

M220 Pt1000 (AECQ) according to DIN EN 60751

Temperature range -50 °C to +500 °C, temporary up to 550 °C

- Excellent long term stability and low drift
- Compact size
- High accuracy and interchangeability
- High vibration and shock resistance
- Optimized for welding, brazing and crimping
- IMDS data available

M-series Pt-RTDs are the best choice for many applications. They are characterized by long-term stability, excellent precision over a wide temperature range and compatibility. The M220 provides a very uniform and well controlled size and is used in automotive, medical, food & beverage equipment, industrial process monitoring and others.

The product can be used in automotive applications, in this case YAGEO Nexensos will check upon the request of the customer, whether additional requirements can be met (e.g. IMDS, PPAP).

Nominal Resistance R_0 [Ω]	Tolerance	Type	Order Number	Packaging
Pt1000	F 0.3 (B)	M220	5169454	Blister reel

Temperature Range of Tolerance Class

Tolerance Class F 0.3 (B) -50 °C to +500 °C

The specified tolerance classes refer to continuous operation. Class F 0.3 also applies up to +550 °C for short periods.

Temperature Coefficient

TCR = 3850 ppm/K

Response Time

Water ($v = 0.4$ m/s) $t_{0.5} = 0.05$ s
 $t_{0.9} = 0.15$ s

Air ($v = 2$ m/s) $t_{0.5} = 3$ s
 $t_{0.9} = 10$ s

Measuring Current

Pt1000 Ω: 0.1 to 0.3 mA
(self-heating has to be considered)

Long-Term Stability

The drift of the resistance value at 0 °C after a storage for 1000 hours in air at the declared upper temperature limit is not more than the tolerance value of the declared tolerance class according DIN EN 60751.

Typical drift of R(0 °C) is 0.04 % after 1000 hours at +500 °C.

Self-Heating

0.4 K/mW at 0 °C

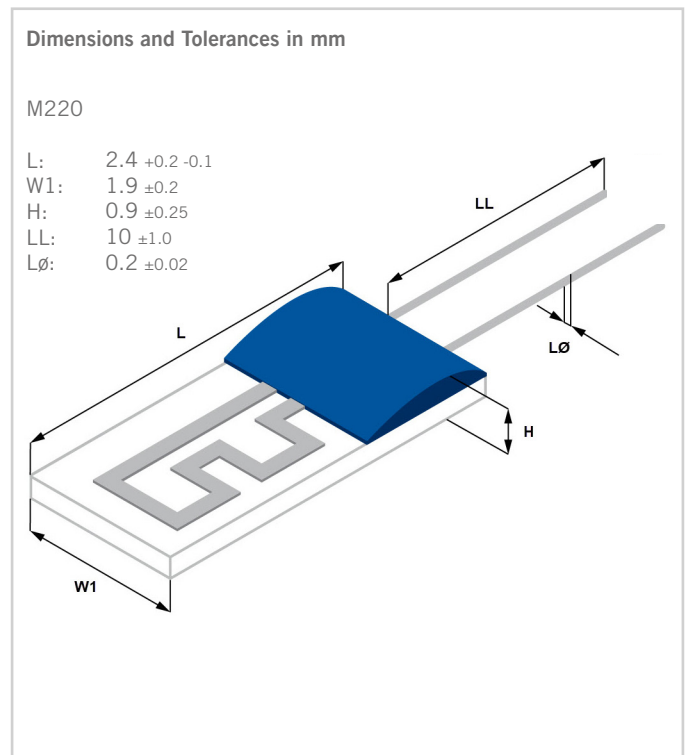


Image for illustration purposes only
Color, shape and forming of fixing drop may vary

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Insulation Resistance

> 100 MΩ at 20 °C
> 2 MΩ at 500 °C

Vibration Resistance

At least 40 g acceleration at 10 to 2000 Hz, depends on installation

Shock Resistance

At least 100 g acceleration with 8 ms half sine wave, depends on installation

Connection Technology

Welding, Crimping, Brazing

Lead Type

Pt clad Ni-wire

Tensile Strength of Leads

≥ 9N

Packaging

Blister reel
Alternative packaging forms on request.

Storage Life

At least 9 months (after manufacture), when stored under the recommended conditions. Longer shelf life may be possible, depending upon actual storage conditions, after requalification by customer. Nitrogen atmosphere recommended.

Note

Other tolerances and values of resistance are available on request

Due to random sample measurements, a bending of connection wires may occur (called V-shape). This bending is batch-dependent and has no influence on the functionality of the platinum measuring resistor.

California Proposition 65

 **WARNING**

This product can expose you to chemicals including lead oxide, which is known to the State of California to cause cancer and birth defects or other reproductive harm, and including cobalt oxide, nickel and cobalt, which are known to the State of California to cause cancer. For more information go to www.p65warnings.ca.gov

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AEC-Q200, Rev. D - Qualification Matrix for M220 Pt1000

Item	Standard	Test Conditions / Methods	Specifications
High Temperature Exposure (Storage)	MIL-STD-202 Method 108	Test temp.: 125 °C Duration: 1000 hours unpowered Measurement at 24 hours ± 2 hours after test conclusion	No visible damage $\left \frac{\Delta R_0 \text{ °C}}{R_0 \text{ °C}} \right \leq 0.1 \%$
Temperature Cycling	JESD22 Method JA-104	Test temp.: -55 °C / +125 °C Dwell time at lower or upper temp.: 30 min Number of cycles: 1000 Measurement at 24 hours ± 2 hours after test conclusion	No visible damage $\left \frac{\Delta R_0 \text{ °C}}{R_0 \text{ °C}} \right \leq 0.1 \%$
Biased Humidity	MIL-STD-202 Method 103	Test temp.: 85 °C Rel. humidity of air: 85 % Duration: 1000 hours Measurement at 24 hours ± 2 hours after test conclusion	No visible damage $\left \frac{\Delta R_0 \text{ °C}}{R_0 \text{ °C}} \right \leq 0.1 \%$
Operational Life	MIL-STD-202 Method 108	Test temp.: 125 °C Duration: 1000 hours Measurement at 24 hours ± 2 hours after test conclusion	No visible damage $\left \frac{\Delta R_0 \text{ °C}}{R_0 \text{ °C}} \right \leq 0.1 \%$
External Visual	MIL-STD-883 Method 2009	Inspect device construction, marking and workmanship	No visible damage
Physical Dimension	JESD22 Method JB-100	Verify physical dimensions to the applicable device specification	Within the specified values
Mechanical Shock	MIL-STD-202 Method 213	Test Condition C Acceleration: 100 g, half sine Peak duration: 6 s 3 shocks per direction, 6 directions	No visible damage $\left \frac{\Delta R_0 \text{ °C}}{R_0 \text{ °C}} \right \leq 0.1 \%$
Vibration	MIL-STD-202 Method 204	Acceleration: 0.06 inch / 5 g, half sinus Cycle time: 20 min / double sweep Frequency: 10 to 2000 Hz 3 axes 12 cycles	No visible damage $\left \frac{\Delta R_0 \text{ °C}}{R_0 \text{ °C}} \right \leq 0.1 \%$
Resistance to Soldering Heat	MIL-STD-202 Method 210	Condition B - No pre-heat of samples. Temp.: 260 °C ± 5 °C, Time: 10 s ± 1 s, 1 cycle	No visible damage

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AEC-Q200, Rev. D - Qualification Matrix for M220 Pt1000

Item	Standard	Test Conditions / Methods	Specifications
ESD	AEC-Q200-002	Stress levels: 500V, 1000V, 2000V, 4000V, 6000V, 8000V, 12000V, 16000V, 25000V Zaps & Polarities: 1 zap, positive and negative per pin	Product passed the component classification level 6
Solderability	J-STD-002D	Test condition J-STD-002D Solder: SAC305 Flux: SM-25 (Flux #2) Temperature: 235 °C Duration: 5 sec Criteria: Wetting Area > 95 %	Passed
Electrical Characterization	Specifications	a) T1 = +25 °C b) T2 = -40 °C c) T3 = +125 °C	Within the specified values
Terminal Strength	AEC-Q200-006	Test condition: MIL-STD-202 Method 211 Test Lead: Two leads on each device Loading Force: 8 oz Bend Angle: 90 arcs Bend Cycle: 3 cycles	No broken wires



The information provided in this data sheet describes certain technical characteristics of the product, but shall not be qualified or construed as quality guarantee (Beschaffungsgarantie) in the meaning of sections 443 and 444 German Civil Code. The information provided in this data sheet regarding measurement values (including, but not limited to, response time, long-term stability, vibration and shock resistance, insulation resistance and self-heating) are average values that have been obtained under laboratory conditions in tests of large numbers of the product. Product results or measurements achieved by customer or any other person in any production, test, or other environment may vary depending on the specific conditions of use. The customer is solely responsible to determine whether the product is suited for the customer's intended use; in this respect YAGEO Nexensos cannot assume any liability. The sale of any products by YAGEO Nexensos is exclusively subject to the General Terms of Sale and Delivery of YAGEO Nexensos in their current version at the time of purchase, which is available under www.yageo-nexensos.com/tc or may be furnished upon request. This data sheet is subject to changes without prior notice.

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