ENGINEERING
TOMORROW

VLT® Midi Drive FC 280

The **key** to unlocking your **efficiency potential**

Reach

new levels of performance with the VLT® Midi Drive FC 280

www.vlt-drives.danfoss.com

VLT® THE REAL DRIVE

Reach **new** levels of **performance** and access your **true high-efficiency potential...**

...with the VLT® Midi Drive FC 280, the evolution of the popular VLT® 2800 drive. Unlock savings, with a wide range of features designed to make installing, using and maintaining the drive as simple and as easy as possible – just set it and forget it.

For precise and efficient motor control for machine builders in the food and beverage, material handling and processing industries, the VLT® Midi Drive is ideal. It is strong on control performance, functional safety, and flexible fieldbus communication.

The right mix of features ensures the drive suits your task, whether for conveyor systems, mixers, and packaging systems or driving pumps, fans and compressors.

With all-pluggable connectors, integrated DC choke, RFI filter, and dual channel STO functional safety, the drive is easy to use and there are no hidden extras.

The VLT® Midi Drive gives you the key to

- Easy and fast installation and set-up
- Savings on cost and space
- Flexibility – to suit your task

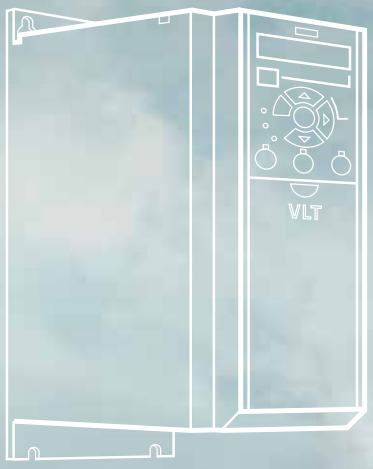
...giving you the freedom to achieve your system goals.

Set and forget

Built on the success and experience of more than 45 years in the drives field, the VLT® Midi Drive shares the same technical heritage represented by the VLT® name in frequency converters.

Easy retrofit

VLT® Midi Drive is prepared for compatibility with the VLT® 2800: exterior dimensions, cable plugs, cable lengths and set-up software tools – making for an easy retrofit in established plant or machinery concepts.



Therefore you can rely on the same low-maintenance robustness and reliability – once you have set it, it will run reliably, earning you energy savings for years on end.

Freedom from extra components

- With integrated DC choke for harmonics mitigation there are no additional component costs.
- The built-in RFI disconnect switch minimises leakage current and optimises operating safely on IT mains – as standard.
- The drive is designed to operate at 45-50°C ambient temperature at full load and 55°C with derating. This means that there is no need to install extra cooling equipment or oversize the drive, resulting in cost savings.

These integrated features save you additional purchases and save space too – a real key to cost saving.

All-pluggable

Pluggable terminals make this the easiest wiring task imaginable for installation and service – simply plug in and plug out for mains, RS485, I/O and motor connections.

Compact design for easy installation

The compact design, and side by side mounting with zero clearance between the drives, allow the owners to optimize panel space.

Easy retrofit

VLT® Midi Drive is prepared for compatibility with the VLT® 2800: exterior dimensions, cable plugs, cable lengths and set-up software tools – making for an easy retrofit in established plant or machinery concepts.

NEW – Easy transfer of settings and firmware updates

The VLT® Memory Module facilitates helpful implementation of factory settings for machine builders, fast installation of firmware updates, and easy commissioning or exchange of drives – a first for VLT® frequency converters.

Insert the VLT® Memory Module in the VLT® Memory Module Programmer and connect to the PC with a standard USB cable. Then transfer settings configured in VLT® Motion Control Tool MCT 10 software.

Save time on setup

Numeric or graphical LCP

Easy parameter set-up makes the path to energy savings both short and simple, and can be carried out with an enhanced numeric LCP or graphical control panel that supports six languages.
Targeted 'Application Selections' make it easy for users to set up and commission typical applications.

VLT® Motion Control Tool MCT 10

Configure and monitor the FC 280 with Danfoss' own VLT® Motion Control Tool MCT 10 software. This provides plant managers with a comprehensive overview over the system at any point in time and a high level of flexibility in configuration and monitoring. There is even a USB port enabling fast PC connection for commissioning and troubleshooting.

Suits your task

Choose the VLT® Midi Drive, whatever you task is. A broad range of fieldbus options suits protocols around the globe. International certification includes CE and UL.
Because it's compatible with both asynchronous and PM motors, you also win the freedom to choose the best high-efficiency motor for your task.

Designed to meet industrial needs

Integrated DC chokes

- Integrated DC chokes reduce harmonics to less than 48% THDi.

Integrated functional safety

- FC 280 is delivered as standard with a dual channel Safe Torque Off (STO) function in compliance with ISO 13849-1 PL d and SIL 2, according to IEC 61508 and IEC 62061

Integrated brake chopper

- A built-in brake chopper for three-phase drives in the whole power range saves money and panel space.

Pulse input as speed reference

- FC 280 offers the capability to convert pulse input as a speed reference, avoiding the need to purchase an analog signal module for the PLC.

Integrated PID controller

- The built-in PID controller calculates an 'error' value as the difference between a measured process variable and a desired setpoint.

Integrated RFI filter

- Built-in filters not only save space, but also eliminate additional costs for fitting, wiring, and material. The integrated RFI filter improves power supply quality, avoiding malfunction and improving the reliability of surrounding components

The VLT® Memory Module is a first for VLT® frequency converters. It facilitates helpful implementation of factory settings, fast installation of firmware updates, and easy transfer of settings.

Coated PCBs

- The printed circuit boards (PCB) are coated as standard according to 3C3 (IEC 60721-3-3) classification against corrosive gases – providing high reliability in harsh environments, preventing failures and unnecessary downtime increasing lifetime of the drive.

PM motor compatibility

- You win the freedom to choose the best high-efficiency motor for your application. The VLT® Midi Drive provides highly efficient permanent magnet (PM) motor control in open loop under VVC+ in the whole power range.

Reliable back-up concept

- External 24 V back-up option for power supply, to keep fieldbus communication on, while disconnected from mains.

Fieldbus communication

- Communicate using a wide range of process automation protocols:
- CANopen
- PROFIBUS
- PROFINET
- EtherNet/IP
- Modbus

Features and benefits

Feature	Benefit
Integrated harmonics and EMC design	
Integrated DC choke	– Saves installation time and panel space requirements – Improves power supply quality and helps extend DC capacitor lifetime
Integrated EMC filter	– Avoiding malfunction and improving reliability of surrounding components
RFI switch	– Operates safely on IT mains – Trouble-free operation of ground leakage monitoring devices
Easy to install and set up	
Pluggable terminals	– Fast installation and exchange
Memory module (option)	– Convenient transfer of parameter set-up – Easy firmware updates – Easy and fast commissioning
Memory module programmer	– Convenient programming of the VLT® Memory Module via PC
Enhanced Numerical LCP (option)	– Cost effective user interface
Adapter for Graphical LCP supporting many languages (option)	– Easy set-up in your own language – Fast troubleshooting
USB port	– Easy PC connection for troubleshooting or commissioning – No need for adapter or PC-USB driver
Application set-up wizards	– Easy commissioning
Strategic design for applications, safety, and motor control	
Integrated Safe Torque Off (STO), dual channel	– Eliminates external components – Enables reliable functional safety
Control algorithm runs both asynchronous and PM motors	– Freedom to choose the best high-efficiency motor for the task
Integrated brake chopper for 3-phase drives in power sizes up to 22 kW	– No cost for external braking chopper
Side-by-side or horizontal mounting, without derating	– Saves panel space and cost
Operates at up to 45 °C without derating	– Saves cost for external cooling and reduces downtime for overtemperature failures

The key to **practicality** and **performance**

This drive delivers ease of use and high performance in food and beverage industries, material handling and processing industries.

The right mix of features is the key to optimising performance for your task, for

Conveyor systems

Release the conveyor from mechanical stress via controlled acceleration and deceleration – promoting longer life and lower operating costs.

Mixers

Upgrade from VLT® 2800, free of redesign – the VLT® Midi Drive fits perfectly. Even upgrade to the high-efficiency motor of your choice – VLT® Midi Drive is compatible.

Integrated DC choke reduces harmonics to less than

48% THDi

Packaging systems
Enjoy compact size and integrated harmonics mitigation, with STO to comply with industrial machine standards.

Pumps
Enjoy reliable operation together with integrated EMC filter and harmonics mitigation.

Fans
Achieve up to 50% energy savings by a 20% reduction in fan speed, and save on carbon emissions too.

Compressors
Enjoy built-in functional safety and the fieldbus protocol of your choice, whilst optimising performance coefficient.

Specifications

Mains supply (L1, L2, L3)	
Supply voltage	200-240 V (-15%/+10%) 380-480 V (-15%/+10%)
Supply frequency	50/60 Hz
Displacement power factor (cos φ)	Near unity (> 0.98)
Switching frequency on input supply L1, L2, L3	Switching maximum 2 times/minute
Output data (U, V, W)	
Output voltage	0 – 100% of supply voltage
Switching on output	Unlimited
Ramp times	0.01-3600 s
Frequency range	0-500 Hz
Programmable digital inputs and outputs	
Digital inputs / digital outputs*	6 (7) / 1
Logic	PNP or NPN
Voltage level	0-24 V DC

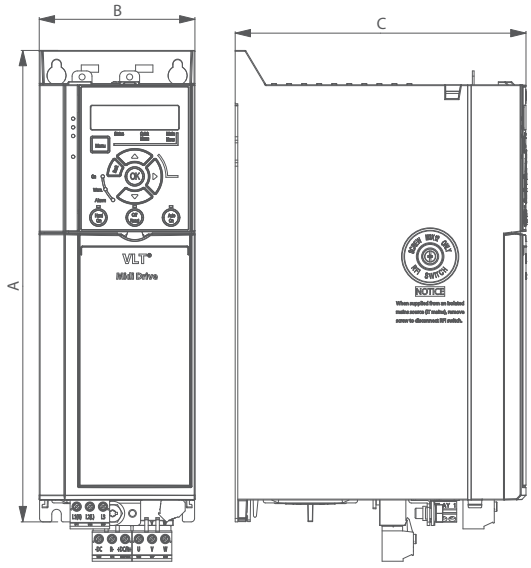
**Note: One digital input can be configured as pulse output*

Pulse and encoder inputs	
Pulse inputs / encoder inputs**	2/2
Voltage level	0–24 V DC

***Note: Two digital inputs can be configured as pulse inputs.*
Two digital inputs can be configured as encoder inputs

Programmable analog inputs	
Analog inputs	2
Modes	1 voltage or current / 1 current or DI
Voltage level	0 V to +10 V (scaleable)
Current level	0/4 to 20 mA (scaleable)
Programmable analog outputs	
Analog outputs	1
Current range at analog output	0/4 to 20 mA
Programmable relay outputs	
Relay outputs	1
Approvals	
Approvals	CE, UL listed, cUL, TÛV

Dimensions



Enclosure	K1	K2	K3	K4	K5
Power size [kW] at voltage 380–480 V	0.37-2.2	3.0-5.5	7.5	11-15	18.5-22
Height A [mm]	210	272.5	272.5	320	410
Width B [mm]	75	90	115	135	150
Depth C [mm]	168	168	168	245	245

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- Flexibility to suit your task

Unlock
the true potential of your solutions

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