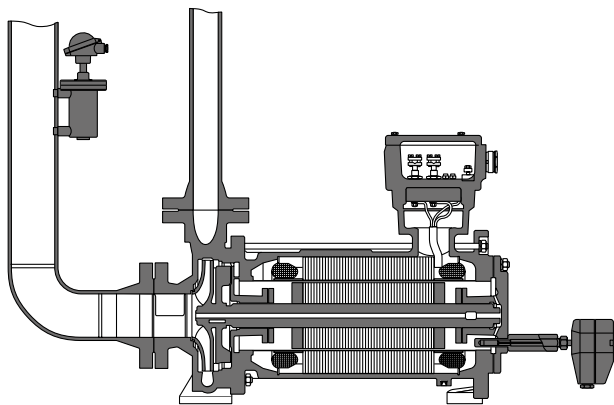


PRODUCT INFORMATION



Electronic level- and temperature  
monitoring device

Monitoring system NTS 30

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## Description

### General

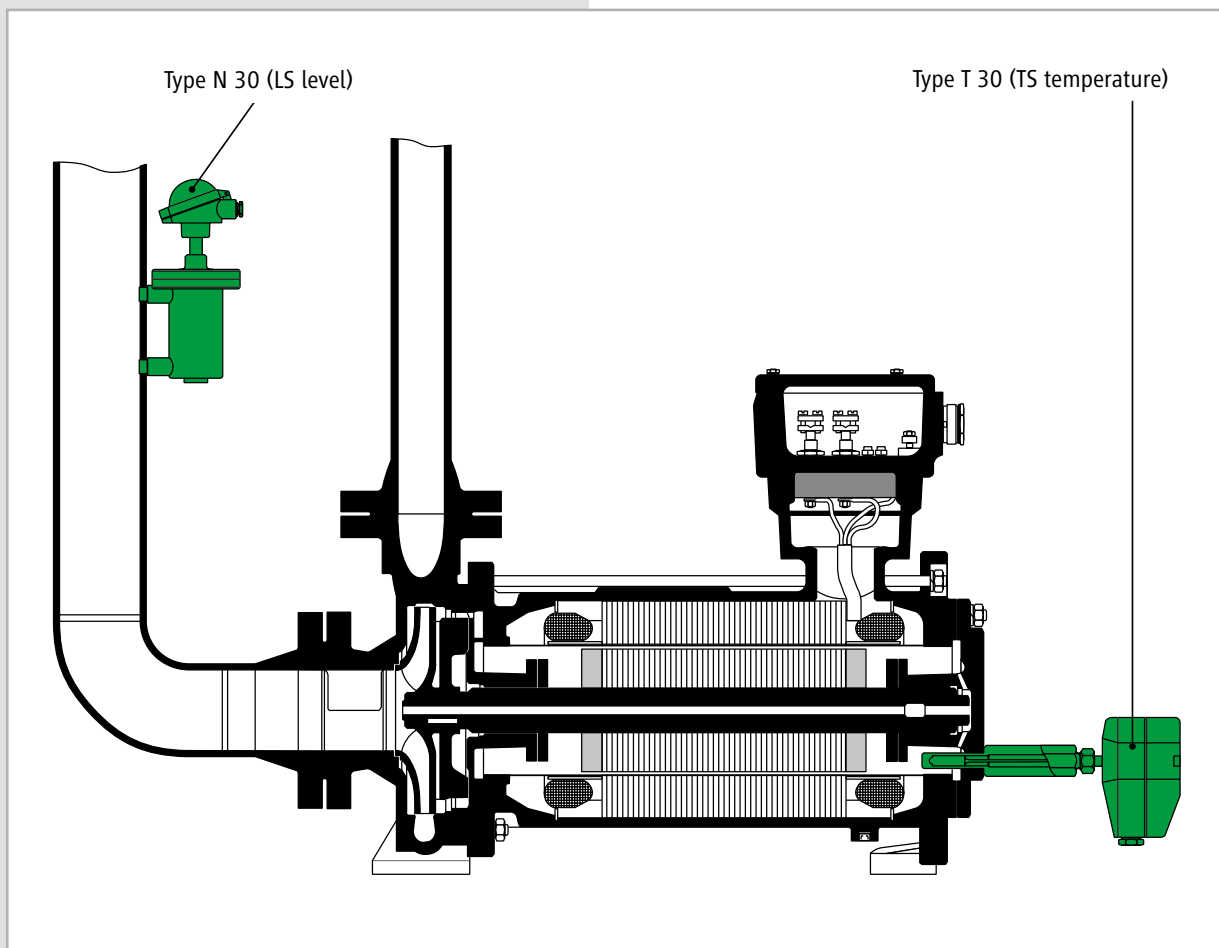
The most part of HERMETIC pumps are designed according to explosion protection requirements. The pumps comply with the requirements of the electrical as well as mechanical explosion protection.

### Level monitoring

On condition that the rotor cavity as part of the process system is steadily filled with liquid, no explosive atmosphere may arise. In this case, no accepted explosion protection is required for the rotor cavity. If the operator is not able to guarantee for a steady filling, it is necessary to install level monitoring devices.

### Temperature monitoring

The observance of the temperature class and the maximum admissible surface temperature of the canned motor, respectively, is ensured via thermistor in the stator winding and/or via a measuring point on the bearing cover (liquid temperature).



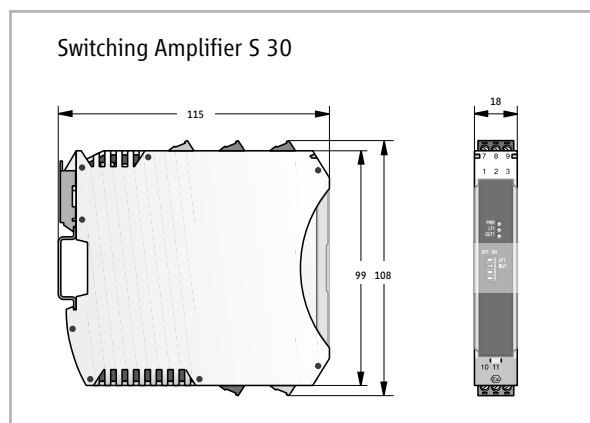
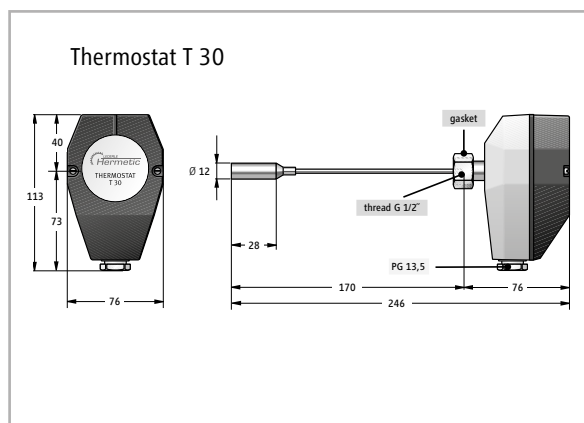
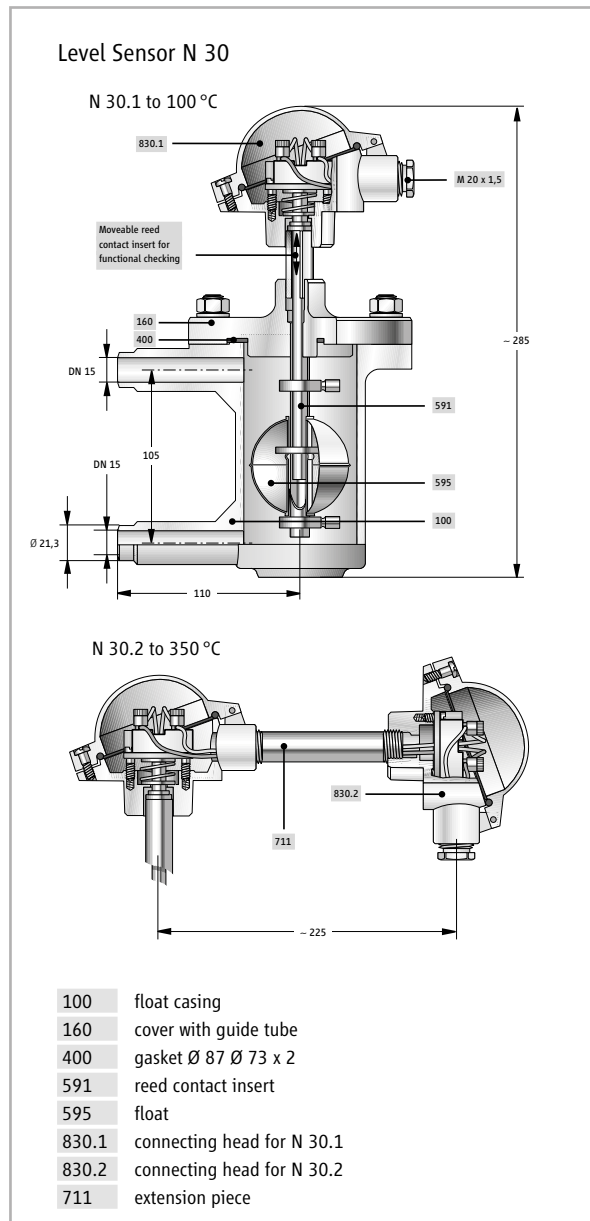
# Operating

The monitoring system is comprised of level sensor (N 30), thermostat (T 30) and switching amplifier (S 30).

Inside the level sensor N 30, a float, equipped with a magnet, moves on a guide tube with an inert gas contact (reed contact) inside. When the fluid level rises or falls, the built-in reed contact is activated by the magnet. The functionality of the contact circuit can be checked by means of a movable contact insert.

The thermostat used is a fluid expansion thermometer with microswitch. The limit of temperature given in the HERMETIC-pump specifications can be adjusted on a temperature scale in the connecting head of the thermostat.

The level sensor N 30 as well as the Thermostat T 30 is a passive component, i.e. these devices are deemed to be "simple electrical equipment" acc. to EN 60079-11 without the need of being marked or certified as long as they are operated in a certified intrinsically safe current circuit.



## Level Sensor N 30

### Design

Float casing with welding socket and casing cap in stainless steel (1.4581), stainless steel (1.4571) float, stainless steel (1.4571) guide tube. Connection head in aluminium. Special materials on request: e.g. Hastelloy, PVDF. Type of protection: IP 65

### Application ranges

Type N 30.1:            −70 °C to +100 °C  
Type N 30.2:            −70 °C to +350 °C  
Contact function:      make contact on rising level  
Breaking capacity:    reed contact  $U_{\max.} \leq 25 \text{ V}$ ,  
                                   $I_{\max.} \leq 150 \text{ mA}$

### Standard design

for densities             $\geq 625 \text{ kg/m}^3$   
pressure rating        PN 25 (EN 764-1) – float 1.4571

### Special designs

for densities             $\geq 480 \text{ kg/m}^3$  PN 25, float Titan  
for densities             $\geq 625 \text{ kg/m}^3$  PN 40, float 1.4571  
– float made of Hastelloy  
– N 30 with flange connection DN 15

### Installation

The level sensor can be directly welded onto the pipe via two welding socket pieces. It is useful to install the level sensor in a vertical string of the suction line. The float casing must be located at least at the level of the pump discharge nozzle. No shut-off device of any kind is allowed between the float and the suction nozzle. If such an installation is not possible, the level sensor may alternatively be installed on the pump discharge side as well.

## Thermostat T 30

### Design

Copper temperature probe, protected against corrosion by a stainless steel (1.4571) conduit and a gasket. Inside and outside of casing treated with acid-resistant grey paint. Internal adjustment of the cut-off temperature with adjustment scale. Type of protection: IP 65

### Application ranges

Type T 30.1:            +20 °C to +150 °C  
Type T 30.2:            +100 °C to +370 °C  
Type T 30.3:            −30 °C to +40 °C  
Additional temperature ranges and switching functions on request.

### Installation

The thermostat is screwed tightly into the connection piece bore at the motor bearing cover. The connection piece also functions as conduit.

## Switching Amplifier S 30

### Types

S 30.9 – 120/230 V AC (R. STAHL 9170/10-12-21s)

S 30.10 – 24 V DC (R. STAHL 9170/10-12-11s)

EC type test certificate DMT 02 ATEX E 195 X

### Explosion protection acc. to Directive 94/9/EC

IEC 60079-0: 2007

EN 60079-11: 2007

### Intrinsic safety "i",

#### Ambient temperature $-20\text{ °C}$ to $+70\text{ °C}$

The switching amplifiers have intrinsic control inputs according to type of protection [Ex ia] IIC. The control may be done with potential-free contacts, two-wire initiators according to EN 60947-5-6 (NAMUR) or other resistance changes.

### Installation

The switching amplifier S 30 must be installed outside of explosive gas atmospheres, since only the pilot circuit is intrinsically safe. If there is a junction of the thermostat and level sensor lines at the pump, only a twin-wire signal line to the switching amplifier is required.

### Electrical data

Mains supply:	a) 110 V to 230 V AC (connections L, N, L+, L-, resp.) (96 V to 253 V) 1,8 VA
	b) 24 V DC (18 V to 31,2 V) about 0,8 W
Pilot circuit: (connections 10,11)	type of protection intrinsic safety [Ex ia] IIC
Peak values:	$U_o = 10,6\text{ V}$ , $I_o = 24\text{ mA}$ , $P_o = 64\text{ mW}$

### Output circuit (connections 1,2,3)

#### Power relay

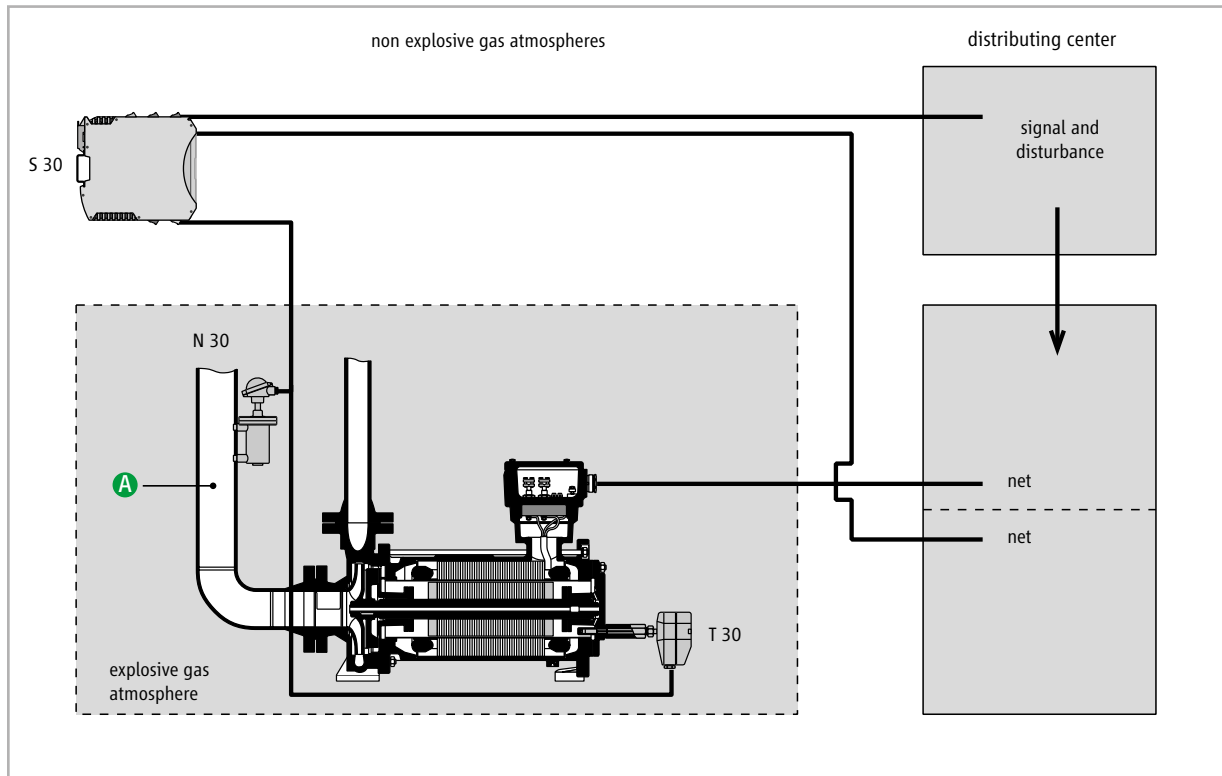
max. loading DC:	250 V / 2 A
max. loading AC:	250 V / 4 A
max. switching capacity:	50 W / 1000 VA

### Mechanical data

Dimension:	18 x 108 x 115 mm
Fixation:	onto connection bar or installation plate acc. to EN 50022
Weight:	~ 160 g
Position:	vertical, explosion-proof terminals, down
Place of installation:	outside of explosive gas atmosphere
Connecting terminals	
single-wire:	fixed 0,2 mm <sup>2</sup> to 2,5 mm <sup>2</sup> flexible 0,2 mm <sup>2</sup> to 2,5 mm <sup>2</sup> flexible with cable end sleeves 0,25 mm <sup>2</sup> to 2,5 mm <sup>2</sup>
twin-wire:	fixed 0,2 mm <sup>2</sup> to 1 mm <sup>2</sup> flexible 0,2 mm <sup>2</sup> to 1,5 mm <sup>2</sup> flexible with cable end sleeves 0,25 mm <sup>2</sup> to 1 mm <sup>2</sup>
Type of protection / casing:	IP 30
Type of protection / terminals:	IP 20
Range of operating temperature:	$-20\text{ °C}$ to $+70\text{ °C}$
Range of storage temperature:	$-40\text{ °C}$ to $+80\text{ °C}$
Relative liquid humidity:	$\leq 95\%$ (no wetting)

## Circuit diagram

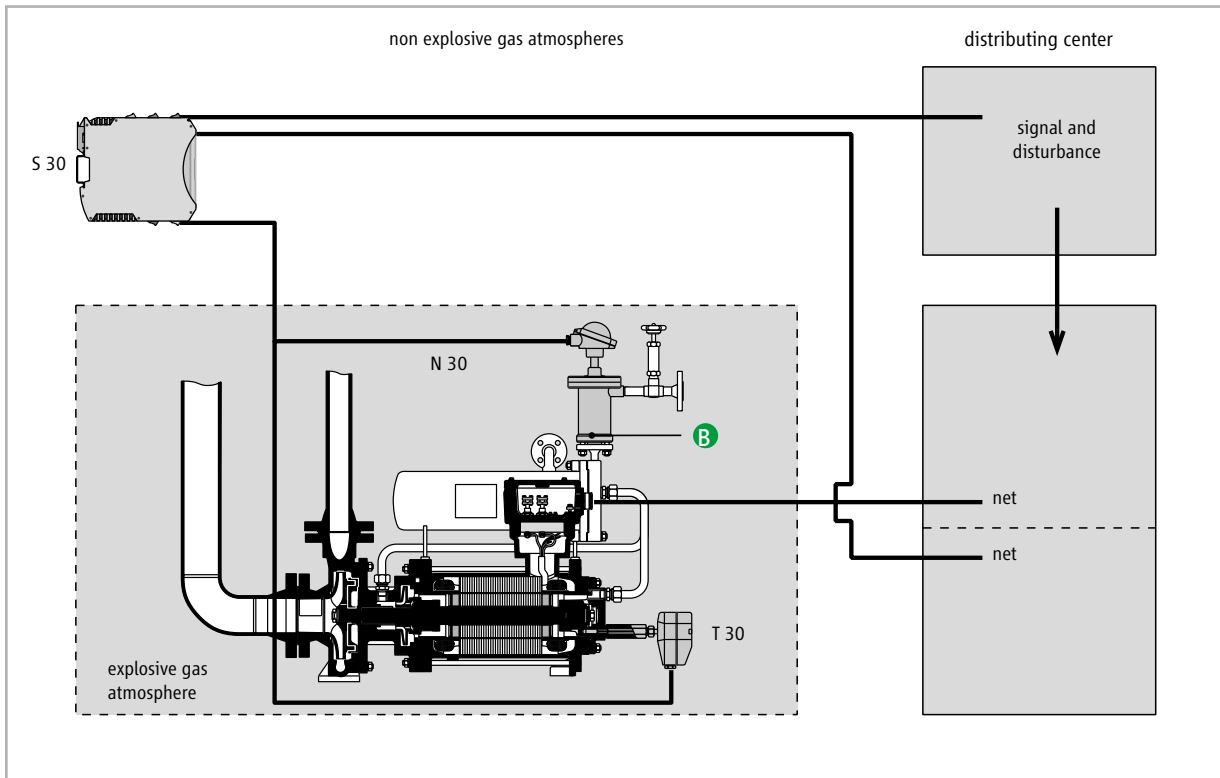
*for canned motor pumps (single- and multistage design)*



### **Mounting position** **A** suction side

In accordance with the PTB safety requirements it must be guaranteed that the rotor space of the canned motor is kept continuously filled with liquid and that no explosive atmosphere can be set up.

*for canned motor pumps with external cooling (single- and multistage design)*



**Mounting position B heat exchanger**

In accordance with the PTB safety requirements it must be guaranteed that the rotor space of the canned motor is kept continuously filled with liquid and that no explosive atmosphere can be set up.

## Convincing service.

Important features are readiness, mobility, flexibility, availability and reliability. We are anxious to ensure a pump operation at best availability and efficiency to our customers.

### *Installation and commissioning*

- service effected on site by own service technicians

### *Spare part servicing*

- prompt and longstanding availability
- customized assistance in spare part stockkeeping

### *Repair and overhauling*

- professional repairs including test run executed by the parent factory
- or executed by one of our service stations worldwide

### *Retrofit*

- retrofit of your centrifugal pumps by installing a canned motor to comply with the requirements of the IPPC Directive

### *Maintenance and service agreement*

- concepts individually worked out to increase the availability of your production facilities

### *Training and workshops*

- extra qualification of your staff to ensure the course of your manufacture

### **Among others, our products comply with:**

- Directive 2006/42/EC (Machinery Directive)
- Explosion protection acc. to Directive 94/9/EC (ATEX); UL; KOSHA; NEPSI; CQST; CSA; Rostechnadzor
- Directive 96/61/EC (IPPC Directive)
- Directive 1999/13/EC (VOC Directive)
- TA-Luft
- RCC-M, Niveau 1, 2, 3

### **HERMETIC-Pumpen GmbH**

#### **is certified acc. to:**

- ISO 9001:2008
- GOST; GOST "R"
- Directive 94/9/EC
- AD 2000 HP 0; Directive 97/23/EC
- DIN EN ISO 3834-2
- KTA 1401; AVS D 100 / 50; IAEA 50-C-Q
- Certified company acc. to § 19 I WH

PRODUKTINFO  
NTS/E/12/2010

All details as stated in this document comply with the technical standard that is applicable at the date of printing. These details are subject to technical innovations and modifications at any time.



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