

# PIShift Drive Electronics

VERSATILE AND COST-EFFECTIVE



## E-870

- For PIShift and PiezoMike piezo inertia drives
- Ideal for OEM applications
- One to four actuators, serial control (through demultiplexing)
- With digital USB interface

### Drive electronics for one to four axes

OEM module with solder pins or on carrier board with connectors and terminal strips for the operation of open-loop PIShift piezo inertia drives

### Operating modes

Full-step mode, max. piezo voltage 0 to 100 V (configurable). Various command modes. Configuration of the operating parameters can be programmed via USB or via hardware settings. Serial control of up to 4 actuators by one unit

### Interfaces

USB for control, configuration and for firmware updates. Interfaces for TTL and analog control. Optional SPI interface

### Fields of application

Lab automation, medical technology, handling

### Related products

N-412 • N-422 PIShift linear actuator



E-870.10: Single-channel driver for piezo inertia drives (to be plugged in or soldered)



The E-870.41 allows the serial control of up to four PIShift or PiezoMike actuators through demultiplexing

Perliminary Data	E-870.10	E-870.11	E-870.41
Function	Drive electronics for PIShift linear drives, OEM circuit board with solder pins	Drive electronics for PIShift linear drives, OEM circuit board with connectors	Drive electronics for PIShift linear drives, OEM circuit board with connectors
Channels	1	1	4 (serial control through demultiplexing)
<b>Amplifier</b>			
Channels	1	1	1 (4-fold demultiplexing)
Output voltage	0 to 100 V	0 to 100 V	0 to 100 V
Peak output power	30 W	30 W	30 W
Output current/channel (<5 ms)	±650 mA	±650 mA	±650 mA
<b>Interface and operation</b>			
Communication interfaces	USB 2.0, analog Interface, ±10 V, 10 bit ADC, TTL inputs	USB 2.0, analog Interface, ±10 V, 10 bit ADC, TTL inputs	USB 2.0, analog Interface, ±10 V, 10 bit ADC, TTL inputs
Actuator connection	Solder pins	DIN 4-pin	DIN 4-pin
Analog and digital inputs	Solder pins	Terminal strip	Terminal strip
Digital output	Overtemperature protection indicated at 75°C, operating status and error output		
Command set	PI GCS 2	PI GCS 2	PI GCS 2
User software	Configuration and operation tool	Configuration and operation tool	Configuration and operation tool
Software drivers	LabVIEW driver, shared libraries for Windows	LabVIEW driver, shared libraries for Windows	LabVIEW driver, shared libraries for Windows
Supported functionality	Alternative command modes: pulse-controlled, pulse slope-controlled, quadrature decoder control, analog velocity control		
Display	–	LED display for operation, error status and overtemperature protection	LED display for operation, error status and overtemperature protection
Manual control	–	Integrated pushbutton control forwards/backwards, joystick via USB	Integrated pushbutton control forwards/backwards, joystick via USB
<b>Miscellaneous</b>			
Operating temperature range	0 to 50°C	0 to 50°C	0 to 50°C
Overtemp protection	Deactivation at 85°C	Deactivation at 85°C	Deactivation at 85°C
Dimensions	76 mm × 61 mm × 20 mm	92.5 mm × 104 mm × 36 mm	92.5 mm × 105 mm × 36 mm
Mass	100 g	172 g	185 g
Operating voltage	12 to 24 V (power supply not included in the scope of delivery)	12 to 24 V (power supply not included in the scope of delivery)	12 to 24 V (power supply not included in the scope of delivery)
Max. power consumption	35 W	35 W	35 W

## Networkable Servo Controller for Stick-Slip Piezo Motors

1 AXIS, FOR POSITIONERS WITH PISHIFT INERTIA DRIVES



### E-871

- Broadband encoder input
- Macro programmable for stand-alone functionality
- Data recorder
- Non-volatile EEPROM for macros and parameters

#### Digital servo controller for PIShift piezomotors

1 channel. Integrated power amplifier and voltage generator for PIShift piezo inertia drives. Point-to-point motion, actuator mode for nanometer-precise positioning to target position

#### Extensive functionality

Powerful macro command language. Non-volatile macro storage, e. g. for stand-alone functionality with autostart macro. Data recorder. ID chip for quick start-up, parameter changes on-the-fly. Extensive software support, e. g. for LabVIEW, shared libraries for Windows and Linux

#### Mercury class motion controller

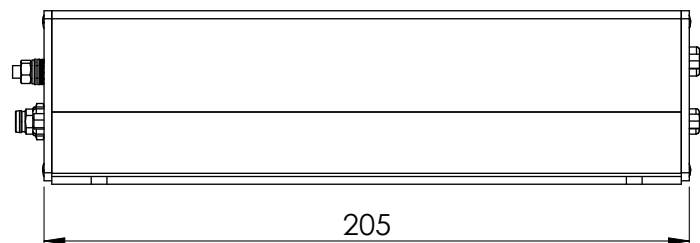
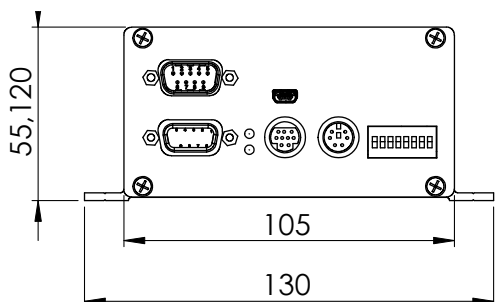
Daisy-chain networking for up to 16 axes operated via a common computer interface.

Interfaces: USB and RS-232 for commands. A/B (quadrature) encoder input. TTL inputs for limit and reference point switches. I/O ports (analog/digital) for automation. Interface for analog joystick.

Delivery scope including wide-range power supply, USB and RS-232 cable, daisy-chain network cable

E-871.1A1	
Function	Piezomotor controller for PIShift drives and positioning systems
Channels	1
<b>Motion and control</b>	
Servo characteristics	PID controller, parameter changes on-the-fly
Encoder input	Analog encoder input sine-cosine, interpolation selectable up to 20000; Interpolation circuit for differential transmission 1 V <sub>pp</sub> and 2.5 V offset of the encoder signal
Stall detection	Servo off
Input limit switch	2 × TTL (pull-up/pull-down, programmable)
Input reference switch	1 × TTL and Zero+ & Zero- for integrated reference in the encoder
<b>Electrical properties</b>	
Max. output power	30 W
Output voltage	0 to 100 V, drive-dependent selection
Max. operating current	1.5 A
<b>Interface and operation</b>	
Communication interfaces	USB, RS-232 (9-pin (m) Sub-D)
Motor connector	HD Sub-D 15-pin (f)
Sensor connection	HD Sub-D 15-pin (m)
Controller network	Up to 16 units on single interface*
I/O ports	4 analog/digital in, 4 digital out
Command set	PI General Command Set (GCS)
User software	PIMikroMove, PITerminal
Software drivers	LabVIEW driver, shared libraries for Windows and Linux
Supported functionality	Point-to-point motion, start-up macro, data recorder for recording parameters as motor input voltage, position or position error; internal safety circuitry: watchdog; ID chip
Manual control (optional)	Pushbutton box, joystick (for 2 axes), Y-cable for 2-D motion
<b>Miscellaneous</b>	
Operating voltage	24 V; included: external power supply, 24V; 2.0 A
Operating temperature range	0 to 50°C
Mass	1.1 kg
Overtemp protection	75°C
Dimensions	205 mm × 130 mm × 55 mm (incl. mounting rails)

\* 16 units via USB; 6 units via RS-232.



E-871, dimensions in mm