

## Manufacturer's Declaration for Sensors for Use in Hazardous Areas

**Product:** Mean value temperature sensor  
**Type:** TFM-2G-...  
**Installation in:** Zones 1 and 2

**Manufacturer:** Schischek GmbH  
**Properties:** passive, potential-free  
**Associated apparatus:** EXL-IMU-1, ExCos-A, RedCos-A

The temperature 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 temperature 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. Measuring transducer type EXL-IMU-1 with EC type examination number PTB 03 ATEX 2092 and Ex marking II (1) G D [EEx ia] IIC or products ExCos-A and RedCos-A that can directly be installed in zones 1 and 21 (ExCos-A) or zones 2 and 22 (RedCos-A) are 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-IMU-1

$U_o \leq U_i$	$7,5 V \leq 10 V$	OK	$C_o \geq C_i + C_{cable}$	$C_i = 0 \mu F$
$I_o \leq I_i$	$5 mA \leq 10 mA$	OK	$L_o \geq L_i + L_{cable}$	$L_i = 0 mH$
$P_o \leq P_i$	$10 mW \leq 15 mW$	OK	$C_{cable}, L_{cable}$ : refer to cable manufacturer's data	
$C_o, L_o$ : values according to gas group, refer to data sheet of EXL-IMU-1				

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

$U_o \leq U_i$	$7,9 V \leq 10 V$	OK	$C_o \geq C_i + C_{cable}$	$C_i = 0 \mu F$
$I_o \leq I_i$	$6,4 mA \leq 10 mA$	OK	$L_o \geq L_i + L_{cable}$	$L_i = 0 mH$
$P_o \leq P_i$	$12,7 mW \leq 15 mW$	OK	$C_{cable}, L_{cable}$ : 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 -20°C..+60°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/grounded via structural parts respectively
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-IMU-1; sensors are, among others, suitable for -20°C to +60°C

### Final evaluation

The mean value temperature sensor of type TFM-2G is suitable for use in conjunction with measuring transducer of type EXL-IMU-1 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, April 20, 2016  
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