

## Digital communication in stationary gas measuring technology

Dräger has counted on digital communication for over 30 years. This includes the globally recognised HART®, FoundationFieldbus H1®, Profibus PA® and LON technologies. We also offer a proprietary solution for our VarioGard systems in the form of the VarioGard Bus.



Dräger provides you with the right solution. Whether planning and installing a gas warning system or connecting to the existing digital infrastructure. We supply the appropriate equipment and offer services such as consultation, commissioning and maintenance. Furthermore, we also offer suitable analysis solutions for all current digital interfaces. These give you remote access to your system.

Our digital transmitters also offer a wide range of internal diagnosis functions.

The remote control via the HART® interface simplifies the daily work performed by measurement and control technicians. The digital HART® signal is superimposed (modulated) on the analogue 4 to 20 mA signal. This way, you can configure your gas transmitter digitally using HART®, while the measurement values are transmitted in analogue mode. It is simple and requires little effort to retrofit your existing 4 to 20 mA system with HART® transmitters.

Both Profibus PA® (PB) and FoundationFieldbus H1® (FF) are in use and accepted all over the world. Both technologies are standards in

accordance with IEC 61158-2. PB and FF, and feature robust signal transmission, which allows process-based applications in the industry.

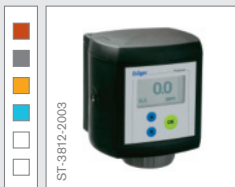
The use of these standards ensures interoperability between various field devices (e.g. gas transmitter and flow regulator).

With PB and FF, we are able to implement systems in the intrinsically safe, increased safety and pressure-resistant enclosure safety types. Intrinsically safe means you can work on the device in the explosion-hazard area without the clearance measurement that would otherwise be required.

The VarioGardBus offers you a large exchange of information between the signal transmitter and analysis unit. With this proprietary Dräger bus, it is possible to design an efficient digital system. In this case, all the components are provided by Dräger.

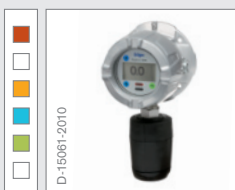
LON is a network platform for control systems in the field of building automation and supply technology. Thanks to LON technology, you can directly integrate the Dräger Polytron 7000.

## Digital devices and their interfaces



### DRÄGER POLYTRON 7000

The Dräger Polytron 7000 intelligent transmitter detects toxic gases and oxygen in cooperation with DrägerSensors. Its modularity makes it particularly versatile.



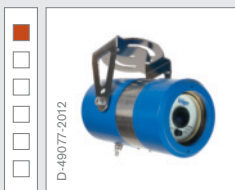
### DRÄGER POLYTRON 8000

The universal transmitters in the Dräger Polytron 8000 family support a diverse range of sensor technologies. The transmitters are all based on a uniform operating concept.



### DRÄGER PIR 7000

The Dräger PIR 7000 is a pressure-resistant enclosed IR transmitter for monitoring combustible gases and vapours with drift-free optics.



### DRÄGER FLAME 5000

The Dräger Flame 5000 is an explosion-proof flame detector which works based on a colour video recorder and can be operated independently.



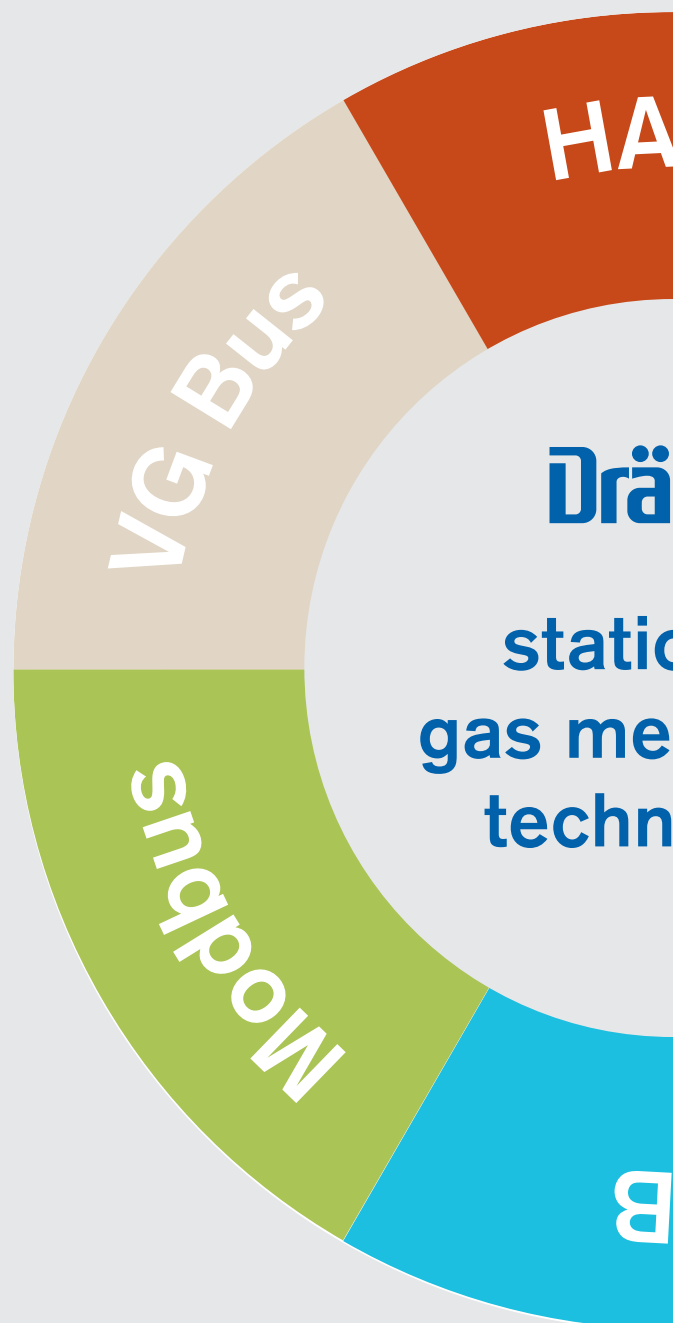
### DRÄGER POLYTRON PULSAR 2

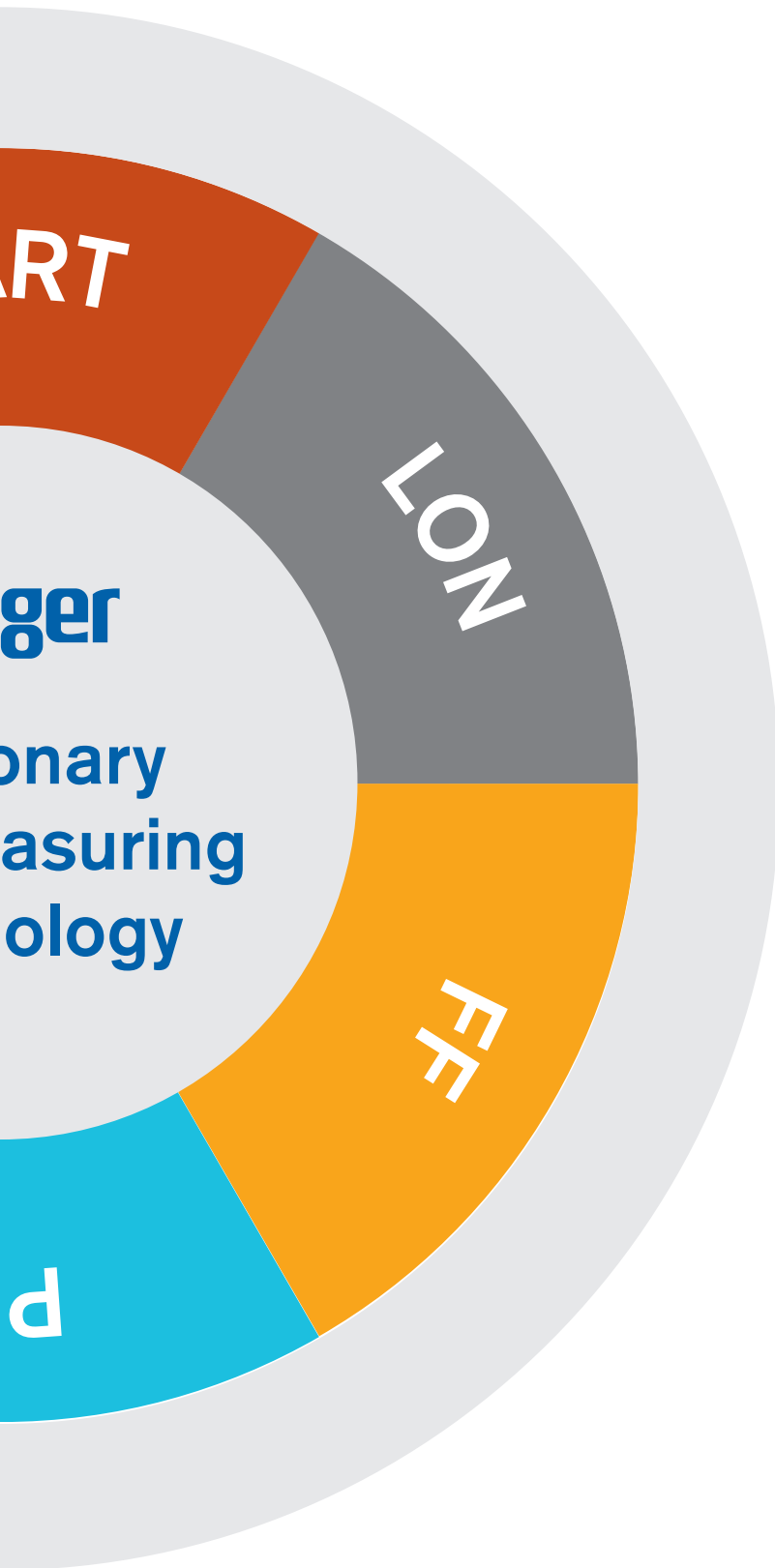
The Dräger Polytron Pulsar 2 is an open-path gas detector. A special algorithm in the xenon lamp ensures it is not affected by environmental influences.



### DRÄGER VARIOGARD 3XX0

The Dräger VarioGard 3xx0 probe with integrated sensor is suitable for affordably setting up a simple digital gas warning system.





#### **HART®**

##### **(HIGHWAY ADDRESSABLE REMOTE TRANSDUCER)**

HART is a standard for communicating with intelligent industrial field equipment.

The HART® signal is superimposed (modulated) on the analogue 4 to 20 mA signal.

#### **PROFIBUS (PB)**

Profibus is the universal field bus for manufacturing, process and building automation. The specification, in accordance with IEC 61158-2, supports a bus supply of the field equipment and allows use in explosion-hazard areas.

#### **FOUNDATIONFIELDBUS (FF)**

The FOUNDATIONFieldbus is a versatile field bus for process automation. The specification, in accordance with IEC 61158-2, supports a bus supply of the field equipment and allows use in explosion-hazard areas.

#### **LON (LOCAL OPERATING NETWORK)**

LON is a decentralised network for control systems, which are predominantly used in the field of building automation.

#### **MODBUS**

The Modbus protocol is an open communication protocol, which is based on a master/slave architecture. The Modbus has developed into a "de facto" standard in industry.

#### **VARIOGARD BUS (VG BUS)**

The Dräger VarioGardBus is a proprietary digital signal transmission for VarioGard systems. Like Modbus, it's a master/slave communication.

### History of development of digital communication

In the 1960s, the 4 to 20 mA signal became established as standard. Devices like the Polytron 1 used this robust and quick signal. However, only a small amount of information can be transmitted. The point-to-point connection does, however, guarantee a high degree of plant security. Should the cable be damaged, only one transmitter is no longer capable of performing its detection duties.

The first stationary transmitter for detecting hydrogen sulphide based on a modulated frequency signal was introduced in 1981, in the form of the Sulfytron. Both technologies only provide a limited amount of information. Besides the measured value, only a few other status signals, such as failures or warnings, can be transmitted.

A good 10 years later, the development of the smart transmitter made digital monitoring possible. The Polytron 2 was controlled by a microprocessor. As such, it offered a wide range of internal diagnosis functions and the transmitters could be configured remotely. The HART interface was used for this purpose.

With the Dräger VarioGardBus, Dräger took its own fully-digital approach to a proprietary system architecture, which can, for example, be used in hospitals, laboratories and underground garages.

Thanks to various different interfaces, it has been possible to directly integrate the Dräger Polytron 7000 in existing bus systems since 2007.

#### HEADQUARTERS

Dräger Safety AG & Co. KGaA  
Revalstraße 1  
23560 Lübeck, Deutschland

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

#### SYSTEM CENTERS

##### P. R. CHINA

Beijing Fortune Draeger Safety  
Equipment Co., Ltd.  
A22 Yu An Rd, B Area,  
Tianzhu Airport Industrial Zone,  
Shunyi District, Beijing 101300  
Tel +86 10 80 49 80 00  
Fax +86 10 80 49 80 05

##### GERMANY

Dräger Safety AG & Co. KGaA  
Revalstrasse 1,  
23560 Lübeck  
Tel +49 451 882-2794  
Fax +49 451 882-4991

##### FRANCE

Dräger Safety France SAS  
3c route de la Fédération, BP 80141  
67025 Strasbourg Cedex 1  
Tel +33 3 88 40 59 29  
Fax +33 3 88 40 76 67

##### SINGAPORE

Draeger Safety Asia Pte Ltd  
67 Ayer Rajah Crescent #06-03  
Singapore 139950  
Tel +65 68 72 92 88  
Fax +65 65 12 19 08

##### UNITED KINGDOM

Draeger Safety UK Ltd.  
Blyth Riverside Business Park  
Blyth, Northumberland NE24 4RG  
Tel +44 1670 352 891  
Fax +44 1670 544 475

##### USA

Draeger Safety, Inc.  
505 Julie Rivers, Suite 150  
Sugar Land, TX 77478  
Tel +1 281 498 1082  
Fax +1 281 498 5190