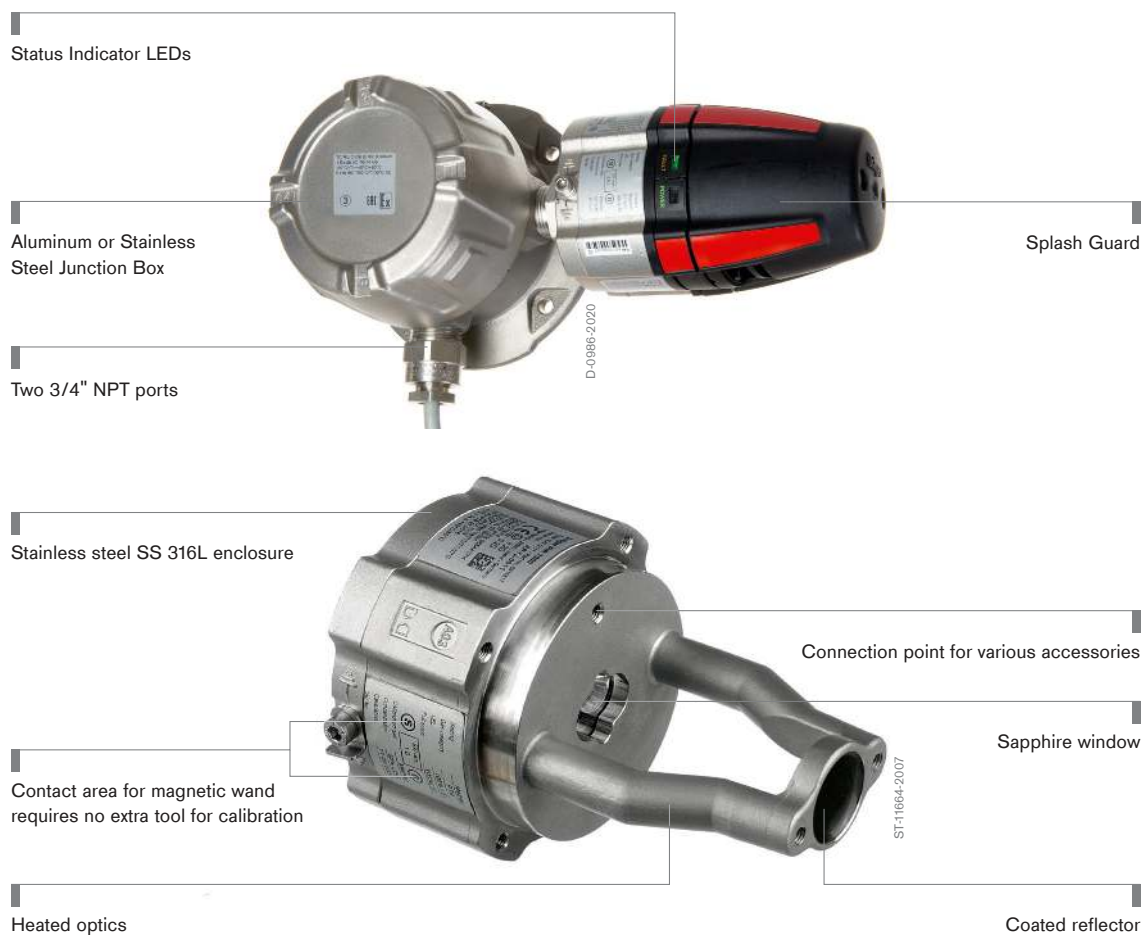# Dräger PIR 7000
Flammable Gas Detection Transmitter

The Dräger PIR 7000 is an explosion-proof point gas detection transmitter that uses infrared (IR) technology to continuously monitor hydrocarbon gases in %LEL or ppm. With its stainless steel SS 316L enclosure and drift-free optics, this detector is built for the harshest industrial environments, including offshore installations.

Status Indicator LEDs

Aluminum or Stainless Steel Junction Box

Splash Guard

Two 3/4" NPT ports

D-0986-2020

Stainless steel SS 316L enclosure

Connection point for various accessories

Sapphire window

Contact area for magnetic wand requires no extra tool for calibration

ST-11664-2007

Heated optics

Coated reflector

Dräger. Technology for Life ®

Benefits

Accurately detects a wide range of flammable substances

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

Choose a target gas with the embedded gas library

Dräger PIR 7000 comes standard with 3 gases (methane, propane, ethylene) and a maximum capacity of 10 embedded gases in its memory. Update the embedded gas library from a list of over 80 available gases using Dräger Polysoft® Premium software for a high degree of application flexibility.

Switch between the embedded library target gases without having to recalibrate the sensor. Any gas in the library can automatically be cross-calibrated with commercially available calibration gases such as methane or propane without needing complicated correction factors. The measuring range can be freely adjusted between 0 – 350 ppm and 0 – 100 % LEL enabling a wide variety of applications.

The available Dräger PRC PC software allows for automatic on the fly changing of target gas curves during operation for process applications such as solvent drying ovens.

Advanced signal stability

Following the success of the most stable point infrared gas detector worldwide—the Dräger Polytron IR— Dräger has introduced the 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 stabilizing system. The total optical system uses no light beam split, simply a set of various reflectors. This double-compensating optical system is very resistant to accumulation of dirt on the optical surface, as well as known influences such as dust, fog and insects, which are frequently found in the measuring cuvette. 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 fulfills the customer requirements of no false alarms, longer service intervals, and a drift-free signal output.

Early detection enables fast response

For optimal safety, it is essential to be informed about a potential hazard as early as possible. A reliable gas monitor that detects leakages at the earliest stage allows you to initiate safety measures on site.

To support fast response, the Dräger PIR 7000 offers a configurable response mode that lets you choose between "normal" or "high speed" response, subject to the application. By 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.

Benefits

Multiple configuration capabilities

The Dräger PIR 7000 has a maximum number of default settings, but remains fully flexible to meet your needs on an application-by-application basis—whether you want to reduce measuring ranges, configure special signals (fault, beam block warning, maintenance), or adjust LEL values that 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 enable you to set up every device exactly to your specific needs and preferences.

Standards-based design ensures high safety and reliability—SIL 2 certified

Over two decades of experience with infrared technology has enabled Dräger to continuously enhance product quality. With the Dräger PIR 7000, the entire product—hardware and software—has been developed according to the Functional Safety standard EN 61508.

The International Electrotechnical Commission's (IEC) standard IEC 61508 defines Safety Integrity Level (SIL) using requirements grouped into two broad categories: hardware safety integrity and systematic safety integrity. A device or system must meet the requirements for both categories to achieve a given SIL.

The Drager PIR 7000 not only fulfills but exceeds SIL 2 requirements.

Additional advantages

– Configurable gas library—methane, propane and ethylene fixed, up to 10 additional substances from a list of 80 can be uploaded
– Multiple mounting and configuration capabilities (signals acc. to NAMUR NE 43)
– Precise and stable measurement
– 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 analog signal output
– Hermetically sealed SS 316L enclosure
– Integrated tag holder for individual labelling
– No moving parts
– Resistant to 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 zones 21 and 22
– Performance approved gas calibration curves independently certified by DEKRA®
– Typical lifetime greater than 15 years

System Components

Dräger REGARD® 7000

The Dräger REGARD® 7000 is a modular and highly expandable control system for monitoring various gases and vapors. Ideal for gas warning systems with various levels of complexity and numbers of transmitters, the Dräger REGARD® 7000 delivers exceptionally reliability and efficiency. An additional benefit is the controller's backward compatibility with the REGARD®.

Dräger REGARD 3900

The Dräger REGARD 3900 is a standalone control system for the detection of toxic gases, oxygen levels, and Ex hazards. The control system is fully configurable between 1 and 16 channels, depending upon the type and quantity of input/output boards installed.

Accessories

Duct Mount Kit

This set lets you mount the transmitter directly in the pipes, remaining air-tight even under positive pressure. Optional accessory parts are available for functional checks and remote calibration.

Part number: 68 11 850

Accessories

ST-11679-2007

Splash Guard

This unit protects the measuring cuvette against dirt and dust, provides quick gas exchange through a "chimney effect", and has reflective fluorescent strips.

Part number: 68 11 911

ST-11706-2007

Insect Guard

This UV-resistant guard protects against spiders or other insects that might block the gas inlet or outlet apertures of the splash guard.

Part number: 68 11 609

D-24481-2020

Hydrophobic Filter

This filter protects the measuring cuvette against dirt and dust, and can be combined with other accessory parts.

Part number: 68 11 890

ST-11681-2007

Calibration Adapter

Mountable with one hand, this adapter lets you calibrate a transmitter (with mounted splash guard), up to a wind force of 55 mph.

Part number: 68 11 610

Accessories

ST-11695-2007

Status Indicator

The status indicator permanently displays the measuring mode or disruption with a green or yellow light signal, and can be combined with other accessory parts.

Part number: 68 11 625

D-24476-2020

Flow Cell

Suitable for process applications, this flow cells lets you perform remote function tests and calibrations of the transmitter in high wind forcesvand/or high test gas concentrations, and includes a status display.

Part number: 68 11 490

r ST-11696-2007

Remote Test Adapter

This adapter lets you perform function tests and calibrations of the transmitter remotely with the usual test gas concentrations, and includes a status display.

Part number: 68 11 630

ST-11687-2007

Process Adapter

Constructed of conductible POM, this adapter is designed for sampling and process applications, and provides fast response due to minimum inner volume.

Part number: 68 11 915

Accessories

Process Cuvette SGR

Designed for sampling or process applications, this 303 stainless steel unit provides fast response due to a minimum inner volume. Sapphire Glass Removable (SGR) for easy replacement or cleaning.
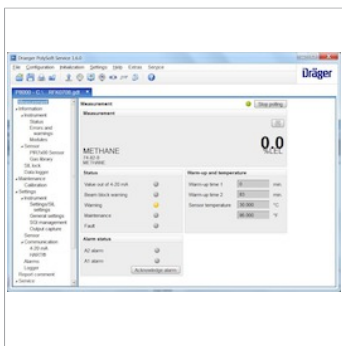
Part number: 68 13 219

Magnetic Wand

This device enables simple and fast calibration (zero-point and sensitivity) of the transmitter, providing feedback through status lights.

Part number: 45 44 101

Dräger Polysoft

Dräger Polysoft is configuration and calibration software for the following stationary gas detection systems: Dräger PIR 7000, Dräger PIR 7200, Dräger Polytron® 8000, and includes status and diagnostic functions.

Part number: 83 23 405

Related Products

D-14983-2010

Dräger Polytron® 8700 IR

The Dräger Polytron® 8700 IR is an advanced explosion proof transmitter for the detection of hydrocarbon gases in the lower explosion limit (LEL) and ppm. It uses a high performance infrared Dräger PIR 7000 sensor, which will quickly detect most common hydrocarbon gases. Besides a 3 wire 4 to 20 mA analog output with relays, it also offers HART®, Modbus and Fieldbus making it compatible with most control systems.

D-20467-2020

Dräger Pulsar 7000 Series

The Dräger Pulsar 7000 Series are stationary open path gas detectors. They detect explosive hydrocarbons in gases. The robust design and the extremely rapid response of the sensor make the Dräger Pulsar 7000 Series a dependable solution for your requirements in the oil and gas industry, as well as the chemical industry.

Technical Data

Dräger PIR 7000

Type	Explosion-proof non-display gas detection transmitter with infrared sensor technology	
Principle of operation	Temperature-compensated infrared absorption, 4-beam technology. IR absorption at 3.34µ or 3.40µ IR wavelength.	
Gases and ranges	Methane, propane, ethylene	0 to 20 ... 100 % LEL
	250+ tested substances	0 to 350 ppm ... 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	0.5 %LEL
	Linearity error	+/- 1.5 %LEL
	Response time $t_{0...90}$	≤ 4 seconds ("normal response mode")
		< 1 seconds ("fast response mode")
		< 9 sec. (w/ splash guard, normal response mode)
	Long-term drift	≤ ± 1 %LEL after 12 months
Electrical data	Output signals	4 to 20 mA, HART® autodetect sink/source
	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 ℃/-40 to +170 ℉ (operating)
		-40 to + 85 ℃/-40 to +180 ℉ (storage)
	Humidity	0 to 100 %RH
	Pressure	700 to 1,300 hPa/23.6 to 32.5 inch Hg
Enclosure	Material	Stainless steel SS 316L
	Connecting thread	M25 or 3/4" NPT
	Weight	2.2 kg (without accessories)
	Dimensions	160 mm x Ø 89 mm / 6.3" x Ø 3.5"
	Ingress protection	IP66 and IP67, NEMA 4X
Approvals	ATEX	II 2G Ex d(e) IIC T6/T4
		II 2D Ex tD A21 IP65 T80 ℃/T130 ℃
	IECEx	Ex d IIC T6/T4
		Ex tD A21 IP65 T80 ℃/T130 ℃
	UL & CSA (only NPT Variants)	Type: IDS 010x
		Class I, Div. 1, Groups A, B, C, D
		Class II, Div. 1, Groups E, F, G
		Class I, Zone 1, Group IIC
		T-Code T6/T4, −40 ℃ < Ta < +40 ℃/+80 ℃
		9 to 30 V DC, 9 W - Type 4x
	Functional Safety (SIL)	SIL2 cert. by TÜV (EN 61508, EN 50402) PFD = 2.04E−04, SFF = 94.0%
	CE mark	Electromagnetic compatibility (directive 89/336/EEC)

Ordering Information

Dräger PIR 7000

Dräger PIR 7000 type 334 (NPT) HART®	68 11 552
Dräger PIR 7000 type 340 (NPT) HART®	68 11 562
Dräger PIR 7000 334 NPT HART® complete set* Ex d Alu.	68 13 030
Dräger PIR 7000 334 NPT HART® complete set* Ex d St. Steel	68 13 035
Dräger PIR 7000 340 NPT HART® complete set* Ex d Alu.	68 13 040
Dräger PIR 7000 340 NPT HART® complete set* Ex d St. Steel	68 13 045
Dräger PIR 7000 type 334 (M25) HART®	68 11 550
Dräger PIR 7000 type 334 NPT (Polytron® 5700/8700 Spare Sensor)	68 11 822
Dräger PIR 7000 type 340 NPT (Polytron® 5700/8700 Spare Sensor)	68 11 832
Dräger PIR 7000 type 334 (M25) HART®, complete set	68 11 817
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 (M25) or Ex d (NPT) junction box, splash guard, status indicator and mounting set, already pre-assembled.

M25 variants are not UL/CSA approved

Accessories

Mounting Set (only compatible with M25 version)	68 11 648
Duct Mount Set Kit	68 11 850
Splash Guard	68 11 911
Status Indicator	68 11 625
Insect Guard	68 11 609
Sunshade Weather Guard	SC05208
Spider Guard (finer mesh than insect guard)	68 00 306
Hydrophobic Filter	68 11 890
Calibration Adapter	68 11 610
Flow Cell for Remote Calibration	68 11 490
Flow Cell for Duct Mount Kit	68 11 945
Bump Test Adapter	68 11 630
Bump Test Adapter for Duct Mount Kit	68 11 990
Process Adapter	68 11 915
Process Cuvette	68 11 415
Process Cuvette SGR	68 13 219
Magnetic Wand	45 44 101
USB PC Adapter	68 11 663
Dräger PRC 7000 Remote Control Software	83 23 355
Dräger PRC 7010 Remote Control Software	83 23 365

Polytron and REGARD are trademarks of Dräger.

HART® is a registered trademark of the HART® Communication Foundation.

Notes

Notes

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