

Type 8022

Flow Transmitter / Pulse divider
Durchflusstransmitter / Impulsteiler
Transmetteur de débit / Diviseur d'impulsions



Quickstart (device Version 2)

English

We reserve the right to make technical changes without notice.

Technische Änderungen vorbehalten.

Sous réserve de modifications techniques.

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1.	QUICKSTART	3
2.	INTENDED USE.....	5
3.	BASIC SAFETY INSTRUCTIONS	6
4.	GENERAL INFORMATION	8
5.	DESCRIPTION.....	9
6.	TECHNICAL DATA.....	10
7.	INSTALLATION AND START-UP.....	15
8.	ADJUSTMENT.....	27
9.	MAINTENANCE	27
10.	PACKAGING, TRANSPORT, STORAGE, DISPOSAL.....	28

1. QUICKSTART

Keep these instructions in a location which is easily accessible to every user and make these instructions available to every new owner of the device.

Important Safety Information!

Read the quickstart carefully and thoroughly. Study in particular the chapters entitled *Basic Safety Instructions* and *Intended Use*.

- ▶ The quickstart must be read and understood.

The quickstart explains how to install and start-up the device.

A detailed description of the device can be found in the Operating Instructions for type 8022.



The Operating Instructions can be found on the Internet at: country.burkert.com

1.1. Symbols

The following symbols are used in these instructions.



CAUTION

Warns of a possible danger!

- ▶ Failure to observe this warning may result in a medium or minor injury.

NOTICE

Warns of damage to property!



Indicates important additional information, tips and recommendations.

→ designates a procedure that must be carried out.

1.2. Definition of the term device

In these instructions the term “device” refers to the Type 8022 flow transmitter or the Type 8022 pulse divider.

3. BASIC SAFETY INSTRUCTIONS

This safety information does not take into account any contingencies or occurrences that may arise during installation, use and maintenance of the product.

The operating company is responsible for the respect of the local safety regulations including for the staff safety.



Risk of injury due to electrical voltage.

- ▶ Before carrying out work on the system or the device, disconnect the electrical power for all the conductors and isolate it.
- ▶ All equipment connected to the product must be double insulated with respect to the mains according to the standard UL/EN 61010-1.
- ▶ Observe all applicable accident protection and safety regulations for electrical equipment.



Various dangerous situations

To avoid injury, observe the following instructions:

- ▶ Do not use the device in an environment incompatible with the device materials.
- ▶ Do not subject the device to mechanical stress.

2. INTENDED USE

Use of the device that does not comply with the Operating Instructions could present risks to people, nearby installations and the environment.

The Type 8022 flow transmitter, associated to a Bürkert flow sensor, converts the frequency signal generated by the flow sensor into an analogue 4...20 mA current signal.

The Type 8022 pulse divider, associated to a Bürkert flow sensor, converts the frequency signal generated by the flow sensor into an adjustable frequency signal.

- ▶ The device is designed for use in industrial environments.
- ▶ Use the device in compliance with the characteristics and start-up and use conditions specified in the contractual documents and in the Operating Instructions.
- ▶ Do not use the device for security applications.
- ▶ Use the device only if in perfect working order.
- ▶ Properly transport, store, install and operate the device.
- ▶ Only use the device as intended.



Various dangerous situations

To avoid injury:

- ▶ Do not use the device in explosive atmospheres.
- ▶ Do not make any modifications to the device.
- ▶ Prevent any unintentional power supply switch-on.
- ▶ Only qualified and skilled staff can carry out the installation and maintenance work.
- ▶ Guarantee a defined or controlled restarting of the process, after a power supply interruption.
- ▶ Observe the general technical rules.

NOTICE

Electrostatic sensitive components or modules.

The device contains electronic components, which react sensitively to electrostatic discharge (ESD). Contact with electrostatically charged persons or objects is hazardous to these components. In the worst case scenario, they will be destroyed immediately or will fail after start-up.

- ▶ Observe the requirements in accordance with EN 61340-5-1 to minimise and even avoid the possibility of damage caused by a sudden electrostatic discharge.
- ▶ Also, ensure that you do not touch electronic components when the power supply voltage is present.

4. GENERAL INFORMATION

4.1. Contact

To contact the manufacturer of the device, use following address:

Bürkert SAS
 Rue du Giessen
 BP 21
 F-67220 TRIEMBACH-AU-VAL

The addresses of our international sales offices are available on the internet at: country.burkert.com

4.2. Warranty

The warranty is only valid if the device is used as intended in accordance with the specified application conditions.

5. DESCRIPTION

Upon delivery, the device can be fitted or not with a display unit. You need a display unit to do the settings for a correct operation of the device. The display unit is available as an accessory.

The device has either a cable gland or a 4-pin M12 male connector.

The device has both a 4...20 mA current output and a transistor output. Thus it can operate either as a flow transmitter or as a pulse divider.

→ Combine the device with a Bürkert flow sensor that has the following output:

- Type 8022 flow transmitter with a Bürkert flow sensor that has a transistor output, in the Low Power device variant of the following types: 8020, 8030, 8070, SE30.
- Type 8022 pulse divider with a Bürkert flow sensor that has a transistor output of the types 8020, 8030, 8070, SE30.

6. TECHNICAL DATA

6.1. Operating conditions

Ambient temperature	-10...+60 °C
Operating condition	Continuous operation
Mobility of the device	Fixed device
Use	Indoor and outdoor use Protect the device against electromagnetic interference, ultraviolet rays and, when installed outdoors, against the effects of climatic conditions.
IP-Code according to IEC / EN 60529	IP65 ¹⁾ , if the following conditions are respected: <ul style="list-style-type: none"> ▪ Cable gland wired or blanked-off, or female connector plugged-in and tightened ▪ Nut of the cable gland tightened with a torque of 1 N·m ± 20 % (0.74 lbf·ft ± 20 %). ▪ Housing closed and screw tightened to a torque of 0.3 N·m ± 20 % (0.22 lbf·ft ± 20 %), or display unit plugged on the device and screw tightened to a torque of 0.3 N·m ± 20 % (0.22 lbf·ft ± 20 %).
Degree of pollution	Degree 2 according to UL/ EN 61010-1

1) not evaluated by UL

6.2. Type label

The diagram shows a rectangular type label with the following information and callouts:

- 1: Type number of the device (8022)
- 2: Operating voltage (12-30V...)
- 3: Available outputs (4-20mA/Pulse)
- 4: Maximum power consumption (Pmax. 3.2WΔ)
- 5: Version of the device (Vers. 2)
- 6: Warning: Before using the device, take into account the technical specifications described in these Operating Instructions
- 7: Conformity marking (UL, CE)
- 8: Certification
- 9: Manufacturing code (W49MG)
- 10: Ambient operating temperature (Tamb -10...+60°C)
- 11: Serial number (S-N:2000)
- 12: Article number (00563223)

Fig. 1: Example of Type label

6.3. Mechanical Data

Fastening	<ul style="list-style-type: none"> ▪ device without display unit ▪ device with display unit 	<ul style="list-style-type: none"> ▪ 1 M3 x 35 screw ▪ 1 M3 x 45 screw
Housing material	PA/PC	
Material of the seals	<ul style="list-style-type: none"> ▪ seal between the device and the sensor ▪ seal for the cover 	
	<ul style="list-style-type: none"> ▪ NBR ▪ EPDM 	

6.4. Electrical Data

Electrical connection	<ul style="list-style-type: none"> ▪ Device variant with cable gland: 4-pin terminal strip, 1.5 mm² max. wire section, 6...7 mm cable diameter ▪ 4-pin M12 male connector
Operating voltage	<ul style="list-style-type: none"> ▪ 12...30 V DC ▪ filtered and regulated ▪ connection to main supply: permanent through external safety extra-low voltage (SELV) and through limited power source (LPS) ▪ tolerance : $\pm 10\%$ ▪ residual ripple : $< 5\%$

Power source (not supplied)	<ul style="list-style-type: none"> ▪ limited power source according to UL/EN 60950-1 standards ▪ or limited energy circuit according to UL/EN 61010-1, Paragraph 9.4
Frequency input	1 ... 600 Hz, sensor supply voltage approximately V+ minus 1 V
Current output	4...20 mA
<ul style="list-style-type: none"> ▪ Uncertainty of the output value ▪ Min. voltage drop at the device terminals ▪ Loop impedance 	<ul style="list-style-type: none"> ▪ $\pm 1.5\%$ of the full scale ▪ $< 10\text{ V}$ at 20 mA ▪ max. $100\ \Omega$ at 12 VDC, max. $700\ \Omega$ at 24 VDC, max. $1000\ \Omega$ at 30 VDC
Transistor output	NPN or PNP, 50 mA max. current, frequency up to 600 Hz
<ul style="list-style-type: none"> ▪ Uncertainty of the output value 	<ul style="list-style-type: none"> ▪ $\pm 1\%$ of the measured value

Maximum power consumption	<ul style="list-style-type: none"> ▪ Operating as a flow transmitter (4-20 mA output in a 2-wire system) ▪ Operating as a pulse divider (NPN/PNP output in a 3-wire system) 	<ul style="list-style-type: none"> ▪ 0.6 W ▪ 3.2 W, from which <ul style="list-style-type: none"> - 0.2 W for the device, - max. 1.5 W for the flow sensor, - max. 1.5 W for the NPN/PNP output
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7. INSTALLATION AND START-UP

7.1. Wire a device variant with cable gland

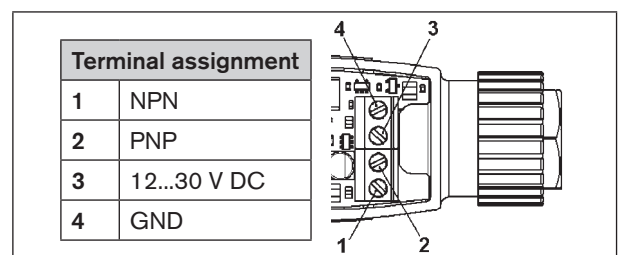


Fig. 2: Terminal assignment of a device variant with cable gland

7.1.1. Use the device as a flow transmitter

When the device operates as a flow transmitter, it converts the frequency signal generated by the combined flow sensor into an analogue 4...20 mA current signal.

NOTICE

- ▶ Only energise the device when the cover is closed or when the display unit is screwed in place of the cover.
- ▶ Switch off the device before removing the display unit.

To use the device as a flow transmitter, do the following:

- Connect the 4...20 mA current output (2-wire connection). Refer to Fig. 3.
- Replace the device cover with a display unit. Tighten the screw to a torque of 0.2...0.3 N·m (0.15...0.22 lbf·ft), to not damage the housing.
- Energise the device.
- Choose the flow rate unit.
- By default, the device output is configured to operate as a 4...20 mA current output. Set the flow rate range associated to the 4...20 mA current output.
- Set the K factor of the fitting used.

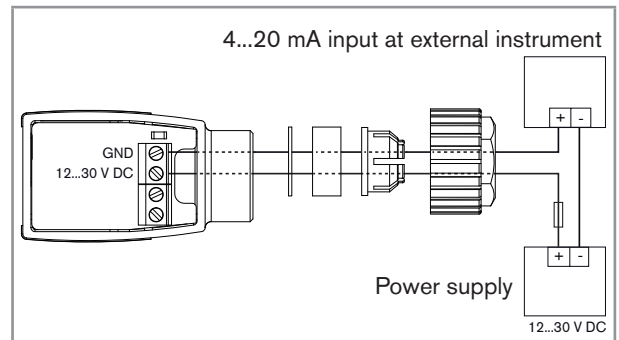


Fig. 3: Device with cable gland – Connection of the current output

- De-energise the device.
- Mount the device on a flow sensor. Refer to chap. 7.3.

7.1.2. Use the device as a pulse divider

When the device operates as a pulse divider, it converts the frequency signal generated by the combined flow sensor into an adjustable frequency signal.

NOTICE

- ▶ Only energise the device when the cover is closed or when the display unit is screwed in place of the cover.
- ▶ Switch off the device before removing the display unit.

To use the device as a pulse divider, do the following:

- Connect the transistor output (3-wire connection). The transistor output can be connected in the following modes: NPN or PNP. Refer to Fig. 4 or Fig. 5.
- Replace the device cover with a display unit. Tighten the screw to a torque of 0.2...0.3 N·m (0.15...0.22 lbf·ft), to not damage the housing.
- Energise the device.
- By default, the device output is configured to operate as a 4...20 mA current output. To change the operating mode, change the settings of the device output.
- Set the K factor of the fitting used.
- If you want to display the measured flow rate, choose the flow rate unit.

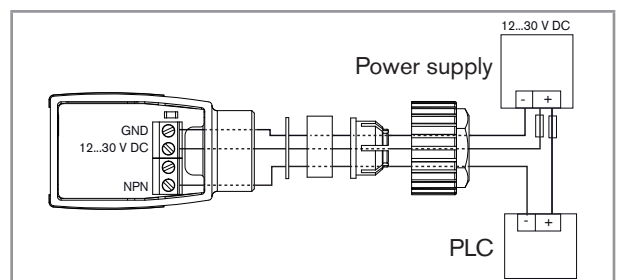


Fig. 4: Device with cable gland – NPN connection of the transistor output

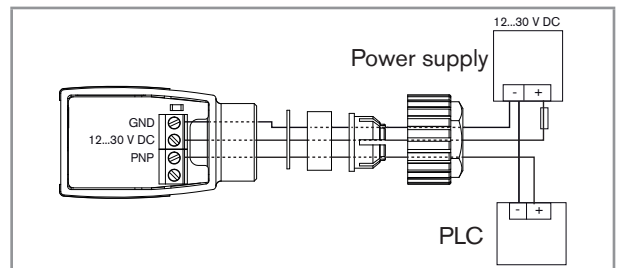


Fig. 5: Device with cable gland – PNP connection of the transistor output

- De-energise the device.
- Mount the device on a flow sensor. Refer to chap. 7.3.

7.2. Wire a device variant with a 4-pin M12 male connector

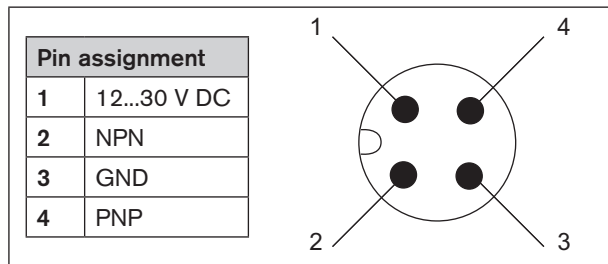


Fig. 6: Pin assignment of the 4-pin M12 male connector (device variant with M12 connector)

7.2.1. Use the device as a flow transmitter

When the device operates as a flow transmitter, it converts the frequency signal generated by the combined flow sensor into an analogue 4...20 mA current signal.

NOTICE

- ▶ Only energise the device when the cover is closed or when the display unit is screwed in place of the cover.
- ▶ Switch off the device before removing the display unit.

To use the device as a flow transmitter, do the following:

- Connect the 4...20 mA current output (2-wire connection). Refer to Fig. 7.
- Replace the device cover with a display unit. Tighten the screw to a torque of 0.2...0.3 N·m (0.15...0.22 lbf·ft), to not damage the housing.
- Energise the device.
- Choose the flow rate unit.
- By default, the device output is configured to operate as a 4...20 mA current output. Set the flow rate range associated to the 4...20 mA current output.
- Set the K factor of the fitting used.

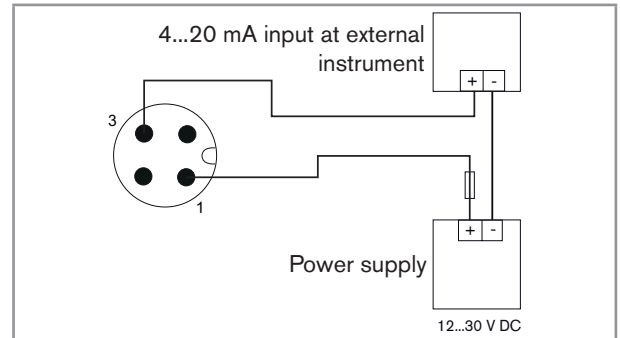


Fig. 7: Device with 4-pin M12 male connector – Connection of the current output

→ De-energise the device.

→ Mount the device on a flow sensor. Refer to chap. 7.3.

7.2.2. Use the device as a pulse divider

When the device operates as a pulse divider, it converts the frequency signal generated by the combined flow sensor into an adjustable frequency signal.

NOTICE

- ▶ Only energise the device when the cover is closed or when the display unit is screwed in place of the cover.
- ▶ Switch off the device before removing the display unit.

To use the device as a pulse divider, do the following:

- Connect the transistor output (3-wire connection). The transistor output can be connected in the following modes: NPN or PNP. Refer to Fig. 8 or Fig. 9.
- Replace the device cover with a display unit. Tighten the screw to a torque of 0.2...0.3 N·m (0.15...0.22 lbf·ft), to not damage the housing.
- Energise the device.
- By default, the device output is configured to operate as a 4...20 mA current output. To change the operating mode,

change the settings of the device output.

→ Set the K factor of the fitting used.

→ If you want to display the flow rate, choose the flow rate unit.

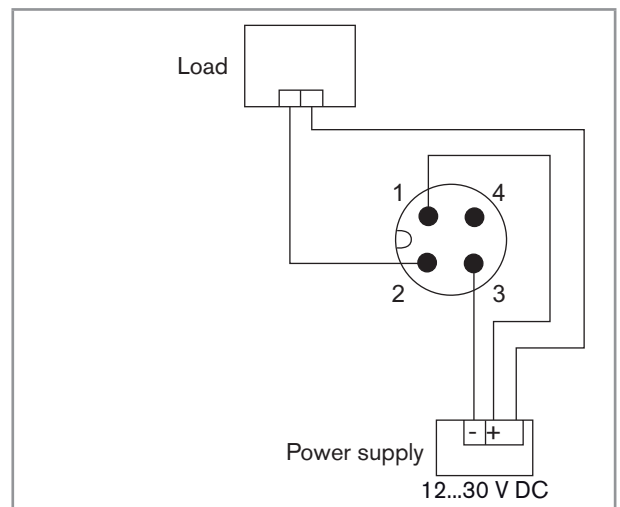


Fig. 8: Device with 4-pin M12 male connector – NPN connection of the transistor output

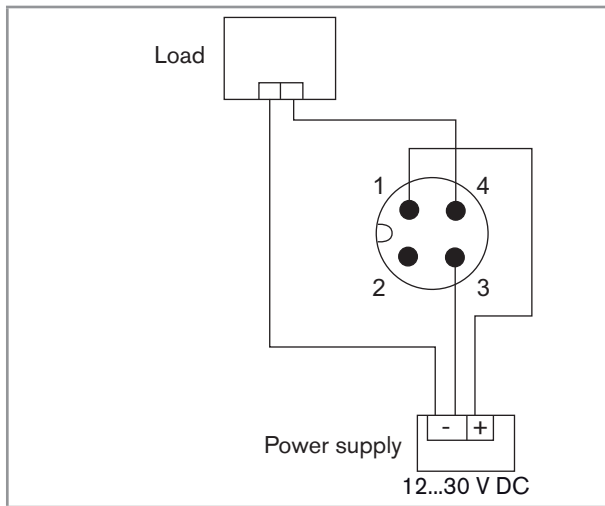


Fig. 9: Device with 4-pin M12 male connector – PNP connection of the transistor output

- De-energise the device.
- Mount the device on a flow sensor. Refer to chap. 7.3.

7.3. Mount the device on a flow sensor

NOTICE

- ▶ Only energise the device when the cover is closed or when the display unit is screwed in place of the cover.
- ▶ Switch off the device before removing the display unit.

- De-energise the device.
- Insert the seal on the 4-pin male connector of the flow sensor.
- Loosen the device screw.
- Correctly position the device (see Fig. 10) and plug it on the 4-pin male connector of the flow sensor.

NOTICE

A faulty mounting can cause a faulty operation of the device.

- ▶ When screwing the device to the sensor, make sure the seal is seated correctly.
- ▶ Tighten the screw to a torque of 0.2...0.3 N·m (0.15...0.22 lbf·ft), to not damage the housing.
- Insert the screw through the cover or the display unit, the device housing, the seal and the flow sensor

housing and tighten it to a torque of 0.2...0.3 N·m (0.15...0.22 lbf·ft). Make sure the seal is seated correctly.

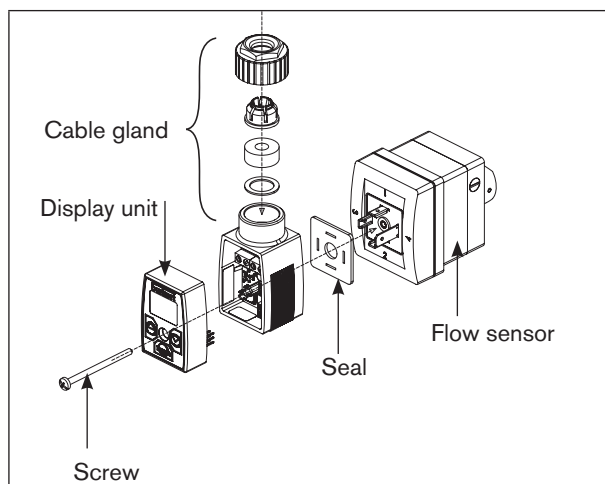


Fig. 10: Installing the device on the sensor (example of a device with cable gland and display unit, mounted on a Type SE30 sensor)

- Install the combination made of the device and the sensor on or in a fitting which is already installed in the pipe.

8. ADJUSTMENT

NOTICE

- ▶ Only energise the device when the cover is closed or when the display unit is screwed in place of the cover.
- ▶ Switch off the device before removing the display unit.

NOTICE

The device is not tight when the display unit is removed.

- ▶ Screw the cover with article number 670549 on the device as soon as the display unit is removed.
- Adjust the device depending whether it is used as a flow transmitter or a pulse divider. Refer to the Operating Instructions available on the internet at country.burkert.com.

9. MAINTENANCE

The device is maintenance-free when operated according to these Operating Instructions.

10. PACKAGING, TRANSPORT, STORAGE, DISPOSAL

NOTICE

Transport damage!

Inadequately protected device may be damaged during transport.

- During transportation protect the device against moisture and dirt in shock-resistant packaging.
- Do not allow the temperature to exceed or drop below the permitted storage temperature.

Incorrect storage may damage the device.

- Store the device in a dry and dust-free location!
- Storage temperature: $-20 \dots +65$ °C

Damage to the environment.

- Dispose of the device and packaging in an environmentally friendly manner.
- Observe applicable regulations on disposal and the environment.