

9 MOVI-SWITCH®

9.1 Description

INFORMATION



This catalog provides a brief overview of MOVI-SWITCH® drive units for a quick drive selection.

For detailed descriptions, project planning notes and dimension drawings, refer to the gearmotor catalogs.

The figure below shows the following MOVI-SWITCH® designs:

- MOVI-SWITCH® 1E (back left)
- MOVI-SWITCH® 1EM (back right)
- MOVI-SWITCH® 2S (front):



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MOVI-SWITCH® is a gearmotor with integrated switching and protection function.

There are 3 different MOVI-SWITCH® designs, for operation with one direction of rotation (MOVI-SWITCH® 1E and MOVI-SWITCH® 1EM) and for operation in direction of rotation reversal (MOVI-SWITCH® 2S).

9.1.1 Device properties of MOVI-SWITCH® 1EM

- MOVI-SWITCH® 1EM is a gearmotor of the DT56 or DR63 series with an integrated electronic on/off switch for one direction of rotation and integrated full motor protection.
- Switching the star point with power semiconductors connects or disconnects the current flow to the motor.
- MOVI-SWITCH® 1EM is available in two designs:
 - **B0**: Binary control
 - **K0**: With integrated AS-Interface
- The various operating states are indicated by a status LED.
- MOVI-SWITCH® 1EM is also available with a brake.

9.1.2 Unit properties of MOVI-SWITCH® 1E

- MOVI-SWITCH® 1E is a gearmotor with an integrated electronic on/off switch for one direction of rotation and integrated full motor protection.
- Switching the star point with power semiconductors connects or disconnects the current flow to the motor.
- The BGW brake control integrated as standard ensures short response times (brake voltage = motor voltage/ $\sqrt{3}$, alternatively motor voltage)

9.1.3 Device properties of MOVI-SWITCH® 2S

- MOVI-SWITCH® 2S is a gearmotor with an integrated on/off switch for two directions of rotation and integrated full motor protection.
- The direction of rotation is reversed by a reversing contactor combination with a long service life.
- MOVI-SWITCH® 2S is available in two designs:
 - **CB0**: Binary control
 - **CK0**: With integrated AS-Interface
- Supply system monitoring, brake control as well as switching and protection functions are implemented in the controller.
- The various operating states are indicated by a status LED.
- With the CB0 design (binary control), the connection assignment for clockwise direction of rotation (CW) is compatible to MOVI-SWITCH® 1E.
- With the CK0 design (with integrated AS-Interface), the connection assignment is compatible with MOVIMOT® using an integrated AS-Interface.

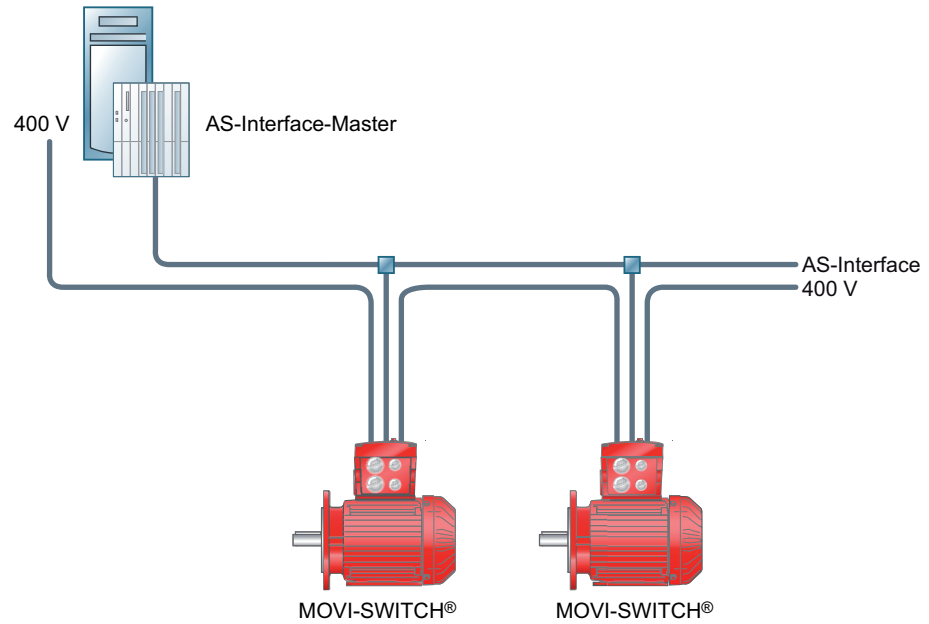
9.1.4 Advantages of MOVI-SWITCH®

MOVI-SWITCH® offers the following advantages:

- The circuit breaker and protection functions are completely integrated, saving control cabinet space and cabling.
- Integrated mechatronic solution, robust and compact.
- AC motors and AC brakemotors with identical connection configuration, this ensures easy installation.

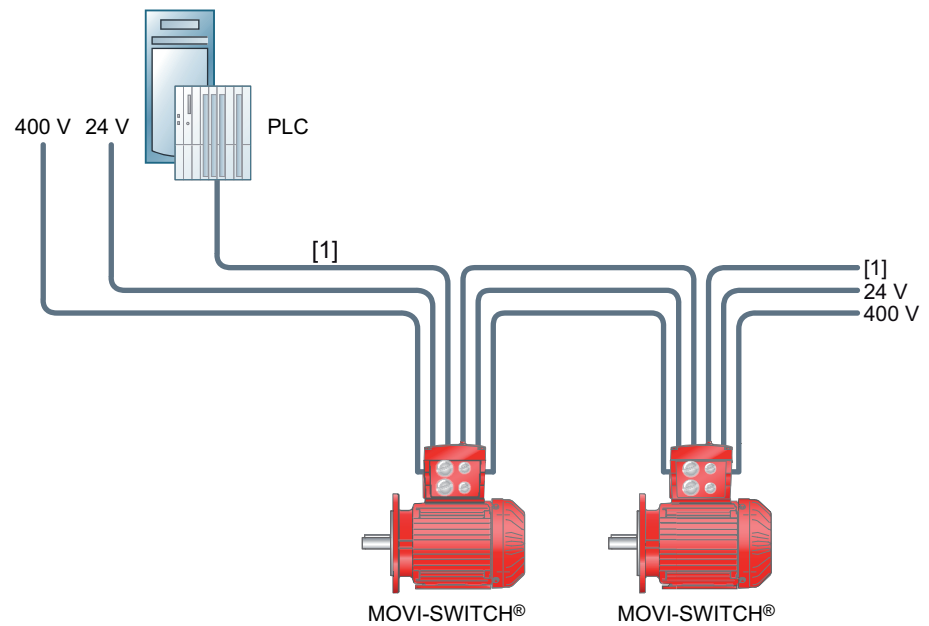
9.2 Installation topology of MOVI-SWITCH®

The following figure shows the basic installation topology of the MOVI-SWITCH® drive with AS-Interface (DC 24 V supply via AS-Interface):



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The following figure shows the basic installation topology of MOVI-SWITCH® drives:



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[1] Control: Binary

9.3 Available MOVI-SWITCH® motor combinations

9.3.1 Combination options

MOVI-SWITCH® AC motors and brakemotors can be combined with all suitable gear unit types, mounting positions and designs in accordance with the selection tables for gearmotors.

Note the following points when ordering AC (brake) motors or gearmotors with MOVI-SWITCH®:

- Voltage for winding in star connection only.
- Brake voltage (with brakemotors only)
- Position of the terminal box preferably 270°. Contact SEW-EURODRIVE for other positions.

9.3.2 MOVI-SWITCH® 1EM with DT56/DR63 AC motor: 1500 min⁻¹ – S1 (50 Hz)

TYPE	P _N [kW]	M _N [Nm]	n _N [min ⁻¹]	I _N 400 V [A]	I _N 380 – 400 V [A]	cosφ	η _{75%} η _{100%} [%] ¹⁾	I _A /I _N	M _A /M _N M _H /M _N	m [kg] ²⁾	J _{Mot} [10 ⁻⁴ kgm ²]
DT56M4/MSW	0.09	0.66	1300	0.29	0.31	0.68	–	2.6	2.1 1.8	³⁾	1.1
DT56L4/MSW	0.12	0.88	1300	0.42	0.46	0.68	–	2.6	2.2 1.9	³⁾	1.1
DR63S4/MSW	0.12	0.83	1380	0.39	0.39	0.69	–	3.3	2.4 2.2	6.9	3.6
DR63M4/MSW	0.18	1.3	1320	0.55	0.55	0.78	–	2.9	1.8 1.7	6.9	3.6
DR63L4/MSW	0.25	1.8	1300	0.68	0.73	0.81	–	2.8	1.8 1.7	7.5	4.4

1) Efficiency levels according to IEC 60034-2-1 Ed.1 (2007) / PLL from Residual Losses

2) Applies for foot-mounted motors without brake

3) Only in combination with helical gear units R07, RF07, R07F or Spiroplan® gear units DT56L4 0.12 W10, WF10, WA10, WAF10

9.3.3 MOVI-SWITCH® 1E with DRN.. AC motor: 1500 min⁻¹ – S1 (50 Hz) IE3

TYPE	P _N [kW]	M _N [Nm]	n _N [min ⁻¹]	I _N 400 V [A]	I _N 380 – 400 V [A]	cosφ	η _{75%} η _{100%} [%] ¹⁾	I _A /I _N	M _A /M _N M _H /M _N	m [kg] ²⁾ ³⁾	J _{Mot} [10 ⁻⁴ kgm ²] ²⁾ ³⁾
DRN80M4/MSW	0.75	4.95	1440	1.75	–	0.74	82.9 82.9	6.7	3.1 2.7	14 18	24.7 26.2
DRN90S4/MSW	1.1	7.2	1455	2.55	–	0.73	85.0 84.5	6.9	2.7 2.1	20 24	54.0 57.7
DRN90L4/MSW	1.5	9.8	1461	3.4	–	0.74	86.1 85.6	7.5	2.7 2.0	23 27	67.2 71.9
DRN100LS4/MSW	2.2	14.5	1450	4.75	–	0.76	87.5 86.9	7.1	2.9 2.2	27 33	81.4 87.4
DRN100L4/MSW	3.0	19.7	1456	6.4	–	0.76	88.3 87.8	8.2	3.4 2.3	34 40	112 118

1) Efficiency levels according to IEC 60034-2-1 Ed.1 (2007) / PLL from Residual Losses

2) Applies for foot-mounted motor without brake

3) Applies for foot-mounted motor with brake

9.3.4 MOVI-SWITCH® 1E with DRE.. AC motor: 1500 min⁻¹ – S1 (50 Hz) IE2

TYPE	P _N [kW]	M _N [Nm]	n _N [min ⁻¹]	I _N 400 V [A]	I _N 380 – 400 V [A]	cosφ	η _{75%} η _{100%} [%] ¹⁾	I _A /I _N	M _A /M _N M _H /M _N	m [kg] ²⁾	J _{Mot} [10 ⁻⁴ kgm ²]
DRE80S4/MSW	0.37	2.45	1435	0.87	–	0.77	78.5 78.8	4.9	2.6 2.1	12.0	14.9
DRE80M4/MSW	0.55	3.63	1445	1.27	–	0.76	82.0 82.3	6.7	3.1 2.2	14.8	21.5
DRE80M4/MSW	0.75	5.0	1435	1.68	1.75	0.79	81.3 81.0	6.2	2.8 2.1	14.8	21.5
DRE90M4/MSW	1.1	7.4	1420	2.45	2.55	0.79	83.5 82.4	5.9	2.8 2.3	18.9	35.5
DRE90L4/MSW	1.5	10	1430	3.35	3.45	0.77	84.7 84.0	6.6	3.2 2.8	21.9	43.5
DRE100M4/MSW	2.2	14.7	1425	4.6	4.7	0.80	86.7 85.4	6.4	3.3 2.7	26.5	56
DRE100LC4/MSW	3	19.7	1455	6.2	6.3	0.81	87.1 86.3	7.5	2.7 2.4	31.7	90
DRE112M4/MSW	3	19.7	1455	6	6.2	0.82	87.4 86.5	7.3	2.4 2	41.8	146

1) Efficiency levels according to IEC 60034-2-1 Ed.1 (2007) / PLL from Residual Losses

2) Applies for foot-mounted motors without brake

9.3.5 MOVI-SWITCH® 1E with DRS.. AC motor: 1500 min⁻¹ – S1 (50 Hz) IE1

TYPE	P _N [kW]	M _N [Nm]	n _N [min ⁻¹]	I _N 400 V [A]	I _N 380 – 400 V [A]	cosφ	η _{75%} η _{100%} [%] ¹⁾	I _A /I _N	M _A /M _N M _H /M _N	m [kg] ²⁾	J _{Mot} [10 ⁻⁴ kgm ²]
DRS71S4/MSW	0.37	2.55	1380	1.14	1.24	0.70	65.3 66.6	3.5	1.8 1.8	8.3	4.9
DRS71M4/MSW	0.55	3.8	1380	1.55	1.62	0.72	71.9 70.6	3.6	2.1 2.1	9.6	7.1

1) Efficiency levels according to IEC 60034-2-1 Ed.1 (2007) / PLL from Residual Losses

2) Applies for foot-mounted motors without brake

9.3.6 MOVI-SWITCH® 2S with DRN.. AC motor: 1500 min⁻¹ – S1 (50 Hz) IE3

TYPE	P _N [kW]	M _N [Nm]	n _N [min ⁻¹]	I _N 400 V [A]	I _N 380 – 400 V [A]	cosφ	η _{75%} η _{100%} [%] ¹⁾	I _A /I _N	M _A /M _N M _H /M _N	m [kg] ²⁾ ³⁾	J _{Mot} [10 ⁻⁴ kgm ²] ²⁾ ³⁾
DRN80M4/MSW	0.75	4.95	1440	1.75	–	0.74	82.9 82.9	6.7	3.1 2.7	15 19	24.7 26.2
DRN90S4/MSW	1.1	7.2	1455	2.55	–	0.73	85.0 84.5	6.9	2.7 2.1	21 25	54.0 57.7
DRN90L4/MSW	1.5	9.8	1461	3.4	–	0.74	86.1 85.6	7.5	2.7 2.0	24 28	67.2 71.9
DRN100LS4/MSW	2.2	14.5	1450	4.75	–	0.76	87.5 86.9	7.1	2.9 2.2	27 34	81.4 87.4
DRN100L4/MSW	3.0	19.7	1456	6.4	–	0.76	88.3 87.8	8.2	3.4 2.3	34 41	112 118

1) Efficiency levels according to IEC 60034-2-1 Ed.1 (2007) / PLL from Residual Losses

2) Applies for foot-mounted motor without brake

3) Applies for foot-mounted motor with brake

9.3.7 MOVI-SWITCH® 2S with DRE.. AC motor: 1500 min⁻¹ – S1 (50 Hz) IE2

TYPE	P _N [kW]	M _N [Nm]	n _N [min ⁻¹]	I _N 400 V [A]	I _N 380 – 400 V [A]	cosφ	η _{75%} η _{100%} [%] ¹⁾	I _A /I _N	M _A /M _N M _H /M _N	m [kg] ²⁾	J _{Mot} [10 ⁻⁴ kgm ²]
DRE80S4/MSW/C.0	0.37	2.45	1435	0.87	–	0.77	78.5 78.8	4.9	2.6 2.1	13.1	14.9
DRE80M4/MSW/C.0	0.55	3.63	1445	1.27	–	0.76	82.0 82.3	6.7	3.1 2.2	15.9	21.5
DRE80M4/MSW/C.0	0.75	5.0	1435	1.68	1.75	0.79	82.3 81.0	6.2	2.8 2.1	15.9	21.5
DRE90M4/MSW/C.0	1.1	7.4	1420	2.45	2.55	0.79	83.5 82.4	5.9	2.8 2.3	20.0	35.5
DRE90L4/MSW/C.0	1.5	10	1430	3.35	3.45	0.77	84.7 84.0	6.6	3.2 2.8	23.0	43.5
DRE100M4/MSW/C.0	2.2	14.7	1425	4.6	4.7	0.80	86.7 85.4	6.4	3.3 2.7	27.6	56
DRE100LC4/MSW/C.0	3	19.7	1455	6.2	6.3	0.81	87.1 86.3	7.5	2.7 2.4	32.8	90
DRE112M4/MSW/C.0	3	19.7	1455	6	6.2	0.83	87.4 86.5	7.3	2.4 2	43.1	146

1) Efficiency levels according to IEC 60034-2-1 Ed.1 (2007) / PLL from Residual Losses

2) Applies for foot-mounted motors without brake

9.3.8 MOVI-SWITCH® 2S with DRS.. AC motor: 1500 min⁻¹ – S1 (50 Hz) IE1

TYPE	P _N [kW]	M _N [Nm]	n _N [min ⁻¹]	I _N 400 V [A]	I _N 380 – 400 V [A]	cosφ	η _{75%} η _{100%} [%] ¹⁾	I _A /I _N	M _A /M _N M _H /M _N	m [kg] ²⁾	J _{Mot} [10 ⁻⁴ kgm ²]
DRS71S4/MSW/C.0	0.37	2.55	1380	1.14	1.24	0.70	65.3 66.6	3.5	1.8 1.8	9.4	4.9
DRS71M4/MSW/C.0	0.55	3.8	1380	1.55	1.62	0.72	71.9 70.6	3.6	2.1 2.1	10.7	7.1

1) Efficiency levels according to IEC 60034-2-1 Ed.1 (2007) / PLL from Residual Losses

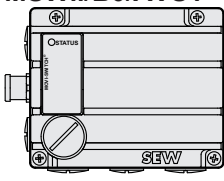
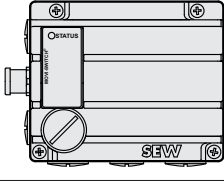
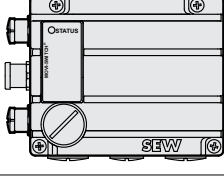
2) Applies for foot-mounted motors without brake

9.4 Connection technology

9.4.1 Connection technology of MOVI-SWITCH® 1EM

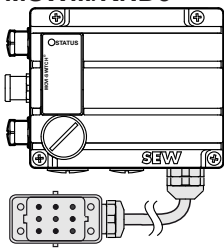
Overview

The following table shows the available plug connectors. For other types, contact SEW-EURODRIVE.

Order designation	Function	Manufacturer's designation
MSW../B0/AVS1 	Binary control	1 x round plug connector M12 x 1
MSW../K0/AVSK 	Control via AS-Interface	1 x round plug connector M12 x 1
MSW../K0/AZZK 	Control via AS-Interface Sensor connection Sensor connection	3 x round plug connector M12 x 1

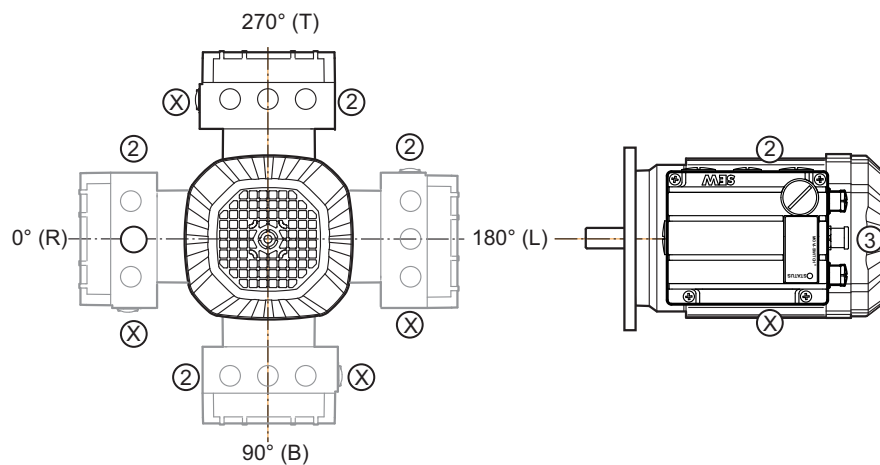
Optional power plug connector

The following table shows the optional power plug connector:

Order designation	Function	Manufacturer's designation
MSW.../KND3 	AC 400 V supply	Cable with Harting Han® plug connector Q8/0 male

Possible plug connector positions

The following positions are possible for plug connectors:



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AVSK or AVS1		
Position Connection box	Position Line connection M20	Position AVSK or AVS1
0°	X	3 or 1 or X
90°	X	3 or 1 or X
270°	X	3 or 1 or X
180°	X	3 or 1 or X
0°	2	3 or 1 or X
90°	2	3 or 1 or X
270°	2	3 or 1 or X
180°	2	3 or 1 or X

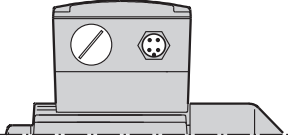
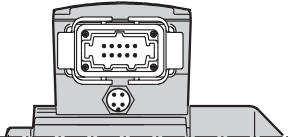
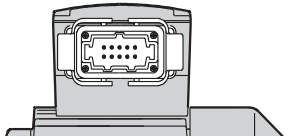
AZZK		
Position Connection box	Position Line connection M20	Position AZZK
0°	X	1
90°	X	1
270°	X	1
180°	X	3
0°	2	3
90°	2	3
270°	2	3
180°	2	1

9.4.2 Connection technology of MOVI-SWITCH® 1E

Overview

MOVI-SWITCH® 1E is supplied with AVS1 plug connector for control signals if not specified otherwise in the order.

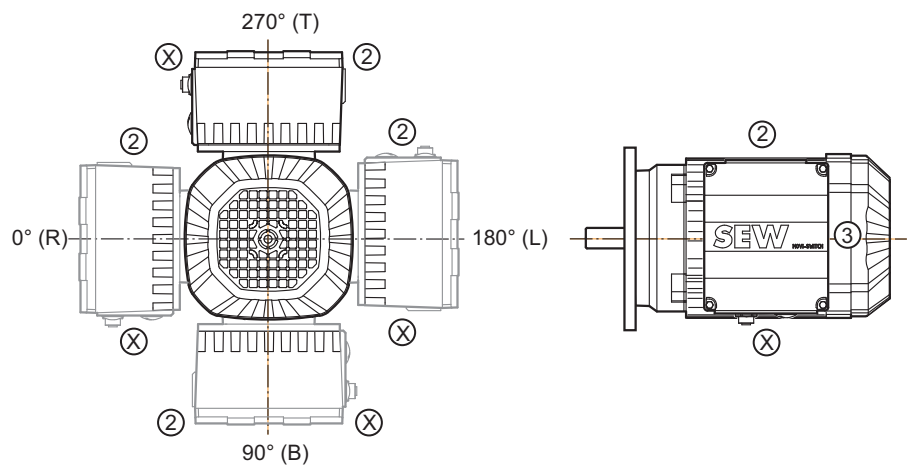
The plug connectors listed in the following table are available as standard:

Order designation	Function	Manufacturer's designation
MSW../AVS1 	Control signals	1 x round plug connector M12 x 1
MSW../AVS1/ASA3 	Control signals Power rating	1 x round plug connector M12 x 1 + Harting Han® 10 ES pin insert (built-on housing with 2 clips)
MSW../ASAW 	Connection to field distributor Z.3W or Z.6W	Harting Han® 10 ES pin insert (built-on housing with 2 clips)

For other types, contact SEW-EURODRIVE.

Possible plug connector positions

The following positions are possible for ASA3 and AVS1 plug connectors:



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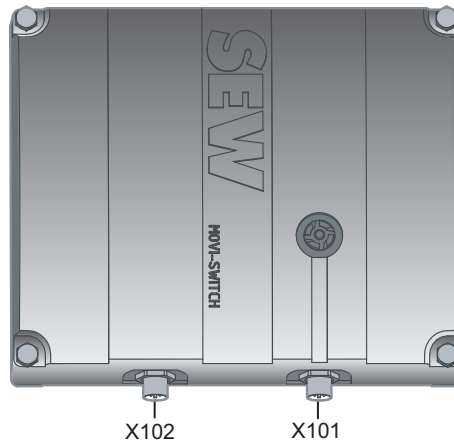
Plug connector	Possible positions
AVS1	X (standard)
	2
	3
ASA3 ASAW	X (standard)
	2
	3
AVS1/ASA3	ASA3 = X (standard) + AVS1 = X (standard)
	ASA3 = 2 + AVS1 = 2
	ASA3 = 3 + AVS1 = 3
	ASA3 = X (standard) + AVS1 = 2
	ASA3 = 2 + AVS1 = X (standard)

9.4.3 Connection technology of MOVI-SWITCH® 2S

Connection technology of CB0 design (binary control)

As standard, MOVI-SWITCH® 2S is equipped with 2 plug connectors for connecting control signals and 24 V supply. The plug connectors are integrated in the control unit, see the following figure.

Order designation of the standard design: MSW/CB0/RA2A.



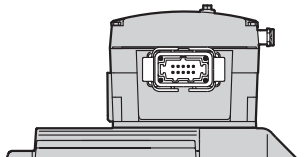
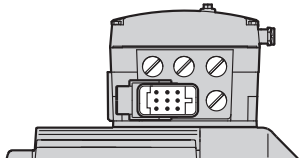
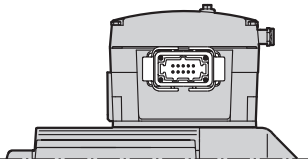
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X102 = DC 24 V supply voltage + control signal (M12 plug connector, A-coding, male)

X101 = DC 24 V supply voltage + feedback (M12 plug connector, A-coding, male)

Optional plug connectors

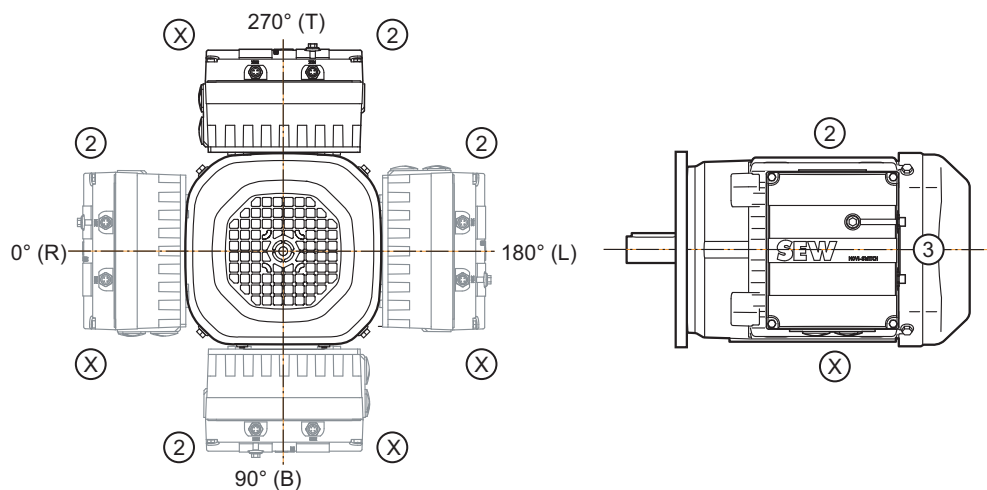
The following table shows the plug connectors in the connection box that are available as option for MOVI-SWITCH® 2S (CB0 design).

Order designation	Function	Manufacturer's designation
MSW/CB0/ASA3 	Power rating	Harting Han® 10 ES pin insert (built-on housing with 2 clips)
MSW/CB0/AND3 	Power rating	Harting Han® Q8/0 pin insert (built-on housing with 1 clip)
MSW/CB0/ASAW 	Connection to field distributor Z.3W or Z.6W	Harting Han® 10 ES pin insert (built-on housing with 2 clips)

For other types, contact SEW-EURODRIVE.

Possible plug connector positions

The positions shown in the following figure are possible for plug connectors. Some positions might not be possible for certain gear unit types and mounting positions (contact SEW-EURODRIVE).

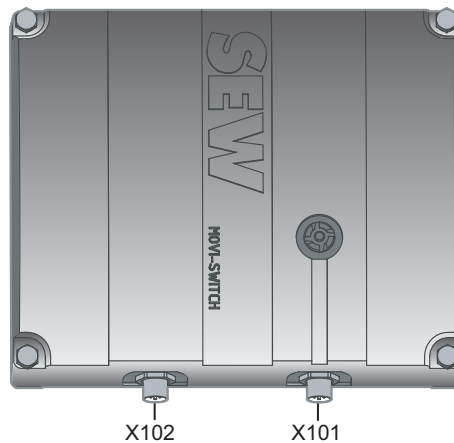


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Connection technology of CK0 design (with integrated AS-Interface)

MOVI-SWITCH® 2S is equipped with 2 plug connectors for AS-Interface and digital inputs as standard. The plug connectors are integrated in the control unit, see the following figure.

Order designation of the standard design: MSW/CK0/RA2A.



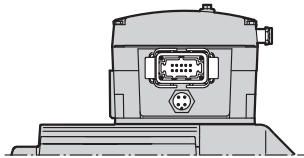
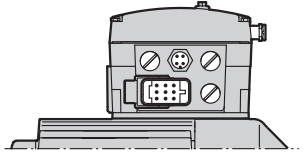
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X102 = DC 24 V supply voltage + AS-Interface (M12 plug connector, A-coding, male)

X101 = DC 24 V supply voltage + digital inputs (M12 plug connector, A-coding, female)

Optional plug connectors

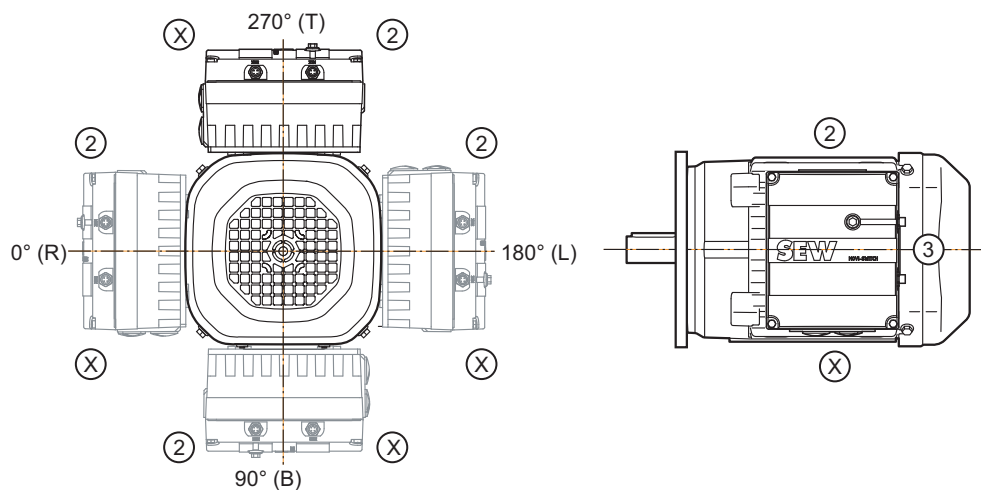
The following table shows the optional plug connectors in the connection box that are available for MOVI-SWITCH® 2S (CK0 design).

Order designation	Function	Manufacturer's designation
MSW/CK0/ASA3/AVS0 	Power + AUX PWR	Harting Han® 10 ES pin insert (built-on housing with 2 clips) +1 x round plug connector M12 x 1
MSW/CK0/AND3/AVS0 	Power + AUX PWR	Harting Han® Q8/0 pin insert (built-on housing with 1 clip) +1 x round plug connector M12 x 1

For other types, contact SEW-EURODRIVE.

Possible plug connector positions

The positions shown in the following figure are possible for plug connectors. Some positions might not be possible for certain gear unit types and mounting positions (contact SEW-EURODRIVE).



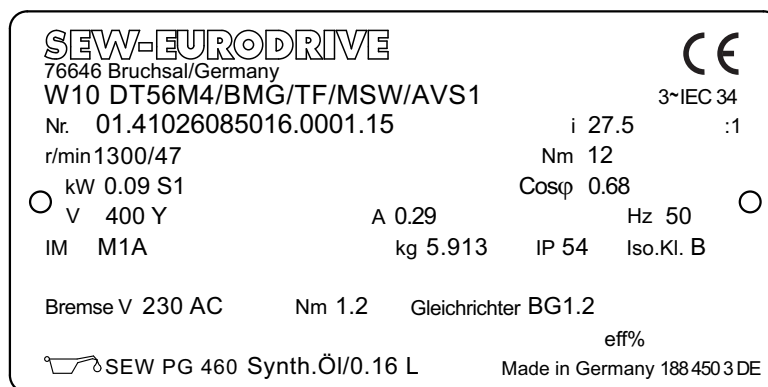
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9.5 Sample type designation

9.5.1 Type designation of MOVI-SWITCH® 1EM

Nameplate

The following illustration gives an example of a nameplate of a MOVI-SWITCH® 1EM drive:



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Type designation

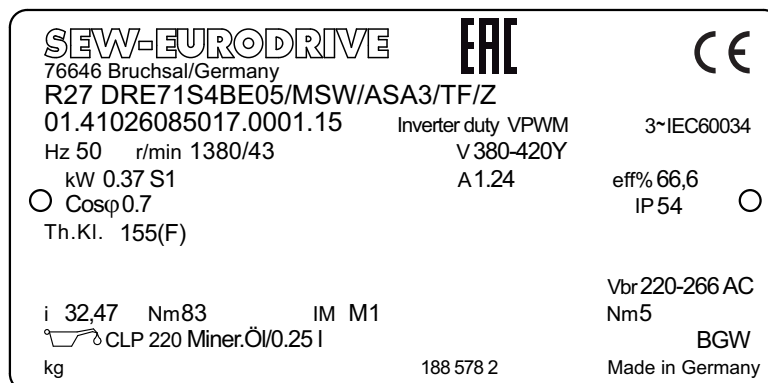
The following table shows the type designation of the MOVI-SWITCH® 1EM drive **W10DT54M4/BMG/TF/MSW/AVS1** as an example:

W	Gear unit series
10	Gear unit size
DT	Motor series (DT..., DR...)
56M	Motor size
4	Number of motor poles
/	
BMG	Mechanical brake option
/	
TF	Thermistor (standard)
/	
MSW	MOVI-SWITCH® motor starter
/	
AVS1	Optional M12 plug connector for control signals

9.5.2 Type designation of MOVI-SWITCH® 1E

Nameplate

The following illustration gives an example of a nameplate of a MOVI-SWITCH® 1E drive:



9007200275137035

Type designation

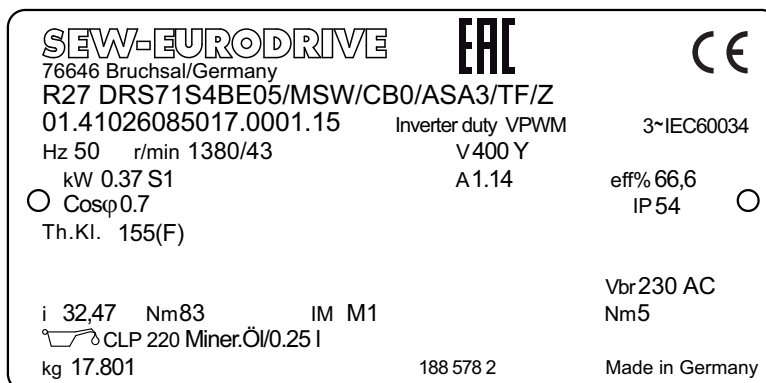
The following table shows the type designation of the MOVI-SWITCH® 1E drive **R27DRE71S4BE05/MSW/ASA3/TF/Z** as an example:

R	Gear unit series
27	Gear unit size
DRE	Motor series (DRS., DRE., DRN..)
71S	Motor size
4	Number of motor poles
BE05	Optional design motor (brake)
/	
MSW	MOVI-SWITCH® motor starter
/	
ASA3	Plug connector option
/	
TF	Thermistor (standard)
/	
Z	Motor option flywheel fan

9.5.3 Type designation of MOVI-SWITCH® 2S

Nameplate

The following illustration gives an example of a nameplate of a MOVI-SWITCH® 2S drive:



9007200276393355

Type designation

The following table shows the type designation of the MOVI-SWITCH® 2S drive **R27DRS71S4/BE05/MSW/CB0/ASA3/TF/Z** as an example:

R	Gear unit series
27	Gear unit size
DRS	Motor series (DRS., DRE., DRN..)
71S	Motor size
4	Number of motor poles
/	
BE05	Optional design motor (brake)
/	
MSW	MOVI-SWITCH® motor starter
/	
C	Control
B	Signal type B = Binary K = AS-Interface
0	Design 0 = Standard
/	
ASA3	Plug connector option
/	
TF	Thermistor (standard)
/	
Z	Motor option flywheel fan