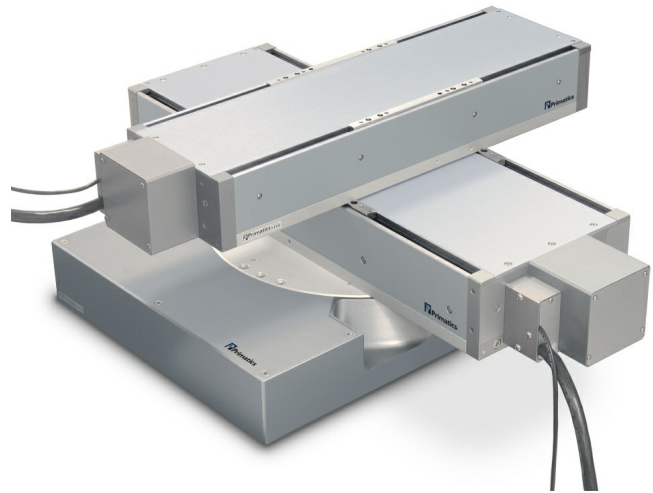


XY stack of PLG210x300mm with in-line motor mount

XYT stack of PLG160 and PLG210 Frameless Motor Stages on PLR350



## Features

- Travel to 600mm
- Loads up to 100kg
- Precision Ballscrew Drive
- Integrated Frameless Servo Motor or NEMA34 Motor Mount
- Internal Linear or Rotary encoder, resolution to 0.1um
- Direct XY stacking
- Failsafe Brake Option
- Protective Belt Option for dirty environments
- Clean Room Options

## Overview

Primatics PLG210 Series linear positioning stage is designed for fast integration into any system. Ideal for demanding applications such as inspection, assembly and material handling, the PLG210 offers a variety of configuration options to suit many requirements. The precision ballscrew drivetrain offers excellent repeatability and trust for many applications.

## Features

Standard features include adjustable forward and reverse limit sensors, a home sensor and a protective hard cover. Models cover travel from 100 to 600mm. Two PLG210's can be directly stacked for XY motion.

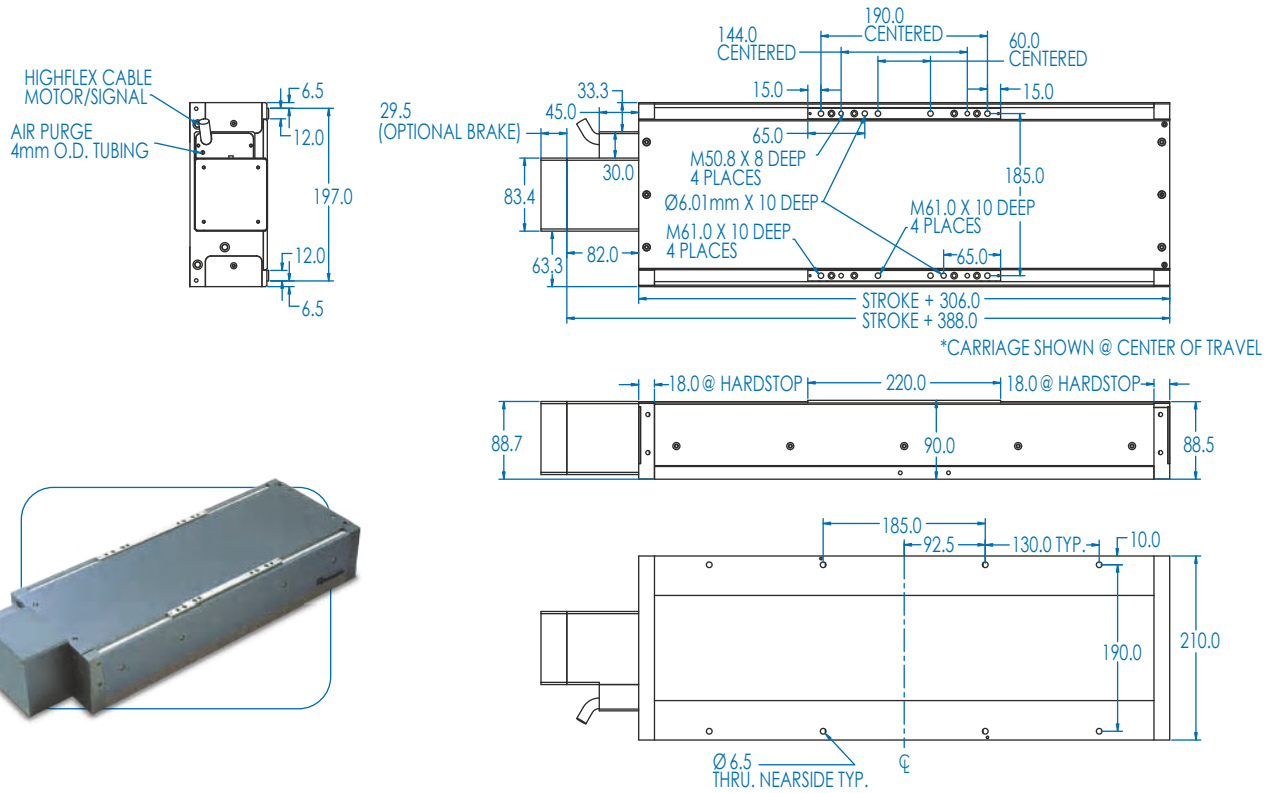
## Options

5mm lead ballscrew is standard and a 10mm lead is optional. A common configuration includes the integrated Frameless Motor option which is a brushless servo motor built directly on the ballscrew. This yields a compact stage relative to the in-line NEMA34 motor mount configuration. An internal rotary encoder or linear encoder (with internal cable management) are standard offerings as is an internal fail-safe brake.

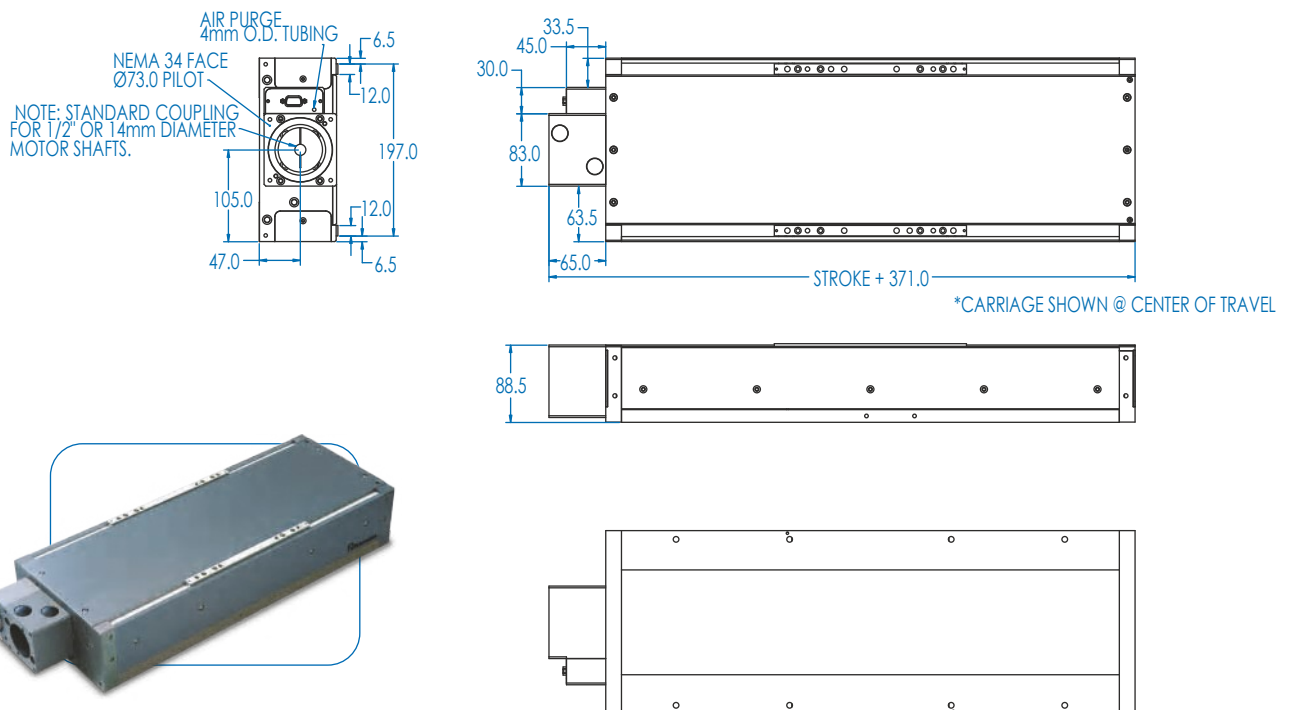
For special environments, models of the PLG210 can be prepared for clean room operation (up to Class 10), or vacuum operation (medium vacuum), or equipped with protective belts and seals for dirty environments.



## Dimensions - Frameless Motor



## Dimensions - In-Line NEMA 34 Mount



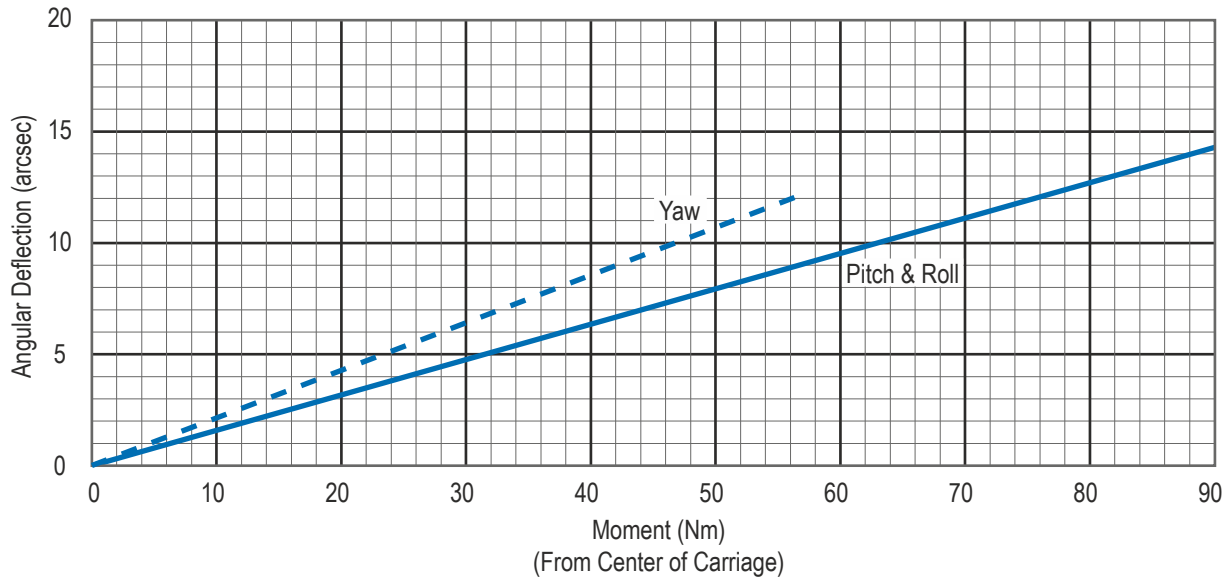
## Specifications

Specifications	Notes	-100	-200	-300	-400	-600
Travel (mm)		100	200	300	400	600
Positional Accuracy Over Total Travel ( $\mu\text{m}$ )	1, 2, 3	+/- 6	+/- 9	+/- 12	+/- 14	+/- 18
Positional Accuracy with Linear Encoder ( $\mu\text{m}$ )	2	+/- 3	+/- 5	+/- 6	+/- 7	+/- 10
Error Mapped Accuracy with E6 Encoder ( $\mu\text{m}$ )		+/- 1.4				+/- 2.0
Error Mapped Accuracy with E4 Encoder ( $\mu\text{m}$ )		+/- 1.0				+/- 1.5
Bi-directional Repeatability ( $\mu\text{m}$ )	1, 2,3	+/- 2.0				
Bi-directional Repeatability with Linear Encoder ( $\mu\text{m}$ )	2	+/- 0.5 (E4 encoder); +/- 1.0 (E6 encoder); +/- 2.0 (E2 encoder)				
Straightness of Travel Over Total Travel ( $\mu\text{m}$ )	2	+/- 2.5	+/- 3	+/- 4	+/- 4.5	+/- 7
Flatness of Travel Over Total Travel ( $\mu\text{m}$ )	2	+/- 1.5	+/- 2.5	+/- 3	+/- 4	+/- 6
Max Speed (mm/sec)	3	300				320
Direct Loading Capacity (kg)		100				
Axial Loading Capacity (kg)		50				
In-Line Rotational Inertia ( $\text{kg}\cdot\text{m}^2$ )		2.10E-4	2.42E-4	2.75E-4	3.07E-4	3.71E-4
Frameless Motor Rotational Inertia ( $\text{kg}\cdot\text{m}^2$ )		2.51E-4	2.83E-4	3.15E-4	3.48E-4	4.12E-4
Minimum Resolution with Linear Encoder ( $\mu\text{m}$ )		0.1				
Pitch Moment Capacity (N-m)		75				
Roll Moment Capacity (N-m)		90				
Yaw Moment Capacity (N-m)		70				
In-Line Stage Weight (kg)		18.2	20.5	22.7	25	29.5
Frameless Motor Stage Weight (kg)		19.1	21.4	23.6	25.9	30.5

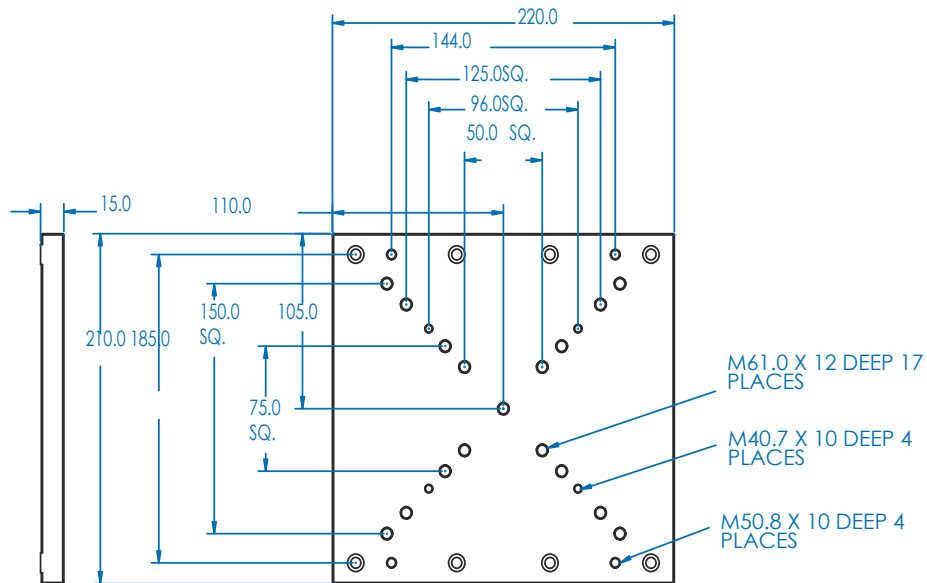
Notes: 1 - For In-Line / Frameless motor mounts, 1250 line rotary encoder; 2 - Measured 50mm above center of carriage; 3 - 5mm lead ballscrew. All specifications subject to change without notice.

Stage Information	PLG210...D1	PLG210...D2
Carriage Mass (kg)	3.6	
Maximum Acceleration, unloaded (G's)	1.0	
Maximum Breakaway Torque (N-m)	0.2	0.31
Maximum Running Torque (N-m)	0.17	0.25
Maximum Motor Bus Voltage (VDC)	170	
Length of Cable (mm)	350	
Life at Listed Specification (km)	5000	

Carriage Stiffness



Tabletop Accessory



Motor Data

Parameter	Notes	M1-2 (NEMA 34 Rotary)	M4-7 (Frameless)
Motor Type		Brushless Servo	
Continuous Torque (N-m)	1	1.7	1.0
Continuous Current (Arms)	1	11	7.4
Peak Torque (N-m)	2	5.3	11.5
Peak Current (Arms)	2	36	84
Torque Constant (N-m/Arms)		0.16	0.14
Back EMF Constant (V/Krpm)		16.6	14.3
Winding Resistance (ohms)		0.23	0.3
Winding Inductance (mH)		1.1	0.8
Thermal Resistance (C/W)		0.98	1.5
Poles		8	6
Rotor Inertia (kg-m <sup>2</sup> )		2.03E-4	1.13E-4
Hall Sensor Power		5 to 24VDC, 50mA	
Hall Outputs		Open collector, current sinking, 20mA max	
Weight (kg)		0.93	0.9
Encoder power		5VDC +/- 5%, 180mA	
Output		Square wave differential line driver 4000 lines/rev	See Encoder Data below
Index		Synchronized pulse, duration equal to one resolution bit	

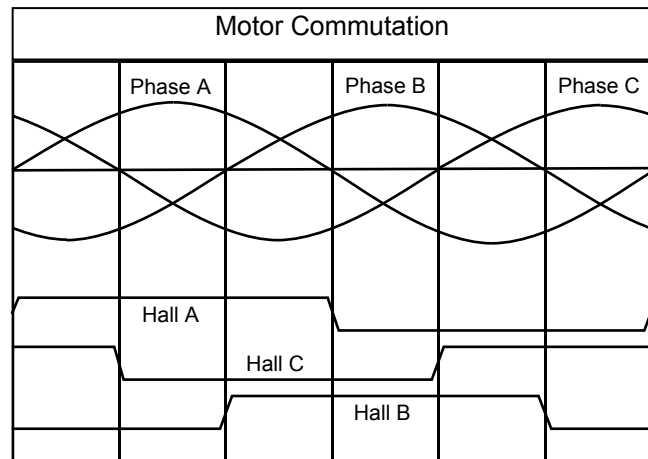
Notes: 1 - At 25°C maximum temperature rise; 2 - At 10% duty cycle and 1 second maximum. All specifications subject to change without notice.

Encoder Data

Parameter	Value
Input Power (VDC)	5VDC +/- 5%, 150mA
Output	Square wave differential line driver
Index	Synchronized pulse, duration equal to one resolution bit
Max Speed (m/sec)	2.6 (E2 encoder) 1.3 (E5, E9, E0 encoder) 0.6 (E6 encoder) 0.3 (E4 encoder)

Brake Data

Parameter	Value
Input Power (VDC)	24VDC, 0.5A
Holding Force, 5mm lead (kg)	50.0



## Connectors

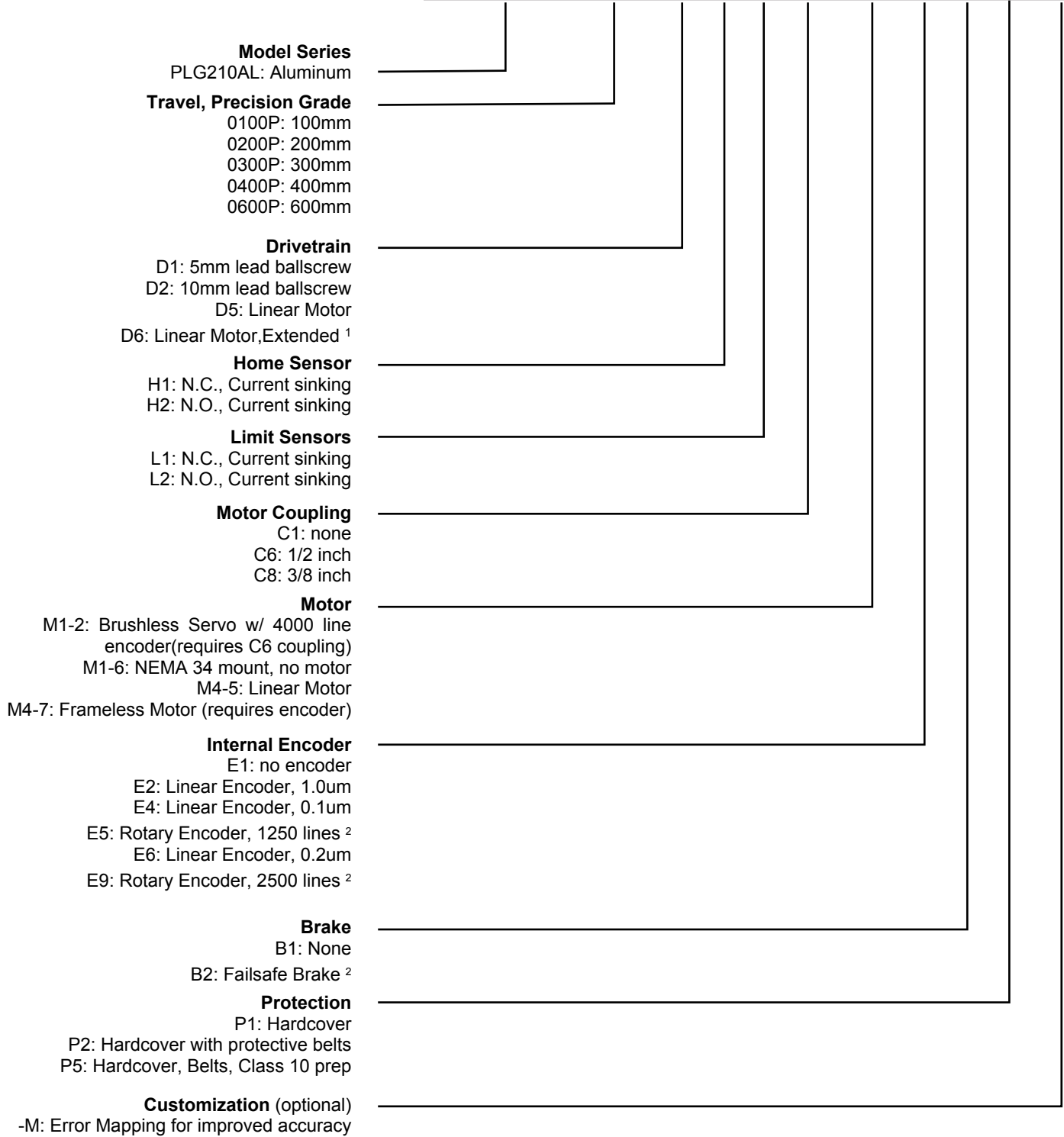
In-Line, no internal encoder	
Connector Type: Dsub, 9 pins Mates with Dsub, 9 sockets	
Pin	Function
1	Limit Power (12-24VDC)
2	Limit Power Return and Signal Common
3	Forward Limit - Activates at Full Forward Travel
4	Reverse Limit - Activates at Full Reverse Travel
5	Home
6	Brake+ (with optional brake)
7	Brake- (with optional brake)
8	No connection
9	No connection

In-Line, with internal encoder		
Connector Type: High Density Dsub, 15 pins Mates with High Density Dsub, 15 sockets		
	Without Brake	With Brake Option
Pin	Function	
1	Limit Power (12-24VDC)	
2	Limit Power Return and Signal Common	
3	Forward Limit - Activates at Full Forward Travel	
4	Reverse Limit - Activates at Full Reverse Travel	
5	Home	
6	Not used	Brake+
7	Encoder Shield	Brake-
8	Encoder 5V	
9	Encoder Power Return	
10	Encoder A+	
11	Encoder A-	
12	Encoder B+	
13	Encoder B-	
14	Encoder I+	
15	Encoder I-	

Servo Motor (NEMA34 or Frameless)	
Connector: Cannon 192926-0480 Size 20, 28 pins	
Pin	Function
A	Motor Phase A
B	Motor Phase B
C	Motor Phase C
D	Motor Shield
E	Encoder 5V
F	Encoder A+
G	Encoder A-
H	Encoder B+
J	Encoder B-
K	Encoder Shield
L	Limit Power (12-24VDC)
M	Limit Return and Signal Common
N	Home
P	Brake+ (with optional brake)
R	Brake- (with optional brake)
S	Signal Shield
T	Hall V+
U	Hall V-
V	Encoder Power Return
W	Encoder I+
X	Encoder I-
Y	Forward Limit - Activates at Full Forward Travel
Z	Reverse Limit - Activates at Full Reverse Travel
a	KEY
b	Hall A
c	Hall B
d	Temp switch (Frameless only)
e	Hall C

## PLG210 Model Configuration

Example: **PLG210AL 0200P D1 H1 L1 C1 M4-7 E5 B1 P2 - M**



Not all configurations are valid - consult factory for assistance. <sup>1</sup> Reduces travel by 75mm, <sup>2</sup> Ballscrew Only.