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Find the *Piezosystem Jena ENV / ENT* at our website: ***Click HERE***

electronics

system ENV • 150 V

- ***modular power supply system for piezoelectrical elements***
- ***different currents for optimum solutions***
- ***each channel with separate display***
- ***closed loop module for measurement systems***
- ***module for PC connection***
- ***excellent signal-to-noise ratio***
- ***protection circuit for power supply and piezoelements***



applications

- multiple channels
- high frequency applications (from ENV 150)
- automated processes in engineering
- precision alignment in optical applications

The amplifier system ENV is a modular system with a 19" housing. In special applications, it is possible to combine one or more amplifier modules with different characteristics. Each amplifier module has its own display which shows the output voltage. If used with a measurement system and closed loop module, it displays the calibrated motion. Different modules for closed loop and PC connections are available.

system 40 – adjustment with highest resolution

The amplifier system 40 was developed for static and low frequency applications. The system has very low noise characteristics (typ. < 2 mV_{pp}) and thus provides resolutions in the nm and sub nm range.

system 150 – flexible system for higher dynamic work

The amplifier system 150 was developed for dynamic applications of piezoelectrical elements. It allows the use of the PZ 100 positioning system with frequencies of approx. 120 Hz at full amplitude. The system was designed using a modern electronic concept to reach the same noise characteristics of the system 40. This allows the ENV 150 to be used in dynamic applications for positioning purposes with very high resolution.

system 400 – high dynamic work for high load actuators

The amplifier system 400 is perfectly suitable for highly dynamic applications. Multi-layer low voltage actuators have a high capacitance. For dynamic work, it is necessary to load and unload this capacitance with high currents.
The amplifier system 400 produces constant currents up to 400 mA. The system has an integrated high power ventilator for one necessary effective cooling. An output for monitoring signals allows to measure the equivalent output voltage. Please find advice for dynamic work with piezoelectrical elements in the chapter 9 of "piezoline".

assembly

Each amplifier system consists of at least three modules. The **ENT** module supplies the main voltage for the **ENV amplifier** module, which is the actual amplifier. The **ENT** and **ENV** modules can be placed individually in the **casing** (not standard). The **casing** can be delivered as a 19" rack mount. Depending on the application, several amplifier modules can be combined with one power supply module **ENT** into one **casing**.
The input and output connections, the display and the potentiometer for manual control are on the front side of each module.

casings for modules: system 40, system 150 and system 400

	space	part no.
63 TE casing	63 TE	E-103-90
84 TE casing	84 TE	E-103-91
84 TE rack casing	84 TE	E-103-92
84 TE double high casing	2 x 84 TE	E-103-94

dimensions	63 TE	84 TE	84 TE Rack	84 TE double high
width B	373 mm	480 mm	483 mm	480 mm
depth T	343 mm	343 mm	272 mm	343 mm
height H	158 mm	158 mm	133 mm	290 mm



ENV casings



rack casing

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system 40

main supply module ENT 40/20



main voltage: 230/110 V, 50/60 Hz
output power: 25 W
module width: 14 TE (1 TE = 5.08 mm)

	main voltage	part no.
ENT 40/20	230 V	E-103-13
ENT 40/20	110 V	E-103-14

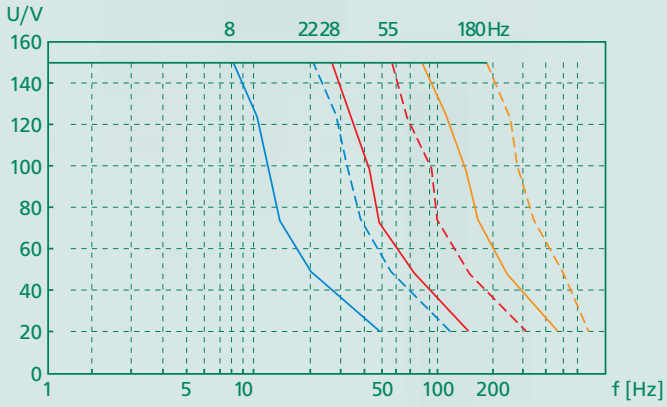
amplifier module ENV 40



technical data:

part no.	**E-103-10**
output power	6 W
module width	14 TE
output voltage	–10 to +150 V
output current (permanent)	40 mA
stability (under stable cond.)	typ. < 1 mV (60 min)
voltage noise (absolute)	≤ 3 mV_{pp} (typ. < 2 mV_{pp} or < 1 mV RMS respectively)
voltage noise (relative)	≤ 2 x 10^{-5}
modulation input	0 to +10 V, BNC connector
input resistance	10 kΩ
DC offset	10 turn potentiometer
display (if using the module ER 1 for position control, the display shows the motion)	LCD, 3.5 digits, LED for voltage limitation, LED for ready signal
display (configuration without measurement system)	LCD, 3.5 digits, LED for voltage limitation, LED for ready signal
output connector	LEMOSA
monitor output (if using the module ER 1 for position control, the monitor output gives the signal from the measurement system)	proceeded measurement signal from the sensor 0 to +10 V
monitor output (configuration without measurement system)	–1 to +15 V, inner resistance 100 kΩ

features:
A protection circuit is implemented which protects from high voltage spikes when the unit is turned on and off. Plese note, that permanent current, caused by short circuiting, will damage the amplifier module. The customer must ship it to ***piezosystem jena*** for repair.



— PU 100 NVHL, PAHL 18/20 NV (typ. 6 µF)
– – PSH 3 z, P 25/10 NV (typ. 2,4 µF)
— PU 90 NV, PXY 100 NV, PA 16/12 NV (typ. 1,7 µF)
– – PU 40 NV, PSH 1 z, PA 8/12 NV (typ. 600 nF)
— P 16/8 NV (typ. 400 nF)
– – Miniaktor (100 nF)

system 150

main supply module ENT 150/20



main voltage: 230/110 V, 50/60 Hz
output power: 50 W
module width: 14 TE (1 TE = 5.08 mm)

	main voltage	part no.
ENT 150/20	230 V	E-103-23
ENT 150/20	110 V	E-103-24

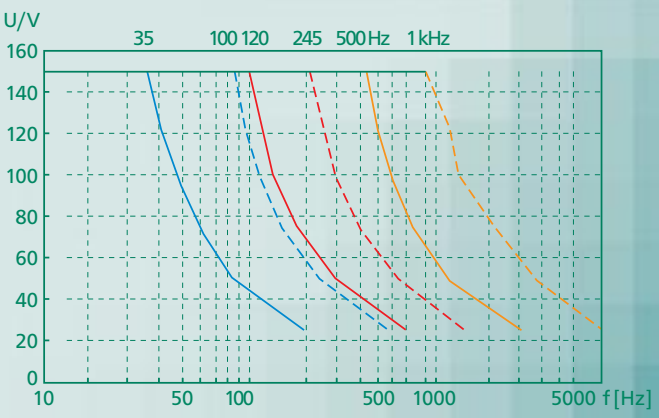
power amplifier module ENV 150



technical data:

part no.	**E-103-20**
output power	22 W
module width	14 TE
output voltage	–10 to +150 V
output current (permanent)	150 mA
stability (under stable cond.)	typ. < 1 mV (60 min)
voltage noise (absolute)	≤ 3 mV_{pp} (typ. < 2 mV_{pp} or < 1 mV RMS respectively)
voltage noise (relative)	≤ 2 x 10^{-5}
modulation input	0 to +10 V, BNC connector
input resistance	10 kΩ
DC offset	10 turn potentiometer
display (if using the module ER 1 for position control, the display shows the motion)	LCD, 3.5 digits, LED for voltage limitation, LED for ready signal
display (configuration without measurement system)	LCD, 3.5 digits, LED for voltage limitation, LED for ready signal
output connector	LEMOSA
monitor output (if using the module ER 1 for position control, the monitor output gives the signal from the measurement system)	proceeded measurement signal from the sensor 0 to +10 V
monitor output (configuration without measurement system)	–1 to +15 V, inner resistance 100 kΩ

features:
protection circuit, see description of module ENV 40



— PU 100 NVHL, PAHL 18/20 NV (typ. 6 µF)
– – PSH 3 z, P 25/10 NV (typ. 2,4 µF)
— PU 90 NV, PXY 100 NV, PA 16/12 NV (typ. 1,7 µF)
– – PU 40 NV, PSH 1 z, PA 8/12 NV (typ. 600 nF)
— P 16/8 NV (typ. 400 nF)
– – Miniaktor (100 nF)

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system 400

main supply module ENT 400



main voltage: 230/110 V, 50/60 Hz
output power: 100 W
module width: 18 TE (1 TE = 5.08 mm)

	main voltage	part no.
ENT 400	230 V	E-103-33
ENT 400	110 V	E-103-34

power amplifier module ENV 400

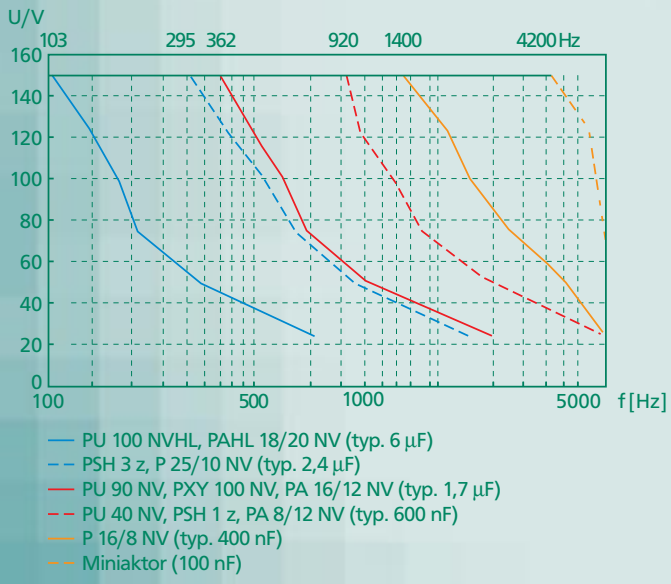
technical data:



part no.	**E-103-30**
output power	60 W
module width	21 TE
output voltage	–10 to +150 V
output current (permanent)	400 mA
stability (under stable cond.)	typ. < 3 mV (60 min)
voltage noise (absolute)	≤ 6 mV_{pp} (typ. < 2 mV RMS respectively)
voltage noise (relative)	≤ 4 x 10^{-5}
modulation input	0 to +10 V, BNC connector
input resistance	10 kΩ
DC offset	10 turn potentiometer
display (if using the module ER 1 for position control, the display shows the motion)	LCD, 3.5 digits, LED for voltage limitation, LED for ready signal
display (configuration without measurement system)	LCD, 3.5 digits, LED for voltage limitation, LED for ready signal
output connector	LEMOSA
monitor output (if using the module ER 1 for position control, the monitor output gives the signal from the measurement system)	proceeded measurement signal from the sensor 0 to +10 V
monitor output (configuration without measurement system)	–1 to +15 V, inner resistance 100 kΩ

features:

protection circuit, see description of ENV 40 module



option:

part no. E-103-40: ENV400/2.0 – max. current 2 A (temporarily)

attention !

Unless otherwise specified, all power supplies are designed for 230 V/50 Hz supply. 110 V main supply can be provided with your order. You can find more information and our advice for dynamic work and for security given in the manuals and in the chapter 12 “piezoline“ at the end of this catalog.

If the output power of all ENV modules is higher then the output power of the ENV power supply, not all ENV modules can be operated at full dynamic range.

electronics

position control module ER 1

Normally the resolution of piezoelectric elements is very high and, principally, determined only by the voltage noise of the power supply. This is also valid for multi-dimensional elements with a lever transmission by ***piezosystem jena*** due to their functioning without mechanical play. However, the absolute accuracy is determined by the hysteresis of the piezoelements. Using integrated measurement systems in each axis, it is possible to avoid hysteresis and to achieve high accuracy and linearity for your positioning system.
The ER 1 position control module integrates the necessary electronics to work with strain gauge measurement systems (SG) and integrates the electronics for position control using a PID closed loop.

Each control module must be seen as a unit together with the amplifier module and the positioning system. All parts are calibrated with each other using a laser beam interferometer. If one module is replaced with another module the calibration will be lost. To reach an optimal accuracy and linearity the constants of the control module are adjusted according to specific elements.
The time constant of the closed loop is always smaller than the time constant of the piezoelement. Replacing components of a closed loop positioning system should be done only by our team from ***piezosystem jena***.

technical data:



part no.	**E-201-10**
type of position control	PID
voltage supply for measurement system	±15 V
monitor output	via amplifier module
closed loop work (approx.)	–0.6 to 9.4 V
open loop work (max.)	–12 to +12 V
time constant for regulation (depends always on the particular element and the calibration!)	200 to 20 ms
slew rate limitation	internal adjustment possible
connector for sensor	LEMOSA
width of the module	6 TE
elements on the front side	switch open loop/closed loop zero adjustment – ZERO sensor connector

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system 40 CAP

main supply module ENT 40/20



main voltage: 230/110 V, 50/60 Hz
output power: 25 W
module width: 14 TE (1 TE = 5.08 mm)

	main voltage	part no.
ENT 40/20	230 V	E-103-13
ENT 40/20	110 V	E-103-14

The main supply module ENT 40/20 can be operated with up to 3 ENV 40 CAP modules or 2 ENV 150 CAP modules.

amplifier module ENV 40 CAP

technical data:



part no.	**E-103-60**
output power	6 W
module width	20 TE
output voltage	–10 to +150 V
output current (permanent)	40 mA
stability (under stable cond.)	typ. < 1 mV (60 min)
voltage noise (absolute)	≤ 3 mV_{pp} (typ. < 2 mV_{pp} or < 1 mV RMS respectively)
voltage noise (relative)	≤ 2 x 10^{-5}
modulation input	0 to +10 V, BNC connector
input resistance	10 kΩ
DC offset	10 turn potentiometer
display (shows allways the motion)	LCD, 3.5 digits, LED for voltage limitation, LED for ready signal, LED for closed loop on/off
output connector	LEMOSA
monitor output (closed loop on)	0 to +10 V, inner resistance 1 kΩ
monitor output (closed loop off)	–15 to +15 V, inner resistance 1 kΩ

features:
A protection circuit is implemented which protects from high voltage spikes when the unit is turned on and off. Plese note, that permanent current, caused by short circuiting, will damage the amplifier module. The customer must ship it to ***piezosystem jena*** for repair.

options: closed loop on by switching on the whole system

system 150 CAP

main supply module ENT 150/20



main voltage: 230/110 V, 50/60 Hz
output power: 50 W
module width: 14 TE (1 TE = 5.08 mm)

	main voltage	part no.
ENT 150/20	230 V	E-103-23
ENT 150/20	110 V	E-103-24

option:
system with 200 V output voltage

Up to two ENV 150 modules can be used with the ENT 150 module.

power amplifier module ENV 150 CAP

technical data:



part no.	**E-103-26**
output power	22 W
module width	20 TE
output voltage	–10 to +150 V
output current (permanent)	150 mA
stability (under stable cond.)	typ. < 1 mV (60 min)
voltage noise (absolute)	≤ 3 mV_{pp} (typ. < 2 mV_{pp} or < 1 mV RMS respectively)
voltage noise (relative)	≤ 2 x 10^{-5}
modulation input	0 to +10 V, BNC connector
input resistance	10 kΩ
DC offset	10 turn potentiometer
display (shows allways the motion)	LCD, 3.5 digits, LED for voltage limitation, LED for ready signal, LED for closed loop on/off
output connector	LEMOSA
monitor output (closed loop on)	0 to +10 V, inner resistance 1 kΩ
monitor output (closed loop off)	–15 to +15 V, inner resistance 1 kΩ

features:
protection circuit, see description of ENV 40 CAP module

options: closed loop on by switching on the whole system

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electronics

system ENV 40 low noise • 150 V

- ***low noise amplifier***
- ***high resolution positioning***
- ***noise less than 200 V***
- ***19" casing***
- ***excellent cost effectiveness***



applications

- precision adjustment for scientific and industrial purposes
- automation systems

The voltage amplifier module **ENV 40 low noise** was developed especially for high resolution applications – with a voltage noise less than 200 µV!
Since the resolution of the piezo actuator is determined by the applied voltage signal, ***piezosystem jena*** designed this amplifier module to minimize the ripple of the voltage signal.
When using this amplifier, a piezo actuator with a total range of motion of 10 µm would have a resolution of 0.013 nm.
Because two amplifier modules can be installed in one 19" casing (63 TE, part number E-103-90) or three amplifier modules in one 19" casing (84 TE, part number E-103-91), new opportunities in high resolution xyz positioning are feasible.

technical data:

part no.	**E-103-18**
output power	6 W
module widht	21 TE
output voltage	–10 to +150 V
max. output current	40 mA
voltage noise (absolute)	< 200 µV
analog input	0 to 10 V, BNC
input resistance	10 kΩ
monitor output	–1 to +15 V, BNC
output resistance	100 kΩ
power supply	ENT 40/20, ordering number E-103-13 (main voltage 230V) E-103-14 (main voltage 110V)
dimensions	19" module, 3 HE 21 TE x 220 mm

electronics

system ENV 40 PSH • 150 V

special voltage amplifier for the tilting stages PSH 5/2 and PSH 10/2

- ***high resolution positioning***
- ***19" casing***
- ***excellent cost effectiveness***



applications

- precision adjustment for scientific and industrial purposes
- automation systems

The modules **ENV 40 PSH** and **ENV 150 PSH** were especially developed for the low voltage tilting stages PSH 5/2 and PSH 10/2. It will be manufactured in the 19" rack mount technology. By using the analogue input you are able to control the amplifier by an analogue voltage of 0...10 V. There is also a BNC socket to control the poutput voltage. The system has very low noise characteristics of less then 3 mV_{PP} and thus provides resolutions in the sub-nm range.

technical data:

part no.	**E-103-19** ENV 40 PSH	**E-103-29** ENV 150 PSH
output power	6 W	22 W
module wigth	14 TE	14 TE
output voltage	–10 to +150 V and +150 V	–10 to +150 V and +150 V
max. output current	40 mA	150 mA
voltage noise (absolute)	3 mV_{PP}	3 mV_{PP}
voltage noise (relative)	$2x10^{-5}$	$2x10^{-5}$
analog input	0 to 10 V, BNC	0 to 10 V, BNC
input resistance	10 kΩ	10 kΩ
DC offset	adjustable by a 10 turn potentiometer	adjustable by a 10 turn potentiometer
display	LCD: 3.5 digits	LCD: 3.5 digits
output connector	LEMOSA	LEMOSA
monitor output	–1 to +15 V, BNC	–1 to +15 V, BNC
inner resistance	100 kΩ	100 kΩ
specials	overload protection (OVL)	overload protection (OVL)

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system ENV 40 compact • 150 V



ENV 40 C
E-104-00



ENV 40 CSG
E-104-10



12 V 40 C
E-301-20

- ***amplifier for low voltage piezo elements***
- ***multi channel system***
- ***excellent cost effectiveness***
- ***measurement amplifier/closed loop system integrated (option)***

applications
- automation systems
- operation with low dynamics
- precision adjustment in labs and industry

The latest development ENV 40 C of the ENV series combines the excellent features of the ENV system with the compactness of the 12V40 modules (see page 62). The compact ENV series is very suitable for automated positioning and scanning applications in labs and industry where the direct display of the output values is not needed. All the drive signals can be tapped from the front plate as well as from the rear wiring.
The ENV 40 C module is available with an integrated controller for the use of different position measurement systems on request.
A PI controller is used for the position control.
A very compact attachable printed circuit board takes the analog test amplification of the signals of the sensor. This additional printed circuit board is also available separately, as well for systems without measurement systems and systems with integrated capacitive or strain gage measurement system.

technical data:

part no.	**E-104-00**	**E-301-20**
output power	6 W	6 W
output voltage	–10 to +150 V	–10 to +150 V
max. output current	40 mA	40 mA
voltage noise (absolute)	≤ 3 mV_{pp} (typ. < 2 mV_{pp} or < 1 mV RMS respectively)	≤ 3 mV_{pp} (typ. < 2 mV_{pp} or < 1 mV RMS respectively)
voltage noise (relative)	≤ 2 x 10^{-5}	≤ 2 x 10^{-5}
analog input	0 to 10 V, SMB	0 to 10 V, SMB
input resistance	10 kΩ	10 kΩ
monitor output (closed loop on, only for systems with integrated measurement system)	0 to +10 V	0 to +10 V
monitor output (closed loop off)	–1 to +15 V	–1 to +15 V
inner resistance	100 kΩ	100 kΩ
power supply	power supplies series ENT	power supplies series ENT or extern 12 V/1 A
dimensions	19“ module, 3 HE 6 TE x 160 mm	19“ module, 3 HE 6 TE x 160 mm

* if the system is controlled in a closed loop, the measurement signal is displayed

options:
control unit for:
- SG measurement system: ENV 40 CSG **part no. E-104-10** (also available with complete backside operating)
- CAP measurement system: ENV 40 CCP **part no. E-104-30** (available only in combination with the capacitive sensor module **part no. E-201-60**)

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interface boards series EDA

- ***universal AD/DA interface boards***
- ***4 channel DAC, 8 channel ADC 16 bit***
- ***8 bit P, 64 k RAM, 128 k Flash on-board programmable***
- ***comes with software for Windows***



applications

- PC control of analog amplifiers
- automatic process control

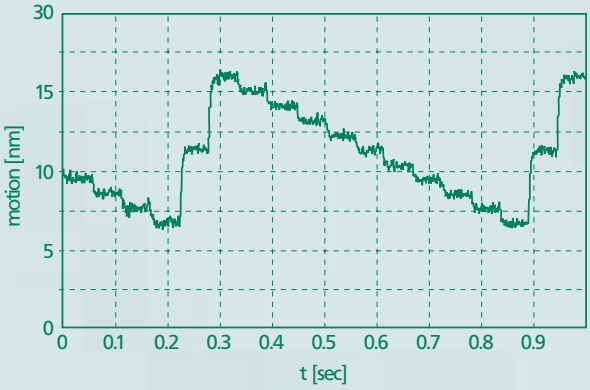
The EDA interface modules are universal I/O boards designed as a 19" slot card. The modules provide additional analog input and digital I/Os used for recording measurement signals or operating additional electronics. With additional software, the programming of special scan functions is very easy.
The main advantages of these modules are the built in micro-controller and a free programmable memory capacity. The micro-controller is capable of input and output procedures or voltage values programmed in the memory. The EDA modules can also work as a normal PC-line operated system directly from the PC.
All EDA interface cards have the same features: the EDA 3 and 5 also have an IEEE 488.2 interface.

general remarks

Piezoelectrical systems and their electronics work with high voltages and high currents. Please consider the advice and rules for safety. Please read our manual and the advice given in the chapter 13 "piezoline".

specifications

connection:	9 pin sub D connector
input voltage range (AC converter):	0 to +10 V, –10 to +10 V, –5 to +5 V
power supply: digital:	+5 V (100 mA)
analog:	±15 V (±15 mA)
size:	100 x 160 mm², width 6 TE standard (EDA 2/4), widht 10 TE (EDA 3/5)
front plate:	• 4 LED indicating the active channels (function can be changed by programming the FLASH EPROM) • switch (can be programmed for stand alone work) • reset switch • 9pin sub-D connector RS 232 • IEEE 488 connector (EDA 3/5 only)



measurement signal of a TRITOR 101 CAP controlled by a 16 bit EDA 4 interface card

The Figure 1 shows the motion of a piezoelement TRITOR 101 CAP with an integrated capacitive sensor. The TRITOR is controlled by an EDA 4 interface card with a resolution of 16 bit.
Because of the high resolution of the capacitive sensor, the minimal step of 1,2 nm. (16 bit resolution corresponding to a motion of 80 µm in closed loop mode) can be resolved easily.

technical data: EDA 2/4: **without** IEEE 488.2 interface, **with** RS 232 interface
EDA 3/5: **with** IEEE 488.2 interface

part no.	**EDA 2** E-202-20	**EDA 3** E-202-30	**EDA 4** E-202-40	**EDA 5** E-202-50
type of interface	RS 232-C, 9600 or 19200 or 57600 baud	RS 232-C, 9600 or 19200 or 57600 baud and IEEE 488.2	RS 232-C, 9600 or 19200 or 57600 baud	RS 232-C, 9600 or 19200 or 57600 baud and IEEE 488.2
resolution	12 bit	12 bit	16 bit	16 bit
sample rate	32 ksamples/s	32 ksamples/s	32 ksamples/s	32 ksamples/s
number of analog				
outputs	4	4	4	4
inputs	8	8	4	4
number of digital				
outputs	8 TTL (HCT573)	8 TTL (HCT573)	8 TTL (HCT573)	8 TTL (HCT573)
inputs	8 as analog inputs programmable 0 ... 5 V, 10 bit	8 as analog inputs programmable 0 ... 5 V, 10 bit	8 as analog inputs programmable 0 ... 5 V, 10 bit	8 as analog inputs programmable 0 ... 5 V, 10 bit
output voltage range	0 ...10 V	0 ...10 V	0 ...10 V	0 ...10 V

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NV 40/3s • 150 V

- ***compact, three-channel power supply***
- ***separate display for each channel***
- ***excellent signal-to-noise ratio for the highest resolution***
- ***RS 232 serial port***
- ***modulation input***
- ***10 turn potentiometer for fine adjustment***

applications:

- precision adjustment in optical applications
- multi-channel control
- fiber positioning
- static and dynamic applications



technical data:

part no.	**NV 40/3s** E-101-01 (230 V) E-101-04 (110 V)
number of channels	3
computer line	serial RS 232, 9600 baud
main voltage	230 / 110 V, 50 / 60 Hz
output power (each channel)	6 W
output voltage	–10 to +150 V
resolution	12 bit
output current (permanent, each channel)	40 mA
bandwidth (with ampl. 150 V, without load)	350 Hz
voltage noise (absolute)	3 mV_{pp} (typ. < 2 mV_{pp} or < 1 mV RMS)
voltage noise (relative)	$2 \cdot 10^{-5}$
modulation input	0 to +10 V, BNC connector
input resistance	1 kΩ
DC-offset	10 turn potentiometer
voltage display	LED, 3 digit
output connector	LEMOSA
features	high voltage spike protection
software	demo software for windows/DOS
dimensions:	width B 290 mm depth T 260 mm height H 60 mm

options

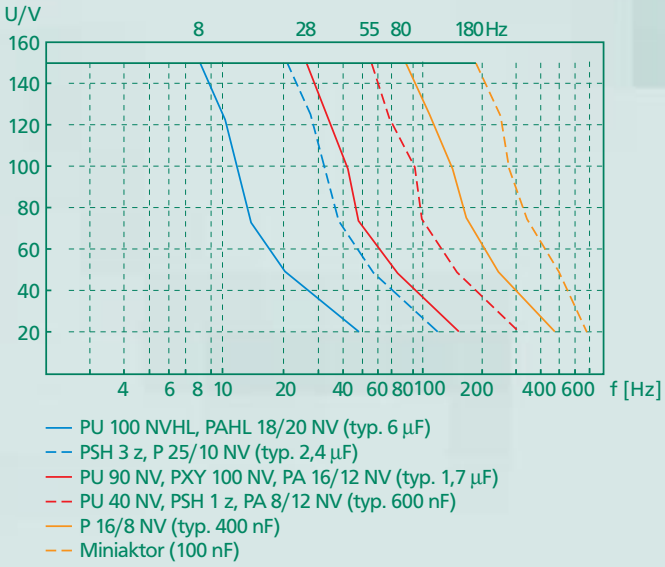
special cable for RS 232 **part no. Z-009-00**

power supply NV 40/3s – alignment with the highest resolution

The resolution of piezoelectrical elements is determined by the signal-to-noise ratio of the power supply. The better the signal-to-noise ratio, the higher the resolution of the piezoelectrical elements. This fact was the motivating factor for the development of the NV 40/3S power supply.
Minimum noise and high stability of the output voltage are the most important features of this power supply.
The NV 40/3S power supply was developed for a wide range of applications, but it is especially suitable for capacitive loads.
A compact case and electronics assembly without the use of expensive modular housings makes this power supply a very cost effective package.

attention!

Unless otherwise specified, all power supplies are designed for 230 V/ 50 Hz supply. A 110 V main supply can be provided with your order. Please read our advice for dynamic work and safety in our manuals and in the chapter “piezoline“ at the end of this catalog.



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NV 40/1 CL • 150 V

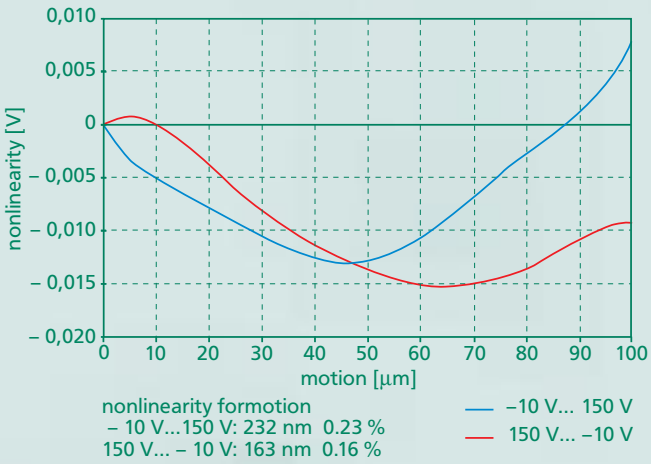
new single channel power supply for motions without creep and hysteresis



- ***compact, one channel power supply***
- ***computer interface RS 232***
- ***developed for modern multilayer piezoelements***
- ***closed loop/open loop operation***
- ***memory function***
- ***modulation input***

Piezoelements reach positioning resolutions in the sub-nm range. The absolute position can be kept only when the characteristic elements of creep and hysteresis are eliminated. Using integrated measurement systems such as strain gauges, make it possible to get a typical accuracy of 0.2 % of full motion.
The strain gauge measurement system can be easily integrated into most of our standard products.

For piezoelements with the SG option measurement system, ***piezosystem jena*** has developed a new compact power supply. It contains the RS 232 computer interface board, and is offered at a competitive price normally associated with open loop systems.



Linearity of a PX100 with strain gauge (SG) measurement system

technical data:

part no.	**NV 40/1 CL** E-101-73 (230 V) E-101-74 (110 V)
channels	1
display	LED, 5 digit
output voltage	–10 to +150 V
modulation input	0 to +10 V, BNC connector
voltage noise (absolute)	3 mV_{pp} (typ. < 2 mV_{pp} or < 1 mV RMS)
voltage noise (relative)	$2 \cdot 10^{-5}$
output current	40 mA
interface	serial RS 232
connector piezo	LEMOSA
connector sensor	LEMOSA
resolution	16 bit
monitor output (closed loop on)	0 to +10 V
monitor output (closed loop off)	–12 to +12 V
dimensions (wxhxd)	170 x 70 x 205 mm

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electronics

OEM piezo-amplifier 12V40

- ***developed for low voltage piezo elements***
- ***12 V supply voltage***
- ***excellent signal to noise ratio***
- ***modulation input***
- ***compact design***
- ***very cost-effective***
- ***optional measurement amplifier***
- ***integrated closed loop system***

applications:

- automation
- low dynamic applications
- precision adjustment of microscope systems

Piezoelectrical elements can be used in many different applications. Especially for OEM applications, the electronics must be centralized in one general housing. The OEM power supply 12V40 meets this requirement in almost every case.

The 12V40 OEM amplifier has been developed for use with low voltage piezo elements. The drive signals can be tapped from the front plate as well as from the rear wiring. The design and construction provide a flexible alternative in electronic drives and control systems.

One of the remarkable features of this amplifier system is its excellent residual ripple: in most cases, the measured values fall below the specified values.

technical data:

part no.	**E-301-10**
output power	6 W
output voltage	–10 to +150 V
max. output current	40 mA
voltage noise (absolute)	≤ 3 mV_{pp} (typ. < 2 mV_{pp} or < 1 mV RMS respectively)
voltage noise (relative)	≤ 2 x 10^{-5}
analog input	0 to 10 V, SMB
inner resistance	10 kΩ
monitor output	–1 to +15 V, SMB
inner resistance	100 kΩ
power supply	12 VDC, 1A
max. input current	750 mA
dimensions	105 x 165 x 32 mm^3



electronics

OEM piezo-amplifier 5V10

- ***miniature amplifier for low voltage piezo elements***
- ***5 Volt supply voltage***
- ***no-load current <100 mA***

applications:

- automation
- high dynamic applications
- precision adjustment of microscope systems

The OEM amplifier 5V10-OEM has been developed for bimorph and low voltage piezo elements. The design and construction provide a flexible alternative in electronic drives and control systems.

The easy adaptation of the output voltage and current to the customer's system makes a variety of applications possible.

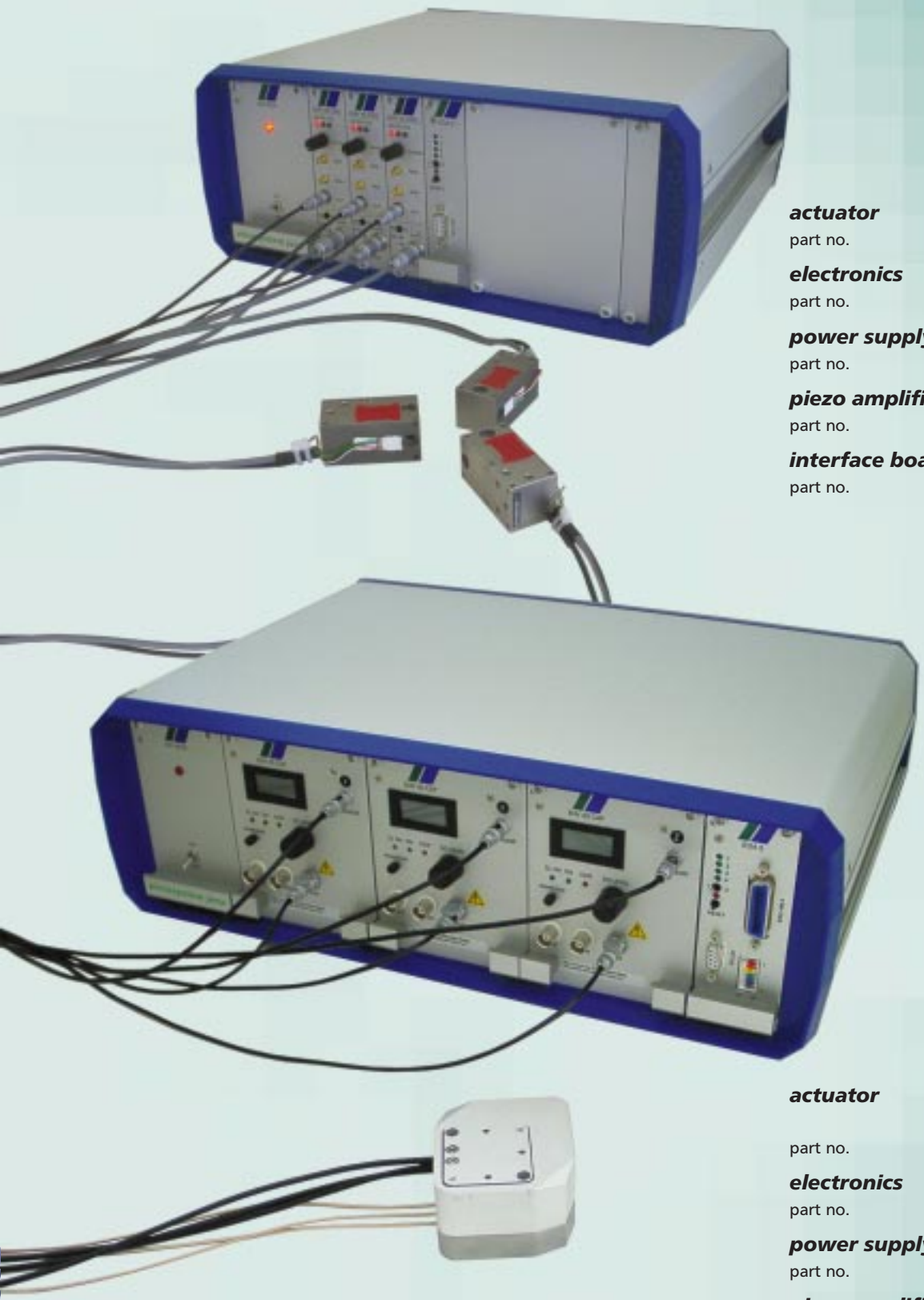


technical data:

part no.	**E-304-10**
supply voltage	+5 V (stabilized)
output power	0.5 W
output voltage	0 to +150 V
max. output current	10 mA
input signal	0 to 5 V, BNC
inner resistance	10 kΩ
power supply	5 VDC
no-load current	< 100 mA
full-load current	< 500 mA
dimensions	80 x 55 x 20 mm^3

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sample configurations



actuator	***3 x PU 100 SG***
part no.	T-502-01
electronics	***casing 63 TE***
part no.	E-103-90
power supply	***ENT 40/20***
part no.	E-103-13
piezo amplifier	***3 x ENV 40 CSG***
part no.	E-104-10
interface board	***EDA 2***
part no.	E-202-20

actuator	***TRITOR 100 CAP (vacuum version)***
part no.	T-403-07
electronics	***casing 84 TE***
part no.	E-103-91
power supply	***ENT 40/20***
part no.	E-103-13
piezo amplifier	***3 x ENV 40 CAP***
part no.	E-104-60
interface board	***EDA 5***
part no.	E-202-50

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