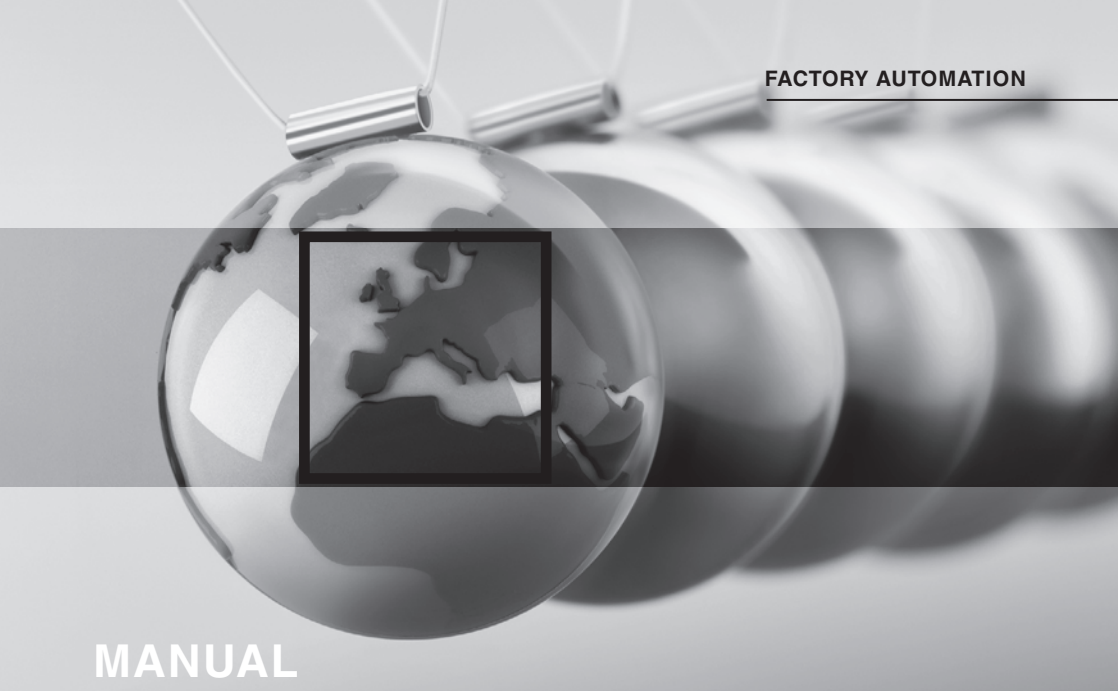
FACTORY AUTOMATION



MANUAL

DAD10-8P

OPTICAL DATA COUPLER

CE

PEPPERL+FUCHS
SENSING YOUR NEEDS

With regard to the supply of products, the current issue of the following document is applicable:

The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.)

in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"

Part No. 236387
Date of issue 2010-04

PEPPERL+FUCHS

Date of issue 2010-04 Part No. 226387

1 Introduction

Congratulations!

You have chosen a device from Pepperl+Fuchs. Pepperl+Fuchs develops, produces, and markets electronic sensors and interface components for the automation technology market worldwide.

Contact

If you have questions about the device, accessories, or other functions, please contact:

Pepperl+Fuchs GmbH
Lilienthalstraße 200
68307 Mannheim
Phone: +49 621 776-4411
Fax: +49 621 776-274411
E-mail: fa-info@pepperl-fuchs.com

1.1. Warranty

Pepperl+Fuchs manufactures its hardware products according to recognized industrial standards. Pepperl+Fuchs guarantees its products to be free of defects in material and workmanship provided the products are used under the normal operating conditions specified by the manufacturer. The warranty applies only to the original owner and is not transferable. All accompanying exclusions of liability, restrictions, and other conditions of this section apply to this warranty.

Exclusions of liability

No warranty obtained or granted hereby shall apply to products that:

- have been repaired, modified, or tampered with unless explicitly performed or approved by Pepperl+Fuchs
- have not been serviced in accordance with the Operating and Handling Instructions provided by Pepperl+Fuchs
- have been exposed to unusual physical or electrical loads, immersed in liquids, or exposed to any one of the following circumstances:
    - breakdown
    - crushing
    - improper use
    - misuse
    - low current
    - unsuitable power supply
    - reverse polarity
    - negligence or accident
- has been used for any purpose other than what is described in the Operating and Handling Instructions

Preventive maintenance is the customer's responsibility and is not covered by this warranty.

Part No. 236387
Date of issue 2010-04

General

With the exception of the warranties noted above, Pepperl+Fuchs offers no warranties for products delivered below in any form whatsoever, whether explicit or implicit, including, but not limited to implicit defect warranty services and guarantee of suitability for a specific purpose, and absence of injury. The explicit warranties noted above shall satisfy all obligations and liabilities of Pepperl+Fuchs for damages, including but not limited to concrete damages, indirect damages or consequential damages in connection with the use or design of the product. The seller's liability to the buyer and other persons (regardless of the origin of liability, whether it be based on contract, warranty, impermissible handling, misuse, and/or other origin) in connection with the use of a product shall in no case exceed the original purchase price of the product. Pepperl+Fuchs shall in no event be liable for consequential damages, concrete and indirect damages, secondary damages or penalties, or lost profits, sales, or loss of data, even if Pepperl+Fuchs had been made aware of this possibility.

2 Declaration of Conformity

We, Pepperl+Fuchs GmbH, hereby declare on our sole responsibility that the

DAD10-8P Optical data coupler

and all models of this product to which this declaration refers are in conformity with the following standards and other regulatory documents

EN 60947-5-2

Product family standard: Electromagnetic Compatibility (EMC for light industry and industry)

	A corresponding Declaration of Conformity may be requested from the manufacturer.

Pepperl+Fuchs GmbH in D-68301 Mannheim has a certified quality assurance system in conformity with ISO 9001.

CE

ISO**9001**

Part No. 226387
Date of issue 2010-04

3 Safety

3.1. Symbols used

Safety-related symbols

	**Danger!** This symbol identifies an immediate and present danger. Failure to observe this warning may result in personal injury or even death.

3.2. General safety instructions

The following basic instructions must be observed in all cases:

- The device must not be placed in service until the manual has been read and understood
- The power device for generating the power supply voltage must be reliably insulated electrically by means of double insulation and a safety transformer according to DIN VDE 0551 (corresponds to IEC 742).
- The device must not be used outside the specification without suitable protective measures
- No unauthorized tampering with the device is permitted
- Do not point the device directly at the sun or measure into the sun
- Do not remove the warning instructions or rating plates

The radiation emitted by a Class 1 laser is harmless. This type of laser instrument can be operated by anyone.

The system operator is responsible for planning, assembly, commissioning, operation, and maintenance of the system.

Installation and commissioning of all devices must only be performed by personnel specially trained for that purpose.

The protection of the system and operating personnel is not ensured if the module is not used according to its intended purpose.

Observe the applicable laws and regulations for use and for the intended purpose. The devices are only approved for proper use in accordance with intended purpose. Any other use voids all warrantee claims and manufacturer's responsibility.

Use only recommended original accessories.

If you are unable to eliminate malfunctions, take the device out of operation. Secure the device against accidental operation. Return the device to Pepperl+Fuchs for repair. Own interventions and modifications are potentially hazardous, and any guarantee and manufacturer's liability shall become void.

Dispose of the useless device in keeping with the applicable national legal regulations.

For example, you can take the sensor to the designated collection point for electronic scrap.

	*In applications with shelf distances and moving carriages, care must always be taken to observe the applicable safety regulations. Failure to do so will result in grave danger to life and limb!*

Part No. 236387
Date of issue 2010-04

4 Product description

Features

- Supply Voltage: 10-60 VDC
- Range: 0 - 1,5 m.
- Sensitivity control
- Half Duplex Data transmission
- Baud Rate: 2400
- 10 optocoupler inputs
- 10 PNP-outputs.
- Action of outputs by interrupting the beams is selectable
- Optical signals for receiving, data inputs and data outputs
- Programmable Operating mode - Master/Slave.
- External transmitter switch off

4.1 Technical Description

The DAD 10-8P unit allows for bidirectional data transmission of 8 bit data words. A pair of units is required to create the transmission path. One of the units is set up as the MASTER (High-level at input Master / Slave) and the second as the SLAVE (Low-level at input Master / Slave).
All parallel binary control signals connected to the inputs D1 to D8 are converted into an 8 bit serial sequence. This serial data is transmitted by light beam to the receiver where it is converted back to parallel data available at the outputs D1 to D8. Frequency shift keying is used to provide secure transmission of the binary data. The total response time is 3ms during which both 8 bit words are transmitted, one in each direction, in timed multiplex mode.
This provides a transmission speed of 2400 baud. A feature of the timed multiplex mode is that the last data message is always stored at the output until the next message is transmitted.

4.2 Action on light beam interruption:

The action required in case the light beam is interrupted can be controlled by a switch.
Switch position 1: data outputs are switched off, when the light beam is interrupted.
Switch position 2: The data received last is still available at the outputs, when the light beam is interrupted.

4.3 Switching off the transmitter:

For operating the DAD10-8P a High-level is necessary at the ENABLE input. If the ENABLE-input is at low level, the transmitter is switched off.
If the transmitter is switched off at the MASTER, the SLAVE -transmitter is also switched off automatically. If the SLAVE is switched off, the MASTER still transmits data, that the SLAVE receives.

Date of issue 2010-04 Part No. 226387

4.4 In- and Outputs, receiving signals:

The inputs of the DAD10-8P are isolated by optocoupler from the other switches. The status of data in- and output is displayed by various LEDs. A high level at the input is indicated by a red LED. A green LED indicates an active output.
A yellow or green LED and the output EMPF.-ANZEIGE (receiver display) gives a sufficient optical signal of receiving.
(yellow LED==> standard function reserve;
green LED ==> triple function reserve)
The SYNC-output marks at the MASTER device the times, when data input is received (rising edge) or when the output data are valid (falling edge).

5 Appendix

5.1 Technical data

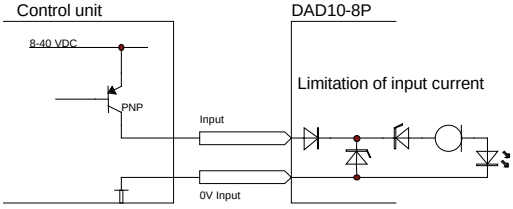
General specifications	
Effective detection range	0 ... 1500 mm
Threshold detection range	3000 mm
Light source	IRED
Light type	modulated infrared light
Approvals	CE
Alignment aid	LED green (sufficient stability control)
Transmission mode	FSK (214.3 kHZ, 250.0 kHz)
Diameter of the light spot	approx. 1250 mm at 1.5 m
Angle of divergence	± 20 °
Ambient light limit	5000 Lux
Cycle time	3
Indicators/operating means	
Data flow display	Inputs: 8 LEDs red Outputs: 8 LEDs green:
Function display	- green LED for power on - yellow LED illuminates, when receiving data (standard function reserve) - green LED illuminated, when receiving (greater than triple function reserve)
Controls	sensitivity adjustment
Controls	coding switch: behavior when light beam is interrupted
Electrical specifications	
Operating voltage U_B	10 ... 60 V DC
No-load supply current I_0	160 mA
Data sampling blanking	Enable input emitter deactivation
Data rate	2400 Bit/s
Operation frequency	232 kHz
Interface	

Part No. 226387
Date of issue 2010-04

Interface type	8 bit parallel, bidirectional inputs: 8 optocoupler Outputs: 8 PNP, not short-circuit proof
Output	
Output of the pre-fault indication	1 PNP (switches if there is sufficient stability control)
Switching voltage	max. 60 V DC
Switching current	max. 100 mA per channel , total ≤ 600 mA
Standard conformity	
Standards	EN50081-1 : 1992 EN50082-2 : 1994 CISPR 22 Class B IEC 1000-4-2 IEC 801-3 IEC1000-4-4 IEC 801-6
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Storage temperature	-20 ... 75 °C (-4 ... 167 °F)
Mechanical specifications	
Protection degree	- Connector with PG9- sealing glands: IP67 to DIN 40050 - Connector with 25-pin Sub-D-socket (optional): IP42 to DIN 40050
Connection	-Screwless spring clamp for conductor diameters of 0.08 mm² ... 0.5 mm² -25-pin Sub-D-plug socket (optional) or connector
Material	
Housing	Terluran, black
Optical face	glass
Mass	170 g

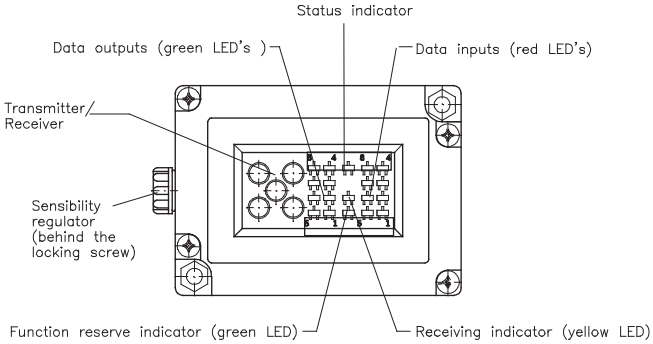
Table 5.1: Technical data

5.2 Sample of input wiring/ switchings

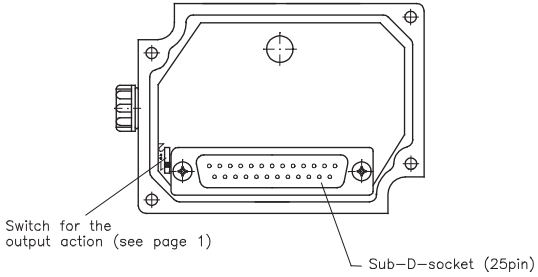


Date of issue 2010-04 Part No. 226387

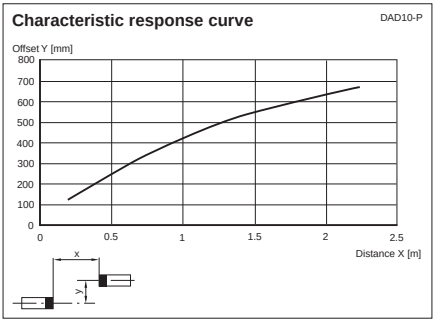
5.3 Functional indications

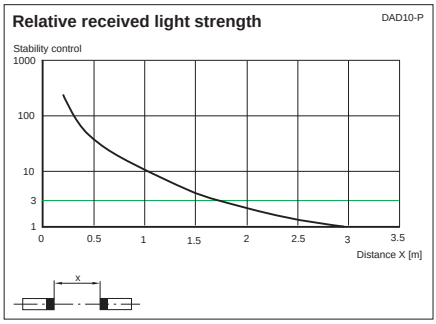


View to the rear part of the device's front



5.4 Diagrams



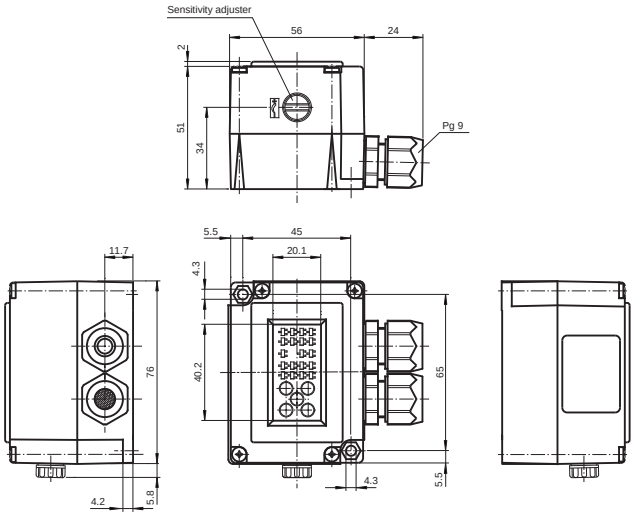


Part No. 226387
Date of issue 2010-04

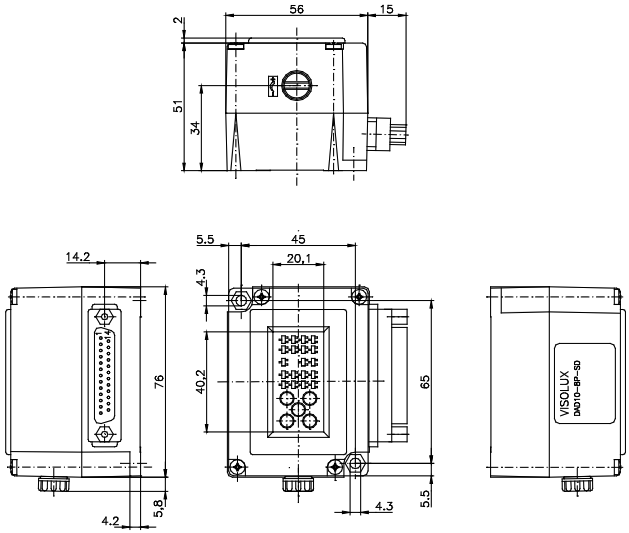
PEPPERL+FUCHS

5.5 Dimensions

DAD 10-8P series (PG-screwings at the housing bottom

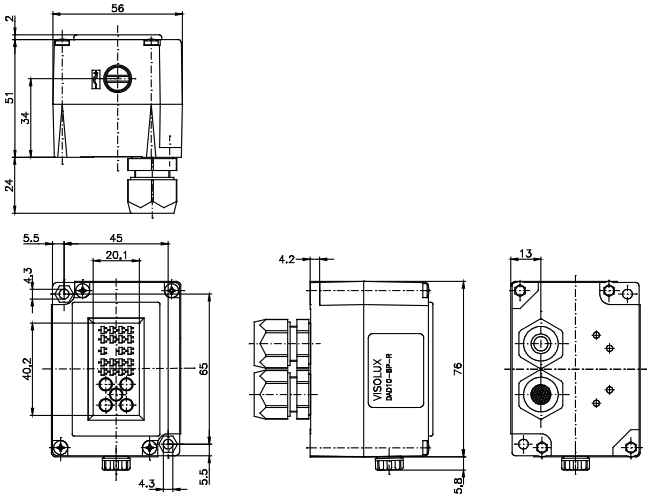


DAD10-8P-SD (with 25-pin Sub-D-socket or connector)

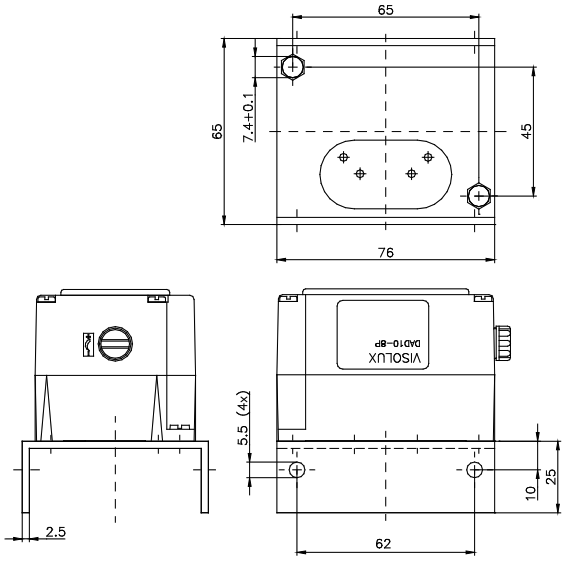


Date of issue 2010-04 Part No. 226387

DAD10-8P-R (PG-screwings at the housing rear)



Fixing angle for DAD10-8P; DAD10-8P-R; DAD10-8P-SD

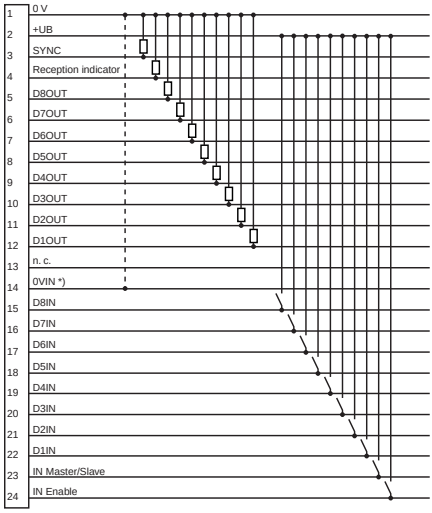


Date of issue 2010-04 Part No. 226387

5.6 Connection diagram

Connector with clamps:

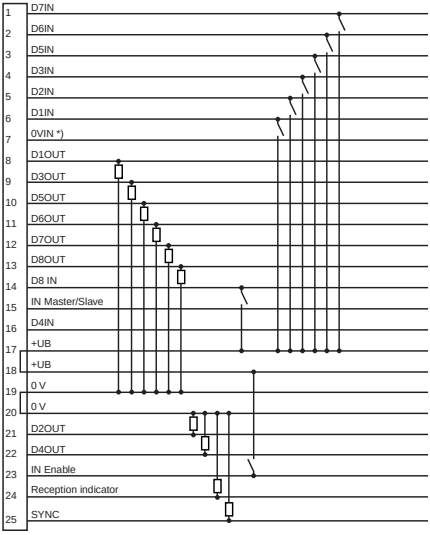
Version DAD10-8P(/35) and ...-HD...



*) Reference potential for data inputs

Connector with 25pin Sub-D-socket or connector

Version ...-SDS... and ...-SDB...



*) Reference potential for data inputs

Date of issue 2010-04 Part No. 226387

5.7 Article description and Article numbers to ease your order

Article Description	Article-Number
Complete Device (Electronics + Cable Adapter)	
DAD10-8P	418610
DAD10-8P-SDB (with 25-pin Sub-D-Socket)	418611
DAD10-8P-R-2388 (with 2 PG9-sealing glands at the housing rear and fixing angle)	418612
DAD10-8P-HD (for DIN rail mounting plus 25-pin Sub-D-Socket)	418613
DAD10-8P-R (with 2 PG9-sealing glands at the housing rear)	418614
DAD10-8P-SDS (with 25-pin Sub-D-Connector)	418616
Complete Device (Electronics + Cable Adapter) Opt. 35 Scanning Range=3m	
DAD10-8P/35	418623
DAD10-8P-SDB/35 (with 25-pin Sub-D-Socket)	418624
DAD10-8P-SDS/35 (with 25-pin Sub-D-Connector)	418625
Electronics	
DAD10-8P-E	418617
Cable Adapter	
DAD10-8P-A	418618
DAD10-8P-AHS (for DIN rail mounting)	418619
DAD10-8P-ASD (with 25-pin Sub-D-Socket)	418620
DAD10-8P-AR (with 2 PG9-sealing glands at the housing rear)	418621
DAD10-8P-AHD (for DIN rail mounting plus 25-pin Sub-D-Sokket)	418622
Accessories	
Fixing angle	406978

Table 5.2: Model Number

Date of issue 2010-04 Part No. 226387

Part No. 226387
Date of issue 2010-04

With regard to the supply of products, the current issue of the following document is applicable:
The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.)
in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"

PEPPERL+FUCHS

FACTORY AUTOMATION – SENSING YOUR NEEDS

Worldwide Headquarters
Pepperl+Fuchs GmbH
68307 Mannheim · Germany
Tel. +49 621 776-0
E-mail: info@de.pepperl-fuchs.com

USA Headquarters
Pepperl+Fuchs Inc.
Twinsburg, Ohio 44087 · USA
Tel. +1 330 4253555
E-mail: sales@us.pepperl-fuchs.com

Asia Pacific Headquarters
Pepperl+Fuchs Pte Ltd.
Company Registration No. 199003130E
Singapore 139942
Tel. +65 67799091
E-mail: sales@sg.pepperl-fuchs.com

www.pepperl-fuchs.com

PEPPERL+FUCHS
SENSING YOUR NEEDS

226387 DOCT-2081
04/2010