

# SINAMICS S120 drive system

## Booksize format

### Motor Modules Double Motor Modules

#### Technical specifications (continued)

|                                                                                                                                                                                                                                                                      |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>DC link voltage 510 ... 720 V DC</b>                                                                                                                                                                                                                              |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| • Internal air cooling                                                                                                                                                                                                                                               |                                        | 6SL3120-2TE13-0AA3                                                                                   | 6SL3120-2TE15-0AA3                                                                                   | 6SL3120-2TE21-0AA3                                                                                   | 6SL3120-2TE21-8AA3                                                                                   |
| • External air cooling                                                                                                                                                                                                                                               |                                        | 6SL3121-2TE13-0AA3                                                                                   | 6SL3121-2TE15-0AA3                                                                                   | 6SL3121-2TE21-0AA3                                                                                   | 6SL3121-2TE21-8AA3                                                                                   |
| • Cold plate cooling                                                                                                                                                                                                                                                 |                                        | 6SL3126-2TE13-0AA3                                                                                   | 6SL3126-2TE15-0AA3                                                                                   | 6SL3126-2TE21-0AA3                                                                                   | 6SL3126-2TE21-8AA3                                                                                   |
| <b>Product name</b>                                                                                                                                                                                                                                                  |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| Double Motor Module in booksize format                                                                                                                                                                                                                               |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| <b>Output current</b>                                                                                                                                                                                                                                                |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| • Rated current $I_{rated}$                                                                                                                                                                                                                                          | A                                      | 2 × 3                                                                                                | 2 × 5                                                                                                | 2 × 9                                                                                                | 2 × 18                                                                                               |
| • For S6 duty (40 %) $I_{S6}$                                                                                                                                                                                                                                        | A                                      | 2 × 3.5                                                                                              | 2 × 6                                                                                                | 2 × 10                                                                                               | 2 × 24                                                                                               |
| • Base-load current $I_H$                                                                                                                                                                                                                                            | A                                      | 2 × 2.6                                                                                              | 2 × 4.3                                                                                              | 2 × 7.7                                                                                              | 2 × 15.3                                                                                             |
| • $I_{max}$                                                                                                                                                                                                                                                          | A                                      | 2 × 6                                                                                                | 2 × 10                                                                                               | 2 × 18                                                                                               | 2 × 36                                                                                               |
| <b>Type rating<sup>1)</sup></b>                                                                                                                                                                                                                                      |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| • Based on $I_{rated}$                                                                                                                                                                                                                                               | kW (HP)                                | 2 × 1.6 (1.5)                                                                                        | 2 × 2.7 (3)                                                                                          | 2 × 4.8 (5)                                                                                          | 2 × 9.7 (10)                                                                                         |
| • Based on $I_H$                                                                                                                                                                                                                                                     | kW (HP)                                | 2 × 1.4 (1)                                                                                          | 2 × 2.3 (2.5)                                                                                        | 2 × 4.1 (5)                                                                                          | 2 × 8.2 (10)                                                                                         |
| <b>DC link current <math>I_d^{(2)}</math></b>                                                                                                                                                                                                                        |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
|                                                                                                                                                                                                                                                                      | A                                      | 7.2                                                                                                  | 12                                                                                                   | 22                                                                                                   | 43                                                                                                   |
| <b>Current carrying capacity</b>                                                                                                                                                                                                                                     |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| • DC link busbars                                                                                                                                                                                                                                                    | A                                      | 100                                                                                                  | 100                                                                                                  | 100                                                                                                  | 100                                                                                                  |
| • 24 V DC busbars                                                                                                                                                                                                                                                    | A                                      | 20                                                                                                   | 20                                                                                                   | 20                                                                                                   | 20                                                                                                   |
| If, due to a number of Line and Motor Modules being mounted side-by-side, the current carrying capacity exceeds 20 A, an additional 24-V-DC connection using a 24-V terminal adapter is required (max. cross-section 6 mm <sup>2</sup> , max. fuse protection 20 A). |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| <b>DC link capacitance</b>                                                                                                                                                                                                                                           |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
|                                                                                                                                                                                                                                                                      | μF                                     | 110                                                                                                  | 220                                                                                                  | 220                                                                                                  | 705                                                                                                  |
| <b>Current requirement</b>                                                                                                                                                                                                                                           |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| At 24 V DC, max.                                                                                                                                                                                                                                                     | A                                      | 1.0                                                                                                  | 1.0                                                                                                  | 1.0                                                                                                  | 1.0                                                                                                  |
| <b>Internal/external air cooling</b>                                                                                                                                                                                                                                 |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| • Power loss <sup>3)</sup>                                                                                                                                                                                                                                           |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| - With internal air cooling in control cabinet                                                                                                                                                                                                                       | kW                                     | 0.095                                                                                                | 0.13                                                                                                 | 0.185                                                                                                | 0.345                                                                                                |
| - With external air cooling, int./ext.                                                                                                                                                                                                                               | kW                                     | 0.06/0.035                                                                                           | 0.07/0.06                                                                                            | 0.09/0.095                                                                                           | 0.105/0.24                                                                                           |
| • Cooling air requirement                                                                                                                                                                                                                                            | m <sup>3</sup> /s (ft <sup>3</sup> /s) | 0.008 (0.3)                                                                                          | 0.008 (0.3)                                                                                          | 0.008 (0.3)                                                                                          | 0.016 (0.6)                                                                                          |
| • Sound press. level $L_{pA}$ (1 m (3.28 ft))                                                                                                                                                                                                                        | dB                                     | < 60                                                                                                 | < 60                                                                                                 | < 60                                                                                                 | < 60                                                                                                 |
| <b>Cold plate cooling</b>                                                                                                                                                                                                                                            |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| • Power loss, int./ext. <sup>3)</sup>                                                                                                                                                                                                                                | kW                                     | 0.055/0.035                                                                                          | 0.06/0.065                                                                                           | 0.08/0.1                                                                                             | 0.095/0.25                                                                                           |
| • Thermal resistance $R_{th}$                                                                                                                                                                                                                                        | K/W                                    | 0.185                                                                                                | 0.185                                                                                                | 0.185                                                                                                | 0.075                                                                                                |
| <b>Motor connection</b>                                                                                                                                                                                                                                              |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| U2, V2, W2                                                                                                                                                                                                                                                           |                                        | 2 x connectors (X1, X2) <sup>4)</sup> , max. 30 A (not included in scope of supply, see Accessories) | 2 x connectors (X1, X2) <sup>4)</sup> , max. 30 A (not included in scope of supply, see Accessories) | 2 x connectors (X1, X2) <sup>4)</sup> , max. 30 A (not included in scope of supply, see Accessories) | 2 x connectors (X1, X2) <sup>4)</sup> , max. 30 A (not included in scope of supply, see Accessories) |
| <b>Shield connection</b>                                                                                                                                                                                                                                             |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
|                                                                                                                                                                                                                                                                      |                                        | Integrated in connector (X1, X2)                                                                     | Integrated in connector (X1, X2)                                                                     | Integrated in connector (X1, X2)                                                                     | Integrated in connector (X1, X2)                                                                     |
| <b>PE connection</b>                                                                                                                                                                                                                                                 |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
|                                                                                                                                                                                                                                                                      |                                        | M5 screw                                                                                             | M5 screw                                                                                             | M5 screw                                                                                             | M5 screw                                                                                             |
| <b>Motor brake connection</b>                                                                                                                                                                                                                                        |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
|                                                                                                                                                                                                                                                                      |                                        | Integr. into the plug-in motor connector (X1, X2), 24 V DC, 2 A                                      | Integr. into the plug-in motor connector (X1, X2), 24 V DC, 2 A                                      | Integr. into the plug-in motor connector (X1, X2), 24 V DC, 2 A                                      | Integr. into the plug-in motor connector (X1, X2), 24 V DC, 2 A                                      |
| <b>Motor cable length, max.</b>                                                                                                                                                                                                                                      |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| • Shielded                                                                                                                                                                                                                                                           | m (ft)                                 | 50 (164)                                                                                             | 50 (164)                                                                                             | 50 (164)                                                                                             | 70 (230)                                                                                             |
| • Unshielded                                                                                                                                                                                                                                                         | m (ft)                                 | 75 (246)                                                                                             | 75 (246)                                                                                             | 75 (246)                                                                                             | 100 (328)                                                                                            |
| <b>Degree of protection</b>                                                                                                                                                                                                                                          |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
|                                                                                                                                                                                                                                                                      |                                        | IP20                                                                                                 | IP20                                                                                                 | IP20                                                                                                 | IP20                                                                                                 |
| <b>Dimensions</b>                                                                                                                                                                                                                                                    |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| • Width                                                                                                                                                                                                                                                              | mm (in)                                | 50 (1.97)                                                                                            | 50 (1.97)                                                                                            | 50 (1.97)                                                                                            | 100 (3.94)                                                                                           |
| • Height                                                                                                                                                                                                                                                             | mm (in)                                | 380 (14.96)                                                                                          | 380 (14.96)                                                                                          | 380 (14.96)                                                                                          | 380 (14.96)                                                                                          |
| • Depth                                                                                                                                                                                                                                                              |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| - With internal air cooling                                                                                                                                                                                                                                          | mm (in)                                | 270 (10.63)                                                                                          | 270 (10.63)                                                                                          | 270 (10.63)                                                                                          | 270 (10.63)                                                                                          |
| - With external air cooling, on/behind mounting surface                                                                                                                                                                                                              | mm (in)                                | 226/66.5 (8.90/2.63)                                                                                 | 226/66.5 (8.90/2.63)                                                                                 | 226/66.5 (8.90/2.63)                                                                                 | 226/66.5 (8.90/2.63)                                                                                 |
| - With cold plate cooling                                                                                                                                                                                                                                            | mm (in)                                | 226 (8.90)                                                                                           | 226 (8.90)                                                                                           | 226 (8.90)                                                                                           | 226 (8.90)                                                                                           |
| <b>Weight, approx.</b>                                                                                                                                                                                                                                               |                                        |                                                                                                      |                                                                                                      |                                                                                                      |                                                                                                      |
| • With internal air cooling                                                                                                                                                                                                                                          | kg (lb)                                | 5.3 (11.7)                                                                                           | 5.3 (11.7)                                                                                           | 5.3 (11.7)                                                                                           | 6.8 (15)                                                                                             |
| • With external air cooling                                                                                                                                                                                                                                          | kg (lb)                                | 5.8 (12.8)                                                                                           | 5.8 (12.8)                                                                                           | 5.8 (12.8)                                                                                           | 8.6 (19)                                                                                             |
| • With cold plate cooling                                                                                                                                                                                                                                            | kg (lb)                                | 4.5 (9.92)                                                                                           | 4.5 (9.92)                                                                                           | 4.5 (9.92)                                                                                           | 5.9 (13)                                                                                             |

<sup>1)</sup> Rated power of a standard asynchronous (induction) motor at 600 V DC link voltage.

<sup>2)</sup> Rated DC link current for dimensioning an external DC connection.  
For instructions for calculating the DC link current when dimensioning the Line Module, see System description (on the CD-ROM supplied with the Catalog NC 61).

<sup>3)</sup> Power loss of Motor Module at rated power including losses of 24 V DC electronics power supply.

<sup>4)</sup> Connector not included in scope of supply, see Accessories.