

Synchronous motors

Linear motors for SINAMICS S120

1FN3 standard type linear motors
version for continuous load – water cooling

Selection and Ordering Data

Motor type Primary section (continued)	Motor phase current		Calculated power	SINAMICS Motor Module		Power cable with complete shield Motor connection via adapter cable with power connector for increased velocity/acceleration		
	I_{rated}	I_{MAX}		Required rated current	Order No.	Order No.	Cable cross-section	
	A	A	I_{rated}/I_{MAX}				A	Pre-assembled adapter cable
1FN3050-1NE...	2.9 ⁵⁾	6 ⁵⁾	1.8 (2.41) ⁵⁾	3/6	6SL312 - - TE13-0A..	Pre-assembled cables available soon.		
1FN3050-2NC...	2.9 ⁵⁾	6 ⁵⁾	2.4 (3.22) ⁵⁾	3/6	6SL312 - - TE13-0A..			
1FN3100-1NC...	2.9	6	2.2 (2.95)	3/6	6SL312 - - TE13-0A..			
1FN3100-2ND...	8.2	17.1	5.3 (7.10)	9/18	6SL312 - - TE21-0A..			
1FN3100-3NC...	8.7	18.2	6.5 (8.71)	9/18 ⁷⁾	6SL312 - - TE21-0A..			
1FN3100-4ND...	16.5	34.2	10.6 (14.21)	18/36	6SL312 - - TE21-8A..			
1FN3150-1NC...	4.7	9.7	3.3 (4.42)	5/10	6SL312 - - TE15-0A..			
1FN3150-2NC...	8.2	17.1	6.1 (8.18)	9/18	6SL312 - - TE21-0A..			
1FN3150-3ND...	17.5	36.4	11.2 (15.01)	18/36 ⁷⁾	6SL312 - - TE21-8A..			
1FN3150-4NC...	16.5	34.2	12.1 (16.22)	18/36	6SL312 - - TE21-8A..			
1FN3300-1NC...	8.1 ⁵⁾	17.1 ⁵⁾	5.4 (7.24) ⁵⁾	9/18	6SL312 - - TE21-0A..			
1FN3300-2NC...	16.2 ⁵⁾	34.1 ⁵⁾	10.8 (14.48) ⁵⁾	18/36	6SL312 - - TE21-8A..			
1FN3300-3NC...	27.3 ⁵⁾	57.4 ⁵⁾	17.4 (23.32) ⁵⁾	30/56 ⁷⁾	6SL312 - - 1 TE23-0A..			
1FN3300-4NC...	28.4 ⁵⁾	59.6 ⁵⁾	19.8 (26.54) ⁵⁾	30/56 ⁷⁾	6SL312 - - 1 TE23-0A..			
1FN3450-2ND...	28.4 ⁵⁾	59.6 ⁵⁾	17.5 (23.46) ⁵⁾	30/56 ⁷⁾	6SL312 - - 1 TE23-0A..			
1FN3450-3ND...	42.5 ⁵⁾	89.5 ⁵⁾	26.2 (35.12) ⁵⁾	45/85 ⁷⁾	6SL312 - - 1 TE24-5A..			
1FN3450-4NC...	40.8 ⁵⁾	85.8 ⁵⁾	28.1 (37.67) ⁵⁾	45/85 ⁷⁾	6SL312 - - 1 TE24-5A..			
1FN3600-2NC...	28.4 ⁵⁾	59.6 ⁵⁾	19.1 (25.60) ⁵⁾	30/56 ⁷⁾	6SL312 - - 1 TE23-0A..			
1FN3600-3NC...	42.5 ⁵⁾	89.5 ⁵⁾	28.5 (38.20) ⁵⁾	45/85 ⁷⁾	6SL312 - - 1 TE24-5A..			
1FN3600-4NC...	56.7 ⁵⁾	119.3 ⁵⁾	38 (50.94) ⁵⁾	60/113 ⁷⁾	6SL312 - - 1 TE26-0A..			
1FN3900-2NB...	28.4 ⁵⁾	59.6 ⁵⁾	22 (29.49) ⁵⁾	30/56 ⁷⁾	6SL312 - - 1 TE23-0A..			
1FN3900-3NB...	42.5 ⁵⁾	89.5 ⁵⁾	32.9 (44.10) ⁵⁾	45/85 ⁷⁾	6SL312 - - 1 TE24-5A..			
1FN3900-4NB...	56.7 ⁵⁾	119.3 ⁵⁾	43.8 (58.71) ⁵⁾	60/113 ⁷⁾	6SL312 - - 1 TE26-0A..			

Cooling:

Internal air cooling
External air cooling

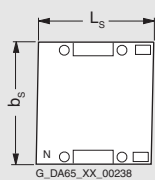
0
1

Motor Module:

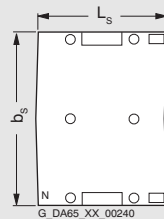
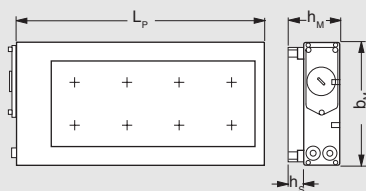
Single Motor Module
Double Motor Module

1
2

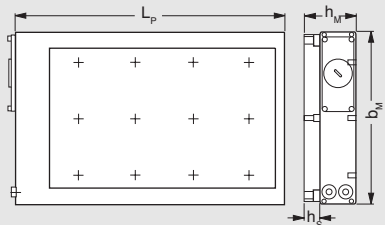
Dimension drawings



1FN3050 to 1FN3450 without precision cooling



1FN3600 to 1FN3900 without precision cooling
Note: 4-row drill pattern with 1FN3900 for fixing the primary section



- For water cooling with inlet temperature 35 °C (95 °F).
- A reduction of up to 30% must be expected in case of motor standstill, at very low speeds, or with very short traverse paths.
- Velocity values refer to a converter DC link voltage of 600 V DC.
- No precision cooler available.
- Preliminary values.
- On request.
- Motor Modules are designed for feedrate force F_{rated} . If feedrate force F_{MAX} is utilized, the next largest Motor Module must be used.

Synchronous motors

Linear motors for SINAMICS S120

1FN3 standard type linear motors
Water cooling

Selection and Ordering Data

Linear motors Type	Optional components Secondary section cover		Cover end pieces for secondary section cover ²⁾ Retaining of the integrated cover without heatsink profiles Order No.
	Integrated ¹⁾ Order No.	Segmented Order No.	
1FN3050-...	1FN3050-0TB00-1 ■ ■ 0	1FN3050-4TP00-1A ■ ■	1FN3050-0TC00-0AA0
1FN3100-...	1FN3100-0TB00-1 ■ ■ 0	1FN3100-4TP00-1A ■ ■	1FN3100-0TC00-0AA0
1FN3150-...	1FN3150-0TB00-1 ■ ■ 0	1FN3150-4TP00-1A ■ ■	1FN3150-0TC00-0AA0
1FN3300-...	1FN3300-0TB00-1 ■ ■ 0	1FN3300-4TP00-1A ■ ■	1FN3300-0TC00-0AA0
1FN3450-...	1FN3450-0TB00-1 ■ ■ 0	1FN3450-4TP00-1A ■ ■	1FN3450-0TC00-0AA0
1FN3600-...	1FN3600-0TB00-1 ■ ■ 0	1FN3600-4TP00-1A ■ ■	-
1FN3900-...	1FN3900-0TB00-1 ■ ■ 0	1FN3900-4TP00-1A ■ ■	-

Number of secondary sections	0	A	Number of secondary sections for all frame sizes	2.5	C 5
	10	B		3	D 0
	20	C		3.5	D 5
	30	D		4	E 0
	40	E		5	F 0
	50	F			
Number of secondary sections for frame sizes 1FN3600/1FN3900	0	A	Number of secondary sections for frame sizes 1FN3600/1FN3900	5.5	F 5
	1	B		6.5	G 5
	2	C			
	3	D			
	4	E			
	5	F			
	6	G			
	7	H			
	8	J			
9	K				

Selection and Ordering Data

Linear motors Type	Optional components Precision cooler Order No.
1FN3050-2W...	1FN3050-2PK00-0AA0
1FN3100-2W...	1FN3100-2PK00-0AA0
1FN3100-3W...	1FN3100-3PK00-0AA0
1FN3100-4W...	1FN3100-4PK00-0AA0
1FN3100-5W...	1FN3100-5PK00-0AA0
1FN3150-2W...	1FN3150-2PK00-0AA0
1FN3150-3W...	1FN3150-3PK00-0AA0
1FN3150-4W...	1FN3150-4PK00-0AA0
1FN3150-5W...	1FN3150-5PK00-0AA0
1FN3300-2W...	1FN3300-2PK00-0AA0
1FN3300-3W...	1FN3300-3PK00-0AA0
1FN3300-4W...	1FN3300-4PK00-0AA0
1FN3450-2W...	1FN3450-2PK00-0AA0
1FN3450-3W...	1FN3450-3PK00-0AA0
1FN3450-4W...	1FN3450-4PK00-0AA0
1FN3600-2W...	1FN3600-2PK00-0AA0
1FN3600-3W...	1FN3600-3PK00-0AA0
1FN3600-4W...	1FN3600-4PK00-0AA0
1FN3900-2W...	1FN3900-2PK00-0AA0
1FN3900-3W...	1FN3900-3PK00-0AA0
1FN3900-4W...	1FN3900-4PK00-0AA0

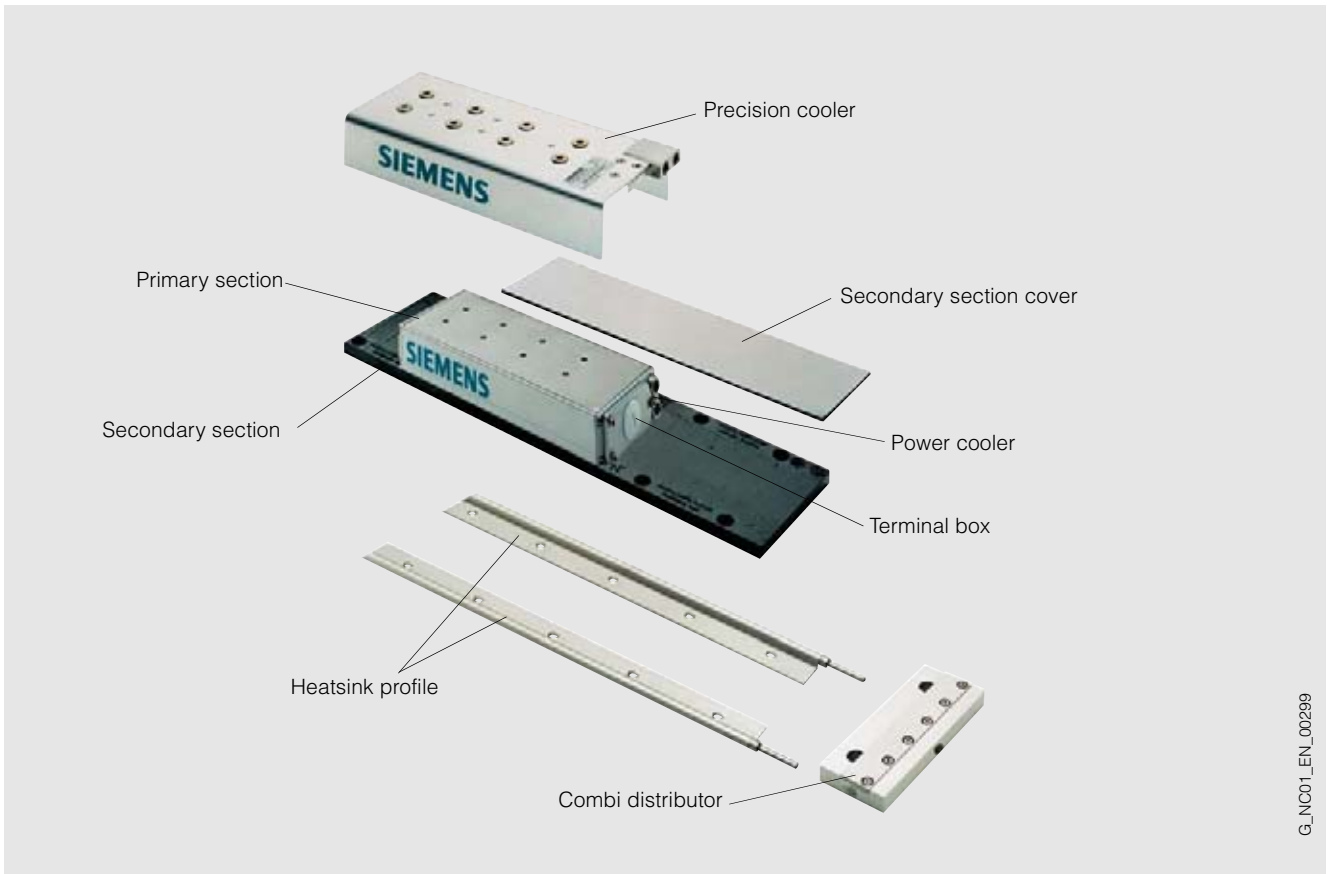
1) Continuous cover for several secondary sections. The maximum length of the secondary section cover is 6 m (19.69 ft). For the following frame sizes, this corresponds to: 1FN3050 to 1FN3150, a maximum number of 50 secondary sections (AB to FA). 1FN3300 to 1FN3900, a maximum number of 32 secondary sections (AB to DC).

2) The secondary section end pieces are designed to allow clamping of the integrated secondary section cover.

3) Sizes
1FN3050 to 1FN3450: 2 units per secondary section track.
1FN3600 to 1FN3900: 3 units per secondary section track.
The maximum available length of a single-part heatsink profile is 3 m (9.84 ft).
For the following frame sizes, this corresponds to:
1FN3050 to 1FN3150 a maximum of 24 secondary sections (AB to CE)
1FN3300 to 1FN3900 a maximum of 16 secondary sections (AB to BG)

Synchronous motors Linear motors for SINAMICS S120

1FN3 standard type linear motors
Water cooling



G_NC01_EN_00299

Selection and Ordering Data

Linear motors Type	Optional components				
	Heatsink profile ³⁾		Secondary section end pieces ²⁾		
	Order No.		Combi distributor Parallel water connection for all heatsink profiles Order No.	Combi adapter Combi adapter and end piece can only be implemented together. Single-sided water connection Order No.	Combi end piece Water diversion Order No.
1FN3050-...	1FN3002-OTK0	■ -1 ■ ■ 0	1FN3050-OTJ01-0AA0	1FN3050-OTG01-0AA0	1FN3050-OTF01-0AA0
1FN3100-...	1FN3002-OTK0	■ -1 ■ ■ 0	1FN3100-OTJ01-0AA0	1FN3100-OTG01-0AA0	1FN3100-OTF01-0AA0
1FN3150-...	1FN3002-OTK0	■ -1 ■ ■ 0	1FN3150-OTJ01-0AA0	1FN3150-OTG01-0AA0	1FN3150-OTF01-0AA0
1FN3300-...	1FN3003-OTK0	■ -1 ■ ■ 0	1FN3300-OTJ01-0AA0	1FN3300-OTG01-0AA0	1FN3300-OTF01-0AA0
1FN3450-...	1FN3003-OTK0	■ -1 ■ ■ 0	1FN3450-OTJ01-0AA0	1FN3450-OTG01-0AA0	1FN3450-OTF01-0AA0
1FN3600-...	1FN3004-OTK0	■ -1 ■ ■ 0	1FN3600-OTJ01-0AA0	-	-
1FN3900-...	1FN3005-OTK0	■ -1 ■ ■ 0	1FN3900-OTJ01-0AA0	-	-

Number of secondary sections	
4	A
	B
	C
6	A
	B
	C
	D
	E
	F
	G
7	H
	J
	K

With plug-in coupling prepared for connection to combi distributor with plug-in coupling, combi adapter with plug-in coupling, combi end piece with plug-in coupling, or as intermediate unit for heatsink profile with cable grommet nipple

Frame sizes 1FN3050 to 1FN3450:
Grommet nipple only on right end of secondary section track

Frame sizes 1FN3600/1FN3900:
Grommet nipple on both ends of secondary section track

Frame sizes 1FN3050 to 1FN3450:
Grommet nipple only on left end of secondary section track

Synchronous motors

Linear motors for SINAMICS S120

1FN3 linear motors Hall-effect sensor box

Overview



The motor position can be identified with an incremental linear measuring system using an additional Hall-effect sensor box, or also motion-based when considering certain additional conditions.

Selection and Ordering Data

Linear motor Type	Hall-effect sensor box Mounted <u>opposite</u> of primary section terminal end	
	Straight cable outlet Order No.	Lateral cable outlet Order No.
1FN3		
1FN3050-2W... 1FN3100-2W... 1FN3100-4W... 1FN3150-2W... 1FN3150-4W...	1FN3002-0PH00-0AA0	1FN3002-0PH01-0AA0
1FN3100-1W... 1FN3100-3W... 1FN3100-5W... 1FN3150-1W... 1FN3150-3W... 1FN3150-5W...	1FN3005-0PH00-0AA0	1FN3005-0PH01-0AA0
1FN3300-2W... 1FN3300-4W... 1FN3450-2W... 1FN3450-4W... 1FN3600-2W... 1FN3600-4W... 1FN3900-2W... 1FN3900-4W...	1FN3003-0PH00-0AA0	1FN3003-0PH01-0AA0
1FN3300-1W... 1FN3300-3W... 1FN3450-3W... 1FN3600-3W... 1FN3900-3W...	1FN3006-0PH00-0AA0	1FN 006-0PH01-0AA0

Linear motor Type	Hall-effect sensor box Mounted <u>on</u> primary section terminal end	
	Straight cable outlet Order No.	Lateral cable outlet Order No.
1FN3050-... 1FN3100-... 1FN3150-...	1FN3002-0PH00-0AA0	1FN3002-0PH01-0AA0
1FN3300-... 1FN3450-... 1FN3600-... 1FN3900-...	1FN3003-0PH00-0AA0	1FN3003-0PH01-0AA0

1FN1/1FN3 linear motors Connector box

Overview



A connector box is required to connect a Hall-effect sensor box (option).

Technical specifications

Product name	Connector box
Degree of protection in accordance with EN 60529 (IEC 60529)	IP65
Permissible air humidity in accordance with DIN 40040	95% (without condensation)
Weight, approx.	0.26 kg (0.58 lb)
Dimensions (without sockets or cable glands)	
• Width	69.6 mm (2.74 in)
• Height	54 mm (2.13 in)
• Depth	25 mm (0.98 in)

Selection and Ordering Data

Designation	Order No.
Connector box for connecting an incremental encoder	1FN1910-0AA00-0AA0

Synchronous motors

Linear motors for SINAMICS S120

1FN1/1FN3 linear motors SME91 Sensor Module External

1FN1/1FN3 linear motors Liquid cooling

Overview



The SME91 Sensor Module External enables motor and position encoder sensors to be connected in the vicinity of the motor in the case of drives with built-in motors. The SME91 is responsible for protecting the motor and outputting the current operating temperature/overtemperature to the drive/converter system without time delay.

Benefits

- Motor protection
- Fault-free transmission to the drive/converter system
- Low cabling overhead
- PU-molded PCB in the housing, making the module extremely rugged and suitable for direct use in the machine

Application

The SME91 is suitable for 1FN linear motors and 1FW6 torque motors to which external position measuring systems and commutation equipment cannot be connected for reasons of space.

Integration

The SME91 Sensor Module External for 1FN1/1FN3 linear motors and 1FW6 torque motors can be used on the SINAMICS S120 drive system via SMC20 or on the SIMODRIVE 611 converter system.

Technical specifications

Product name	SME91 Sensor Module External
Degree of protection in accordance with EN 60529 (IEC 60529)	IP67
Permissible air humidity in accordance with DIN 40040	5 ... 85% (without condensation)
Weight, approx.	0.721 kg (25.43 oz)
Dimensions (W x H x D) (without sockets or cable gland)	150 mm x 64 mm x 34 mm (5.91 in x 2.52 in x 1.34 in)

Selection and Ordering Data

Designation	Order No.
SME91 Sensor Module External for connecting an absolute position measuring system • 1 x connection for temperature sensors, 7-pole	1FN1910-0AA20-1AA0

Overview

Non-Siemens products whose fundamental suitability is familiar to us. It goes without saying that equivalent products from other manufacturers may be used. Our recommendations are to be seen as helpful information, not as requirements or dictates. We do not warrant the composition, nature, state or quality of non-Siemens products.

Please get in touch with the contact persons of the cooler manufacturers listed below for technical information.

More information

BKW Kälte-Wärme-Versorgungstechnik GmbH

Benzstraße 2
72649 WOLFSCHLUGEN, Germany
Phone: +49 (0) 70 22 - 50 03 - 0
Fax: +49 (0) 70 22 - 50 03 - 30
E-mail: info@bkw-kuema.de
www.bkw-kuema.de

Helmut Schimpke and Team Industriekühlanlagen GmbH + Co. KG

Postfach 101 661
42760 HAAN, Germany
Phone: +49 (0) 21 29 - 94 38 - 0
Fax: +49 (0) 21 29 - 94 38 - 99
E-mail: info@schimpke.de
www.schimpke.com

Hydac System GmbH

Contact: Mr. Klein
Postfach 12 51
66273 SULZBACH/SAAR, Germany
Phone: +49 (0) 68 97 - 5 09 - 7 08
Fax: +49 (0) 68 97 - 5 09 - 4 54
E-mail: winfried.klein@hydac.com
www.hydac.com

Pfannenberg GmbH

Contact: Mr. Hille
Werner-Witt-Straße 1
21035 HAMBURG, Germany
Phone: +49 (0) 40 - 7 34 12 - 1 27
Fax: +49 (0) 40 - 7 34 12 - 1 01
E-mail: werner.hille@pfannenberg.com
www.pfannenberg.com

Rittal GmbH & Co. KG

Contact: Mr. Cieslar
Postfach 16 62
35726 HERBORN, Germany
Phone: +49 (0) 27 72 - 5 05 - 20 63
Fax: +49 (0) 27 72 - 5 05 - 29 66
E-mail: cieslar.g@rittal.de
www.rittal.com

For design of cooling units, see Planning Guide (see documentation for Order No.).