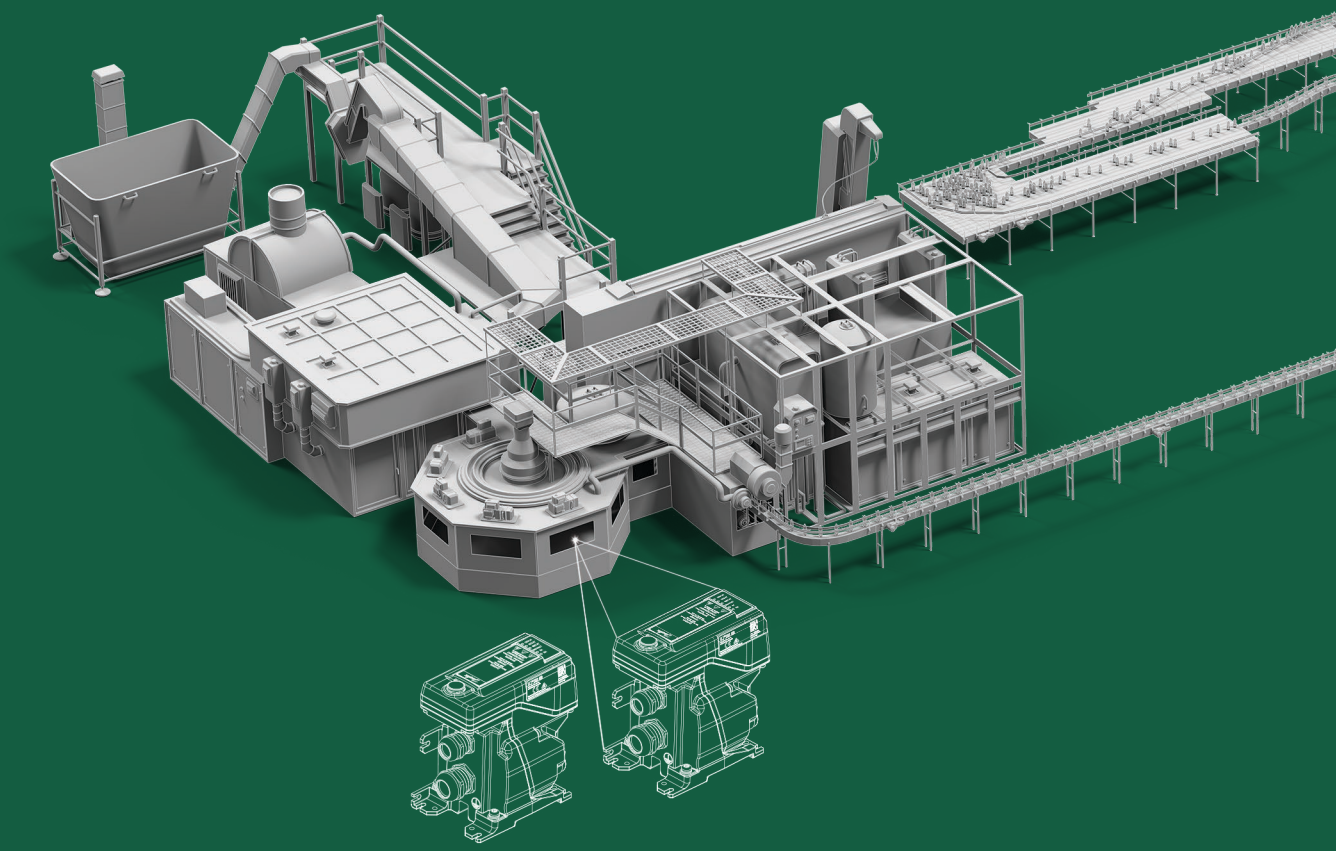
Ultimate freedom – one system for central and decentral servo motion

Flexible system for modular machine architecture

The future of smart machine design – it's flexible

Are you striving to modularize machine architecture to suit your business?

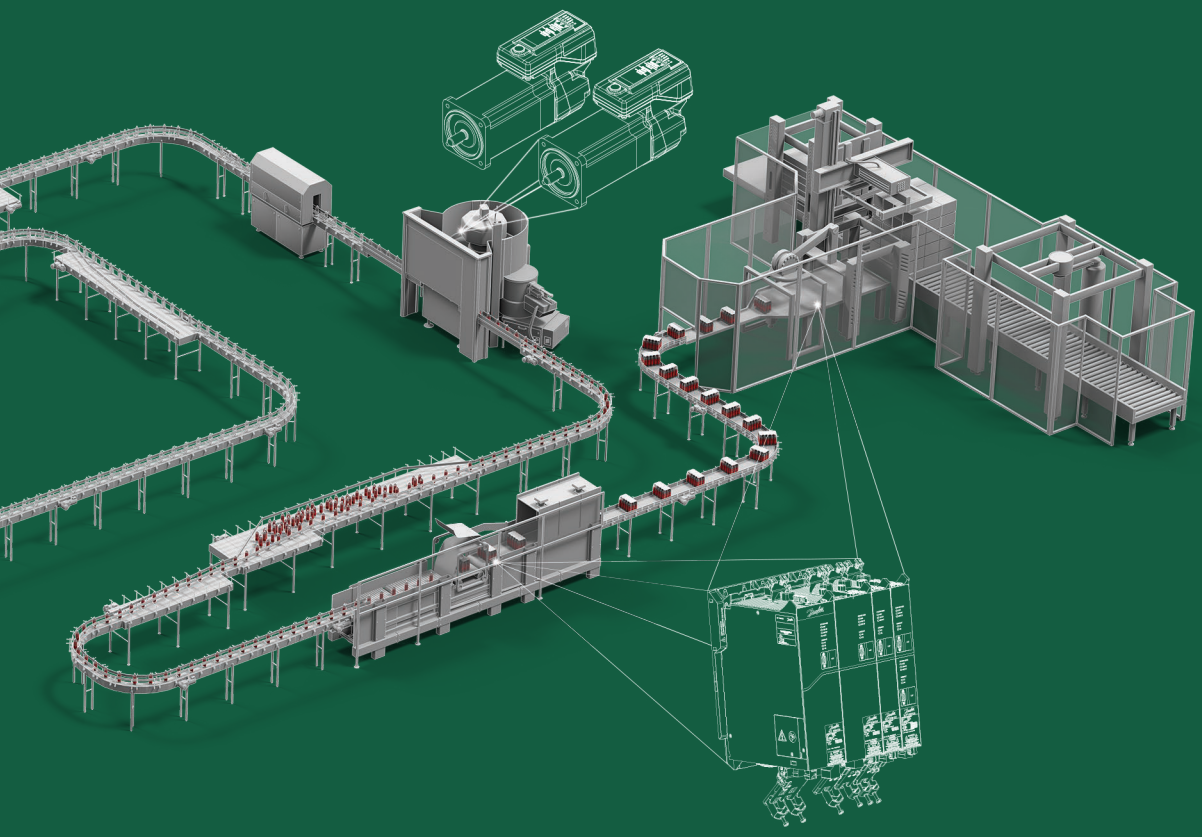
Then take a look at Danfoss VLT® FlexMotion™. It's a multi-purpose universally compatible servo drive concept, designed to meet the requirements of tomorrow's machine architecture, today. Combine and **scale** the modules to suit your specific needs. That way, its central and decentral modules will allow you to achieve a multitude of functions. **Open** system architecture gives you total freedom to integrate with the motors and PLC you prefer.
Save time and costs thanks to numerous finesses facilitating **fast** installation and commissioning. All designed for absolutely **reliable** operation in demanding environments.
All in all, this system gives you the ultimate freedom in machine design.



VLT® Decentral Servo Drive DSD 520

SCALABLE
OPEN
FAST
RELIABLE

VLT® Integrated Servo Drive ISD® 520

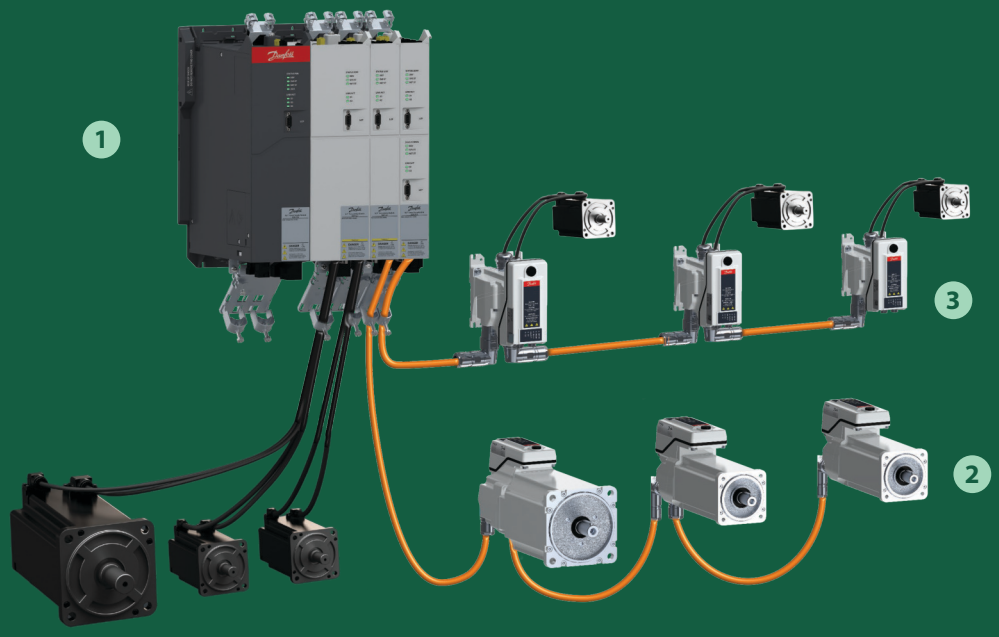


VLT® Multiaxis Servo Drive MSD 520

Let flexibility flourish in your machine design

Danfoss can help you wherever you are in your 'machines for smart manufacturing' journey. You can achieve a whole new degree of customization and precision – enabling you to get more from less. The combination of central and decentral drives in VLT® FlexMotion™ ensures you achieve maximum flexibility in machine design and system integration.

Be smart. Build your machine to meet tomorrow's requirements.
Let Danfoss support your business.



Build modular machines using a versatile system

Scalable concept

Modern machine systems need to be extremely flexible in terms of adaptability and extensions. This criterion also applies for all the system components used in the VLT® FlexMotion™ machine design – it is specially designed to give you the ultimate freedom in your design projects.

Each module allows machine builders to sustain maximum flexibility in case the need arises to add a new line – or extend an existing line with additional drives.

Combine these VLT® FlexMotion™ product lines according to your needs:
1. VLT® Multiaxis Servo Drive MSD 520
2. VLT® Integrated Servo Drive ISD® 520
3. VLT® Decentral Servo Drive DSD 520

Use the VLT® Multiaxis Servo Drive MSD 520 as a servo hub and combine with standard permanent-magnet (PM) or asynchronous (ASM) motors, decentral servo drives (DSD 520) or even motors with integrated servo drives (ISD 520). This concept minimizes cabinet space occupied, cable length, and installation time. At the same time it maximizes performance, precision and modularity.

The VLT® Integrated Servo Drive ISD® 520 system serves a wide range of applications, such as turntable applications, labeling, capping, food packaging and pharmaceutical packaging.

You can tailor the drive to meet specific customer requirements thanks to:
- various drive options
- 5 flange sizes
- optional mechanical brake
- customization options

The VLT® Decentral Servo Drive DSD 520 is a compact servo drive where the drive electronics are installed close to, but separate from the motor. The servo drives are connected to the motors via cables. This setup optimizes cabinet space and improves your system flexibility by providing a wide range of feedback options and compatibility with permanent magnet (PM) as well as induction motors (IM).

All of these features support you in creating easily extendable and adaptable machines.

Specify the rest of the system as you please Free choice thanks to open platform

We respect that you are in the best position to decide what technologies are optimal for your system. Therefore, we leave all your options open and do not lock you into one protocol. We don't expect you to switch protocols to fit the drive – on the contrary, these drives fit into any system. Feel free to choose the communication and engineering platforms you prefer.

Your preferred protocol

The open system architecture of VLT® FlexMotion™ supports the real-time Ethernet protocols PROFINET®, POWERLINK® and EtherCAT®. It also allows you to use third-party master controllers. Program masters via IEC 61131-3 and PLCopen-conformant motion libraries make the system even more flexible and easy to integrate into diverse engineering environments. Gateway-free fieldbus communication contributes to seamless communication with less equipment. You can plug other fieldbus devices mounted in the machine directly into the advanced decentral drives.

Your safety net

Implement servo control for highly demanding applications with the factory option VLT® FlexSafety™, which offers numerous functional safety capabilities. Level SIL3 (IEC 61508), Ple / CAT3 (ISO 13849) is achievable for PROFIsafe and FSoE over fieldbus. The offering includes STO, SS1, SS2, SOS, SLA, SAR, SLS, SSR, SLP, SLI, SDI, SCA, SSM, SBC, SBT for safe stop, speed, ramp, CAM and brake functions. Optionally, safe digital Inputs and outputs allow access to several functions independently from the fieldbus.

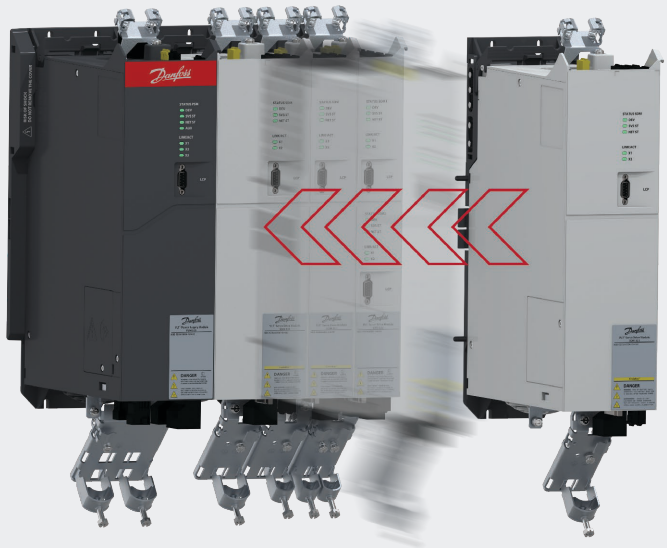
Your optimal motor

Whatever the need, you can choose the motor technology that best fits your application. Whether it's an ISD® 520 with nominal torque up to 13.8 Nm (peak torque up to 39 Nm), a combination of DSD 520 and a PM or ASM motor up to 2.3 kW power, or even a motor up to a power rating of 20 kW combined with one of the central servo drive modules (SDM 521 or SDM 522); by supporting a wider range of feedback encoders, your choice is completely open.

EtherCAT® Safety over EtherCAT® PROFINET® PROFIsafe ETHERNET POWERLINK PLCopen motion control

Save time in installation
Fast and fail-safe

Save time with effective measures that the system electrician will appreciate. With a fresh and inventive approach, the VLT® FlexMotion™ concept reduces the complexity of mounting and commissioning. And there are no compromises – the result meets the highest safety and quality standards.



Click and Lock mounting concept for easy installation.

Click and Lock mounting

Enjoy easy mounting and fail-safe installation thanks to the unique Click and Lock concept where DC-link and control voltage supply are integrated in the backplate of each module. Save time – there is no need to use additional components like wires or bus bars.

Intelligent user interface

Enjoy the effective all-in-one interface, VLT® Servo Toolbox software: It's streamlined, intuitive, and offers a wealth of integrated tools for commissioning, CAM editing, debugging and test runs.

Commission, troubleshoot and complete service tasks faster with the VLT® Local Control Panel LCP 102. It adds the power of speed in accessing the advanced decentral servo drives and all central modules of the concept. For fast working routines, it features a graphical display, quick access menus and a clear parameter structure as well as easy-to-read status LEDs.

Streamlined, fail-safe cabling

The decentralization of drives in the VLT® FlexMotion™ concept reduces the number of cables required. The VLT® Power Supply Module PSM 520 integrated Decentral Access Module factory option connects to the first servo drive via a pre-configured hybrid cable. This single cable combines the 565-680 V DC power supply, the 24/48 V DC, the STO signal and the bus communication. The hybrid cable loops these signals to further servo drives connected in the daisy-chain format.

For VLT® Integrated Servo Drive ISD® 520, this streamlined cabling infrastructure eliminates the need for extra equipment, such as separate feedback cables and connection boxes. The Plug and Twist cabling concept ensures fast and fail-safe installation.

When your name is at stake, integrity is critical
Reliable performance

With your name on the machine it's essential to deliver quality. We recognize and respect your need to maintain the integrity you have established over long relationships with your customers. Save time on researching complex combinations of different equipment to achieve exactly the performance you require. With VLT® FlexMotion™ you tap into a coherent concept of building blocks with proven compatibility and performance. For any system you choose to build, the outcome is fuss-free reliability with maximum uptime.

Resistance in demanding environments

After years of working with the food and beverage industry, we understand the need for robust performance based on well-protected construction. Therefore, the decentral servo drives ISD® 520 and DSD 520 are available with enclosures rated up to IP67*.
A completely smooth and easy-to-clean surface, free of cooling fins or fans, makes these drives hygienically fully reliable and chemical-resistant. Vibration class 3M7 ensures trouble-free operation and renders these drives ideal for rotating machine parts.

Time-saving straightforward design

Maintenance costs can be kept to a minimum because the VLT® FlexMotion™ modules are virtually maintenance-free – they're built for robust reliability.
The drives use high-quality bearings, and the only spare part needed is the shaft seal. The fact that no tools are required to work with the hybrid cables results in significant time-savings.

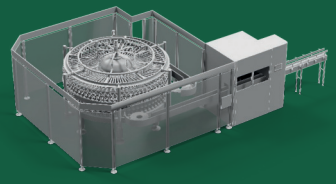
Detect errors quickly via LED signals on all central and decentral modules.

The advanced drives versions provide three extra ports for:

- I/Os and external encoder; for example, homing or limit switches
- User interface: VLT® Local Control Panel LCP 102
- Fully functional Ethernet** (for direct connection of third-party fieldbus devices)

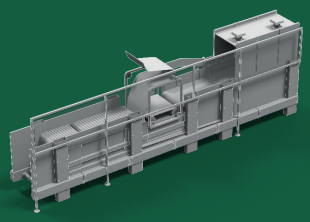
** for details please check ordering type codes on pages 15 and 17.*
*** available for EtherCAT and POWERLINK drives.*

Typical applications



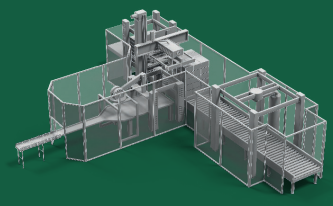
Beverage

- Labeling
- Capping
- PET blow-moulding
- Digital bottle printing



Food and beverage packaging

- Flow wrapping
- Bag maker
- Tray sealing
- Shrink wrapping



Industrial and pharmaceutical packaging

- Palletization
- Top loader
- Cartoning
- Tube filling
- Blister machine
- Liquid filling
- Solid dosing

VLT® Multiaxis Servo Drive MSD 520

The MSD 520 system is a generic central servo solution and forms the basis of the VLT® FlexMotion™ concept. Its flexibility and modularity in hardware and software gives you the freedom to design machines according to the application needs.

The MSD 520 system comprises these modules:
- VLT® Power Supply Module PSM 520
- VLT® Servo Drive Module SDM 521 for single axis and SDM 522 for double axis
- VLT® Expansion Module EXM 520

To optimize the space requirements, some of the modules are available in two frame sizes, either 50 mm [1.97 inch] or 100 mm [3.94 inch] wide.

Enjoy easy mounting and fail-safe installation thanks to a unique Click and Lock concept where DC-link and control voltage supply are integrated in the backplate of each module. Depending on the machine architecture, you can use the MSD 520 as a stand-alone central concept or in a mixed system together with the VLT® Integrated Servo Drive ISD® 520 and VLT® Decentral Servo Drive DSD 520. Extensions or adjustments to the machine are easy to implement – just add or swap modules accordingly.

> VLT® Power Supply Module PSM 520

> VLT® Servo Drive Modules SDM 521 and SDM 522

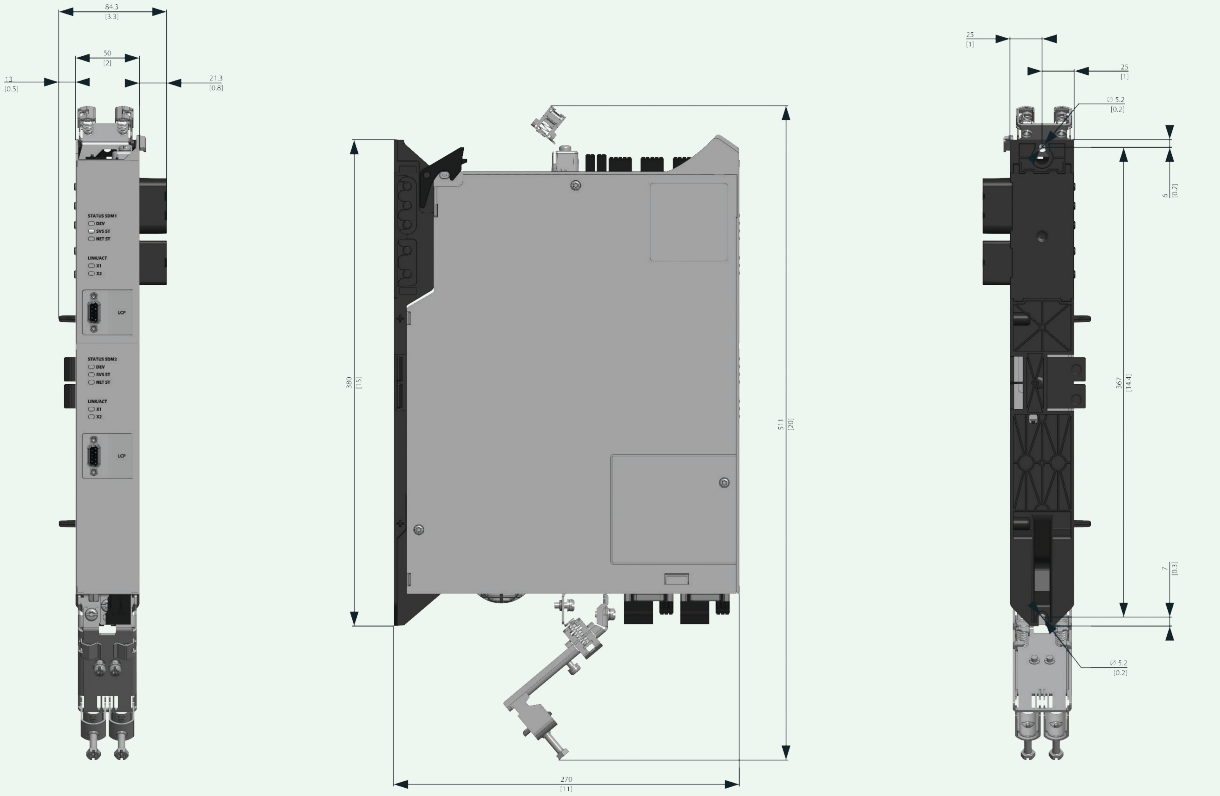
> VLT® Expansion Module EXM 520

Specifications

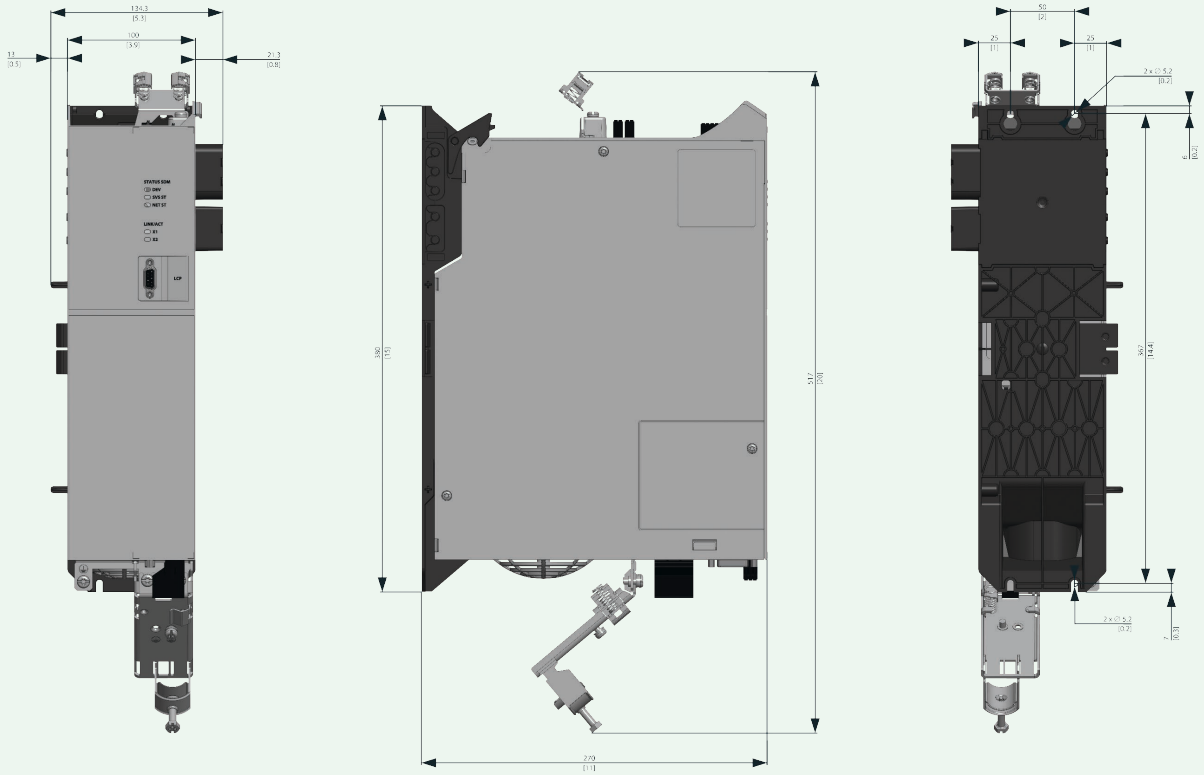
Nominal input voltage	3 ~ 400-480 V AC +/-10%
Mains frequency	50 / 60 Hz
DC-link voltage	565-680 V DC +/-10%
Control voltage	24 / 48 V DC +/-10%
Ambient temperature	5-40 °C, max 55 °C with derating [41-104 °F, max 131 °F with derating]
Fieldbus	PROFINET®, POWERLINK®, EtherCAT®
IP protection class	IP20
Modular construction with 2 frame sizes	FS1 50 mm [1.97 inch] or FS2 100 mm [3.94 inch]
Mounting	Wall-mounting on backplate – click & lock
EMC according 61800-3	C3, C2 with external filter
Certificates/Approvals	CE, UL
Functional safety	STO SIL 2 Pl d

Dimensions

Frame size 1 (FS1)



Frame size 2 (FS2)



Dimensions are in mm [inch]

VLT® Power Supply Module PSM 520

The PSM 520 module generates a 565-680 DC-link voltage and is available in 3 power sizes with either 10, 20 or 30 kW and 200% overload capability. To achieve a nominal output up to 60 kW, install two PSM 520 units in parallel.

The PSM 520 module connects the VLT® Integrated Servo Drive ISD® 520 and VLT® Decentral Servo Drive DSD 520 through a hybrid feed-in cable to the MSD 520 system. This gives you great flexibility and freedom to design the servo system according to your application needs. Supports modular machine architectures.

Specifications

		PSM 520 10 kW	PSM 520 20 kW	PSM 520 30 kW
Nominal input voltage	V AC		3 x 400-480 +/-10%	
DC-link voltage	V DC		565-680 +/-10%	
Rated output current	A	20	40	60
Rated output power	kW [hp]	10 [13.4]	20 [26.8]	30 [40.2]
Peak current i_{max}	A	40	80	120
Peak power P_{max}	kW [hp]	20 [26.8]	40 [53.6]	60 [80.4]
Internal brake resistor				
Peak power P_{max}	kW		8	
Rated power P_N	W		150	
Nominal resistance	Ω		15	
External brake resistor				
Peak power P_{max}	kW		37.5	
Rated power P_N	kW		7.5	
Minimum resistance	Ω		15	
Cooling			Integrated fan	
Module width	mm [inch]		100 [3.94]	
Frame size			FS 2	
Weight	kg [lbs]		6 [13.2]	
Factory Option, Decentral Access Module			**DAM 15–25 A**	
DC-link voltage	V DC		565-680 +/-10%	
Output current DC-link	A		15-25	
Output current auxiliary supply	A		15	

VLT® Servo Drive Modules SDM 521 and SDM 522

The SDM 521 module is a single-axis servo drive, available in 5 power sizes. The SDM 522 module is a double-axis servo drive, available in 3 power sizes.

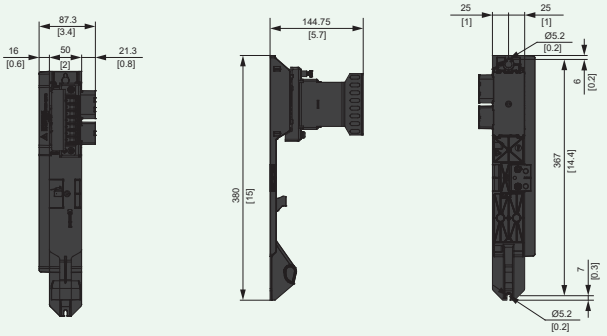
A wide range of feedback options allows you to choose your preferred PM or ASM motor. Alternatively you can also run the motor without feedback. Furthermore, the drive modules are equipped with digital I/Os and integrated Safe Torque Off (STO). Functional safety over fieldbus and additional I/O are available as factory options.

Specifications

		SDM521-xx	**SDM521-xx**	**SDM521-xx**	**SDM521-xx**	**SDM521-xx**	**SDM522-xx**	**SDM522-xx**	**SDM522-xx**
DC-link	V DC	565-680 +/-10%							
Rated current I_n	A	2.5	5	10	20	40	2 x 2.5	2 x 5	2 x 10
Rated power P_n	kW [hp]	1.4 [1.9]	2.8 [3.8]	5.7 [7.6]	11.3 [15.2]	22.6 [30.3]	2 x 1.4 [1.9]	2 x 2.8 [3.8]	2 x 5.7 [7.6]
Peak current	A	7.5	15	30	45	90	2 x 7.5	2 x 15	2 x 30
Peak power	kW [hp]	4.2 [5.7]	8.5 [11.5]	17.0 [22.8]	25.4 [34.5]	50.8 [69.1]	2 x 4.2 [5.7]	2 x 8.5 [11.6]	2 x 17 [23.1]
Nominal switching frequency	kHz	4/5							
Possible switching frequency	kHz	8/10							
Maximum output frequency	Hz	590							
Number of motor connections		1					2		
Cooling		Integrated fan							
Module width	mm [inch]	50 [1.97]				100 [3.94]	50 [1.97]		
Frame size		FS 1				FS 2	FS 1		
Weight	kg [lbs]	3.9 [8.6]				5.5 [12.1]	4.0 [8.8]		

VLT® Expansion Module EXM 520

Expansion Module (EXM 520)



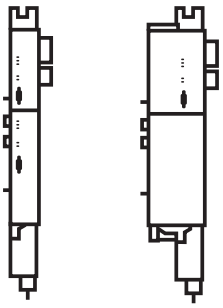
Dimensions are in mm [inch]

To support a modular machine architecture the EXM 520 can be used to split the MSD 520 system into 2 cabinets. The max. distance between the cabinets (cable length) is 5 meters.

Specifications

EXM 520		
Ordering number		175G0194
DC-link	V DC	565-680 +/-10%
Maximum current DC-link	A	62
Module width	mm [inch]	50 [1.97]
Weight	kg [lbs]	0.6 [1.1]

Ordering model code [1]



Product group *(character 1-5)*	
MSD510	VLT® Multiaxis Servo Drive MSD 520
Product category *(character 6-7)*	
SA	Air-cooled
Product type *(character 8-9)*	
PS	Power Supply Module
AS	Axis Single Module
AD	Axis Double Module
Mains voltage *(character 10-11)*	
04	400-480 V AC
D6	600 V DC
Output *(character 12-16)*	
Power supply modules	
-10P0	10 kW
-20P0	20 kW
-30P0	30 kW
Axis single/double modules	
-02A5	2.5 A
-05A0	5.0 A
-10A0	10 A
-20A0	20 A
-40A0	40 A
Communication interface *(character 17-18)*	
PL	Ethernet POWERLINK®
EC	EtherCAT®
PN	PROFINET®

Power supply modules	
Functional safety *(character +)*	
+BEF1	Hard-wired STO (standard)
Option board *(character +)*	
+CTXX	Without option board (standard)
Integrated brake chopper *(character +)*	
+ACBC	Yes (with integrated resistor)
Integrated common mode filter *(character +)*	
+AIC1	Yes (with integrated filter)
DC fuses and devices *(character +)*	
+AKXX	Without (standard)
+AKD1	DAM option 15A
+AKD2	DAM option 20A
Standard I/Os *(character +)*	
+BDS1	With Basic I/Os
Product software *(character +)*	
+ECXXX	Latest released version (standard)
Technical documentation *(character +)*	
+EGXX	Without (standard)
+EGIN	Installation Guide
Packaging *(character +)*	
+TACB	Cardboard box (standard)

Axis single/double modules	
Functional safety *(character +)*	
+BEF1	Hard-wired STO (standard)
+BEFS	VLT® FlexSafety™ functional safety via fieldbus
Option board *(character +)*	
+CTXX	Without option board (standard)
+CTIO	Standard I/O option board
+CTSO	Safe I/O option board
DC fuses and devices *(character +)*	
+AKFX	With DC link fuses (standard)
Standard I/Os *(character +)*	
+BDS1	With Basic I/Os
Motor feedback *(character +)*	
+FFMF	Multi feedback (standard)
Motor brake control *(character +)*	
+IDBS	With brake control (standard)
Product software *(character +)*	
+ECXXX	Latest released version (standard)
Technical documentation *(character +)*	
+EGXX	Without (standard)
+EGIN	Installation Guide
Packaging *(character +)*	
+TACB	Cardboard box (standard)

[1] *Note: Not all combinations are possible. To configure your drive with correct combinations, use the online configurator located here:* ***Motion Controls and Servo Drives***

Example

Servo drive modules

[1-5]		[6-7]		[8-9]		[10-11]		[12-16]		[17-18]		[+]	
MSD-520	+	SA	+	PS	+	04	+	-10P0	+	PL	+	+AKD1	+ ...

MSD-520SAPS04-10P0PL+AKD1+...

Power supply modules

[1-5]		[6-7]		[8-9]		[10-11]		[12-16]		[17-18]		[+]		[+]		[+]		[+]		[+]	
MSD-520	+	SA	+	PS	+	04	+	-10P0	+	PL	+	+BEF1	+	+CTXX	+	+ACBC	+	+AIC1	+	+AKD1	+ ...

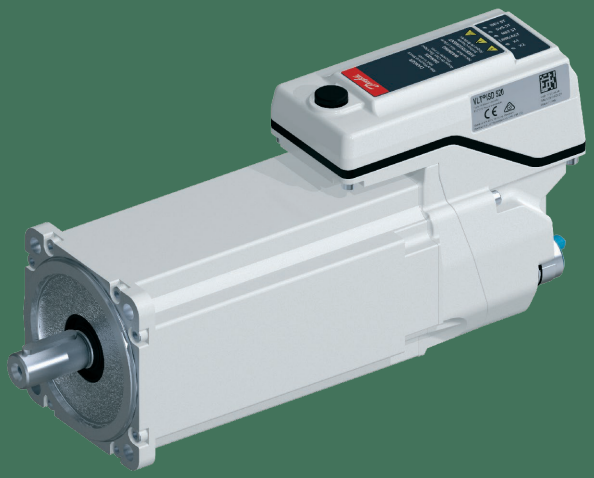
MSD520SAP04-10P0-02A5PL+BEF1+CTXX+ACBC+AKC1+AKD1...

VLT® Integrated Servo Drive ISD® 520

The VLT® Integrated Servo Drive ISD® 520 combines a servo motor and servo drive in one compact unit. It offers great benefits in diverse applications, such as turntables, labeling, capping, and packaging of food and pharmaceuticals.

The ISD 520 is powered by the VLT® Power Supply Module PSM 520 with the integrated Decentral Access Module (DAM) option. The Plug and Twist hybrid cabling concept, including supply and control voltage as well as functional safety and fieldbus wires, makes the installation fast, easy, fail-safe and cost-efficient. Since multiple decentral drive units can be connected to just one PSM 520 *(including integrated DAM option)* through simple daisy-chain wiring, no distribution boxes are needed and cables can be reduced to a minimum.

A completely smooth and easy-to-clean surface together with high protection IP67 enclosure and vibration resistance class 3M7 ensure the perfect fit for all kinds of rotating applications in demanding environments.

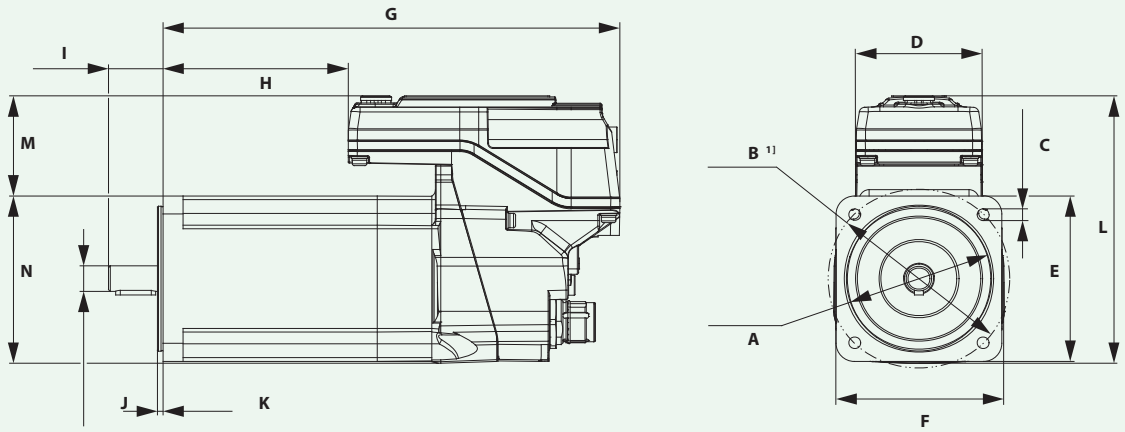


Specifications

		Size 1	Size 2		Size 3	Size 4	Size 5
Common							
Flange size	mm [inch]	70	87	91	100	116	142
Shaft diameter	mm [inch]	11	19	14/19	19	24	24
Weight (without brake)	kg [lbs]	2.6	4.2	3.9-5.7	6.6…TBD	9.1-11.0	11.8-13.2
Inertia	10^{-4} kgm^2	0.63	2.3	0.80-1.80	2.60-3.20	5.10	9.80-12.9
Rated voltage	V DC	565-680 +/-10%					
Rated switching frequency	kHz	8/10					
Possible switching frequency	kHz	4/5					
Auxiliary voltage	V DC	24/48					
Maximum auxiliary current [1]	A DC	0.82	0.4	0.82-1.21	1.24	1.19-1.42	1.42
Low speed							
Rated speed	rpm	3000	2000	3000	3000	2200	2200
Max speed	rpm	6600	2500	6600	6600	6000	5000
Rated torque	Nm	1.65	2.5	2.5-4.6	5.2-6.4	9.0-11.2	10.6-13.8
Stall torque	Nm	2.6	2.6	2.6-5.0	6.4-8.4	11.2	10.6-16.0
Peak torque	Nm	6.3	11.0	7.5-15.5	16.0-25.6	29.0-32.0	33.0-39.0
Rated current	A DC	1.1	1.1	1.7-3.2	3.2-3.9	5.5-7.0	6.2-7.0
Peak current	A DC	6.2	6.0	7.6-12.5	12.5-22.0	22.0	22.0
High speed							
Rated speed	rpm	6000	n.a.	6000	6000	4500	4500
Max speed	rpm	6600		6600	6600	6000	5000
Rated torque	Nm	1.5		2.1-2.7	3.0-4.8	4.7-6.5	7.2-7.5
Stall torque	Nm	1.8		2.6-2.7	3.0-5.4	6.3-7.4	7.0-7.4
Peak torque	Nm	6.3		7.0-8.6	9.4-22.0	17.4-23.1	21.5-22.8
Rated current	A DC	2.1		2.9-3.9	3.7-3.9	4.4-7.0	7.0
Peak current	A DC	12.5		12.5	12.5-14.0	22.0	22.0

1] Value at auxiliary voltage 24 V DC, including mechanical holding brake

Dimensions



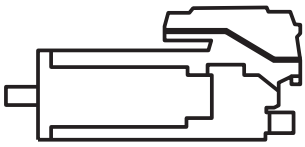
1) Dimension B is the Bolt Circle Diameter (BCD)

	A		B		C		D		E		F		G	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Size 1, E0	80	3.15	96	3.79	M8 1)	0.31	69.9	2.75	68	2.68	92.4	3.64	217.7	8.57
Size 1, E1	60	2.36	75	2.95	5.8	0.23	69.9	2.75	70	2.76	92.7	3.65	290.7	11.44
Size 2	80	3.15	100	3.94	6.5	0.26	69.9	2.75	91.3	3.59	92.4	3.64	217.7	8.57
Size 3	95	3.74	115	4.53	9	0.35	69.9	2.75	100	3.94	100	3.94	287.2	11.31
Size 4	110	4.33	130	5.12	9	0.35	69.9	2.75	116	4.57	142	5.59	338.3	13.32
Size 5	130	5.12	165	6.50	12.5	0.49	69.9	2.75	142	5.59	142	5.59	329	12.95

1) Use M8 screw at 'C', approx 8 mm diameter

	H		I		J		K		L		M		N	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Size 1, E0	68	2.68	46.5	1.83	19	0.75	4.0	0.16	146.7	5.78	48.0	1.89	98.7	3.89
Size 1, E1	141	5.55	23	0.91	11	0.43	2.5	0.10	147	5.79	47.9	1.89	99.1	3.90
Size 2	102	4.02	30	1.18	14	0.55	3.0	0.12	147.6	5.81	55.2	2.17	92.4	3.46
Size 3	137.5	5.41	40	1.57	19	0.75	3.0	0.12	148.4	5.84	48	1.89	100	3.94
Size 4	188.6	7.43	50	1.97	24	0.94	3.0	0.12	169	6.65	52.1	2.05	116.9	4.60
Size 5	179.3	7.06	50	1.97	24	0.94	3.5	0.14	190.4	7.50	48	1.89	142	5.59

Ordering model code [1]



Product group *(character 1-7)*	
ISD-520	VLT® Integrated Servo Drive 520
Mains voltage *(character 8-9)*	
D6	600 V DC
Torque level (rated) *(character 10-14)*	
–01T5	1.5 Nm
–02T5	2.5 Nm
–03T5	3.5 Nm
–04T0	4.0 Nm
–04T5	4.5 Nm
–05T0	5.0 Nm
–06T5	6.5 Nm
–09T0	9.0 Nm
–12T0	12.0 Nm
–14T0	14.0 Nm
–16T5	16.5 Nm
Communication interface *(character 15-16)*	
PL	Ethernet POWERLINK®
EC	EtherCAT®
PN	PROFINET®
Functional Safety *(character +)*	
+BEF1	Hard-wired STO (standard)
+BEFS	VLT® FlexSafety™ over fieldbus
Option board *(character +)*	
+CTXX	Without option board (standard)
+CTIO	Standard I/O option board
+CTSO	Safe I/O option board

Technical documentation *(character +)*	
+EGXX	None (Standard)
+EGIN	Installation guide
Documentation language *(character +)*	
+EHXX	Multilanguage (Standard)
Customer-specific label *(character +)*	
+EJXX	None (Standard)
Mechanical brake *(character +)*	
+FAXX	Without holding brake
+FAHB	With holding brake (Standard)
Motor shaft *(character +)*	
+FCSS	Smooth shaft
+FCKS	Fitted key
Motor shaft size *(character +)*	
+FD11	11 mm
+FD14	14 mm
+FD19	19 mm
+FD24	24 mm
+FD32	32 mm
Feedback type *(character +)*	
+FFS0	Singleturn 17-bit BISS-C
+FFS1	Singleturn 17-bit HIPERFACE DSL
+FFM1	Multiturn 17-bit HIPERFACE DSL
+FFM3	Safety multiturn 20-bit HIPERFACE DSL

Flange size *(character +)*	
+FG070	70 mm
+FG087	87 mm
+FG091	91 mm
+FG100	100 mm
+FG116	116 mm
+FG142	142 mm
Gear *(character +)*	
+FHXX	Without gear (Standard)
Rated speed *(character +)*	
+FN04	400 RPM
+FN10	1000 RPM
+FN20	2000 RPM
+FN22	2200 RPM
+FN30	3000 RPM
+FN45	4500 RPM
+FN60	6000 RPM
Shaft seal *(character +)*	
+FSXX	Without shaft seal
+FSSS	With shaft seal
Shipping package *(character +)*	
+TACB	Individually packaged (Standard)
+TAMP	All products shipped in 1 package

[1] *Note: Not all combinations are possible. To configure your drive with correct combinations, use the online configurator located here:* ***Motion Controls and Servo Drives***

Example

[1-7]		[8-9]		[10-14]		[15-16]		[+]		[+]		[+]		[+]		[+]		
ISD-520	+	D6	+	–01T5	+	PL	+	+BEF1	+	+CTXX	+	+EGXX	+	+EHXX	+	+FAXX	+	+FCSS	+ ...

ISD-520D6-10T5PL+BEF1+CTXX+EGXX+EHXX+FAXX+FCSS...

VLT® Decentral Servo Drive DSD 520

The VLT® Decentral Servo Drive DSD 520 extends the decentral servo drive concept. With rated power up to 2.3 kW and supporting a wide range of feedback encoders, its architecture is completely open and allows you to choose your preferred PM or ASM motor.

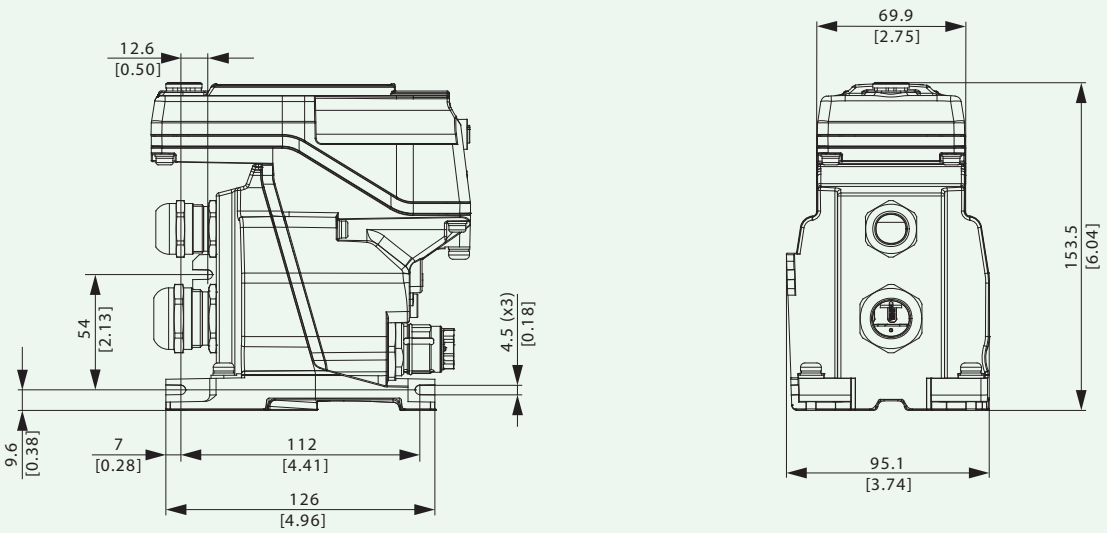
The DSD 520 is powered by the VLT® Power Supply Module PSM 520 and the integrated option, Decentral Access Module (DAM). The Plug and Twist hybrid cabling concept, including supply and control voltage as well as functional safety and fieldbus wires, makes the installation fast, easy, fail-safe, and cost-efficient. Since multiple decentral drive units can be connected to just one PSM 520 module (including integrated DAM option) through simple daisy-chain wiring, no distribution boxes are needed and you can reduce cabling to a minimum.

A completely smooth and easy-to-clean surface, together with high-protection IP67 enclosure and vibration resistance class 3M7, ensures the perfect fit for all kinds of rotating applications in demanding environments.

Specifications

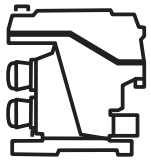
DSD 520		
Rated voltage	V DC	565-680 +/-10%
Rated current I_N	A rms	4.5
Maximum current I_{max}	A rms	12.5
Rated power P_N	kW [hp]	2.3 [3.08]
Nominal switching frequency	kHz	8/10
Possible switching frequency	kHz	4/5
Protection rating		IP67
Weight	kg [lbs]	2.3

Dimensions



Dimensions are in mm [inch]

Ordering model code [1]



Product group *(character 1-7)*	
DSD-520	VLT® Decentral Servo Drive 520
Mains voltage *(character 8-9)*	
D6	600 V DC
Current rating *(character 10-14)*	
–05A0	4.5 A
Communication interface *(character 15-16)*	
PL	Ethernet POWERLINK®
EC	EtherCAT®
PN	PROFINET®
Functional Safety *(character +)*	
+BEF1	Hard-wired STO (standard)
+BEFS	Functional safety option VLT® FlexSafety™

Option board *(character +)*	
+CTXX	Without option board (standard)
+CTIO	Standard I/O option board
+CTSO	Safe I/O option board
Technical documentation *(character +)*	
+EGXX	None (Standard)
+EGIN	Installation guide
Documentation language *(character +)*	
+EHXX	Multilanguage (Standard)
Customer-specific label *(character +)*	
+EJXX	None (Standard)
Feedback type *(character +)*	
+FFMF	Multi-feedback interface (Standard)

Motor connection *(character +)*	
+FITS	Terminal box single connection
+FITD	Terminal box dual connection
+FIBE	Terminal bottom-entry connection
+FIS3	Single plug M23 connection
+FID3	Dual plug M23 connection
Shipping package *(character +)*	
+TACB	Individually packaged (Standard)
+TAMP	All products shipped in 1 package

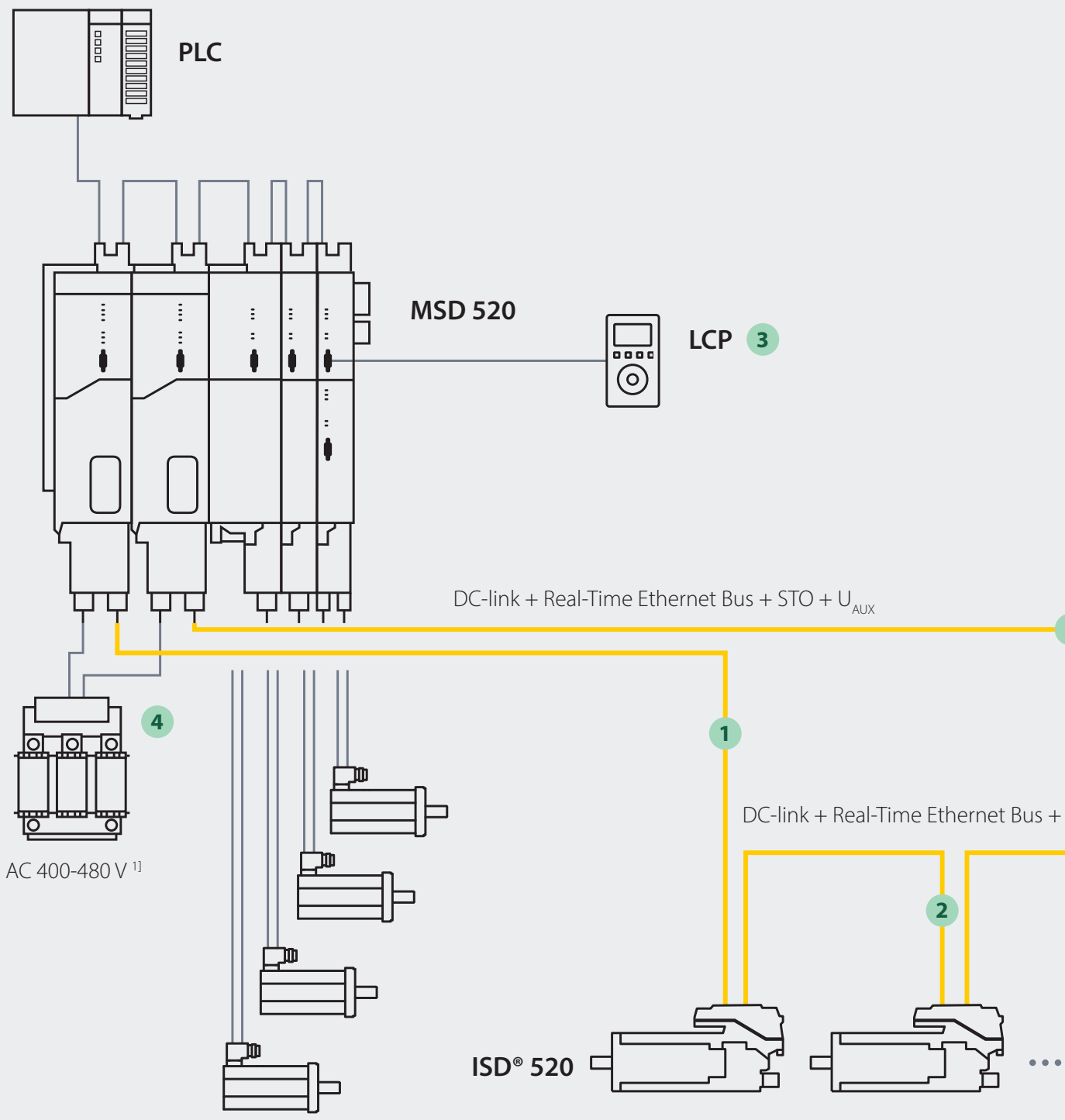
[1] *Note: Not all combinations are possible. To configure your drive with correct combinations, use the online configurator located here:* ***Motion Controls and Servo Drives***

Example

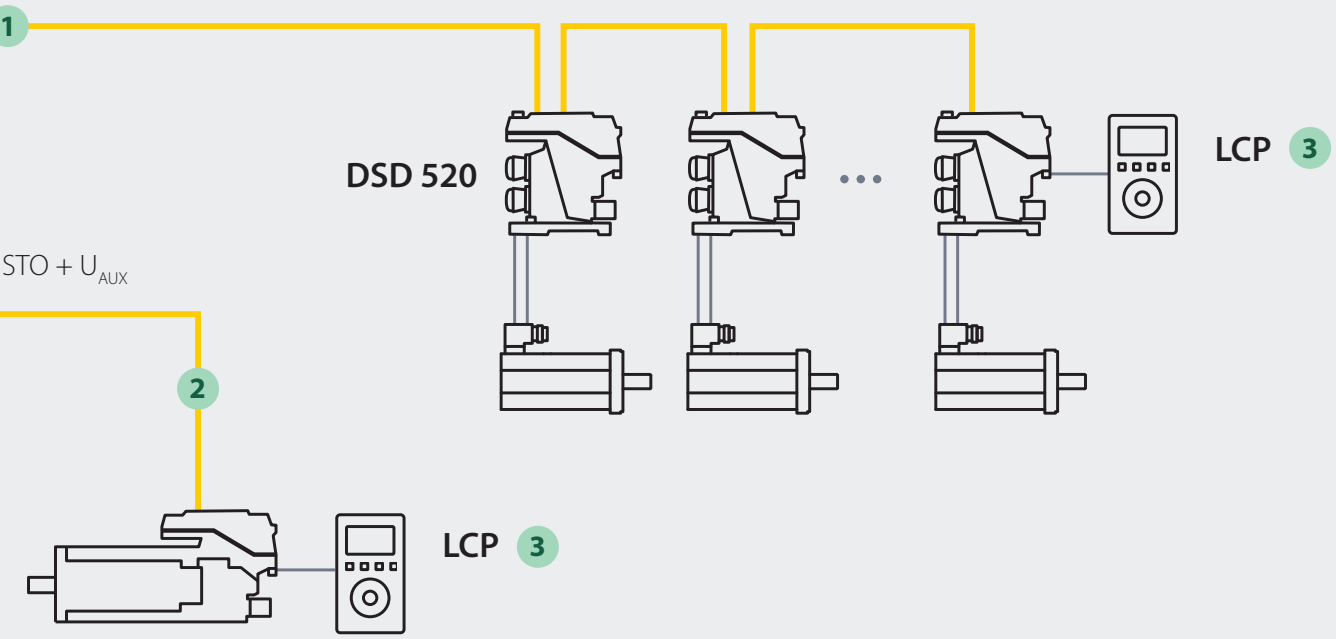
[1-7]		[8-9]		[10-14]		[15-16]		[+]		[+]		[+]		[+]		[+]		
DSD-520	+	D6	+	–05A0	+	PL	+	+BEF1	+	+CTXX	+	+EGXX	+	+EHXX	+	+FFMF	+	+FITS + ...

DSD-520D6-05A0PL+BEF1+CTXX+EGXX+EHXX+FFMF+FITS...

Accessories and options



[1] *It is mandatory to use a 3-phase AC line choke close to the PSM 520. For technical details please refer to the MSD 520 Operating Guide.*


1
DSD 520
LCP
3
STO + U_{AUX}
2
LCP
3

Accessories and options

Fast, reliable and simple hybrid cables are available in numerous configurations and various lengths. Use feed-in cables to connect the PSM 520 *(with integrated DAM option)* with the first decentral drive in the line. Then use loop cables to continue the daisy chain from one ISD 520 or DSD 520 to the next. For flexibility as well as drag chain robustness, selected hybrid cable materials fulfill the individual application demands.

Check the product catalog at store.danfoss.com to find the full range of accessories available.
Search for Accessories during product configuration at Motion Controls and Servo

1 2

Loop cable M23 90° - M23 90°

Loop cable M23 180° - M23 180°

Feed-in cable Open - M23 90°

Feed-in cable Open - M23 180°

Feed-in cable DAM - M23 180°

Feed-in cable DAM - M23 90°

3 VLT® Local Control Panel LCP 102

Description	Ordering number
VLT® Local Control Panel LCP 102 *(Graphical)*	130B1107
LCP Cable (SUB-D to M8), 3 m [9.8 ft] cable	175G8942 [1]
LCP Cable (SUB-D to SUB-D) 3 m [9.8 ft] cable	175Z0929 [2]
LCP remote mounting kit (IP21) including LCP, fasteners, 3 m [9.8 ft] cable, and gasket	130B1170
LCP remote mounting kit (IP21) without LCP, but including fasteners, 3 m [9.8 ft] cable, and gasket	130B1117

[1] Use 175G8942 for ISD 520 and DSD 520
[2] Use 175Z0929 for MSD 520 (PSM 520, SDM 521, and SDM 522)

4 AC line choke

Description	Ordering number
3 Phase Line Reactor 20 A	175G0179
3 Phase Line Reactor 63 A	175G0178
3 Phase Line Reactor 40 A	175G0192
3 Phase Line Reactor 125 A	175G0299

Discover more about VLT® FlexMotion™ here:
drives.danfoss.com/flexmotion

General-purpose servo drive solution

Imagine versatile and highly secure power conversion and motor control. Intensely powerful and compact converters and drives built to optimize a vast range of systems while giving you the flexibility to distribute intelligence the way you want.
Paving the way for a new dimension, where open, connected and intelligent systems are the new reality.

Danfoss Drives A/S
Ulsnaes 1
6300 Graasten
Denmark
CVR reg. no. 19883876