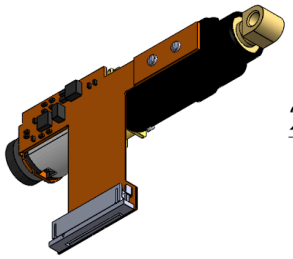
LAF12 Linear Actuator Brushed (precious metal brushes)

Ø12mm motor body / integrated driver / open frame

PRECISION MICRODRIVES ™



Series / frame size L A F 1 2 - V 1 2 - G 0 3 0 Gearing option

Voltage option

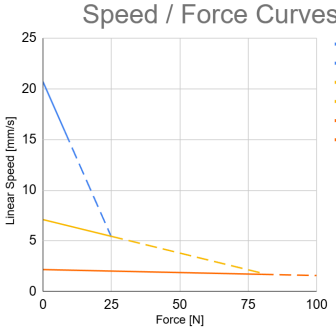
Design and accessories		Units				Custom design
A	Availability		Stocked design			8 weeks
B	Motor Type		Brushed			Brushed / brushless
C	Commutation		Precious metal brush			To requirement
D	Motor body diameter	mm	12.0			12.0
E	Control method		2x PWM			To requirement
F	Encoder counts / turn (at motor shaft)		12			
G	Connections		Molex 0522711479			Please contact support@pmdri.com
H	Cable		25mm FPCB			
I	Body Material		Anodized aluminium alloy			

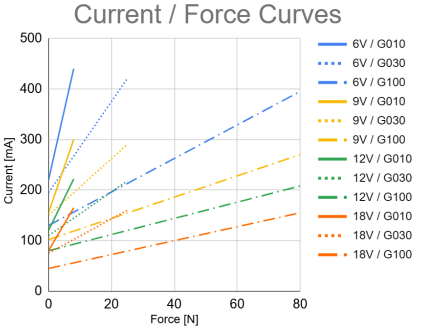
Voltage option			V18	V12	V09	V06
1	Nominal voltage	V	18	12	9	6
2	Terminal resistance	Ω	31.6	12.5	7.5	3.2
3	Terminal inductance	mH	5.24	2.35	1.25	0.60
4	No load current	A	0.060	0.105	0.140	0.185
5	Nominal current	A	0.160	0.215	0.285	0.415
6	Stall current	A	0.550	0.750	0.900	1.100

Gearing option			G010	G030	G100	
11	Max. speed (no load)	mm/s	20.7	7.10	2.20	For custom Voltage / Stroke / Gearing options, please contact support@pmdri.com
12	Nominal force	N	8	25	80	
13	Nominal speed (at nominal force)	mm/s	15.8	5.45	1.70	
14	Backdrive force	N	No backdrive	No backdrive	No backdrive	
15	Encoder linear resolution	um/count	4.306	1.414	0.421	
16	Repeatability	um	80	20	10	

Motor body characteristics			
17	Home sensor position		Fully retracted
18	Home sensor technology		Magnetic
19	Encoder technology		Magnetic
20	Ambient temperature min.	°C	-10
21	Ambient temperature max.	°C	+50
22	Axial play at axial load	mm	0.2 max
23	Max. axial load (dynamic)	N	80

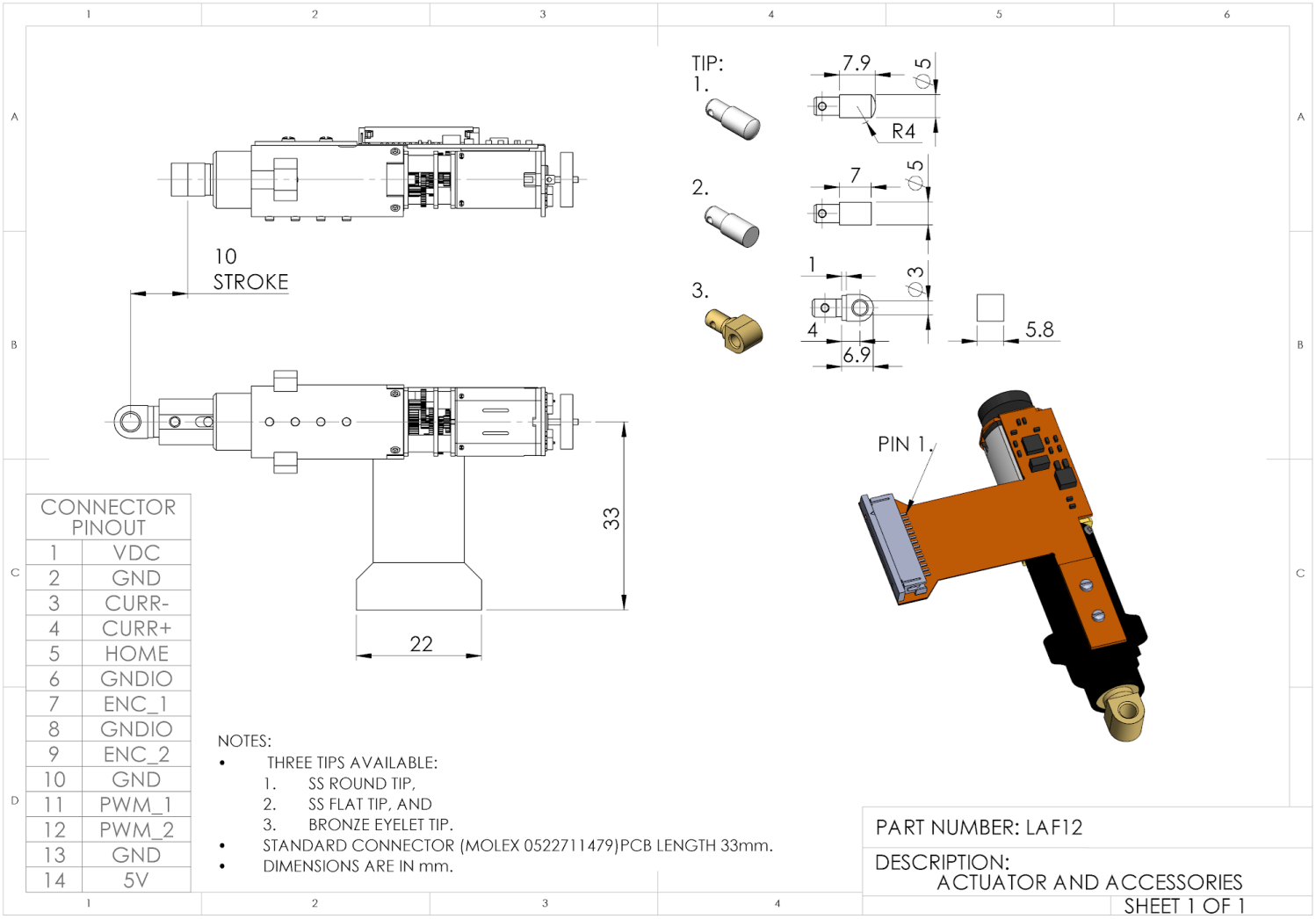
Operating range (based on ambient 25°C)





LAF12 Linear Actuator Brushed (precious metal brushes)

Ø12mm motor body / integrated driver / open frame



CONNECTOR PINOUT	
1	VDC
2	GND
3	CURR-
4	CURR+
5	HOME
6	GNDIO
7	ENC_1
8	GNDIO
9	ENC_2
10	GND
11	PWM_1
12	PWM_2
13	GND
14	5V

NOTES:

- THREE TIPS AVAILABLE:
  1. SS ROUND TIP,
  2. SS FLAT TIP, AND
  3. BRONZE EYELET TIP.
- STANDARD CONNECTOR (MOLEX 0522711479)PCB LENGTH 33mm.
- DIMENSIONS ARE IN mm.

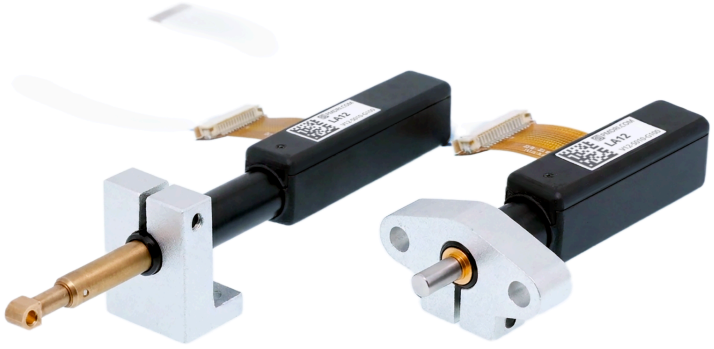
PART NUMBER: LAF12

DESCRIPTION: ACTUATOR AND ACCESSORIES

SHEET 1 OF 1

Accessories

A range of tips and mounting brackets are available for the actuator, to enable better integration into the end product and fast prototyping and testing



Actuator features

The actuator PCBA is equipped with the following features:
- Rotary incremental encoder
- Current monitor
- Home sensor

Rotary incremental encoder
The actuator contains a two-channel, hall-sensor based incremental encoder. The encoder is fitted on the motor body (before gearbox reduction) for increased resolution, and produces a quadrature output In the extending direction, encoder channel 1 leads channel 2

Current monitor
CURR+ / CURR- provide a differential signal proportional to the current flowing through the driver H-bridge. The conversion factor is 1 mA / mV e.g. a voltage output of 50mV corresponds to a motor current of 50mA

Home sensor
The Home sensor triggers low when the actuator is in the fully retracted position. The Home sensor comprises of a neodymium magnet and high sensitivity Hall sensor, allowing it to achieve high repeatability

Actuator driving

The actuator operates in PWM control mode. When running the actuator below 100% duty, during PWM off time, the actuator can either be set to:
- Coast - fast decay mode
- Brake - slow decay mode

Slow decay mode is typically used as it offers more linearity of actuator speed versus driving voltage, and in some cases improved efficiency

PWM_1	PWM_2	OUT1	OUT2	DESCRIPTION
0	0	Hi-Z	Hi-Z	Coast (H-Bridge Hi-Z)
0	1	L	H	Reverse
1	0	H	L	Forward
1	1	L	L	Brake (Low-side slow decay)