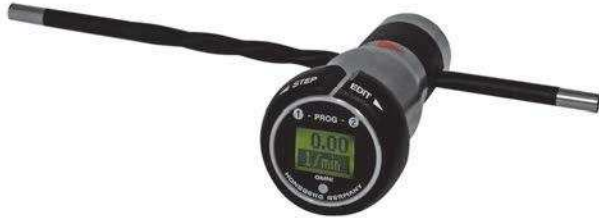


Product Information

Hygienic design

**Flow Transmitter /
 Switch HFK35-FIN**



- For foodstuffs use
- Analog output 0/4..20 mA or 0/2..10 V
- Two programmable switches (push-pull)
- Graphical LCD display, backlit (transreflective), can be read in sunlight and in the dark
- Programmable parameters via rotatable, removable ring (programming protection)
- Full metal housing with non-scratch, chemically resistant glass
- Physical unit in the display (selectable)
- Rotatable electronic head for best reading position
- Optionally CIP/SIP-capable (130 °C)
- Connection to USB interface for setting parameters

Characteristics

The HFK35-FIN calorimetric sensor measures small fluid flows, and has been designed specially for use in the foodstuffs industry (for the measurement principle, see also "General description: calorimetric sensors").

The integrated transformer has a backlit graphics LCD display which is very easy to read both in the dark and in bright sunlight. The graphics display allows the presentation of measured values and parameters in a clearly understandable form. The measured values are displayed to 4 places, together with their physical unit, which may also be modified by the user. The electronics have an analog output (4..20 mA or 0..10 V) and two switching outputs, which can be used as limit switches for monitoring minimal or maximal, or as two-point controllers. The switching outputs are designed as push-pull drivers, and can therefore be used both as PNP and NPN outputs. Exceeding limit values is signalled by a red LED which is visible over a long distance, and by a cleartext in the display. The stainless steel case has a hardened non-scratch mineral glass pane. It is operated by a programming ring fitted with a magnet, so there is no need to open the operating controls housing, and its leakproofness is permanently ensured.

By turning the ring to right or left, it is simple to modify the parameters (e.g. switching point, hysteresis...). To protect from unintended programming, it can be removed, turned through 180 ° and replaced, or completely removed, thus acting as a key.

Technical data

Sensor	calorimetric measurement principle	
Process connection	smooth tube for crimp connector or hose connection	
Metering ranges (for water)	6 mm tube	(0.001) 0.01..2 l/min
	8 mm tube	0.025..5 l/min
	10 mm tube	0.05..10 l/min
	() = special ranges available on request	
Measurement accuracy	±3 % MW (H ₂ O dist.)	
Repeatability	±1 % MW (H ₂ O dist.)	
Temperature gradient	4 K/s	
Start-up time	10 sec. after application of operating volt.	
Response time	in water (25 °C) at average Flow speed of approx. 1-2 sec.	
Process pressure	PN 10	
Medium temperature	0..+100 °C	
Ambient temperature	-20..+70 °C	
Storage temperature	-20..+80 °C	
CIP- / SIP temperature	with spacer: 140 °C, 30 minutes max.	
Materials medium-contact	stainless steel 1.4404 (others available on request)	
Non-medium-contact materials	Housing:	stainless steel 1.4305
	Glass:	mineral glass, hardened
	Magnet:	samarium-Cobalt
	Ring:	POM
Supply voltage	24 V DC ±10 %	
Analog output	0/4..20 mA or 0/2..10 V	
Power consumption	max. 2.5 W	
Switching outputs	transistor output "push-pull", compatible with PNP and NPN, (resistant to short circuits, and reversal polarity protected) I _{out} = 100 mA max.	
Hysteresis	adjustable, position of the hysteresis depends on minimum or maximum switching value	
Display	extendable graphic LCD display temperature range -20..+70 °C, 32 x 16 pixels, background illuminated, flashing LED signal lamp with simultaneous message on the display.	
Electrical connection	for round plug connector M12x1, 5-pole	
Ingress protection	IP 67	
Weight	approx. 0.25 kg	
Conformity	CE, EHEDG	



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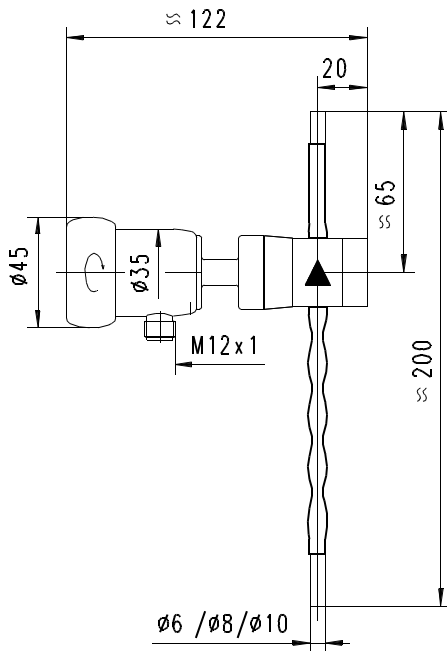
Wiring

Before the electrical installation, it must be ensured that the auxiliary voltage corresponds to the data sheet.

The switching outputs are self-configuring, depending on whether they are connected as PNP or NPN switches (push-pull). It is recommended to use shielded wiring.

Dimensions

A spacer between the electronics head and the medium-contact measurement tube provides thermal decoupling between the two units. The media temperature may be raised for 45 min. to 130 °C.



Handling and operation

Installation

In order to ensure the sensor's maximum insensitivity to interference, the flow should run from bottom to top (best degassing even at the slowest flow speed). Standard crimp connectors, hoses with crush protection, or the crimp connectors provided by HONSBERG can be used for the connection.

The insulation hoses provide the best possible insulation from the environment, and should therefore not be removed.

It must be ensured that the calming section with the static mixer is not kinked.

Programming

The annular gap of the programming ring can be turned to positions 1 and 2. The following actions are possible:



Set to 1 = continue (STEP)
 Set to 2 = modify (PROG)

Neutral position between 1 and 2

The ring can be removed to act as a key, or turned through 180 ° and replaced to create a programming protector.

Operation is by dialog with the display messages, which makes its use very simple.

Starting from the normal display (present value and unit), if 1 (STEP) is repeatedly selected, then the display shows the following information in this order:

Display of the parameters, using position 1

- Switching value S 1 (switching point 1 in the selected unit)
- Switching characteristic of S 1
 MIN = Monitoring of minimum value
 MAX = Monitoring of maximum value
- Hysteresis 1 (hysteresis value of S 1 in the set unit)
- Switching value S 2
- Switching characteristic of S 2
- Hysteresis 2
- Code
 After entering the **code 111**, further parameters can be defined:
- Filter (settling time of the display and output)
- Physical unit (Units)
- Output: 0..20 mA or 4..20 mA
- 0/4 mA (measured value corresponding to 0/4 mA)
- 20 mA (measured value corresponding to 20 mA)

For models with a voltage output, replace 20 mA accordingly with 10 V.

Edit, using position 2

If the currently visible parameter is to be modified:

- Turn the annular gap to position 2, so that a flashing cursor appears which displays the position which can be modified.
- By repeatedly turning to position 2, values are increased; by turning to position 1, the cursor moves to the next digit.
- Leave the parameter by turning to position 1 (until the cursor leaves the row); this accepts the modification.
- If there is no action within 30 seconds, the device returns to the normal display range without accepting the modification.

Product Information

Hygienic design

The limit switches S 1 and S 2 can be used to monitor minimal or maximal.

With a minimum-switch, falling below the limit value causes a switchover to the alarm state. Return to the normal state occurs when the limit value plus the set hysteresis is once more exceeded.

With a maximum-switch, exceeding the limit value causes a switchover to the alarm state. Return to the normal state occurs when the measured value once more falls below the limit value minus the set hysteresis.

The change to the alarm state is indicated by the integrated red LED and a cleartext in the display. While in the normal state the switching outputs are at the level of the supply voltage; in the alarm state they are at 0 V, so that a wire break would also display as an alarm state at the signal receiver.

Overload display

Overload of a switching output is detected and indicated on the display ("Check S 1 / S 2"), and the switching output is switched off.

Simulation mode

To simplify commissioning, the sensor provides a simulation mode for the analog output. It is possible to create a programmable value in the range 0..26.0 mA at the output (without modifying the process variable). This allows the wiring run between the sensor and the downstream electronics to be tested during commissioning. This mode is accessed by means of code **311**.

Factory settings

After modifying the configuration parameters, it is possible to reset them to the factory settings at any time using **Code 989**.

Ordering code

1. 2. 3. 4. 5. 6.
HFK35-FIN - - **K1** **S** **H**

For combination option, see table "Technical data".
 ○=Option

1. Tubing diameter	
006	6 mm
008	8 mm
010	10 mm
2. Metering range	
02000	(0.001) 0.01..2 l/min
05000	0.025..5 l/min
10000	0.05..10 l/min
3. Pipework material	
K1	stainless steel 1.4404
4. Analog output	
I	current output 0/4..20 mA
U	<input type="radio"/> voltage output 0/2..10 V
5. Electrical connection	
S	for round plug connector M12x1.5-pole
6. Spacer	
H	CIP/SIP version, 140 °C, 30 minutes max.

Accessories

- ECI-1 device configurator (USB programming adapter)
- Process adapter
- Cable/round plug connector (KH...) see additional information "Accessories"