

# EE80 Series

## HVAC Room Transmitter and Switches for CO<sub>2</sub>, Relative Humidity and Temperature

EE80 series set new standards in CO<sub>2</sub> measurements for HVAC. The transmitters resp. switches combine CO<sub>2</sub>, relative humidity (RH) and temperature (T) measurement in one modern and user-friendly housing.

The basic EE80 version for CO<sub>2</sub> and T can be easily extended with a RH plug-in module.

The CO<sub>2</sub> measurement is based on the infrared principle. A patented auto-calibration procedure compensates for the aging of the infrared source and ensures outstanding long term stability.

EE80 provides analogue outputs (in V or mA). The optional display indicates sequentially the actual measuring data.

As one more option a switching output with adjustable switching point and hysteresis is available.

A wide variety of models ensures an optimal adjustment for customised requirements.



### Typical Applications

**building management for residential and office areas**  
**ventilation control**

### Features

**CO<sub>2</sub> / RH / T measurement in one device**  
**RH output with plug-in module**  
**analogue or switching output**  
**modern design**  
**optional display**  
**easiest installation**  
**long-term stable**

### Technical Data

#### Measuring values

##### CO<sub>2</sub>

Measurement principle	Non-Dispersive Infrared Technology (NDIR)	
Sensor	E+E Dual Source Infrared System	
Working range	0...2000 / 5000ppm	
Accuracy at 25°C (77°F)	0...2000ppm:	< ± (50ppm +2% of measuring value)
and 1013mbar	0...5000ppm:	< ± (50ppm +3% of measuring value)
Response time $t_{63}$	< 195s	
Temperature dependence	typ. 2ppm CO <sub>2</sub> /°C	
Long term stability	typ. 20ppm / year	
Sample rate	approx. 15s	

##### Temperature

Accuracy at 20°C (68°F)	±0.3°C (±0.54°F)	version with current output 4 - 20mA: ±0.7°C (±1.26°F)
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##### Relative Humidity

Measurement principle	capacitive	
Sensor element	HC103	
Working range <sup>1)</sup>	10...90% RH	
Accuracy at 20°C (68°F)	±3% RH (30...70% RH)	±5% (10...90% RH)

##### Outputs

##### Analogue Output

0...2000 / 5000ppm /	0 - 5V	-1mA < I <sub>L</sub> < 1mA
0...100% RH / 0...50°C (32...122°F)	0 - 10V	-1mA < I <sub>L</sub> < 1mA
	4 - 20mA	R <sub>L</sub> < 500 Ohm

##### Switching Output

Max. switching voltage	50V AC / 60V DC	
Max. switching load	0.7A at 50V AC	1A at 30V DC
Min. switching load	1mA at 5V DC	
Contact material	Ag+Au clad	

#### General

Supply voltage	24V AC ±20%	15 - 35V DC
Current consumption	typ. 10mA + output current max. 0.5A for 0.3s	
Warm up time <sup>2)</sup>	< 5 min	

Display	LC display: alternating CO <sub>2</sub> (ppm) / T (°C or °F) / RH (% RH)
Electrical connection	screw terminals max. 1.5 mm <sup>2</sup> (AWG16)
Electromagnetic compatibility	EN61326-1 FCC Part 15 EN61326-2-3 ICES-003 ClassB
Working temperature range	0...90% RH (non condensing) / -20...60°C (-4...140°F)
Storage temperature range	0...90% RH (non condensing) / -20...60°C (-4...140°F)

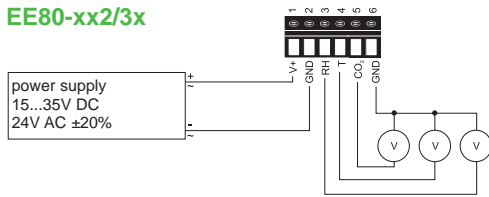
1) refer to the working range of the humidity sensor HC103!  
 2) warm up time for performance according specification



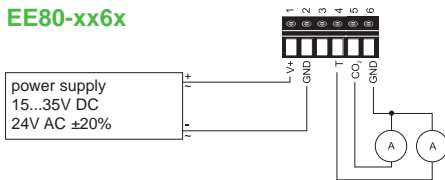
## Connection Diagram

### Analogue Output

#### EE80-xx2/3x

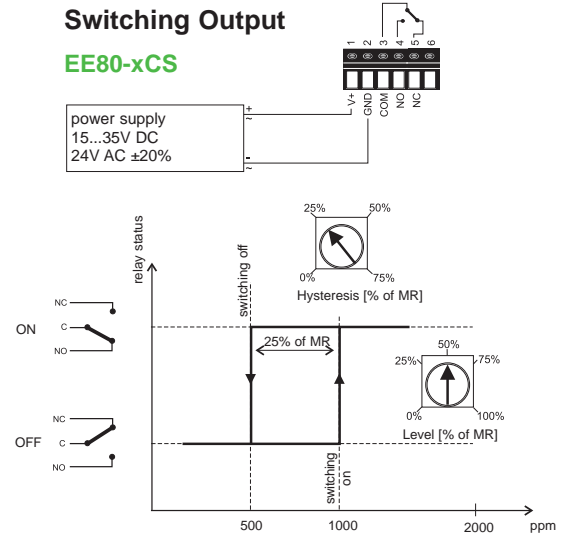


#### EE80-xx6x

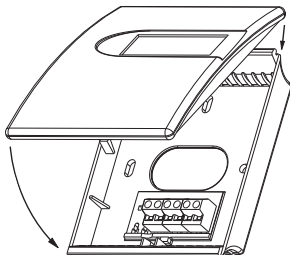


### Switching Output

#### EE80-xCS



## Housing Dimensions (mm)



W x H x D = 85 x 100 x 26mm (3.3 x 3.9 x 1")

Material of housing: PC  
 Protection class: IP30

Colour of housing: Cover: RAL 9003 (signal white)  
 Back: RAL 7035 (light grey)

## Ordering Guide

### EE80 voltage / current output:

WORKING RANGE	MODEL	OUTPUT	DISPLAY	T-UNIT	T-SCALE
0...2000ppm	(2) CO <sub>2</sub> + T	(CT) 0-5V	(2) without display	(-) °C	(T04) 0...50
0...5000ppm	(5) CO <sub>2</sub> + T + RH	(CTF) 0-10V 4-20mA <sup>1)</sup>	(3) with display	(E01) °F	(T31) -5...55 (T55) 0...40 (Txx) other
<b>EE80-</b>					

1) current output (6) not available for model CTF

### EE80 switching output:

WORKING RANGE	MODEL	OUTPUT	DISPLAY
0...2000ppm	(2) CO <sub>2</sub>	(C) switching output	(S) without display
0...5000ppm	(5)		(D04) with display
<b>EE80-</b>			

## Order Example

### EE80-2CT3D04-T04

Version with voltage output:  
 Working range: 0...2000ppm  
 Model: CO<sub>2</sub> + T  
 Output: 0-10V  
 Display: with display  
 T-Unit: °C  
 T-Scale: 0...50°C (32...122°F)

## Accessories

- humidity plug-in module (HA011003)

# Scaling of T-outputs

## EE08, EE10, EE10-T, EE21, EE22, EE23, EE29, EE30EX, EE31, EE32, EE33, EE35, EE36, EE75 and EE80

Following Txx defines the scaling of the outputs for **temperature (T)**, **dew point temperature (Td)**, **frost point temperature (Tf)** and **wet bulb temperature (Tw)**. The Txx codes are to be used in the order number of EE08, EE10, EE10-T, EE21, EE22, EE23, EE29, EE30EX, EE31, EE32, EE33, EE35, EE36, EE75 and EE80 transmitter series.

Please see the ordering guide at the end of each data sheet.

The limits of the temperature scale shall be within the temperature working range of respective EExx transmitter.

### For T scale in °C, please use Txx code alone:

Example :

EE29-PFTD3025AB6-T57                      T output scale: 4...20mA = -20...+140°C

### For T scale in °F, please use E01-Txx:

Example:

EE31-PFTE3056AB5-E01-T57                      T output scale: 0...10V = -20...+140°F

<b>T01</b>	-30...+40	<b>T35</b>	+100...+180	<b>T69</b>	0...+20	<b>T103</b>	-30...+100
<b>T02</b>	-40...+60	<b>T36</b>	0...+150	<b>T70</b>	-10...+25	<b>T104</b>	-60...+40
<b>T03</b>	-10...+50	<b>T37</b>	0...+130	<b>T71</b>	+50...+130	<b>T105</b>	-40...+40
<b>T04</b>	0...+50	<b>T38</b>	-40...+70	<b>T72</b>	+50...+140	<b>T106</b>	+10...+50
<b>T05</b>	0...+100	<b>T39</b>	-30...+20	<b>T73</b>	-20...+70	<b>T107</b>	0...+200
<b>T06</b>	-5...+45	<b>T40</b>	+20...+180	<b>T74</b>	-40...+356	<b>T108</b>	-112...+32
<b>T07</b>	0...+60	<b>T41</b>	+60...+110	<b>T75</b>	+32...+212	<b>T109</b>	-40...+32
<b>T08</b>	-30...+70	<b>T42</b>	-10...+100	<b>T76</b>	+32...+122	<b>T110</b>	-35...+50
<b>T09</b>	-30...+120	<b>T43</b>	-35...+35	<b>T77</b>	+20...+140	<b>T111</b>	-60...0
<b>T10</b>	-20...+120	<b>T44</b>	-40...+50	<b>T78</b>	-40...+248	<b>T112</b>	0...+30
<b>T11</b>	-10...+70	<b>T45</b>	-30...+50	<b>T79</b>	-40...+100	<b>T113</b>	-23...+85
<b>T12</b>	-40...+120	<b>T46</b>	0...+75	<b>T80</b>	-40...+176	<b>T114</b>	+60...+180
<b>T13</b>	+15...+25	<b>T47</b>	-20...+150	<b>T81</b>	-40...+250	<b>T115</b>	+10...+40
<b>T14</b>	-20...+100	<b>T48</b>	-20...+50	<b>T82</b>	-40...+350	<b>T116</b>	-80...+180
<b>T15</b>	+20...+120	<b>T49</b>	0...+170	<b>T83</b>	-40...+140	<b>T117</b>	+15...+35
<b>T16</b>	0...+120	<b>T50</b>	-10...+60	<b>T84</b>	-40...+300	<b>T118</b>	-70...+180
<b>T17</b>	0...+70	<b>T51</b>	-50...+70	<b>T85</b>	0...+140	<b>T119</b>	-25...+25
<b>T18</b>	-10...+40	<b>T52</b>	-40...+180	<b>T86</b>	0...+176	<b>T120</b>	-70...+60
<b>T19</b>	+10...+100	<b>T53</b>	+80...+120	<b>T87</b>	0...+248	<b>T121</b>	+55...+95
<b>T20</b>	-30...+60	<b>T54</b>	-30...+35	<b>T88</b>	0...+250	<b>T122</b>	-20...+20
<b>T21</b>	0...+80	<b>T55</b>	0...+40	<b>T89</b>	0...+350	<b>T123</b>	-80...+80
<b>T22</b>	-40...+80	<b>T56</b>	0...+5	<b>T90</b>	+32...+120		
<b>T23</b>	-30...+130	<b>T57</b>	-20...+140	<b>T91</b>	+32...+140		
<b>T24</b>	-20...+80	<b>T58</b>	+10...+30	<b>T92</b>	+32...+180		
<b>T25</b>	-20...+60	<b>T59</b>	-10...+30	<b>T93</b>	+32...+248		
<b>T26</b>	0...+180	<b>T60</b>	-20...+40	<b>T94</b>	+32...+250		
<b>T27</b>	-50...+50	<b>T61</b>	-5...+100	<b>T95</b>	+32...+300		
<b>T28</b>	-80...+60	<b>T62</b>	-5...+50	<b>T96</b>	+32...+132		
<b>T29</b>	-20...+180	<b>T63</b>	-80...+20	<b>T97</b>	-60...+120		
<b>T30</b>	0...+160	<b>T64</b>	-60...+60	<b>T98</b>	-60...+212		
<b>T31</b>	-5...+55	<b>T65</b>	-60...+20	<b>T99</b>	-110...+70		
<b>T32</b>	-80...0	<b>T66</b>	-50...+100	<b>T100</b>	-76...+140		
<b>T33</b>	-40...+160	<b>T67</b>	-80...+100	<b>T101</b>	+32...+350		
<b>T34</b>	-70...+40	<b>T68</b>	-40...+150	<b>T102</b>	-15...+25		