

# Piezo Amplifier / Servo Controller

For Closed-Loop Multilayer Bending Actuators



## E-651 • E-614

- For closed-loop multilayer piezo bending actuators
- Benchtop and OEM board versions
- One- and two-channel versions
- Position control for strain gauge sensors
- Overheat protection

### Piezo amplifier / servo controller for P-871 multilayer bending actuators

The E-651 is a benchtop device, especially designed for P-871 multilayer bending actuators equipped with strain gauge sensors. One- and two-channel versions are available. The compact E-614.2BS OEM board provides the same functionality as the 2-channel model.

### Closed-loop and open-loop piezo positioning

The control signal specifies the piezo position in the servo loop. The servo controller is set so that maximum displacement is achieved at an input control voltage of +/- 5 V. The E-651 can also be operated as a pure voltage amplifier. The analog input signal in a range of -5 to +5 V then controls the output voltage ranging up to 60 V.

## Specifications

	E-651.1S	E-651.2S / E-614.2BS
Function	Piezo amplifier and position controller for multilayer bending actuators, benchtop device	Piezo amplifier and position controller for multilayer bending actuators E-651.2S: benchtop device E-614.2BS: OEM module
Channels	1	2
Sensor	E-651.1S	E-651.2S / E-614.2BS
Controller type	P-I (analog)	P-I (analog)
Sensor type	SGS	SGS
Sensor bandwidth	Low-pass filter frequency: 300 Hz / 1 kHz / 3 kHz selectable	Low-pass filter frequency: 300 Hz / 1 kHz / 3 kHz selectable

Amplifier	E-651.1S	E-651.2S / E-614.2BS
Input voltage range	-5 to 5 V	-5 to 5 V
Min. output voltage	0 to 60 V, additional fixed voltage of 60 V	0 to 60 V, additional fixed voltage of 60 V
Max. output power (<5 ms)	1 W	1 W / channel
Average output power	0.5 W	0.5 W / channel
Peak current (<5 ms)	36 mA	36 mA / channel
Average output current	18 mA	18 mA / channel
Current limitation	Short-circuit proof	Short-circuit proof
Voltage gain	6	6
Input impedance	100 k $\Omega$	100 k $\Omega$

Interfaces and operation	E-651.1S	E-651.2S	E-614.2BS
Piezo / sensor connector	LEMO EPG.0B.307.HLN	LEMO EPG.0B.307.HLN	Separate pin headers for piezo output and sensor
Analog input / control input socket	BNC	BNC	Pin header
Sensor monitor output	0 to 10 V for nominal displacement	0 to 10 V for nominal displacement	0 to 10 V for nominal displacement
Sensor monitor socket	BNC	BNC	Pin header

Miscellaneous	E-651.1S	E-651.2S	E-614.2BS
Operating temperature range	5 to 50 °C	5 to 50 °C	5 to 50 °C
Overheat protection	Deactivation at 75 °C	Deactivation at 75 °C	Deactivation at 75 °C
Dimensions	125 mm × 90 mm × 265 mm	125 mm × 90 mm × 265 mm	100 mm × 40 mm × 200 mm
Mass	1.36 kg	1.45 kg	0.3 kg
Operating voltage	14 to 16 V DC (power adapter in the scope of delivery)	14 to 16 V DC (power adapter in the scope of delivery)	14 to 16 V DC

## Ordering Information

### E-651.1S

Piezo amplifier / servo controller for bending actuators, 1 channel, 0 to 60 V, strain gauge sensor, benchtop device

### E-651.2S

Piezo amplifier / servo controller for bending actuators, 2 channels, 0 to 60 V, strain gauge sensor, benchtop device

### E-614.2BS

Piezo amplifier / servo controller for bending actuators, 2 channels, 0 to 60 V, strain gauge sensor, OEM module