



# hps<sup>+</sup>

In protective housing – When you need chemical- and pressure-resistant sensors.

## HIGHLIGHTS

- › Optionally used in normal pressure or overpressure
- › Teflon membrane › for protection against aggressive media
- › Stainless-steel or optional PVDF housing for hps<sup>+</sup>340 › for use in the food industry
- › Sealed against the housing with an O-ring made from FFKM › for the highest possible chemical resistance
- › Digital display with direct measured value output in mm/cm or %
- › Numeric configuration of the sensor using digital display

## BASICS

- › 2 switching outputs in pnp variant
- › Analogue output plus 1 pnp switching output
- › 4 detection ranges with a measurement range of 30 mm to 8 m
- › microsonic Teach-in by using button T1 or T2
- › 0.025 mm to 2.4 mm resolution
- › Temperature compensation
- › 9–30 V operating voltage
- › LinkControl › for configuration of sensors from a PC



Fill level measurement in tanks



hps+340 in highly resistant PVDF housing



PTFE protective film sealed with an O-ring made from FFKM against the housing

### For fill level measurements of aggressive media and in overpressure

the ultrasonic transducers of the hps+ sensors are fitted out – as standard – with a Teflon film. It is sealed with a FFKM O-ring against the housing made of 1.4571 stainless steel or PVDF. This ensures a high degree of resistance to aggressive media.

The hps+ sensors can be used for fill level measurement under normal pressure or in tanks and containers with an overpressure of up to 6 bar. Its special software filters also allow its use in containers filled from above or that have a stirring system. Pressure-tight installation in a tank is undertaken by means of a 1" threaded flange or a 2" one in the case of hps+340.

### Chemical resistance

and seal tightness were tested through being stored over cellulose thinner and 1,000,000 alternating pressure stresses. Cellulose thinner is extremely corrosive and has a high rate of penetration.

### Two different output stages

are available for four detection ranges:



2 switching outputs, in pnp switching technology



1 pnp switching output with an additional analogue output

### The hps+ sensors with switching output have three operating modes:

- Single switching point
- Two-way reflective barrier
- Window mode

### Two three-colour LEDs

always show the current state of the switching outputs or the analogue output.

### With TouchControl

all configuration can be done right at the sensor. The easily legible three-digit LED display continually shows the current distance value and automatically switches between millimetre and centimetre displays.

### Setting a switching or analogue output

can optionally be carried out by numeric input of the desired distance values, or using a Teach-in procedure. This permits the user to select the configuration method preferred.

The hps+ sensors support synchronisation and multiplex operation and have extensive parameterisation options via LinkControl.

Further information on how to set up hps+ sensors can be found in the chapter "mic+".

### LinkControl

consists of the LinkControl adapter and the LinkControl software and facilitates the configuration of the hps+ sensors via a PC or laptop with any conventional Windows® operating system.



Sensor connected to the PC via LCA-2 for programming

# hps<sup>+</sup>25

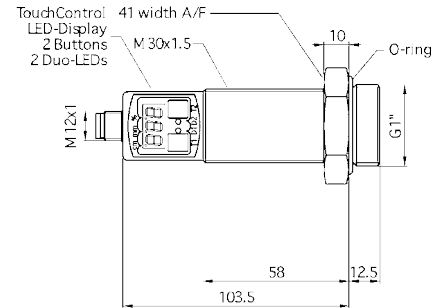
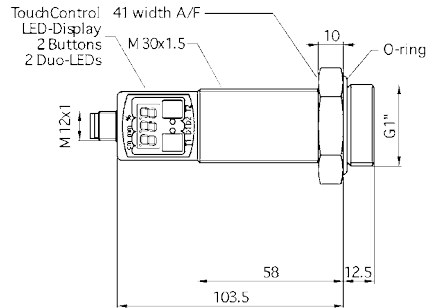
# hps<sup>+</sup>35



measuring range

30–990 mm

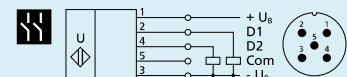
85–1,500 mm



blind zone	30 mm	85 mm
operating range	250 mm	350 mm
maximum range @ normal pressure	350 mm	600 mm
maximum range @ $\geq 2$ bar overpressure	990 mm	1,500 mm
angle of beam spread	please see <a href="#">i</a>	please see <a href="#">i</a>
transducer frequency	320 kHz	320 kHz
resolution/sampling rate	0.025 mm	0.18 mm
reproducibility	$\pm 0.15\%$	$\pm 0.15\%$
accuracy	$\pm 1\%$ (temperature drift internally compensated)	$\pm 1\%$ (temperature drift internally compensated)
operating voltage $U_B$	9 V to 30 V DC, reverse polarity protection	9 V to 30 V DC, reverse polarity protection
no-load current consumption	$\leq 80$ mA	$\leq 80$ mA
housing	stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PTFE film, FFKM O-ring	stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PTFE film, FFKM O-ring
process connection	G1	G1
class of protection according to EN 60529	IP 67	IP 67
type of connection	5-pin M12 initiator plug	5-pin M12 initiator plug
controls	TouchControl	TouchControl
scope for settings	<ul style="list-style-type: none"> <li>• numeric configuration and Teach-in</li> <li>• LCA-2 with LinkControl</li> </ul>	<ul style="list-style-type: none"> <li>• numeric configuration and Teach-in</li> <li>• LCA-2 with LinkControl</li> </ul>
indicators	3-digit LED display, 2 three-colour LEDs	3-digit LED display, 2 three-colour LEDs
operating pressure	up to 6.0 bar overpressure	up to 6.0 bar overpressure
operating temperature	-25°C to +70°C	-25°C to +70°C
storage temperature	-40°C to +85°C	-40°C to +85°C
weight	210 g	210 g
switching hysteresis <sup>1)</sup>	3 mm	5 mm
switching frequency <sup>1)</sup>	11 Hz	9 Hz
response time <sup>1)</sup>	68 ms	84 ms
delay prior to availability	< 300 ms	< 300 ms
order number	<b>hps+25/DD/TC/E/G1</b>	<b>hps+35/DD/TC/E/G1</b>
switching outputs	2 x pnp, $U_B-2$ V, $I_{max} = 2 \times 200$ mA NOC/NCC adjustable, short-circuit-proof	2 x pnp, $U_B-2$ V, $I_{max} = 2 \times 200$ mA NOC/NCC adjustable, short-circuit-proof



2 pnp switching outputs



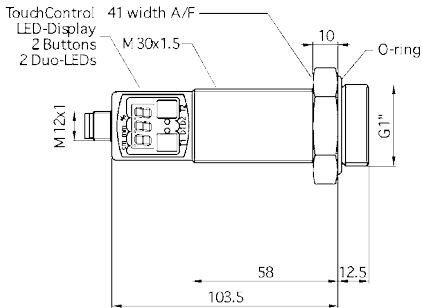
2 pnp switching outputs

<sup>1)</sup> Can be programmed with TouchControl and LinkControl.

# hps+ 130



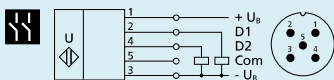
200–5,000 mm



- 200 mm
- 1,300 mm
- 2,000 mm
- 5,000 mm
- please see ⓘ
- 180 kHz
- 0.18 mm
- ± 0.15 %
- ± 1 % (temperature drift internally compensated)
- 9 V to 30 V DC, reverse polarity protection
- ≤ 80 mA
- stainless steel 1.4571, plastic parts: PBT, TPU;
- ultrasonic transducer: coated with PTFE film, FFKM O-ring
- G1
- IP 67
- 5-pin M12 initiator plug
- TouchControl
- numeric configuration and Teach-in
- LCA-2 with LinkControl
- 3-digit LED display, 2 three-colour LEDs
- up to 6.0 bar overpressure
- 25°C to +70°C
- 40°C to +85°C
- 210 g
- 20 mm
- 5 Hz
- 160 ms
- < 300 ms

## hps+130/DD/TC/E/G1

2 x pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=2 \times 200\text{ mA}$   
 NOC/NCC adjustable, short-circuit-proof

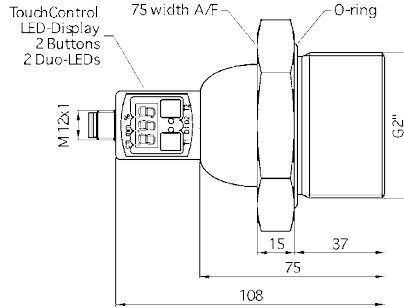


2 pnp switching outputs

# hps+ 340



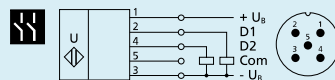
350–8,000 mm



- 350 mm
- 3,400 mm
- 5,000 mm
- 8,000 mm
- please see ⓘ
- 120 kHz
- 0.18 mm
- ± 0.15 %
- ± 1 % (temperature drift internally compensated)
- 9 V to 30 V DC, reverse polarity protection
- ≤ 80 mA
- stainless steel 1.4571, plastic parts: PBT, TPU;
- ultrasonic transducer: coated with PTFE film, FFKM O-ring
- G2
- IP 67
- 5-pin M12 initiator plug
- TouchControl
- numeric configuration and Teach-in
- LCA-2 with LinkControl
- 3-digit LED display, 2 three-colour LEDs
- up to 6.0 bar overpressure
- 25°C to +70°C
- 40°C to +85°C
- 1,200 g
- 50 mm
- 3 Hz
- 240 ms
- < 380 ms

## hps+340/DD/TC/E/G2

2 x pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=2 \times 200\text{ mA}$   
 NOC/NCC adjustable, short-circuit-proof

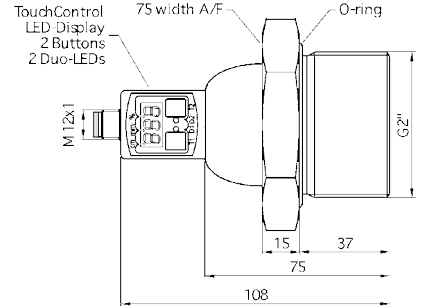


2 pnp switching outputs

# hps+ 340



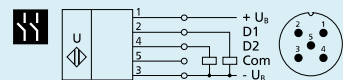
350–8,000 mm



- 350 mm
- 3,400 mm
- 5,000 mm
- 8,000 mm
- please see ⓘ
- 120 kHz
- 0.18 mm
- ± 0.15 %
- ± 1 % (temperature drift internally compensated)
- 9 V to 30 V DC, reverse polarity protection
- ≤ 80 mA
- PVDF, PBT, TPU;
- ultrasonic transducer: coated with PTFE film, FFKM O-ring
- G2
- IP 67
- 5-pin M12 initiator plug
- TouchControl
- numeric configuration and Teach-in
- LCA-2 with LinkControl
- 3-digit LED display, 2 three-colour LEDs
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- 350 g
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- 3 Hz
- 240 ms
- < 380 ms

## hps+340/DD/TC/G2

2 x pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=2 \times 200\text{ mA}$   
 NOC/NCC adjustable, short-circuit-proof



2 pnp switching outputs

# hps<sup>+</sup>25

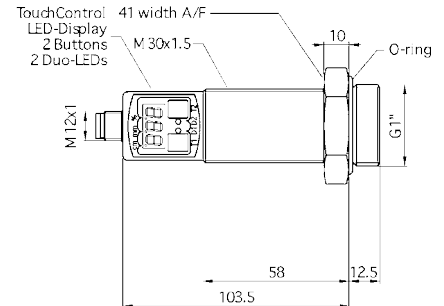
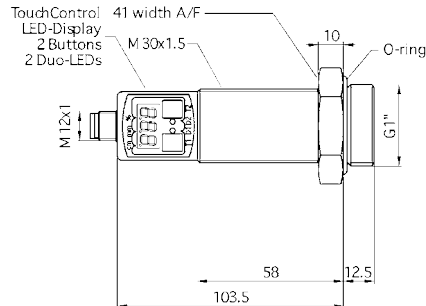
# hps<sup>+</sup>35



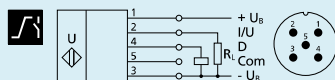
measuring range

30–990 mm

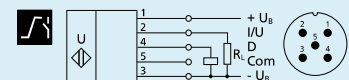
85–1,500 mm



blind zone	30 mm	85 mm
operating range	250 mm	350 mm
maximum range @ normal pressure	350 mm	600 mm
maximum range @ $\geq 2$ bar overpressure	990 mm	1,500 mm
angle of beam spread	please see <a href="#">i</a>	please see <a href="#">i</a>
transducer frequency	320 kHz	320 kHz
resolution/sampling rate	0.025 mm to 0.30 mm, depending on the analogue window	0.18 mm to 0.45 mm, depending on the analogue window
reproducibility	$\pm 0.15\%$	$\pm 0.15\%$
accuracy	$\pm 1\%$ (temperature drift internally compensated)	$\pm 1\%$ (temperature drift internally compensated)
operating voltage $U_B$	9 V to 30 V DC, reverse polarity protection	9 V to 30 V DC, reverse polarity protection
no-load current consumption	$\leq 80$ mA	$\leq 80$ mA
housing	stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PTFE film, FFKM O-ring	stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PTFE film, FFKM O-ring
process connection	G1	G1
class of protection according to EN 60529	IP 67	IP 67
type of connection	5-pin M12 initiator plug	5-pin M12 initiator plug
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scope for settings	<ul style="list-style-type: none"> <li>• numeric configuration and Teach-in</li> <li>• LCA-2 with LinkControl</li> </ul>	<ul style="list-style-type: none"> <li>• numeric configuration and Teach-in</li> <li>• LCA-2 with LinkControl</li> </ul>
indicators	3-digit LED display, 2 three-colour LEDs	3-digit LED display, 2 three-colour LEDs
operating pressure	up to 6.0 bar overpressure	up to 6.0 bar overpressure
operating temperature	-25°C to +70°C	-25°C to +70°C
storage temperature	-40°C to +85°C	-40°C to +85°C
weight	210 g	210 g
switching hysteresis <sup>1)</sup>	3 mm	5 mm
switching frequency <sup>1)</sup>	11 Hz	9 Hz
response time <sup>1)</sup>	68 ms	84 ms
delay prior to availability	< 300 ms	< 300 ms
<b>order number</b>	<b>hps+25/DIU/TC/E/G1</b>	<b>hps+35/DIU/TC/E/G1</b>
switching output	npn, $U_B=2$ V, $I_{max} = 200$ mA NOC/NCC adjustable, short-circuit-proof	npn, $U_B=2$ V, $I_{max} = 200$ mA NOC/NCC adjustable, short-circuit-proof
analogue output	current output 4–20 mA voltage output 0–10 V (at $U_B \geq 15$ V), short-circuit-proof switchable rising/falling	current output 4–20 mA voltage output 0–10 V (at $U_B \geq 15$ V), short-circuit-proof switchable rising/falling



1 npn switching output + analogue output



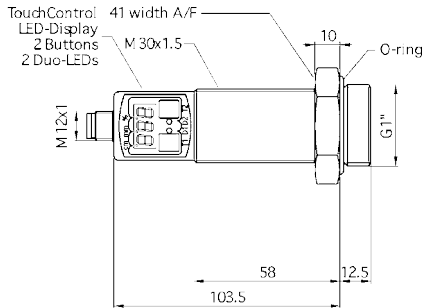
1 npn switching output + analogue output

<sup>1)</sup> Can be programmed with TouchControl and LinkControl.

# hps+ 130



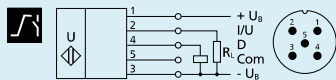
200–5,000 mm



200 mm
1,300 mm
2,000 mm
5,000 mm
please see ⓘ
180 kHz
0.18 mm to 1.5 mm, depending on the analogue window
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PTFE film, FFKM O-ring
G1
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
up to 6.0 bar overpressure
-25°C to +70°C
-40°C to +85°C
210 g
20 mm
5 Hz
160 ms
< 300 ms

## hps+130/DIU/TC/E/G1

pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=200\text{ mA}$   
 NOC/NCC adjustable, short-circuit-proof  
 current output 4–20 mA  
 voltage output 0–10 V (at  $U_B \geq 15\text{ V}$ ),  
 short-circuit-proof  
 switchable rising/falling

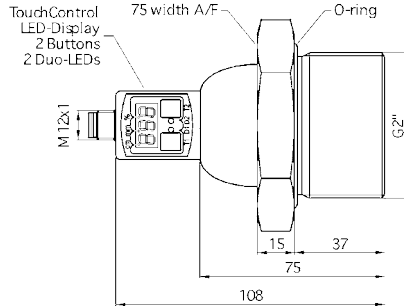


1 pnp switching output + analogue output

# hps+ 340



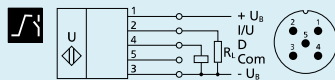
350–8,000 mm



350 mm
3,400 mm
5,000 mm
8,000 mm
please see ⓘ
120 kHz
0.18 mm to 2.4 mm, depending on the analogue window
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PTFE film, FFKM O-ring
G2
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
up to 6.0 bar overpressure
-25°C to +70°C
-40°C to +85°C
1,200 g
50 mm
3 Hz
240 ms
< 450 ms

## hps+340/DIU/TC/E/G2

pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=200\text{ mA}$   
 NOC/NCC adjustable, short-circuit-proof  
 current output 4–20 mA  
 voltage output 0–10 V (at  $U_B \geq 15\text{ V}$ ),  
 short-circuit-proof  
 switchable rising/falling

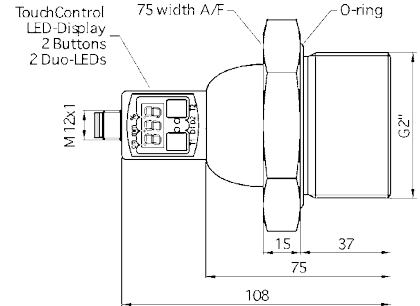


1 pnp switching output + analogue output

# hps+ 340



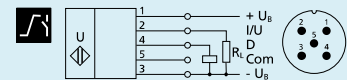
350–8,000 mm



350 mm
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please see ⓘ
120 kHz
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pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=200\text{ mA}$   
 NOC/NCC adjustable, short-circuit-proof  
 current output 4–20 mA  
 voltage output 0–10 V (at  $U_B \geq 15\text{ V}$ ),  
 short-circuit-proof  
 switchable rising/falling



1 pnp switching output + analogue output