



Electromotive 2-way globe proportional valve

- · Actuator isolated from flow path
- Excellent range and fast response times
- Low power consumption
- Connection nominal diameter DN 15...DN 25
- Variants: Standard, positioner, process controller







Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with



Type 8006 Mass Flow Meter (MFM)



Type 8008 Flowmeter for gases



Type 8746

Mass flow controller
(MFC) / Mass flow
meter (MFM) for gases



Type 8611 eCONTROL - Universal controller

Type description

The direct-acting motor valve of type 3285 is used for dosing of liquids and gases in closed or open control loops. The valve features a stepper motor as the actuator. The integrated electronics simplifies the process integration; additional actuation modules are not necessary. The motor's power consumption to hold a specific opening position of the valve is zero. This key feature can reduce the energy consumption of a plant dramatically and thus make it more efficient. Type 3285 is available as a standard ON/OFF or proportional valve, as a variant with integrated positioner and as a variant with integrated process controller.



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1. General technical data

1.1. General

1.1. General	
Product properties	
Dimensions	Refer to "4. Dimensions" on page 7 chapter for more information.
Material	
Refer to "3.2. Material specifications" on	page 6 chapter for more information.
Valve body	Brass or stainless steel
Seal	NBR for liquids
	EPDM for liquids and special gases (e. g. ammonia, acetylene),
	FKM for neutral gases
Seat sealing	Technical ceramics
Design	Disc On/Off valve
	Disc control valve
Connection nominal diameter	DN 15 DN 25, NPS ½1
Safety setting in case of power failure	With capacitive buffer module as accessory, see chapter "4.2. Capacitive buffer module" on page 8.
Flow direction	Above seat
Controller variant	Standard On/Off, standard control valve, position controller or process controller
Weight	~ 0.8 kg (DN 8)1.5 kg (DN 25)
Status display	LED (Refer to the instruction manual for more information.)
Performance data	
Typical values of positioning behaviour ^{1,)}	
Dead band of the position control	±0.5% (corresponds to setting range 1:100)
Closing time	4 s
Operating pressure	06 bar(g) (see "6.2. Pressure range" on page 10) Vacuum variant (up to -0.9 bar(g)) (optional)
K _{vs} value	1.89.6 m³/h (see chapter "6.2. Pressure range" on page 10)
Electrical data	041/100 400//
Operating voltage	24 V DC ±10 % (max. residual ripple 10 %)
Power consumption	<1 W in holding position Max. 12 W (depending on motor control)
Duty cycle	Up to 100 % (depending on medium and ambient temperature)
Medium data	Marriago paga di misira
Process medium	Neutral gases, liquids
Medium temperature	• EPDM (seal material): -30 °C+70 °C
Min a naite	• FKM, NBR (seal material): 0 °C+70 °C
Viscosity	Max. 80 mm ² /s (cSt)
Process/Port connection & communicati Port connection	Threaded connection
1 of Confidence	• G (EN ISO 228-1)
	• NPT (ASME B 1.20.1)
Communication and control	0.1
Standard signal (analogue)	Setpoint: 0/420 mA, 05/10 V and digital input, see chapter "1.2. Electrical control and interfaces" on page 4.
Fieldbus (digital)	Bürkert system bus (büS)
	CANopen (optional)
EDIP	Field device for integration into the EDIP platform via Bürkert system bus (büS) Refer to "8.2. Software Bürkert Communicator" on page 13 chapter for more
	information.
Environment and installation	
Environment and installation Ambient temperature	
	information10 °C+60 °C

^{1.)} Characteristic data of control behaviour depends on process conditions.



1.2. Electrical control and interfaces

Technical data	Device variant								
	Stand	ard (G/H)	Positioner (C)		Process controller (D)				
	ON/OFF (G)	Control valve (H)1.)	Analogue	Digital (fieldbus)	Analogue	Digital (fieldbus)			
Electrical connection	M12 plug, A-coded, 8-pin	M12 plug, A-coded, 8-pin	M12 plug, A-coded, 8-pin	M12 plug, A-coded, 5-pin	M12 plug, A-coded, 8-pin and M12 socket, A-coded, 5-pin	M12 plug, A-coded, 5-pin and M12 socket, A-coded, 5-pin			
Input signal (setpoint)	Digital input: 05 V (log. 0, valve closed) or 1030 V (log. 1, valve open)	420 mA, 010 V or PWM (800 Hz) min: 10 V type: 24 V max: 30 V)	420 mA, 020 mA, 010 V or 05 V	-	420 mA, 020 mA, 010 V or 05 V	-			
Input signal (actual value from ext. Sensor)	-	-	-	-	420 mA, 020 mA, 010 V or 05 V	420 mA, 020 mA, 010 V, 05 V or frequency (52000 Hz)			
Input imped- ance for ana- logue input	22 kΩ	60 Ω (current), 22 kΩ (voltage)	60 Ω (current), 22 kΩ (voltage)	-	60 Ω (current), 22 kΩ (voltage)	60 Ω (current), 22 kΩ (voltage)			
Output signal (actual value)	Digital output: PNP, max. 100 mA current limits, feedback function (output signal active, when valve closed)	Digital output: PNP, max. 100 mA current limits, feedback function (output signal active, when valve closed)	0/420 mA (max. load: 560 Ω), 05/10 V (max. current: 10 mA)	-	0/420 mA (max. load: 560 Ω), 05/10 V (max. current: 10 mA)	-			
Fieldbus interface	_	_	_	büS / CANopen	_	büS / CANopen			
Parameteriza- tion Tool	-	_	Bürkert Communicator (Connection via büS stick)	Bürkert Communicator (Connection via büS stick)	Bürkert Communicator (Connection via büS stick)	Bürkert Communicator (Connection via büS stick)			

^{1.)} The standard control valve variant is a proportional valve which, like the positioner variant, changes the valve stroke continuously depending on the input signal. This variant has no büS interface and no analogue output signal.



2. Approvals and conformities

2.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the
 product complies with all required specifications.
- Not all available versions can be supplied with the below mentioned approvals or conformities.

2.2. Conformity

In accordance with the Declaration of conformity, the product is compliant with the EU Directives.

2.3. Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

2.4. North America (USA/Canada)

Approval	Description
CUL US	Optional: UL Listed for the USA and Canada The products are UL Listed for the USA and Canada according to: UL 429 (Electrically operated valves) CSA C22.2 No. 139 (Electrically operated valves)

2.5. Drinking water

Conformity	Description
H ₂ O	Optional: Certification according to 1+ system of UBA (valid for variable code PF23) The materials comply with the assessment principles (UBA) for materials in contact with drinking water (TrinkwasserV).

2.6. Others

Oxygen

Conformity	Description
02	Oxygen In their composition, the products are suitable for use with gaseous oxygen (optional).

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3. Materials

3.1. Bürkert resistApp



Bürkert resistApp - Chemical resistance chart

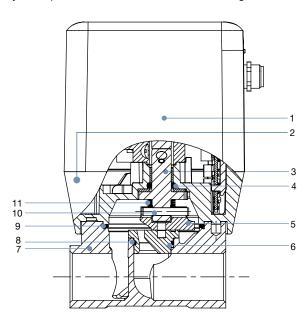
You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

Start chemical resistance check

3.2. Material specifications

Note:

The globe control valve Type 3285 is supplied with various pipe connections. These connections are not shown completely. However, they correspond to the material of the valve housing.



Actuator

No.	Element	Material
1	Housing cover	PC (Polycarbonate)
2	Housing base	PPS (Polyphenylene sulfide)
	_	

Valve body

No.	Element	Material		
3	Spindle	Stainless steel 1.4404/1.4401		
4	Spindle seal	FKM/EPDM/NBR		
5	Disc	Technical ceramics		
6	Valve seat	Technical ceramics		
7	Valve body	Brass or stainless steel 1.4408		
8	O-ring	FKM/EPDM/NBR		
9	O-ring FKM/EPDM/NBR			
10	Parallel pin	Stainless steel 1.4401		
11	Spring	Spring steel/Stainless steel		

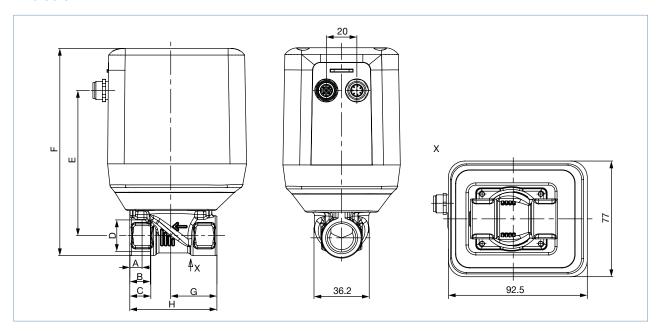
burkert

4. Dimensions

4.1. Threaded body

Note:

Dimensions in mm



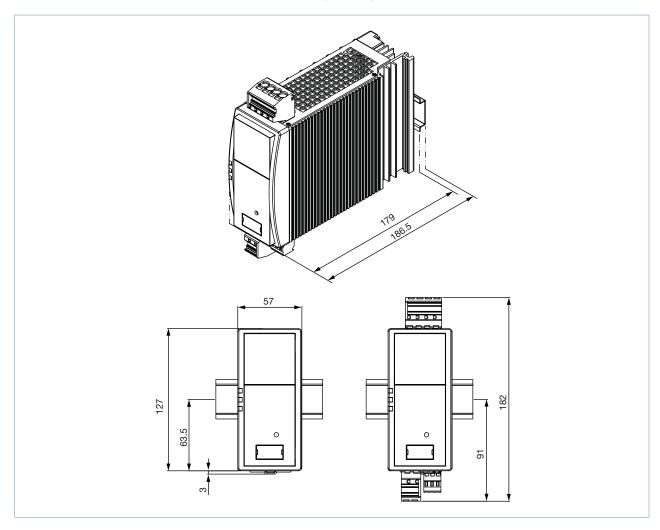
Α	В	С	D	E	F	G	Н	Н
8.2	13.7	_	NPT ½	97	138	31	58	26.6
_	_	14	G ½	97	138	31	58	26.6
8.6	14	_	NPT ¾	103.5	147	43	80	32
_	_	16	G ¾	103.5	147	43	80	32
10.2	16.8	_	NPT 1	108.5	156.5	49	95	41
_	-	18	G 1	108.5	156.5	49	95	41



4.2. Capacitive buffer module

Note:

- Dimensions in mm
- Refer to "8.1. Accessories capacitive buffer module" on page 13 chapter for more information.





5. Device/Process connections

5.1. Analogue

Note:

For parameterisation and configuration of the positioner and the process controller variants, please use the Bürkert Communicator software tool, "8.2. Software Bürkert Communicator" on page 13.



Circular connector M12, 8-pin	Pin	Configuration
3	1	24 V DC
4 2	2	Power supply GND
8	3	Internal use ^{1.)}
5	4	Internal use ^{1.)}
6	5	Internal use ^{1,)}
6 7 1	6	Signal input +
7	7	Signal output
	8	Signal GND

Only for positioners and process controllers variant, for connection of the parameterization tools: Bürkert Communicator. The
connection is via the büS-Stick. Using an adapter cable (M12 8-pin to M12 5-pin) the büS-Stick can be connected, see "8.2.
Software Bürkert Communicator" on page 13).

Additional for process controller variant:

Socket M12, 5-pin	Pin	Configuration
4,	1	24 V DC sensor power supply
	2	Analogue I _N (020 mA, 420 mA, 05 V or 010 V)
	3	GND
5	4	GND (bridge according to GND pin 3)
	5	Not connected
3 2		

5.2. Digital (fieldbus)

Note:

For parameterisation and configuration of the positioner and the process controller variants, please use the Bürkert Communicator software tool, "8.2. Software Bürkert Communicator" on page 13.



Circular connector M12, 5-pin	Pin	Configuration
3 ,	1	Shield
	2	24 V DC
	3	GND
5 (((0° 9))) >	4	CAN high
4	5	CAN low

Additional for process controller variant:

Socket M12, 5-pin	Pin	Configuration
5 3	1	24 V DC sensor power supply
	2	Analogue I_N (020 mA, 420 mA, 05 V, 010 V or frequency)
	3	GND
	4	GND (bridge according to GND pin 3)
	5	Not connected

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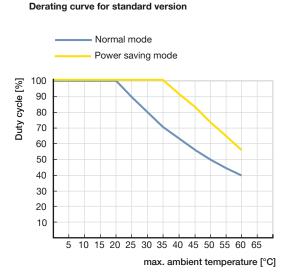


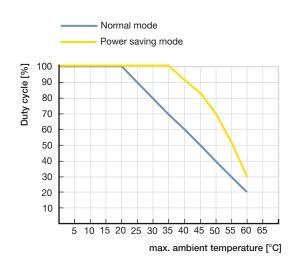
6. Performance specifications

6.1. Duty cycle derating diagram

Note:

- The duty cycle is an important factor for motor valves. The self-heating of the engine limits the maximum duty cycle. High ambient temperatures additionally increase the risk of damage due to overheating. The following diagram shows the recommended maximum duty cycle as a function of the ambient temperature. In energy-saving mode (lower driving force), higher duty cycles are possible. The motor is optimised for the valve function in terms of size, power consumption and costs.
- The duty cycle does not mean the duty cycle of the device but the duty cycle of the motor. This is only switched on when the
 valve is to move. Frequent set-point value changes drastically increase the duty cycle of the motor.
- Operating the valve outside the recommended duty cycle limits will result in a significantly reduced service life of the valve.





Derating curve for positioner and process controller

6.2. Pressure range

Note:

For orders from our standard product range, use the product filter in our eShop (see "9.1. Bürkert eShop" on page 14).

Alternatively, you can use the Product Enquiry Form (see "9.4. Bürkert Product Enquiry Form" on page 15) for information about the device layout and send it to us after completion.

Valve function	Seat size	Port connection ^{1.)} K _{vs} -value water		Pressure range ^{3.)}
	[mm]		[m ³ /h] ^{2.)}	[bar(g)]
Control valve, without safety position in case of power failure	8	G ½	1.8	6
	10	G ½	2.5	6
	12	G ¾	3.9	6
	15	G ¾	5.4	6
	20	G 1	8.1	6
	25	G 1	9.6	6

- 1.) Other cable connections (NPT, \ldots) on request
- 2.) Measurement at +20 $^{\circ}\text{C},$ 1 bar pressure difference above the fully open valve
- 3.) Fuel gases may vary

	Further versions on request		
J °	Temperature Low temperature variant: Suitable for minimum medium temperatures down to -30 °C (sealing material EPDM) (optional)	0 bar	Pressure Vacuum variant: This variant is suitable up to -0.9 bar(g) (optional)

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6.3. Flow characteristic

Determination of the K, value

Note:

Once the K_v -value required for the application has been calculated, it can be compared with the K_{vs} -values from the ordering chart. The K_{vs} -value must be higher than the K_v -value of the application, but should be neither too high nor too close to it - as a recommendation: 10 % higher.

Pressure drop	K _v value for liquids [m³/h]	K _v value for gases [m³/h]
Sub-critical $p_2 > \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \Delta p}}$	$=\frac{\mathbf{Q}_{N}}{514}\ \sqrt{\frac{T_{1}\rho_{N}}{p_{2}\Delta p}}$
Supercritical $p_2 < \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \Delta p}}$	$=\frac{Q_{_N}}{257\rho_{_1}}\sqrt{T_{_1}\rho_{_N}}$

- 1.) Measured for water, $\Delta p = 1$ bar
- 2.) At reference conditions 1.013 bar and 0 °C (273 K)
- 3.) Absolute pressure

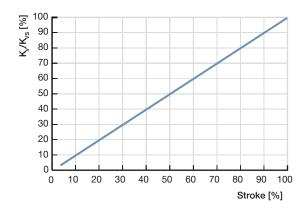
Exemplary characteristic curve of the motor valve

Note:

The design of the seat size is very important for the proper functioning of electromotive proportional valves within the application. The seat size must be selected in such a way that, on the one hand, the desired flow range is achieved and, on the other hand, when the valve is fully open, a sufficient part of the total pressure drop takes place via the valve.

Reference value:

Δp valve > 25 % of the total pressure drop - otherwise, an ideal, linear valve characteristic is deformed into a curved system characteristic.



Linear flow characteristic - the K_{vs} values of the respective seat sizes can be found in chapter "6.2. Pressure range" on page 10.



7. Product operation

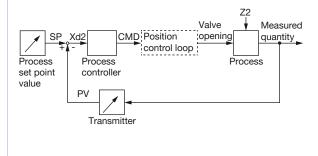
Standard on/off valve

In the ON / OFF variant, an external voltage signal is digitized and the valve is closed or opened. The status of the two end positions of the valve are indicated on the LED. In addition, the valve position "closed" is reached via the digital output.

Standard control valve

The standard proportional valve converts an external standard signal (position set-point value) into a valve position. Both valve end positions are indicated by the LED status. Additionally, the digital output indicates when the "closed" valve position has been achieved.

Process diagram CMD Xd1 CTRL POS opening Set-point position Positioner Electromotive actuator Position sensor Position control loop



Description

Positioner variantThe positioner prop

The positioner proportional valve converts an external standard signal (position set-point value) into a valve position. The position of the actuator is controlled according to the position set-point value. The current position (POS) of the electromotive valve is recorded by the position measuring system. The position controller compares this position actual value to the set-point value (CMD) specified as the standard signal. In case of a control difference (Xd1), the motor control signal is sent to the actuating drive as the actuating variable. Z1 is a disturbance value.

Both valve end positions are indicated by the LED status. Moreover, the position actual value recorded using the position measuring system is output via the M12 circular plug-in connector.

Process controller variant

The additionally implemented PID controller can perform not only the actual position control but also a process control in the sense of a cascade control. The process controller is integrated in a control circuit. The position set-point value of the valve is calculated from the process set-point value and the process actual value using the control parameters (PID controller). The process set-point value can be specified by an external signal. During the process control the position control mentioned above becomes the subordinate auxiliary control circuit; this results in a cascade control. The process controller in the main control circuit has a PID function.

The process set-point value (SP) is specified as a set-point value and is compared with the actual value (PV) of the process variable to be controlled. The position measuring system records the current position (POS) of the electromotive linear actuator. This position actual value is compared by the position controller with the set-point value (CMD) specified by the process controller. If there is a control difference (Xd2), the actual position (POS) and therefore the valve opening are changed by the control variable (CTRL). Z2 represents a disturbance variable.



8. Product accessories

8.1. Accessories capacitive buffer module

Note:

- See "4.2. Capacitive buffer module" on page 8 for information about dimensions.
- See "Standard accessories" on page 15 for ordering information.

Accessories Description Capacitive buffer module for moving to a safety position in case of power failure Motor valve(s) connection In order to be able to move to a safety position of the valve in the event of a power failure, the valve must be supplied with voltage via the capacitive buffer module. In the event of a power failure, the buffer module provides an output voltage of 18 V DC for a few seconds. The reduced input voltage is detected by the valve and the safety position is approached accordingly. Up to 3 valves of Type 3280 or 2 valves of Type 3281 and Type 3285 can be connected to a buffer module. Factory setting of the safety position: "valve closed" For standard variant (functionality available as of software version A.08): adjustable via DIP switches (for the reverse operating direction, the safety position changes to "valve open". For positioner and process controller variant (functionality available as of software version A.06): adjustable via Bürkert Communicator (user-defined safety position) 24 V DC power supply For example: Single phase, primary switched mode power supply Type 1573

8.2. Software Bürkert Communicator

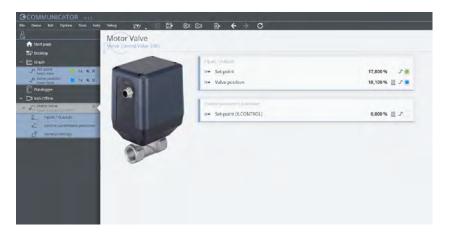
Note:

- An adjustment of the valve by the Bürkert Communicator is only possible with the positioner or process controller variants.
- To install the software, click here >.

The Bürkert Communicator is the most important software component of the ,Efficient Device Integration Platform' (EDIP). Various features of this universal tool simplify the configuration and parameterization of devices equipped with a digital CANopen based interface. With this tool the user has a complete overview of cyclic process values as well as acyclic diagnosis data. The integrated graphical programming environment enables the creation of decentralized sub-system control functions. The connection to the PC is established with a USB-CAN adapter. This is available as an accessory (see "9.5. Ordering chart accessories" on page 15).

The Communicator enables:

- Configuration, parameterisation and diagnosis of EDIP devices / networks
- Easy and comfortable mapping of cyclic values
- · Graphical display of process values
- Firmware update for the connected EDIP devices
- Backup and restoring of device configurations





Connection Type 3285 with Bürkert Communicator software

The interface to the "Bürkert Communicator" software tool is based on CANopen. A corresponding bus termination is mandatory. For variants with standard signal interfaces, please activate the switchable terminating resistor on the büS stick. For variants with büS / CANopen communication interface, this terminating resistor should not be switched on if the device is already integrated in a properly terminated bus network.

- A büS stick is required to connect the motor valve to the "Bürkert Communicator" software tool. The büS stick sets contain the necessary accessories.
- Variants with büS / CANopen communication interface are connected directly via the 5-pin M12 plug (büS stick set 1 contains the necessary accessories).
- Variants with standard signal interfaces are connected via the 8-pin M12 plug on the device (büS stick set 1 + büS adapter; socket 8-pin M12 to plug 5-pin M12 contain the necessary accessories).

9. Ordering information

9.1. Bürkert eShop



Bürkert eShop - Easy ordering and quick delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

Order online now

9.2. Recommendation regarding product selection

Note:

- The configuration of the seat size is very important for proportional valves to ensure proper functioning within the application. The seat size must be selected in such a way that on the one hand the desired flow range is achieved and on the other hand a sufficient part of the total pressure drop across the valve takes place when the valve is fully open.
- Reference value: pressure drop of the valve >25 % of the total pressure drop
- Let Bürkert engineers advise you already in the planning phase!

9.3. Bürkert product filter



Bürkert product filter - Get quickly to the right product

You want to select products comfortably based on your technical requirements? Use the Bürkert product filter and find suitable articles for your application quickly and easily.

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9.4. Bürkert Product Enquiry Form



Bürkert Product Enquiry Form - Your enquiry quickly and compactly

Would you like to make a specific product enquiry based on your technical requirements? Use our Product Enquiry Form for this purpose. There you will find all the relevant information for your Bürkert contact. This will enable us to provide you with the best possible advice.

Fill out the form now

9.5. Ordering chart accessories

Standard accessories

Description	Article no.
Power supply Type 1573 for rail mounting, 100240 V AC / 24 V DC, 1.25 A, NEC Class 2 (UL 1310)	772438 📜
Power supply Type 1573 for rail mounting, 100240 V AC / 24 V DC, 1 A	772361 🖼
Power supply Type 1573 for rail mounting, 100240 V AC / 24 V DC, 2 A	772362 📜
Power supply Type 1573 for rail mounting, 100240 V AC / 24 V DC, 4 A	772363 🖼
Buffer module Type 1573 for safety position when power failure	773440 🖼

Accessories cable

Description	Article no.
Connection cable M12 socket, 8-pin, 2 m ready-made cable for input and output signals (for analogue variant)	919061 ≒
Connection cable M12 socket, 8-pin, 2 m ready-made shielded cable for input and output signals (for analogue variant)	918991 ≒
Connection cable M12 plug, 5-pin, 2 m ready-made shielded cable for actual process value input signals (only for variant with analogue/digital process controller)	559177 🥦

Bürkert accessories

Note:

- For connection to a büS/CANopen network see cabling guide >. Detailed accessory tables can be found in the wiring guide
- Can only be used with positioner and process controller variant.

Description	Article no.
Software Bürkert Communicator, Type 8920	LINK
büS adapter; socket 8-pin M12 to plug 5-pin M12 (for büS stick connection)	773286 📜
büS stick set 1 (including power supply unit, büS stick, terminating resistor, Y-distributor, cable)	772426 ≒
büS stick set 2 (including büS stick, terminating resistor, Y-distributor, cable)	772551 🛱

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