



# FAST-BACK®



## POWERED BRUSHLESS MOTOR

### FAST-BACK® (FBK)

**All-in-one fully digital DRIVE+MOTOR.**  
**The decentralized structure gives you much more freedom in designing your machine's layout. Installation, commissioning and service are much simpler. Many advantages such as cables and control cabinet space reduction. Motion controller and EMC line filter suppression are integrated.**



#### STANDARD FEATURES

- ✓ 220 VAC 3PH pwr supply. EMC line filter and in-rush circuit on board
- ✓ Logic supply for control circuits obtained from DC Bus
- ✓ Integrated regenerative circuit and power resistor
- ✓ Integrated positioning control
- ✓ Feedback from encoder 2048 P/rev
- ✓ **CBMD CAN BUS** - CAN V2.0B (°) + RS232 to CAN BUS multidrop  
CAN OPEN protocol implementations: DS301-V4.02 - DSP402-V2.0
- ✓ Fully programmable via RS232 (°), Mod Bus-RTU based
- ✓ **Speeder-One®** software interface (Windows 98/2000/XP based)

#### OPTIONS

- ✓ **220M** 220 Vac single PH power supply
- ✓ **D300** 300 Vdc Power Supply
- ✓ **HB+HBD** Holding Brake + Drive Circuitry
- ✓ **RS 485** interface, Mod Bus-RTU based (°), 230 kbps max
- ✓ **HO1** feedback from absolute multiturn encoder
- ✓ Special flange and shafts available upon request
- ✓ Special connection orientation available upon request
- ✓ Special windings
- ✓ 2 digital inputs (opto-isolated) 24 Vdc - 7 mA (PLC compatible)
- ✓ 1 digital output (opto-isolated) 24 Vdc - 50 mA (PLC compatible)
- ✓ **PROTECTION CLASS:**  
 level 2 = IP65  
 level 3 = IP65S (with shaft sealing)

#### SPECIFICATIONS

- ✓ Operating frequency 10 KHz
- ✓ Ambient temperature
  - operating at rated data: 0 ÷ 40°C (no derating)
  - **Mo - Mpk** torque derating: 40 ÷ 55°C (2.5%/°C)
  - maximum operating: 55°C max
  - storage: - 20 ÷ 55°C
- ✓ Altitude A.M.S.L.
  - operating at rated data: 1000 m
  - **Mo - Mpk** torque derating: 1000 ÷ 2500 m (1.5 %/100m)
- ✓ Storage duration 1 year max\*
- ✓ Protection class IP54

#### TYPICAL APPLICATIONS

- food processing
- labelling equipment
- adjustment of formats
- medical equipment
- laser/water jet cutters
- pick-and-place equipment
- industrial printing
- limit stop adj. for wood, metal working machines
- size adj. for packing machines

°: Optocoupled

\*: After 1 year storage duration the internal electrolytic power capacitors must be re-formed. Contact Axor's technical department for details.

SERIES		FBK220T75				FBK220T100		
SIZE		XS	S	M	L	S	M	L
<b>Mo</b> stall Torque ( $\Delta t=100^\circ\text{C}$ )	(Nm)	1.1	1.6	2.7	3.8	3.2	5.2	7.5
<b>Mpk</b> Peak Stall Torque (x 2 sec.)	(Nm)	3.3	4.8	8.1	10	10.3	10.5	15
<b>Nn</b> Rated speed <sup>1)</sup>	(Rpm)	3000	3000	3000	3000	3000	3000	2200
<b>Mn</b> Rated torque at Nn ( $\Delta t=100^\circ\text{C}$ )	(Nm)	0.95	1.35	2.35	3.3	2.8	4.5	6.4
<b>Power Supply</b> (grounded systems only)		220 VAC $\pm$ 10% three phase (single-ph as optional feature) <sup>2)</sup>						
<b>Logic Supply</b> (for back-up only)		24 Vdc ( $\pm$ 10%) - 200mA						
<b>Logic Supply</b> (for back-up+brake)		24 Vdc ( $\pm$ 5%) - 800 mA MAX						
<b>J</b> Rotor Inertia	(Kg m <sup>2</sup> ) · 10 <sup>-4</sup>	0.4	0.6	1	1.4	1.8	2.8	3.8
<b>Jb</b> Brake Inertia	(Kg m <sup>2</sup> ) · 10 <sup>-4</sup>	0.122			0.37			
<b>BRAKE</b> stall torque ( $\Delta t=100^\circ\text{C}$ )		4 Nm (0.5 Adc)				8 Nm (0.8 Adc)		
<b>MODULE</b>		2	3	5	7	3	5	7

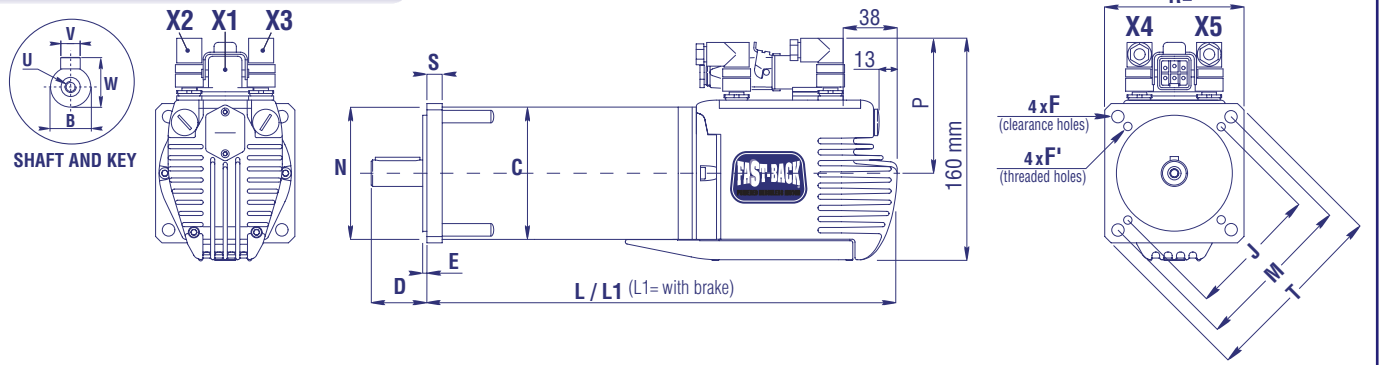
**NOTE** <sup>1)</sup>: Rated speed refers at 220 Vac power supply three phase

<sup>2)</sup>: Single phase does not allow you to obtain the rated performance (torque and speed). Contact Axor's technical department for details.

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## MECHANICAL DIMENSIONS

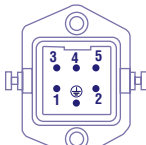


REFERENCES SERIES - Mo (Nm)	L	L1	Bj6	D	Vh9	W	U	Nj6	M	F	J	F'	E	S	R□	T	C	P	WEIGHT*	WEIGHT* with BRAKE	
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg	Kg	
FBK...220 75 XS	1.1	230	285	11	23	4 x 18	12.5	M4x10	60	90	5.5	75	M5x8	2.5	10	75	100	75	107	2.85	3.45
FBK...220 75 S	1.6	245	300																	3.3	3.9
FBK...220 75 M	2.7	275	330																	4.2	4.8
FBK...220 75 L	3.8	305	360	14	30	5 x 25	16	M6x16	95	115	9	/	/	3	12	100	135	95	97	5.0	5.6
FBK...220 100 S	3.2	301	359	5.8	6.5																
FBK...220 100 M	5.2	336	394	7	7.7																
FBK...220 100 L	7.5	371	429	8.2	8.9																

## CONNECTION DATA

### POWER SUPPLY CONNECTOR X1

- 1 = L1 (Power supply)
- 2 = L2 (Power supply)
- 3 = +24 Vdc (back-up)
- 4 = L3 (Power supply)\*
- 5 = 0 Vdc (back-up)
- ⊕ = PE



Bayonet (male)

### CAN BUS IN/OUT X2 - X3

- 1 = ⊕ PE / Shield
- 2 = CAN L
- 3 = PGND (0V CAN)
- 4 = CAN H
- 5 = CAN L (optional)



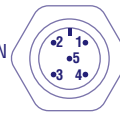
optional  
M12/4p connector (male)  
M12/5p optional

### RS 485 IN/OUT

- 1 = ⊕ PE / Shield
- 2 = 485 B
- 3 = PGND (0V 485)
- 4 = 485 A

### SIGNALS IN/OUT X4

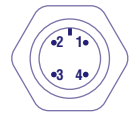
- 1 = DGT-IN 1
- 2 = DGT-IN 2
- 3 = DGT-OUT 1
- 4 = DGT-IN/OUT RTN
- 5 = ⊕ PE / Shield



M12/5p connector (male)

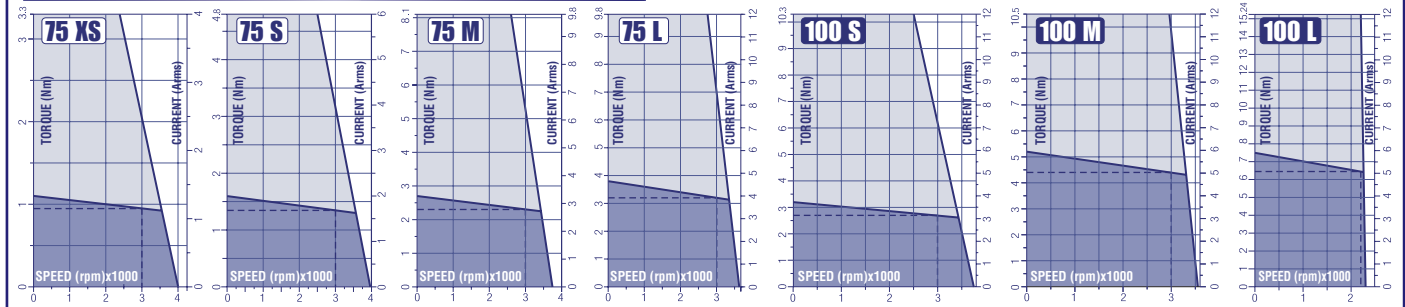
### PC - RS232 X5

- 1 = TXD
- 2 = RXD
- 3 = PGND
- 4 = N.C.



M12 / 4p connector (male)

## CHARACTERISTIC CURVES TORQUE VS. SPEED



## ORDERING CODE

Example:

HARDWARE

SOFTWARE

**FBK 220T - 75 M 30 - 000D00X - 0 T15 1 - 1000X - Sxxx 00000 / 00000**

### POWER SUPPLY:

- 220T = 220 VAC 3PH (std)
- 220M = 220 VAC single PH (opt)
- D300 = 300 Vdc (opt)

### SIZE:

XS, S, M, L

NOMINAL SPEED:  
Ex: 30= 3000 Rpm

### HB+HBD:

- 0= without brake (std)
- 1= with brake (opt)

### FEEDBACK:

- T15 = Encoder OIH3506- 2048PPR (std for FBK 75)
- T05 = Encoder OIH4808- 2048PPR (std for FBK 100)
- H01 = Encoder EQ11130 absolute multiturn (opt)

### FLANGE & SHAFT

#### MOUNTING FLANGE:

- 000 = standard (see above)
- 001÷499 = IEC metric dimension
- 501÷999 = Axor's internal code

#### MOUNTING HOLES:

- D = B5 flange with thru holes (standard)
- C = B14 flange with threaded holes (optional)

**000D00X** = standard for all motors (see above)

#### SHAFT KEY:

- x = with key (standard)
- w = without key (optional)

#### SHAFT DIAMETER:

- 00 = standard (see above)
- 01 ÷ 49 = IEC metric diameter
- 51 ÷ 99 = Axor's internal code

### PROTECTION CLASS:

- 1 = IP54 (std)
- 2 = IP65 (opt)
- 3 = IP65S with shaft oil seal (opt)

### ADDITIONAL FEATURES:

**1000X**

CBMD: CAN BUS+ MULTIDROP interf.  
1 = Present (std)  
0 = Not present (opt)

Not in use  
Reducer presence:  
0 = Not present (std)  
1 = Present (opt)

RS485 Interface  
1 = Present (opt)  
0 = Not present (std)

SPECIFIC NUMBER PRESENCE (opt):  
**S xxx**

001÷999 = specific number

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