

**Product Information**

**HFK12-I / U / F / C**

**Calorimetric  
 Flow Transmitter  
 HFK12-I / U / F / C**



- Complete flow transmitter for the foodstuffs industry, in 12 mm housing
- Analog output 4..20 mA (HFK12-I)
- Analog output 0..10 V (HFK12-U)
- Frequency output (HFK12-F)
- Pulse output (HFK12-C)
- User-configurable via plug pin (teaching)
- Same mechanical construction available as temperature transmitter/switch, flow transmitter/switch or as a level switch or drip sensor

**Characteristics**

The sensors in the HFK12 family can be used for the measurement and monitoring of flows, and are specially designed for use in the foodstuffs industry. They require little space, yet offer a variable sensor length, as well as various fastening options. The 16-bit processor provides linearisation and temperature compensation, and emits the standardised output signal.

The HFK12 electronics transmit the result as


- an analog 4..20 mA signal (HFK12-I)
- an analog 0..10 V signal (HFK12-U)
- a frequency signal (HFK12-F)
- a value signal Pulse / x Litres (HFK12-C)

If desired, the range end value can be set to the presently existing flow rate using teaching (see Handling and Operation).

It is recommended also to order a T-piece, as the later installation position corresponds to the factory calibration situation.

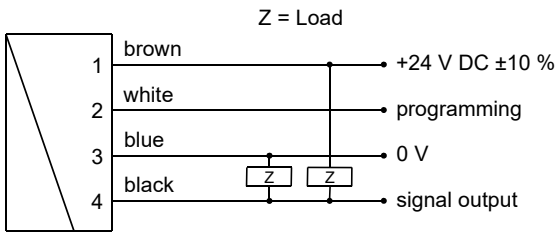
**Technical data**

<b>Sensor</b>	calorimetric measurement principle
<b>Process connection</b>	GHMadapt G 1/2
<b>Metering range</b>	water 2..150 cm/s range, 2..300 cm/s available on request oil (available on request)
<b>Measurement accuracy</b>	±10 % end value, tested with 10 x D in inlet and output, with a rising pipe (medium: water)
<b>Repeatability</b>	±1 %
<b>Temperature gradient</b>	4 K/s
<b>Start-up time</b>	10 sec. after application of operating voltage
<b>Response time</b>	in water (25 °C) at an average flow speed of approx. 1-2 sec.

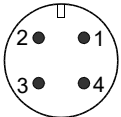
<b>Process pressure</b>	PN 50	
<b>Media temperature</b>	-20..+100 °C	
<b>Ambient temperature</b>	0..+60 °C	
<b>Storage temperature</b>	-20..+80 °C	
<b>CIP- / SIP temperature</b>	140 °C, < 30 min	
<b>Materials medium-contact</b>	sensor tip	1.4435, FDA-compliant
<b>Non-medium-contact materials</b>	Housing:	1.4571
	Pressure screw:	1.4404
	Plug:	PA
	Contacts:	gold-plated
<b>Supply voltage</b>	24 V DC ±10 %	
<b>Current consumption at rest</b>	< 60 mA	
<b>Output</b>	HFK12-I: 4..20 mA / max. load 500 Ohm	
	HFK12-U: 0..10 V / min. load 1 kOhm	
	HFK12-F: Frequency output "push-pull" (resistant to short circuits and polarity reversal) I <sub>out</sub> = 100 mA max. selectable output frequency, max. 2 kHz	
	HFK12-C: transistor output "push-pull", (resistant to short circuits and polarity reversal) I <sub>out</sub> = 100 mA max. selectable pulse per volume, details of nominal pipework width required, pulse width 50 ms	
<b>Electrical connection</b>	for round plug connector M12x1, 4-pole	
<b>Ingress protection</b>	IP 67	
<b>Weight</b>	approx. 0.1 kg incl. pressure screw	
<b>Conformity</b>	CE	

**Product Information**

**Wiring**

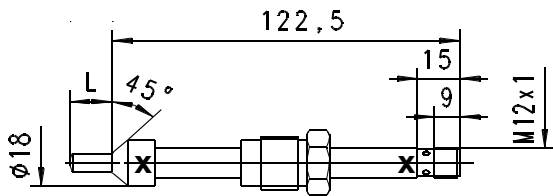


Connection example: PNP NPN



The use of shielded cabling is recommended.

**Dimensions**



For compatible T-pieces and weld-on sockets in the GHMadaptseries, see "Accessories".

**Handling and operation**

**Note**

The metering range end value can be programmed by the user via "teaching". Requirement for programmability must be stated when ordering, otherwise the device cannot be programmed.

The ECI-1 device configurator with associated software is available as a convenient option for programming all parameters by PC, and for adjustment.

**Operation and programming**

If desired, the metering range end can be set by the user by means of teaching.

For this, proceed as follows:

- Apply the flow rate end range to the device
- Apply an impulse of at least 0.5 seconds and max. 2 seconds duration to pin 2 (e.g. via a bridge to the auxiliary voltage or a pulse from the PLC), in order to accept the measured value.
- When the teaching is complete, pin 2 should be connected to 0 V, so as to prevent unintended programming.

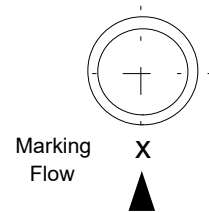
The devices have a yellow LED which flashes during the programming pulse. During operation, the LED acts as a display for the operating voltage.

With the HFK12-C, the teaching option is not available.

**Installation**

The sensor is inserted into the boring together with a sealing cone, oriented, and fastened in place with a pressure screw.

When a flow is present, this should impinge on the side of the sensor marked with an X, in order to achieve as small a response time as possible.



The torque on the pressure screw should be between 5..10 Nm.

Avoid bubbles or deposits on the sensor! It is therefore best to install at the side.

**Product Information**

**Order code**

HFK12-  1.  2.  3.  4.  5.  6.  7.

○=Option

<b>1. Electrical output</b>	
I	current output 4..20 mA
U	voltage output 0..10 V
F	frequency output
C	pulse output
<b>2. Sensor tip length</b>	
015	L = 15 mm
<b>3. Sensor material</b>	
K1	stainless steel 1.4435
<b>4. Programming</b>	
N	cannot be programmed (no teaching)
P	<input type="radio"/> programmable (teaching possible)
<b>5. Temperature</b>	
H	CIP- / SIP version, 140 °C, 30 minutes max.
<b>6. Options</b>	
00	without option
P	programmable (teaching possible)
<b>7. Certificate DIN EN 10204 (indicate only when required, multiple responses possible)</b>	
APZMAT	acceptance test certificate 3.1 for material (in contact with products)
WZ2.2	factory certification 2.2

**Accessories**

- ECI-3 device configurator (USB programming adapter)
- Process adapter
- Cable/round plug connector (KH...) see additional information "Accessories"
- External display OMNI-TA or OMNI Remote

**Required order information**

For HFK12-F:

Output frequency at full scale     Hz  
Maximum value: 2.000 Hz

For HFK12-C:

For HFK12-C, the volume must be stated (with numerical value and unit) which will correspond to one pulse. Here, the adjustment depends on the internal tubing diameter, which therefore must also be stated. If the order for the device includes the T-piece, then there is no need to state the internal tubing diameter.

Volume per pulse (numerical value)

Volume per pulse (unit)

Tubing diameter    mm

**Options**

Special range for analog output:    cm/s  
<= Metering range (standard=metering range)

Special range for frequency output:    cm/s  
<= Metering range (standard=metering range)

Power-On-Delay period (0..99 s)   s  
(time after applying power during which the outputs are not activated or set to defined values)