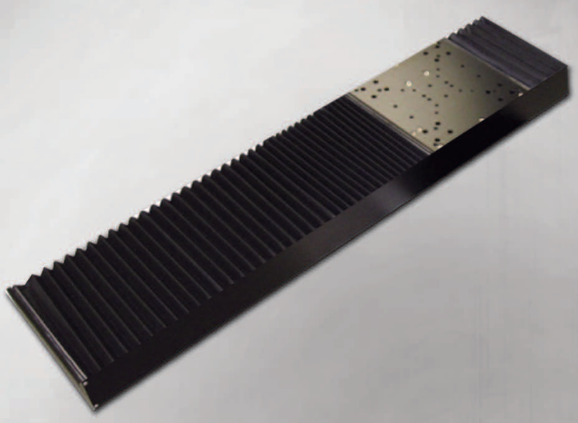


PIAB SERIES

LINEAR SERVO MOTOR ACTUATOR
IRON CORE

PBA SYSTEMS

www.pbasystems.com.sg

PART NUMBERING SYSTEM

Coil Assembly

PIAB - P1 - S - TM - 1.0 - FC - HC - E1.0 - O - 1060 - 00

MOTOR MODEL

P1	PIX200-027-030
P2	PIX200-027-050
P3	PIX200-040-050

CONNECTION TYPE

S	Series
P	Parallel

THERMAL PROTECTION

TC*	PT 100 Sensor
TM**	Thermostat

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

HALL SENSOR AND CONNECTOR OPTIONS

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

ENCODER RESOLUTION

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

COVER

O	Open
C	Covered
B	Bellow

EFFECTIVE STROKE (mm)

100-1700	Open Type
100-1700	Covered Type
100-1060	Bellow Type

DESIGN VERSIONS

00	Standard
01	Customized Version
:	

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

PIAB-P1

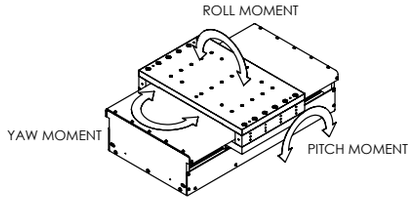
- Iron Core Actuator
- Peak force to 542N, Continuous force to 108N

PIAB SERIES
Iron Core Actuator

SPECIFICATION		MODEL	
		PIAB-P1	
Motor Parameters	**Unit**	S	P
Peak Force	N	542	
Continuous Force @ 105ºC*	N	108	
Continuous Stall Force @ 105ºC*	N	77	
Peak Power @ 105ºC	W	1823	
Continuous Power @ 105ºC*	W	73	
Peak Current	A^{pk}	30.4	60.8
Continuous Current @ 105ºC*	A^{pk}	6.1	12.2
Continuous Stall Current @ 105ºC*	Arms	4.3	8.6
Force Constant	N/A^{pk}	17.8	8.9
Back EMF Constant	$V^{pk}/m/s$	20.5	10.3
Coil Resistance L-L @ 25ºC	Ohm	1.9	0.5
Coil Resistance L-L @ 120ºC*	Ohm	2.6	0.7
Inductance L-L @ 1kHz	mH	4.9	1.2
Motor Constant @ 25ºC*	N/√W	14.9	
Motor Constant @ 120ºC*	N/√W	12.7	
Max Terminal Voltage	Vdc	600	
Accuracy			
Repeatability **	um	± 2um	
Accuracy ***	um	± 20um / 300mm	
Straightness ***	um	± 8um / 300mm	
Flatness ***	um	± 8um / 300mm	
Linear Guide Rated Load and Static Moment			
Model Code		LM Guide	
Block Quantity		4	
Maximum bearing load	N	3125	
Pitch moment	Nm	287	
Yaw moment	Nm	287	
Roll moment	Nm	218	

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. Specifications tolerance – inductance +/-15%, all others +/-10%.
3. * Ambient temperature 25ºC, heat dissipation by natural convection, without heat sink attached.
4. ** Depend on encoder resolution.
5. Peak force and current - 1 second duration.
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.



PIAB-P2

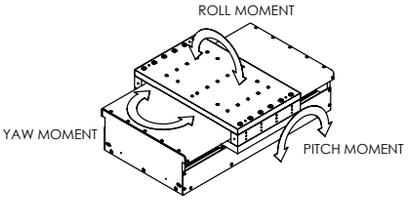
- Iron Core Actuator
- Peak force to 893N, Continuous force to 179N

PIAB SERIES
Iron Core Actuator

SPECIFICATION		MODEL	
		PIAB-P2	
Motor Parameters	**Unit**	S	P
Peak Force	N	893	
Continuous Force @ 105ºC*	N	179	
Continuous Stall Force @ 105ºC*	N	126	
Peak Power @ 105ºC	W	2323	
Continuous Power @ 105ºC*	W	93	
Peak Current	A^{pk}	29.3	88.7
Continuous Current @ 105ºC*	A^{pk}	5.9	11.7
Continuous Stall Current @ 105ºC*	Arms	4.15	8.30
Force Constant	N/A^{pk}	30.4	15.2
Back EMF Constant	$V^{pk}/m/s$	35	17.5
Coil Resistance L-L @ 25ºC	Ohm	2.6	0.7
Coil Resistance L-L @ 120ºC*	Ohm	3.6	0.9
Inductance L-L @ 1kHz	mH	7.1	1.8
Motor Constant @ 25ºC*	$N/\sqrt{W}$	21.8	
Motor Constant @ 120ºC*	$N/\sqrt{W}$	18.5	
Max Terminal Voltage	Vdc	600	
Accuracy			
Repeatability **	mm	± 2um	
Accuracy ***	mm	± 20um / 300mm	
Straightness ***	um	± 8um / 300mm	
Flatness ***	um	± 8um / 300mm	
Linear Guide Rated Load and Static Moment			
Model Code		LM Guide	
Block Quantity		4	
Maximum bearing load	N	3125	
Pitch moment	Nm	287	
Yaw moment	Nm	287	
Roll moment	Nm	218	

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. Specifications tolerance – inductance +/-15%, all others +/-10%.
3. * Ambient temperature 25ºC, heat dissipation by natural convection, without heat sink attached.
4. ** Depend on encoder resolution.
5. Peak force and current - 1 second duration.
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.



PIAB-P3

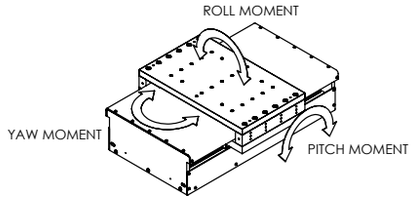
- Iron Core Actuator
- Peak force to 943N, Continuous force to 189N

PIAB SERIES
Iron Core Actuator

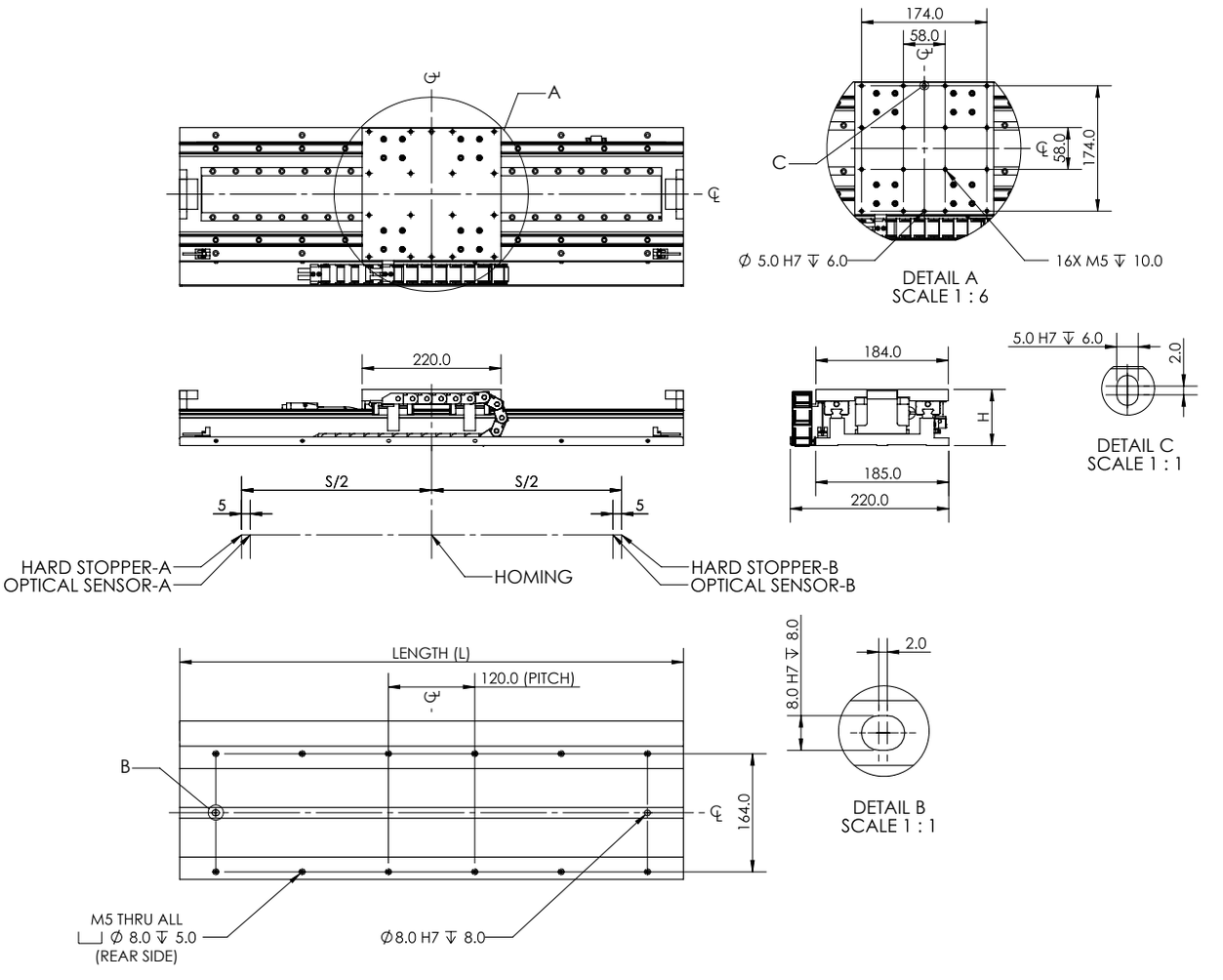
SPECIFICATION		MODEL	
		PIAB-P3	
Motor Parameters	**Unit**	S	P
Peak Force	N	1515	
Continuous Force @ 105ºC*	N	303	
Continuous Stall Force @ 105ºC*	N	214	
Peak Power @ 105ºC	W	2662	
Continuous Power @ 105ºC*	W	106	
Peak Current	A^{pk}	20.5	41.0
Continuous Current @ 105ºC*	A^{pk}	4.1	8.2
Continuous Stall Current @ 105ºC*	Arms	2.9	5.8
Force Constant	N/A^{pk}	73.9	37.0
Back EMF Constant	$V^{pk}/m/s$	85.0	42.5
Coil Resistance L-L @ 25ºC	Ohm	6.1	1.5
Coil Resistance L-L @ 105ºC*	Ohm	8.4	2.1
Inductance L-L @ 1kHz	mH	60.6	15.1
Motor Constant @ 25ºC*	N/√W	34.6	
Motor Constant @ 120ºC*	N/√W	29.4	
Max Terminal Voltage	Vdc	600	
Accuracy			
Repeatability **	mm	± 2um	
Accuracy ***	mm	± 20um / 300mm	
Straightness ***	um	± 8um / 300mm	
Flatness ***	um	± 8um / 300mm	
Linear Guide Rated Load and Static Moment			
Model Code		LM Guide	
Block Quantity		4	
Maximum bearing load	N	3125	
Pitch moment	Nm	287	
Yaw moment	Nm	287	
Roll moment	Nm	218	

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. Specifications tolerance – inductance +/-15%, all others +/-10%.
3. * Ambient temperature 25ºC, heat dissipation by natural convection, without heat sink attached.
4. ** Depend on encoder resolution.
5. Peak force and current - 1 second duration.
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.



PIAB - OPEN TYPE

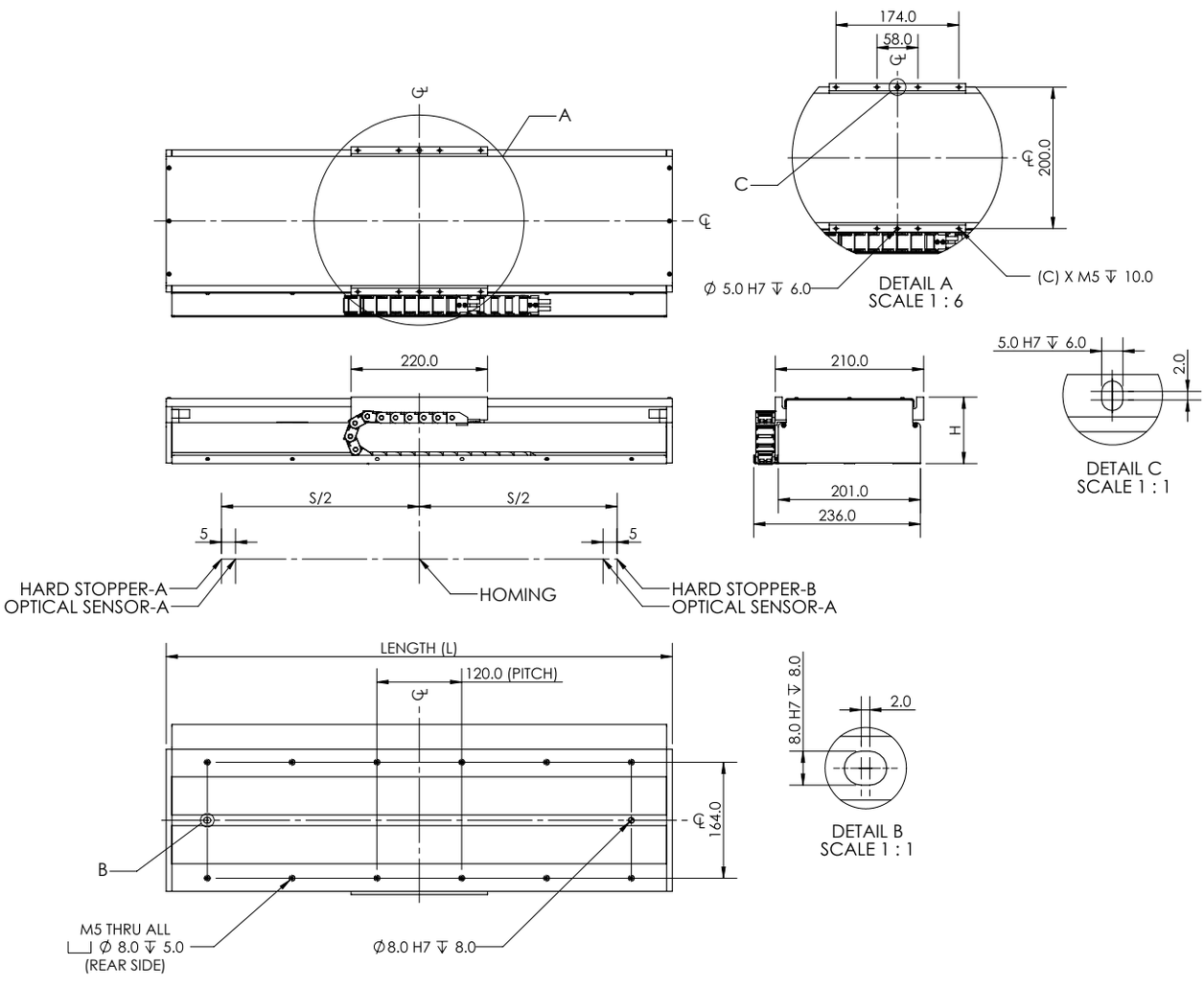


MOTOR MODEL	HEIGHT (H) mm	STROKE (S) mm	ACTUATOR (L) mm	STROKE/ACTUATOR LENGTH (S) / (L) mm	SLIDER MASS kg	MODULE MASS (W) kg	
PIX200-027-030	65	MIN:100 MAX:1700	MIN:380 MAX:1980	S=100+(Multiple of 64mm) L=S+220+(60mm)	3.1	MIN : 8.6 MAX: 40.5	W=8.6 + (Multiple of 1.2kg)
PIX200-027-050					3.8	MIN : 9.8 MAX: 41.8	W=9.8 + (Multiple of 1.2kg)
PIX200-040-050	78				4.9	MIN : 11.0 MAX: 42.9	W=11.0 + (Multiple of 1.2kg)

Notes:

1. Slider Mass = Coil Mass + Carriage Mass
2. Module mass increment of 1.2kg per 64mm

PIAB - COVERED TYPE

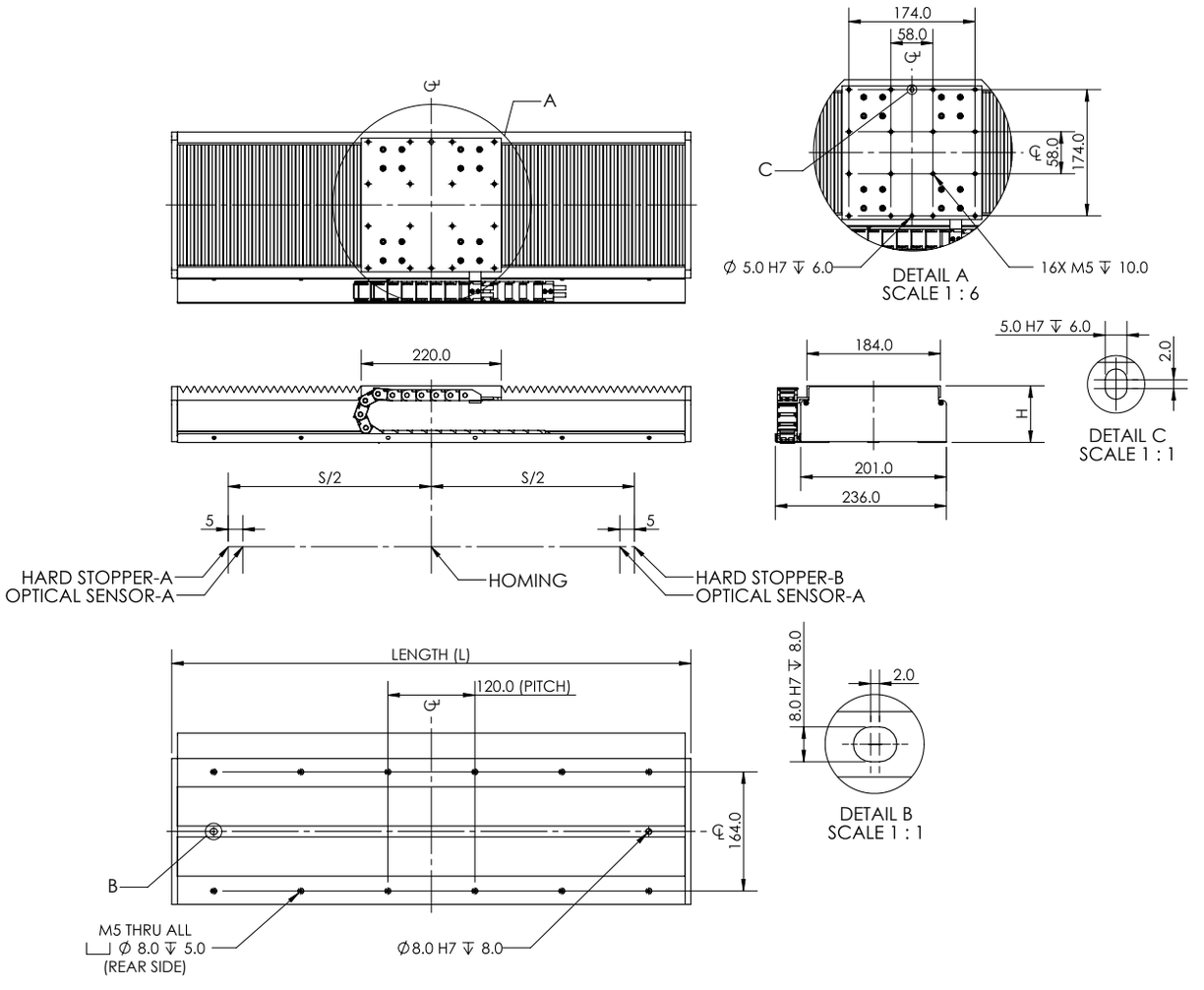


MOTOR MODEL	HEIGHT (H) mm	STROKE (S) mm	ACTUATOR (L) mm	STROKE/ACTUATOR LENGTH (S) / (L) mm	SLIDER MASS kg	MODULE MASS (W) kg	
PIX200-027-030	80	MIN:100 MAX:1700	MIN:396 MAX:1996	S=100+(Multiple of 64mm) L=S+220+(76mm)	3.5	MIN : 11.2 MAX: 46.2	W=11.2 + (Multiple of 1.4kg)
PIX200-027-050					4.2	MIN : 12.5 MAX: 47.5	W=12.5 + (Multiple of 1.4kg)
PIX200-040-050	95				5.3	MIN : 13.6 MAX: 48.6	W=13.6 + (Multiple of 1.4kg)

Notes:

1. Slider Mass = Coil Mass + Carriage Mass
2. Module mass increment of 1.4kg per 64mm

PIAB - BELLOW TYPE

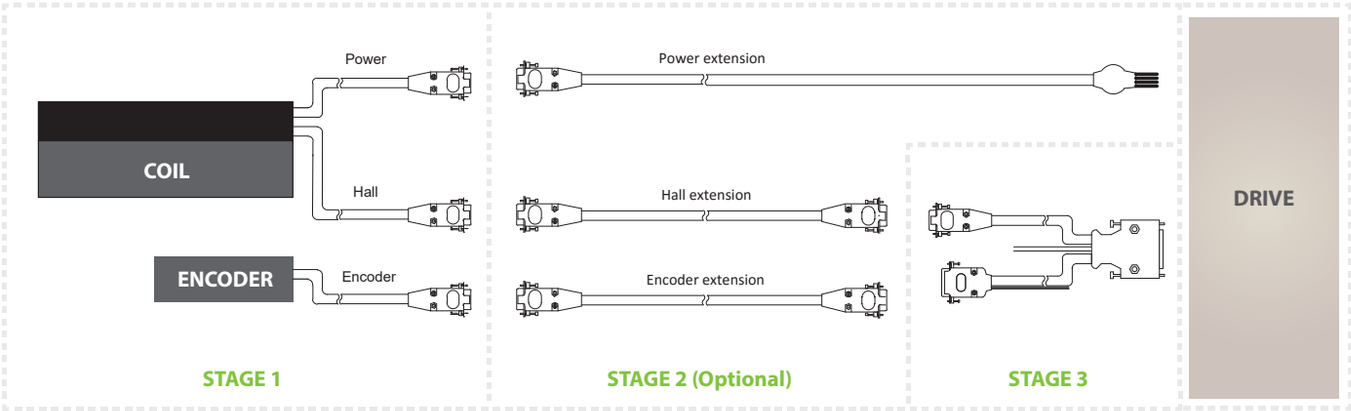


MOTOR MODEL	HEIGHT (H) mm	STROKE (S) mm	ACTUATOR (L) mm	STROKE/ACTUATOR LENGTH (S) / (L) mm	SLIDER MASS kg	MODULE MASS (W) kg	
PIX200-027-030	65	MIN:100 MAX:1060	MIN:428 MAX:1868	S=100+(Multiple of 64mm) L=S+220+(200mm)	3.3	MIN : 10.5 MAX: 30.0	W=10.5 + (Multiple of 1.3kg)
PIX200-027-050					4.0	MIN : 11.7 MAX: 31.2	W=11.7 + (Multiple of 1.3kg)
PIX200-040-050	78				5.1	MIN : 12.9 MAX: 32.4	W=12.9 + (Multiple of 1.3kg)

Notes:

1. Slider Mass = Coil Mass + Carriage Mass
2. Module mass increment of 1.3kg per 64mm

CABLE OPTION

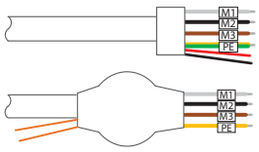


STAGE 1 — POWER AND HALL CABLE OPTION

PIAB-P1-S-TM-1.0-**FC**-**HC**-E1.0-O-1060-00

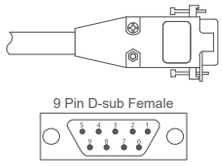
POWER CABLE OPTIONS

NF / FC



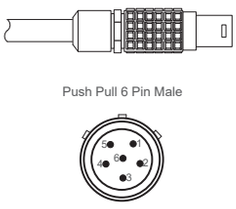
M1	Grey
M2	Brown
M3	Black
PE	Yellow
Temp sensor 1	Orange / Black
Temp sensor 2	Orange

9NF



P1	M1	Grey
P2	M1	Grey (Jump)
P3	M3	Brown
P4	M3	Brown (Jump)
P5	M2	Black
P6	M2	Black (Jump)
P7	Temp sensor 1	Red
P8	Temp sensor 2	Black
P9	PE	Yellow & Green

CNF



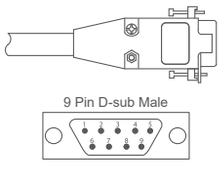
P1	M1	Grey
P2	M2	Black
P3	M3	Brown
P4	Temp sensor 1	Red
P5	Temp sensor 2	Black
P6	PE	Yellow & Green

HALL SENSOR OPTIONS

H

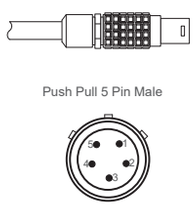
Hall A	White
Hall B	Green
Hall C	Blue
5V	Red
0V	Black

HC



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

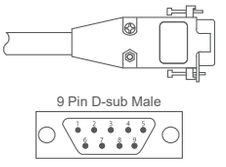
CHC



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

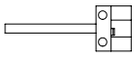
PIAB CABLE PIN OUT

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

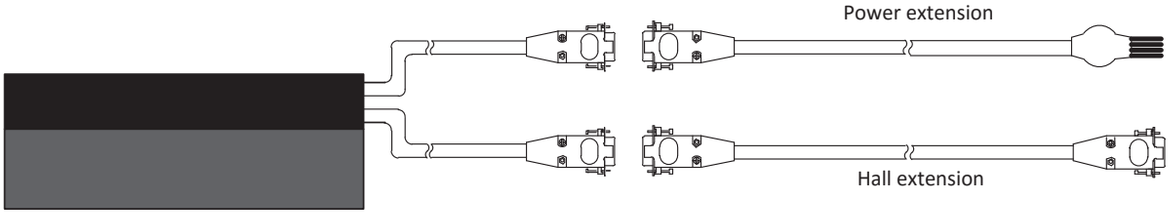
OPTICAL LIMIT SWITCH (PM-L24)

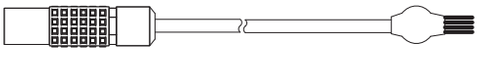
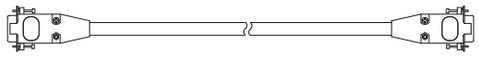
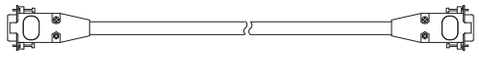


+5V dc	Brown
GND	Blue
LIGHT-ON	Black
DARK-ON	White

STAGE 2 PIAB EXTENSION CABLE

Connection example: PIAB-P1-S-TM-1.0-FC-HC-E1.0-O-1060-00



Extension Cable		Part Number
Power Extension Cable		CBL_EXT_PWR_PIXA_X.X
		CBL_EXT_PWR_PIXA_CC_X.X
Hall Sensor Extension Cable		CBL_EXT_HALL_PIXA_X.X
		CBL_EXT_HALL_PIXA_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