

VLT® HVAC Drive



Product range:

3 x 380 – 480 V.....	1.1 – 1000 kW
3 x 200 – 240 V.....	1.1 – 45 kW
3 x 525 – 600 V.....	1.1 – 1000 kW
3 x 525 – 690 V.....	132 – 1400 kW

With 110% over load torque

Available enclosure ratings:

IP 00:	110 – 1000 kW
IP 20:	1.1 – 90 kW
IP 21 (NEMA 1):	1.1 – 1400 kW
IP 54 (NEMA 12):	110 – 1400 kW
IP 55 (NEMA 12):.....	1.1 – 90 kW
IP 66.....	1.1 – 90 kW

Optional coating providing extra protection for aggressive environments.

The VLT® HVAC Drive series is available in a wide power range 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.

Feature	Benefit
All built-in – low investment	
<ul style="list-style-type: none"> Modular product concept and a wide range of options Dedicated HVAC I/O functionality for temperature sensors etc. Decentral I/O control via serial communication Wide range of HVAC protocols for BMS controller connectivity 4 x auto tuned PID's Smart Logic Controller Real Time Clock Integrated fan, pump and compressor functionality i.e. Fire Override Mode, Dry run Detection Constant Torque etc. 	<ul style="list-style-type: none"> Low initial investment – max. flexibility, later upgrade possible External conversion saved Reduced wiring costs, and external controller I/O saved Less extra gateway solutions needed No external PID controller needed Often makes PLC unnecessary Enables daily and weekly settings Saves external control and conversion equipment Protects equipment and saves energy
Save energy – less operation cost	
<ul style="list-style-type: none"> Automatic Energy Optimizer function, advanced version Advanced energy monitoring Energy saving functions i.e. flow compensation, sleep mode etc. 	<ul style="list-style-type: none"> Saves 5 – 15% energy Overview on energy consumption Saves energy
Unequalled robustness – maximum uptime	
<ul style="list-style-type: none"> Robust single enclosure Unique cooling concept with no ambient air flow over electronics Max ambient temp. 50° C without derating 	<ul style="list-style-type: none"> Maintenance-free Problem-free operation in harsh environments No external cooling or oversize necessary
User friendly – save commissioning and operating cost	
<ul style="list-style-type: none"> Awarded graphical display, 27 languages USB plug and play connection Global HVAC support organisation 	<ul style="list-style-type: none"> Effective commissioning and operation Easy to use PC software tools Local service – globally
Built-in DC coils and RFI filters – no EMC concerns	
<ul style="list-style-type: none"> Integrated DC link harmonic filters Integrated EMC filters 	<ul style="list-style-type: none"> Small power cables. Meets EN 61000-3-12 Meets EN 55011 Class B, A1 or A2

Application options

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

General purpose I/O option (MCB 101):
3 digital inputs, 2 digital outputs, 1 analogue current output, 2 analogue voltage inputs.

Relay option (MCB 105):
Adds 3 relay outputs

Analogue I/O option (MCB 109):
3 Pt1000/Ni1000 inputs, 3 analogue voltage outputs

External 24 VDC supply (MCB 107):
24 VDC external supply can be connected to supply, control and option cards.

Battery back-up for Real Time Clock (MCB 109).

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. Mains Disconnect Switch as a built-in option.

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	
Analogue input	
Analogue inputs	2
Modes	Voltage or current
Voltage level	0 V to +10 V (scaleable)
Current level	0/4 to 20 mA (scaleable)
Analogue output	
Programmable analogue outputs	1
Current range at analogue 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 (MCA 108) BACnet (MCA 109) DeviceNet (MCA 104) Profibus (MCA 101)

Dimensions [mm]

	A2	A3	A5	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4	E1	E2	F1	F2	F3	F4
H	268		420	480	650	399	520	680	770	550	660	1209	1589	1046	1327	2000	1547	2204			
W	90	130		242		165	230	308	370	308	370	420		408		600	585	1400	1800	2000	2400
D	205		195	260		249	242	310	335	333		380		375		494	498	606			
H+	375					475	670			755	950										
W+	90	130				165	255			329	391										

H and W dimensions are with back-plate. H+ and W+ are with IP upgrade kit. D dimensions are without option A/B.