

## Dräger Polytron IR Ex Fixed Gas Detector

Dräger Polytron IR Ex is a gas detector for continuous monitoring of flammable gases and vapors in ambient air. It offers all benefits of fail-safe IR measurement technology for applications in rough industrial environments.



The transmitter converts the gas concentration signal into a 4 to 20 mA analog output. It is designed for one-man calibration and offers a variety of diagnostics and self test features. The configuration and calibration of the transmitter is menu guided and easy to perform, using the built-in keypad. With the ATEX-approval (device category II 2G acc. to 94/9/EC) and the IEC-approval for world-wide applications the Dräger Polytron IR Ex is suitable for use in potentially explosive atmospheres zone 1 and zone 2.

### FEATURES AND BENEFITS

- Intrinsically safe protection design: easy to install – easy to maintenance
- 3- or 4-wire-connection
- Unambiguous linear output signal
- Configurable measuring ranges in the lower ppm-range or % LEL-range
- Configurable measuring range up to 100 % by vol. Methane

### DIFFERENT VERSIONS

The transmitter is available in three different versions: Either the standard version with LC display and keypad, or without display and keypad to be connected to a fixed installed remote display unit, or with a plug connector to be connected to a hand-held terminal. With this maintenance and cali-

bration can easily be performed even if the transmitter is hard to access.

### COMPREHENSIVE EXPLOSION PROTECTION

The Dräger Polytron transmitters IR Ex are certified acc. to the directive 94/9/EC (ATEX 95) and marked by II 2G, indicating that they are suitable to be operated in zones 1 and 2. Also, Dräger Polytron IR Ex is approved acc. to the IEC standard.

### INTRINSIC SAFETY

Knowingly Dräger designed the Dräger Polytron IR Ex without implementing the type protection concept of heavy flame-proof encapsulation. This means lightweight enclosure and easy installation and maintenance. Parts of the transmitter such as sensor, LC display and keypad – also the remote display unit and hand-held terminal – are intrinsically safe. No additional zener barriers are necessary.

### SYSTEMS SOLUTIONS

The shock-resistant enclosure (EEx e) is made of conductive, glass fibre reinforced polyester. Combined with a suitable 4 to 20 mA controller the Dräger Polytron IR Ex transmitters satisfy the customers' needs for maximum safety and system availability.



**Dräger Polytron IR Ex or IR Ex ES**  
Standard version with LC display and keypad.



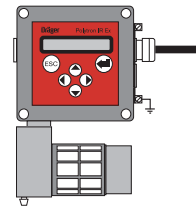
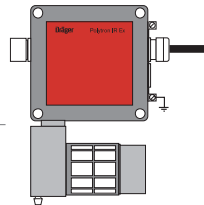
**Dräger Polytron IR Ex HC**  
Version with small sensor for selected gases, measuring range 0 to 100 % LEL, with LC display and keypad.

### Configurations

The graphics emphasize the versatility of the transmitter Dräger Polytron IR Ex in different versions.

#### Dräger Polytron IR Ex

Complete with display and keypad.  
The transmitter is operated directly via the built-in display and keypad.

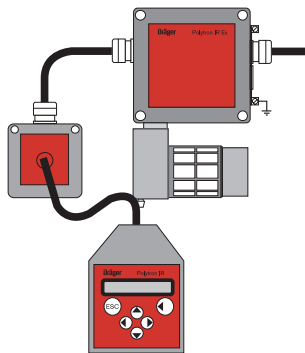


#### Dräger Polytron IR Ex NDH

Non-display version with socket for hand-held terminal.  
The transmitter is operated via the hand-held terminal using the plug connection.

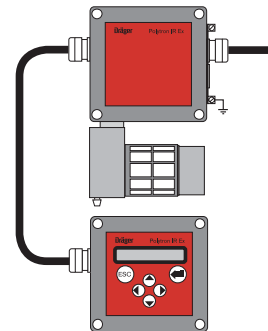
#### Dräger Polytron IR Ex NDF

Non-display version and remote display unit.  
The transmitter is operated via the display and keypad of the fix installed remote display unit.



#### Dräger Polytron IR Ex NDF

Non-display version with junction box and socket for hand-held terminal.  
The transmitter is operated via the display and keypad of the hand-held terminal.



### DRÄGER POLYTRON IR EX

The transmitter Dräger Polytron IR Ex is a measuring instrument with an optical system which, based on its 2-fold reflected IR-beam and its optimized IR measuring wave length, is very sensitively reacting on hydrocarbon concentrations. Hence for e.g. propane, butane, gasoline vapors, ethers, alcohols, or amines etc. measuring ranges down to 1000 ppm or 5 % LEL full scale value can be adjusted. Also, measuring ranges up to 100 % by vol. for methane are possible.

### DRÄGER POLYTRON IR EX IL

The Dräger Polytron IR Ex IL is an in-line-version for concentration measurement in a gas stream in close-to-process applications. The enclosed stainless steel optical system can directly be connected to a piping system.

### DRÄGER POLYTRON IR EX ES

The Dräger Polytron IR Ex ES is a transmitter with an optimized IR measuring wave length especially for the measurement of ethylene, benzene, butadiene, chlorobenzene, styrene, pyridine, and vinyl acetate, etc. These substances are not – or only poorly – detectable by the Dräger Polytron IR Ex.

### DRÄGER POLYTRON IR EX HC

Dräger Polytron IR Ex HC is a transmitter with a small optical system including only one reflector. It is very suitable for hydrocarbons which strongly absorb IR around the 3.4 micrometer band, such as gasoline vapors, alcohols, ethers and cycloalcanes. However, the measuring range is 0 to 100 % LEL fix.

## TECHNICAL DATA

Type	Transmitter with infrared sensor		
Gases	Flammable gases and vapors		
	Gas type methane	Gas type ethene (ethylene)	Gas type propane
Configurable measuring ranges (full scale value) IR Ex and IR Ex IL	20 to 100 % LEL 0.8 to 5.0 % by vol. 5.0 to 100 % by vol.	80 to 100 % LEL 1.8 to 2.3 % by vol.	5 to 100 % LEL 0.1 to 1.7 % by vol. 1000 to 9990 ppm
Configurable measuring ranges (full scale value) IR Ex ES	20 to 100 % LEL 1.0 to 10 % by vol.	40 to 100 % LEL 1.0 to 10 % by vol.	20 to 100 % LEL 0.34 to 10 % by vol. 3000 to 9990 ppm
Configurable measuring ranges (full scale value) IR Ex HC	-	-	100 % LEL 1.0 to 100 % by vol.
Power supply	13 to 30 V DC (nominal 24 V DC), ca. 4 W, IR Ex HC: < 2 W		
Output signals	Operation	4 to 20 mA	
	Maintenance signal	2 / 5 mA with 1 Hz or 3 mA constant, configurable	
	Warning signal	2 / 5 mA with 1 Hz or 2 mA every 10 s or 2 mA constant, configurable	
	Fault signal	< 3 mA or 1 mA, configurable	
Measuring line	3-core, shielded, core cross-section 0.5 to 1.5 mm <sup>2</sup> , outer diameter 6 to 12 mm		
Maximum cable length (at 24 V)	2000 m for 3 x 1.5 mm <sup>2</sup> ; 1500 m for 3 x 1.0 mm <sup>2</sup> ; 1000 m for 3 x 0.75 mm <sup>2</sup>		
Response time t <sub>90</sub> at 25 °C / 77 °F)	IR Ex, IR Ex ES	< 3 s without dust filter, < 15 s with dust filter in moved air (> 1 m/s)	
	IR Ex IL	10 s at 10 liters/min flow	
	IR Ex HC	< 45 s	
Ambient conditions	min. Temperature	- 25 °C / - 13 °F (- 40 °C / - 40 °F on request)	
	max. Temperature	+ 65 °C / 150 °F, IR Ex HC: + 50 °C / 122 °F	
	Pressure	700 to 1300 hPa / 23.6 to 32.5 inch Hg	
	Humidity	0 to 100 % r.H., IR Ex HC: 0 to 95 % r.H.	
Enclosure	IP 65, glass fiber reinforced polyester (GRP)		
Pipe connections IR Ex IL	2 x 1/2" NPT female thread, maintenance port 1 x G 3/4, thread length 15 mm		
Size (w x h x d)	225 x 145 x 105 mm, IR Ex HC: 205 x 145 x 105 mm		
Weight	ca. 1.9 kg, IR Ex IL: 3.5 kg, remote display unit 1.0 kg		
Approvals	Transmitter	ATEX	II 2G EEx me [ib] d IIB+H <sub>2</sub> T4, - 40 °C ≤ T <sub>a</sub> ≤ + 65 °C
		IEC	Ex me [ib] d IIB+H <sub>2</sub> T4, - 20 °C ≤ T <sub>a</sub> ≤ + 55 °C
	Hand held terminal and display unit	ATEX	II 2G EEx ib IIC T4, - 40 °C ≤ T <sub>a</sub> ≤ + 65 °C
		IEC	Ex ib IIC T4, - 40 °C ≤ T <sub>a</sub> ≤ + 65 °C
	IR Ex and IR Ex IL	Performance approved acc. to directive 94/9/EC (ATEX 95), Ann. II, chap. 1.5.5 acc. to EN 50054 ff and EN 50271 (21 gases / vapors)	
	CE-marking	Electromagnetic compatibility (directive 89/336/EEC)	

### ALL TRANSMITTERS

The dual wavelength design compensates for changes in light source, optics and environmental conditions. Especially a certain contamination of the reflectors is tolerated without influencing the measuring signal: Without loss of measuring function in case of dirty mirrors a warning signal ("pre-beam-block-warning") is generated. The reflectors of the sensor are heated just above ambient temperature (not HC version) to prevent condensation due to sudden environmental changes in temperature and humidity.

### MEASURING FUNCTION FOR EXPLOSION PROTECTION

Concerning measurement performance acc. to the directive 94/9/EC (Annex II, 1.5.5), Dräger Polytron IR Ex and IR Ex IL are approved acc. to the standards EN 50054, EN 50057, EN 50058, and EN 50271 in respect to the following gases and vapors: Methane, propane, acetone, cyclohexane, cyclopentane, dimethyl ether, ethyl acetate, methylethyl ketone, n-pentane, i-propanol, n-octane, toluene, n-butane, n-butyl acetate, ethanol, methanol, methyl-i-butyl ketone, propylene, xylene, i-butane, and 1-butylene.

## ORDER INFORMATION

	Standard version, with display and keypad	NDF-Version, without display and keypad, with connection for remote display unit	NDH-Version, without display and keypad, with plug socket for hand-held terminal
Dräger Polytron IR Ex	83 16 030	83 16 031	83 16 032
Dräger Polytron IR Ex ES	83 16 060	83 16 061	83 16 062
Dräger Polytron IR Ex IL	83 16 053	83 16 054	83 16 055
Dräger Polytron IR Ex HC	83 16 034	83 16 035	83 16 036
Remote display unit IR Ex	83 16 033		
Hand-held terminal HHT IR Ex	83 12 580		
Junction box with plug socket for HHT	83 12 596		



ST-5644-2004

**Dräger Polytron IR Ex IL NDH**  
Version with enclosed rugged stainless steel optical system with openings to be connected to gas streams, non-display version with plug socket for hand-held terminal.



ST-5653-2004

**Dräger Polytron IR Ex HHT**  
Hand-held terminal for maintenance and calibration of the non-display versions.

## HEADQUARTERS:

Dräger Safety AG & Co. KGaA  
Revalstrasse 1  
23560 Lübeck, Germany

[www.draeger.com](http://www.draeger.com)

## SYSTEM CENTERS:

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