

# VLT

## VLT® HVAC Drive

The VLT® HVAC Drive series is an advanced drive built on HVAC dedication, available in a wide power range and designed for all HVAC applications.

The VLT® HVAC Drive is a full-featured, HVAC dedicated drive 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 200 – 240 V.....1.5 – 60 HP  
 3 x 380 – 480 V.....1.5 – 1350 HP  
 3 x 525 – 600 V.....1.5 – 1350 HP  
 With 110% overload torque

### Available enclosure ratings:

IP 00.....148 – 1350 HP  
 IP 20.....1.5 – 120 HP  
 IP 21 (NEMA 1).....1.5 – 1875 HP  
 IP 54 (NEMA 12).....110 – 1400 kW  
 IP 55 (NEMA 12).....1.1 – 90 kW  
 IP 66 (NEMA 4X).....1.1 – 90 kW

Feature	Benefit
<b>All built-in – low investment</b>	
• 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 conversion saved
• Decentral I/O control via serial communication	• Reduced wiring costs and fewer controller I/O needed
• Wide range of HVAC protocols for BMS controller connectivity	• Less extra gateway solutions needed
• 4 x auto tuned PID's	• No external PID controllers required
• Smart Logic Controller	• Often makes external controller unnecessary
• Real Time Clock	• Enables daily and weekly settings
• Integrated fan, pump and compressor functionality	• Reduces external control and conversion equipment needs
• Fire Override Mode, Dry Run Detection	• Protects equipment and saves energy
• Variable or Constant Torque	
<b>Save energy – less operation cost</b>	
• Automatic Energy Optimizer function, advanced version	• Saves 5 – 15% energy
• Advanced energy monitoring	• Overview on energy consumption
• Energy saving functions i.e. flow compensation, sleep mode	• Saves energy
<b>Unequaled robustness – maximum uptime</b>	
• 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 derating necessary
<b>User friendly – save commissioning and operating cost</b>	
• Smart Start	• Quick and precise start-up
• Award winning graphic 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
<b>Built-in DC coils and RFI filters – no EMC concerns</b>	
• Integrated DC link harmonic filters	• Small power cables. Meets EN 61000-3-12
• Integrated EMC filters	• 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 analog current output, 2 analog voltage inputs.
- **Relay option (MCB 105)**  
Adds 3 relay outputs
- **Analog I/O option (MCB 109)**  
3 Pt1000/Ni1000 inputs, 3 analog voltage outputs
- **External 24 VDC supply (MCB 107)**  
24 VDC external supply can be connected to supply control and option cards when main power is disconnected.
- **Brake chopper option**  
Connected to an external brake resistor, the built-in brake chopper limits the DC bus voltage when the motor acts as generator.
- **Mains Disconnect Switch**  
Built in

### Power options

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

- **Advanced harmonic filters**  
For critical limitations on harmonic distortion
- **dV/dt filters** For special demands on motor insulation protection
- **Sine wave filters** (LC filters)  
For noiseless motor and when long motor leads are required

### 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** Harmonic analysis tool

Power 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 BACnet	Optional: LonWorks (MCA 108) BACnet (MCA 109) DeviceNet (MCA 104) Profibus (MCA 101)
OSHDP Special Seismic Certification	
Pre-Approval	Certification expedites seismic authorization by regulatory agencies.

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