VLT® HVAC Drive

Features and benefits - securing lowest life time cost

The VLT® HVAC Drive series available in the power range 1.1 kW – 400 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 – 400 kW
3 x 200 – 240 V	1.1 – 45 kW
3 x 525 – 600 V	1.1 – 7.5 kW

With 110% over load torque

Available enclosure ratings:

IP00 :	11 – 355 kW
IP20 (NEMA1):	1.1 – 7.5 kW
IP21 (NEMA1):	1.1 – 400 kW
IP54 (NEMA12):	110 – 400 kW
IP55 (NEMA12):	1.1 – 90 kW

Optional coating providing extra protection for aggressive environments.

All built in - low investment	
• Modular product concept and a wide range of options	- low initial investment - max. flexibility
• 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 omissible
• Real Time Clock	- enables daily and weekly settings
• Integrated fan, pump and compressor functionality i.e. Fire Override Mode, Dry Pump Detection, Constant Torque etc.	- saves external control and concersion equipment

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 temperature 50 deg. Celsius without derating	- no external cooling or over size nessessary

User friendly - save commisioning and operating cost	
• Awarded Graphical display, 27 languages	- Effective commisioning 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 life
• Integrated EMC filters	- meets EN 55011 A2, A1 or B

Specifications

Mains supply (L1, L2, L3):	
Supply voltage:	200-240 V ±10%
Supply voltage:	380-500 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.
Closed loop	0-132 Hz

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

* 2 can be used as digital outs

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

Pulse inputs:	
Programmable pulse inputs	2
Voltage level	0 - 24 VDC (PNP positive logic)
Pulse input accuracy (0.1 - 110 kHz)	
Utize some of the digital inputs	

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:	Optional:
• FC Protocol	• LonWorks
• N2 Metasys	• BACnet
• FLN Apogee	• DeviceNet
• Modbus RTU	• Profibus

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:
3 relay outputs

Analogue I/O option:
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 ciruit 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 filters** (LC filters): For noiseless motor

HVAC PC software tools

- **MCT 10**
  – ideal for commissioning and servicing the drive
- **VLT® HVAC Planet**
  – an interactive design guide including application examples.
- **VLT® Energy Box**
  - comprehensive energy analysis tool, shows the drive pay-back time
- **MCT 31**
  – harmonics calculations tool