



Description

It measures one component of the electric field vector based on the electro-optic technology. This Ultra-Wide Band sensor allows accurate measurements in almost any location and environment (air, liquids, and gases) under harsh conditions.

Each eoProbe is delivered with a Routine Test Report valid for 2 years.

This probe must be used with the eoSense opto-electronic converter.

6 patents covers the eoProbe: EP2035845, EP2035846, US7769250, US8264684, CA2655034, CA2655447.

Main usage precautions

The probe and its fibre optic must not be submitted to mechanical constraints or shocks. The eoProbe must be handle with care and stored inside its provided suitcase.

Applications

E-field measurement in/for:

- Biological environment
- Specific Absorption Rate assessment
- Medium and high voltage systems
- Cold plasmas
- MRI
- Power electronics systems
- Railways
- Any liquid
- Antennas
- And many more

Main features

- Vector near and far E-field measurement
- Non-perturbative (no metal part)
- Withstand more than 10MV/m
- Ultra-Wide Band
- Very compact design
- Remote measure up to 100 meters
- Fully insulated sensor

eoProbe versions

Reference	Environment	Sensitivity - Bandwidth	Type
P1tR05-BS5-air	Low permittivity (Air / oils)	250mV/m - 30Hz ... 10GHz	Transverse
P1tR05-BS1-air	Low permittivity (Air / oils)	500mV/m - 30Hz ... 50GHz	Transverse
P1IR05-BS5-air	Low permittivity (Air / oils)	50mV/m - 30Hz ... 10GHz	Longitudinal
P1IR05-BS1-air	Low permittivity (Air / oils)	200mV/m - 30Hz ... 50GHz	Longitudinal
P1tR05-BS5-bio	High permittivity (water based liquids)	50mV/m - 30kHz ... 10GHz	Transverse
P1tR05-BS1-bio	High permittivity (water based liquids)	200mV/m - 30kHz ... 50GHz	Transverse
P1IR05-BS5-bio	High permittivity (water based liquids)	50mV/m - 30kHz ... 10GHz	Longitudinal
P1IR05-BS1-bio	High permittivity (water based liquids)	200mV/m - 30kHz ... 50GHz	Longitudinal

All probes have 5 meters of fibre optic and a robust connector. Longer distances are available with the fibre optic extension.

Type concept

Transverse type: the eoProbe measures the concerned E-field vector when it is orthogonal to the eoProbe

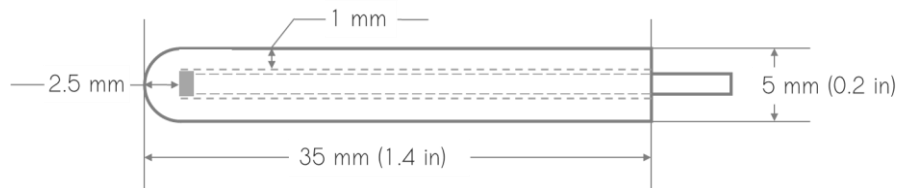
Longitudinal type: the eoProbe measures the concerned E-field vector when it is in line with the eoProbe

Main specifications *

Sensitivity and bandwidth	See above eoProbe versions table (RBW = 1Hz)
Dynamic of measurement	$\geq 130 \text{ dB}\cdot\sqrt{\text{Hz}}$
Selectivity	$\geq 50\text{dB}$
Spatial resolution	$\leq 1 \text{ mm}$
Operating temperature	0 ... +50°C (32 ... 122 °F)
Operating pressure	0 ... 2030 hPa (0 ... 29.4 PSI)
Max E-field without damage	10 MV/m
Max B-field without damage	4.7 Tesla
Ingress protection rating	IP 67 (sensor only)
Chemical compatibility of gases	Air, nitrogen, plasmas, SF6
Chemical compatibility of liquids	Water, oils, alcohols, biological liquids
Probe cleaning	Clean lightly moistened with isotropilic alcohol
Fibre optic diameter	2.8 mm
Fibre optic minimum bend radius	40 mm

*Values are valid under certain conditions

eoProbe dimensions



Permittivity ϵ_r

Crystal: 42
 Air probe packaging: 3.3
 Bio probe packaging: 23
 Fibre optic: 5

Accessories

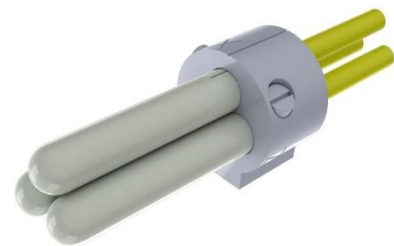
Ring to maintain 2 or 3 probes in the same direction

This ring maintains together in a very easy way, up to 3 probes to measure the 3 axis (X, Y and Z) of the electric field.

Marks are available on the ring to clearly identify the orthogonal components of the vector for the transverse probes.

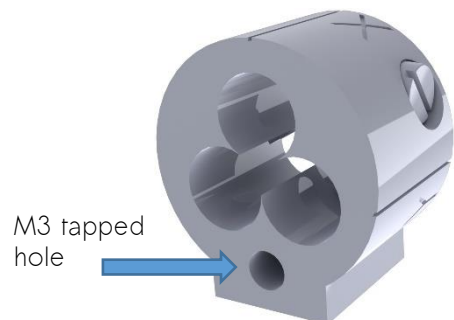
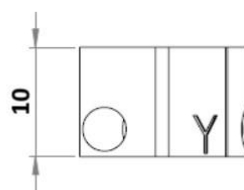
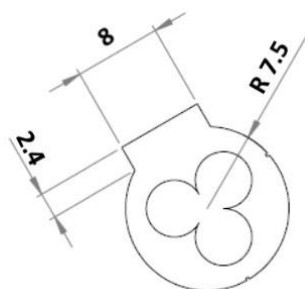
2 transverse probes and 1 longitudinal probe can be used with this ring.

The ring material does not perturbate the measurement.



Reference: EOP-SH

Dimensions of the ring:



The flat area of the ring is used to fix it on Kapteos accessory called eoPod or on another fixing system via a M3 plastic screw (not provided).
It is not necessary to screw too tight the probes on this holder. A light torque is plenty enough.

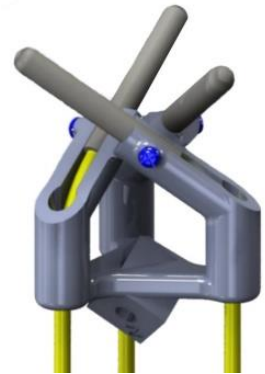
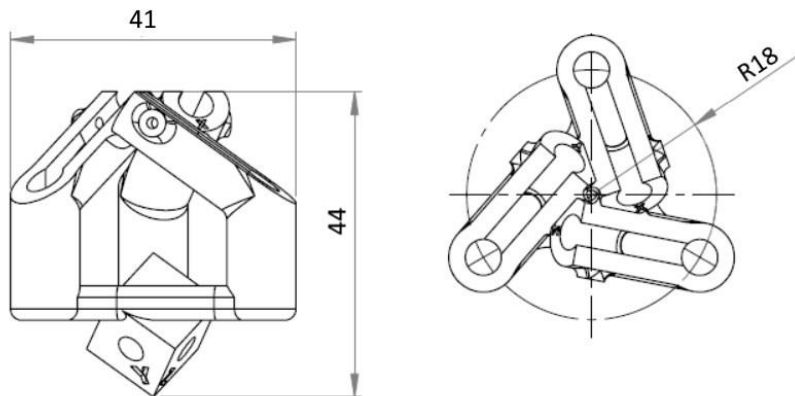
Support to maintain 2 or 3 probes at 90°

The holder maintains together in a very easy way, up to 3 probes to measure the 3 axis (X, Y and Z) of the electric field when using 3 longitudinal eoProbe. The holder material does not perturbate the measurement.

Reference: EOP-HLD

It is not necessary to screw too tight the probes on this holder. A light torque is plenty enough.

Dimensions of the holder:



Articulated arm to maintain the probes holder

This accessory allows the mechanical maintain of the probes thanks to a flexible dielectric guide. This guide is MRI compliant meaning it does not include any magnetic part, nor metallic part. This accessory is very easy to use for rapid and accurate localisation of the probes.
It is also designed to maintain the EOP-SH and EOP-HLD probes support via a specific adapter delivered when ordering both eoPod and EOP-SH or EOP-HLD.
The blue dome is made from silicon for a good adherence.

Reference: eoPod



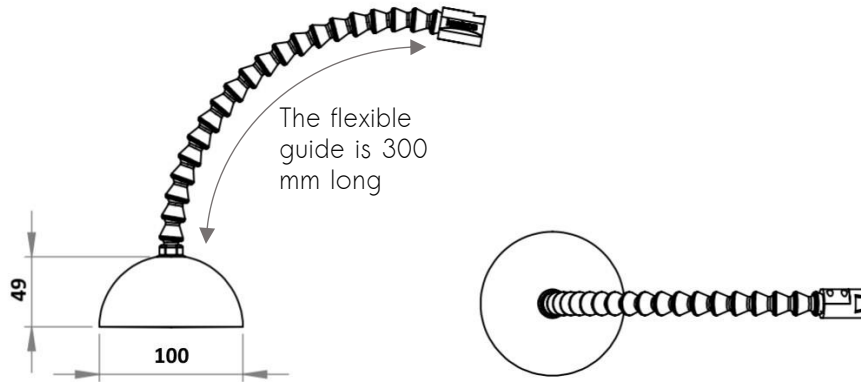
View with EOP-SH support



View with EOP-HLD support



Dimensions of eoPod



Fibre optic extension

The fibre optic extension is inserted between the eoSense opto-electronic converter and an eoProbe sensor to increase the distance up to a maximum of 100 meters. The length of this extension version is 10 or 15 meters. Each end of the fibre optic is connected with a ruggedized UTS-LC connector. The sensibility of the eoProbe may be reduced between 10 to 15% at the most.

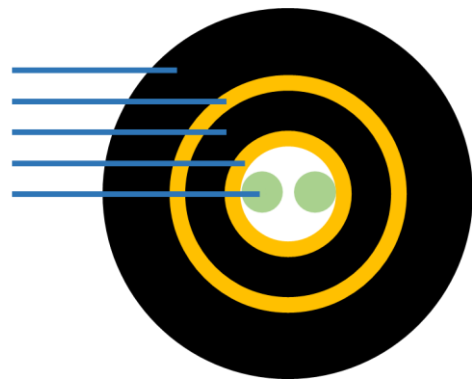


Reference: EOP-EXT

Ruggedized fibre optic extension

For specific indoor or outdoor conditions, a ruggedized version of the fibre optic extension is available. The distances are 15, 25, 50 or 95 meters. Each end of the fibre optic is connected with a ruggedized UTS-LC connector. This ruggedized version is rodent-proof and resistant to humidity and UV.

Black PE external sheath
Aramid protection
Black PE internal sheath
Aramid protection
Fibre optic



The main specifications are:

Resistance to traction	80 daN
Resistance to compression	90 daN
Construction	100 % dielectric
External diameter	9.5 mm
Weight	7 kg per 100 meters
Minimum dynamic bend radius	100 mm
Minimum static bend radius	80 mm
Storage temperature	-30 °C to +70 °C
Operating temperature	-5 °C to +50 °C

The sensibility of the eoProbe may be reduced between 10 to 15% at the most.

Reference: EOP-EXTXX-R (with XX = length of fibre, i.e. 15 or 25 or 50 or 95 meters)

Characterisation cell for eoProbe used with liquids

The eoCal is designed for the characterisation of eoProbe linked to specific customer liquids at the relevant frequencies (maximum 100 MHz). The characterisation is performed by the customer himself. The customer has to provide the input signal to eoCal with AC voltage. The eoCal provides an output linked to the customers conditions.

Reference: **eoCal**

For further information, please read eoCal data sheet.



Services

Calibration

New calibration of eoProbe (with its eoSense instrument) is requested to be performed at Kapteos every 2 years.

Rental

No rental of an eoProbe or any of the above listed accessories without the rental of an eoSense instrument.

Contact us

Kapteos SAS
Bâtiment CleanSpace
354 voie Magellan
73800 Sainte-Hélène du Lac
France

contact@kapteos.com

Tel: +33 (0)4 79 62 88 34

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