Manufacturer's Declaration for Sensors for Use in Hazardous Areas

Product: Room temperature and humidity sensor
Type: TFFR-2G
Installation in: Zones 1, 2

Manufacturer: Schischek GmbH
Properties: passive, potential-free
Associated apparatus: EXL-IM-9182

The sensor was evaluated for installation and use in explosive atmospheres of zones 1 and 2. Directive 2014/34/EU was used as base for the evaluation. Moreover, the standards EN 60079-0 and EN 60079-11 were applied. The room temperature and humidity sensor is simple apparatus in the meaning of EN 60079-11 sub-clause 5.7 and has to be operated with an intrinsically-safe circuit. The measuring transducer type EXL-IM-9182 manufactured by company Stahl is suitable. The transducer may only be installed and operated in non-hazardous atmospheres.

Verification of intrinsic safety for simple electrical apparatus in conjunction with EXL-IM-9182

Terminals 1 – 2 – 3			**Terminals 4 – 5 – 6**		
$U_o \leq U_i$	6,5 V ≤ 30 V	OK	$U_o \leq U_i$	6,5 V ≤ 30 V	OK
$I_o \leq I_i$	19,7 mA ≤ 50 mA	OK	$I_o \leq I_i$	19,7 mA ≤ 50 mA	OK
$P_o \leq P_i$	32 mW ≤ 100 mW	OK	$P_o \leq P_i$	32 mW ≤ 100 mW	OK
$C_o \geq C_i + C_{Kabel}$	C_i = 10 pF		$C_o \geq C_i + C_{Kabel}$	C_i = 0 pF	
$L_o \geq L_i + L_{Kabel}$	L_i = 100 µH		$L_o \geq L_i + L_{Kabel}$	L_i = 0 µH	

C_{Cable}, L_{Cable}: refer to cable manufacturer's data
C_o, L_o: values according to gas group, refer to data sheet of EXL-IM-9182

Verification of intrinsic safety for simple electrical apparatus in conjunction with products ExCos-A and RedCos-A

$U_o \leq U_i$	7,9 V ≤ 30 V	OK	$U_o \leq U_i$	7,9 V ≤ 30 V	OK
$I_o \leq I_i$	6,4 mA ≤ 50 mA	OK	$I_o \leq I_i$	6,4 mA ≤ 50 mA	OK
$P_o \leq P_i$	12,7 mW ≤ 100 mW	OK	$P_o \leq P_i$	12,7 mW ≤ 100 mW	OK
$C_o \geq C_i + C_{Kabel}$	C_i = 10 pF		$C_o \geq C_i + C_{cable}$	C_i = 0 µF	
$L_o \geq L_i + L_{Kabel}$	L_i = 100 µH		$L_o \geq L_i + L_{Cable}$	L_i = 0 mH	

C_{Cable}, L_{Cable}: refer to cable manufacturer's data
C_o, L_o: values according to gas group, refer to data sheet of ExCos-A and RedCos-A

Test	**Result**
IP protection	The equipment complies with min. IP20
Evaluation of metallic parts	Magnesium, titanium and zirconium content < 7.5%
Evaluation of plastics	Suitable for ambient operating temperature range of -10°C..+50°C
Electrostatics	No limitations for use in groups IIA and IIB, for use in group IIC the warning "Only wet cleaning" or similar applies
Fasteners	No particular conditions, not applicable
Grounding	Plastic enclosure, no grounding necessary
Cable entries	The cables have to be protected against mechanical and thermal damage, after installation IP20 has to be complied with
Temperature rise test	No temperature rise >5K measured in conjunction with switching amplifier of type EXL-IM-9182; sensors are, among others, suitable for -10°C to +50°C

Final evaluation

The room temperature and humidity sensor of type TFFR-2G is suitable for use in conjunction with Stahl measuring transducer of type EXL-IM-9182 and products ExCos-A and RedCos-A in zones 1 and 2. The information contained in the specification sheet/user manual has to be observed. Likewise, the warning statements referring to electrostatics have to be observed. After installation IP protection IP20 has to be guaranteed.

Langenzenn, 11. March 2021
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