

Fact Sheet

# VLT® HVAC Drive FC 102



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 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.

### NABERS compliance

Thanks to its built-in energy meter, the VLT® HVAC Drive is certified as fully compliant with National Australian Built Environment Rating System (NABERS)

**98%**  
energy efficiency

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

requirements. This means you save on installation time and cost, because there is no need to install a separate energy meter.

### Product range

3 x 200 – 240 V.....	1.1 – 45 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 – 630 kW
IP 20.....	1.1 – 400 kW
IP 21 (Type 1).....	1.1 – 1400 kW
IP 54 (Type 12).....	75 – 1400 kW
IP 55 (Type 12).....	1.1 – 90 kW
Type 3R.....	1.1 – 400 kW
IP 66 (Type 4X indoor).....	1.1 – 90 kW

Optional coating providing extra protection for aggressive environments.

Feature	Benefit
<b>All built-in – low investment</b>	
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
Smart Logic Controller	Often makes PLC unnecessary
Real Time Clock	Enables daily and weekly settings
Integrated fan, pump and compressor functionality i.e.	Saves external control and conversion equipment
Fire Override Mode, Dry run Detection, Constant Torque etc.	Protects equipment and saves energy
Back-channel cooling for frame D, E and F frame	Prolonged lifetime of electronics
<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 etc.	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 (D-frame 45°C)	No external cooling or oversize necessary
<b>User-friendly – save commissioning and operating cost</b>	
Smart Start	Quick and precise start-up
Awarded graphical display, 27 languages	Effective commissioning and operation
USB plug and play connection	Easy to use PC software tools
Global HVAC support organisation	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 and IEC61800-3 Category C1, C2 and C3

## 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® Extended Relay Card MCB 113

7 digital inputs, 2 analog outputs 4 SPDT relays, Meets NAMUR recommendations, Galvanic isolation capability

### VLT® Analog I/O MCB 109

3 Pt1000/Ni1000 inputs, 3 analogue voltage outputs and back-up power for Real-Time Clock.

### VLT® 24 V External Supply MCB 107

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

### VLT® Sensor Input MCB 114

Sensor input card for motor protection with 2 or 3 PT100 or PT1000 inputs

### Brake chopper (IGBT) option

Connected to an external brake resistor, the built-in brake chopper limits the load on the intermediate circuit in situations where the motor acts as a generator.

### VLT® BACnet/IP MCA 125

Use this option for fast access to information and reduced overall cost of ownership in building management systems. It enables communication via the BACnet/IP protocol, and BACnet over Ethernet.

## Power options

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

#### ■ VLT® Advanced Harmonic Filter

For critical demands on harmonic distortion

## 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
Switching on output	Unlimited
Ramp times	1–3600 s
Output frequency	0–590 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 embedded	Optional: VLT® LonWorks MCA 108 VLT® BACnet MCA 109 VLT® BACnet/IP MCA 125 VLT® DeviceNet MCA 104 VLT® PROFIBUS DP MCA 101

#### ■ VLT® dU/dt Filter

For special demands on motor isolation protection

#### ■ VLT® Sine Wave Filter

## HVAC PC software tools

#### ■ VLT® Motion Control Tool MCT 10

Ideal for commissioning and servicing the drive

#### ■ VLT® Energy Box

Comprehensive energy analysis tool. Energy consumption with and without drive can be calculated (drive payback time). Online function for accessing drives energy log.

#### ■ 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.