

Datasheet

FWPR-20-IN

Femtowatt Photoreceiver  
with InGaAs PIN Photodiode



The photoreceiver will be delivered without post holder and post.

Features

- InGaAs PIN photodiode, 0.5 mm active diameter
- Ultra low noise, NEP 7.5 fW/√Hz
- Amplifier transimpedance gain  $1 \times 10^{11}$  V/A
- Max. conversion gain  $0.95 \times 10^{11}$  V/W @ 1550 nm
- Wavelength range 900 ... 1700 nm

Applications

- Fluorescence measurements
- NIR spectroscopy
- Electrophoresis
- Replacement for (liquid nitrogen) cooled Ge photodiodes and avalanche photodiodes (APDs)

Specifications

	Test conditions	$V_G = \pm 15$ V, $T_A = 25^\circ\text{C}$ Warm-up 20 minutes (min. 10 minutes recommended)
Gain	Amplifier transimpedance Max. conversion gain	$1.0 \times 10^{11}$ V/A (@ $\geq 100$ k $\Omega$ load) $0.95 \times 10^{11}$ V/W (@ 1550 nm)
Frequency Response	Lower cut-off frequency Upper cut-off frequency (-3 dB) Rise/fall time (10 % - 90 %)	DC 20 Hz ( $\pm 20$ %) 18 ms ( $\pm 20$ %)
Detector	Detector material Active area Spectral response	InGaAs PIN photodiode $\varnothing$ 0.5 mm 900 ... 1700 nm
Input	Optical saturation power NEP	110 pW (for linear amplification, @ 1550 nm) 7.5 fW/√Hz (@ 1550 nm, 1 Hz)

SOPHISTICATED TOOLS FOR SIGNAL RECOVERY

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DE-FWPR-20-IN\_R5/JM/02JAN2019

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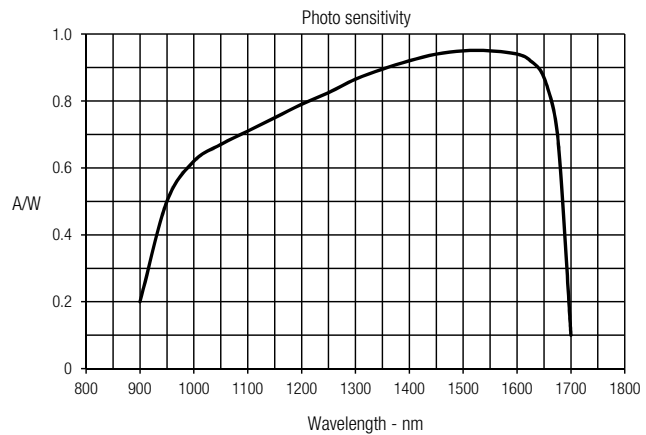
**Femtowatt Photoreceiver  
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Specifications (continued)

Output	Output voltage range	±10 V (@ ≥ 100 kΩ load)
	Output impedance	50 Ω (designed for ≥ 100 kΩ load)
	Offset voltage	0 V, adjustable by offset potentiometer within ±1.6 V
	Max. output current	±25 mA
	Output noise	ca. 20 mV <sub>PP</sub> or 3 mV <sub>RMS</sub> (@ ≥ 100 kΩ load, no signal on detector)
Power Supply	Supply voltage	±15 V
	Supply current	±15 mA typ. (depends on operating conditions, recommended power supply capability min. ±50 mA)
Case	Weight	190 g (0.42 lbs)
	Material	AlMg3/4.5Mn, nickel-plated
Temperature Range	Storage temperature	-40 ... +100 °C
	Operating temperature	0 ... +60 °C

Absolute Maximum Ratings	Optical input power	10 mW
	Power supply voltage	±22 V

Spectral Response



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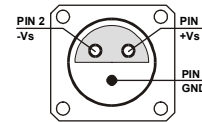
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**Connectors**

**Input** 25 mm round flange for free space applications  
(fiber optic input available as customized unit)

**Output** BNC jack (female)

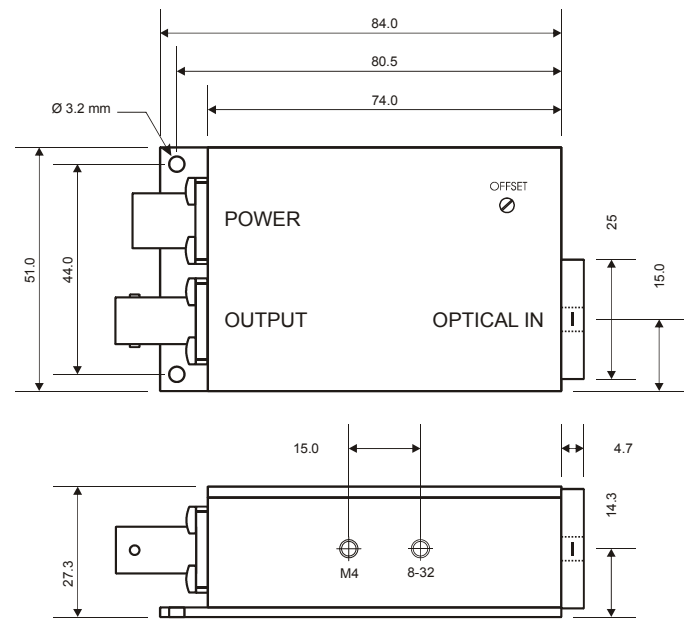
**Power supply** Lemo® series 1S, 3-pin fixed socket  
(Mating plug type: FFA.1S.303.CLAC52)  
Pin 1: +15V  
Pin 2: -15V  
Pin 3: GND



**Available Models**

FWPR-20-IN-FS Free space input  
FWPR-S Customized version available on request

**Dimensions**



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**SOPHISTICATED TOOLS FOR SIGNAL RECOVERY**

