

# POTENTIALLY HAZARDOUS AREAS



Ex-approved temperature and pressure monitoring solutions



- Pressure switches
- Pressure transmitters
- Thermostats



# Trafag – Swiss quality solutions to rely on

Trafag draws from decades of experience in the design and manufacturing of pressure and temperature measuring instruments for hazardous area applications. We continuously meet the rising expectations in respect of safety and reliability of our products. These products provide reliable functionality in various hazardous zones with ATEX and in many cases also IECEx certification.

## CE - Designation and marking

**CE** 1258 **Ex** **II 2** **GD**

Control No. of notified body for the supervision of the quality assurance system

I: Mining  
II: All other applications

Category (see below)

G = Gas  
D = Dust

- Category 1: Can be used in zone 0 (gas) and 20 (dust)
  - Potentially explosive atmosphere: Permanent
  - Two independent failures – safety
- Category 2: Can be used in zone 1 (gas) and 21 (dust)
  - Potentially explosive atmosphere: Regularly
  - One failure – safety
- Category 3: Can be used in zone 2 (gas) and 22 (dust)
  - Potentially explosive atmosphere: Unlikely or for very short time

## IEC/EN 60079-0 – Gases

**Ex ia IIC T6 Ga**

Type of protection

Equipment groups (for gases)

Temperature class

Equipment protection level

- Type of protection: Intrinsically safe
- Equipment group (gases): IIC = Hydrogen, Acetylene
- Temperature level: Defines ignition temperature and permissible temperature of equipment surface
- Protection level: Referring to installation zone (Ga = Zone 0 = Category 1 in ATEX)

## IEC/EN 60079-0 – Dust

**Ex ia IIIC T130°C Da**

Type of protection

Equipment groups (for dust)

Surface temperature

Equipment protection level

- Type of protection: Intrinsically safe, powder filling, encapsulation, ...
- Equipment group (dust): IIIC = Conductive dust
- Temperature level: Defines maximum surface temperature
- Protection level: Referring to installation zone (Da = Zone 20 = Category 1 in ATEX)

## EN 50303 - Mining

**Ex ia I Ma**

Type of protection

Equipment for mining

Equipment protection level

- Category and Protection level:
  - Category M1 / Protection level Ma: Fully functional and safe when explosive atmosphere is present. Requires means to cope with two independent failures
  - Category M2 / Protection level Mb: These products are intended to be deenergised in the presence of an explosive atmosphere

# Ex-Product lines for pressure and temperature control

Trafag offers a wide range of EX-, ATEX- and IECEx approved products for pressure and temperature monitoring. These products provide reliable functionality in various hazardous zones, with a guaranteed safety operation. In addition to both CE and ATEX-conformance, Trafag products are also extremely fail-safe.



## Pressure transmitters

The electronic pressure transmitters are based on Trafag's own sensor technologies, thin-film-on-steel and thick-film-on-ceramic as well as complementary high-end piezoresistive sensors for special applications. The vast portfolio of options and features allows a perfect fit for a wide range of demands.



## Pressure switches

Trafag's mechanical pressure switches offer high vibration resistance and switchpoint accuracy in combination with an extraordinary rugged design for years of maintenance-free operation in rough conditions. Different sensors based on bellows, membrane and piston principle cover a wide range of pressure ranges, media and load cycle profiles.



## Thermostats

For 70 years Trafag thermostats have proven their robustness in order to withstand the most adverse environmental conditions. Industry usage ranges from air conditioning applications to engine and ship manufacturing and even to offshore oil and gas platform production. The appeal of Trafag thermostats lies in their high switching point precision even after decades of operation under harsh conditions without maintenance.

# EXNT 8292

## Ex pressure transmitter



Optional with hydrogen-compatible sensor



### Features

- II 1G Ex ia IIC T4/T6 Ga  
II 1D Ex ia IIIC T130° Da  
I M1 Ex ia I Ma  
II 1/2G Ex ia IIC T4/T6 Ga/Gb (with plastic-type connector)
- Pressure ranges from 0.4 to 2000 bar
- Completely welded sensor system
- Optional with hydrogen-compatible sensor
- ATEX and IECEx

### Technical Data

Measuring principle	Thin-film-on-steel
Measuring range	0 ... 0.4 to 0 ... 2000 bar 0 ... 5 to 0 ... 30000 psi
Output signal	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Media temperature	Max. -40°C ... +120°C
Ambient temperature	Max. -40°C ... +120°C
Approval / conformity	GL, KRS, RMRS ATEX / IECEx, according to the norm EN/IEC 60079-0/EN 60079-11/ EN 60079-26/ EN 50303



Data sheet

[www.trafag.com/H72329](http://www.trafag.com/H72329)

# EXL 8432

## Ex submersible pressure transmitter



### Features

- II 1G Ex ia IIC T4/T6 Ga  
I M1 Ex ia I Ma
- Good media compatibility
- Cable PUR/PE or FEP
- EMC protection, IEC 61000

### Technical Data

Measuring principle	Thick-film-on-ceramic
Measuring range	0 ... 0.2 to 0 ... 10 bar
Output signal	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.3 % FS typ. ± 0.5 % FS typ.
Media temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
Ambient temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
Approval / conformity	GL, KRS Ex ATEX/IECEx, EN 60079-0/ EN 60079-11/EN 60079-26/ EN 50303



Data sheet

[www.trafag.com/H72330](http://www.trafag.com/H72330)

# EPN 8298

## Engine pressure transmitter



### Features

- II 3G Ex ec IIC T4 Gc
- High vibration resistance
- Good temperature resistance
- Different accuracy classes
- Completely welded steel sensor system without additional seals

### Technical Data

Measuring principle	Thin-film-on-steel
Measuring range	0 ... 2.5 to 0 ... 2500 bar
Output signal	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Media temperature	-40°C ... +125°C
Ambient temperature	-40°C ... +125°C
Approval / conformity	ABS, BV, CCS, DNV-GL, KRS, LRS, NKK, RINA, RMRS



Data sheet

[www.trafag.com/H72312](http://www.trafag.com/H72312)

# EXNA 8854

## Ex pressure transmitter



### Features

- Ex ATEX / IECEx
- Pressure ranges from 100 mbar
- Versions with frontal flush diaphragm
- Media temperature to 150°C
- EMC protection, IEC 61000

### Technical Data

Measuring principle	Piezoresistive
Measuring range	0 ... 0.1 to 0 ... 1000 bar
Output signal	4 ... 20 mA
Media temperature	T3: -40°C ... +150°C T4: -40°C ... +100°C T6: -40°C ... +50°C
Approval / conformity	DNV-GL Ex according to standards, IEC/EN 60079-0 / -11/-26, EN 50303
Type of protection	Ex II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIIC T145°C Da I M1 Ex ia I Ma



Data sheet

[www.trafag.com/H72334](http://www.trafag.com/H72334)



# EXNA 8852/8853

## Ex pressure transmitter



### Features

- Ex SEV 11 ATEX 0145 X
- Pressure ranges from 100 mbar
- Versions with frontal flush diaphragm
- Media temperature to 150°C
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

### Technical Data

Measuring principle	Piezoresistive
Measuring range	0 ... 0.1 to 0 ... 1000 bar
Output signal	4 ... 20 mA
Media temperature	T3: -25°C ... +150°C T4: -25°C ... +100°C T6: -25°C ... +55°C
Ambient temperature	T3/T4: -25°C ... +85°C T6: -25°C ... +55°C
Approval / conformity	GL, KRS
Type of protection	Ex II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIIC T125°C Da I M1 Ex ia I Ma



Data sheet

[www.trafag.com/H72227](http://www.trafag.com/H72227)

# EXNAL 8858

## Ex submersible pressure transmitter



### Features

- Pressure ranges from 100 mbar
- Cable PUR or FEP
- Chemical resistant material, e.g. titanium
- Explosion-proof Ex ia IIC T3 ... T6
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

### Technical Data

Measuring principle	Piezoresistive
Measuring range	0 ... 0.1 to 0 ... 25 bar
Output signal	4 ... 20 mA
Media temperature	T4/T6: -5°C ... +50°C
Ambient temperature	T4/T6: -5°C ... +50°C
Approval / conformity	GL, KRS
Type of protection	Ex II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIIC T125°C Da I M1 Ex ia I Ma



Data sheet

[www.trafag.com/H72231](http://www.trafag.com/H72231)

# EXS 404/414

## EX industat



### Features

- Compact design
- Rugged housing
- Any mounting position possible
- Ex db eb IIC T6 Gb
- Ex tb IIIC T80°C Db

### Technical Data

Designation of application	Ex Industrial thermostat with remote sensor
Measuring range	-30°C ... +40°C to +70°C ... +350°C
Output signal	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 0.5 % FS typ.
Approval / conformity	SEV 15 ATEX 0156 X IECEX SEV 17.0010X



Data sheet

[www.trafag.com/H72108](http://www.trafag.com/H72108)

# EXAS 409/419

## Ex indu ambistat



### Features

- Compact design
- Rugged housing
- Protection IP65
- Ex db eb IIC T6 Gb
- Ex tb IIIC T80°C Db

### Technical Data

Designation of application	Ex Industrial room thermostat
Measuring range	-30°C ... +30°C to 0°C ... +60°C
Output signal	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 0.5 % FS typ.
Approval / conformity	SEV 15 ATEX 0156 X IECEX SEV 17.0010X



Data sheet

[www.trafag.com/H72128](http://www.trafag.com/H72128)

# EXP 900/904/912

## Ex pressostat



### Features

- Rugged aluminium housing, option: housing stainless steel
- Protection IP66
- Any mounting position possible
- Ex db eb IIC T6 Gb
- Ex tb IIIC T80°C Db



### Technical Data

Measuring principle	Bellow
Measuring range	-0.9 ... 1.5 to 4 ... 40 bar
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-40°C ... +150°C
Approval / conformity	SEV 15 ATEX 0157 X IECEX SEV 17.0013X
Type of protection	Areas with gaz explosion hazards: II 2 G Ex db eb IIC T6 Gb Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db



Data sheet

[www.trafag.com/H72263](http://www.trafag.com/H72263)

# EXPK 944/947/953

## Ex pressostat



### Features

- Rugged aluminium housing, option: housing stainless steel
- Protection IP66
- Any mounting position possible
- Ex db eb IIC T6 Gb
- Ex tb IIIC T80°C Db



### Technical Data

Measuring principle	Piston
Measuring range	1 ... 10 to 60 ... 600 bar
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	NBR: -30°C ... +100°C FKM: -15°C ... +150°C
Approval / conformity	SEV 15 ATEX 0157 X IECEX SEV 17.0013X
Type of protection	Areas with gas explosion hazards: II 2 G Ex db eb IIC T6 Gb; Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db



Data sheet

[www.trafag.com/H72270](http://www.trafag.com/H72270)



# EXPD 920/924/932

## Ex differential pressostat



### Features

- Rugged aluminium housing
- Protection IP66
- Ex db eb IIC T6 Gb
- Ex tb IIIC T80°C Db
- Any mounting position possible

### Technical Data

Measuring principle	Bellow
Measuring range	-1 ... 6 to -1 ... 18 bar
Differential pressure	-0.6 ... 3.4 to 1 ... 16 bar
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-50°C ... +150°C
Approval / conformity	SEV 15 ATEX 0157 X IECEX SEV 17.0013X
Type of protection	Areas with gas explosion hazards: II 2G Ex db eb IIC T6 Gb; Areas with dust explosion hazards: II 2D Ex tb IIIC T80°C Db

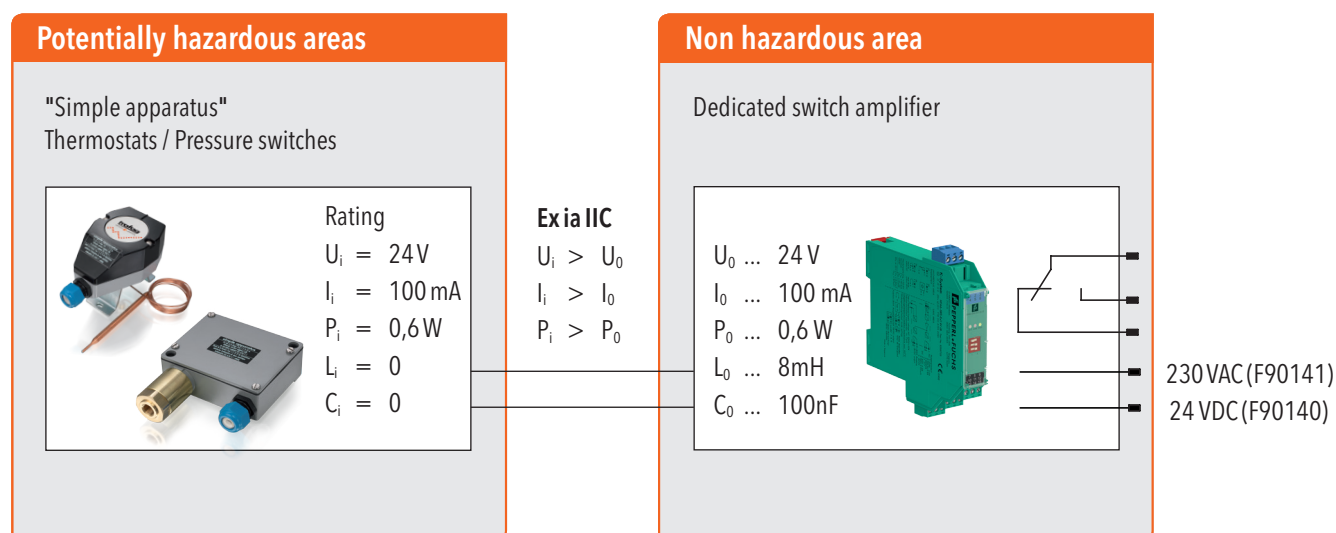


Data sheet

[www.trafag.com/H72256](http://www.trafag.com/H72256)

# Simple Apparatus

Pressostats and Thermostats, when combined with a certified switch amplifier (Zener barrier/Zener relay), can be used as "simple electrical apparatus" in Zone 1 and 2, as well as in Zone 21 and 22, according to IEC/EN 60079-11. These pressostats and thermostats are not suitable for Zone 0 and Zone 20. The use in safety relevant applications (approved electrical apparatus) is not permitted. Switch amplifiers are suitable for intrinsically safe applications. The device transmits signals from the hazardous area into the safe area.



Recommended switch amplifier (see chapter „Accessories“):

Trafag parts no.: ZEN230VAC (230 VAC)  
 ZEN24VDC (24 VDC)

If another type of switch amplifier is used, make sure its electrical rating limits are within the specification of the „Simple Apparatus“ thermostat or pressostat.

# «Simple Apparatus» conformity to ATEX 904/924/947

## Pressure switches



### Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible
- May be used as „simple apparatus“ in zones at risk of explosions

### Technical Data

Sensor technology	Bellow / Piston
Measuring range	904: -0.9 ... 1.5 to 10 ... 100 bar 924: -1 ... 6 to -1 ... 18 bar 947: 1 ... 10 to 60 ... 600 bar
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	904 / 924: -40 ... +150 °C 947: Seal NBR: -30 ... +100 °C Seal FKM: -15 ... +150 °C
Sensor material	1.4435 (AISI316L) / Bronze / Bronze nickel plated
Housing material	AlSi10Mg/ Epoxy coated



Data sheet 904  
[www.trafag.com/H72364](http://www.trafag.com/H72364)



Data sheet 924  
[www.trafag.com/H72365](http://www.trafag.com/H72365)



Data sheet 947  
[www.trafag.com/H72366](http://www.trafag.com/H72366)

# «Simple Apparatus» conformity to ATEX 414/419

## Thermostats



### Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible
- May be used as „simple apparatus“ in zones at risk of explosions

### Technical Data

Sensor technology	414: Capillary tube with remote sensor 419: Sensor coil
Measuring range	414: -30 ... +40 to +70 ... +350°C 419: -30 ... +30 to 0 ... +60°C
Output signal	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 0.5 % FS typ.
Shock	50 g / 11 ms
Sensor material	Stainless steel / Copper / Copper nickel plated
Housing material	AlSi9Cu3, coated



Data sheet 414  
[www.trafag.com/H72183](http://www.trafag.com/H72183)



Data sheet 419  
[www.trafag.com/H72182](http://www.trafag.com/H72182)



# Reliable quality

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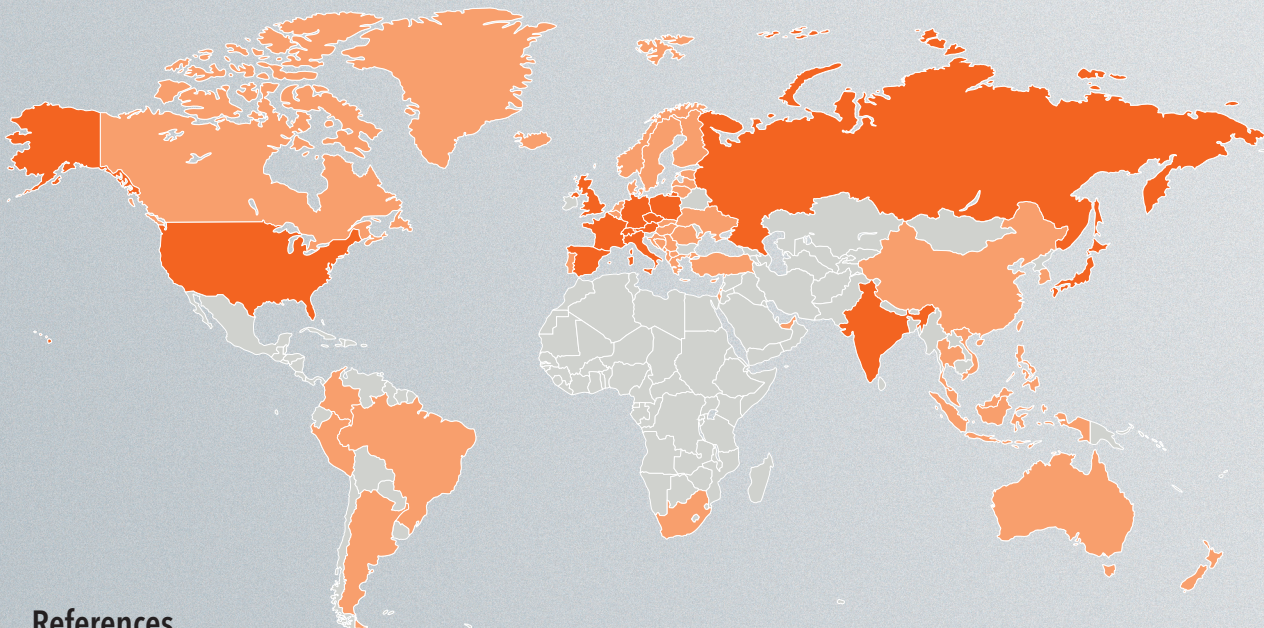
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## References

ABB | AIT | AKG | Alstom | ArevaT&D | Atos | AVL | Benninghoven | Bharat Heavy Electrical | Blohm & Voss | Bombardier | Bosch Rexroth | BMW Rolls-Royce  
Bühler | Caterpillar | Charmilles | Dalian Marine Diesel Ltd. | Detroit Diesel | Deutsche Bahn AG | Doosan Group | Dräger | Electrolux | Elektrobudowa S.A.  
Faiveley | Fincantieri | Flender | Goninan | Greenfield | G&W | Hermetic Pumpen | Roche | Hudong Heavy Machinery | Hyundai Heavy Industries | IAV  
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STX Heavy Industries | Thermax Limited | Toshiba | Trumpf | Verolme Shipyards | Vesta | Viessmann | Voith | Wärtsilä | Westfalia Separator | W&H  
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