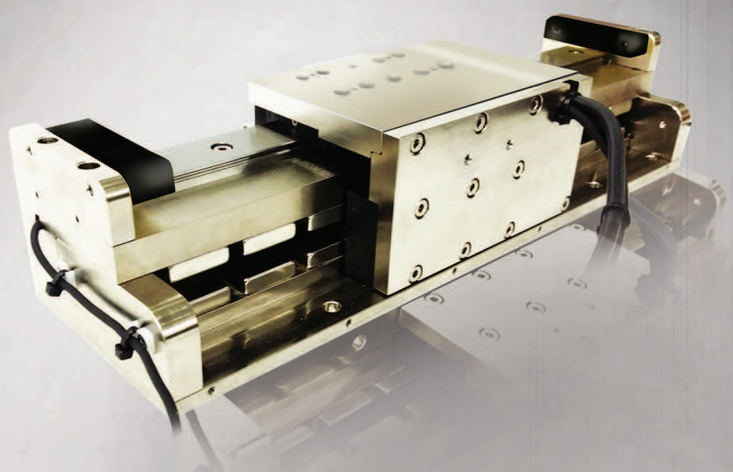

PCA SERIES
COMPACT ACTUATOR

PBA SYSTEMS

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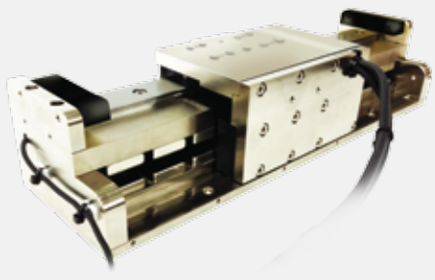
HIGHEST SPEED
smooth minimal ripple motion

PCA SERIES
COMPACT ACTUATOR



PCA Compact Actuator - Cost Effective Solution

Compact Modular actuators assembled onto the magnet tracks of DX20 , DX30 and DX50 series product. Its space saving and compact design offers clients a cost effective solution to fit into spaces where a standard linear servo actuator would not fit before.

Due to its lightweight nature, this actuator is highly suitable for use in multi-axis configurations where mass is of concern, especially suitable for Z axis applications.

Configurable with either digital or analogue encoders, PCA systems can achieve 80nm resolution in tandem with PBA Maxtune drives.

Application

- Semiconductor and Electronics
- Medical and Life Sciences
- Optics and Photonics
- Scanning and
- Digital Fabrication
- Packaging and Material Handling
- Automated Assembly

* Technical specifications subject to change without prior notice

PART NUMBERING SYSTEM

Coil Assembly

PCA - D5 - C2 - S - TM - 1.0 - FC - HC - E1.0 - 495 - 00

MOTOR MODEL

D2	DX20B
D3	DX30B
D5	DX50B

MOTOR SIZE

C1	Not available for DX20
C2	
C3	
C4	Not available for DX30
C5	Not available for DX30 & 50

CONNECTION TYPE

S	Series
P	Parallel

THERMAL PROTECTION

TC*	PT 100 Sensor
TM**	Thermostat Not available for DX20B

CABLE LENGTH***

0.5	0.5m
1.0	1.0m
2.0	2.0m
3.0	3.0m
4.0	4.0m
5.0	5.0m

POWER CABLE OPTIONS

NF	No Ferrite Core (Flying Leads)
FC	Ferrite Core (Recommended)
9NF	No Ferrite Core, D Sub 9 pins Female Connector
CNF	No Ferrite Core, Circular Quick Lock 6 pins Male Connector

DESIGN VERSIONS

00	Standard
01	Customized Version
	:

EFFECTIVE STROKE (mm)

60-360	D1 (DX20B) Min 60; Max 360 Increment by 60
60-480	D2 (DX30B) Min 60; Max 480 Increment by 60
75-495	D3 (DX50B) Min 75; Max 495 Increment by 60

ENCODER RESOLUTION

EA	Analog
E0.5	0.5 um
E1.0	1.0 um

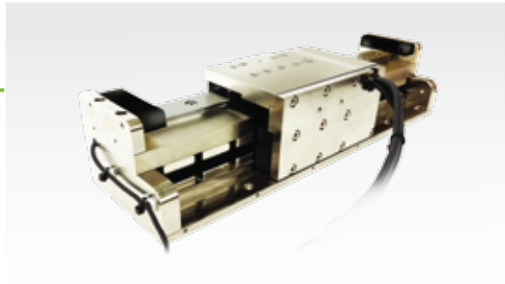
HALL SENSOR CONNECTOR OPTIONS

H	Flying Leads (No Connector)
HC	9 pins D Sub Male Connector
CHC	5 pins Circular Quick Lock Male Connector

* TC - Sensor output to temperature controller
** TM - On/Off switch, triggers at 100°C
*** Encoder, power & hall cable

PCA - D2

- Compact Actuator
- Peak force to 137N, Continuous force to 27N

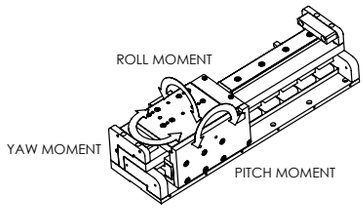


PCA SERIES
Compact Actuator

SPECIFICATION		MODEL			
		PCA-D2-C2		PCA-D2-C3	
Motor Parameters	**Unit**	S	P	S	P
Peak Force	N	92		137	
Continuous Force @ 120ºC*	N	18		27	
Peak Power @ 120ºC	W	744		1116	
Continuous Power @ 120ºC*	W	30		45	
Peak Current	A^{pk}	10.5	21	10.5	21
Continuous Current @ 120ºC*	A^{pk}	2.1	4.2	2.1	4.2
Continuous Stall Current @ 120ºC*	Arms	1.40	2.80	1.40	2.80
Force Constant	N/A^{pk}	8.7	4.4	13.1	6.5
Back EMF Constant	$V^{pk}/m/s$	10	5	15	7.5
Coil Resistance L-L @ 25ºC	Ohm	6.5	1.6	9.8	2.4
Coil Resistance L-L @ 120ºC*	Ohm	9.0	2.2	13.5	3.4
Inductance L-L @ 1kHz	mH	1.53	0.38	2.3	0.57
Motor Constant @ 25ºC*	N/√W	3.95		4.84	
Motor Constant @ 120ºC*	N/√W	3.36		4.11	
Max. Terminal Voltage	Vdc	400			
Thermal Resistance @ 120ºC*	ºC/W	3.19		2.13	
Max. Coil Temperature	ºC	120			
Electrical Cycle Length	mm	30			
Specifications					
Effective Stroke (S)	mm	60 120 180 240 300 360	60 120 180 240 300 360	60 120 180 240 300 360	60 120 180 240 300 360
Repeatability**	um	±1.5			
Accuracy***	um	±15	±25 ±15 ±25	±15	±25 ±15 ±25
Straightness***	um	±8	±15 ±8 ±15	±8	±15 ±8 ±15
Flatness***	um	±8	±10 ±8 ±10	±8	±10 ±8 ±10
Linear Guide Rated Load and Static Moment					
Model Code		LM Guide			
Block Quantity		2			
Maximum bearing load	N	7,200			
Pitch moment	Nm	68.2			
Yaw moment	Nm	68.2			
Roll moment	Nm	66.4			

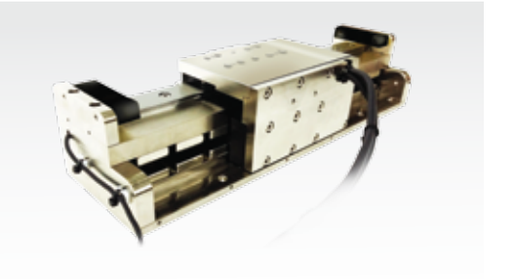
Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, heat dissipation by natural convection, without heat sink attached.
3. Specifications tolerance – inductance +/-30%, all others +/-10% (for motor parameters).
4. Peak force and current - 1 second duration.
5. ** Depend on encoder resolution.
6. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
7. For customized stroke length, contact PBA.
8. For different motor models, contact PBA.



PCA - D2

- Compact Actuator
- Peak force to 229N, Continuous force to 46N

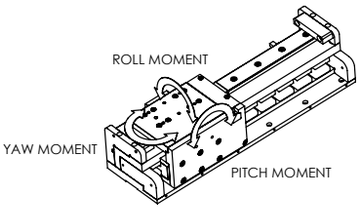


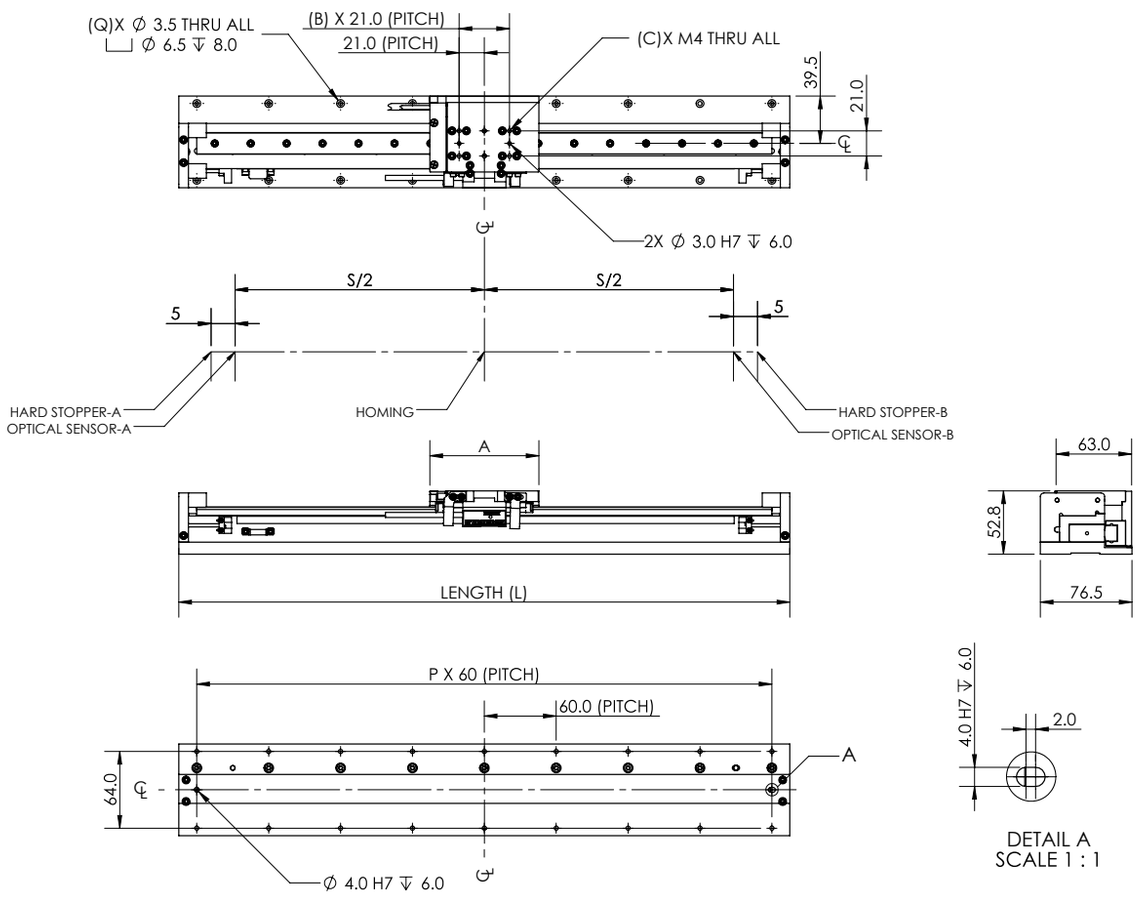
PCA SERIES
Compact Actuator

SPECIFICATION		MODEL			
		PCA-D2-C4		PCA-D2-C5	
Motor Parameters	**Unit**	S	P	S	P
Peak Force	N	183		229	
Continuous Force @ 120ºC*	N	37		46	
Peak Power @ 120ºC	W	1488		1860	
Continuous Power @ 120ºC*	W	60		74	
Peak Current	A^{pk}	10.5	21	10.5	21
Continuous Current @ 120ºC*	A^{pk}	2.1	4.2	2.1	4.2
Continuous Stall Current @ 120ºC*	Arms	1.40	2.80	1.40	2.80
Force Constant	N/A^{pk}	17.4	8.7	21.8	10.9
Back EMF Constant	V^{pk}/m/s	20.1	10	25.1	12.5
Coil Resistance L-L @ 25ºC	Ohm	13	3.3	16.3	4.1
Coil Resistance L-L @ 120ºC*	Ohm	18.0	4.5	22.5	5.6
Inductance L-L @ 1kHz	mH	3.06	0.77	3.83	0.96
Motor Constant @ 25ºC*	N/√W	5.59		6.24	
Motor Constant @ 120ºC*	N/√W	4.75		5.31	
Max. Terminal Voltage	Vdc	400			
Thermal Resistance @ 120ºC*	ºC/W	1.60		1.28	
Max. Coil Temperature	ºC	120			
Electrical Cycle Length	mm	30			
Specifications					
Effective Stroke (S)	mm	60 120 180 240 300	60 120 180 240 300	60 120 180 240	60 120 180 240
Repeatability**	um	±1.5			
Accuracy***	um	±15	±25 ±15 ±25	±15 ±25	±15 ±25
Straightness***	um	±8	±15 ±8 ±15	±8 ±15	±8 ±15
Flatness***	um	±8	±10 ±8 ±10	±8 ±10	±8 ±10
Linear Guide Rated Load and Static Moment					
Model Code		LM Guide			
Block Quantity		2			
Maximum bearing load	N	10,800		14,400	
Pitch moment	Nm	170.4		322.3	
Yaw moment	Nm	170.4		322.3	
Roll moment	Nm	99.6			

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, heat dissipation by natural convection, without heat sink attached.
3. Specifications tolerance – inductance +/-30%, all others +/-10% (for motor parameters).
4. Peak force and current - 1 second duration.
5. ** Depend on encoder resolution.
6. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
7. For customized stroke length, contact PBA.
8. For different motor models, contact PBA.



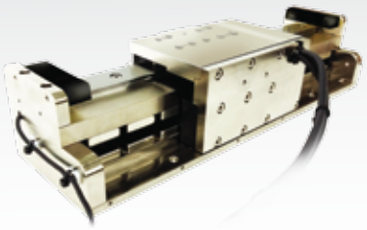


MOTOR MODEL	STROKE (S) mm	ACTUATOR LENGTH (L) mm	CARRIAGE LENGTH (A) mm	B	C	P	Q	SLIDER MASS kg	MODULE MASS kg
C2	60	180	61	2	6	2	6	0.4	1.9
	120	240				3	8		2.5
	180	300				4	10		3.1
	240	360				5	12		3.7
	300	420				6	14		4.3
	360	480				7	16		4.9
C3	60	210	91	3	8	3	8	0.5	2.4
	120	270				4	10		3.0
	180	330				5	12		3.6
	240	390				6	14		4.2
	300	450				7	16		4.8
	360	510				8	18		5.4
C4	60	240	121	5	12	4	10	0.5	3.4
	120	300				5	12		3.6
	180	360				6	14		4.2
	240	420				7	16		4.8
	300	480				8	18		5.4
C5	60	270	151	6	14	5	12	0.6	3.6
	120	330				6	14		4.2
	180	390				7	16		4.8
	240	450				8	18		5.4

* Technical specifications subject to change without prior notice

PCA - D3

- Compact Actuator
- Peak force to 145N, Continuous force to 29N

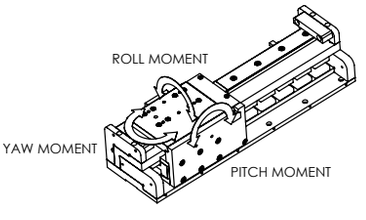


PCA SERIES
Compact Actuator

SPECIFICATION		MODEL	
		PCA-D3-C1	
Motor Parameters	**Unit**	S	P
Peak Force	N	145	
Continuous Force @ 120ºC*	N	29	
Peak Power @ 120ºC	W	695	
Continuous Power @ 120ºC*	W	28	
Peak Current	A^{pk}	11.81	23.63
Continuous Current @ 120ºC*	A^{pk}	2.36	4.73
Continuous Stall Current @ 120ºC*	Arms	1.75	3.50
Force Constant	N/A^{pk}	12.3	6.1
Back EMF Constant	V^{pk}/m/s	14.1	7.0
Coil Resistance L-L @ 25ºC	Ohm	4.8	1.2
Coil Resistance L-L @ 120ºC*	Ohm	6.6	1.7
Inductance L-L @ 1kHz	mH	3.00	0.75
Motor Constant @ 25ºC*	N/√W	6.46	
Motor Constant @ 120ºC*	N/√W	5.49	
Max. Terminal Voltage	Vdc	400	
Thermal Resistance @ 120ºC*	ºC/W	3.42	
Max. Coil Temperature	ºC	120	
Electrical Cycle Length	mm	60	
Specifications			
Effective Stroke (S)	mm	60 120 180 240 300 360 420 480	60 120 180 240 300 360 420 480
Repeatability**	um	±1.5	
Accuracy***	um	±15 ±25	±15 ±25
Straightness***	um	±8 ±15	±8 ±15
Flatness***	um	±8 ±10	±8 ±10
Linear Guide Rated Load and Static Moment			
Model Code		LM Guide	
Block Quantity		2	
Maximum bearing load	N	10,400	
Pitch moment	Nm	128.2	
Yaw moment	Nm	128.2	
Roll moment	Nm	132	

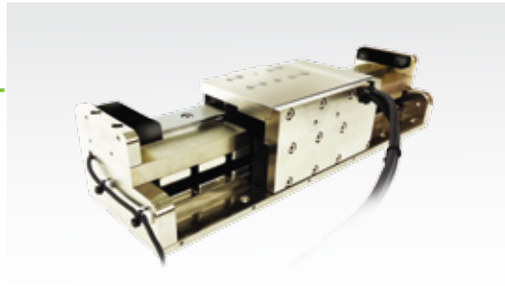
Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, heat dissipation by natural convection, without heat sink attached.
3. Specifications tolerance – inductance +/-30%, all others +/-10% (for motor parameters).
4. Peak force and current - 1 second duration.
5. ** Depend on encoder resolution.
6. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
7. For customized stroke length, contact PBA.
8. For different motor models, contact PBA.



PCA - D3

- Compact Actuator
- Peak force to 434N, Continuous force to 87N

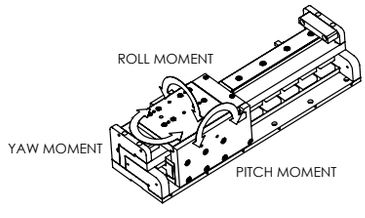


PCA SERIES
Compact Actuator

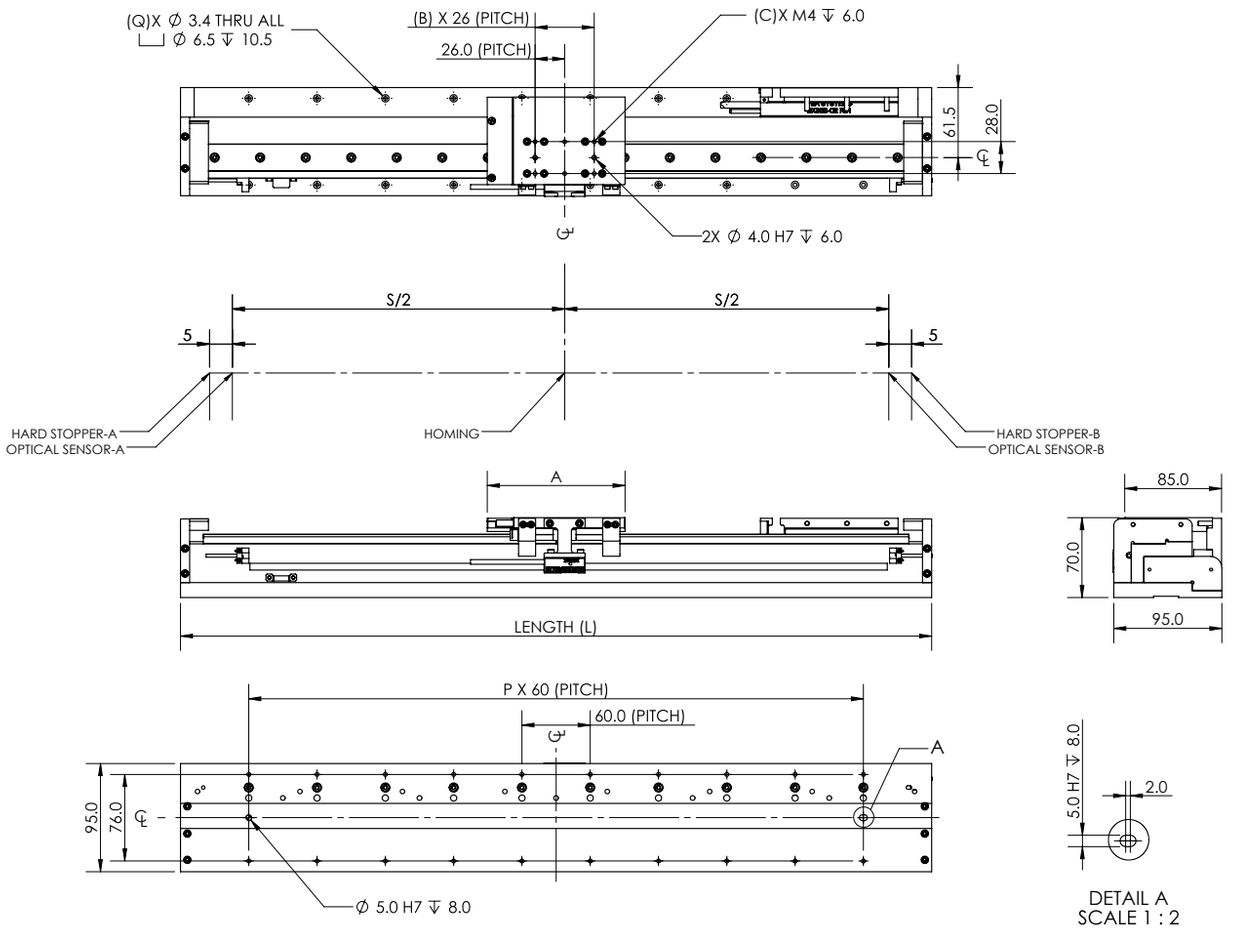
SPECIFICATION		MODEL			
		PCA-D3-C2		PCA-D3-C3	
Motor Parameters	**Unit**	S	P	S	P
Peak Force	N	289		434	
Continuous Force @ 120ºC*	N	58		87	
Peak Power @ 120ºC	W	1390		2086	
Continuous Power @ 120ºC*	W	56		83	
Peak Current	A^{pk}	11.81	23.63	11.81	23.63
Continuous Current @ 120ºC*	A^{pk}	2.36	4.73	2.36	4.73
Continuous Stall Current @ 120ºC*	Arms	1.75	3.50	1.75	3.50
Force Constant	N/A^{pk}	24.5	12.3	36.8	18.4
Back EMF Constant	V^{pk}/m/s	28.2	14.1	42.3	21.1
Coil Resistance L-L @ 25ºC	Ohm	9.6	2.4	14.4	3.6
Coil Resistance L-L @ 120ºC*	Ohm	13.3	3.3	19.9	5.0
Inductance L-L @ 1kHz	mH	6.00	1.50	9.00	2.25
Motor Constant @ 25ºC*	N/√W	9.13		11.18	
Motor Constant @ 120ºC*	N/√W	7.76		9.51	
Max. Terminal Voltage	Vdc	400			
Thermal Resistance @ 120ºC*	ºC/W	1.71		1.14	
Max. Coil Temperature	ºC	120			
Electrical Cycle Length	mm	60			
Specifications					
Effective Stroke (S)	mm	60 120 180 240 300 360 420 480	60 120 180 240 300 360 420 480	60 120 180 240 300 360 420	60 120 180 240 300 360 420
Repeatability**	um	±1.5			
Accuracy***	um	±15	±25	±15 ±25	±15 ±25	±15 ±25
Straightness***	um	±8	±15	±8 ±15	±8 ±15	±8 ±15
Flatness***	um	±8	±10	±8 ±10	±8 ±10	±8 ±10
Linear Guide Rated Load and Static Moment					
Model Code		LM Guide			
Block Quantity		2			
Maximum bearing load	N	10,400		15,600	
Pitch moment	Nm	128.2		345.5	
Yaw moment	Nm	128.2		345.5	
Roll moment	Nm	132		195	

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, heat dissipation by natural convection, without heat sink attached.
3. Specifications tolerance – inductance +/-30%, all others +/-10% (for motor parameters).
4. Peak force and current - 1 second duration.
5. ** Depend on encoder resolution.
6. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
7. For customized stroke length, contact PBA.
8. For different motor models, contact PBA.



PCA - D3



MOTOR MODEL	STROKE (S) mm	ACTUATOR LENGTH (L) mm	CARRIAGE LENGTH (A) mm	B	C	P	Q	SLIDER MASS kg	MODULE MASS kg
C1	60	180	61	2	6	1	4	0.6	4.2
	120	240				2	6		5.2
	180	300				3	8		6.2
	240	360				4	10		7.2
	300	420				5	12		8.2
	360	480				6	14		9.2
	420	540				7	16		10.2
	480	600				8	18		11.2
C2	60	240	121	4	10	2	6	0.8	4.5
	120	300				3	8		5.5
	180	360				4	10		6.5
	240	420				5	12		7.5
	300	480				6	14		8.5
	360	540				7	16		9.5
	420	600				8	18		11.0
	480	660				9	20		12.0
C3	60	300	181	6	14	3	8	1.0	4.8
	120	360				4	10		5.8
	180	420				5	12		6.8
	240	480				6	14		7.8
	300	540				7	16		8.8
	360	600				8	18		9.8
	420	660				9	20		10.8

PCA - D5

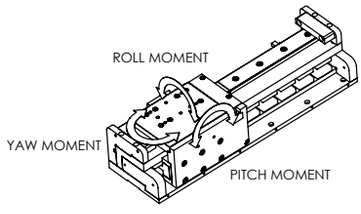
- Compact Actuator
- Peak force to 446N, Continuous force to 89N

PCA SERIES
Compact Actuator

SPECIFICATION		MODEL			
		PCA-D5-C1		PCA-D5-C2	
Motor Parameters	**Unit**	S	P	S	P
Peak Force	N	223		446	
Continuous Force @ 120ºC*	N	45		89	
Peak Power @ 120ºC	W	751		1502	
Continuous Power @ 120ºC*	W	30		60	
Peak Current	A^{pk}	13.13	26.25	13.13	26.25
Continuous Current @ 120ºC*	A^{pk}	2.63	5.25	2.63	5.25
Continuous Stall Current @ 120ºC*	Arms	2.10	4.20	2.10	4.20
Force Constant	N/A^{pk}	17	8.5	34	17
Back EMF Constant	V^{pk}/m/s	19.6	9.8	39.1	19.6
Coil Resistance L-L @ 25ºC	Ohm	4.2	1.1	8.4	2.1
Coil Resistance L-L @ 120ºC*	Ohm	5.8	1.5	11.6	2.9
Inductance L-L @ 1kHz	mH	3.11	0.78	6.22	1.56
Motor Constant @ 25ºC*	N/√W	9.58		13.55	
Motor Constant @ 120ºC*	N/√W	8.14		11.51	
Max. Terminal Voltage	Vdc	400			
Thermal Resistance @ 120ºC*	ºC/W	3.16		1.58	
Max. Coil Temperature	ºC	120			
Electrical Cycle Length	mm	60			
Specifications					
Effective Stroke (S)	mm	75 135 195 255 315 375 435 495	75 135 195 255 315 375 435 495	75 135 195 255 315 375 435 495	75 135 195 255 315 375 435 495
Repeatability**	um	±1.5			
Accuracy***	um	±15	±25 ±15 ±25	±15	±25 ±15 ±25
Straightness***	um	±8	±15 ±8 ±15	±8	±15 ±8 ±15
Flatness***	um	±8	±10 ±8 ±10	±8	±10 ±8 ±10
Linear Guide Rated Load and Static Moment					
Model Code		LM Guide			
Block Quantity		2			
Maximum bearing load	N	39,500			
Pitch moment	Nm	674			
Yaw moment	Nm	674			
Roll moment	Nm	636			

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, heat dissipation by natural convection, without heat sink attached.
3. Specifications tolerance – inductance +/-30%, all others +/-10% (for motor parameters).
4. Peak force and current - 1 second duration.
5. ** Depend on encoder resolution.
6. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
7. For customized stroke length, contact PBA.
8. For different motor models, contact PBA.



PCA - D5

- Compact Actuator
- Peak force to 893N, Continuous force to 179N

PCA SERIES
Compact Actuator

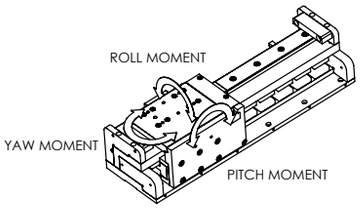
SPECIFICATION		MODEL			
		PCA-D5-C3		PCA-D5-C4	
Motor Parameters	**Unit**	S	P	S	P
Peak Force	N	669		893	
Continuous Force @ 120ºC*	N	134		179	
Peak Power @ 120ºC	W	2253		3004	
Continuous Power @ 120ºC*	W	90		120	
Peak Current	A^{pk}	13.13	26.25	13.13	26.25
Continuous Current @ 120ºC*	A^{pk}	2.63	5.25	2.63	5.25
Continuous Stall Current @ 120ºC*	Arms	2.10	4.20	2.10	4.20
Force Constant	N/A^{pk}	51	25.5	68	34
Back EMF Constant	$V^{pk}/m/s$	58.7	29.3	78.2	39.1
Coil Resistance L-L @ 25ºC	Ohm	12.6	3.2	16.8	4.2
Coil Resistance L-L @ 120ºC*	Ohm	17.4	4.4	23.2	5.8
Inductance L-L @ 1kHz	mH	9.33	2.33	12.44	3.11
Motor Constant @ 25ºC*	N/√W	16.59		19.16	
Motor Constant @ 120ºC*	N/√W	14.10		16.28	
Max. Terminal Voltage	Vdc	400			
Thermal Resistance @ 120ºC*	ºC/W	1.05		0.79	
Max. Coil Temperature	ºC	120			
Electrical Cycle Length	mm	60			

Specifications																														
Effective Stroke (S)	mm	75	135	195	255	315	375	435	495	75	135	195	255	315	375	435	495	75	135	195	255	315	375	435	75	135	195	255	315	375	435
Repeatability**	um	±1.5																													
Accuracy***	um	±15		±25		±15		±25		±15		±25		±15		±25															
Straightness***	um	±8		±15		±8		±15		±8		±15		±8		±15															
Flatness***	um	±8		±10		±8		±10		±8		±10		±8		±10															

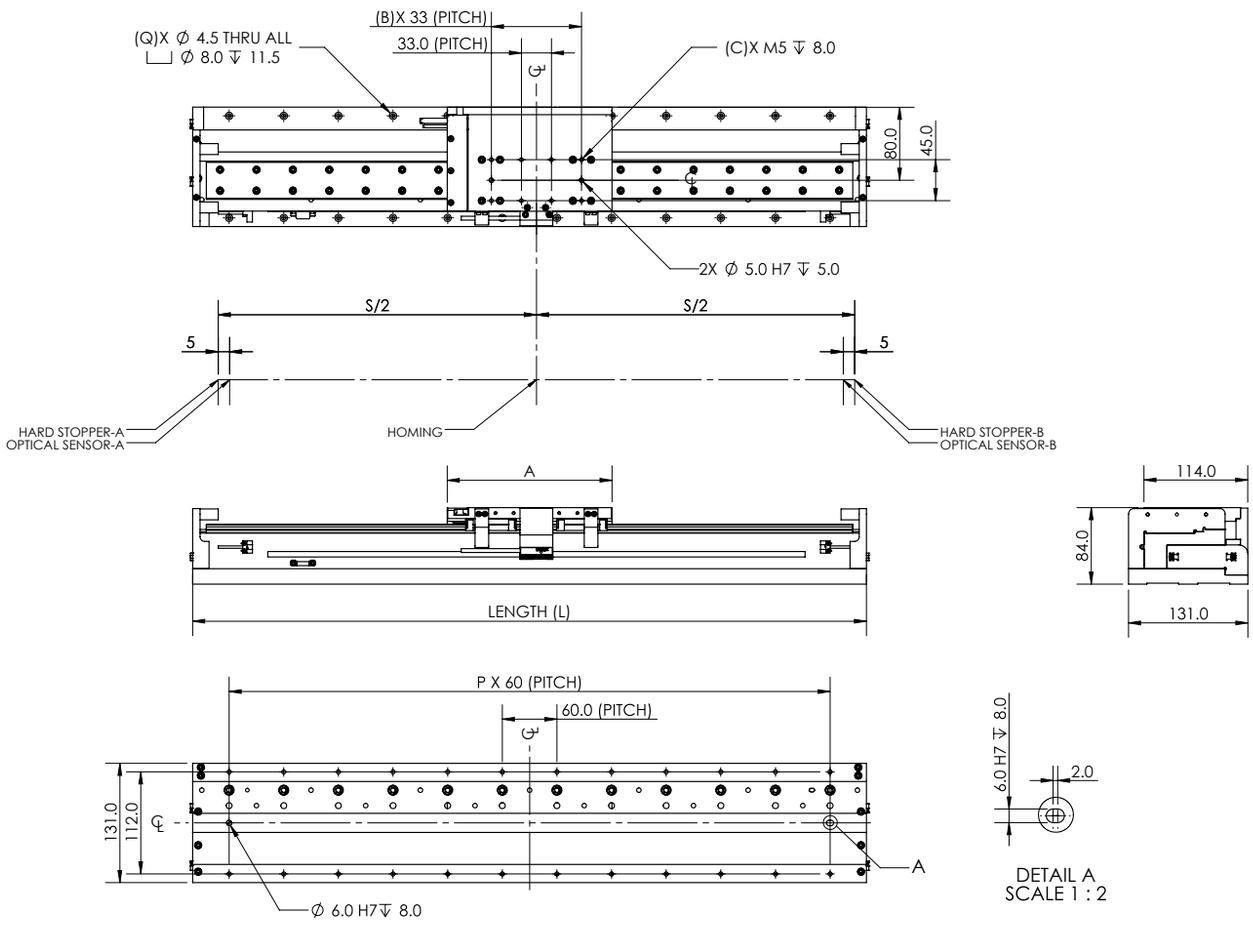
Linear Guide Rated Load and Static Moment			
Model Code		LM Guide	
Block Quantity		2	
Maximum bearing load	N	39,500	
Pitch moment	Nm	1081	1489
Yaw moment	Nm	1081	1489
Roll moment	Nm	636	

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, heat dissipation by natural convection, without heat sink attached.
3. Specifications tolerance – inductance +/-30%, all others +/-10% (for motor parameters).
4. Peak force and current - 1 second duration.
5. ** Depend on encoder resolution.
6. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
7. For customized stroke length, contact PBA.
8. For different motor models, contact PBA.



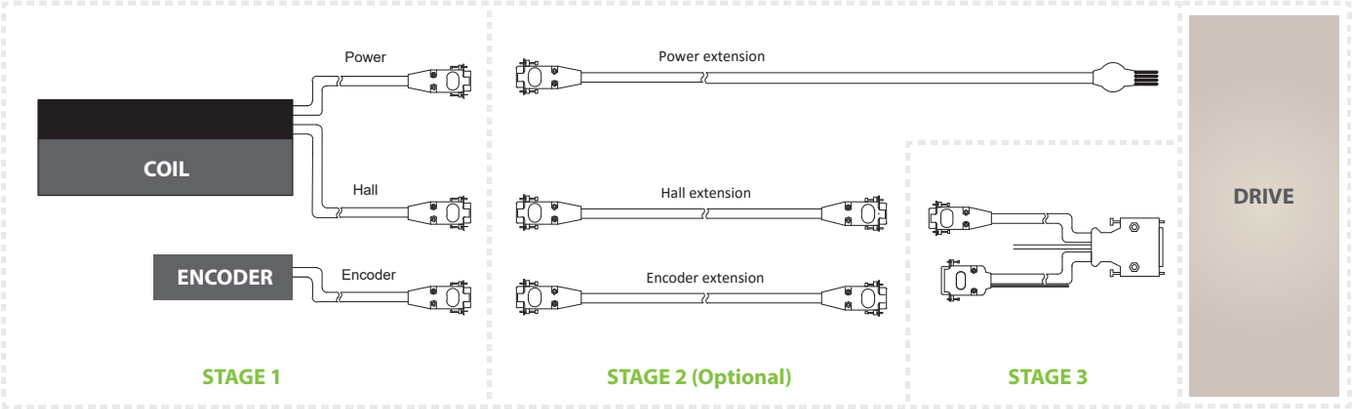
PCA - D5



MOTOR MODEL	STROKE (S) mm	ACTUATOR LENGTH (L) mm	CARRIAGE LENGTH (A) mm	B	C	P	Q	SLIDER MASS kg	MODULE MASS kg
C1	75	200	61	1	4	2	6	0.8	6.8
	135	260				3	8		8.4
	195	320				4	10		9.9
	255	380				5	12		11.7
	315	440				6	14		13.3
	375	500				7	16		14.9
	435	560				8	18		16.5
	495	620				9	20		18.2
C2	75	260	121	3	8	3	8	1.4	8.6
	135	320				4	10		10.2
	195	380				5	12		11.8
	255	440				6	14		13.5
	315	500				7	16		15.1
	375	560				8	18		16.7
	435	620				9	20		18.4
	495	680				10	22		19.9
C3	75	320	181	4	10	4	10	1.9	10.5
	135	380				5	12		12.1
	195	440				6	14		13.8
	255	500				7	16		15.4
	315	560				8	18		16.9
	375	620				9	20		18.6
	435	680				10	22		20.2
	495	740				11	24		21.8
C4	75	380	241	6	14	5	12	2.5	12.5
	135	440				6	14		14.1
	195	500				7	16		15.7
	255	560				8	18		17.3
	315	620				9	20		18.9
	375	680				10	22		20.5
	435	740				11	24		22.1

** Technical specifications subject to change without prior notice*

CABLE OPTION

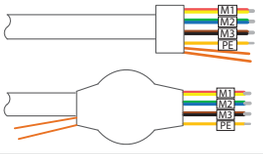


STAGE 1 — POWER AND HALL CABLE OPTION

PCA-D5-C2-S-TM-1.0-FC-HC-E1.0-495-00

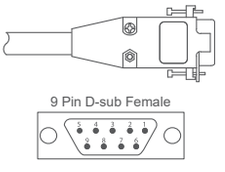
POWER CABLE OPTIONS

NF / FC



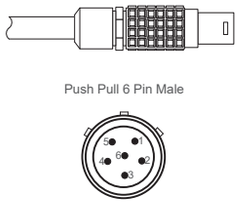
M1	Pink & Yellow
M2	Green & Blue
M3	Brown & Black
PE	Yellow
Temp sensor 1	Orange / Black
Temp sensor 2	Orange

9NF



P1	M1	Pink
P2	M1	Yellow
P3	M3	Black
P4	M3	Brown
P5	M2	Blue
P6	M2	Green
P7	Temp sensor 1	Orange/Black
P8	Temp sensor 2	Orange
P9	PE	White

CNF



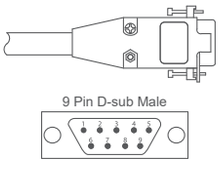
P1	M1	Pink & Yellow
P2	M2	Green & Blue
P3	M3	Brown & Black
P4	Temp sensor 1	Orange / Black
P5	Temp sensor 2	Orange
P6	PE	White

HALL SENSOR OPTIONS

H

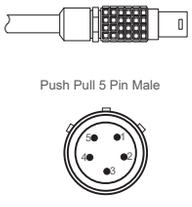
Hall A	White
Hall B	Green
Hall C	Blue
5V	Red
0V	Black

HC



P1	Hall A	White
P2	Hall B	Green
P3	Hall C	Blue
P4	5V	Red
P5	0V	Black

CHC



P1	Hall A	White
P2	Hall B	Green
P3	Hall C	Blue
P4	5V	Red
P5	0V	Black

The temperature in which the thermostat is active is shown as below:

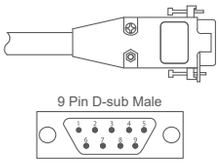
MODEL	THERMAL DEVICE TYPE	THERMOSTAT (NC) OPENS AT
DX 20B	PT100	See Note 1
DX 30B	Thermostat	100°C
DX 50B	Thermostat	100°C

Note 1

- Programmable on temperature controller or analog inputs on motion controller.
- Recommended to set cut-off temperature to 100°C (max) to prevent coil damage.
- User has to ensure that the thermal protection devices are wired to appropriate electronics to ensure that the motor power cutoff is active when temperature reaches its allowable limit.

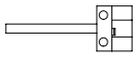
PCA CABLE PIN OUT

ENCODER CONNECTOR - 9 PIN D-SUB MALE



	RH200X / RH200Z	RH200B
P1	0V DC	0V DC
P2	A+	Sine+
P3	Z+	Z+
P4	B+	Cosine+
P5	+5V DC	+5V DC
P6	A-	Sine-
P7	Z-	Z-
P8	B-	Cosine-
P9	Inner	Inner
Casing	Outer	Outer

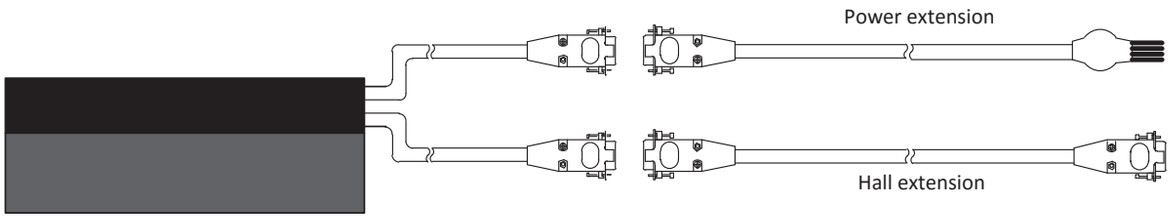
OPTICAL LIMIT SWITCH (PM-L24)



+5V dc	Brown
GND	Blue
LIGHT-ON	Black
DARK-ON	White

STAGE 2 PCA EXTENSION CABLE

Connection example: PCA-D5-C2-S-TM-1.0-FC-HC-E1.0-495-00



Extension Cable		Part Number
Power Extension Cable		CBL_EXT_PWR_DX_X.X
		CBL_EXT_PWR_DX_CC_X.X
Hall Sensor Extension Cable		CBL_EXT_HALL_DX_X.X
		CBL_EXT_HALL_DX_CC_X.X
Encoder Extension Cable		CBL_EXT_REN01_X.X
		CBL_EXT_REN01B_X.X

CABLE	
01	RH200 Digital
01B	RH200 Analog

CABLE LENGTH (X.X)	
0.5	0.5 meter
1.0	1.0 meter
2.0	2.0 meter
3.0	3.0 meter
4.0	4.0 meter
5.0	5.0 meter

Notes: **1.** X.X is the length of the cable in meters 2. For customized cable length, contact PBA