

System overview

Clicking to the Industry Mall

6SL3255-0AA00-5AA0



SINAMICS V90 basic servo drive system

Selection and ordering data

SIMOTICS S-1FL6 servomotors → Configuration with SINAMICS V90 servo drive

Further info in section SIMOTICS S-1FL6 servomotors.

Max. speed	Rated power ¹⁾	Static torque	Rated torque ¹⁾	Max. torque ¹⁾	Rated current	Max. current	Article No.	Torque constant	Moment of inertia of rotor	Recommended load to motor inertia ratio, max.	Weight ²⁾		
n_{max}	P_{rated} at $\Delta T=100$ K	M_0 at $\Delta T=100$ K	M_{rated} at $\Delta T=100$ K	M_{max}	I_{rated} at $\Delta T=100$ K	I_{max}			$J_{without\ brake}$	$J_{with\ brake}$		$m_{without\ brake}$	$m_{with\ brake}$
rpm	kW (hp)	Nm	Nm	Nm	A	A		Nm/A	10^{-4} kgm ²		kg	kg	
SIMOTICS S-1FL6 Low Inertia servomotors – High dynamic performance													
Shaft height 20 – Rated speed n_{rated} 3000 rpm													
5000	0.05 (0.07)	0.16	0.16	0.48	1.2	3.6	1FL6022-2AF21-1 ■ ■ ■ 1	0.14	0.031	0.038	30×	0.47	0.7
5000	0.10 (0.14)	0.32	0.32	0.96	1.2	3.6	1FL6024-2AF21-1 ■ ■ ■ 1	0.29	0.052	0.059	30×	0.63	0.86
Shaft height 30 – Rated speed n_{rated} 3000 rpm													
5000	0.20 (0.27)	0.64	0.64	1.91	1.4	4.2	1FL6032-2AF21-1 ■ ■ ■ 1	0.48	0.214	0.245	30×	1.02	1.48
5000	0.40 (0.54)	1.27	1.27	3.82	2.6	7.8	1FL6034-2AF21-1 ■ ■ ■ 1	0.49	0.351	0.381	30×	1.46	1.92
Shaft height 40 – Rated speed n_{rated} 3000 rpm													
5000	0.75 (1.02)	2.39	2.39	7.2	4.7	14.2	1FL6042-2AF21-1 ■ ■ ■ 1	0.51	0.897	1.06	20×	2.8	3.68
Shaft height 40 – Rated speed n_{rated} 3000 rpm													
5000	1.00 (1.36)	3.18	3.18	9.54	6.3	18.9	1FL6044-2AF21-1 ■ ■ ■ 1	0.51	1.15	1.31	20×	3.39	4.2
Shaft height 50 – Rated speed n_{rated} 3000 rpm													
5000	1.50 (2.04)	4.78	4.78	14.3	10.6	31.8	1FL6052-2AF21-2 ■ ■ ■ 1	0.46	2.04	2.24	15×	5.45	6.96
5000	2.00 (2.72)	6.37	6.37	19.1	11.6	34.8	1FL6054-2AF21-2 ■ ■ ■ 1	0.55	2.62	2.82		6.66	8.2
SIMOTICS S-1FL6 High Inertia servomotors – Smooth operational performance													
Shaft height 45 – Rated speed n_{rated} 3000 rpm													
4000	0.4 (0.54)	1.9	1.27	3.8	1.2	3.6	1FL6042-1AF61-2 ■ ■ ■ 1	1.1	2.7	3.2	10×	3.4	4.8
4000	0.75 (1.02)	3.5	2.39	7.2	2.1	6.3	1FL6044-1AF61-2 ■ ■ ■ 1	1.2	5.2	5.7		5.2	6.6
Shaft height 65 – Rated speed n_{rated} 2000 rpm													
3000	0.75 (1.02)	4	3.58	10.7	2.5	7.5	1FL6061-1AC61-2 ■ ■ ■ 1	1.5	8	9.1	5×	5.7	8.8
3000	1 (1.36)	6	4.78	14.3	3	9	1FL6062-1AC61-2 ■ ■ ■ 1	1.7	11.7	13.5		7	10.1
3000	1.5 (2.04)	8	7.16	21.5	4.6	13.8	1FL6064-1AC61-2 ■ ■ ■ 1	1.6	15.3	16.4		8.4	11.5
3000	1.75 (2.38)	11	8.36	25.1	5.3	15.9	1FL6066-1AC61-2 ■ ■ ■ 1	1.7	22.6	23.7		11.1	14.2
3000	2 (2.72)	15	9.55	28.7	5.9	17.7	1FL6067-1AC61-2 ■ ■ ■ 1	1.7	29.9	31		13.7	16.8
Shaft height 90 – Rated speed n_{rated} 2000 rpm													
3000	2.5 (3.40)	15	11.9	35.7	7.8	23.4	1FL6090-1AC61-2 ■ ■ ■ 1	1.6	47.4	56.3	5×	15.4	21.5
3000	3.5 (4.76)	22	16.7	50	11	33	1FL6092-1AC61-2 ■ ■ ■ 1	1.6	69.1	77.9		19.8	25.9
2500	5 (6.80)	30	23.9	70	12.6	36.9	1FL6094-1AC61-2 ■ ■ ■ 1	2.0	90.8	99.7		24.4	30.5
2000	7 (9.52)	40	33.4	90	13.2	35.6	1FL6096-1AC61-2 ■ ■ ■ 1	2.7	134.3	143.2		33.3	39.3

Encoder type

Incremental encoder TTL, 2500 S/R

Absolute encoder 20-bit single-turn + 12-bit multi-turn *

1FL6 Low Inertia: Absolute encoder 21-bit single-turn

A

L

M

Shaft extension Holding brake

Feather key Without

Feather key With

Plain shaft Without

Plain shaft With

A

B

G

H

Detailed information on SINAMICS V90 is available on the Internet at: www.siemens.com/sinamics-v90In addition, the Drive Technology Configurator (DT Configurator) can be used on the Internet: www.siemens.com/dt-configurator

* Absolute encoder 20-bit single-turn + 12-bit multi-turn are available for 1FL6 Low Inertia from the second half of the 2019 calendar year.

²⁾ Motor weight with incremental encoder.¹⁾ Rated torque, rated power and maximum torque listed in the table above allow for a production tolerance of 10 %.

6SL3255-0AA00-5AA0



SINAMICS V90 basic servo drive system

1

SINAMICS V90 servo drive Further info in section SINAMICS V90 servo drive.		Line filter	Recommended standard fuse		Recommended circuit breaker
Max. motor power	Frame size	With one of the recommended line filters, EN 61008-3 category C2 can be reached in combination with SINAMICS V90. For more information please refer to SINAMICS V90 Operating instructions.	corresponding to IEC standard	corresponding to UL standard	corresponding to IEC standard/ UL standard
kW (hp)	Article No.	Line supply voltage	I_{rated}	I_{rated}	I_{rated} Class
		V	A	A	A
		Article No.	Article No.	Article No.	Article No.
SINAMICS V90 servo drive					
Line supply 200 ... 240 V 1 AC/3 AC					
0.10 (0.14)	6SL3210-5FB10-1U ■ 2	FSA	200 ... 240 1 AC 18	6SL3203-0BB21-8VA0	6 3NA3801 6 Listed JDDZ
			200 ... 240 3 AC 5	6SL3203-0BE15-0VA0	
			200 ... 240 1 AC 18	6SL3203-0BB21-8VA0	
			200 ... 240 3 AC 5	6SL3203-0BE15-0VA0	
Line supply 200 ... 240 V 1 AC/3 AC					
0.20 (0.27)	6SL3210-5FB10-2U ■ 2	FSA	200 ... 240 1 AC 18	6SL3203-0BB21-8VA0	6 3NA3801 6 Listed JDDZ
			200 ... 240 3 AC 5	6SL3203-0BE15-0VA0	
0.40 (0.54)	6SL3210-5FB10-4U ■ 1	FSB	200 ... 240 1 AC 18	6SL3203-0BB21-8VA0	10 3NA3803 10
			200 ... 240 3 AC 5	6SL3203-0BE15-0VA0	
Line supply 200 ... 240 V 1 AC/3 AC					
0.75 (1.02)	6SL3210-5FB10-8U ■ 0	FSC	200 ... 240 1 AC 18	6SL3203-0BB21-8VA0	16 3NA3805 20 Listed JDDZ
			200 ... 240 3 AC 5	6SL3203-0BE15-0VA0	
Line supply 200 ... 240 V 3 AC					
1.00 (1.36)	6SL3210-5FB11-0U ■ 1	FSD	200 ... 240 3 AC 12	6SL3203-0BE21-2VA0	16 3NA3805 20 Listed JDDZ
Line supply 200 ... 240 V 3 AC					
1.50 (2.04)	6SL3210-5FB11-5U ■ 0	FSD	200 ... 240 3 AC 12	6SL3203-0BE21-2VA0	25 3NA3810 25 Listed JDDZ
2.00 (2.72)	6SL3210-5FB12-0U ■ 0				
SINAMICS V90 servo drive					
Line supply 380 ... 480 V 3 AC					
0.4 (0.54)	6SL3210-5FE10-4U ■ 0	FSAA	380 ... 480 3 AC 5	6SL3203-0BE15-0VA0	6 3NA3801-6 10 Listed JDDZ
0.75 (1.02)	6SL3210-5FE10-8U ■ 0	FSA			
Line supply 380 ... 480 V 3 AC					
1 (1.36)	6SL3210-5FE11-0U ■ 0	FSA	380 ... 480 3 AC 5	6SL3203-0BE15-0VA0	10 3NA3803-6 10 Listed JDDZ
1.75 (2.38)	6SL3210-5FE11-5U ■ 0	FSB	12	6SL3203-0BE21-2VA0	15
2.5 (3.40)	6SL3210-5FE12-0U ■ 0				
Line supply 380 ... 480 V 3 AC					
2.5 (3.40)	6SL3210-5FE12-0U ■ 0	FSB	380 ... 480 3 AC 12	6SL3203-0BE21-2VA0	16 3NA3805-6 15 Listed JDDZ
3.5 (4.76)	6SL3210-5FE13-5U ■ 0	FSC	20	6SL3203-0BE22-0VA0	20 3NA3807-6 25
5 (6.80)	6SL3210-5FE15-0U ■ 0				
7 (9.52)	6SL3210-5FE17-0U ■ 0				
SINAMICS V90, pulse train (PTI) version	A				
SINAMICS V90, PROFINET (PN) version	F				

System overview

Clicking to the Industry Mall

6SL3255-0AA00-5AA0



SINAMICS V90 basic servo drive system

Selection and ordering data (continued)

SIMOTICS S-1FL6 servomotors → Configuration with MOTION-CONNECT connection systems
Further info in section SIMOTICS S-1FL6 servomotors.

Max. speed	Rated power ¹⁾	Static torque	Rated torque ¹⁾	Max. torque ¹⁾	Rated current	Max. current	Article No.	Torque constant	Moment of inertia of rotor	Recommended load to motor inertia ratio, max.	Weight ²⁾		
n_{max}	P_{rated} at $\Delta T=100$ K	M_0 at $\Delta T=100$ K	M_{rated} at $\Delta T=100$ K	M_{max}	I_{rated} at $\Delta T=100$ K	I_{max}			$J_{without\ brake}$	$J_{with\ brake}$		$m_{without\ brake}$	$m_{with\ brake}$
rpm	kW (hp)	Nm	Nm	Nm	A	A		Nm/A	10^{-4} kgm ²		kg	kg	
SIMOTICS S-1FL6 Low Inertia servomotors – High dynamic performance													
Shaft height 20 – Rated speed n_{rated} 3000 rpm													
5000	0.05 (0.07)	0.16	0.16	0.48	1.2	3.6	1FL6022-2AF21-1 ■ ■ ■ 1	0.14	0.031	0.038	30×	0.47	0.7
5000	0.10 (0.14)	0.32	0.32	0.96	1.2	3.6	1FL6024-2AF21-1 ■ ■ ■ 1	0.29	0.052	0.059	30×	0.63	0.86
Shaft height 30 – Rated speed n_{rated} 3000 rpm													
5000	0.20 (0.27)	0.64	0.64	1.91	1.4	4.2	1FL6032-2AF21-1 ■ ■ ■ 1	0.48	0.214	0.245	30×	1.02	1.48
5000	0.40 (0.54)	1.27	1.27	3.82	2.6	7.8	1FL6034-2AF21-1 ■ ■ ■ 1	0.49	0.351	0.381	30×	1.46	1.92
Shaft height 40 – Rated speed n_{rated} 3000 rpm													
5000	0.75 (1.02)	2.39	2.39	7.2	4.7	14.2	1FL6042-2AF21-1 ■ ■ ■ 1	0.51	0.897	1.06	20×	2.8	3.68
Shaft height 40 – Rated speed n_{rated} 3000 rpm													
5000	1.00 (1.36)	3.18	3.18	9.54	6.3	18.9	1FL6044-2AF21-1 ■ ■ ■ 1	0.51	1.15	1.31	20×	3.39	4.2
Shaft height 50 – Rated speed n_{rated} 3000 rpm													
5000	1.50 (2.04)	4.78	4.78	14.3	10.6	31.8	1FL6052-2AF21-2 ■ ■ ■ 1	0.46	2.04	2.24	15×	5.45	6.96
5000	2.00 (2.72)	6.37	6.37	19.1	11.6	34.8	1FL6054-2AF21-2 ■ ■ ■ 1	0.55	2.62	2.82		6.66	8.2
SIMOTICS S-1FL6 High Inertia servomotors – Smooth operational performance													
Shaft height 45 – Rated speed n_{rated} 3000 rpm													
4000	0.4 (0.54)	1.9	1.27	3.8	1.2	3.6	1FL6042-1AF61-2 ■ ■ ■ 1	1.1	2.7	3.2	10×	3.4	4.8
4000	0.75 (1.02)	3.5	2.39	7.2	2.1	6.3	1FL6044-1AF61-2 ■ ■ ■ 1	1.2	5.2	5.7		5.2	6.6
Shaft height 65 – Rated speed n_{rated} 2000 rpm													
3000	0.75 (1.02)	4	3.58	10.7	2.5	7.5	1FL6061-1AC61-2 ■ ■ ■ 1	1.5	8	9.1	5×	5.7	8.8
3000	1 (1.36)	6	4.78	14.3	3	9	1FL6062-1AC61-2 ■ ■ ■ 1	1.7	11.7	13.5		7	10.1
3000	1.5 (2.04)	8	7.16	21.5	4.6	13.8	1FL6064-1AC61-2 ■ ■ ■ 1	1.6	15.3	16.4		8.4	11.5
3000	1.75 (2.38)	11	8.36	25.1	5.3	15.9	1FL6066-1AC61-2 ■ ■ ■ 1	1.7	22.6	23.7		11.1	14.2
3000	2 (2.72)	15	9.55	28.7	5.9	17.7	1FL6067-1AC61-2 ■ ■ ■ 1	1.7	29.9	31		13.7	16.8
Shaft height 90 – Rated speed n_{rated} 2000 rpm													
3000	2.5 (3.40)	15	11.9	35.7	7.8	23.4	1FL6090-1AC61-2 ■ ■ ■ 1	1.6	47.4	56.3	5×	15.4	21.5
3000	3.5 (4.76)	22	16.7	50	11	33	1FL6092-1AC61-2 ■ ■ ■ 1	1.6	69.1	77.9		19.8	25.9
2500	5 (6.80)	30	23.9	70	12.6	36.9	1FL6094-1AC61-2 ■ ■ ■ 1	2.0	90.8	99.7		24.4	30.5
2000	7 (9.52)	40	33.4	90	13.2	35.6	1FL6096-1AC61-2 ■ ■ ■ 1	2.7	134.3	143.2		33.3	39.3

Encoder type

Incremental encoder TTL, 2500 S/R

Absolute encoder 20-bit single-turn + 12-bit multi-turn *

1FL6 Low Inertia: Absolute encoder 21-bit single-turn

A

L

M

Shaft extension Holding brake

Feather key Without

Feather key With

Plain shaft Without

Plain shaft With

A

B

G

H

Detailed information on SINAMICS V90 is available on the Internet at: www.siemens.com/sinamics-v90In addition, the Drive Technology Configurator (DT Configurator) can be used on the Internet: www.siemens.com/dt-configurator

* Absolute encoder 20-bit single-turn + 12-bit multi-turn are available for 1FL6 Low Inertia from the second half of the 2019 calendar year.

²⁾ Motor weight with incremental encoder.¹⁾ Rated torque, rated power and maximum torque listed in the table above allow for a production tolerance of 10 %.

6SL3255-0AA00-5AA0



SINAMICS V90 basic servo drive system

1

MOTION-CONNECT connection systems Further info in section MOTION-CONNECT connection systems.								
Pre-assembled power cables		Pre-assembled signal cables				Connectors		
No. of cores x conductor cross-section		SINAMICS V90 – Incremental encoder on the 1FL6 servo- motor	SINAMICS V90 – Absolute encoder on the 1FL6 servomotor	SINAMICS V90 – Brake on the 1FL6 servomotor with holding brake	Motor side for power connection	Motor side for incre- mental encoder	for absolute encoder	for brake
mm ²	Article No.	Article No.	Article No.	Article No.	Article No.	Article No.	Article No.	Article No.
MOTION-CONNECT connection systems								
4 x 0.75	6FX3002-5CK01-1 ■ ■ 0	6FX3002-2CT20-1 ■ ■ 0	6FX3002-2DB20-1 ■ ■ 0	6FX3002-5BK02-1 ■ ■ 0	6FX2003-0LL12	6FX2003-0SL12	6FX2003-0DB12	6FX2003-0LL52
4 x 0.75	6FX3002-5CK01-1 ■ ■ 0	6FX3002-2CT20-1 ■ ■ 0	6FX3002-2DB20-1 ■ ■ 0	6FX3002-5BK02-1 ■ ■ 0	6FX2003-0LL12	6FX2003-0SL12	6FX2003-0DB12	6FX2003-0LL52
4 x 0.75	6FX3002-5CK01-1 ■ ■ 0	6FX3002-2CT20-1 ■ ■ 0	6FX3002-2DB20-1 ■ ■ 0	6FX3002-5BK02-1 ■ ■ 0	6FX2003-0LL12	6FX2003-0SL12	6FX2003-0DB12	6FX2003-0LL52
4 x 0.75	6FX3002-5CK01-1 ■ ■ 0	6FX3002-2CT20-1 ■ ■ 0	6FX3002-2DB20-1 ■ ■ 0	6FX3002-5BK02-1 ■ ■ 0	6FX2003-0LL12	6FX2003-0SL12	6FX2003-0DB12	6FX2003-0LL52
4 x 2.5	6FX3002-5CK32-1 ■ ■ 0	6FX3002-2CT12-1 ■ ■ 0	6FX3002-2DB12-1 ■ ■ 0	6FX3002-5BL03-1 ■ ■ 0	6FX2003-0LL13	6FX2003-0SL13	6FX2003-0DB13	6FX2003-0LL53
MOTION-CONNECT connection systems								
4 x 1.5	6FX3002-5CL02-1 ■ ■ 0	6FX3002-2CT12-1 ■ ■ 0	6FX3002-2DB10-1 ■ ■ 0	6FX3002-5BL03-1 ■ ■ 0	6FX2003-0LL13	6FX2003-0SL13	6FX2003-0DB11	6FX2003-0LL53
4 x 1.5	6FX3002-5CL02-1 ■ ■ 0	6FX3002-2CT12-1 ■ ■ 0	6FX3002-2DB10-1 ■ ■ 0	6FX3002-5BL03-1 ■ ■ 0	6FX2003-0LL13	6FX2003-0SL13	6FX2003-0DB11	6FX2003-0LL53
4 x 2.5	6FX3002-5CL12-1 ■ ■ 0							
4 x 2.5	6FX3002-5CL12-1 ■ ■ 0	6FX3002-2CT12-1 ■ ■ 0	6FX3002-2DB10-1 ■ ■ 0	6FX3002-5BL03-1 ■ ■ 0	6FX2003-0LL13	6FX2003-0SL13	6FX2003-0DB11	6FX2003-0LL53

Length	A	D	Length	A	D	Length	A	D	Length	A	D
3 m	A	D	3 m	A	D	3 m	A	D	3 m	A	D
5 m	A	F	5 m	A	F	5 m	A	F	5 m	A	F
7 m ¹⁾	A	H	7 m ¹⁾	A	H	7 m ¹⁾	A	H	7 m ¹⁾	A	H
10 m	B	A	10 m	B	A	10 m	B	A	10 m	B	A
15 m ¹⁾	B	F	15 m ¹⁾	B	F	15 m ¹⁾	B	F	15 m ¹⁾	B	F
20 m	C	A	20 m	C	A	20 m	C	A	20 m	C	A

Drive side	
for incre- mental encoder	for absolute encoder
Article No.	Article No.
6FX2003-0SB14	6FX2003-0SB14

¹⁾ Only available for High Inertia motors (400 V 3 AC).