



**Electro Optical Components, Inc.**

5464 Skylane Boulevard, Suite D, Santa Rosa, CA 95403

Toll Free: 855-EOC-6300

[www.eoc-inc.com](http://www.eoc-inc.com) | [info@eoc-inc.com](mailto:info@eoc-inc.com)



**smartGAS**  
MIKROSENSORIK

blue performance

## Broadband Refrigeration - TRANSMITTER<sup>EVO</sup>

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<sup>EVO</sup> 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<sup>EVO</sup> technology the TRANSMITTER<sup>EVO</sup> 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<sup>EVO</sup> is especially designed for refrigeration leak detection in small concentration ranges (2000 ppm range) for wall mounting. The TRANSMITTER<sup>EVO</sup> 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<sup>EVO</sup> is installed. The TRANSMITTER<sup>EVO</sup> 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**

## Broadband Refrigeration - TRANSMITTER<sup>EVO</sup>

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

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 <sub>90</sub> ):	appr. 60 s
Digital resolution (@ zero):	1 ppm
Detection limit (3 σ):	≤ 10 ppm
Repeatability:	≤ ± 20 ppm
Linearity error (straight line deviation):	≤ ± 30 ppm
Long term stability (span):	≤ ± 40 ppm over 12 month period
Long term stability (zero):	≤ ± 30 ppm over 12 month period
Influence of T and P *	
Temp. dependence (zero):	≤ ± 3 ppm per °C
Temp. dependence (span):	≤ ± 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.	

## Broadband Refrigeration - TRANSMITTER<sup>EVO</sup>

Broadband Infrared gas detector for refrigerants – calibrated to R134 // TETRAFLUOROETHANE // 2000 ppm  
 smartGAS item number: T4-712205-03800

### Broadband features cross-sensitivity

Gas:	<b>R125</b>	<b>R404a</b>	<b>R407a</b>	<b>R410a</b>
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:	<b>R448a</b>	<b>R449a</b>	<b>R407f</b>	<b>R513a</b>
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:	<b>R32</b>	<b>R23</b>	<b>R452a</b>	<b>R455a</b>
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:

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

<b>Actual gas conc. (target gas):</b>	Real gas concentration of the target gas
<b>Scaling factor:</b>	Multiplier to correct the sensor readings
<b>Conc. Reading (R134a):</b>	Sensor output reading referencing to R134a as calibration gas

All rights reserved. Any logos and/or product names are trademarks of smartGAS. The reproduction, transfer, distribution or storage of information contained in this brochure in any form without the prior written consent of smartGAS is strictly prohibited. All specifications – technical included – are subject to change without notice. Depending on the application, the target gas and the measurement range the technical data may differ. No liability is accepted for any consequential losses, injury or damage resulting from the use of this document or from any omissions or errors herein. The data is given for guidance only. It does not constitute a specification or an offer for sale.

For more information, please visit [www.smartGAS.eu](http://www.smartGAS.eu) or contact us at [sales@smartgas.eu](mailto: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.