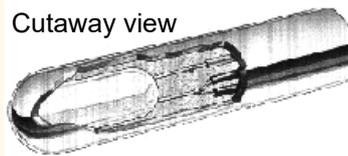


- **Bendable sensor during mounting**
- **High flexibility**
 (minimum bending: 3 x sheath diameter)
- **Gaztight and other liquid tight**
- **High pressure strength**
- **Great vibrations strength**
- **High length on request**
- **Application:**
 Laboratory
 Chemistry industry (reactor)



Cutaway view



• **Models available in ATEX and IECex version**



Bendable probes series on site during implementation, gaztight and liquid tight. High length on request, and diameter at 1.9mm to 8 mm.

TECHNICAL SPECIFICATION : (standard execution)

- **Protection sheath:** Bendable mineral insulated sheath stainless steel 316L (or inconel 600),
 Insulation: magnesia heavily compacted.
 Flexible, it follows difficult and nonlinear ways without bending tools, minimum bending : 3 x sheath diameter.
 Reduced floor-space: diameter from 1,9 mm to 8 mm.
 Resists to thermal shocks and high pressures(> 600 bars).
 A protection sheath is not necessarily required.
 Reduced response time due to low thermal density and to electric insulator (magnesia), great temperature conductivity.
 Utile length : 50mm to more than 50 meters
 Usage Temperature: - 80 to + 600 °C.
- **Fastening:** Straight pipe, sliding connection, sliding flange,
 Other connection on request
- **Measure element:** RTD, single or duplex
 2, 3, 4 wires, 2x3 wires or 2x4 wires mounting.
 RTD class type: A, 1/3 B, 1/10 B ... in option.
 protection of measure element : 20mm length rigid shield
 (no bendable part)

Fastening Accessory

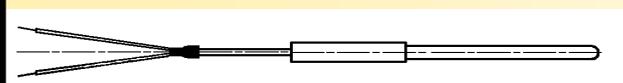
JPC type sliding flange

Sliding connection

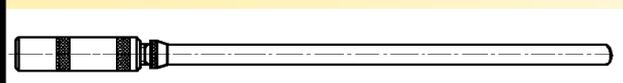
Standard output, other type on request.



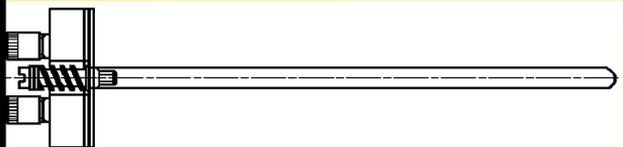
Mounting type 1
Direct output by stripped wires with resin tightness (260°C)



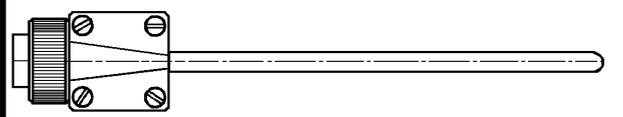
Mounting type 2
Cable output: PVC, Teflon, Silicon, ..
Tight intermediate junction Ø 6mm, 50mm length



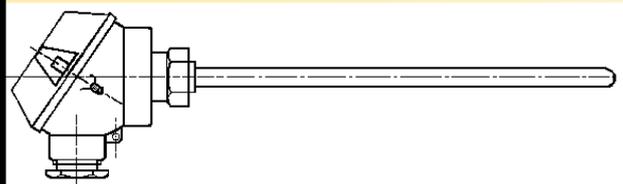
Mounting type 3
Output by fast locking wire « LEMO » type
Size 0 for Ø 1,6mm, 1,9mm, 3mm
Size 1-2-3 for Ø 3mm, 5mm, 6mm.



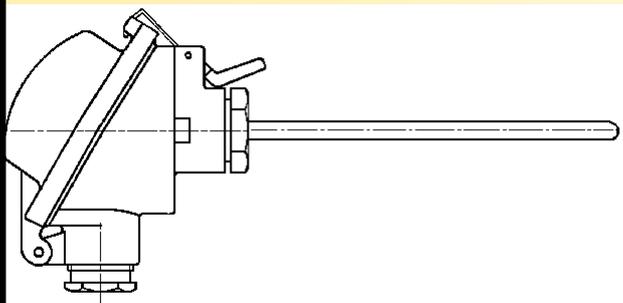
Mounting type 4
Interchangeable measure element
Output on ceramic terminal (B form)
33mm interaxial
Supplied with screws and spring for anti-vibration mounting.



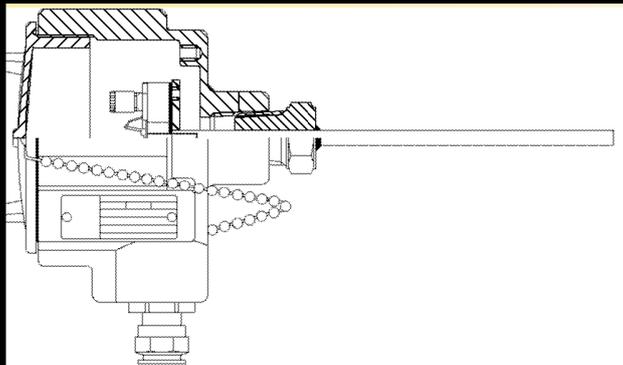
Mounting type 5
Output by screwable connection « JEAGER » type



Mounting type 6
Output on MA type (IP54) miniature connecting head.



Mounting type 7
Output on DAN-Screw (IP65), or Dan-Clip (IP54) with ceramic terminal connection head.



Mounting type 8
Output on ADF head (IP65), with ceramic terminal.

Sensible element realization:

Cap without allowance

- advantage: no increase of the diameter
- disadvantage: fragile



Cap with allowance

- advantage: robustness
- disadvantage: increase of the diameter

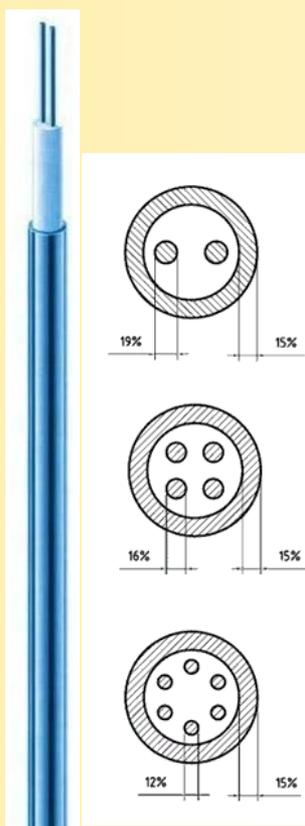


RTD Single Mounting with allowance cap	
Sheath (d) Ø 1,6 mm	Cap D Ø 1,9 mm
Sheath (d) Ø 1,9 mm	Cap D Ø 2,5 mm
Sheath (d) Ø 3 mm	Cap D Ø 4 mm
Sheath (d) Ø 5 mm	Cap D Ø 6 mm
Sheath (d) Ø 6 mm	Cap D Ø 8 mm
RTD Duplex Mounting with allowance cap	
Sheath (d) Ø 3 mm	Cap D Ø 4 mm
Sheath (d) Ø 5 mm	Cap D Ø 6 mm
Sheath (d) Ø 6 mm	Cap D Ø 8 mm

Order code

SC Mineral insulated RTD Probe	i sheath type i : stainless steel	30 Mineral insulated diameter (1/10mm)	D Single (by default) or Duplex	/	7 Output type from 1 to 9	/	L length (mm)
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MINERAL INSULATED RTD PROBE
Property of mineral insulated measure cables.



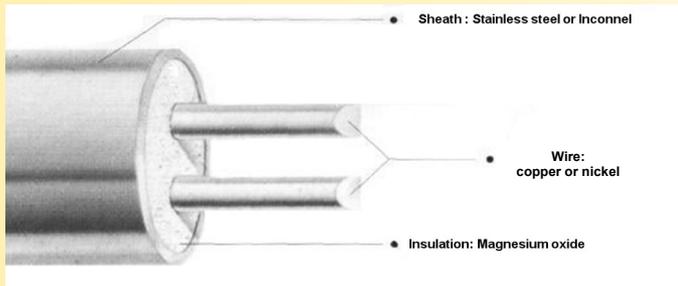
Ø outside (mm)	RTD of wire per meter (Ω/m)		Ø Wire (mm)		Wall thickness (mm)	Mass (kg/m)
	Cu	Ni	Cu	Ni		
2 wires						
2,0	0,20	0,91	0,33	0,33	0,29	0,015
3,0	0,18	0,53	0,35	0,44	0,33	0,033
4,5	0,098	0,30	0,48	0,58	0,44	0,059
5,0	0,063	0,19	0,59	0,73	0,55	0,092
6,0	0,044	0,13	0,71	0,89	0,66	0,132
4 wires						
2,0	0,24	0,88	0,30	0,34	0,29	0,016
3,0	0,12	0,53	0,43	0,44	0,33	0,037
4,5	0,11	0,39	0,45	0,51	0,44	0,065
5,0	0,071	0,25	0,56	0,64	0,55	0,101
6,0	0,049	0,17	0,67	0,77	0,66	0,146
8,0	0,028	0,10	0,89	1,0	0,88	0,260
6 wires						
3,0	0,151	0,52	0,38	0,44	0,33	0,037
4,5	0,084	0,29	0,52	0,59	0,44	0,065
5,0	0,081	0,19	0,52	0,73	0,55	0,102
6,0	0,056	0,13	0,63	0,89	0,66	0,147
8,0	0,032	0,07	0,83	1,2	0,88	0,261

Electrical properties of internal wires depending temperature.

Materials of internal wires	resistivity Ω mm ² /m to :					Maximum temperature using °C
	20°C	200°C	400°C	600°C	800°C	
Cu	0,0175	0,030	0,045	0,059	-	600
Ni	0,08	0,172	0,325	0,395	0,407	800

Rated capacity at ambient temperature (pico farad / meter)

Sheath diameter	2 Wires		3 Wires		4 Wires	
	wire / wire	wire / sheath	wire / wire	wire / sheath	wire / wire	wire / sheath
8	185	285	217	329	229	402
6	198	325	204	314	221	376
4,5	192	274	192	293	210	355
3	190	281	189	290	205	348



Resistance pressure: > 3500Kg/cm²
Resistance temperature of the mineral insulated:
-270°C à 1650°C without reaction
Bending diameter minimum 3 x sheath diameter
(without sheath break, without insulation losses)

Standards materials of external protection sheath.

Specification	AISI (USA)	BS (GB)	AFNOR (FR)	UNI (IT)
(X2CrNiMo 18-10)	316L	316S	Z2CND 17-12	X2CrNiMo 1712
inconel 600	600		NC15Fe	B163. 166-168

Evolution of the insulation resistance with temperature.

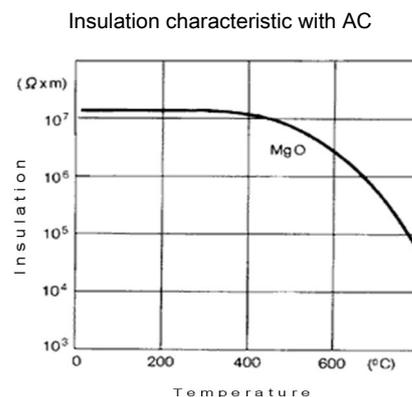
Insulation resistance at ambient temperature (20°C):

diameter 1 to 2mm: > 1000 Mohms to 50Vdc (50 cm length)
 diameter 3 to 8mm: > 1000 Mohms to 500Vdc (50 cm length)

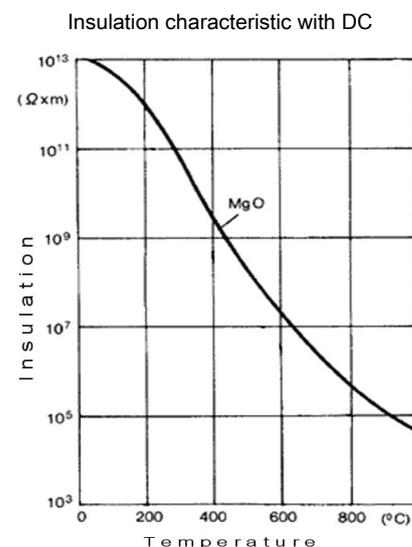
Insulation to 300 °C:

diameter 1mm: > 10 Mohms (50 cm length)
 diameter 2 to 8mm: > 100 Mohms (50 cm length)

Insulation at 500 Vdc in Mohms / 30cm				
Sheath diameter	Temperature	Number of wires		
mm	°C.	2	3	4
8	300	10 ⁸	10 ⁸	10 ⁸
	500	10 ⁶	10 ⁶	10 ⁶
	800	10 ⁵	10 ⁵	10 ⁵
6	300	10 ⁷	10 ⁷	10 ⁷
	500	10 ⁶	10 ⁶	10 ⁶
	800	10 ⁵	10 ⁵	10 ⁵
4,5	300	10 ⁷	10 ⁷	10 ⁷
	500	10 ⁶	10 ⁶	10 ⁶
	800	10 ⁵	10 ⁵	10 ⁵
3	300	10 ⁷	10 ⁷	10 ⁷
	500	10 ⁶	10 ⁶	10 ⁶
	800	10 ⁵	10 ⁵	10 ⁵

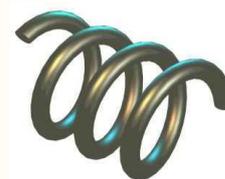
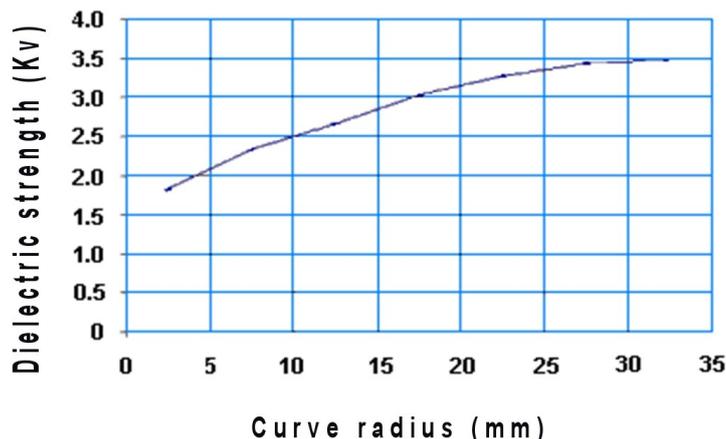


Measurement insulation made at 500 Vac / 50 Hz



Measurement insulation made at 20 Vdc

Evolution of the dielectric strength with mineral insulated curve radius.



Dielectric strenght:
 > 4000 Vac / mm (straight mineral insulated)

Dielectric strenght:
 > 2000 Vac / mm (curved mineral insulated)

The dielectric strenght is independant of the temperature up to 800°C.