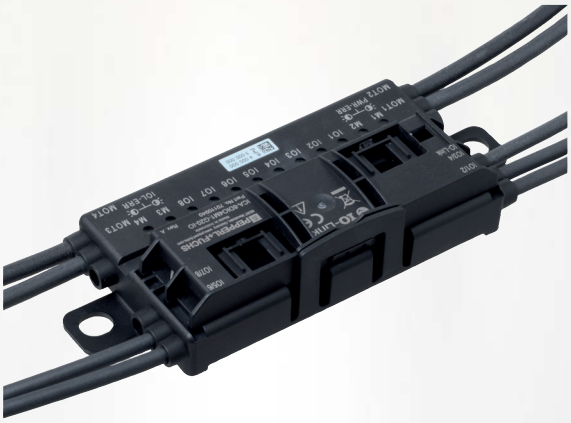
ICA-16IO-G20-IO-P16

G20 IO-Link Module for 16 Freely Configurable Digital Inputs/Outputs

Manual



IO-Link

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1 Introduction

1.1 Content of this Document

This document contains information required to use the product in the relevant phases of the product life cycle. This may include information on the following:

- Product identification
- Delivery, transport, and storage
- Mounting and installation
- Commissioning and operation
- Maintenance and repair
- Troubleshooting
- Dismounting
- Disposal

Note

For full information on the product, refer to the further documentation on the Internet at www.pepperl-fuchs.com.

Note

For specific device information such as the year of construction, scan the QR code on the device. As an alternative, enter the serial number in the serial number search at www.pepperl-fuchs.com.

The documentation comprises the following parts:

- This document
- Datasheet

In addition, the documentation may comprise the following parts, if applicable:

- EU-type examination certificate
- EU declaration of conformity
- Attestation of conformity
- Certificates
- Control drawings
- Instruction manual
- Functional safety manual
- Other documents

1.2 Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

Only appropriately trained and qualified personnel may carry out mounting, installation, commissioning, operation, maintenance, and dismounting of the product. The personnel must have read and understood the instruction manual and the further documentation.

Prior to using the product make yourself familiar with it. Read the document carefully.

2024-02

1.3 Symbols Used

This document contains symbols for the identification of warning messages and of informative messages.

Warning Messages

You will find warning messages, whenever dangers may arise from your actions. It is mandatory that you observe these warning messages for your personal safety and in order to avoid property damage.

Depending on the risk level, the warning messages are displayed in descending order as follows:

Danger!

This symbol indicates an imminent danger.

Non-observance will result in personal injury or death.

Warning!

This symbol indicates a possible fault or danger.

Non-observance may cause personal injury or serious property damage.

Caution!

This symbol indicates a possible fault.

Non-observance could interrupt the device and any connected systems and plants, or result in their complete failure.

Informative Symbols

Note

This symbol brings important information to your attention.

Action

This symbol indicates a paragraph with instructions. You are prompted to perform an action or a sequence of actions.

1.4 General Safety Information

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

Installation and commissioning of all devices may be performed only by trained and qualified personnel.

It is dangerous for the user to make changes and/or repairs. Additionally, doing so voids the warranty and excludes the manufacturer from any liability. In the event of any serious errors, stop using the device. Secure the device against unintended operation. To have the device repaired, return it to your local Pepperl+Fuchs representative or your sales center.

Note

Disposal

Electronic waste is dangerous. When disposing of the equipment, observe the current statutory requirements in the relevant country of use and local regulations.

1.5 Declaration of Conformity

This product was developed and manufactured in line with the applicable European standards and directives.

Note

A declaration of conformity can be requested from the manufacturer.

The product manufacturer, Pepperl+Fuchs Group, 68307 Mannheim, Germany, has a certified quality assurance system that conforms to ISO 9001.

ISO**9001**

2 Product Description

2.1 Use and Application

The ICA-16IO-G20-IO-P16 is an IO-Link field module with 16 freely configurable digital inputs/outputs. The compact housing can be installed directly into support profiles or cable ducts.

The module and the inputs and outputs are supplied with power via IO-Link.

The inputs and outputs are connected to 4-pin M8 sockets via cable outlets. IO-Link is connected to a 4-pin M12 plug via a cable outlet.

The current switch state or an overload of the inputs or outputs are indicated via the IO LEDs.

The input characteristic of the inputs corresponds to type 3 in accordance with EN 61131-2. The outputs are resistant to short circuits and overloading.

The module and the digital inputs/outputs are supplied via IO-Link. Each sensor power supply can be loaded with 200 mA.

For details regarding connection, .

General IO-Link Information

IO-Link is a standardized point-to-point IO technology (IEC 61131-9) between an IO-Link master that controls communication and an IO-Link device that acquires or executes process values at the lowest sensor/actuator level. In addition to transmitting process data, IO-Link also provides access to detailed identification, diagnostic, and parameter data of the respective IO-Link device.

IO-Link uses unshielded 3- or 5-wire cables with a maximum length of 20 meters between the IO-Link master and IO-Link device and enables data transmission rates of 4.8 kbit/s (COM1), 38.4 kbit/s (COM2), or 230.4 kbit/s (COM3). The IO-Link interface is backward compatible with the 24 V I/O signals specified in IEC 61131-2.

2.2 Housing

The housing is made entirely of plastic material, except for the hinge pins for the hinge cable guide.

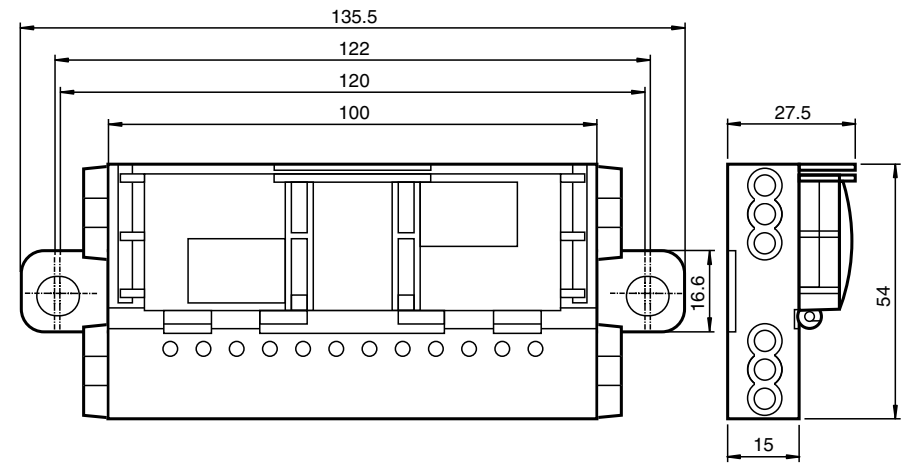


Figure 2.1 Housing dimensions

2.3 LED Indicators

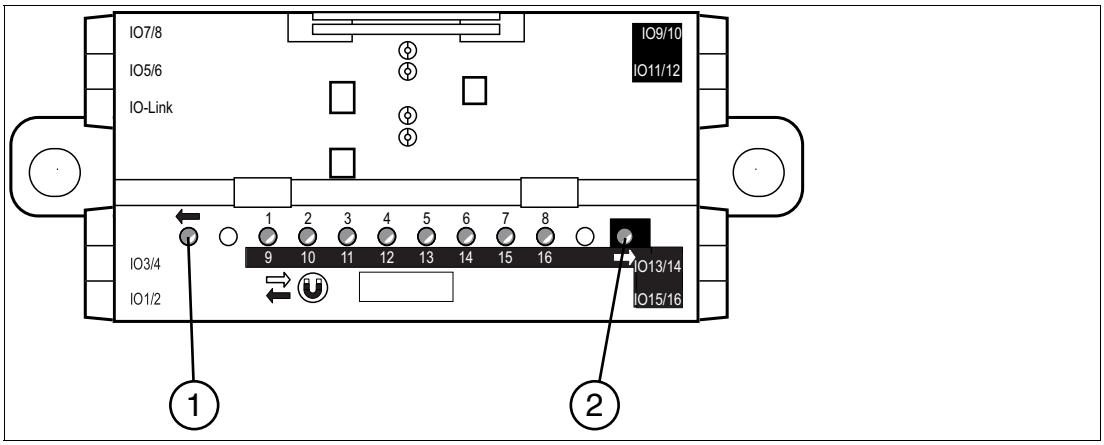


Figure 2.2 LED indicators

1 "Left arrow" LED

2 "Right arrow" LED

Indication Mode

You can select the following modes for the LED indicator:

Mode 1: Automatic mode[1]

- Alternating indication of bank IO1/2... IO7/8 and bank IO9/10... IO15/16
- Duration of indication 5 s[1<Default ¬1 Font>], can be configured via IO-Link

Mode 2: Display configuration via IO-Link command

- Continuous indication of bank IO1/2... IO7/8
  - "Left arrow" LED flashes
- Continuous indication of bank IO9/10... IO15/16
  - "Right arrow" LED flashes
- Alternating indication of bank IO1/2... IO7/8 and bank IO9/10... IO15/16

Mode 3: Manual port selection via Hall sensor

- Continuous indication of bank IO1/2... IO7/8
  - "Left arrow" LED flashes
- Continuous indication of bank IO9/10... IO15/16
  - "Right arrow" LED flashes

Note

The indication mode automatically returns to mode 1 after one hour.

If there is a red LED due to input or output overload on only one bank, the affected bank is indicated continuously.

Note

The LEDs on the inputs and outputs indicate the physical state of the respective channel. You can find the invertible logical state of a channel in the process data.

1. Default

"Left arrow" LED ①

The "Left arrow" LED indicates the IO ports IO1/2... IO7/8. The numbers 1... 8 above the LEDs indicate the ports.

Status	Function
Off	The status of ports IO9/10 to IO15/16 is indicated "Right arrow" LED is on
Green	The status of ports IO1/2 to IO7/8 is indicated "Right arrow" LED is off
Green flashing (2 Hz)	Manual bank selection using IO-Link parameters or Hall sensor
Red	Signals a fault on one of the ports of bank IO1/2... IO7/8, while bank IO9/10... IO15/16 is indicated via LEDs IO9/10 to IO15/16

"Right arrow" LED ②

The "Right arrow" LED indicates IO ports IO9/10... IO15/16. The numbers 9... 16 under the LEDs indicate the ports.

Status	Function
Off	The status of ports IO1/2 to IO7/8 is indicated "Left arrow" LED is on
Green	The status of ports IO9/10 to IO15/16 is indicated "Left arrow" LED is off
Green flashing (2 Hz)	Manual bank selection using IO-Link parameters or Hall sensor
Red	Signals a fault on one of the ports of bank IO9/10... IO15/16, while bank IO1/2... IO7/8 is indicated via LEDs IO1/2 to IO7/8

LEDs 1/9... 8/16

LEDs 1/9... 8/16 indicate the input/output status of the assigned port, see "Left arrow" LED and "Right arrow" LED

LED 1, 3, 5... 15: Pin 4 status

LED 2, 4, 6... 16: Pin 2 status

Status	Function
Off	Input/output is not active
Yellow	Input/output is active
Red	Overload of the input supply or output

Flashing pattern for device identification

In the field, a device can be identified by a flashing pattern. The flashing pattern is activated via IO-Link. All LEDs flash in the following pattern:

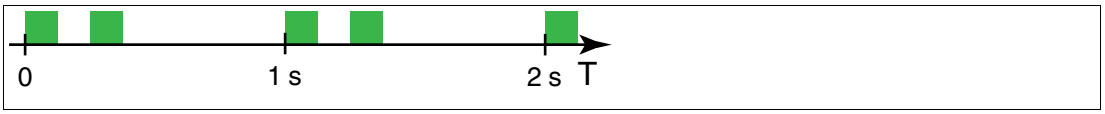


Figure 2.3 Flashing pattern for device identification

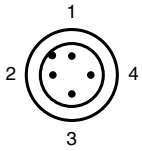
2.4 Interfaces and Connections

Input/Output Connections

The sensors and actuators are connected to the module via cables with round M8 connectors:

- Connection: Socket, 4-pin

Plug Assignment

Connection for	connectors	Plug type/assignment
Inputs/outputs		**Input:** LF004-GS1-A in accordance with IEC/EN 61076-2-104 M8, 4-pin, socket, union nut, A-coded **Suitable mating connector:** LM004-Gx1-A or similar 1: V+ sensor supply 2: IO2, IO4, IO6, IO8, IO10, IO12, IO14, IO16 3: V- sensor supply 4: IO1, IO3, IO5, IO7, IO9, IO11, IO13, IO15
IO-Link		**IO-Link:** LM type in accordance with EN 61076-2-101 M12, 4-pin, plug, screw-locking, A-coded **Suitable mating connector:** LF type or similar 1: L+ 2: n.c. 3: L- 4: Q/C

3 Installation

3.1 Storage and Transportation

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

3.2 Unpacking

Check the product for damage while unpacking. If the product should be damaged, inform the post office or parcel service and notify the supplier.

Retain the original packaging in case the device must be stored or shipped again at a later date.

Should you have any questions, please contact Pepperl+Fuchs.

3.3 Mounting

Mount the device with both brackets (1) on a solid, continuous surface.

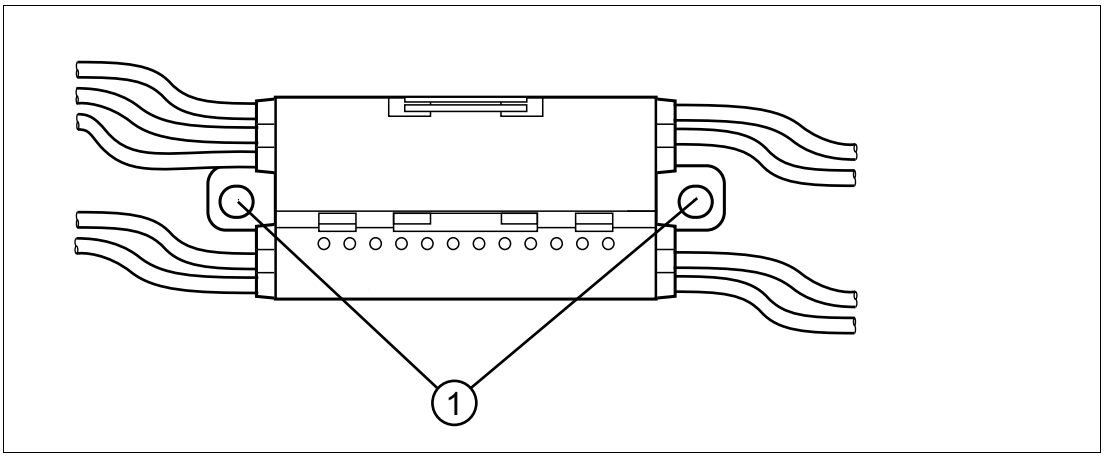


Figure 3.1 Mounting brackets (1)

3.4 Connecting Actuators and Sensors

IO-Link, the inputs, and outputs are connected via standard round plug connectors.

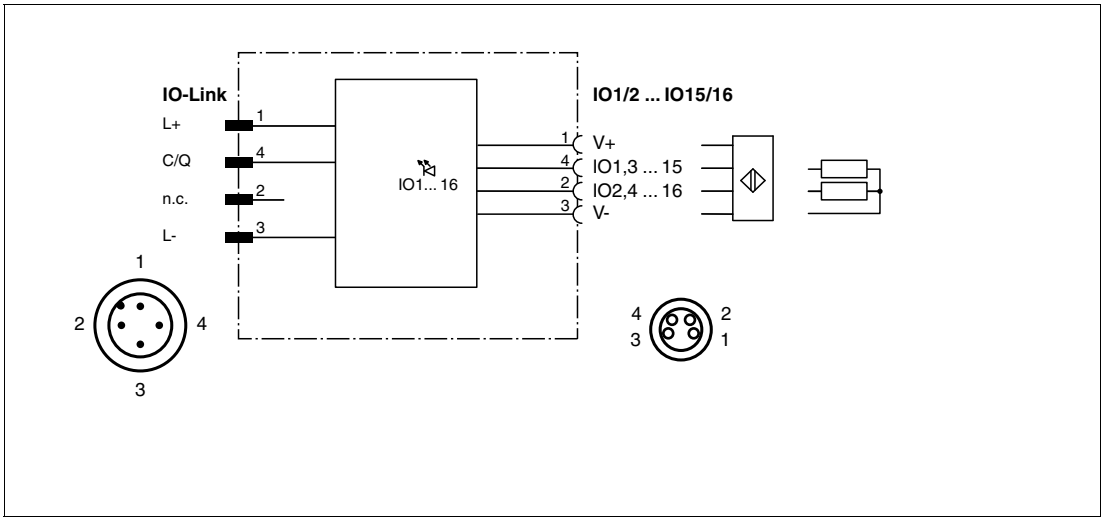


Figure 3.2 Connection wiring diagram

Warning!

Damage to contacts

Only connect or disconnect the module connections when the module is de–energized. Otherwise, the connections could be damaged.

4 Repair and Servicing

The device must not be repaired, changed, or manipulated. In case of failure, always replace the device with an original device.

5 Firmware Updates

The device supports firmware updates via IO-Link in accordance with the standardized IO-Link firmware update profile IOLFW. The IOLFW files can be found on the detail page for your product, at www.pepperl-fuchs.com.

You can use an IO-Link device tool or other software that supports firmware updates, such as PortVision DX, to perform firmware updates.

For more information on the update process, refer to the product documentation for your IO-Link master or the software you are using.

6 Appendix

6.1 ASCII table

hex	dec	ASCII	hex	dec	ASCII	hex	dec	ASCII	hex	dec	ASCII
00	0	NUL	**20**	**32**	**Space**	40	64	@	**60**	**96**	'
01	1	SOH	**21**	**33**	**!**	41	65	A	**61**	**97**	**a**
02	2	STX	**22**	**34**	**"**	42	66	B	**62**	**98**	**b**
03	3	ETX	**23**	**35**	**#**	43	67	C	**63**	**99**	**c**
04	4	EOT	**24**	**36**	**$**	44	68	D	**64**	**100**	**d**
05	5	ENQ	**25**	**37**	**%**	45	69	E	**65**	**101**	**e**
06	6	ACK	**26**	**38**	**&**	46	70	F	**66**	**102**	**f**
07	7	BEL	**27**	**39**	**'**	47	71	G	**67**	**103**	**g**
08	8	BS	**28**	**40**	**(**	48	72	H	**68**	**104**	**h**
09	9	HT	**29**	**41**	**)**	49	73	I	**69**	**105**	**I**
0A	10	LF	**2A**	**42**	*****	4A	74	J	**6A**	**106**	**j**
0B	11	VT	**2B**	**43**	**+**	4B	75	K	**6B**	**107**	**k**
0C	12	FF	**2C**	**44**	**,**	4C	76	L	**6C**	**108**	**l**
0D	13	CR	**2D**	**45**	**-**	4D	77	M	**6D**	**109**	**m**
0E	14	SO	**2E**	**46**	**.**	4E	78	N	**6E**	**110**	**n**
0F	15	SI	**2F**	**47**	**/**	4F	79	O	**6F**	**111**	**o**
10	16	DLE	**30**	**48**	**0**	50	80	P	**70**	**112**	**p**
11	17	DC1	**31**	**49**	**1**	51	81	Q	**71**	**113**	**q**
12	18	DC2	**32**	**50**	**2**	52	82	R	**72**	**114**	**r**
13	19	DC3	**33**	**51**	**3**	53	83	S	**73**	**115**	**s**
14	20	DC4	**34**	**52**	**4**	54	84	T	**74**	**116**	**t**
15	21	NAK	**35**	**53**	**5**	55	85	U	**75**	**117**	**u**
16	22	SYN	**36**	**54**	**6**	56	86	V	**76**	**118**	**v**
17	23	ETB	**37**	**55**	**7**	57	87	W	**77**	**119**	**w**
18	24	CAN	**38**	**56**	**8**	58	88	X	**78**	**120**	**x**
19	25	EM	**39**	**57**	**9**	59	89	Y	**79**	**121**	**y**
1A	26	SUB	**3A**	**58**	**:**	5A	90	Z	**7A**	**122**	**z**
1B	27	ESC	**3B**	**59**	**;**	5B	91	[	**7B**	**123**	**{**
1C	28	FS	**3C**	**60**	**<**	5C	92	\	**7C**	**124**	**|**
1D	29	GS	**3D**	**61**	**=**	5D	93	]	**7D**	**125**	**}**
1E	30	RS	**3E**	**62**	**>**	5E	94	^	**7E**	**126**	**~**
1F	31	US	**3F**	**63**	**?**	5F	95	_	**7F**	**127**	**DEL**

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