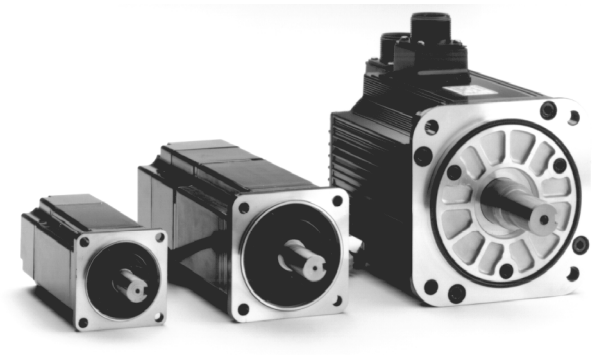
GB

...when motors must be controlled

JVL AC-Servo Motor Controllers/Drivers used with Yaskawa AC Servo Motors



JVL's Servo Motor Controllers and Yaskawa servo motors — a powerful combination.

Together with selected Yaskawa servo motors, JVL Servo Motor Controllers Types AMC 10, 11 and 12 (which provide power outputs up to 1kW) offer an ideal solution for many control applications.

JVL Controllers are characterised by great flexibility in application and control, while Yaskawa motors are characterised by their small size, low weight and very large dynamic response. Together they provide an attractive, modern solution for compact motion-control systems.

Programming of the Controller is simple using JVL's windows-based programming software, MotoWare. Motor power, velocity, torque, etc., can be monitored graphically and comparisons made with previously recorded curves. These features greatly assist control and trouble-shooting.

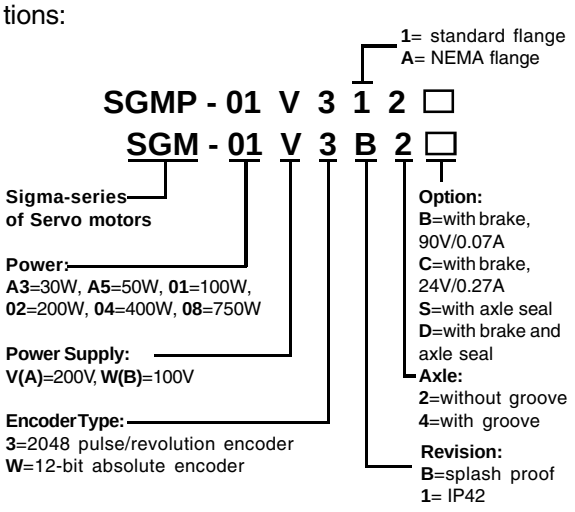
JVL Servo Controller features:

- ***Compact and programmable***
- ***EMC tested. CE-marked***
- ***Built-in RS232/RS485 Interface***
- ***Models with sequential program execution***
- ***Simple programming using MotoWare***
- ***Facilities for graphic monitoring***
- ***Electronic gearing with high resolution***
- ***Use FLASH-PROM, can be re-programmed***
- ***Absolute or relative positioning***
- ***Programmable velocity profiles***
- ***Driver stages of 6 and 12A***
- ***Digital control loop***
- ***Automatic zero-point seek***
- ***11 inputs, 8 outputs***
- ***Current and voltage overload protection***
- ***Short-circuit and thermal overload protection***
- ***End-of-travel limit inputs***

Yaskawa AC Servo Motors

Yaskawa Type designations

Yaskawa motors have the following type designations:



Yaskawa Motors and JVL Controllers

JVL´s programme of AMC Servo Motor Controllers can be used with the following types of Yaskawa SGM AC servo motor, which are stocked by JVL in the models indicated below:
All of the motors are models with an incremental encoder, are IP44 models and have grooved axles. Other models, as indicated by the type designations opposite, can also be supplied. (SGMP types are a more compact, type IP55 motor (IP67 available as an option).)

SGM-A3W3B4	30W/100V
SGM-A5W3B4	50W/100V
SGM-01W3B4 (SGMP-01W314)	100W/100V
SGM-02W3B4 (SGMP-01W314)	200W/100V
SGM-03W3B4 (SGMP-01W314)	300W/100V
SGM-04V3B4 (SGMP-01W314)	400W/200V

Motor Specifications (values in parentheses apply to SGMP motor types)

Servo Motor Type		SGM-A3W3B4	SGM-A5W3B4	SGM-01W3B4	SGM-02W3B4	SGM-03W3B4	SGM-04V3B4
Voltage	V	100	100	100	100	100	200
Power	W (HP)	30 (0.04)	50 (0.07)	100 (0.13)	200 (0.27)	300 (0.4)	400 (0.53)
Torque (nominal)	Nm	0.095	0.159	0.318	0.637	0.95	1.27
Torque (peak)	Nm	0.29	0.48	0.96	1.91	3.72	3.82
Nominal Angular Velocity	rpm	3000	3000	3000	3000	3000	3000
Max. Angular Velocity	rpm	4500	4500	4500	4500	4500	4500
Encoder Type	Incremental 2048 pulse/rev.	X	X	X	X	X	X
Inertial Torque (without brake)	$kgcm^2$	0.021	0.026	0.040 (0.065)	0.123 (0.209)	0.191 (0.347)	0.191 (0.347)
Inertial Torque (with brake)	$kgcm^2$	0.030	0.035	0.049 (0.103)	0.181 (0.307)	0.249 (0.445)	0.249 (0.445)
Allowable Inertial Load	$kgcm^2$	0.63	0.78	1.20	3.69	3.82	3.82
Cont. Current	A (rms)	0.63	0.9	2.2	2.7	3.7 (4.3)	2.6
Max. Current	A (rms)	2.0	2.9	7.1	8.4	14.8 (13.9)	8.0
Nominal angular acceleration	rad/s^2	45200	61200	79500 (49200)	51800 (30500)	49700 (27500)	66600 (36700)
Nominal "Power Rating"	kW/s	4.36	9.63	25.4 (15.7)	32.8 (19.4)	47.3 (26.3)	84.6 (46.8)
Weight	kg	0.3	0.4	0.5 (0.9)	1.1 (1.9)	1.7 (2.6)	1.7 (2.6)

Common Motor Specifications

Operation type	Continuous
Insulation Class	Class B
Vibration	V15
Insulation voltage	1500 VAC
Insulation resistance	500VDC, 10MOhm or more
Motor housing	Completely sealed, self cooling
Ambient temperature	0 to +40°C
Ambient humidity	20 to +80% (without condensation)
Magnet	Permanent
Mounting	Flanges

JVL Servo Controllers Overview

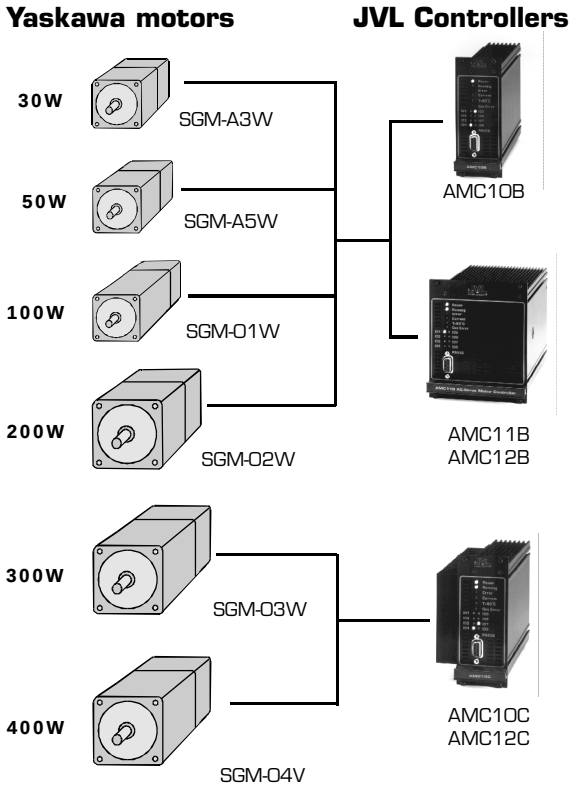
Model	Motor Current		Sequential program execution	Built-in Fieldbus Interface	Built-in power sup. 150W/ 230VAC
	0-6A cont. 12A peak	0-12A cont. 25A peak			
AMC10B	X				
AMC10C		X			
AMC11B	X				X
AMC12B	X		X	X	X
AMC12C		X	X	X	

Specifications

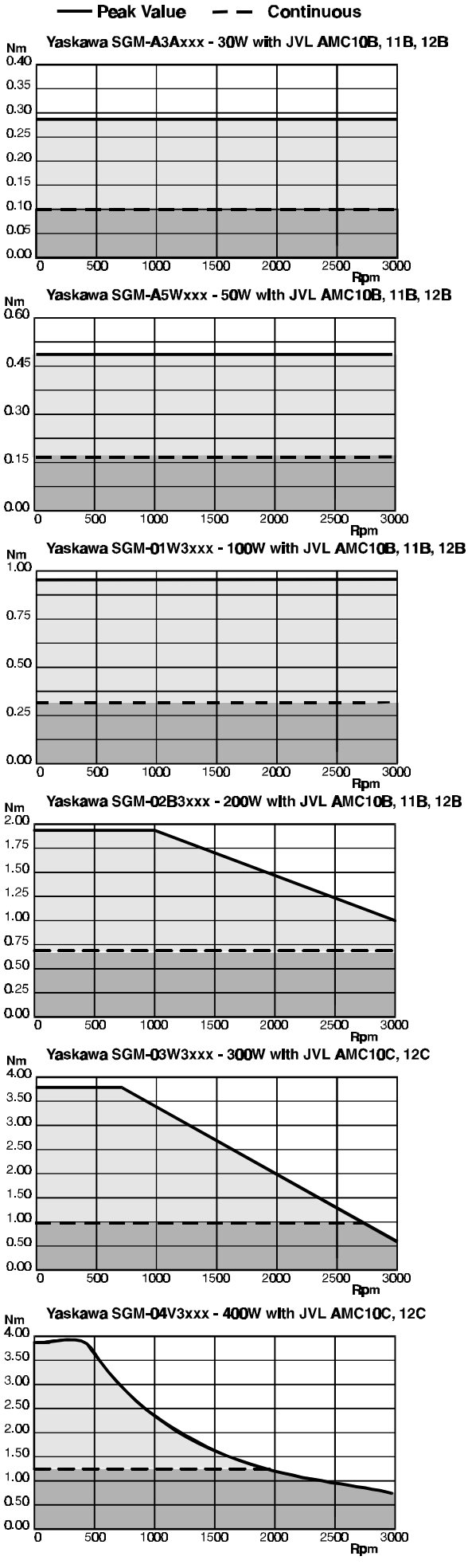
Description	Min.	Max.	Units
Supply voltage:	15	80	VDC
AMC10B,AMC11B,AMC12B:			
Continuous motor current:	0	6	A
Peak motor current:	0	12	A
AMC10C, AMC12C:			
Continuous motor current:	0	12	A
Peak motor current:	0	25	A
Update time PID-filter		540	µs
Max. Power Loss in driver:	0	25	W
Motor voltage:	0	85	V
Continuous "Power dump":	-	100	W
PWM Frequency:	-	24.3	kHz
Encoder frequency:	0	500	kHz
Pulse input - frequency:	0	500	kHz
Supply to encoder:	4.8	5.2	VDC
Thermal protection:	-	75	°C
Operating temperature range:	0	50	°C
User inputs/outputs:	4.5	30	VDC

Dimensions: (mm)

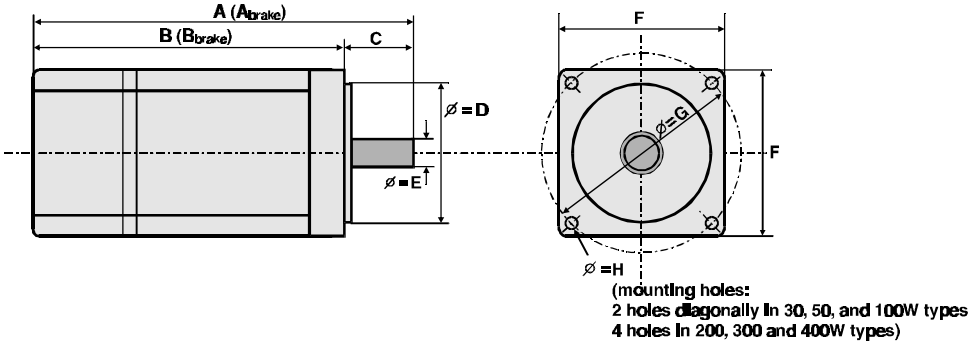
TYPE	AMC10,12B	AMC10,12C	AMC11B
H	128.5(3HE)	128.5(3HE)	128.5(3HE)
B	50.1(10TE)	81.1(16TE)	106.4(21TE)
D	171	171	171



Velocity - Torque Curves



Yaskawa Motors - Mechanical Dimensions

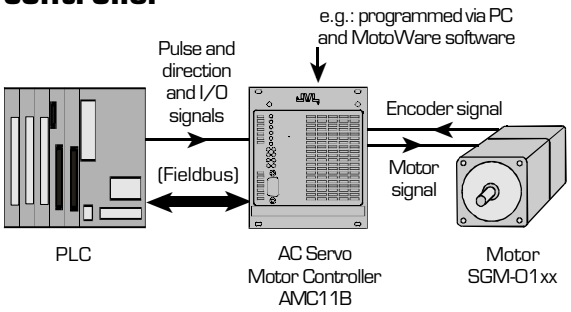


Motor	A	A_{brake}	B	B_{brake}	C	D	E	F	G	H	R	S	S_{brake}
SGM-A3W3xxx	94.5	126	69.5	101	25	30	6	40	46	4.3	6.5	37	64.5
SGM-A5W3xxx	102	133.5	77	108.5	25	30	6	40	46	4.3	6.5	37	64.5
SGM-01W3xxx	119.5 (82)	160 (111)	94.5 (57)	135 (86)	25	30 (50)	8	40 (60)	46 (70)	4.3 (5.5)	6.5 (9.3)	37 (25)	73.5 (54)
SGM-02W3xxx	126.5 (92)	166 (123.5)	96.5 (62)	136 (93.5)	30	50 (70)	14	60 (80)	70 (90)	5.5 (7)	28.8 (8.7)	41.5 (22)	78 (54)
SGM-03W3xxx	154.5 (112)	194 (143.5)	124.5 (82)	164 (113.5)	30	50 (70)	14	60 (80)	70 (90)	5.5 (7)	28.8 (8.7)	41.5 (22)	78 (74)
SGM-04V3xxx	154.5 (112)	194 (143.5)	124.5 (82)	164 (113.5)	30	50 (70)	14	60 (80)	70 (90)	5.5 (7)	28.8 (8.7)	41.5 (22)	78 (74)

( ): Values in parentheses are valid for SGMP motors

System Configurations

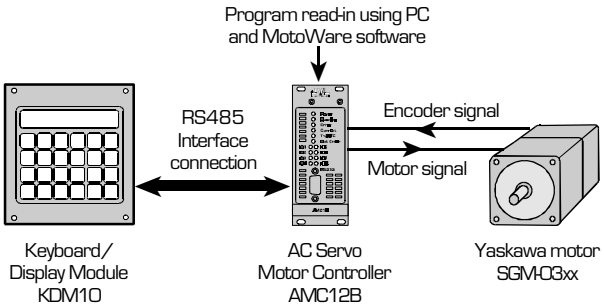
System with a PLC as the overall controller



In systems where overall control is managed by a PLC, the AMC Servo Motor Controllers can be controlled in 2 ways:

1) Using pulse and direction signals ±10V. Velocity and operating length can thus be controlled completely by the PLC-program.
2) Using the Controller's registers themselves to store parameter sets, up to 64 positions, velocities, etc., which are addressed via the digital inputs and activated by the start input. This gives maximum use of the Controller's features.

Independent system with control from Keyboard/Display Module



In this configuration, the JVL AMC Controller is used as an independent unit that completely controls program execution. Programming of the Controller is most easily accomplished using JVL's MotoWare software and a PC. The Keyboard/Display Module enables register values and program parameters to be keyed in, e.g. displacements, volumes, quantities, etc. Print-out of data to the Module display enables an operator to follow program execution. In many applications, this type of system can replace the use of a PLC.

Accessories

Extra power supply 80V/200W	PSU80-2
Connector board with plug-in connectors	CON13
Set-up and programming software	MotoWare
Interface cable	RS232-9-1
19" Rack-insert	RAI1
Mounting plate for surfaces	BASE1

Distributor:

JVL Industri Elektronik A/S • Blokken 42 • DK-3460 Birkerød • Denmark • Tel.: +45 4582 4440 • Fax: +45 4582 5550