



SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



DATASHEET

DLPCA-D-S1

Dual Channel Low Noise Current Amplifier



■ Dual Channel Amplifiers

Dual Channel Low Noise Current Amplifier

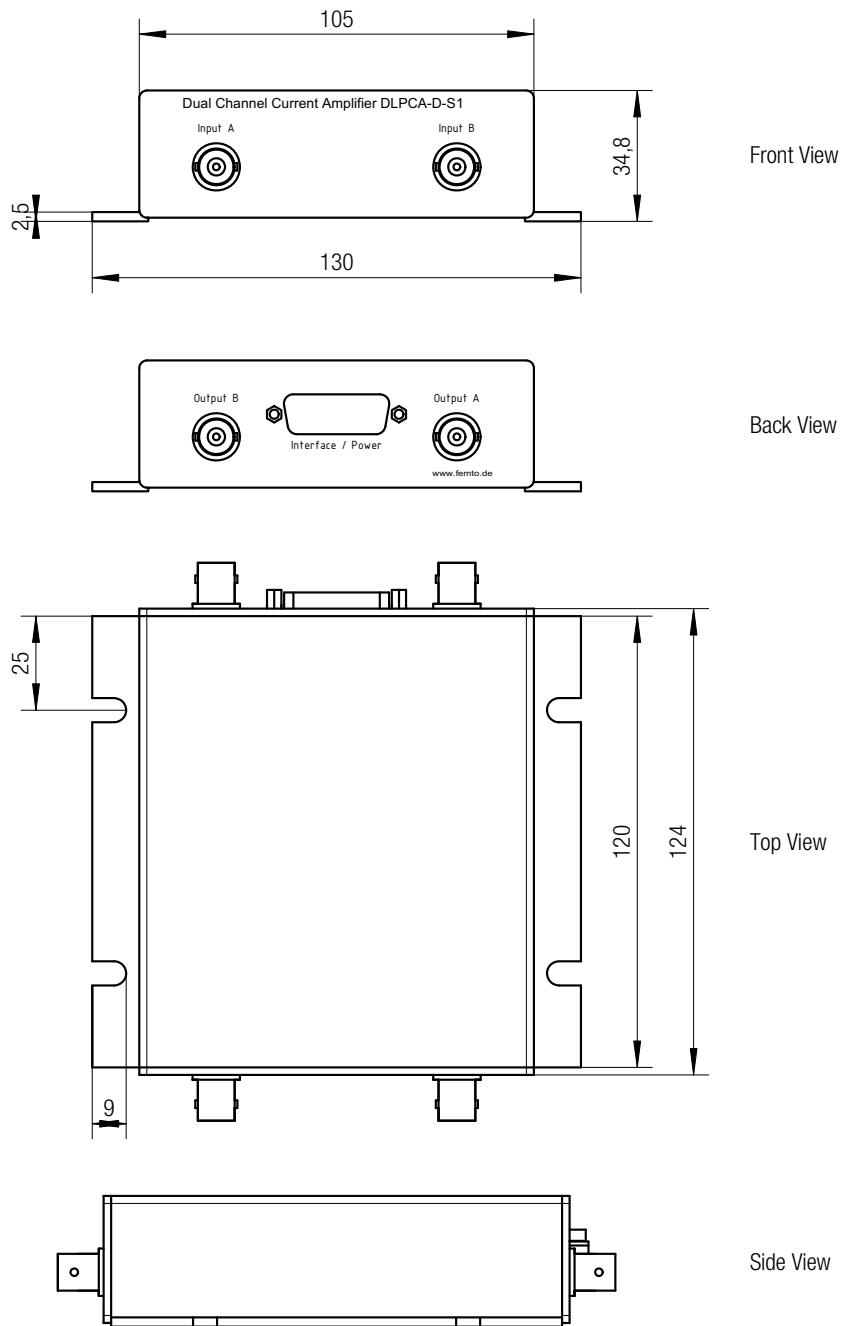
Features	<ul style="list-style-type: none"> • Two Separate Channels in One Compact Housing • Transimpedance (Gain) 1×10^5, 1×10^7 and 1×10^9 V/A • Transimpedance (Gain) Individually Switchable for Channels A and B by Opto-Isolated Control Interface • Bandwidth DC ... 2 kHz • Fast Switching Time of Typically 1 ms between Gain Settings • Protection Against ± 3 kV Transients 			
Applications	<ul style="list-style-type: none"> • Dual Channel Photodiode Amplifier • Spectroscopy • Beam Monitoring for Particle Accelerators / Synchrotrons • Ionisation Detectors 			
Specifications	<p><i>Test Conditions</i> $V_s = \pm 15$ V, $T_a = 25^\circ$C</p>			
Gain	Transimpedance	1×10^5 , 1×10^7 and 1×10^9 V/A		
	Gain Accuracy	± 2 %		
	Linearity	typ. < 0.1 %		
	Gain Drift	see table below		
	Switching Time	1 ms typ. for gain increase/decrease		
Frequency Response	Lower Cut-Off Frequency	DC		
	Upper Cut-Off Frequency	up to 2 kHz (see table below)		
Input	Equ. Input Noise Current	see table below (value per $\sqrt{\text{Hz}}$, @ 100 Hz)		
	Equ. Input Noise Voltage	4 nV/ $\sqrt{\text{Hz}}$ (@ 100 Hz)		
	Input Bias Current	1 pA typ.		
	Max. Input Current	see table below (value for linear amplification)		
	Input Offset	< 1 mV for all gain settings		
	Input Offset Drift	< 20 μ V/ $^\circ$ C		
	Crosstalk between Channels	better -90 dB		
Performance depending on Gain Setting	Gain Setting	10^5 V/A	10^7 V/A	10^9 V/A
	Upper Cut-Off Frequency (-3 dB)	2 kHz	2 kHz	1.5 kHz
	Rise / Fall Time (10% - 90%)	180 μ s	180 μ s	240 μ s
	Equ. Input Noise Current ($\sqrt{\text{Hz}}$)	500 fA	45 fA	4.5 fA
	Output Noise (peak-peak)	< 1 mV	< 1 mV	2 mV
	Gain Drift ($^\circ$ C)	0.01%	0.01%	0.02%
	Max. Input Current (\pm)	100 μ A	1 μ A	10 nA
	DC Input Impedance (\parallel 5 pF)	50 Ω	200 Ω	10 k Ω
Output	Output Voltage	± 10 V (@ > 10 k Ω load)		
	Output Impedance	50 Ω (terminate with > 10 k Ω load for best performance)		
	Max. Output Current	± 20 mA		
	Output Offset	< 1 mV for all gain settings (no signal)		
	Output Offset Drift	< 20 μ V/ $^\circ$ C		
Digital Control	Control Input Voltage Range	Low: -1 ... +1 V, High: +3 ... +12 V		
	Control Input Current	0 mA @ 0 V, 1.8 mA @ +5 V, 5 mA @ +12 V		

Dual Channel Low Noise Current Amplifier

Specifications (continued)				
Power Supply	Supply Voltage	± 15 V		
	Supply Current	+ 60 / - 40 mA typ. (depends on operating conditions, recommended power supply capability min. ± 80 mA)		
Case	Weight	0.44 kg (0.97 lbs)		
	Material	AlMgSi0.5F22, transparent passivated		
Temperature Range	Storage Temperature	-40 ... +100 °C		
	Operating Temperature	0 ... +40 °C		
Absolute Maximum Ratings	Signal Input Voltage	± 5V		
	Transient Input Voltage	± 3 kV (out of 200 pF source)		
	Control Input Voltage	- 5 V / + 20 V		
	Power Supply Voltage	± 22 V		
Connectors	Input	2 x BNC		
	Output	2 x BNC		
	Power Supply and Interface	Sub-D 15-pin, female, qual. class 2		
		Pin 1:	+ 15 V supply voltage	
		Pin 2:	- 15 V supply voltage	
		Pin 3:	AGND (analog ground)	
		Pin 4:	not connected	
		Pin 5:	AGND (analog ground)	
		Pin 6:	not connected	
		Pin 7:	AGND (analog ground)	
		Pin 8:	not connected	
		Pin 9:	DGND (digital ground for control pins 10 - 13)	
		Pin 10:	digital control input: gain channel B, bit B1	
		Pin 11:	digital control input: gain channel B, bit B2	
		Pin 12:	digital control input: gain channel A, bit A1	
		Pin 13:	digital control input: gain channel A, bit A2	
		Pin 14:	not connected	
		Pin 15:	not connected	
Remote Control Operation	General	Remote control input bits are opto-isolated. Select the desired gain setting via a bit code at the corresponding digital inputs.		
	Gain Setting	Gain (V/A)	Channel A Pin 13 A2	Channel B Pin 12 A1 Pin 11 B2 Pin 10 B1
		10 ⁵	Low High	Low High
		10 ⁷	High Low	High Low
		10 ⁹	Low Low	Low Low
		Not defined	High High	High High

Dual Channel Low Noise Current Amplifier

Dimensions



All measures in mm unless otherwise noted

02_DLPCA-D-S1_R1

FEMTO Messtechnik GmbH
 Paul-Lincke-Ufer 34
 D-10999 Berlin · Germany
 Tel.: +49 (0)30 – 4 46 93 86
 Fax: +49 (0)30 – 4 46 93 88
 e-mail: info@femto.de
<http://www.femto.de>

Specifications are subject to change without notice. Information furnished herein is believed to be accurate and reliable. However, no responsibility is assumed by FEMTO Messtechnik GmbH for its use, nor for any infringement of patents or other rights granted by implication or otherwise under any patent rights of FEMTO Messtechnik GmbH. Product names mentioned may also be trademarks used here for identification purposes only.

© by FEMTO Messtechnik GmbH
 Printed in Germany