EMS Brno

Data Acquisition Environment

Hardware – Software – Cloud application

www.emsbrno.cz

Air temperature and humidity sensor EMS 33S

Main features:

- Sensor replacement by customer on site – cheaper than recalibration
- SDI-12 outputs
- Stainless steel mesh
- Economy solution
- Manufactured by EMS

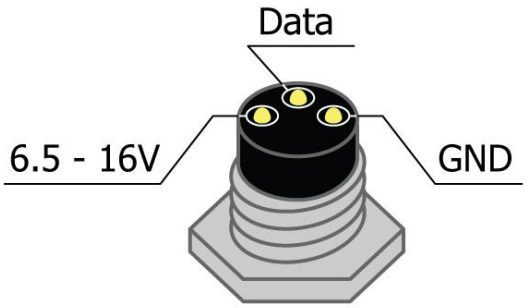
Specification:

- Temperature:
  - range -40 to 60 °C
  - accuracy better than ± 0.15 °C
- Air Humidity
  - range 0 to 100 %
  - accuracy better than ± 2 %
- Size: ø20 x 81 mm

Specification:

Temperature measuring range	-40 to 60 °C
Temperature accuracy	± 0.15 °C
Humidity measuring range	0 to 100%
Humidity accuracy	± 2%
Size (diameter x length)	20 x 92 mm
Weight	26 g
Operating temperature	-40 to 80 °C
Operating humidity	0 to 100%
Connection	Three wire M8 connector male

Air temperature and humidity sensor EMS 33S - male connector wiring



Standard M8 female connector cable wiring

Brown - 6.5-16V
Black - Data
Blue - GND

SDI-12 interface specification

EMS33 sensor is compatible with SDI-12 version 1.3 described in documents on http://sdi-12.org/archives.php, except for continuous measurements (aR0 - aR9 or aRC0 - aRC9).

Overview of supported commands (a = sensor address):

Datalogger commands are in bold. Each response from the sensor is terminated by <CR> <LF>

Info command - aI!

For instance:

1I! 113EMSBrno EMS33S1.1Sn # 1234567890

Parameter	Length	Description
1I!	3	Request to read the sensor information at address 1
1	1	Sensor address - here 1
13	2	SDI version - here 1.3
EMSBrno	8	Manufacturer - completed with space 0x20
EMS33S	6	Model - completed with space 0x20
1.1	3	FW Sensor version - here 1.1
Sn#1234567890	13	Serial number of the sensor

Measurement command - aM!

For instance:

1M! 10012

Parameter	Length	Description
1M!	3	Sensor measurement request at address 1
1	1	Sensor address - here 1
001	3	Time after which the measured data will be available in seconds - here 1. If the data is available earlier, the sensor sends the address terminated by the <CR> <LF> - service request.
2	1	Number of variables returned - here 2

Data command - aD0!

For instance:

1D0! 1+20.321+60.542XYZ

Parameter	Length	Description
1D0!	4	Sensor data request at address 1
1	1	Sensor address - here 1
+20.321	Variable	Temperature in °C
+60.542	Variable	Relative Humidity in %
XYZ	3	16-bit CRC - added only if aMC! or aCC! commands were requested for the measurement

Change Address - aAb!

For instance:

1A2! 2

Parameter	Length	Description
1A2!	4	Request to change the sensor address on the address 1 to address 2
2	1	New sensor address - here 2

Address Query command -?! - only one sensor on the line!

For instance:

?! 2

Parameter	Length	Description
?!	2	Retrieving the sensor address
2	1	Attached sensor address - here 2.

Concurrent Measurement - aC!

For instance:

1C! 100102

Parameter	Length	Description
1C!	3	Sensor measurement request at address 1
1	1	Sensor address - here 1
001	3	Time after which the measured data will be available in seconds - here 1
02	2	Number of variables returned - here 2

Measurement command with CRC - aMC!

For instance:

1MC! 10012

Parameter	Length	Description
1MC!	4	Sensor measurement request at address 1 with CRC data control
1	1	Sensor address here 1
001	3	Time after which the measured data will be available in seconds - here 1. If the data is available earlier, the sensor sends the address terminated by the <CR> <LF> - service request.
2	1	Number of variables returned - here 2

Concurrent Measurement with CRC - aCC!

For instance:

1CC! 100102

Parameter	Length	Description
1CC!	4	Sensor measurement request at address 1 with CRC data control
1	1	Sensor address here 1
001	3	Time after which the measured data will be available in seconds - here 1
02	2	Number of variables returned - here 2

Verification command - aV!

For instance:

1V! 10012

Parameter	Length	Description
1V!	3	Sensor measurement request at address 1
1	1	Sensor address here 1
001	3	Time after which the measured data will be available in seconds - here 1
2	1	Number of variables returned - here 2

Acknowledge Active – a!

For instance:

2! 2

Parameter	Length	Description
2!	2	Check the sensor connection
2	1	Sensor address respond - here 2