

## E-831 Piezo Driver OEM Module, Power Supply for up to 3 Axes



- Cost Effective Piezo Driver
- Small Size
- Low Noise, High Stability
- Easy-to-Use
- Full Overcurrent, Short-Circuit and Temperature Protection
- Power-up/down Without Voltage Spikes

The E-831.03 OEM piezo driver module is a very compact, cost-effective, single-channel, 4-quadrant power amplifier for low-voltage piezoelectric actuators.

It provides a peak output power of 12 W and average power of 2 W (expandable to 5 W with external heat sink). The E-831.03 is a high-precision amplifier with a fixed gain of 10.0 and outputs voltages in

the range of -20 to 120 V for control input signals ranging from of -2 to 12 V. The output is fully compensated for the capacitive loads of up to 10  $\mu$ F typical of PI's low-voltage PZTs such as PICMA<sup>®</sup> piezo actuators. For monitoring purposes, the output voltage is internally divided by 100 and provided at a special monitor pin.

Because piezo actuators require virtually no power in

steadystate operation and the power consumption depends on the operating frequency, high-powered amplifiers are not required for many applications. With a peak output current of 100 mA (sink/source) the E-831 is well-suited for switching applications and fast transitions where the capacitive load (the piezo actuator) needs to be charged as quickly as possible. The small-signal bandwidth is about 3 kHz.

### Power Supplies for E-831.03

The E-841.05 (input voltage range 10 to 30V) and E-842.05 (input voltage range 30 V to 72 V) switched power supply modules provide all the operating voltages ( $\pm 15$  V, -26 V and +127 V DC) required by the E-831.03 amplifier module. Both models supply enough power for up to three E-831.03 amplifiers with a total output power of 5 W.

A sync. input on the power supply allows synchronization of the internal switching frequency with an external clock (185 to 220 kHz) for elimination of interference in AC-driven position sensors or DACs.

### Easy Implementation

E-831 and E-841/E-842 modules are enclosed in metal cases with solderable pins for PCB mounting. They are designed to work together without additional components.

### Triple Safety

The E-831 amplifier is short-circuit proof with both a low-speed current limiter of 50 mA and a high-speed (8 msec) current limiter of 100 mA. When the case temperature rises above 70 °C (can be reached after a few minutes with maximum current) an internal temperature sensor shuts down

### Ordering Information

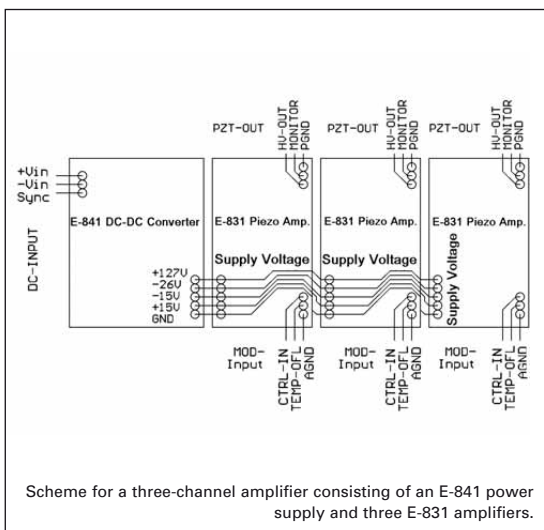
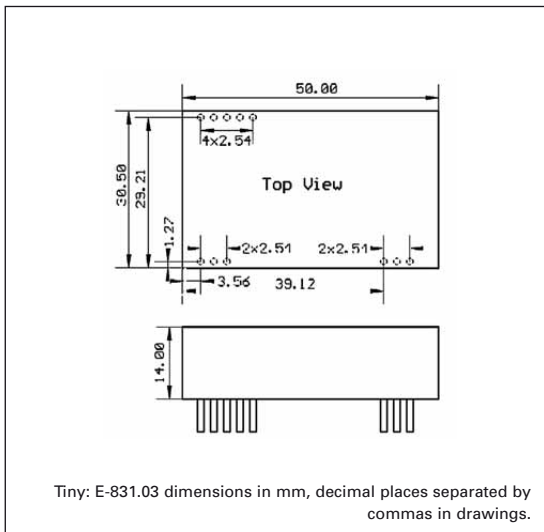
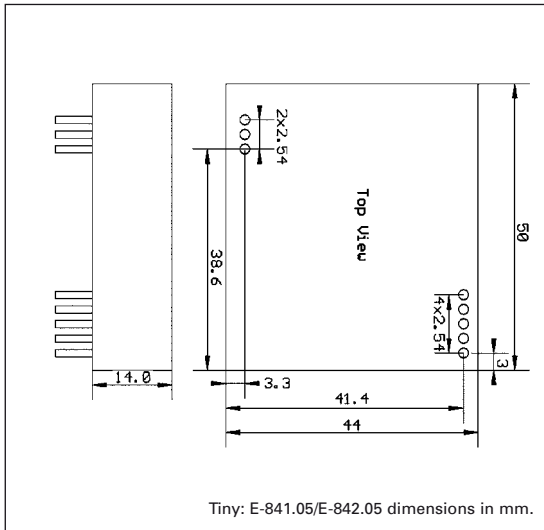
**E-831.03**  
Single-Channel Piezo Driver Module for LVPZTs

**E-841.05**  
Power Supply Module for E-831, Input 10 to 30 V

**E-842.05**  
Power Supply Module for E-831, Input 30 to 72 V

the output stage until the temperature drops below 60 °C. This operation mode is indicated by the active-high TEMP-OFL TTL status line.





### Technical Data E-831.03

Models	E-831.03
Function:	Single-channel piezo amplifier module
Output voltage range:	from [U+ - 6 V] (121 V for U+ = 127 V) to [U- + 8 V] (-20 V for U- = 28 V)
Gain	10 ±0.1
Max. output current:	100 mA for 8 ms (sink/source)
Max. average current:	50 mA for 2 min without heatsink
Output protection:	short-circuit protected, the module is overload protected to 70 °C case temperature
Max. output power:	2 W without ext. heatsink 5 W with ext. heatsink or forced airflow
Control input range:	-2 to +12 V
Input impedance:	100 kΩ
Dynamic current requirements:	depend on load, amplitude and slew rate
Cut off frequency:	3.5 kHz, no load
Operating temperature range:	+5° to +50° Celsius
Operating voltages:	+15 V / 20 mA (14 to 16 V) (all currents without dynamic load) -15 V / 7 mA (-14 th -16 V) +127 V / 1.8 mA +125 to 135 V) -26 V / 1.8 mA (-24 to -30 V)
Case	Metal shielded case, size: 50 x 30 x 14 mm
Soldering pins	1 mm diameter, 4 mm length

### Technical Data E-84x.05

Models	E-841.05, E-842.05
Function:	Power Supply Module for E-831
Output voltages:	+127 V, 30 mA; -26 V, 30 mA; +15 V, 60 mA; -15 V, 20 mA
Max. output Power:	8 W
Max. average Power	8 W with forced air flow (5 W without)
Output protection:	short-circuit protected (1 min.)
Input voltage:	10 - 30 V (E-841.05); 30 - 72 V (E-842.05)
Quiescent current:	100 mA @15 V; 60 mA @30 V; 25 mA @72 V
Max. input current:	1000 mA (E-841.05 @ 10V); 200 mA (E-842.05 @ 72V)
Power-on, peak current:	1500 mA
Switching frequency	100 kHz typical
External clock frequency:	200 kHz (185 - 220 kHz possible)
Synchronization signal:	preferred TTL-level with duty cycle 50 %; operating from 1.8 V <sub>DD</sub> and offsets within ±7 V
Output ripple:	<100 mV <sub>pp</sub>
Operating temperature range:	5° to +50° Celsius (with power derating above 40 °C)
Case	Metal shielded case, size: 50 x 44 x 14 mm
Soldering pins	1 mm diameter, 4 mm length

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