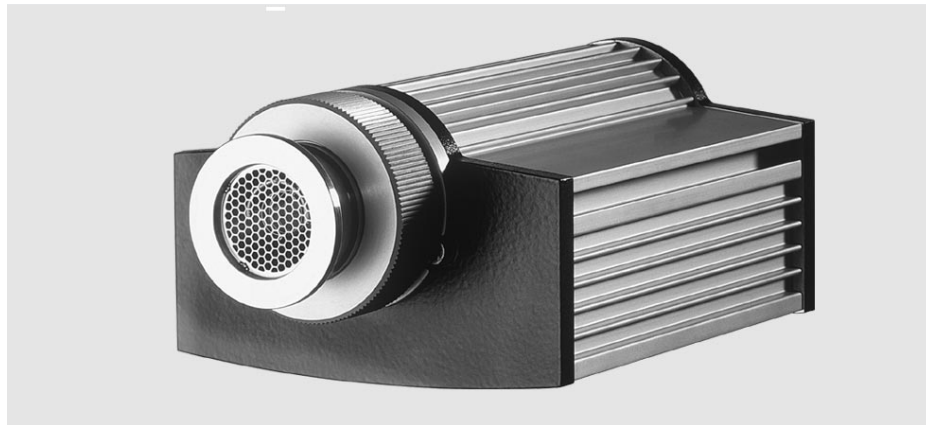


## ITR 100 IONIVAC Transmitter



These IONI transmitters have been developed especially for integration into vacuum systems. Being active sensors (pressure to voltage converters) with the newly developed wide-range Bayard-Alpert sensing system, this type of gauge offers a measurement range which spans  $2 \times 10^{-10}$  to  $1 \times 10^{-1}$  mbar ( $1.5 \times 10^{-10}$  to  $0.75 \times 10^{-1}$  Torr) and IP 54 protection.

### Advantages to the User

- ◆ Wide measurement range of  $2 \times 10^{-10}$  to  $1 \times 10^{-1}$  mbar ( $1.5 \times 10^{-10}$  to  $0.75 \times 10^{-1}$  Torr) with a single sensor
- ◆ High reproducibility of  $\pm 10\%$  of the meas. value within the process pressure range
- ◆ Fully encapsulated sensor with a very stable geometry for the electrodes
- ◆ Increased service life through dual cathodes – automatic switchover in case of failure
- ◆ Long-life iridium cathodes with yttriumoxide coating
- ◆ Uninterrupted measurements in the degas mode through electron bombardment
- ◆ Easy to exchange sensors with automatic self-calibration
- ◆ Switching threshold adjustable over a wide range ( $1 \times 10^{-9}$  to  $1 \times 10^{-1}$  mbar ( $0.75 \times 10^{-9}$  to  $0.75 \times 10^{-1}$  Torr)) and relay contact
- ◆ Standardized measurement and control signals
- ◆ 0 to 10 V analog output with selectable logarithmic/linear characteristic (algorithm supplied)
- ◆ Computer interfaces:
  - RS 232 C
  - Field bus: Profibus DP/DeviceNet
- ◆ LEDs to indicate operating modes, and for selfdiagnosis
- ◆ Rugged IP 54 metal enclosure
- ◆ High EMI compatibility through screened enclosure, screened sensor and electric interference suppression on all inputs and outputs
- ◆ CE mark

### Typical Applications

- ◆ Analytical engineering
- ◆ Evaporation and coating systems
- ◆ Vacuum furnaces
- ◆ General pressure measurement and control on systems in the fine and rough vacuum range which have the following requirements:
  - ◆ Immediate data transfer to a programmable control/computer via analog interface
  - ◆ Coverage of greater distances between the point of the measurement and processing location
  - ◆ Several locations which are to be monitored continuously
  - ◆ Low voltage supply
  - ◆ Simple, cost and space saving installation
  - ◆ Increased reliability
  - ◆ Simple operation
  - ◆ Increased requirements concerning electromagnetic compatibility (EMI)

### Sensor

The wide range Bayard-Alpert sensing system is mechanically protected by the metal tube which surrounds it. The rugged arrangement of the electrodes ensures highly reproducible measurements over the entire range.

Each sensor is individually calibrated in the factory. The calibration data is stored in an EEPROM and is fully integrated into the sensor.

When exchanging the sensor, the electronics of the transmitter are automatically adjusted to the connected sensor, so that the specified reproducibility can be guaranteed.

The sensor with a CF flange is equipped with a welded current feedthrough which enables degassing of the sensor at a temperature of  $150\text{ }^{\circ}\text{C}$  with the electronics in place.

Sensor supply and processing of the measurement data is performed by microprocessor controlled electronics, which require a 24 V power supply and draw a very low current.

The microcontroller also controls the ITR 100 in that it monitors the emission, converts and corrects the measurement data (automatic correction of the sensor's sensitivity, matching of the unit etc.) and monitoring of the trigger thresholds for the relay.

The selectable signal output characteristics (linear/logarithmic) as well as the digital computer interfaces permits easy integration in existing or future system concepts.

Technical Data		ITR Transmitter
Measurement range	mbar (Torr)	$2 \times 10^{-10}$ to $1 \times 10^{-1}$ ( $1.5 \times 10^{-10}$ to $0.75 \times 10^{-1}$ ) Threshold $1 \times 10^{-10}$ ( $0.75 \times 10^{-10}$ )
Reproducibility (standard deviation to DIN 1319-1)		$\pm 10$ % of the meas. value, in proc. press. range $1 \times 10^{-7}$ to $1 \times 10^{-2}$ mbar
Principle of measurement		Wide range Bayard-Alpert ionization gauge
Degas		Electron bombardment 3 minutes, max.
Emission current (automatic switching)		5 mA to about $5 \times 10^{-5}$ mbar $25 \mu\text{A}$ from about $5 \times 10^{-5}$ to $1 \times 10^{-1}$ mbar
Supply voltage		20 to 28 V DC, typ. 24 V DC Hum voltage $\leq 2 V_{pp}$
Current consumption	A	0.5 in the measurement mode 0.8 in the degassing mode 1.4 during start-up (about 1 s.)
Storage / nominal temperature range	°C	-20 to +70 / 0 to +50
Max. rel. humidity (climatic class F)	% n.c.	95
Protection class		IP 54
Dimensions (H x W x D)	mm	See dimensional drawing
Weight, approx.		
	kg (lbs)	0.98 (2.2)
ITR 100, DN 25 KF	kg (lbs)	1.28 (2.8)
ITR 100, DN 40 CF		
Sensor		Fully sealed, exchangeable, with automatic self-calibration
Cathode		2 x yttriumoxide coated iridium cathode, capable of withstanding air inrushes, automatic switch off in case of overpressures
Vacuum connection	DN	25 KF or 40 CF
Degassing temperature, max.	°C	80 (DN 25 KF flange), 150 (DN 40 CF flange)
Dead volume, max.	cm <sup>3</sup>	24 at DN 25 KF 34 at DN 40 CF
Materials in contact with the medium		Stainl. steel, yttriumoxide, glass, NiFe, NiCr, tungsten
Over-pressure rating (abs.)	bar	2
Signal output ( $R_a \geq 10 \text{ k}\Omega$ ) Measurement signal (selectable)		0 to 10 V, 1 V/decade, logarithm. divisions or 3 decades selectable out of 9 decades; linear over 9 decades, mantissa 0.8 to 10 V with extra output for the exponent: 1 V increments/decade
Signal rise time	ms	< 100 (at $p > 1 \times 10^{-6}$ mbar)
Trigger		1 normally open relay contact
Adjustment range	mbar (Torr)	$1 \times 10^{-9}$ to $1 \times 10^{-1}$ ( $0.75 \times 10^{-9}$ to $0.75 \times 10^{-1}$ )
Hysteresis		about 10 % of the value
Reaction time	ms	$\leq 100$ (at $p > 1 \times 10^{-6}$ mbar)
Contact rating		60 V, 0.5 A DC
Control input ( $R_E = 11 \text{ k}\Omega$ ) Programmable control compatible, 24 V logic		Emission: ON/OFF; DEGAS: ON/OFF Switchover between measurement signal/trigger level
Electrical connection		15 way sub-D male connector
Cable length, max.	m	100

Ordering Information	ITR Transmitter	
ITR 100, DN 25 KF (RS 232 C interface) Replacement sensor IE 100, DN 25 KF	Part No. 163 60 Part No. 163 61	
ITR 100, DN 40 CF (RS 232 C interface) Replacement sensor IE 100, DN 40 CF	Part No. 163 66 Part No. 163 67	
ITR 100, DN 25 KF, with Profibus DP	Part No. 163 70	
ITR 100, DN 40 CF, with Profibus DP	Part No. 163 72	
ITR 100, DN 25 KF, with DeviceNet	Part No. 163 74	
ITR 100, DN 40 CF, with DeviceNet	Part No. 163 75	
Sensor cables	Sub-D/bare wire ends	ITR - IT 23 Center 1/Combivac 2T
5 m	Part No. 124 63	Part No. 124 55
10 m	Part No. 163 69	Part No. 163 83
15 m	Part No. 124 64	Part No. 124 56
20 m	Part No. 124 65	Part No. 124 57
30 m	Part No. 124 66	Part No. 124 58
other cable lengths upon request		

