

Broadband Refrigeration - TRANSMITTER^{EVO}

Broadband Infrared gas detector for refrigerants – calibrated to R134a // TETRAFLUOROETHANE // 2000 ppm
smartGAS item number: T4-712205-03800

READY TO INSTALL • LOW DRIFT • LONG LIFE TIME • LOW MAINTENANCE COSTS



IDEAL FOR:

HOTEL AIR CONDITIONING
FOOD STORAGE ROOMS
INDUSTRIAL REFRIGERATION
FOOD TRANSPORT
SUPERMARKETS

- **R134a (Reference)**
- **R23**
- **R32**
- **R125**
- **R404a**
- **R407a**
- **R407f**
- **R410a**
- **R448a**
- **R449a**
- **R452a**
- **R455a**
- **R513a**

The TRANSMITTER^{EVO} series is designed to address the individual requirements of customers who are seeking their own branded product and technical solution. Based on the highly reliable NDIR BASIC^{EVO} technology the TRANSMITTER^{EVO} offers the opportunity for customer specific solutions at reasonable cost.

Non Dispersive Infrared (NDIR) gas sensor for ambient air monitoring using dual wavelength technology. The TRANSMITTER^{EVO} is especially designed for refrigeration leak detection in small concentration ranges (2000 ppm range) for wall mounting. The TRANSMITTER^{EVO} can be utilised as a refrigerants detector for up to 8 gases (R134a, R125, R404a, R407a, R410a, R448a, R449a, R407f, R513a) in industrial refrigeration facilities but can also be used for ambient air monitoring in the field of air conditioning devices. Other scopes of applications comprise continuous gas monitoring in controlled environment chambers and food storage rooms as well as usage for various areas of scientific research.

Coloured LED lights indicate the device status at any time and the on board pressure compensation allows for precise gas measurement regardless of where the TRANSMITTER^{EVO} is installed. The TRANSMITTER^{EVO} offers IP54 protection as well as a fast gas exchange for reliable and safe operation. A robust design allows for operation even in dirty or challenging environments.

- **Customized design • Reducing maintenance costs • IP54 protection • Easy calibration**

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General features	
Measurement principle:	Non Dispersive Infra-Red (NDIR), dual wavelength
Measurement range:	0 .. 2000 ppm Full Scale (FS)
Gas supply:	by diffusion (atmospheric pressure)
Dimensions housing:	151 mm x 80 mm x 60 mm (L x W x H)
Warm-up time:	< 2 minutes (start up time) < 11 minutes (fade in finished) < 30 minutes (full specification)
Measuring response *	
Response time (t_{90}):	appr. 60 s
Digital resolution (@ zero):	1 ppm
Detection limit (3σ):	≤ 10 ppm
Repeatability:	$\leq \pm 20$ ppm
Linearity error (straight line deviation):	$\leq \pm 30$ ppm
Long term stability (span):	$\leq \pm 40$ ppm over 12 month period
Long term stability (zero):	$\leq \pm 30$ ppm over 12 month period
Influence of T and P *	
Temp. dependence (zero):	$\leq \pm 3$ ppm per °C
Temp. dependence (span):	$\leq \pm 6$ ppm per °C
Pressure dependence:	± 0.100 % of measurement value / hPa
Electrical inputs and outputs	
Supply voltage:	12 V .. 28 V DC
Average power consumption:	≤ 1.5 W (without load on pump supply)
Digital output signal:	Modbus ASCII / RTU via RS 485, autobaud, autoframe
Analogue output signal:	0(4) –20 mA, max 500 Ω / 0-2 V / 0-5 V / 0-10 V (DC)
Calibration:	zero and span by software or push buttons
Pressure compensation:	atmospheric
Climatic conditions	
Operating temperature:	-20 .. + 40 °C
Storage temperature:	-20 .. + 60 °C
Air pressure:	800 .. 1150 hPa
Ambient humidity:	0 .. 95 % relative humidity (not condensing)
* Typical values related to 1013 hPa and 22 °C for dry (not condensing) and clean sample gas. Stated values exclude calibration gas tolerance.	

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Broadband features cross-sensitivity

Gas:	R125	R404a	R407a	R410a
Scaling factor (other than R134a):	0,639	0,773	0,852	1,017
Scaling error (other than R134a):	≤ ± 80 ppm	≤ ± 90 ppm	≤ ± 50 ppm	≤ ± 80 ppm

Broadband features cross-sensitivity

Gas:	R448a	R449a	R407f	R513a
Scaling factor (other than R134a):	0,851	0,843	0,941	0,735
Scaling error (other than R134a):	≤ ± 270 ppm	≤ ± 270 ppm	≤ ± 230 ppm	≤ ± 60 ppm

Broadband features cross-sensitivity

Gas:	R32	R23	R452a	R455a
Scaling factor (other than R134a):	1,701	1,292	0,614	2,681
Scaling error (other than R134a):	≤ ± 75 ppm	≤ ± 220 ppm	≤ ± 175 ppm	≤ ± 110 ppm

Application of scaling factors:

$$\text{Actual gas conc. (target gas)} = \text{Scaling factor} \times \text{Conc. reading (R134a)}$$

Actual gas conc. (target gas):

Real gas concentration of the target gas

Scaling factor:

Multiplier to correct the sensor readings

Conc. Reading (R134a):

Sensor output reading referencing to R134a as calibration gas

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For more information, please visit www.smartGAS.eu or contact us at sales@smartgas.eu

Please consult smartGAS sales for parts specified with other temperature and measurement ranges.

At first initiation and depending on application and ambient conditions recalibration is recommended. Recurring cycles of recalibration are recommended.