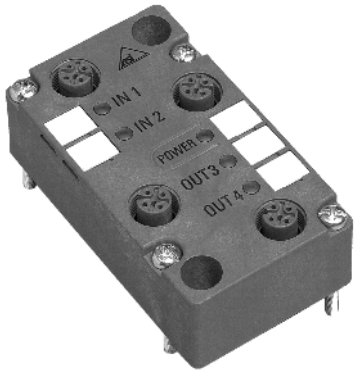
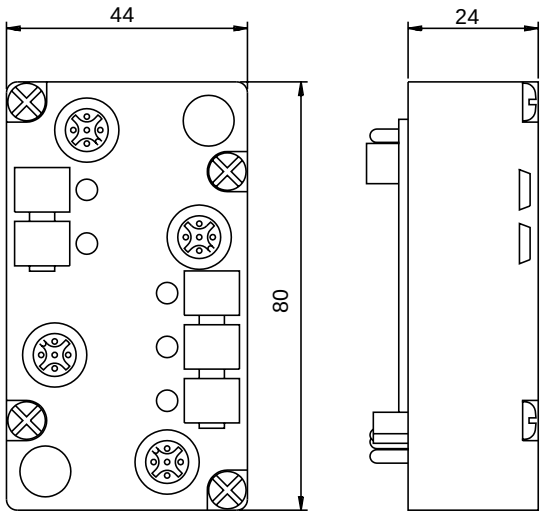
AS-Interface Logic Module





Model Number

VAA-2EA-G1-ZE/E2-LG

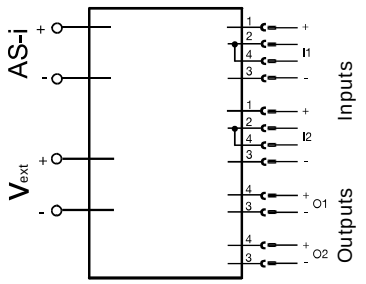
Logic module

2 inputs/2outputs

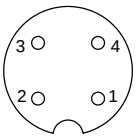
Features

- Inputs can be logically linked to outputs using parameter bits
- Can operate as a standard 2 input/2 output I/O module
- LEDs for inputs and outputs
- Uses standard AS-Interface flat or round cable mounting bases
- IP67

Connections

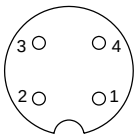


Inputs Face view - female



1 Input power (+)
2 Input*
3 Input power (-)
4 Input*

Outputs Face view - female



1 n.c.
2 n.c.
3 External power (-)
4 Switch output (+)

* Internally connected

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Technical Data:

Model Number	VAA-2EA-G1-ZE/E2-LG
Connections	
AS-Interface/external power	yellow flat cable/black flat cable or standard round cable
Inputs/outputs	V1 (M12x1) quick disconnect
Operating voltage V_B	via AS-Interface, reverse polarity protection
Operating current I_e	≤ 70 mA
Inputs	two 2- or 3-wire sensors, DC, sourcing
OFF I_{In}	≤ 1 mA
ON I_{In}	≥ 4.5 mA
I_{in}	≤ 7 mA
V_{OUT}	20-30 VDC from AS-Interface
I_{OUT}	70 mA, short circuit protection
Outputs	2, electronic
Load capacity	24 VDC, 500 mA (per output), 1 A total, galvanically isolated
External power V_{ext}	24 VDC ±15% PELV
Indicators	
4, Switch status (I1-I2, O3-O4)	LED yellow
Power (AS-Interface)/sensor overload	LED green/LED red
EMC	per EN 50 081-2, EN 50 082-2
Operating temperature t_b	-25 to +60°C (-13 to +140°F)
Storage temperature t_l	-25 to +85°C (-13 to +185°F)
Protection (IEC)	IP67

Description

Function:

- Logically connects inputs I1 and I2 to outputs O3 and O4
- Uses all four inputs and outputs

Inputs: D0, D1 switch conditions on inputs I1, I2 (1 = Switch status ON)
D2, D3 switch conditions on outputs O3, O4 (1 = Switch status ON)

Outputs: D0, D1 not used
D2, D3 Master-release of outputs O3, O4 (0 = output with no power)

Note:
The outputs are switched to a de-energized state (after approximately 10 ms) when an interruption of the bus communications (master outage) occurs.

Logic Function:

P3	P2	P1	P0	Output O3	Output O4	
0	0	0	0	D2	D3	(2EA-relationship)
0	0	0	1	I1	I2	(directly affect)
0	0	1	0	I1	I1 AND I2	
0	0	1	1	I1	I1 OR I2	
0	1	0	0	I1	I1 XOR I2	
0	1	0	1	I1 AND I2	I1 AND I2	
0	1	1	0	I1 AND I2	I1 OR I2	
0	1	1	1	I1 AND I2	I1 XOR I2	
1	0	0	0	I1 OR I2	I1 OR I2	
1	0	0	1	I1 OR I2	I1 XOR I2	
1	0	1	0	I1 XOR I2	I1 XOR I2	
1	0	1	1	reserved		
1	1	0	0	reserved		
1	1	0	1	reserved		
1	1	1	0	reserved		
1	1	1	1	D2	D3	(2EA-relationship)

Programming Instructions

Address	preset to 00, can be changed via the master or with a hand-held addressing device.
IO-Code	7
ID-Code	F

Data Bit

Bit	Function
D0	input I1
D1	input I2
D2	output O3
D3	output O4

Parameter Bits

Function
Adjustment of the logic functions through P0 to P3 (refer to Logic Function on this page)

Accessories

U-G1FF
Base for connection of AS-Interface flat cable and the 24 VDC flat cables

U-G1FFA
Base for connection of AS-Interface flat cable and the 24 VDC flat cables with addressing jack.

U-G1PP
Base for connection of AS-Interface round cable and external power supply

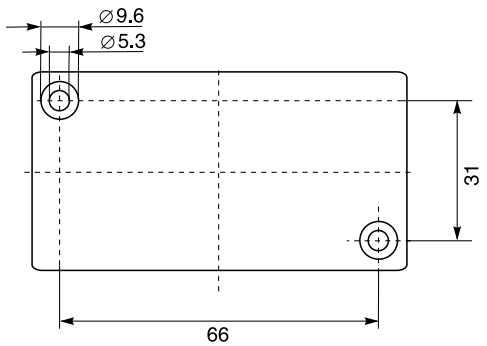
PG11-1/2"NPT
1/2" NPT conduit adapter for U-G1P base

VAZ-V1-B
Protective cover

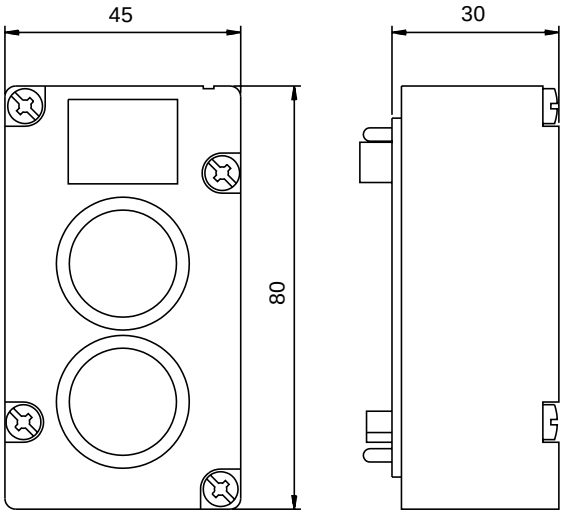
VBP-HH1-110V
Hand-held addressing device

VAZ-PK-V1-CINCH
Cable from module to hand-held addressing device

Mounting hole dimensions for bases



AS-Interface Pushbutton Module



Model Number

VAA-LT2-G1

Lighted pushbutton module

2 inputs/2outputs

Features

- 2 integrated illuminated buttons
- White LEDs with colored lens covers
- Uses standard AS-Interface flat or round cable mounting bases
- IP67

Button Color Options

The default lens colors for the VAA-LT2-G1 is as follows:

button 1 = green
button 2 = red

The folowing optional lens colors are also available:

black (opaque)
gray (opaque)
red
green
yellow
white (clear)
orange
blue

To order optional lens colors, indicate positions and color on the order. (i.e. VAA-LT2-G1 button 1 = blue, button 2 = orange)

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Technical Data:

Model Number	VAA-LT2-G1
Connections	
AS-Interface	yellow flat cable or standard round cable
Operating voltage V_B	from AS-Interface, reverse polarity protection
Operating current I_e	≤ 55 mA
Inputs	2 integrated pushbuttons
Outputs	2 integrated LEDs, powered from AS-Interface
EMC	per EN 50 081-2, EN 50 082-2
Operating temperature	-25 to + 60°C (-13 to +140°F)
Storage temperature	-40 to +85°C (-13 to +185°F)
Protection (IEC)	IP67

Description

The VAA-LT2-G1 lighted push button module provides a link between the maintenance personnel and AS-Interface. LEDs integrated in the buttons display the current status. The IP67 lighted buttons are ideal for use in the field.

Use the U-G1F base to connect to the AS-Interface flat cable, and use the U-G1P base to connect to the round cable. The VAA-LT2-G1 is fully powered from AS-Interface. The AS-Interface standardized base U-G1FA includes an integrated addressing jack that allows easy connection to the hand-held addressing device.

Programming Instructions

Address	preset to 00, can be changed via the master or with a hand-held addressing device.
IO-Code	3
ID-Code	F

Bit Assignment

Bit	Function
D0	button 2 (red)
D1	button 1 (green)
D2	LED 2 (red)
D3	LED 1 (green)

Accessories

U-G1F
Base for connection of AS-Interface flat cable

U-G1FA
Base for connection of AS-Interface flat cable with addressing jack.

U-G1P
Base for connection of AS-Interface round cable

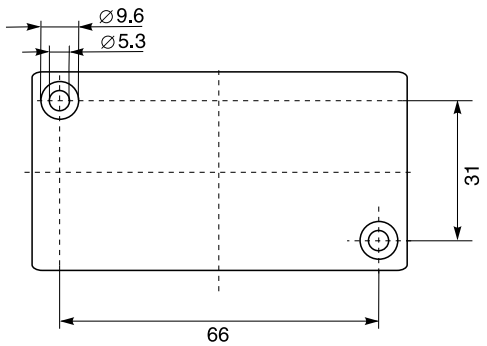
PG11-1/2"NPT
1/2" NPT conduit adapter for U-G1P base

VAZ-V1-B
Protective cover

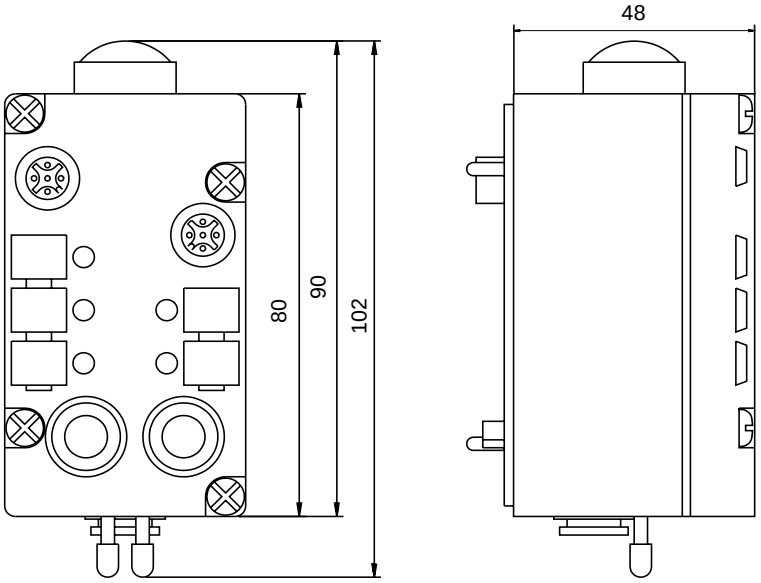
VBP-HH1-110V
Hand-held addressing device

VAZ-PK-V1-CINCH
Cable from module to hand-held addressing device

Mounting hole dimensions for bases



AS-Interface Pneumatic Module



Model Number

VAA-2EA-G1-ZE/P-S

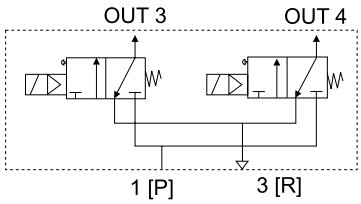
Pneumatic module

2 inputs/2 outputs

Features

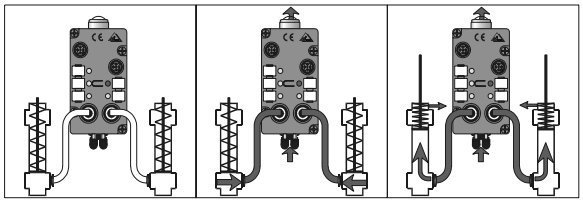
- Connection of 2- or 3-wire sensors
- Uses standard AS-Interface flat or round cable mounting bases
- Connects directly to pneumatic cylinders
- Easy installation
- IP65

Outputs

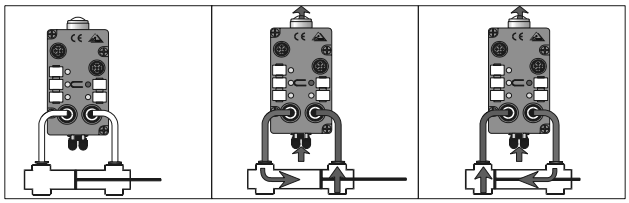


Examples for AS-Interface Airbox Functions

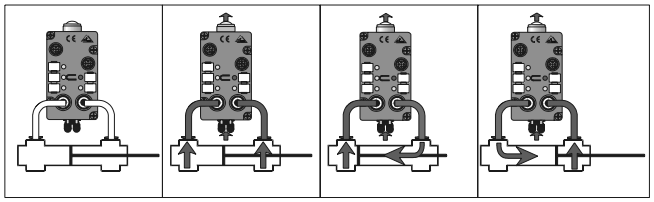
3/2-way valve



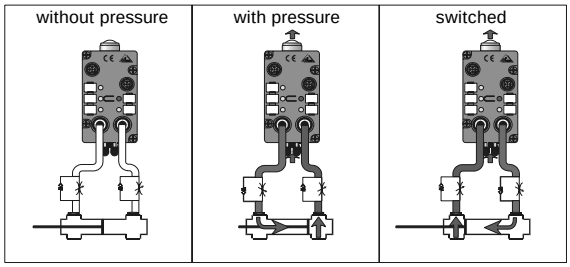
4/2-way valve



5/3-way valve



5/3-way valve



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Technical Data:

Model Number	VAA-2EA-G1ZE/P-S
Connections	
AS-Interface	yellow flat cable/black flat cable or standard round cable
Inputs	V1 (M12x1) quick disconnect
Outputs	air hose connector (8 mm)
Operating voltage V_B	from AS-Interface, reverse polarity protection
Operating current I_e	≤ 45 mA
Inputs	two 2- or 3-wire sensors, DC, sourcing
OFF I_{in}	≤ 1 mA
ON I_{in}	≥ 4.5 mA
I_{in}	≤ 7 mA
V_{out}	20-30 VDC from AS-Interface
I_{out}	100 mA, short circuit protection
Outputs	2, integrated solenoids
Pneumatic outputs	3/2-way valves
Pressure (min)	2 bar
Pressure (max)	8 bar
Air throughput rate	400 Nl/min
Exhaust	Sinterfilter
Seated valve nominal width	5 mm
Compressed air consistancy	filtered (5 µm), oiled or unoiled compressed air
Indicators	
4, Switch status (I1-I2, O3-O4)	LED yellow
Power (AS-Interface)	LED green
EMC	per EN 50 081-2, EN 50 082-2
Operating temperature	0 to + 55°C (32 to +131°F)
Storage temperature	-20 to +55°C (-4 to +131°F)
Protection (IEC)	IP65

Description

The VAA-2EA-G1-ZE/P-S module has two inputs for 2- or 3-wire sensors and two pneumatic outputs with a high air throughput rate for direct control of pneumatic actuators in the field. Two isolated 3/2 way valves are built in the module. Sensors are connected to the module with a V1 (M12x1) quick disconnect and jacketed 8 mm quick disconnects attach the outputs to the pneumatic cylinders.

Use the U-G1F base to connect to the AS-Interface flat cable, and use the U-G1P base to connect to the round cable. The VAA-2EA-G1-ZE/P-S is fully powered from AS-Interface. The AS-Interface standardized base U-G1FA includes an integrated addressing jack that allows easy connection to the hand-held addressing device.

Programming Instructions

Address	preset to 00, can be changed via the master or with a hand-held addressing device.
IO-Code	3
ID-Code	F

Data Bit

Bit	Function
D0	input I1
D1	input I2
D2	output O3
D3	output O4

Parameter Bits

Bit	Function (1/0)
P0	not used
P1	not used
P2	not used
P3	not used

Accessories

U-G1F
Base for connection of AS-Interface flat cable

U-G1FA
Base for connection of AS-Interface flat cable with addressing jack.

U-G1P
Base for connection of AS-Interface round cable

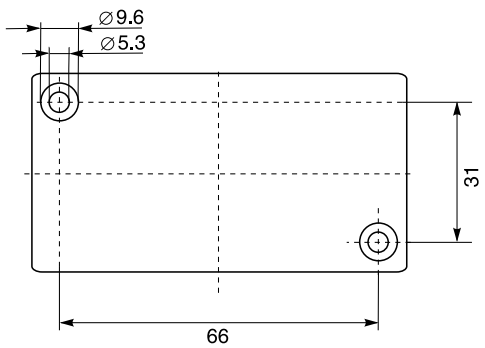
PG11-1/2"NPT
1/2" NPT conduit adapter for U-G1P base

VAZ-V1-B
Protective cover

VBP-HH1-110V
Hand-held addressing device

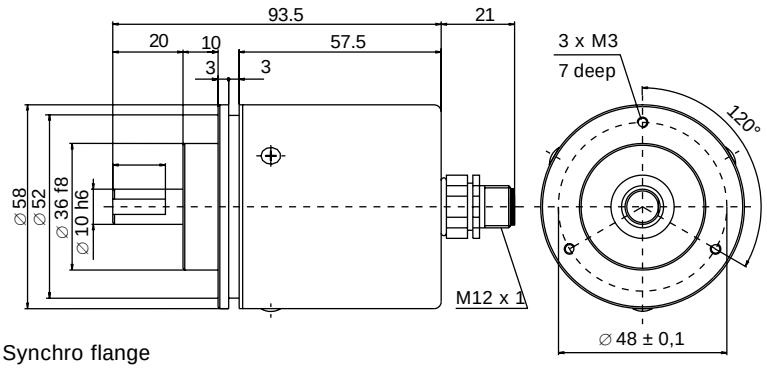
VAZ-PK-V1-CINCH
Cable from module to hand-held addressing device

Mounting hole dimensions for bases

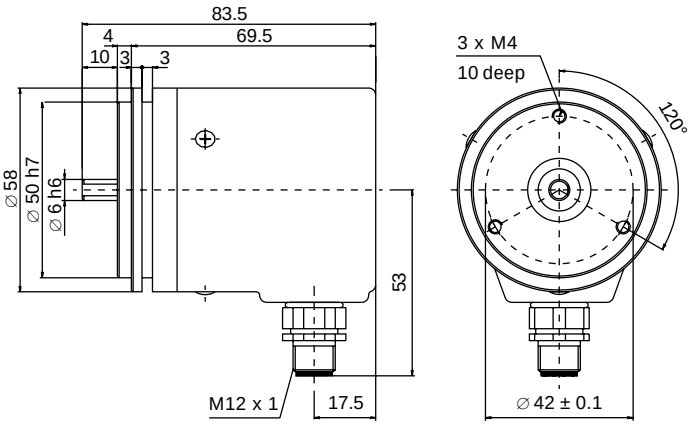


AS-Interface Serial Absolute Rotary Encoder

Clamping flange



Synchro flange



Model Number

Series BVE 10, BVM 10

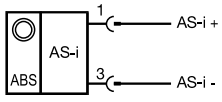
See Key to Model Numbers

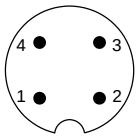
Features

- 13-bit single-turn
- 16-bit multi-turn
- Gray or binary code
- Transmission of the position data over 4 AS-Interface slaves
- Programming and addressing via AS-Interface

Electrical Connections

AS-i Connection Face view - male





1 AS-i (+)
2 n.c.
3 AS-i (-)
4 n.c.

NOTE:
Pin 2 and pin 4 must not be connected.

Key to Model Numbers

B	V		1	0	-				B	-		-	

Data format
B = AS-Interface

Design
E = Single-turn
M = Multi-turn

Flange
1 ≙ Clamping flange
2 ≙ Synchro flange

Shaft
0 = ∅ 10 x 20 mm
2 = ∅ 12 x 20 mm
6 = ∅ 6 x 10 mm

Connections
F = V1, radial
G = V1, axial

Steps per revolution*

Number of rotations*

* Note: BVM 10 - Steps per revolution ≤ 8,192. Steps per revolution x number of rotations ≤ 65,536.
BVE 10 - Steps per revolution = 8,192.

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Technical Data:

Model Number	See Model Number
Connections	
AS-Interface	V1 (M12x1) quick disconnect, axial or radial
Operating voltage	from AS-Interface
Operating current	< 100 mA
Mechanical	
Housing	aluminium, black finish
Flange	aluminium
Code-disc	metal
Shaft	stainless steel
Shaft seal	oil/saltwater-resistant
Max. speed	6000 rpm
Inertia	30 gcm^2
Starting torque	< 1.5 Ncm (at 20 °C)
Torque	< 1.0 Ncm (at 20 °C)
Max. shaft load, axial	40 N
Max. shaft load, radial	60 N
Min. mechanical life	4 x 10^{10} Rot.
Environmental Conditions	
Operating temperature	-20 to +80°C (-13 to +176°F)
Storage temperature	-25 to +85°C (-13 to +185°F)
Protection (IEC)	IP65

Description

The absolute rotary encoders use 4 AS-Interface addresses for transmitting up to 16 bit position data. These encoders offer a number of operating modes that will guarantee trouble-free operation.

1. Sequential Addresses and Gray-Codes
Since these 4 addresses are sequentially polled, the data can originate from 4 different measurement times. In order to minimize this effect, addresses A, B, C and D should be sequential addresses and, if possible, Gray Code should be used.

2. Temporary Storage of the Position Data in the Rotary Encoder
A controller exchanges input and output data at intervals that are independent of the AS-Interface scans. Therefore, the encoder data can originate from 2 different AS-Interface cycles. This problem can be avoided through temporary storage of the position data in the rotary encoder. The controller transfers the data bits D2 and D3 for address A to enable the temporary storage feature. The controller then receives the encoder data simultaneously from the AS-Interface master which was stored from the previous cycle. The data is delayed one scan as a precautionary measure.

3. Temporary Storage and Transfer with Response Bits
If any data from the rotory encoder is interrupted during transmission, it is possible that not all of the data transferred to the controler originates from the same position in the data word. The controller can check the data integrity for a single data word by comparing the 4 response bits. This is accomplished through the transfer of one response bit per address. As a result of using the response bits, the size of the usable data is reduced from 16 to 12 bits.

Programming Instructions

	Pre-set Address	IO-Code	ID-Code
Slave A	1	7	F
Slave B	2	0	F
Slave C	3	0	F
Slave D	4	0	F

Parameter Bits (slave A)

PB	0	1
P0	gray code	binary code
P1	with response bit	without response bit
P2	counter clockwise operating mode	clockwise operating mode
P3	not used	not used

Data Input without Response Bit

Slave A

D0	D1	D2	D3
Bit0	Bit1	Bit2	Bit3

Slave B

D0	D1	D2	D3
Bit4	Bit5	Bit6	Bit7

Slave C

D0	D1	D2	D3
Bit8	Bit9	Bit10	Bit11

Slave D

D0	D1	D2	D3
Bit12	Bit13	Bit14	Bit15

Data Input with Response Bit

Slave A

D0	D1	D2	D3
Bit0	Bit1	Bit2	QA

Slave B

D0	D1	D2	D3
Bit3	Bit4	Bit5	QB

Slave C

D0	D1	D2	D3
Bit6	Bit7	Bit8	QC

Slave D

D0	D1	D2	D3
Bit9	Bit10	Bit11	QD

Data Output (slave A)

D0/D1:	00 or 11	standard operation
	01	the rotary encoder is set to 0
	10	the rotary encoder is set to 90°
D2/D3:	00 or 11	output data is not stored
	10 or 01	output data is stored

Accessories

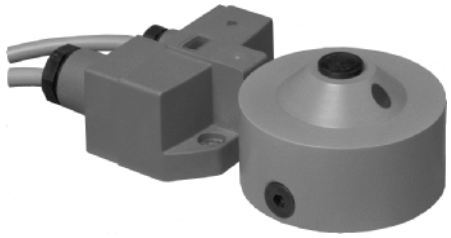
9203
Mounting bracket for clamping flange

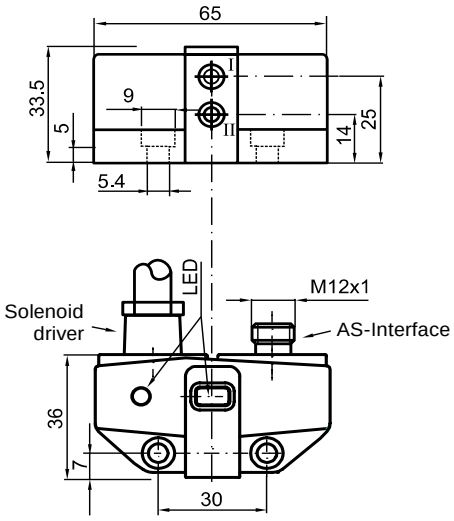
9310
Synchro mounting flange

9401, 9402, 9403
Encoder shaft couplers

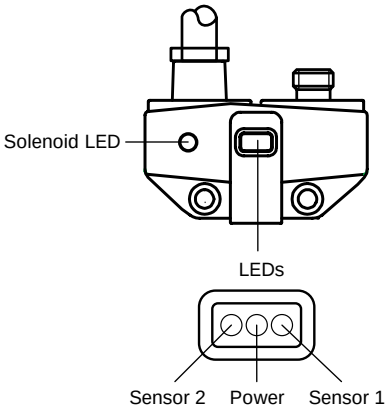
For more information on mounting accessories and adapters, refer to the Rotary Encoders Catalog.

AS-Interface Valve Position Sensor and Solenoid Driver





Actuator not displayed.



Model Number

NCN3-F31-B3-V1-K

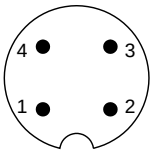
Valve position indicator and solenoid driver

Features

- 2 integrated sensors and AS-Interface powered solenoid driver
- 3 mm sensing range for each sensor
- Integrated sensors programmable N.O./N.C.
- Coil breakage monitoring of the sensors
- Lead breakage and short circuit monitoring of the solenoid
- IP67

Electrical Connections

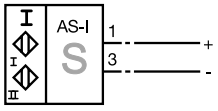
AS-i Connection Face view - male



1 AS-i (+)
2 n.c.
3 AS-i (-)
4 n.c.

Solenoid Cable

\+ Red
\- Yellow



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Technical Data:

Model Number	NCN3-F31-B3-V1-K
Connections	
AS-Interface	V1 (M12x1) quick disconnect
Output	1 M pigtail
Operating voltage V_B	from AS-Interface, reverse polarity protection
Operating current I_e	≤ 150 mA
Inputs	2, integrated sensors, powered from AS-Interface
Shielded	yes
Sensing range s_a	2.4-3.7 mm
Switching frequency f	≥ 100 Hz
Outputs	1, solenoid driver*
Output voltage V_{out}	from AS-Interface, reverse polarity protection
Output current I_{out}	100 mA, short circuit protection
Indicators	
2, switch status	LED yellow
Power (AS-Interface)	LED green
Solenoid on/LB or SC	LED yellow/LED red
EMC	per EN 60 947-5-2
Operating temperature t_b	-25 to +70°C (-13 to +158°F)
Storage temperature t_l	-40 to +85°C (-40 to +185°F)
Protection (IEC)	IP67

* Valve power consumption maximum 2.6 W/24 VDC

Programming Instructions

Address — preset to 00, can be changed via the master or with a hand-held addressing device.
IO-Code — D
ID-Code — F

Data Bits

Bit	Function
D0	solenoid status "0" solenoid off "1" solenoid on
D1	solenoid error [1] "0" lead breakage/short circuit "1" no error
D2	switch output sensor I [2] "0" target present (on) "1" target absent (off)
D3	switch output sensor II [2] "0" target present (on) "1" target absent (off)

Parameter Bits

Bit	Function (1/0)
P0	watchdog [3] "0" inactive "1" active
P1	not used
P2	mode of operation sensor I [4] "1" normally open "0" normally closed
P3	mode of operation sensor II [4] "1" normally open "0" normally closed

1 Monitoring only occurs with actuated solenoid (D0 = "1")

2 Applies to N.C. function (P2/P3 = "1" ; preset), for N.O. function (P2/P3 = "0") reverse relationship

3 Watchdog active: output returns to its de-energized state if a communications fault occurs

4 Default setting: normally closed

Description

The NCN3-F31-B3-V1-K is a dual inductive sensor and solenoid driver used to indicate and control the valve position of actuators. This dual sensor uses two screws to mount directly on the actuator and requires no additional adjustment.

The NCN3-F31-B3-V1-K connects to AS-Interface with a V1(M12x1) quick disconnect. The D1 data bit monitors the solenoid for lead breakage and short circuits. Yellow LEDs display the current switch conditions. A dual LED displays the current solenoid status or if an error exists.

The sensors can be programmed as normally open or normally closed contacts (parameter bits P2 and P3). If the watchdog is active and a communication fault occurs on the network, the ouput returns to its de-energized state. The P0 parameter bit disables the watchdog function.

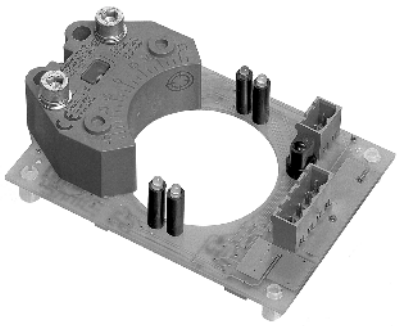
Accessories

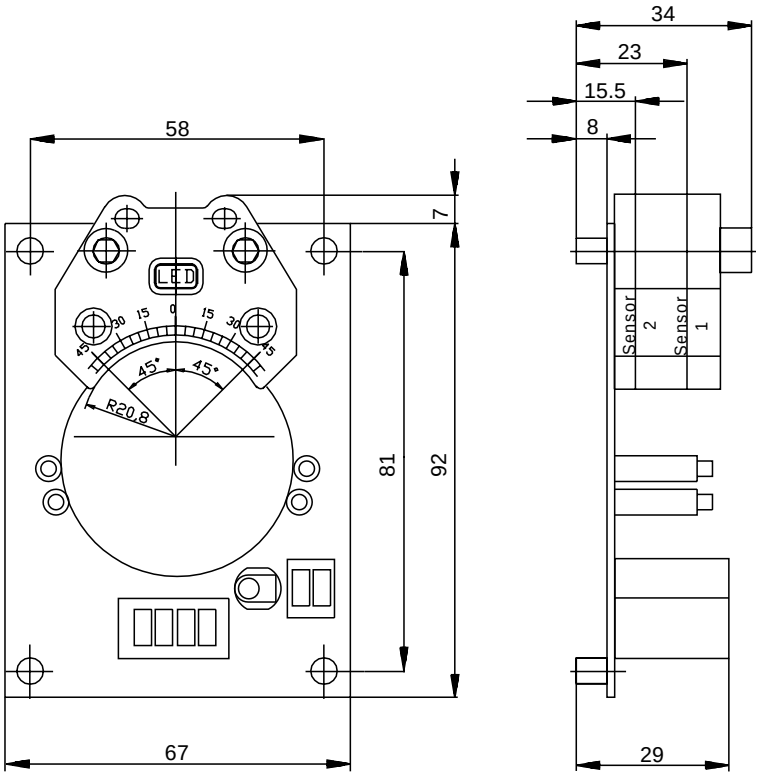
VBP-HH1-110V
Hand-held addressing device

BT 65
Positioning puck

BT 115
Positioning puck

AS-Interface Valve Position Sensor and Solenoid Driver





Model Number

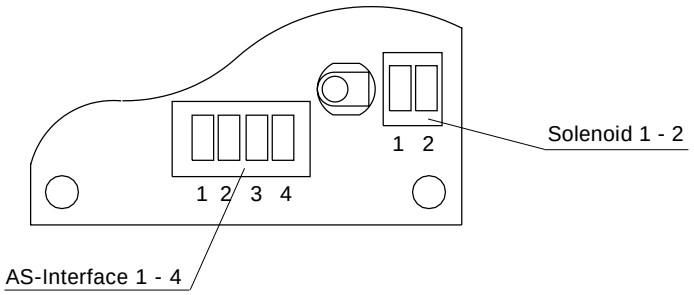
PL1-F25-B3-S

Valve position indicator and solenoid driver circuit board

Features

- 2 integrated sensors and AS-Interface powered solenoid driver
- Lead breakage and short circuit monitoring of the solenoid
- Watchdog functionality
- LED indication for inputs and output

Connections



Connections			
AS-Interface		Solenoid	
Pin 1	AS-i +	Pin 1	Solenoid +
Pin 2	AS-i -	Pin 2	Solenoid -
Pin 3	AS-i +		
Pin 4	AS-i -		

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Technical Data:

Model Number	PL1-F25-B3-S
Connections	
AS-Interface	removable terminals
Output	removable terminals
Operating voltage V_B	from AS-Interface, reverse polarity protection
Operating current I_e	≤ 150 mA
Inputs	2, integrated sensors, powered from AS-Interface
Switching frequency f	≥ 100 Hz
Outputs	1, solenoid driver*
Output voltage V_{out}	from AS-Interface, reverse polarity protection
Output current I_{out}	100 mA, short circuit protection
Indicators	
2, switch status	LED yellow on board
2, switch status	LED yellow in sensor
Power (AS-Interface)	LED green
Solenoid on	LED yellow
EMC	per EN 60 947-5-2
Operating temperature t_b	-25 to +60°C (-13 to +140°F)
Storage temperature t_l	-40 to +85°C (-40 to +185°F)

* Valve power consumption maximum 2.6 W/24 VDC

Programming Instructions

Address	preset to 00, can be changed via the master or with a hand-held addressing device.
IO-Code	D
ID-Code	F

Data Bits

Bit	Function
D0	solenoid status "1" solenoid on "0" solenoid off
D1	not used
D2	switch output sensor I "1" target present (on) "0" target absent (off)
D3	switch output sensor II "1" target present (on) "0" target absent (off)

Parameter Bits

Bit	Function (1/0)
P0	watchdog = 1, outputs return to their de-energized state when a communications fault exists = 0, outputs latch in their last state when a communications fault exists
P1	not used
P2	not used
P3	not used

Description

Quarter-turn valves are commonly used to control product flow throughout the processing industry. These valves are typically controlled pneumatically and open or closed indication is reported back to the controller. Standard housings per VDI/VDE 3845 contain the open or closed proximity sensors used by a control valve.

The PL1-F25-B3-S circuit board was developed for use in standard housings and includes connection terminals, the AS-Interface circuit board and dual sensor.

A jack is provided for programming the AS-Interface address using the cinch cable and a hand-held addressing device. When the output is active, the solenoid is monitored for lead breakage.

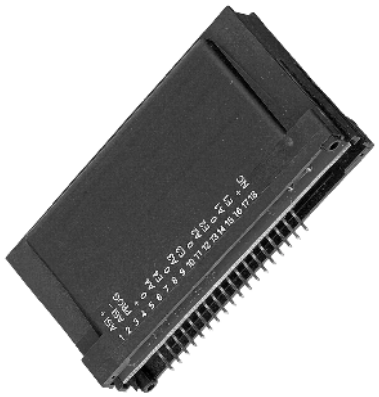
Accessories

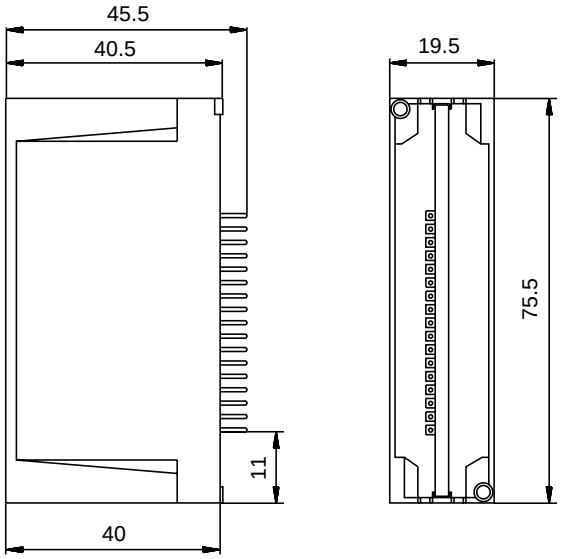
VBP-HH1-110V
Hand-held addressing device

VAZ-PK-V1-CINCH
Connection cable, module/addressing device

BT 65
Positioning puck

AS-Interface Circuit Board





Model Number

VAA-4EA-CB-E/E2

Circuit board module

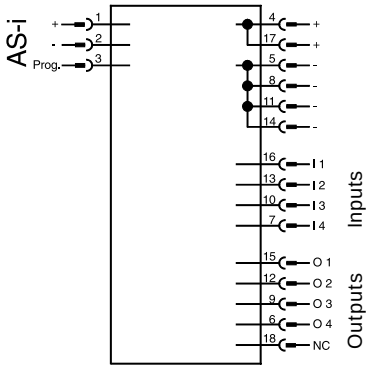
4 inputs/4 outputs

Features

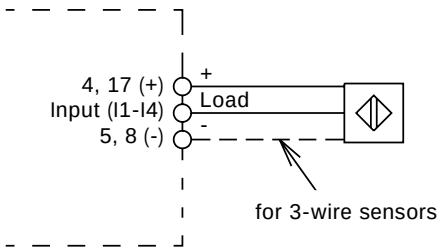
- Bus powered outputs
- Short circuit and overload protection for inputs and outputs
- Watchdog functionality

Connections

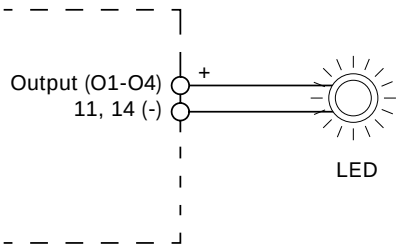
Rail dimension: 2.54



Inputs



Outputs



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Technical Data:

Model Number	VAA-4EA-CB-E/E2
Connections	
AS-Interface	Solder pins
Inputs/outputs	Solder pins
Operating voltage V_B	from AS-Interface, reverse polarity protection
Operating current I_e	≤ 200 mA
Inputs	four 2- or 3-wire sensors, DC, sourcing
OFF I_{In}	≤ 1.5 mA
ON I_{In}	≥ 5 mA
I_{in}	≤ 7 mA
V_{OUT}	20-30 VDC from AS-Interface
Outputs	4, electronic
Load capacity	45 mA per output 24 VDC, 180 mA total
Indicators	
8, Switch status (I1-I4, O1-O4)	LED yellow
Power (AS-Interface)	LED green
EMC	per EN 50 081-2, EN 50 082-2
Operating temperature t_b	-25 to +70°C (-13 to +158°F)
Storage temperature t_l	-40 to +70°C (-40 to +158°F)
Protection (IEC)	IP00

Description

The VAA-4EA-CB-E/E2 is an AS-Interface circuit board solution for an AS-Interface I/O module. AS-Interface supplies power to the module and the input and outputs are short circuit and overload protected. If the watchdog is active and a communication fault occurs on the network, the ouput returns to its de-energized state.

P+F can customize circuit board models to meet your specific applications.

Programming Instructions

Address	preset to 00, can be changed via the master or with a hand-held addressing device.
IO-Code	7
ID-Code	0

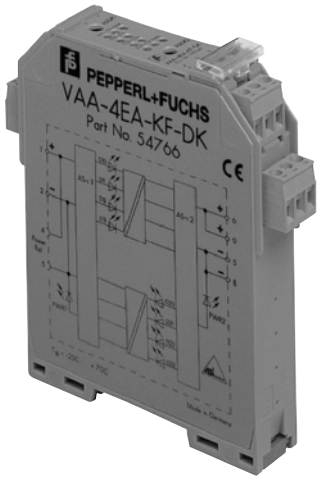
Data Bits

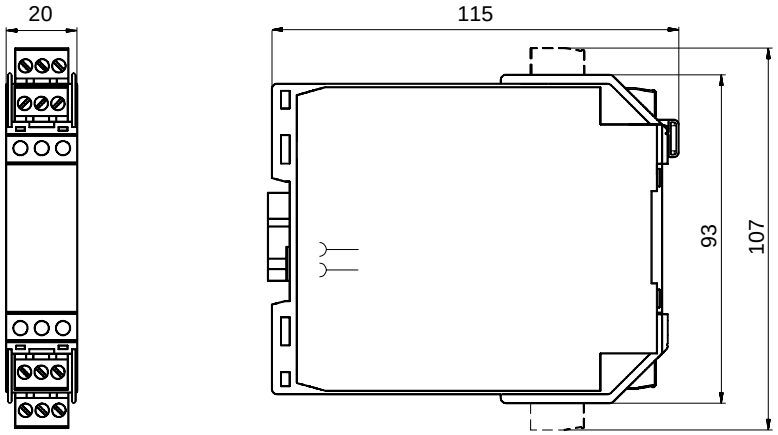
Bit	Function
D0	input I1/output O1
D1	input I2/output O2
D2	input I3/output O3
D3	input I4/output O4

Parameter Bits

Bit	Function (1/0)
P0	not used
P1	not used
P2	not used
P3	not used

AS-Interface Data Coupler





Model Number

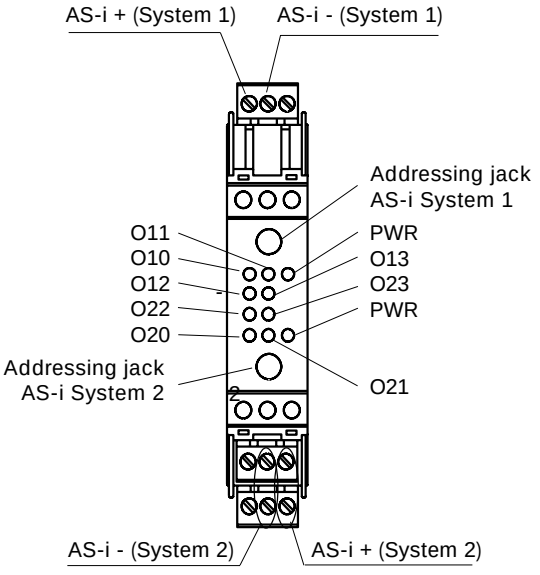
VAA-4EA-KF-DK

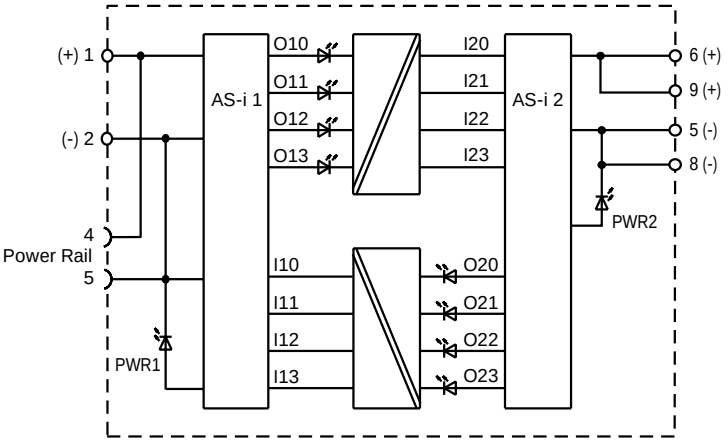
Data coupler

Features

- Module for bidirectional data exchange between two AS-Interface systems
- Two AS-Interface connections per system
- Two 4 input/4 output modules (1 per system, internally connected)
- AS-Interface connections via power rail and terminals
- Removable, mechanically-keyed terminals
- LED indication for all outputs
- Two integrated addressing jacks

Connections





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Technical Data:

Model Number	VAA-4EA-KF-DK
Connections	
AS-Interface	terminals or Power Rail (System 1) terminals (System 2)
Inputs/outputs	internally connected
Operating voltage V_B	from AS-Interface, reverse polarity protection
Operating current I_e	≤ 50 mA (System 1) ≤ 50 mA (System 2)
Indicators	
8, Switch status (O1-O4, O1-O4)	LED yellow
2, Power (AS-Interface)	LED green
EMC	per EN 50 081-2, EN 50 082-2
Operating temperature	-25 to + 70°C (-13 to +158°F)
Storage temperature	-25 to +85°C (-13 to +185°F)
Protection (IEC)	IP20

Programming Instructions

Address	preset to 00, can be changed via the master or with a hand-held addressing device.
IO-Code	7
ID-Code	F

Data Bits (System 1)

Bit	Function
D0	input I10/output O10
D1	input I11/output O11
D2	input I12/output O12
D3	input I13/output O13

Data Bits (System 2)

Bit	Function
D0	input I20/output O20
D1	input I21/output O21
D2	input I22/output O22
D3	input I23/output O23

Parameter Bits

Bit	Function (1/0)
P0	not used
P1	not used
P2	not used
P3	not used

Description

The data coupler VAA-4EA-KF-DK is used for bidirectional data exchange between two independent AS-Interface systems. Therefore the data exchange can be carried out locally, without having to transfer the data back to the control system. This is of particular advantage in time-critical applications.

The inputs and outputs are electrically isolated from each other so that the two independent AS-Interface systems can be connected. The electrical isolation eliminates a potential problem of a floating ground. The status of all the outputs is indicated via 8 LEDs provided on the front of the module. Two additional LEDs signal the presence of the AS-Interface voltage on the two circuits.

The connection to the AS-Interface System 1 can be accomplished through terminal connections or using the Power Rail and System 2 by terminals only. Two addressing jacks are available for connection of the hand-held addressing device to each module. The KF modules allow the exchange of components while under power and the mechanically-keyed, removable terminals enable simple replacement of the module and aid installation.

Accessories

VBP-HH1-110V
Hand-held addressing device

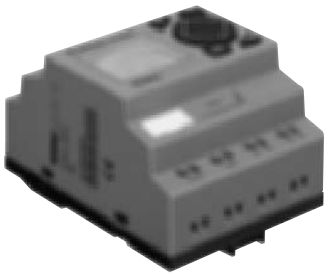
VAZ-PK-V1-CINCH
Cable from module to addressing device

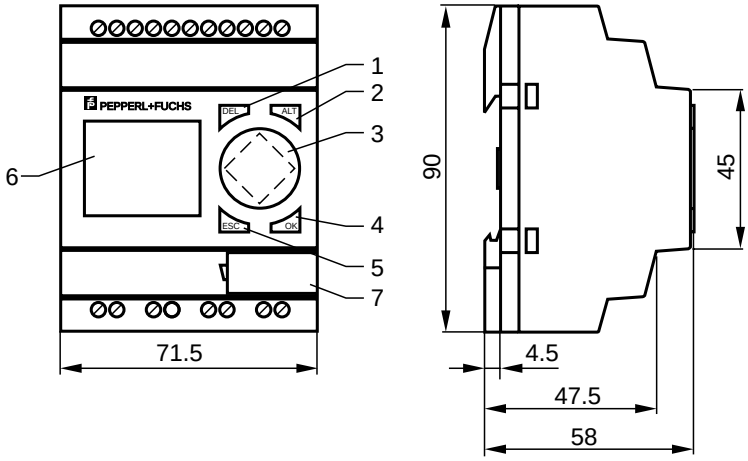
UPR-05
Continuous Power Rail with aluminum DIN rail and cover, 2 m long

UPR E
UPR 05 end cap

PR 05
Power Rail, 0.5 m long

AS-Interface Control Relay





1 DEL key
2 ALT key
3 Cursor key
4 OK key
5 ESC key
6 LCD display
7 Socket for PC Interface (with cover)

Model Number

EASY412-DC-TC

Control relay

IP20

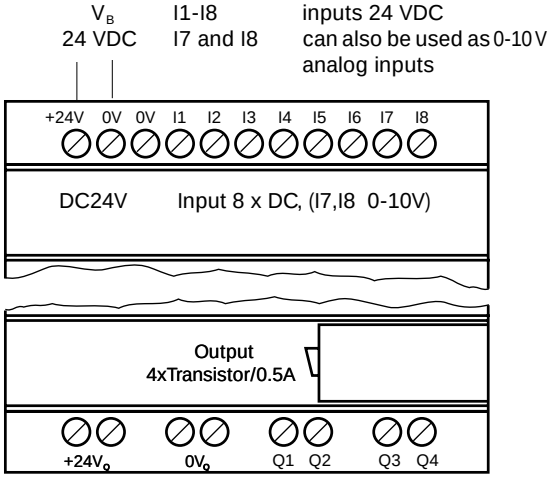
Features

- 8 digital inputs, two of which can be used as analog inputs
- 4 transistor outputs
- 4-line LCD display
- Control panel/keys
- Real-time clock/timing relay
- Retentive memory functions
- Interface for transfer to memory card or PC
- No software required

Controls and displays

1 DEL key:	Deletion of contacts, relays, connections, ladder rungs
2 ALT key:	Indicate connections, N.O. or N.C. contact selection, insert ladder rung
3 Cursor keys:	right, left, up, down Contacts, relays, number selection P key for: Input P1 cursor left Input P2 cursor up Input P3 cursor right Input P4 cursor down
4 OK key:	Step forward in menu, accept entry
5 ESC key:	Take one step back in menu Menu, exit parameter function relay Exit without saving
LCD display:	Inputs/outputs status indication Operating status Ladder diagram Display time

Connections



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Technical Data:

Model Number	EASY412-DC-TC
Connections	
Power	terminals
Inputs/outputs	terminals
Operating voltage V_B	24 VDC, +20/-15 %
Operating current I_e	≤ 80 mA
Digital inputs (I1-I8)	8*, mechanical contacts or 3-wire sensors, DC, sourcing
OFF V_{In}	≤ 5 VDC
ON V_{In}	≥ 15 VDC
ON I_{In}	≤ 3.3 mA
Analog inputs (I7-I8)	2*, 0-10 VDC
Voltage range	0-10 VDC
Resolution	0.1 VDC
Input impedance	11.2 kΩ
Outputs	4, electronic
Load capacity	24 VDC, 500 mA (per output), galvanically isolated
Indicators	
LCD display	4 line
Operating temperature t_b	-25 to +55°C (-13 to +131°F)
Storage temperature t_l	-40 to +70°C (-40 to +158°F)
Protection (IEC)	IP20

* 8 digital inputs, two of which can be used as analog inputs.

References

Manual: EASY 412, EASY 600 User's Manual

The documentation and software are included with the unit.

Training Guide: EASY 412, EASY 600

- Contact Pepperl+Fuchs

Description

The EASY412-DC-TC programmable relay is a simple, low-cost alternative to hard-wired and conventional PLC solutions. It is ideal for controlling HVAC systems, counting, security lighting, alarms or other applications typically considered too simple to justify the expense of a PLC. This relay mounts on a 35 mm DIN rail or it can be screwed to a panel. The EEPROM stores the ladder diagram program, eliminating the need for a battery backup. A separate memory module is available for program backup or distribution to multiple units.

Programming
The EASY412-DC-TC uses just four buttons and a cursor control to construct ladder diagrams so you don't have to learn a special logic language. Internal relays enable interlocking functions and intermediate data storage. An optional Windows-based software package is available for users who require advanced programming capabilities.

Accessories

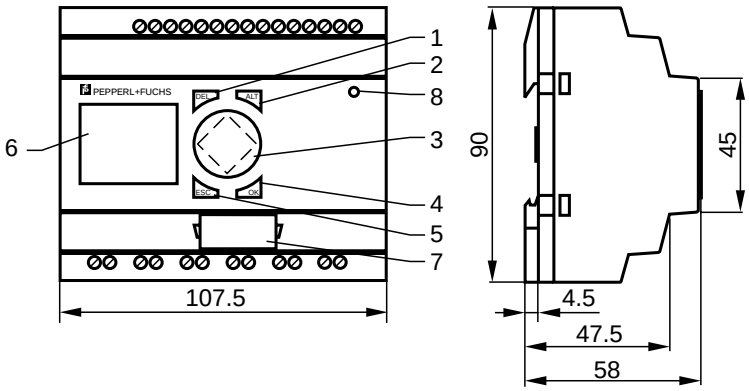
EASY-SOFT
Windows-based programming software for ladder logic programming and printing.

EASY-M-8K
8K Flash memory module for back-up and copying of programs from/to the EASY412-DC-TC.

EASY-M-16K
16K Flash memory module for back-up and copying of programs from/to the EASY412-DC-TC.

EASY-PC-CAB
Programming cable for connectiong the EASY412-DC-TC to a PC serial port, 2 m long.

AS-Interface Control Relay



1 DEL key	5 ESC key
2 ALT key	6 LCD display
3 Cursor key	7 Socket for PC Interface (with cover)
4 OK key	8 LED Power/Run

Model Number

EASY621-DC-TC

Control relay

IP20

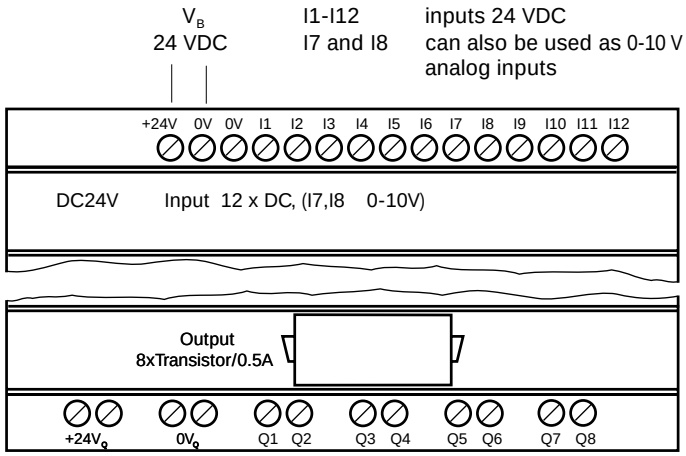
Features

- 12 digital inputs, two of which can be used as analog inputs
- 4 transistor outputs
- 4-line LCD display
- Control panel/keys
- Real-time clock/timing relay
- Retentive memory functions
- Interface for transfer to memory card or PC
- Can be expanded with EASY205-ASI as a 4 input/4 output AS-Interface module
- No software required

Controls and displays

1 DEL key:	Deletion of contacts, relays, connections, ladder rungs
2 ALT key:	Indicate connections, N.O. or N.C. contact selection, insert ladder rung
3 Cursor keys:	right, left, up, down Contacts, relays, number selection P key for: Input P1 cursor left Input P2 cursor up Input P3 cursor right Input P4 cursor down
4 OK key:	Step forward in menu, accept entry
5 ESC key:	Take one step back in menu Menu, exit parameter function relay Exit without saving
LCD display:	Inputs/outputs status indication Operating status Ladder diagram Display time

Connections



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Technical Data:

Model Number	EASY621-DC-TC
Connections	
Power	terminals
Inputs/outputs	terminals
EASY expansion	integrated 6-pin connector
Operating voltage V_B	24 VDC, +20/-15%
Operating current I_e	≤ 140 mA
Digital inputs (I1-I12)	12*, mechanical contacts or 3-wire sensors, DC, sourcing
OFF V_{In}	≤ 5 VDC
ON V_{In}	≥ 15 VDC
ON I_{In}	≤ 3.3 mA
Analog inputs (I11-I12)	2*, 0-10 VDC
Voltage range	0-10 VDC
Resolution	0.1 VDC
Input impedance	11.2 kΩ
Outputs	8, electronic
Load capacity	24 VDC, 500 mA (per output), galvanically isolated
Indicators	
Program mode/run mode	LED green/LED green flashing
LCD display	4 line
Operating temperature t_b	-25 to +55°C (-13 to +131°F)
Storage temperature t_l	-40 to +70°C (-40 to +158°F)
Protection (IEC)	IP20

* 12 digital inputs, two of which can be used as analog inputs.

References

Manual: EASY 412, EASY 600 User's Manual

The documentation and software are included with the unit.

Training Guide: EASY 412, EASY 600

- Contact Pepperl+Fuchs

Description

The EASY621-DC-TC programmable relay is a simple, low-cost alternative to hard-wired and conventional PLC solutions. It is ideal for controlling HVAC systems, counting, security lighting, alarms or other applications typically considered too simple to justify the expense of a PLC. This relay mounts on a 35 mm DIN rail or it can be screwed to a panel. The EEPROM stores the ladder diagram program, eliminating the need for a battery backup. A separate memory module is available for program backup or distribution to multiple units.

Programming
The EASY621-DC-TC uses just four buttons and a cursor control to construct ladder diagrams so you don't have to learn a special logic language. Internal relays enable interlocking functions and intermediate data storage. An optional Windows-based software package is available for users who require advanced programming capabilities.

Expandability
The EASY621-DC-TC can be expanded with a connection to AS-Interface using the EASY205-ASI module. The exchange of data between the AS-Interface master and the EASY 621 is provided by four inputs and four outputs as well as four parameter bits of the EASY205-ASI module.

Accessories

EASY-SOFT
Windows-based programming software for ladder logic programming and printing.

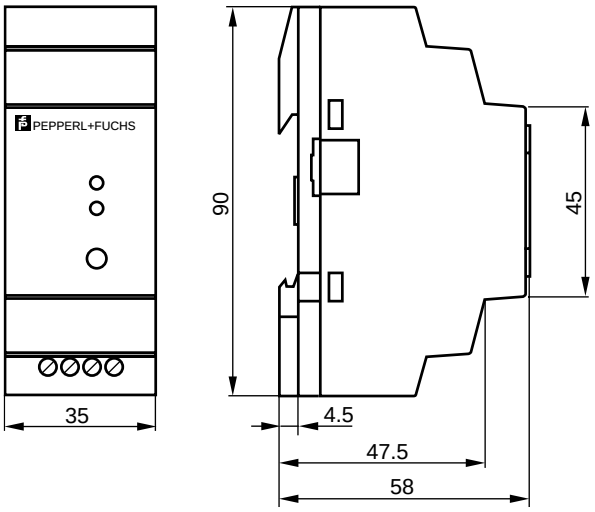
EASY-M-8K
8K Flash memory module for back-up and copying of programs from/to the EASY621-DC-TC.

EASY-M-16K
16K Flash memory module for back-up and copying of programs from/to the EASY621-DC-TC.

EASY-PC-CAB
Programming cable for connectiong the EASY621-DC-TC to a PC serial port, 2 m long.

EASY205-ASI
AS-Interface expansion module for the EASY 612 control relay.

AS-Interface EASY Expansion Module



Model Number

EASY205-ASI

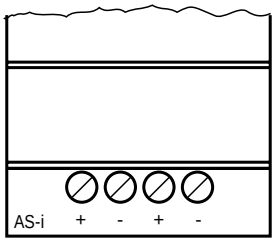
AS-Interface expansion module for the EASY 621

IP20

Features

- AS-Interface expansion module for control relay EASY621-DC-TC
- Interface module and control relay together form an intelligent standard AS-i module
- Internal watchdog for monitoring the communication with the AS-i interface and the control relay
- 4 inputs/4 outputs/4 parameters
- Functional display for device supply and watchdog

Connections



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Technical Data:

Model Number	EASY205-ASI
Connections	
EASY expansion	integrated 6-pin connector
AS-Interface	terminals
Operating voltage V_B	from AS-Interface, reverse polarity protection
Operating current I_e	≤ 25 mA
Indicators	
Power (AS-Interface)	LED green
Communication error	LED red
Operating temperature t_b	-25 to +55°C (-13 to +131°F)
Storage temperature t_l	-40 to +70°C (-40 to +158°F)
Protection (IEC)	IP20

Programming Instructions

Address	preset to 00, can be changed via the master or with a hand-held addressing device.
IO-Code	7
ID-Code	F

Data Bits

Bit	Function	EASY Outputs
D0	input I1	S1
D1	input I2	S2
D2	input I3	S3
D3	input I4	S4

Data Bits

Bit	Function	EASY Inputs
D0	output O1	R1
D1	output O2	R2
D2	output O3	R3
D3	output O4	R4

Parameter Bits

Bit	Function (1/0)	EASY Inputs
P0	output P0	R5
P1	output P1	R6
P2	output P2	R7
P3	output P3	R8

Description

The EASY621-DC-TC can be expanded with a connection to AS-Interface using the EASY205-ASI module. The exchange of data between the AS-Interface master and the EASY 621 is provided by four inputs and four outputs as well as four parameter bits of the EASY205-ASI module.

Accessories

VBP-HH1-110V
Hand-held addressing device

VAZ-PK-V1-CINCH
Cable from module to addressing device

Note: 6-pin connector for attaching the expansion module to the EASY 621 is included with the unit.