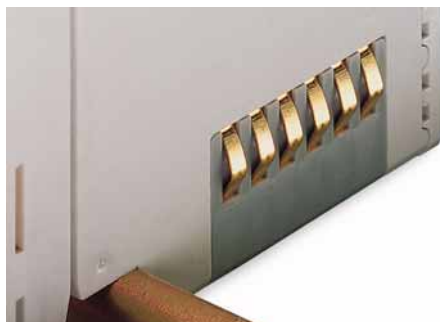


Figure 2: Data contacts

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

3.2.2 Power Contacts/Field Supply

CAUTION

Risk of injury due to sharp-edged male contacts!

The male contacts are sharp-edged. Handle the module carefully to prevent injury.

The I/O module 750-1504 has 2 self-cleaning power jumper contacts that supply and transmit power for the field side. The contacts on the left side of the I/O module are designed as male contacts and the contacts on the right side as spring contacts.

Table 4: Power jumper contacts

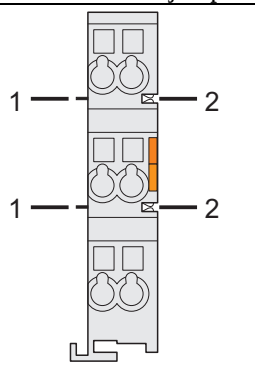
	Connection	Type	Number	Function
	1	Blade contact	2	Infeed of the field supply voltage (U_V and 0 V)
	2	Spring contact	2	Forwarding of the field supply voltage (U_V and 0 V)

Figure 3: Power jumper contacts

NOTICE

Do not exceed maximum current via power contacts!

The maximum current to flow through the power contacts is 10 A.

Greater currents can damage the power contacts.

When configuring the system, ensure that this current is not exceeded. If exceeded, an additional potential feed module must be used.

Note

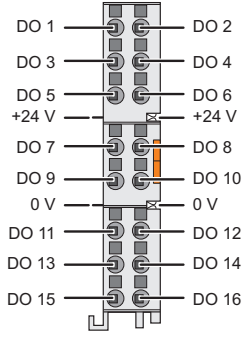


Use potential feed module for Ground (earth)!

The I/O module has no power contacts for PE intake and transfer. Use a potential feed module when a PE feed is needed for the subsequent I/O modules.

3.2.3 CAGE CLAMP® Connections

Table 5: Connections

 Figure 4: Connections	Connection	Channel	Designation	Function
	1	1	Output DO 1	Output DO 1: Signal voltage
	2	2	Output DO 2	Output DO 2: Signal voltage
			.	
			.	
			.	
	15	15	Output DO 15	Output DO 15: Signal voltage
	16	16	Output DO 16	Output DO 16: Signal voltage
	Power jumper contacts	-	+24 V	Field supply voltage +24 V
	Power jumper contacts	-	0 V	Field supply voltage 0 V

3.3 Display Elements

Table 6: Display elements

Diagram of a 16-channel LED display module. The module is labeled "750-150X" at the top. It features two rows of 8 LEDs each, labeled DO 1 through DO 16. The top row (DO 1-8) has red LEDs, and the bottom row (DO 9-16) has green LEDs. The LEDs are arranged in a grid with pins numbered 1 through 14 on the sides.

Figure 5: Display elements

LED	Channel	Designation	State	Function
1	1	State DO 1	off	Output DO 1: Signal voltage (0)
			green	Output DO 1: Signal voltage (1)
2	2	State DO 2	off	Output DO 2: Signal voltage (0)
			green	Output DO 2: Signal voltage (1)
			.	
			.	
			.	
15	15	State DO 15	off	Output DO 15: Signal voltage (0)
			green	Output DO 15: Signal voltage (1)
16	16	State DO 16	off	Output DO 16: Signal voltage (0)
			green	Output DO 16: Signal voltage (1)

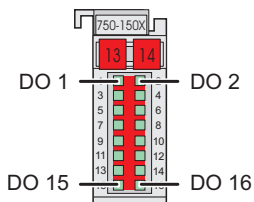


Figure 5: Display elements

3.4 Operating Elements

The I/O module 750-1504 has no operating elements.

3.5 Schematic Diagram

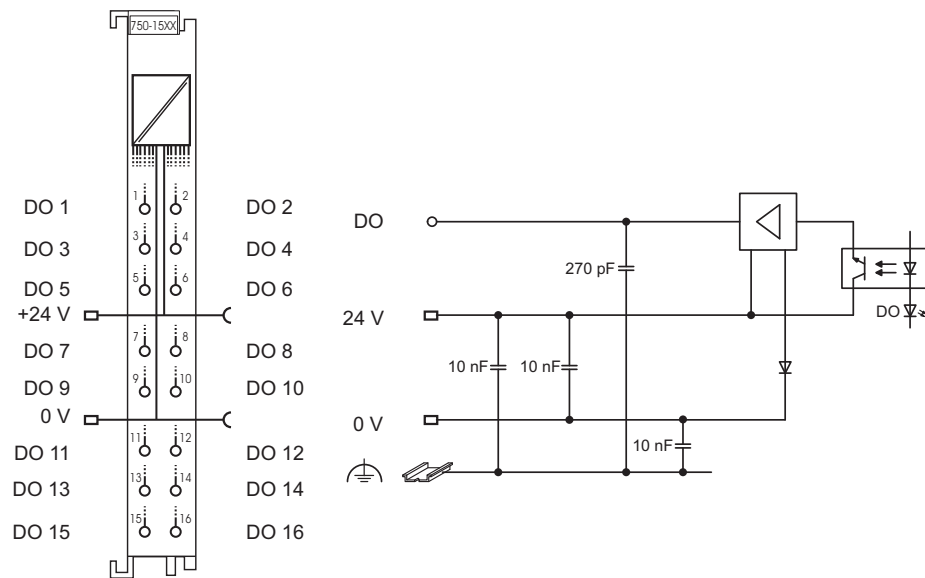


Figure 6: Schematic diagram

3.6 Technical Data

3.6.1 Device data

Table 7: Technical data device

Width	12 mm
Height (from upper edge of 35 DIN rail)	67 mm
Depth	100 mm
Weight	50 g
Storage temperature	-20 °C ... +85 °C
Operating temperature	0 °C ... +55 °C

3.6.2 Communication

Table 8: Technical data communication

Bit width	16 bits
-----------	---------

3.6.3 Supply

Table 9: Technical data supply

Voltage supply	Via system supply (internal bus) and power jumper contacts
Supply voltage (U _v) Field supply	DC 24 V (-25 % ... +30 %)
Current consumption Field supply	approx. 29 mA
Current consumption System supply	approx. 40 mA
Isolation System/Supply	500 V

3.6.4 Outputs

Table 10: Technical data outputs

No. of outputs	16
Output type	High-side switching
Type of load	Lamps, resistive and inductive load
Switching frequency _{max.}	1 kHz
Output current _{max.} , 1 Output	0.5 A, short-circuit protected
L _{max.} (V _{cc} = 24 V, R _{Load} = 48 Ohm)	2 H
Voltage quenching circuit _{max.}	V _{cc} - 47 V

3.6.5 Wire Connection

Table 11: Technical Data Wire Connection

Wire connection	CAGE CLAMP [®] S
Cross section	0.08 ... 1.5 mm ² / AWG 28 ... 16
Stripped lengths	8 ... 9 mm / 0.33 in

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 on the DVD "AUTOMATION Tools and Docs" (Item-No.: 0888-0412) or via the internet under: www.wago.com → Service → Documentation → WAGO-I/O-SYSTEM 750 → System Description.

The following approvals have been granted to 750-1504 I/O modules:



Conformity Marking



cUL_{US} (UL508)

The following ship approvals have been granted to 750-1504 I/O modules:



ABS (American Bureau of Shipping)



Federal Maritime and Hydrographic Agency



DNV (Det Norske Veritas) Class B



GL (Germanischer Lloyd) Cat. A, B, C, D (EMC 1)



KR (Korean Register of Shipping)

3.8 Standards and Guidelines

750-1504 I/O modules meet the following requirements on emission and immunity of interference:

EMC CE-Emission of interference	acc. to EN 61000-6-3: 2007
EMC CE-Immunity to interference	acc. to EN 61000-6-2: 2005
EMC marine applications-Emission of interference	acc. to Germanischer Lloyd (2003)
EMC marine applications-Immunity to interference	acc. to Germanischer Lloyd (2003)

4 Assembly

4.1 Assembly Sequence

All system components can be 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 components are securely seated on the rail after installation.

Starting with the coupler/controller, the bus modules are assembled 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 bus modules with power contacts (male contacts) cannot be linked to bus modules with fewer power contacts.

CAUTION

Risk of injury due to sharp-edged male contacts!

The male contacts are sharp-edged. Handle the module carefully to prevent injury.

NOTICE

Connect the I/O modules in the required order!

Never plug bus modules from the direction of the end terminal. A ground wire power contact, which is inserted into a terminal without contacts, e.g. a 4-channel digital input module, has a decreased air and creepage distance to the neighboring contact in the example DI4.

NOTICE

Assemble the I/O modules in rows only if the grooves are open!

Please take into consideration that some bus modules have no or only a few power jumper contacts. The design of some modules does not allow them to be physically assembled in rows, as the grooves for the male contacts are closed at 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 the WAGO I/O System 750 fieldbus couplers/controllers to guarantee proper data transfer.

4.2 Inserting and Removing Devices



DANGER

Use caution when interrupting the PE!

Make sure that people or equipment are not placed at risk when removing an I/O module and the associated PE interruption. To prevent interruptions, provide ring feeding of the ground conductor, see section "Grounding/Ground Conductor" in manual "System Description WAGO-I/O-SYSTEM 750".

NOTICE

Perform work on devices only if the system is de-energized!

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

4.2.1 Inserting 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.

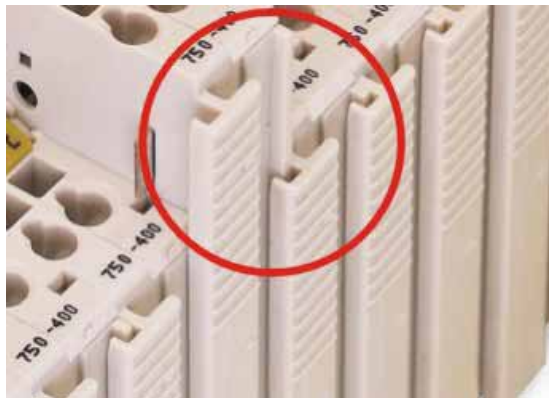


Figure 7: Insert I/O module

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

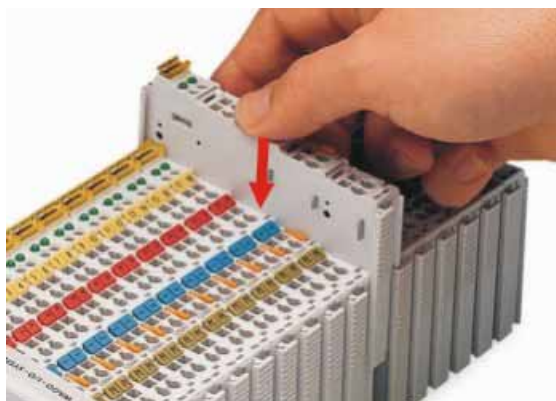


Figure 8: Snap the I/O module into place

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

4.2.2 Removing the I/O Module

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

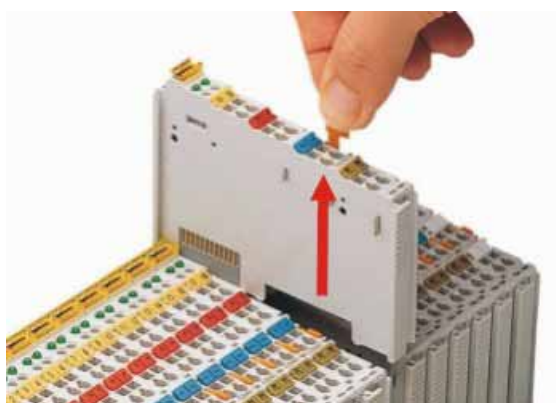


Figure 9: Removing the I/O module

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

5 Connect Devices

5.1 Connecting a conductor to the CAGE CLAMP® S

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



Note

Only connect one conductor to each CAGE CLAMP® S connection!
Only one conductor may be connected to each CAGE CLAMP® S connection.
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.

Terminate both solid and stranded or ferruled conductors by simply pushing them in - no tool required. For all other types of conductors, CAGE CLAMP® S must be opened for connection with an operating tool with a 2.5 mm blade (order no. 210-719).

1. To open the CAGE CLAMP® S insert the actuating tool into the opening above the connection.
2. Insert the conductor into the corresponding connection opening.
3. To close the CAGE CLAMP® S simply remove the tool - the conductor is then clamped firmly in place.

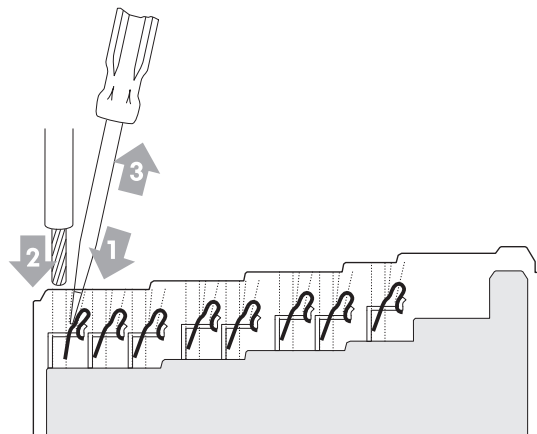


Figure 10: Connecting a conductor to a CAGE CLAMP® S

6 Process Image

Table 12: Outputbyte D0

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DO 8	DO 7	DO 6	DO 5	DO 4	DO 3	DO 2	DO 1
DO 1	Signal state DO 1 – Digital Output Channel 1						
DO 2	Signal state DO 2 – Digital Output Channel 2						
DO 3	Signal state DO 3 – Digital Output Channel 3						
DO 4	Signal state DO 4 – Digital Output Channel 4						
DO 5	Signal state DO 5 – Digital Output Channel 5						
DO 6	Signal state DO 6 – Digital Output Channel 6						
DO 7	Signal state DO 7 – Digital Output Channel 7						
DO 8	Signal state DO 8 – Digital Output Channel 8						

Table 13: Outputbyte D1

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DO 16	DO 15	DO 14	DO 13	DO 12	DO 11	DO 10	DO 9
DO 9	Signal state DO 9 – Digital Output Channel 9						
DO 10	Signal state DO 10 – Digital Output Channel 10						
DO 11	Signal state DO 11 – Digital Output Channel 11						
DO 12	Signal state DO 12 – Digital Output Channel 12						
DO 13	Signal state DO 13 – Digital Output Channel 13						
DO 14	Signal state DO 14 – Digital Output Channel 14						
DO 15	Signal state DO 15 – Digital Output Channel 15						
DO 16	Signal state DO 16 – Digital Output Channel 16						

7 Using Interference-Free IO Modules in Safety Related Applications

The 750-1504 I/O module is suited for use in interference-free safety circuits.

If the field side supply is shut down via a safety switching device, the safety function of the module is not active.

When the interference-free IO module is used correctly in a safety related application, neither the SIL or Performance Level achieved by the circuit nor the category will be influenced.

This requires that you adhere to the following notes and connection diagrams!

7.1 Important Notes

WARNING

Use PELV supply only!

Only a power supply unit with protective extra-low voltage (PELV) shall be used for the 24 V power supply.

WARNING

Note maximum voltage!

Please note that a maximum voltage $U_{\max}$ only can act on the reaction-free I/O module in the event of a failure because irreparable damage could occur to the module otherwise.

For the reaction-free I/O module, the field supply voltage is:

$$U_{\max} < 32 \text{ V}$$

NOTICE

Note IP54 protection class!

IP54 protection class is absolutely mandatory. This means that the interference-free digital output module shall only be integrated and operated in switch boxes or switch cabinets complying with IP54 or higher.

NOTICE

Avoid reverse supply of output!

The 24 V power supply shall never be applied to the output of an interference-free digital output module. This wiring failure will not be detected by the system.

NOTICE

Avoid reverse supply of module!

A group of interference-free digital output modules shall only be supplied using a safety switching device. Reverse supply must absolutely be avoided.

NOTICE

Avoid short circuits between outputs!

Short circuits between outputs of different interference-free digital output modules must absolutely be avoided as they are not detected by the system.

According to EN ISO 13849-2, the following measures are required for an “external voltage” fault exclusion:

- Use of cables routed separately and
- Protection from external damage (e.g., caused by cable duct).

7.2 Connecting the IO Module to Safety Switching Devices or Safety Modules

7.2.1 General Structure of a Potential Group

When using the interference-free IO module 750-1504 in safety related applications, the modules belonging to a safety switching device shall be combined to form a potential group. Power to the potential group shall be supplied via a power supply module 750-601 or 750-602 or via filter module 750-626. Either a power supply module or a separation module without power jumper contacts (750-616) must be connected at the end of the potential group.

Safety switch module/
Safety module

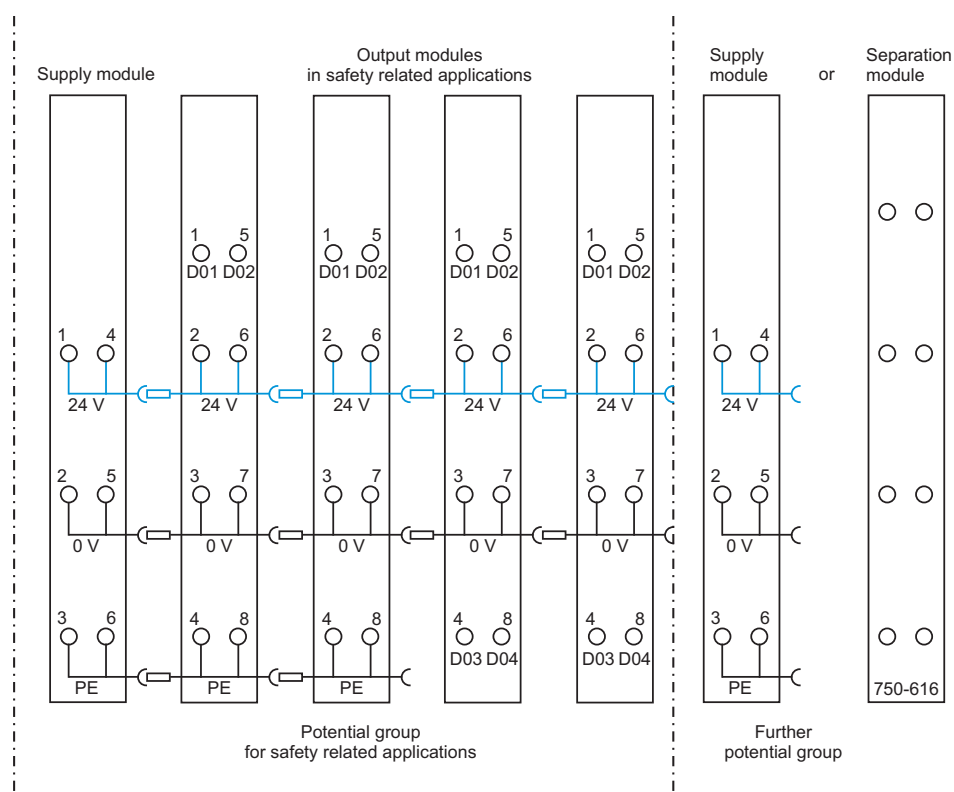


Figure 11: Potential group for safety related applications

7.2.2 Examples of Connection

Two-Channel Single-Pole Power Supply Disconnection

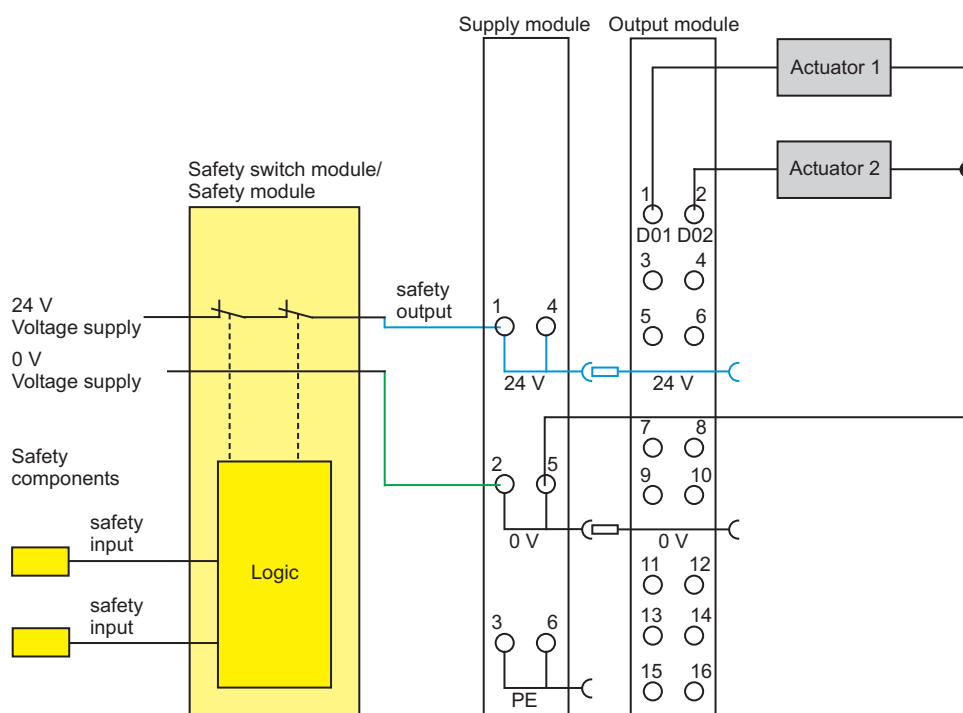


Figure 12: Two-channel single-pole disconnection

Two-Channel Double-Pole Power Supply Disconnection

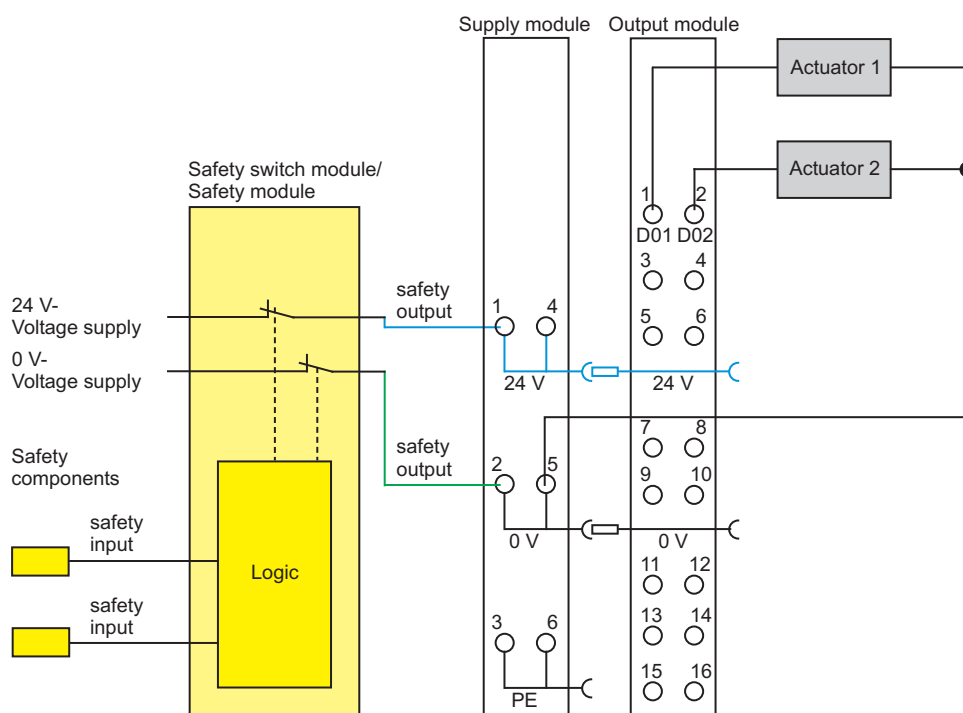


Figure 13: Two-channel double-pole disconnection

List of Figures

Figure 1: View.....	15
Figure 2: Data contacts.....	16
Figure 3: Power jumper contacts.....	17
Figure 4: Connections	18
Figure 5: Display elements.....	19
Figure 6: Schematic diagram.....	20
Figure 7: Insert I/O module	25
Figure 8: Snap the I/O module into place.....	26
Figure 9: Removing the I/O module.....	26
Figure 10: Connecting a conductor to a CAGE CLAMP® S.....	27
Figure 11: Potential group for safety related applications	31
Figure 12: Two-channel single-pole disconnection	32
Figure 13: Two-channel double-pole disconnection	32

List of Tables

Table 1: Number Notation.....	8
Table 2: Font Conventions	8
Table 3: Caption acc. to figure “View”	15
Table 4: Power jumper contacts	17
Table 5: Connections.....	18
Table 6: Display elements	19
Table 7: Technical data device.....	21
Table 8: Technical data communication	21
Table 9: Technical data supply.....	21
Table 10: Technical data outputs.....	21
Table 11: Technical Data Wire Connection	22
Table 12: Outputbyte D0.....	28
Table 13: Outputbyte D1.....	28

WAGO Kontakttechnik GmbH & Co. KG
Postfach 2880 • D-32385 Minden
Hansastraße 27 • D-32423 Minden
Phone: +49/5 71/8 87 – 0
Fax: +49/5 71/8 87 – 1 69
E-Mail: info@wago.com
Internet: <http://www.wago.com>

