

# CERTIFICATE

## Railway application - Rolling stock equipment category 3

**According to DIN EN 50155 / DIN EN 50121**

<b>Certificate no:</b>	<b>U1982-51a-15</b>
<b>Date of issue:</b>	12 November 2015
<b>Number of pages:</b>	2 page
<b>Applicant's name:</b>	<b>JUMO Mess- und Regeltechnik AG</b>
<b>Address:</b>	Laubisrütistrasse 70, CH-8712 Stäfa
<b>Manufacturer:</b>	<b>JUMO Mess- und Regeltechnik AG</b>
<b>Address:</b>	Laubisrütistrasse 70, CH-8712 Stäfa
<b>Product description:</b>	<b>RTD temperature probe</b>
<b>Trademark:</b>	JUMO
<b>Model and/or type list:</b>	902050 / 902150

**Applied tests by QUINEL:**

Test		Standard	Result <sup>1</sup>
1	Cold, -60°C, 2h	EN 60068-2-1:2007	passed
2	Damp heat cyclic, 25°C/55°C, 95%r.H., 4cycles à 24h	EN 60068-2-30:2005	passed
3	Salt mist, 5% NaCl, 35°C, 96h	EN 60068-2-11:1999	passed
4	Dry Heat, 125°C, 18h	EN 60068-2-2:2007	passed
5	EMC	EN 50155:2007 EN 50121-3-2:2006	passed
	RF conducted disturbances 0.15...80 MHz, 10V RMS	IEC 61000-4-6:2008 EN 61000-4-6:2009	passed
	Radiated electromagnetic field 80...2800 MHz, >20V/m	IEC61000-4-3:2006+A1:2007 +A2:2010 EN 61000-4-3:2006+A1:2008 +A2:2010	passed
	AC voltage test 500V, 50Hz, 1min DC voltage test 500V, 1min	EN 50155:2007	passed
	Surge 1kV (42Ω) line to line 2kV (42Ω) line to earth	IEC 61000-4-5:2005 EN 61000-4-5:2006	passed
6	Vibration broad-band random, Test Fh 10Hz...500Hz, 8.74(m/s <sup>2</sup> ) <sup>2</sup> /Hz, 3 x 10min	IEC/EN 61373, cat.3:1999 EN 60068-2-64:2008	passed
7	vibration broad-band random, Test Fh 10Hz...500Hz, 545.2(m/s <sup>2</sup> ) <sup>2</sup> /Hz, 3 x 5h	IEC/EN 61373, cat.3:1999 EN 60068-2-64:2008	passed
8	mechanical shock, Test Ea, 1000ms-2 6ms, 3 shocks in each direction of the two main axes	IEC/EN 61373, cat.3:1999	passed


**Applied tests by subcontractor:** FAKT GmbH, Grüntenstrasse 3-5, D-87751 Heimertingen

Test		Standard	Result <sup>1</sup>
1	Vibration random 10Hz...500Hz, 38(m/s <sup>2</sup> ), 2 x 10min 10Hz...500Hz, 300(m/s <sup>2</sup> ), 5h/axis	EN 61373 Cat. 3:1999 EN 61373 Cat. 3:2011 EN 60068-2-64:2008	passed
2	Mechanical shock, 100g 6ms, 3 shocks/direction total 18 shocks/test sample	EN 61373 Cat. 3:1999 EN 61373 Cat. 3:2011 EN 60068-2-64:2008	passed

**Applied tests by subcontractor:** JUMO Mess- und Regeltechnik AG, Laubisrütistrasse 70, CH-8712 Stäfa

Test		Standard	Result
1	Temperature shock 20°C / 100°C (500 cycles)	EN 60068-2-14:2009	passed
2	IP68	EN 60529:2000	passed
3	DIN IEC 60751	EN 60751:2009	passed

**Note 1: Final measurements by customer**

 <p>STS 0037</p>	<p><b>QUINEL AG</b></p> <p>Elsihof 3, CH-6035 Perlen</p>
	<p>DATE:</p> <p>Perlen, 12 November 2015</p>