



**Datasheet**

**FWPR-20-SI**

**Femtowatt Photoreceiver with Si Photodiode**



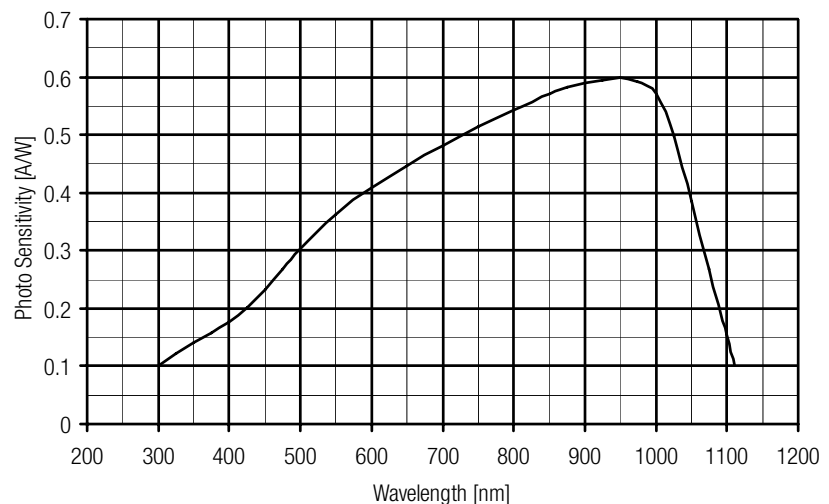
The photoreceiver will be delivered without post holder and post.

Features	<ul style="list-style-type: none"> <li>• <b>Si Photodiode, 1.1 x 1.1 mm<sup>2</sup> Active Area</b></li> <li>• <b>Ultra Low Noise, Minimum NEP 0.7 fW/√Hz</b></li> <li>• <b>Amplifier Transimpedance Gain 1 x 10<sup>12</sup> V/A</b></li> <li>• <b>Max. Conversion Gain 0.6 x 10<sup>12</sup> V/W @ 960 nm</b></li> <li>• <b>Wavelength Range 320 ... 1100 nm</b></li> </ul>																																								
Applications	<ul style="list-style-type: none"> <li>• <b>Fluorescence Measurements</b></li> <li>• <b>Spectroscopy</b></li> <li>• <b>Electrophoresis</b></li> <li>• <b>Replacement for Photomultiplier Tubes (PMTs) and Avalanche Photodiodes (APDs)</b></li> </ul>																																								
Specifications	<p><i>Test Conditions</i> <span style="float: right;"><i>V<sub>s</sub> = ± 15 V, T<sub>a</sub> = 25°C</i></span></p> <table border="0"> <tr> <td style="vertical-align: top;">Gain</td> <td>Transimpedance</td> <td>1.0 x 10<sup>12</sup> V/A</td> <td>(@ ≥ 1 MΩ load)</td> </tr> <tr> <td></td> <td>Max. Conversion Gain</td> <td>0.6 x 10<sup>12</sup> V/W</td> <td>(@ 960 nm)</td> </tr> <tr> <td style="vertical-align: top;">Frequency Response</td> <td>Lower Cut-Off Frequency</td> <td>DC</td> <td></td> </tr> <tr> <td></td> <td>Upper Cut-Off Frequency (- 3 dB)</td> <td>20 Hz</td> <td></td> </tr> <tr> <td></td> <td>Rise/Fall Time (10% - 90%)</td> <td>18 ms</td> <td></td> </tr> <tr> <td style="vertical-align: top;">Detector</td> <td>Detector Material</td> <td>Si photodiode</td> <td></td> </tr> <tr> <td></td> <td>Active Area</td> <td>1.1 x 1.1 mm<sup>2</sup></td> <td></td> </tr> <tr> <td></td> <td>Spectral Response</td> <td>320 ... 1100 nm</td> <td></td> </tr> <tr> <td style="vertical-align: top;">Input</td> <td>Optical Saturation Power</td> <td>18 pW</td> <td>(for linear amplification, @ 960 nm)</td> </tr> <tr> <td></td> <td>Min. NEP</td> <td>0.7 fW/√Hz</td> <td>(@ 960 nm, 1 Hz)</td> </tr> </table>	Gain	Transimpedance	1.0 x 10 <sup>12</sup> V/A	(@ ≥ 1 MΩ load)		Max. Conversion Gain	0.6 x 10 <sup>12</sup> V/W	(@ 960 nm)	Frequency Response	Lower Cut-Off Frequency	DC			Upper Cut-Off Frequency (- 3 dB)	20 Hz			Rise/Fall Time (10% - 90%)	18 ms		Detector	Detector Material	Si photodiode			Active Area	1.1 x 1.1 mm <sup>2</sup>			Spectral Response	320 ... 1100 nm		Input	Optical Saturation Power	18 pW	(for linear amplification, @ 960 nm)		Min. NEP	0.7 fW/√Hz	(@ 960 nm, 1 Hz)
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Specifications (continued)		
Output	Output Voltage Range	$\pm 10$ V (@ $\geq 1$ M $\Omega$ load)
	Output Impedance	50 $\Omega$ (designed for $\geq 1$ M $\Omega$ load)
	Offset Voltage	0 V, adjustable by offset trimpot within $\pm 1.6$ V
	Max. Output Current	$\pm 25$ mA
	Output Noise	ca. 40 mV peak-peak or 6 mV rms (@ $\geq 1$ M $\Omega$ load, no signal on detector)
Power Supply	Supply Voltage	$\pm 15$ V
	Supply Current	$\pm 15$ mA typ. (depends on operating conditions, recommended power supply capability minimum $\pm 50$ mA)
Case	Weight	190 g (0.42 lbs)
	Material	AlMg4.5Mn, 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	$\pm 22$ V

## Spectral Response

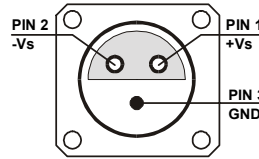


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## Femtowatt Photoreceiver with Si Photodiode

Connectors	Input	25 mm round flange for free space applications (fiber optic input available as customized unit)
	Output	BNC
	Power Supply	LEMO series 1S, 3-pin fixed socket Pin 1: + 15V Pin 2: - 15V Pin 3: GND



Available Models	FWPR-20-SI-FS FWPR-S	free space input customized version available on request
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Dimensions		
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