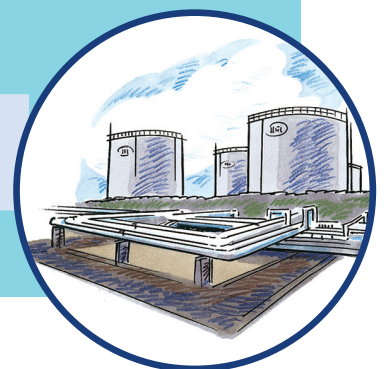


Level Sensor

Typ 76 A with NB 220

2.2



PTC Resistor Level Control Type 76 A with NB 220, for combustible (AIII) and non-combustible liquids

The FAFNIR Level Control regulates the height of liquids in tanks and process containers. It presents a "stand-alone-solution" and operates independently of superior industrial controls.

The FAFNIR Level Control consists of a level sensor with two or three independent sensors and a corresponding number of transducers. The upper sensor can take over the function of a certified overfill prevention device.

Application

The FAFNIR level control is destined to detect limits of liquids. It is applied wherever levels have to be controlled. This level control is predestined for oily liquids since the viscosity of these liquids decreases with rising temperatures and thus the sensor will be ready again.

In some countries storage tanks with a volume of more than 1.000 litres have to be equipped by law with an overfill prevention device. This task can be simultaneously taken care of by the FAFNIR Level Control.

Tanks with a smaller volume are not subject to this law. However, operators who have already experienced the misfortune of an overfilling will appreciate the advantages of FAFNIR's overfill prevention, because this relieves them of the precarious task of permanently checking the filling levels or delegating this work to an employee.



Level Sensor Type 76 A Duo-2
Transducer Type NB 220 H
Transducer Type NB 220 QSF



Advantages of FAFNIR's Technology

- Tested and tried under the most difficult conditions
- More than 25 years of FAFNIR-experience in using this technology
- Space-saving, robust and corrosion-resistant design
- Easy adjustability for different tank sizes
- Alignment on site not necessary
- Two-wire connection to the transducer, independent of polarity
- Sensor without moving components
- Totally maintenance-free
- Integrated alarm with acoustic signal and lamp
- Registered according to the WHG
- Required periodical check performed by push-button according to AK 3

Our Terminology

Water law: WHG (German Water Law)

Sealed sensor: indicator

Indicator with sheath and

tank connection: level sensor

Required protection class: AK

Function

The electrical connection between the level sensor, series 76, inside the tank and the transducer, series NB 220, is made by a two-wire cable.

The electrical connection can also be made by a four-wire cable with a 76 Duo or a six-wire cable with a 76 Trio.

The indicator on the threshold point of the level detector is a sealed PTC-resistor. The PTC resistor is a variable resistance whose value increases in relation to the rising temperature. As liquids are better thermal conductors than air or gas, the PTC-resistor heats up better in air or gas. When dipped into liquid, the PTC-resistor is cooled down and the changing resistance-value is interpreted by the transducer.

If the threshold point of the level detector comes into contact with the liquid, a switching signal is released to switch off/on e.g. a pump. In the immersed state the relay of NB 220 H and NB 220 QSF is repelled and the relay of NB 220 HT is attracted. At the same time an optical or acoustic alarm can be released. The acoustic alarm can be acknowledged and stopped via push button. The optical alarm remains active until the threshold cause is eliminated.

The periodical check of the level sensor as required by the WHG is performed by triggering or by dismantling the level detector and dipping it into the stored liquid. This work is made unnecessary by the integrated test function according to AK 3. The correct functioning of the level sensor is checked by pressing a button.

Installation Possibilities

The threshold length to be maintained for each tank must be stated exactly for fused-in level detectors. For level detectors with stuffing box screwing the threshold length can be easily adjusted by shifting the probe tube.

The transducer is designed for wall mounting. For controlling tasks with several transducers there are solutions for control unit mounting.

Design

The level sensor consists of:

- Sensor
- Screw-in unit
- Electrical connection to the transducer
- Connection housing

The transducer consists of:

- Analysing processor for PTC-resistor
- Change-over contact (floating)
- Panel lights
- Terminals
- Housing
- Additionally for NB 220 QSF:
 - Alarm (acoustic signal, lamp)
 - Keyboard (acknowledgement, check)
 - Change-over contact (floating) that can be acknowledged

Process Connection

The level detector type 76 Duo is supplied with screw-in unit R1½ or R2, the level detector type 76 Trio is supplied with screw-in unit R2. The tank must be provided with a corresponding sleeve.

Installation Advice

When installing the level sensor it must be assured that the sensor is not in the area of a gas flow. If this cannot be avoided, the sensor must be equipped with a protective sleeve against increased gas flow.

The transducer must be installed in enclosed rooms or in a housing, protection class IP 54.

Technical Data Level Sensor Type 76:

Operating data:

- Temperature range of products:
-25 °C to +50 °C; -25 °C to +80 °C
- Ambient temperature:
-25 °C to +80 °C
- Pressure range: 0 - 2 bar
- Media compatibility:
refer to list of substances
- Immersion switching delay:
< 2 seconds
- Protection type of housing: IP 67

Materials of parts in contact with media:

- Brass: 2.0332
- Stainless steel as per DIN 17440:
1.4301 to 1.4571
- Spring steel as per DIN 17222:
1.248, galvanised
- Solder: L-Sn 40 Pb
- Vulkolan
- Linear polyester: Ultradur

Dimensions:

- Pipe diameter:
brass 24 x 2, stainless steel 16 x 1.5
- Lengths of probe: 100 mm to
3,000 mm, observe the standards
- For more data refer
to the illustration

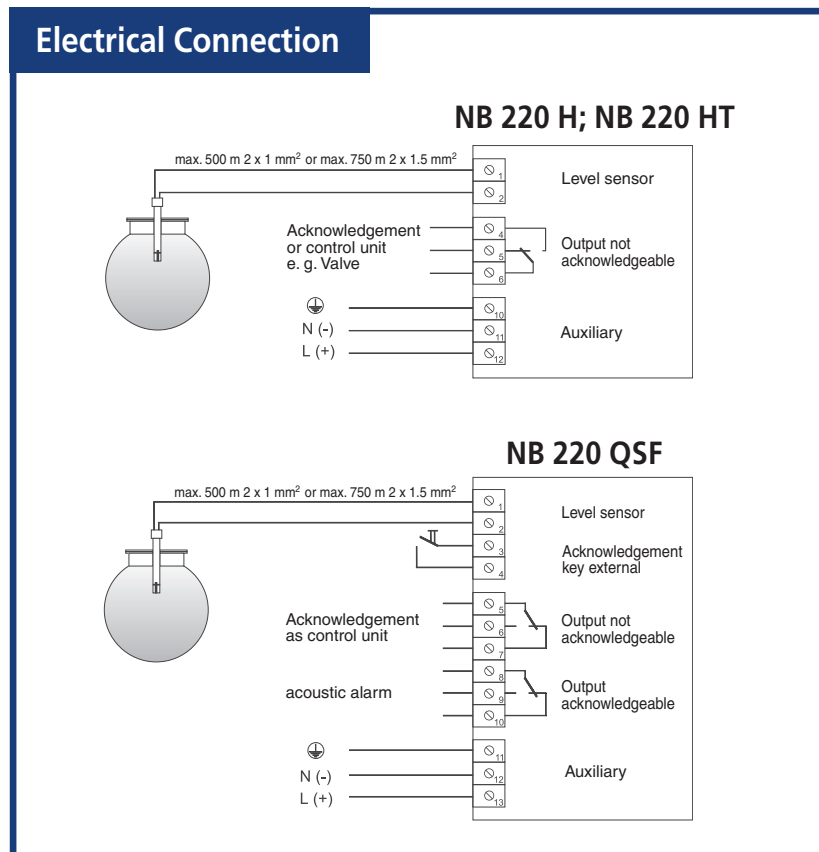
Transducer NB 220:

Operating data:

- Auxiliary power: 24 V, 110 V, 230 V;
50 Hz or 24 V DC
- Power consumption: 4 VA or 6 W
- Ambient temperature:
-25 °C to +60 °C
- Protection type of housing: IP 40

Outputs:

- Change-over contact (floating),
type QSF plus acknowledgeable,
floating change-over contact
- Load AC: " 250 V; " 4 A;
 $\cos\varphi \geq 0,7$; max. 500 VA
- Load DC:
" 250 V; " 0.25 A; max. 50 W



Inputs:

- Type QSF acknowledgement button:
U " 12.6 V DC, I " 20 mA,
P " 60 mW
- Level sensor input: two-wire,
independent of polarity, max.
cable length: 750 m for 1.5 mm²

Dimensions:

- NB 220 QSF: H 163 x W 97 x D 62
- NB 220 H: H 111 x W 50 x D 110

Electrical connection

- Refer to illustration

List of substances

Flammable liquids:

Diesel fuel according to DIN 51601;
fuel oil EL according to DIN 51603, part 1;
used gear lubricating and engine oils; hexyl
alcohol 1; nitrobenzene, diacetic ether;
1.2-dichlorobenzene (acetic ethyl acetate);
2.4-dimethylaniline (N, N-dimethylaniline),
acrylic acid 2-ethylhexylester (2-ethylhexy-
lacrylate); cyclohexylacetate; benzal-

dehyde; diethene oxalate; diacetic methyl-
ether; n-octanal (n-octylene); aniline

Non-flammable

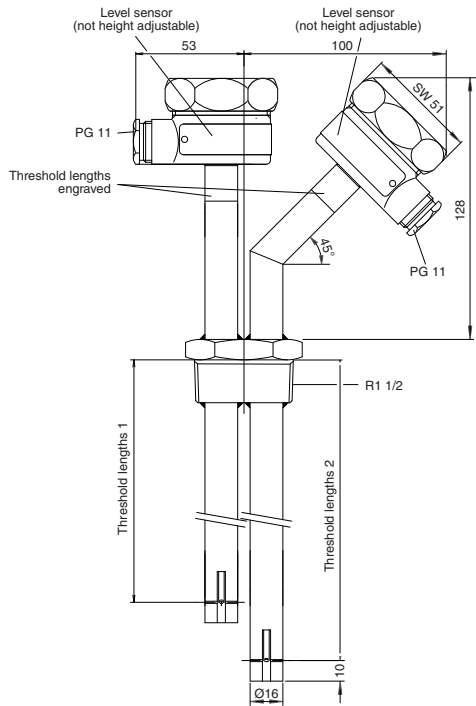
water polluting liquids:

Unused engine oils, gear lubricants, and
hydraulic oils; transformer oils; vegetable
oils; anti-freeze agents; oil and water
mixtures (e. g. drilling and lubricating
oils); cleaning agents/water mixtures;
perchloroethylene and trichloroethylene, as
well as comparable liquids with identical
thermal conductivity.

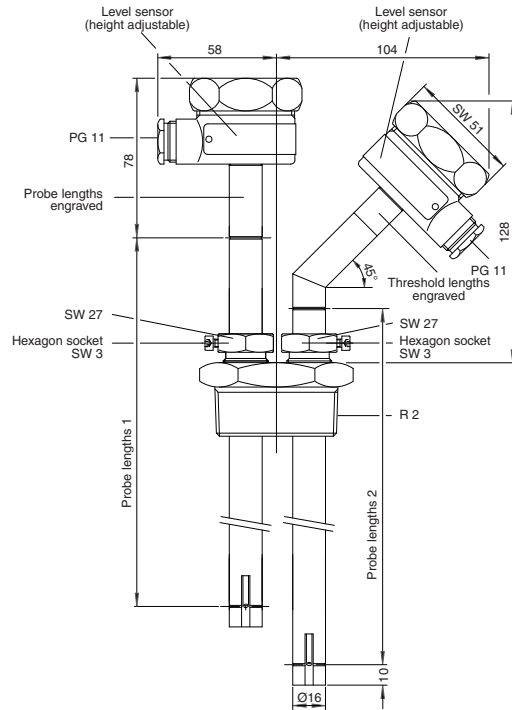
Accessories

- Acknowledgement unit, type QE 200
- Collective acknowledgement unit,
type SAM 10 for max. 10 fault
indicators
- Collective confirmation unit, type
SAM 25 for max. 25 fault indicators
- Acoustic signal type HPW 110
- Acoustic signal with integrated
warning lamp: type HR
- Warning lamp: type W
- Warning lamp: type R4

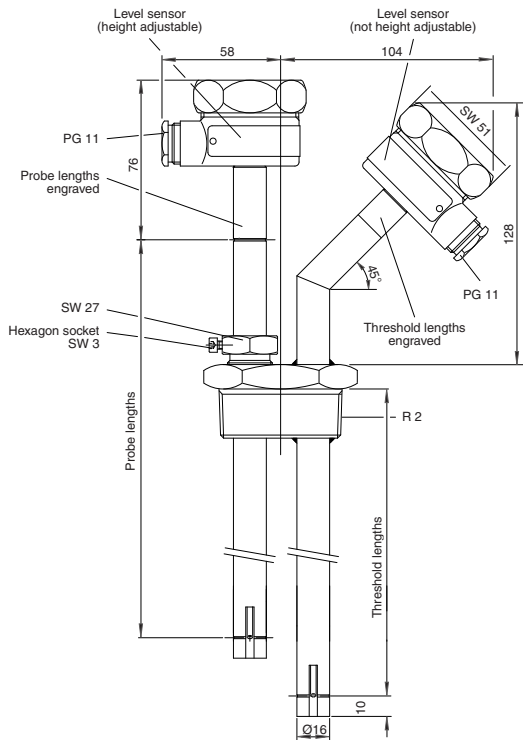
Type 76 A Duo-1



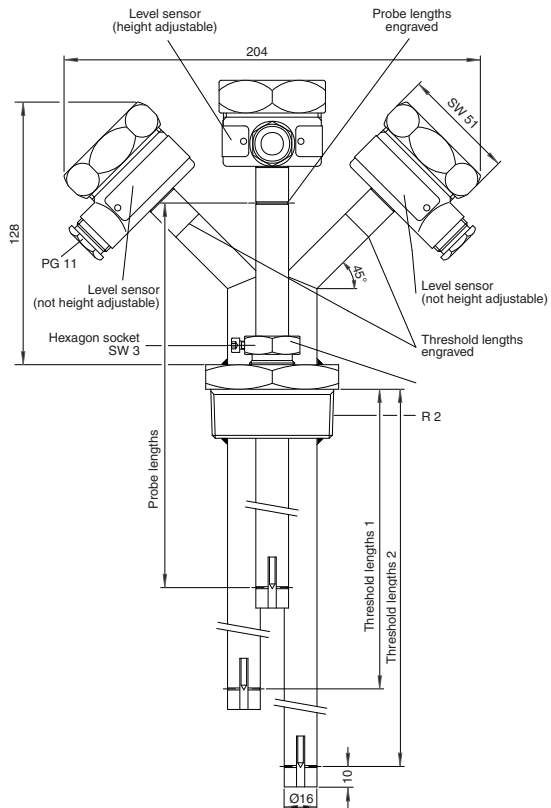
Type 76 A Duo-2



Type 76 A Duo-3



Type 76 A Trio



Dimensions in mm

Purchase Order Codes

Please state the following order number in your purchase order.

Level Sensor Type 76

Protective sleeve against strong gas flow		with	0
		without	1
Temperature range		-25 °C till +50 °C	0
		H: -25 °C till +80 °C	1
Threshold length 2	two-digit code: length in mm / 100 (e.g. 1.500 mm = 15)		
Threshold length 1	two-digit code: length in mm / 100 (e.g. 1.000 mm = 10)		
Probe length	two-digit code: length in mm / 100 (e.g. 500 mm = 05)		
Process connection			
	screw-in unit R 1 1/2 (only possible for Duo)	0	
	Screw-in unit R2	1	
Order number	3610		

Transducer Type NB 220

Auxiliary energy		230 V AC	1
		only QSF 110 V AC	2
		24 V AC	3
		24 V DC	4
Output / alarm / test key	H; HT: 1 change-over contact (floating) / none / none	1 0 0	
	QSF: 2 change-over contacts (floating) / acoustic signal, lamp / as per AK3	2 1 1	
Order number	3312		

For further information contact us on telephone +49/40/39 82 07-0

Current information under: www.fafnir.com

Please note:

We also supply level sensors with several threshold points in different heights.

This gives you the opportunity to realize overflow prevention and tank control with only one process connection.

