bürkert
FLUID CONTROL SYSTEMS

System Control Unit

- Fieldbus coupler for Industrial Ethernet and Fieldbus standards
- Up to 128 input and 128 output variables can be assigned
- Easy integration in the process control system ensured through system specific device description files
- Optional: Expandable with I/O modules
- Optional: Graphical programming for automation of sub-systems

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

Can be combined with

Type 8741 ▸
Mass Flow Controller (MFC)/ Mass Flow Meter (MFM) for Gases

Type 8742 ▸
Mass Flow Controller (MFC)/ Mass Flow Meter (MFM) for gases

Type 8746 ▸
Mass flow controller (MFC)/Mass flow meter (MFM) for gases

Type 8905 ▸
Online Analysis System

Type description

The System Control Unit (SCU) of Type ME2X is the central control unit for Bürkert devices (valves, sensors, mass flow controller or displays), which are based on EDIP (“Efficient Device Integration Platform”). The basic version of Type ME2X consists of power-in and power-out modules of Type ME29 and a fieldbus coupler of Type ME23. This fieldbus coupler transmits the internal CANopen based communication of the Bürkert field devices to industrial standards for Industrial Ethernet and fieldbus.

Additionally I/O modules from Type ME24 for analog and digital signals can be used to expand the system. Through these standard signals other field devices without a fieldbus interface can be integrated. (For e.g. analog sensors, valves etc.)

With the help of the graphical programming, sub-systems can be automated specifically to the customer’s needs. (For e.g. controlled mixing of gases, error monitoring through switching commands, timer switches etc.)

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Visit product website ▸

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1. General Technical Data

1.1. ME2X System Control Unit (SCU)

Product properties	
Dimensions	Detailed information can be found in chapter "2. Dimensions" on page 5.
Material	
Body	PC (Polycarbonate)
Configuration memory	Micro SD Card (for storing device parameters and configuration, data-logging and easy replacement of a module)
Status LED	RGB-LED based on NAMUR NE107
Electrical data	
Operating voltage	18…35 V DC
Power consumption	2 W
Input/output signal	Via Module ME24 2AI/2DI 2AO/2DO 4DO
Process/Port connection & communication	
Gateway-Functionality (integrated switch for Industrial Ethernet)	PROFINET Ethernet/IP Modbus/TCP Profibus-DP
Environment and installation	
Installation position	Horizontal or vertical on DIN rail EN 50022
Ambient temperature	0…50 °C
Degree of protection	
ME21 (Display)	IP20
ME23 (Gateway)	IP20
ME24 (I/O Module)	IP65
ME29 (entry-exit module)	IP65
BEF1 (Backplane)	IP65

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1.2. ME24 I/O Modules (optional)

Electrical properties of inputs and outputs

Note:

- Supply voltage: 20…30 V over the Backplane BEF1
- UL devices: Power supply unit limited to Class 2
- Power consumption: <3 W
- If the outputs are supplied via büS, the total current is internally limited to 2 A: Max. 48 W

Feature		2AO/2DO / f(x) Module		4DO/f(x) Module	2AI/2DI Module	
		Analogue output; AO	Digital output; DO	Digital output (PWM); DO	Analogue input; AI	Digital input; DI
Electrical signal		Current output	Transistor output	Transistor output: Open-Drain-output	Current input or voltage input	Voltage input
Operating mode		4…20 mA	On-Off Threshold value PWM PFM	On-Off Threshold value PWM PFM	4…20 mA 0…20 mA 0…10 V 0…5 V 0…2 V	0…35 V DC
Current consumption		–	0.7 A pro channel/ 1 A pro module[1.)]	0.7 A pro channel / 1.8 A pro module[1.)]	–	–
Input impedance		–	–	–	110 Ω at current input 120 kΩ at voltage input	ca. 3…5 kΩ at voltage of 5…35 V
Switching threshold		–	–	–	–	V_{ON} =5…35 V V_{OFF} <2 V DC
Loop impedance (max.) at current output 22 mA		1350 Ω at 35 V DC 850 Ω at 24 V DC 300 Ω at 12 V DC	–	–	–	–
Galvanic isolation (between the channels and the power supply of the module electronics)		Yes	Yes	–	Yes	Yes
Diagnostics	Inverse-polarity protection	Yes	–	–	Yes	Yes
	Overload detection	–	Yes	Yes	–	–
	Detection of open loop	Yes	–	–	Yes at voltage input	–
Resolution		6 µA	–	–	12 bit	–
Sampling time		–	–	–	100 ms	–
Measuring frequency		–	Max. 2500 Hz	–	–	0.5…2500 Hz
Clock frequency		–	–	20 kHz	–	–

1.) Load supplied via the SCU

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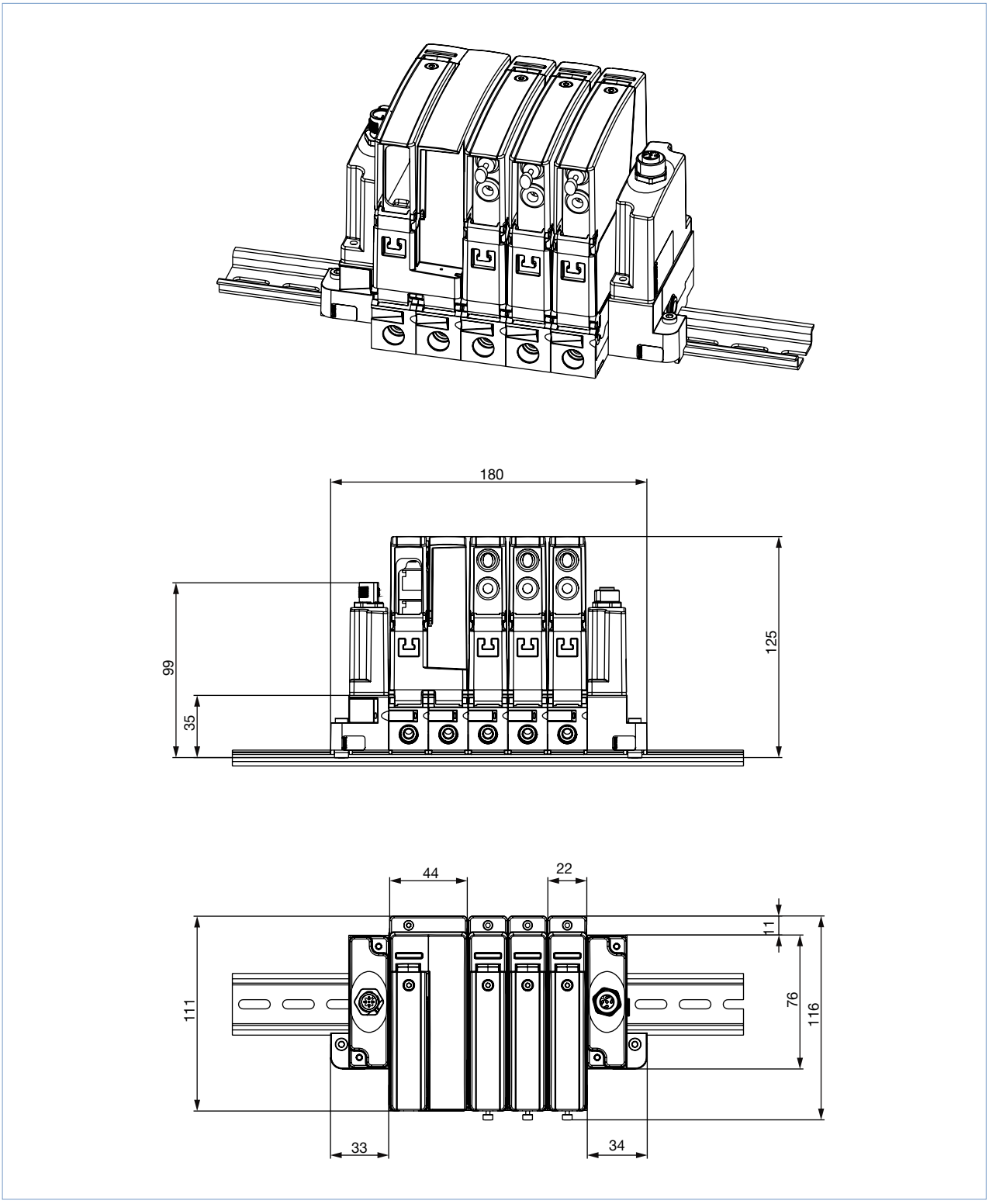
2. Dimensions

2.1. Possible version with M12 for büS connection

Note:
Versions with terminal block are also available.



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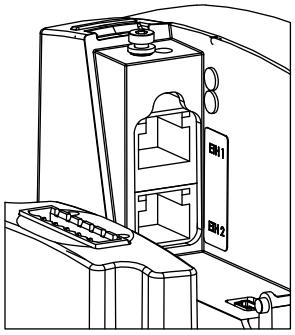
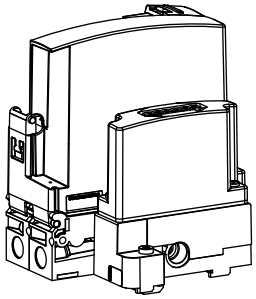
3. Device/Process connections

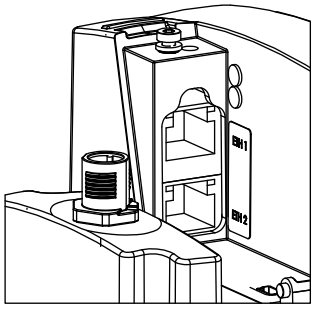
3.1. Pin assignment

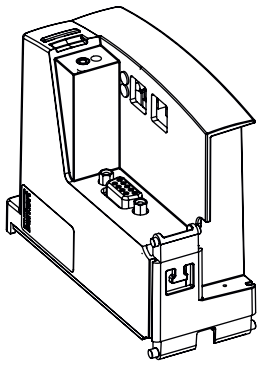
Note:

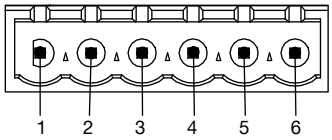
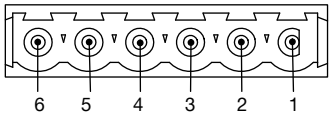
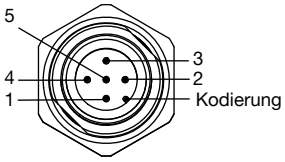
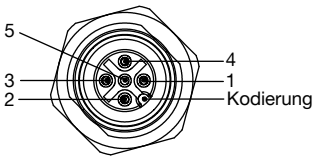
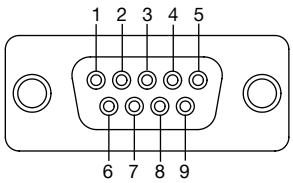
- Both, the büS input and output modules (ME29) include an integrated 120 Ohm resistor for bus termination. On demand, the resistors can be switched on or off via a DIP switch.
- CANopen requires two termination resistors: one at the beginning and one at the end of the network. An indicator of the correct bus termination is the resistance between CAN_H and CAN_L when the power supply is disconnected; this should be about 60 Ohm.









Terminal block, 6 pin, male (power input)	Pin	Pin assignment
	1	DGND
	2	CAN_L
	3	SHIELD
	4	CAN_H
	5	V+ (only input)
	6	FE (opt.)
Terminal block, 6 pin, female (power output)	**Pin**	**Pin assignment**
	1	DGND
	2	CAN_L
	3	SHIELD
	4	CAN_H
	5	V+ (only output)
	6	FE (opt.)
M12, 5 pin, male (power input)	**Pin**	**Pin assignment**
	1	SHIELD
	2	V+ (only input)
	3	DGND
	4	CAN_H
	5	CAN_L
M12, 5 pin, female (power output)	**Pin**	**Pin assignment**
	1	SHIELD
	2	V+ (only output)
	3	DGND
	4	CAN_H
	5	CAN_L
D-SUB, 9 pin, female	**Pin**	**Pin assignment**
	1	SHIELD
	2	N.C.
	3	RxD/TxD - P (B-Line)
	4	CNTR-P
	5	GND
	6	+5 V (only for termination resistor)
	7	N.C.
	8	RxD/TxD - N (A-Line)
	9	N.C.

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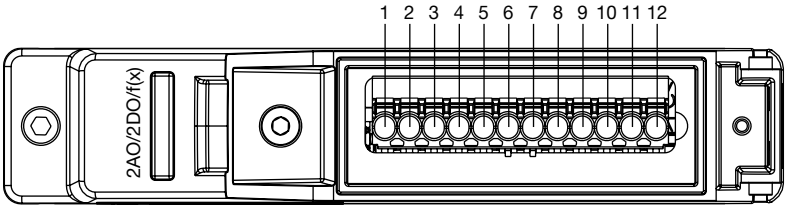
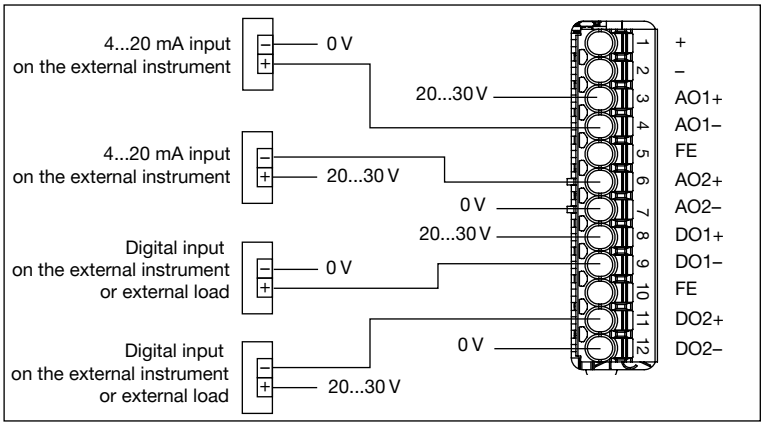
3.2. Pin assignment and wiring

2AO/DO/f(x)		
Pin	**Pin assignment**	**External circuit**
1	+	20…30 V / 2 A max. OUTPUT no galvanic isolation
2	-	20…30 V / 2 A max. OUTPUT no galvanic isolation
3	AO1+	+ (4…20 mA) output galvanically isolated
4	AO1–	– (4…20 mA) output galvanically isolated
5	FE	Shielding
6	AO2+	+ (4…20 mA) output galvanically isolated
7	AO2–	– (4…20 mA) output galvanically isolated
8	DO1+	+ NPN galvanically isolated
9	DO1–	– NPN galvanically isolated
10	FE	Shielding
11	DO2+	+ NPN galvanically isolated
12	DO2–	– NPN galvanically isolated

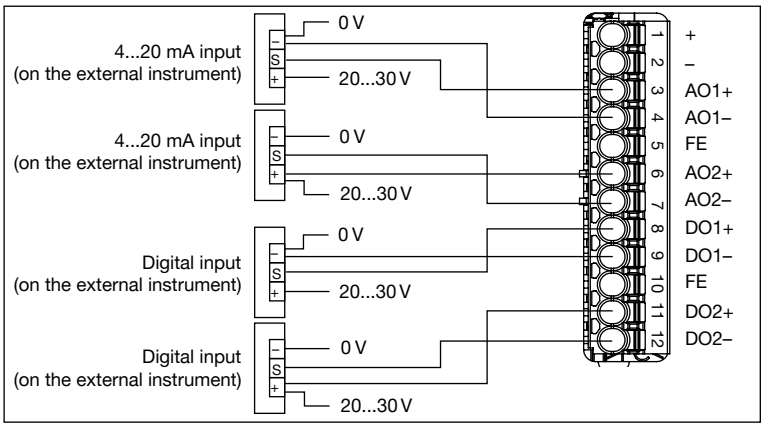


2AO, 2DO, f(x): 2 Wire



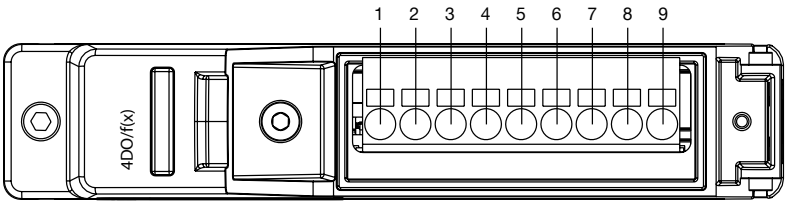
External circuit 2AO, 2DO, f(x), 2 wire

2AO, 2DO, f(x): 3 Wire

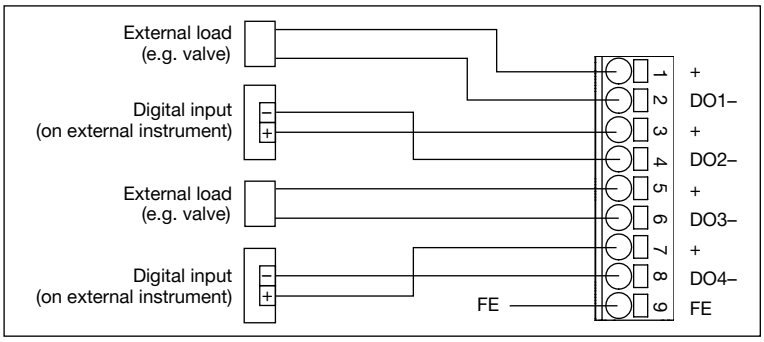


External circuit 2AO, 2DO, f(x), 3 wire

4DO/f(x)		
Pin	**Pin assignment**	**External circuit**
1	+	20…30 V / 2 A max. total current no galvanic isolation
2	DO1–	Open Drain
3	+	20…30 V / 2 A max. total current no galvanic isolation
4	DO2–	Open Drain
5	+	20…30 V / 2 A max. total current no galvanic isolation
6	DO3–	Open Drain
7	+	20…30 V / 2 A max. total current no galvanic isolation
8	DO4–	Open Drain
9	FE	Shielding



4DO, f(x)



External circuit 4DO PWM 20 kHz

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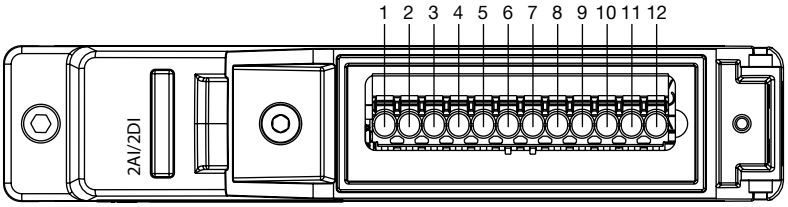
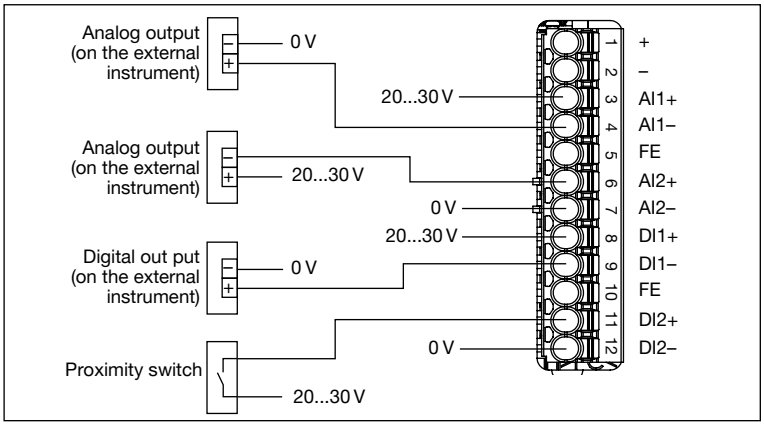
2AI/2DI		
Pin	**Pin assignment**	**External circuit**
1	+	20…30 V / 2 A max. OUTPUT no galvanic isolation
2	-	20…30 V / 2 A max. OUTPUT no galvanic isolation
3	AI1+	+ (0/4…20 mA, 0…2/5/10 V) input galvanically isolated
4	AI1–	– (0/4…20 mA, 0…2/5/10 V) input galvanically isolated
5	FE	Shielding
6	AI2+	+ (0/4…20 mA, 0…2/5/10 V) input galvanically isolated
7	AI2–	– (0/4…20 mA, 0…2/5/10 V) input galvanically isolated
8	DI1+	+ (ON: 5…35 V, OFF: >2 V) input galvanically isolated
9	DI1–	– (ON: 5…35 V, OFF: >2 V) input galvanically isolated
10	FE	Shielding
11	DI2+	+ (ON: 5…35 V, OFF: >2 V) input galvanically isolated
12	DI2–	– (ON: 5…35 V, OFF: >2 V) input galvanically isolated

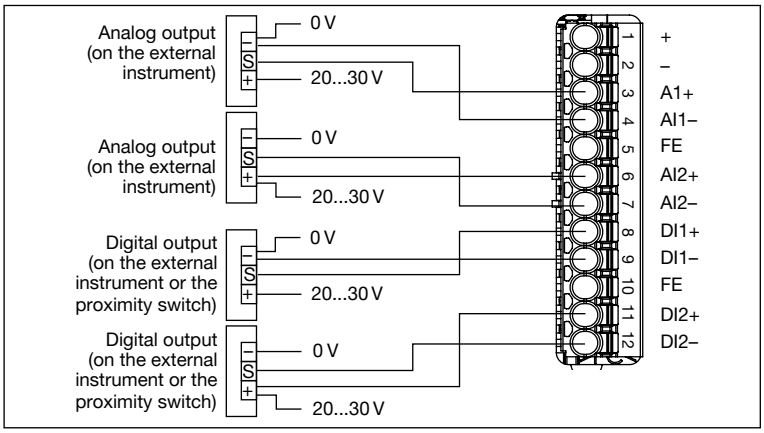


2AI, 2DI, f(x): 2 Wire



External configuration 2AI, 2DI, 2 wire

2AI, 2DI, f(x): 3 Wire



External configuration 2AI, 2DI, 3 wire

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4. Product design and assembly

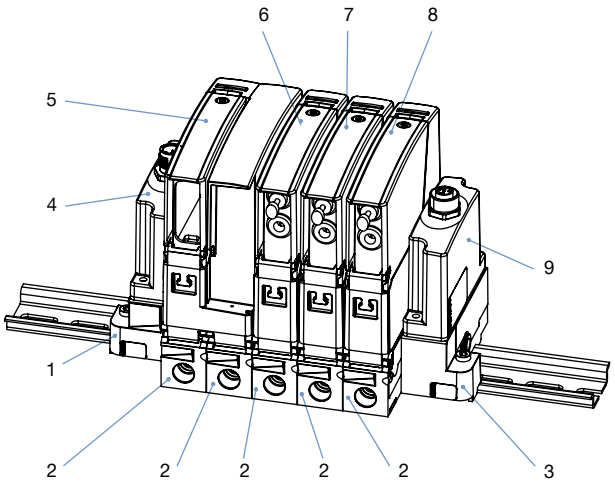
4.1. Product assembly

System connection with Type ME2X

Example of a possible SCU configuration. Further modules can be added to expand the system.

No.	Module	Type
1	Backplane left	BEF1
2	Backplane (for Type ME23, ME24, ME25)	BEF1
3	Backplane right	BEF1
4	büS input module (M12)[1.)]	ME29
5	Gateway module	ME23
6	I/O module (2AI/2DI)	ME24
7	I/O module (2AO/2DO)	ME24
8	I/O module (4DO)	ME24
9	büS output module (M12)[1.)]	ME29

1.) Also available with terminal blocks



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5. Product accessories

5.1. EDIP – Efficient Device Integration Platform

EDIP is the new Bürkert device platform which will in the future standardise the operation, communication and interfaces of many process devices (e.g. Sensors, Mass Flow Controller). Thanks to EDIP the devices can be intelligently networked and operated with the consistent Software, the Bürkert Communicator. The backbone and connecting link of EDIP is the digital interface which complies with the CANopen standard and is always downwards compatible to it. EDIP offers following advantages to the user:

- Interoperability - guaranteed by the uniform interface
- Comfortable operating and display concept
- Fast start-up and easy commissioning
- Modularity – allows adjustment of the devices to individual customer requirements
- Easy transfer and backup of device settings

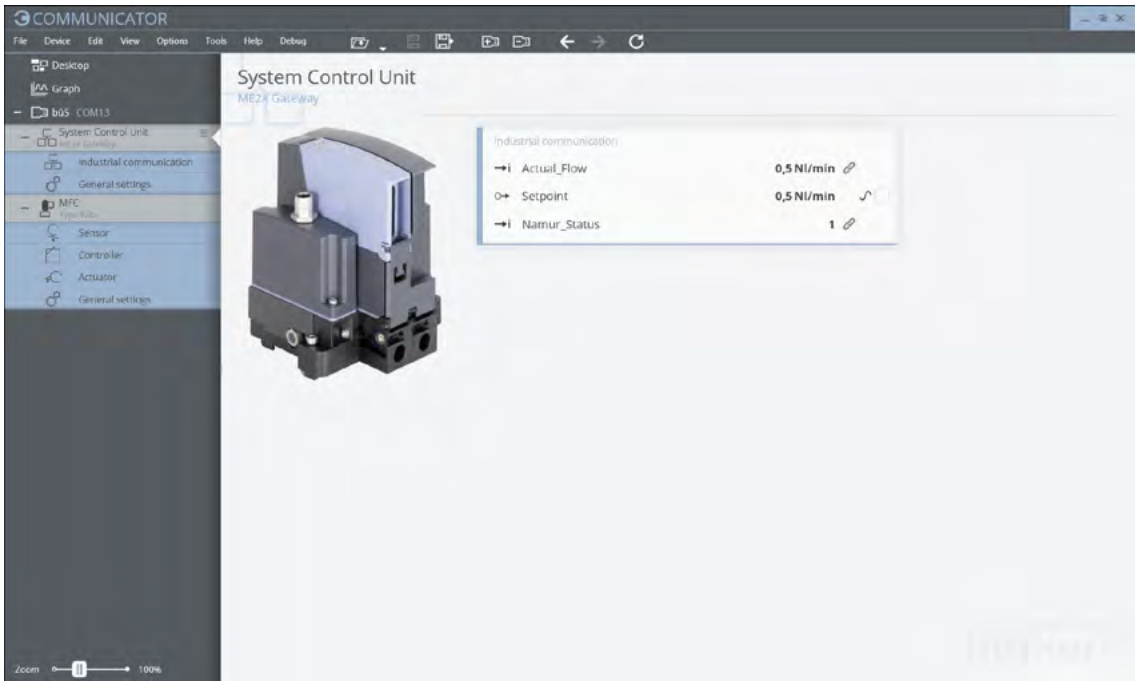
5.2. Software Bürkert Communicator

Note:
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. In the near future, an integral part of the Communicator will be a graphical programming environment which will help in creating decentralized sub-system control functions. The connection to the PC is established with a USB-CAN adapter. This is available as an accessory, see **"7.3. Ordering chart accessories" on page 13**

The communicator allows:

- Configuration, parametrisation 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
- Recalibration routine controlled



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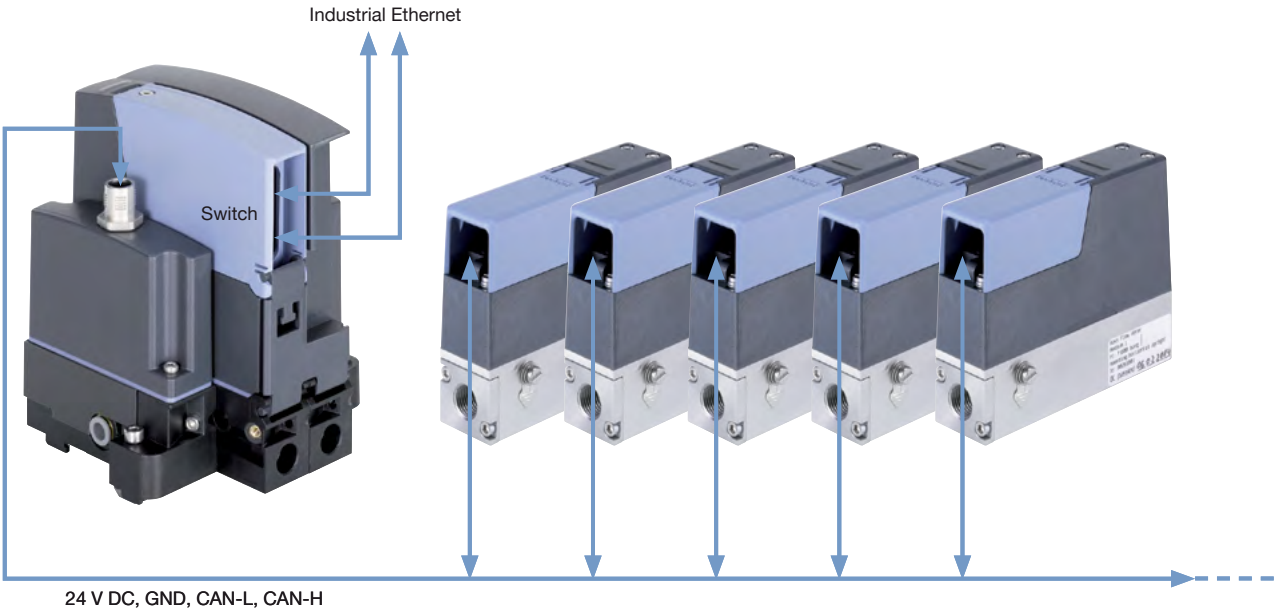
6. Networking and combination with other Bürkert products

Note:
Example of a network with SCU and MFCs



7. Ordering information

7.1. Bürkert eShop – Easy ordering and quick delivery

Bürkert eShop – Easy ordering and fast 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

7.2. 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

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7.3. Ordering chart accessories

Article	Article no.
büS cable extension, M12, 0.1 m	772492
büS cable extension, M12, 0.2 m	772402
büS cable extension, M12, 0.5 m	772403
büS cable extension, M12, 1 m	772404
büS cable extension, M12, 3 m	772405
M12-socket, straight (A coded)[1.)]	772416
M12-plug, straight (A coded)[1.)]	772417
M12-socket, angled (A coded)[1.)]	772418
M12-plug, angled (A coded)[1.)]	772419
Y connector	772420
Y connector for connecting two separately powered segments of a büS network	772421
Termination resistor 120 Ohm M12 male	772424
Termination resistor 120 Ohm M12 female	772425
Power supply Type 1573 for rail mounting, 100…240 V AC/ 24 V DC, 1.25 A, NEC Class 2 (UL 1310)	772438
Power supply Type 1573 for rail mounting, 100…240 V AC/ 24 V DC, 1 A, NEC Class 2 (UL 1310)	772361
Power supply Type 1573 for rail mounting, 100…240 V AC/ 24 V DC, 2 A, NEC Class 2 (UL 1310)	772362
Power supply Type 1573 for rail mounting, 100…240 V AC/ 24 V DC, 4 A	772363
Micro SD card	On request
büS Stick Set 1 (incl. cable (M12)), stick with integrated termination resistor, power supply and software	772426
büS Stick Set 2 (incl. cable (M12)), stick with integrated termination resistor	772551
Terminal block 6 pin male (connector to büS input module)	On request
Terminal block 6 pin female (connector to büS output module)	On request
License for graphical programming (only required for a running time >60 minutes)	567713
Software Bürkert Communicator	**Link**

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-distributor. Please use the available ready-made assembled cable in this case.

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