

**Information**

**design**

**Switch and**

The following output for

	Flow		Temperature	
	Analog	Switching output	Analog	Switch output
•				
•		•		
•		•		
•				
•			•	

The switching output is a "full" transistor output provides  
 and NPN inputs can be used for a minimum  
 maximum switching frequency

**data**

Calorimetric	Pressure
connection	crimp
Measuring ranges (for water)	5.5 l/min
	10 l/min
	15 l/min
	20 l/min
	25 l/min
	30 l/min
	35 l/min
	40 l/min
	45 l/min
	50 l/min
	55 l/min
	60 l/min
	65 l/min
	70 l/min
	75 l/min
	80 l/min
	85 l/min
	90 l/min
	95 l/min
	100 l/min
	105 l/min
	110 l/min
	115 l/min
	120 l/min
	125 l/min
	130 l/min
	135 l/min
	140 l/min
	145 l/min
	150 l/min
	155 l/min
	160 l/min
	165 l/min
	170 l/min
	175 l/min
	180 l/min
	185 l/min
	190 l/min
	195 l/min
	200 l/min
	205 l/min
	210 l/min
	215 l/min
	220 l/min
	225 l/min
	230 l/min
	235 l/min
	240 l/min
	245 l/min
	250 l/min
	255 l/min
	260 l/min
	265 l/min
	270 l/min
	275 l/min
	280 l/min
	285 l/min
	290 l/min
	295 l/min
	300 l/min
	305 l/min
	310 l/min
	315 l/min
	320 l/min
	325 l/min
	330 l/min
	335 l/min
	340 l/min
	345 l/min
	350 l/min
	355 l/min
	360 l/min
	365 l/min
	370 l/min
	375 l/min
	380 l/min
	385 l/min
	390 l/min
	395 l/min
	400 l/min
	405 l/min
	410 l/min
	415 l/min
	420 l/min
	425 l/min
	430 l/min
	435 l/min
	440 l/min
	445 l/min
	450 l/min
	455 l/min
	460 l/min
	465 l/min
	470 l/min
	475 l/min
	480 l/min
	485 l/min
	490 l/min
	495 l/min
	500 l/min
	505 l/min
	510 l/min
	515 l/min
	520 l/min
	525 l/min
	530 l/min
	535 l/min
	540 l/min
	545 l/min
	550 l/min
	555 l/min
	560 l/min
	565 l/min
	570 l/min
	575 l/min
	580 l/min
	585 l/min
	590 l/min
	595 l/min
	600 l/min
	605 l/min
	610 l/min
	615 l/min
	620 l/min
	625 l/min
	630 l/min
	635 l/min
	640 l/min
	645 l/min
	650 l/min
	655 l/min
	660 l/min
	665 l/min
	670 l/min
	675 l/min
	680 l/min
	685 l/min
	690 l/min
	695 l/min
	700 l/min
	705 l/min
	710 l/min
	715 l/min
	720 l/min
	725 l/min
	730 l/min
	735 l/min
	740 l/min
	745 l/min
	750 l/min
	755 l/min
	760 l/min
	765 l/min
	770 l/min
	775 l/min
	780 l/min
	785 l/min
	790 l/min
	795 l/min
	800 l/min
	805 l/min
	810 l/min
	815 l/min
	820 l/min
	825 l/min
	830 l/min
	835 l/min
	840 l/min
	845 l/min
	850 l/min
	855 l/min
	860 l/min
	865 l/min
	870 l/min
	875 l/min
	880 l/min
	885 l/min
	890 l/min
	895 l/min
	900 l/min
	905 l/min
	910 l/min
	915 l/min
	920 l/min
	925 l/min
	930 l/min
	935 l/min
	940 l/min
	945 l/min
	950 l/min
	955 l/min
	960 l/min
	965 l/min
	970 l/min
	975 l/min
	980 l/min
	985 l/min
	990 l/min
	995 l/min
	1000 l/min

**Characteristics**

The HFK30-FIN flow sensor for liquids combines the measurement of flow and temperature. The integrated transducer provides an analog output (0..10 V) and one switching output. A limit switch for monitoring minimum flow is also available. The switching output is designed to be used as a PNP or NPN signal source. The switching output is connected to the cable outlet; the LED is connected to the housing. The sensor is configured in the factory or done with the help of the optional configurator (PC interface for PC). A selectable parameter can be modified on the device with the aid of the magnet clip provided. In this case, the current value is saved as the parameter value. Examples of parameters are the switching value or the metering range error. The stainless steel electronics housing is rotatable, so that the cable outlet is in the desired position after installation.

The conversion factors: the flow speed of the liquid can be assigned to the switching output.

**medium-contact**

<b>Power consumption</b>	max. 240 mA
<b>Supply voltage</b>	24 V DC ± 5%
<b>Analog output</b>	4..20 mA (load 500 Ω)
<b>Electrical connection</b>	4-pin M12 connector
<b>Current consumption</b>	max. 240 mA
<b>Switching output</b>	PNP or NPN, 24 V DC, 100 mA
<b>Material</b>	stainless steel
<b>Weight</b>	max. 100 g
<b>Dimensions</b>	see drawing
<b>Ordering information</b>	see drawing

**Product Information**

**Hygienic design**

Ingress protection	IP 67
Weight	approx. 0.2 kg
Conformity	CE, EHEDG



**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.

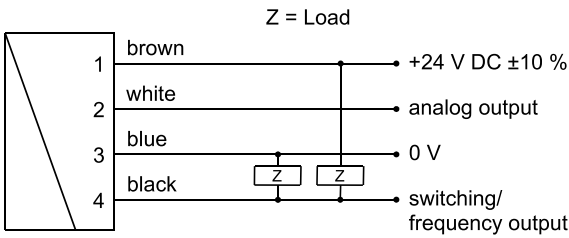
The insulation hoses offer the best possible insulation against the surroundings, and must therefore not be removed.

**Programming**

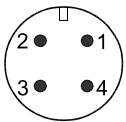
The electronics contain a magnetic contact, with the aid of which different parameters can be programmed. Programming takes place when a magnet clip is applied for a period between 0.5 and 2 seconds to the marking located on the label. If the contact time is longer or shorter than this, no programming takes place (protection against external magnetic fields).



**Wiring**

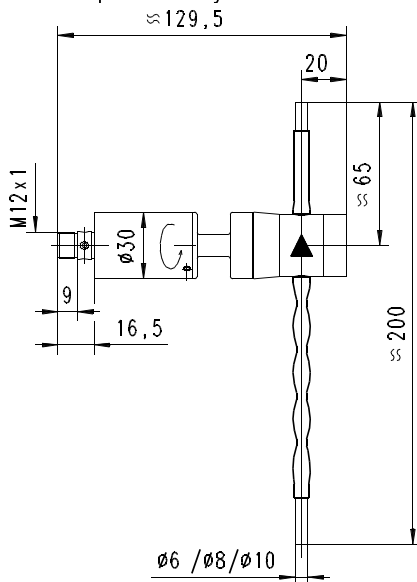


Connection example: PNP NPN



**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.



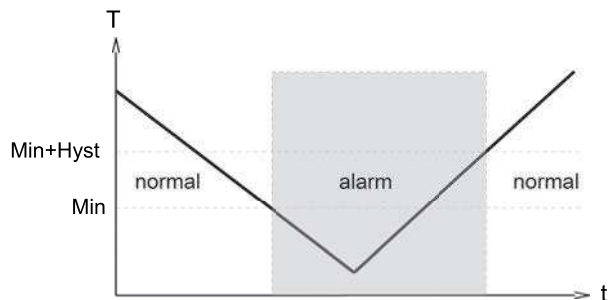
After the programming ("teaching"), the clip can either be left on the device, or removed to protect data.

The device has a yellow LED which flashes during the programming pulse. During operation, the LED serves as a status display for the switching output. In order to avoid the need to transit to an undesired operating status during "teaching", the device can be provided ex-works with a "teach-offset". The "teach-offset" value is added to the currently measured value before saving (or is subtracted if a negative value is entered).

*Example: The switching value is to be set to 70 % of the metering range, because at this flow rate a critical process status is to be notified. However, only 50% can be achieved without danger. In this case, the device would be ordered with a "teach-offset" of +20 %. At 50 % in the process, a switching value of 70 % would then be stored during "teaching".*

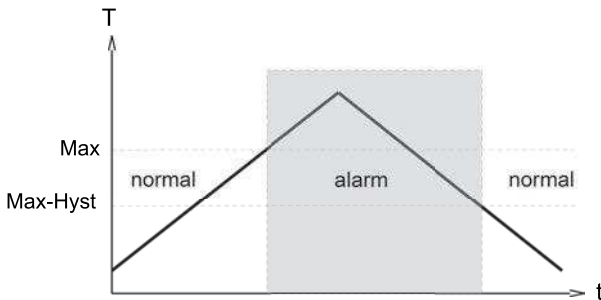
Normally, programming is used to set the limit switch. However, if desired, other parameters such as the end value of the analog or frequency output may also be set.

The limit switch 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.

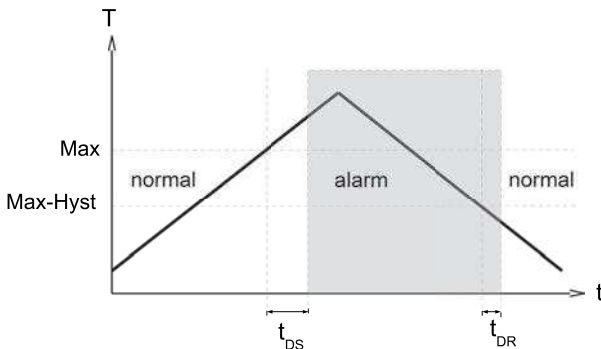


**Product Information**

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.

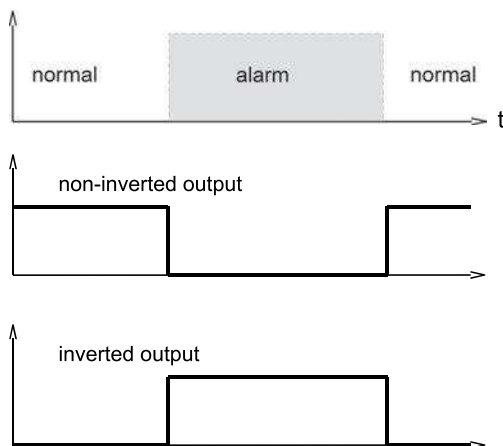


A switchover delay time ( $t_{DS}$ ) can be applied to the switchover to the alarm state. Equally, one switch-back delay time ( $t_{DR}$ ) of several can be applied to switching back to the normal state.



In the normal state the integrated LED is on, in the alarm state it is off, and this corresponds to its status when there is no supply voltage.

In the non-inverted (standard) version, while in the normal state the switching output is at the level of the supply voltage; in the alarm state it is at 0 V, so that a wire break would also display as an alarm state at the signal receiver. Optionally, an inverted switching output can also be provided, i.e. in the normal state the output is at 0 V, and in the alarm state it is at the level of the supply voltage.



A Power-On delay function (ordered as a separate option) makes it possible to maintain the switching output in the normal state for a defined period after application of the supply voltage.

**Ordering code**

HFK30-FIN - 1. [ ] - 2. [ ] 3. **K1** 4. [ ] 5. [ ] 6. [ ] 7. [ ] 8. [ ]  
 9. [ ] 10. **H**

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

<b>1. Tubing diameter</b>	
006	6 mm
008	8 mm
010	10 mm
<b>2. Metering range</b>	
02000	(0.001) 0.01..2 l/min
05000	0.025..5 l/min
10000	0.05..10 l/min
<b>3. Pipework material</b>	
K1	stainless steel 1.4404
<b>4. Analog output</b>	
I	current output 4..20 mA
U	voltage output 0..10 V
<b>5. Measurement parameter to analog output</b>	
F	flow rate to analog output
T	temperature to analog output
<b>6. Switching output</b>	
T	transistor output "push-pull"
M	○ NPN (open collector)
<b>7. Measurement parameter to switching output</b>	
F	flow to switching output
T	temperature to switching output
<b>8. Functioning of the switching output</b>	
L	minimum-switch
H	maximum-switch
R	frequency output
<b>9. Switching signal</b>	
O	standard
I	inverted
<b>10. Spacer</b>	
H	CIP- / SIP version, 140 °C, 30 minutes max.

**Product Information**

Hygienic design

**Options**

**Special measuring range for flow:**

Metering range start value      ml/min

Metering range end value      ml/min

**Special measuring range for temperature:**

Maximum 100 °C (standard = 70 °C)    °C

Minimum -20 °C (standard = 0 °C)    °C

**Special range for analog output:**

<= Metering range    ml/min  
 (Standard = Metering range) °C

**Special range for frequency output:**

<= Metering range    ml/min  
 (Standard = Metering range) °C

**End frequency (max. 2000 Hz)**    Hz

**Switching delay period (0.0..99.9 s)**    .  s  
 (from Normal to Alarm)

**Switch-back delay period (0.0..99.9 s)**    .  s  
 (from Alarm to Normal)

**Power-On delay**   s  
 (After connecting the supply, time during which the switching output is not activated)

**Switching output fixed**    ml/min  
 °C

**Special hysteresis**   %  
 (standard = 2 % EW)

**Teach-offset**     %  
 (in percent of the metering range)  
 Standard = 0 %

If the field is not completed, the standard setting is selected automatically.

**Accessories**

- ECI-1 device configurator (USB programming adapter)
- Process adapter
- Cable/round plug connector (KH...) see additional information "Accessories"
- External display OMNI-TA or OMNI Remote