Electronic Level Switch

HNS 3000

Features and Benefits

- 1, 2, or 4 independent PNP transistor switching outputs
- User-selectable switch outputs based on the measured value
- Switching and switch-back points can be adjusted independently
- Selectable analog output available as an option
- 4-digit display
- Various types of float available

The HNS 3000 is an electronic level switch with integrated display. The float-based sensor for high-precision analog monitoring of the fluid level has 1, 2 or 4 switching outputs and an analog output signal is available as an option. In addition to the conventional minimum and maximum switching signal, with the 4 output version it is possible to set additional warning signals to prevent problems such as tank overflow or aeration of the pump. The main applications of this HNS 3000 are primarily in hydraulics, e.g. for fluid level monitoring of a tank. The sensor is available in probe lengths from 9.84 to 98.4 inches. The instrument is also available with or without temperature sensor.

Depending on the application, several different floats are available, e.g. stainless steel for aggressive media or plastic.

Technical Data

Input Data	
Sensor Type	Megnetostrictive
Measuring Ranges	7.01”; 8.19”; 11.73”; 13.31”; 17.64”; 25.90”
Probe Length[1)]	9.84”; 11.02”; 14.57”; 16.14”; 20.47”; 28.74”
Max. Speed of Change in Fluid Level	Optional
Repeatability[2)]	≤ ± 1 % FS
Switching Point Accuracy	≤ ± 1 % FS
Temperature (optional)	
Sensor Type	Semi-conductor Sensor
Measuring Range	-13 .. +212 °F
Accuracy	± 3.0 °F
Reaction Time (t_{90})	< 100 s
Output Data	
Analog output (optional)	
With 1 or 2 SP selectable	4 .. 20 mA load resistance ≤ 500 Ω 0 .. 10 V load resistance ≥ 1 kΩ corresponds to measurement range selected
With 4 SP (only with temperature sensor)	0 .. 10 V load resistance ≥ 1kΩ corresponds to measurement range selected
Switch outputs	
Type	PNP transistor output programmable as N/O / N/C
Assignment	On version with temperature measurement user-selectable temperature or fl uid level
Switching current	1 or 2 SP: max. 1.2 A per output 4 SP: max. 0.25 A per output
Switching cycles	> 100 million

Technical Data (cont.)

Environmental Conditions	
Max. tank pressure	43.5 psi (short-term 145 psi, t < 1 min)
Operating Temperature Range	-40 .. +185 °F
Storage Temperature Range	-40 .. +212 °F
Fluid Temperature Range	-40 .. +248 °F
CE- mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6	7.5 mm (5 .. 8.2 Hz) 2.0 g (8.2 .. 150 Hz)
Shock resistance to DIN EN 60068-2-27	20 g (11ms)
Protection class to IEC 60529	IP67
Other Data	
Supply voltage (U_B)	9 .. 35 V DC (without analog output) 18 .. 35 V DC (with analog output)
Current consumption (without output)	≤ 150 mA
Residual ripple of supply voltage	≤ 250 mV
Fluids	Hydraulic oils, cooling lubricants
Parts in Contact with Medium	Stainless steel (1.4301 / 1.4571)
Float	PP (polypropylene); 0.6 kg/dm3
Display	4-digit, LED, 7-segment, red, height of digits 7 mm
Weight (dependent on the probe length)	~ 1000 g

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.
FS (Full Scale) = relative to the complete measuring range
1) Other probe lengths on request
2) Specified for calm, non-turbulent fluid

Pin Connections:

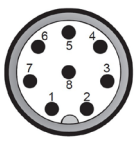
M12x1, 4 pole

Pin	HNS 3X26-2	HNS 3X26-3
1	$+U_B$	$+U_B$
2	SP 2	Analog
3	0 V	0 V
4	SP 1	SP 1

M12x1, 5 pole

Pin	HNS 3X28-5
1	$+U_B$
2	Analog
3	0 V
4	SP 1
5	SP 2

M12x1, 8 pole



Pin	HNS 3X2P-8
1	$+U_B$
2	SP 2
3	0 V
4	SP 1
5	SP 3
6	SP 4
7	Analog level
8	Analog temperature

Electronic Level Switch

HNS 3000

How to Build a Valid Model Number for a Schroeder HNS 3000 Supply Module:

HNS 3000						
Model	Temperature Sensor	Mechanical Connection	Electrical Connection	Output	Probe Length	Modification Number

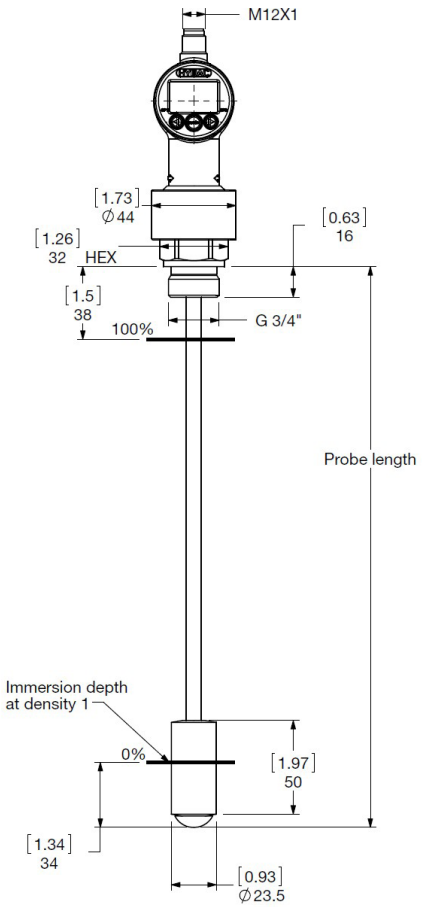
***Starting from the left to the right you will choose your Type and work your way through each category as illustrated above.*

Model	Temperature Sensor	Mechanical Connection
☐ **HNS 3000 =** Electronic Level Switch	☐ **1 =** with Temperature Sensor ☐ **2 =** without Temperature Sensor	☐ **2 =** G3/4 A DIN 3852 (male)

Electrical Connection	Output
☐ **6 =** Male M12x1, 4 pole; only for output models “2” and “3” ☐ **8 =** Male M12x1, 5 pole; possible only for output model “5” ☐ **P =** Male M12x1, 8 pole; only for output model “8”	☐ **2 =** 2 Switching outputs; only in conjunction with electrical connection type “6” ☐ **3 =** 1 Switching output and 1 analog output; only in conjunction with electrical connection type “6” ☐ **5 =** 2 Switching outputs and 1 analog output; only in conjunction with electrical connection type “8” ☐ **8 =** 4 Switching outputs and 2 analog outputs; only in conjunction with electrical connection type “P”

Probe Length (Physical)		Modification Number
☐ **0250 =** 9.84”	☐ **0410 =** 16.14”	☐ **400 =** Standard in inch
☐ **0280 =** 11.02”	☐ **0520 =** 20.47”	
☐ **0370 =** 14.57”	☐ **0730 =** 28.74”	

Dimensions



Accessories

Appropriate accessories, such as electrical connectors, splash guards, etc. can be found in the Accessories brochure.

Note:

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.