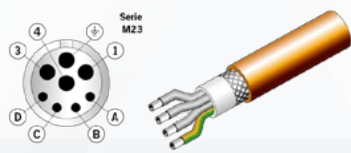


CONNECTIONS DIAGRAM

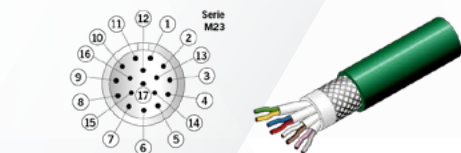
POWER AND BRAKE CONNECTION



WELDING SIDE VIEW

POWER		CABLE
PIN	FUNCTIONS	COLOURS
1	U	1-U
3	V	2-V
4	W	3-W
A	BRAKE +24	WHITE OR RED
B	BRAKE GND	BLACK
⏏	PE+SHIELD	YELLOW/GREEN

ENCODER CONNECTION



WELDING SIDE VIEW

ENCODER CONNECTOR			CABLE
PIN	INCREMENTAL	ABSOLUTE	COLOURS
1	SHIELD	SHIELD	SHIELD
2	PTC	PTC	YELLOW/BROWN
3	+5V	+5V	RED
4	0V	0V	BLACK
5	CHA	SIN+	GREEN
6	CHA-	SIN-	BROWN
7	CHB	COS+	YELLOW
8	CHB-	COS-	ORANGE OR PINK
9	CHZ	-	BLUE
10	CHZ-	-	WHITE
11	HALL A	D+	GREY
12	HALL A-	D-	RED/BLUE
13	HALL B-	CK-	WHITE/GREEN
14	HALL B	CK+	VIOLET
15	HALL C	0V SENSE	GREY/PINK
16	HALL C-	+5V SENSE	BROWN/GREEN
17	PTC	PTC	WHITE/YELLOW

RESOLVER CONNECTION



WELDING SIDE VIEW

CONNECTOR		CABLE
PIN	RESOLVER	COLOURS
1	-	-
2	-	-
3	-	-
4	SIN -	RED
5	COS -	YELLOW
6	COS +	GREEN
7	EXC -	BROWN
8	PTC	PINK
9	PTC	GREY
10	EXC +	WHITE
11	-	-
12	-	-
13	-	-
14	SIN +	BLUE
15	SHIELD	SHIELD
16	-	-
17	-	-

ORDER CODE

PARKING AND/OR EMERGENCY BRAKE:  
1 = motor without brake  
6 = motor with brake

DRIVE POWER SUPPLY VOLTAGE:  
R = 400V  
S = 230V

ANGUS OIL SEAL:  
5 = without sealing ring  
7 = with sealing ring

POWER CONNECTION:  
A = vertical connector  
G = angular connector rotatable

BH

10

M

1

R

1

C

5

G

1

G

30

N

XXX

SERIES:  
BH

MOTOR TYPE:  
10 - 14

MOTOR SIZE:  
S - M - L

MECHANICAL CONFIGURATION:  
1 = B5

SHAFT:  
C = with key

TRANSDUCER UTILISED:  
1 = resolver 2 poli  
2 = increm. optical enc. 1024ppr 5V LD + Halls sens.  
200 = increm. optical enc. 2500ppr 5V LD + Halls sens.  
280 = increm. mag. enc. 1024ppr 5V LD + Halls sens.  
480 = absolute magn. enc. singleturn 1024ppr SSI  
412 = absolute enc. singleturn 12/22 BiSS + SinCos  
512 = absolute enc. multiturn 12/22 Bit Biss+SinCos  
521\*= abs. enc. multiturn 12/19 Bit ENDAT 2.2 Safety  
581\*= absolute encoder multiturn 12/24 Bit BiSS

\*IN DEVELOPMENT  
\*\*ON REQUEST

SPECIAL WORKINGS

COOLING:  
N = not ventilated

RPM / 1':  
15 = 1500  
30 = 3000

SIGNAL CONNECTION:  
A = vertical connector  
G = angular connector rotatable

EXAMPLE: BH 10 M 1 R 1 C 5 G 1 G 30 N XXX

BH10 series and type; M motor size 8,9 Nm; 1 mech. configuration flange B5; R drive power supply 400V; 1 without parking brake; C shaft with key; 5 without sealing ring; G power angular connector rotatable; 1 2 poles resolver; G signal angular connector rotatable; 30 3000 RPM speed; N not ventilated; XXX no special working.

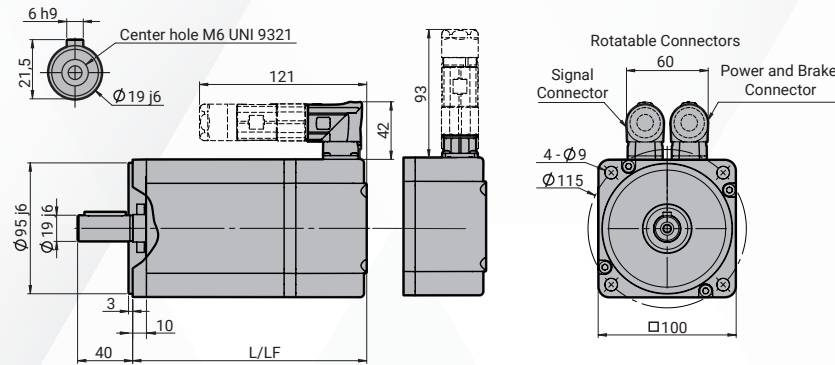
SERIE BH  
High Torque Density Brushless Motors

hdtlovato.com

CAT.S.BH1014.1.A4.4P2025.07.UK

# BH10

## High torque density servo motors



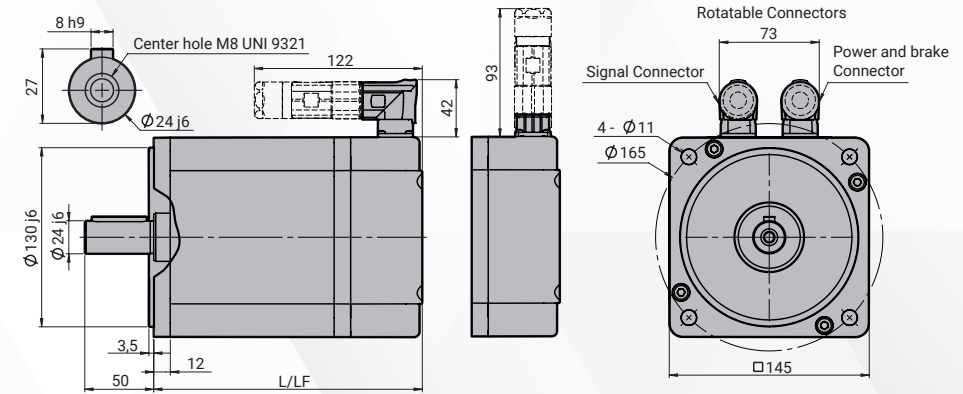
TECNICAL SPECIFICATION ▼ MOTOR TYPE ►		symbol	u. mis.	BH10S		BH10S		BH10M		BH10L	
ELECTRICAL DATA	Drive operating voltage			230V		400V		400V		400V	
	Stall torque at 100K Δt	To	Nm	4,7	4,7	4,7	4,7	8,9	8,9	11,5	11,5
	Rated speed	n	RPM	1500	3000	1500	3000	1500	3000	1500	3000
	Power at rated speed at 100K Δt	Pn	W	701	1326	701	1326	1263	2190	1604	2589
	Torque at rated speed at 100K Δt	Tn	Nm	4,46	4,22	4,46	4,22	8,04	6,97	10,2	8,24
	Peak torque with S3 10% at 100K Δt	Tpk	Nm	12,6	12,6	12,6	12,6	24	24	31	31
	Number of poles	PN		10	10	10	10	10	10	10	10
	Winding resistance 20°C phase/phase	Rw	Ohm	3,34	0,96	10	2,86	5,62	1,76	3,68	1,18
	E.M.F. constant ref. at 20°C	Ke	V/krpm	74,6	40	129	69,1	152	84,7	159	90,4
	Torque constant at 100K Δt	Kt	Nm/A <sub>rms</sub>	1,13	0,61	1,96	1,05	2,37	1,32	2,42	1,37
	Phase-to-phase inductance 50Hz	Lw	mH	35,1	10,1	105	30,2	66,5	20,7	51,2	16,5
	Rated voltage at 100K Δt	Vn	V	155	158	268	273	288	301	292	308
	Stall current at 100K Δt	Io	A	4,08	7,6	2,36	4,4	3,72	6,67	4,78	8,43
	Current at rated speed at 100K Δt	In	A	3,94	6,96	2,28	4,03	3,39	5,26	4,22	6,02
THERMAL DATA	Reference and operating conditions		°C	0÷40							
	Insulation class			Class F							
	Cooling system			Natural Air: IC 410 (not ventilated)							
	Protection degree			IP65 (shaft excluded *)							
MECHANICAL DATA	PTC trigger threshold	PTC	°C	130							
	Rotor inertia	Jm	gm <sup>2</sup>	0,32	0,32	0,32	0,32	0,59	0,59	0,86	0,86
	Rotor inertia (motor with brake)	Jmb	gm <sup>2</sup>	0,38	0,38	0,38	0,38	0,65	0,65	0,92	0,92
	Length	L	mm	170	170	170	170	210	210	250	250
	Length with brake	LF	mm	217	217	217	217	257	257	297	297
	Mass	M	Kg	3,7	3,7	3,7	3,7	5,7	5,7	7,7	7,7
BRAKE PARKING DATA	Mass with brake	Mb	Kg	4,8	4,8	4,8	4,8	6,8	6,8	8,8	8,8
	Brake type			06							
	Static brake torque at 20 / 100°C	Tb	Nm	9 / 8							
	Brake power 20°C	Pb	W	18							
	Coupling time		ms	7							
	Release time		ms	40							
FEEDBACKS	Drive voltage ±5%		VDC	24							
	Backlash		Arcmin	0							
	Resolver	cod.1		✓	✓	✓	✓	✓	✓	✓	✓
	Increm. Optical Enc. 1024ppr 5V LD + Halls	cod.2		✓	✓	✓	✓	✓	✓	✓	✓
	Increm. Optical Enc. 2500ppr 5V LD + Halls	cod.200		✓	✓	✓	✓	✓	✓	✓	✓
	Increm. Magnetic Enc. 1024ppr 5V LD + Halls	cod.280		✓	✓	✓	✓	✓	✓	✓	✓
FEEDBACKS	Absolute Magn. Enc. singleturn 1024ppr SSI	cod.480		✓	✓	✓	✓	✓	✓	✓	✓
	Absolute Enc. Multiturn 12/22 Bit Biss+SinCos	cod.512		✓	✓	✓	✓	✓	✓	✓	✓
	Abs. Enc. Multiturn 12/19 Bit ENDAT 2.2 Safety	cod.521		★	★	★	★	★	★	★	★
	Abs. Enc. Multiturn 12/24 Bit BiSS	cod.581		★	★	★	★	★	★	★	★

✓ = Available \* = Not Available ★ = On request, contact the sales department

\* Option: IP65 shaft sealing ring

# BH14

## High torque density servo motors



TECNICAL SPECIFICATION ▼ MOTOR TYPE ►		symbol	u. mis.	BH14S		BH14M		BH14L	
ELECTRICAL DATA	Drive operating voltage			400V		400V		400V	
	Stall torque at 100K Δt	To	Nm	12,3	12,3	23	23	33,2	33,2
	Rated speed	n	RPM	1500	3000	1500	3000	1500	3000
	Power at rated speed at 100K Δt	Pn	W	1838	3437	3277	5705	4406	6607
	Torque at rated speed at 100K Δt	Tn	Nm	11,7	10,9	20,9	18,2	28	21
	Peak torque with S3 10% at 100K Δt	Tpk	Nm	33,3	33,3	62,1	62,1	89,7	89,7
	Number of poles	PN		10	10	10	10	10	10
	Winding resistance 20°C phase/phase	Rw	Ohm	2,88	0,84	1,46	0,44	1,16	0,38
	E.M.F. constant ref. at 20°C	Ke	V/krpm	131	70,4	151	82	170	97,3
	Torque constant at 100K Δt	Kt	Nm/A <sub>rms</sub>	2,03	1,09	2,4	1,31	2,73	1,56
	Phase-to-phase inductance 50Hz	Lw	mH	41,8	12,1	26,9	7,96	20,9	6,82
	Rated voltage at 100K Δt	Vn	V	270	274	286	293	303	322
	Stall current at 100K Δt	Io	A	5,97	11,1	9,55	17,6	11,8	20,6
	Current at rated speed at 100K Δt	In	A	5,77	10	8,68	13,9	10,3	13,5
THERMAL DATA	Reference and operating conditions		°C	0÷40					
	Insulation class			Class F					
	Cooling system			Natural Air: IC 410 (not ventilated)					
	Protection degree			IP65 (shaft excluded *)					
MECHANICAL DATA	PTC trigger threshold	PTC	°C	130					
	Rotor inertia	Jm	gm <sup>2</sup>	1,91	1,91	3,47	3,47	5,04	5,04
	Rotor inertia (motor with brake)	Jmb	gm <sup>2</sup>	2,1	2,1	4,05	4,05	5,62	5,62
	Length	L	mm	195	195	245	245	295	295
	Length with brake	LF	mm	254	254	304	304	354	354
	Mass	M	Kg	10	10	15,4	15,4	20,8	20,8
BRAKE PARKING DATA	Mass with brake	Mb	Kg	12	12	18,2	18,2	23,6	23,6
	Brake type			07	07	08	08		
	Static brake torque at 20 / 100°C	Tb	Nm	18 / 15	18 / 15	36 / 32	36 / 32		
	Brake power 20°C	Pb	W	24	24	26	26		
	Coupling time		ms	10	10	22	22		
	Release time		ms	50	50	90	90		
FEEDBACKS	Drive voltage ±5%		VDC	24	24	24	24		
	Backlash		Arcmin	0	0	0	0		
	Resolver	cod.1		✓	✓	✓	✓	✓	✓
	Increm. Optical Enc. 1024ppr 5V LD + Halls	cod.2		✓	✓	✓	✓	✓	✓
	Increm. Optical Enc. 2500ppr 5V LD + Halls	cod.200		✓	✓	✓	✓	✓	✓
	Increm. Magnetic Enc. 1024ppr 5V LD + Halls	cod.280		✓	✓	✓	✓	✓	✓
FEEDBACKS	Absolute Magn. Enc. singleturn 1024ppr SSI	cod.480		✓	✓	✓	✓	✓	✓
	Absolute Enc. Multiturn 12/22 Bit Biss+SinCos	cod.512		✓	✓	✓	✓	✓	✓
	Abs. Enc. Multiturn 12/19 Bit ENDAT 2.2 Safety	cod.521		★	★	★	★	★	★
	Abs. Enc. Multiturn 12/24 Bit BiSS	cod.581		★	★	★	★	★	★

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\* Option: IP65 shaft sealing ring