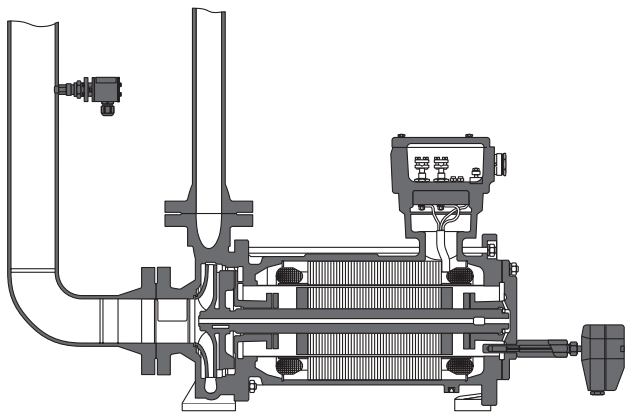


PRODUCT INFORMATION



Electronic level- and temperature  
monitoring device

Monitoring device OTV 30

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## Description

### General

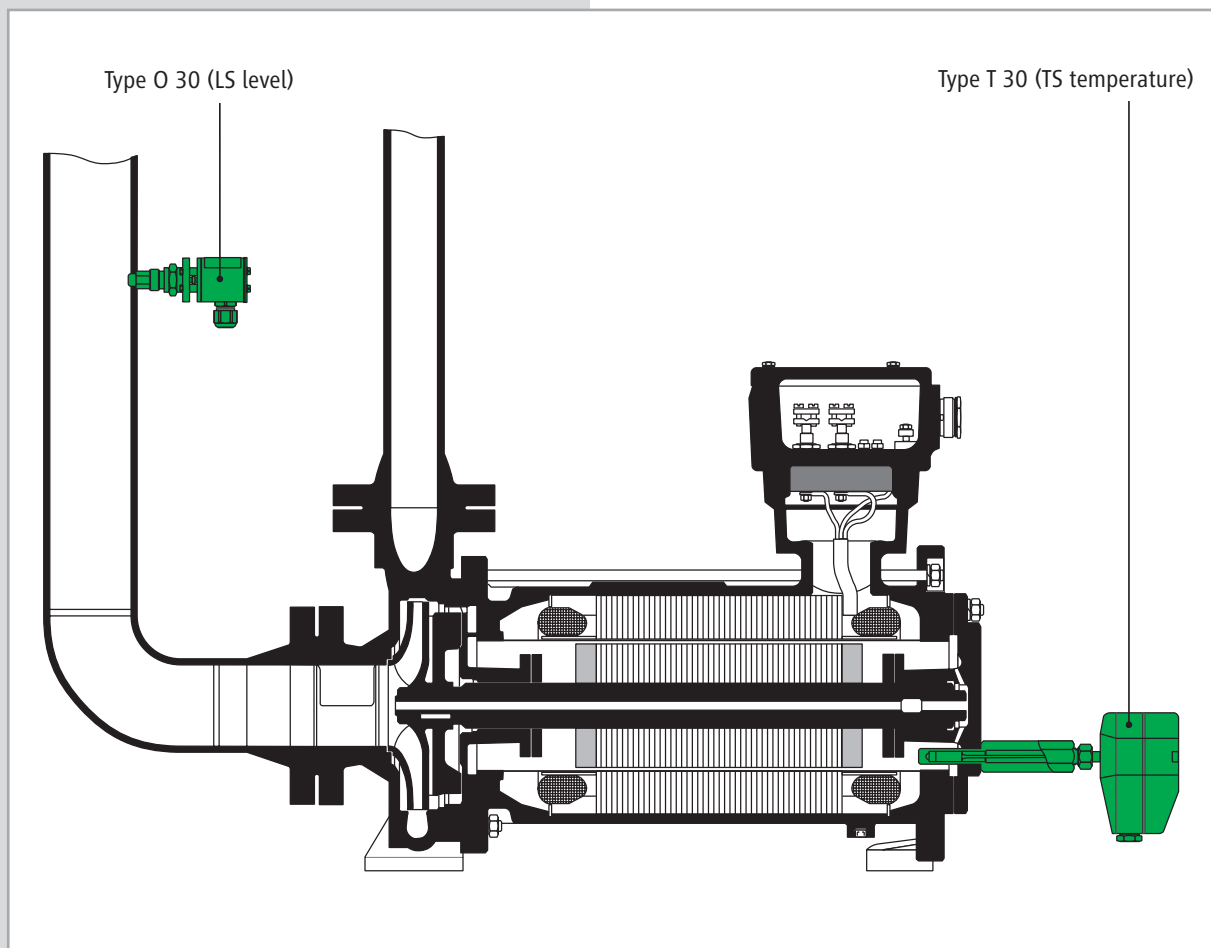
The most part of HERMETIC pumps are designed according to explosion protection requirements. The pumps comply with the requirements of the electrical as well as mechanical explosion protection.

### 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

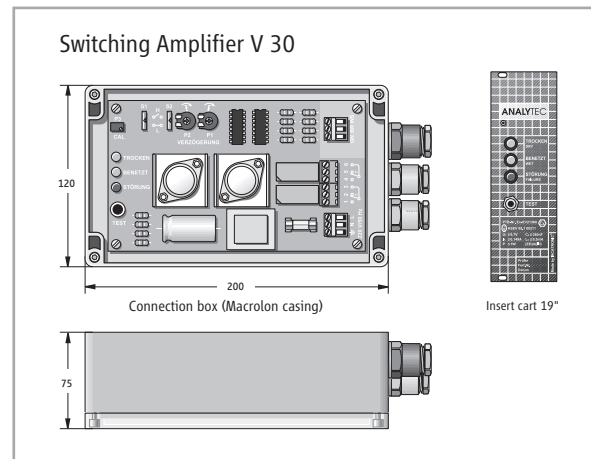
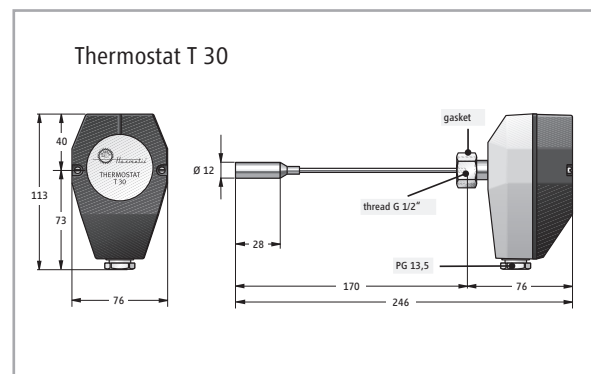
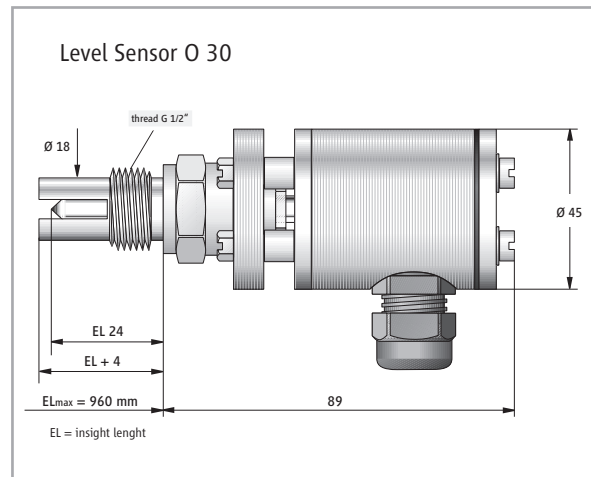
The monitoring device is comprised of level sensor (O 30), thermostat (T 30) and switching amplifier (V 30).

The O 30 level monitor directly measures the liquid level optoelectronically. The device utilises the difference in refractive index between liquids and gasses. Light from an LED is directed through a glass bar with a conical end. If the medium surrounding the end of the glass rod is gas the light is almost completely refracted back to a phototransistor located in the instrument head. On the other hand, if the glass rod is surrounded by liquid, the light is completely refracted into the liquid, and the phototransistor receives no light.

The output from the phototransistor can therefore be evaluated to represent "WET" and "DRY" and give control voltage via a switching amplifier.

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.

Considered as a passive, "standard electrical equipment", this device has not to be certified provided that it is installed in a tested and intrinsically safe electric circuit.




# Design and electrical data

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## Level Sensor O 30

### Certificate of conformity ZELM 02 ATEX 0087

#### Design

Sensor with stainless steel (1.4571) connection thread G 1/2", stainless steel sensor glass connection head. Special materials on request: e.g. Hastelloy, titanium. Type of protection: EEx ib IIC T 6 Ex  (sensor: zone 0).

#### Application ranges

Type O 30.1:            -60 °C to +250 °C  
                                  (standard design)  
Type O 30.2:            -273 °C to +400 °C  
                                  (with cooling ribs)  
Contact function:      normally open contact with  
                                  rising level

#### Standard design

for densities            all densities  
pressure rating        PN 25 (DIN 2401)

#### Special designs

Special materials      such as Hastelloy  
with flange connection up to DN 20  
seal weld

#### Installation

The level sensor can be directly welded onto the pipe. If the level sensor is installed in a vertical string of the suction line, it 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 as well. The tip of the sensor should at least project 10 mm into the pipe cross section, but should be more than 15 mm away from the opposite wall of the pipe.

## 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.

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## Switching Amplifier V 30

Type: V 30.3 – 230 VAC, V 30.4 – 24 VAC, V 30.5 – 24 VDC

Certificate of conformity ZELM 02 ATEX 0106 [IEEx ib] II C

### European standard

EN 50014: 1977

EN 50020: 1977

### Intrinsic safety "i", ambient temperature

Insert card 70 °C max.

Macrolon casing 40 °C max.

Compact amplifier in macrolon casing IP 64 or insert card 19" SPDT "signal" / SPDT "failure"

Operating voltage alternatively 230 V ~, 24 V ~, 24 DC

### 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: for amplifier type

(clamps): V 30.3 – 230 V ~,

V 30.4 – 24 V ~,

V 30.5 – 24 VDC,

48 ... 68 Hz, about 3 VA

Pilot circuit: type of protection

"intrinsic safety" [IEEx ib] IIC

(clamps): peak values:

$U \leq 9,7 \text{ V}$ ,  $I \leq 0,149 \text{ A}$

### Line length

with max. 1,5 600 m

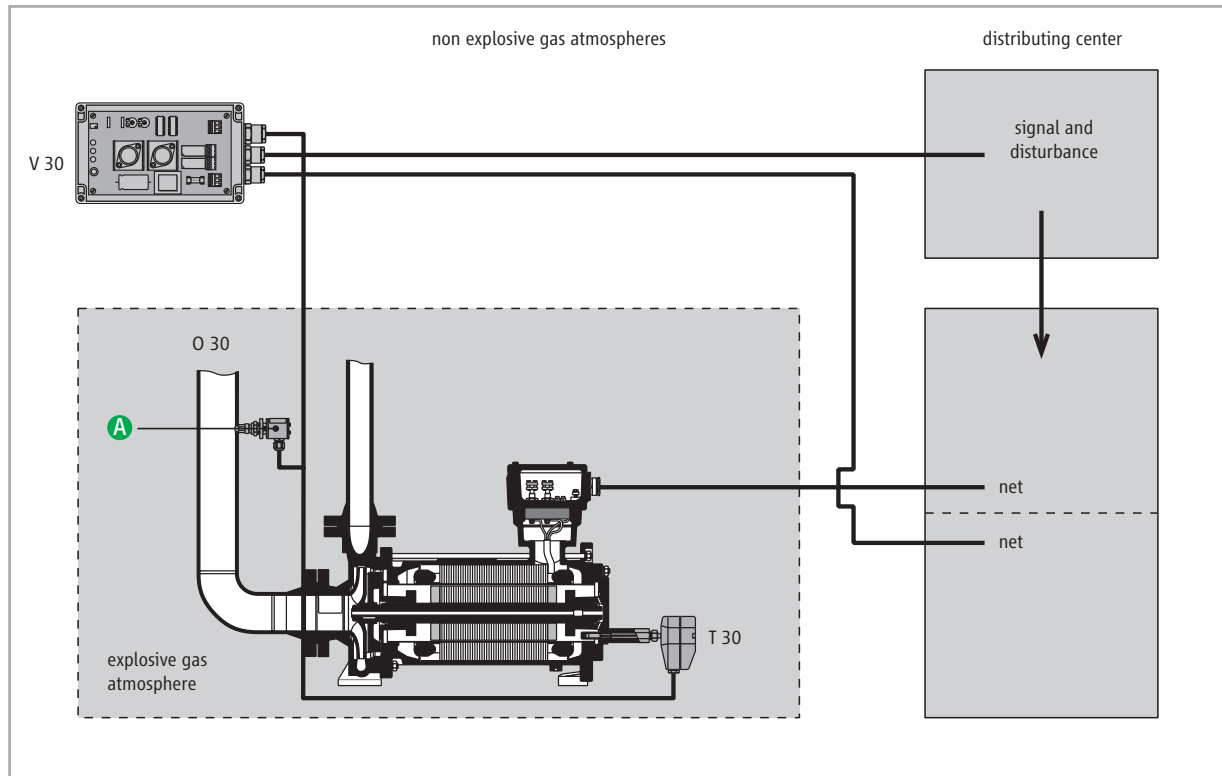
### Output circuit

Output circuit  $U - \leq 250 \text{ V}$ ,  $\leq 4 \text{ A}$ ,  $\cos \varphi \geq 0,7$

Clamps 1, 2, 3 = active switching contacts

## Circuit diagram

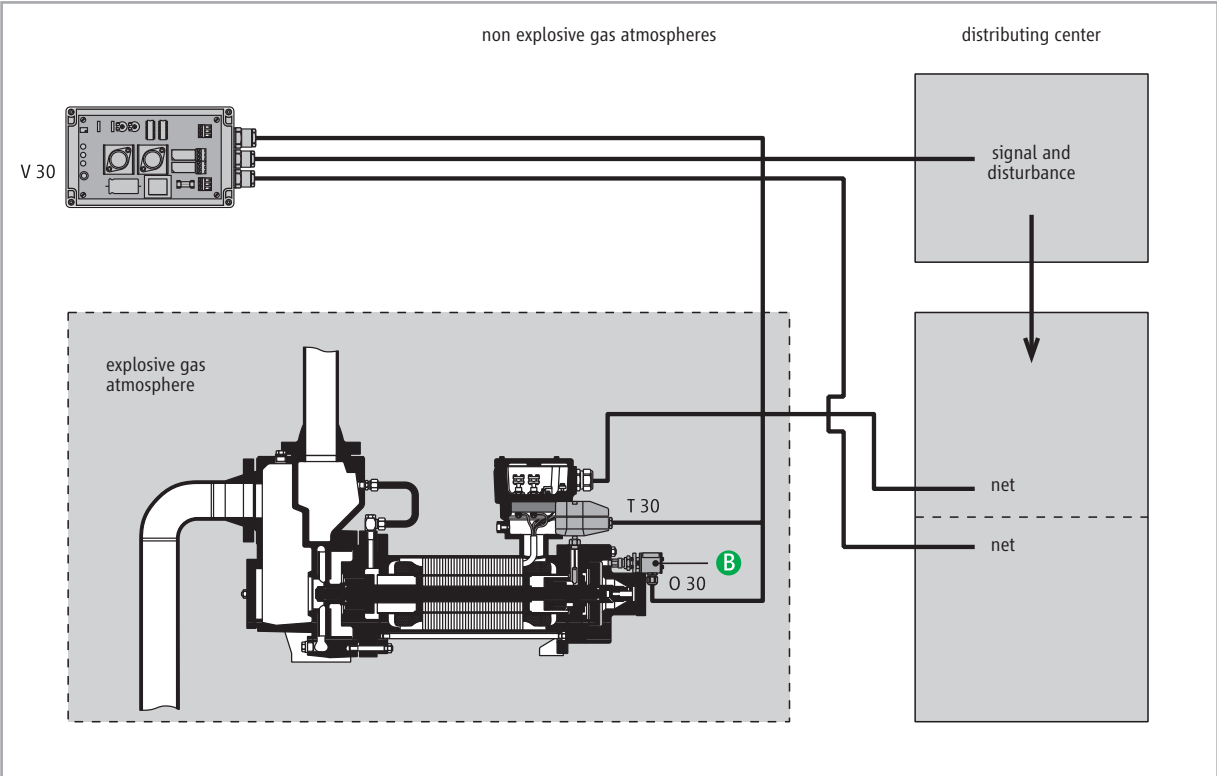
for canned motor pumps (single- and multistage design)



### 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 self priming canned motor pumps (single- and multistage design)*



**Mounting position B**

In case of type CS, the installation is effected on motor-sided bearing cover. The level sensor O 30 must be located above the level of the liquid to be conveyed in rotor cavity.

## 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

### *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

### **Our products comply with:**

- Explosion protection acc. to ATEX / UL / CQST / CSA
- VOC directive 1999/13/EC
- TA-Luft
- IPPC directive
- CE
- RCCM, level 2
- Rosgortechnazdor

### **HERMETIC-Pumpen GmbH**

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

- ISO 9001:2000
- GOST "R"
- ATEX 94/9/EG
- AD HP 0 / TRD 201
- DIN EN 729-2
- KTA 1401, QSP 4a