Regal Rexnord

Servo System
ABD & ABM Series

RegalRexnord™ KOLLMORGEN

A REGAL REXNORD BRAND

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ABOUT US

Engineer the Exceptional

We believe in the power of motion and automation to create a better world.

Kollmorgen has more than 100 years of motion experience, proven in the industry's highest-performing, most reliable motors, drives, linear actuators, gearheads, AGV control solutions and automation platforms. We deliver breakthrough solutions that are unmatched in performance, reliability and ease of use, giving machine builders an irrefutable marketplace advantage.

Kollmorgen is a brand of Regal Rexnord, a premier global designer and producer of a wide range of motion control and power transmission solutions. With engineered components and systems that provide the essential control of equipment speed, torque, positioning, and other functions, Regal Rexnord products can be used in nearly any machine, process or application involving motion.

ISO9001

EtherCAT®

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ABD Servo Drives

01 INTRODUCTION

Drives and Matched Motors

Motors for ABM Drives

- Absolute or incremental encoder ABM series motors
- Holding Brake as optional
- IP65 as standard

Models	ABD0406	ABD0806 ABD1006 ABD1506	ABD2006 ABD3006
Drives			
Power / kW	0.4	0.75 -1.5	2 - 3
Dimension (H×W×D / mm)	172×38×180	172×65×180	172×95×180
Motors			
	ABM23	ABM41 ABM42 ABM51 ABM61	ABM52 ABM62 ABM71

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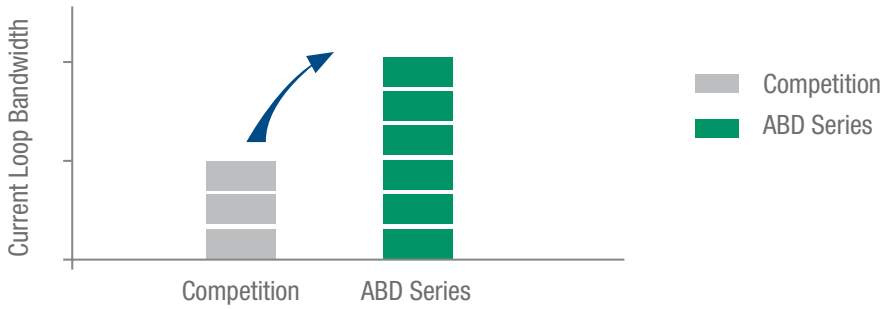
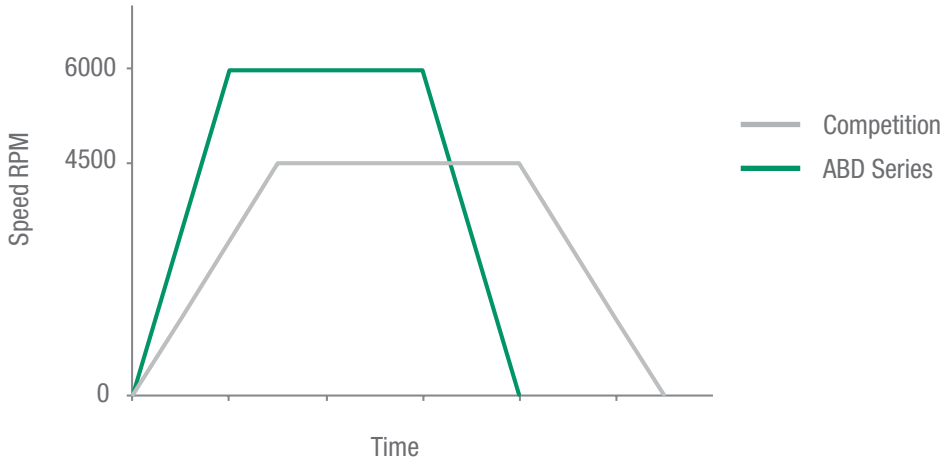
Advantages

Zero Stacking	1mm drive installation clerance

High Response	62.5µs current loop cycle, and minimum 125µs EtherCAT update cycle



Over-load Capability	Higher acceleration and deceleration with 3.5 times over-load capability



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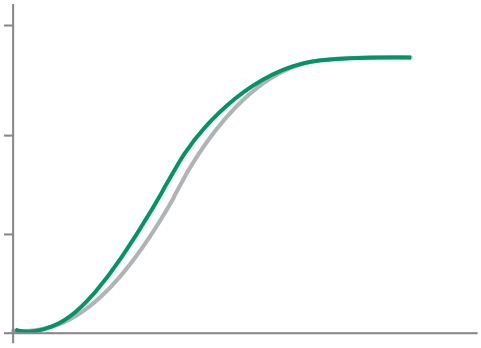
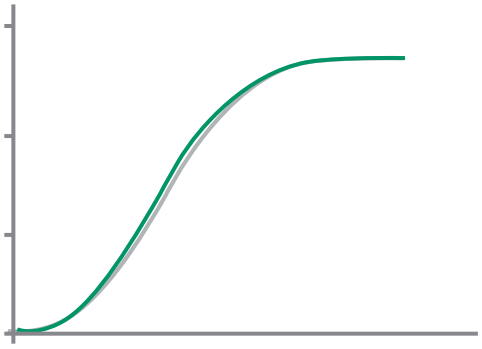
Advantages

ABD Servo Drives

Smart Turning	Support multiple tuning models



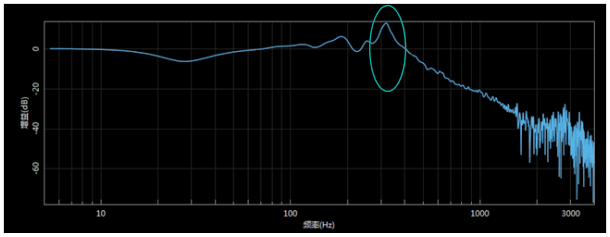
Position Tracking (before tuning)



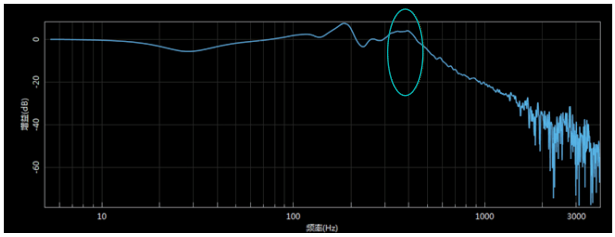
Position Tracking (after tuning)

Position Reference
Position Feedback

Vibration Suppression	Full-range frequency (1-5kHz) vibration supression

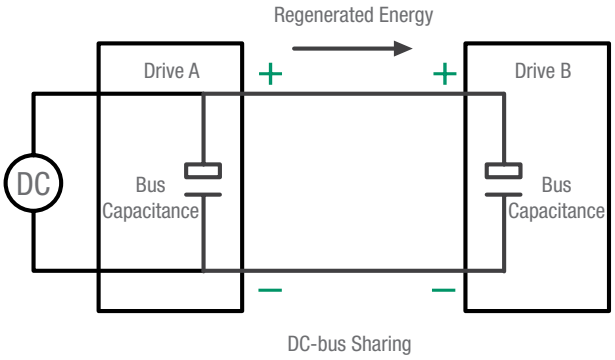


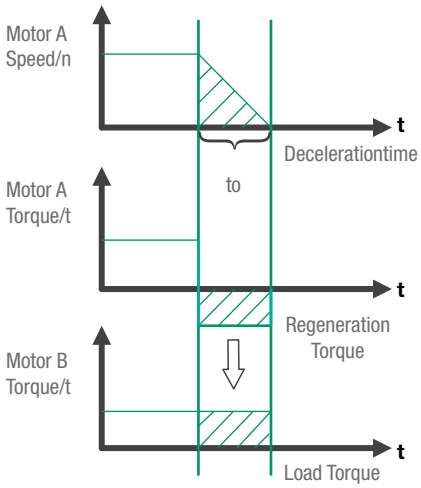
Bode plot mechanical magnitude (before vibration suppression)



Bode plot mechanical magnitude (after vibration suppression)

DC-bus Sharing	Multiple power bus sharing approached to save energy & cost





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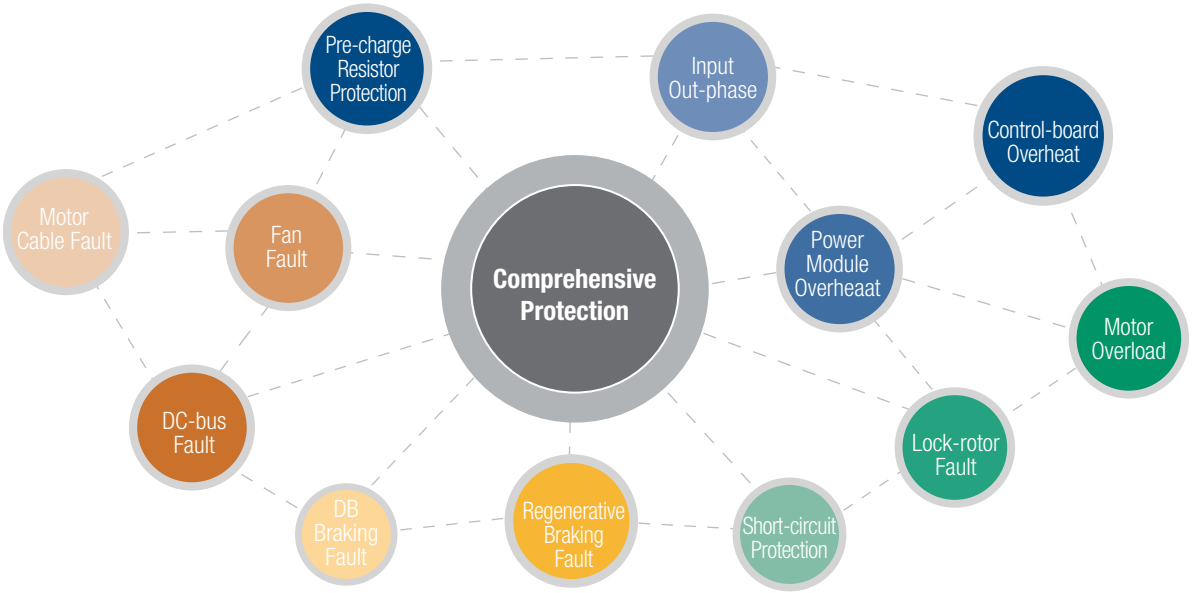
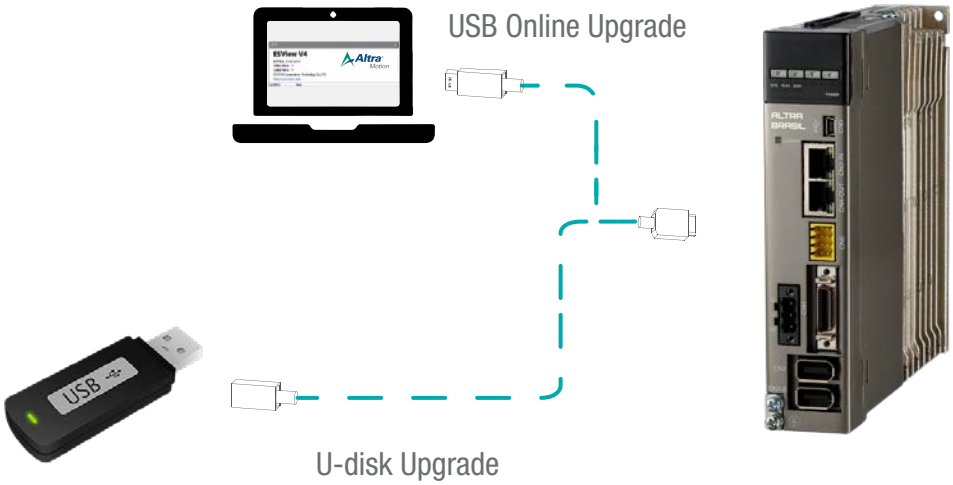
ABD Servo Drives

Comprehensive Protection	Improved system reliability



Firmware Upgrade	Upgrading firmware through USB or U-disk



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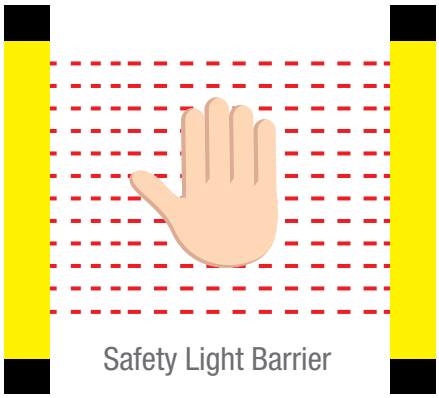
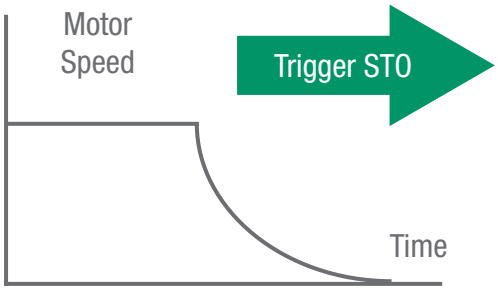
Advantages

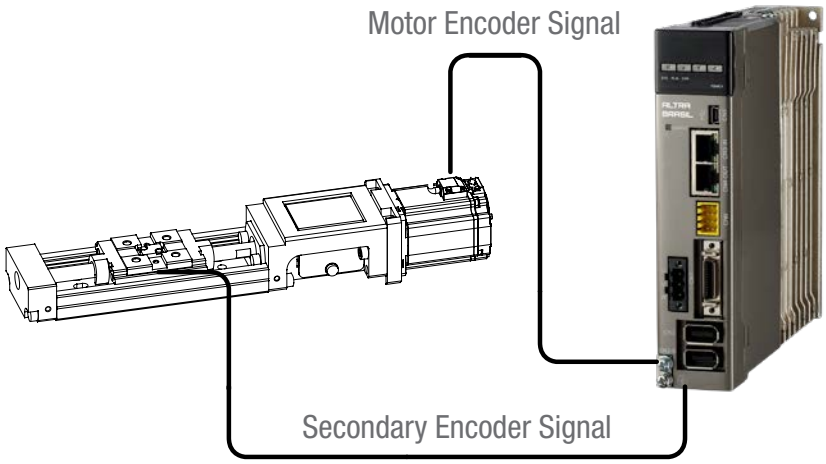
ABD Servo Drives

Function Safety: STO (Safe Torque Off) → Built-in STO function:SIL3,PLe,Cat.4



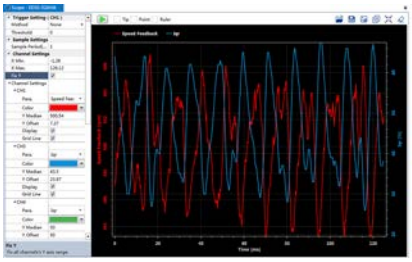


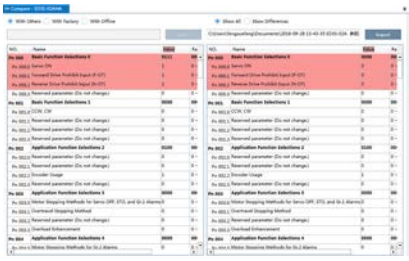
Fully-closed Loop Control → Improved system positioning accuracy with secondary encoder at load side

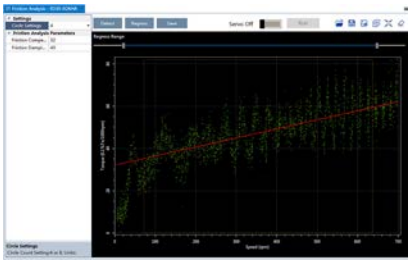


Configuration Tools - ABView

Oscilloscope → Parameter Comparison → Friction Analysis →







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02 PART NUMBERS

ABD Servodrives	Voltage	Power	ABM Servomotors 1	Encoder Cable 2	Power Cable 2
ABD0406-EC-00	Single-phase or Three-Phase 230 Vac	0.4 kW	ABM23-KK-A☐EI-00	CF-ABD-A-EA-☐☐	CP-ABD-A1-04-☐☐ (w/o brake) CP-ABD-A1F-04-☐☐ (with brake)
ABD0406-EC-0B			ABM23-KK-A☐EA-00		
ABD0806-EC-00		0.75 kW	ABM41-AK-A☐EI-00		CP-ABD-A1-10-☐☐ (w/o brake) CP-ABD-A1F-10-☐☐ (with brake)
ABD0806-EC-0B			ABM41-AK-A☐EA-00		
ABD1006-EC-00		1.0 kW	ABM42-AK-A☐EI-00		
ABD1006-EC-0B			ABM42-AK-A☐EA-00		
ABD1506-EC-0B		1.5 kW	ABM51-CC-D☐EA-00	CF-ABD-D-EA-☐☐	CP-ABD-B1-20-☐☐ (w/o brake) CP-ABD-B1F-20-☐☐ (with brake)
ABD1506-EC-00			ABM61-SK-B☐EI-00	CF-ABD-B-EA-☐☐	
ABD1506-EC-0B			ABM61-SK-B☐EA-00		
ABD2006-EC-0B	Three-Phase 230 VCA	2.0 kW	ABM52-CC-D☐EA-00	CF-ABD-D-EA-☐☐	
ABD2006-EC-00			ABM62-SK-B☐EI-00	CF-ABD-B-EA-☐☐	
ABD2006-EC-0B			ABM62-SK-B☐EA-00		
ABD3006-EC-00		3.0 kW	ABM71-KK-C☐EI-00	CF-ABD-C-EA-☐☐	CP-ABD-C1-30-☐☐ (w/o brake) CP-ABD-C1F-30-☐☐ (with brake)
ABD3006-EC-0B			ABM71-KK-C☐EA-00		

1 ☐ : N = without Brake - 2 = with Brake;

2 ☐☐ : Cable Length (030 - 3m; 150 = 15m)

Servo Drive	Main Circuit Voltage	Built-in Regenerative Resistor Specifications	Min.Allowable Resistance	Min.Rated Current for Circuit Breaker
ABD0406-EC	200-240VAC	—	50Ω	10A
ABD0806-EC	200-240VAC	50Ω/60W	25Ω	25A
ABD1006-EC	200-240VAC	50Ω/60W	25Ω	25A
ABD1506-EC	200-240VAC	40Ω/80W	10Ω	35A
ABD2006-EC	200-240VAC	20Ω/150W	10Ω	55A
ABD3006-EC	200-240VAC	20Ω/150W	10Ω	70A

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03 ABD SERVO DRIVES

Part Number

ABD 04 06 - EC - 00

Power	Supply	Protocol	Encoder Option
04: 0.4kW 08: 0.75kW 10: 1kW 15: 1.5kW 20: 2kW 30: 3kW	06: 200VAC	EC: EtherCAT, STO, Full-closed loop	00: Incremental Encoder 1B: Battery for Absolute MT Encoder

Ratings

Servo Drive Model: ABD	0406	0806	1006	1506	2006	3006
Applicable Servo Motor Model: ABM	23	41	42	51/61	52/62	71
Continuous Output Current [Arms]	2.9	5.1	6.9	8.2	11.3	18.0
Max. Output Current [Arms]	11.5	19.5	21.0	24.6	33.9	54.0
Input Power Capacity [kVA]	0.9	1.6	2.0	3.0	3.5	4.5

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Specifications

Ratings			Specifications	
Input Power Supply	Main Circuit		Single-phase/Three-phase200～240VAC，+10%～-15%(50/60Hz) 270~324VDC，+10%~-15%	Three-phase200～240VAC，+10%～-15%(50/60Hz) 270~324VDC，+10%~-15%
	Control Circuit		Single-phase200～240VAC，+10%～-15% (50/60Hz) 270~324VDC，+10%~-15%	
Control Method			SVPWM Control	
Feedback			Serial Encoders 20bits : 1048576 PPR(incremental) 23bits: 8388608PPR(absolute)	
Operating Conditions	Ambient/Storage Temperature		Ambient temperature：0～+55℃ Storage temperature：-25～+85℃	
	Ambient/Storage Humidity		5%~95% RH(no condensation)	
	Protection Structure		IP20	
	Altitude		1000m or less	
	Vibration/impact		Vibration Resistance：4.9m/s² Impact Resistance：19.6m/s²	
	Power System		TN system*3	
Installation			Base-mounted	
Performance	Speed Setting		1:5000	
	Speed Fluctuation Factors	With Load	0 to 100% load: ±0.01% or less (at rated speed)	
			Rated voltage ±10%: 0% (at rated speed)	
		With Temperature	25±25°C: ±0.1% or less (at rated speed)	
	Soft Start-up Setting		0 to 10 s (acceleration and deceleration can be set separately)	
I/O Signals	Encoder Dividing Pulses Output		Phase-A, Phase-B, Phase-C:line driver output Dividing pulses number: determine ratio by setting parameter	
	Sequence Input	Channel Number	7 Channels (two channels of them are high-speed Optocoupler input for Touch Probe)	
		Functions	Signal allocations and positive & negative logic modifications: servo on (/S-ON); forward run prohibited (P-OT); reverse run prohibited (N-OT); forward torque limit (/P-CL); reverse torque limit (/N-CL); gain switch options (/G-SEL); home/reference point switch (/HOME). two high-speed optocoupler channels can be allocated to Touch Probe 1 and Touch Probe 2	
	Sequence Output	Channel Number	4 Channels	
		Functions	Signal allocations and positive/negative logic modifications: positioning completion (/COIN); speed coincidence (/V-CMP); servomotor rotation detection (/TGON);servo ready (/S-RDY); torque limit output (/CLT); brake interlock output (/BK); encoder C pulse (/PGC); over travel signal (/OT). servo excitation (/RD) etc. Of these: servo alarm (ALM); stationary channel; cannot be changed	
Dynamic Braking			0806-3006：built-in regenerative resistor；0406：external regenerative resistor	
Protection Functions			Overcurrent, overvoltage,low voltage, overload, regeneration error, overspeed, etc	
Auxiliary Functions			Alarm trace back, JOG operation, load inertia detection, parameter autotuning, etc	
Optional Functions	Functional safety		STO acc. to IEC 61800-5-2	
			SIL3 acc. to IEC 61508 and IEC 62061, Cat. 4, PLe acc. to ISO 13849-1	
	Fully-closed loop control		Supporting for A/B/Z,TTL differential output	

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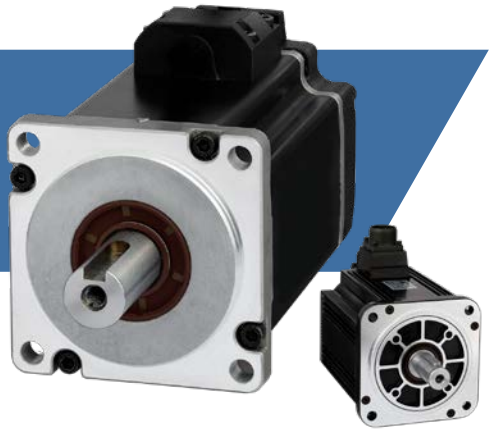
04 ABM SERVO MOTORS



Part Number

ABM 6 2 - K K - A N EA 00

ABM Series

Flange Size

- **2** 60 mm
- **4** 80 mm
- **5** 100 mm
- **6** 130 mm
- **7** 180 mm

Rotor Stack Length

Shaft

- **A,K, C** Keyway - IEC Standard
- **S** Special

Mount

- **C** Alternative IEC Standard
- **K** Standard
- **S** Special

Connectors

- **A** Standard IP65 (0.4kW to 1kW)
- **B** Aviation Plug (1.5kW to 2kW)
- **C** Aviation Plug (3kW)
- **D** Standard IP65 (1.5kW to 2kW)

Brake

- **2** 24V holding brake
- **N** Without brake

Feedback Device

- **EI** 20-bit Incremental Encoder
- **EA** 23-bit Absolute Multi-Turn Encoder

Customization/Seal

- **00** Standard Motor

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ABM Servo Motor Specifications

Ratings		200 VAC			
Servo Motor Model		ABM23-KK-A□EI-00 ABM23-KK-A□EA-00	ABM41-AK-A□EI-00 ABM41-AK-A□EA-00	ABM42-AK-A□EI-00 ABM42-AK-A□EA-00	ABM51-CC-D□EA-00
Rated Output	kW	0.4	0.75	1	1,5
Rated Torque	N·m	1.27	2.39	3.18	4,78
Instantaneous Peak Torque	N·m	4.45	8.37	11.13	14,3
Rated Current	Arms	2.9	5.1	6.9	9,5
Instantaneous Max current	Arms	11.5	19.5	21.0	31,6
Rated Speed	r/min	3000			3000
Max. Speed	r/min	6000			5000
Rotor Moment of Interia	$\times10^{-4}$kg·m²	0.244 (0.276)	0.909 (1.07)	1.14 (1.30)	2,33 (3,10)
Weight	kg	1.3 (1.7)	2.6 (3.2)	3.1 (3.8)	5.1 (6.4)
Brake Power Supply		DC24V±10%			
Brake Rated Power	W	7.4	9.6		9,2
Brake Rated Torque	N·m	1.5	3.2		8
Encoder		20-bit Incremental Encoder 1048576 P/R; 23-bit Absolute Encoder 8388608ppr[3]			
Insulation Class		F			
Ambient Temperature		0 ~ +40℃(No freezing)			
Ambient Humidity		20%~80% RH (No condensing)			
Vibration		Vibration: Dynamic ≤49m/s (² 5G) ; Static ≤24.5m/s²; Shock:≤98m/s²(10G)			
Enclosure		Totally Enclosed, Self-cooled, IP65 (Except for shaft opening, when not equipped with oil seal; Except for connector, when not equipped with waterproof plug)			

Notes:
1. □ : N = without Brake - 2 = with Brake;
2. The data inside parenthesis represents the values with brake.
3. The ABM51 only has the absolute feedback option.

ABM Servo Motor Specifications

Ratings		200 VAC			
Servo Motor Model	kW	ABM52-CC-D□EA-00	ABM61-SK-B□EI-00 ABM61-SK-B□EA-00	ABM62-SK-B□EI-00 ABM62-SK-B□EA-00	ABM71-KK-C□EI-00 ABM71-KK-C□EA-00
Rated Output	kW	2,0	1.5	2.0	3.0
Rated Torque	N·m	6,37	7.16	9.55	14.3
Instantaneous Peak Torque	N·m	19,1	21.5	28.7	40
Rated Current	Arms	12,6	8.2	11.3	18.0
Instantaneous Max current	Arms	42	24.6	33.9	54.0
Rated Speed	r/min	3000	2000		
Max. Speed	r/min	5000	3000		
Rotor Moment of Interia	$\times10^{-4}$kg·m²	2,95 (3,72)	18.4 (19.5)	23.5 (24.6)	41.3 (44.5)
Weight	kg	6,1 (7,5)	8.9 (10.4)	10.8 (12.3)	16.63 (20.23)
Brake Power Supply		DC24V±10%			
Brake Rated Power	W	12,5	19.5		35
Brake Rated Torque	N·m	8	12		40
Encoder		20-bit Incremental Encoder 1048576 P/R; 23-bit Absolute Encoder 8388608ppr[3]			
Insulation Class		F			
Ambient Temperature		0 ~ +40℃(No freezing)			
Ambient Humidity		20%~80% RH (No condensing)			
Vibration		24.5m/s²			
Enclosure		Completely Closed, Wind-cooling, Self-cooling, IP65 (The Model With Oil Seal[3], excluding Connecting Joint With Cable)			

Notes:
1. □ : N = without Brake - 2 = with Brake;
2. The data inside parenthesis represents the values with brake.
3. The ABM52 only has the absolute feedback option and is not equipped with an oil seal.

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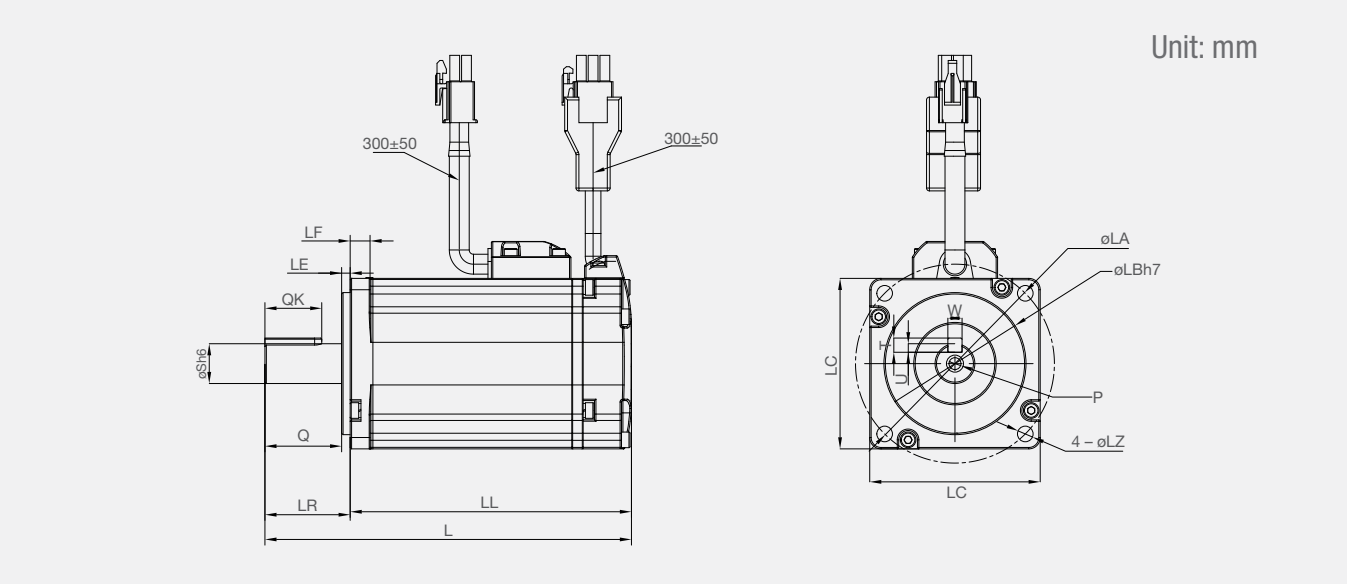
Dimensions

ABM Servo Motors

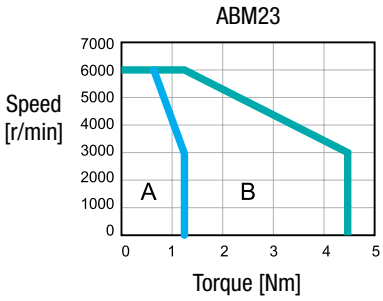
ABM Dimensions

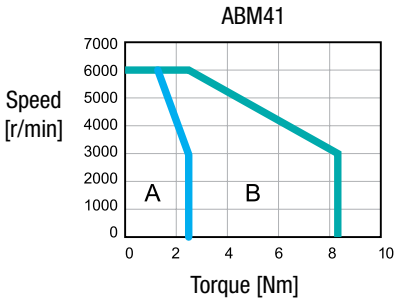


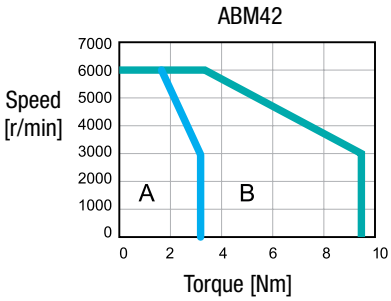
ABM	L	LL	Flange Side							S	Threaded hole x Depth	Key				
			LR	LE	LF	LC	LA	LB	LZ			QK	W	T	U	Q
23-KK-A□EA	129(158)	99(128)	30	3	7	60	70	50	5.5	14	M5X12	20	5	5	3	27
41-AK-A□EA	141(184)	111(144)	40	3	8	80	90	70	6.6	19	M6X12	25	6	6	3.5	37
42-AK-A□EA	155(198)	125(158)	40	3	8	80	90	70	6.6	19	M6X12	25	6	6	3.5	37
23-KK-A□EI	147.5(176.5)	117.5(146.5)	30	3	7	60	70	50	5.5	14	M5X12	20	5	5	3	27
41-AK-A□EI	169.5(202.5)	129.5(162.5)	40	3	8	80	90	70	6.6	19	M6X12	25	6	6	3.5	37
42-AK-A□EI	183.5(216.5)	143.5(176.5)	40	3	8	80	90	70	6.6	19	M6X12	25	6	6	3.5	37

Note:Numbers inside parentheses represents the values with brake.

ABM Torque-Speed Features







A: Continuous Working Area B: Repeatedly Working Area

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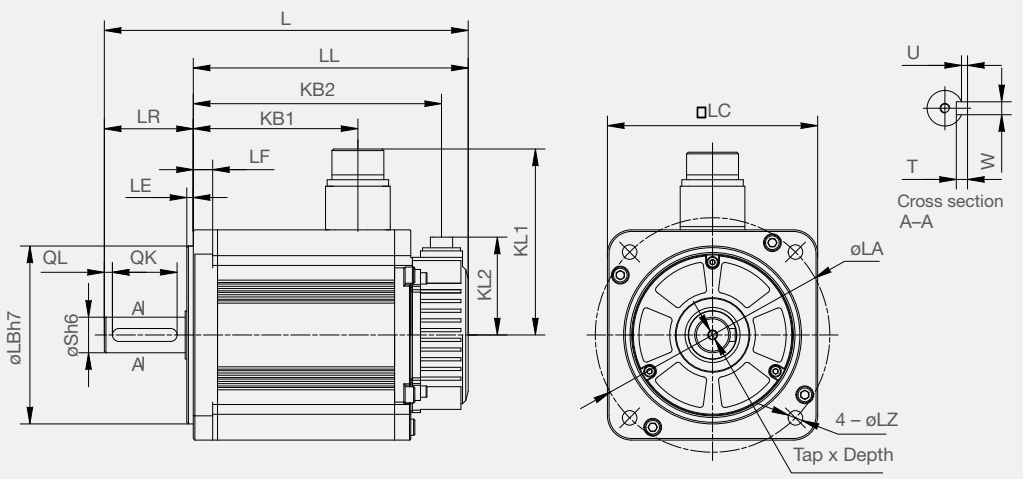
ABM Servo Motors

ABM Dimensions

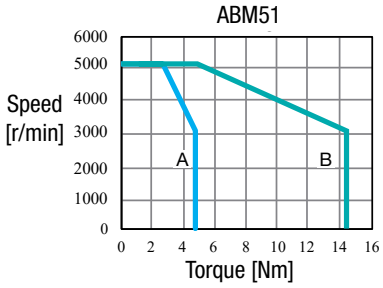
Unit: mm

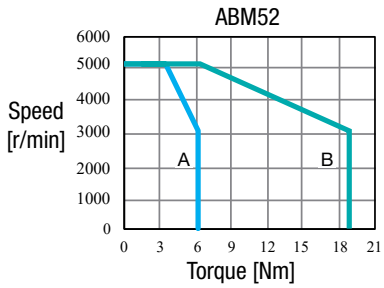


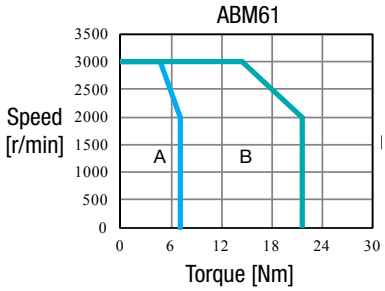
ABM	L	LL	KB1	KB2	KL1	KL2	Flange Side							S	Threaded hole x Depth	Key				
							LR	LE	LF	LC	LA	LB	LZ			QK	W	T	U	QL
51-CC-D□EA	210 (240)	165 (195)	97 (109)	150 (180)	102	60	45	3	10	100	115	95	7	24	M8 x 16	36	8	7	4	-
52-CC-D□EA	230 (260)	185 (215)	117 (129)	170 (200)																
61-SK-B□E□	225 (267,5)	170 (212.5)	102 (125.2)	153.5 (196)	117	60.5	55	4	12	130	145	110	9	22	M6×20	40	8	7	4	5
62-SK-B□E□	247 (289.5)	192 (234.5)	124 (147.2)	175.5 (218)																
71-KK-C□E□	307 (378)	228 (299)	143	203 (27 4)	140	79	79	3.2	18	180	200	114.3	13.5	35	M8×16	55	10	8	5	6

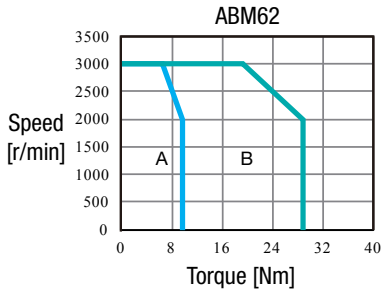
Note: Numbers inside parentheses represents the values with brake.

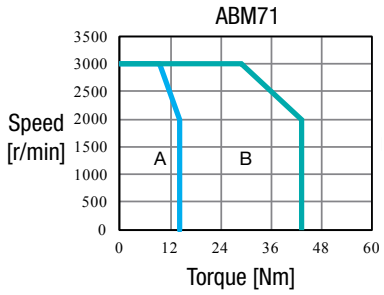
ABM Torque-Speed Features











A: Continuous Working Area B: Repeatedly Working Area

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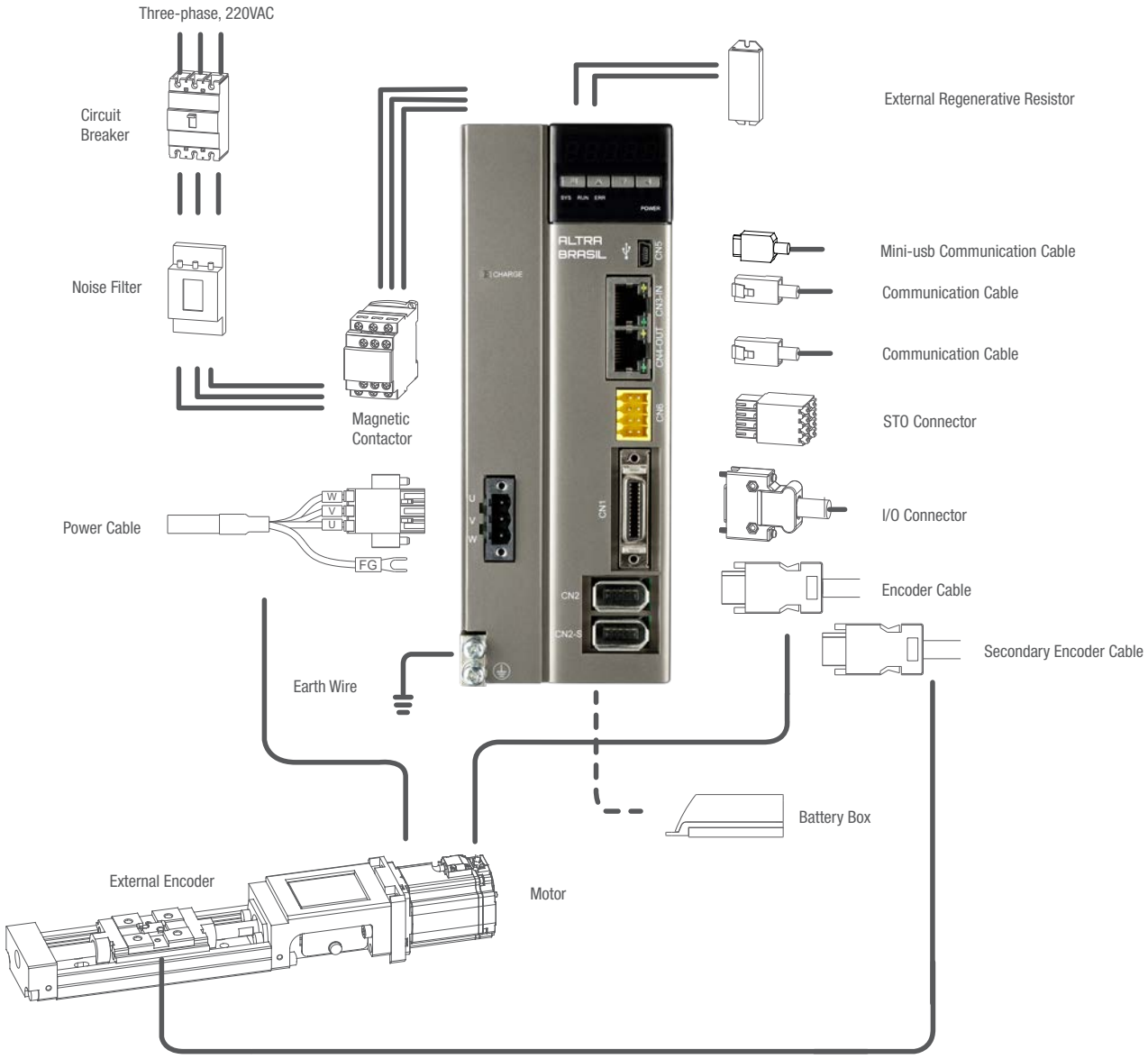
ABD & ABM Servo System

05 WIRING

Wiring



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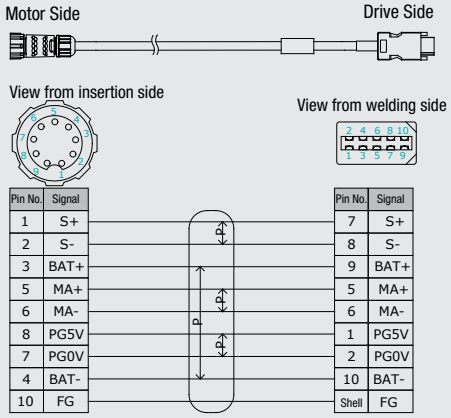
06 ACCESSORIES

Cables

Encoder Cables

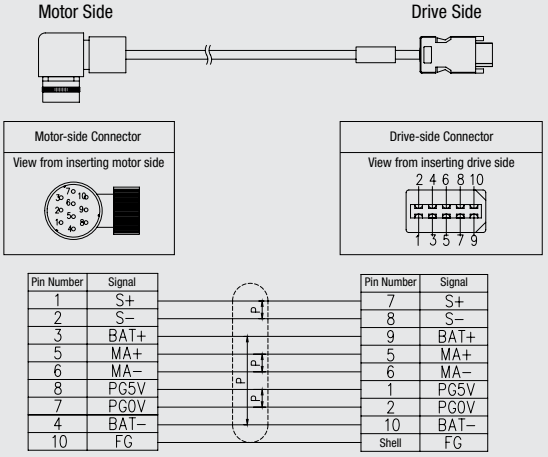
CF-ABD-A-EA-□□



Pin No.	Signal
1	S+
2	S-
3	BAT+
5	MA+
6	MA-
8	PG5V
7	PG0V
4	BAT-
10	FG

Pin No.	Signal
7	S+
8	S-
9	BAT+
5	MA+
6	MA-
1	PG5V
2	PG0V
10	BAT-
Shell	FG

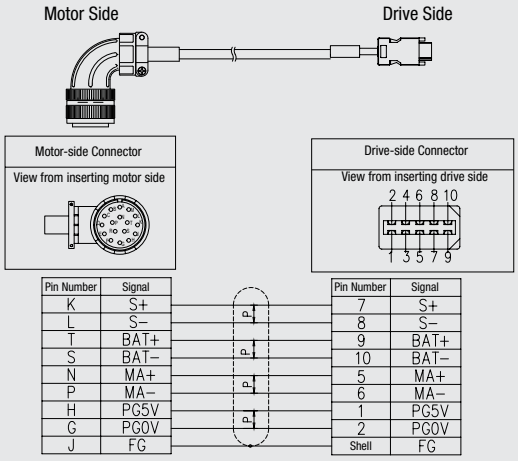
CF-ABD-B-EA-□□
CF-ABD-D-EA-□□



Pin Number	Signal
1	S+
2	S–
3	BAT+
5	MA+
6	MA–
8	PG5V
7	PG0V
4	BAT–
10	FG

Pin Number	Signal
7	S+
8	S–
9	BAT+
5	MA+
6	MA–
1	PG5V
2	PG0V
10	BAT–
Shell	FG

CF-ABD-C-EA-□□



Pin Number	Signal
K	S+
L	S–
T	BAT+
S	BAT–
N	MA+
P	MA–
H	PG5V
G	PG0V
J	FG

Pin Number	Signal
7	S+
8	S–
9	BAT+
10	BAT–
5	MA+
6	MA–
1	PG5V
2	PG0V
Shell	FG

Notes:
□□ : Cable Length (030 = 3m; 150 = 15m).

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Notes

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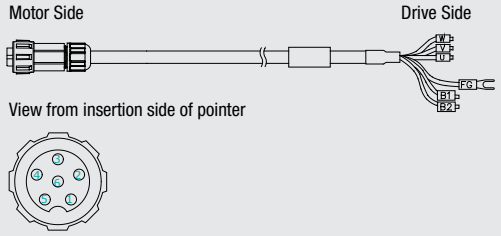
Accessories

ABD & ABM Servo System

Power Cables

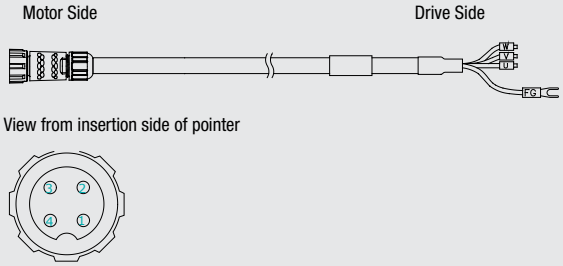
CP-ABD-A1F-04-□□
CP-ABD-A1F-10-□□



Pin No.	Signal
1	U
2	V
3	W
4	FG
5	B1
6	B2

Pin No.	Signal
	U
	V
	W
Crimp Terminal	FG
	B1
	B2

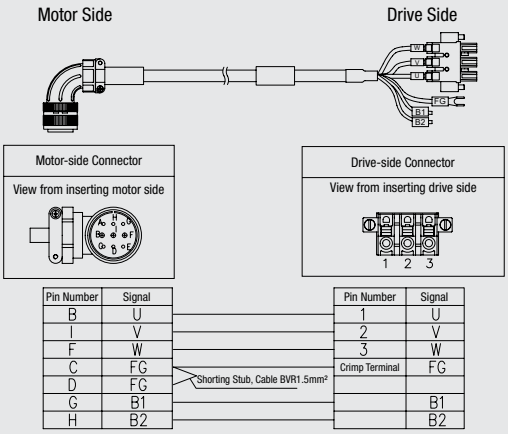
CP-ABD-A1-04-□□
CP-ABD-A1-10-□□



Pin No.	Signal
1	U
2	V
3	W
4	FG

Pin No.	Signal
	U
	V
	W
Crimp Terminal	FG

CP-ABD-B1F-20-□□

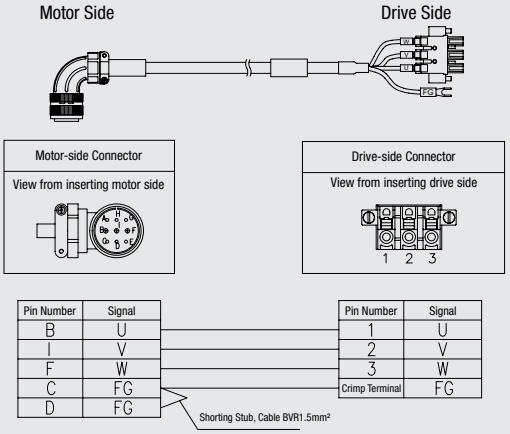


Pin Number	Signal
B	U
I	V
F	W
C	FG
D	FG
G	B1
H	B2

Shorting Stub, Cable BVR1.5mm²

Pin Number	Signal
1	U
2	V
3	W
Crimp Terminal	FG
	B1
	B2

CP-ABD-B1-20-□□

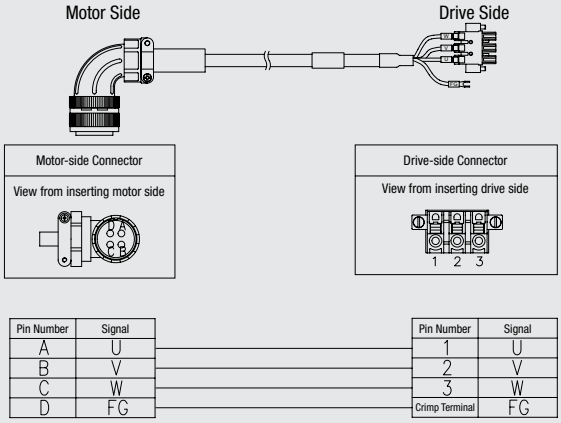


Pin Number	Signal
B	U
I	V
F	W
C	FG
D	FG

Shorting Stub, Cable BVR1.5mm²

Pin Number	Signal
1	U
2	V
3	W
Crimp Terminal	FG

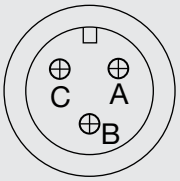
CP-ABD-C1-20-□□



Pin Number	Signal
A	U
B	V
C	W
D	FG

Pin Number	Signal
1	U
2	V
3	W
Crimp Terminal	FG

Brake Connector Specification



Pin No.	Signal
A	B1
B	B2
C	–

Notes:
□□ : Cable Length (030 = 3m; 150 = 15m).

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