PROGRESSIVE AUTOMATIONS
FORWARD THINKING

PA-12

User Manual

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Have any queries? Our expert engineers are here to help!

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Specifications

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 Alluminum Alloy / Stainless Steel & 2 Polyketone Gears / Stainless Steel Rod	
Motor Type / Watt	Coreless Motor / 26W	
Recomended 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 Alluminum Alloy / Stainless Steel & 2 Polyketone Gears / Stainless Steel Rod	
Motor Type / Watt	Coreless Motor / 26W	
Recomended Duty Cycle	50%	
Communication	RS-485	

Positional Accuracy		0.05mm (50μm)
Mechanical Backlash		0.05mm (50μm)
Positional Sensor		10K Linear Potentiometer
Input Voltage		12.1V (Rated)
Current Consumption	Idle	30mA at 12.0V
	Max (Stall)	2.3A at 12.1V
Audible Noise		Approx. 50db at 1m
Communication		RS-485
LED Indication		7 Error Indications: (Overload, Checksum, Data Range, Overheat, Stroke Limit, Input Voltage, Instruction Error)
Micro Controller		32bit ARM Core, 4096 Resolution (A/D Converter)
Pulse Range		900μm (Retracted) - 1500μm (Center) - 2100μm (Extended)
Parameter Setting		Programmable via PC Software
Ingress Protection		IP-54 (Dust and Water Resistant)
Size/Weight (exclding rod-end & hinge)	27mm	57.5mm (L) × 29.9mm (W) × 15mm (H) / Approx. 46-65g
	56mm	111.5mm (L) × 36mm (W) × 18mm (H) / Approx. 128g
Operating Temperature		-10 to 60°C
Included Accessories		See page 9
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, 0.08×60 (22AWG) or RS-485 (F version): Molex to Molex Type (Molex 0510650400), 4pins) / 200mm length, 0.08×6022AWG)

Specifications

Coreless Motors (T)

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 Alluminum Alloy / Stainless Steel & 2 Polyketone Gears / Stainless Steel Rod			
Motor Type / Watt	Cored Motor / 4.2W			
Recomended Duty Cycle	50%			
Communication	TTL/PWM			

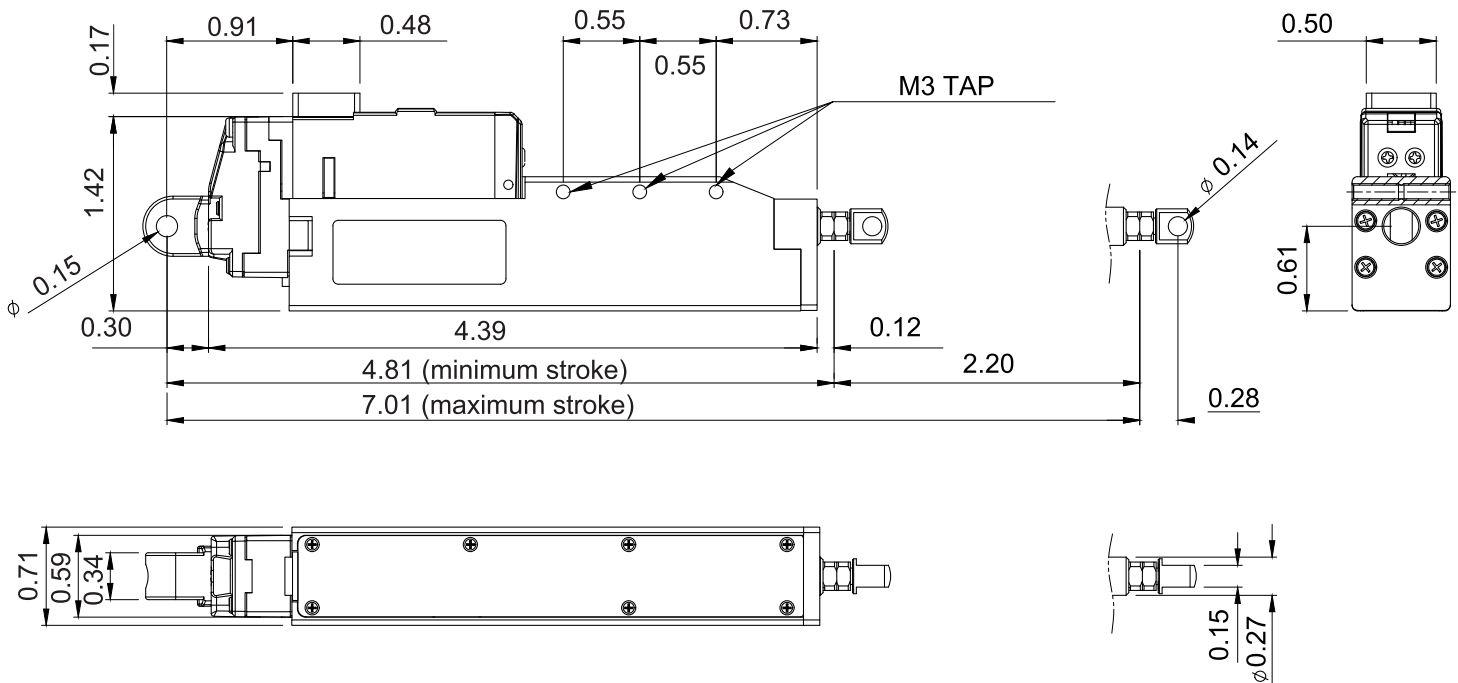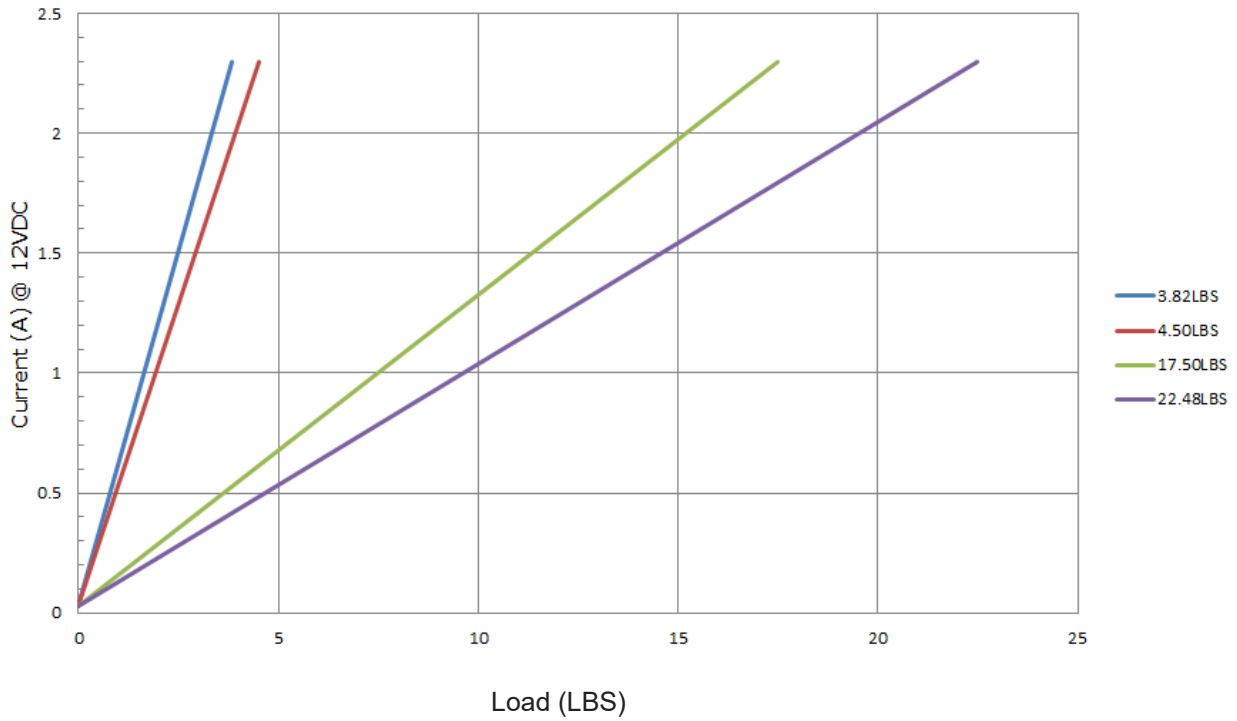| Positional Accuracy		0.05mm (50μm)
Mechanical Backlash		0.05mm (50μm)
Positional Sensor		10K Linear Potentiometer
Input Voltage		12.1V / 7.4V (Rated)
Current Consumption	Idle	30mA at 12.0V / 25mA at 7.4V
	Max (Stall)	0.33A at 12.1V / 0.46A at 7.4V
Audible Noise		Approx. 50db at 1m
Communication		TTL/PWM
LED Indication		7 Error Indications: (Overload, Checksum, Data Range, Overheat, Stroke Limit, Input Voltage, Instruction Error)
Micro Controller		32bit ARM Core, 4096 Resolution (A/D Converter)
Pulse Range		900μm (Retracted) - 1500μm (Center) - 2100μm (Extended)
Parameter Setting		Programmable via PC Software
Ingress Protection		IP-54 (Dust and Water Resistant)
Size/Weight (excliding rod-end & hinge)	27mm	57.5mm (L) × 29.9mm (W) × 15mm (H) / Approx. 46-65g
Operating Temperature		-10 to 60°C
Included Accessories		See page 9
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, 0.08×60 (22AWG) or RS-485 (F version): Molex to Molex Type (Molex 0510650400), 4pins) / 200mm length, 0.08×6022AWG)

Dimensions

1.06" Model
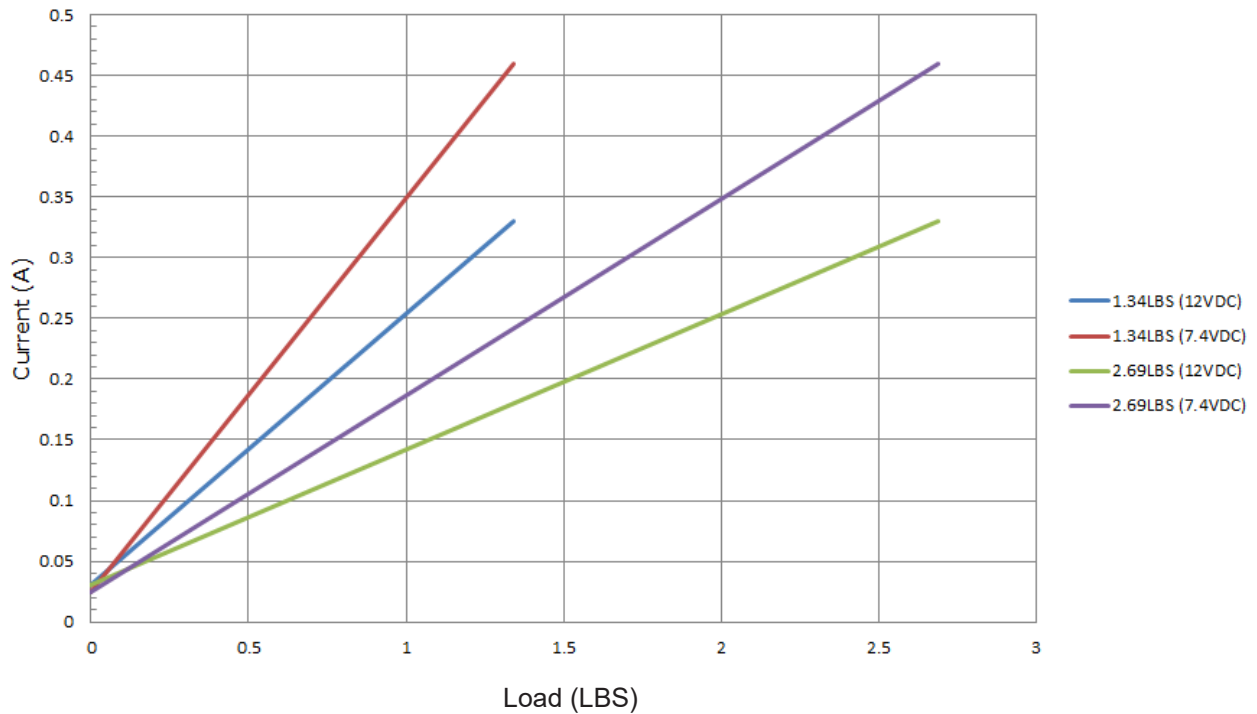
(Dimensions in inches)
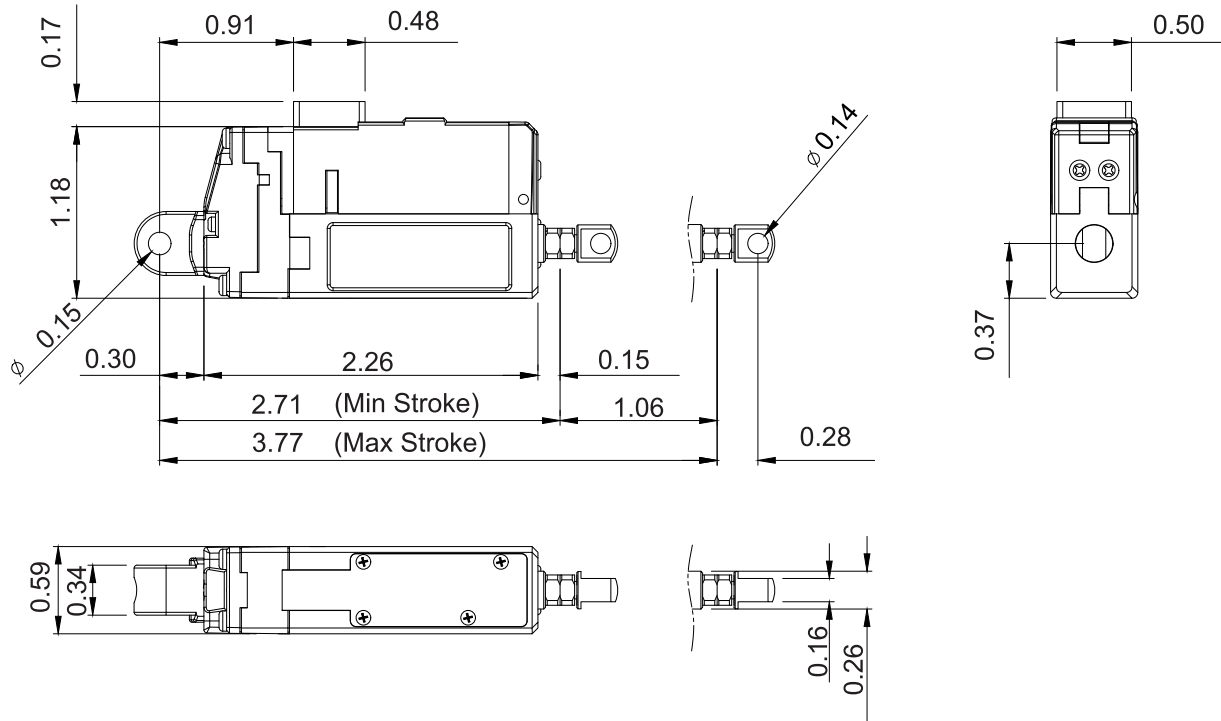
2.20" Model

(Dimensions in inches)

Current vs Load Coreless (R)
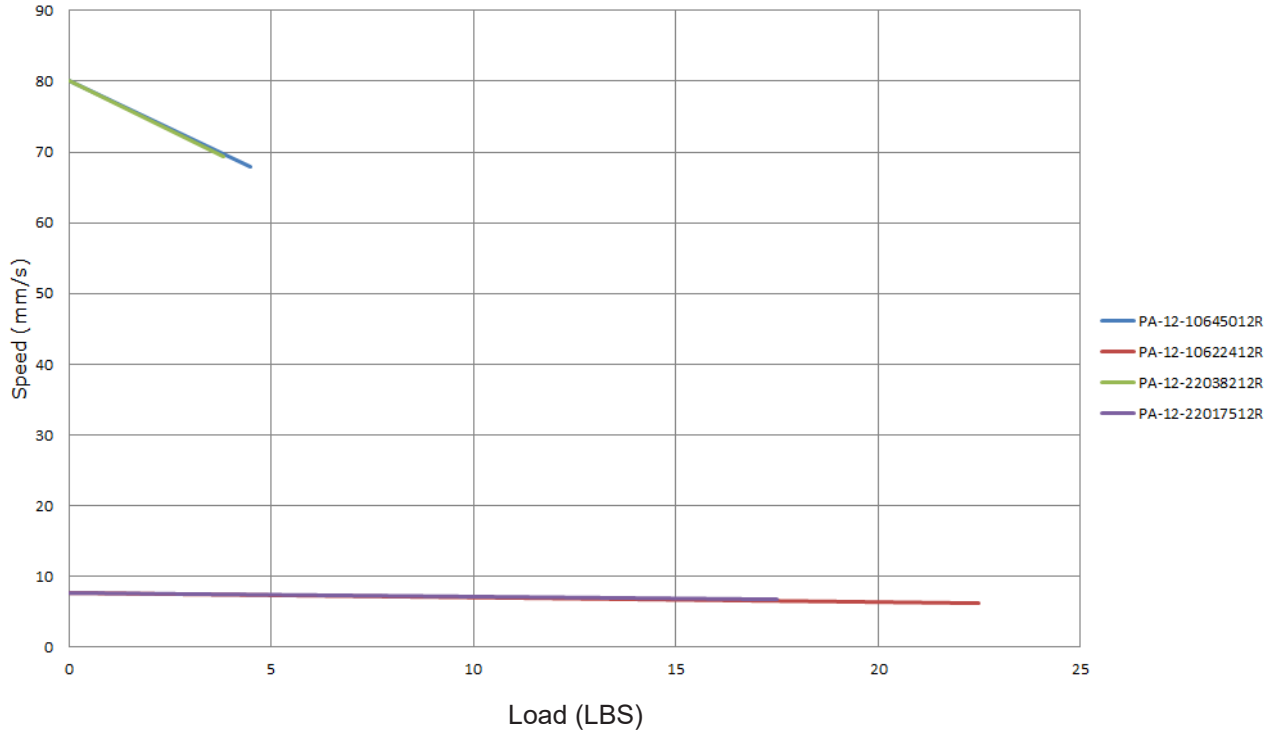
Current vs. Load: PA-12-Coreless (R) Linear Actuator

Legend:
- 3.82LBS
- 4.50LBS
- 17.50LBS
- 22.48LBS

Y-axis: Current (A) @ 12VDC
X-axis: Load (LBS)

Current vs Load Cored (T)

Current vs. Load: PA-12-Cored (T) Linear Actuator

Legend:
- 1.34LBS (12VDC)
- 1.34LBS (7.4VDC)
- 2.69LBS (12VDC)
- 2.69LBS (7.4VDC)

Y-axis: Current (A)
X-axis: Load (LBS)

Speed vs Load Coreless (R)

Speed vs. Load: PA-12-Coreless Motors (R)

Legend:
- PA-12-10645012R
- PA-12-10622412R
- PA-12-22038212R
- PA-12-22017512R

Y-axis: Speed (mm/s), X-axis: Load (LBS)

Speed vs Load Cored (T)

Speed vs. Load: PA-12-Cored Motors (T)

Legend:
- PA-12-10613474T
- PA-12-10626974T
- PA-12-10613412T
- PA-12-10626912T

Y-axis: Speed (mm/s), X-axis: Load (LBS)
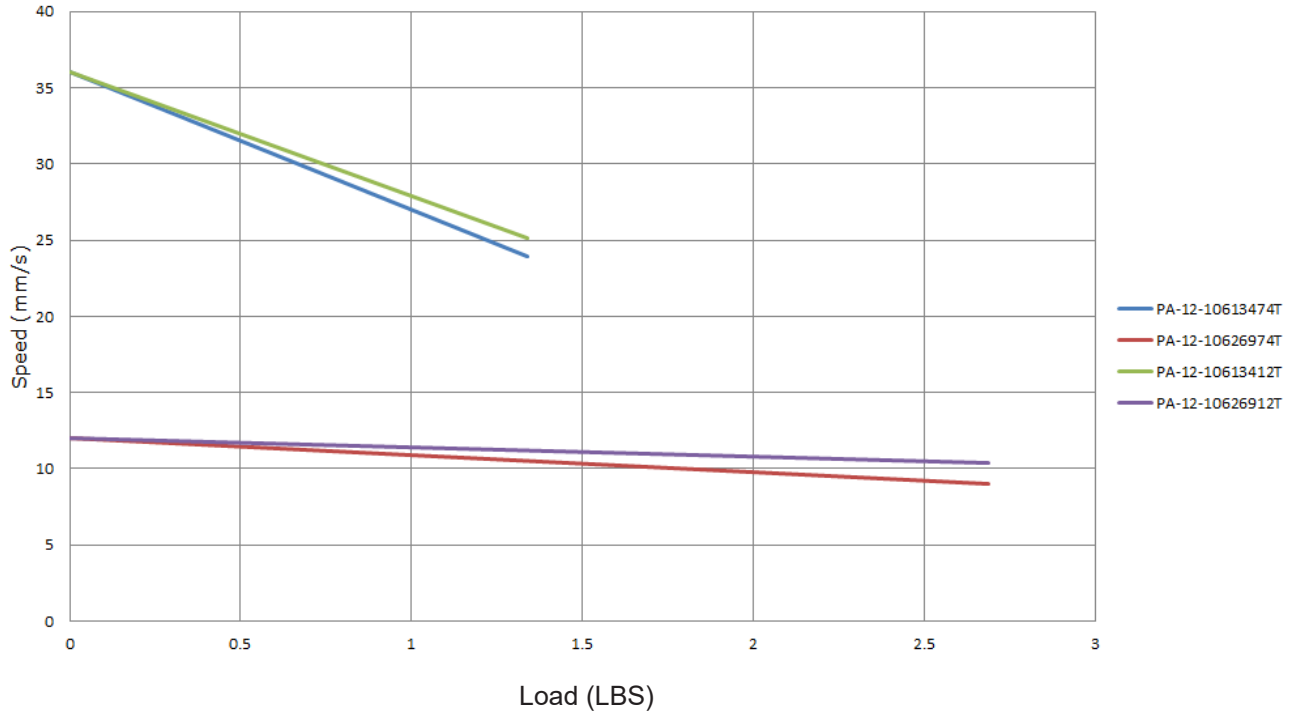
Feedback Specifications

TTL/PWM - 3Pin Connector


< HALF DUPLEX UART >
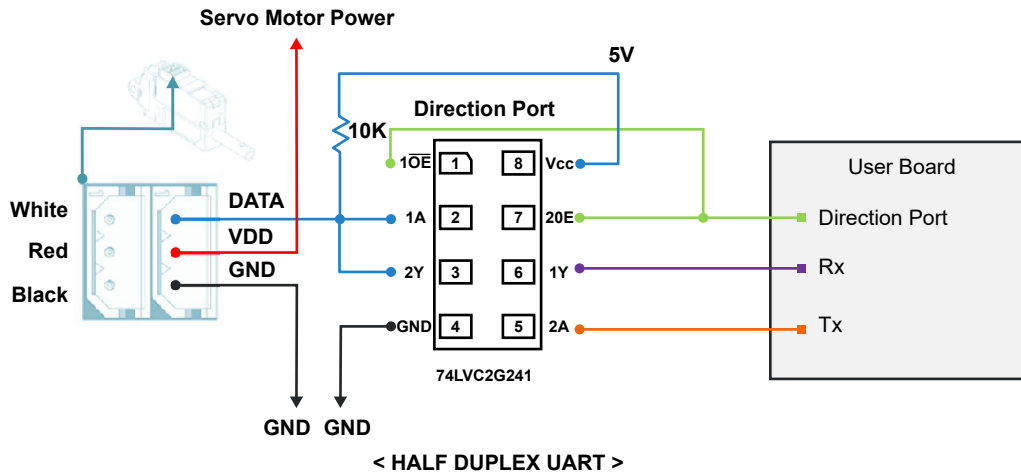
The direction of data signal for TxD and RxD of TTL level will be determined according to the level of direction_port as below.

*   The level of "direction_port" is LOW :Data signal will be inputted to RxD.
*   The level of "direction_port" is HIGH :TxD 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 -
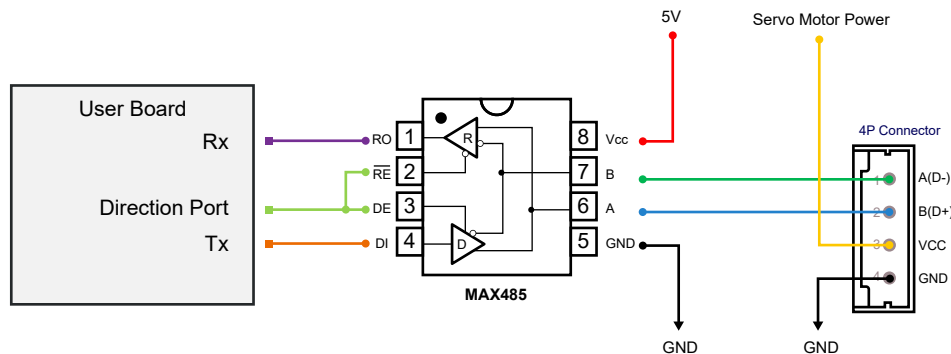
If the power is supplied from outside, you can connect to 485 D+, 485 D- only.
You can convert TX and RX mode by controlling "Direction_Port pin" in above circuit.

*   The level of "direction_port" is LOW : Data signal will be inputted to RxD.
*   The level of "direction_port" is HIGH : TxD signal will be outputted as Data

Included Accessories

No.	Part	Qty.
1	Hinge Shaft	1
2	Hinge Base	1
3	Rod End Tip	1

No.	Part	Qty.
4	Hinge	1
5	M2.5x6 Screws	3
6	M3 Nut	2

#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.

Rod End Tip

Rod End

M3 Nut

Optional Accessories

BRK-12

(Dimensions in inches)

PRT-12

LC-12