GEMÜ R563 eSyStep

Motorized control valve

Features

- Control of liquid and gaseous media from 63 l/h to 3300 l/h
- Linear or equal-percentage control characteristic options
- Hermetic separation between medium and actuator
- Parameterizable via IO-Link
- On-site or remote end position programming via programming input
- Various functions integrated (e.g. feedback, stroke limiter, etc.)

Description

The GEMÜ R563 2/2-way straight seat control valve has a body with an integrated control mechanism. The GEMÜ R563 valve was specially developed for controlling small quantities and allows flow rates from 63 l/h to 3300 l/h. The valve will be available with a positioner for a 0/4-20 mA or 0-10 V input signal and can also be configured to a fail-safe position by using an emergency power supply module. Additional functions can be adapted via the IO-Link interface. The self-locking actuator holds its position in a stable manner when idle and in the event of power supply failure.

Technical specifications

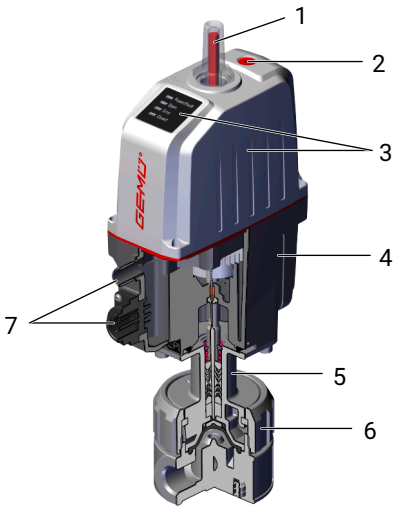
- **Media temperature:** 0 to 80 °C
- **Ambient temperature:** 0 to 60 °C
- **Operating pressure :** 0 to 6 bar
- **Nominal sizes:** DN 10 to 15
- **Body configurations:** 2/2-way body
- **Connection types:** Threaded connection l Union end
- **Connection standards:** DIN l EN l ISO
- **Body materials:** PVC-U l PVDF
- **Seat seal materials:** PEEK
- **Supply voltage:** 24 V DC
- **Actuating speed:** max. 3 mm/s
- **Protection class:** IP 65

Technical data depends on the respective configuration

further information
webcode: GW-R563

Product description

Construction



Item	Name	Materials
1	Optical position indicator	PA 12
2	Manual override	
3	Actuator top with LED display	Reinforced polyamide
4	Actuator base	Reinforced polyamide
5	Distance piece with leak detection hole	
6	Valve body	PVC-U, grey / regulating cone PEEK PVDF / regulating cone PEEK
7	Electrical connections	

GEMÜ CONEXO

The interaction of valve components that are equipped with RFID chips and an associated IT infrastructure actively increase process reliability.

Thanks to serialization, every valve and every relevant valve component such as the body, actuator or diaphragm, and even automation components, can be clearly traced and read using the CONEXO pen RFID reader. The CONEXO app, which can be installed on mobile devices, not only facilitates and improves the "installation qualification" process, but also makes the maintenance process much more transparent and easier to document. The app actively guides the maintenance technician through the maintenance schedule and directly provides him with all the information assigned to the valve, such as test reports, testing documentation and maintenance histories. The CONEXO portal acts as a central element, helping to collect, manage and process all data.

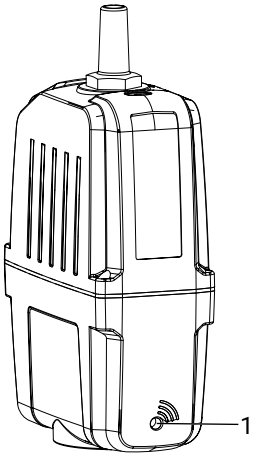
For further information on GEMÜ CONEXO please visit:
www.gemu-group.com/conexo

Ordering

GEMÜ Conexo must be ordered separately with the ordering option "CONEXO".

In the corresponding design with CONEXO, this product has an RFID chip (1) for electronic identification purposes. The position of the RFID chip can be seen below. The CONEXO pen helps read out information stored in the RFID chips. The CONEXO app or CONEXO portal is required to display this information.

For electronic identification purposes, each replaceable component contained in the product is equipped with an RFID chip (1). Where you can find the RFID chip differs from product to product.



Actuator RFID chip

The CONEXO pen helps read out information stored in these RFID chips. The CONEXO app or CONEXO portal is required to view this information.

Availability

Availability of valve bodies

Threaded connection

DN	Connection types code [1]		
	1		7
	Material code [2]		
	1	20	1
3	X	X	X
6	X	X	X
10	X	X	X
15	X	X	X

X = Standard

1) **Connection type**
Code 1: Threaded socket DIN ISO 228
Code 7: Union end with insert (socket) – DIN

2) **Valve body material**
Code 1: PVC-U, grey / regulating cone PEEK
Code 20: PVDF / regulating cone PEEK

Order data

The order data provide an overview of standard configurations.

Please check the availability before ordering. Other configurations available on request.

Order codes

1 Type	Code
Control valve, motorized, eSyStep	R563

2 DN	Code
DN 3	3
DN 6	6
DN 10	10
DN 15	15

3 Body configuration	Code
2/2-way body	D

4 Connection type	Code
Threaded socket DIN ISO 228	1
Union end with insert (socket) – DIN	7

5 Valve body material	Code
PVC-U, grey / regulating cone PEEK	1
PVDF / regulating cone PEEK	20

6 Seal material	Code
FKM	4
EPDM	19

7 Voltage/frequency	Code
24 V DC	C1

8 Control module	Code
Positioner	S0
Positioner, configured for emergency power supply module (NC)	S5

8 Control module	Code
Positioner, configured for emergency power supply module (NO)	S6

9 Control characteristic	Code
Regulating cone, equal-percentage	A
Regulating cone, equal-percentage	B
Regulating cone, equal-percentage	C
Regulating cone, linear	D
Regulating cone, linear	E

10 Kv value	Code
63 l/h	63
100 l/h	100
160 l/h	160
250 l/h	250
400 l/h	400
630 l/h	630
1000 l/h	1000
1600 l/h	1600
2500 l/h	2500
3300 l/h	3300

11 Actuator version	Code
Actuator size 0	0A

12 CONEXO	Code
Without	
Integrated RFID chip for electronic identification and traceability	C

Order example

Ordering option	Code	Description
1 Type	R563	Control valve, motorized, eSyStep
2 DN	3	DN 3
3 Body configuration	D	2/2-way body
4 Connection type	1	Threaded socket DIN ISO 228
5 Valve body material	1	PVC-U, grey / regulating cone PEEK
6 Seal material	19	EPDM
7 Voltage/frequency	C1	24 V DC
8 Control module	S0	Positioner
9 Control characteristic	A	Regulating cone, equal-percentage
10 Kv value	63	63 l/h
11 Actuator version	0A	Actuator size 0
12 CONEXO	C	Integrated RFID chip for electronic identification and traceability

Technical data

Medium

Working medium: Corrosive, inert, gaseous and liquid media which have no negative impact on the physical and chemical properties of the body and seal material.

Temperature

Media temperature: 0 — 80 °C

Ambient temperature: 0 — 60 °C (code S0, S5, S6)*

* depending on version and/or operating parameters (see chapter Duty cycle and service life)

Storage temperature: 0 — 40 °C

Pressure

Operating pressure: 0 — 6 bar

All pressures are gauge pressures.

Pressure/temperature correlation:

Valve body material		Temperature in °C (valve body)											
Materials	Code	-10	±0	5	10	20	25	30	40	50	60	70	80
PVC-U	**1**	-	-	-	6.0	6.0	6.0	6.0	6.0	3.5	1.5	-	-
PVDF	**20**	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.4	4.7

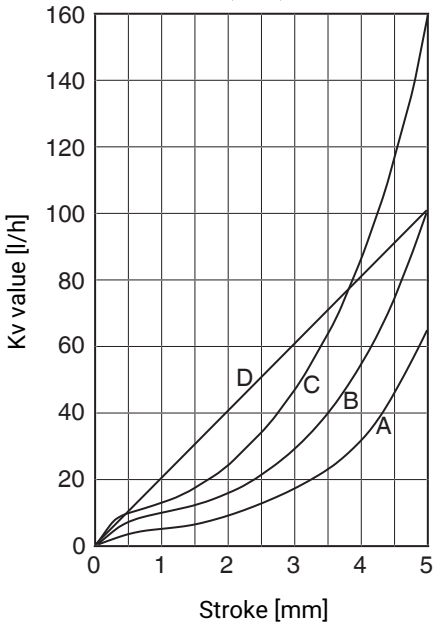
Permissible operating pressure in bar
The pressure rating (PN) depends on the connection code.
Data for extended temperature ranges on request. Please note that the ambient temperature and media temperature generate a combined temperature at the valve body which must not exceed the above values.

Leakage rate:

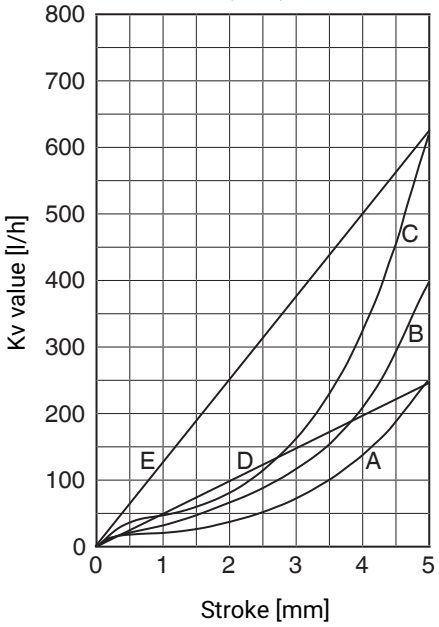
Seat seal	Standard	Test procedure	Leakage rate	Test medium
PEEK, PVC, PVDF	DIN EN 60534-4	1	IV	Air

Kv values:

Characteristics DN 3 (seat)



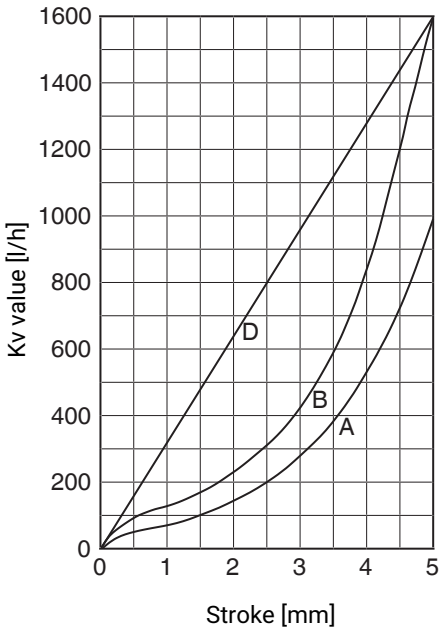
Characteristics DN 6 (seat)



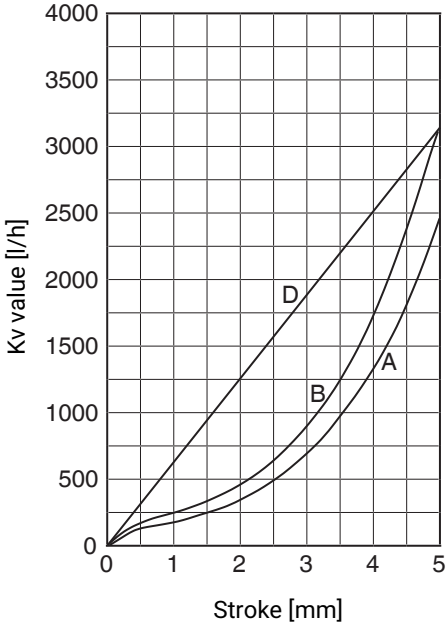
Characteristic	Kv values DN 3	Kv values DN 6
A	63	250
B	100	400
C	160	630
D	100	250
E	-	630

Kv values in l/h

Characteristics DN 10 (seat)



Characteristics DN 15 (seat)



Characteristic	Kv values DN 10	Kv values DN 15
A	1000	2500
B	1600	3300
D	1600	3300

Kv values in l/h

Product conformities

Machinery Directive: 2006/42/EC

Pressure Equipment Directive: 2014/68/EU

Food:
Regulation (EC) No. 1935/2004*
Regulation (EC) No. 10/2011*
FDA*
* depending on version and / or operating parameters

EMC Directive: 2014/30/EU
Technical standards used:

Interference emission	DIN EN 61000-6-4 (07/2011) DIN EN 61326-1 (industry) (07/2013) Interference emission class: Class A Interference emission group: Group 1
Interference resistance	DIN EN 61000-6-2 (03/2006) DIN EN 61326-1 (industry) (07/2013)

Mechanical data

Protection class: IP 65 acc. to EN 60529

Actuating speed:

Actuator size 0	Max. 3 mm/s
Actuator size 1	max. 2.5 mm/s

Max. 3 mm/s

Stroke: 5 mm

Weight:

Actuator

DN 3, 6, 10 15	1.6 kg

Valve body

Connection types code	Material code	Weight
1	1	0.1
1	20	0.13
7	1	0.13

Weights in kg

Mechanical environmental conditions: Class 4M8 acc. to EN 60721-3-4:1998

Vibration: 5g acc. to IEC 60068-2-6 Test Fc

Shock: 25g acc. to 60068-2-27 Test Ea

Duty cycle and service life

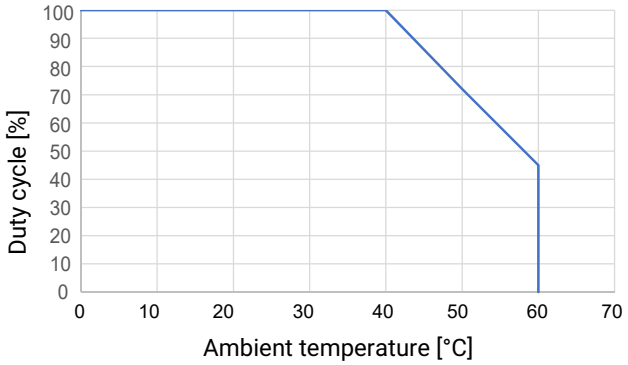
Service life:

Control operation - Class C according to EN 15714-2 (1,800,000 starts and 1200 starts per hour).

Open/Close duty - At least 500,000 switching cycles at room temperature and permissible duty cycle.

Duty cycle:

Control module positioner (code S0, S5, S6), Open/Close duty
duty cycle at full valve stroke and 10 minutes cycle time.



Control module positioner (code S0, S5, S6), control operation - class C acc. to EN 15714-2 - DN 10 - 15 up to 50 °C ambient temperature

The specified characteristics and values apply to the default setting.

With reduced forces, higher duty cycles and/or higher ambient temperatures are possible. At higher force settings the duty cycle and/or ambient temperature is reduced (for IO-Link parameters see operating instructions).

Electrical data

Supply voltage Uv:	24 V DC ± 10%	
Rating:	Actuator size 0 (code 0A)	20 W
Operation:	Stepper motor, self-locking	
Reverse battery protection:	Yes	

Analogue input signals – Control module Positioner (code S0, S5, S6)

Set value

Input signal:	0/4 - 20 mA; 0 - 10 V (function selectable via IO-Link)
Input type:	passive
Input resistance:	250 Ω
Accuracy/linearity:	≤ ±0.3% of full flow
Temperature drift:	≤ ±0.1% / 10°K
Resolution:	12 bit
Reverse battery protection:	Yes (up to ± 24 V DC)

Digital input signals

Inputs:	Function selectable via IO-Link (see table Overview of available functions – Input and output signals)
Input voltage:	24 V DC
Logic level "1":	> 15.3 V DC
Logic level "0":	< 5.8 V DC
Input current:	typically < 0.5 mA

Analogue output signals – Control module Positioner (code S0, S5, S6)

Actual value

Output signal:	0/4 - 20 mA; 0 - 10 V (function selectable via IO-Link)
Output type:	Active
Accuracy:	≤ ±1% of full flow
Temperature drift:	≤ ±0.1% / 10°K
Load resistor:	≤ 750 kΩ
Resolution:	12 bit
Short-circuit proof:	Yes

Digital output signals

Outputs:	Function selectable via IO-Link (see table Overview of available functions – Input and output signals)
Type of contact:	Push-Pull
Switching voltage:	Power supply Uv
Switching current:	≤ 140 mA
Short-circuit proof:	Yes

Communication

Interface:	IO-Link
Function:	Parameterization/process data
Transmission rate:	38400 baud
Frame type in Operate:	2.V (eSyStep positioner, code S0, S5, S6), PDout 3Byte; PDin 3 Byte; OnRequestData 2 Byte
Min. cycle time:	20 ms (eSyStep positioner, code S0, S5, S6)
Vendor-ID:	401
Device-ID:	1906801 (eSyStep positioner, code S0, S5, S6),
Product-ID:	eSyStep Positioner (code S0, S5, S6)
ISDU support:	Yes
SIO operation:	Yes
IO-Link specification:	V1.1

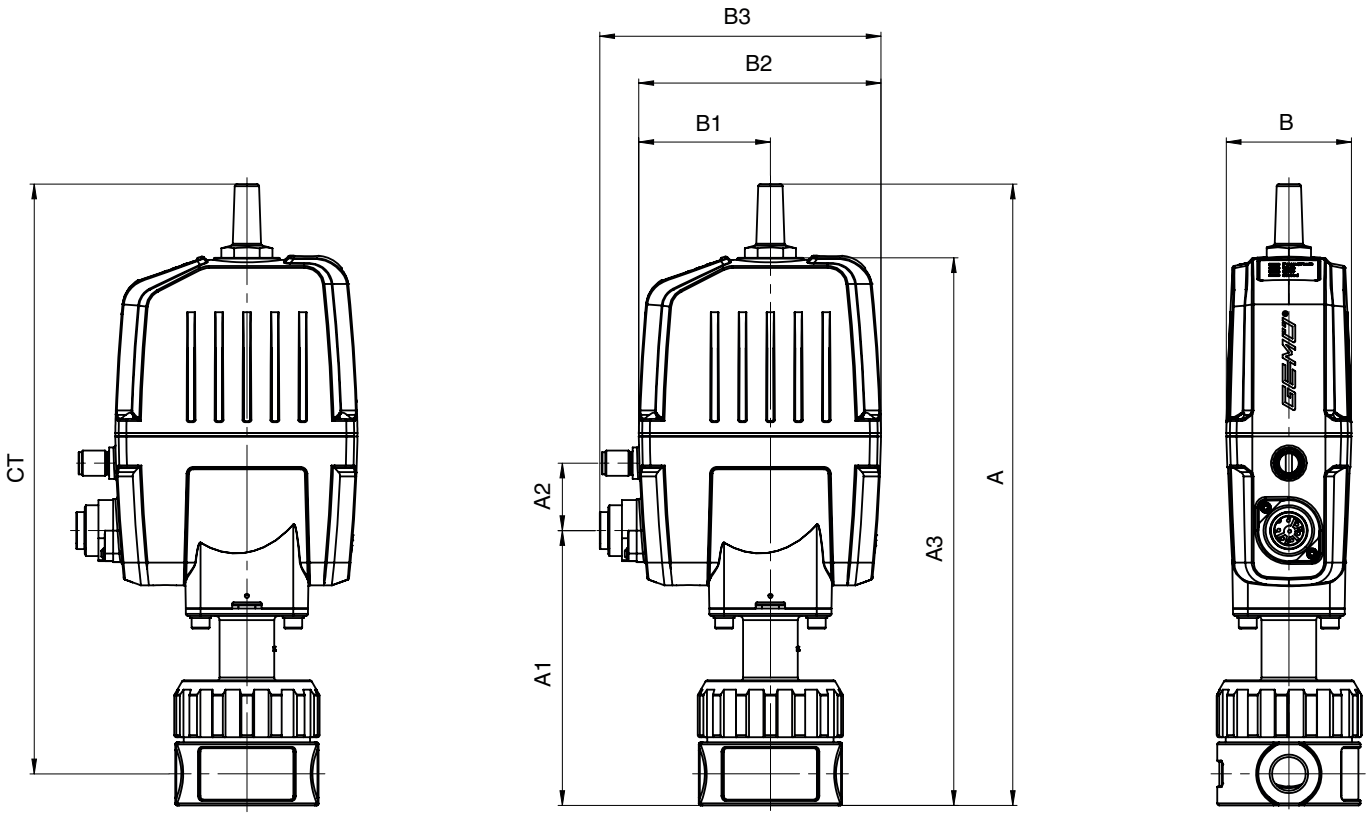
IODD files can be downloaded via https://ioddfinder.io-link.com/ or www.gemu-group.com.

Behaviour in the event of an error

Function:	In the event of an error the valve moves to the error position. Notes: Moving to the error position is only possible with full power supply. This behaviour is not a safety position. The valve must be operated with a GEMÜ 1571 emergency power supply module (see accessories) to ensure the function in case of voltage loss.
Error position:	Closed, open or hold (adjustable via IO-Link).

Dimensions

Installation and actuator dimensions

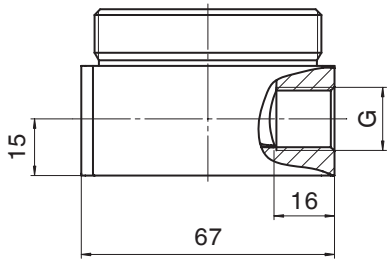


Actuator version	A	A1	A2	A3	B	B1	B2	B3	CT
0A	295	130.5	32	260	59.4	62.49	114.99	133.49	280

Dimensions in mm

Body dimensions

Threaded socket code 1



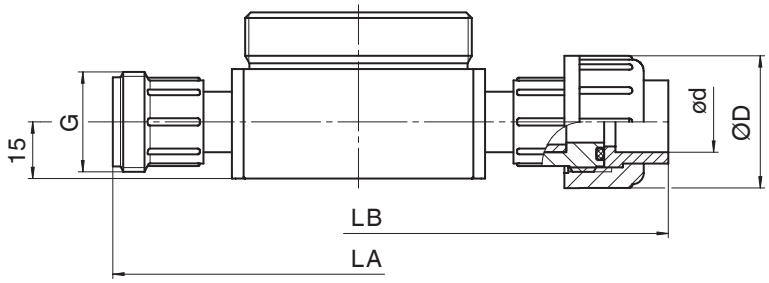
Connection type code 1 [1]			
Material code 1, 20 [2]			
Nominal size	Code DN	Seat diameter	G
DN 10	**3, 6, 10**	**3, 6, 10**	G 3/8
DN 15	**15**	**15**	G 1/2

Dimensions in mm

1) **Connection type**
Code 1: Threaded socket DIN ISO 228

2) **Valve body material**
Code 1: PVC-U, grey / regulating cone PEEK
Code 20: PVDF / regulating cone PEEK

Union end code 7



			Connection type code 7 [1]				
			Material code 1 [2]				
Nominal size	Code DN	Seat diameter	G	øD	ød	LA	LB
DN 10	**3, 6, 10**	**3, 6, 10**	G 3/4	35	16	130	164
DN 15	**15**	**15**	G 1	43	20	130	168

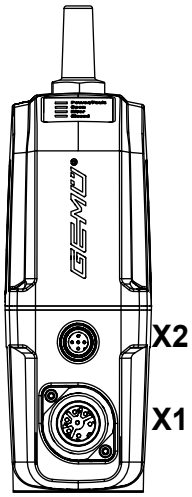
Dimensions in mm

1) **Connection type**
Code 1: Threaded socket DIN ISO 228

2) **Valve body material**
Code 1: PVC-U, grey / regulating cone PEEK

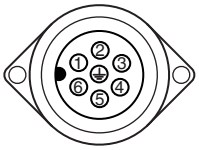
Electrical connection

Position of the connectors



Electrical connection

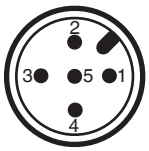
Connection X1



7-pin plug, Binder, type 693

Pin	Signal name
1	Uv, 24 V DC supply voltage
2	GND
3	Digital input 1
4	Digital input 2
5	Digital input/output
6	Digital output, IO-Link
7	n.c.

Connection X2 (only for positioner design)



5-pin M12 plug, A-coded

Pin	Signal name
1	I+/U+, set value input
2	I-/U-, set value input
3	I+/U+, actual value output
4	I-/U-, actual value output
5	n.c.

Overview of available functions – Input and output signals

NOTICE

The factory default setting "Configured for emergency power supply module" is reset to default settings when a reset is carried out.

NOTICE

When configuring the emergency power module (code A5 / A6), the control of the valve changes. Valve is controlled 1-pole via digital input 1. Level logic 1 moves the valve OPEN, level logic 0 moves the valve CLOSE.

NOTICE

When the digital inputs for OPEN and CLOSE are activated simultaneously, the defined error position is approached.

	Function	Control module S0	Control module S5, S6
		Default settings	Factory default setting "Configured for emergency power supply module"
Digital input 1	Off/Open/Closed/Safe/On/Initialization	Initialization	Initialization
Digital input 2	Off/Open/Closed/Safe/On/Initialization	Off	Safe/On
Digital input/output	Open/Closed/Error/Error and warning/Initialization	Error	Error
Digital output	Open/Closed/Error/Error and warning	Closed	Closed
Analogue input	4–20 mA/0–20 mA/0–10 V	4–20 mA	4–20 mA
Analogue output	4–20 mA/0–20 mA/0–10 V	4–20 mA	4–20 mA

Accessories

GEMÜ 1218

Connector

The GEMÜ 1218 is a connector (cable socket / cable plug), 7-pin. Straight and/or 90° angled plug type.

GEMÜ 1218 Binder connector			
Connection X1 – supply voltage, relay outputs			
Binder plug	468/eSy series mating connector	Terminal compartment/ screws, 7-pin	88220649
		Terminal compartment/ screws, 7-pin, 90°	88377714 [1)]
		Terminal compartment/ screws, 7-pin, 90°, fitted with a 2 metre cable set	88770522

1) provided in the scope of delivery

GEMÜ 1219

Cable socket / cable plug M12

The GEMÜ 1219 is a connector (cable socket / cable plug) M12, 5-pin. Straight and/or 90° angled plug type. Defined cable length or with threaded connection without cable. Various materials available for the threaded ring.

GEMÜ 1560

IO-Link master

The GEMÜ 1560 IO-Link master is used for parametrization, actuation, commissioning and for evaluating process and diagnostics data on products with IO-Link interface with communication standard in accordance with IEC 61131-9. The IO-Link master is available with USB port for use on a computer or with a Bluetooth or WLAN interface for use on mobile devices (iOS and Android). GEMÜ 1560 can be ordered separately or as a set for GEMÜ products including the required adapter.

Description	Order designation	Order number
IO-Link master kit (adapter plus cable)	1560USBS 1 A40A12AU A	99072365
IO-Link master kit (adapter plus cable)	1560 BTS 1 A20A12AA A	99130458

GEMÜ 1571

Emergency power supply module

The GEMÜ 1571 capacitive emergency power supply module is suitable for valves with motorized actuators such as GEMÜ eSyStep and eSyDrive as well as the GEMÜ C53 iComLine control valve. In the event of a power failure, the product provides an uninterrupted power supply so that the valve can be moved to the safety position. The emergency power supply module is available individually or with an expansion module and can supply several valves. The input and output voltage is 24 V.

GEMÜ 1571 emergency power supply module			
Input voltage	Output voltage	Capacity	Item number
24 V	24 V	1700 Ws	88660398
24 V	24 V	13200 Ws	88751062

GEMÜ 1573

Switching power supply unit

The GEMÜ 1573 switching power supply unit converts unstable input voltages from 100 to 240 V AC into a continuous DC voltage. It can be used as an accessory for valves with motorized actuators e. g. GEMÜ eSyLite, eSyStep und eSyDrive and for additional devices with a 24 V DC power supply. Different power levels, output currents and a 48 V DC version for servoDrive actuators are available.

GEMÜ 1573 switching power supply unit			
Input voltage	Output voltage	Output current	Item number
100 - 240 V AC	24 V DC	5 A	88660400
		10 A	88660401

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