

Digital servo drive system



DDS (Digital Drive System)

The perfect solution for the machine-tool manufacturer who requires smooth, fast and precise machining



General characteristics

Interface	SERCOS-II or analog
Velocity feedback	High resolution Sincos encoder
Protections	Over-voltage, over-current, over-speed, over-temperature, overload, etc.
Control	High speed spindles and built-in motors
Direct position feedback	Differential TTL, Vpp, distance-coded reference mark, Fagor absolute
Fine interpolation	Position loop (250 microseconds) and velocity loop (62.5 microseconds)

Tailored solutions for your machine

The Fagor Automation's digital servo drive system is the perfect solution for the machine manufacturer who requires smooth, fast and precise machining. It offers maximum efficiency using a single power supply for governing the spindle and the axes of the machine.

- **PS** Non-regenerative power supply.
- **XPS** Regenerative power supply.
- **RPS** Regulated regenerative power supply with a power factor near 1 (boosting power supply).

Axis control

AXD drives can govern the axes of the machine with FKM motors, covering a range from 0.54 Nm to 115 Nm (0.25 kW to 24.1 kW) with a rated speed from 2000 rpm to 6000 rpm.

FKM	FKM1	FKM2	FKM4	FKM6	FKM8	FKM9
Stall Torque (Nm)	0.54 ... 0.95	1.7 ... 3.2	6.3 ... 11.6	8.9 ... 23.5	32 ... 100	68 ... 115
Flange (mm)	40	80	110	130	180	230

Spindle control

SPD drives are used to govern the spindle with FM7 and FM9 motors.

- **E01/E02 series** Spindle motors with star connection, not accessible.
- **E03 series** Spindle motors with Y-D (star/triangle) connection and 6 accessible terminals.
- **HS3 series** Spindle motors ready for direct coupling (without belts), hollow shaft for tool cooling and 6 accessible terminals for star/delta connection.

FM7 E01/E02	Power (kW)	3.7	5.5 ... 9	11 ... 22	22 ... 37	21.5 ... 51
	Flange (mm)	150	180	230	300	350
	Shaft height (mm)	100	112	160	180	225
FM9 E01	Power (kW)	37 ... 55	71 ... 130			
	Flange (mm)	300	450			
	Shaft height (mm)	180	225			
FM7 E03	Power (kW)	5.5 ... 7.5	11 ... 22			
	Flange (mm)	180	230			
FM7 HS3	Power (kW)	7.5	11 ... 22			
	Flange (mm)	180	230			

Safety function



Fagor AXD and SPD drives offer the STO (Safe Torque Off) safety function defined in compliance with the standard IEC 61800-5-2. This safety function may be used to safely disconnect the motor torque and it is always active.

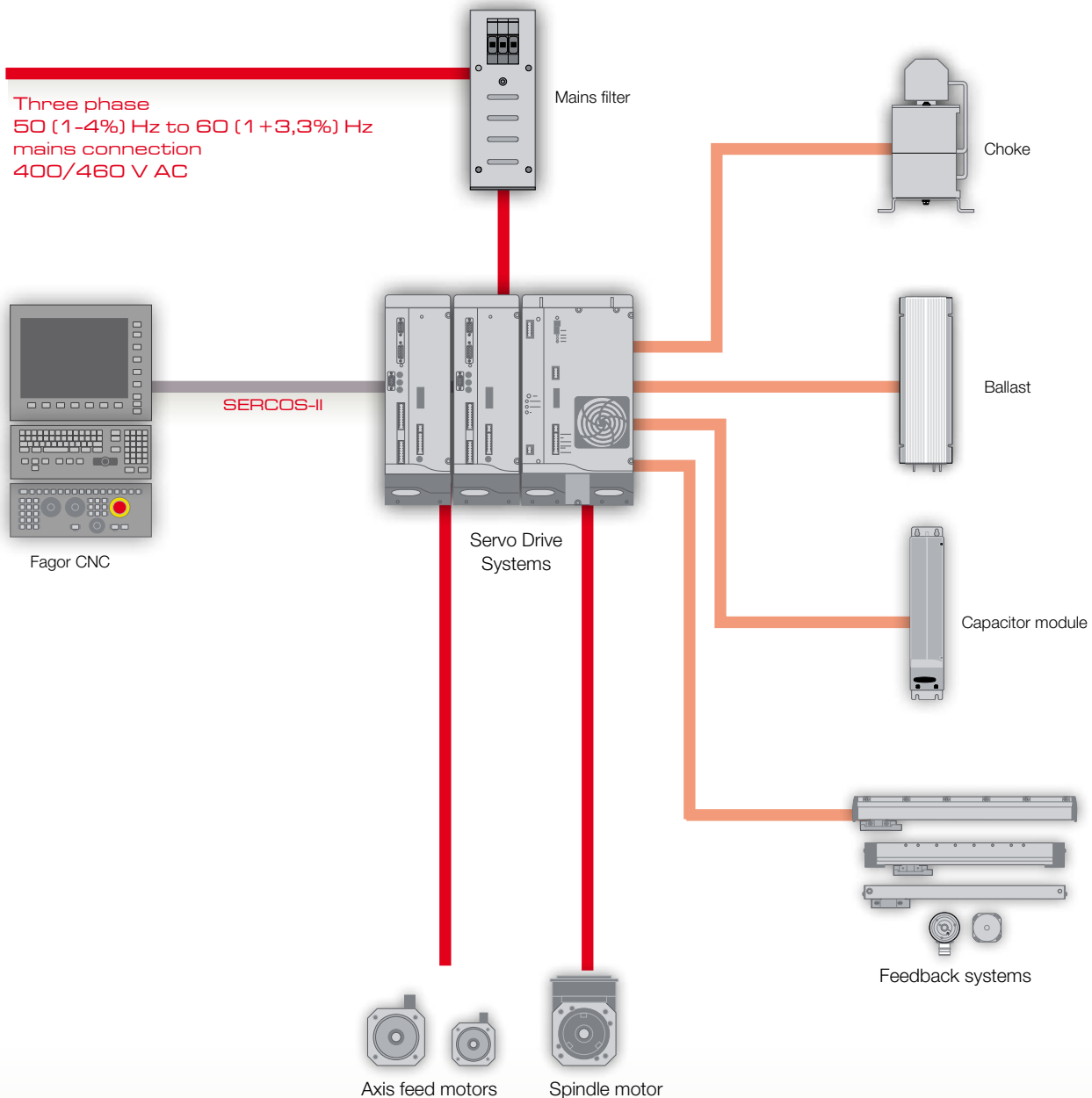
When a machine requires a certain Performance Level «PL d» or a certain safety integrity level «SIL 2», it requires an external safety controller «PL d» or «SIL 2» that disconnects the motor torque in two different channels. The safety controller will watch the status of each channel (only when demanding the STO) keeping the motor torque off in case of failure.

Completely integrated solution

A unique integrated platform for all your needs

Fagor Automation's unique integrated platform brings together every electronic element of your machine: the CNC, digital servo motors and drives, linear and angular feedback and ensures seamless integration, guaranteeing robust machine design and extreme performance to obtain maximum efficiency.

These elements work in perfect harmony and intelligently selecting and executing the machining algorithms to exceed user's expectations – EVERYTIME.



POWER SUPPLIES



PS - XPS - RPS series

FAGOR power supplies are connected to three-phase mains from 400/460 VAC, 48 ... 62 Hz and they provide power through the power bus of the drive modules. They also manage the energy excess generated when braking the motors.

PS series

Non-regenerative power supplies. The excess of energy generated while braking is dissipated as heat on certain electrical resistors.

	PS-25B4	PS-65A
Input voltage	Three-phase 48 ... 62 Hz, with a voltage range between 400/460 V AC	
Output voltage (Power bus)	565 - 650 V DC	565 - 650 V DC
Rated (peak) output power	25 kW (75 kW, 1 s)	65 kW (195 kW, 1 s)
Rated (peak) output current	45 A (135 A, 1 s)	120 A (360 A, 1 s)
Auxiliary power supply for drive control signals	24 V DC (240 W)	—
Internal Ballast resistance (power)	16.5 Ω (500 W)	9 Ω (600 W)
Width	77 mm	117 mm

XPS series

Regenerative power supplies. The energy excess is returned to mains, reducing the electrical consumption of the system without generating extra heat.

	XPS-25	XPS-65
Input voltage	Three-phase 48 ... 62 Hz, with a voltage range between 400/460 V AC	
Output voltage (Power bus)	565 - 650 V DC	565 - 650 V DC
Rated (peak) output power	25 kW (55 kW, 1 s)	65 kW (108 kW, 1 s)
Rated (peak) output current	45 A (135 A, 1 s)	120 A (120 A, 1 s)
Auxiliary power supply for drive control signals	24 V DC (192 W)	24 V DC (192 W)
Internal Ballast resistance (power)	18 Ω (520 W)	9 Ω (1800 W)
Rated regenerated power (returned to mains)	20 kW	54 kW
Isolated choke (not integrated into the XPS power supply)	Choke XPS-25	Choke XPS-65-A
Width	194 mm	234 mm

RPS series

Regenerative regulated power supplies (boost power supplies). They provide a programmable DC output voltage (regardless of mains voltage) and its exceeding energy is returned to mains with a near-one power factor reducing the consumption of the system without generating additional heat.

	RPS-20	RPS-45	RPS-75	RPS-80
Input voltage	Three-phase 48 ... 62 Hz, with a voltage range between 400/460 V AC			
Output voltage (Power bus)	600, 625 or 725 V DC. It is programmable			
Rated (peak) output power	20 kW (26 kW in S6-40%)	45 kW (59 kW in S6-40%)	75 kW (97 kW in S6-40%)	80 kW (104 kW in S6-40%)
Rated (peak) output current	32 A (41.6 A in S6-40%)	72 A (95 A in S6-40%)	120 A (156 A in S6-40%)	128 A (166.5 A in S6-40%)
Auxiliary power supply for drive control signals	24 V DC (192 W)	24 V DC (192 W)	24 V DC (192 W)	24 V DC (192 W)
Isolated choke (not integrated into the RPS power supply)	Choke RPS-20	Choke RPS-45	Choke RPS-75-3	Choke RPS-75-3
Width	194 mm	311 mm	350 mm	350 mm

AXIS AND SPINDLE DRIVES



AXD - SPD series

The drives have a modular and stackable design. They are connected directly to the power bus provided by the power supply and provide the motor with three-phase voltage with a variable frequency to control the speed and the position.

Input of the direct feedback for the position loop (Optional)

Feedback of the actual (real) position of an axis, usually by connecting a linear or rotary encoder.

Connector for RS-232 serial line connection

To connect with a PC for system parameter setting and monitoring.

Encoder simulator output (Optional)

It provides a number of pulses per motor revolution that may be set by parameter (any value between 1 and 16,384 pulses/turn, programmable I/O, differential TTL).

SERCOS-II interface connector

To transmit position, velocity and torque commands. The use of optical fiber ensures full immunity against noise and very simple wiring between modules.

Motor feedback input

It reads the signals coming from an encoder mounted on the motor to know its exact position and speed.

AXD (*) series

Digital drive that can govern a synchronous motor, together with the CNC, in speed and position while working as an axis.

	AXD 1.08	AXD 1.15	AXD 1.25	AXD 1.35	AXD 2.50	AXD 2.75	AXD 3.100	AXD 3.150
I rated (A)	4	7.5	12.5	17.5	25	37.5	50	75
I peak (0.5 s) (A)	8	15	25	35	50	75	100	150
Voltage supply for control circuits	24 V DC (between 21 V DC and 28 V DC)							
Consumption of control circuits	0.90 A	0.90 A	0.90 A	0.90 A	1.25 A	1.25 A	2.00 A	2.00 A
Width	77 mm	77 mm	77 mm	77 mm	117 mm	117 mm	234 mm	234 mm

SPD (*) series

Digital drive that can govern a synchronous or an asynchronous motor in speed and position working as a spindle.

	SPD 1.25	SPD 1.35	SPD 2.50	SPD 2.75	SPD 2.85	SPD 3.100	SPD 3.150	SPD 3.200	SPD 3.250
I S1 (A) at 4 kHz	16	23.1	31	42	50	70	90	121	135
I S1 (A) at 8 kHz	13	18	27	32	37	56	70	97	108
I S6-40% (A) 4 kHz	20.8	30	40.3	54.6	65	91	117	157.3	175.5
I S6-40% (A) 8 kHz	16.9	23.4	35.1	41.6	48.1	72.8	91	126.1	140.4
Voltage supply for control circuits	24 V DC (between 21 V DC and 28 V DC)								
Consumption of control circuits	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	2.00 A	2.00 A	2.00 A	2.00 A
Width	77 mm	77 mm	117 mm	117 mm	117 mm	234 mm	234 mm	234 mm	234 mm

(*) Products manufactured by FAGOR AUTOMATION since April 1st 2014 will include "-MDU" in their identification if they are included on the list of dual use products according to regulation UE 428/2009 and require an export license depending on destination.

MULTI-AXIS BOX DRIVERS



MAB series

The MAB series is specifically designed to work with the 8060/65/70 CNC families.

The Multi-Axis Box enables both the design and cabinet size to be optimized. It drastically reduces the number of components and cables, allowing for a quick and easy installation.

The MAB drive family offers the best model for each machine configuration:

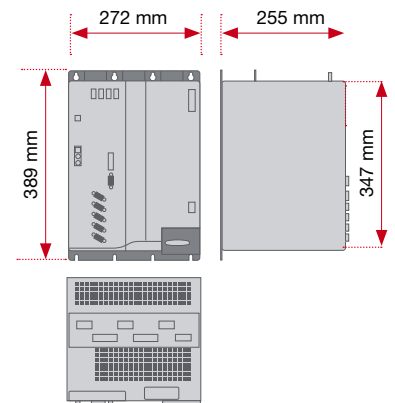
- FM7 spindles up to 15 kW.
- Up to 5* axis motor up to 23 Nm.
- Second feedback for spindles.
- One of the axis can be used for live tool purpose.

* With additional AXD 1.XX drive

Available models

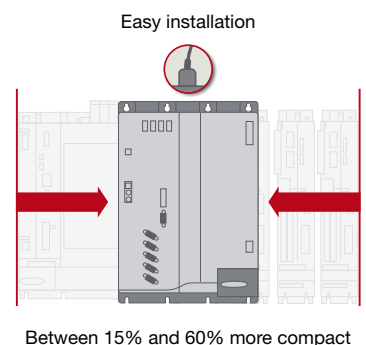
With spindle and axes

MODEL (*)	Mains power	Spindle	Axis 1	Axis 2	Axis 3	Extra AXD
	kW	IS1 (A) (at 4/8 kHz)	In (A)	In (A)	In (A)	In (Max. A)
Spindle + 2 axes Non-regenerative						
MAB--075-2	15	20/20	7.5	7.5	-	-
MAB--150-2	29	40/30	17.5	17.5	-	-
Spindle + 2 axes Regenerative						
MAB-R-075-2	15	20/20	7.5	7.5	-	-
MAB-R-150-2	29	40/30	17.5	17.5	-	-
Spindle + 3/4 axes Non-regenerative						
MAB--075-3	23	20/20	7.5	7.5	17.5	17.5
MAB--150-3	32	40/30	17.5	17.5	17.5	17.5
Spindle + 3/4 axes Regenerative						
MAB-R-075-3	23	20/20	7.5	7.5	17.5	17.5
MAB-R-150-3	32	40/30	17.5	17.5	17.5	17.5



Without spindle, only axes

MODEL (*)	Mains power	Axis 1	Axis 2	Axis 3	Axis 4	Extra AXD
	kW	In (A) (at 4/8 kHz)	In (A)	In (A)	In (A)	In (Max. A)
3 axes Non-regenerative						
MAB--000-3-L	9	14/14	7.5	7.5	-	-
MAB--000-3-H	19	27/27	17.5	17.5	-	-
4/5 axes Non-regenerative						
MAB--000-4-L	13	14/14	7.5	7.5	17.5	17.5
MAB--000-4-H	19	27/27	17.5	17.5	17.5	17.5



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SPINDLE MOTORS

FM7 - FM9 series

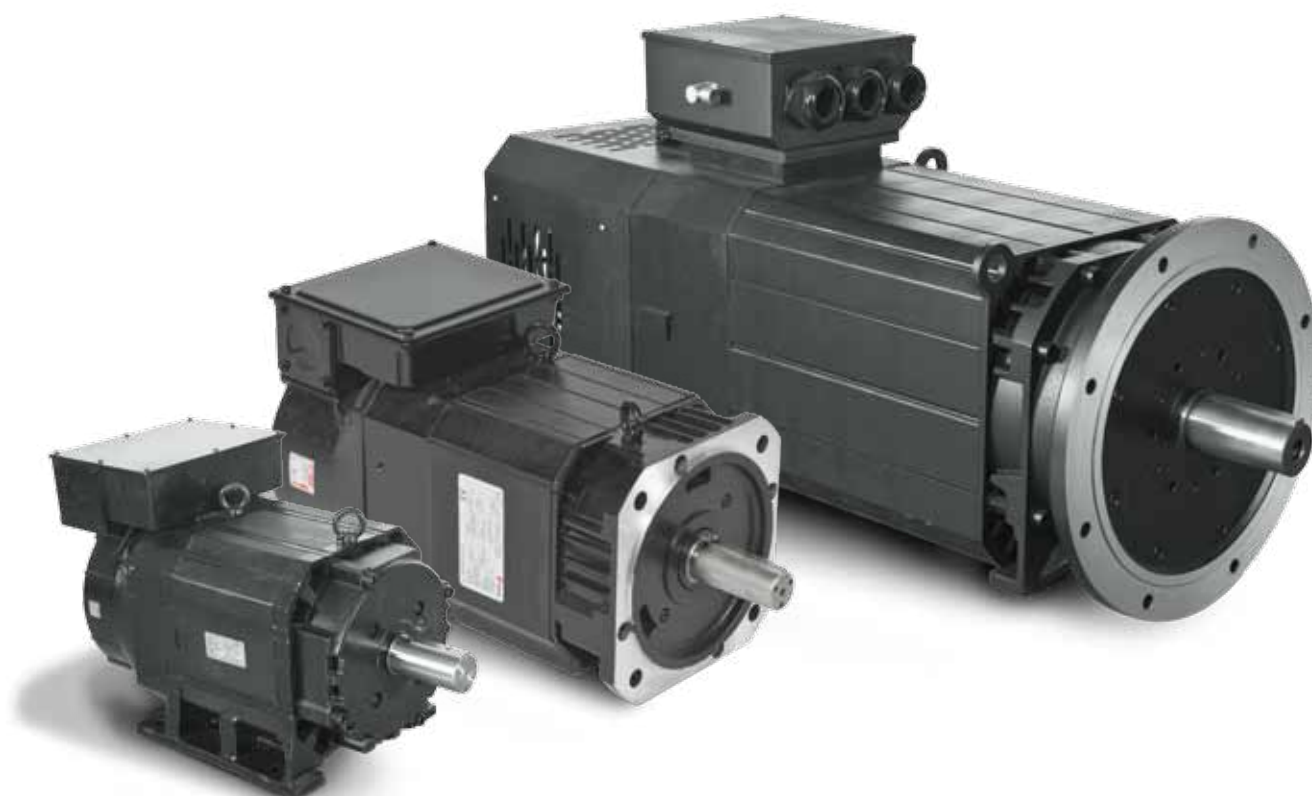
The asynchronous FM7 - FM9 series motors can operate with all types of machine tool spindles, providing great reliability and optimum performance that the application requires.

Its design of great robustness, the use of high speed bearings (special) and many other elements used in its manufacture, allows the customer to have our quality and versatility in a wide range of powers.

- E01/E02 series Spindle motors with star connection, not accessible.
- E03 series Spindle motors with Y-D (star/triangle) connection and 6 accessible terminals.
- HS3 series Spindle motors ready for direct coupling (without belts), hollow shaft for tool cooling and 6 accessible terminals for star/delta connection.

General characteristics

	FM7 E03 / FM7 HS3	FM7 E01/E02	FM9 E01
Thermal protection (according to IEC 60034-6 standard)	NTC thermistor	NTC thermistor	KTY84-130 thermistor
Vibration level (according to IEC 60034-14 standard)	V3	V5 - V10 (standard) V3 - V5 (optional)	V5
Construction type (according to IEC 60034-7 standard)	Horizontal: IM B5 Vertical: IM V1	Horizontal: IM B3, IM B5, IM B35 Vertical: IM V1, IM V5, IM V15	Horizontal: IM B3, IM B5, IM B35 Vertical: IM V1, IM V5, IM V15, IM V3, IM V6, IM V36
Insulation class (according to IEC 60034 standard)	Class F (155 °C / 311 °F)	Class F (155 °C / 311 °F)	Class F (155 °C / 311 °F)
Protection degree (according to IEC 60034-5 standard)	IP 44	IP 44	IP 54
Feedback	Incremental TTL encoder of 1024 ppt	1024 ppt incremental TTL encoder (standard) 1024 ppt sinusoidal 1Vpp encoder (optional)	1024 ppt sinusoidal 1Vpp encoder



FM7 E03 - FM7 HS3 series



The FM7 E03 and FM7 HS3 series motors are equipped with forced ventilation and can be connected in star/delta, reaching speeds of up to 15,000 rpm.

The FM7 HS3 motors are specially designed to be mounted on the column, providing a direct transmission without belts. The tool is connected via a coupling and has a hollow shaft for tool cooling.

FM7 E03 - FM7 HS3 series

	Rated power S1 (kW)	Rated power S6-40% (kW)		Rated torque S1 (Nm)		Rated current (A)		Base speed (rpm)		Maximum speed (rpm)	Inertia [kgcm ²]
		λ	Δ	λ	Δ	λ	Δ	λ	Δ		
FM7-D055-S1xx-E03	5.5	7.7	10	35	13.1	20.3	20.7	1,500	4,000	15,000	210
FM7-D075-S1xx-E03	7.5	11	13	47.7	17.9	26.5	25.8	1,500	4,000	15,000	260
FM7-D110-S1xx-E03	11	15.5	20	70	26.3	38	40	1,500	4,000	12,000	690
FM7-D150-S1xx-E03	15	22	26	95.5	35.8	46.4	45.7	1,500	4,000	12,000	690
FM7-D185-S1xx-E03	18.5	26	32	117.8	44.2	49.2	49.2	1,500	4,000	12,000	890
FM7-D220-S1xx-E03	22	33	40	140.1	52.2	62.3	61.7	1,500	4,000	12,000	1,080
FM7-D075-S1xx-HS3	7.5	11	13	47.7	17.9	26.5	25.8	1,500	4,000	15,000	260
FM7-D110-S1xx-HS3	11	15.5	20	70	26.3	38	40	1,500	4,000	12,000	690
FM7-D185-S1xx-HS3	18.5	26	32	117.8	44.2	49.2	49.2	1,500	4,000	12,000	890
FM7-D220-S1xx-HS3	22	33	40	140.1	52.2	62.3	61.7	1,500	4,000	12,000	1,080

FM7 E01/E02 - FM9 E01 series



The FM7 E01/E02 - FM9 E01 series motors have forced ventilation.

FM7 E01/ E02 motors have a rated power between 3.7 and 51 kW and can reach speeds of up to 12,000 rpm.

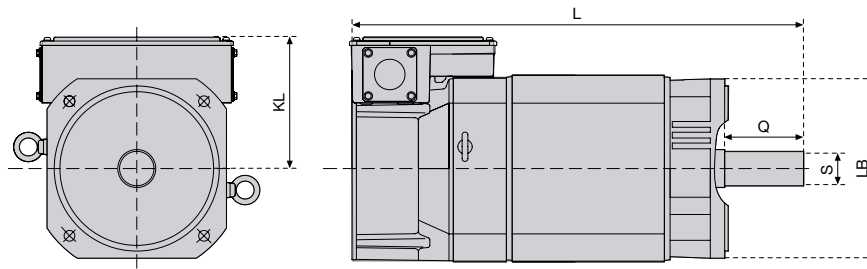
FM9 E01 motors have a rated power between 37 and 130 kW and can reach speeds of up to 5,000 rpm.

FM7 E01/E02 - FM9 E01 series

	Rated power S1 (kW)	Rated power S6-40% (kW)	Rated torque S1 (Nm)	Rated current (A)	Base speed (rpm)	Maximum speed (rpm)		Inertia [kgcm ²]
						E01	E02	
FM7 A037-xx-E01/E02	3.7	5.5	23.5	12.4	1,500	9,000	12,000	140
FM7 A055-xx-E01/E02	5.5	7.7	35	14.6	1,500	9,000	10,000	210
FM7 A075-xx-E01/E02	7.5	11	47.7	19.8	1,500	9,000	10,000	260
FM7 A090-xx-E01/E02	9	13	57.4	25.1	1,500	9,000	10,000	330
FM7 A110-xx-E01/E02	11	15.5	70	27.9	1,500	9,000	10,000	690
FM7 A150-xx-E01/E02	15	22	95.5	39.3	1,500	8,000	9,000	690
FM7 A185-xx-E01/E02	18.5	26	117.8	47.4	1,500	8,000	9,000	890
FM7 A220-xx-E01/E02	22	33	140	61.4	1,500	8,000	9,000	1,080
FM7 A300-xx-E01	30	45	191	82.1	1,500	6,500	-	2,310
FM7 A370-xx-E01	37	56	235	89.9	1,500	6,500	-	2,660
FM7 A510-xx-E01/E02	51	71	325	115.1	1,500	5,000	6,000	4,730
FM7 B120-xx-E01/E02	12	18.5	114.6	35	1,000	8,000	9,000	890
FM7 B170-xx-E01/E02	17	25	162.3	47.2	1,000	8,000	9,000	1,080
FM7 B220-xx-E01	22	33	210	64.9	1,000	6,500	-	2,310
FM7 B280-xx-E01	28	42	267.4	78.2	1,000	6,500	-	2,660
FM7 C215-xx-E01/E02	21.5	29	410.6	87.8	500	5,000	6,000	4,730
FM7 C270-xx-E01/E02	27	37	515.7	116.9	500	5,000	6,000	5,840
FM9 B037-xx-E01	37	45	350	74.7	1,000	5,000	-	3,000
FM9 B055-xx-E01-A	55	72	525.2	104.4	1,000	5,000	-	6,900
FM9 B071-xx-E01	71	105	678	134.8	1,000	4,500	-	14,790
FM9 A100-xx-E01	100	136	636.6	190	1,500	4,500	-	14,790
FM9 B113-xx-E01	113	153	1,079	215	1,000	4,500	-	23,260
FM9 A130-xx-E01	130	178	827.6	246.9	1,500	4,500	-	19,300

Dimensions in mm

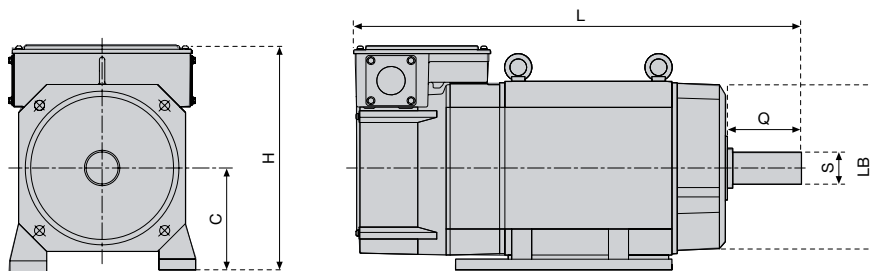
FM7 E03 - FM7 HS3 series



	L	LB	KL	Q	S
FM7-D055-S1D0-E03	475	180h7	158	60	28h6
FM7-D075-S1D0-E03	506	180h7	164	60	28h6
FM7-D110-S1D0-E03	556	230h7	183	80	38h6
FM7-D150-S1D0-E03	556	230h7	183	80	38h6
FM7-D185-S1D0-E03	618	230h7	183	80	38h6
FM7-D220-S1D0-E03	665	230h7	183	80	38h6

FM7-D075-S1D0-HS3	715	180h7	158	60	28h6
FM7-D110-S1D0-HS3	751	230h7	183	70	38h6
FM7-D185-S1D0-HS3	813	230h7	183	70	38h6
FM7-D220-S1D0-HS3	851	230h7	183	70	38h6

FM7 E01/E02 - FM9 E01 series



	L	LB	C	H	Q	S
FM7 A037-xx-E01/E02	499	150h7	100	250	60	28h6
FM7 A055-xx-E01/E02	486	180h7	112	269	80	32h6
FM7 A075-xx-E01/E02	546	180h7	112	269	110	48h6
FM7 A090-xx-E01/E02	586	180h7	112	269	110	48h6
FM7 A110-xx-E01/E02	571	230h7	160	343	110	48h6
FM7 A150-xx-E01/E02	571	230h7	160	343	110	48h6
FM7 A185-xx-E01/E02	633	230h7	160	343	110	48h6
FM7 A220-xx-E01/E02	671	230h7	160	343	110	48h6
FM7 A300-xx-E01	769	300h7	180	407	140	60m6
FM7 A370-xx-E01	809	300h7	180	407	140	60m6
FM7 A510-xx-E01/E02	842.5	350h7	225	540	140	70m6
FM7 B120-xx-E01/E02	633	230h7	160	343	110	48h6
FM7 B170-xx-E01/E02	671	230h7	160	343	110	48h6
FM7 B220-xx-E01	769	300h7	180	407	140	60m6
FM7 B280-xx-E01	809	300h7	180	407	140	60m6
FM7 C215-xx-E01/E02	842.5	350h7	225	540	140	70m6
FM7 C270-xx-E01/E02	892.5	350h7	225	540	140	70m6

FM9 B037-xx-E01	944	300	160	420,3	100	55
FM9 B055-xx-E01-A	1,218.5	300	180	476	140	65
FM9 B071-xx-E01	1,259	450	225	660	140	75
FM9 A100-xx-E01	1,259	450	225	660	140	75
FM9 B113-xx-E01	1,444	450	225	660	140	75
FM9 A130-xx-E01	1,354	450	225	660	140	75

AXIS MOTORS

FKM series

The FKM series are high-performance permanent magnet synchronous motors that suit any application and new requirements demanded by new generation machines.

These motors, combined with AXD axis drives, together form a solid and compact system with high functionality and versatility. The feedback system can be adapted to the needs of the required application.

These are compact motors designed to work without any type of additional cooling, being able to incorporate forced ventilation in some sizes, to increase the nominal power depending on the needs. As an option, all sizes except the FKM96 have a maintenance brake.

General characteristics

Temperature sensor	PTC KTY84-130 thermistor (only for FKM9), PTC111-130 thermistor (only for FKM1), RTD Pt1000 thermoresistance
Shaft end	Keyless shaft (option: with key)
Mounting methods (according to CEI 34-3-72 standard)	IM B5, IM V1, IM V3
Balancing (according to DIN 45665 standard)	Half-key balancing, Class N (standard), Class R (optional)
Insulation class (according to IEC 60034 standard)	Class F (155 °C / 311 °F)
Protection degree (according to IEC 60034-5 standard)	Models FKM 94, 95 and 96: IP 65 Rest of models: IP 64 (standard) and IP 65 (optional)
Ventilation	Optional on models FKM 66, 82, 83, 84, 85
Holding brake	Optional on all models except FKM96
Feedback	Single and multi-turn absolute sinusoidal 1024 ppt 1Vpp encoder 1024 ppt sinusoidal 1Vpp encoder



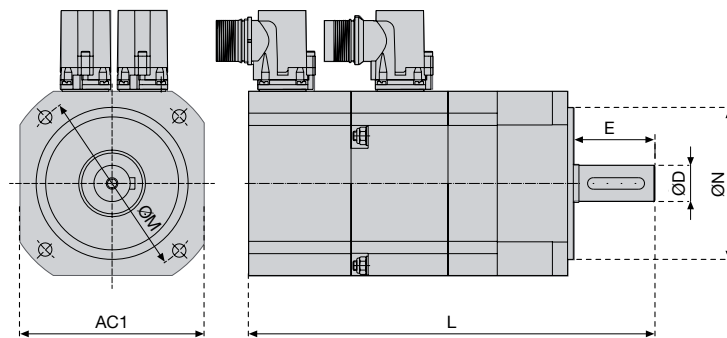
FKM series

MODEL	Stall torque [Nm]	Peak torque [Nm]	Stall current [A] / Peak current [A]						Inertia [kgcm ²]		
			2000 rpm	3000 rpm	4000 rpm	4500 rpm	5000 rpm	6000 rpm	without brake	with brake	extra brake
FKM12	0.54	2.2				0.93 / 4.3			0.07	0.138	--
FKM14	0.95	3.8				1.15 / 5.3			0.11	0.178	--
FKM21	1.7	7						2.8 / 11	1.6	1.72	--
FKM22	3.2	13		2.4 / 10			4.0 / 16	4.5 / 18	2.9	3.02	--
FKM42	6.3	25		4.6 / 19		6.9 / 28		8.5 / 34	8.5	9.04	--
FKM43	9	36	3.9 / 15.7	6.2 / 25	9.4 / 38				16.7	17.24	--
FKM44 (*)	11.6	47	4.6 / 19	8.2 / 33	10.7 / 43				16.7	17.24	18.4
FKM62	8.9	35		7.1 / 28	9.3 / 37			13.1 / 52	16	17.15	--
FKM63	12.5	51	5.3 / 21.3	10.3 / 40.6	16.2 / 64				29.5	31.16	--
FKM64	16.5	66	6.5 / 26	12.1 / 48	16.2 / 64				29.5	30.65	--
FKM66 (*)	23.5	94	10.5 / 42	16.4 / 66					43	44.15	45
FKM66 V (*)	32	94	12.8 / 37	22.3 / 66					43	--	45
FKM82	32	96	13.2 / 39	19.8 / 59	26.4 / 79				103	134.8	--
FKM82 V	40	96			33.0 / 79				103	134.8	--
FKM83	41	123	17.0 / 51	27.1 / 81					150	181.8	--
FKM83 V	60	123		39.6 / 81					150	181.8	--
FKM84	52	156	21.5 / 64	32.2 / 96					197	228.8	--
FKM84 V	80	156	33 / 64	49.5 / 96					197	228.8	--
FKM85	74	222	29.3 / 87						243	274.8	--
FKM85 V	100	222	39.6 / 87						243	274.8	--
FKM94	68	204	25.4 / 99						430	483	--
FKM95	93	279	33.1 / 129						550	603	--
FKM96	115	345	42.1 / 164						660	--	--

V Electro-ventilated motor

(*) Extra braking torque variant available

Dimensions in mm



MODEL	L (without brake)	L (with brake)	L (extra brake)	AC1	M	N	E	D
FKM12	129	167		55	63	40j6	17,5	9k6
FKM14	159	197						
FKM21	208			97	100	80j6	40	19j6
FKM22	232							
FKM42	247							
FKM43	289			126	130	110j6	50	24j6
FKM44	289		329					
FKM62	260							
FKM63	296			158	165	130j6	58	32k6
FKM64	296							
FKM66	332		394					
FKM66 V	383.5		445.5	176				
FKM82	388	438						
FKM83	438	488						
FKM84	488	538		192	215	180j6	80	38k6
FKM85	538	588						
FKM82 V	503	553						
FKM83 V	553	603						
FKM84 V	603	653		211	215	180j6	80	38k6
FKM85 V	653	703						
FKM94	527	621					80	38k6
FKM95	625	720		240	265	230j6	110	42k6
FKM96	693						110	42k6

Accessory modules

Mains filters

In order to comply with European Directive 2004/108/CE on electromagnetic compatibility, it is mandatory to insert a mains filter between mains and the DDS servo drive system.

MAIN FILTER 42A-A,
for: PS-25B4, XPS-25, RPS-20 and
MAB < 30 kW

MAIN FILTER 75A-A,
for: RPS-45 and MAB > 30 kW

MAIN FILTER 130A-A,
for: PS-65A, XPS-65 / RPS-75

MAIN FILTER 180A-A,
for: RPS-80



Chokes

Installing chokes (inductances or coils) is an absolute must when using XPS regenerative regulated power supplies and regulated regenerative power supplies (RPS) and they must always be installed between the power supply and the mains filter.

CHOKE XPS-25
CHOKE XPS-65-A
CHOKE RPS-20
CHOKE RPS-45
CHOKE RPS-75-3
CHOKE MAB-R-075-4
CHOKE MAB-R-150-4



External Ballast resistors

They are used to dissipate the excess of energy generated at the power bus in a braking process of electrical motors and cannot be dissipated by the internal resistor of the module (power supply or compact drive).

They must be used with PS, XPS and MAB--XXX-X-X power supplies.

Model	Ω	W
ER+TH-24/750	24	650
ER+TH-24/1100	24	950
ER+TH-18/1100	18	950
ER+TH-18/1800	18	1300
ER+TH-18/2200	18	2000
ER+TH-18/1000+FAN	18	2000
ER+TH-18/1500+FAN	18	3000
ER+TH-18/2000+FAN	18	4000



CM1.75 capacitor module

It stores the energy returned while braking the motors when using non-generative (PS) power supplies.

It has a capacity of 7.5 mF and it provides a maximum voltage of 797 V DC at the power bus.



APS 24 auxiliary power supply

It generates 24 V DC for the control circuits of the drive modules and of the power supplies that do not integrate the auxiliary power supply (i.e. PS-65A).

This power supply maintains the 24 V during a mains outage for a while to allow braking safely.

Input voltage 400/460 V AC,
48 ... 62 Hz

Mains consumption 0.72 A (400 V AC)
0.63 A (460 V AC)

Output voltage, maximum current 24 V DC (5%)
10 A

Width 77 mm



BPM power bus protection module

It prevents overvoltage at the power bus. When the bus voltage exceeds the set limit, the module kicks in to bring it down to the set limit. The energy is dissipated as heat through up to three resistors.



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