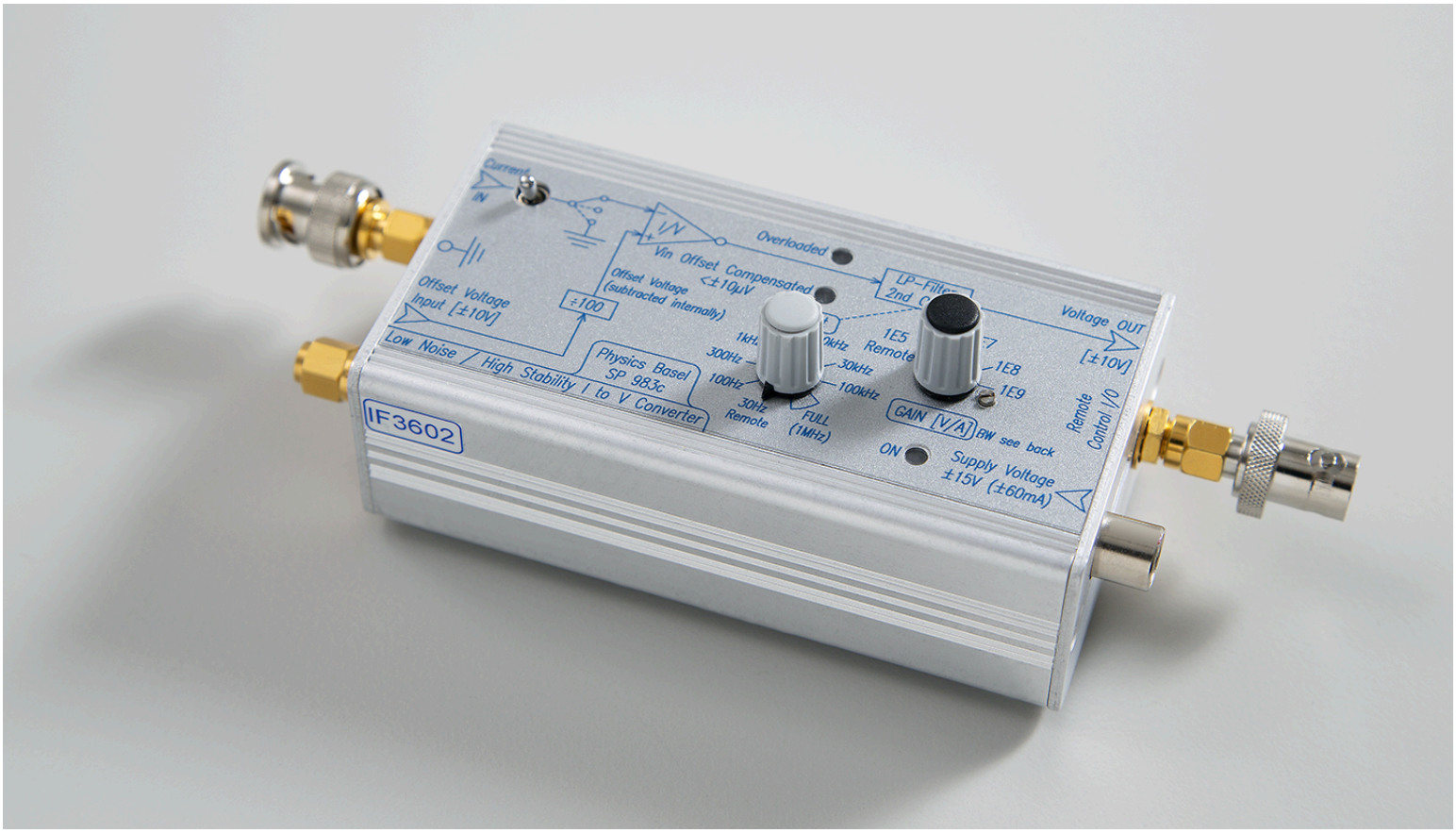
Basel Precision Instruments



Low-Noise High-Stability I to V Converter

- Ultra-low current and voltage noise
- Actively stabilized input voltage: drift seen by sample < 0.2 µV/°C
- A floating instrument: avoids ground loops
- External bias voltage up to ±2 V, enables a host of new measurements, such as exploring symmetric source-drain biasing, biasing multi-terminal devices, biasing SPM tips, reducing noise by measuring current twice, and more
- Small and light for mounting directly on the breakout box
- Adjustable low-pass filter from 30 Hz to full bandwidth
- Variable gain: 10^5 to 10^9 V/A

Applications:

- Low-noise sensitive current measurements
- Low-temperature transport
- Current measurements on filtered high-capacitance lines
- Current measurements on high impedance loads, e.g., spin-blockade readout
- Scanning tunnelling microscopes
- Applying a bias voltage and measuring a current on the same lead

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Model: SP983c	-IF	01-IF	LSK	02-LSK
Input J-FET	IF3602, best for R < 1 MΩ or C > 1 nF		LSK389A, best for R > 1 MΩ and C < 1 nF	
Stable, low-noise and overload protected input current				
Current noise @10 Hz & 10^9 V/A (fA/√Hz) Current noise @1 kHz & 10^9 V/A (fA/√Hz)	6 9		5 8	
leakage current magnitude (pA)	40	50 *	3	3 *
Stable, low-drift and low-noise input voltage (low voltage noise relevant for R < 1 MΩ)				
Input voltage noise @ 10 Hz (nV//√Hz) Input voltage noise @ 1 kHz (nV//√Hz)	2.0 1.2	2.6 * 2.0 *	4.5 1.9	5.0 * 2.7 *
Input voltage drift	0.15 µV/K @25°C - feedback stabilized			
Input bias voltage (internally subtracted at output)	±100 mV	±1 V	±100 mV	±2 V
Gain	five decades 10^5 to 10^9 V/A - remote controllable			
Filtering	integrated low-pass filter 30 Hz to 100 kHz - remote controllable			
DC input impedance	33 Ω – 46 Ω			
GBWP	600 MHz		68 MHz	
Dimensions and weight	small size, low weight 122 × 55 × 35 mm, 165 gr			

Table shows typical specs
* Noise and leakage current values are measured at zero bias and may change with bias voltage. The noise of the externally applied voltage (divided by 2, 5 or 10, depending on the model) adds to the input voltage noise. Therefore, it's important to use a very low-noise voltage source, such as BASPI's LNHR DACII

Bandwidth

Gain (V/A)	10^9	10^8	10^7	10^6	10^5
Typical Bandwidth (-3dB) @ 1V	1.7 kHz	24 kHz	94 kHz	315 kHz	580 kHz

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Multichannel Remote Controller

for SP1004 Differential Amplifiers and SP983c I to V Converters

- Centralised remote control of gain and low-pass filter cutoff frequency
- Monitoring device status
- Parallel control of up to four SP1004 differential amplifiers and four SP983c I to V converters
- 4-meter flat cables for connection to the I to V converters and differential amplifiers
- Web interface (GUI) and a Python/QCoDeS driver

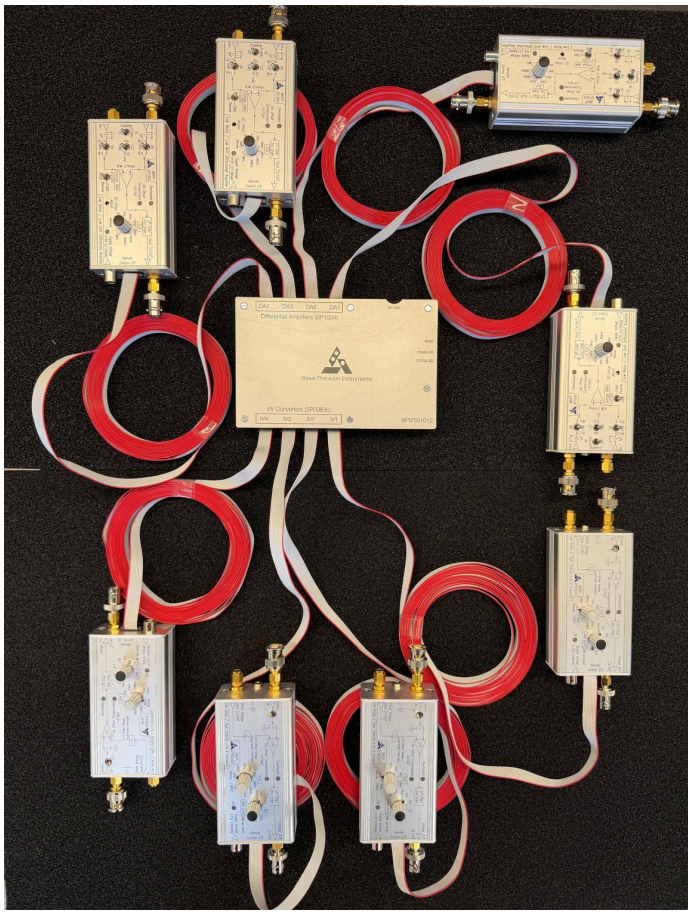
Applications:

- Remote control of the I to V converters and differential amplifiers positioned close to the setup or in hard-to-reach places
- Remote control of multiple amplifiers in parallel
- Simple observation and detailed logging of device status via the web interface

Basel Precision Instruments · Mülhauserstr 113 · 4056 Basel · Switzerland · info@baspi.ch · https://baspi.ch

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Model	BPI2501
Number of controllable units	Four SP983c IV converters and four SP1004 differential amplifiers in parallel
Configurable parameters	Gain and low-pass cutoff frequency
Readable parameters	Device overload, gain, low-pass cutoff frequency (SP983c & SP1004) Input voltage compensation status (SP1004 only)
Communication and control	TCP/IP (Ethernet) web interface (GUI) command-line interface QCoDeS driver included
Grounding/Noise performance	Ground is galvanically isolated from the amplifier units - no ground loops No deterioration of the superior noise performance of SP1004 and SP983c amplifiers
System operation via web interface	Event log with time stamps Visual and acoustic overload warning Network configuration
Dimensions and weight	147 × 95 × 28 mm, 1 kg



The figure shows the multi-channel remote controller connected to four I to V converters and four differential amplifiers. The grey-red flat cables provided with the remote controller are 4 meters long, allowing for a large distance between the I to V converters, differential amplifiers and the remote control unit.