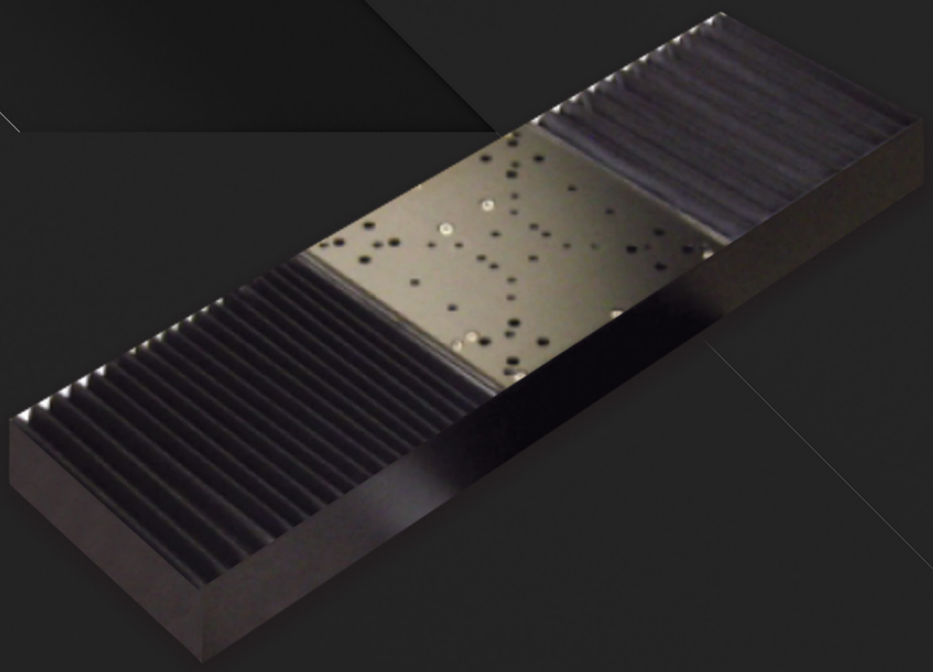
pba

SYSTEMS

# DIRECT DRIVE TECHNOLOGY

## Product Catalogue

VERSION 4.1.1



# PDAB SERIES

## LINEAR SERVO MOTOR ACTUATOR

- PLAY VIDEO -

# PART NUMBERING SYSTEM

## COIL ASSEMBLY

PDAB – D5 – C1 – S – TM – 1.0 – FC – HC – E1.0 – O – 1600 – 00

**ACTUATOR MODEL**

**MOTOR MODEL**

| | |
|---|---|
| D3 | DX30B |
| D3T | DX30BT |
| D5 | DX50B |
| D5T | DX50BT |

**COIL SIZE**

C1
C2
C3
C4
C5

**CONNECTION TYPE**

| | |
|---|---|
| S | Series |
| P | Parallel |

**THERMAL PROTECTION**

| | |
|---|---|
| TC* | PT 100 |
| 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 |

**DESIGN VERSIONS**

| | |
|---|---|
| 00 | Standard |
| 01 | Customized Version |
| : | |

**EFFECTIVE STROKE (mm)**

| | |
|---|---|
| 100-1600 | Open type |
| 100-1600 | Covered Type |
| 100-520 | Bellow Type |

**ACTUATOR SIZE**

| | |
|---|---|
| O | Open |
| C | Covered |
| B | Bellow |

**ENCODER RESOLUTION**

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

**HALL SENSOR AND CONNECTOR OPTIONS**

| | |
|---|---|
| H | Flying Leads (No Connector) |
| HC | 9 pins D Sub (Male Connector) |
| CHC | 5 Pins Circular (Quick Lock Male Connector) |
| HCL | 9 pins D Sub (Male Connector with Line Driver) |

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

# PDAB SERIES

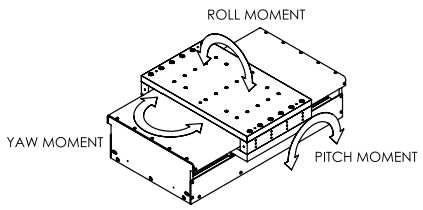
IRONLESS LINEAR MOTOR

## PDAB-D3/D3T

- Ironless Linear Motor
- Peak force to 434N, Continuous force to 87N

| SPECIFICATION | | MODEL | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | DX30B/BT | | | | | | |
| | | PDAB-D3-C1 | | PDAB-D3-C2 | | PDAB-D3T-C2 | PDAB-D3-C3 | |
| **Motor Parameters** | **Unit** | **S** | **P** | **S** | **P** | **P** | **S** | **P** |
| Peak Force | N | 145 | | 289 | | | 434 | |
| Continuous Force @ 120°C* | N | 29 | | 58 | | | 87 | |
| Peak Power @ 120°C | W | 695 | | 1390 | | | 2086 | |
| Continuous Power @ 120°C* | W | 28 | | 56 | | | 83 | |
| Peak Current | Apk | 11.81 | 23.63 | 11.81 | 23.63 | 47.25 | 11.81 | 23.63 |
| Continuous Current @ 120°C* | Apk | 2.36 | 4.73 | 2.36 | 4.73 | 9.45 | 2.36 | 4.73 |
| Continuous Stall Current @ 120°C* | Arms | 1.75 | 3.5 | 1.75 | 3.5 | 7 | 1.75 | 3.5 |
| Force Constant | N/Apk | 12.3 | 6.1 | 24.5 | 12.3 | 6.1 | 36.8 | 18.4 |
| Back EMF Constant | Vpk/m/s | 14.1 | 7 | 28.2 | 14.1 | 7 | 42.3 | 21.1 |
| Coil Resistance L-L @ 25°C | Ohm | 4.8 | 1.2 | 9.6 | 2.4 | 0.6 | 14.4 | 3.6 |
| Coil Resistance L-L @ 120°C* | Ohm | 6.6 | 1.7 | 13.3 | 3.3 | 0.8 | 19.9 | 5 |
| Inductance L-L @ 1kHz | mH | 3 | 0.75 | 6 | 1.5 | 0.38 | 9 | 2.25 |
| Motor Constant @ 25°C* | N/√W | 6.46 | | 9.13 | | | 11.18 | |
| Motor Constant @ 120°C* | N/√W | 5.49 | | 7.76 | | | 9.51 | |
| Max. Terminal Voltage | Vdc | 400 | | | | | | |
| Thermal Resistance @ 120°C* | °C/W | 3.42 | | 1.71 | | | 1.14 | |
| Max. Coil Temperature | °C | 120 | | | | | | |
| Electrical Cycle Length | mm | 60 | | | | | | |
| **Specifications** | | | | | | | | |
| Repeatability** | um | ±2.0 | | | | | | |
| 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 | kN | 3.1 | | | | | | |
| Pitch moment | Nm | 104 | | 191 | | | 287 | |
| Yaw moment | Nm | 104 | | 191 | | | 287 | |
| Roll moment | Nm | 218 | | | | | | |

Notes:
1. Apk = 1.414 * Arms; Vpk = 1.414 * Vrms.
2. * Ambient temperature 25°C, 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 : 4% duty ratio and 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.
9. Specifications are subject to change without prior notice.

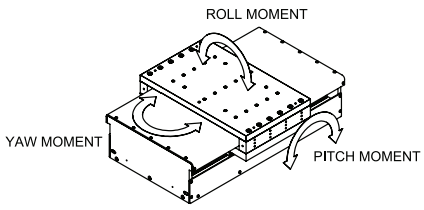


# PDAB-D3/D3T

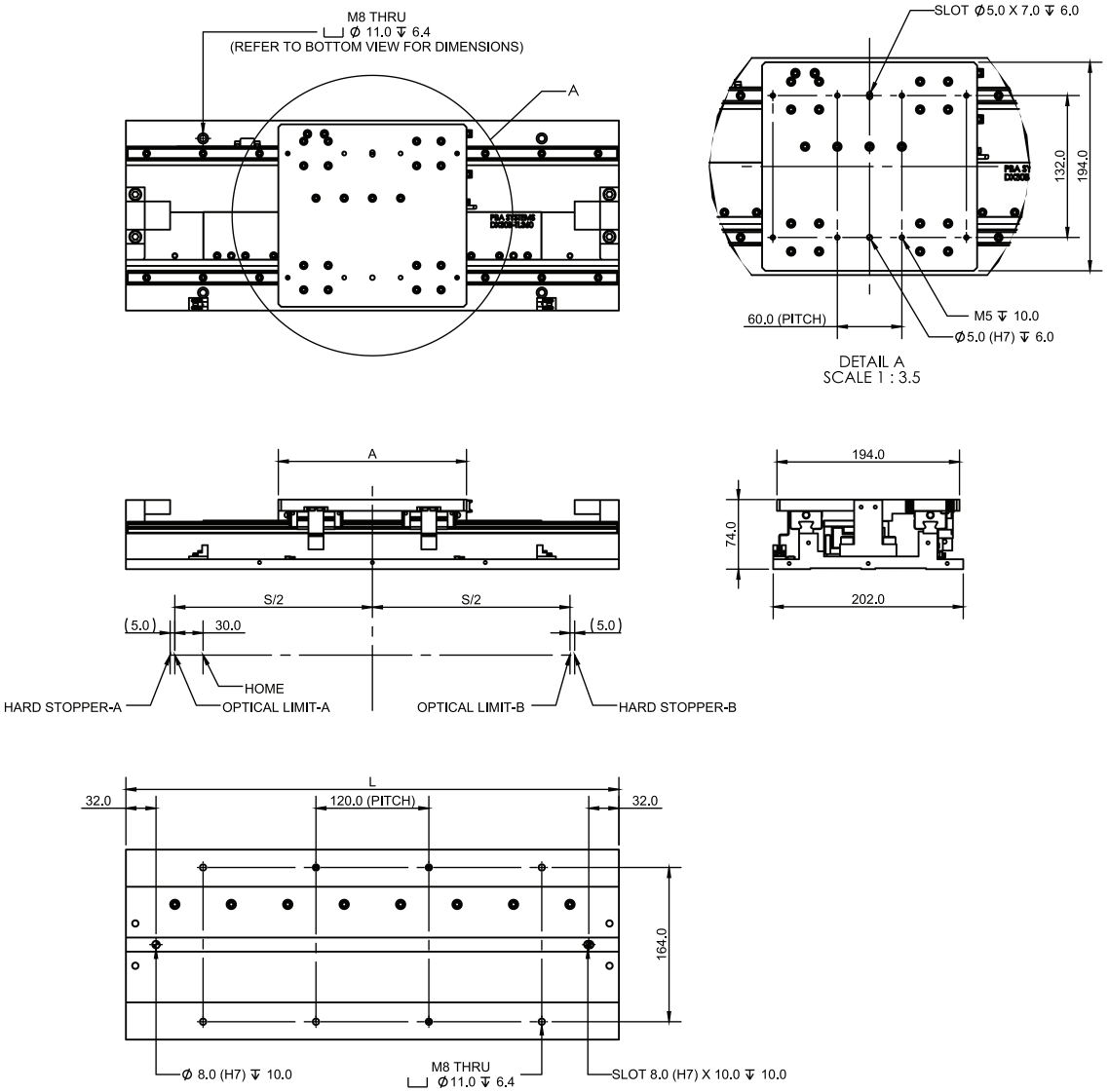
- Ironless Linear Motor
- Peak force to 724N, Continuous force to 145N

| SPECIFICATION | | MODEL | | | | |
|---|---|---|---|---|---|---|
| | | DX30B/BT | | | | |
| | | PDAB-D3-C4 | | PDAB-D3T-C4 | PDAB-D3-C5 | |
| **Motor Parameters** | **Unit** | **S** | **P** | **P** | **S** | **P** |
| Peak Force | N | 579 | | | 724 | |
| Continuous Force @ 120°C* | N | 116 | | | 145 | |
| Peak Power @ 120°C | W | 278 | | | 3476 | |
| Continuous Power @ 120°C* | W | 111 | | | 139 | |
| Peak Current | Apk | 11.81 | 23.63 | 47.25 | 11.81 | 23.63 |
| Continuous Current @ 120°C* | Apk | 2.36 | 4.73 | 9.45 | 2.36 | 4.73 |
| Continuous Stall Current @ 120°C* | Arms | 1.75 | 3.5 | 7 | 1.75 | 3.5 |
| Force Constant | N/Apk | 49 | 24.5 | 12.3 | 61.3 | 30.6 |
| Back EMF Constant | Vpk/m/s | 56.4 | 28.2 | 14.1 | 70.4 | 35.2 |
| Coil Resistance L-L @ 25°C | Ohm | 19.2 | 4.8 | 1.2 | 24 | 6 |
| Coil Resistance L-L @ 120°C* | Ohm | 26.6 | 6.6 | 1.7 | 33.2 | 8.3 |
| Inductance L-L @ 1kHz | mH | 12 | 3 | 0.75 | 15 | 3.75 |
| Motor Constant @ 25°C* | N/√W | 12.91 | | | 14.44 | |
| Motor Constant @ 120°C* | N/√W | 10.98 | | | 12.27 | |
| Max. Terminal Voltage | Vdc | 400 | | | | |
| Thermal Resistance @ 120°C* | °C/W | 0.85 | | | 0.68 | |
| Max. Coil Temperature | °C | 120 | | | | |
| Electrical Cycle Length | mm | 60 | | | | |
| **Specifications** | | | | | | |
| Repeatability** | um | ±2.0 | | | | |
| 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 | kN | 3.1 | | | | |
| Pitch moment | Nm | 287 | | | | |
| Yaw moment | Nm | 287 | | | | |
| Roll moment | Nm | 218 | | | | |

Notes:
1. Apk = 1.414 * Arms; Vpk = 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 : 4% duty ratio and 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.
9. Specifications are subject to change without prior notice.



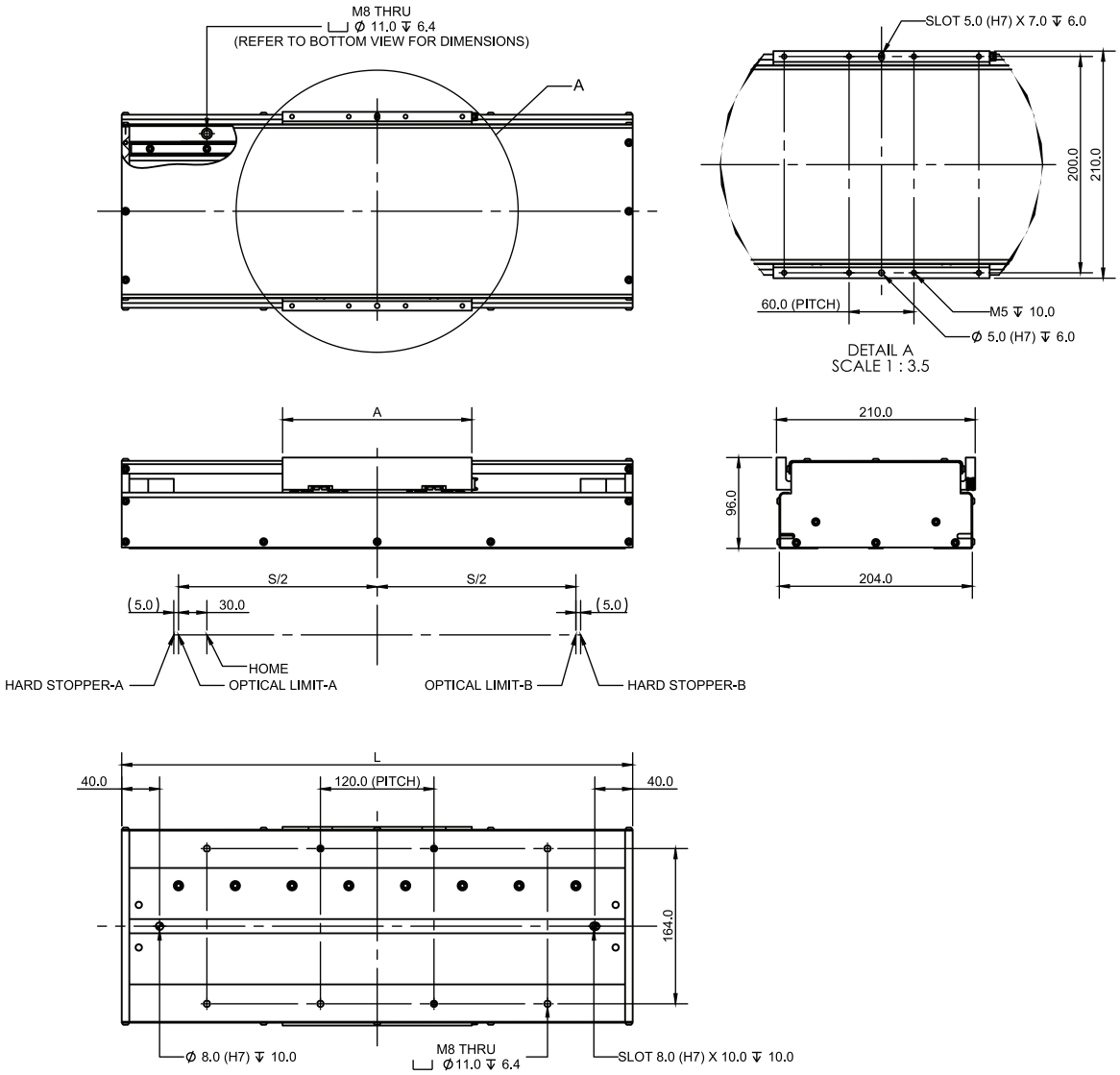
# PDAB-D3/D3T (OPEN TYPE)




| MOTOR MODEL | STROKE (S) mm | ACTUATOR LENGTH (L) mm | STROKE/ACTUATOR LENGTH (S)/(L) mm | CARRIAGE LENGTH (A) mm | SLIDER MASS kg | MODULE MASS (W) kg | |
|---|---|---|---|---|---|---|---|
| C1 | MIN:100 MAX:1600 | MIN:284 MAX:1784 | S=100+(Multiple of 60mm) L=S+A+(104mm) | 80 | 1.2 | MIN:7.6 MAX:40.1 | W=7.6 + (Multiple of 1.3kg) |
| C2 | | MIN:344 MAX:1844 | | 140 | 2.1 | MIN:9.2 MAX:41.7 | W=9.2 + (Multiple of 1.3kg) |
| C3 | | MIN:404 MAX:1904 | | 200 | 2.8 | MIN:11.6 MAX:44.1 | W=11.6 + (Multiple of 1.3kg) |
| C4 | | MIN:464 MAX:1964 | | 260 | 3.4 | MIN:12.9 MAX:45.4 | W=12.9 + (Multiple of 1.3kg) |
| C5 | | MIN:524 MAX:2024 | | 320 | 4.0 | MIN:15.3 MAX:47.8 | W=15.3 + (Multiple of 1.3kg) |

Notes:
1. Slider Mass = Coil Mass + Carriage Mass
2. Module mass increment of 1.3kg per 60mm

# PDAB-D3/D3T (COVERED TYPE)

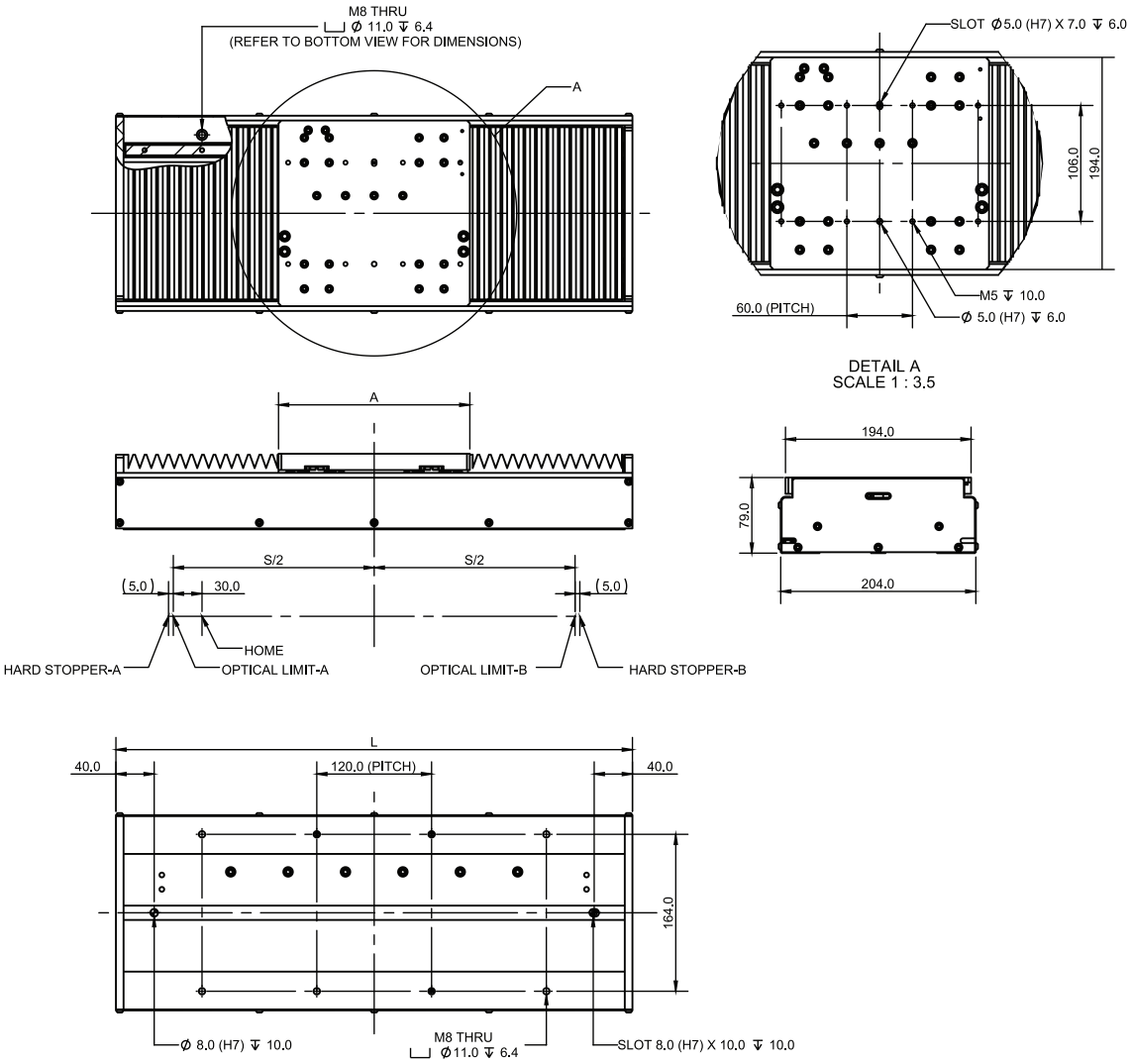



| MOTOR MODEL | STROKE (S) mm | ACTUATOR LENGTH (L) mm | STROKE/ACTUATOR LENGTH (S)/(L) mm | CARRIAGE LENGTH (A) mm | SLIDER MASS kg | MODULE MASS (W) kg | |
|---|---|---|---|---|---|---|---|
| C1 | MIN:100 MAX:1600 | MIN:300 MAX:1800 | S=100+(Multiple of 60mm) L=S+A+(120mm) | 80 | 1.3 | MIN:9.5 MAX:47.0 | W=9.5 + (Multiple of 1.5kg) |
| C2 | | MIN:360 MAX:1860 | | 140 | 2.3 | MIN:11.4 MAX:48.9 | W=11.4 + (Multiple of 1.5kg) |
| C3 | | MIN:420 MAX:1920 | | 200 | 3.1 | MIN:14.1 MAX:51.6 | W=14.1 + (Multiple of 1.5kg) |
| C4 | | MIN:480 MAX:1980 | | 260 | 3.8 | MIN:15.7 MAX:53.2 | W=15.7 + (Multiple of 1.5kg) |
| C5 | | MIN:4540 MAX:2040 | | 320 | 4.5 | MIN:18.4 MAX:55.9 | W=18.4 + (Multiple of 1.5kg) |

Notes:

1. Slider Mass = Coil Mass + Carriage Mass
2. Module mass increment of 1.5kg per 60mm

# PDAB-D3/D3T (BELLOW TYPE)



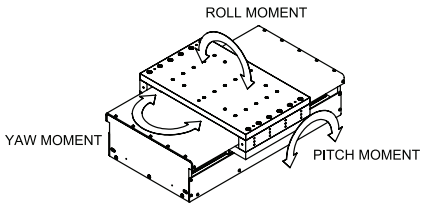

| MOTOR MODEL | STROKE (S) mm | | | | ACTUATOR LENGTH (L) mm | | | | CARRIAGE LENGTH (A) mm | SLIDER MASS kg | MODULE MASS (W) kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1 | 100 | 160 | 220 | 280 | 300 | 420 | 540 | 600 | 80 | 1.3 | 8.9 | 10.9 | 12.9 | 13.9 |
| | 340 | 400 | 460 | 520 | 720 | 840 | 900 | 1020 | | | 15.9 | 17.9 | 18.9 | 20.9 |
| C2 | 100 | 160 | 220 | 280 | 360 | 480 | 600 | 660 | 140 | 2.3 | 10.7 | 12.7 | 14.7 | 15.7 |
| | 340 | 400 | 460 | 520 | 780 | 900 | 960 | 1080 | | | 17.7 | 19.7 | 20.7 | 22.7 |
| C3 | 100 | 160 | 220 | 280 | 420 | 540 | 660 | 720 | 200 | 3.1 | 13.3 | 15.3 | 17.3 | 18.3 |
| | 340 | 400 | 460 | | 840 | 960 | 1020 | | | | 20.3 | 22.3 | 23.3 | |
| C4 | 100 | 160 | 220 | 280 | 480 | 600 | 720 | 780 | 260 | 3.8 | 14.7 | 16.7 | 18.7 | 19.7 |
| | 340 | 400 | | | 900 | 1020 | | | | | 21.7 | 23.7 | | |
| C5 | 100 | 160 | 220 | 280 | 540 | 660 | 780 | 840 | 320 | 4.5 | 17.3 | 19.3 | 21.3 | 22.3 |
| | 340 | 400 | | | 960 | 1080 | | | | | 24.3 | 26.3 | | |

# PDAB-D5/D5T

- Ironless Linear Motor
- Peak force to 446N, Continuous force to 89N

| SPECIFICATION | | MODEL | | | | |
|---|---|---|---|---|---|---|
| | | DX50B/BT | | | | |
| | | PDAB-D5-C1 | | PDAB-D5-C2 | | PDAB-D5T-C2 |
| **Motor Parameters** | **Unit** | **S** | **P** | **S** | **P** | **P** |
| Peak Force | N | 223 | | 446 | | |
| Continuous Force @ 120°C* | N | 45 | | 89 | | |
| Peak Power @ 120°C | W | 751 | | 1502 | | |
| Continuous Power @ 120°C* | W | 30 | | 60 | | |
| Peak Current | Apk | 13.13 | 26.25 | 13.13 | 26.25 | 52.5 |
| Continuous Current @ 120°C* | Apk | 2.63 | 5.25 | 2.63 | 5.25 | 10.5 |
| Continuous Stall Current @ 120°C* | Arms | 2.1 | 4.2 | 2.1 | 4.2 | 8.4 |
| Force Constant | N/Apk | 17 | 8.5 | 34 | 17 | 8.5 |
| Back EMF Constant | Vpk/m/s | 19.6 | 9.8 | 39.1 | 19.6 | 9.8 |
| Coil Resistance L-L @ 25°C | Ohm | 4.2 | 1.1 | 8.4 | 2.1 | 0.5 |
| Coil Resistance L-L @ 120°C* | Ohm | 5.8 | 1.5 | 11.6 | 2.9 | 0.7 |
| Inductance L-L @ 1kHz | mH | 3.11 | 0.78 | 6.22 | 1.56 | 0.39 |
| Motor Constant @ 25°C* | N/√W | 9.58 | | 13.55 | | |
| Motor Constant @ 120°C* | N/√W | 8.14 | | 11.51 | | |
| Max. Terminal Voltage | Vdc | 400 | | | | |
| Thermal Resistance @ 120°C* | °C/W | 3.16 | | 1.58 | | |
| Max. Coil Temperature | °C | 120 | | | | |
| Electrical Cycle Length | mm | 60 | | | | |
| **Specifications** | | | | | | |
| Repeatability** | um | ±2.0 | | | | |
| 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 | | 2 | | 4 | | |
| Maximum bearing load | kN | 3.1 | | | | |
| Pitch moment | Nm | 104 | | 191 | | |
| Yaw moment | Nm | 104 | | 191 | | |
| Roll moment | Nm | 218 | | | | |

Notes:
1. Apk = 1.414 * Arms; Vpk = 1.414 * Vrms.
2. * Ambient temperature 25°C, 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 : 4% duty ratio and 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.
9. Specifications are subject to change without prior notice.



# PDAB SERIES

IRONLESS LINEAR MOTOR

## PDAB-D5/D5T

- Ironless Linear Motor
- Peak force to 116N, Continuous force to 223N

| SPECIFICATION | | MODEL | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | DX50B/BT | | | | | | | |
| | | PDAB-D5-C3 | | PDAB-D5-C4 | | PDAB-D5T-C4 | PDAB-D5-C5 | | |
| **Motor Parameters** | **Unit** | **S** | **P** | **S** | **P** | **P** | **S** | **P** | |
| Peak Force | N | 669 | | 893 | | | 1116 | | |
| Continuous Force @ 120°C* | N | 134 | | 179 | | | 223 | | |
| Peak Power @ 120°C | W | 2253 | | 3004 | | | 3755 | | |
| Continuous Power @ 120°C* | W | 90 | | 120 | | | 150 | | |
| Peak Current | Apk | 13.13 | 26.25 | 13.13 | 26.25 | 52.5 | 13.13 | 26.25 | |
| Continuous Current @ 120°C* | Apk | 2.63 | 5.25 | 2.63 | 5.25 | 10.5 | 2.63 | 5.25 | |
| Continuous Stall Current @ 120°C* | Arms | 2.1 | 4.2 | 2.1 | 4.2 | 8.4 | 2.1 | 4.2 | |
| Force Constant | N/Apk | 51 | 25.5 | 68 | 34 | 17 | 85 | 42.5 | |
| Back EMF Constant | Vpk/m/s | 58.7 | 29.3 | 78.2 | 39.1 | 19.6 | 97.8 | 48.9 | |
| Coil Resistance L-L @ 25°C | Ohm | 12.6 | 3.2 | 16.8 | 4.2 | 1.1 | 21 | 5.3 | |
| Coil Resistance L-L @ 120°C* | Ohm | 17.4 | 4.4 | 23.2 | 5.8 | 1.5 | 29.1 | 7.3 | |
| Inductance L-L @ 1kHz | mH | 9.33 | 2.33 | 12.44 | 3.11 | 0.78 | 15.55 | 3.89 | |
| Motor Constant @ 25°C* | N/√W | 16.59 | | 19.16 | | | 21.42 | | |
| Motor Constant @ 120°C* | N/√W | 14.1 | | 16.28 | | | 18.21 | | |
| Max. Terminal Voltage | Vdc | 400 | | | | | | | |
| Thermal Resistance @ 120°C* | °C/W | 1.05 | | 0.79 | | | 0.63 | | |
| Max. Coil Temperature | °C | 120 | | | | | | | |
| Electrical Cycle Length | mm | 60 | | | | | | | |
| **Specifications** | | | | | | | | | |
| Repeatability** | um | ±2.0 | | | | | | | |
| 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 | kN | 3.1 | | | | | | | |
| Pitch moment | Nm | 287 | | | | | | | |
| Yaw moment | Nm | 287 | | | | | | | |
| Roll moment | Nm | 218 | | | | | | | |

Notes:
1. Apk = 1.414 * Arms; Vpk = 1.414 * Vrms.
2. * Ambient temperature 25°C, 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 : 4% duty ratio and 1 second duration.
5. ** Depend on encoder resolution.
6. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
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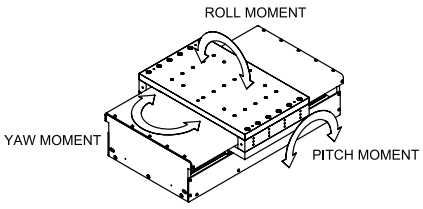
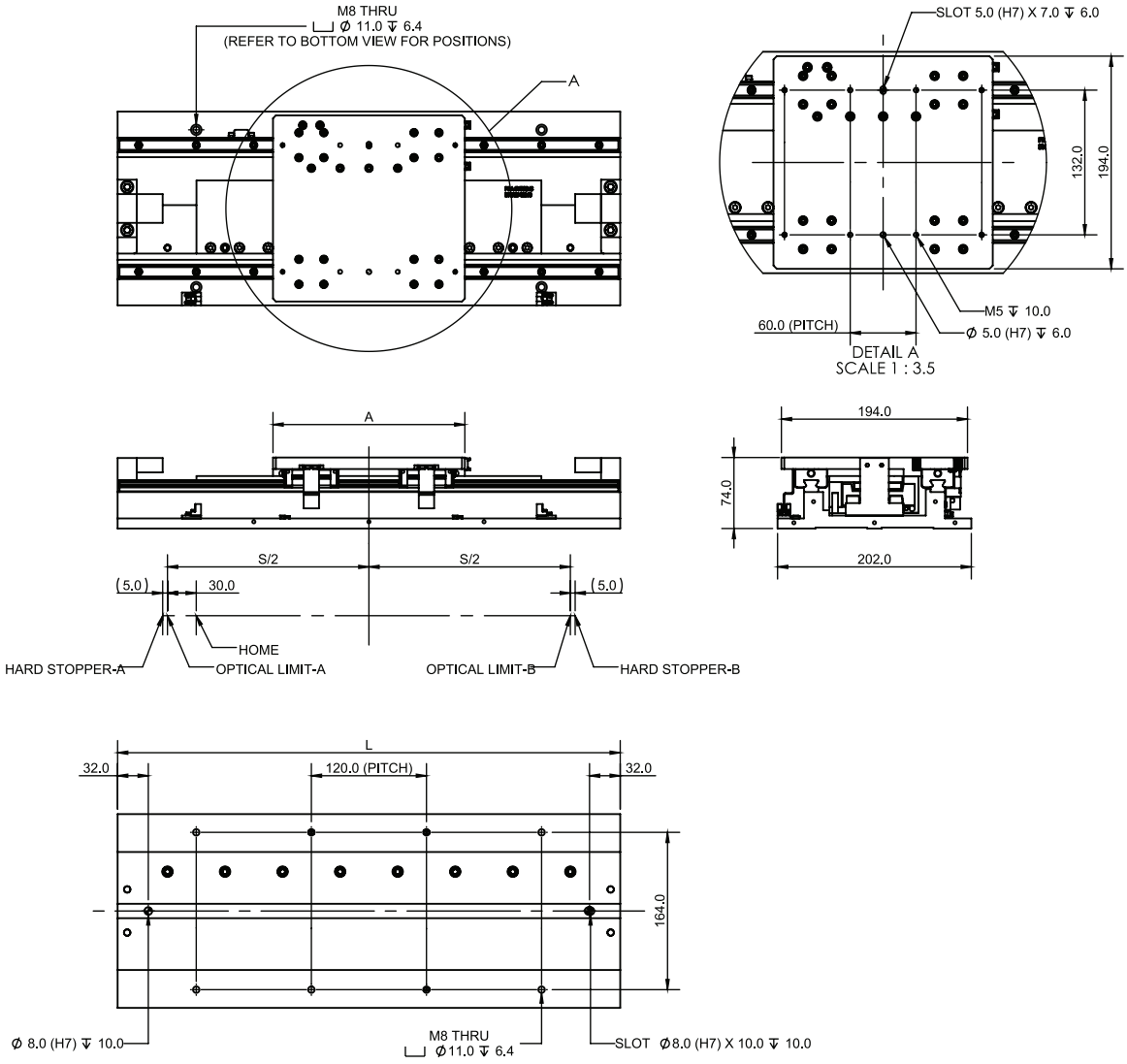


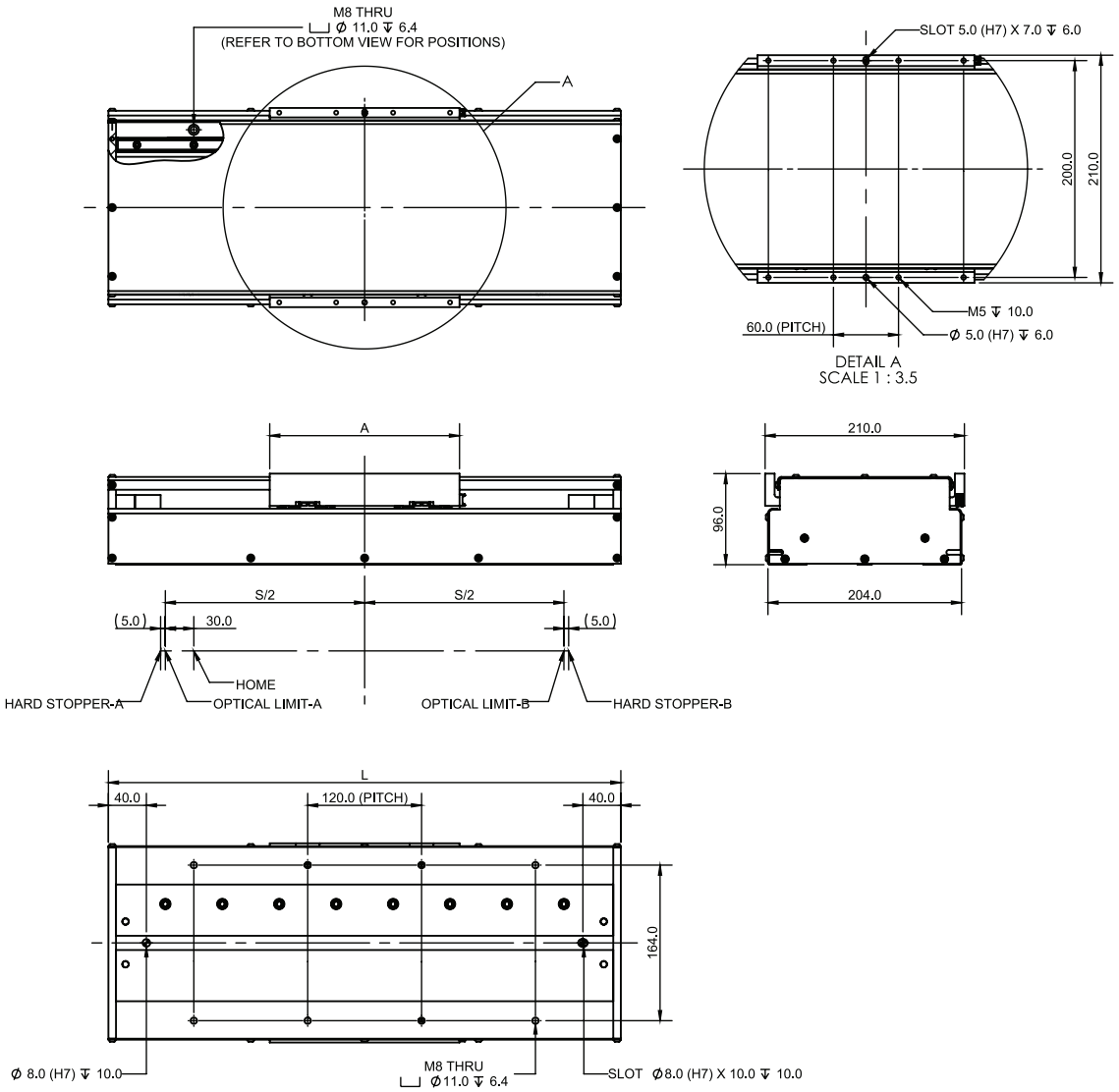
# PDAB-D5/D5T (OPEN TYPE)




| MOTOR MODEL | STROKE (S) mm | ACTUATOR LENGTH (L) mm | STROKE/ACTUATOR LENGTH (S)/(L) mm | CARRIAGE LENGTH (A) mm | SLIDER MASS kg | MODULE MASS (W) kg | |
|---|---|---|---|---|---|---|---|
| C1 | MIN:100 MAX:1600 | MIN:284 MAX:1784 | S=100+(Multiple of 60mm) L=S+A+(104mm) | 80 | 1.2 | MIN:8.9 MAX:51.4 | W=8.9 + (Multiple of 1.7kg) |
| C2 | | MIN:344 MAX:1844 | | 140 | 2.2 | MIN:10.5 MAX:53.0 | W=10.5 + (Multiple of 1.7kg) |
| C3 | | MIN:404 MAX:1904 | | 200 | 2.8 | MIN:13.6 MAX:56.1 | W=13.6 + (Multiple of 1.7kg) |
| C4 | | MIN:464 MAX:1964 | | 260 | 3.5 | MIN:14.8 MAX:57.3 | W=14.8 + (Multiple of 1.7kg) |
| C5 | | MIN:524 MAX:2024 | | 320 | 4.1 | MIN:18.6 MAX:61.1 | W=18.6 + (Multiple of 1.7kg) |

Notes:
1. Slider Mass = Coil Mass + Carriage Mass
2. Module mass increment of 1.7kg per 60mm

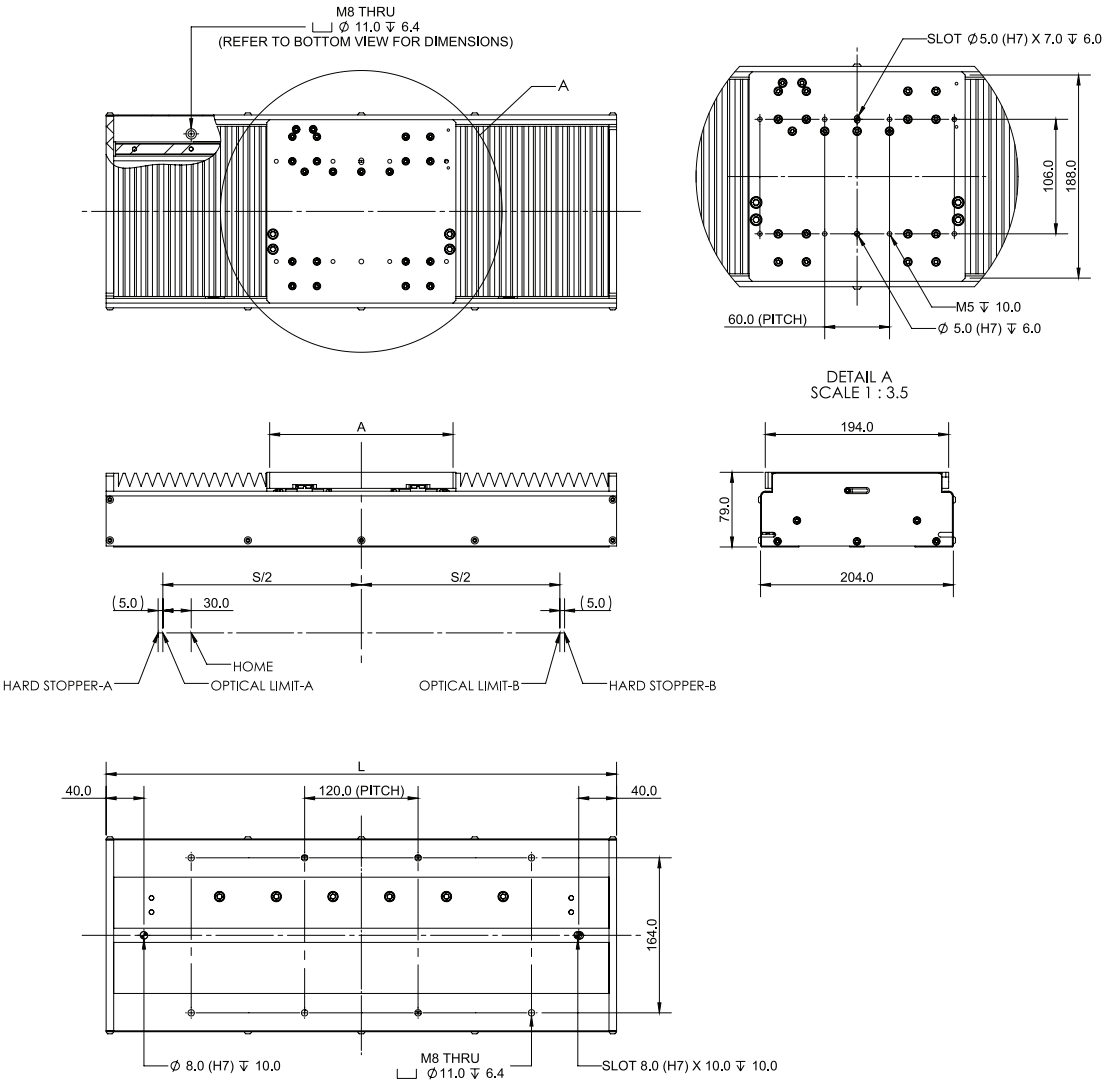
# PDAB-D5/D5T (COVERED TYPE)




| MOTOR MODEL | STROKE (S) mm | ACTUATOR LENGTH (L) mm | STROKE/ACTUATOR LENGTH (S)/(L) mm | CARRIAGE LENGTH (A) mm | SLIDER MASS kg | MODULE MASS (W) kg | |
|---|---|---|---|---|---|---|---|
| C1 | MIN:100 MAX:1600 | MIN:300 MAX:1800 | S=100+(Multiple of 60mm) L=S+A+(120mm) | 80 | 1.3 | MIN:10.9 MAX:58.4 | W=10.9 + (Multiple of 1.9kg) |
| C2 | | MIN:360 MAX:1860 | | 140 | 2.4 | MIN:12.8 MAX:60.3 | W=12.8 + (Multiple of 1.9kg) |
| C3 | | MIN:420 MAX:1920 | | 200 | 3.1 | MIN:16.1 MAX:63.6 | W=16.1+ (Multiple of 1.9kg) |
| C4 | | MIN:480 MAX:1980 | | 260 | 3.9 | MIN:17.7 MAX:65.2 | W=17.7 + (Multiple of 1.9kg) |
| C5 | | MIN:540 MAX:2040 | | 320 | 4.6 | MIN:21.0 MAX:68.5 | W=21.0 + (Multiple of 1.9kg) |

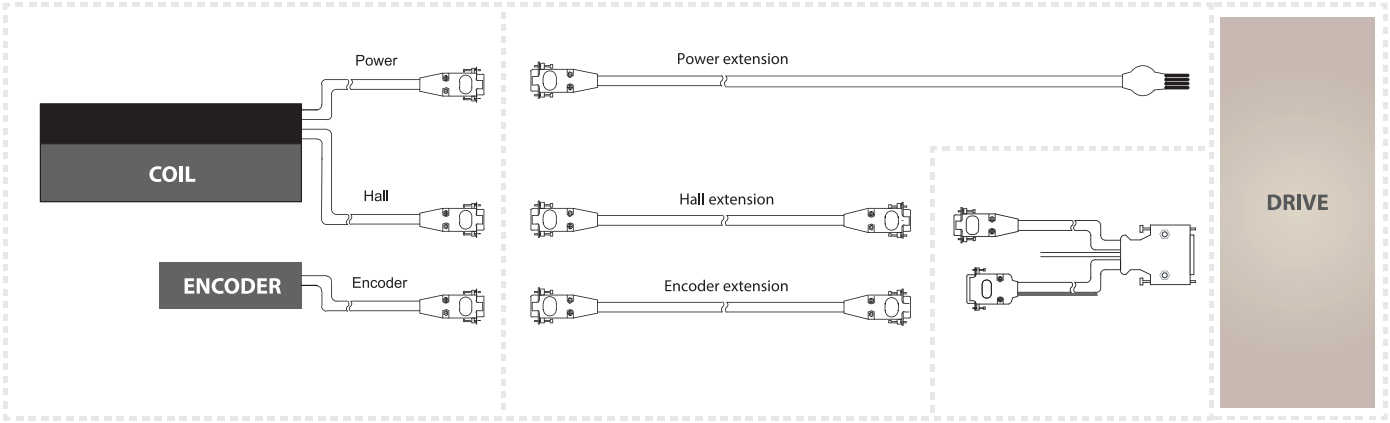
Notes:
1. Slider Mass = Coil Mass + Carriage Mass
2. Module mass increment of 1.7kg per 60mm

# PDAB-D5/D5T (BELLOW TYPE)




| MOTOR MODEL | STROKE (S) mm | | | | ACTUATOR LENGTH (L) mm | | | | CARRIAGE LENGTH (A) mm | SLIDER MASS kg | MODULE MASS (W) kg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1 | 100 | 160 | 220 | 280 | 300 | 420 | 540 | 600 | 80 | 1.3 | 10.3 | 12.3 | 14.3 | 15.3 |
| | 340 | 400 | 460 | 520 | 720 | 840 | 900 | 1020 | | | 17.3 | 19.3 | 20.3 | 22.3 |
| C2 | 100 | 160 | 220 | 280 | 360 | 480 | 600 | 660 | 140 | 2.3 | 12.0 | 14.0 | 16.0 | 17.0 |
| | 340 | 400 | 460 | 520 | 780 | 900 | 960 | 1080 | | | 19.0 | 21.0 | 22.0 | 24.0 |
| C3 | 100 | 160 | 220 | 280 | 420 | 540 | 660 | 720 | 200 | 3.1 | 16.2 | 17.2 | 19.2 | 20.2 |
| | 340 | 400 | 460 | | 840 | 960 | 1020 | | | | 22.2 | 24.2 | 25.2 | |
| C4 | 100 | 160 | 220 | 280 | 480 | 600 | 720 | 780 | 260 | 3.8 | 16.6 | 18.6 | 20.6 | 21.6 |
| | 340 | 400 | | | 900 | 1020 | | | | | 23.6 | 25.6 | | |
| C5 | 100 | 160 | 220 | 280 | 540 | 660 | 780 | 840 | 320 | 4.5 | 19.8 | 21.8 | 23.8 | 24.8 |
| | 340 | 400 | | | 960 | 1080 | | | | | 26.8 | 28.8 | | |

# CABLE OPTION



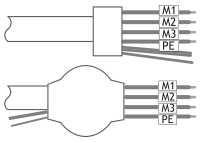

STAGE 1 | STAGE 2 (Optional) | STAGE 3

# STAGE 1 | POWER AND HALL CABLE OPTION

PDAB-D5-C1-S-TM-1.0-FC-HC-E1.0-O-1600-00

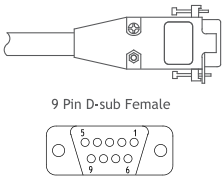
## POWER CABLE OPTIONS

### NF / FC



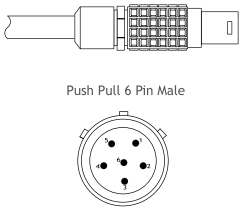

| | |
|---|---|
| M1 | Grey |
| M2 | Brown |
| M3 | Black |
| PE | Yellow |
| Temp sensor 1 | Black |
| Temp sensor 2 | Orange |

### 9NF




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

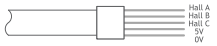
### CNF




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

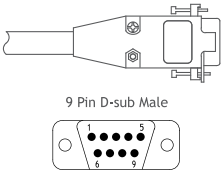
## HALL SENSOR OPTIONS

### H



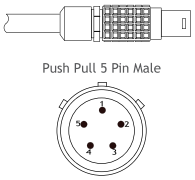

| | |
|---|---|
| Hall A | White |
| Hall B | Green |
| Hall C | Blue |
| 5V | Red |
| 0V | Black |

### HC



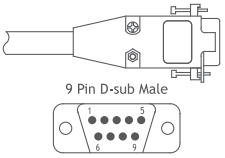

| | | |
|---|---|---|
| P1 | Hall A | White |
| P2 | Hall B | Green |
| P3 | Hall C | Blue |
| P4 | 5V | Red |
| P5 | 0V | Black |

### CHC




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

### HCL




| | |
|---|---|
| P1 | Hall A+ |
| P2 | Hall A- |
| P3 | Hall B+ |
| P4 | Hall B- |
| P5 | Hall C+ |
| P6 | Hall C- |
| P7 | 5V |
| P8 | 0V |

Notes: All connectors shown are front view

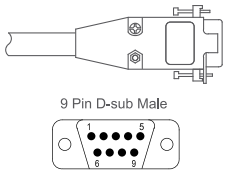
The temperature in which the thermostat is active is shown as below:

| MODEL | THERMAL DEVICE TYPE | THERMOSTAT (NC) OPENS AT |
|---|---|---|
| DX30B | PT100 | See Note 1 |
| DX30B | Thermostat | 100°C |
| DX50B | 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.

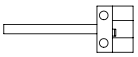
# PDAB CABLE PIN OUT

## 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 |

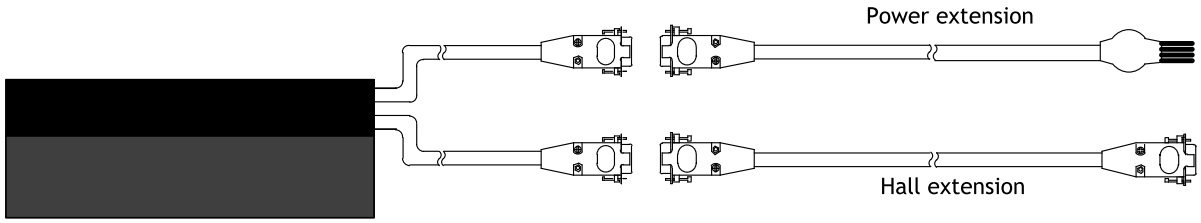
## OPTICAL LIMIT SWITCH (PM-L24)

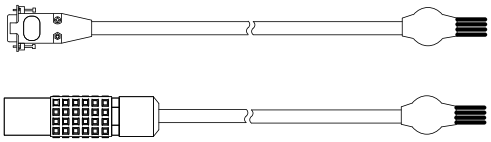
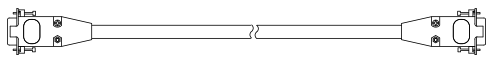
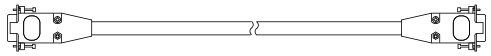


| | |
|---|---|
| +5 to 24V DC | Brown |
| GND | Blue |
| LIGHT-ON | Black |
| DARK-ON | White |

# STAGE 2 | PDAB EXTENSION CABLE

Connection example: PDAB-D5-C1-S-TM-1.0-FC-HC-E1.0-O-1600-00




| 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_HALL0_X.X |
| |  | CBL_EXT_HALL0_CC_X.X |
| | | CBL_EXT_HALL0_DIF_X.X |
| Encoder Extension Cable |  | CBL_EXT_REN01_X.X |
| | | CBL_EXT_REN01B_X.X |

| CABLE | |
|---|---|
| 00 | RGH41, VIONIC, QUANTIC Digital |
| 00A | RGH41 Analog |
| 01 | RH200 Digital |
| 01B | RH200 Analog |
| 05 | ATOM Ri Interface Digital |
| 05A | ATOM Ri Interface 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

# Application Form - Linear Motor Selection

| Customer Name: | Date (DD/MM/YY): |
|---|---|
| Contact Email: | |

## PBA LINEAR MOTOR SELECTION QUESTIONAIRE

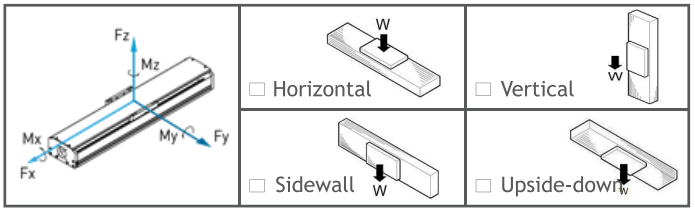
1. Application Description

1a. Application Sketch With Approx Dimensions

2. Load Parameter

| | | | | | |
|---|---|---|---|---|---|
| Moving mass (without motor coil) | kg | | | | |
| Frictional force | N | | | | |
| Opposing force | N | | | | |
| Mx | N.m | My | N.m | Mz | N.m |
| | | | | | |

Stage Requirements




3. Motion Parameter

| | | Profile 1 | Profile 2 | Profile 3 |
|---|---|---|---|---|
| Moving distance | mm | | | |
| Moving time | s | | | |
| Moving velocity | m/s | | | |
| Acceleration | $m/s^2$ | | | |
| Dwell time | s | | | |

4. Command/Bus (Please Circle Accordingly)

Pulse and direction / Analog / EtherCAT / IO trigger / Other : _____

5. Encoder (Please Circle Accordingly)

| | | |
|---|---|---|
| Resolution | um | |
| Incremental / Absolute / Analog | | |

6. Motion Precision

| | | |
|---|---|---|
| Accuracy | um/mm | |
| Repeatability | um | |

7. Mechanical Specification

| | | |
|---|---|---|
| Effective stroke | mm | |
| Flatness | um/mm | |
| Straightness | um/mm | |
| Space constraints ( L x W x H ) | mm | |

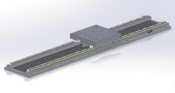
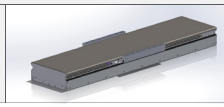
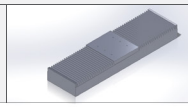
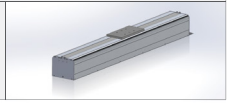
8. Working Environment

| | | |
|---|---|---|
| Room temperature | °C | |
| Clean room class | | |

9. Additional Requirements (Please Tick ( )Accordingly)

| Motor cable length | Controller | Amplifier | Encoder | Other: _____ |
|---|---|---|---|---|
| m | | | | |

10. Actuator

| Open Frame | Enclosed | | | | | | |
|---|---|---|---|---|---|---|---|
|  | PARTIAL |  | BELLOW |  | STRIP SEAL |  | |

11. Remarks: If you have any special motion request for sizing procedure, please specify your requirement in below remarks.

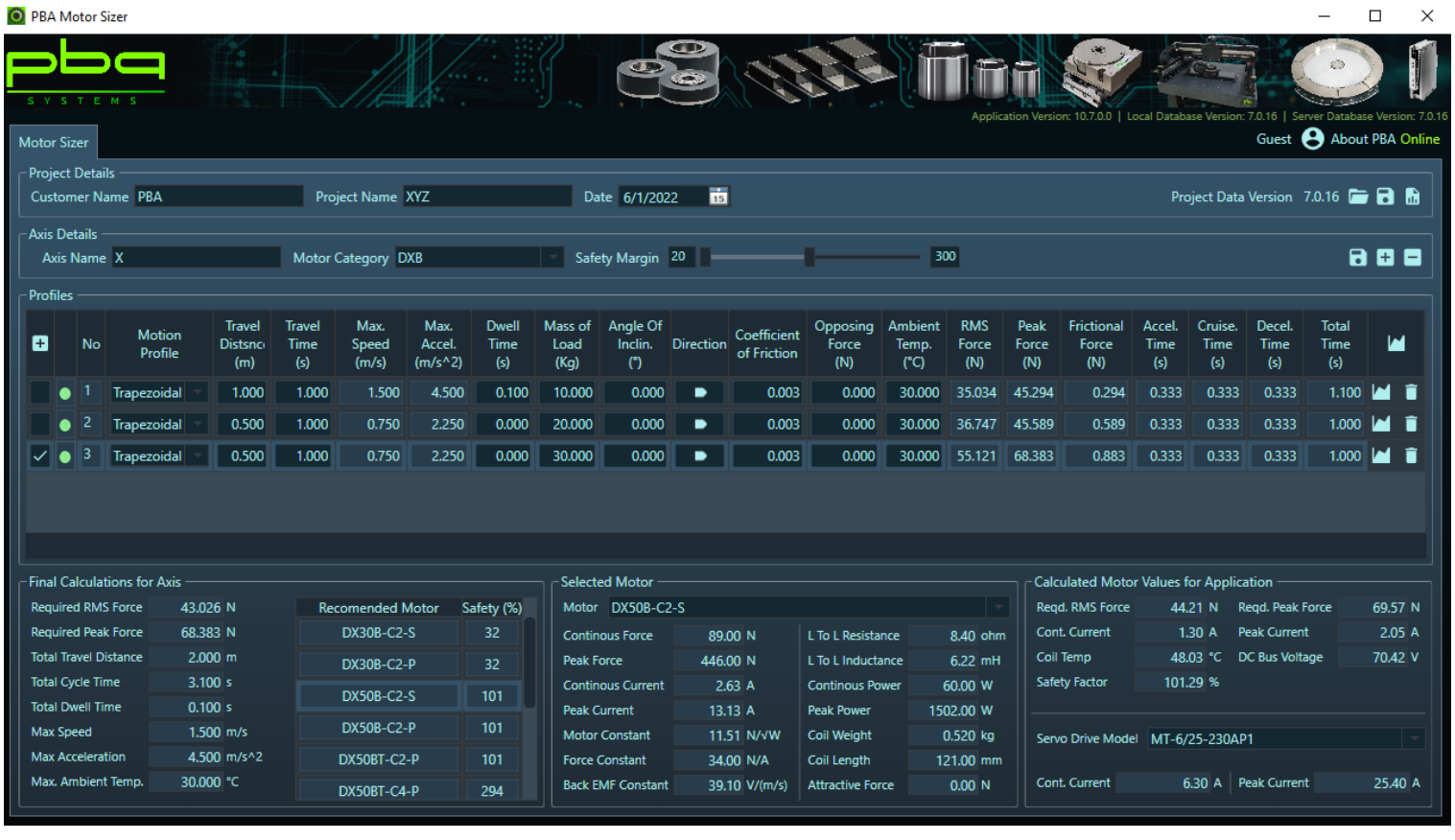
# PBA SYSTEMS LINEAR MOTOR SIZER SOFTWARE


## PBA SYSTEMS LINEAR MOTOR SIZER SOFTWARE

PBA Systems Motor Sizer Software is available to download from our website to assist in the calculation and selection.

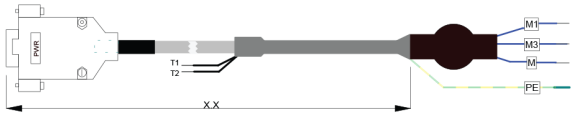
Kindly visit us at www.pbasystems.com.sg or simply scan the QR CODE

## SIMULATED PERFORMANCE CHARTS

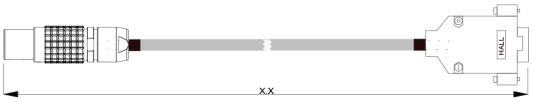


# APPENDIX

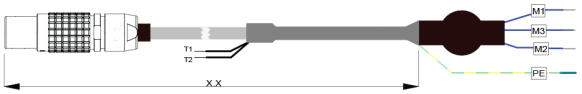
Power Extension Cable



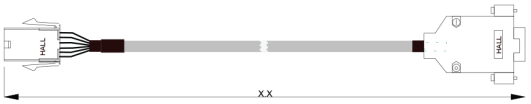

Hall Extension Cable



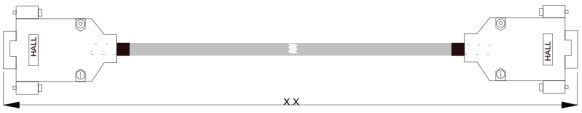

Power Extension Cable



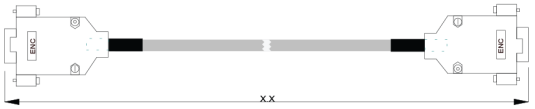

Hall Extension Cable



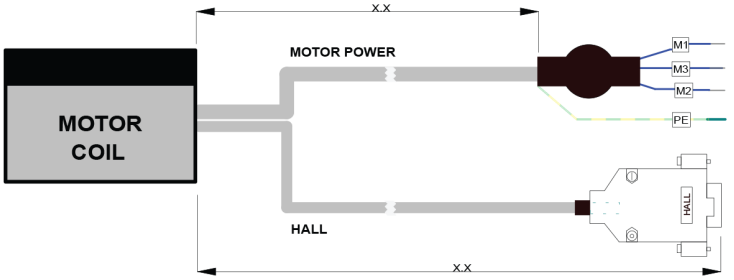

Hall Extension Cable



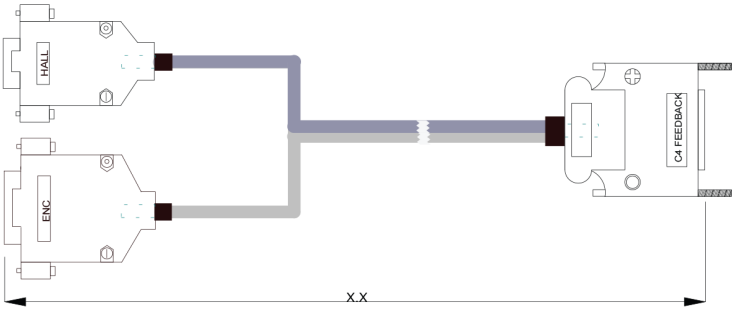

Encoder Extension Cable




## MOTOR POWER HALL CABLE




## MAXTUNE FEEDBACK CABLE




Notes:

1. X.X is the length of the cable in meter with a tolerance of $^{+\ 0.10}_{-\ 0}$
2. All measurements are in meters (m) unless stated