# 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<br>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,<br>incl. 2 pin JST PHR-2 connector |

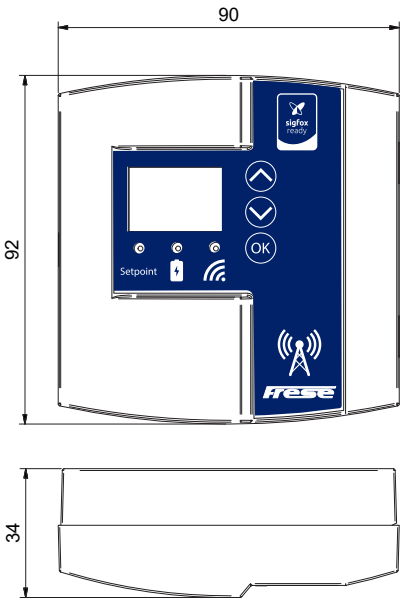
## Tekniske data · Temperatursensor (probe sensor)

| | |
|---|---|
| **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]



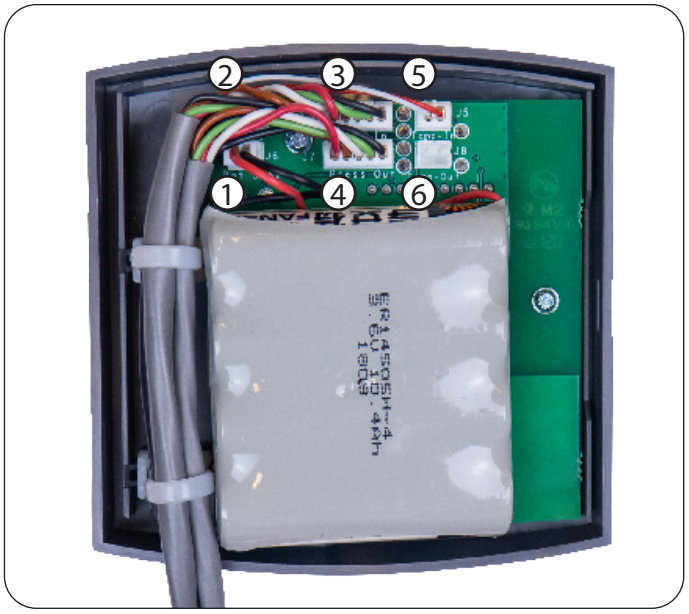
# Frese BYPASS

## 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



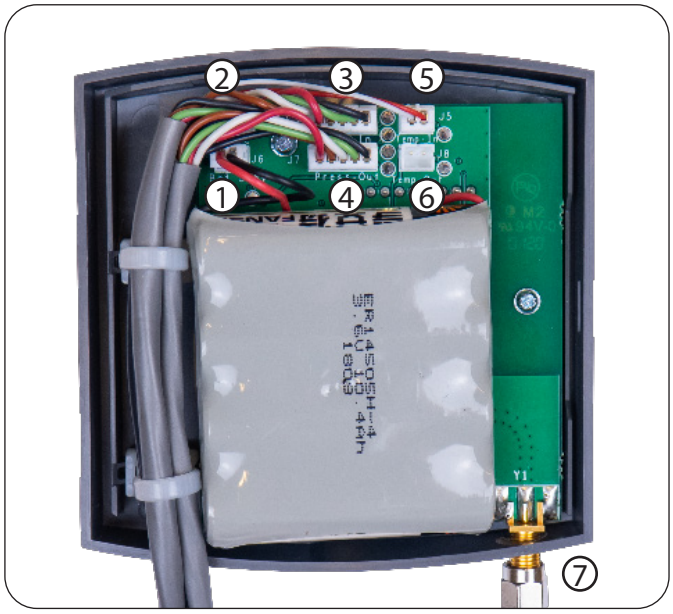

*Frese BYPASS Controller with internal antenna*

## 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.<br>• Green diode off – Actual inflow temperature is shown.<br>• 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<br>• 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.<br><br>**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 |



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