

# SENMA

madur



CHARACTERISTIC | FEATURES | TECHNICAL DATA | SENSORS

SENMA is a flow gas sensor which serves as detector for single gas component. It is highly adaptable to specific needs. Depending on analyzed gas it uses NDIR (Non-Dispersive Infra-red), electrochemical, thermal conductivity or photoionization measurement technology.

Each sensor is prepared for detection of particular gas and calibrated for required range.

Gas sample gets to the sensor through the membrane pump, which is installed inside the device (note, Senma is not a diffusion sensor), then the gas is being analyzed.

When concentration of detected gas exceeds specified level, SENMA sets off any connected alarm with help of the relay output or performs other, indicated action.

# SENMA

CHARACTERISTIC

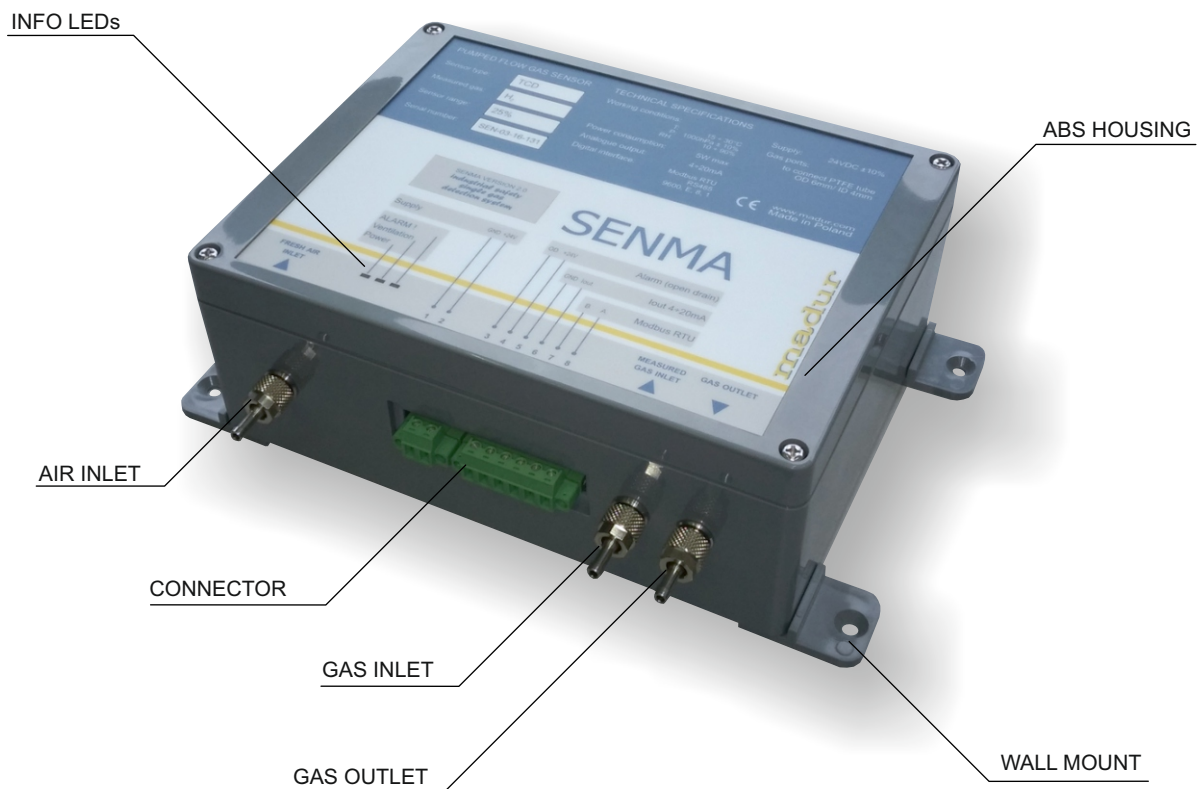
FEATURES

TECHNICAL DATA

SENSORS

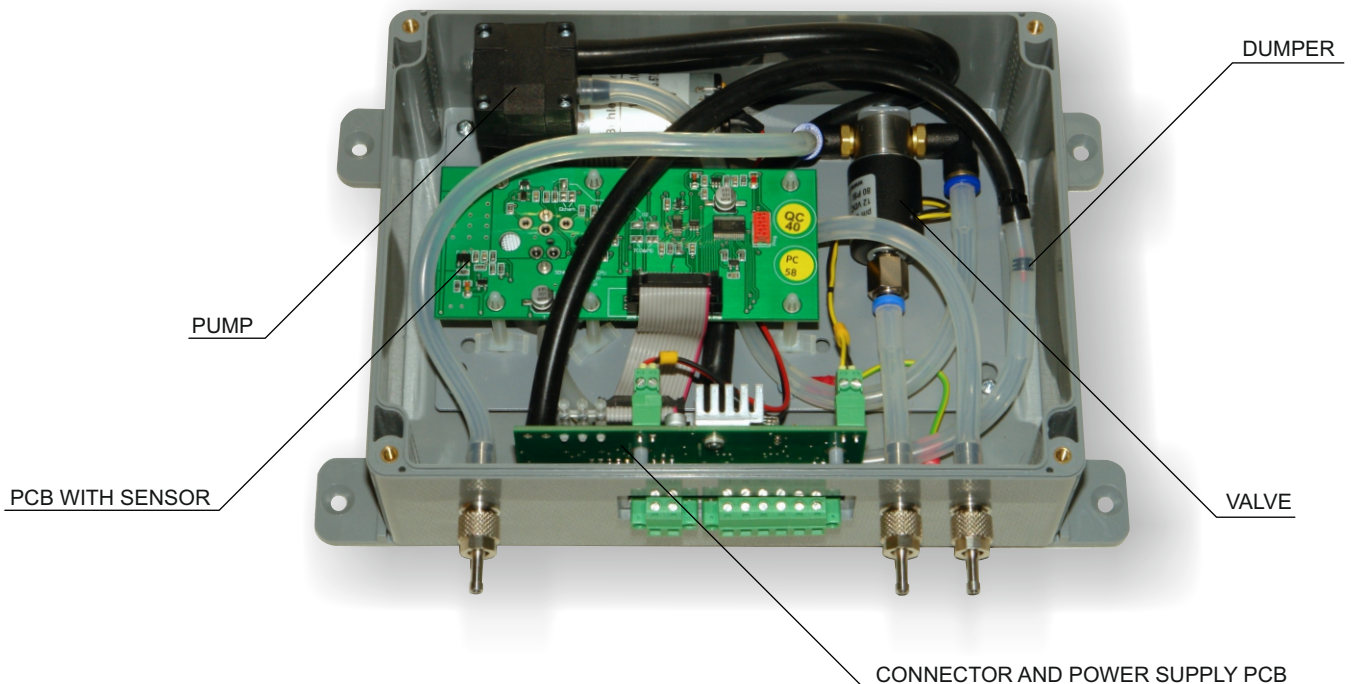
- Wide choice of electrochemical, NDIR, TCD and VOC sensors
- Available for various ranges and resolutions
- ABS housing
- Integrated membrane pump
- Solenoid valve for automatic ventilation and zeroing
- PC program to adjust the analyser's settings and to view the results
- Communication with PC via MODBUS 485 / RS485
- Analogue output (0/4÷20mA)
- Alarm (open drain) relay output
- Optional display (4,5 digits)

## SENMA DETECTOR



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Dimensions (W * H * D)	240 mm * 175 mm * 70 mm
Weight (depends on inside equipment)	1,1kg ÷ 1,2kg
Casing material	ABS
Operating conditions	T: 10°C ÷ 50°C; RH: 5%÷90% (non condensing)
Storing temperature	0°C ÷ 55°C
Power consumption	10W
Protection grade	IP52
Gas pump	Membrane   12VDC   1.5l/min (90l/h) - with automatic flow control
Solenoid valve	3-way   12VDC
Current analogue outputs	1 output 0 mA ÷ 20 mA or 4 mA ÷20 mA
Alarm (open drain)	1 relay output
Communication interface with PC computer	MODBUS 485 / RS485
Gas inlets/outlets	INOX   for PTFE 4x6mm hose



Method	Range   Resolution	Accuracy	Time (T90)
<b>O<sub>2</sub> - OXYGEN</b>			
Electrochemical	20,95%   0,01%	± 0,2% abs. or 5% rel.	45 sec
<b>CO - CARBON MONOXIDE</b>			
Electrochemical	4 000 ppm   1 ppm	± 5 ppm abs. or 5% rel.	45 sec
NDIR	10%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	25%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	50%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	100%   0,1%	± 0,5% abs. or 5% rel.	45 sec
<b>CO<sub>2</sub> - CARBON DIOXIDE</b>			
NDIR	1%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	5%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	10%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	50%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	100%   0,1%	± 0,5% abs. or 5% rel.	45 sec
<b>CH<sub>4</sub> - METHANE</b>			
NDIR	1%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	5%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	10%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	25%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	100%   0,1%	± 0,5% abs. or 5% rel.	45 sec
<b>H<sub>2</sub>S - HYDROGEN SULPHIDE</b>			
Electrochemical	200 ppm   0,02 ppm	± 0,2 ppm abs. or 5% rel.	45 sec
<b>NO - NITRIC OXIDE</b>			
Electrochemical	500 ppm   0,2 ppm	± 1 ppm abs. or 5% rel.	45 sec
<b>NO<sub>2</sub> - NITROGEN DIOXIDE</b>			
Electrochemical	50 ppm   0,1 ppm	± 0,2 ppm abs. or 5% rel.	45 sec
<b>N<sub>2</sub>O - NITROUS OXIDE</b>			
NDIR	2000 ppm   0,1 ppm	± 5 ppm abs. or 5% rel.	45 sec
<b>SO<sub>2</sub> - SULPHUR DIOXIDE</b>			
Electrochemical	200 ppm   0,1 ppm	± 1 ppm abs. or 5% rel.	45 sec
<b>H<sub>2</sub> - HYDROGEN</b>			
Electrochemical	2 000 ppm   1 ppm	± 5 ppm abs. or 5% rel.	45 sec
TCD - Thermal conductivity detector	10%   0,1%	± 0,05% abs. or 5% rel.	45 sec
TCD - Thermal conductivity detector	25%   0,1%	± 0,05% abs. or 5% rel.	45 sec
TCD - Thermal conductivity detector	50%   0,1%	± 0,05% abs. or 5% rel.	45 sec
TCD - Thermal conductivity detector	100%   0,1%	± 0,5% abs. or 5% rel.	45 sec

Method	Range   Resolution	Accuracy	Time (T90)
<b>CL<sub>2</sub> - CHLORINE</b>			
Electrochemical	10 ppm   0,02 ppm	± 0,2 ppm abs. or 5% rel.	45 sec
<b>HCL - HYDROGEN CHLORIDE</b>			
Electrochemical	100 ppm   0,1 ppm	± 1 ppm abs. or 5% rel.	45 sec
<b>NH<sub>3</sub> - AMMONIA</b>			
Electrochemical	200 ppm   0,5 ppm	± 2,5 ppm abs. or 5% rel.	45 sec
<b>SiH<sub>4</sub> - SILANE</b>			
Electrochemical	50 ppm   0,2 ppm	± 2 ppm abs. or 5% rel.	45 sec
<b>BCL<sub>3</sub> - BORON TRICHLORIDE</b>			
Electrochemical	10 ppm   0,1 ppm	± 1 ppm abs. or 5% rel.	45 sec
<b>SiH<sub>2</sub>CL<sub>2</sub> - DICHLOROSILANE</b>			
Electrochemical	50 ppm   0,1 ppm	± 1 ppm abs. or 5% rel.	45 sec
<b>BF<sub>3</sub> - BORON TRIFLUORIDE</b>			
Electrochemical	10 ppm   0,1 ppm	± 1 ppm abs. or 5% rel.	45 sec
<b>HF<sub>3</sub> - HYDROGEN FLUORIDE</b>			
Electrochemical	10 ppm   0,1 ppm	± 1 ppm abs. or 5% rel.	45 sec
<b>SF<sub>6</sub> - SULFUR HEXAFLUORIDE</b>			
NDIR	1%   0,001%	± 0,005% abs. or 5% rel.	45 sec
NDIR	10%   0,01%	± 0,05% abs. or 5% rel.	45 sec
NDIR	100%   0,1%	± 0,5% abs. or 5% rel.	45 sec
<b>CHF<sub>3</sub> - FLUOROFORM (R23 COOLING AGENT)</b>			
NDIR	2,5%   0,01%	± 0,05% abs. or 5% rel.	45 sec
<b>CF<sub>4</sub> - TETRAFLUOROMETHANE</b>			
NDIR	1%   0,01%	± 0,05% abs. or 5% rel.	45 sec
<b>C<sub>4</sub>F<sub>8</sub> - OCTAFLUOROCYCLOBUTANE (RC318 COOLING AGENT)</b>			
NDIR	1%   0,01%	± 0,05% abs. or 5% rel.	45 sec
<b>He - HELIUM</b>			
TCD - Thermal conductivity detector	10%   0,1%	± 0,05% abs. or 5% rel.	45 sec
TCD - Thermal conductivity detector	25%   0,1%	± 0,05% abs. or 5% rel.	45 sec
TCD - Thermal conductivity detector	50%   0,1%	± 0,05% abs. or 5% rel.	45 sec
TCD - Thermal conductivity detector	100%   0,1%	± 0,5% abs. or 5% rel.	45 sec
<b>VOC - VOLATILE ORGANIC COMPOUNDS</b>			
PID - Photoionization Detector	100 ppm   1 ppm	± 5 ppm abs. or 5% rel.	45 sec
PID - Photoionization Detector	1000 ppm   1 ppm	± 5 ppm abs. or 5% rel.	45 sec