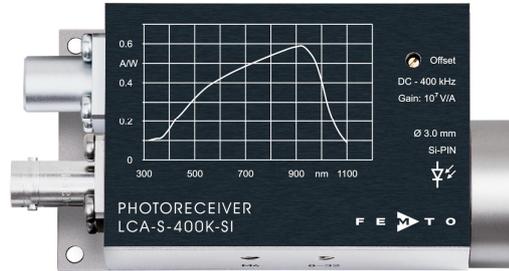


Low Noise 400 kHz Photoreceiver with Si-PIN Photodiode

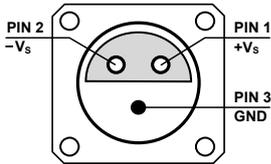


<p>Features</p>	<ul style="list-style-type: none"> • Large area Si-PIN photodiode, 3.0 mm active diameter • Bandwidth DC – 400 kHz • Amplifier transimpedance gain 1.0×10^7 V/A • Max. conversion gain 5.9×10^6 V/W @ 920 nm • Spectral range 320 – 1060 nm • Free-space input 1.035"-40 threaded, easily convertible to fiber optic input (FC and FSMA) with optionally available screw-on adapters • UNC 8-32 and M4 tapped holes for mounting on standard posts with metric and imperial thread
<p>Applications</p>	<ul style="list-style-type: none"> • Spectroscopy • General purpose opto-electronic measurements • Optical front-end for oscilloscopes, A/D converters and lock-in amplifiers
<p>Block Diagram</p>	<p style="text-align: right; font-size: small;">BS01-LCA-S_R01</p>
<p>Intended Use</p>	<p>The LCA-S-400K-SI photoreceiver consists of an Si-PIN photodiode and a subsequent low-noise fixed gain transimpedance amplifier. It is designed for fast conversion of small optical signals into equivalent output voltages. Operation is mostly self-explanatory. If in doubt, consult this document or contact support@femto.de.</p> <p>For safe operation, please refer to the damage thresholds specified in the "Absolute Maximum Ratings", "Temperature Range" and "Power Supply" sections of this document.</p> <p>The operating environment must be free of smoke, dust, grease, oil, condensing moisture, and other contaminants that could affect the operation or performance.</p>

Low Noise 400 kHz Photoreceiver with Si-PIN Photodiode

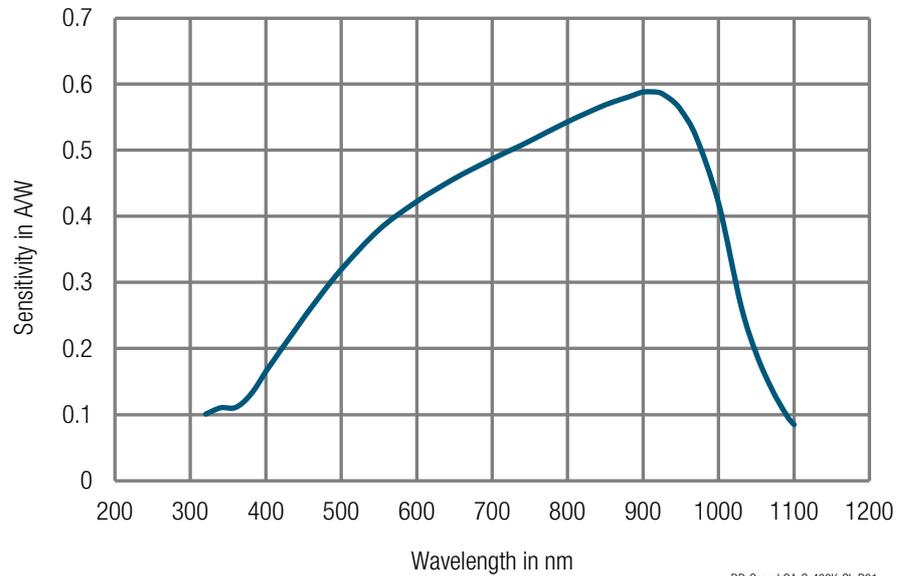
<p>Available Version</p>	<p>LCA-S-400K-SI-FST</p>  <p>1.035"-40 threaded flange with internally threaded coupler ring (outer diameter 30 mm) for free space applications, compatible with many optical standard accessories</p> <p>Optionally available: Fiber adapters PRA-FC, PRA-FCA and PRA-FSMA, with the relative large 3.0 mm dia. photodiode installed in the LCA-S-400K-SI input coupling is not critical, however, standard SM 9/125 fibers (PC or APC) with low numerical aperture (NA) are recommended for ensuring near 100% coupling efficiency</p>												
<p>Related Model</p>	<p>LCA-S-400K-IN-FST</p> <p>InGaAs-PIN, Ø 0.5 mm, 900 - 1700 nm free space input, 1.035"-40 threaded flange</p>												
<p>Available Accessories</p>	<p>PRA-FC PRA-FCA PRA-FSMA</p>  <p>Fiber-adapter with external 1.035"-40 thread (suitable for FST models only)</p> <p>PRA-PAP</p>  <p>Alternative mounting option: post adapter plate, easy to mount on FEMTO photoreceiver series OE, FWPR, PWPR, HCA-S and LCA-S</p> <p>PS-15-25-L</p>  <p>Power Supply input: 100 – 240 VAC output: ±15 VDC</p>												
<p>Specifications</p>	<table border="0"> <tr> <td>Test conditions</td> <td>$V_s = \pm 15\text{ V}$, $T_A = 25\text{ }^\circ\text{C}$, output load impedance $1\text{ M}\Omega$, warm-up 20 minutes (min. 10 minutes recommended)</td> </tr> <tr> <td>Gain</td> <td> <p>Transimpedance gain $1.0 \times 10^7\text{ V/A}$ (@ output load $\geq 100\text{ k}\Omega$)</p> <p>Gain accuracy $\pm 1\%$ (electrical)</p> <p>Conversion gain $5.9 \times 10^6\text{ V/W typ.}$ (@ 920 nm, output load $\geq 100\text{ k}\Omega$)</p> </td> </tr> <tr> <td>Frequency Response</td> <td> <p>Lower cut-off frequency DC</p> <p>Upper cut-off frequency (-3 dB) 400 kHz</p> <p>Gain flatness $\pm 0.5\text{ dB}$</p> </td> </tr> <tr> <td>Time Response</td> <td>Rise/fall time (10 % – 90 %) 900 ns</td> </tr> <tr> <td>Input</td> <td> <p>Noise equivalent power (NEP) $120\text{ fW}/\sqrt{\text{Hz}}$ (@ 920 nm, 10 kHz)</p> <p>Optical saturation power $1.6\text{ }\mu\text{W}$ (for linear amplification, @ 920 nm)</p> <p>Input offset compensation range $\pm 300\text{ nA}$, adjustable by offset potentiometer</p> </td> </tr> <tr> <td>Detector</td> <td> <p>Detector Si-PIN photodiode</p> <p>Active area $\text{Ø } 3.0\text{ mm}$</p> <p>Spectral range 320 – 1060 nm</p> <p>Max. sensitivity 0.59 A/W typ. (@ 920 nm)</p> </td> </tr> </table>	Test conditions	$V_s = \pm 15\text{ V}$, $T_A = 25\text{ }^\circ\text{C}$, output load impedance $1\text{ M}\Omega$, warm-up 20 minutes (min. 10 minutes recommended)	Gain	<p>Transimpedance gain $1.0 \times 10^7\text{ V/A}$ (@ output load $\geq 100\text{ k}\Omega$)</p> <p>Gain accuracy $\pm 1\%$ (electrical)</p> <p>Conversion gain $5.9 \times 10^6\text{ V/W typ.}$ (@ 920 nm, output load $\geq 100\text{ k}\Omega$)</p>	Frequency Response	<p>Lower cut-off frequency DC</p> <p>Upper cut-off frequency (-3 dB) 400 kHz</p> <p>Gain flatness $\pm 0.5\text{ dB}$</p>	Time Response	Rise/fall time (10 % – 90 %) 900 ns	Input	<p>Noise equivalent power (NEP) $120\text{ fW}/\sqrt{\text{Hz}}$ (@ 920 nm, 10 kHz)</p> <p>Optical saturation power $1.6\text{ }\mu\text{W}$ (for linear amplification, @ 920 nm)</p> <p>Input offset compensation range $\pm 300\text{ nA}$, adjustable by offset potentiometer</p>	Detector	<p>Detector Si-PIN photodiode</p> <p>Active area $\text{Ø } 3.0\text{ mm}$</p> <p>Spectral range 320 – 1060 nm</p> <p>Max. sensitivity 0.59 A/W typ. (@ 920 nm)</p>
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Low Noise 400 kHz Photoreceiver with Si-PIN Photodiode

Specifications (continued)		
Output	Output voltage range Output impedance Max. output current Output noise	-3 V ... +10 V (@ $\geq 100\text{ k}\Omega$ output load) 50 Ω (terminate with $\geq 100\text{ k}\Omega$ load) 30 mA (short-circuit proof) 1.6 mV RMS (10 mV peak-peak) typ. (@ $\geq 100\text{ k}\Omega$ load, no signal on detector, measurement bandwidth 1 MHz)
Input Flange	Material	1.4305 stainless steel, nickel-plated
Coupler Ring	Material	1.4305 stainless steel, glass bead blasted
Power Supply	Supply voltage Supply current	$\pm 15\text{ V}$ ($\pm 14.5\text{ V}$... $\pm 16.5\text{ V}$) $\pm 40\text{ mA}$ (depends on operating conditions, recommended power supply capability min. $\pm 150\text{ mA}$)
Case	Weight Material	212 g (0.47 lbs) LCA-S-400K-SI-FST incl. coupler ring AlMg4.5Mn, nickel-plated
Temperature Range	Storage temperature Operating temperature	-30 °C ... +85 °C 0 °C ... +60 °C
Absolute Maximum Ratings	Optical input power (CW) Power supply voltage	10 mW $\pm 20\text{ V}$
Connectors	Input Output Power supply	1.035"-40 threaded flange for free space applications and for use with various types of optical standard accessories BNC jack (female) LEMO® series 1S, 3-pin fixed socket (mating plug type: FFA.1S.303.CLAC52)
		
	Pin 1: +15 V Pin 2: -15 V Pin 3: GND	
Scope of Delivery	LCA-S-400K-SI, internally threaded coupler ring, LEMO® 3-pin connector, datasheet, transport package	
Ordering Information	LCA-S-400K-SI-FST	1.035"-40 threaded flange for free space applications and for use with various types of optical standard accessories

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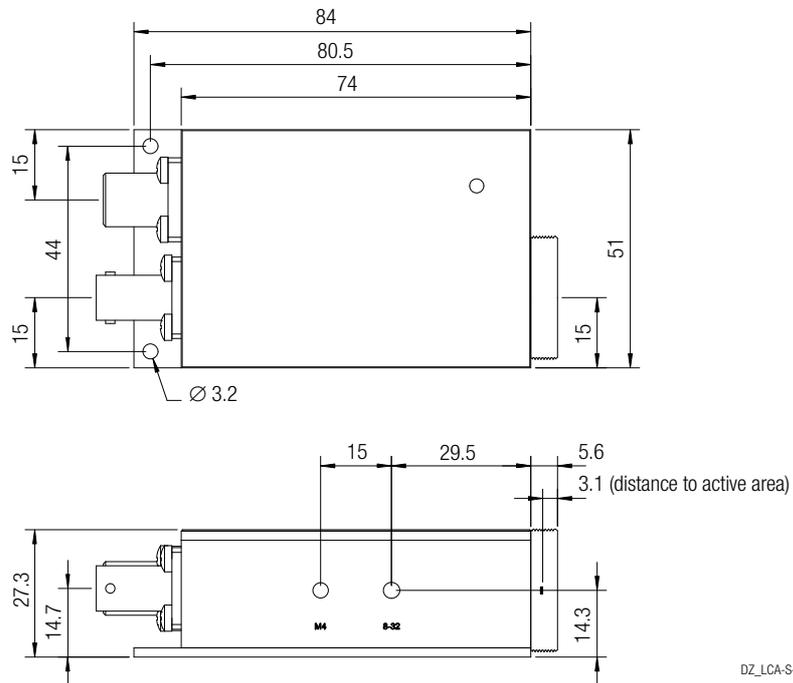
Spectral Responsivity



DB-Sens-LCA-S-400K-SI_R01

Dimensions

LCA-S-400K-SI-FST (1.035"-40 threaded free space input)



DZ_LCA-S-400K-SI-FST_R1

all dimensions in mm unless otherwise noted

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