



## 13 DT56, DR63, DV250/280 AC Motors

### 13.1 Technical data of DT56, DR63, DV250/280

#### 3000 1/min - S1

Motor type	$P_N$	$n_N$	$I_N$ 380-415 V (400 V)	$\cos\varphi$	IE class	$\eta_{75\%}$ $\eta_{100\%}$	$I_A/I_N$	$M_A/M_N$ $M_H/M_N$	$J_{Mot}$		$Z_0$ BG <sup>4)</sup> BGE <sup>5)</sup>	$M_{Bmax}$	$m^1)$	
	$\frac{[kW]}{[Nm]}$								[rpm]	[A]			[%]	2)
DR63S2	0.18 0.63	2720	0.46 (0.45)	0.88	-	-	4.2	2.4 2.2	3.6	4.8	5000 -	1.6	6.2	8.0
DR63M2	0.25 0.9	2660	0.66 (0.65)	0.86	-	-	3.5	2.2 1.9	3.6	4.8	4500 -	2.4	6.2	8.0
DR63L2	0.37 1.3	2650	1.0 (0.92)	0.87	-	-	3.5	2.1 1.9	4.4	5.6	4000 -	3.2	6.7	8.5

- 1) Applies to flange motor
- 2) Without brake
- 3) With brake
- 4) Operation with BG brake control system
- 5) Operation with BGE brake control system

#### 1500 1/min - S1

Motor type	$P_N$	$n_N$	$I_N$ 380-415 V (400 V)	$\cos\varphi$	IE class	$\eta_{75\%}$ $\eta_{100\%}$	$I_A/I_N$	$M_A/M_N$ $M_H/M_N$	$J_{Mot}$		$Z_0$ BG <sup>4)</sup> BGE <sup>5)</sup>	$M_{Bmax}$	$m^1)$	
	$\frac{[kW]}{[Nm]}$								[rpm]	[A]			[%]	2)
DT56M4	0.09 0.66	1300	0.31 (0.29)	0.68	-	-	2.6	2.1 1.8	1.1	1.2	10000 -	0.8	In combination with helical gear units R07, RF07, R07F or Spiroplan <sup>®</sup> gear units W10, WF10, WA10, WAF10 only	
DT56L4	0.12 0.88	1300	0.46 (0.42)	0.68	-	-	2.6	2.2 1.9	1.1	1.2	10000 -	1.2		
DR63S4	0.12 0.83	1380	0.39 (0.39)	0.69	-	-	3.3	2.4 2.2	3.6	4.8	10000 -	2.4	6.1	7.6
DR63M4	0.18 1.3	1320	0.55 (0.55)	0.78	-	-	2.9	1.8 1.7	3.6	4.8	10000 -	3.2	6.1	7.6
DR63L4	0.25 1.8	1300	0.73 (0.68)	0.81	-	-	2.8	1.8 1.7	4.4	5.6	10000 -	3.2	6.7	8.2
DV250M4	55 356	1475	106 (102)	0.83	IE1	92.7 92.5	6.0	2.7 2.0	6300	6600 6730 <sup>6)</sup>	- 200	600 1200 <sup>6)</sup>	448	528 538 <sup>6)</sup>
DV280S4	75 484	1480	142 (138)	0.83	IE1	93.1 93.3	7.2	3.2 2.2	8925	9225 9355 <sup>6)</sup>	- 150	600 1200	520	600 610 <sup>6)</sup>
DV280M4	90 581	1480	173 (170)	0.81	IE1	93.4 93.5	7.1	3.3 2.2	8925	9225 9355 <sup>6)</sup>	- 100	600 1200 <sup>6)</sup>	520	600 610 <sup>6)</sup>

- 1) Applies to flange motor
- 2) Without brake
- 3) With brake
- 4) Operation with BG brake control system
- 5) Operation with BGE brake control system
- 6) Double disk brake



## DT56, DR63, DV250/280 AC Motors

Technical data of DT56, DR63, DV250/280

### IE2 motors (energy-efficient motors): 1500 rpm - S1

Motor type	P <sub>N</sub> M <sub>N</sub> [kW] [Nm]	n <sub>N</sub> [rpm]	I <sub>N</sub> 380-415 V (400 V) [A]	cosφ	IE class	η		I <sub>A</sub> /I <sub>N</sub>	M <sub>A</sub> /M <sub>N</sub> M <sub>H</sub> /M <sub>N</sub>		J <sub>Mot</sub> 2)   3) [10 <sup>-4</sup> kgm <sup>2</sup> ]		Z <sub>0</sub> BG <sup>4)</sup> BGE <sup>5)</sup> [1/h]	M <sub>Bmax</sub> [Nm]	m <sup>1)</sup> 2)   3) [kg]	
						η <sub>75%</sub> η <sub>100%</sub> [%]										
DVE250M4	45 290	1480	88 (86)	0.81	IE2	93.2 93.4		7.1	3.3 2.5		6300	6600 6730 <sup>6)</sup>	- -	300 600 <sup>6)</sup>	448	528 538 <sup>6)</sup>
DVE250M4	55 356	1475	106 (102)	0.83	IE2	94 93.7		6.0	2.7 2.0		6300	6600 6730 <sup>6)</sup>	- -	600 1200 <sup>6)</sup>	520	600 610 <sup>6)</sup>
DVE280S4	75 484	1480	142 (137)	0.83	IE2	94.2 94.2		7.2	3.2 2.2		8925	9225 9355 <sup>6)</sup>	- -	600 1200 <sup>6)</sup>	520	600 610 <sup>6)</sup>
DVE280M4	90 581	1480	171 (168)	0.81	IE2	94.6 94.5		7.1	3.3 2.2		8925	9225 9355 <sup>6)</sup>	- -	600 1200 <sup>6)</sup>	520	600 610 <sup>6)</sup>

- 1) Applies to flange motor
- 2) Without brake
- 3) With brake
- 4) Operation with BG brake control system
- 5) Operation with BGE brake control system
- 6) Double disk brake

### 1000 1/min - S1

Motor type	P <sub>N</sub> [kW]	M <sub>N</sub> [Nm]	n <sub>N</sub> [rpm]	I <sub>N</sub> 380-415 V (400 V) [A]	cosφ	IE class	η		I <sub>A</sub> /I <sub>N</sub>	M <sub>A</sub> /M <sub>N</sub> M <sub>H</sub> /M <sub>N</sub>		J <sub>Mot</sub> 2)   3) [10 <sup>-4</sup> kgm <sup>2</sup> ]		Z <sub>0</sub> BG <sup>4)</sup> BGE <sup>5)</sup> [1/h]	M <sub>Bmax</sub> [Nm]	m <sup>1)</sup> 2)   3) [kg]	
							η <sub>75%</sub> η <sub>100%</sub> [%]										
DR63S6	0.09	0.95	900	0.42 (0.38)	0.64	-	-	2.2	1.8 1.6		5.4	6.6	20000 -	2.5	6.0	7.5	
DR63M6	0.12	1.2	900	0.62 (0.58)	0.65	-	-	2.1	1.8 1.7		5.4	6.6	20000 -	3.2	6.0	7.5	
DR63L6	0.18	2	870	0.81 (0.78)	0.70	-	-	2.2	1.6 1.5		6.8	8.0	20000 -	3.2	6.6	8.1	
DV250M6	37	360	980	85 (82)	0.71	IE1	91.5 91.3	4.5	2.4 1.6		6300	6600 6730 <sup>6)</sup>	- 240	600 1200 <sup>6)</sup>	448	528 538 <sup>6)</sup>	
DV280S6	45	436	985	105 (103)	0.68	IE1	92 92	4.9	2.6 1.8		8925	9225 9355 <sup>6)</sup>	- 180	600 1200 <sup>6)</sup>	520	600 610 <sup>6)</sup>	

- 1) Applies to flange motor
- 2) Without brake
- 3) With brake
- 4) Operation with BG brake control system
- 5) Operation with BGE brake control system
- 6) Double disk brake



### 13.2 General notes on the product description

**Noise** The noise levels of all motors from SEW-EURODRIVE are well within the maximum permitted noise levels set forth in IEC/EN60034-9.

**Coating** The motors from SEW-EURODRIVE are painted with "blue/gray" / RAL 7031 machine paint according to DIN 1843 as standard. Special paints are available on request.

#### **Surface and corrosion protection**

If required, all motors from SEW-EURODRIVE can also be supplied with special surface protection for applications in extremely humid and chemically aggressive environments.

#### **Air admission and accessibility**

The motors/brakemotors must be mounted on the driven machine in such a way that both axially and radially there is enough space left for unimpeded air admission, for maintenance work on the brake and, if required, for the MOVIMOT® inverter. Please also refer to the notes in the motor dimension sheets.

#### **Brakemotors**

On request, the motors can be supplied with an integrated mechanical brake. The SEW-EURODRIVE brake is an electromagnetic disk brake with a DC coil that releases electrically and brakes using spring force. Due to its operating principle, the brake is applied if the power fails. It meets the basic safety requirements. The brake can also be released mechanically if equipped with manual brake release. You will either receive a manual lever with automatic reset or an adjustable setscrew for this purpose. The brake is controlled by a brake controller that is either installed in the motor wiring space or the control cabinet.

A characteristic feature of the brakes is their very short design. The brake bearing end shield is a part of both the motor and the brake. The integrated construction of the SEW-EURODRIVE brakemotor permits particularly compact and sturdy solutions.

#### **International markets**

On request, SEW-EURODRIVE supplies UL registered motors or CSA certified motors with connection conditions according to CSA and NEMA standard.

On request, SEW-EURODRIVE supplies UL registered MOVIMOT® drives with connection conditions according to NEMA standards.

For the Japanese market, SEW-EURODRIVE offers motors conforming to JIS standard. Contact your sales representative to assist you in such cases.



### 13.3 Energy-efficient motors

CEMEP, the association of European electric motor manufacturers, has reached an agreement with the European Commission's General Directorate for Energy that all 2 and 4-pole low-voltage AC motors from 1 to 100 kW will be classified on the basis of their efficiency, and that this classification will be identified on the nameplate and in catalogs. The classification distinguishes between EFF3, EFF2 and EFF1 classes. EFF3 refers to motors without any particular efficiency requirement. EFF2 indicates improved efficiency motors and EFF1 is for high-efficiency motors.



Type DV 4-pole AC motors of motor sizes 250M to 280M meet the requirements of efficiency class EFF2.



Type DVE 4-pole AC motors of motor sizes 250M to 280M meet the requirements of efficiency class EFF1. These motors are referred to as energy efficient motors.

#### **International regulations**

Type /DV and /DVE 4-pole AC motors comply with the energy efficiency standards and energy efficiency regulations of the following countries:

- Australia
- New Zealand
- Brazil
- Canada
- USA



### 13.4 Special markets

#### CSA/NEMA/UL-R

SEW-EURODRIVE offers the NEMA MG1 version or the "CSA/UL-R" option for drives delivered to North America (see "Motors for the USA and Canada" on page 409). These versions have the following characteristic features:

- Terminal designation T1, T2, etc. in addition to U1, V1.
- In MOVIMOT<sup>®</sup> drives additional earth connection via an external terminal.
- Some terminal boxes are made of gray-cast iron and others of aluminum:

Motor size	Terminal box material
DT56/DR63	Aluminum (part of the motor housing)
DV250/DV280	Always gray cast iron

- Cable entry in the terminal box compliant with ANSI / ASME B1.20.1.-1983 with NPT threads (conical inch threads). The following table shows the number of cable entries and NPT sizes for the respective motor sizes.

Motor size	Number and type of threads
DT56	1 × 1/2" NPT + 1 × 3/8" NPT (with adapter)
DR63	2 × 1/2' NPT (with adapter)
DV250M ... DV280S	2 × 2 1/2' NPT + 2 × 1/2' NPT

The NPT openings are sealed with plugs for transportation and storage.

- For AC motors/AC brakemotors, there is a modified nameplate with the following information: TEFC, K.V.A. code and design. With CSA/UL-R option, also CSA and UR identification (UL registration no. E189357).

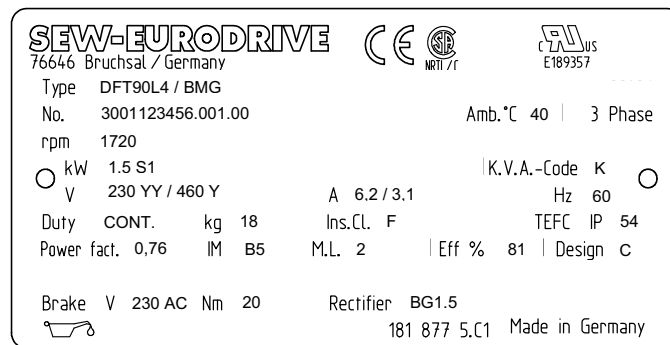


Figure 33: Example: Motor nameplate for CSA/UL-R variant

59773AXX

**JIS / JEC**

The drives can be built according to JIS for delivery to Japan. SEW-EURODRIVE supplies special motor terminal boxes on request. These terminal boxes have cable entries with the PF threads (straight inch thread) customary in Japan.

**V.I.K. (German Association of the Energy and Power Generation Industry)**

The German association of the Energy and Power Generation Industry V.I.K. has published for its members a recommendation for the implementation of technical requirements for AC asynchronous motors.

The drives from SEW-EURODRIVE can be supplied in compliance with these requirements. The following deviations from the standard are taken into account:

- Motor protection at least IP55.
- Motor of thermal class F, permitted overtemperature only as in thermal class B.
- Corrosion protection of motor parts.
- Terminal box made of gray cast iron.
- Protection canopy for vertical motor mounting positions with fan guard on top.
- Additional ground connection via external terminal.
- Nameplate with V.I.K. information. A second nameplate on the inside of the terminal box cover.

**Note**

Technical requirements issued by the V.I.K. must be applied analogously to gearmotors, pole-changing motors and motors for high inertia starting, switching operation and speed control. The requirements result in the following necessary deviations:

- Mounting position: The position of the breather valves and the lubricant fill quantities, which depend on the mounting position, means that gearmotors cannot be used in either horizontal or vertical mounting positions.
- Sign: No bores are provided for attaching an additional identification sign.

**CCC**

After joining the World Trade Organization (WTO), the People's Republic of China issued a certification system - CCC "China Compulsory Certification" - for products. CCC became effective on 1 May 2002 and replaced the marks "Great Wall" (CCEE China Commission for Conformity of Electric Equipment) for domestic products and "CCIB" (China Commodity Inspection Bureau) for imported products. The Chinese government is trying to improve the safety for household appliances by introducing the CCC certification. The certification requirement became effective on 1 August 2003 for many products in household applications.

That means machines and systems supplied by our customers with permanently installed motors and gearmotors are usually not subject to this mandatory certification. The only known exception are welding machines. That means CCC certification will only become an issue for machine and system supplier in case they are exporting individual products, such as spare parts.

This certification affects SEW-EURODRIVE products as well. The drive solutions from SEW-EURODRIVE received the necessary certification on 29 July 2003.



The SEW-EURODRIVE products affected by this certification are:

- 2-pole motors up to 2.2 kW
- 4-pole motors up to 1.1 kW
- 6-pole motors up to 0.75 kW
- 8-pole motors up to 0.55 kW

These motors may be identified with the CCC mark upon request and will be delivered with the certificate attached to the drive.

### 13.5 Corrosion and surface protection

See chapter "Corrosion and surface protection" on page 20.

### 13.6 Unit designations for AC motors and options

#### Standard AC motor of the series

DV..	Foot-mounted design
DR.., ..DT.., ..DV..	Attached motor for gear units
DFR.., DFT.., DFV..	Flange-mounted design
DV..F	Foot and flange-mounted design

#### Motor options

/BR, /BM(G)	Brake (noise-reduced)
../HF	.. with lock-type manual brake release
../HR	.. with self-reengaging manual brake release
/RI	Reinforced insulation for inverter operation > 500 V
/RS	Backstop
/TF	Thermistor (PTC resistor)
/TH	Thermostat (bimetallic switch)
/U	Non-ventilated
/V	Forced cooling fan, 3 × 380 – 415 V <sub>AC</sub> , 50 Hz
/C	Protection canopy for the fan guard

#### Plug connector on AC motor options

/IS	Integrated plug connector
/AMD..	HAN modular 10B plug connector on the terminal box with one-clamp closure
/AME..	HAN modular 10B plug connector on terminal box with one-clamp closure and EMC housing
/ASD..	HAN 10ES plug connector on terminal box with one-clamp closure
/ASE..	HAN 10ES plug connector on terminal box with one-clamp closure and EMC housing


**Encoder on AC motor options**

/AV1Y	Multi-turn absolute encoder with solid shaft, MSI and sin/cos signals
/AV1H	Multi-turn absolute encoder with solid shaft, HIPERFACE™ and sin/cos signals
/EV1T	Encoder with solid shaft, TTL (RS-422), signals
/EV1S	Encoder with solid shaft, sin/cos signals
/EV1R	Encoder with solid shaft, TTL (RS-422), signals
/EV1H	Single-turn absolute encoder with solid shaft, HIPERFACE™ and sin/cos signals
/EH1T	Encoder with hollow shaft, TTL (RS-422), signals
/EH1S	Encoder with hollow shaft, sin/cos signals
/EH1R	Encoder with hollow shaft, TTL (RS-422), signals

**Mounting device for encoders on AC motor options**

EV1A .. with solid shaft

**13.7 Important order information**
**Position of the motor terminal box and the cable entry**

The position of the motor terminal box has so far been specified indicated with 0°, 90°, 180° or 270° as viewed onto the fan guard = B-end (see Figure 34). A change in the product standard EN 60034 specifies that the following designations will have to be used for terminal box positions for foot-mounted motors in the future:

- As viewed onto the output shaft = A-end
- Designation as R (right), B (bottom), L (left) and T (top)

This new designation applies to foot-mounted motors without a gear unit in mounting position B3 (= M1). The previous designation is retained for gearmotors. Figure 34 shows both designations. Where the mounting position of the motor changes, R, B, L and T are rotated accordingly. In motor mounting position B8 (= M3), T is at the bottom.

The position of the cable entry can be selected as well. The positions are "X" (= standard position), "1", "2" or "3" (see Figure 34).

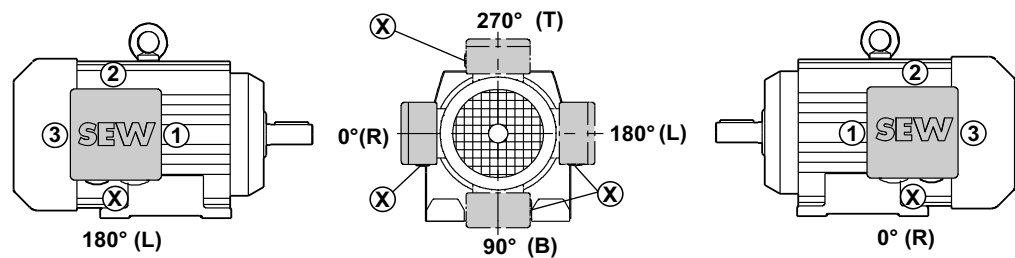



Figure 34: Position of terminal box and cable entry

51302AXX





Unless indicated otherwise, you will receive the terminal box type 0° (R) with "X" cable entry. We recommend selecting cable entry "2" with mounting position M3.

	<b>TIP</b>
	<ul style="list-style-type: none"> <li>• <b>When the terminal box is in the 90° (B) position</b>, check to see if the gearmotor has to be supported.</li> <li>• <b>Only cable entries "X" and "2" are possible for DT56 and DR63 motors. Exception:</b> For DR63 with IS plug connector, cable entry "3" is also possible.</li> </ul>

Terminal box position	0° (R)	90° (B)	180° (L)	270° (T)
Possible cable entries	"X", "3"	"X", "1", "3"	"1", "2"	"X", "1", "3"

### 13.8 Mounting position designations of the motors

See chapter "Mounting position designation for motors" on page 42.

### 13.9 Available motor options

#### Overview

The following motor options are available in various combinations:

- Disk brakes BM(G)/BR (→ page 446)
- IS integrated plug connector (→ page 415)
- Plug connectors AS..., AC..., AM..., AB..(→ page 416)
- Encoders and pre-fabricated cables for encoder connection (→ page 419)
- Encoder mounting adapter (→ page 420)
- Forced cooling fan /V (→ page 428)
- Backstop RS (→ page 431)
- Protection canopy C (→ page 432)

**13.10 Standards and regulations****Conformance to standards**

AC motors and AC brakemotors from SEW-EURODRIVE conform to the relevant standards and regulations, in particular:

- IEC 60034-1, EN 60034-1  
Rotating electrical machinery, rating and performance.
- EN 60529  
IP degrees of protection provided by enclosures of electrical equipment.
- IEC 60072  
Dimensions and performance of rotating electrical machinery.
- EN 50262  
Metric threads of cable glands.
- EN 50347  
Standardized dimensions and power ranges.

**Rated data**

See section "Rated data" page 27.

**Tolerances**

See section "Tolerance" page 28.