

Standard exterior color is black. Other colors available for volume orders.



# Miniature Linear Motion Series • **PQ12**

Firgelli Technologies' unique line of Miniature Linear Actuators enables a new generation of motion-enabled product designs, with capabilities that have never before been combined in a device of this size. These tiny linear actuators are a superior alternative to awkward gears, motors, servos and rods.

The PQ12 actuators are complete, self-contained linear motion devices with sophisticated control capabilities. You can accurately control the actuator's position along its stroke, based on feedback from a built-in precision linear potentiometer. Driving the actuator could not be simpler: apply a DC voltage to extend the actuator, and reverse the polarity to change the actuator direction. The PQ12s is a high-speed configuration, and the PQ12f is a high-force configuration. Other force/speed combinations are available as special orders.

The PQ12 actuators are available now. Sample quantities may be ordered directly from [www.firgelli.com](http://www.firgelli.com). Please contact Firgelli for volume pricing or custom configurations.

## Benefits

- **Compact miniature size**
- **Precise position feedback**
- **Simple control**
- **Low voltage**
- **Equal push / pull force**
- **Easy mounting**

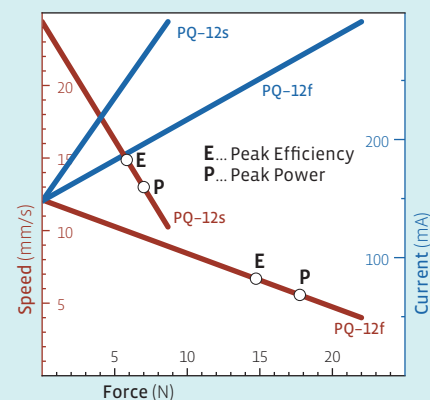
## Applications

- **Robotics**
- **Consumer appliances**
- **Medical Devices**
- **Automotive**
- **Industrial automation**

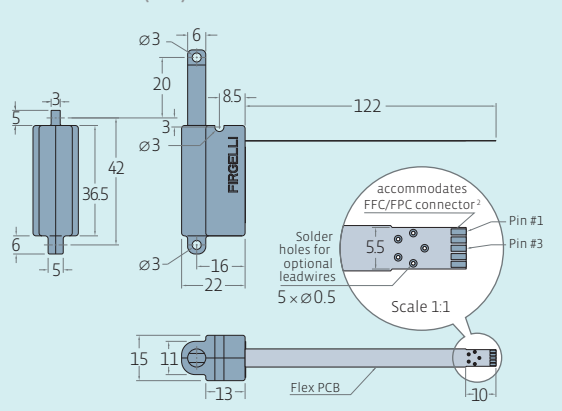
## Specifications

	<b>PQ12f</b> High Force	<b>PQ12s</b> High Speed
Product number	PQ-12-20-63-A	PQ-12-20-30-A
Stroke	<b>20 mm</b>	<b>20 mm</b>
Rated force (at peak efficiency)	<b>15 N at 7 mm/s</b>	<b>6 N at 15 mm/s</b>
Max Power Point	<b>18 N at 6 mm/s</b>	<b>7 N at 13 mm/s</b>
Max speed (no load)	<b>12 mm/s</b>	<b>27 mm/s</b>
Current draw (at peak efficiency)	<b>250 mA</b>	<b>250 mA</b>
Input voltage	<b>5 Vdc</b>	<b>5 Vdc</b>
Feedback mode	<b>2 kΩ linear potentiometer</b>	
Feedback potentiometer linearity	<b>1%</b>	
Mass	<b>19 g</b>	
Operating temperature	<b>-10 to +50°C</b>	
Duty Cycle <sup>1</sup>	<b>20%</b>	
Actuator lifetime <sup>1</sup>	<b>200 hours</b>	

## Load Curve



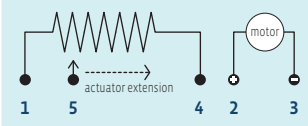
## Dimensions (mm) 1:2.5



## Wiring

Pin Function <sup>2</sup>

- 1 Potentiometer reference**
- 2 Actuator power (+5V to extend)**
- 3 Actuator power (+5V to retract)**
- 4 Potentiometer reference**
- 5 Potentiometer wiper (position signal)**



<sup>1</sup> Quoted lifetime is at peak efficiency point and stated duty cycle. Higher loads or duty cycles may reduce life. <sup>2</sup> Flex-PCB edge accepts a 5-pin 1 mm pitch or 10-pin 0.5 mm pitch FFC/FPC connector, such as Hirose FH21 or Molex 52087. Each 1 mm pitch PCB terminal will contact two adjacent 0.5 mm connector pins.



## Firgelli Technologies Inc.

3020 152nd Street, 2nd Floor  
Surrey, BC V4P 3N7  
Canada

1 (206) 347-9684 *phone*

1 (888) 225-9198 *toll-free*

1 (206) 347-9684 *fax*

[sales@firgelli.com](mailto:sales@firgelli.com)

[www.firgelli.com](http://www.firgelli.com)