Frese BYPASS

Description

Frese BYPASS is remote Flow Control as a Service. The digital Frese BYPASS monitors temperature, differential pressure and valve position.

Frese BYPASS regulates the flow in the district energy bypass in order to ensure an optimised inflow temperature.

A dashboard shows historic values in graphs and enables the user to change valve position and temperature set point.

The controller is connected to the dashboard via the Sigfox IoT technology. Sigfox is a LPWAN (Low Power Wide Area) IoT network, that covers more than 60 countries.

Application

Frese BYPASS can be used in both heating and cooling systems to monitor and optimise the temperature remotely.

The temperature in Frese BYPASS is set via the dashboard. The controller will automatically regulate the temperature to match the set value.

During winter, the flow can be limited to a minimum. This considerably reduces heat loss and keeps the bypass frost free.

Benefits

- Remote setting of temperature
- Valve size: DN15-DN20 – up to 1,500 l/h
- Monitoring of pressure and differential pressure
- Monitoring of temperature
- Flow regulation by measured temperature
- Battery driven - low installation cost

Approvals

- Conforms to EMC directive
- CE approved
- Sigfox certified

Features

- Control of maximum flow – overflow protection due to pressure independent valve design
- Exchange of data between the controller and Frese FLOWCLOUD® up to 3 downlinks and 144 uplinks a day depending on Sigfox signal strength
- Battery driven system – up to 5 years
- Built in Sigfox antenna – not visible
- Optional external Sigfox antenna version
- Tamper proof 3-point actuator
- LPWAN – very long range at ultra low power consumption
- Digital pressure and temperature sensor mounted directly in the valve
- Web user interface
- IP 43
- Supports up to 2 external temperature sensors
- Possibility of fixed power supply via usb cable

Frese BYPASS

Function

- Data transmission via the World Wide Sigfox network (url: sigfox.com/en/coverage)

- Remote setting of temperature set point

- Remote setting of fixed valve position

- Remote operation - no access to buildings neccessary

- Battery lifetime up to 5 years. When the battery lifetime expires the valve position will remain unchanged until the battery has been changed

- Forced data transmission of valve position, pressure and temperature from the controller via the menu - see the Mounting Instruction

- Full IT-structure included

- Frese provides full access to a user-friendly dashboard

- Data exchange to 3rd party system via API

Remote Sigfox function/benefit

- No need for Wifi or SIM-card

- Does not require customers' involvement

- No problems with firewall

- No pairing is required

- Plug & Play after the device is registered with a QR-code on a smartphone or tablet

- Opens or closes the valve slowly if the temperature becomes too low or too high

- No P-band

- Digital regulation with average water temperature inside of +/- 3°K

Frese BYPASS

Technical data · Frese OPTIMA Compact PICV

Valve housing:	DZR Brass, CW602N
DP controller:	PPS 40% GF
Spring:	Stainless steel
Diaphragm:	HNBR
O-rings:	EPDM
Pressure class:	PN25
Max. differential pressure:	800 kPa
Medium temperature range:	0°C - 120°C

Technical data · Frese Motoric Actuator for PICV

Characteristics:	Motoric actuator
Material actuator housing:	PA/PC
Protection class:	IP 54 to EN 60529
Control signal:	3-point
Actuating force:	125 N
Stroke:	max. 8.5 mm
Running time:	15 s/mm
Ambient operating conditions:	0°C - 50°C
Cable length:	1.0 m incl. 3 pin JST PHR-3 connector

Technical data · Frese BYPASS

Control unit material:	ABS and PC
Protection class:	IP 43 to EN 60529
Supply:	Lithium Battery 3.6 V, 10.4 Ah (NON rechargeable)
Battery lifetime:	Up to 5 years
Ambient operating conditions:	Temperature 0°C - 50°C Humidity 10-90% r.F.
Control connection:	Sigfox

Technical data · Temperature/Pressure Sensor

Output signal:	Digital (SPI)
Sensor housing material:	Stainless steel AISI 316
Temperature sensor range:	0°C - 55°C
Pressure sensor range:	0 bar -10 bar, tol. +/- 1%
Operation temperature range:	0°C - 85°C
Pressure class:	PN25
Sensor connection:	1/4"
Cable length:	1,2 m incl. 5 pin JST PHR-5 connector

Frese BYPASS

Technical data · Temperature Sensor (strap-on)

Material:	ABS
Colour:	Base black, lid white
Temperature range:	0°C - 100°C, tol. +/- 0,2°C
Cable length:	2 m, Silicone, black, incl. 2 pin JST PHR-2 connector

Tekniske data · Temperatursensor (probe sensor)

Material:	Stainless steel
Temperature range:	-40°C - 120°C, tol. +/- 0,2°C
Cable length:	2 m incl. 2 pin JST PHR-2 connector

Technical data · External Antenna

|	
Material:	ASA Plastic
Protection class:	IP54 to EN60529
Colour:	Grey RAL 7047
Frequency:	Omni-directional 868 MHz
Ambient operating conditions:	-30°C - +70°C
Cable length:	3 m incl. SMA-Plug connector

Dimensions [mm]
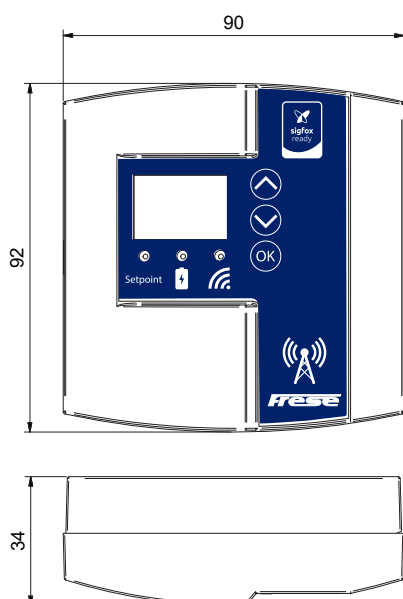
Frese BYPASS

Connection of power and sensors · Standard

Terminals:

1. Battery
2. Valve
3. Pressure inlet side
4. Pressure outlet side
5. Temperature inlet side
6. Tempereture outlet side
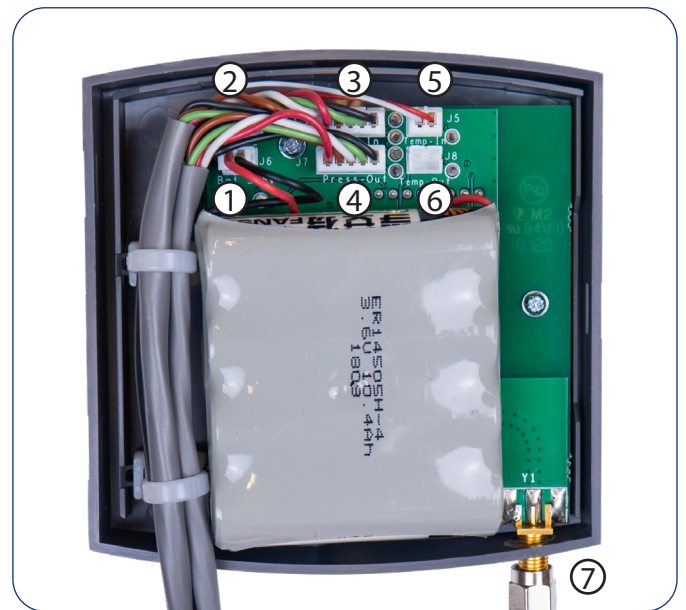
See Mounting Instruction for further details
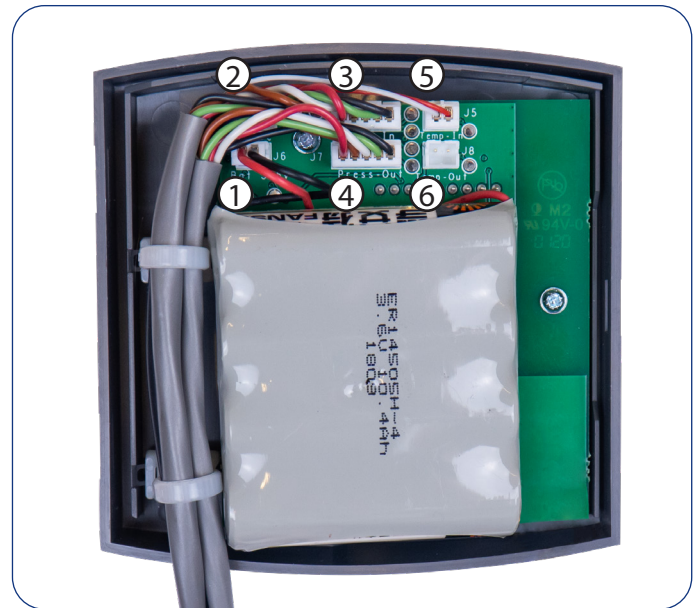
Frese BYPASS Controller with internal antenna

Connection of power and sensors · Extended

Terminals:

1. Battery
2. Valve
3. Pressure inlet side
4. Pressure outlet side
5. Temperature inlet side
6. Tempereture outlet side
7. External antenna

See Mounting Instruction for further details

Frese FLOWGUARD controller with external antenna

The pipe system shall be properly ventilated to avoid risk of air pockets. Glycolic mixtures up to 50% are applicable (both ethylene and propylene).

Recommendation: Water treatment to VDI 2035.

Frese A/S can accept no responsibility if another actuator is used instead of the Frese actuator. Other disclaims can be found in the Frese T&C for IoT products.

Frese BYPASS

Setting the BYPASS

The Frese BYPASS controller can be activated in two different ways

1

"OK" is activated briefly, until a number appears on the display.

You now have access to the various menu options in the controller.

Point 1	• Green diode on – Temperature set point is shown. • Green diode off – Actual inflow temperature is shown. • You can adjust the reading by pressing "OK" and then adjust the reading up or down using the arrow buttons. (Green dot following the number indicates an adjusted value.)
Point 2	• Red diode on – Battery status
Point 3	• Green diode on – Valve position
Point 4	• No diode on – Inlet pressure
Point 5	• No diode on– Outlet pressure
Point 6	• Green diode on – Differential pressure
Point 7	• Blue diode on - Data exchange • Press "OK" to enter this submenu. Then press "Arrow up", to upload data to Frese FLOWCLOUD, or "Arrow down", to download a command from Frese FLOWCLOUD.
Point 8	• No diode on – Firmware version

Firmware vers. 3.2

Frese BYPASS controller

2

Press and hold "OK" until the green and red diodes flash alternately.

You can now calibrate the BYPASS by pressing "arrow down".

NOTE	The actuator MUST be mounted on the valve before calibration. **N.B.:** During calibration, a diode on top of the actuator will be on. If the diode is off, the actuator jack has probably not been inserted correctly.

Frese BYPASS

Frese BYPASS Code Builder

Remote Flow Contol as a Service		48	
		-	
Frese OPTIMA Compact PICV Dimension		B	DN15
		C	DN20
		D	Reserved
Frese OPTIMA Compact PICV Type		A	Low flow 2,5 mm P/T
		B	Reserved
		C	High flow 2,5 mm P/T
		D	Reserved
		E	Ultra high flow 2,5 mm P/T
Valve Connection		M	Male Thread
		F	Female Thread
		-	
Inline Temperature & Pressure Sensor		0	No sensor
		1	1 sensor
		2	2 sensors
Temperature Sensor		0	No sensor
		1	1 strap-on sensor
		2	2 strap-on sensors
		3	1 probe sensor
		4	2 probe sensors
		0	Reserved
Actuator		A	3-point (53-1982)
Controller		1	BYPASS
Antenna		0	Internal antenna
		1	Eksternal antenna
48 - X X X - X X 0 A 1 X			

Example of product code: 48-BCM-210A11

Product programme

Frese BYPASS version	Varenr.
Frese OPTIMA Compact DN15 2,5 mm HF, N/N, 2 inline sensors, 1 strap-on sensor, 3-point actuator, internal antenna	48-BCM-210A10
Frese OPTIMA Compact DN15 2,5 mm HF, N/N, 2 inline sensors, 1 strap-on sensor, 3-point actuator, eksternal antenna	48-BCM-210A11