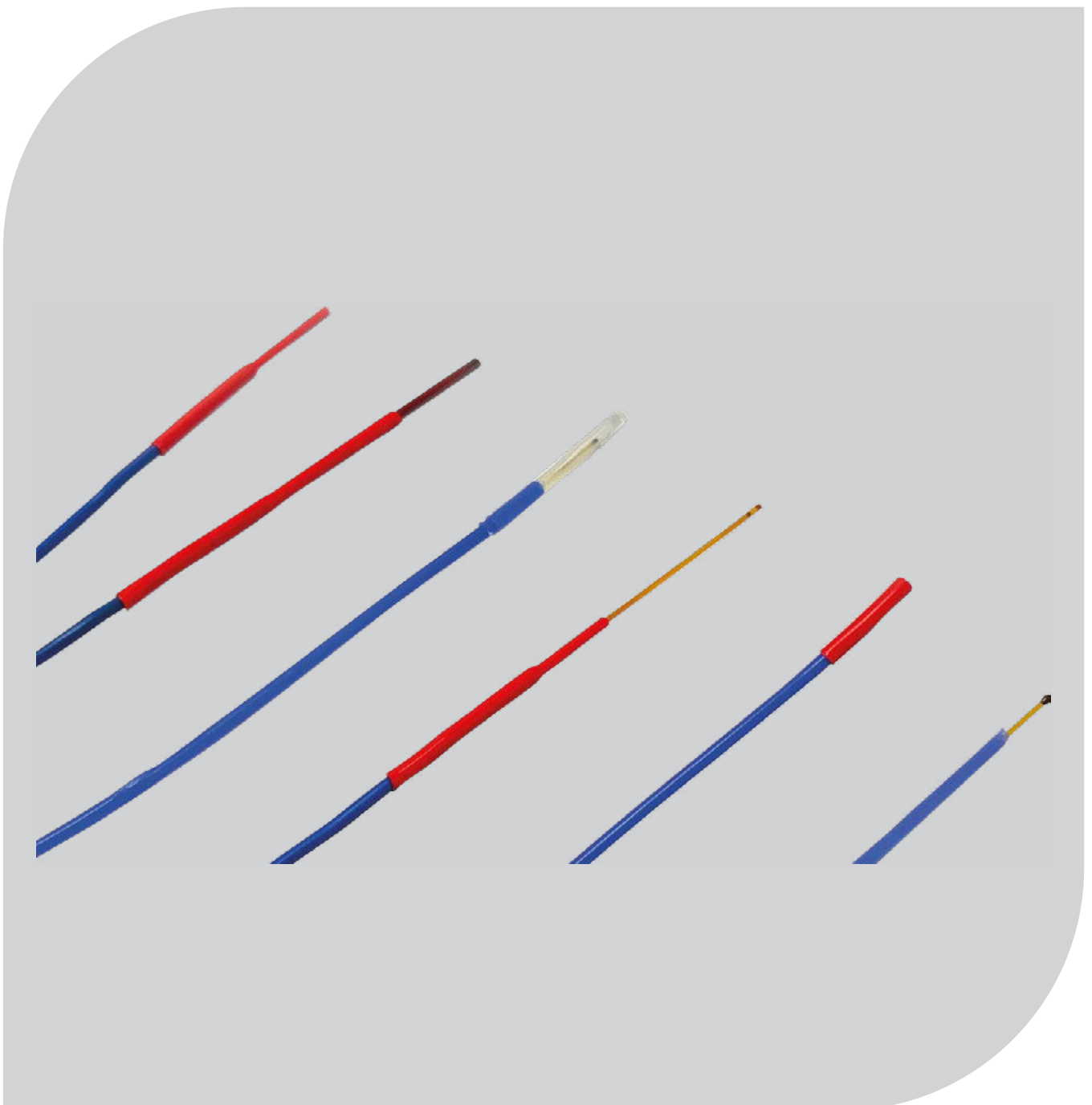


TECHNICAL GUIDE

Fiber optic sensors & accessories



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Application

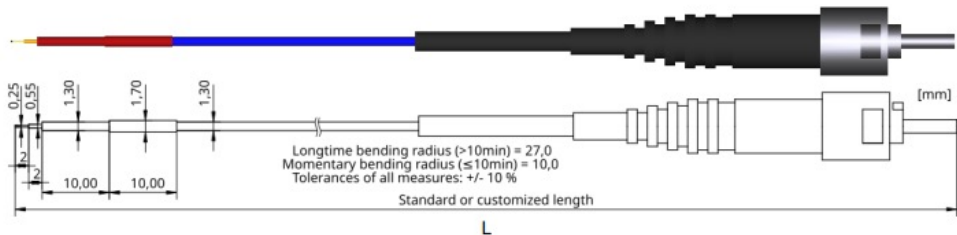
Sensor type	Application	
TS2P	General use	Radio-frequency environments, High voltage applications, Semiconductor, and Medical testing
TS3	General use	Food, Microwave oven, RF environments, NMR analytical chemistry applications, and Pharmaceutical drying
TS4	Harsh environments	Harsh & Chemical environments, Liquid immersion, Natural Gas pipelines, Battery testing, and Nuclear environments
TS5	Medical & SFF	Medical Environments, Catheter instrumentation, Semiconductors, Small Form Factor
TST	Transformers	Oil-filled transformers, Generators, Monitoring of hot-spot inside transformers, and Measurement in gas insulated power breakers
J-Spacer	General use	Transformer windings, Bus Bars, and other Switchgears

Technical data

Sensor type	TS2P	TS3	TS4	TS5	TST
					
Key features	Smallest size, direct contact measurement, Bare GaAs crystal (300 µm x 300 µm) for very small surface areas, and the fastest measurement, Semiconductor devices, & Micro Vials, Non-conductive.	Customizable semi rigid probe, Immune to EMI/RFI & Microwave emissions, Non-conductive.	High accuracy, Corrosion resistant, PTFE coated, Non-conductive	Customizable probe, Small form factor, Compact size, Non-conductive	Designed to be used in oil-filled and dry-type transformers, without air inclusions, Non-conductive
Long-term temperature range	-200°C to +260°C	-200°C to +260°C	-200°C to +260°C	-200°C to +260°C	-200°C to +260°C
Short-term temperature range	+260°C to +300°C	+260°C to +300°C	+260°C to +300°C	+260°C to +300°C	+260°C to +300°C
Accuracy	± 0.2 K	± 0.2 K	± 0.2 K	± 0.2 K	± 0.2 K
Thermal response	20 K/s	12 K/s	7 K/s	19 K/s	3 K/s
Fiber diameter	200/220/240µm	200/220/240µm	200/220/240µm	200/220/240µm	200/220/240µm
Cable coating	Polyimide / PTFE	Polyimide / PTFE	PTFE	Polyimide / PTFE	PTFE
Connector type	ST	ST	ST	ST	ST
Optional					Nomex® J-Spacer Nomex® Disk-Spacer

Dimensions

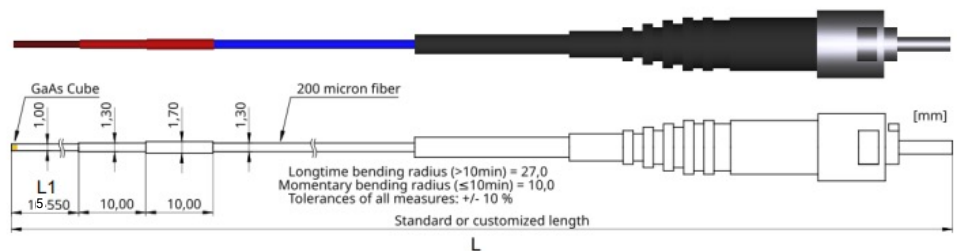
TS2P



Probe dimensions	D1	0.45 mm
	D2	1.7 mm
	D3	1.3 mm
Dimensions * Other lenghts on request	L1	2 mm
	L2	42 mm
	L3	2 - 20 m

* 2m standard, other lengths on customer request up to 20m

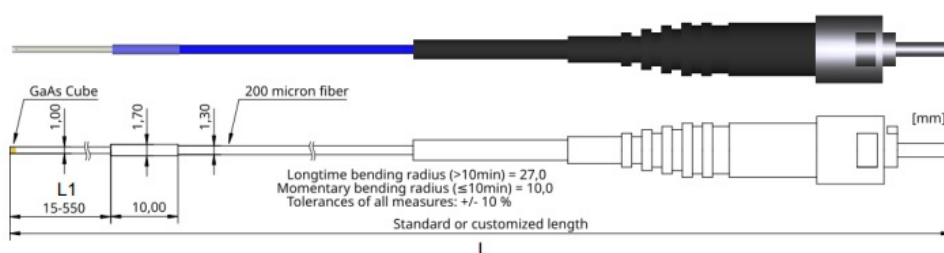
TS3



Probe dimensions	D1	1.0 mm
	D2	1.7 mm
	D3	1.3 mm
Dimensions * Other lenghts on request	L1	15 - 550 mm
	L2	20 mm
	L3	2 - 20 m

* 2m standard, other lengths on customer request up to 20m

TS4



Probe dimensions

D1	1 mm
D2	1.7 mm
D3	1.3 mm

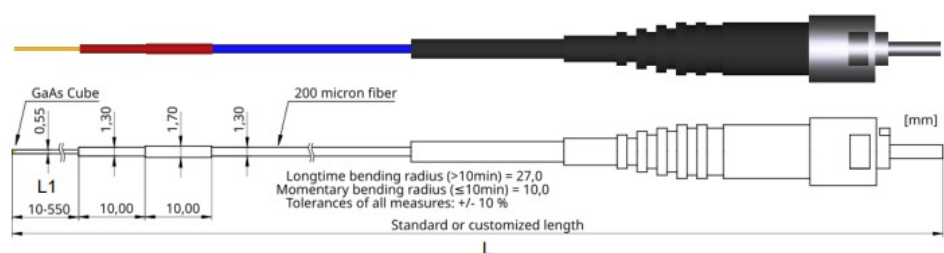
Dimensions *

Other lengths on request

L1	15 - 550 mm
L2	10 mm
L3	2 - 20 m

* 2m standard, other lengths on customer request up to 20m

TS5



Probe dimensions

D1	0.55 mm
D2	1.7 mm
D3	1.3 mm

Dimensions *

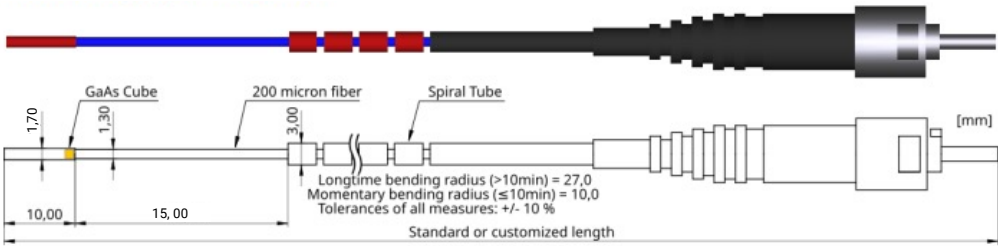
Other lengths on request

L1	15 - 550 mm
L2	20 mm
L3	2 - 20 m

* 2m standard, other lengths on customer request up to 20m

Dimensions

TST

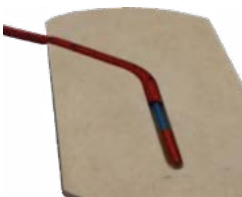


Probe dimensions	D1	1.7 mm
	D2	1.3 mm
	D3	3 mm
Dimensions * Other lenghts on request	L1	10 mm
	L2	15 mm
	L3	1 - 12 m

* 2m standard, other lengths on customer request up to 12m

Optional accessories

J-Spacer



Disk-Spacer



Order sheet

Sensors



Date	
Rev.	
Customer reference	

Optical sensor type	Quantity	
TS2P		
TS3		
TS4		
TS5		
TST		

Lenghts

2 m (Standard)	
Other lenghts from 2 to 20m (upon request)	

Tip lenght (TS3, TS4, TS5)

15 - 550 mm	
-------------	--

Order sheet

Accessories

Date	
Rev.	
Customer reference	

J-Spacers

ZM0060



EOF0203



EOF0200



Technical specifications

EOF0200	J-Spacer for mounting TST temperature probe in transformer winding, Nomex + Peek
EOF0203	Disk-Spacer for mounting TST temperature probe in transformer winding, Nomex
ZM0060	Busbar for radial mounting up to two TS3 temperature probe on high voltage busbar, Peek

Order sheet

Quantity

J-Spacer		
Disk-Spacer		
Busbar for radial mounting		

Feedthrough DF1- NPT 1/4"



Technical specifications

Temperature range	-40 °C to 120 °C
Pressure	Max. 200 bar
Thread size	1/4" NPT
Connector type	ST

Order sheet

Quantity

Feedthrough DF1		
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Feedthrough DF5 - metric M14



Technical specifications

Temperature range	-40 °C to 120 °C
Pressure	Max. 2 bar
Thread size	M14 x 1.5
Connector type	ST

Order sheet

Quantity

Feedthrough DF5		
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Order sheet

Accessories

Date	
Rev.	
Customer reference	

KF40 Flange



Technical specifications

Material	Stainless steel
Dimension	R: 27,5 mm L: 59,3 mm
Number of feedthroughs	1-2
Mounting	Welded

Order sheet	Quantity	
KF40 Flange		
Number of feedthroughs (1-2)		

TWP Set Tank wall plate, Block flange & J-Box



Technical specifications

Material	Stainless steel
Dimension	TWP R: 125 mm L: 30 mm DN125 R: 125 mm L: 30 mm Box 156x156x164,5 mm
Number of feedthroughs	1-16
Mounting	Welded or screwed on tank wall

Order sheet

Tank wall plate	Quantity	
TWP 8 (1 - 8 feedthrough)		
TWP 16 (9 - 16 feedthrough)		

Block flange	Quantity	
DN125		

J-Box	Quantity	
Box		

Order sheet

Accessories

Date	
Rev.	
Customer reference	

Distance cable



Technical specifications

Operating temperature	-40 °C to 85 °C
Material	PVC or PTFE
Fiber ø	200 µm
Sensor standard lengths	2 m up to 20 m (up to 30 m with PVC)
Connector type	ST with metallic ferrule (-40 °C to 85 °C)

Order sheet

Lengths	Quantity	
2 - 20m		
Spiral wrap (only with PTFE)		
Material PTFE		
Material PVC		

Multiwire distance cable FO - DC6



Technical specifications

Inner material	PVC
Outer material	PE
Aount PCF-Elements (200/230)	6
Wire-ø (mm)	3.5 mm
External-ø (mm)	7.5 mm
Min. blending radius (short term)	120 mm
Min. blending radius (long term)	100 mm
Max. load (short term)	1200 N
Max. load (long term)	1000 N
Weight	ca. 80 kg/km
Operating temperature	-40 °C to 70 °C



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