

PA-12 Micro Precision Servo Actuator Data Sheet



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Coreless Motors (R)

PA-12- XXX-XXX-XX-X

Stroke - Force - Voltage - Core Type

Model Number	PA-12-10645012R	PA-12-22038212R
Rated Force	4.50lbs / 80.0mm/s	3.82lbs / 80.0mm/s
No Load Speed	80.0mm/s	80.0mm/s
Full Load Speed	68.0mm/s	69.3mm/s
Self Lock Force / Z-Axis Force	1.57lbs / 1.57lbs	1.57lbs / 1.57lbs
Input Voltage	12VDC	12VDC
Stroke Length	1.06"	2.20"
Gear Ratio	10:1	
Gear Type / Rod Type	4 Aluminum alloy/stainless steel & 2 Polyketone Gears / Stainless Steel Rod	
Motor Type / Watt	Coreless Motor / 26W	
Recommended Duty Cycle	50%	
Communication	RS-485	

Model Number	PA-12-10622412R	PA-12-22017512R
Rated Force	22.48lbs	17.50lbs
No Load Speed	7.7mm/s	7.7mm/s
Full Load Speed	6.3mm/s	6.7mm/s
Self Lock Force / Z-Axis Force	22.48lbs / 16.86lbs	17.50lbs / 13.15lbs
Input Voltage	12VDC	12VDC
Stroke Length	1.06"	2.20"
Gear Ratio	50:1	
Gear Type / Rod Type	4 Aluminum alloy/stainless steel & 2 Polyketone Gears / Stainless Steel Rod	
Motor Type / Watt	Coreless Motor / 26W	
Recommended Duty Cycle	50%	
Communication	RS-485	

Positional Accuracy		0.05mm (50μm)	Micro Controller		32bit ARM Core, 4096 Resolution (A/D converter)
Mechanical Backlash		0.05mm (50μm)	Pulse Range		900μm (Retracted) - 1500μm (Center) - 2100μm (Extended)
Positional Sensor		10K linear Potentiometer	Parameter Setting		Programmable via PC Software
Input Voltage		12.1V (Rated)	Ingress Protection		IP-54 (Dust and Water Resistant)
Current Consumption	Idle	30mA at 12.1V	Size/Weight (excluding rod-end & hinge)	27mm	57.5mm (L) x 29.9mm (W) x 15mm (H) / Approx. 46-65g
	Max (Stall)	2.3A at 12.1V		56mm	111.5mm(L) x 36mm(W) x 18mm(H) / Approx. 128g
Audible Noise		Approx. 50db at 1m	Operating Temperature		-10C to 60C
Communication		RS-485	Included Accessories		1x Mounting Bracket, 2x types rod end (detachable linkage and metal nut (M2.5) type), Wire Harnesses.



Cored Motors (T)

PA-12- XXX-XXX-XX-X

Stroke - Force - Voltage - Core Type

Model Number	PA-10613412T	PA-10613474T	PA-10626912T	PA-10626974T
Rated Force	1.34lbs	1.34lbs	2.69lbs	2.69lbs
No Load Speed	36mm/s	36mm/s	12mm/s	12mm/s
Full Load Speed	25.1mm/s	23.9mm/s	10.4mm/s	9mm/s
Self Lock Force / Z-Axis Force	0.67lbs / 0.67lbs	0.67lbs / 0.67lbs	2.69lbs / 2.02lbs	2.69lbs / 2.02lbs
Input Voltage	12VDC	7.4VDC	12VDC	7.4VDC
Stroke Length	1.06"			
Gear Ratio	10:1			
Gear Type / Rod Type	4 Aluminum alloy/stainless steel & 2 Polyketone Gears / Stainless Steel Rod			
Motor Type	Cored Motor / 4.2W			
Recommended Duty Cycle	50%			
Communication	TTL/PWM			

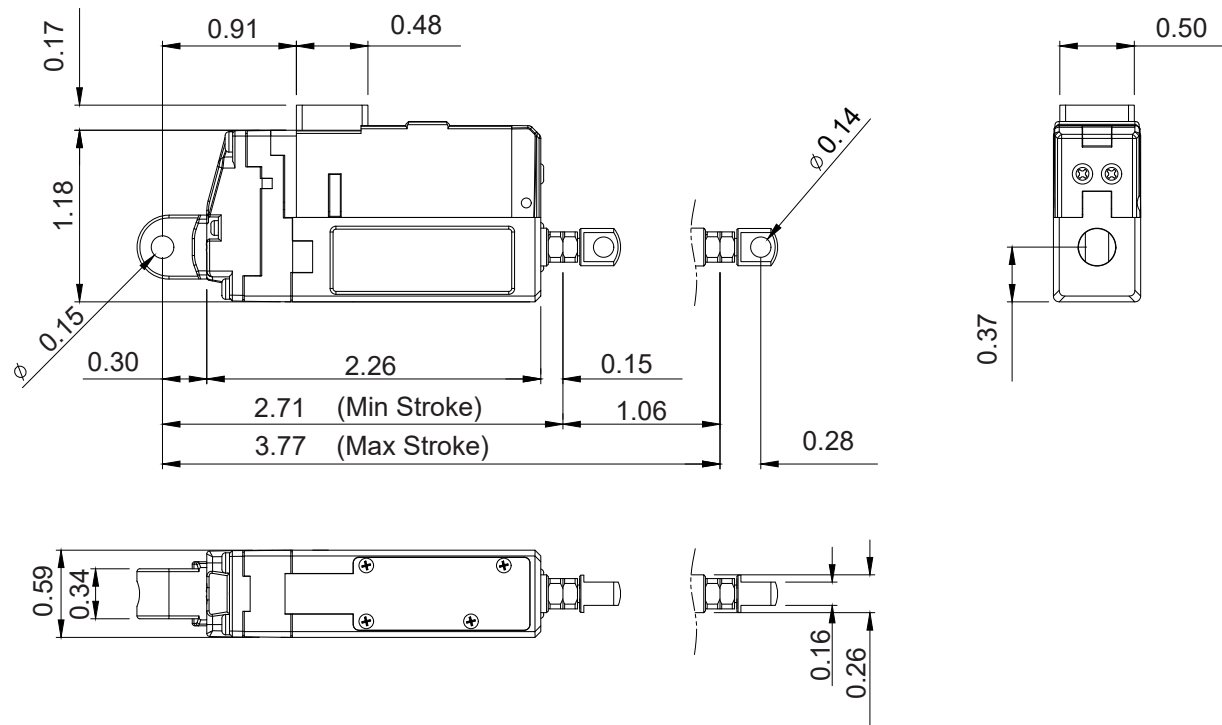
Positional Accuracy		0.05mm (50μm)	Micro Controller		32bit ARM Core, 4096 Resolution (A/D converter)	
Mechanical Backlash		0.05mm (50μm)	Pulse Range		900μm (Retracted) - 1500μm (Center) - 2100μm (Extended)	
Positional Sensor		10K linear Potentiometer	Parameter Setting		Programmable via PC Software	
Input Voltage		12.1V / 7.4V (Rated)	Ingress Protection		IP-54 (Dust and Water Resistant)	
Current Consumption	Idle	30mA at 12.1V / 25mA at 7.4V	Size/Weight (excluding rod-end & hinge)	27mm	57.5mm (L) x 29.9mm (W) x 15mm (H) / Approx. 46-65g	
	Max (Stall)	0.33A at 12.1V / 0.46A at 7.4V				
Audible Noise		Approx. 50db at 1m	Operating Temperature		-10C to 60C	
Communication		TTL/PWM	Included Accessories		1x Mounting Bracket, 2x types rod end (detachable linkage and metal nut (M2.5) type), Wire Harnesses.	
LED Indication		7 Error Indications: (Overload, Checksum, Data Range, Overheat, Stroke Limit, Input voltage, Instruction Error)	Wire Harness (Molex to S-02 PWM wire to be packed in Cored versions only)		PWM/TTL (PT version): Molex to S-02 and Molex to Molex Type (Molex 50-37-5033, 3pin) / 200mm length, 0.08x60(22AWG) or RS-485 (F version): Molex to Molex Type (Molex 0510650400, 4pins) / 200mm length, 0.08x60(22AWG)	



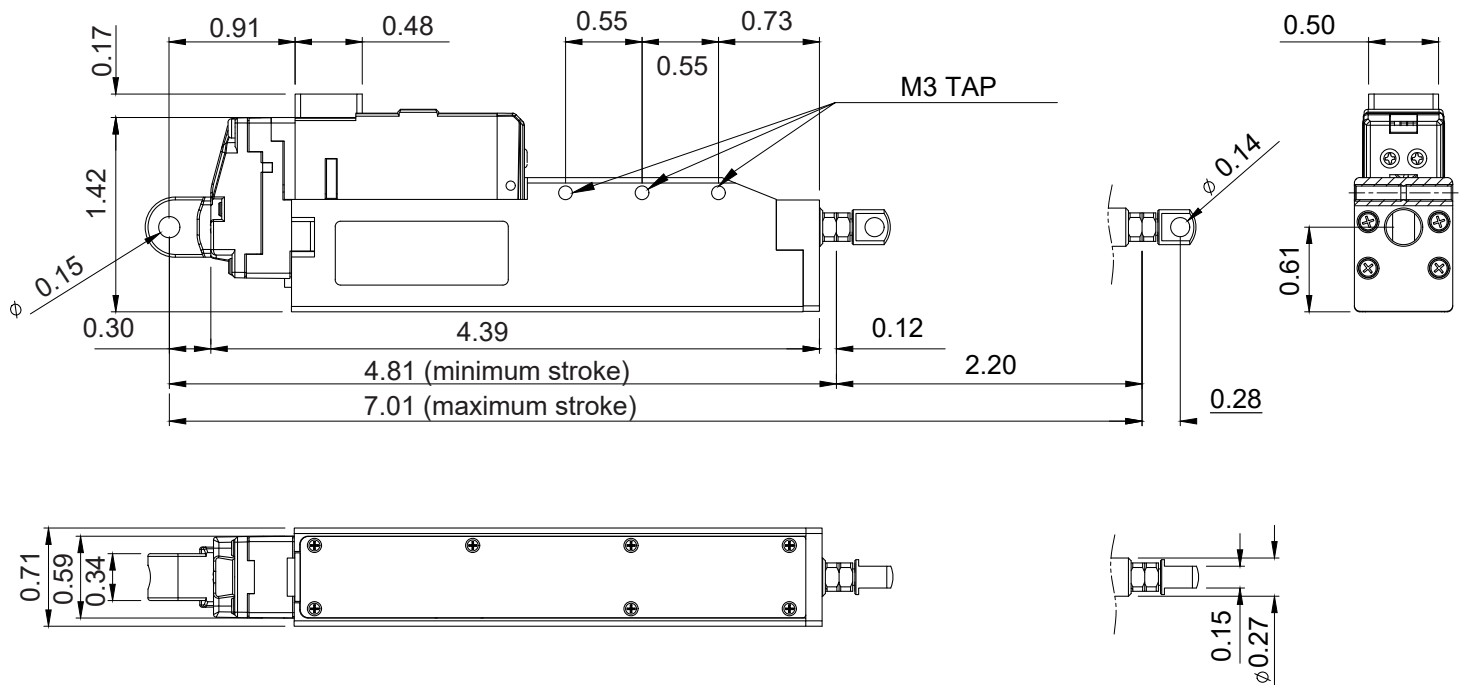
Dimensions

(Dimensions in inches)

1.06" Model

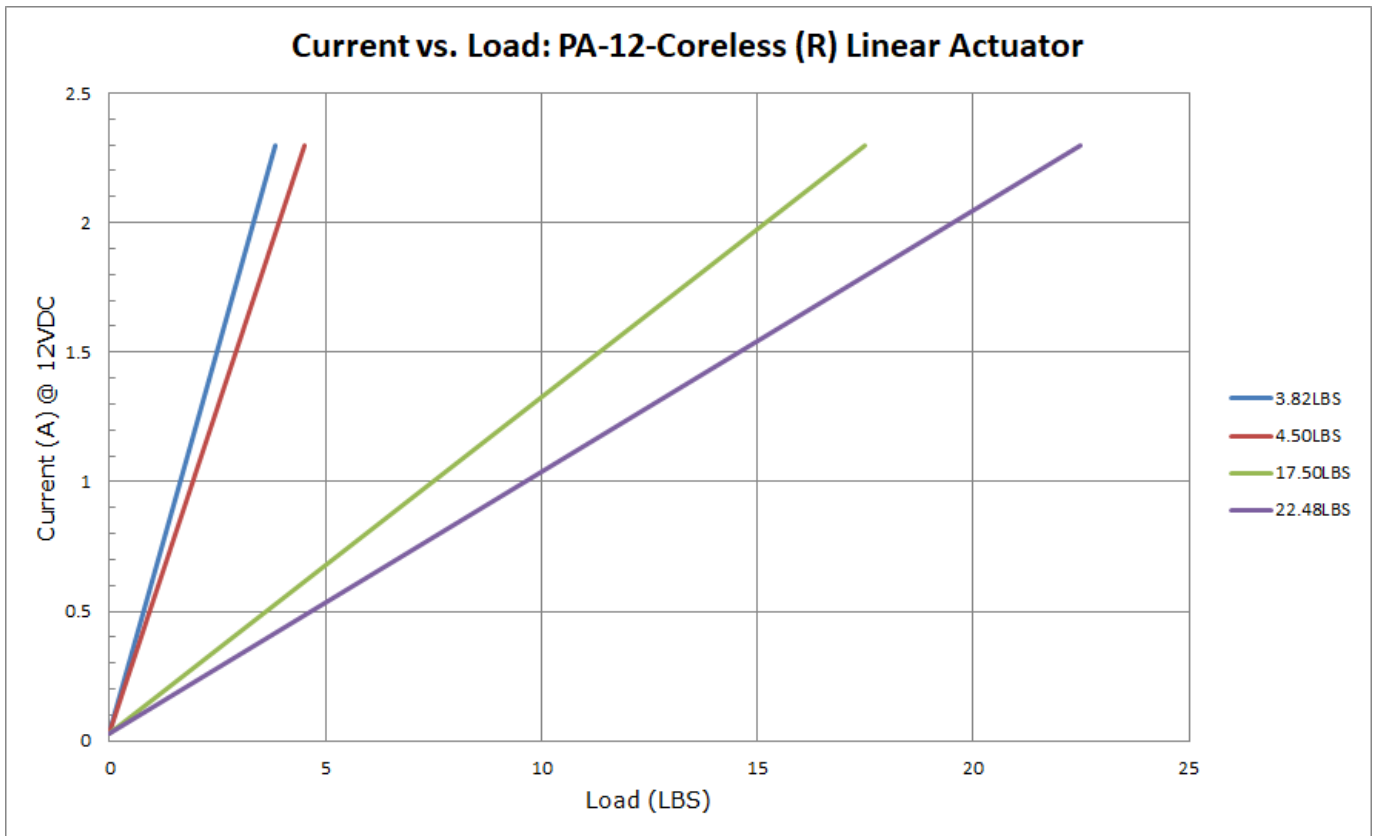


2.20" Model

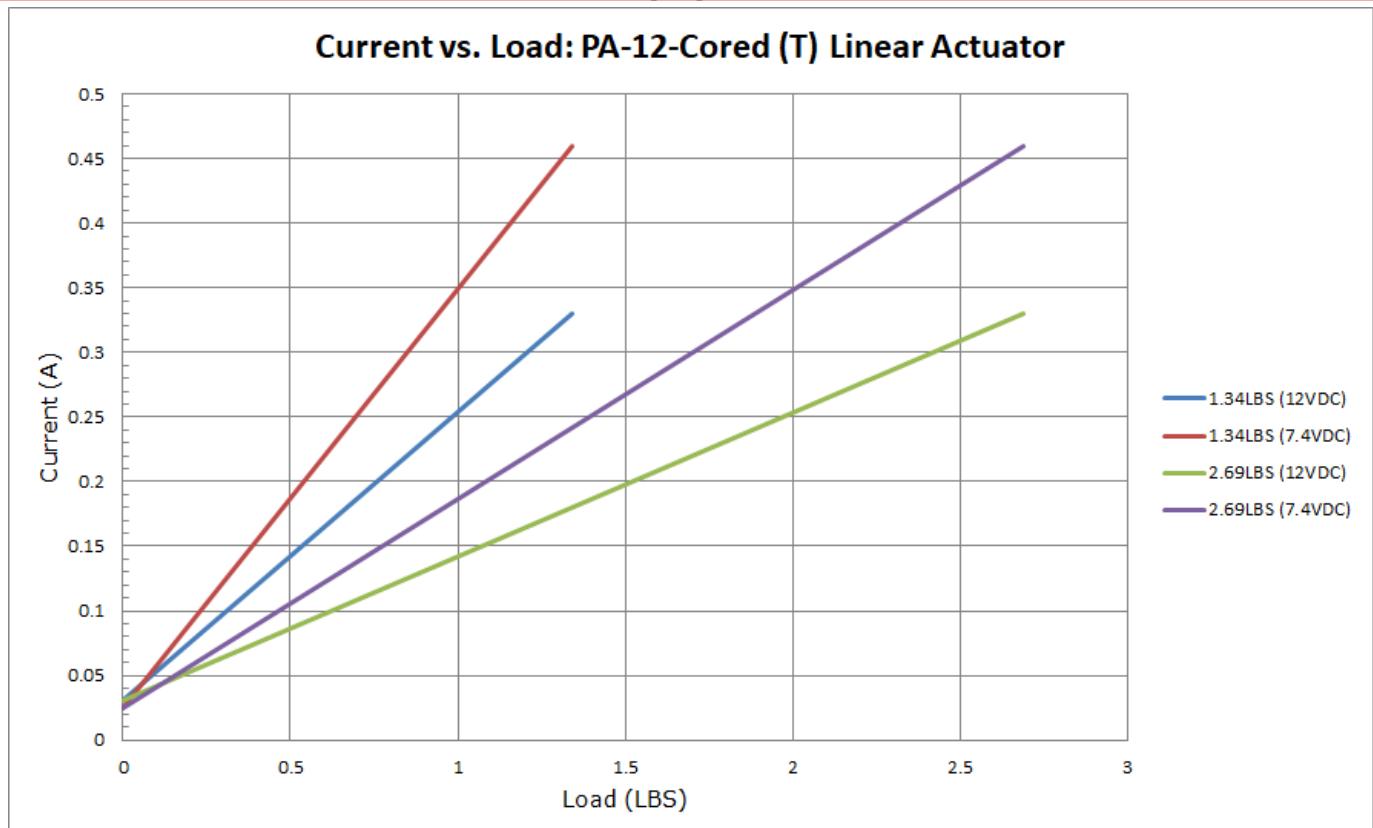




Current vs Load Coreless (R)

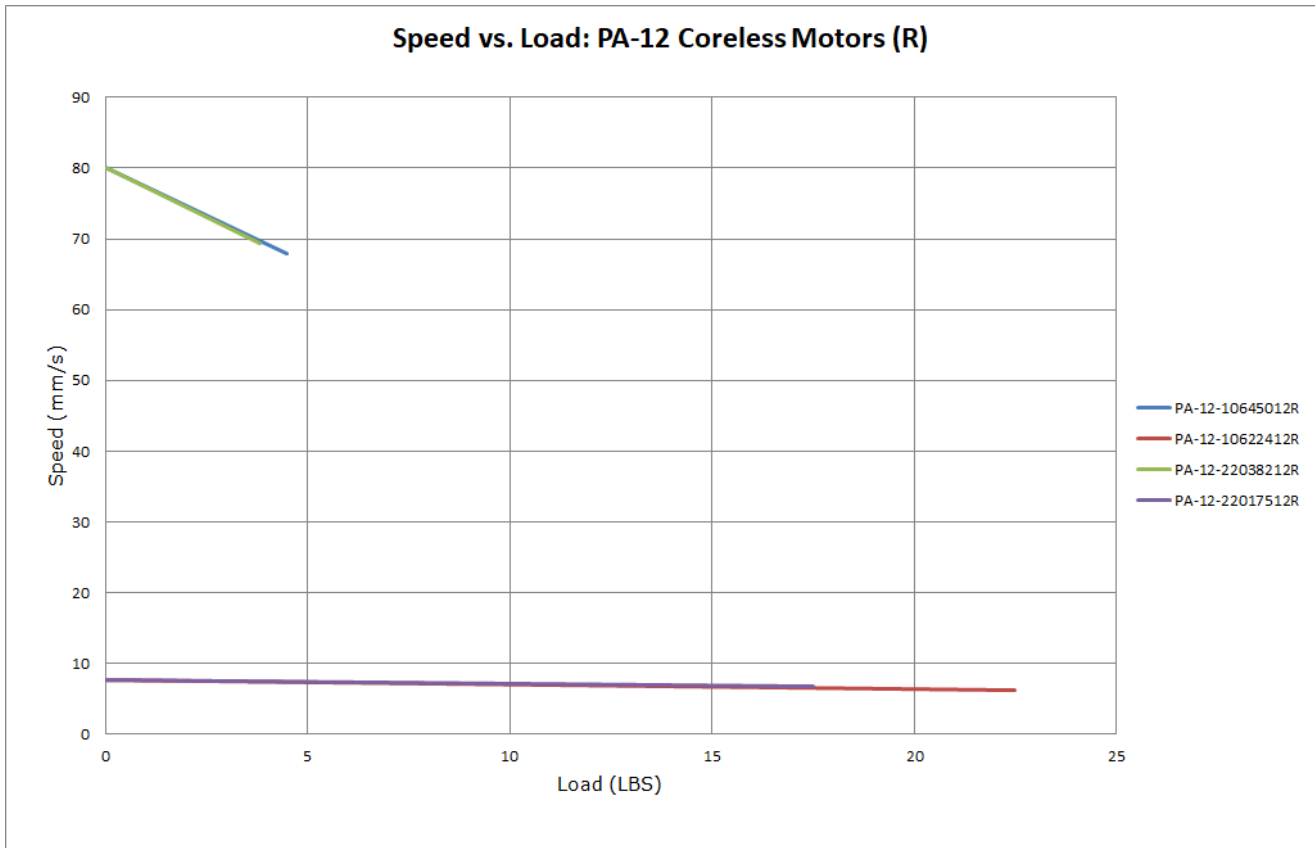


Current vs Load Cored (T)

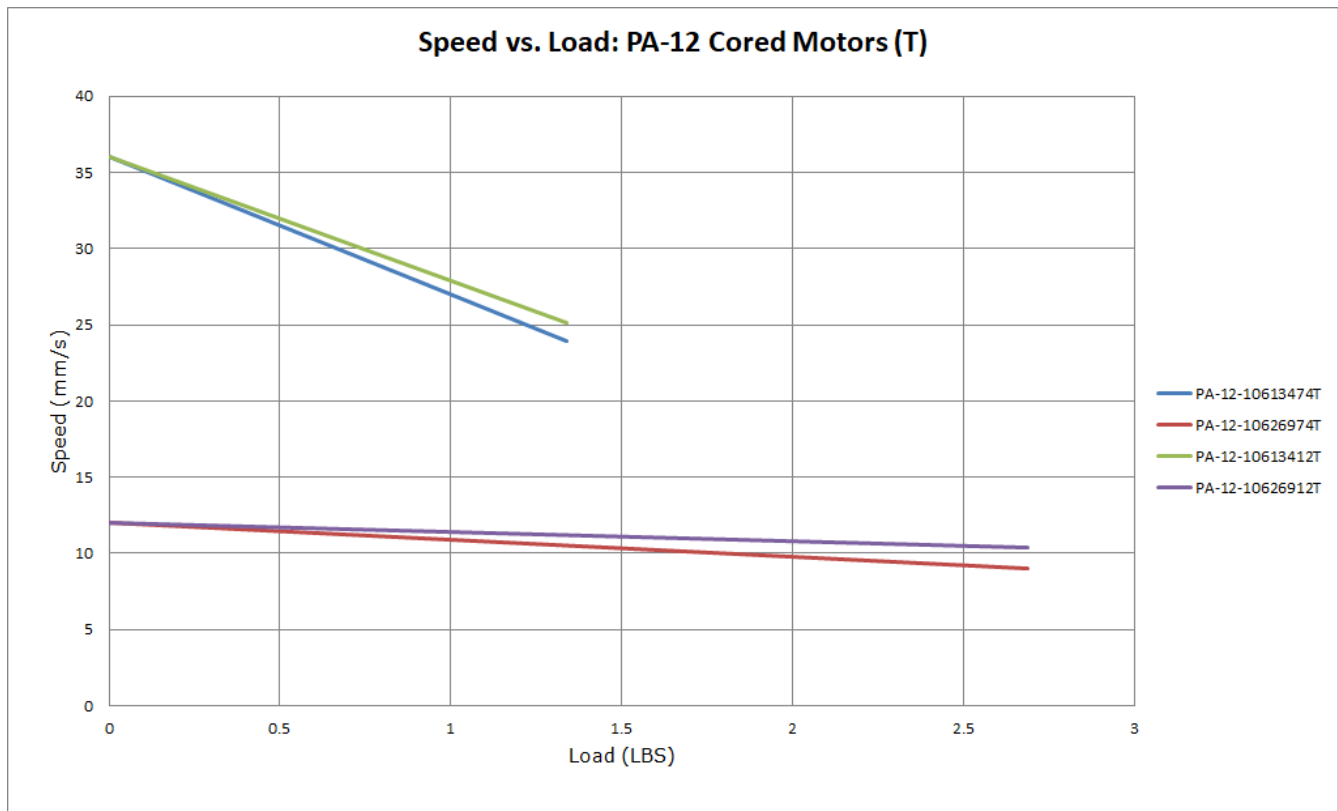




Speed vs Load Coreless (R)



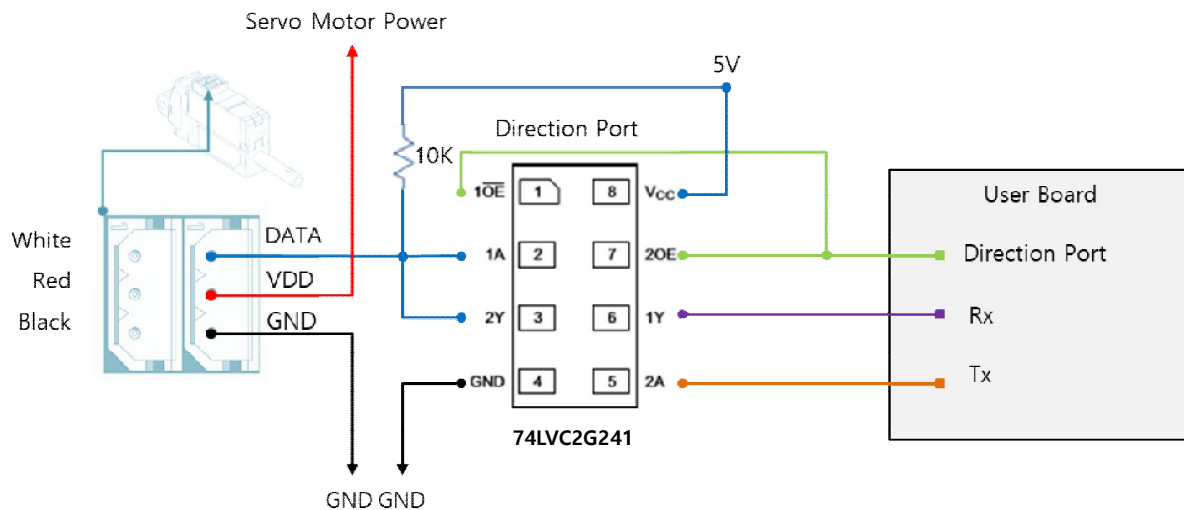
Speed vs Load Cored (T)



Feedback Specifications



TTL/PWM - 3Pin Connector

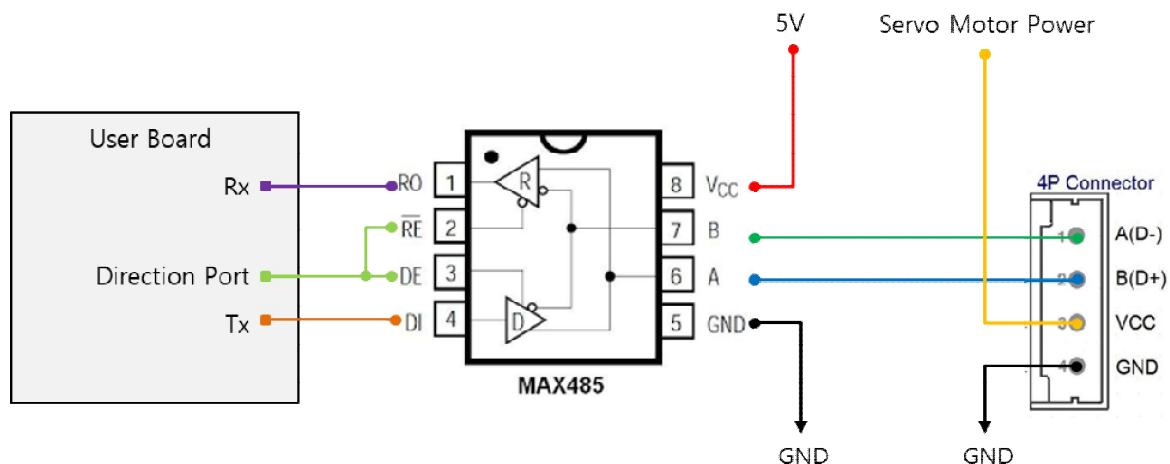


The direction of data signal for Tx and Rx of TTL level will be determined according to the level of direction_port as below.

- The level of "direction_port" is LOW :Data signal will be inputted to Rx.
- The level of "direction_port" is HIGH :Tx signal will be outputted as Data.

RS-485 - 4Pin Connector

PIN NUMBER(COLOR)	PIN NAME	FUNCTION(RS485)
1 (Yellow)	D-	RS485 -
2 (White)	D+	RS485 +
3 (Red)	VCC	Power +
4 (Black)	GND	Power -



※If the power is supplied from outside, you can connect to 485 D+, 485 D- only.

You can convert TX and RX mode by controlling "Direction_Port pin" in above circuit.

- The level of "direction_port" is LOW : Data signal will be inputted to Rx.
- The level of "direction_port" is HIGH : Tx signal will be outputted as Data

Included Components



1. Hinge Shaft (1pc)
2. Hinge Base (1pc)
3. Rod End Tip (1pc)
4. Hinge (1pc)
5. M2.5x6 Screws (3pcs)
6. M3 Nut (2pcs)
7. Wire (PF Version)
4Pin Molex to Molex (RS-485)
8. Wire (PT Version)
3Pin Molex to Molex
(TTL) & S-02 to Molex (PWM)

#6 M3 nut can be used to fix the hinge and hinge base. The M3 nut can also be used between rod-end and rod-end tip as a stopper.



