Ultra High-Speed Photoreceiver with Si-PIN Photodiode

The picture shows the HSPR-X-I-1G4-SI-FS with free space input.
The photoreceiver will be delivered without post holder and post.

Features	• **Bandwidth 10 kHz ... 1.4 GHz** • **Si-PIN detector** • **Spectral range 320 ... 1000 nm** • **Amplifier transimpedance (gain) 5 x 10^3 V/A (inverting)** • **Conversion gain 2.55 x 10^3 V/W @ 760 nm**		
Applications	• **Spectroscopy** • **Ultra-fast pulse and transient measurements** • **Optical triggering** • **Optical front-end for oscilloscopes and ultra-fast A/D converters**		
Specifications	Test conditions	V_S = +15 V, T_A = 25 °C, system impedance = 50 Ω	
Gain	Amplifier transimpedance	5 x 10^3 V/A	(@ 50 Ω load, inverting)
	Conversion gain	2.55 x 10^3 V/W	(typ. @ 760 nm)
Frequency Response	Lower cut-off frequency (–3 dB)	10 kHz	(±25 %)
	Upper cut-off frequency (–3 dB)	1.4 GHz	(±15 %)
	Rise/fall time (10 % - 90 %)	250 ps	(±15 %)
Input/Detector	Detector material	Si-PIN photodiode	
	Active area	FS-version:	∅ 400 µm
		FC-version:	integrated ball lens, suitable for fibers up to 400 µm core diameter
	Spectral range	320 ... 1000 nm	
	Max. optical peak input power	390 µW AC	(for linear amplification, @ 760 nm)
		10 mW CW	(to prevent saturation, @ 760 nm)
Noise	Min. NEP	19 pW/√Hz	(@ 760 nm, 100 MHz)

Ultra High-Speed Photoreceiver with Si-PIN Photodiode

Specifications (continued)

Output

Output impedance	50 Ω	(designed for 50 Ω load)
Output VSWR	1.4 : 1	(@ f < 2.5 GHz)
Output return loss	15.5 dB	(@ f < 2.5 GHz)
Max. output voltage	2.0 V_{PP}	(@ 50 Ω load, for linear amplification)
Output noise	typ. 2.5 mV_{RMS} or 17 mV_{PP}*	(measurement BW: 4 GHz)

* The peak-to-peak output noise is derived from the RMS noise as follows: $V_{PP} = V_{RMS} \times 6.6$ (99.9% of the time the output noise voltage will be within the specified peak-to-peak value.)

Power Supply

Supply voltage	+15 V, 150 mA typ. (depends on operating conditions, recommended power supply capability minimum 200 mA)

Case

Weight	100 g (0.23 lbs)
Material	AlMg4.5Mn, nickel-plated

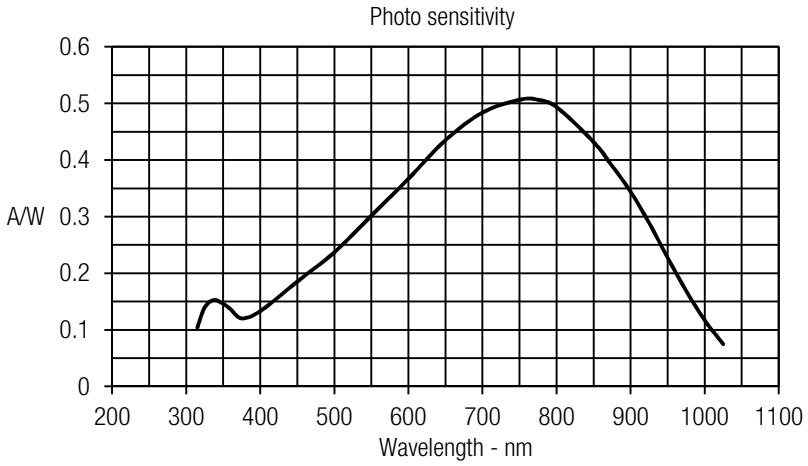
Temperature Range

Storage temperature	–40 ... +100 °C
Operating temperature	0 ... +60 °C

Absolute Maximum Ratings

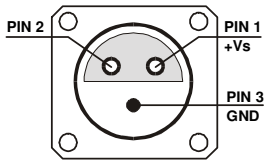
Power supply voltage	±18.5 V
Optical input power	12 mW (averaged)

Spectral Response



Connectors

Input	HSPR-X-I-1G4-SI-FS	25 mm round flange for free space applications
	HSPR-X-I-1G4-SI-FC	FC fiber optic receptacle
Output	SMA jack (female)	
Power supply	Lemo® series 1S, 3-pin fixed socket (mating plug type: FFA.1S.303.CLAC52) Pin 1: +15V Pin 2: NC Pin 3: GND	

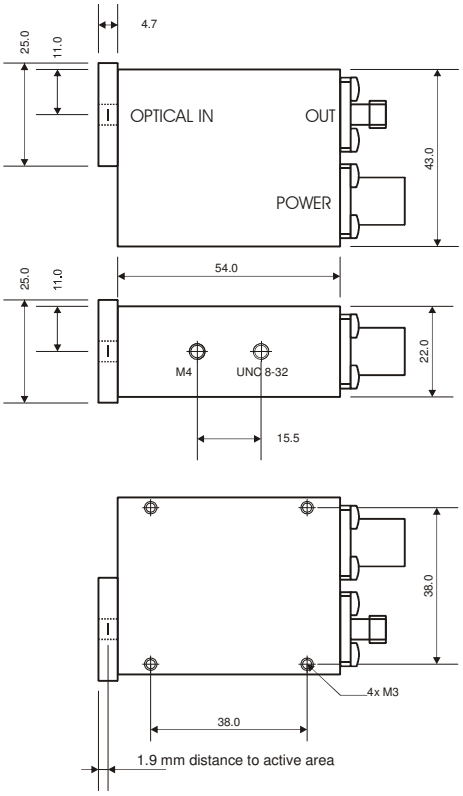


Ultra High-Speed Photoreceiver with Si-PIN Photodiode

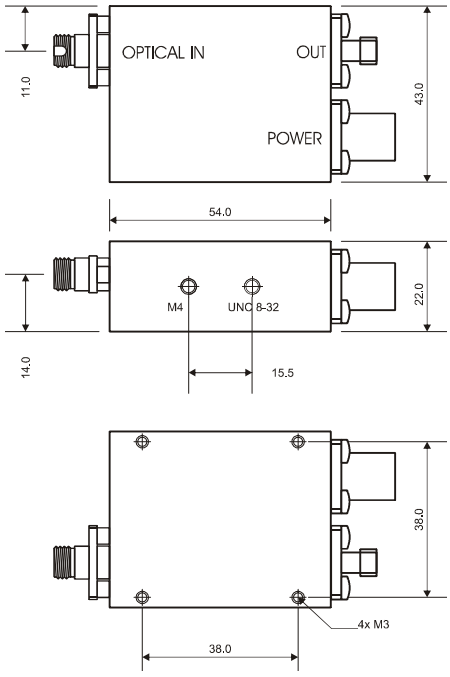
Available Models	HSPR-X-I-1G4-SI-FS	free space input
	HSPR-X-I-1G4-SI-FC	fiber optic receptacle
	HSPR-X-S	customized versions available on request

Dimensions

HSPR-X-I-1G4-SI-FS



HSPR-X-I-1G4-SI-FC



All measures in mm unless otherwise noted

FEMTO Messtechnik GmbH
Klosterstr. 64
10179 Berlin · Germany
Phone: +49 30 280 4711-0
Fax: +49 30 280 4711-11
Email: info@femto.de
www.femto.de