Internal Sensor Modules for Ambient Air Quality Monitor

These sensor modules are used for Ambient Air Quality Monitor like MAQM...

- AMBIENT TEMPERTURE AND HUMIDITY SENSOR MODULE -ATH
- SOUND LEVEL SENSOR MBRTU-SL
- OPTICAL PARTICLE COUNTING SENSOR MBRTU-OPC
- OPTICAL PARTICLE PROFILER MAX-OPC-N3
- HIGH PERFORMANCE GAS MEASUREMENT MODULE MAX-O3
- HIGH PERFORMANCE GAS MEASUREMENT MODULE MAX-NO2
- HIGH PERFORMANCE GAS MEASUREMENT MODULE MAX-CO
- HIGH PERFORMANCE GAS MEASUREMENT MODULE MAX-SO2
- HIGH PERFORMANCE GAS MEASUREMENT MODULE MAX-CO2

AMBIENT TEMPERTURE AND HUMIDITY SENSOR MODULE -ATH

Item code: MBRTU-ATH-11IR

Description: Internal sensor module for ambient temperature and humidity, Modbus output.

Used for: MAQM

SENSOR SPECIFICATION

MEASURING SPECIFICATION	
Sensor	Digital type, factory calibrated, outputs both Humidity & Temperature values
Humidity measuring range & accuracy	0 .. 100 %RH, +/- 3.0% RH (+/- 1.5%RH for ATH-15 version)
Humidity resolution	0.1%
Temperature measuring range & accuracy	-40 .. + 85 oC, +/- 0.5 oC (+/- 0.1 oC for ATH-15 version)
Temperature resolution	0.1 oC
Sensor Filter	20um Alloy sintered filter
Accessories	Rain-guard for outdoor installation
Power supply	9..36VDC, max 30mA

SOUND LEVEL SENSOR MBRTU-SL

Item code: MBRTU-SL-01

Description: Internal Sensor module for Sound level, Modbus output.

Used for: MAQM and MAQM-MAX

SENSOR SPECIFICATION

MEASURING SPECIFICATION	
Sensor	Capacitive Microphone
Measuring range	30-130 dB(A)
Frequency range	20 - 12,500 Hz
Resolution	0.1 dB(A)
Accuracy	+/- 0.5 dB(A) at 94 dB(A) and 1 KHz
Working temperature	-20 .. + 60 oC
Working humidity	0 - 80% RH
Power supply	9..36VDC, max 30mA

OPTICAL PARTICLE COUNTING SENSOR MBRTU-OPC

Item code: MBRTU-OPC-02I

Description: Internal Sensor module for measuring outdoor PM1.0, PM2.5, and PM10; Modbus output.

Used for: MAQM

SENSOR SPECIFICATION

MEASURING SPECIFICATION	
Measuring technology	Laser light scattered method for PM1.0, PM2.5 and PM10
Particle range	0.3 to 12.4 um
Detection limit (PM10)	0.01 ug/m3 to 1500 mg/m3
Resolution	0.01 ug/m3
Accuracy	+/- 10% of Reading value
Sample flowrate	240 mL/min
Laser Classification	Class 1
Power supply	9..36VDC, max 30mA

OPTICAL PARTICLE PROFILER MAX-OPC-N3

Item code: MAX-OPC-N3

Description: Internal Sensor module for measuring outdoor PM1.0, PM2.5, and PM10; Modbus output.

Used for: MAQM-MAX

SENSOR SPECIFICATION

MEASURING SPECIFICATION	
Measuring technology	Laser light scattered method for PM1.0, PM2.5 and PM10
Particle range	0.3 to 40 um
Detection limit (PM1)	0.01 ug/m3 to 200 ug/m3
Detection limit (PM2.5)	0.01 ug/m3 to 2000 ug/m3
Detection limit (PM10)	0.01 ug/m3 to 2000 ug/m3
Resolution	0.01 ug/m3
Accuracy	+/- 10% of Reading value
Sample flowrate	5.5 L/min
Working Temperature	-10 .. + 50 oC
Working Humidity	0..95% RH non-condensing, continuous
Laser Classification	Class 1
Power supply	9..36VDC, max 30mA

HIGH PERFORMANCE GAS MEASUREMENT MODULE MAX-O3

Item code: MAX-O3-C5

Description: Internal Sensor module for measuring Ozone gas.

Used for: MAQM-MAX

SENSOR SPECIFICATION

MEASURING SPECIFICATION	
Measuring technology	Electro-chemical
Measurement range	0-5 ppm
Overload	50 ppm
Resolution	0.001 ppm
Lower Detectable Limit	0.001 ppm
Accuracy	+/- 2% of Reading value
Linearity	< 0.1% of Full scale
Response Time (T80)	< 60s
Operating Pressure	Atmospheric ± 10%
Working Temperature	-40 .. + 50 oC
Working Humidity	15..90% RH non-condensing, continuous
Sensor Life Time	2 years in clean air
Drift in Air	< 2 % signal loss per month
Power supply	9..36VDC, max 30mA

CROSS SENSITIVITY DATA

The table below does not claim to be complete. Interfering gases should not be used for calibration.

Interfering Gas	Concentration [ppm]	Reading [ppm]
C_2H_4	100	0
CH_2O	7	0
Cl_2	5	4
CO	100	0
Ethanol (C_2H_5OH)	60	0
H_2	100	0
H_2S	20	< -20
HCl	20	0
NH_3	80	0
NO	50	0
NO_2	5	~ 5
SO_2	5	0

Important Application Notes: NO readily forms NO2 in the presence of O2.

HIGH PERFORMANCE GAS MEASUREMENT MODULE MAX-NO2

Item code: MAX-NO2-C20

Description: Internal Sensor module for measuring NO2 gas.

Used for: MAQM-MAX

SENSOR SPECIFICATION

MEASURING SPECIFICATION	
Measuring technology	Electro-chemical
Measurement range	0-20 ppm
Overload	200 ppm
Resolution	0.001 ppm
Lower Detectable Limit	0.001 ppm
Accuracy	+/- 2% of Reading value
Linearity	< 0.1% of Full scale
Response Time (T90)	< 60s
Operating Pressure	Atmospheric ± 10%
Working Temperature	-40 .. + 50 oC
Working Humidity	15..90% RH non-condensing, continuous
Sensor Life Time	2 years in clean air
Drift in Air	< 2 % signal loss per month
Power supply	9..36VDC, max 30mA

CROSS SENSITIVITY DATA

The table below does not claim to be complete. Interfering gases should not be used for calibration.

Interfering Gas	Concentration [ppm]	Reading [ppm]
C_2H_4	100	0
CH_2O	7	0
Cl_2	20	15
CO	100	0
Ethanol (C_2H_5OH)	60	0
H_2	100	0
H_2S	20	< -20
HCl	20	0
NH_3	80	0
NO	50	0
O_3	1	1
SO_2	5	0

Important Application Notes:

HIGH PERFORMANCE GAS MEASUREMENT MODULE MAX-CO

Item code: MAX-CO-C1000

Description: Internal Sensor module for measuring CO gas.

Used for: MAQM-MAX

SENSOR SPECIFICATION

MEASURING SPECIFICATION	
Measuring technology	Electro-chemical
Measurement range	0-1000 ppm
Overload	2000 ppm
Resolution	0.001 ppm
Lower Detectable Limit	0.04 ppm
Accuracy	+/- 2% of Reading value
Linearity	< 0.1% of Full scale
Response Time (T90)	< 35s
Operating Pressure	Atmospheric ± 10%
Working Temperature	-40 .. + 50 oC
Working Humidity	15..90% RH non-condensing, continuous
Sensor Life Time	3 years in clean air
Drift in Air	< 2 % signal loss per month
Power supply	9..36VDC, max 30mA

CROSS SENSITIVITY DATA

The table below does not claim to be complete. Interfering gases should not be used for calibration.

Interfering Gas	Concentration [ppm]	Reading [ppm]
C_2H_4	10	14
CH_2O	5	15
Cl_2	20	-11
H_2	400	< 200
H_2S	20	60
NO	50	13
NO_2	100	-64
O_3	1	~ -1
SO_2	100	78

Important Application Notes:

HIGH PERFORMANCE GAS MEASUREMENT MODULE MAX-SO2

Item code: MAX-SO2-C20

Description: Internal Sensor module for measuring SO2 gas.

Used for: MAQM-MAX

SENSOR SPECIFICATION

MEASURING SPECIFICATION	
Measuring technology	Electro-chemical
Measurement range	0-20 ppm
Overload	100 ppm
Resolution	0.001 ppm
Lower Detectable Limit	0.009 ppm
Accuracy	+/- 2% of Reading value
Linearity	< 0.1% of Full scale
Response Time (T90)	< 15s
Operating Pressure	Atmospheric ± 10%
Working Temperature	-20 .. + 50 oC
Working Humidity	15..90% RH non-condensing, continuous
Sensor Life Time	2 years in clean air
Drift in Air	< 2 % signal loss per month
Power supply	9..36VDC, max 30mA

CROSS SENSITIVITY DATA

The table below does not claim to be complete. Interfering gases should not be used for calibration.

Interfering Gas	Concentration [ppm]	Reading [ppm]
CO	100	< 1
H_2	100	1
H_2S	20	~ 17
NO	100	0
NO_2	100	-125

Important Application Notes:

HIGH PERFORMANCE GAS MEASUREMENT MODULE MAX-CO2

Item code: MAX-CO2-LP5000

Description: Internal Sensor module for measuring CO2 gas.

Used for: MAQM-MAX

SENSOR SPECIFICATION

MEASURING SPECIFICATION	
Measuring technology	NDIR
Measurement range	0-5000 ppm
Overload	100 %
Resolution	1 ppm
Lower Detectable Limit	10 ppm
Accuracy	+/- 30 ppm + 3% of reading
Linearity	< 0.1% of Full scale
Response Time (T90)	< 30s
Operating Pressure	500 mbar to 2 bar absolute
Working Temperature	0 .. + 50 oC
Working Humidity	0..95% RH non-condensing, continuous
Sensor Life Time	10 years in clean air
Pressure Dependence	0.14% signal per mbar deviation from 1013 mbar, 950-1050mba
Power supply	9..36VDC, max 30mA