

ABSOLUTE MAXIMUM RATINGS

Average current	600mA
Bias voltage	10V
Temperature range	0 – 60 °C

ORDERING INFORMATION

Full order code: TZA600

For customized systems (eg: customized gain or receptacles or mixed amplifier systems), please contact us.

SPECIFICATIONS

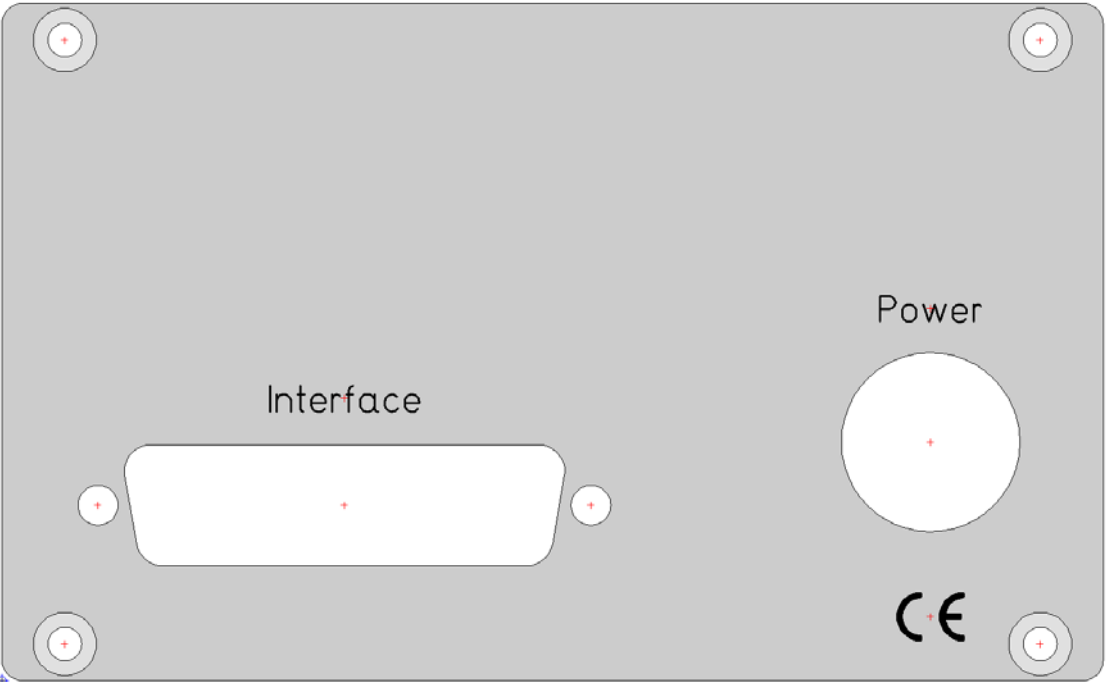
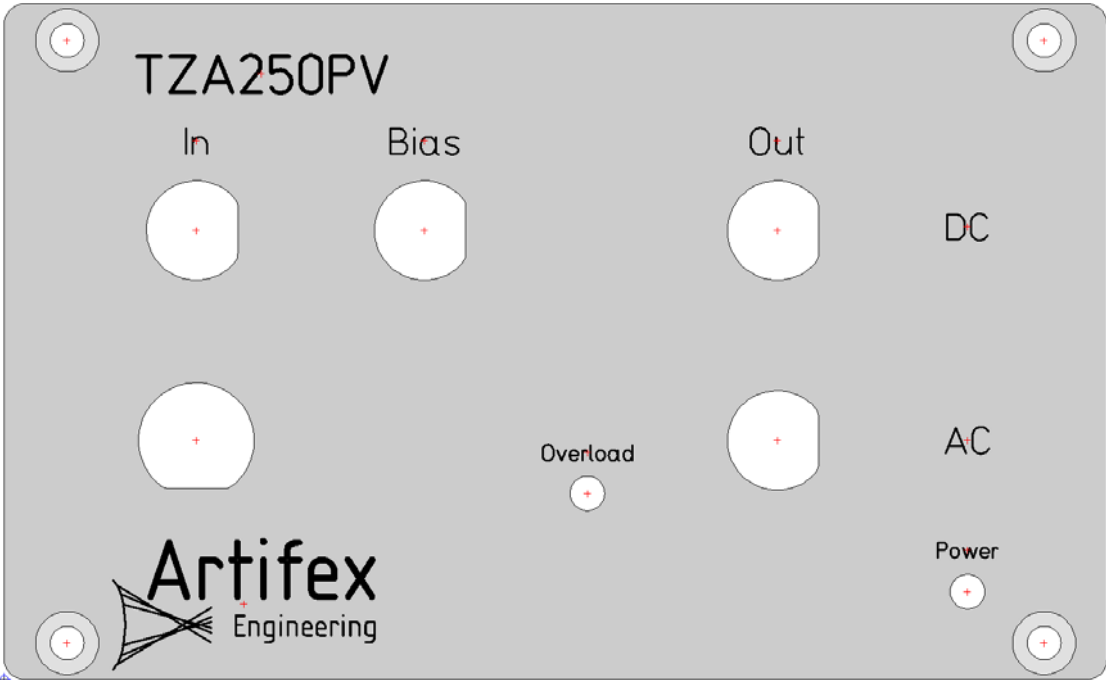
Parameter	Conditions	Min	Typ	Max	Units
Input					
Current ranges (full scale)	DC		500		mA
	AC		10 1 100 10 1 100		mA " μA " " nA
Noise equivalent current (NEI_{RMS})	DC			10	μA
	AC-Range: 10mA 1mA 100μA 10μA 1μA 100nA			300 30 3 300 30 30	nA " " pA " "
Connectors		BNC ¹			
Output					
Function		Linear analogue $V_{out} = scale \times I_{in}$			
Output scale, DC			10		V / A
Output scale, AC	Range: 10mA 1mA 100μA 10μA 1μA 100nA		1 10 0.1 1 10 0.1		V / mA " V / μA " " V / nA
Connectors		BNC ¹ and DB25			
Output range (full scale)				10	V
Frequency range	DC			0.1	Hz
	AC	1		250	Hz
Accuracy		± 1			%
Linearity			± 0.1	± 0.2	dB
Output impedance				1	Ω
Logic					
Current required for switching (5V)		-10	0.01	10	μA
Switching time				150 ²	μs
Power Supply					
Type		Wall plug (supplied)			
Dimensions		30 x 50 x 60			mm
Dimensions					
	1 channel	105 ³ x 45 x 116 mm (w x h x l)			mm
	19" rack modules	3U			

¹ Adapters for other connector systems available upon request

² Logic switching < 1μs. Effective switching time limited by settling time.

³ 130 mm including case wings

The Front and Back Panels



INSTRUCTIONS FOR MEASUREMENT

To make a measurement, proceed as follows:

1. Turn the unit on. For the most accurate measurement, please allow for a 15 minute warm up before using.
2. Connect a current source to the unit via the corresponding receptacle.
3. Connect a BNC-cable from the output socket to a suitable measurement instrument (voltmeter, oscilloscope, I/O card, etc.). Alternatively, the output may be taken from the interface receptacle using the interface cable supplied with the unit.
4. Where appropriate, connect a bias source to the bias input.
5. Select the appropriate range setting for the expected current (see „Gain (pins 10 – 12, AC channel only“).
6. Turn on the current source to be measured.
7. Read the voltage output and convert to current using the appropriate conversion factor for the range chosen (see „Outputs“).

CONTROL ELEMENTS

INDICATORS

Power (LED, green): The unit is switched on.

Overload (LED, red): The input current is too high for the gain range chosen.

The interface provides additional indicators, useful for remote operation:

Pin 4 +5 V = power on 0 V (digital ground) = power off

Pin 5 +5 V = overload 0 V (digital ground) = acceptable operating condition

OUTPUTS

The analogue output is provided via standard BNC sockets as well as through the interface. The output is linear with input current, the magnitude of the signal depending on the range selected, as follows:

AC-Input

Range	10mA	Output	1	V / mA
	1mA	scale	10	“
	100µA		0.1	V / µA
	10µA		1	“
	1µA		10	“
	100nA		0.1	V / nA

DC-Input

10 V/A (fixed gain)

INTERFACE (AC CHANNEL ONLY)

The interface on the back panel allows control of the unit, as well as readout of the measurement values. The pin correlation of the interface is given in the following table:

pin	function	pin	function
1	n.c.	14	n.c.
2	n.c.	15*	digital control input: BW
3	AGND (analogue ground)	16*	digital control input: BW = 100 Hz
4	digital output: HI = power on	17*	digital control input: BW = 10 Hz
5	digital output: HI = overload	18*	digital control input: output polarity
6	analogue output: signal (connected to BNC)	19*	n.c.
7	n.c.	20*	n.c.
8	n.c.	21	n.c.
9	DGND (digital ground)	22	n.c.
10*	digital control input: gain LSB	23	n.c.
11*	digital control input: gain	24	n.c.
12*	digital control input: gain MSB	25	n.c.
13	n.c.		

*: Isolated digital input. Current required for switching = 10 μ A at 5V.

Pin settings for the various functions are described below.

Gain (pins 10 – 12, AC channel only)

Range (full scale)	Gain [V / A]	Output scale	Pin 12 (MSB)	Pin 11	Pin 10 (LSB)
10 mA	10 ³	1 V / mA	0	0	0
1 mA	10 ⁴	10 V / mA	0	0	1
100 μ A	10 ⁵	0.1 V / μ A	0	1	0
10 μ A	10 ⁶	1 V / μ A	0	1	1
1 μ A	10 ⁷	10 V / μ A	1	0	0
100 nA	10 ⁸	0.1 V / nA	1	0	1

Bandwidth (pins 15 – 17, AC channel only)

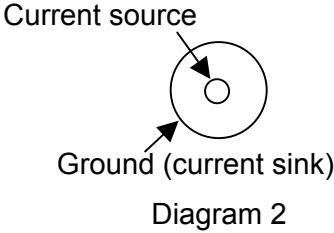
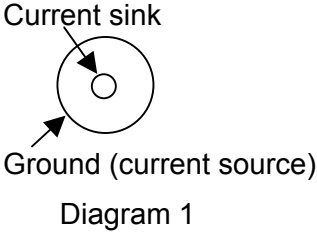
Bandwidth	Pin 17	Pin 16	Pin 15
100 Hz	0	1	0
10 Hz	1	0	0

Output polarity (pin 18, AC channel only)

LO = positive output for current sourced into the BNC centre conductor.
 HI = positive output for current sunk out of the BNC centre conductor.

Thus, when measuring the current from a photodiode, the polarity will be as follows:

Connection	Diagram	LO	HI
cathode to BNC inner pin, anode to BNC outer pin	1	negative output	positive output
anode to BNC inner pin, cathode to BNC outer pin	2	positive output	negative output



DAMAGE

The unit may be damaged by exceeding the maximum average input current. Please read „Absolute Maximum Ratings“ for these maximum values before working with the instrument.

Use only the power supply and power supply cable provided with the unit.

TROUBLESHOOTING

In the event that a measurement is not successful, the following possibilities should be analysed:

Symptom	Possible Errors	Correction
No output and power LED is not on	<ul style="list-style-type: none">• System is not switched on• Fuse blown⁴	<ul style="list-style-type: none">• Ensure the power cord is connected at both ends and switch the system on.
No output and power LED is on	<ul style="list-style-type: none">• Input power too low• Input or output connection not correct	<ul style="list-style-type: none">• Switch to more sensitive range or increase input power• Ensure that the connectors are inserted correctly and locked. In multichannel units, ensure that the channel being monitored corresponds to the input channel. Ensure that the interface plug is securely seated and the screws fastened.
Output at full scale, independant of input current	Range too sensitive	Switch to a less sensitive range or lower the input current.

In the unlikely event that you are not able to obtain a measurement in spite of these troubleshooting measures, please contact us. We will be pleased to help you solve your problem.

⁴ Secondary, internal self resetting fuses, only. In the event that a secondary fuse „blows“, shut off the power, correct the fault and wait a few minutes before switching the power back on.

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