

Dräger PIR 7000

The Dräger PIR 7000 is an explosion proof point infrared gas detector for continuous monitoring of flammable gases and vapours. With its stainless steel SS 316L enclosure and drift-free optics this detector is built for the harshest industrial environments, e.g. offshore installations.



Two models of the Dräger PIR 7000 are available – type 334 and type 340. Each model works with a different measuring wavelength, thus giving the broadest possible range of detectable substances with superior accuracy.

Advanced signal stability

Following the success of the most stable point infrared gas detector worldwide – the Dräger Polytron IR – Dräger now introduce the Dräger PIR 7000 which encompasses the latest in revolutionary technology.

Based on patented innovations, the Dräger PIR 7000 combines a maximum light collecting construction with a 4-beam signal stabilising system. The total optical system uses no light beam split, simply a set of various reflectors. This double-compensating optical system is very resistant towards known influences such as dust, fog or insects frequently found in the measuring cuvette or by dirt accumulation on the optical surfaces. Due to its non-imaging construction, the measuring signal is not affected by a partial beam block.

This innovative optical system ensures that the Dräger PIR 7000 fulfils the customer requirements of “no false alarms”, longer service intervals and a drift-free signal output.

Fast response

Equally important is being informed about a potential hazard as early as possible. An early and reliable gas alarm allows for safety measures to be initiated on site.

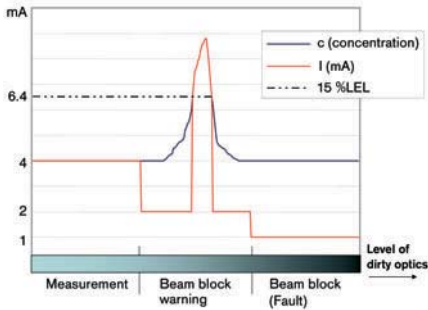
To support this, the Dräger PIR 7000 offers a configurable response mode which allows the end user to choose between “normal” or “high speed” response subject to the application. Using the “high speed” option, and combining it with the lowest feasible alarm threshold, the Dräger PIR 7000 shortens the reaction time in case of an alarm. Leakages can be detected at the earliest stage of their existence.



reddot design award
winner 2008



Dräger PIR 7000
Configurable IR gas detector for reliable detection of flammable gases and vapours



Beam block warning

Special warning informs about contaminated optical surfaces – providing the possibility to schedule preventive maintenance

Multiple configuration capabilities

The Dräger PIR 7000 is delivered with the optimum default settings, but remains fully flexible to meet with the customers demands on an application-by-application basis. Whether it be reduced measuring ranges, configurable special signals (fault, beam block warning, maintenance), adjustable LEL values (values which are different across regions) all coupled with the configurable gas library (for other substances to be monitored) – all these features of the Dräger PIR 7000 offer the possibility to set up every device exactly to the customer’s needs and preferences.

Maximum reliability – SIL 2 certified

After almost two decades of experience with infrared technology, leading to a continuously enhanced product quality, the Dräger PIR 7000 is further advanced as the total product has been developed inline with the Functional Safety standard EN 61508. This is applicable to both the devices hardware and software.

Furthermore, the excellent parameters as detailed in the SIL 2 (Safety Integrity Level) certificate, issued by the German TÜV show that only 2 % from the entire SIL 2 budget is allocated to the field device, thus providing flexibility to choose control systems and actuators.

This is a new understanding of reliability – not only fulfilling but exceeding the SIL 2 requirements significantly.

Enclosure made of stainless steel SS 316L

Various accessories to be installed

Sapphire window

Contact area for magnetic wand – no extra tool for calibration

Heated optics

Coated reflector



ST-11664-2007

Dräger PIR 7000 offers:

- Configurable gas library – methane, propane and ethylene fixed, up to 10 additional substances can be uploaded
- Multiple mounting and configuration capabilities (signals acc. to NAMUR NE 43)
- Precise and stable measurement
- Fastest response of less than 1 second
- Beam block warning in case of dirty optics for preventive maintenance
- Long maintenance intervals
- Extended temperature range of up to + 77 °C / + 170 °F
- Double-compensating, non-imaging optics (using 4-beam technology)
- Single cable multidrop capability using HART® communication
- Conventional 4 to 20 mA analogue signal output
- Hermetically sealed SS 316L enclosure
- Integrated tag holder for individual labelling
- No moving parts
- Resistant towards shock and vibration up to 4 G
- Continuous self-testing in the context of the IEC/EN 61508 standard
- Developed and manufactured according to the SIL guidelines, SIL 2 certified by TÜV
- Ex approvals for worldwide application: ATEX, IECEx, UL, CSA
- Dust approval for zone 21 and 22
- Typical lifetime greater than 15 years



ST-11679-2007

Splash guard

Protects the measuring cuvette against splash and jet water, rain, dirt and insects – supports the fast response with its chimney effect – easy to retrieve as well during night due to its reflecting red stripes



ST-11676-2008

Junction box

Advanced junction box (Ex e approved) with large inner volume – easy and convenient handling – flexible installation possible by rotatability (four times 90°)

ORDER INFORMATION

Dräger PIR 7000

| | |
|---|-----------|
| Dräger PIR 7000 type 334 (NPT) HART | 68 11 552 |
| Dräger PIR 7000 type 334 (M25) HART | 68 11 550 |
| Dräger PIR 7000 type 334 (M25) HART, complete set | 68 11 817 |
| Dräger PIR 7000 type 340 (NPT) HART | 68 11 562 |
| Dräger PIR 7000 type 340 (M25) HART | 68 11 560 |
| Dräger PIR 7000 type 340 (M25) HART, complete set | 68 11 819 |

The complete set contains an Ex e junction box, splash guard, status indicator and mounting set, already pre-assembled.

Accessories

| | |
|---------------------|-----------|
| Mounting set | 68 11 648 |
| Duct mount set | 68 11 850 |
| Splash guard | 68 11 911 |
| Insect guard | 68 11 609 |
| Hydrophobic filter | 68 11 890 |
| Calibration adapter | 68 11 610 |
| Status indicator | 68 11 625 |
| Flowcell | 68 11 490 |
| Bump test adapter | 68 11 630 |
| Process adapter | 68 11 915 |
| Process cuvette | 68 11 415 |
| Magnetic wand | 45 43 428 |
| USB PC adapter | 68 11 663 |



ST-11686-2007

Process cuvette

For sampling and in-line applications – reduces the inner volume of the measuring cuvette, thus providing a faster speed of response under flow conditions – made of stainless steel

TECHNICAL DATA

Dräger PIR 7000

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|---|---|---|--|
| Type | Explosion proof gas transmitter with infrared sensor technology | | |
| Principle of operation | Temperature-compensated infrared absorption, 4-beam technology | | |
| Gases and ranges | Methane, propane, ethylene | 0 to 20...100 %LEL | |
| | Methane | 0 to 100 % vol. | |
| | Further substances and measuring ranges on request | | |
| Measuring performance (type 334, methane, 0 to 100 %LEL) | Digital resolution | 0.5 %LEL | |
| | Repeatability | ± 1 %LEL | |
| | Response time $t_{0..90}$ | ≤ 4 seconds ("normal response") < 1 second ("fast response") | |
| | Long-term drift | ± 1 %LEL after 12 months | |
| Electrical data | Output signals | 4 to 20 mA, HART® | |
| | Fault signal | ≤ 1.2 mA (configurable) | |
| | Beam block warning signal | 2 mA (configurable) | |
| | Maintenance signal | 3 mA (configurable) | |
| | Power supply | 13 to 30 V DC, 3-wire | |
| | Power consumption | 5.6 W (typical) | |
| | Ambient conditions | Temperature | - 40 to + 77 °C / - 40 to + 170 °F (operating) - 40 to + 85 °C / - 40 to + 180 °F (storage) |
| Enclosure | Humidity | 0 to 100 %RH | |
| | Pressure | 700 to 1300 hPa / 23.6 to 32.5 inch Hg | |
| | Material | Stainless steel SS 316L | |
| | Connecting thread | M25 or ¾" NPT | |
| | Weight | 2.2 kg (without accessories) | |
| | Dimensions | 160 mm x Ø 89 mm / 6.3 " x Ø 3.5 " | |
| Approvals | Ingress protection | IP 66 and IP 67, NEMA 4X | |
| | ┌ | ATEX | II 2G Ex d(e) IIC T6/T4 II 2D Ex tD A21 IP65 T80 °C/T130 °C |
| | | └ | IECEX |
| | ┌ | UL (Classified) | Class I, Div. 1, Groups A, B, C, D Class II, Div. 1, Groups E, F, G |
| | | CSA (C-US) | Class I, Div. 1, Groups B, C, D Class II, Div. 1, Groups E, F, G |
| | | Safety Integrity Level | SIL2 certified by TÜV (EN 61508, EN 50402) |
| | └ | CE mark: electromagnetic compatibility (directive 89/336/EEC) | |

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