TECHDOCS

WAGO I/O System 750/753

4-channel digital input; 24 VDC; 3,0 ms; 3-wire connection; high-side switching

750-1420



Product manual
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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.

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1 Provisions

1.1 Scope of Applicability

This document applies to the following product:

750-1420 (4DI 24V DC 3.0ms/ 3-wire) 4-channel digital input; 24 VDC; 3,0 ms; 3-wire connection; high-side switching.

From hardware version	03
From firmware version	--
Product detail page	**www.wago.com/750-1420**

Note

Note applicable documents!

The complete operating instructions for the product consists of several, applicable documents. The product must only be installed and operated in accordance with the complete operating instructions. Knowledge of all applicable documents is required for proper use. You can find all documents and information on the product detail page.

Applicable document

System Manual I/O System 750/753

- Provisions
- Safety
- Planning
- Transport and Storage
- Assembly and Disassembly
- Conductor Termination
- Decommissioning

2 Overview

The I/O module acquires binary control signals from field devices (e.g., sensors, encoders, switches or proximity switches).

The I/O module has four input channels and directly connects to 3-wire sensors.

Each input channel has a noise-rejection RC filter with a 3.0 ms time constant.

The I/O module inputs provide high-side switching. If the 24 V potential for field power is switched to an input connection, the signal status for the corresponding input channel is set to “high.”

For each channel, a green status LED indicates the signal status.

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

The I/O module can be operated on all head stations of the WAGO I/O System 750/753.

3 Properties

3.1 View

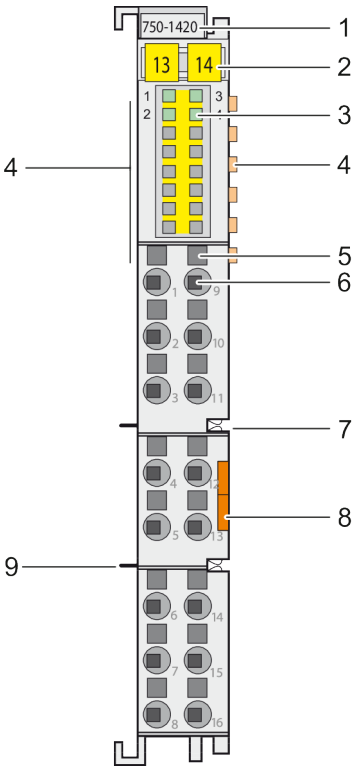


Figure 1: View

1	Item number	Scope of Applicability [▸ 4]
2	Slot for Mini-WSB (optional)	System Manual I/O System 750/753
3	Status LEDs	Indicators [▸ 7]
4	Data contacts	System Manual I/O System 750/753
5	Access to open the associated Push-in CAGE CLAMP® connection	System Manual I/O System 750/753
6	Push-in CAGE CLAMP® connection	Wiring Interface [▸ 8] and System Manual I/O System 750/753
7	Power jumper contacts (spring)	Power Jumper Contacts [▸ 9] and System Manual I/O System 750/753
8	Release tab	System Manual I/O System 750/753
9	Power jumper contacts (blade)	Power Jumper Contacts [▸ 9] and System Manual I/O System 750/753

3.2 Indicators

For each channel, a green status LED indicates the signal status.

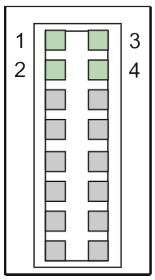


Figure 2: Indicators

Channel	Designation	LED	State	Function
1	DI 1 status	1	Off	DI 1 input: signal voltage (0)
			Green	DI 1 input: signal voltage (1)
2	DI 2 status	2	Off	DI 2 input: signal voltage (0)
			Green	DI 2 input: signal voltage (1)
3	DI 3 status	3	Off	DI 3 input: signal voltage (0)
			Green	DI 3 input: signal voltage (1)
4	DI 4 status	4	Off	DI 4 input: signal voltage (0)
			Green	DI 4 input: signal voltage (1)

3.3 Wiring Interface

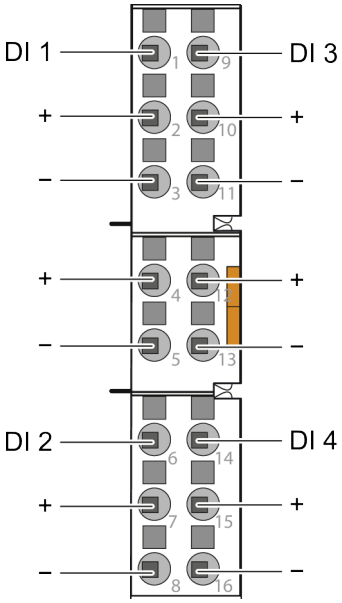


Figure 3: Push-in CAGE CLAMP® Connections

Channel	Designation	Connection	Function
1	DI 1	1	Input DI 1: signal voltage
	+	2	Input DI 1: +24 V sensor supply
	–	3	Input DI 1: 0 V sensor supply
2	DI 2	6	Input DI 2: signal voltage
	+	7	Input DI 2: +24 V sensor supply
	–	8	Input DI 2: 0 V sensor supply
3	DI 3	9	Input DI 3: signal voltage
	+	10	Input DI 3: +24 V sensor supply
	–	11	Input DI 3: 0 V sensor supply
4	DI 4	14	Input DI 4: signal voltage
	+	15	Input DI 4: +24 V sensor supply
	–	16	Input DI 4: 0 V sensor supply
-	+	4	+24 V sensor supply
		12	
	–	5	0 V sensor supply
		13	

3.4 Power Jumper Contacts

The potential for the field supply is fed in via the blade contacts and passed on via the spring contacts.

For additional information on the Power Jumper Contacts, please see
🕮 System Manual I/O System 750/753.

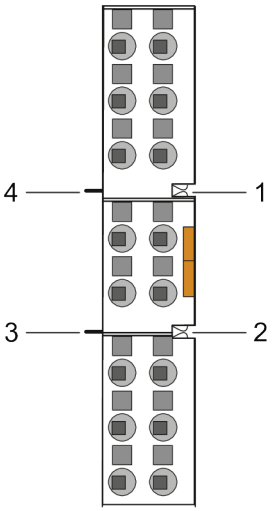


Figure 4: Power Jumper Contacts

No.	Type
1	Groove with spring contact
2	
3	Blade contact
4	

Arrangement in the Bus Node

For mechanical arrangement of the I/O module, the previous component must have at least 2 open grooves for accommodating the blade contacts.

For electrical compatibility requirements see Section Circuit Diagram [▸ 10].

3.5 Circuit Diagram

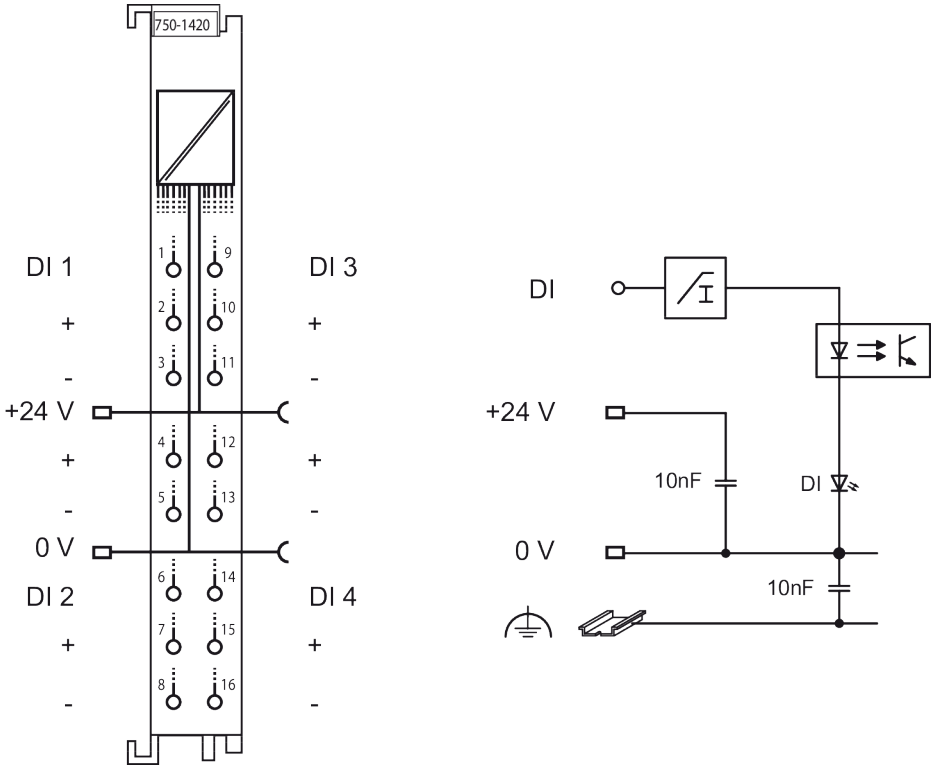


Figure 5: Circuit Diagram

For information on the system power supply, please see 🕮 **System Manual I/O System 750/753**.

4 Functions

4.1 Signal Processing

Each input channel has a noise-rejection RC filter with a 3.0 ms time constant.

The I/O module inputs provide high-side switching. If the 24 V potential for field power is switched to an input connection, the signal status for the corresponding input channel is set to “high.”

4.2 Process Image

Table 1: Process Image – Input

	Bit 3	Bit 2	Bit 1	Bit 0
	DI 4	DI 3	DI 2	DI 1

DI 1	DI 1 signal status – digital input channel 1
DI 2	DI 2 signal status – digital input channel 2
DI 3	DI 3 signal status – digital input channel 3
DI 4	DI 4 signal status – digital input channel 4

5 Planning

This section provides helpful information for planing the use of the product in a node.

5.1 Compatibility

The I/O module can be operated on all head stations of the WAGO I/O System 750/753.

5.2 Requirements for Wiring and Accessories

An operating tool with a 2.5 mm blade (e.g., item no. 210-719) is required for opening the Push-in CAGE CLAMP® connections.

5.3 Connection Examples

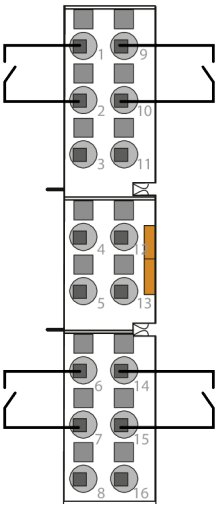


Figure 6: Example: 2-Wire Connection

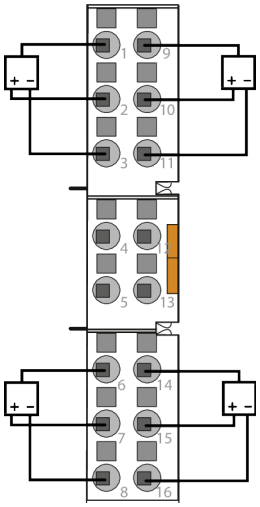


Figure 7: Example: 3-Wire Connection

6 Appendix

6.1 Technical Data, Approvals, Guidelines and Standards

Note

Subject to changes!

Please also observe the further product documentation! You can generate the current datasheet at any time at: www.wago.com /<item number>.

See also

Data sheet 750-1420 [▶ 14]

Data Sheet | Item Number: 750-1420

4-channel digital input; 24 VDC; 3 ms; 3-conductor connection

https://www.wago.com/750-1420

This digital input module is a 3-wire device featuring four channels in a width of just 12 mm (0.47 inch).
It receives binary control signals from digital field devices (e.g., sensors, encoders, switches or proximity sensors).
The module features Push-in CAGE CLAMP® connections enabling solid conductors to be connected by simply pushing them in.
Each input channel has a noise-rejection RC filter with 3.0 ms time constant.
A green LED indicates the signal state of each channel.
Field and system levels are electrically isolated.
An operating tool with a 2.5 mm blade (210-719) is required to open the Push-in CAGE CLAMP® connections.

Technical data

Number of digital inputs	4
Total number of channels (module)	4
Signal type	Digital
Signal type (voltage)	24 VDC
Sensor connection	4 x (3-wire)
Input characteristic	high-side switching Type 3
Input filter (digital)	3 ms
Input current per channel for signal (0) typ.	1.6 mA
Input current per channel for signal (1) typ.	4.5 mA
Input current per channel for signal (1) min.	4.3 mA
Input current per channel for signal (1) max.	4.6 mA
Voltage range for signal (0)	−3 … +5 VDC
Voltage range for signal (1)	11 … 30 VDC
Sensor supply	24 VDC
Input data width (internal) max.	4 bits
Supply voltage (system)	5 VDC; via data contacts
Current consumption (5 V system supply)	4 mA
Supply voltage (field)	24 VDC (-25 … +30 %); via power jumper contacts (power supply via blade contact; transmission (field side supply voltage only) via spring contact)
Current consumption, field supply (module with no external load)	2 mA
Isolation	500 V system/field
Indicators	LED (1-4) green: Status DI 1 … DI 4
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Current carrying capacity (power jumper contacts)	10 A

Connection data

Connection technology: inputs/outputs	16 x Push-in CAGE CLAMP® (inputs)
Connectable conductor materials	Copper
Connection type 1	Input
Solid conductor	0.08 … 1.5 mm² / 28 … 16 AWG
Fine-stranded conductor	0.25 … 1.5 mm² / 22 … 16 AWG
Strip length	8 … 9 mm / 0.31 … 0.35 inches

Physical data

Width	12 mm / 0.472 inches
Height	100 mm / 3.937 inches
Depth	69 mm / 2.717 inches
Depth from upper-edge of DIN-rail	61.8 mm / 2.433 inches

Mechanical data

Mounting type	DIN-35 rail
Pluggable connector	fixed

Material data

Housing material	Polycarbonate; polyamide 6.6
Fire load	0.972 MJ
Weight	45 g
Conformity marking	CE

Environmental requirements

Ambient temperature (operation)	0 … +55 °C
Ambient temperature (storage)	-40 … +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
Permissible H_2S contaminant concentration at a relative humidity 75 %	10 ppm
Permissible SO_2 contaminant concentration at a relative humidity 75 %	25 ppm

Product classification

UNSPSC	32151705

Environmental Product Compliance

CAS-No.	1303-86-2 1317-36-8 7439-92-1
REACH Candidate List Substance	Diboron trioxide Lead Lead monoxide
RoHS Compliance Status	Compliant,With Exemption
RoHS Exemption	6(c) 7(a) 7(c)-I 7(c)-II
SCIP notification number (Austria)	8c6af265-cda7-4fc3-8496-1d44374362fa
SCIP notification number (Belgium)	af5a7bc6-8d9b-4954-b258-c0853ad681d1
SCIP notification number (Bulgaria)	28cb3e14-fd55-4cf3-a4e6-e5f10b03ca31
SCIP notification number (Czech Republic)	dd0b01d7-077b-422e-a978-43d61c619255
SCIP notification number (Denmark)	d0bbd80f-d6e3-45a8-8914-5b581442a98a
SCIP notification number (Finland)	f2b725dc-89c9-4ae8-801c-2f0609fce2b2
SCIP notification number (France)	0107650f-c7db-4aaf-8287-7be2153f5c99

Continued on next page

Environmental Product Compliance

SCIP notification number (Germany)	fd513443-5ea6-4a81-be08-8482c112587a
SCIP notification number (Hungary)	ad819ca3-6aeb-429d-9d6a-bf9b4cd52adb
SCIP notification number (Italy)	70ca1347-63f6-47f8-8a68-5aec0578eaa8
SCIP notification number (Netherlands)	ae772e99-c8f9-4d65-8a05-e09d53aefdc1
SCIP notification number (Poland)	a08e1329-b4bb-4aac-bd82-478aaac535fa
SCIP notification number (Romania)	3e0b1d03-90bb-418d-a77b-107b0b412f49
SCIP notification number (Sweden)	25da3fda-3757-4fad-841d-bc6bf195e2a4

Approvals / Certificates

General approvals

Approval	Standard	Certificate Name
EAC GZO Almaty Standart	TP TC 020/2011	EAC CoC 03083
KC National Radio Research Agency	Article 58-2, Clause 3	MSIP-REM-W43-DIM750
UL Underwriters Laboratories Inc. (ORDINARY LOCATIONS)	UL 508	E175199

Declarations of conformity and manufacturer's declarations

Approval	Standard	Certificate Name
EU-Declaration of Conformity WAGO GmbH & Co. KG	-	-
UK-Declaration of Conformity WAGO GmbH & Co. KG	-	-

Approvals for marine applications

Approval	Standard	Certificate Name
ABS American Bureau of Shipping	-	22-2219060
BSH Bundesamt fuer Seeschifffahrt und Hydrographie	-	1104
BV Bureau Veritas S.A.	-	30389/C0 BV
DNV DNV GL SE	DNV-CG-0339,Aug.2021	TAA0000194
KR Korean Register of Shipping	-	KR HMB05880-AC001
LR Lloyds Register EMEA	-	LR22180952TA
PRS Polski Rejestr Statków	-	TE/1101/880590/23
RINA RINA Germany GmbH	-	ELE343521XG001

Approvals for hazardous areas

Approval	Standard	Certificate Name
ATEX TUEV Nord Cert GmbH	EN 60079-0	TUEV14ATEX148929X (II 3 G Ex ec IIC T4 Gc)
CCCEx CQST/CNEx	CNCA-C23-01	2020312310000213 (Ex ec IIC T4 Gc)
IECEx TUEV Nord Cert GmbH	IEC 60079-0	IECEx TUN 14.0035 X (Ex ec IIC T4 Gc)
INMETRO TÜV Rheinland do Brasil Ltda.	IEC 60079-0	TÜV 12.1297 X
UKEx WAGO GmbH & Co. KG	EN 60079-0	UKCA_WAGO22UKEX003X_ec
UL Underwriters Laboratories Inc. (HAZARDOUS LOCATIONS)	UL 121201	E198726

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