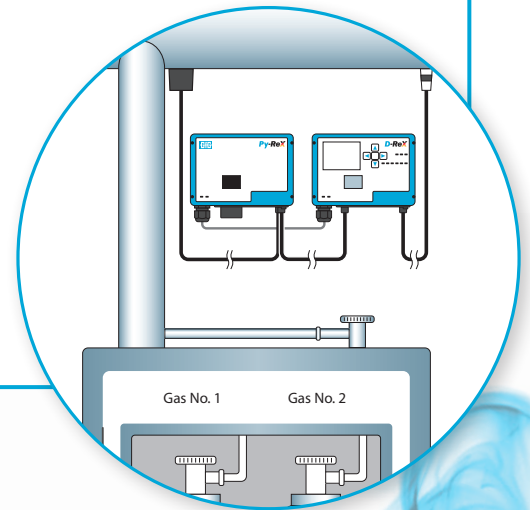




# Py-ReX<sup>®</sup>

For highly toxic or  
electrochemically  
inactive gases





# Py-ReX<sup>®</sup>

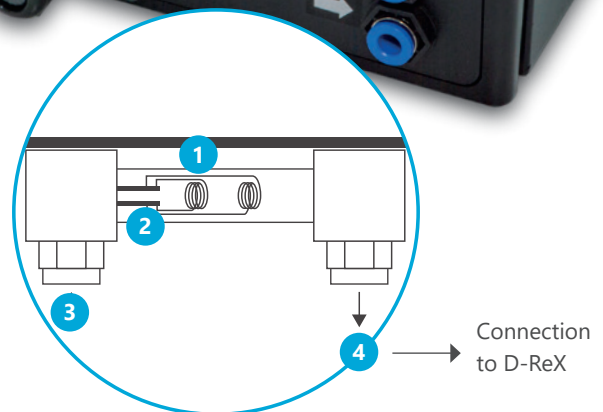
## Gas detection in extraction mode combined with pyrolysis

The Py-ReX<sup>®</sup> pyrolyzer improves the performance of our D-ReX gas detectors. When used in combination with a D-ReX PoS and its integrated pump, the Py-ReX will allow you to detect highly toxic or chemically inactive gases. Since it detects their decomposition products, it is able to measure these gases even in small concentrations.

### How does pyrolysis work?

Pyrolyzers, sometimes also called “decomposers”, are used in many analysis devices. No matter the application however, the goal is always to transform the original gas (target gas) into another gas (measured gas), which can be detected more easily.

The Py-ReX is a filament pyrolyzer. Inside a quartz glass tube, it contains a filament which is heated to a certain temperature – depending on the gas you need to detect. The target gas decomposes into the measured gas (and potentially other components) upon coming into contact with the filament. It is then measured using an electrochemical smart sensor. The concentration of measured gas can then be used to calculate the original concentration of target gas.



- |                            |                           |
|----------------------------|---------------------------|
| <b>1</b> Filament          | <b>3</b> Target gas in    |
| <b>2</b> Quartz glass tube | <b>4</b> Measured gas out |

### Why choose a filament pyrolyzer?

All pyrolyzers use heat to disassemble samples. In devices which analyze unknown samples for their components, pyrolysis often takes place without with no oxygen present and in precisely set thermic conditions.

Adhering to such specific parameters is not necessary for reliable gas detection, since both the monitored target gas as well as the expected decomposition product are known in advance. This is why filament pyrolyzers have been appreciated as the most reliable and durable solution for pyrolyzing gases for years now.



Some manufacturers also sell pyrolyzers which use an  $\alpha$ -radiation absorption method. In this process, a radioactive  $\alpha$ -radiation source generates a continuous ion current in the measuring chamber and a reference chamber.

The decomposition products generated as a result of pyrolyzing the target gas absorb parts of this ion current in the measuring chamber and the difference between the values in the two chambers are then used to calculate the concentration of target gas.

**We deliberately decided against using this approach when developing the Py-ReX, since it would bring only disadvantages to users:**

- » It does not improve measuring accuracy or speed.
- » Users would continuously have to take precautions regarding the use, storage and transport of radioactive material.
- » Pyrolyzers cannot just be disposed of or recycled, but instead have to be sent back to the manufacturer in special safety packaging.
- » They must be labeled as radioactive "Type L" packages by a qualified forwarding agent for every transport. Special restrictions also apply for air transport.

**There are currently D-ReX versions available for measuring the following gases:**

$C_2H_2Cl_2$	1,2 dichloroethene (DCE)
$C_4F_6$	Hexafluorobutadiene
$C_5F_8$	Octafluorocyclopentene
$CH_3F$	Methyl fluoride
$NF_3$	Nitrogen trifluoride
$SF_6$	Sulfur hexafluoride

### Which gases do you need a pyrolyzer for?

Most inert gases used in the semiconductor industry and industrial processes are fluorine-based. But there are also fluorine-free inert gases, such as 1,2 dichloroethene, which need to be monitored.

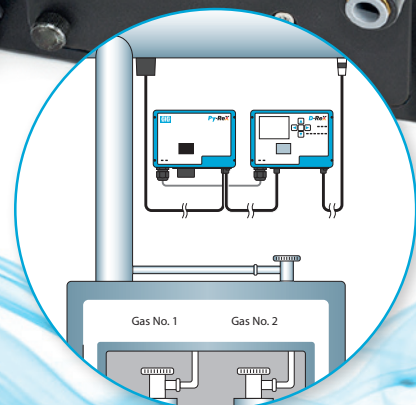
The temperature needed for the pyrolysis process depends on the specific gas. That's why the Py-ReX is calibrated meticulously, ensuring the decomposition products needed for the subsequent detection are created.

**D-ReX**  
PoS

Gas detection in extraction mode at Point-of-Sampling (PoS)

When combined with a Py-ReX<sup>®</sup> pyrolyzer, the D-ReX PoS allows you to monitor gases that are either too toxic or too chemically inactive to be measured directly. Simply mount the Py-ReX between the intake hose and the D-ReX and it will disassemble the gas you need to monitor into nonhazardous components which are easy to detect.

The Point of Sampling (PoS) can be located up to 30 meters away from the D-ReX PoS and its integrated pump. The optional Line Integrity Monitoring (LIM) ensures that no secondary air is drawn into the hose at any point during intake. The length of the recirculation hose can be up to 30 meters as well. The optional Line Integrity Monitoring (LIM) ensures that no secondary air is drawn into the hose at any point during intake.



# Technical Specification: Py-ReX

Gases:	See gas list
Pyrolysis principle:	Filament pyrolysis
Sampling:	Extraction using the D-ReX PoS's integrated pump
Display and control elements:	2 Status LEDs
Communication:	Analog: 4–20 mA
Warm-up time:	< 60 s
Expected average lifetime of the pyrolyzer:	> 2 years
Temperature:	-10 to +40 °C
Humidity:	5 to 90 % RH.*
Air pressure:	70 to 130 kPa
Power supply:	12 to 30 V DC SELV/PELV
Housing:	Plastic
Mounting:	DIN rail IEC/EN
Weight:	485 g
Dimensions (L x H x W):	145 x 105 x 78 mm
Electromagnetic compatibility:	EN 50270:2015 EN 301489-1 V2.2.3 (2019-11) EN 301489-17 V3.2.4 (2020-04) FCC §15B
Radio:	EN 300 328, Bluetooth LE FCC Part 15.247, Bluetooth LE
Electrical safety:	EN 61010-1 (Pollution degree 2)
Enclosure protection class:	EN 60529 (up to IP64)



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

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