

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.

www.burkert.com

© Bürkert SAS, 2011 - 2019
Operating Instructions 1901/05_EU-ml 00809507 / Original FR

1. QUICKSTART	3
2. INTENDED USE	5
3. BASIC SAFETY INSTRUCTIONS	6
4. GENERAL INFORMATION	8
5. DESCRIPTION	9
6. TECHNICAL DATA	11
7. INSTALLATION AND COMMISSIONING	14
8. ADJUSTMENT	25
9. MAINTENANCE	25
10. PACKAGING, TRANSPORT, STORAGE, DISPOSAL	26

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, using examples, 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: www.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" always refers to the Type 8022 flow transmitter or the Type 8022 pulse divider.

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 commissioning and use conditions specified in the contractual documents and in the Operating Instructions.
- ▶ Do not use the device for security applications.
- ▶ Do not use the device outdoors.
- ▶ Protect the device against electromagnetic interference and ultraviolet rays.
- ▶ Use the device only if in perfect working order.
- ▶ Properly transport, store, install and operate the device.
- ▶ Only use the device as intended.

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.

NOTICE

Electrostatic sensitive components/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 minimize 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!



Various dangerous situations

To avoid injury:

- ▶ Do not use the device in explosive atmospheres.
- ▶ Do not use the device in an environment incompatible with the materials it is made of.
- ▶ Do not subject the device to mechanical stress.
- ▶ 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.

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: www.burkert.com

4.2. Warranty

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

4.3. Information on the Internet

The Operating Instructions and data sheets for type 8022 can be found on the Internet at: www.burkert.com

5. DESCRIPTION

The device must be combined with a Bürkert flow sensor. To be combined to the flow sensor, the device has a 4-pin female connector. Refer to chap. 5.1 to know which sensor you can combine with the device.

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. For example, to enter the K factor of the fitting in which the combined flow sensor is inserted in or mounted on. The display unit is available as an accessory.

The device is available either with 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.

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

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

→ Wire the 4...20 mA current output (2-wire connection).

→ By default, the device output is configured to operate as a 4...20 mA current output. Use a display unit to set the flow rate range associated to the 4...20 mA current output.

→ Do the other necessary settings.

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

→ Wire the transistor output (3-wire connection).

→ Use a display unit to change the operating mode. To change the operating mode, change the settings of the device output.

→ Do the other necessary settings.

5.1. Combined sensor

- The flow transmitter type 8022 must be combined with a Bürkert flow sensor with a transistor output, in the Low Power version of the following types: 8020, 8030, 8070, SE30.
- The pulse divider type 8022 must be combined with a Bürkert flow sensor with a transistor output of the types 8020, 8030, 8070, SE30.

6. TECHNICAL DATA

6.1. Operating conditions

Ambient temperature	-10...+60 °C
Protection class	IP65 according to EN 60529, 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 with a torque of 0,3 N·m ± 20 % (0,22 lbf·ft ± 20 %), or display unit plugged on the device and screw tightened with a torque of 0,3 N·m ± 20 % (0,22 lbf·ft ± 20 %).
Combined flow sensor	
▪ Flow transmitter	▪ Bürkert flow sensor with a transistor output, in the Low Power version of the types 8020, 8030, 8070, SE30.
▪ Pulse divider	▪ Bürkert flow sensor with a transistor output, of the types 8020, 8030, 8070, SE30.

6.2. 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 	

6.3. Electrical Data

Electrical connection	<ul style="list-style-type: none"> Version with cable gland: 4-pin terminal strip, 1.5 mm² max. wire section, 6...7 mm cable diameter 4-pin M12 male connector
Voltage supply, 12...30 V DC	<ul style="list-style-type: none"> filtered and regulated SELV circuit at a non dangerous energy level tolerance : ±10% residual ripple : < 5%
Frequency input	1-600 Hz, sensor supply voltage approximately V+ minus 1 V

Current output	<p>4...20 mA</p> <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"> ±1,5% of the full scale < 10 V at 20 mA max. 100 Ω at 12 VDC, max. 700 Ω at 24 VDC, max. 1000 Ω at 30 VDC
Transistor output	<p>NPN or PNP, 50 mA max. current, frequency up to 600 Hz</p> <ul style="list-style-type: none"> Uncertainty of the output value 	<ul style="list-style-type: none"> ±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

7. INSTALLATION AND COMMISSIONING

7.1. Wiring a version with cable gland

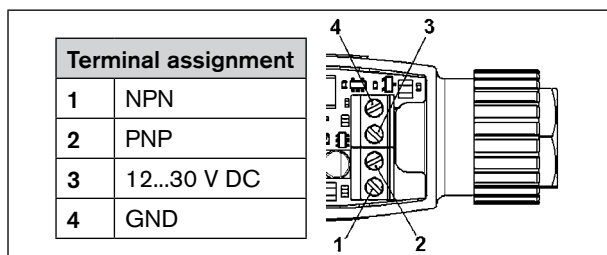


Fig. 1: Terminal assignment of a version with cable gland

7.1.1. Using the device as a flow transmitter

NOTICE

- ▶ Only power on 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. Refer to Fig. 2.
 - 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.
 - Energize 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.

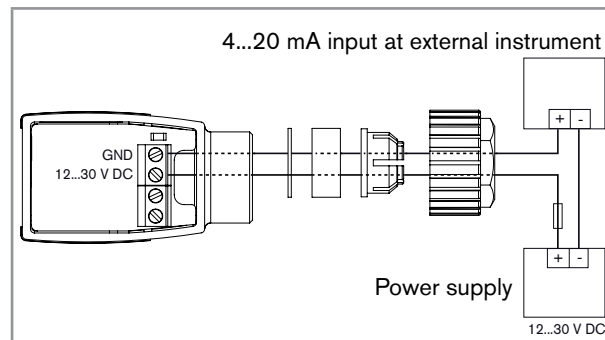


Fig. 2: Device with cable gland – Connection of the current output

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

7.1.2. Using the device as a pulse divider

NOTICE

- ▶ Only power on 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. The transistor output can be connected in the following modes: NPN or PNP. Refer to Fig. 3 or Fig. 4.
- 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.
- Energize 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.

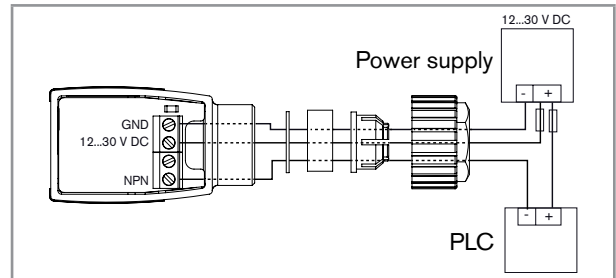


Fig. 3: Device with cable gland – NPN connection of the transistor output

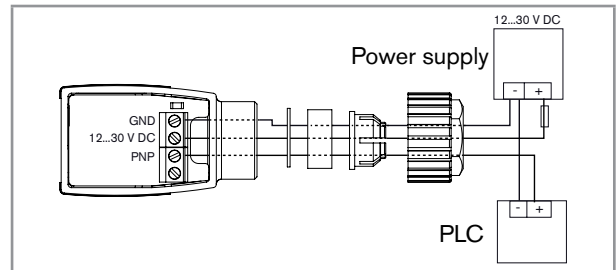


Fig. 4: Device with cable gland – PNP connection of the transistor output

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

7.2. Wiring a version with a 4-pin M12 male connector

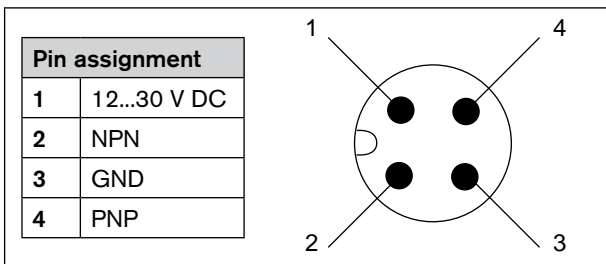


Fig. 5: Pin assignment of the 4-pin M12 male connector (version with M12 connector)

7.2.1. Using the device as a flow transmitter

NOTICE

- ▶ Only power on 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. Refer to Fig. 6.
- 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.
- Energize 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.

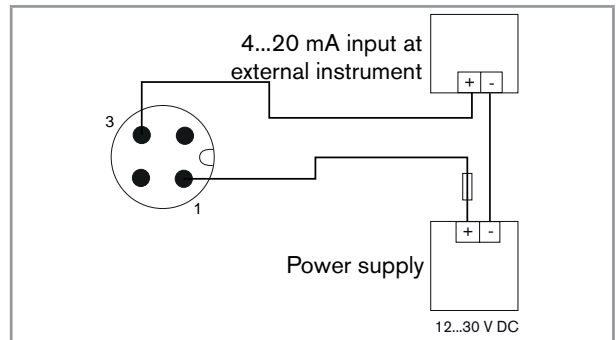


Fig. 6: Device with 4-pin M12 male connector – Connection of the current output

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

7.2.2. Using the device as a pulse divider

NOTICE

- ▶ Only power on 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. The transistor output can be connected in the following modes: NPN or PNP. Refer to Fig. 7 or Fig. 8.
- 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.
- Energize 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.

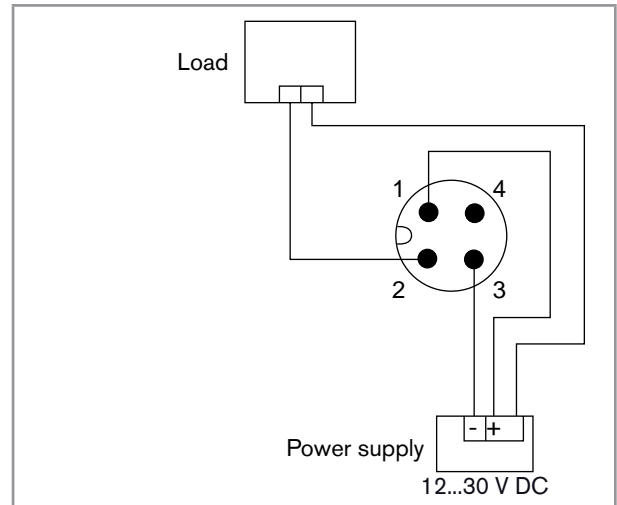


Fig. 7: Device with 4-pin M12 male connector – NPN connection of the transistor output

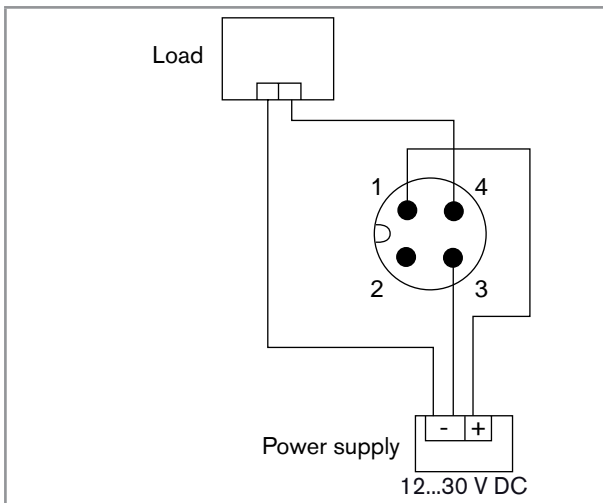


Fig. 8: Device with 4-pin M12 male connector – PNP connection of the transistor output

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

7.3. Mounting the device on a flow sensor

NOTICE

- ▶ Only power on 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-energize 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. 9) 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.

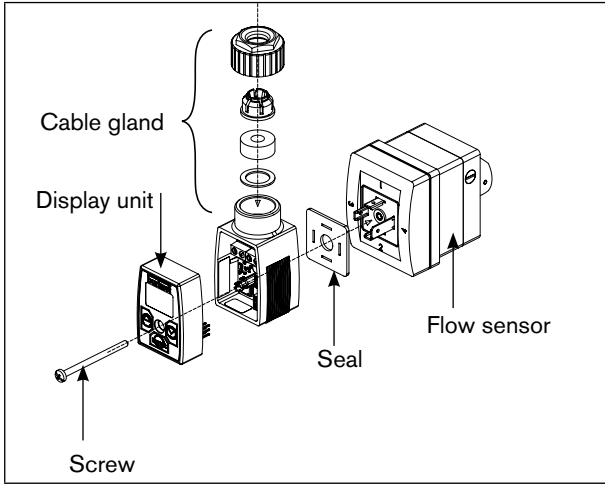


Fig. 9: Installing the device on the sensor (example of a device with cable gland and display unit, mounted on a Type SE30 sensor)

→ 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 power on 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 www.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: $-20 \dots +65 \text{ }^{\circ}\text{C}$

Damage to the environment.

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