



Fixed gas detection systems

smart  
**GasDetection**  
Technologies



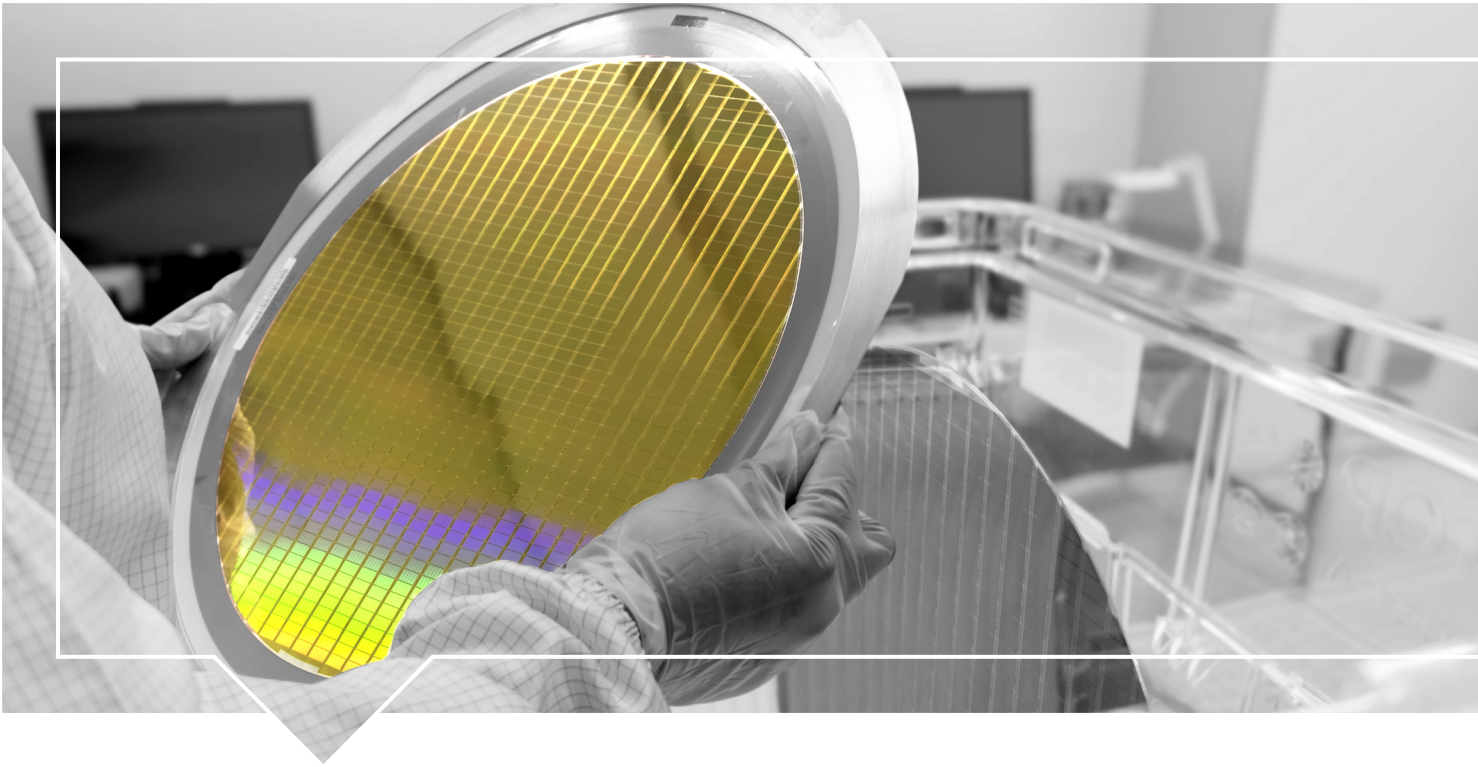
*Click Here\* for information and to view the D-Rex on The Safety Equipment Store® website.*

# D-ReX<sup>®</sup>

## State-of-the-art monitoring of gases in the semiconductor industry



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# D-ReX<sup>®</sup> Designed for Versatility

Gases are used in many areas of application and process steps of the semiconductor industry. This results in a wide variety of associated requirements for measuring methods, sensors, measuring ranges and communication.

The D-ReX allows you to select the ideal combination of measurement method and sensor for every requirement. Benefit from the DIN-rail mounted gas detector's easy-to-understand user interface, its modern, future-proof technology, and simple and cost-effective maintenance.

## Versatility in measurement methods

The D-ReX gas detector series lets you choose between different measuring methods to ensure you are using the ideal solution for every requirement.

### » D-ReX PoU (Point of Use)

Monitoring of gases at the point of use using the diffusion method.

### » D-ReX Pol (Point of Installation)

Monitoring of gases by diffusion method using a remote sensor cartridge. Distance between the D-ReX and the cartridge can be up to 30 meters.

### » D-ReX PoS (Point of Sampling)

Monitoring of gases via extraction using a built-in pump (suction distance up to 30 meters). The sensor is situated within the D-ReX. Furthermore, the D-ReX PoS is the only gas detector in the world that offers optional monitoring of the hose line for leaks. The Line Integrity Monitoring (LIM) technology continuously works to prevent unnoticed absorption of secondary air.

### » D-ReX PoS with pyrolyzer

The Py-ReX is the matching pyrolyzer for the D-ReX PoS to monitor gases that are either too toxic or chemically inactive to be measured directly. The Py-ReX is simply mounted between the suction hose and the D-ReX and breaks the monitored gas down into harmless, easy-to-detect components.

## D-ReX versions and options

D-ReX Version	Internal Sensor (Diffusion)	External Sensor (Diffusion)	Pump module (eXtraction Module)	Py-ReX	Internal Relays	LonWorks
Point of Use (PoU)	✓				5 (option)	(option)
Point of Installation (Pol)		✓			5 (option)	(option)
Point of Sampling (PoS)	✓		✓	✓*	5 (option)	(option)

\* Required for certain gases

### Versatility in gases and measuring ranges

A wide range of durable smart sensors, covering all important gases of the semiconductor industry as well as the relevant measuring ranges, is available for the D-ReX. The following list is merely a selection of these. Please note that a pyrolyzer is needed for the detection of some gases (\*).

#### List of Detectable Gases using an EC Sensor

Formula	Gas	Nominal Range	Formula	Gas	Nominal Range
AsH <sub>3</sub>	Arsine	0-1 ppm	N <sub>2</sub> H <sub>4</sub>	Hydrazine	0-1 ppm
AsH <sub>3</sub>	Arsine / no H <sub>2</sub> (no cross-sensitivity to H <sub>2</sub> )	0-1 ppm	NH <sub>3</sub>	Ammonia	0-100 ppm
B <sub>2</sub> H <sub>6</sub>	Diborane	0-1 ppm	NH <sub>3</sub>	Ammonia	0-1000 ppm
Br <sub>2</sub>	Bromine	0-5 ppm	NH <sub>3</sub>	Ammonia	0-5000 ppm
Cl <sub>2</sub>	Chlorine	0-10 ppm	NO	Nitrogen monoxide	0-100 ppm
ClF <sub>3</sub>	Chlorine trifluoride	0-1 ppm	NO <sub>2</sub>	Nitrogen dioxide	0-30 ppm
ClO <sub>2</sub>	Chlorine dioxide	0-2 ppm	O <sub>2</sub>	Oxygen (5-year sensor, lead-free)	0-25 Vol.-%
CO	Carbon monoxide	0-500 ppm	O <sub>3</sub>	Ozone	0-5 ppm
COCl <sub>2</sub>	Phosgene	0-2 ppm	PH <sub>3</sub>	Phosphine	0-1 ppm
DCS	Dichlorosilane	0-30 ppm	SiH <sub>4</sub>	Silane	0-50 ppm
ETO	Ethylene oxide	0-20 ppm	SO <sub>2</sub>	Sulfur dioxide	0-10 ppm
F <sub>2</sub>	Fluorine	0-5 ppm	TEOS	Tetraethyl orthosilicate	0-100 ppm
GeH <sub>4</sub>	Germanium hydrogen	0-5 ppm	TMB	Trimethyl borate	0-500 ppm
H <sub>2</sub>	Hydrogen	0-2000 ppm	<b>List of detectable gases which require a pyrolyzer</b>		
H <sub>2</sub>	Hydrogen	0-1 Vol.-%	Formula	Gas	Nominal Range
H <sub>2</sub>	Hydrogen	0-4 Vol.-%	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	Trans-1,2 dichloroethylene (DCE)	tbd
H <sub>2</sub> S	Hydrogen sulfide	0-100 ppm	C <sub>4</sub> F <sub>6</sub>	Hexafluorobutadiene	tbd
H <sub>2</sub> SE	Hydrogen selenide	0-5 ppm	C <sub>5</sub> F <sub>8</sub>	Octafluorocyclopenten	tbd
HBr	Hydrogen bromide	0-30 ppm	CH <sub>3</sub> F	Methyl fluoride	tbd
HCl	Hydrogen chloride	0-30 ppm	NF <sub>3</sub>	Nitrogen trifluoride	0-50 ppm
HCN	Hydrogen cyanide	0-30 ppm	SF <sub>6</sub>	Sulfur hexafluoride	tbd
HF	Hydrogen fluoride	0-10 ppm			
HMDS	Hexamethyl disilazane	0-0.5 Vol.-%			

#### List of Detectable Gases using an IR Sensor

Formula	Gas	Nominal Range
C <sub>3</sub> H <sub>8</sub>	Propane	0-2 Vol.-%
CH <sub>4</sub>	Methane	0-5 Vol.-%
CO <sub>2</sub>	Carbon dioxide	0-5 Vol.-%
CO <sub>2</sub>	Carbon dioxide	0-1 Vol.-%
N <sub>2</sub> O	Nitrous oxide	0-1000 ppm
N <sub>2</sub> O	Nitrous oxide	0-1 Vol.-%

#### List of Detectable Gases using a CC Sensor

Formula	Gas	Nominal Range
C <sub>2</sub> H <sub>2</sub>	Acetylene	0-100 % UEG
C <sub>2</sub> H <sub>4</sub>	Ethylene	0-100 % UEG
C <sub>2</sub> H <sub>6</sub>	Ethane	0-100 % UEG
C <sub>3</sub> H <sub>8</sub>	Propane	0-100 % UEG
C <sub>4</sub> H <sub>10</sub>	Butane	0-100 % UEG
C <sub>5</sub> H <sub>12</sub>	Pentane	0-100 % UEG
C <sub>6</sub> H <sub>14</sub>	Hexane	0-100 % UEG
CH <sub>4</sub>	Methane	0-100 % UEG
H <sub>2</sub>	Hydrogen	0-100 % UEG

### Versatility in communication

A simple, straightforward visual display of readings, alarms and error messages as well as the capability to be easily integrated into alarm and monitoring systems are what make good gas detectors.

### The D-ReX offers:

- » A high-resolution color display
- » Plain text information instead of cryptic codes
- » Bluetooth® for easy maintenance and access to all relevant information via app
- » Power-over-Ethernet communication (Modbus/TCP)
- » LonWorks® (optional)
- » RS-485 (Modbus/RTU)
- » Analog: 4–20 mA signal
- » 5x internal programmable relays (optional)

- 1 D-ReX
- 2 Py-ReX
- 3 Ethernet cable with PoE
- 4 IP Code sticker
- 5 Sensor cartridge with detachable pipe flange adapter (up to 30 meters / 100 feet)
- 6 Connector cartridge for remote sensors (M12)
- 7 Sensor cartridge with detachable diffusion mode adapter
- 8 Integrated pump (up to 30 meters / 100 feet)
- 9 Mounting bracket
- 10 Pipe flange saddle
- 11 Lower housing covers





# Technical Specification: D-ReX Series

<b>Gases:</b>	See gas list
<b>Measuring Principle:</b>	Sensor dependent; available options: EC = electrochemical   CC = catalytic combustion   IR = infrared
<b>Sampling Method:</b>	Depending on configuration
<b>PoU</b>	» Diffusion
<b>Pol</b>	» Remote sensor
<b>PoS</b>	» Extraction with pump (if applicable, in combination with Py-ReX)
<b>Display and Interface:</b>	Display: 2.4" full color TFT (320 x 240 pixels) Interface: 5 push buttons
<b>Selectable Languages:</b>	German, English (more languages coming soon)
<b>Communication:</b>	<ul style="list-style-type: none"> <li>» Analog: 4–20 mA output</li> <li>» Digital: RS-485 (Modbus/RTU)</li> <li>» 10/100 Mbit Ethernet (Modbus/TCP)</li> <li>» Bluetooth</li> <li>» Interface for Py-ReX (D-ReX PoS only)</li> <li>» LonWorks® (option)</li> </ul> <p>Relays: 5x internal (programmable) form C relays (option) Max. 2 A / 30 V DC Min. 10 mA / 5 V can optionally be upgraded with an external relay module with up to 16 relays each</p>
<b>Response Time:</b>	Varies by sensor (see sensor data sheet)
<b>Expected Average Life of the Sensor:</b>	Varies by sensor (see sensor data sheet)
<b>Operating Temperature:</b>	-10 to +40 °C 14 to 104 °F
<b>Operating Humidity:</b>	5 to 90 % RH
<b>Operating Pressure:</b>	70 to 130 kPa
<b>Power Supply:</b>	12 to 30 V DC SELV/PELV PoE = 48 V DC
<b>Housing:</b>	Plastic
<b>Protection Class:</b>	PoS-Version: base unit IP30 (optionally IP64) / gas sensor IP64 PoU-Version: base unit IP30 (optionally IP64) / gas sensor IP43 Pol-Version: base unit IP30 (optionally IP64) / gas sensor IP40–IP64, depending on installation situation
<b>Mounting:</b>	(DIN) rail IEC/EN
<b>Weight:</b>	650 g up to 850 g
<b>Dimensions: (W x H x D)</b>	145 x 105 x 78 mm 5.7 x 4.1 x 3.0 in
<b>Labelling:</b>	CE and UL certification



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All specifications on this brochure are subject to technical changes due to further development.

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