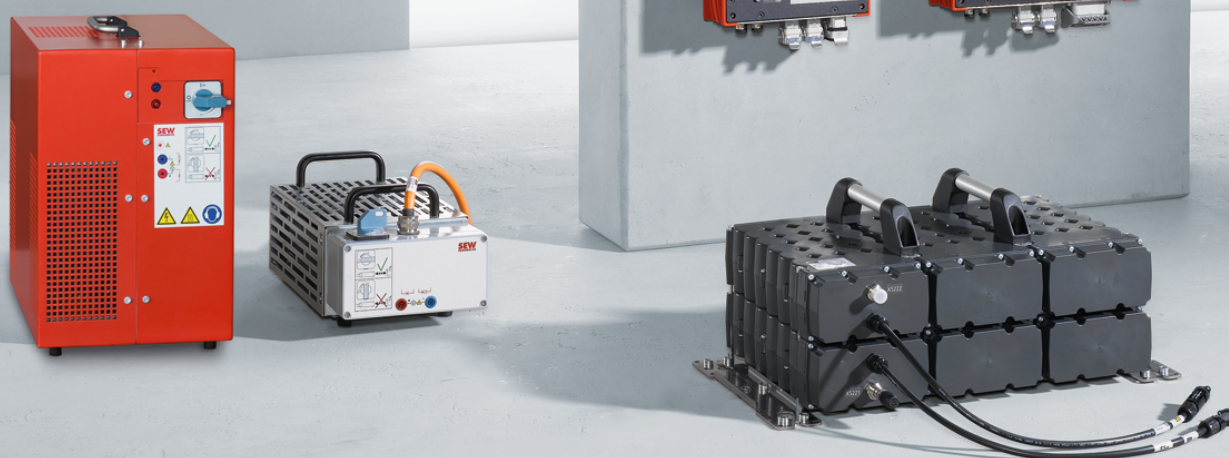




Product Description



Drive Power Solution – MOVIE-DPS



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1 Introduction

1.1 What is MOVI-DPS?

Especially in this day and age, it is important to use energy sustainably and save energy. SEW-EURODRIVE developed MOVI-DPS for designing energy-efficient applications and systems. MOVI-DPS stands for **Drive Power Solution** and consists of several components that allow for intelligent power and energy management in mobile and stationary applications.

Using MOVI-DPS you can prevent load peaks in the supply system as well as harmonics. In regenerative operation, the braking energy is stored locally in the MOVI-DPS storage bundle and made available for the frequency inverters during motor operation. This way, the energy demand within the supply system is reduced.

Another aspect of energy management is converting energy generation from a centralized structure to a distributed structure. To control load peaks, a controllable distributed energy storage is necessary. MOVI-DPS can contribute to this as well.

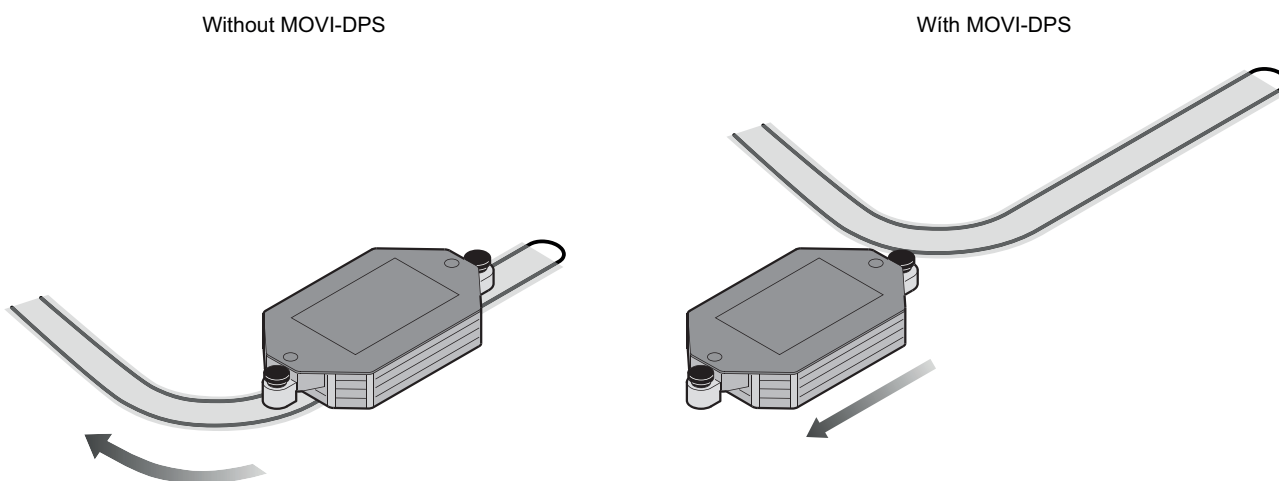
1.1.1 Operating modes

MOVI-DPS can be used for 2 different operating modes:

- Energy mode
- Power mode

Energy mode

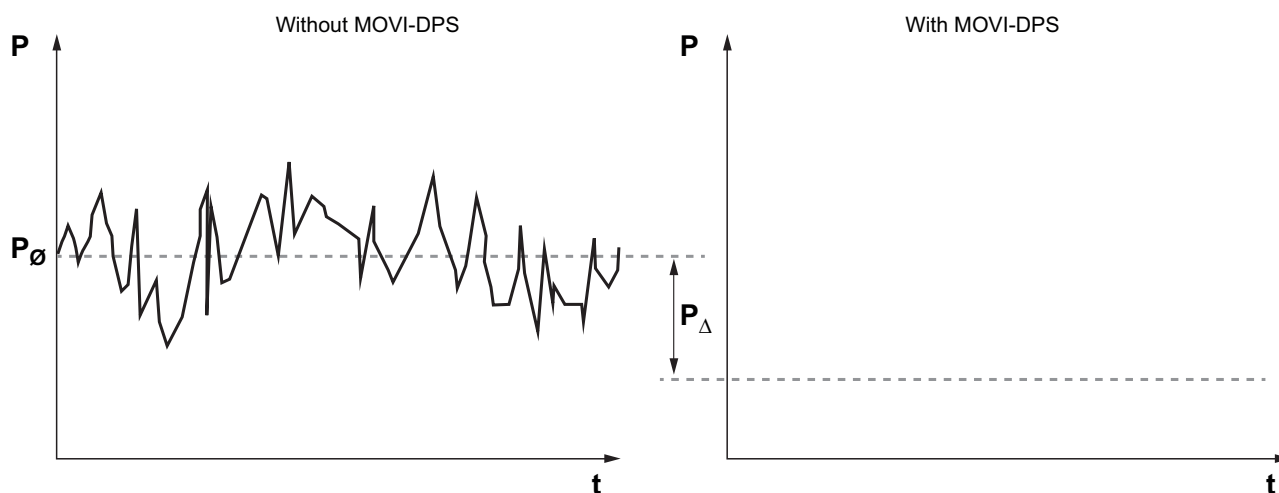
In energy mode, MOVI-DPS can supply applications with energy from the MOVI-DPS storage bundle continuously over several minutes. For example, this allows for an automated guided vehicle to leave the MOVITRANS® line cable and travel a section without external power supply. In addition, the peak power of the automated guided vehicle can be increased with power supply via MOVITRANS®.



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Power mode

With MOVI-DPS in power mode you can realize very dynamic applications with travel cycles of 1 – 60 seconds. The intelligent energy management significantly reduces the input power.



17063519755

P	Input power
P_0	Mean input power
P_Δ	Reduced input power
t	Time

1.2 Advantages

The use of MOVI-DPS has the following advantages:

- Decentralized energy storage
- Decentralized energy supply
- Energy optimization of applications and systems
- Reduction of overall operation costs
- Reduction of costs for supply system infrastructure
- Increased process safety in case of power failure

1.3 Possible applications

- Reducing the peak loads taken from the supply system
- UPS function
 - Fire protection applications
 - Storage/retrieval systems, handling devices
 - Maintaining the DC 24 V supply
- Voltage stabilization

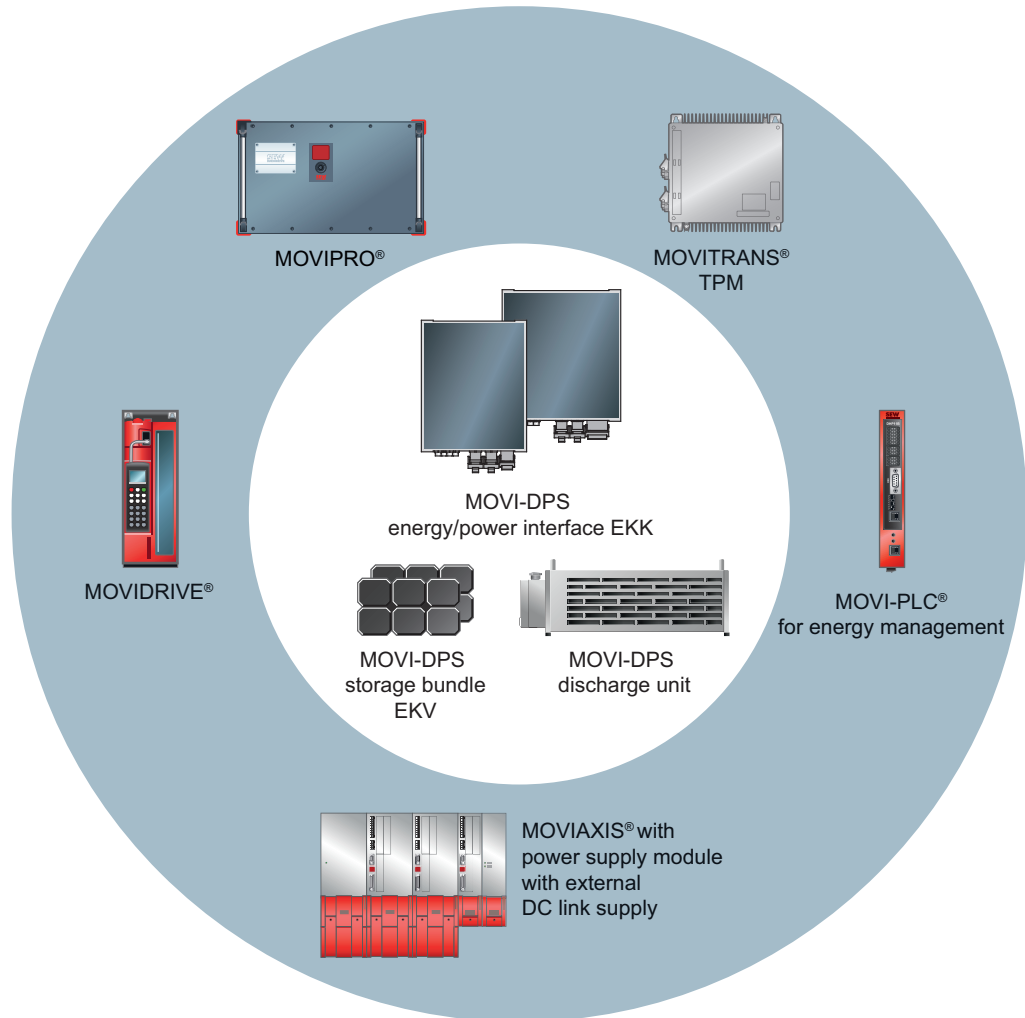
1.3.1 Applications

The following applications can be equipped with MOVI-DPS:

- Automated guided vehicle systems (AGVS)
 - Heavy-duty
 - Light-duty
- Pallet transfer shuttle
- Shuttles for high-bay warehouses
- Lifting and travel axis for storage/retrieval system
- Lifting station for electrified monorail vehicles
- Vertical conveyor

2 Component overview

The MOVI-DSP components are compatible with the current standard components from SEW-EURODRIVE. This way, you get all components for your application from one source.



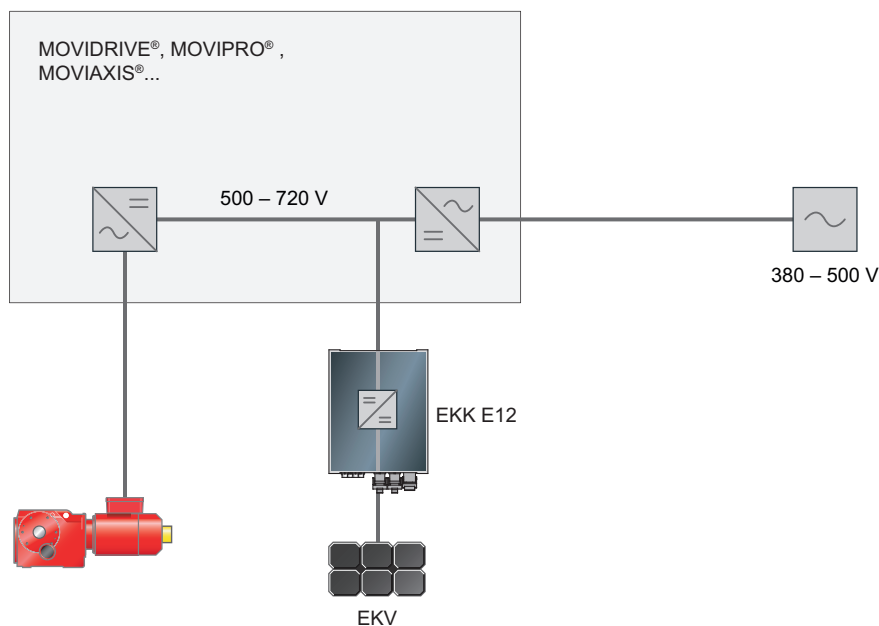
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3 Energy mode

3.1 Operating principle

The rectifier integrated in the inverter is connected to the supply system, as it would be without MOVI-DPS. Additionally, the MOVI-DPS energy interface is connected to the DC link of the inverter. In case of a power failure, the MOVI-DPS energy interface supplies the required energy from the MOVI-DPS storage bundle to the inverter. If regenerative energy is created, the MOVI-DPS energy interface stores the energy in the MOVI-DPS storage bundle. Use of a braking resistor is not necessary.

The following figure shows the functional principle of MOVI-DPS in energy mode:



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EKK E12 MOVI-DPS energy interface
EKV MOVI-DPS storage bundle

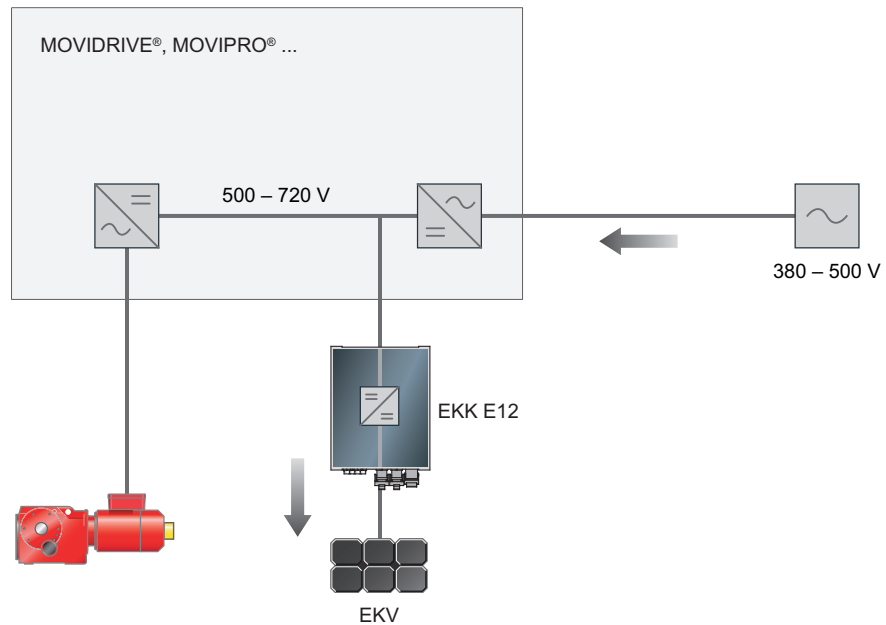
3.2 Operating phases stationary charging

The following examples show the energy flow in various operating phases.

3.2.1 Load

Shuttles for high-bay warehouses

The MOVI-DPS storage bundle is charged via sliding contacts to a predefined state of charge during the wait time during repositioning of the shuttle.



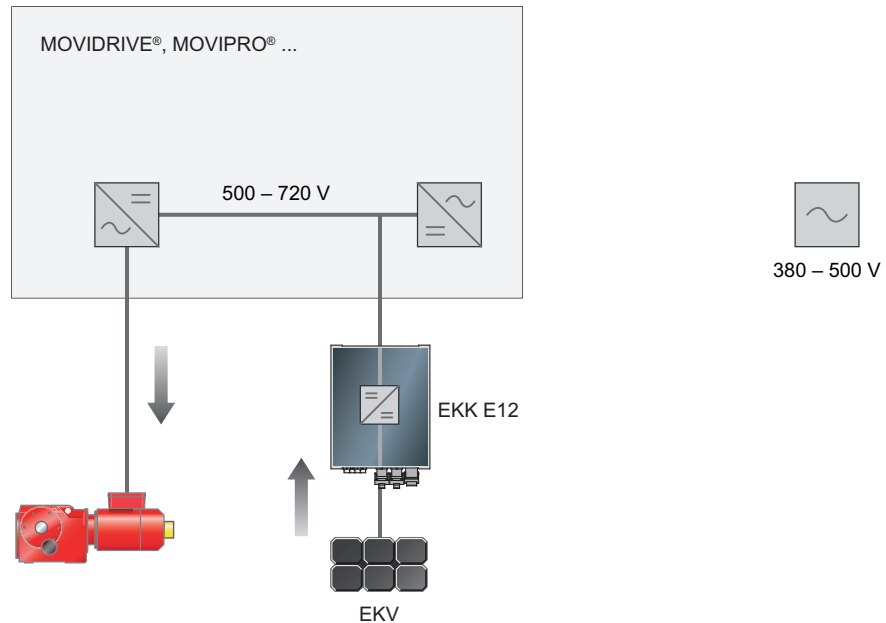
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3.2.2 Traveling

Shuttles for high-bay warehouses

When the shuttle leaves the charging position, the MOVI-DPS storage bundle supplies it with the required energy.

3

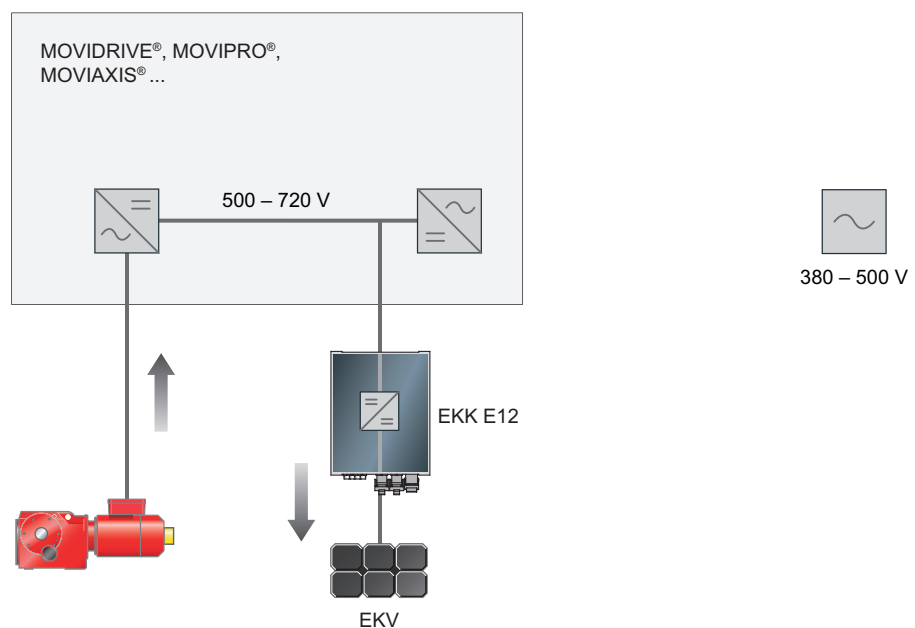


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3.2.3 Braking

Shuttles for high-bay warehouses

The regenerative energy created during braking is stored in the MOVI-DPS storage bundle. This way, a braking resistor is not required. Further, the regenerative energy can be reused during the next travel cycle.



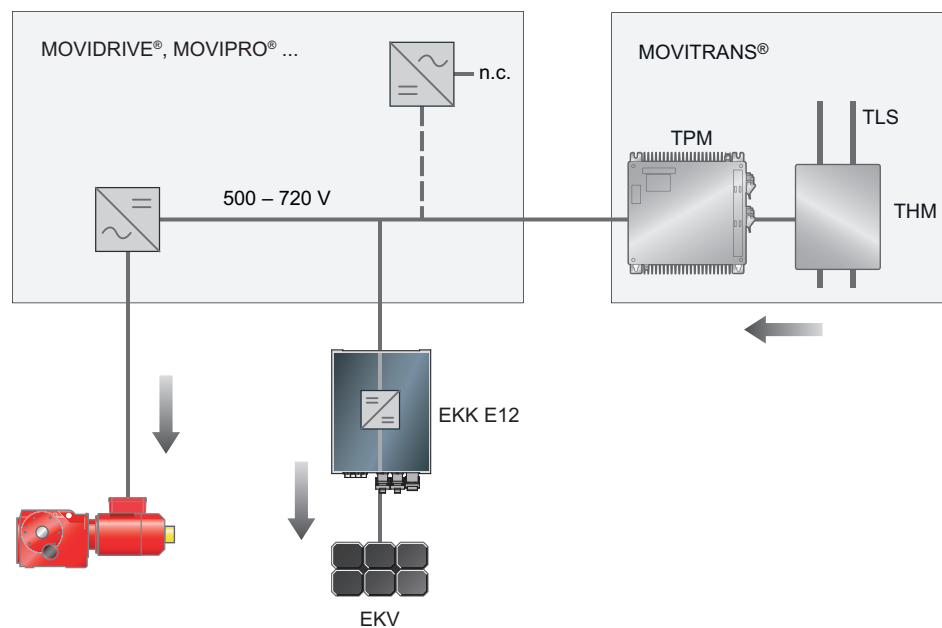
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3.3 Operating phases mobile charging

3.3.1 Traveling and charging

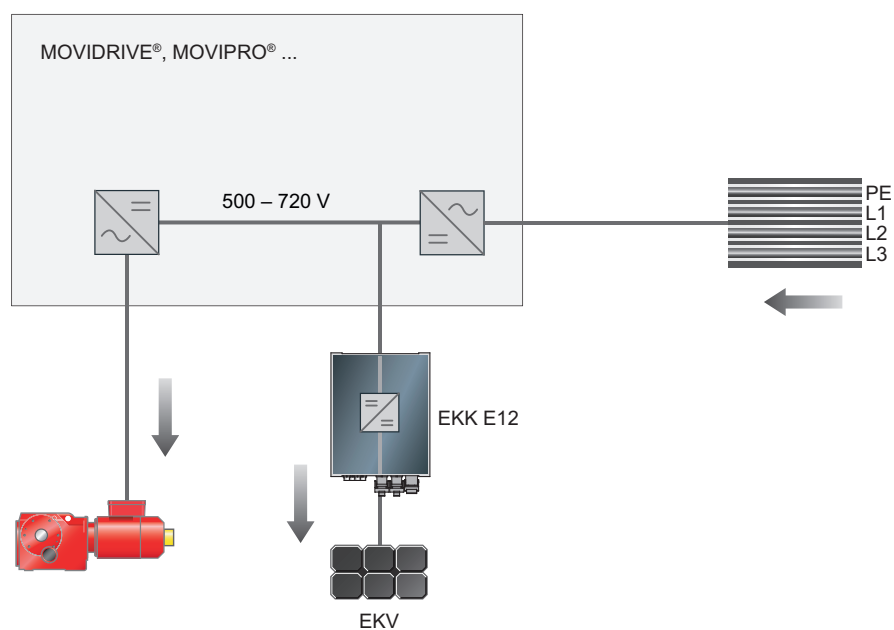
The energy that is required for traveling is supplied by MOVITRANS® or a conductor rail. At the same time, the MOVI-DPS storage bundle is charged during traveling.

Automated guided vehicle



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Pallet transfer shuttle

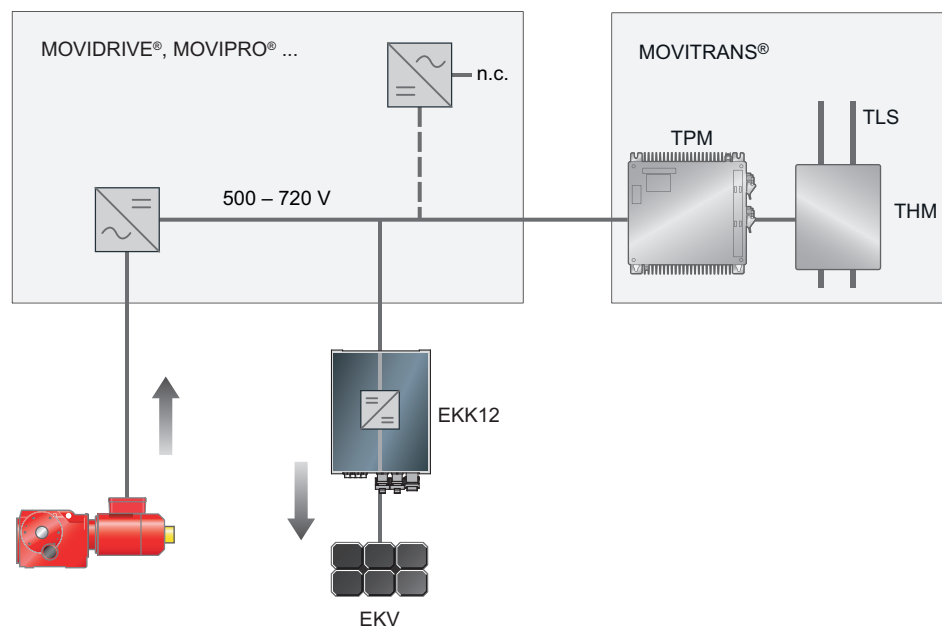


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3.3.3 Braking

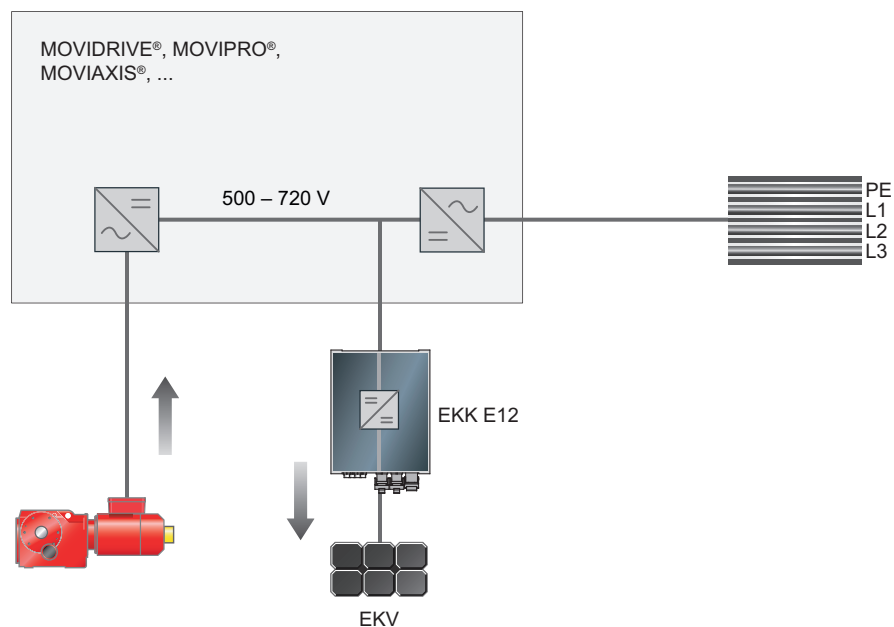
The regenerative energy created during braking is stored in the MOVI-DPS storage bundle. This way, a braking resistor is not required. Further, the regenerative energy can be reused during the next travel cycle.

Automated guided vehicle



16236158219

Pallet transfer shuttle



16229578123

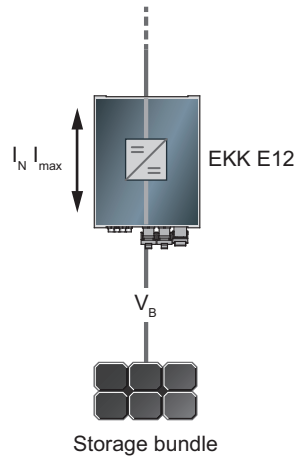
3.4 Available energy and power rating in energy mode

3.4.1 Calculation formulas

The following formulas are used to determine the power with which the MOVI-DPS storage bundle is charged and discharged:

Nominal current I_N × voltage on storage end V_B = Nominal power P_N

Peak current I_{max} × voltage on storage end V_B = Peak power P_{max}



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During project planning of the application consider that the available power depends on the state of charge of the MOVI-DPS storage bundle.

3.4.2 Value table

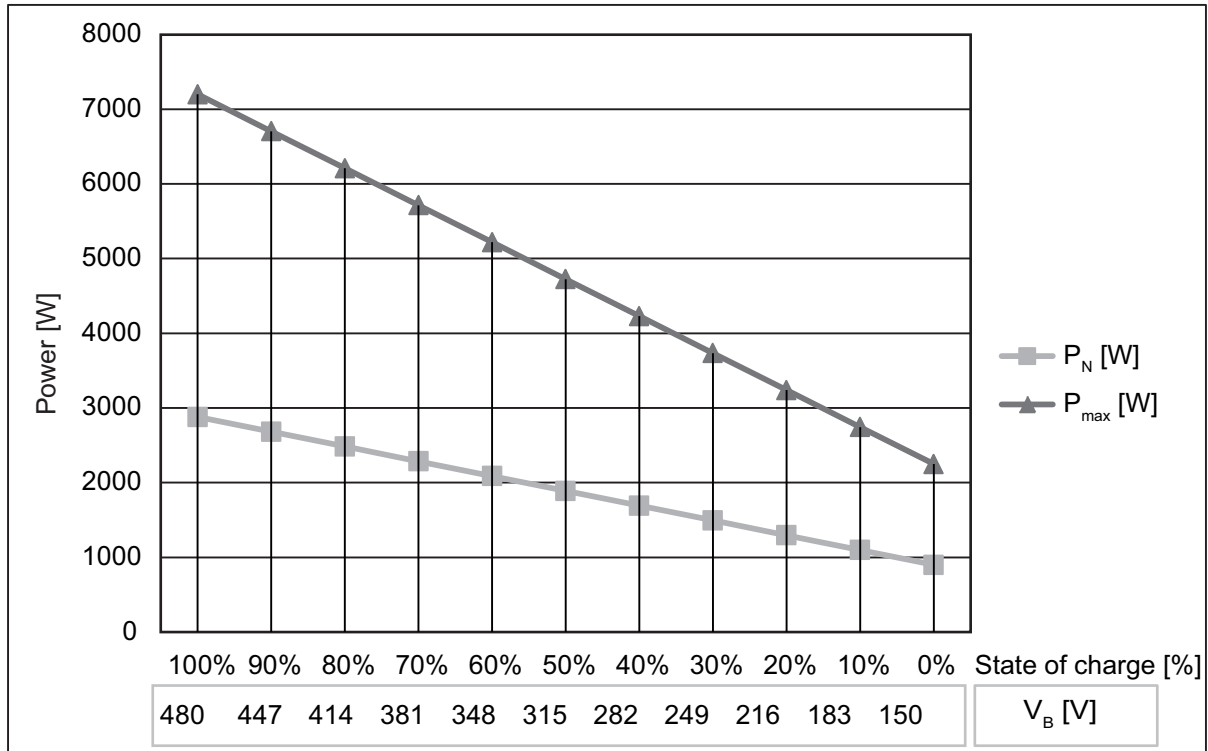
The following table shows the available energy and power when using the MOVI-DPS storage bundle EKV...A-...350-00:

Operating voltage range	Energy content				Nominal power range	Peak power range (max. 5 s with $f_{\text{PWM}} = 8 \text{ kHz}$)
	Energy module					
	Nominal voltage 60 V	Number	Nominal voltage 30 V	Number		
DC 150 – 240 V	64 kW _s	4	128 kW _s	8	0.9 kW – 1.44 kW	2.25 kW – 3.6 kW
DC 150 – 360 V	130 kW _s	6	260 kW _s	12	0.9 kW – 2.16 kW	2.25 kW – 5.4 kW
DC 150 – 480 V	190 kW _s	8	379 kW _s	16	0.9 kW – 2.88 kW	2.25 kW – 7.2 kW

3.4.3 Value diagrams

The following diagrams show the power P depending on the voltage V_B and the state of charge of the MOVI-DPS storage bundle:

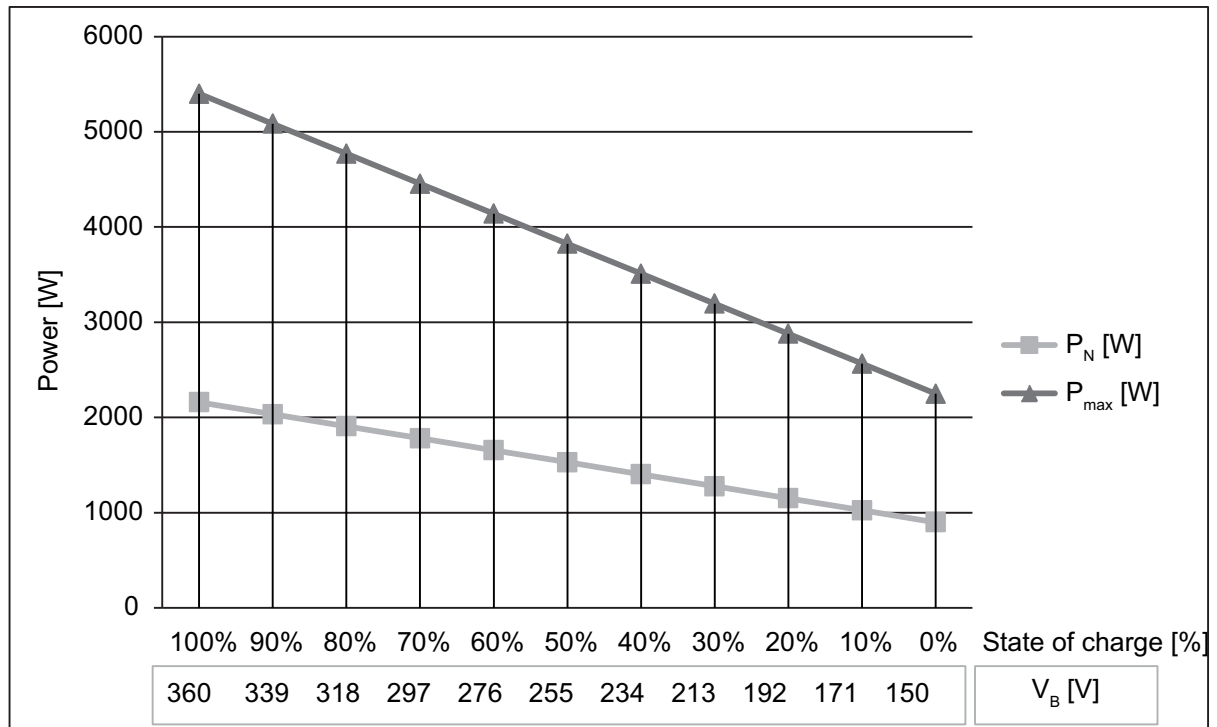
$V_B = 480 - 150 \text{ V}$



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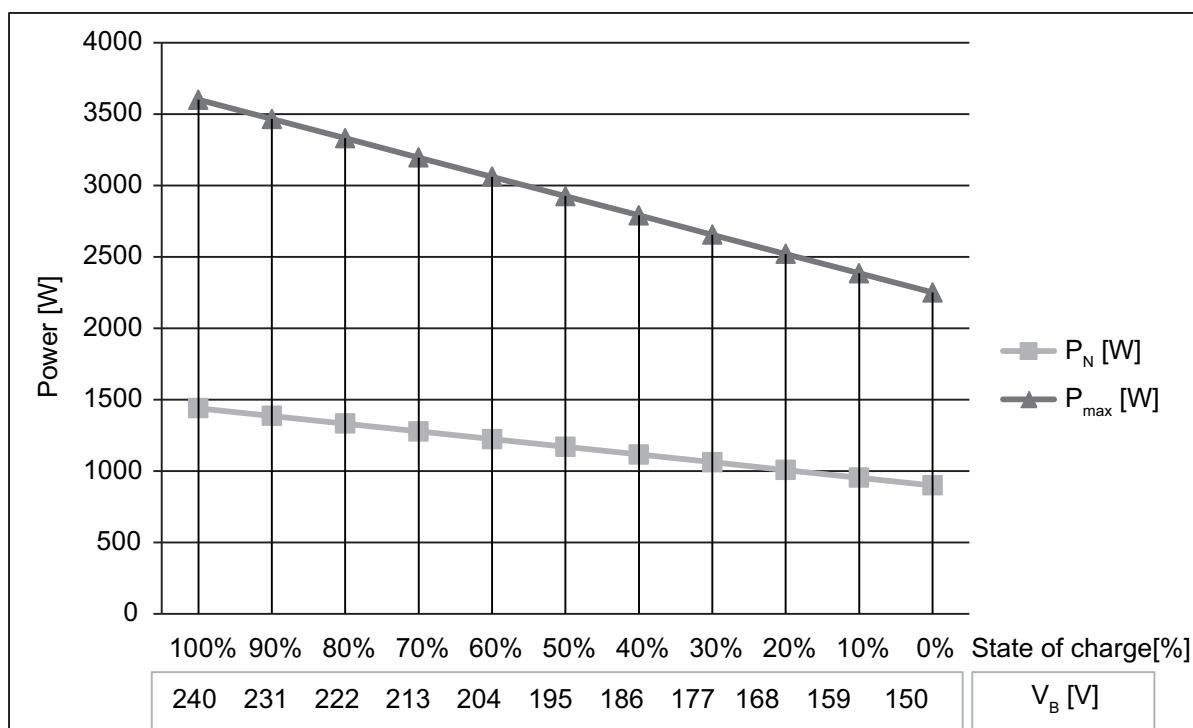
V_B Voltage storage bundle end
 P_N Nominal power
 P_{max} Peak power

$V_B = 360 - 150 \text{ V}$



18403367179

V_B Voltage storage bundle end
 P_N Nominal power
 P_{max} Peak power

$V_B = 240 - 150 \text{ V}$


18403364747

V_B Voltage storage bundle end
 P_N Nominal power
 P_{max} Peak power

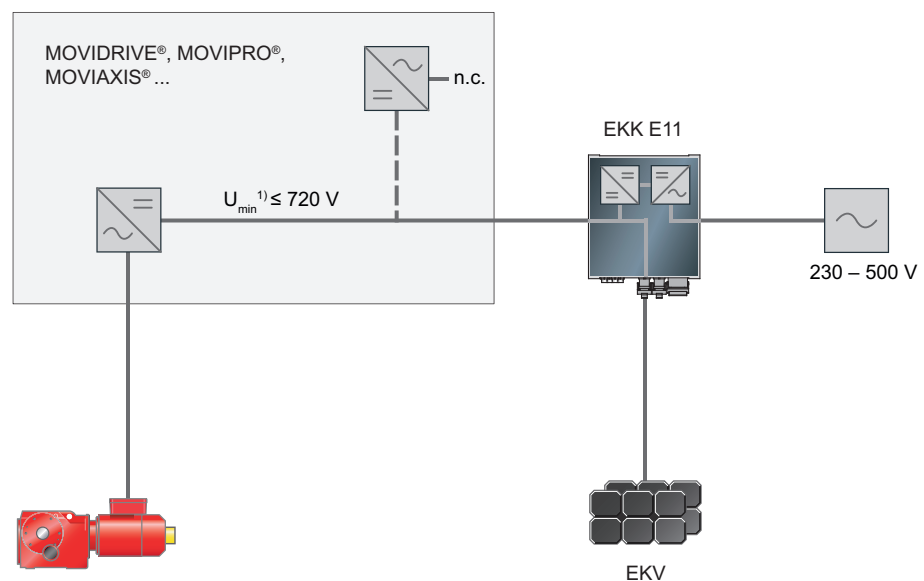
4 Power mode

4.1 Operating principle

The MOVI-DPS power interface is connect directly to the DC link of the frequency inverter and supplies the required energy from the supply system. The rectifier integrated in the frequency inverter is not connected.

Additional energy from the supply system and the MOVITRANS® is only taken if losses due to the system efficiency must be compensated. Regenerative energy is stored directly in the MOVI-DPS storage bundle. The required energy during peak load is supplied by the MOVI-DPS storage bundle. This way, energy consumption from the supply system is limited and the grid load is reduced.

The following figure shows the connection of the MOVI-DPS components in power mode:



16236219019

¹⁾ Depends on application project planning
EKK E11 MOVI-DPS power interface
EKV MOVI-DPS storage bundle

4.2 Energy flow in various operating phases

During the various operating phases, energy flows in different directions within the application. For project planning of the application, the travel cycle and the operating times must be specified.

During downward travel, all travel sections can create regenerative energy. There is a risk that the MOVI-DPS storage bundle is overcharged with regenerative energy. Take this into account during project planning of the application by dimensioning the MOVI-DPS storage bundle accordingly.

The arrows in the figures for the operating phase descriptions show the direction of the energy flow with MOVI-DPS in power mode:

- Depending on the operating phase, the MOVI-DPS storage bundle takes energy from the DC link of the MOVI-DPS power interface. If required, the MOVI-DPS storage bundle supplies the energy for the DC link.
- The supply system and the power supply with MOVITRANS® supply energy only to the DC link of the MOVI-DPS power interface.

4.2.1 Examples

The arrows have the following meaning:

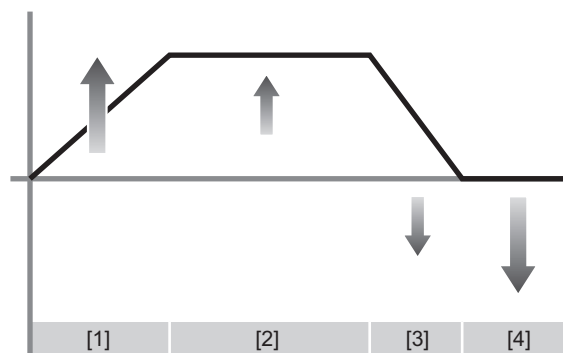


The MOVI-DPS storage bundle stores energy.



The MOVI-DPS storage bundle supplies energy to the application.

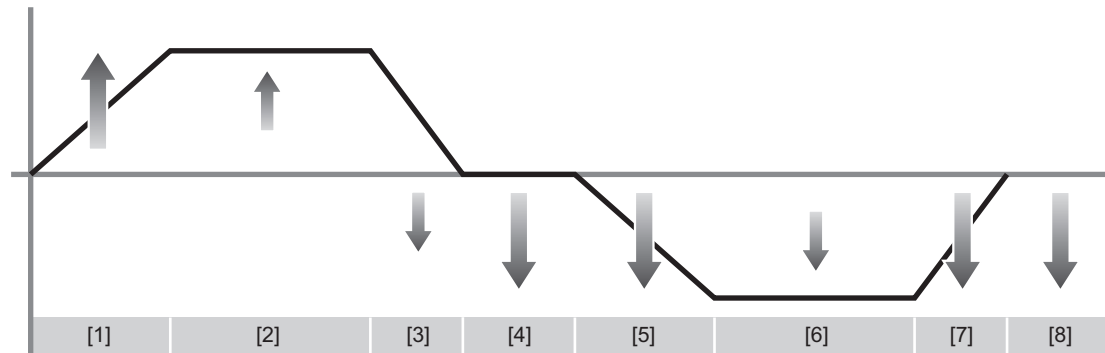
Pallet transfer shuttle



16939555979

- [1] Acceleration (→ 22)
- [2] Constant travel (→ 24)
- [3] Braking (→ 26)
- [4] Charging (wait time) (→ 27)

Lift without counterweight



16939549579

- [1] Acceleration (→ 22)
- [2] Constant travel (→ 24)
- [3] Braking (→ 26)
- [4] Charging (wait time) (→ 27)
- [5] Acceleration
- [6] Constant travel
- [7] Braking
- [8] Charging (wait time)

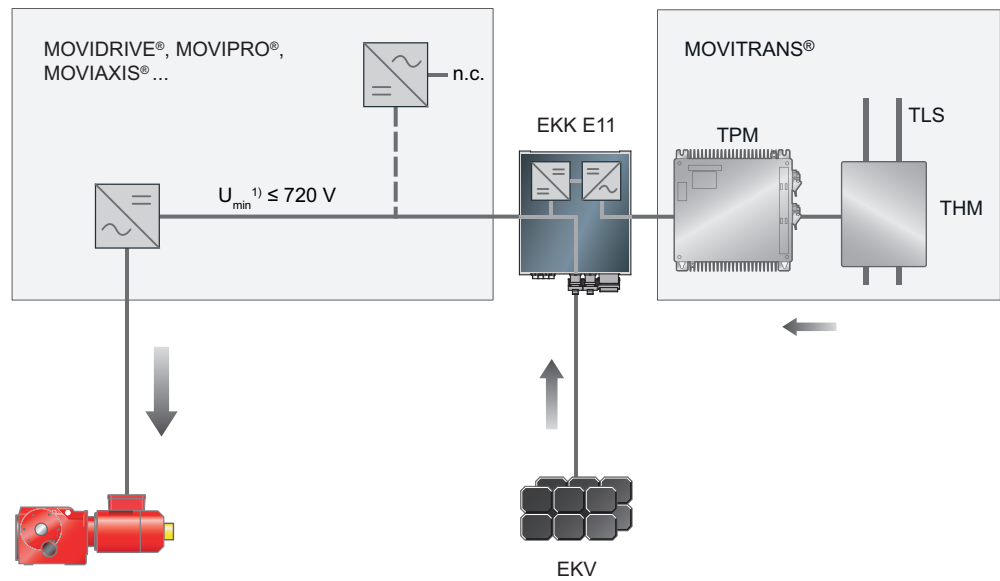
4.2.2 Operating phases

Acceleration

The supply system or MOVITRANS® supply the application with the projected nominal power. However, more power might be required in the application for short periods. This additional power is supplied by the MOVI-DPS storage bundle.

The following figures shows the energy flow for horizontal conveyor applications. As the energy flow in vertical conveyor applications depends on the application mechanics, the generally valid energy flow cannot be shown.

Pallet transfer shuttle

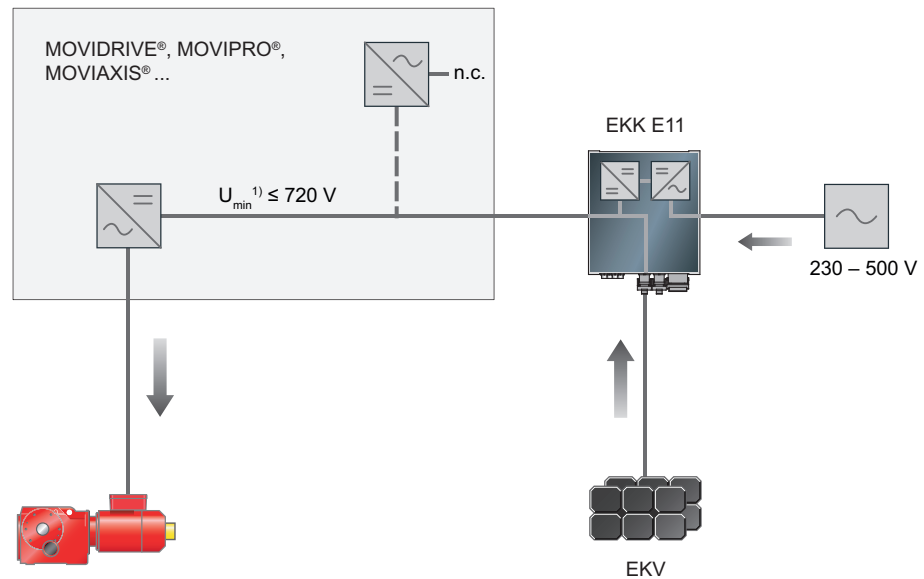


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¹⁾ Depends on application project planning

Lift without counterweight

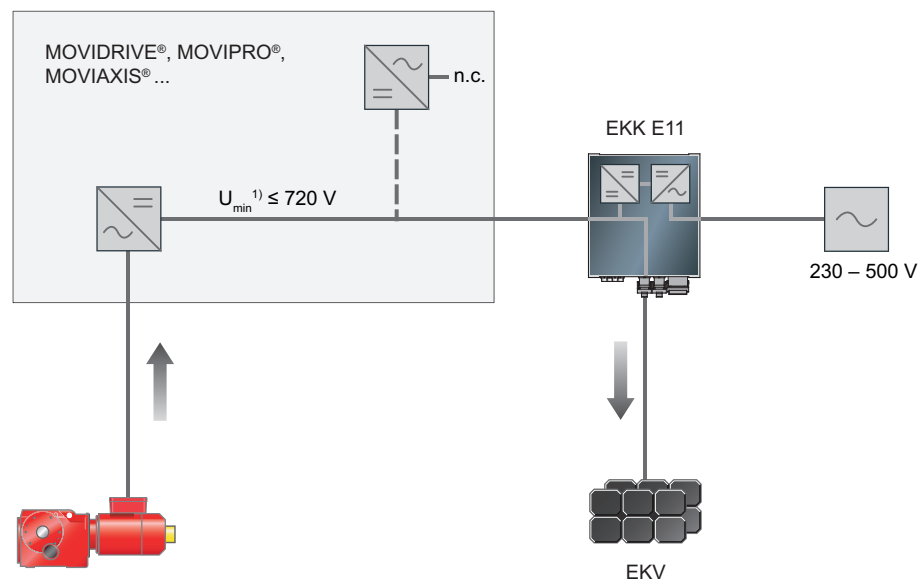
Lifting



16236189835

¹⁾ Depends on application project planning

Lowering



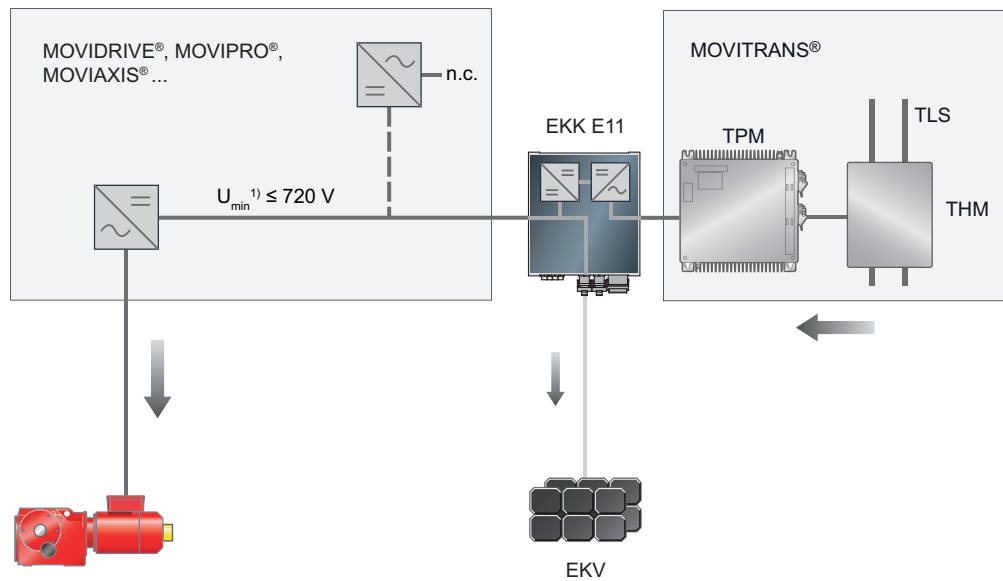
16940925323

¹⁾ Depends on application project planning

Constant travel

For most applications, the required energy can be supplied by the supply system or MOVITRANS® during constant travel. Depending on the application and project planning, the MOVI-DPS storage bundle can also be charged during constant travel. It is also possible to have the MOVI-DPS storage bundle supply part of the required energy. Your contact person at SEW-EURODRIVE (→ 68) can help you determine which procedure is best for your application.

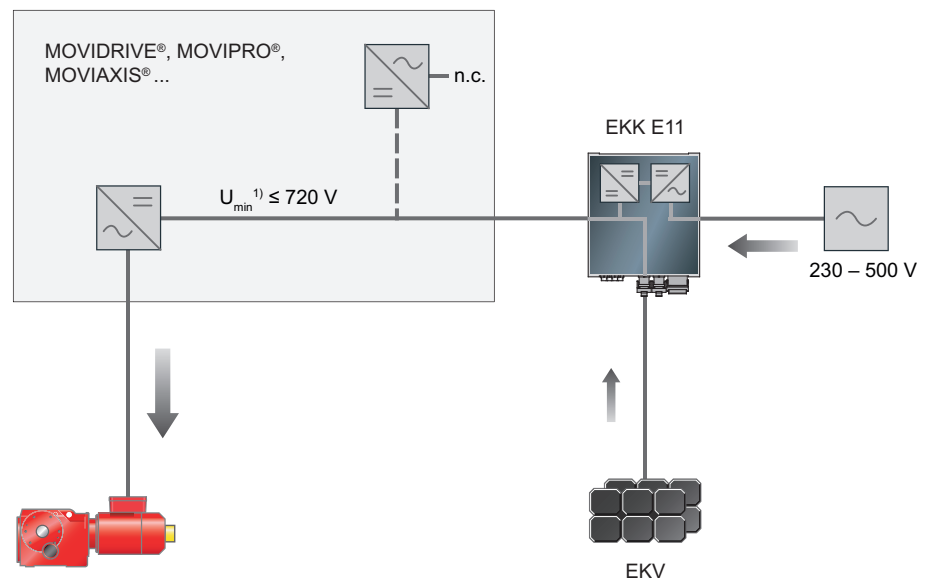
For additional information on project planning, refer to chapter "System project planning" (→ 65).

Pallet transfer shuttle

16236194699

¹⁾ Depends on application project planning

Storage/retrieval system



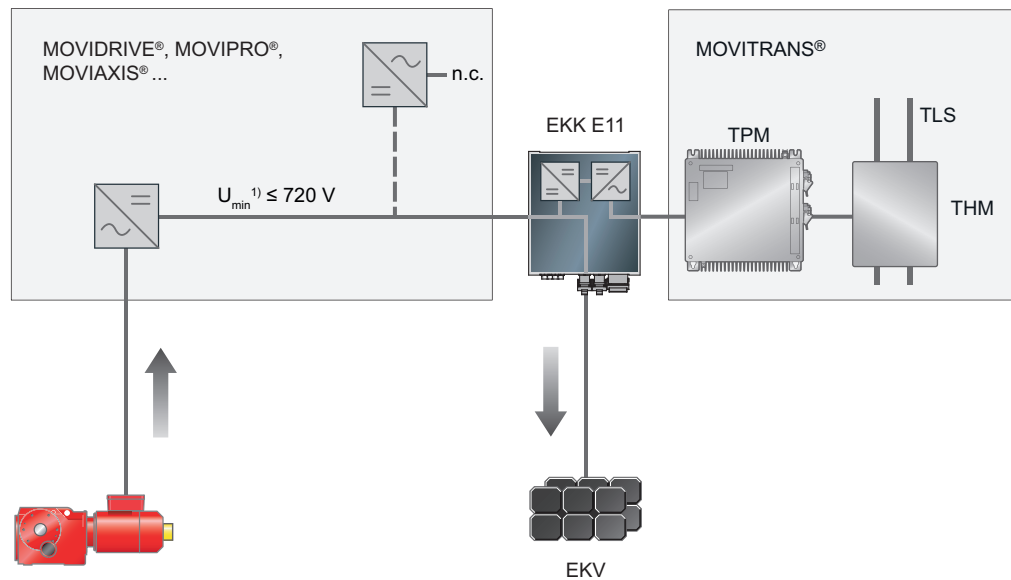
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¹⁾ Depends on application project planning

Braking

During braking, regenerative energy is created charging the MOVI-DPS storage bundle. During the next travel cycle, the MOVI-DPS storage bundle supplies the application with the stored energy.

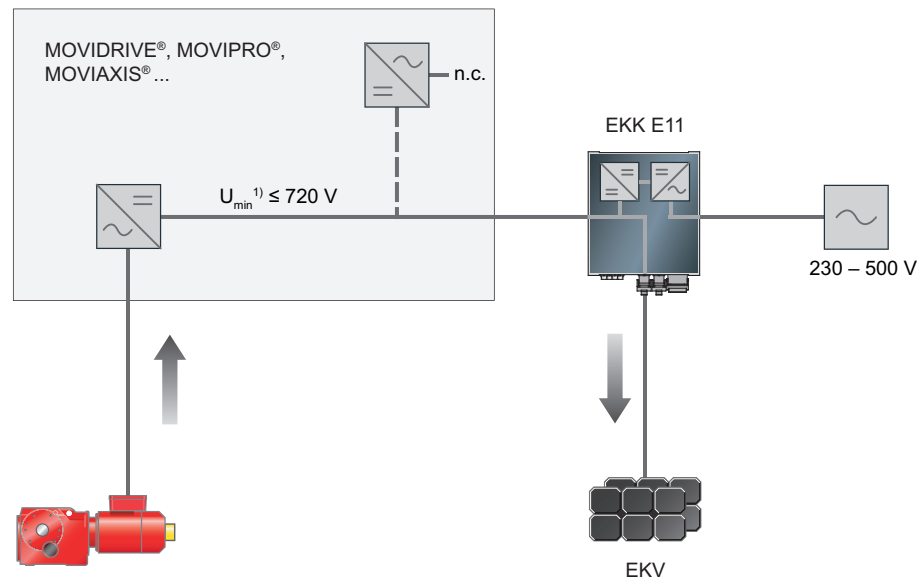
Pallet transfer shuttle



16243123211

¹⁾ Depends on application project planning

Storage/retrieval system



16243125643

¹⁾ Depends on application project planning

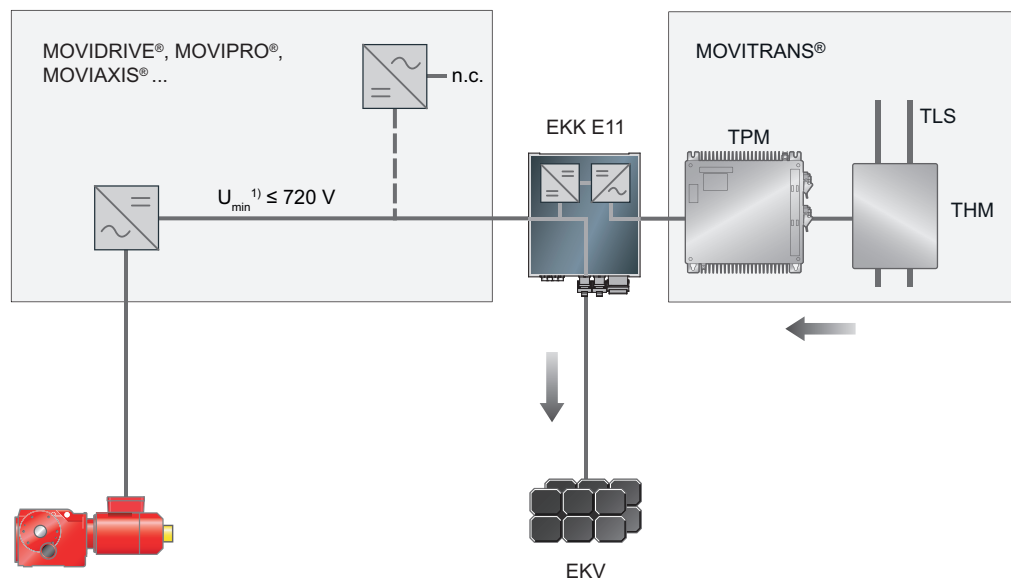
Load

During this operating phase, the MOVI-DPS storage bundle is charged to the idle state of charge required for acceleration either by the supply system or MOVITRANS®.

The idle state of charge is the state of charge to which the MOVI-DPS storage bundle is charged in a controlled manner. The idle state of charge depends on the application and is defined during project planning.

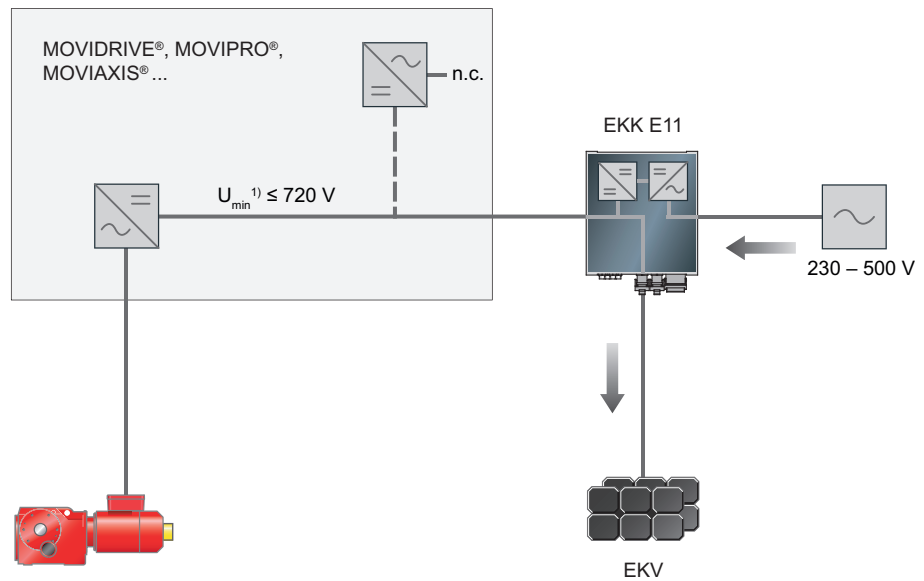
For additional information on project planning, refer to chapter "System project planning" (→ 65).

Pallet transfer shuttle



16243128587

¹⁾ Depends on application project planning

Storage/retrieval system

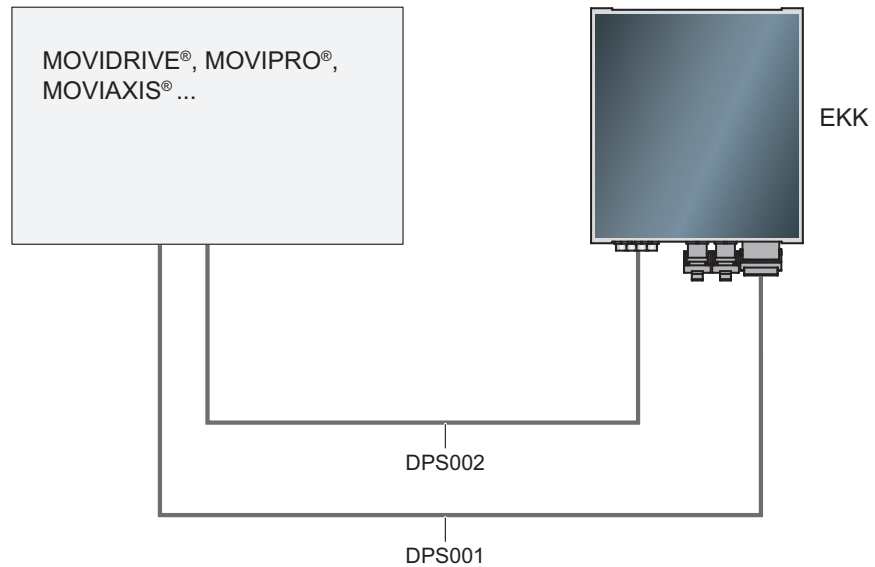
16243131019

¹⁾ Depends on application project planning

5 Technical diagram

5.1 Inverter ↔ MOVI-DPS energy and power interface

The following figure shows the connection cables between inverter and MOVI-DPS energy and power interface:

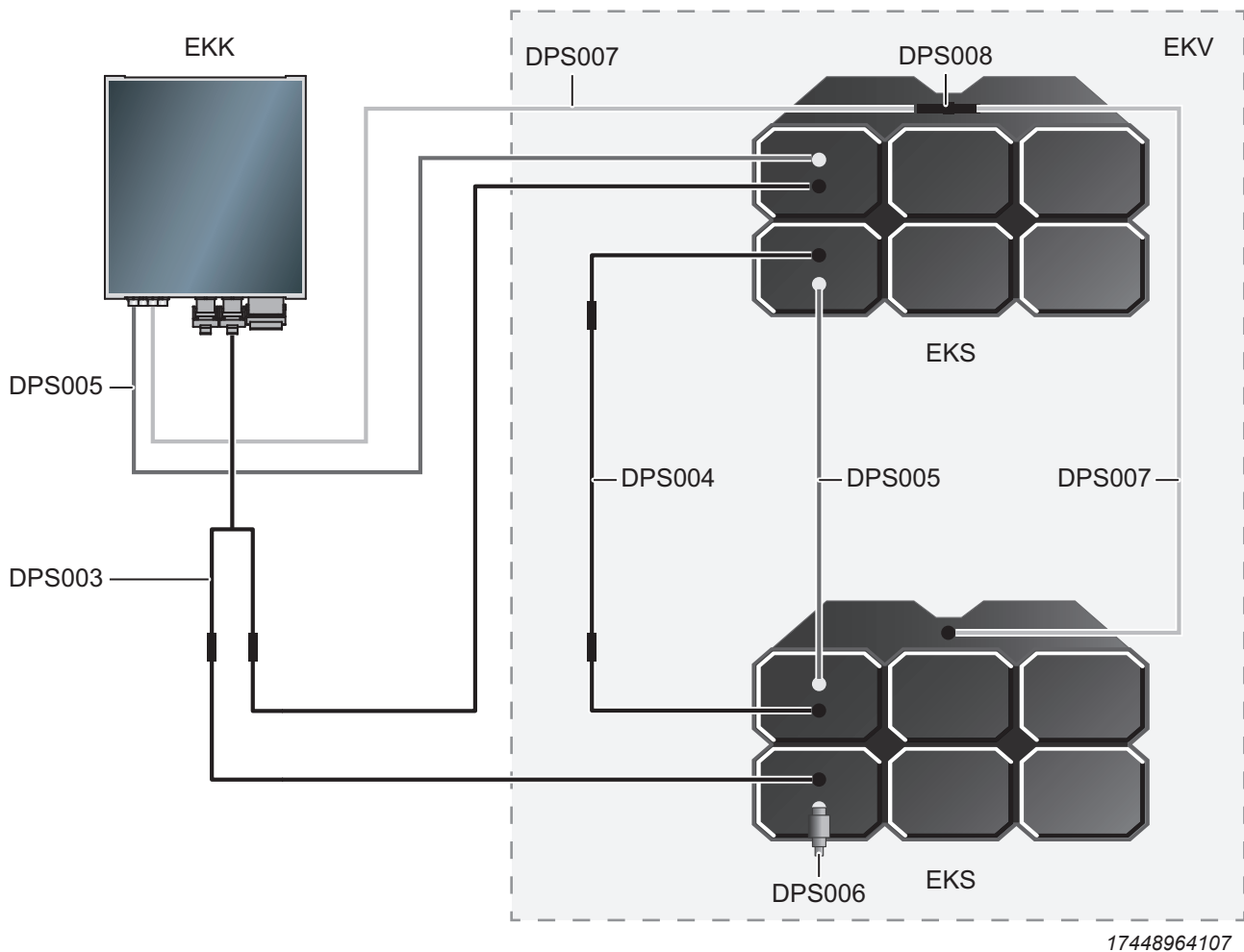


17479327499

- EKK MOVI-DPS energy and power interface
- DPS002 Connection cable for CAN bus – Input (→ 37)
Connection cable for CAN bus – Output (→ 35)
- DPS001 MOVI-DPS energy interface:
Connection cable for DC 560 V supply (→ 31)
MOVI-DPS power interface:
Connection cable for energy management (→ 33)

5.2 MOVI-DPS energy and power interface ↔ MOVI-DPS storage bundle

The following figure shows the connection cables between the individual components:



- EKK MOVI-DPS energy and power interface
- EKV MOVI-DPS storage bundle
- EKS MOVI-DPS storage unit
- DPS003 Y connection cable HAN® Q 2/0, female ↔ Multi-contact PV-KBT4/6II-UR, multi-contact PV-KST4/6II-UR (→ 33)
- DPS004 Extension cables for connection of MOVI-DPS storage units (→ 34)
- DPS005 Connection cable for monitoring the MOVI-DPS storage bundle (→ 38)
- DPS006 Jumper plug (→ 38)
- DPS007 Connection cable of fan assembly (→ 39)
- DPS008 T piece of fan assembly (→ 39)

5.3 Connection cables

INFORMATION



For more information on cable types, refer to the chapter Technical data.





Connection cables are not included in the delivery.

Prefabricated cables for connecting SEW-EURODRIVE components can be ordered. For each connection, the available prefabricated cables are listed. Specify the part number and length of the required cable in your order.

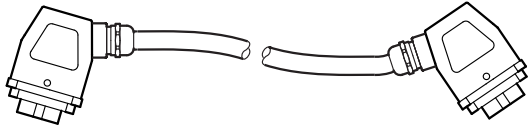

The number and design of the required connection cables depend on the device design and the components to be connected. This is why you do not need all listed cables.

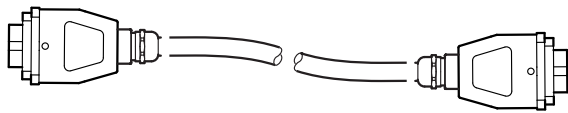
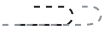
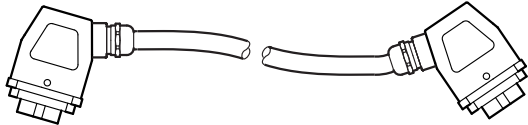

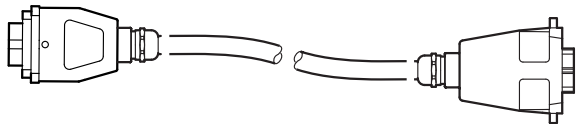

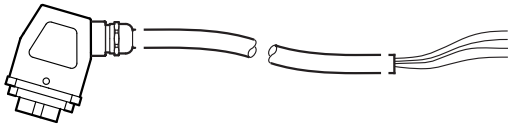

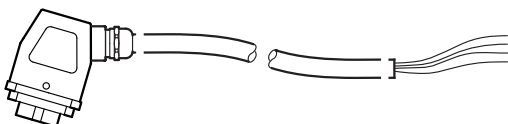
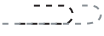
5.3.1 Cable types

The table below shows the depiction and what they mean:

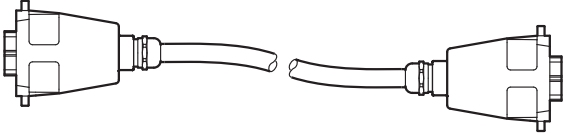

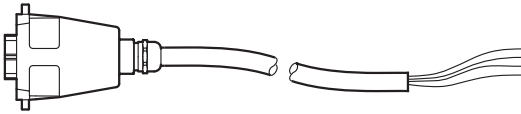

Depiction	Meaning
	Set length
	Variable length
	Suitable for cable carriers
	Not suitable for cable carriers

5.3.2 Connection cable for DC 560 V supply

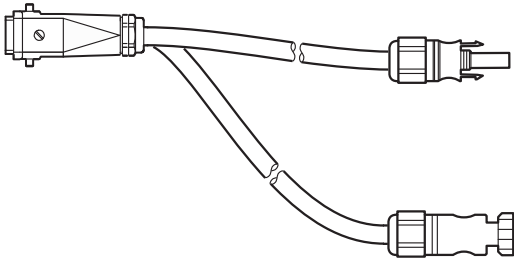

Cable	Length/installation type	Component
Part number: 18156711 Cable design: (4G6)  Han® Q 4/2, female ↔ Han® Q 4/2, female	Variable length (max. 5 m) 	MOVIPRO® PHC

Cable	Length/installation type	Component
Part number: 18189407 Cable design: (4G6)  Han® Q 4/2, female ↔ Han® Q 4/2, female	Variable length (max. 5 m) 	MOVIPRO® PHC
Part number: 18161944 Cable design: (4G6)  Han® Q4/2, female ↔ Han® Q4/2, female	Variable length (max. 5 m) 	MOVIPRO® PHC
Part number: 18166873 Cable design: (3G6)  Han® Q4/2, female ↔ Han® 10B, male-female-male	Variable length (max. 5 m) 	MOVIPRO® PHC
Part number: 18161928 Cable design: (4G6)  Han® Q4/2, female ↔ Open (conductor end sleeves)	Variable length (max. 5 m) 	—
Part number: 18158153 Cable design: (4G6)  Han® Q4/2, female ↔ Open (conductor end sleeves)	Variable length (max. 5 m) 	—

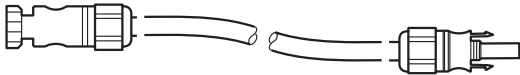

5.3.3 Connection cable for energy management

Cable	Length/installation type	Component
Part number: 18166865 Cable design: (7G6)  Han® 6B, female-female ↔ Han® 10B, male-female-male	Variable length (max. 5 m) 	MOVIPRO® PHC
Part number: 18166911 Cable design: (7G6)  Han® 6B, female-female ↔ Open with conductor end sleeves	Variable length (max. 5 m) 	—

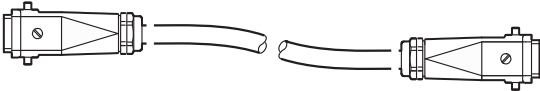

5.3.4 Connection cable for the MOVI-DPS storage bundle

Cable	Length/installation type	Component
Part number: 18147356 Cable design: (2X6.0)  HAN® Q 2/0, female ↔ Multi-contact PV-KBT4/6II-UR (at top), multi-contact PV-KST4/6II-UR (at bottom)	Variable length (max. 4.5 m) 	MOVI-DPS storage bundle





Extension cable

Cable	Length/installation type	Component
Part number: 18156703 Cable design: (1x6.0)  Multi-Contact PV-KST4/6II-UR ↔ Multi-Contact PV-KBT4/6II-UR	Variable length (max. 4 m) 	MOVI-DPS storage unit

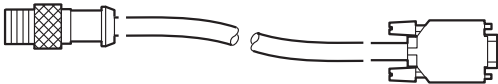

5.3.5 Connection cable for MOVI-DPS discharge unit

Cable	Length/installation type	Component
Part number: 18162037  Han® Q 2/0, male ↔ Han® Q 2/0, male	Variable length (max. 10 m) 	MOVI-DPS discharge unit size 2

5.3.6 Connection cable and component CAN bus – system bus (output)

Cable	Length/installation type	Component
<p>Standard lengths:</p> <p>1 m: Part number: 13237748 2 m: Part number: 13237756 3 m: Part number: 13286315 4 m: Part number: 13286323 5 m: Part number: 13286331 10 m: Part number: 13286358 15 m: Part number: 13286366</p> <p>Custom lengths:</p> <p>1.5 m: Part number: 13286293 2.5 m: Part number: 13286307 Cable design: ((1X2X0.2)+(1X2X0.32)+1X0.32)</p>  <p>M12, male, A-coded ↔ M12, female, A-coded</p>	<p>Fixed length</p>  <p>—</p>	
<p>Standard lengths:</p> <p>2 m: Part number: 13281364 5 m: Part number: 13281402</p> <p>Custom lengths:</p> <p>1 m: Part number: 13281348 1.5 m: Part number: 13281356 2.5 m: Part number: 13281372 3 m: Part number: 13281380 4 m: Part number: 13281399 10 m: Part number: 13281410 15 m: Part number: 13281429 Cable design: ((1X2X0.2)+(1X2X0.32)+1X0.32)</p>  <p>M12, male, A-coded ↔ Open</p>	<p>Fixed length</p>  <p>—</p>	

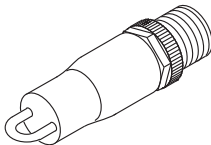
11348011/EN – 08/2016

Cable	Length/installation type	Component
Part number: 18158137 Cable design: (1X2X0.2)+(1X2X0.32)+1X0.32 <div>  </div> <p>M12 male ↔ D-Sub 9-pin female</p>	Variable length (max. 10 m) <div>  </div>	Interface adapter CAN ↔ USB (18210597)

CAN terminating resistor


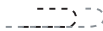


Part number: 13287036

Connection: M12







63050395932099851

5.3.7 Connection cable CAN bus – system bus (input)

Cable	Length/installation type	Component
<p>Standard lengths:</p> <p>1 m: Part number: 13237748 2 m: Part number: 13237756 3 m: Part number: 13286315 4 m: Part number: 13286323 5 m: Part number: 13286331 10 m: Part number: 13286358 15 m: Part number: 13286366</p> <p>Custom lengths:</p> <p>1.5 m: Part number: 13286293 2.5 m: Part number: 13286307 Cable design: ((1X2X0.2)+(1X2X0.32)+1X0.32)</p>  <p>M12, female, A-coded ↔ M12, male, A-coded</p>	<p>Fixed length</p> 	–
<p>Standard lengths:</p> <p>2 m: Part number 19111630 5 m: Part number 13295810</p> <p>Custom lengths:</p> <p>1 m: Part number 19111614 1.5 m: Part number 19111622 2.5 m: Part number 19111649 3 m: Part number 13301322 4 m: Part number 19111657 10 m: Part number 19129270 15 m: Part number 19129289 Cable design: ((1X2X0.2)+(1X2X0.32)+1X0.32)</p>  <p>M12, female, A-coded ↔ Open</p>	<p>Fixed length</p> 	–

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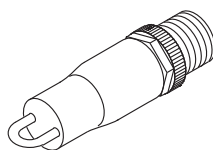
5.3.8 Connection cable for monitoring the MOVI-DPS storage bundle

Cable	Length/installation type	Component
Standard lengths: 1.5 m: Part number 19115881 3 m: Part number 18161103 Custom lengths: 1 m: Part number 18161073 2 m: Part number 18161081 4 m: Part number 18161111 5 m: Part number 18161138  M12 male ↔ M12 female	Fixed length 	MOVI-DPS storage bundle
Custom lengths: 1 m: Part number: 18161146 2 m: Part number: 18161154 3 m: Part number: 18161162 4 m: Part number: 18161170 5 m: Part number: 18161189  M12 male ↔ M12 female	Fixed length 	MOVI-DPS storage bundle

Jumper plug

Part number: 28217063



Connection: M12



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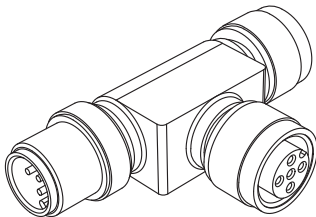
5.3.9 Connection cable and component fan subassembly

Cable	Length/installation type	Component
<div><div>1.5 m: Part number: 19166214</div><div>3 m: Part number: 19166206</div><div>Cable design: 5X0.34</div><div></div><div>M12 male ↔ M12 female</div></div>	<div>Fixed length</div> <div></div>	<div>Fan assembly of</div> <div>MOVI-DPS storage unit</div>

T piece of fan assembly

Part number: 19165048

Connection: M12



18025993099

6 Component description

6.1 MOVI-DPS energy interface and MOVI-DPS power interface

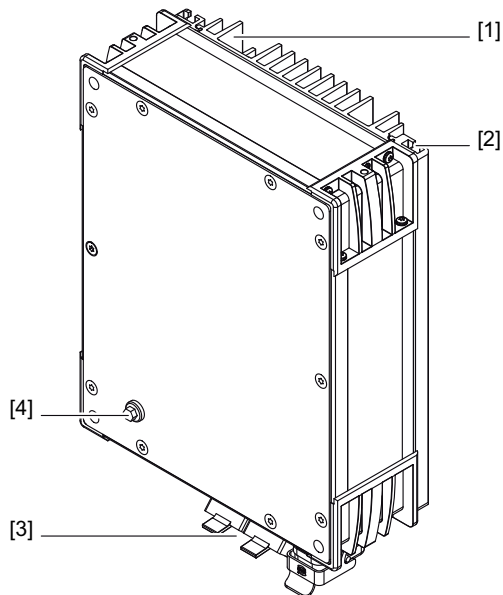
Depending on whether you operate your application in energy or power mode, you require a MOVI-DPS energy interface or a MOVI-DPS power interface.



16257842315

6.1.1 Unit overview

The following figure shows an overview of the MOVI-DPS EKK:



9250572171

- [1] Cooling fins
- [2] T-slot profile
- [3] Connection block
- [4] Status LED

6.1.2 Scope of delivery

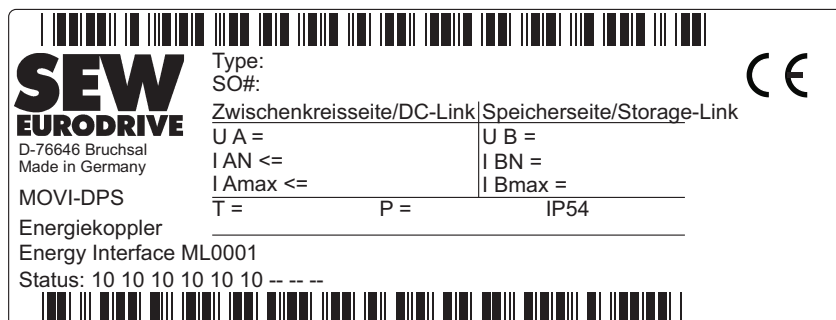
The following components are included in the delivery:

Component	Part number
MOVI-DPS energy interface EKK-A-D500-I06-500-0-0/E12	18255183
or	
MOVI-DPS power interface EKK-A-A400-I06-500-0-0/E11	18258891
Protective covers for all plug connectors	-
Grounding kit	12704628

6.1.3 Nameplates

MOVI-DPS energy interface

The nameplate provides important information about the MOVI-DPS energy interface. The following figure shows an example of a nameplate:





9441232523

Value		Specification
	Type	Type designation
	SO#	Production number
	P#	Part number
DC link end	V A	Voltage
	I AN	Nominal current
	I Amax	Maximum current
Storage bundle end	V B	Voltage
	I BN	Nominal current
	I Bmax	Peak current
	T	Ambient temperature
	P	Rated power
	IP	Degree of protection

MOVI-DPS power interface

The nameplate provides important information about the MOVI-DPS power interface. The following figure shows an example of a nameplate:

		
SEW EURODRIVE D-76646 Bruchsal Made in Germany MOVI-DPS Leistungskoppler Power Interface ML0001 Status: 10 10 10 10 10 10 -- -- --	Type: SO#: Eingang/Input U = I = f = T =	

13952137995

Value		Specification
Type		Type designation
SO#		Production number
P#		Part number
Input	V	Nominal voltage
	I	Nominal current
	f	Frequency
DC link end	V	Nominal voltage
	I N	Nominal current
	I max	Peak current
	T	Ambient temperature
	P	Rated power
	IP	Degree of protection

6.1.4 Type designation

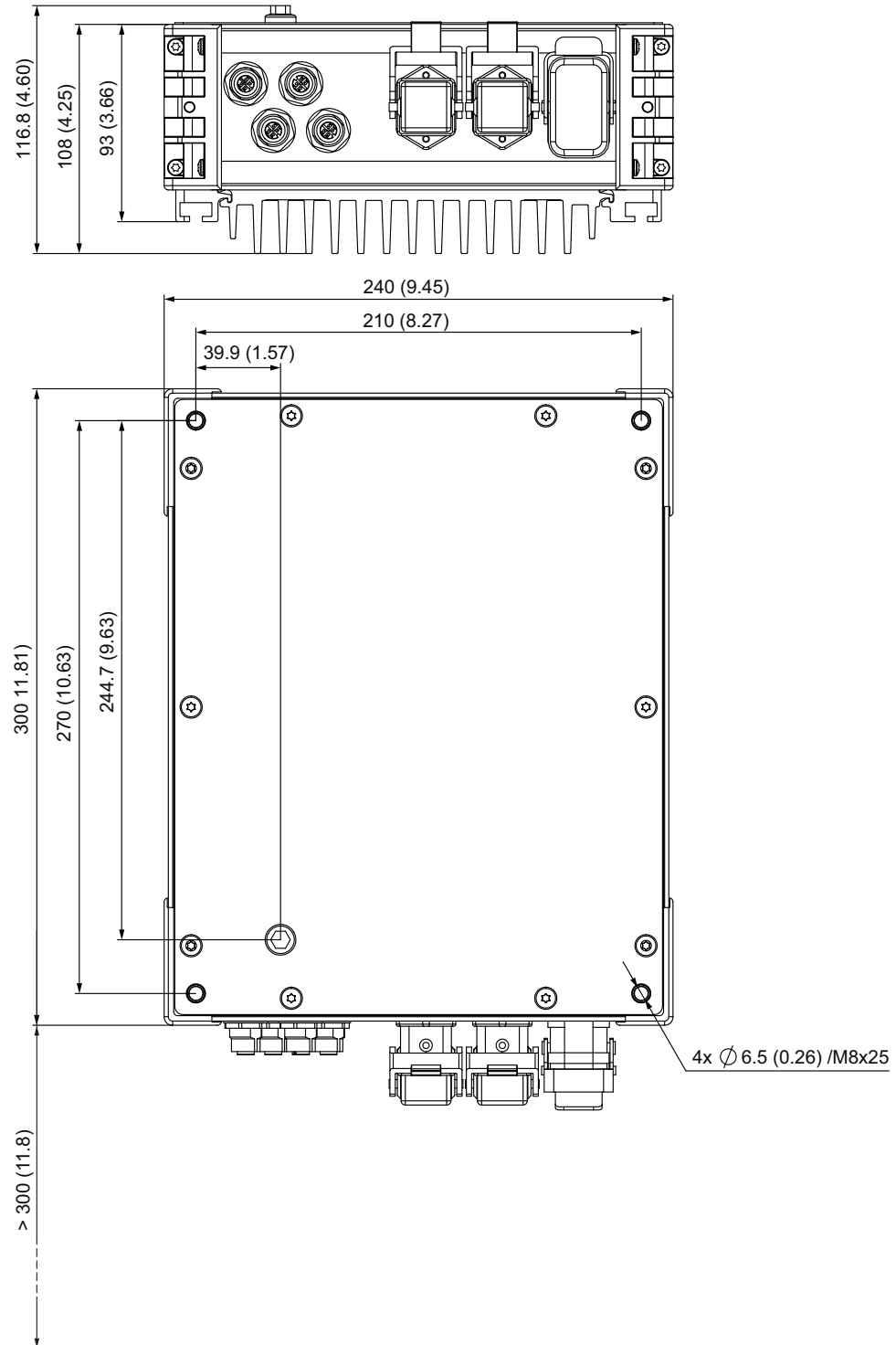
The following device data can be derived from the type designation of the MOVI-DPS energy and power interfaces EKK-A-....-I06-500-0-0/E...:

EKK-A	MOVI-DPS energy and power interface
-	
....	Supply voltage A400 = AC 400 V D500 = DC 500 V
-	
I06	Nominal current I06 = 6 A
-	
500	Voltage energy storage bundle in V
-	
0	Option: 0 = Temperature sensor bus
-	
0/E..	Energy management: 11 = Power mode 12 = Energy mode

6.1.5 Dimension drawings

MOVI-DPS energy interface

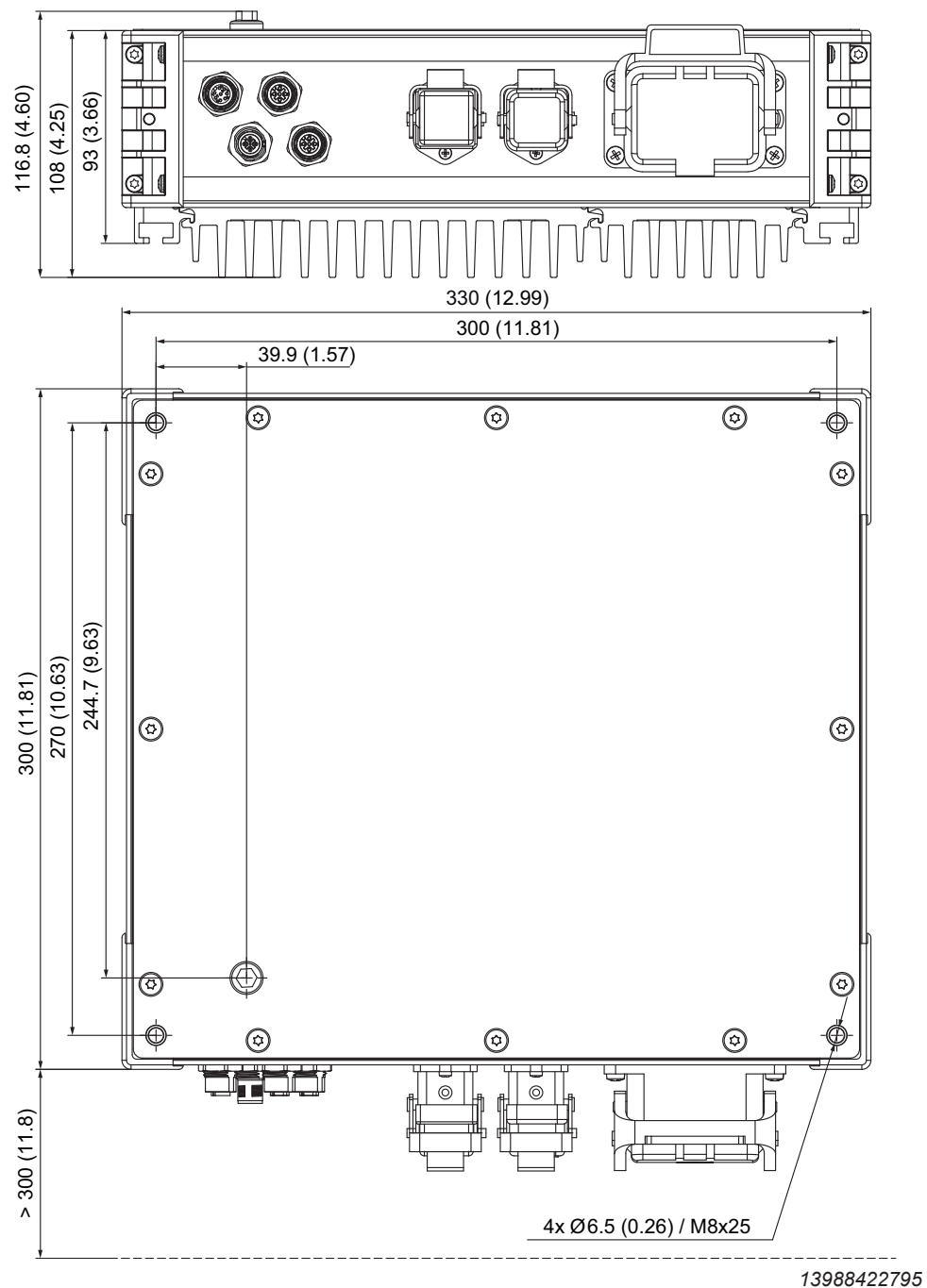
The dimension drawing shows the mechanical dimensions of the MOVI-DPS energy interface in mm (in):



9007208467152779

MOVI-DPS power interface

The dimension drawing shows the mechanical dimensions of the MOVI-DPS energy interface in mm (in):

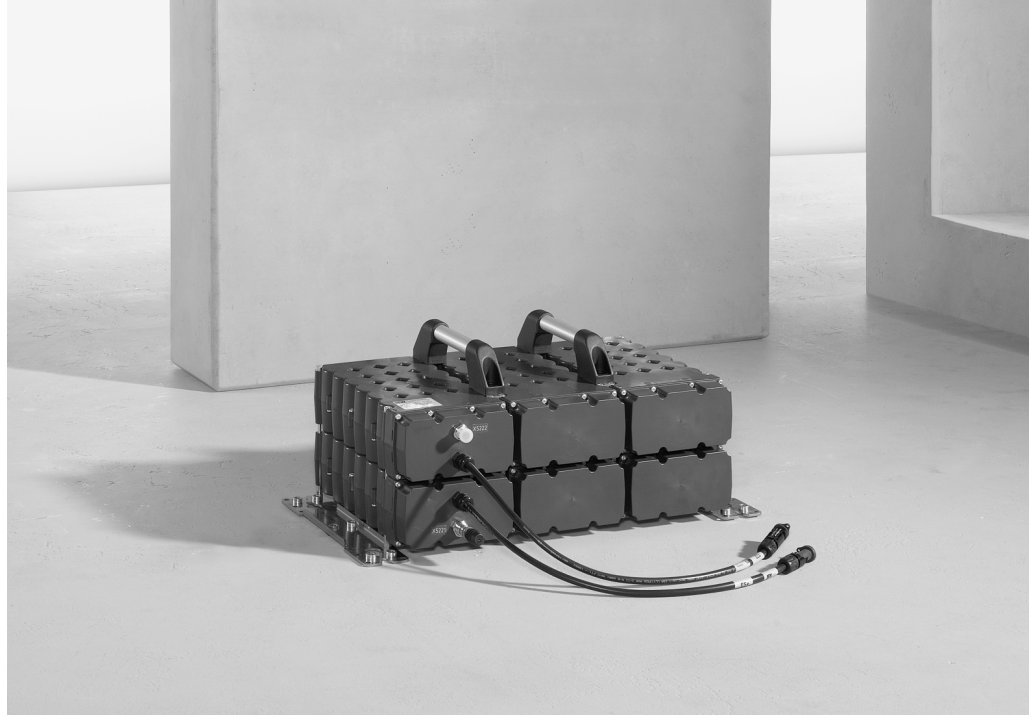


6.2 MOVIDPS storage unit and storage bundle

The MOVI-DPS storage unit stores energy and supplies the energy to the application if required. The MOVI-DPS storage unit is scalable and can consist of a number of energy modules.

Several MOVI-DPS storage units are combined to one MOVI-DPS storage bundle. The MOVI-DPS storage bundle is connected directly to the MOVI-DPS energy or power interface.

6

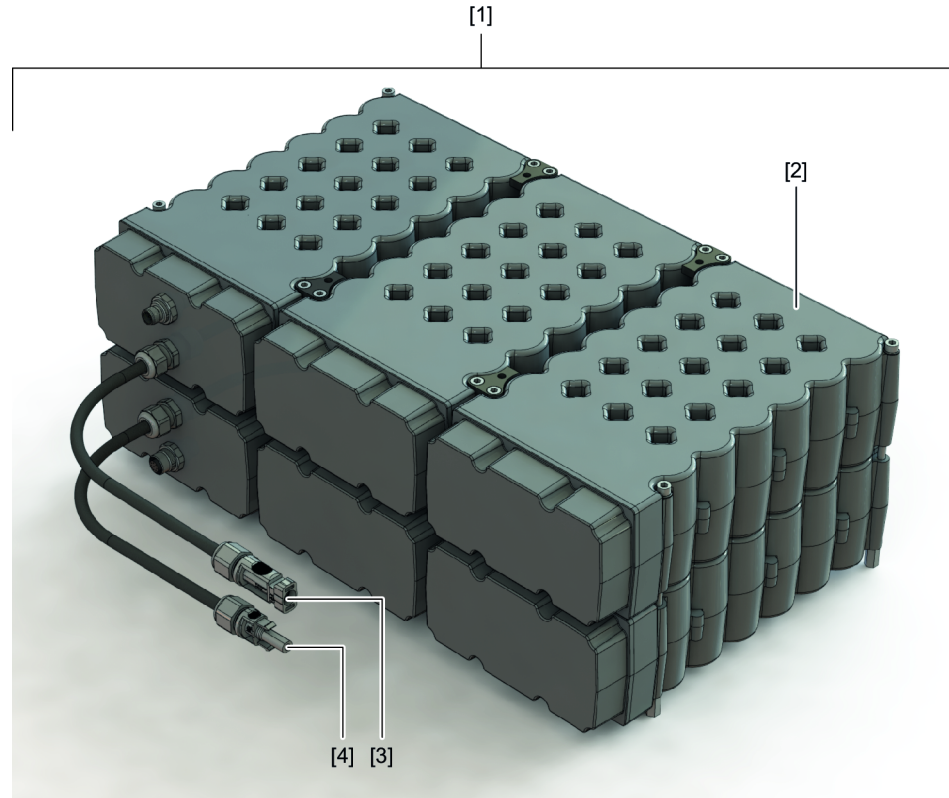


9007212062147723

6.2.1 MOVI-DPS storage unit

A MOVI-DPS storage unit consists of a varying number of energy modules.

The following figure shows an example of a MOVI-DPS storage unit structure with 6 energy modules (3 × 2):



27021604741996171

[1] MOVI-DPS storage unit

[2] Energy module (number depends on MOVI-DPS storage unit)

[3] Connection cable for ES– with Multi-Contact PV-KST4/6II-UR plug connector

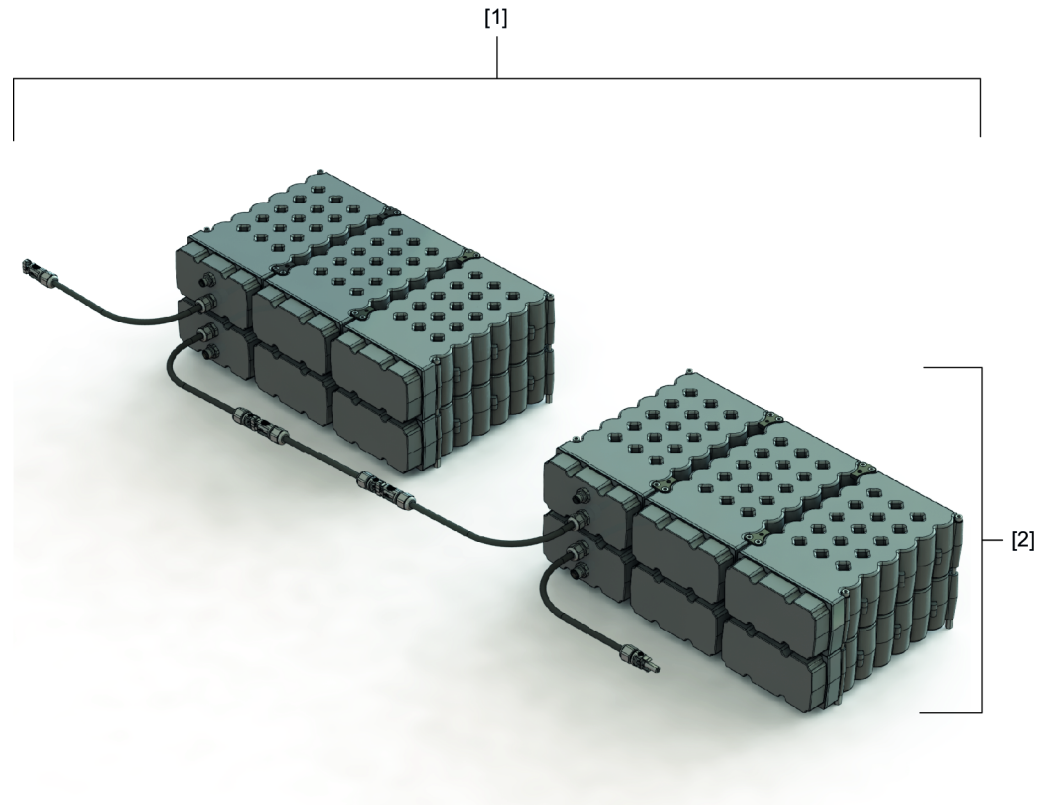
[4] Connection cable for ES+ with Multi-Contact PV-KBT4/6II-UR plug connector

6.2.2 MOVI-DPS storage bundle

A MOVI-DPS storage bundle consists of a variable number of MOVI-DPS storage units.

Combine only MOVI-DPS storage units with the same production number to one MOVI-DPS storage bundle.

The following figure shows a MOVI-DPS storage bundle with 2 MOVI-DPS storage units:



16949739019

- [1] MOVI-DPS storage bundle
- [2] MOVI-DPS storage unit

6.2.3 Type designation of MOVI-DPS storage units

The type designation of the MOVI-DPS storage unit EKS...A-.....M...S...-00 comprises the following characteristic unit data:

EKS...A	MOVI-DPS storage unit
-..	Nominal voltage: Value × 10 V
.	Connection: P = parallel connection S = series connection
...	Nominal capacitance per cell 350 = 350 F (standard) 100 = 100 F (consult SEW-EURODRIVE) 25 = 25 F (consult SEW-EURODRIVE)
M	Energy module
.	Number energy storage modules at x axis (maximum 4)
.	Number energy storage modules at y axis (maximum 3)
S	Cell monitoring = standard
.	Waste heat: P = passive A = active, with fan assembly (only for 350 F and number of energy storage modules on x axis = 3)
...-00	Connection type

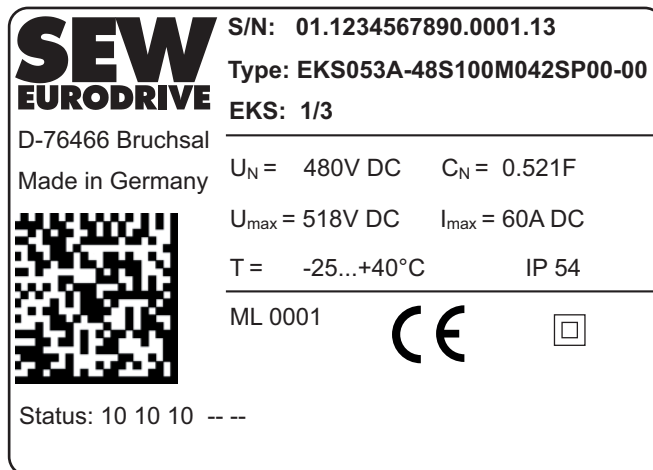
6.2.4 Type designation MOVI-DPS storage bundle

The type designation of the MOVI-DPS storage bundle EKV...A-..S...-00 comprises the following characteristic device data:

EKV...A	MOVI-DPS storage bundle
-	
..	Nominal voltage: Value × 10 V
.	Connection: P = parallel connection S = series connection
...-00	Nominal capacitance per cell in F

6.2.5 Nameplate

Each MOVI-DPS storage unit has a nameplate that provides important information. The following figure shows an example of a nameplate with the data of a MOVI-DPS storage unit:



9007206232519051

S/N	Production number
Type	Type designation
EKS	Number of MOVI-DPS storage units in a MOVI-DPS storage bundle (example: 1/3 = MOVI-DPS storage unit 1 of 3)
V_N	Nominal voltage
C_N	Nominal capacitance
U_{max}	Maximum operating voltage
I_{max}	Peak current for 1 s
T	Permitted ambient temperature

6.2.6 Scope of delivery

The following components are included in the delivery of the MOVI-DPS storage bundle:

Component
MOVI-DPS storage unit EKS...A-.....M...S...-00 including the following permanently installed connection cables, length 0.5 m: <ul style="list-style-type: none"> For ES– with plug connector Multi-Contact PV-KST4/6II-UR For ES+ with plug connector Multi-Contact PV-KBT4/6II-UR Optional: Pre-assembled fan assembly for MOVI-DPS storage unit EKS...A-... 350M3.SA ...-00
Jumper plug (part number 28217063)
Protective covers for all signal plug connectors

6.2.7 Fan assembly

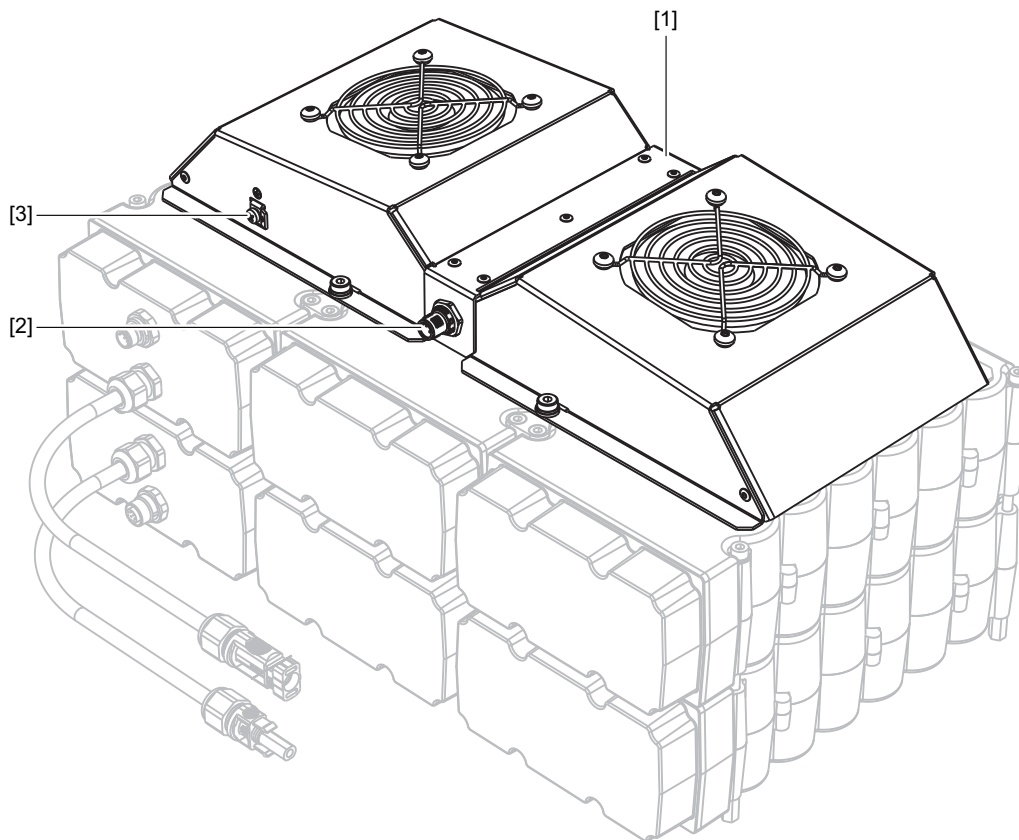
The energy storage modules of the MOVI-DPS heat up at high power consumption. This reduces the service life of the MOVI-DPS storage unit. The use of a fan assembly reduces the operating temperature of the MOVI-DPS storage unit and thus reduces heating of the individual energy storage modules. This increases the service life of the MOVI-DPS storage unit.

The fan assembly consists of 2 fans. The fan assembly is always delivered mounted onto the MOVI-DPS storage unit.

INFORMATION

No handles can be used for MOVI-DPS storage units with fan assembly.

The following figure shows the fan assembly mounted on a MOVI-DPS storage unit:



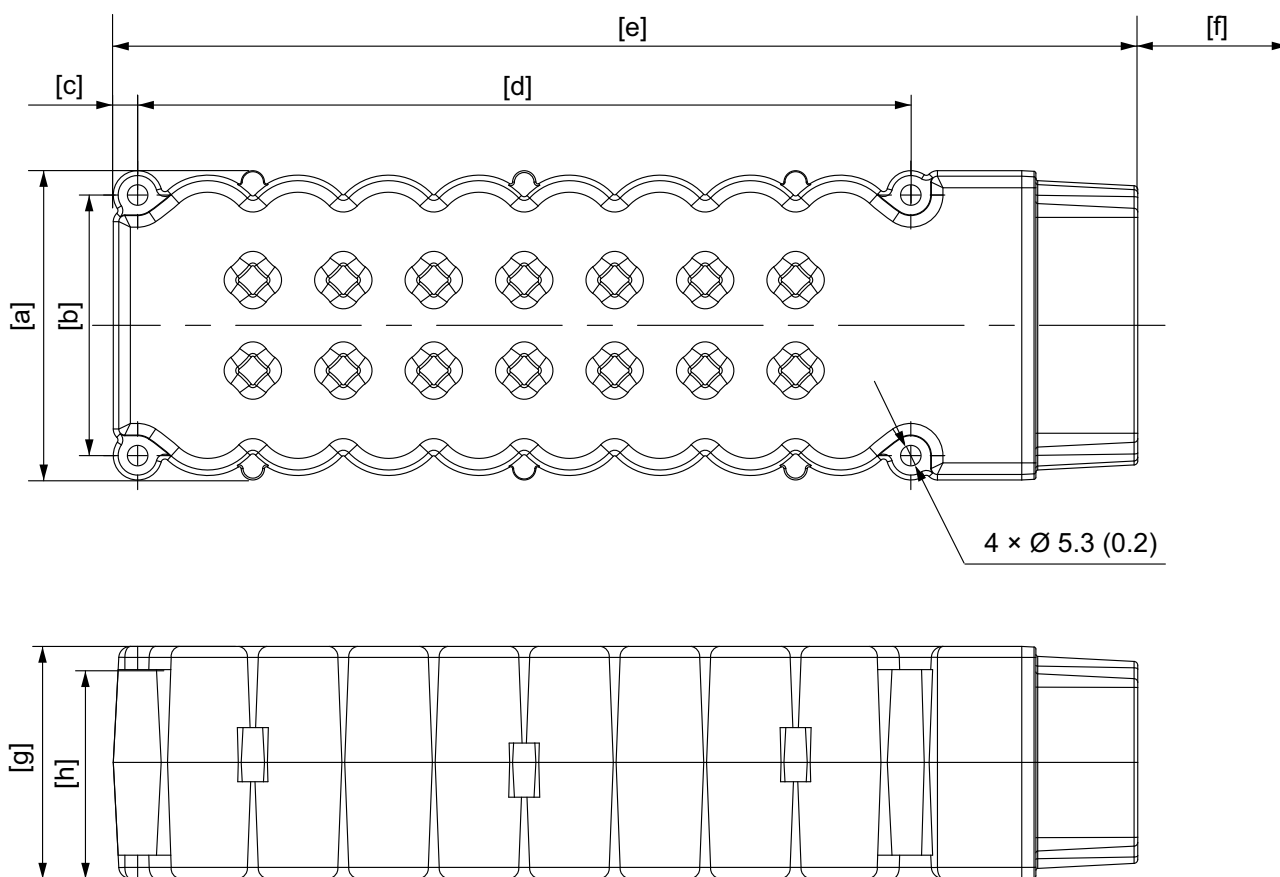
18166647307

- [1] Fan subassembly
- [2] Connection for MOVI-DPS energy and power interface:
X5151 DC 24 V input – fan
- [3] Connection point for grounding or equipotential bonding

6.2.8 Dimension drawings

Dimension drawing energy module

The dimension drawing shows the mechanical dimensions of the energy module in mm (in). The dimensions depend on the variant.

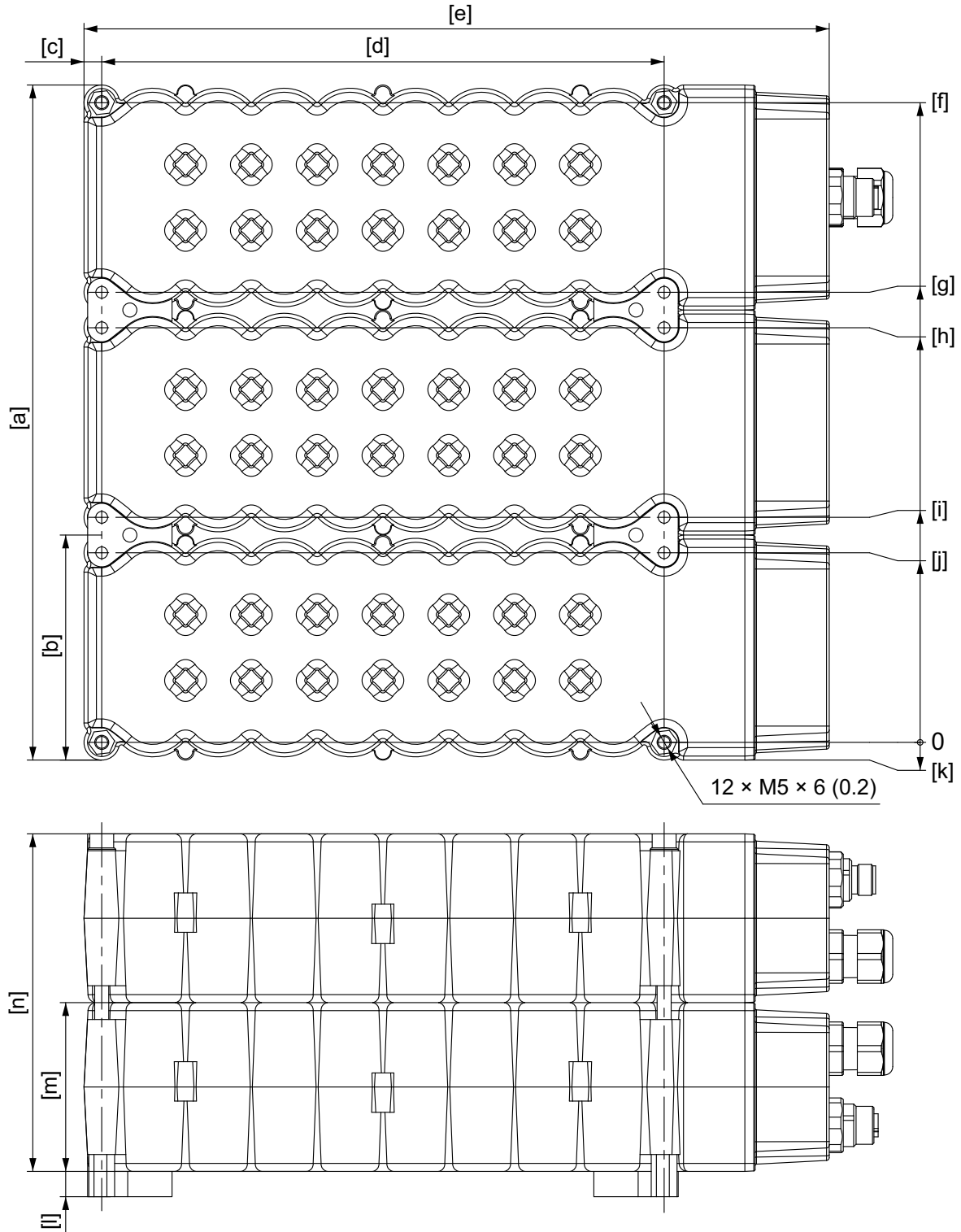


9445609227

Energy module	Value [mm (in)]		
Dimension	25 F	100 F	350 F
a	80 (3.1)	80 (3.1)	150 (5.91)
b	67.4 (2.65)	67.4 (2.65)	136 (5.35)
c	6.3 (0.3)	6.3 (0.3)	7 (0.3)
d	222 (8.66)	200 (7.87)	208 (8.19)
e	280 (11.4)	265 (10.4)	270 (10.6)
f	100 (3.94)	100 (3.94)	100 (3.94)
g	42 (1.7)	60 (2.4)	80 (3.1)
h	36 (1.4)	54 (2.1)	74 (2.9)

Dimension drawing of MOVI-DPS storage unit

The dimension drawing shows an example of the mechanical dimensions of a MOVI-DPS storage unit with 6 energy modules (3 × 2) in mm (in). The dimensions depend on the number and variant of the energy modules.



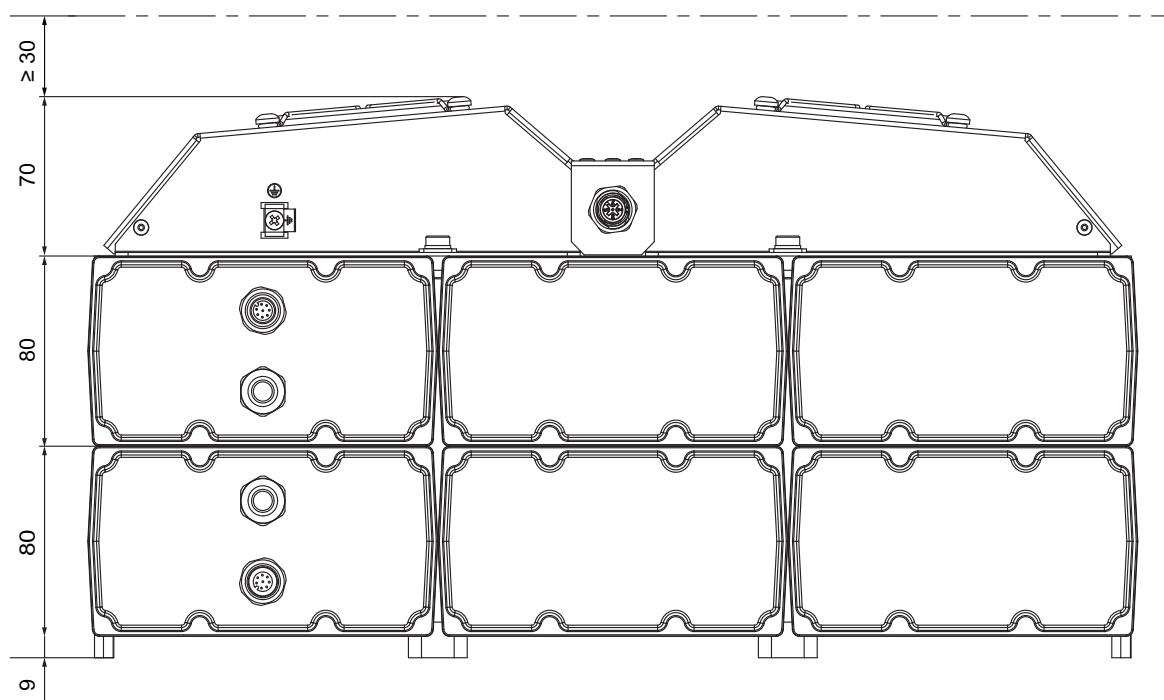
9457059467

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Dimension	Value [mm (in)]		
	EKS...A--S025M032SP--00 EKS...A--P025M032SP--00	EKS...A--S100M032SP--00 EKS...A--P100M032SP--00	EKS...A--S350M032SP--00 EKS...A--P350M032SP--00
a	240 (= 3 × 80) (9.45 (= 3 × 3.1))	240 (= 3 × 80) (9.45 (= 3 × 3.1))	450 (= 3 × 150) (17.7 (= 3 × 5.91))
b	80 (3.1)	80 (3.1)	150 (5.91)
c	6.3 (0.3)	6.3 (0.3)	7 (0.3)
d	222 (8.66)	200 (7.87)	208 (8.19)
e	280 (11.4)	265 (10.4)	270 (10.6)
f	227.4 (8.95)	227.4 (8.95)	436 (17.2)
g	160 (6.2)	160 (6.2)	300 (11.8)
h	147.4 (5.8)	147.4 (5.8)	286 (11.3)
i	80 (3.1)	80 (3.1)	150 (5.91)
j	67.4 (2.65)	67.4 (2.65)	136 (5.35)
k	6.3 (0.3)	6.3 (0.3)	7 (0.3)
l	9 (0.4)	9 (0.4)	9 (0.4)
m	42 (1.7)	60 (2.4)	80 (3.1)
n	84 (= 2 × 42) (3.4 (= 2 × 1.7))	120 (= 2 × 60) (4.8 (= 2 × 2.4))	160 (= 2 × 80) (6.2 (= 2 × 3.1))

Dimension drawing – Fan assembly

The dimension drawing shows the mechanical dimensions of a MOVI-DPS storage unit with mounted fan assembly in mm:



18206117259

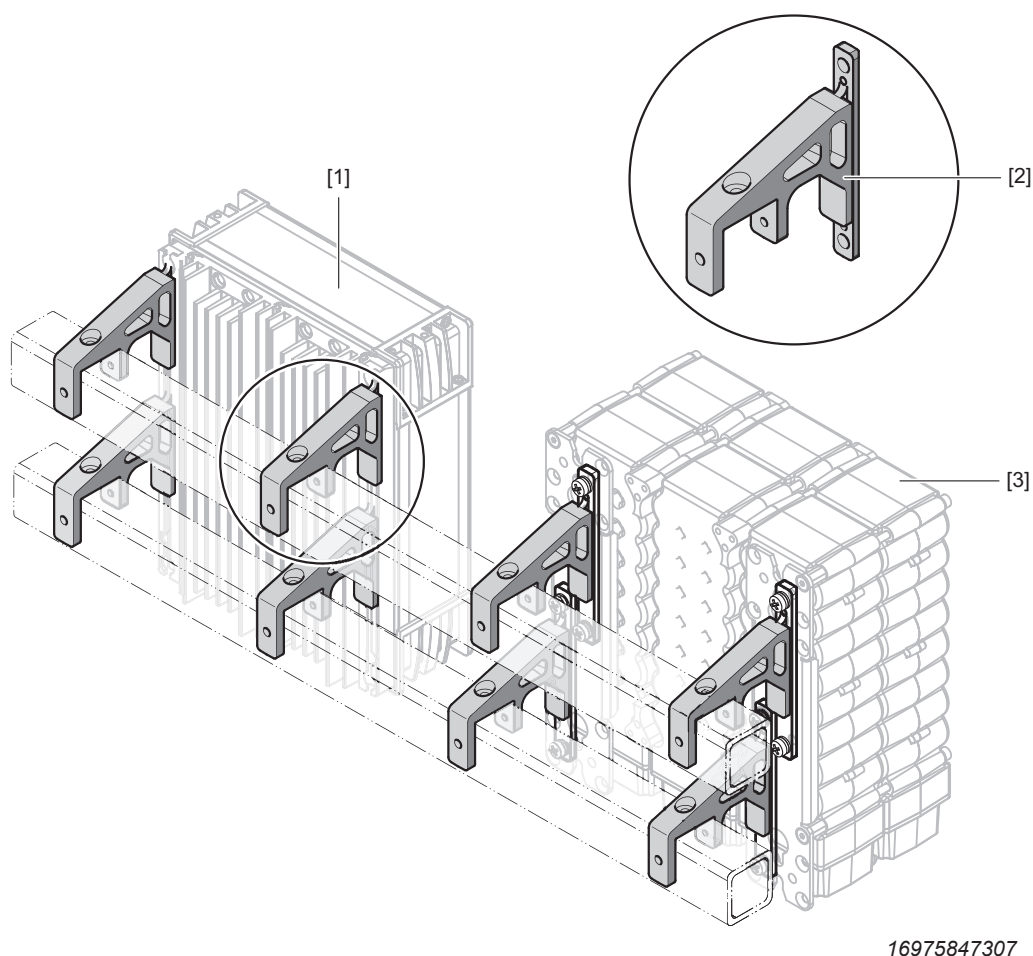
7 Accessories

The following accessories are available for MOVI-DPS:

	Part number
Mounting bracket kit	18157890
Fastening kit	18157882
Handle 180	18157904
MOVI-DPS discharge unit size 1	13574949
MOVI-DPS discharge unit size 2	13574930
PC CAN interface adapter	18210597
Note that the connection cable M12 ↔ D-sub (part number 18158137) must be order separately.	

7.1 Mounting brackets for mounting to square pipes or bars

Use the mounting brackets to safely and simply attach the MOVI-DPS energy and power interface and the MOVI-DPS storage unit to square pipes or bars:



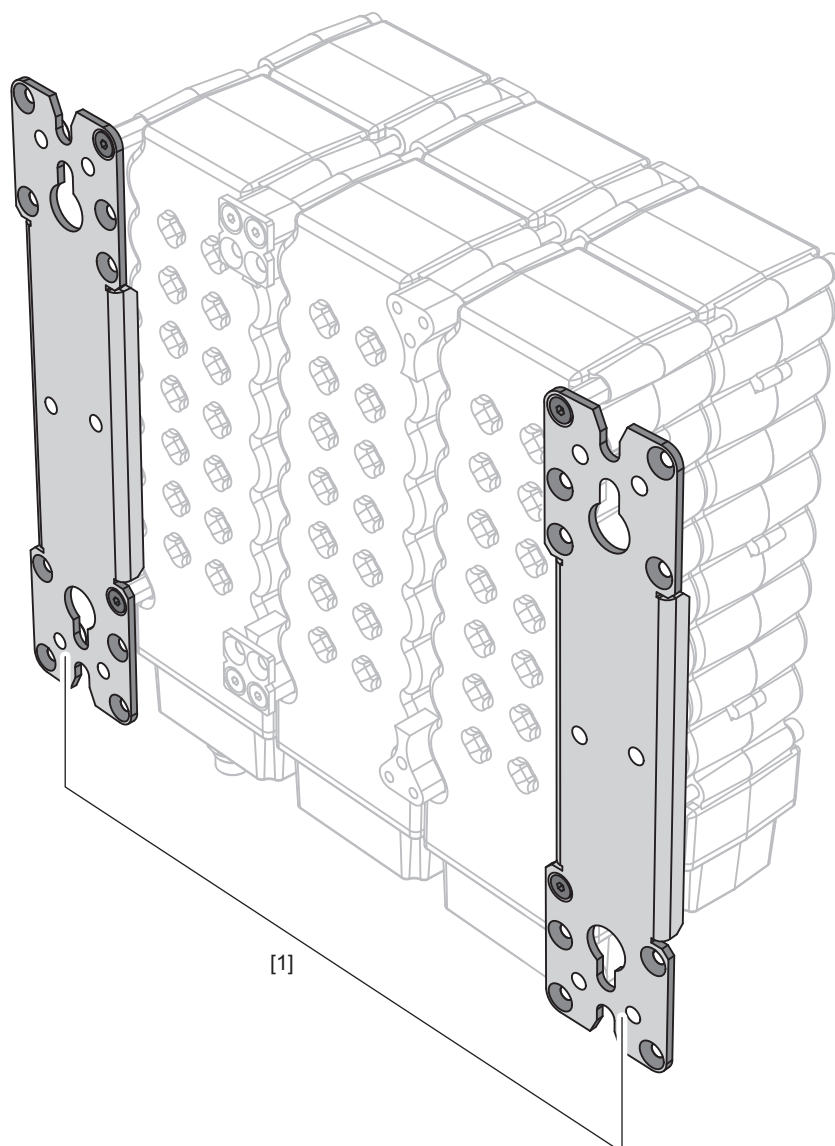
- [1] MOVI-DPS energy and power interface
- [2] Mounting brackets
- [3] MOVI-DPS storage unit

	Mounting brackets	Part number
MOVI-DPS energy and power interface	Mounting bracket kit, large (4 pieces)	12708305
MOVI-DPS storage unit	Mounting bracket set (4 mounting bracket, 2 retaining plates)	18157890

7.2 Retaining plates for surface mounting

7

Use the retaining plates to safely and simply attach the MOVI-DPS energy and power interface and the MOVI-DPS storage unit to surfaces:



[1]

18150197643

[1] Retaining plates

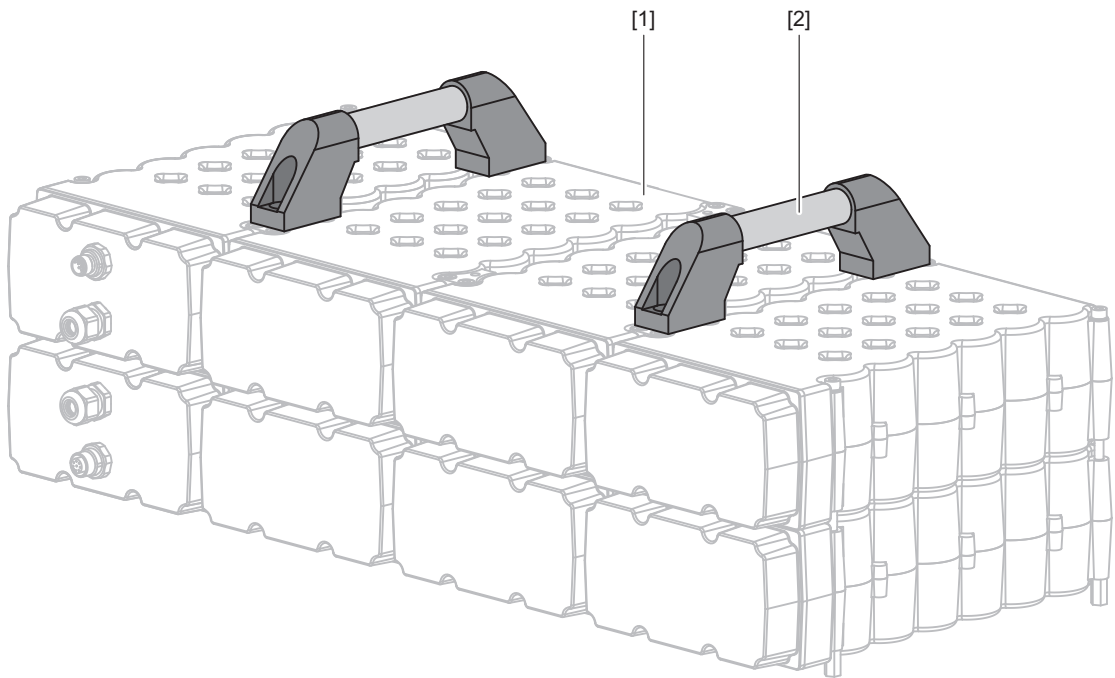
7.3 Handles

INFORMATION



No handles can be used for MOVI-DPS storage units with fan assembly.

For easier handling, the MOVI-DPS storage units can be equipped with handles.



17118124043

- [1] MOVI-DPS storage unit
- [2] Handle

Handle	Part number
1 pieces with 2 retaining screws	18157904

7.4 MOVI-DPS discharge unit

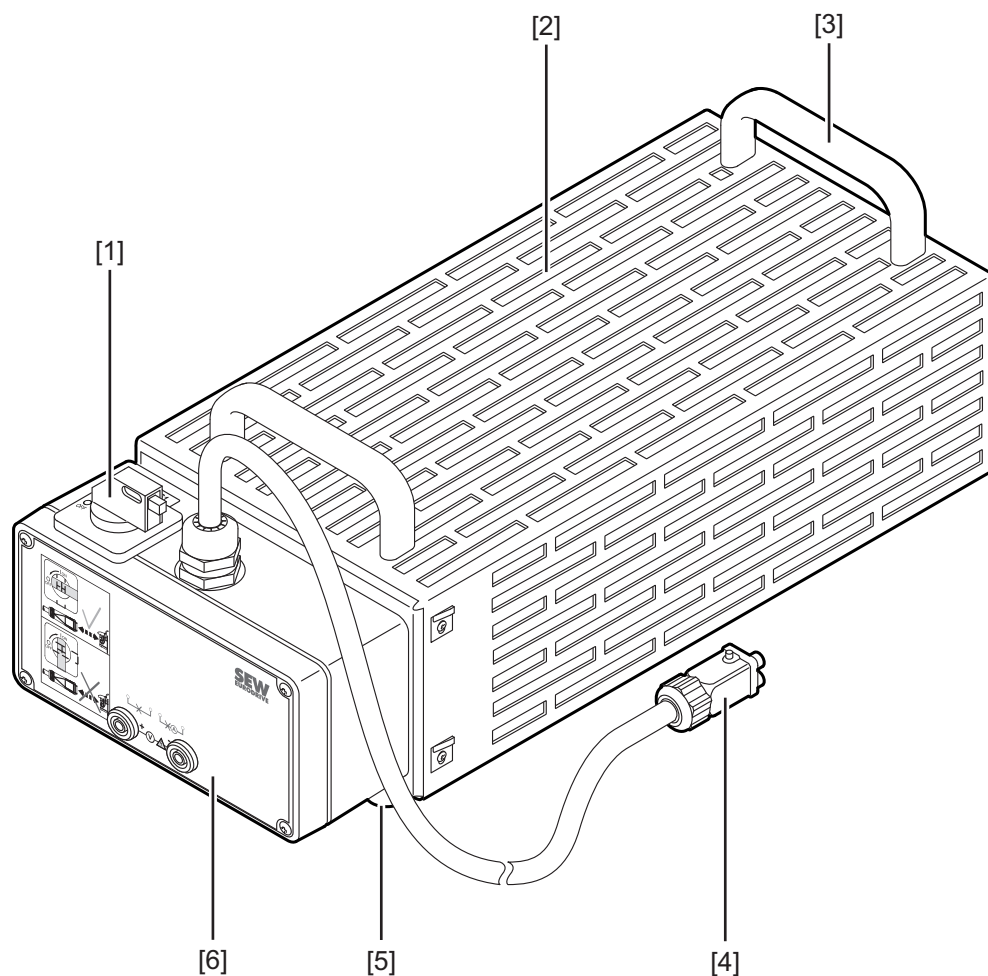
The MOVI-DPS discharge unit is connected to the MOVI-DPS energy and power interface and serves to discharge the MOVI-DPS storage bundle. This is necessary to disconnect the MOVI-DPS storage bundle from the MOVI-DPS energy or power interface.



18166899339

7.4.1 MOVI-DPS discharge unit size 1

The following figure illustrates the structure of the unit:

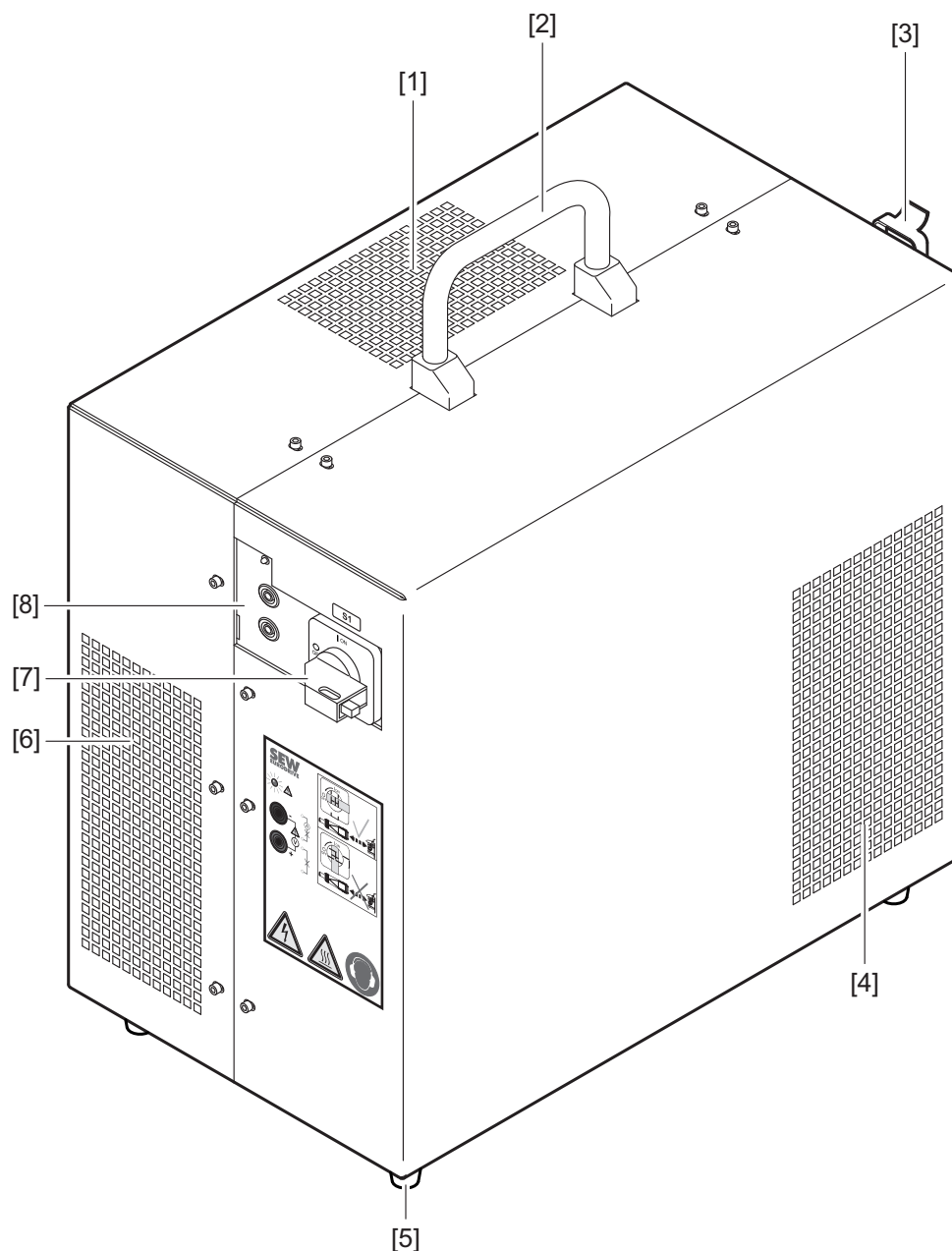


12061077003

- [1] Switch S1
- [2] Ventilation grille
- [3] Handle (2x)
- [4] Connection cable with Han® Q 2/0, male
- [5] Foot (4x)
- [6] Front panel connectors

7.4.2 MOVI-DPS discharge unit size 2

The following figure illustrates the structure of the unit:



12085552523

- [1] Upper ventilation grille
- [2] Handle
- [3] Connection for MOVI-DPS energy and power interface
- [4] Ventilation grille at the side
- [5] Foot (4x)
- [6] Front ventilation grille
- [7] Switch S1
- [8] Front panel connectors

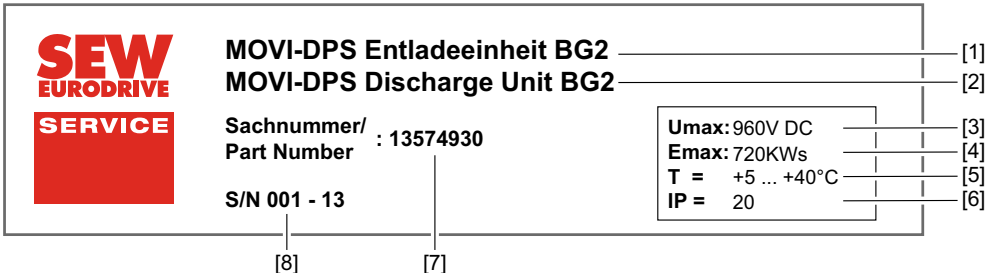
7.4.3 Scope of delivery

The following components are included in the scope of delivery:

Discharge unit	Part number
MOVI-DPS discharge unit size 1	13574949
or	
MOVI-DPS discharge unit size 2	13574930

7.4.4 Nameplate

The nameplate of the MOVI-DPS discharge unit contains information on the unit type. The following figure shows an example of the nameplate of the MOVI-DPS discharge unit size 2:



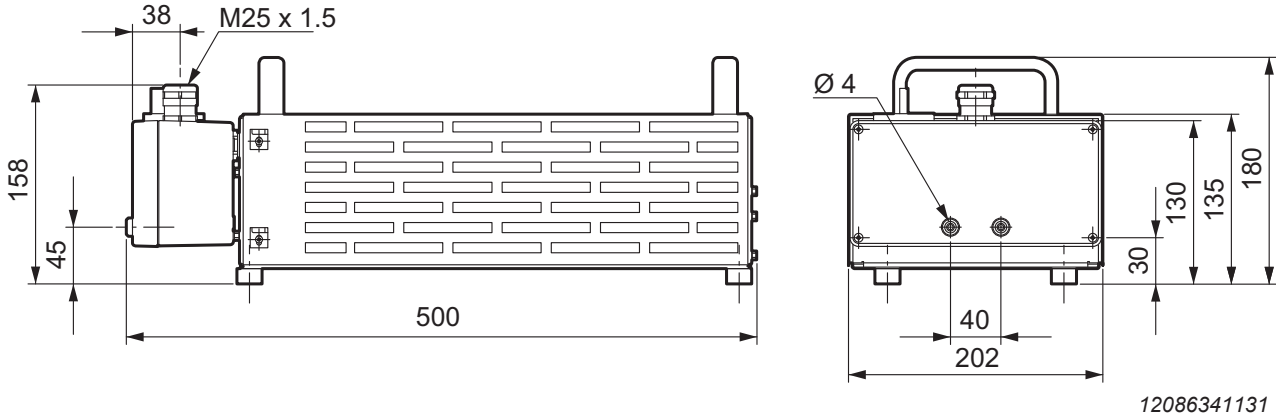
9737346443

- [1] Type designation German
- [2] Type designation English
- [3] Max. storage voltage V_{max}
- [4] Maximum energy stored of the storage bundle E_{max}
- [5] Operating temperature T
- [6] Degree of protection
- [7] Part number
- [8] Serial number

7.4.5 Dimension drawings

MOVI-DPS discharge unit size 1

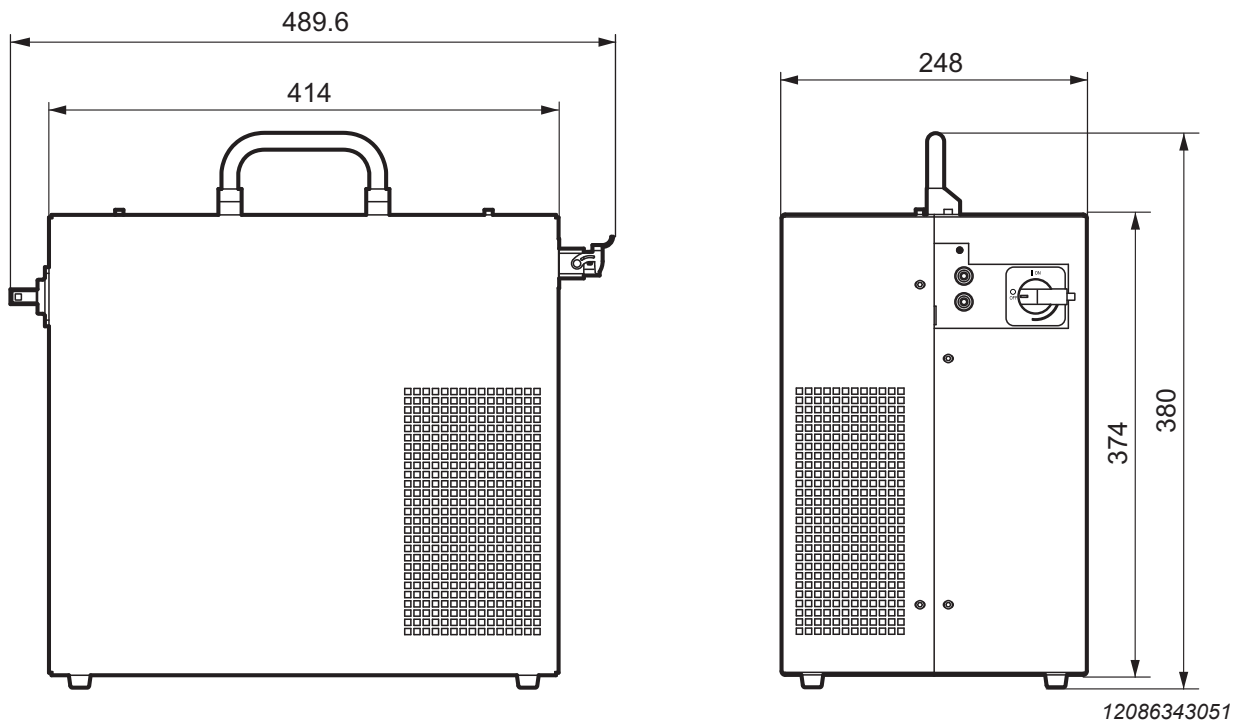
The following figure shows the mechanical dimensions in mm:



11348011/EN – 08/2016

MOVI-DPS discharge unit size 2

The following figure shows the mechanical dimensions in mm:

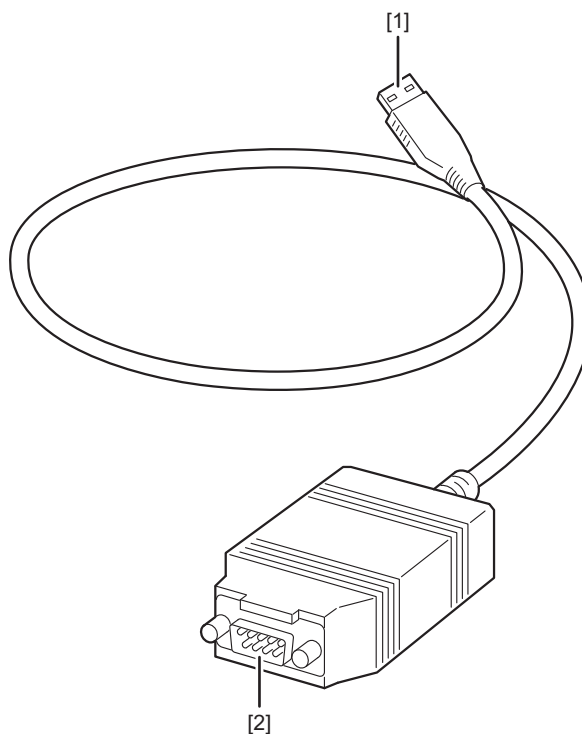


7.5 PC CAN interface adapter

Use MOVITOOLS® MotionStudio on a PC or laptop to startup the MOVI-DPS energy or power interface. A PC-CAN interface adapter is required to connect the PC or laptop with the MOVI-DPS energy or power interface.

Part number: 18210597

The following figure shows the PC-CAN interface adapter:



18194145163

- [1] USB plug connector
- [2] D-sub plug connector 9-pin, male

8 System project planning

Please contact your SEW-EURODRIVE representative for a detailed system project planning. For contact details, refer to chapter "MAXOLUTION® Competence Center" (→ 68).

8.1 Project planning procedure

Note that drive project planning for your application must be completed before project planning for the MOVI-DPS components can be performed.

The project planning comprises several steps:



17899244683

1. You specify the basic conditions.
2. SEW-EURODRIVE performs project planning for the MOVI-DPS components and calculates the relevant application values.
3. SEW-EURODRIVE puts together a component list including technical diagram and accessories.

8.1.1 General setup

For SEW-EURODRIVE to perform detailed project planning, you have to specify all relevant information for the application. The following information are relevant:

1. Project number
2. Project name
3. Application
4. Travel cycle:
 - Estimate
 - Peak power × time (kW_s)
 - Nominal power × travel time (kW_s)
 - Wait time for charging (s)
 - Workbench project file
 - For storage/retrieval system:
 - Maximum aisle length and height
 - Double cycle yes/no
 - Required operating hours
5. Selecting power supply
 - MOVITRANS® (A technical diagram of the mobile component of the application and separate project planning for MOVITRANS® is required.)
 - AC 400 V supply system
6. Selecting connection component to the DC link:
 - MOVIPRO® ADC with Energy Management Interface

- MOVIDRIVE®
 - MOVIAXIS® with power supply module with external DC link voltage
7. Requirements for the mobile component of the application
- DC link voltage
 - DC 500 V
 - Standby operation (min)
 - Energy consumption standby operation of the application and the external DC 24 V consumers (kW)
 - Ambient temperature (°C)
 - Protection class IP

8.1.2 Project planning

Based on the basic conditions for the application, SEW-EURODRIVE performs project planning for the MOVI-DPS component and calculates the relevant application values:

1. Number of MOVI-DPS energy and power interfaces
2. Number of MOVI-DPS storage units
3. State of charge during operation
4. Required recharging time
5. Required charging time until a completely discharged MOVI-DPS storage bundle is charged to the minimally required state of charge
6. Estimated useful life of a MOVI-DPS storage bundle
7. Thermal simulation of the MOVI-DPS components
8. Determining the minimum DC link voltage
9. Checking the speed at minimum DC link voltage

8.1.3 Project planning result

The result of project planning and calculation by SEW-EURODRIVE contains the following:

1. List of required MOVI-DPS components and connection cables
2. Overview of option accessories
3. Technical diagram of MOVI-DPS components
4. List of the relevant application values:
 - Minimum DC link voltage
 - Minimum and maximum energy content of the MOVI-DPS storage bundle

9 Available documentation

The following documents are available for the MOVI-DPS components:

- "MOVI-DPS Energy and Power Interface" operating instructions
- "MOVI-DPS Storage Unit" operating instructions
- "MOVI-DPS Discharge Unit" operating instructions
- Addendum to the "MOVIPRO® ADC with Energy Management Interface" operating instructions

Go to www.sew-eurodrive.com to download the documents.

10 MAXOLUTION® Competence Center

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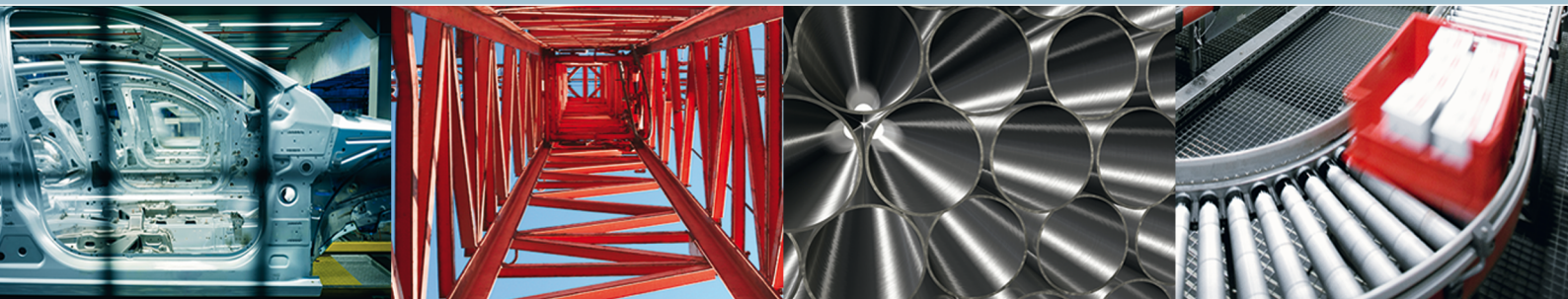
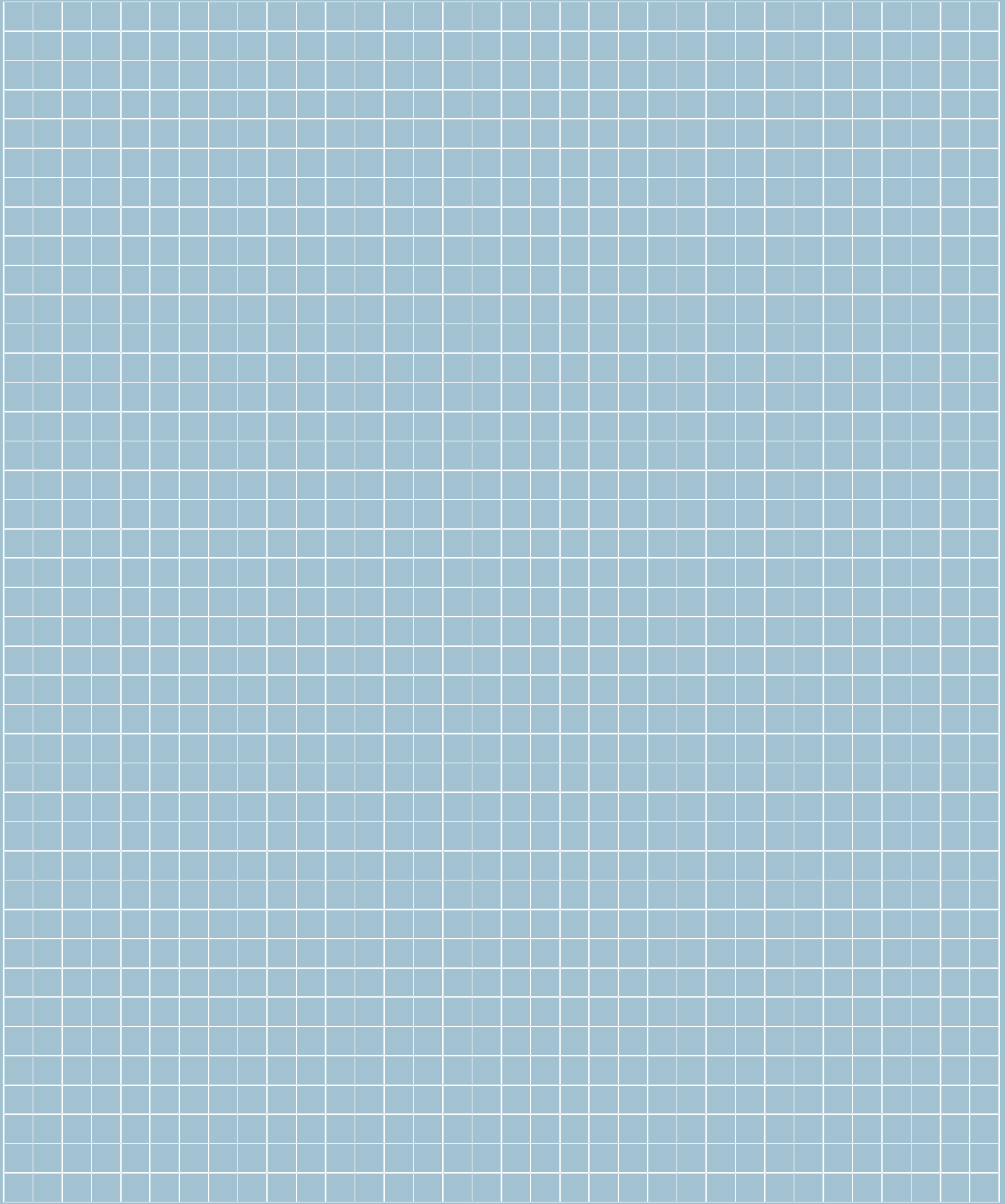
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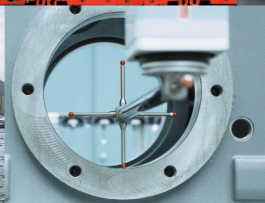
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