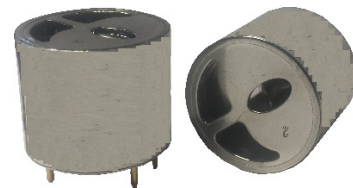**mipex**®

DATA SHEET

SMALL-SIZE INFRARED GAS SENSOR MIPEX-02-3-RX-1.1 G

Non Ex version

Features

☑ Ultra-low power consumption – less than 1.5 mW.

☑ Smart sensor with embedded microcontroller returns linearized, temperature-compensated output data (-20…+50 °C).

☑ LED based dual wave length technology.

☑ Fully digital.

☑ Durable stainless-steel housing.

☑ Measurement range:
- up to 5% vol. for carbon dioxide (CO_2).

☑ Fast response time (T90 < 30 s).

☑ Does not require metal-ceramic filters (sinters).

☑ Industry standard size ⌀20.3×16.6 mm.

Description

MIPEX-02 is intended for automatic continuous measurement of carbon dioxide concentration in the premises which atmosphere can contains it.

Sensor operating principle is based on NDIR technology, i.e. on selective absorption of infrared radiation by gas molecules.

Differential dual wavelength method allows eliminating of water vapor, optical elements contamination and other non-selective hindrances influence.

Communication interface – UART

Application

MIPEX-02 sensor is intended for using in the following areas: food industry, agricultural industry and production technological cycles. Sensor is used as a OEM component for portable and fixed gas detectors. Ideal for wireless IoT applications.

Part number	Target gas	Calibration gas	Measurement range, % vol.	Temperature range, °C	RX-code
MIPEX-02-3-30-1.1 G	CO_2	CO_2	0…1.5	-10…+40	30
MIPEX-02-3-32-1.1 G				-20…+50	32
MIPEX-02-3-40-1.1 G			0…5	-10…+40	40
MIPEX-02-3-42-1.1 G				-20…+50	42

Technical specification

General specification	
Gas sampling method:	Diffusion
Operating principle:	Non-Dispersive Infra-Red (NDIR)
Target gas	CO_2
Operating, storage and transportation conditions: Relative humidity, %	up to 98
Operating, storage and transportation conditions: Atmospheric pressure, kPa	80…120
Operating, storage and transportation conditions: Temperature**, °C	-55...+60
Warm-up time, sec	120
Overall dimensions, mm	⌀20.3×16.6 (w/o pins)
Weight, g	17.2
Housing material	Stainless steel

Measurement specification	
Measurement range, % vol.	0…1.5
	0…5
Readings variability (+20…+25 ºC)*	± 0.05% vol. or ± 5% of readings (whichever is greater)
Response time (T90), sec	≤ 30
Response time (T90) with dust filter applied, sec	≤ 60

Electrical specification	
Operating supply voltage, VDC (min…max)	+3.0…+5.0
Communication interface	UART
Average current, µA	≤ 330

* Variability in whole operating temperature range for any sensor modification presented below.
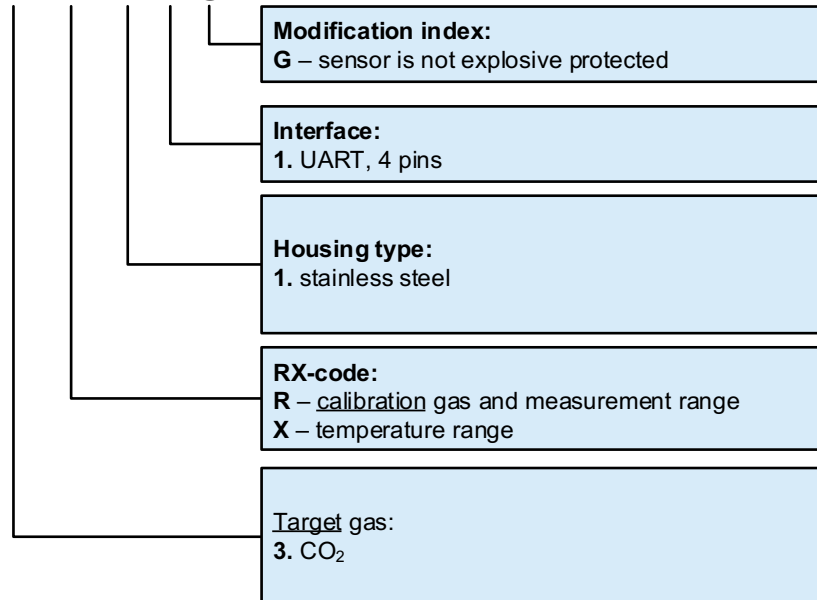
** Term "operating temperature" refers to ambient temperature, at which sensor operates and its intrinsic safety is ensured, but sensor readings variability stated in table below is provided only in temperature range determined by RX-code (see Ordering info).

Gas	Readings variability within a temperature range	Additional variability due to pressure	Additional variability due to humidity
CO_2	± 0.05% vol. or ± 5% of readings (whichever is greater) within the range of +20…+25 °C;	± 0.1% vol. or ± 40% of readings (whichever is greater) at 100 kPa (tested at 80 kPa, 100 kPa, 120 kPa)	± 0.1% vol. or ± 15% of readings (whichever is greater) at 40 °C (tested at 20% RH, 50% RH, 90% RH)
	± 0.1% vol. or ± 10% of readings (whichever is greater) within the range of -10…+20 °C and +25…+40 °C;		
	± 0.2% vol. or ± 20% of readings (whichever is greater) within the range of -20…-10 °C and +40…+50 °C.		

Ordering info

Part number structure:

MIPEX-02-B-RX-D.1 G

Modification index:
G – sensor is not explosive protected

Interface:
1. UART, 4 pins

Housing type:
1. stainless steel

RX-code:
R – calibration gas and measurement range
X – temperature range

Target gas:
3. CO_2

Current consumption

Average current consumption is not more than 330 µA at request rate less than 1 Hz.

Intrinsic safety

⚠️ Sensor is not explosive protected.

Certificates / Declarations of conformity

RoHS 2 Compliant – Directive 2011/65/EU.

Handling precautions

Maximum allowable pressure on the central part of sensor reflecting cover or on sensor side surface – 2 MPa, on sensor upper edge – 100 MPa.

Sensor is not intended to measure carbon dioxide contained in fluids.

Gas holes of sensor should be protected against ingress of dust and sprayed materials.

Sensor must be mounted using sockets only, as soldering the pins may damage sensor.

There is no risk of pollution and negative impact on human health. Sensor does not contain any harmful substances that may be released during its normal operation.
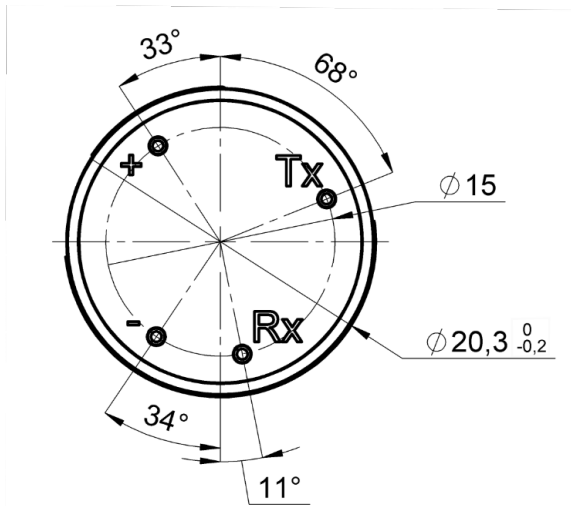
Sensor pinout (bottom side)
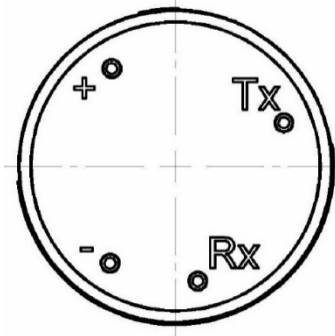
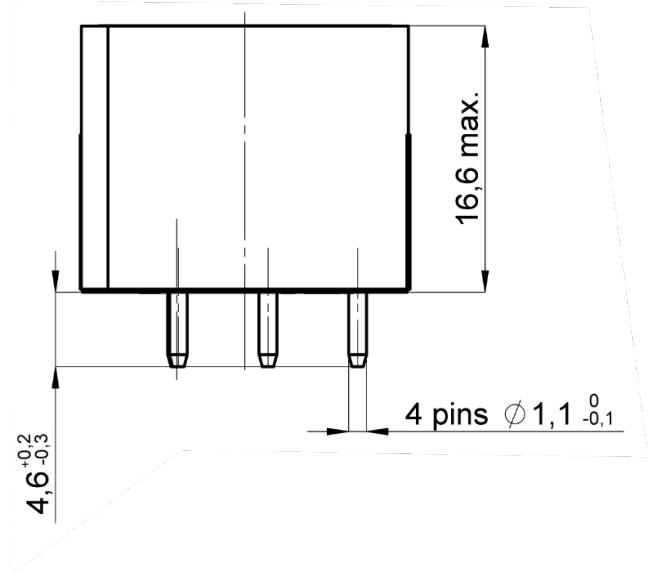| Pin	Purpose
Tx	UART, TxD output
Rx	UART, RxD input
+	V_{DD}
—	GND

Outline

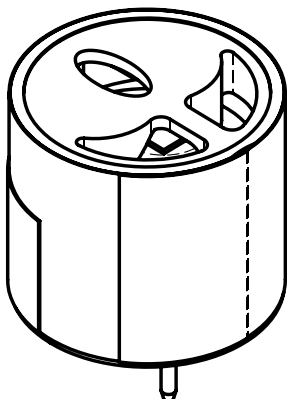All dimensions are in millimeters.

Bottom view

Side view

Housing Type

Contacts

MIPEX TECHNOLOGY

SIA MIPEX

2B, Valkas iela, Daugavpils, Latvia, 5417

Tel/fax: +371 26179021

web: www.mipex-tech.com

e-mail: info@mipex-tech.com

support: support@mipex-tech.com