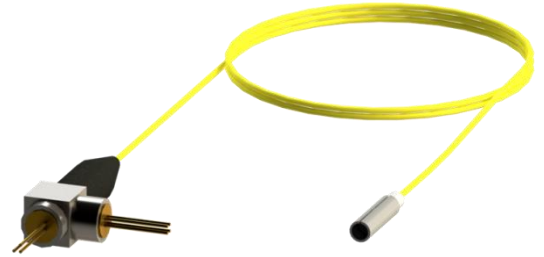


## Dione

The Dione bidirectional sensor is a compact and affordable source/detector module that is at the core of the Lein confocal sensing technique. It can be used as a scanning or static device, allowing position and multi-layer thickness measurements with sub-micron precision and repeatability. Dione can also be used to measure refractive index with a resolution to  $1 \times 10^{-5}$ . Dione can either be supplied as a standalone product or Lein can provide engineering support for sensor integration into a custom measurement system.



### Absolute Maximum Ratings:

Parameter	Symbol	Rating
Laser diode CW forward current	$I_{F(LD)}$	$I_{th} + 40 \text{ mA}$
Laser diode reverse voltage	$V_{R(LD)}$	2 V
Photodiode reverse voltage	$V_{R(PD)}$	20 V
Photodiode CW forward current	$I_{F(PD)}$	2 mA
Reverse voltage	$V_R$	20 V

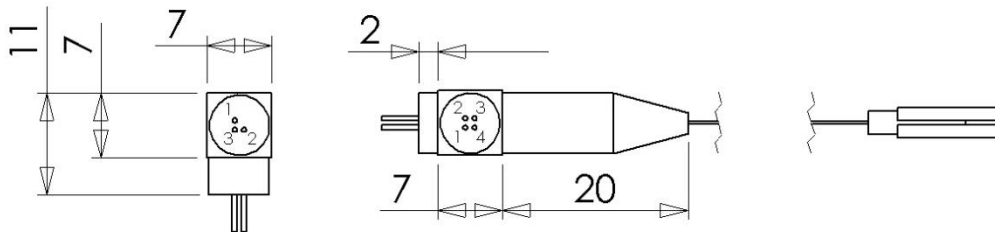
### Transmitter Characteristics:

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Optical output power	$P_{\text{fibre}}$	$I_f = I_{op}$ , $I_{op} = I_{th} + 20 \text{ mA}$ ; kink free	30		400	$\mu\text{W}$
Centre wavelength	$\lambda_c$	$I_f = I_{op}$	1290	1310	1330	nm
Spectral width (rms, -20dB)	$\Delta\lambda$	$I_f = I_{op}$			4	nm
Threshold current	$I_{th}$			10	15	mA
Operating voltage	$V_{op}$	$I_f = I_{op}$		1.2	1.6	V
Rise/Fall time (10% to 90%)	$t_r$	$I_{\text{bias}} = I_{th}$ , $I_f = I_{op}$		0.3	0.7	ns
Return loss					-40	dB
Monitor current	$I_m$	$I_f = I_{op}$ , $V_{R(PD)} = 1 \text{ V}$	100	500		$\mu\text{A}$
Photodiode dark current	$I_{D(PD)}$	$V_{R(PD)} = 10 \text{ V}$			0.1	$\mu\text{A}$
Photodiode capacitance	$C_{PD}$	$V_{R(PD)} = 10 \text{ V}$ , $f = 1 \text{ MHz}$			20	pF
Tracking Error	TE	$T_c = 0^\circ\text{C}$ to $50^\circ\text{C}$	-1		1	dB
Optical crosstalk	$X_{\text{talk}}$				-25	dB

**Detector Characteristics:**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Centre wavelength	$\lambda_c$	$I_f = I_{op}$	1290	1310	1330	nm
Dark current	$I_{D(PD)}$	$V_{PD} = -5V$			1	nA
Capacitance	$C_{PD}$	$V_{R(PD)} = -5V, f = 1MHz$			1.5	pF
Rise/Fall time (10% to 90%)	$t_r, t_f$	$V_{PD} = -5V$			0.5	ns
Responsivity	R	$V_{PD} = -5V @ 1310nm$	0.65			A/W

**Measurement Dimensions (mm):**



**Pin Configuration:**

Transmitter		Receiver	
Pin 1	Laser Cathode	Pin 1	Receiver Anode
Pin 2	Photodiode Anode	Pin 2	Receiver Cathode
Pin 3	Laser Anode/Photodiode Cathode	Pin 3	Receiver Case
Pin 4	Case		

Pin configuration subject to change, please contact Lein for the latest configuration.

**Handling Instructions:**

**ENSURE that polished end of fibre assembly is kept free of any dirt/debris**  
**DO NOT bend fibre in a radius of less than 25 mm**  
**DO NOT pull on fibre**

**Warnings:**



Fig 1:  
Laser /Classification Label



Fig 2:  
Electrostatic Sensitive Device Label

Lein Applied Diagnostics Ltd reserves the right to update and improve this datasheet without prior notice.