

**Datasheet**
**FWPR-20-IN**

## Femtowatt Photoreceiver with InGaAs PIN Photodiode

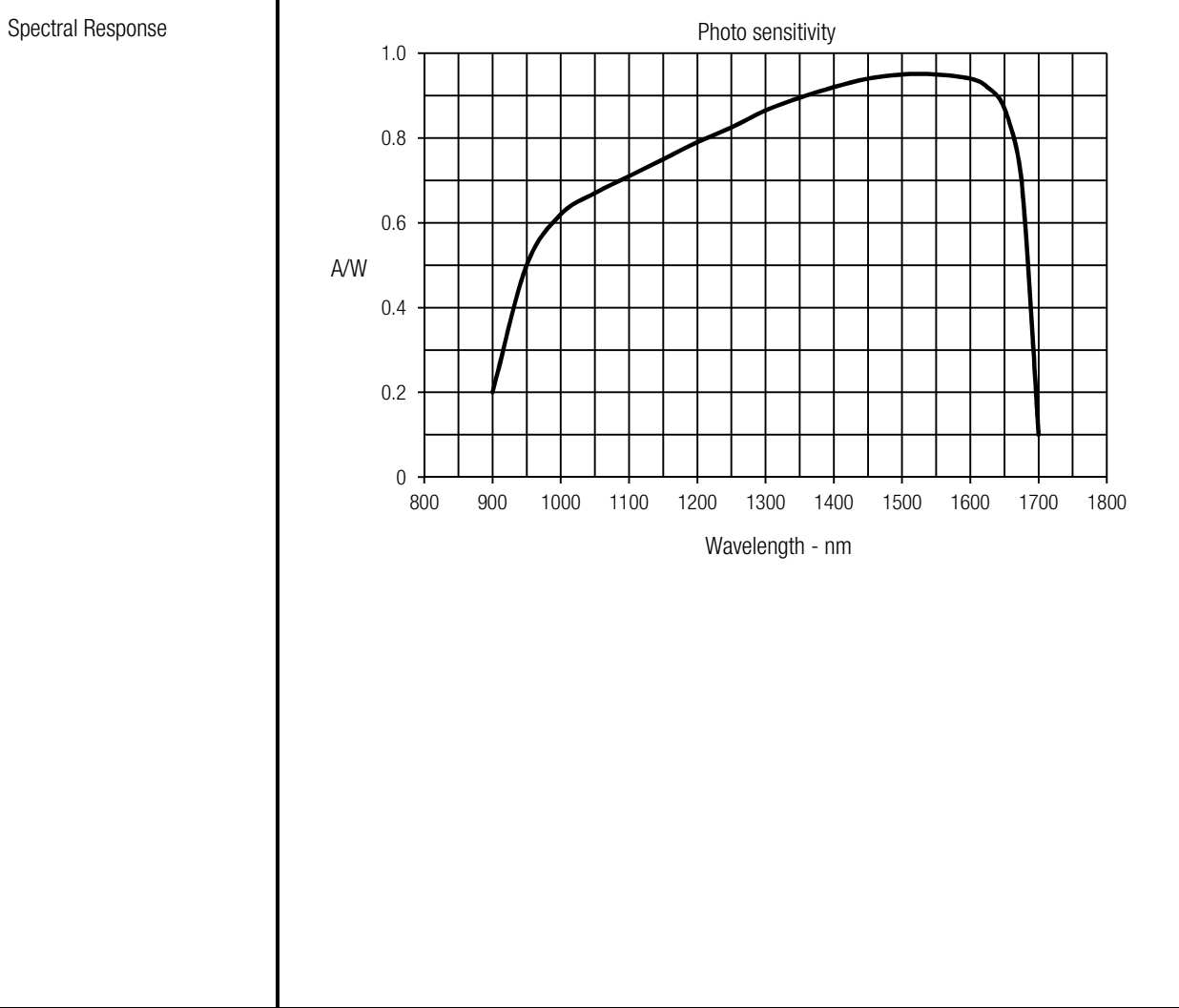


The photoreceiver will be delivered without post holder and post.

Features	<ul style="list-style-type: none"> <li>• <b>InGaAs PIN photodiode, 0.5 mm active diameter</b></li> <li>• <b>Ultra low noise, NEP 7.5 fW/√Hz</b></li> <li>• <b>Amplifier transimpedance gain 1 x 10<sup>11</sup> V/A</b></li> <li>• <b>Max. conversion gain 0.95 x 10<sup>11</sup> V/W @ 1550 nm</b></li> <li>• <b>Wavelength range 900 ... 1700 nm</b></li> </ul>	
Applications	<ul style="list-style-type: none"> <li>• <b>Fluorescence measurements</b></li> <li>• <b>NIR spectroscopy</b></li> <li>• <b>Electrophoresis</b></li> <li>• <b>Replacement for (liquid nitrogen) cooled Ge photodiodes and avalanche photodiodes (APDs)</b></li> </ul>	
Specifications	Test conditions $V_s = \pm 15 \text{ V}$ , $T_A = 25^\circ\text{C}$ Warm-up 20 minutes (min. 10 minutes recommended)	
Gain	Amplifier transimpedance Max. conversion gain	$1.0 \times 10^{11} \text{ V/A}$ (@ $\geq 100 \text{ k}\Omega$ load) $0.95 \times 10^{11} \text{ V/W}$ (@ 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 $\varnothing 0.5 \text{ mm}$ 900 ... 1700 nm
Input	Optical saturation power NEP	$110 \text{ pW}$ (for linear amplification, @ 1550 nm) $7.5 \text{ fW}/\sqrt{\text{Hz}}$ (@ 1550 nm, 1 Hz)

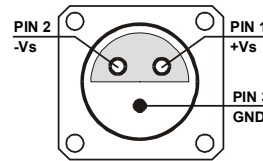
## Femtowatt Photoreceiver with InGaAs PIN Photodiode

Specifications (continued)		
Output	Output voltage range	$\pm 10\text{ V}$ (@ $\geq 100\text{ k}\Omega$ load)
	Output impedance	$50\ \Omega$ (designed for $\geq 100\text{ k}\Omega$ load)
	Offset voltage	0 V, adjustable by offset potentiometer within $\pm 1.6\text{ V}$
	Max. output current	$\pm 25\text{ mA}$
	Output noise	ca. $20\text{ mV}_{pp}$ or $3\text{ mV}_{RMS}$ (@ $\geq 100\text{ k}\Omega$ load, no signal on detector)
Power Supply	Supply voltage	$\pm 15\text{ V}$
	Supply current	$\pm 15\text{ mA}$ typ. (depends on operating conditions, recommended power supply capability min. $\pm 50\text{ mA}$ )
Case	Weight	190 g (0.42 lbs)
	Material	AlMg3/4.5Mn, nickel-plated
Temperature Range	Storage temperature	$-40 \dots +100\text{ }^\circ\text{C}$
	Operating temperature	$0 \dots +60\text{ }^\circ\text{C}$
Absolute Maximum Ratings	Optical input power	10 mW
	Power supply voltage	$\pm 22\text{ V}$



## Femtowatt Photoreceiver with InGaAs PIN Photodiode

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 FWPR-S	Free space input Customized version available on request
------------------	-------------------------	---

