

EE23 Series

EE23 series stand for multifunctionality, highest accuracy, easy mounting and service.

The new IP65 water proof housing concept is based on three modules:

- back module with connectors
- middle module which accommodates the electronics
- cover module with optional display

It offers easy installation and the possibility for fast exchange of the sensor unit for service purposes.

EE23 can be employed in all common applications by choosing the appropriate housing combination.

- A and B versions are dedicated for wall or duct mounting.
- C version with remote sensing probe has a working temperature range $-40...120^{\circ}\text{C}$
- F wall mounted version with rear cable outlets is dedicated for clean room applications. Connection cables do not disturb the cleaning process.
- G version with optional radiation shield is dedicated for outdoor and meteo applications.

The high quality humidity sensor elements HC series and newest microprocessor technology are the guarantee for best accuracy, excellent long term stability, small hysteresis and highest resistance to pollutants.

Easy configuration of the humidity and temperature outputs is made possible by the innovative design of the EE23 electronics. The user can select between various current or voltage output signals.

Optional the transmitters are available with passive temperature sensor elements with a free choice of the sensor type.

An optional hygrostat output for control and alarm purposes completes the wide range of types.

One can very easily perform a two point adjustment on site by using two push buttons and an optional display.

The three modules concept makes possible also a loop calibration according to FDA (Food and Drug Administration) recommendations.

Further options are the integrated display and cable outlets via connectors.

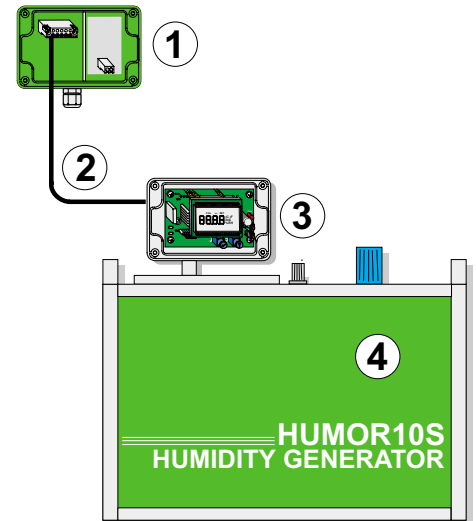
Multifunctional Humidity & Temperature Transmitter



Field calibration

The three modules housing design allows a fast and easy dismounting of EE23 for field calibration. The user does not have to interrupt the measurement which is essential for the loop calibration recommended by FDA (Food and Drug Administration).

- ① EE23 back module mounted on the wall
- ② EE23 extension cable (can be ordered separately)
- ③ EE23 middle module mounted in the calibrator
- ④ Humidity reference system (e.g. HUMOR10)



Two Points Adjustment

With an easy routine the user can perform a fast and accurate two points adjustment.



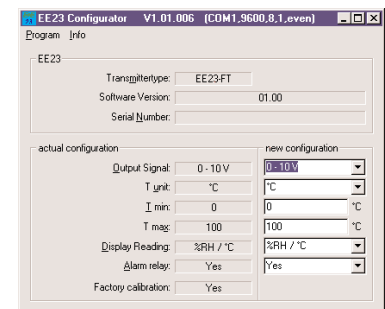
Display

The actual measured data can be read on the optional integrated display. The user can choose between RH, T or both.



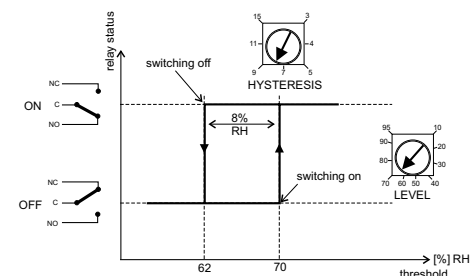
Configuration

The configuration kit consists of the hardware interface module and the communication software. Individual adjustments of the analogue outputs, temperature output scaling and display mode can be made via software.



Alarm Output

Simple control applications can be solved by the optional alarm output of EE23. The user can set threshold and hysteresis via potentiometers.



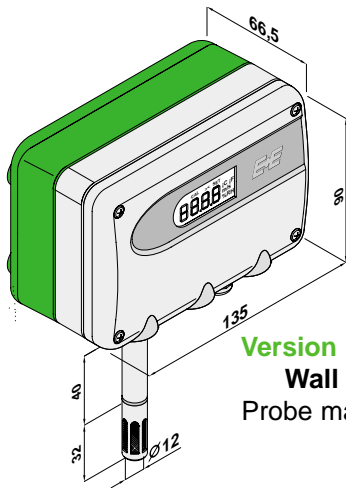
Typical Applications

High end HVAC
 Climate chambers
 Process technology
 Dryers
 Meteorology
 Clean rooms
 Green houses
 Stocks

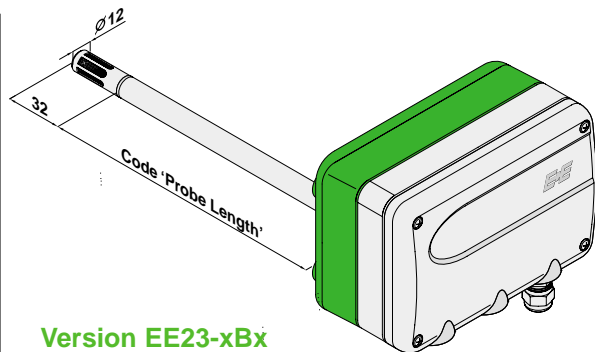
Features

temperature range $-40..120^{\circ}\text{C}$
 very easy mounting
 fast and easy service and replacement
 on site calibration
 best accuracy over whole temperature range
 remote sensing probe up to 10 m
 alarm output

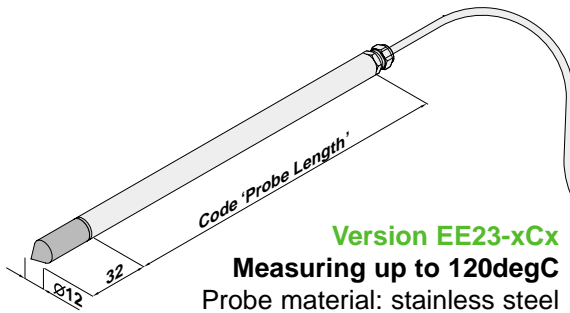
Dimensions (mm)



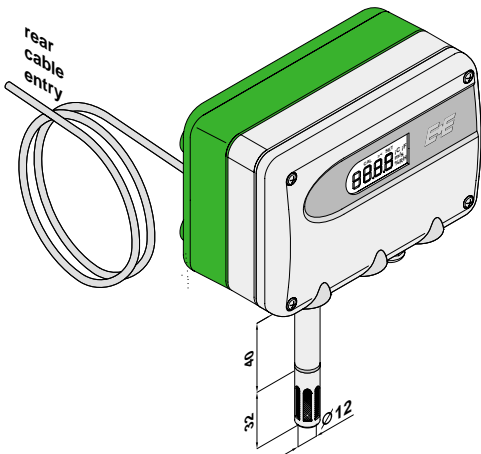
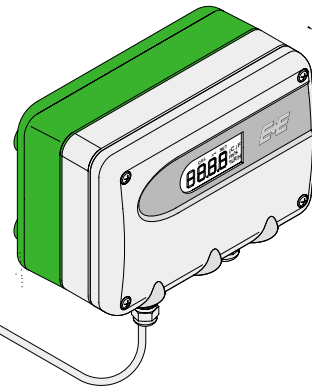
Version EE23-xAx
Wall mounting
 Probe material: PC



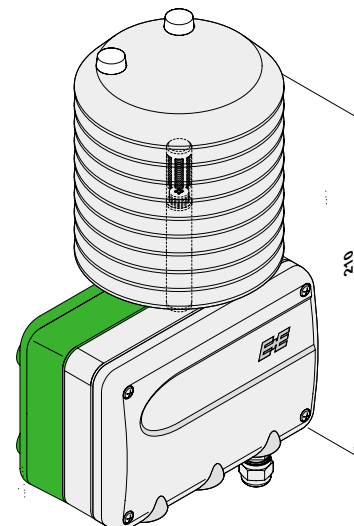
Version EE23-xBx
Duct mounting
 Probe material: stainless steel



Version EE23-xCx
Measuring up to 120degC
 Probe material: stainless steel



Version EE23-xFx
Wall mounting with rear cable entry
 Probe material: PC



Version EE23-xGx
Wall mounting for meteorology
 Probe material: PC

Technical Data EE23

Measured quantities

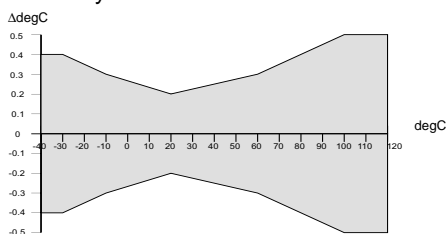
Relative humidity

Humidity sensor ¹⁾	HC1000-200 or HC1000-200C	
Working range ¹⁾	0...100 %RH	
Accuracy incl. hysteresis and nonlinearity		
- with special calibration against certified standards	± 1 %RH (0...90 %RH)	± 2 %RH (90...100 %RH)
- standard calibration	± 2 %RH (0...90 %RH)	± 3 %RH (90...100 %RH)
Guaranteed accuracy limits - GAL 23 according standard NFX15.113	for range 0-90 % RH :	2.35 % RH
	for range 0-100 % RH :	2.96 % RH
Temperature dependence electronics	typ. 0.06 %RH/degC	
Temperature dependence sensing probe	typ. 0.03 %RH/degC	
Response time with metal grid filter at 20 degC / t ₉₀	< 15 sec.	

Temperature

Temperature sensor element	Pt1000 (class A, DIN EN 60751)			
Working range sensing head	EE23-xAx	-40...60 degC (-40...140 °F)	EE23-xBx	-40...80 degC (-40...176 °F)
	EE23-xCx	-40...120 degC (-40...248 °F)	EE23-xFx	-40...60 degC (-40...140 °F)
	EE23-xGx	-40...60 degC (-40...140 °F)		

Accuracy



Temperature dependence of electronics	typ. 0.005 degC/degC	
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Outputs

0...100 %RH / xx...yy degC	0 - 5 V	-1 mA < I _L < 1 mA
(temperature output scale adjustable by E+E or with configuration kit)	0 - 10 V	-1 mA < I _L < 1 mA
	0 - 20mA	R _L < 350 Ohm
	4 - 20 mA	R _L < 350 Ohm

General

Supply voltage		
for 0 - 5 V outputs	10.5 VDC - 28 VDC	or 19.5 VAC - 28 VAC
for 0 - 10 V, 0 - 20 mA and 4-20 mA outputs	19.5 VDC - 28 VDC	or 19.5 VAC - 28 VAC
Current consumption for voltage output		
for DC supply ≤ 25 mA	with alarm module:	for DC supply ≤ 35 mA
for AC supply ≤ 35 mA eff.		for AC supply ≤ 60 mA eff.
Current consumption for current output		
for DC supply ≤ 50 mA	with alarm module:	for DC supply ≤ 60 mA
for AC supply ≤ 90 mA eff.		for AC supply ≤ 110 mA eff.
Housing / protection class	PC / IP65	
Cable gland ²⁾	M16x1.5	
Electrical connection ²⁾	screw terminals max. 1.5 mm ²	
Sensor protection	sintered stainless steel filter, PTFE or metal grid filter	
Working temperature range of electronics	-40...+60 degC (-40...140 °F)	
Working temperature range with display	0...+40 degC (32...104 °F)	
Storage temperature range	-30...+60 degC (-22...140 °F)	

¹⁾ Refer to the working range of the humidity sensor!

²⁾ Connection plugs refer to 'Accessories'!

Electromagnetic compatibility according

EN50081-2

EN50081-1

EN50082-2

EN50082-1

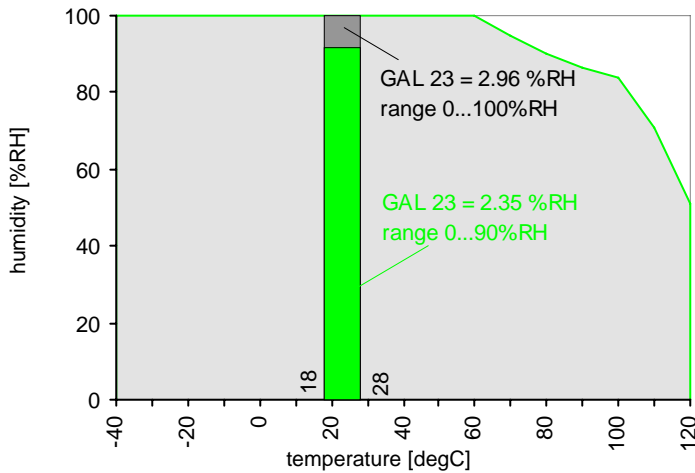
EN61010-1



Alarm Module - optional

Output	change-over relay up to 250VAC/8A or 28VDC/8A	
Setting range	threshold 10...95 %RH	hysteresis 3...15%RH
Setting accuracy	± 3 %RH	

Working Range Humidity Sensor



The working range of the humidity sensor element is shown in terms of humidity/ temperature limits.

Although the sensors would not deteriorate beyond the limits, their performance can only be specified within the limits of the working range.

Humidity Sensor with Coating

For very dirty and corrosive industrial environment the EE23 series can be equipped with the humidity sensor element HC1000-200C. Details upon request.

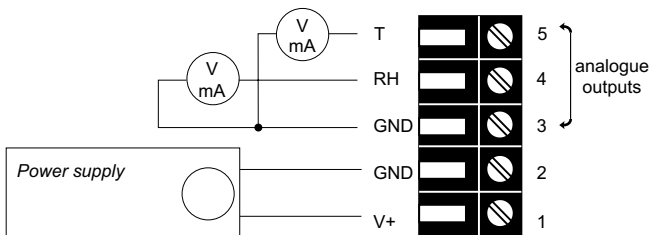
High Humidity Calibration

For applications with a steady climate of > 90%RH we recommend a special high humidity calibration .

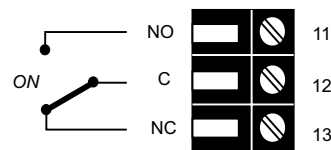
Connecting Diagram

output and supply

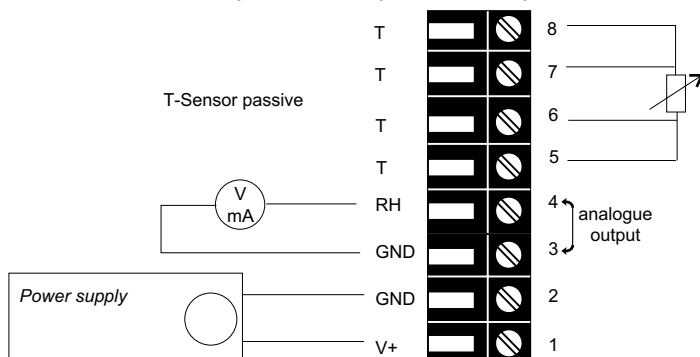
with active temperature output



alarm output



with passive temperature output



Ordering Guide

Order Code - Hardware Settings

MODEL	HOUSING TYPE	FILTER	CABLE LENGTH (only Model C)	PROBE LENGTH (only Model B + C)
humidity + temperature (FT)	wall mounting (A)	stainless steel (3)	2 m (02)	50 (2)
humidity (F)	duct mounting (B)	PTFE (5)	5 m (05)	200 (5)
humidity + Ptxxx passive (FPtxxx)	remote probe up to 120 degC (C) wall mounting - rear cable entry (F) wall mounting - for meteorology (G)	metal grid (6)	10 m (10)	400 (6)
EE23-				

Order Code - Hardware Settings

DISPLAY (refer to software code)	ALARM OUTPUT	CONNECTOR	HUMIDITY SENSOR	CALIBRATION
no display (no code)	no alarm output (no code)	standard cable gland PG11 (no code)	HC1000-200 (no code)	no special calibration (no code)
display (D03)	alarm output (SW)	one plug for supply and outputs (C03) two plugs for supply + outputs and alarm output (C09)	HC1000-200C (HC01)	high humidity calibration (CA1)

Code for - Software Settings

OUTPUT	UNITS	RANGE FOR TEMPERATURE OUTPUT SCALING		DISPLAY MODE
0 - 5 V (2)	°C (no code)	-30...40 degC (-22...104 °F) (T01)	-40...120 degC (-40...248°F) (T12)	humidity and temperature alternating (TH)
0 - 10 V (3)	°F (E01)	-40...60 degC (-40...140 °F) (T02)	-20...100 degC (-4...212 °F) (T14)	
0 - 20 mA (5)		-10...50 degC (14...122 °F) (T03)	+20...120degC (68...248 °F) (T15)	humidity (RH)
4 - 20 mA (6)		0...50 degC (32...122 °F) (T04)	0...120 degC (32...248 °F) (T16)	
		0...100 degC (32...212 °F) (T05)	0...70 degC (32...158 °F) (T17)	temperature (TE)
		0...60 degC (32...140 °F) (T07)	0...80 degC (32...176 °F) (T21)	
		-30...70 degC (-22...158 °F) (T08)	-40...80 degC (-40...176 °F) (T22)	
		-30...120 degC (-22...248 °F) (T09)	-20...80 degC (-4...176 °F) (T24)	
		-20...120 degC (-4...248 °F) (T10)	-20...60 degC (-4...160 °F) (T25)	
		-10...70 degC (14...158 °F) (T11)	others (on request) (Txx)	

Order example



INGENIEROS ASOCIADOS DE CONTROL S.L.

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EE23-FTC6025D03/6-T12-TH

model:	humidity and temperature
type of housing:	seperated sensor probe
filter:	metal grid
cable length:	2 m
probe length:	200 mm
display:	yes
output:	4 - 20 mA
units of measurements:	metric
temperature scaling:	-40...+120degC
display mode:	humidity/temperature alternating

Accessories (please refer to data sheet 'Accessories')

- filter caps
- radiation shield
- drip water protection
- mounting flange
- replacement sensors
- external power supply unit
- configuration kit
- cable connectors
- calibration set
- bracket for installation onto mounting rails
- display