VLT® HVAC Drive

The VLT® HVAC Drive series is available in the power range 1.1 – 450 kW designed for all HVAC applications. An advanced drive built on HVAC dedication.

The new VLT® HVAC Drive is the latest series of HVAC drives from Danfoss with built in intelligence.
The VLT® HVAC Drive has a vast number of functions developed to meet the diverse needs of the HVAC business. It is the perfect match for pumps, fans and compressors in modern buildings that are fitted with increasingly sophisticated solutions.

Product range

3 x 380 – 480 V	1.1 – 450 kW
3 x 200 – 240 V	1.1 – 45 kW
3 x 525 – 600 V	1.1 – 450 kW

With 110% over load torque

Available enclosure ratings:

IP00:	110 – 450 kW
IP20 (NEMA1):	1.1 – 7.5 kW
IP21 (NEMA1):	1.1 – 450 kW
IP54 (NEMA12):	110 – 450 kW
IP55 (NEMA12):	1.1 – 90 kW
IP66 (NEMA4X)	1.1 – 90 kW

Optional coating providing extra protection for aggressive environments.

Features	Benefits
All built in – low investment	
• Modular product concept and a wide range of options	• Low initial investment – max. flexibility, later upgrade possible
• Dedicated HVAC I/O functionality for temperature sensors etc.	• External convertion saved
• Decentral I/O control via serial communication	• Reduced wiring costs. and external controller I/O saved
• Wide range of HVAC protocols for BMS controller connectivity	• Less extra gateway solutions needed
• 4 x auto tuned PID's	• No external PID controller needed
• Smart Logic Controller	• Often makes PLC unnessary
• Real Time Clock	• Enables daily and weekly settings
• Integrated fan, pump and compressor functionality i.e.	• Saves external control and concersion equipment
• Fire Override Mode, Dry run Detection Constant Torque etc.	• Protect equipment and save energy
Save energy – less operation cost	
• Automatic Energy Optimizer function, advanced version	• Saves 5-15 % energy
• Advanced energy monitoring	• Overview on energy consumption
• Energy saving functions i.e. flow compensation, sleepmode etc.	• Saves energy
Unequalled robustness – maximum uptime	
• Robust single enclosure	• Maintenance free
• Unique cooling concept with no ambient air flow over electronics	• Problem free operation in harsh environments
• Max ambient temp. 50˚C without derating	• No external cooling or over size necessary
User friendly – save commisioning and operating cost	
• Awarded graphical display, 27 languages	• Effective commissioning and operation
• USB plug and play connection	• Easy to use PC software tools
• Global HVAC support organization	• Local service – globally
Built in DC coils and RFI filters – no EMC concerns	
• Integrated DC link harmonic filters	• Small power cables, ext. capacitor lifetime
• Integrated EMC filters	• Meets EN 55011 Class B, A1 or A2

VLT®
THE REAL DRIVE

Application options

A wide range of integrated HVAC options can be fitted in the drive:

General purpose I/O option:
3 digital inputs, 2 digital outputs, 1 analog current output, 2 analog voltage inputs.

Relay option:
Adds 3 relay outputs

Analogue I/O option adds:
3 Pt1000 / Ni1000 inputs, 3 analog voltage outputs

External 24 VDC supply option:
24 VDC external supply can be connected to supply, control and option cards.

Brake chopper option:
Connected to an external brake resistor, the built in brake chopper limits the load on the intermediate circuit in the case the motor acts as generator.

Power options

A wide range of external power options are available for VLT® HVAC Drive in critical networks or applications:

- **Advanced harmonic filters**: For critical demands on harmonic distortion
- **dU/dt filters**: For special demands on motor isolation protection
- **Sine wave filters** (LC filters): For noiseless motor

HVAC PC software tools

- **MCT 10**
  Ideal for commissioning and servicing the drive
- **VLT® Energy Box**
  Comprehensive energy analysis tool, shows the drive payback time
- **MCT 31**
  Harmonics calculations tool

Specifications

Mains supply (L1, L2, L3)	
Supply voltage	200–240 V ±10%
Supply voltage	380–480 V ±10%
Supply voltage	525–600 V ±10%
Supply frequency	50/60 Hz
Displacement Power Factor (cos φ) near unity	(> 0.98)
Switching on input supply L1, L2, L3	1–2 times/min.

Output data (U, V, W)	
Output voltage	0–100% of supply voltage
Switching on output	Unlimited
Ramp times	1–3600 sec.
Open/Closed loop	0–1000 Hz

Digital inputs	
Programmable digital inputs	6*
Logic	PNP or NPN
Voltage level	0–24 VDC

* 2 can be used as digital outputs

Pulse inputs	
Programmable pulse inputs	2
Voltage level	0–24 VDC (PNP positive logic)
Pulse input accuracy	(0.1–110 kHz)

* Utilize some of the digital inputs

Analog input	
Analog inputs	2
Modes	Voltage or current
Voltage level	0 V to +10 V (scaleable)
Current level	0/4 to 20 mA (scaleable)

Analog output	
Programmable analog outputs	1
Current range at analog output	0/4–20 mA

Relay outputs	
Programmable relay outputs	2 (240 VAC, 2 A and 400 VAC, 2 A)

Fieldbus communication	
Standard built-in: FC Protocol N2 Metasys FLN Apogee Modbus RTU	Optional: LonWorks BACnet DeviceNet Profibus