DATA SHEET

Type 8653

AirLINE Field – the valve island – optimised for process automation

- Fieldbus interface CANopen, IO-Link or büS (Bürkert System Bus)
- Easy diagnostics via LC display
- Process reliability through pneumatic functions
- Optimised for installation in the field (IP65/67)

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

Can be combined with

Type 8652
AirLINE - the valve island optimised for process automation

Type ME43
Fieldbus gateway

Type 2012
Pneumatically operated 2/2-way globe valve CLASSIC

Type 2100
Pneumatically operated 2/2-way angle seat valve ELEMENT for decentralized automation

Type 8920
Bürkert Communicator

Type 8697
Pneumatic control for decentralised automation of ELEMENT process valves

Type description

The valve island Type 8653 AirLINE Field has been especially developed for applications in process automation. New diagnostic functions can be visualised at the LC display, both in clear text and as symbols. This facilitates assignment of the displayed messages and helps to save time during start-up and maintenance. Furthermore the diagnostic message is also available in the controller. This therefore enables a fast overview of the plant status. The hardware design has been optimised for installation close to the actuator. Thus, an intelligent installation system allows the valve island to be installed in a wide variety of positions. Needless to say, straightforward installation on the DIN rail is also possible. Moreover, key pneumatic functions ensure increased process reliability. For instance, the non-return valves in the exhaust air ducts make sure there is no unplanned actuation due to pressure peaks.

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LINE OA WEBSITE

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1. General technical data

Product properties	
Dimensions	Further information can be found in chapter "5. Dimensions" on page 6.
Material	
Body	PPA
Seal	NBR and PUR
Maximum installation width of a valve island	48.6 mm. Further information can be found in chapter "5. Dimensions" on page 6.
Width per station	11 mm
Manual override	Latching, spring return (optional: lockable)
Number of valve positions	Max. 4
Maximum number of valve functions	Max. 8
Switching function/Operating principle	Further information can be found in chapter "2. Circuit functions" on page 4.
Pneumatic intermediate supply	N/A
Performance data	
Pressure data	Overpressure to atmospheric pressure
Pressure range	Vac.…8 bar
External supply air (auxiliary pilot air)	3…8 bar
Flow rate Q_{Nn} value air	310 l/min [1.] measured at +20 °C, 6 bar pressure at valve inlet and 1 bar differential pressure
Flow rate Q_{Nn} value air with integrated P shut-off	N/A
Nominal operating mode	Continuous operation (100 % duty cycle)
Switching time	Measured according to ISO 12238
Electrical data	
Operating voltage	24 V DC
Voltage tolerance	±10 %
Residual ripple (at DC)	1 Vss
Nominal power of each valve	0.7 W (0.1 W after power reduction)
Nominal current of each valve	29 mA (10 mA after power reduction)
Position feedback	Possible via 8-DI module Type ME44 or 16-DI module Type ME6
Protection class	III according to DIN EN 61140, VDE 0140
Total current	
With fieldbus connection	Current consumption < 400 mA
Medium data	
Operating medium	Oil-free or lubricated compressed dry air, neutral gases (5 µm filter recommended)
Compressed air quality	ISO 8573-1:2010, Class 7.4.4
Approvals and conformities	
Degree of protection	IP65, IP67
North America (USA/Canada)	Further information can be found in chapter "3.4. North America (USA/Canada)" on page 5.
Process/Port connection & communication	
Working port	D 6, D ¼
Air supply connection	D 8, D 5/16
Communication module	ME43 or ME63 (Gateway)
Communication interface	PROFIBUS DP Industrial Ethernet (PROFINET IO, EtherNet/IP, Modbus TCP, EtherCAT, CC-Link IE Field Basic) CANopen büS (for networking with Bürkert devices)
Environment and installation	
Installation position	Any
Storage temperature	-10…+60 °C
Ambient temperature	-10…+55 °C
Accessories	
Bürkert Software [2.]	Software Bürkert Communicator Further information can be found in chapter "8.1. Bürkert Communicator Software" on page 8.

1.) The maximum flow rate depends on the valve function.

2.) For commissioning, the **Bürkert Communicator software Type 8920** ▸ as well as the associated USB büS interface set 1 with **Article no. 772426** 🛒 are required.

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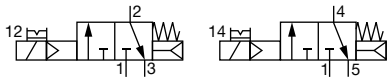
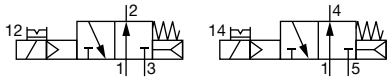
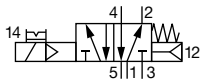
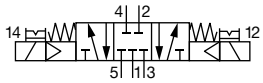
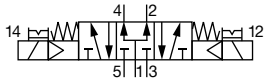
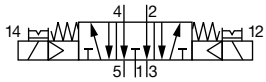
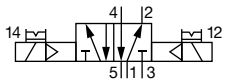
2. Circuit functions

Symbol	Description
	**Circuit function C (CF C)** 2 x 3/2-way solenoid valve Servo-controlled, with manual override Normally closed
	**Circuit function D (CF D)** 2 x 3/2-way solenoid valve Servo-controlled, with manual override Normally open
	**Circuit function H (CF H)** 5/2-way solenoid valve Servo-controlled, with manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure.
	**Circuit function L (CF L)** 5/3-way solenoid valve With manual override In middle position all ports locked
	**Circuit function M (CF M)** 5/3-way solenoid valve With manual override In middle position ports 2 and 4 ventilated
	**Circuit function N (CF N)** 5/3-way solenoid valve With manual override In middle position ports 2 and 4 exhausted
	**Circuit function Z (CF Z)** 5/2-way solenoid valve Impulse version with 2 coils and manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure.

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3. Approvals and conformities

3.1. 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.

3.2. Conformity

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

3.3. 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.

3.4. North America (USA/Canada)

Approval	Description
c UL us LISTED	**Optional: UL Listed for the USA and Canada** The products are UL Listed for the USA and Canada according to: • UL 61010-1 (ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE – Part 1: General Requirements) • CAN/CSA-C22.2 No. 61010-1

4. Materials

4.1. 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

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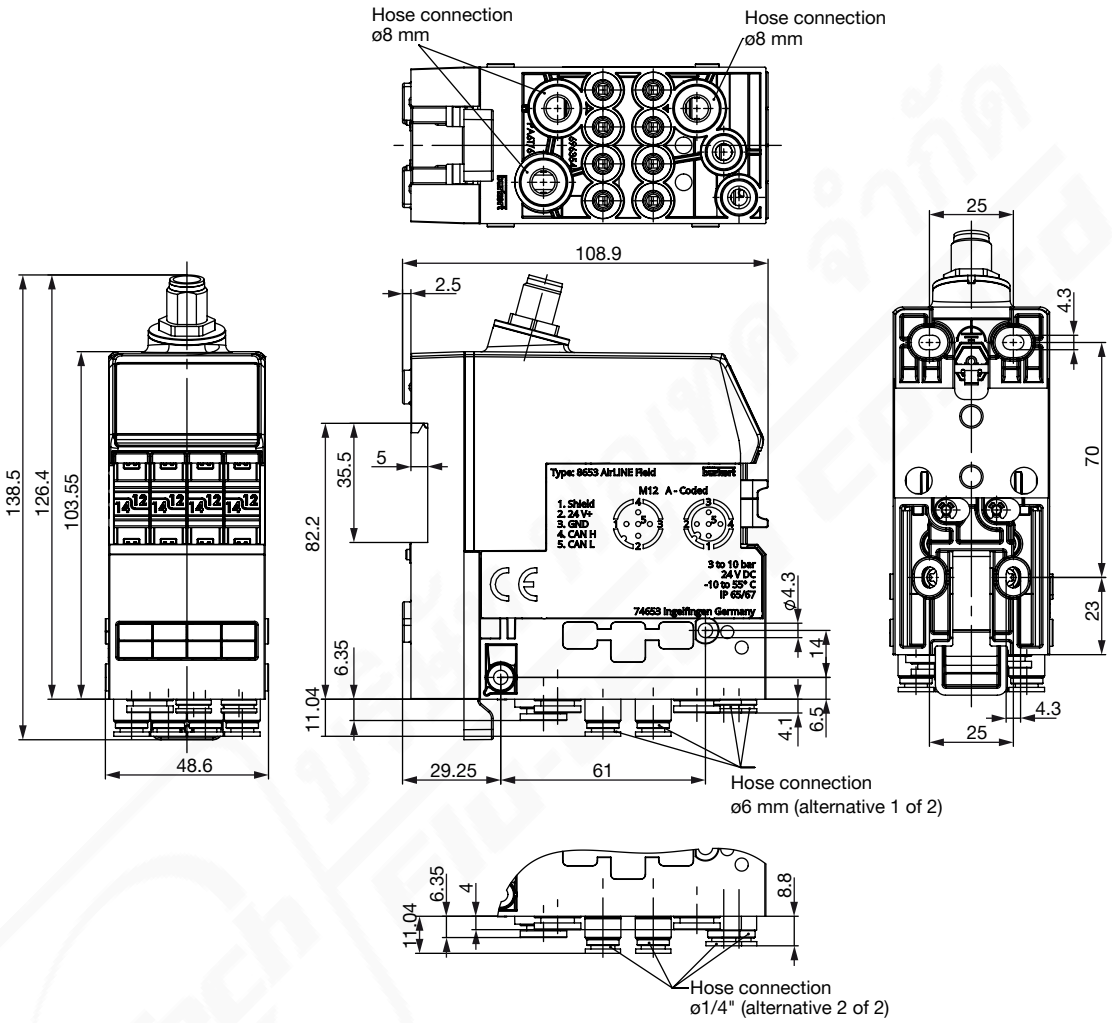
5. Dimensions

Note:
Dimensions in mm, unless otherwise stated



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6. Device/Process connections

6.1. Assignment of circular plug M12, 5-pin

büS/CANopen version

Assignment of circular plug M12, 5-pin, A-coded, büS/CANopen variant

View of pins	Pin	Assignment
	1	SHIELDING
	2	Supply voltage 24 V
	3	GND
	4	CAN_H (büS connection)
	5	CAN_L (büS connection)

IO-Link version

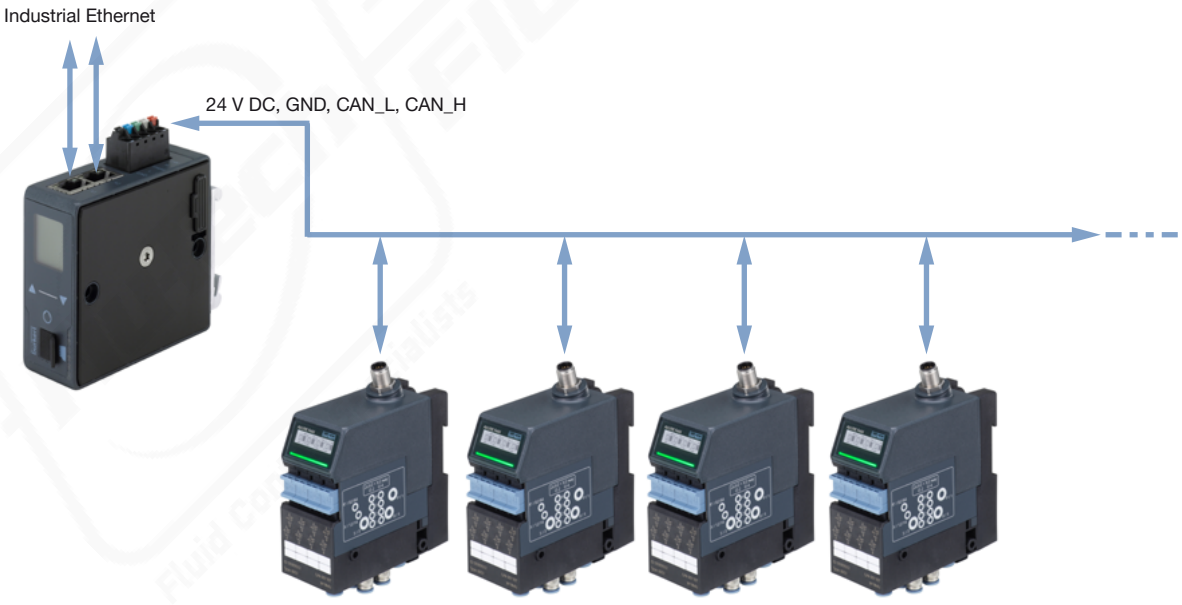
Assignment of circular plug M12, 5-pin, A-coded, IO-Link variant, Port Class B

View of pins	Pin	Assignment
	1	L+ (24 V processor)
	2	P24 (24 V valve unit)
	3	L- (0 V GND processor)
	4	C/Q (IO-Link)
	5	N24 (0 V GND valve unit)

7. Product design and assembly

7.1. Example configuration

The following graphic shows a network with the example of Fieldbus Gateway Type ME43 and AirLINE Field Type 8653 (büS version).



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8. Product accessories

8.1. Bürkert Communicator Software

Note:
The corresponding communication software can be downloaded from the website **Type 8920** ▶.

The Bürkert Communicator is the most important software component of the EDIP (Efficient Device Integration Platform). Various features of this universal tool simplify the configuration and parametrisation 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 diagnostic data. The integrated graphical programming environment enables the creation of decentralised sub-system control functions. The connection to the PC is established with a USB-CAN adapter. The adapter is available as an accessory (see **"9.4. Ordering chart accessories" on page 14**).

The Bürkert Communicator enables:

- Configuration, parametrization 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

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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. 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.

Try out our product filter

9.3. Ordering chart

Ordering chart Type 8653 büS version

The following ordering chart lists the part numbers for Type 8653, subdivided according to connection type and circuit function. All valve positions are equipped with the same operating principle.

Note:
All articles in the following table are equipped with integrated check valves.

Symbol	Q_{Nn} value air	Switching times		Article no.	Article no.
		Opening	Closing	D6/D8	D¼"/ 5/16"
	[l/min]	[ms]	[ms]		
C (CF C) 2 x 3/2-way solenoid valve Servo-controlled, with manual override Normally closed 	270	15	15	309522	309537
D (CF D) 2 x 3/2-way solenoid valve Servo-controlled, with manual override Normally open 	310	15	15	377659	o. r.

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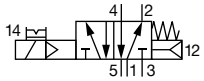
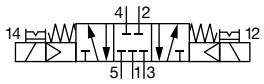
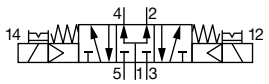
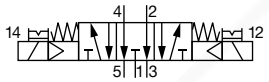
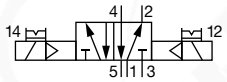
Symbol	Q_{Nn} value air	Switching times		Article no.	Article no.
		Opening	Closing	D6/D8	D¼"/ 5/16"
	[l/min]	[ms]	[ms]		
H (CF H) 5/2-way solenoid valve Servo-controlled, with manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure. 	270	20	25	309529	338890
L (CF L) 5/3-way solenoid valve With manual override In middle position all ports locked 	290	20	25	20030510	o. r.
M (CF M) 5/3-way solenoid valve With manual override In middle position ports 2 and 4 ventilated 	290	20	25	o. r.	o. r.
N (CF N) 5/3-way solenoid valve With manual override In middle position ports 2 and 4 exhausted 	290	20	25	o. r.	o. r.
Z (CF Z) 5/2-way solenoid valve Impulse version with 2 coils and manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure. 	290	20	25	20058986	o. r.

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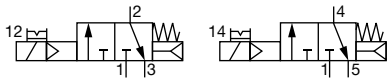
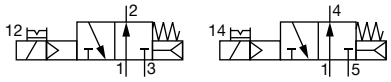
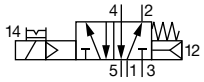
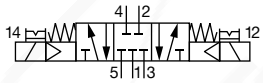
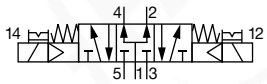
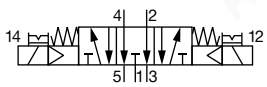
Ordering chart Type 8653 CANopen version

The following ordering chart lists the part numbers for Type 8653, subdivided according to connection type and circuit function. All valve positions are equipped with the same operating principle.

Note:
All articles in the following table are equipped with integrated check valves.

Symbol	Q_{Nn} value air	Switching times		Article no.	Article no.
		Opening	Closing	D6/D8	D¼"/ 5/16"
	[l/min]	[ms]	[ms]		
C (CF C) 2 x 3/2-way solenoid valve Servo-controlled, with manual override Normally closed 	270	15	15	309527	338914
D (CF D) 2 x 3/2-way solenoid valve Servo-controlled, with manual override Normally open 	310	15	15	o. r.	o. r.
H (CF H) 5/2-way solenoid valve Servo-controlled, with manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure. 	270	20	25	309532	338917
L (CF L) 5/3-way solenoid valve With manual override In middle position all ports locked 	290	20	25	o. r.	o. r.
M (CF M) 5/3-way solenoid valve With manual override In middle position ports 2 and 4 ventilated 	290	20	25	o. r.	o. r.
N (CF N) 5/3-way solenoid valve With manual override In middle position ports 2 and 4 exhausted 	290	20	25	o. r.	o. r.

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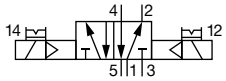
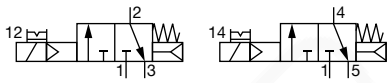
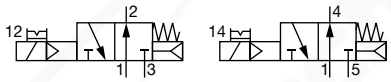
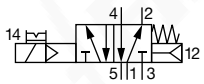
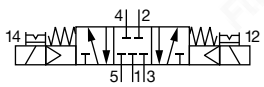
Symbol	Q_{Nn} value air	Switching times		Article no.	Article no.
		Opening	Closing	D6/D8	D¼"/ 5/16"
	[l/min]	[ms]	[ms]		
Z (CF Z) 5/2-way solenoid valve Impulse version with 2 coils and manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure. 	290	20	25	o. r.	o. r.

o. r. = on request

Ordering chart IO-Link version

The following ordering chart lists the part numbers for Type 8653, subdivided according to connection type and circuit function. All valve positions are equipped with the same operating principle.

Note:
All articles in the following table are equipped with integrated check valves.

Symbol	Q_{Nn} value air	Switching times		Article no.	Article no.
		Opening	Closing	D6/D8	D¼"/ 5/16"
	[l/min]	[ms]	[ms]		
C (CF C) 2 x 3/2-way solenoid valve Servo-controlled, with manual override Normally closed 	270	15	15	357762	373702
D (CF D) 2 x 3/2-way solenoid valve Servo-controlled, with manual override Normally open 	310	15	15	20002355	o. r.
H (CF H) 5/2-way solenoid valve Servo-controlled, with manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure. 	270	20	25	370110	373703
L (CF L) 5/3-way solenoid valve With manual override In middle position all ports locked 	290	20	25	382177	o. r.

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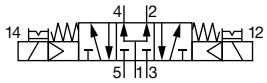
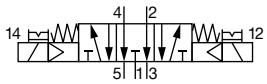
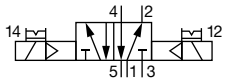
Symbol	Q_{Nn} value air	Switching times		Article no.	Article no.
		Opening	Closing	D6/D8	D¼"/ 5/16"
	[l/min]	[ms]	[ms]		
M (CF M) 5/3-way solenoid valve With manual override In middle position ports 2 and 4 ventilated 	290	20	25	o. r.	o. r.
N (CF N) 5/3-way solenoid valve With manual override In middle position ports 2 and 4 exhausted 	290	20	25	o. r.	o. r.
Z (CF Z) 5/2-way solenoid valve Impulse version with 2 coils and manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure. 	290	20	25	371372	o. r.

o. r. = on request

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9.4. Ordering chart accessories

Fieldbus gateway Type ME43

Note:

- Please note that the ME43 gateway modules are not configured ex works. However, these absolutely must be configured in order to be used in a system. The device description files must be generated with the Bürkert Communicator software before the start-up of a system.
- Further information can be found in the operating instructions **Type ME43** ▶.

Description	Article no.
Industrial Ethernet gateway (PROFINET IO, EtherNet/IP, Modbus TCP, EtherCAT®)	307390
PROFIBUS gateway (PROFIBUS DPV1)	307393
Gateway büS/CANopen	307391
Gateway CC Link	307394

Accessory for Software Bürkert Communicator

Description	Article no.
büS cable extension, M12, cable length: 0.1 m	772492
büS cable extension, M12, cable length: 0.2 m	772402
büS cable extension, M12, cable length: 0.5 m	772403
büS cable extension, M12, cable length: 1 m	772404
büS cable extension, M12, cable length: 3 m	772405
büS socket, M12, straight, A-coded	772416
büS plug, M12, straight, A-coded	772417
büS socket, M12, angled, A-coded	772418
büS plug, M12, angled, A-coded	772419
büS Y plug	772420
büS Y plugfor linking 2 separately supplied segments of a büS network	772421
Termination resistor (directly pluggable)	303833
büS plug, M12, terminating resistor 120 Ω	772424
büS socket, M12, terminating resistor 120 Ω	772425
Power supply unit Phoenix Class2 (Type 1573), 85…240 V AC/24 V DC, 1.25 A, NEC Class 2 (UL 1310)	772438
Power supply unit for standard rail (Type 1573), 100…240 V AC/24 V DC, 1 A, NEC Class 2 (UL 1310)	772361
Power supply unit for standard rail (Type 1573), 100…240 V AC/24 V DC, 2 A, NEC Class 2 (UL 1310)	772362
Power supply unit for standard rail (Type 1573), 100…240 V AC/24 V DC, 3.8 A, NEC Class 2 (UL60950-1)	772898
Power supply unit for standard rail (Type 1573), 100…240 V AC/24 V DC, 10 A	772698
microSD card	774087
USB büS interface set 1 (Type 8923) for connection to the Bürkert Communicator software: includes connection cable (M12 and micro USB), stick with integrated terminating resistor, power supply and software	772426
USB büS interface set 2 (Type 8923) for connection to the Bürkert Communicator software: including büS stick, connection cable to M12 plug, M12 connection cable on micro USB for the büS service interface and Y distributor, cable length: 0.7 m	772551
License for graphical programming (only required for a running time >60 minutes)	567713
Software Bürkert Communicator	**Type 8920** ▶

1.) Due to lack of space, the M12 single connectors may not be suitable for their simultaneous use on the same side of the Y connector. Please use the available ready-made assembled cable in this case.

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