SENTINEL PROCESS SYSTEMS, INC

GEMÜ

GEMÜ 1235/1236

Electrical position indicator

Features

- Communication and programming interface IO-Link
- Adjustable switch point tolerances
- Speed^{-AP} function for fast mounting and initialization
- High visibility position indicator by LED
- Can be fitted to GEMÜ valves or third-party actuators
- On-site or remote end position programming via programming input

Description

GEMÜ 1235 / 1236 electrical position indicators are suitable for mounting on pneumatically operated actuators. The position of the valve spindle is reliably electronically detected and evaluated using play-free and non-positive mounting. Intelligent micro-processor controlled functions facilitate commissioning and support during operation. The current position of the valve is displayed via high-visibility LEDs and fed back via electrical signals.

Technical specifications

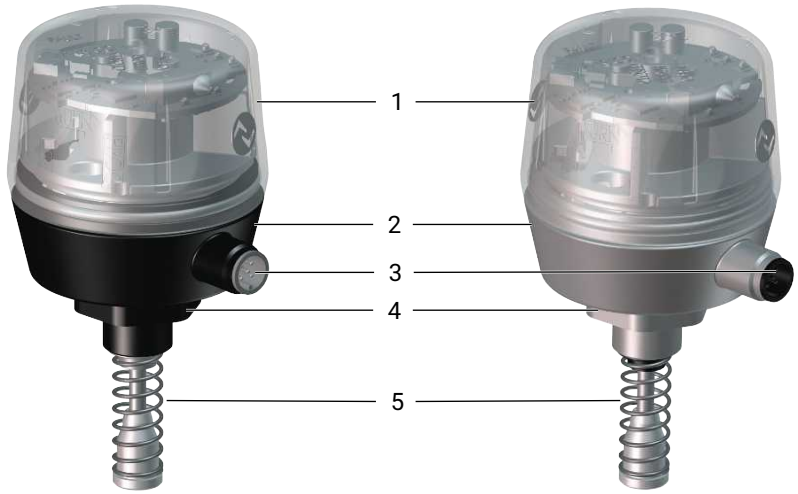
- **Ambient temperature:** -10 to 70 °C
- **Linear measuring range:** 2.0 to 74.4 mm
- **Supply voltages:** 24 V DC
- **Electrical connection types:** M12 plug
- **Communication modes:** IO-Link I None
- **Protection class:** IP 67
- **Conformities:** EAC I Functional safety I UL listed

Technical data depends on the respective configuration

EAC IO-Link c UL us LISTED

further information
webcode: GW-1235_1236

Product description

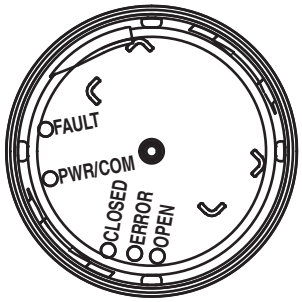


GEMÜ 1235 GEMÜ 1236

Item	Name	Materials
1	Housing cover	PPR
2	Housing base	GEMÜ 1235: PVDF GEMÜ 1236: SS
3	Electrical connection	PVDF
4	Adapter piece	PVDF
5	Mounting kit, valve-specific	Valve-specific materials
	Seals	EPDM, PUR

Status LEDs

As well as the electrical position feedback and error analysis, a visual signal is emitted by LEDs that can be seen from above as well as a high visibility LED.



LED	Colour		Function
	Standard [1]	Inversed [2]	
FAULT	red	red	Communication error
PWR/COM	green	green	Power / communication
CLOSED	green	orange	Process valve in CLOSED position
ERROR	red	red	Error
OPEN	orange	green	Process valve in OPEN position
High visibility LED	green	orange	Process valve in CLOSED position
	orange	green	Process valve in OPEN position
	Alternating green/orange	Alternating green/orange	Programming mode
	Flashes orange	Flashes orange	Error
	Flashes green	Flashes green	Location function*

*The location function is used for the optical identification of a device in a plant. In this case, all high visibility LEDs flash green. The location function can always be started and overrides all other flash codes of the high visibility LEDs.
The rest of the device function is not affected..

1) **Device version**
Code 3E: Open/Closed position feedback, programming input, high visibility optical position indicator, IO-Link communication
Code 3S: Open/Closed position feedback, high visibility optical position indicator

2) **Device version**
Code 4E: Open/Closed position feedback inversed, programming input, high visibility optical position indicator, IO-Link communication
Code 4S: Open/Closed position feedback inversed, high visibility optical position indicator

For order codes see chapter "Order data"

GEMÜ CONEXO

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

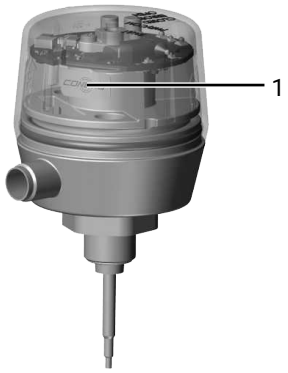
Thanks to serialization, every valve and every relevant valve component such as the body, actuator or diaphragm, and even automation components, can be clearly traced and read using the CONEXO pen RFID reader. The CONEXO app, which can be installed on mobile devices, not only facilitates and improves 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".

Installing the RFID chip (1)



Availabilities

Option	Code	1235	1236
Housing material [1)]	**G10**	X	-
	G70	-	X
	G73	-	X

1) **Housing material**
Code G10: PVDF base, black, PPR natural cover, M16 thread PEEK
Code G70: Base 1.4301, PP cover, M16 thread, 1.4305
Code G73: Base 1.4301, PP cover, M16 thread, 1.4305, (for GEMÜ 650, actuator size 1, 2, 3 control function 1)

Overview of available functions

Function	IO-Link
Optical high visibility position indicator	X
Deactivation - high visibility position indicator	X
On-site programming	X
Deactivation of on-site programming	X
Position feedback Open	X
Position feedback Closed	X
Feedback for operating mode	X
Location function	X
Inversion of LED colours	X
Inversion of feedback signals	X
Switch point setting (tolerance)	X
Setting stroke reduction alarm	X
Feedback stroke reduction alarm	X
Feedback programmed positions	X
Feedback current positions	X
Feedback internal error	X
Feedback sensor error	X
Feedback programming error	X
Feedback over-temperature	X
Counter Powerfail	X
Counter Power on	X
Programming counter	X
Counter programming error	X
Counter sensor error	X
Counter over-temperature	X
Cycle counter (on-site)	X
Total cycle counter	X
Default	X

Order data

The order data provide an overview of standard configurations.

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

Note: A valve specific mounting kit is required for assembly. For designing the mounting kit, the valve type, nominal size, control function and actuator size must be stated.

Order codes

1 Type	Code
Electrical position indicator	1235
Electrical position indicator	1236

2 Fieldbus	Code
Without	000

3 Accessory	Code
Accessory	Z

4 Device version	Code
Open/Closed position feedback, programming input, high visibility optical position indicator, IO-Link communication	3E
Open/Closed position feedback, high visibility optical position indicator	3S
Open/Closed position feedback programming input, IO-Link communication	3W
Open/Closed position feedback	3X
Open/Closed position feedback inversed, programming input, high visibility optical position indicator, IO-Link communication	4E
Open/Closed position feedback inversed, high visibility optical position indicator	4S

4 Device version	Code
Open/Closed position feedback inversed programming input, IO-Link communication	4W
Open/Closed position feedback inversed	4X

5 Electrical connection	Code
M12 plug, 5-pin	M125

6 Travel sensor version	Code
Potentiometer, 30 mm length	030
Potentiometer, 50 mm length	050
Potentiometer, 75 mm length	075

7 Housing material	Code
PVDF base, black, PPR natural cover, M16 thread PEEK	G10
Base 1.4301, PP cover, M16 thread, 1.4305	G70
Base 1.4301, PP cover, M16 thread, 1.4305, (for GEMÜ 650, actuator size 1, 2, 3 control function 1)	G73

8 Special version	Code
UL approval	U

Order example

Ordering option	Code	Description
1 Type	1236	Electrical position indicator
2 Fieldbus	000	Without
3 Accessory	Z	Accessory
4 Device version	3E	Open/Closed position feedback, programming input, high visibility optical position indicator, IO-Link communication
5 Electrical connection	M125	M12 plug, 5-pin
6 Travel sensor version	030	Potentiometer, 30 mm length
7 Housing material	G70	Base 1.4301, PP cover, M16 thread, 1.4305
8 Special version	U	UL approval

Technical data

Temperature

Ambient temperature: -10 — 70 °C

Storage temperature: -20 — 70 °C

Product compliance

RoHS Directive: 2011/65/EU

Machinery Directive: 2006/42/EC

EMC Directive: 2014/30/EU

Interference resistance: DIN EN 61000-6-2 (Nov. 2019)

Interference emission: DIN EN 61000-6-3

Approvals: Fieldbus/Communication IO-Link specification V1.1

SIL:

Product description: Electrical position indicator GEMÜ 1235_1236
Device type: B
Valid software version: V1.0.0.4
Safety function: The safety function is defined as a High (24 V DC) signal at pin 5 (device version 3S/4S) and at pin 4 (device version 3E/4E), if the current position of the integrated travel sensor is smaller than the switch point CLOSED (default setting 12 %).
HFT (Hardware Fault Tolerance): 0
MTTR (Mean Time To Restoration): 24 hours
MTBF (Mean Time Between Failures): 346 years

Further information, see SIL safety manual

UL approval: UL listed for Canada and USA

Certificate: E515574

Mechanical data

Installation position: Optional

Weight:

Travel length code 030: 115 g
Travel length code 050: 138 g
Travel length code 075: 160 g

Protection class: IP 67

Travel sensor:

	Travel sensor version Code		
	Code 030	Code 050	Code 075
Minimum stroke:	2.0 mm	3.5 mm	5.0 mm
Maximum stroke:	30.0 mm	50.0 mm	75.0 mm
Hysteresis:	0.2 mm	0.4 mm	0.5 mm
Accuracy:	0.2% Full Scale		

Operating conditions

Ambient conditions: Use in indoor spaces

Ambient conditions: (only relevant for UL)

Electrical data

Electrical connection type: 1 x 5-pin M12 plug (A-coded)

Supply voltage Uv: 24 V DC (18 to 30 V DC)

Current consumption: typically 30 mA

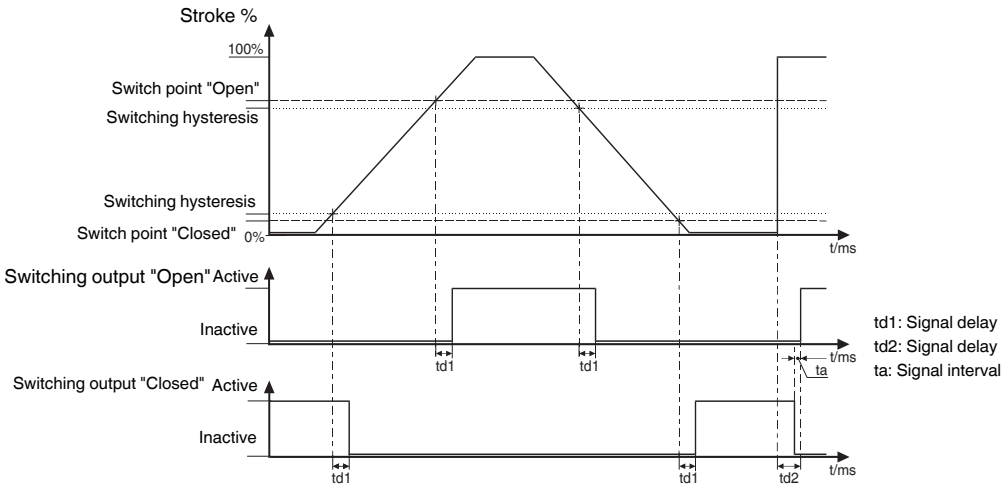
Duty cycle: Continuous duty

Electrical protection class: III

Reverse battery protection: yes

Line fuse 630 mA medium time lag (not applicable for operation with IO-Link Master)

Switching characteristic:



Switch points: The data in percent refers to the programmed stroke, with reference to the lower end position (0%)

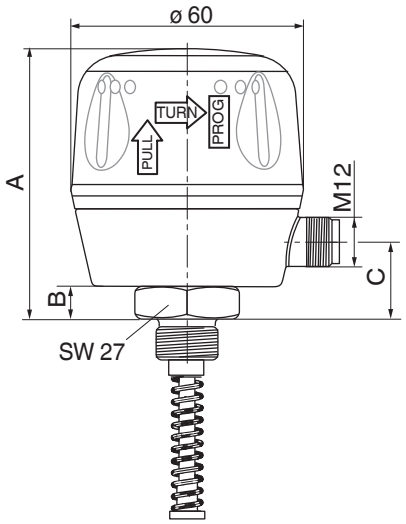
Switch points:

	Travel sensor version Code		
	030	050	075
Default setting switch point CLOSED	12 %		
Default setting switch point OPEN	25 %		
Min. switch point CLOSED	0.8 mm	1.4 mm	2.0 mm
Min. switch point OPEN	0.5 mm	0.9 mm	1.25 mm

If the percentage switch points dependent on the programmed stroke are smaller than the permissible min. switch points, the min. switch points apply automatically.

Dimensions

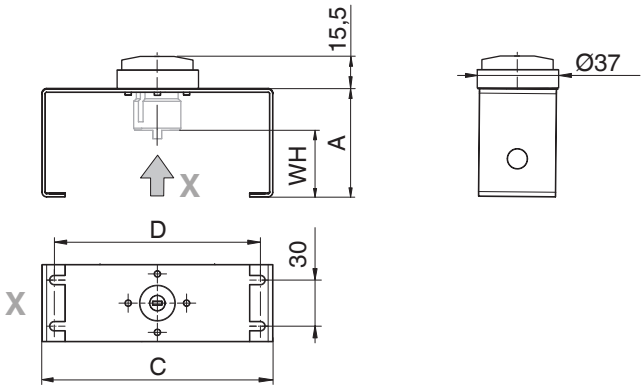
1235/1236 electrical position indicator



	Travel sensor version code		
	030	050	075
A	65.5	87.5	112.5
B	8.5	30.5	55.5
C	19.0	41.0	66.0

Dimensions in mm

1235/1236 PTAZ mounting bracket for direct mounting on quarter turn actuators



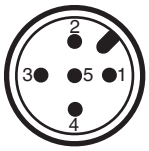
Shaft height WH	Hole spacing D	A	C
20.0	80.0	40.0	100.0
30.0	80.0	50.0	100.0
50.0	130.0	70.0	150.0

Dimensions in mm

Electrical connection

24 V, ordering option Device version, code 3S/4S/3X/4X

Pin assignment

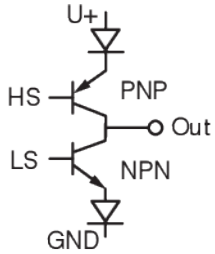


	Description
1	U, 24 V DC, supply voltage
2	U, GND
3	24 V DC, Open end position output
4	n. c.
5	24 V DC, Closed end position output

Device version 3S / 4S is pin compatible with the previous version 2SM125, pin 5 is highly active but without potential-free contacts. The device has 24 V DC Push-Pull outputs

Output (pin 3, 5)

Internal wiring:



Type of contact: Push-Pull

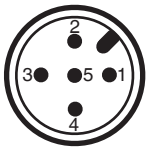
Max. switching current: ± 100 mA

Max. voltage drop Vdrop: 3 V at 100 mA

Switching voltage: $+U_v - V_{drop}$ push high
$-U_v + V_{drop}$ pull low

24 V / IO-Link, ordering option Device version, code 3E/4E/3W/4W

Pin assignment



	Description
1	U, 24 V DC, supply voltage
2	24 V DC, Open end position output
3	U, GND
4	24 V DC, Closed end position output, C/Q IO-Link
5	24 V DC, programming input (speed^{AP} function)

Input (pin 5)

Input impedance: min. 27 kΩ

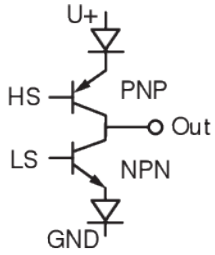
Input voltage: max. 30 V DC

High level: > 18 V

Low level: < 5 V

Output (pin 2, 4)

Internal wiring:



Type of contact: Push-Pull

Max. switching current: ± 100 mA

Max. voltage drop Vdrop: 3 V at 100 mA

Switching voltage: $+U_v - V_{drop}$ push high
$-U_v + V_{drop}$ pull low

Specific data IO-Link (pin 4)

Physics: Physics 2 (3-wire design)

Port configuration: Port type A

Transmission rate: 38400 baud

Frame type in Operate: 2.5

Min. cycle time: 2.3 ms

Vendor-ID: 401

Device-ID: 123501

Product-ID: 1235IOL

ISDU support: yes

SIO operation: yes

IO-Link specification: V1.1 when using IODD 1.1 [1)]

1) When using IODD 1.0.1 the device works in accordance with IO-Link specification V1.0 (compatibility mode)

Note for IO-Link: IODD files can be downloaded via the hyperlinks https://ioddfinder.io-link.com/%20oder%20www.gemu-group.com, https://ioddfinder.io-link.com or www.gemu-group.com.

Process data

Device → Master

Bit	Default	Designation	Function	Logic
0	0	Valve position	Feedback OPEN position	0 = process valve **not** in OPEN position 1 = process valve in OPEN position

Bit	Default	Designation	Function	Logic
1	0	Valve position	Feedback CLOSED position	0 = process valve **not** in CLOSED position 1 = process valve in CLOSED position
2	0	Programing mode	Indication of operating mode	0 = normal operation 1 = programming mode
3...7	not used			

Master → Device

Bit	Default	Designation	Function	Logic
0	0	Programing mode	Selection of operating mode	0 = normal operation 1 = programming mode
1	0	Location function	Location function	0 = inactive 1 = active
2 ... 7	not used			

Parameter overview

Index [Hex]	Sub-index	Access rights	Parameter	Length	Data type	Default settings	Setting options
0x10	0	ro	Vendor name	6 bytes	StringT	GEMUE	-
0x12	0	ro	Product name	18 bytes	StringT	1235/1236 IO-Link	-
0x13	0	ro	Product ID	8 bytes	StringT	1235 IO-LINK	-
0x16	0	ro	Hardware version	8 bytes	StringT	Rev. xx	-
0x17	0	ro	Firmware version	10 bytes	StringT	V x.x.x.x	-
0x50	1	rw	Inversion of LED colours	1 bit	Boolean	0	0 = standard 1 = inversed
	2	rw	Inversion of feedback signals	1 bit	Boolean	0	
	3	rw	Function of high visibility position indicator	3 bits	UIntegerT	3	0 = off 1 = open/closed (33%) 2 = open/closed (66%) 3 = open/closed (100%) 4 = open (0%)/ closed (100%) 5 = open (100%)/ closed (0%)
	4	rw	Programming mode	1 bit	Boolean	0	0 = automatic 1 = manual
	5	rw	On site programming	1 bit	Boolean	0	0 = enabled 1 = disabled
	6	rw	Inversion of outputs	1 bit	Boolean	0	0 = standard 1 = inversed
0x51	1	rw	Threshold OPEN request	8 bits	UIntegerT	25%	3%–97%
	2	rw	Threshold CLOSED request	8 bits	UIntegerT	12%	
	3	ro	Threshold OPEN real	8 bits	UIntegerT	25%	Display of values 3%–97%
	4	ro	Threshold CLOSED real	8 bits	UIntegerT	12%	
0x52	1	rw	Alarm stroke reduction open	4 bits	UIntegerT	1	0 = disabled 1 = 25% of Switch Point 2 = 50% of Switch Point 3 = 75% of Switch Point
	2	rw	Alarm stroke reduction closed	4 bits	UIntegerT	1	
	3	rw	Alarm opening time	8 bits	UIntegerT	0	0 = disabled 1–255 s
	4	rw	Alarm closing time	8 bits	UIntegerT	0	
0x53	1	ro	Programmed position OPEN	16 bits	UIntegerT	0	Display of numerical values 0–4092
	2	ro	Programmed position CLOSED	16 bits	UIntegerT	0	
	3	ro	Programmed position STROKE	16 bits	UIntegerT	0	
0x54	1	ro	Last position OPEN	16 bits	UIntegerT	0	Display of numerical values 0–4092
	2	ro	Last position CLOSED	16 bits	UIntegerT	0	
	3	ro	Last position STROKE	16 bits	UIntegerT	0	
0x55	1	ro	Travel sensor calibration min	16 bits	UIntegerT	0–1000	

Index [Hex]	Sub-index	Access rights	Parameter	Length	Data type	Default settings	Setting options
	2	ro	Travel sensor calibration max	16 bits	UIntegerT	3092–4092	
0x56	1	rw	Valve cycles user	24 bits	UIntegerT	0	Resettable to 0, display of numerical values 0–16,777,215
	2	ro	Valve cycles total	24 bits	UIntegerT	0	Display of numerical values 0–16,777,215
0x57	1	ro	Counter Powerfail	16 bits	UIntegerT	0	Display of numerical values 0–65,535
	2	ro	Counter Power on	16 bits	UIntegerT	0	
	3	ro	Counter Programming	16 bits	UIntegerT	0	
	4	ro	Counter Travel Sensor calibration	16 bits	UIntegerT	0	
	5	ro	Counter Prog error no stroke	16 bits	UIntegerT	0	
	6	ro	Counter Prog error less stroke	16 bits	UIntegerT	0	
	7	ro	Counter Prog error after sensor error	16 bits	UIntegerT	0	
	11	ro	Counter Sensor error OPEN	16 bits	UIntegerT	0	
	12	ro	Counter Sensor error CLOSED	16 bits	UIntegerT	0	
	16	ro	Counter Over temperature	16 bits	UIntegerT	0	
0x60	0	ro	Actual AD-value	16 bits	UIntegerT	0	Display of numerical values 0–4092

Mounting options

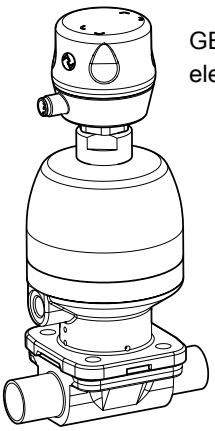
Mounting the electrical position indicator to linear actuators

Direct mounting

For direct mounting of the electrical position indicator on a valve with linear actuator, you need the following components

- GEMÜ 1235/GEMÜ 1236 electrical position indicator in travel sensor version code 030, 050 or 075 (dependent on the stroke of the valve used)
- GEMÜ 1235 S01 Z .../1236 S01 Z ... valve-specific mounting kit for mounting the electrical position indicator

(At the time of ordering, state the valve type with nominal size and control function)



GEMÜ 1235/1236 ... 030/050/075
electrical position indicator

GEMÜ diaphragm valve

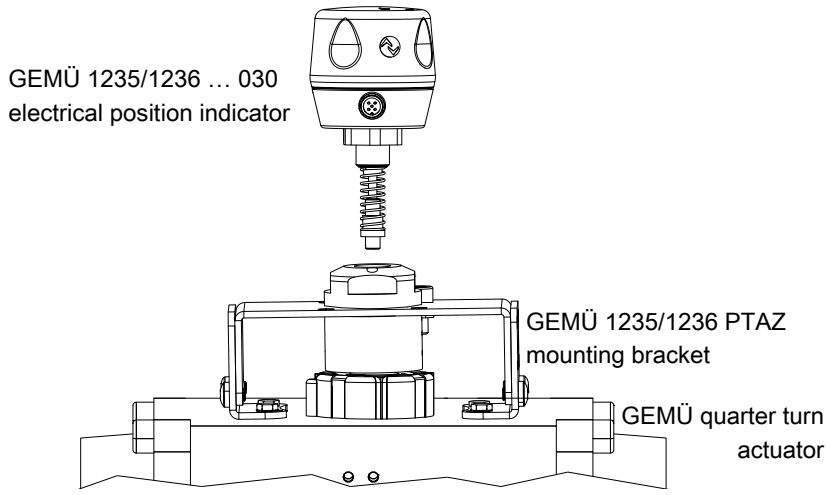
Mounting the electrical position indicator to quarter turn actuators

Direct mounting

For direct mounting of the electrical position indicator on a valve with quarter turn actuator, you need the following components

- GEMÜ 1235 ... 030/1236 ... 030 electrical position indicator
- GEMÜ 1235 PTAZ XX 090 000/1236 PTAZ XX 090 000 valve-specific mounting kit for mounting the electrical position indicator

(At the time of ordering, state the valve type with actuator flange size)



Accessories

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.

Description	Length	Order number
5-pin, angle	without cable	88205545
	2 m cable	88205534
	5 m cable	88205540
	10 m cable	88210911
	15 m cable	88244667
5-pin, straight	without cable	88205544
	2 m cable	88205542
	5 m cable	88205543
	10 m cable	88270972
	15 m cable	88346791
8-pin, angle	5 m cable	88374574
8-pin, straight	without cable	88304829

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

Subject to alteration | 09.2023 | 88353395

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8, 74653 Ingelfingen-Criesbach, Germany
Phone +49 (0) 7940 1230 · info@gemue.de
www.gemu-group.com

SENTINEL PROCESS SYSTEMS, INC
3265 Sunset Lane Hatboro, PA 19040 | 215-675-5700 | sentinelprocess.com