ENGINEERING TOMORROW

Fact Sheet

VLT® HVAC Drive FC 102

Product range

1 x 200 – 240 V.....1.1 – 22kW
3 x 200 – 240 V.....1.1 – 160 kW
3 x 380 – 480 V.....1.1 – 1000 kW
3 x 525 – 600 V.....1.1 – 90 kW
3 x 525 – 690 V.....1.1 – 1400 kW
With 110% overload torque

Available protection ratings

IP 00 .....355 – 1200 kW
IP 20.....1.1 – 800 kW
IP 21.....1.1 – 1400 kW
IP 54.....7.5 – 1400 kW
IP 55.....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 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 needs of the HVAC business. It is the perfect match for pumps, fans and compressors in modern buildings that are fitted withincreasingly sophisticated solutions.

Intelligent application functions support and optimize the application operation to gain maximum uptime with minimal energy consumption. A built-in energy meter document the consumption and Condition Based Monitoring, with application baseline, indicated from first power up the application performance.

98%
energy efficiency
Save energy and money with up to **98% efficiency VLT®** drives.

Feature	Benefit
All built-in – low investment	
Modular product concept with 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 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
Programable Smart Logic Controller	Often makes external controller unnecessary
Real Time Clock	Enables daily and weekly operation with intelligent features
Integrated fan, pump and compressor functionality for optimal control	Saves external control and conversion equipment
Intelligent feature like Fire Emergency Mode, Dry run Detection, Variable or Constant Torque etc.	Multi operation zones to protect human life & inventory and save energy.
Save energy – less operation cost	
Smart "Back-channel" cooling concepts to minimize room ambient temperature	Reduce energy to cool-down the drives and prolong
Automatic Energy Optimizer function	Saves 5 – 15% energy
Advanced energy monitoring	Overview on energy consumption
Energy saving functions i.e. flow compensation, sleep mode etc.	Saves energy and wear & tear on the system
Built to last - maximize uptime	
Advanced Condition Based Monitoring with application baseline.	Maximize uptime on notification when application change
Robust single enclosure	Easy installation even in a demanding environment
Unique cooling concept with no ambient air flow over electronics	Problem-free operation in harsh environments
Operation temperature from -13°F to +131°F, see design guide for more details.	No external cooling or oversize necessary
User-friendly – save commissioning and operating cost	
Smart Start	Quick and precise start-up
Award winning graphic display, 27 languages	Effective commissioning and operation
USB and Wifi connection	Easy to use PC software tools and Apps for Smart devices
Global HVAC support organisation	Local service – globally
Built-in DC coils and RFI filters – no EMC concerns	
Integrated DC link harmonic filters	Effective harmonic mittigation with low power consumption. Meets EN 61000-3-12
IntegratedEMC filters	Meets IEC 61800-3 in Category C1, C2 and C3

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Application options

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

VLT® General Purpose I/O MCB 101
3 digital inputs, 2 digital outputs,
1 analog current output,
2 analog voltage inputs.

VLT® Relay Card MCB 105
Adds 3 relay outputs.

VLT® 24 V External Supply MCB 107
24 VDC external supply can be connected to supply control and option cards when mains power is disconnected.

VLT® Analog I/O MCB 109
3 Pt1000/Ni1000 inputs, 3 analogue voltage outputs and back-up power for Real-Time Clock.

VLT® Extended Relay Card MCB 113
7 digital inputs, 2 analog outputs 4 SPDT relays, Meets NAMUR recommendations, Galvanic isolation capability

VLT® Sensor Input MCB 114
Sensor input card for motor protection with 2 or 3 PT100 or PT1000 inputs

Brake chopper (IGBT) option
Connection to external brake resistor to absorb the generated energy form the motor.

PTU-025 Pressure transmitter
4 sensor inputs to monitor AHU filter and control the airflow.

ErP READY APPLIES TO EUROPEAN DIRECTIVE VENTILATION UNITS (AHU)

Power options

A wide range of external power options to support critical applications:

- VLT® Advanced Harmonic Filter
  For critical demands on harmonic distortion
- VLT® dU/dt Filter
  For special demands on motor isolation protection

Specifications

Mains supply (L1, L2, L3)	
Supply voltage	200 – 240 V ±10% 380 – 480 V ±10% 525 – 600 V ±10% 525 – 690 V ±10%
Supply frequency	50/60 Hz
Displacement power factor (cos φ)	> 0.98 near unity
Switching on input supply L1, L2, L3	1–2 times/min.
Output data (U, V, W)	
Output voltage	0–100% of supply voltage
Ramp times	1–3600 s
Output frequency	0–590 Hz
Digital inputs	
Programmable digital inputs	6*
Programmable pulse inputs	2* (PNP positive logic)
Pulse input accuracy	(0.1–110 kHz)
Logic	PNP or NPN
Voltage level	0–24 VDC
* 2 can be used as digital outputs or pulse inputs	
Relay outputs	
Programmable relay outputs	2 (240 VAC, 2 A and 400 VAC, 2 A)
Digital outputs	
Programmable digital output	2*
Voltage level	24 VDC (+1, -3 V) 200mA
* 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
Fieldbus communication	
Standard built-in: FC Protocol N2 Metasys FLN Apogee Modbus RTU BACnet MSTP embedded	Optional: MCA 108 - VLT® LonWorks MCA 109 - VLT® BACnet MCA 125 - VLT® BACnet/IP MCA 104 - VLT® DeviceNet MCA 101 - VLT® PROFIBUS DP MCA 120 - VLT Profinet MCA 121 - VLT Ethernet TCP/IP MCA 122 - VLT Modbus TCP

- VLT® Sine Wave Filter
  For motor protection, noise & bearing current reduction
- VLT® **All-Mode filter**

For motor & EMC protection and long unshielded motor cables (1000m).

HVAC PC software tools

- VLT® Motion Control Tool MCT 10
  Ideal for commission, customize and servicing the drive.
- VLT® Energy Box
  Comprehensive energy tool to document and optimize energy consumption.
- VLT® Motion Control Tool MCT 31
  Harmonics calculation tool

High power options

- IEC Emergency stop with Safety Relay
- Safety Stop with Safety Relay
- RFI filter
- NAMUR terminals
- RCD
- IRM
- Mains shielding
- Regen terminals

Please see the VLT® High Power Drive Selection Guide for the complete range of options.

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