

Broadband Refrigeration - BASIC^{EVO}

Broadband Infrared gas sensor for refrigerants – calibrated to R134a // TETRAFLUOROETHANE // 2000 ppm
 smartGAS item number: B3-712205-03800
 NDIR refrigerant sensor for R134a, R125, R404a, R407a, R410a, R448a, R449a, R407f, R513a



- Pre calibrated to R134a
 Also applicable for:
 R125, R404a, R407a, R410a,
 R448a, R449a, R407f, R513a
- Gas entry by diffusion
- Low drift
- Long life time
- Low maintenance costs

APPLICATION EXAMPLE
 HOTEL AIR CONDITIONING
 FOOD STORAGE ROOMS
 INDUSTRIAL REFRIGERATION
 FOOD TRANSPORT

Non Dispersive Infrared (NDIR) broadband gas sensor for ambient air monitoring using dual wavelength technology. Although designed especially for refrigeration leak detection in small concentration ranges (2000 ppm range) for wall mount detectors and room air monitoring devices the BASIC^{EVO} can also be applied in food storage facilities, air conditioning systems and various areas of scientific research.

The BASIC^{EVO} refrigerant broadband sensor is calibrated to R134a as reference and can easily be integrated into OEM systems, where long term stability, repeatability and reliable performance are required. It 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. Special build-in solutions to provide IP54 protection and easy field gas-calibration are available.

Modbus ASCII or RTU data communication offers a variety of options to connect the BASIC^{EVO} gas sensor to a controller.

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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:	62 mm x 37 mm x 30 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 at R134a reference gas

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:	3.3 V .. 6.0 V DC
Supply current (peak):	< 400 mA @ 3.3V, < 240mA @ 5.0 V
Inrush current:	< 600 mA
Average power consumption:	< 800 mW
Digital output signal:	Modbus ASCII / RTU via UART, autobaud, autoframe
Calibration:	zero and span by SW

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.

EVO

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Broadband features cross-sensitivity				
Gas:	R125	R404a	R407a	R410a
Scaling factor (other than R134a):	0,644	0,772	0,85	1,014
Scaling error at FS (other than R134a):	≤ ± 90 ppm	≤ ± 80 ppm	≤ ± 50 ppm	≤ ± 60 ppm

Broadband features cross-sensitivity				
Gas:	R448a	R449a	R407f	R513a
Scaling factor (other than R134a):	0,851	0,843	0,941	0,736
Scaling error at FS (other than R134a):	≤ ± 90 ppm	≤ ± 90 ppm	≤ ± 80 ppm	≤ ± 80 ppm

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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.