

EE385 Series

Compact Moisture Content in Oil Transmitter for OEM Applications

E+E Transmitter Series EE385 are specially designed for the measurement of moisture content in oil and temperature. EE385 is ideal for online monitoring of moisture in lubrication, hydraulic or insulation oil, which is very important for the long-term performance and preventive maintenance of plant and machinery.

Humidity measurement in oil

Similar to the humidity in the air, the water content in oil can be indicated by the relative value a_w :

- a_w (actual water content as fraction of the water content in saturated oil)

$a_w = 0$ corresponds to water-free oil, while $a_w = 1$ indicates saturated oil.

a_w measurement with the EE385 transmitter is based on the outstanding long term stability and resistance to pollution of the E+E capacitive sensor elements series HC.



EE385

Technical Data

Measuring values

Water activity

Measuring range	0...1 a_w	
Accuracy incl. hysteresis and nonlinearity 0...60°C (32...140°F)	$\pm 0.02a_w$ (0...0.9 a_w)	$\pm 0.03a_w$ (0.9...1 a_w)
Temperature dependence	Traceable to intern. standards, administrated by NIST, PTB, BEV...	
Response time with stainless steel filter at 20°C / t_{90}	TBD	
	typ. 10min in still oil	

Temperature

Measuring range	-40...125°C (-40...257°F)	
Accuracy at 20°C (68°F)	$\pm 0.2^\circ\text{C}$ ($\pm 0.36^\circ\text{F}$)	
Temperature dependence of electronics	TBD	

Outputs¹⁾

Analogue outputs for a_w and T	2 x 4 - 20mA	$R_L < 500 \text{ Ohm}$
Digital output	RS485	

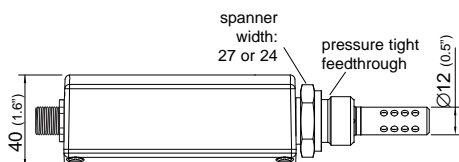
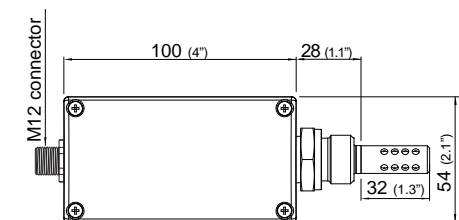
General

Supply voltage	21...28V DC		
Current consumption at 24V DC	typ. 80mA		
Pressure range	0...20bar (0...290psi) / 0...100bar (0...1450psi)		
Housing / Protection class	Al Si 9 Cu 3 / IP65		
Electrical connection	M12 plug connector		
Working temperature range	probe:	-40...125°C (-40...257°F)	
	electronic:	-40...80°C (-40...176°F)	
Storage temperature range	-40...80°C (-40...176°F)		
Electromagnetic compatibility according to	EN 61326-1	EN61326-2-3	ICES-003 ClassB
	Industrial Environment		FCC Part15 ClassB

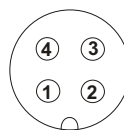


¹⁾ selection between 2 x 4 - 20mA and RS485 by jumper on the PCB

Dimensions in mm Connection Diagram



Male connector



analogue output	RS485 output
1...V+	1...V+
2...output 1	2...RS485 -/B
3...GND	3...GND
4...output 2	4...RS485 +/A

selection between 2 x 4 - 20mA and RS485 by jumper on the PCB

Ordering Guide

EE385-

Hardware Configuration				
Model	transmitter			T
Pressure range	up to 20bar (290psi)			E
	up to 100bar (1450psi)			I
Pressure tight feedthrough	G1/2" male thread			HA03
	1/2" NPT thread			HA07
	3/8" BSPP			HA09
Software Configuration				
Physical parameters of outputs	Temperature	T [°C / °F]	(B)	B
	Water activity	aw []	(K)	K
Type of output signals	4-20mA			6
Temperature unit	°C			E01
	°F			
Scaling of T-output (in °C or °F)	-40...60 (T02)	-20...100 (T14)	-40...140 (T83)	select according to Ordering Guide (Txx) other T-scaling on request
	0...50 (T04)	0...120 (T16)	0...250 (T88)	
	0...100 (T05)	0...80 (T21)	32...120 (T90)	
	-30...70 (T08)	-20...80 (T24)	32...140 (T91)	
	-20...120 (T10)	-40...160 (T33)	32...250 (T94)	
	-40...120 (T12)	-40...250 (T81)	32...132 (T96)	

Accessories

- Stainless steel filter (HA010110)

Order Example

EE385-TEHA03/BK6T02

Model:	transmitter
Pressure range:	up to 20bar (290psi)
Pressure tight feedthrough:	G1/2" male thread
Output:	temperature, water activity
Output signal:	4-20mA
Temperature unit:	°C
Scaling of T-output:	-40...60°C