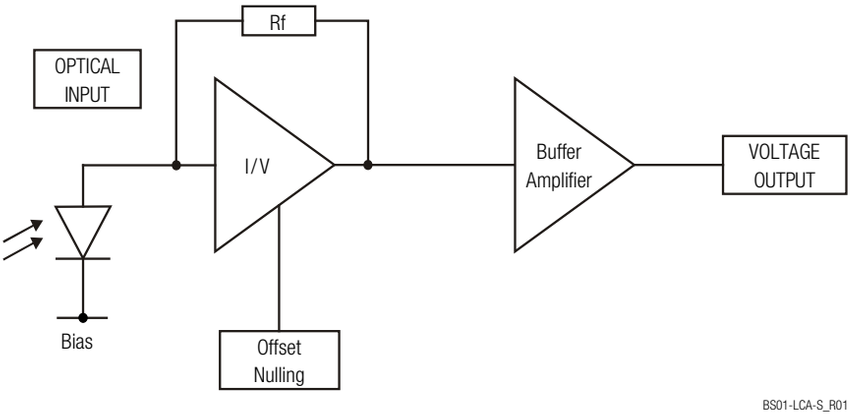
Datasheet LCA-S-400K-SI

Low Noise 400 kHz Photoreceiver with Si-PIN Photodiode

The picture shows model LCA-S-400K-SI-FS.
The photoreceiver will be delivered without post holder and post.

Features	• **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, alternatively 25 mm diameter unthreaded** • **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**
Applications	• **Spectroscopy** • **General purpose opto-electronic measurements** • **Optical front-end for oscilloscopes, A/D converters and lock-in amplifiers**
Block Diagram	

BS01-LCA-S_R01

SOPHISTICATED TOOLS FOR SIGNAL RECOVERY FEMTO

Low Noise 400 kHz Photoreceiver with Si-PIN Photodiode

Available Versions

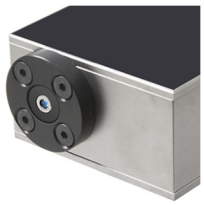
LCA-S-400K-SI-FST

Picture shows 1.035"-40 threaded flange with internally threaded coupler ring (outer diameter 30 mm)

1.035"-40 threaded flange for free space applications, compatible with many optical standard accessories and for use with various types of fiber connector adapters.

Optionally available:
Fiber adapters PRA-FC, PRA-FCA and PRA-FSMA.
The coupling efficiency will depend on fiber type.
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.

LCA-S-400K-SI-FS



Picture shows unthreaded flange with 25 mm diameter

25 mm dia. unthreaded flange for free space applications. Compatible with many optical standard accessories.

Related Models

LCA-S-400K-IN-FST	InGaAs-PIN, ∅ 0.5 mm, 900 - 1700 nm free space input, 1.035"-40 threaded flange
LCA-S-400K-IN-FS	InGaAs-PIN, ∅ 0.5 mm, 900 - 1700 nm free space input, 25 mm dia. unthreaded flange

Available Accessories

PRA-FC
PRA-FCA
PRA-FSMA

Fiber-adapter with external 1.035"-40 thread (suitable for FST models only).

PRA-PAP

Alternative mounting option:
Post adapter plate, easy to mount on FEMTO photoreceiver series OE, FWPR, PWPR, HCA-S and LCA-S.

PS-15-25-L

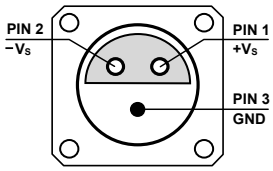
Power supply
Input: 100 – 240 VAC
Output: ±15 VDC

Low Noise 400 kHz Photoreceiver with Si-PIN Photodiode

Specifications	Test conditions	$V_S = \pm 15$ V, $T_A = 25$ °C, output load impedance 1 MΩ, warm-up 20 minutes (min. 10 minutes recommended)
Gain	Transimpedance gain	1.0×10^7 V/A (@ output load ≥ 100 kΩ)
	Gain accuracy	±1 % (electrical)
	Conversion gain	5.9×10^6 V/W typ. (@ 920 nm, output load ≥ 100 kΩ)
Frequency Response	Lower cut-off frequency	DC
	Upper cut-off frequency (–3 dB)	400 kHz
	Gain flatness	±0.5 dB
Time Response	Rise/fall time (10 % – 90 %)	900 ns
Input	Noise equivalent power (NEP)	120 fW/√Hz (@ 920 nm, 10 kHz)
	Optical saturation power	1.6 µW (for linear amplification, @ 920 nm)
	Input offset compensation range	±300 nA, adjustable by offset potentiometer
Detector	Detector	Si-PIN photodiode
	Active area	∅ 3.0 mm
	Spectral range	320 – 1060 nm
	Max. sensitivity	0.59 A/W typ. (@ 920 nm)
Output	Output voltage range	–3 V ... +10 V (@ ≥ 100 kΩ output load)
	Output impedance	50 Ω (terminate with ≥ 100 kΩ load)
	Max. output current	30 mA (short-circuit proof)
	Output noise	1.6 mV_{RMS} (10 mV_{PP}) typ. (@ ≥ 100 kΩ load, no signal on detector, measurement bandwidth 1 MHz)
Input Flange	Material	1.4305 stainless steel, nickel-plated (FST flange) AlMg4.5Mn, nickel-plated (FS flange)
Coupler Ring (FST version only)	Material	1.4305 stainless steel, glass bead blasted
Power Supply	Supply voltage	±15 V (±14.5 V ... ±16.5 V)
	Supply current	±40 mA (depends on operating conditions, recommended power supply capability min. ±150 mA)
Case	Weight	212 g (0.47 lbs) LCA-S-400K-SI-FST incl. coupler ring 195 g (0.43 lbs) LCA-S-400K-SI-FS
	Material	AlMg4.5Mn, nickel-plated
Temperature Range	Storage temperature	–30 °C ... +85 °C
	Operating temperature	0 °C ... +60 °C
Absolute Maximum Ratings	Optical input power (CW)	10 mW
	Power supply voltage	±20 V

Low Noise 400 kHz Photoreceiver with Si-PIN Photodiode

Connectors	Input	LCA-S-400K-SI-FST	1.035"-40 threaded flange for free space applications and for use with various types of optical standard accessories
		LCA-S-400K-SI-FS	25 mm dia. unthreaded flange for free space applications
	Output	BNC jack (female)	
	Power supply	LEMO® series 1S, 3-pin fixed socket (mating plug type: FFA.1S.303.CLAC52)	



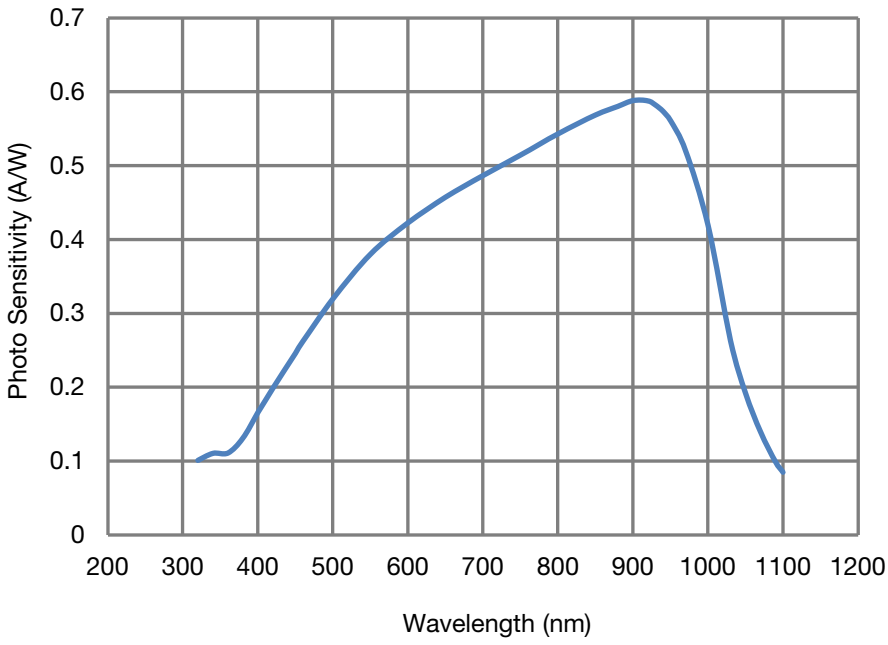
Pin 1: +15 V
Pin 2: −15 V
Pin 3: GND

Scope of Delivery: LCA-S-400K-SI, internally threaded coupler ring (FST version only), 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.
LCA-S-400K-SI-FS	25 mm dia. unthreaded flange for free space applications.

Spectral Responsivity

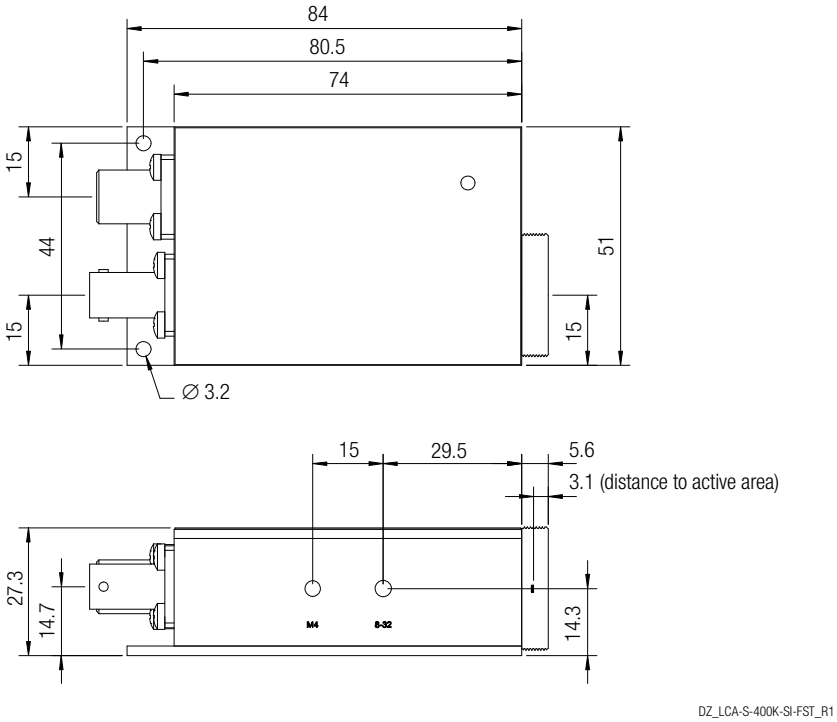


DB-Sens-LCA-S-400K-SI_R01

Low Noise 400 kHz Photoreceiver with Si-PIN Photodiode

Dimensions

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



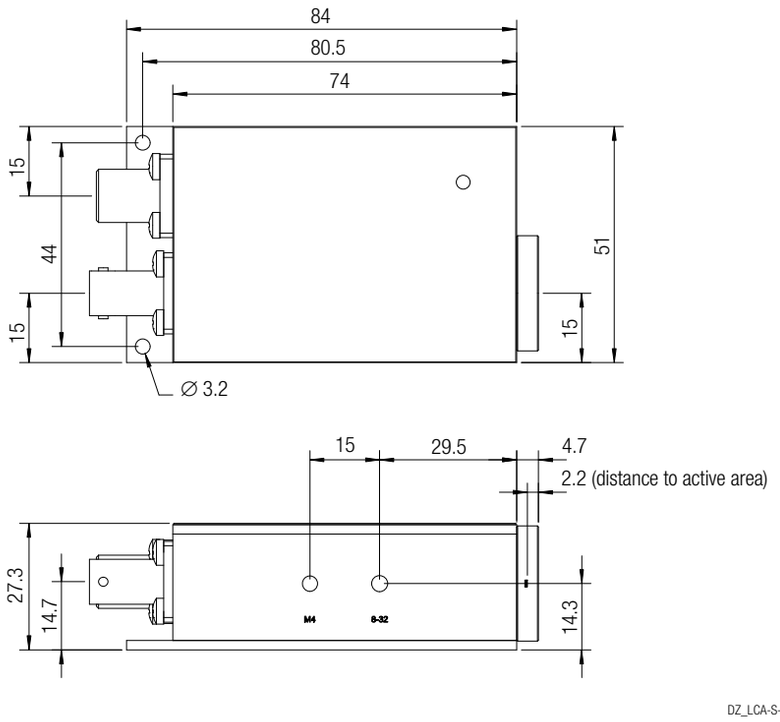
DZ_LCA-S-400K-SI-FST_R1

all dimensions in mm unless otherwise noted

Low Noise 400 kHz Photoreceiver with Si-PIN Photodiode

Dimensions (continued)

LCA-S-400K-SI-FS (25 mm dia. unthreaded free space input)



DZ_LCA-S-400K-SI-FS_R1

all dimensions in mm unless otherwise noted

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