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## Technical specifications

### *Overview of technical specifications*

This table lists the most important technical specifications. For more information and details, see Catalog Section 1 "Introduction".

| | |
|---|---|
| Type of motor | SIMOTICS GP/SD 1LE1/1LE5/1PC1 IEC Low-Voltage Motors |
| Connection types | Star/delta connection<br>The connection type to be used can be established from the Article No. supplements for the required motor. |
| Number of poles | 2, 4, 6, 8 |
| Frame sizes | 63 M ... 315 L |
| Rated power | 0.09 ... 300 kW (1LE1/1LE5 motor series)/0.3 ... 9 kW (1PC1 motor series) |
| Frequencies | 50 Hz and 60 Hz |
| Versions | Self-ventilated 1LE1 energy-saving motors with:<br>• IE1 (Standard Efficiency)<br>• IE2 (High Efficiency)<br>• IE3 (Premium Efficiency)<br>• IE4 (Super Premium Efficiency)<br>• IR3 (Rendimento Premium)<br>• NEE (NEMA Energy Efficient, acc. to NEMA MG, Table 12-11)<br>• NPE (NEMA Premium Efficient, acc. to NEMA MG, Table 12-12)<br>Self-ventilated 1LE1 motors with increased power with:<br>• IE1 (Standard Efficiency)<br>• IE2 (High Efficiency)<br>• IE3 (Premium Efficiency)<br>Forced-air cooled 1LE1 motors without external fan and fan cover with:<br>• IE1 (Standard Efficiency)<br>• IE2 (High Efficiency)<br>• IE3 (Premium Efficiency)<br>• IE4 (Super Premium Efficiency)<br>• IR3 (Rendimento Premium)<br>Naturally cooled 1PC1 motors without external fan and fan cover with:<br>• IE1 (Standard Efficiency)<br>• IE2 (High Efficiency)<br>• IE3 (Premium Efficiency)<br>• IE4 (Super Premium Efficiency) |
| Marking | IEC 60034-30-1 IE1, IE2, IE3, IE4: 2, 4, 6 and 8-pole; NBR 17094-1: IR3 Rendimento Premium: 2, 4, 6, and 8-pole<br>US Energy Independence Security Act EISA: 2, 4, 6 and 8-pole |
| Rated speed (synchronous speed) | 750 … 3000 rpm |
| Rated torque | 0.6 ... 1978 Nm (1LE1/1LE5 motor series) |
| Insulation of the stator winding in accordance with EN 60034-1 (IEC 60034-1) | Temperature class 155 (F), utilized acc. to temperature class 130 (B) (also for motors with increased power)<br>DURIGNIT IR 2000 insulation system |
| Degree of protection according to EN 60034-5 (IEC 60034-5) | IP55 as standard |
| Cooling according to EN 60034-6 (IEC 60034-6) | • Self-ventilated (IC411) (1LE1/1LE5 motor series) frame size 80 M to 315 L<br>• Forced-air cooled (IC418) (1LE1/1LE5 motor series with order code **F90**), frame size 80 M to 200 L<br>• Naturally cooled (IC410) (1PC1 motor series) frame size 100 L to 160 L |
| Permissible coolant temperature and installation altitude | –20 ... +40 °C as standard, installation altitude up to 1000 m above sea level.<br>See "Coolant temperature and installation altitude" in Catalog Section 1 "Introduction". |
| Standard voltages according to EN 60038 (IEC 60038) | 50 Hz: 230 V, 400 V, 500 V, 690 V<br>The voltage to be used can be found in the "Selection and ordering data" for the required motor. |
| Type of construction according to EN 60034-7 (IEC 60034-7) | • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6, IM V5 with protective cover<br>• With flange: IM B5, IM V1, IM V3, IM B35<br>• With flange (next largest): IM B14, IM V19, IM V18, IM B34 |
| Paint finish<br>Suitability of paint finish for climate group according to IEC 60721, Part 2-1 | Standard: Color RAL 7030 stone gray<br>See "Paint finish" in Catalog Section 1 "Introduction". |
| Vibration severity grade according to EN 60034-14 (IEC 60034-14) | Grade A (normal – without special vibration requirements)<br>Optionally: Grade B (with special vibration requirements)<br>See "Balance and vibration severity" in Catalog Section 1 "Introduction". |
| Shaft extension according to DIN 748 (IEC 60072) | Balancing type: half-key balancing as standard<br>See "Balance and vibration severity" in Catalog Section 1 "Introduction". |
| Sound pressure level according to EN ISO 1680 (tolerance +3 dB) | The corresponding sound pressure level is listed in the selection and ordering data for the required motor. |
| Weights | The corresponding weight is listed in the selection and ordering data for the required motor. |
| Modular mounting concept | Rotary pulse encoder, brake, separately driven fan or prepared for mountings |
| Consistent series concept | • Cast housing feet, screwed-on feet available as an option and retrofittable<br>• Terminal box obliquely partitioned and rotatable through 4 × 90°<br>• Bearings at DE and NDE are of identical design, reinforced bearings available as an option |
| Options | See "Article No. supplements and special versions" |

## More information

For further information, please get in touch with your local Siemens contact and use the DT Configurator.

Contacts: www.siemens.com/automation/partner
DT Configurator: www.siemens.com/dt-configurator

Wherever possible, you will find a local contact for:
- Technical support
- Spare parts/repairs
- Service
- Training
- Sales
- Technical consultation/engineering

You start by selecting a:
- country,
- product or
- sector.

By further specifying the remaining criteria you will find exactly the right contact partner with his/her respective expertise.

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## Selection and ordering data

| $P_{rated}$, 50 Hz/ P50 | $P_{rated}$, 60 Hz/ P60 | Frame size | Operating values at rated power: $n_{rated}$, 50 Hz | $T_{rated}$, 50 Hz | $\eta_{rated}$, 50 Hz, 4/4 | $\eta_{rated}$, 50 Hz, 3/4 | $\eta_{rated}$, 50 Hz, 2/4 | $\cos\varphi_{rated}$, 50 Hz, 4/4 | $I_{rated}$, 50 Hz, 400 V | $T_{LR}/T_{rated}$, 50 Hz | $I_{LR}/I_{rated}$, 50 Hz | $T_B/T_{rated}$, 50 Hz | $L_{pfA}$, 50 Hz | $L_{WA}$, 50 Hz | Cast-iron series 1LE1504 – Basic Line Article No. | $m_{IM\ B3}$ | $J$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| kW | kW | FS | rpm | Nm | % | % | % | | A | | | | dB(A) | dB(A) | | kg | $kgm^2$ |
| • Cooling: Self-ventilated (IC411) or with order code F90 forced-air cooled without external fan and fan cover (IC418)<br>• Efficiency according to IEC 60034-30-1: IE4 Super Premium Efficiency, service factor (SF) 1.15<br>• Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) | | | | | | | | | | | | | | | | | |
| 2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | | | | | | |
| 3 | 3.45 | 100 L | 2920 | 9.8 | 89.1 | 89.8 | 89.4 | 0.86 | 5.7 | 3.7 | 9 | 4.9 | 62 | 74 | 1LE1504-1AA4■-■■■■ | 38 | 0.0054 |
| 4 | 4.55 | 112 M | 2950 | 13 | 90 | 90.4 | 89.7 | 0.89 | 7.2 | 2.6 | 8.8 | 4.1 | 68 | 80 | 1LE1504-1BA2■-■■■■ | 45 | 0.012 |
| 5.5 | 6.3 | 132 S | 2960 | 18 | 90.9 | 90.9 | 89.8 | 0.84 | 10.4 | 2.1 | 8.6 | 4.6 | 67 | 84 | 1LE1504-1CA0■-■■■■ | 62 | 0.024 |
| 7.5 | 8.6 | 132 S | 2955 | 24 | 91.7 | 92.4 | 92.3 | 0.91 | 13 | 2.2 | 8.6 | 4.3 | 67 | 80 | 1LE1504-1CA1■-■■■■ | 74 | 0.031 |
| 11 | 12.6 | 160 M | 2955 | 36 | 92.6 | 92.8 | 92 | 0.9 | 19.1 | 2.8 | 8.6 | 4.2 | 74 | 87 | 1LE1504-1DA2■-■■■■ | 113 | 0.061 |
| 15 | 17.3 | 160 M | 2955 | 48 | 93.3 | 93.5 | 92.9 | 0.9 | 26 | 3.1 | 9 | 4.5 | 74 | 87 | 1LE1504-1DA3■-■■■■ | 130 | 0.068 |
| 18.5 | 21.3 | 160 L | 2955 | 60 | 93.7 | 94.1 | 93.8 | 0.91 | 31.5 | 3.1 | 8.9 | 4.3 | 74 | 87 | 1LE1504-1DA4■-■■■■ | 147 | 0.074 |
| 22 | 24.5 | 180 M | 2950 | 71 | 94 | 94.4 | 94.1 | 0.89 | 38 | 2.8 | 8.9 | 4.3 | 71 | 84 | 1LE1504-1EA2■-■■■■ | 175 | 0.091 |
| 30 | 33.5 | 200 L | 2955 | 97 | 94.5 | 94.8 | 94.4 | 0.85 | 54 | 2.8 | 7.9 | 4 | 69 | 83 | 1LE1504-2AA4■-■■■■ | 222 | 0.13 |
| 37 | 41.5 | 200 L | 2955 | 120 | 94.8 | 95.1 | 94.9 | 0.88 | 64 | 2.9 | 7.8 | 4 | 69 | 83 | 1LE1504-2AA5■-■■■■ | 263 | 0.20 |
| 45 | 51 | 225 M | 2970 | 145 | 95 | 95 | 94.4 | 0.85 | 80 | 3.1 | 8.8 | 4.1 | 73 | 86 | 1LE1504-2BA2■-■■■■ | 330 | 0.26 |
| 55 | 62 | 250 M | 2978 | 176 | 95.3 | 95.2 | 94.5 | 0.88 | 95 | 2.5 | 7.5 | 3.2 | 73 | 86 | 1LE1504-2CA2■-■■■■ | 430 | 0.48 |
| 75 | 84 | 280 S | 2980 | 240 | 95.6 | 95.6 | 95 | 0.89 | 127 | 2.7 | 8.4 | 3.5 | 73 | 87 | 1LE1504-2DA0■-■■■■ | 610 | 0.94 |
| 90 | 101 | 280 M | 2978 | 289 | 95.8 | 95.9 | 95.4 | 0.89 | 152 | 2.7 | 8.4 | 3.5 | 77 | 91 | 1LE1504-2DA2■-■■■■ | 610 | 1.0 |
| 110 | 123 | 315 S | 2985 | 352 | 96 | 96 | 95.3 | 0.89 | 186 | 2.6 | 8.8 | 3.4 | 77 | 91 | 1LE1504-3AA0■-■■■■ | 750 | 1.4 |
| 132 | 148 | 315 M | 2988 | 422 | 96.2 | 96.2 | 95.6 | 0.9 | 220 | 3.1 | 10.5 | 4 | 77 | 91 | 1LE1504-3AA2■-■■■■ | 980 | 1.9 |
| 160 | 180 | 315 L | 2988 | 511 | 96.3 | 96.3 | 95.8 | 0.92 | 260 | 3.2 | 10.3 | 3.9 | 78 | 91 | 1LE1504-3AA4■-■■■■ | 1060 | 2.1 |
| 200 | 224 | 315 L | 2986 | 640 | 96.5 | 96.5 | 96.1 | 0.92 | 325 | 3.5 | 10 | 3.9 | 78 | 93 | 1LE1504-3AA5■-■■■■ | 1180 | 2.4 |

| Voltages [2] | | Version | | | | | Order code |
|---|---|---|---|---|---|---|---|
| 50 Hz 230 VΔ/400 VY | 60 Hz [1] 460 VY | **Standard** | 2 | 2 | | | – |
| 50 Hz 400 VΔ/690 VY | 60 Hz [1] 460 VΔ | **Standard** | 3 | 4 | | | – |
| For other voltages and more information, see from page 2/96 | | | 9 | 0 | | | . . . |
| **Types of construction** | | Version | | | | | Order code |
| Without flange | IM B3 [3] | **Standard** | | | A | | – |
| With flange | IM B5 [3] | With additional charge | | | F | | – |
| With flange | IM B5 [3] | With additional charge | | | K | | – |
| For other types of construction and more information, see from page 2/103 | | | | | ■ | | . . . |
| **Motor protection** | | Version | | | | | Order code |
| Without | | **Standard** | | | | A | – |
| PTC thermistor with 3 temperature sensors | | With additional charge | | | | B | – |
| For other motor protection and more information, see from page 2/113 | | | | | | ■ | . . . |
| **Terminal box position** | | Version | | | | | |
| Terminal box at top | | **Standard** | | | | 4 | |
| For other terminal box positions and more information, see from page 2/116 | | | | | | ■ | |
| **Special versions** | | | | | | | Order code(s) |
| Forced-air cooled motors w/o ext. fan/fan cover (IC418) | | 1LE1504-. . . . ■-■■■■ | | | | -Z | F90 +. . .+. . .+. . . |
| For options, see from page 2/125 | | 1LE1504-. . . . ■-■■■■ | | | | -Z | . . .+. . .+. . .+. . . |

Note: IE4 motors (2-pole) in frame size 315 do not comply with the vibration values stipulated in IEC 60034-14 when rigidly installed (see also page 1/50).

1) Operating values at rated power for 60 Hz are stored in the Drive Technology Configurator (DT Configurator; see Appendix, "Tools and engineering").

2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (order code **R52**) or a larger terminal box (order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5, or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

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## Selection and ordering data

| $P_{rated}$, 50 Hz/ P50 | $P_{rated}$, 60 Hz/ P60 | Frame size | Operating values at rated power: $n_{rated}$, 50 Hz | $T_{rated}$, 50 Hz | Different IE class 60 Hz/P60 | $\eta_{rated}$, 50 Hz, 4/4 | $\eta_{rated}$, 50 Hz, 3/4 | $\eta_{rated}$, 50 Hz, 2/4 | $\cos\varphi_{rated}$, 50 Hz, 4/4 | $I_{rated}$, 50 Hz, 400 V | $T_{LR}/T_{rated}$, 50 Hz | $I_{LR}/I_{rated}$, 50 Hz | $T_B/T_{rated}$, 50 Hz | $L_{pfA}$, 50 Hz | $L_{WA}$, 50 Hz | Cast-iron series 1LE1504 – Basic Line Article No. | $m_{IM\ B3}$ | $J$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| kW | kW | FS | rpm | Nm | | % | % | % | | A | | | | dB(A) | dB(A) | | kg | $kgm^2$ |
| • Cooling: Self-ventilated (IC411) or with order code F90 forced-air cooled without external fan and fan cover (IC418) | | | | | | | | | | | | | | | | | | |
| • Efficiency according to IEC 60034-30-1: IE4 Super Premium Efficiency, service factor (SF) 1.15 | | | | | | | | | | | | | | | | | | |
| • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) | | | | | | | | | | | | | | | | | | |
| **4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz** | | | | | | | | | | | | | | | | | | |
| **2.2** | **2.55** | **100 L** | 1465 | 14 | | 89.5 | 89.6 | 88.3 | 0.79 | 4.5 | 3.3 | 8.5 | 4.7 | 59 | 71 | **1LE1504-1AB4**■-■■■■ | 41 | 0.014 |
| **3** | **3.45** | **100 L** | 1460 | 20 | | 90.4 | 91 | 90.5 | 0.81 | 5.9 | 3.5 | 8.8 | 4.2 | 59 | 71 | **1LE1504-1AB5**■-■■■■ | 50 | 0.016 |
| **4** | **4.55** | **112 M** | 1465 | 26 | | 91.1 | 91.6 | 91 | 0.81 | 7.8 | 3.1 | 8.3 | 4.3 | 63 | 75 | **1LE1504-1BB2**■-■■■■ | 58 | 0.020 |
| **5.5** | **6.3** | **132 S** | 1470 | 36 | | 91.9 | 92.5 | 92.3 | 0.83 | 10.4 | 2.6 | 8.3 | 3.5 | 56 | 68 | **1LE1504-1CB0**■-■■■■ | 77 | 0.039 |
| **7.5** | **8.6** | **132 M** | 1470 | 49 | | 92.6 | 93.1 | 92.7 | 0.81 | 14.4 | 3 | 7.7 | 4 | 56 | 68 | **1LE1504-1CB2**■-■■■■ | 80 | 0.046 |
| **11** | **12.6** | **160 M** | 1475 | 71 | | 93.3 | 93.5 | 92.9 | 0.82 | 21 | 2.9 | 8.1 | 4.1 | 63 | 76 | **1LE1504-1DB2**■-■■■■ | 127 | 0.099 |
| **15** | **17.3** | **160 L** | 1480 | 97 | | 93.9 | 94 | 93.3 | 0.8 | 29 | 3.7 | 7.8 | 4.3 | 63 | 76 | **1LE1504-1DB4**■-■■■■ | 138 | 0.11 |
| **18.5** | **21.3** | **180 M** | 1470 | 120 | | 94.2 | 94.7 | 94.5 | 0.81 | 35 | 2.7 | 7.9 | 3.6 | 59 | 72 | **1LE1504-1EB2**■-■■■■ | 187 | 0.17 |
| **22** | **25.3** | **180 L** | 1475 | 142 | | 94.5 | 95 | 94.8 | 0.81 | 41.5 | 2.9 | 7.7 | 3.8 | 59 | 72 | **1LE1504-1EB4**■-■■■■ | 192 | 0.18 |
| **30** | **34.5** | **200 L** | 1475 | 194 | | 94.9 | 95.2 | 94.9 | 0.81 | 56 | 3.2 | 7.3 | 3.6 | 60 | 73 | **1LE1504-2AB5**■-■■■■ | 258 | 0.27 |
| **37** | **42.5** | **225 S** | 1485 | 238 | | 95.2 | 95.5 | 95.2 | 0.84 | 67 | 3.2 | 8.4 | 3.2 | 69 | 83 | **1LE1504-2BB0**■-■■■■ | 345 | 0.52 |
| **45** | **52** | **225 M** | 1485 | 289 | IE3 | 95.4 | 95.7 | 95.4 | 0.84 | 81 | 3.4 | 8 | 3.3 | 69 | 83 | **1LE1504-2BB2**■-■■■■ | 415 | 0.66 |
| **55** | **63** | **250 M** | 1486 | 353 | | 95.7 | 95.8 | 95.4 | 0.86 | 96 | 3 | 8.2 | 3.3 | 68 | 82 | **1LE1504-2CB2**■-■■■■ | 490 | 1.1 |
| **75** | **86** | **280 S** | 1490 | 481 | | 96 | 96.1 | 95.6 | 0.85 | 133 | 3.4 | 9.2 | 3.8 | 69 | 83 | **1LE1504-2DB0**■-■■■■ | 670 | 1.7 |
| **90** | **104** | **280 M** | 1488 | 578 | | 96.1 | 96.3 | 96.1 | 0.86 | 157 | 3.2 | 9 | 3.4 | 70 | 84 | **1LE1504-2DB2**■-■■■■ | 730 | 2.0 |
| **110** | **127** | **315 M** [4] | 1491 | 705 | | 96.3 | 96.4 | 95.9 | 0.86 | 192 | 3.2 | 8.6 | 3.3 | 73 | 87 | **1LE1504-3AB0**■-■■■■ | 910 | 2.7 |
| **132** | **152** | **315 M** | 1491 | 845 | | 96.4 | 96.6 | 96.2 | 0.87 | 225 | 3.3 | 8.7 | 3.3 | 73 | 87 | **1LE1504-3AB2**■-■■■■ | 990 | 3.1 |
| **160** | **184** | **315 L** | 1490 | 1025 | | 96.6 | 96.7 | 96.5 | 0.86 | 280 | 3.6 | 9 | 3.2 | 76 | 90 | **1LE1504-3AB4**■-■■■■ | 1180 | 3.7 |
| **200** | **230** | **315 L** | 1490 | 1282 | | 96.7 | 96.9 | 96.6 | 0.86 | 345 | 3.8 | 9.2 | 3.4 | 76 | 90 | **1LE1504-3AB5**■-■■■■ | 1300 | 4.4 |

| **Voltages** [2] | | Version | | | | | Order code |
|---|---|---|---|---|---|---|---|
| 50 Hz 230 VΔ/400 VY | 60 Hz [1] 460 VY | **Standard** | **2** | **2** | | | – |
| 50 Hz 400 VΔ/690 VY | 60 Hz [1] 460 VΔ | **Standard** | **3** | **4** | | | – |
| For other voltages and more information, see from page 2/96 | | | **9** | **0** | | | . . . |
| **Types of construction** | | Version | | | | | Order code |
| Without flange | IM B3 [3] | **Standard** | | | **A** | | – |
| With flange | IM B5 [3] | With additional charge | | | **F** | | – |
| With flange | IM B5 [3] | With additional charge | | | **K** | | – |
| For other types of construction and more information, see from page 2/103 | | | | | ■ | | . . . |
| **Motor protection** | | Version | | | | | Order code |
| Without | | **Standard** | | | | **A** | – |
| PTC thermistor with 3 temperature sensors | | With additional charge | | | | **B** | – |
| For other motor protection and more information, see from page 2/113 | | | | | | ■ | . . . |
| **Terminal box position** | | Version | | | | | |
| Terminal box at top | | **Standard** | | | | | **4** |
| For other terminal box positions and more information, see from page 2/116 | | | | | | | ■ |
| **Special versions** | | | | | | | Order code(s) |
| Forced-air cooled motors w/o ext. fan/fan cover (IC418) | | **1LE1504-**. . . . ■-■■■■ | | | | | **-Z F90** +. . .+. . .+. . . |
| For options, see from page 2/125 | | **1LE1504-**. . . . ■-■■■■ | | | | | **-Z** . . .+. . .+. . .+. . . |

1) Operating values at rated power for 60 Hz are stored in the Drive Technology Configurator (DT Configurator; see Appendix, "Tools and engineering").

2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (order code **R52**) or a larger terminal box (order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5, or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

4) As 315 M version (not the same as 315 S according to EN 50347).

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## Selection and ordering data

| $P_{rated}$, 50 Hz/ P50 | $P_{rated}$, 60 Hz/ P60 | Frame size | Operating values at rated power: $n_{rated}$, 50 Hz | $T_{rated}$, 50 Hz | $\eta_{rated}$, 50 Hz, 4/4 | $\eta_{rated}$, 50 Hz, 3/4 | $\eta_{rated}$, 50 Hz, 2/4 | $\cos\varphi_{rated}$, 50 Hz, 4/4 | $I_{rated}$, 50 Hz, 400 V | $T_{LR}/T_{rated}$, 50 Hz | $I_{LR}/I_{rated}$, 50 Hz | $T_B/T_{rated}$, 50 Hz | $L_{pfA}$, 50 Hz | $L_{WA}$, 50 Hz | Cast-iron series 1LE1604 – Performance Line Article No. | $m_{IM\ B3}$ | $J$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| kW | kW | FS | rpm | Nm | % | % | % | | A | | | | dB(A) | dB(A) | | kg | $kgm^2$ |
| • Cooling: Self-ventilated (IC411) or with order code F90 forced-air cooled without external fan and fan cover (IC418) | | | | | | | | | | | | | | | | | |
| • Efficiency according to IEC 60034-30-1: IE4 Super Premium Efficiency, service factor (SF) 1.15 | | | | | | | | | | | | | | | | | |
| • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) | | | | | | | | | | | | | | | | | |
| 2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz | | | | | | | | | | | | | | | | | |
| **3** | **3.45** | **100 L** | 2920 | 9.8 | 89.1 | 89.8 | 89.4 | 0.86 | 5.7 | 3.7 | 9 | 4.9 | 62 | 74 | **1LE1604-1AA4■-■■■■** | 38 | 0.0054 |
| **4** | **4.55** | **112 M** | 2950 | 13 | 90 | 90.4 | 89.7 | 0.89 | 7.2 | 2.6 | 8.8 | 4.1 | 68 | 80 | **1LE1604-1BA2■-■■■■** | 45 | 0.012 |
| **5.5** | **6.3** | **132 S** | 2960 | 18 | 90.9 | 90.9 | 89.8 | 0.84 | 10.4 | 2.1 | 8.6 | 4.6 | 67 | 84 | **1LE1604-1CA0■-■■■■** | 62 | 0.024 |
| **7.5** | **8.6** | **132 S** | 2955 | 24 | 91.7 | 92.4 | 92.3 | 0.91 | 13 | 2.2 | 8.6 | 4.3 | 67 | 80 | **1LE1604-1CA1■-■■■■** | 74 | 0.031 |
| **11** | **12.6** | **160 M** | 2955 | 36 | 92.6 | 92.8 | 92 | 0.9 | 19.1 | 2.8 | 8.6 | 4.2 | 74 | 87 | **1LE1604-1DA2■-■■■■** | 113 | 0.061 |
| **15** | **17.3** | **160 M** | 2955 | 48 | 93.3 | 93.5 | 92.9 | 0.9 | 26 | 3.1 | 9 | 4.5 | 74 | 87 | **1LE1604-1DA3■-■■■■** | 130 | 0.068 |
| **18.5** | **21.3** | **160 L** | 2955 | 60 | 93.7 | 94.1 | 93.8 | 0.91 | 31.5 | 3.1 | 8.9 | 4.3 | 74 | 87 | **1LE1604-1DA4■-■■■■** | 147 | 0.074 |
| **22** | **24.5** | **180 M** | 2950 | 71 | 94 | 94.4 | 94.1 | 0.89 | 38 | 2.8 | 8.9 | 4.3 | 71 | 84 | **1LE1604-1EA2■-■■■■** | 175 | 0.091 |
| **30** | **33.5** | **200 L** | 2955 | 97 | 94.5 | 94.8 | 94.4 | 0.85 | 54 | 2.8 | 7.9 | 4 | 69 | 83 | **1LE1604-2AA4■-■■■■** | 222 | 0.13 |
| **37** | **41.5** | **200 L** | 2955 | 120 | 94.8 | 95.1 | 94.9 | 0.88 | 64 | 2.9 | 7.8 | 4 | 69 | 83 | **1LE1604-2AA5■-■■■■** | 263 | 0.20 |
| **45** | **51** | **225 M** | 2970 | 145 | 95 | 95 | 94.4 | 0.85 | 80 | 3.1 | 8.8 | 4.1 | 73 | 86 | **1LE1604-2BA2■-■■■■** | 330 | 0.26 |
| **55** | **62** | **250 M** | 2978 | 176 | 95.3 | 95.2 | 94.5 | 0.88 | 95 | 2.5 | 7.5 | 3.2 | 73 | 86 | **1LE1604-2CA2■-■■■■** | 430 | 0.48 |
| **75** | **84** | **280 S** | 2980 | 240 | 95.6 | 95.6 | 95 | 0.89 | 127 | 2.7 | 8.4 | 3.5 | 73 | 87 | **1LE1604-2DA0■-■■■■** | 610 | 0.94 |
| **90** | **101** | **280 M** | 2978 | 289 | 95.8 | 95.9 | 95.4 | 0.89 | 152 | 2.7 | 8.4 | 3.5 | 77 | 91 | **1LE1604-2DA2■-■■■■** | 610 | 1.0 |
| **110** | **123** | **315 S** | 2985 | 352 | 96 | 96 | 95.3 | 0.89 | 186 | 2.6 | 8.8 | 3.4 | 77 | 91 | **1LE1604-3AA0■-■■■■** | 750 | 1.4 |
| **132** | **148** | **315 M** | 2988 | 422 | 96.2 | 96.2 | 95.6 | 0.9 | 220 | 3.1 | 10.5 | 4 | 77 | 91 | **1LE1604-3AA2■-■■■■** | 980 | 1.9 |
| **160** | **180** | **315 L** | 2988 | 511 | 96.3 | 96.3 | 95.8 | 0.92 | 260 | 3.2 | 10.3 | 3.9 | 78 | 91 | **1LE1604-3AA4■-■■■■** | 1060 | 2.1 |
| **200** | **224** | **315 L** | 2986 | 640 | 96.5 | 96.5 | 96.1 | 0.92 | 325 | 3.5 | 10 | 3.9 | 78 | 93 | **1LE1604-3AA5■-■■■■** | 1180 | 2.4 |

| **Voltages** [2] | | Version | | | | Order code |
|---|---|---|---|---|---|---|
| 50 Hz 230 VΔ/400 VY | 60 Hz [1] 460 VY | **Standard** | **2** | **2** | | – |
| 50 Hz 400 VΔ/690 VY | 60 Hz [1] 460 VΔ | **Standard** | **3** | **4** | | – |
| For other voltages and more information, see from page 2/96 | | | **9** | **0** | | . . . |
| **Types of construction** | | Version | | | | Order code |
| Without flange | IM B3 [3] | **Standard** | | | **A** | – |
| With flange | IM B5 [3] | With additional charge | | | **F** | – |
| With flange | IM B5 [3] | With additional charge | | | **K** | – |
| For other types of construction and more information, see from page 2/103 | | | | | ■ | . . . |
| **Motor protection** | | Version | | | | Order code |
| PTC thermistor with 3 temperature sensors | | **Standard** | | | **B** | – |
| For other motor protection and more information, see from page 2/113 | | | | | ■ | . . . |
| **Terminal box position** | | Version | | | | |
| Terminal box at top | | **Standard** | | | **4** | |
| For other terminal box positions and more information, see from page 2/116 | | | | | ■ | |
| **Special versions** | | | | | | Order code(s) |
| Forced-air cooled motors w/o ext. fan/fan cover (IC418) | | **1LE1604-. . . . ■-■■■■** | | | **-Z** | **F90 +. . .+. . .+. . .** |
| For options, see from page 2/125 | | **1LE1604-. . . . ■-■■■■** | | | **-Z** | **. . .+. . .+. . .+. . .** |

Note: IE4 motors (2-pole) in frame size 315 do not comply with the vibration values stipulated in IEC 60034-14 when rigidly installed (see also page 1/50).

1) Operating values at rated power for 60 Hz are stored in the Drive Technology Configurator (DT Configurator; see Appendix, "Tools and engineering").

2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (order code **R52**) or a larger terminal box (order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5, or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

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## Selection and ordering data

| $P_{rated}$, 50 Hz/ P50 | $P_{rated}$, 60 Hz/ P60 | Frame size | Operating values at rated power: $n_{rated}$, 50 Hz | $T_{rated}$, 50 Hz | Different IE class 60 Hz/P60 | $\eta_{rated}$, 50 Hz, 4/4 | $\eta_{rated}$, 50 Hz, 3/4 | $\eta_{rated}$, 50 Hz, 2/4 | $\cos\varphi_{rated}$, 50 Hz, 4/4 | $I_{rated}$, 50 Hz, 400 V | $T_{LR}/T_{rated}$, 50 Hz | $I_{LR}/I_{rated}$, 50 Hz | $T_B/T_{rated}$, 50 Hz | $L_{pfA}$, 50 Hz | $L_{WA}$, 50 Hz | Cast-iron series 1LE1604 – Performance Line Article No. | $m_{IM\ B3}$ | $J$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| kW | kW | FS | rpm | Nm | | % | % | % | | A | | | | dB(A) | dB(A) | | kg | $kgm^2$ |
| **• Cooling: Self-ventilated (IC411) or with order code F90 forced-air cooled without external fan and fan cover (IC418)** | | | | | | | | | | | | | | | | | | |
| **• Efficiency according to IEC 60034-30-1: IE4 Super Premium Efficiency, service factor (SF) 1.15** | | | | | | | | | | | | | | | | | | |
| **• Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)** | | | | | | | | | | | | | | | | | | |
| **4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz** | | | | | | | | | | | | | | | | | | |
| **2.2** | **2.55** | **100 L** | 1465 | 14 | | 89.5 | 89.6 | 88.3 | 0.79 | 4.5 | 3.3 | 8.5 | 4.7 | 59 | 71 | **1LE1604-1AB4■-■■■■** | 41 | 0.014 |
| **3** | **3.45** | **100 L** | 1460 | 20 | | 90.4 | 91 | 90.5 | 0.81 | 5.9 | 3.5 | 8.8 | 4.2 | 59 | 71 | **1LE1604-1AB5■-■■■■** | 50 | 0.016 |
| **4** | **4.55** | **112 M** | 1465 | 26 | | 91.1 | 91.6 | 91 | 0.81 | 7.8 | 3.1 | 8.3 | 4.3 | 63 | 75 | **1LE1604-1BB2■-■■■■** | 58 | 0.020 |
| **5.5** | **6.3** | **132 S** | 1470 | 36 | | 91.9 | 92.5 | 92.3 | 0.83 | 10.4 | 2.6 | 8.3 | 3.5 | 56 | 68 | **1LE1604-1CB0■-■■■■** | 77 | 0.039 |
| **7.5** | **8.6** | **132 M** | 1470 | 49 | | 92.6 | 93.1 | 92.7 | 0.81 | 14.4 | 3 | 7.7 | 4 | 56 | 68 | **1LE1604-1CB2■-■■■■** | 80 | 0.046 |
| **11** | **12.6** | **160 M** | 1475 | 71 | | 93.3 | 93.5 | 92.9 | 0.82 | 21 | 2.9 | 8.1 | 4.1 | 63 | 76 | **1LE1604-1DB2■-■■■■** | 127 | 0.099 |
| **15** | **17.3** | **160 L** | 1480 | 97 | | 93.9 | 94 | 93.3 | 0.8 | 29 | 3.7 | 7.8 | 4.3 | 63 | 76 | **1LE1604-1DB4■-■■■■** | 138 | 0.11 |
| **18.5** | **21.3** | **180 M** | 1470 | 120 | | 94.2 | 94.7 | 94.5 | 0.81 | 35 | 2.7 | 7.9 | 3.6 | 59 | 72 | **1LE1604-1EB2■-■■■■** | 187 | 0.17 |
| **22** | **25.3** | **180 L** | 1475 | 142 | | 94.5 | 95 | 94.8 | 0.81 | 41.5 | 2.9 | 7.7 | 3.8 | 59 | 72 | **1LE1604-1EB4■-■■■■** | 192 | 0.18 |
| **30** | **34.5** | **200 L** | 1475 | 194 | | 94.9 | 95.2 | 94.9 | 0.81 | 56 | 3.2 | 7.3 | 3.6 | 60 | 73 | **1LE1604-2AB5■-■■■■** | 258 | 0.27 |
| **37** | **42.5** | **225 S** | 1485 | 238 | | 95.2 | 95.5 | 95.2 | 0.84 | 67 | 3.2 | 8.4 | 3.2 | 69 | 83 | **1LE1604-2BB0■-■■■■** | 345 | 0.52 |
| **45** | **52** | **225 M** | 1485 | 289 | IE3 | 95.4 | 95.7 | 95.4 | 0.84 | 81 | 3.4 | 8 | 3.3 | 69 | 83 | **1LE1604-2BB2■-■■■■** | 415 | 0.66 |
| **55** | **63** | **250 M** | 1486 | 353 | | 95.7 | 95.8 | 95.4 | 0.86 | 96 | 3 | 8.2 | 3.3 | 68 | 82 | **1LE1604-2CB2■-■■■■** | 490 | 1.1 |
| **75** | **86** | **280 S** | 1490 | 481 | | 96 | 96.1 | 95.6 | 0.85 | 133 | 3.4 | 9.2 | 3.8 | 69 | 83 | **1LE1604-2DB0■-■■■■** | 670 | 1.7 |
| **90** | **104** | **280 M** | 1488 | 578 | | 96.1 | 96.3 | 96.1 | 0.86 | 157 | 3.2 | 9 | 3.4 | 70 | 84 | **1LE1604-2DB2■-■■■■** | 730 | 2.0 |
| **110** | **127** | **315 M** [4] | 1491 | 705 | | 96.3 | 96.4 | 95.9 | 0.86 | 192 | 3.2 | 8.6 | 3.3 | 73 | 87 | **1LE1604-3AB0■-■■■■** | 910 | 2.7 |
| **132** | **152** | **315 M** | 1491 | 845 | | 96.4 | 96.6 | 96.2 | 0.87 | 225 | 3.3 | 8.7 | 3.3 | 73 | 87 | **1LE1604-3AB2■-■■■■** | 990 | 3.1 |
| **160** | **184** | **315 L** | 1490 | 1025 | | 96.6 | 96.7 | 96.5 | 0.86 | 280 | 3.6 | 9 | 3.2 | 76 | 90 | **1LE1604-3AB4■-■■■■** | 1180 | 3.7 |
| **200** | **230** | **315 L** | 1490 | 1282 | | 96.7 | 96.9 | 96.6 | 0.86 | 345 | 3.8 | 9.2 | 3.4 | 76 | 90 | **1LE1604-3AB5■-■■■■** | 1300 | 4.4 |

| **Voltages** [2] | | Version | | | | Order code |
|---|---|---|---|---|---|---|
| 50 Hz 230 VΔ/400 VY | 60 Hz [1] 460 VY | **Standard** | **2** | **2** | | – |
| 50 Hz 400 VΔ/690 VY | 60 Hz [1] 460 VΔ | **Standard** | **3** | **4** | | – |
| For other voltages and more information, see from page 2/96 | | | **9** | **0** | | . . . |
| **Types of construction** | | Version | | | | Order code |
| Without flange | IM B3 [3] | **Standard** | | **A** | | – |
| With flange | IM B5 [3] | With additional charge | | **F** | | – |
| With flange | IM B5 [3] | With additional charge | | **K** | | – |
| For other types of construction and more information, see from page 2/103 | | | | ■ | | . . . |
| **Motor protection** | | Version | | | | Order code |
| PTC thermistor with 3 temperature sensors | | **Standard** | | | **B** | – |
| For other motor protection and more information, see from page 2/113 | | | | | ■ | . . . |
| **Terminal box position** | | Version | | | | |
| Terminal box at top | | **Standard** | | | | **4** |
| For other terminal box positions and more information, see from page 2/116 | | | | | | ■ |
| **Special versions** | | | | | | Order code(s) |
| Forced-air cooled motors w/o ext. fan/fan cover (IC418) | | **1LE1604-. . . . ■-■■■■-Z** | | | | **F90** +. . .+. . .+. . . |
| For options, see from page 2/125 | | **1LE1604-. . . . ■-■■■■-Z** | | | | . . .+. . .+. . .+. . . |

1) Operating values at rated power for 60 Hz are stored in the Drive Technology Configurator (DT Configurator; see Appendix, "Tools and engineering").

2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (order code **R52**) or a larger terminal box (order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5, or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

4) As 315 M version (not the same as 315 S according to EN 50347).