ENGINEERING
TOMORROW

Fact Sheet | VLT® AQUA Drive FC 202

A **masterclass performance** in **cost efficiency** and **trouble-free operation**

Optimized drive for AC motor-driven water and wastewater applications. A user-friendly set-up makes installation easy. Powerful efficiency enables owners to reach the highest level of performance and lowest cost of ownership.

Featuring a wide range of powerful, standard features, which can be expanded with performance-improving options, the VLT® AQUA Drive is equally suited to both new and retrofit projects.

Set up the drive quickly and easily with the user-friendly dialog-based Smart Start wizard and a quick menu which provides direct access to the most important features for water and pump applications. Collecting the most important water and pump parameters in one place significantly reduces the risk of incorrect configuration.

30%

cost reduction in 1st year compared with next best alternative

IP66 enclosure and coated boards cut down the need for cabinet space, saving on investment and reducing installation time.

Instantly benefit from high efficiency, fast payback and the lowest overall cost of ownership for water and wastewater applications.

Product range

1 x 200-240 V AC ..... 1.1-22 kW
1 x 380-480 V AC ..... 7.5-37 kW
3 x 200-240 V AC .....0.25-160 kW
3 x 380-480 V AC .....0.37-1000 kW
3 x 525-600 V AC .....0.75-90 kW
3 x 525-690 V AC .....11-1400 kW*
**Up to 2000 kW available on request*

Feature	Benefit
Dedicated features	
Dry run detection	Protects the pump
Flow compensation function	Saves energy
2 step ramps (initial/final ramp) and minimum speed monitor	Protects deep well pumps
Check valve ramp	Protects against water hammering and saves installation cost for soft close valves
Pipe fill mode	Eliminates water hammering
Built-in motor alternation feature	Duty stand by operation, cost reduction
Sleep Mode and no/low flow detection	Save energy and protect the pump
End of pump-curve detection	Pump protection, leakage detection
Pump cascade controller	Saves energy and reduces equipment cost
Built-in Smart Logic Controller	Often makes PLC omissible
Multi-Master Cascade (optional)	Full redundant cascade system for maximum up-time
Deragging	Preventive/reactive pump cleaning
Back-channel cooling for frame D, E and F	Prolonged lifetime of electronics
Pre/Post Lubrication	System and pump protection
Free programmable infos/warnings/alerts	Perfect system integration and adaptation to the application
Flow confirmation	System and pump protection
Energy saving	**Less operation cost**
VLT® efficiency (98%)	Saves energy
Automatic Energy Optimisation (AEO)	Saves 3-8% energy
Auto Tuning of Staging Speeds	Smoothens the staging and saves energy
Reliable	**Maximum uptime**
IP20 – IP66 enclosures (depending on power size)	Choose the protection class you need
All power sizes available in IP 54/55 enclosures	Broad usability in standard enclosure
Password protection	Reliable operation
Mains disconnect switch	No need for external switch
Optional, built-in RFI suppression	No need for external modules
One Wire safe stop	Safe operation/less wiring
Max. ambient temperature up to 50°C without derating (D-frame 45°C)	Less need for cooling or oversizing
User-friendly	**Save initial and operation cost**
One drive type for the full power range	Less learning required
Intuitive user interface	Time saved
Modular design	Enables fast installation of options
Auto tuning of PI-controllers	Time saved
Payback time indication	Monitor performance

Fieldbus options

Extend the functionality of the drive with integrated options:

- VLT® PROFIBUS DP MCA 101
- VLT® DeviceNet MCA 104
- VLT® PROFINET MCA 120
- VLT® EtherNet/IP MCA 121
- VLT® Modbus TCP MCA 122
- VLT® BACnet/IP MCA 125

Application and I/O options

Extend the functionality of the drive with integrated options:

- VLT® General Purpose I/O MCB 101
- VLT® Extended Cascade Controller MCO 101
- VLT® Advanced Cascade Controller MCO 102
- VLT® 24 V External Supply MCB 107
- VLT® PTC Thermistor Card MCB 112
- VLT® Extended Relay Card MCB 113
- VLT® Sensor Input MCB 114
- VLT® Relay Card MCB 105
- VLT® 24 V DC Supply MCB 107
- VLT® Analog I/O MCB109
- VLT® Programmable I/O MCB115
- VLT® Real-time Clock MCB 117

License features

Extend the functionality of the drive with integrated options:

- Condition-based monitoring
- VLT® Digital Cascade Controller Multi-Master

High-power options (above 110 kW)

See the VLT® AQUA Drive FC 202 Selection Guide for a complete list.

Coated PCB available

Standard 3C2 for harsh environments according to levels in IEC61721-3-3, optional 3C3. From 90 kW 3C3 coating is standard.

Power options

Choose from a wide range of external power options for use with our drive in critical networks or applications:

- VLT® Low Harmonic Drive
- VLT® Advanced Harmonic Filter AHF 050 & AHF 010
- VLT® dU/dt Filter MCC 102
- VLT® Sine Wave Filter MCC 201 (LC filter)

PC software tool

- VLT® Motion Control Tool MCT 10
- VLT® Energy Box
- VLT® Motion Control Tool MCT 31

Specifications

Mains supply (L1, L2, L3)	
Supply voltage	1 x 200-240 V AC ..... 1.1-22 kW 1 x 380-480 V AC ..... 7.5-37 kW 3 x 200-240 V AC ..... 0.25-160 kW 3 x 380-480 V AC ..... 0.37-1000 kW 3 x 525-600 V AC ..... 0.75-90 kW 3 x 525-690 V AC ..... 11-1400 kW*
Supply frequency	50/60 Hz
Displacement Power Factor (cos φ) near unity	(> 0.98)
True power factor (λ)	≥ 0.9
Switching on input supply L1, L2, L3	1-2 times/min.
Output data (U, V,W)	
Output voltage	0-100% of supply
Switching on output	Unlimited
Ramp times	0.1-3600 sec.
Max. output frequency	590 Hz

Note: VLT® AQUA Drive can provide 110%, 150% or 160% current for 1 minute, dependent on power size and parameter settings. Higher overload rating is achieved by oversizing the drive.

Digital inputs	
Programmable digital inputs	6*
Logic	PNP or NPN
Voltage level	0-24 V DC

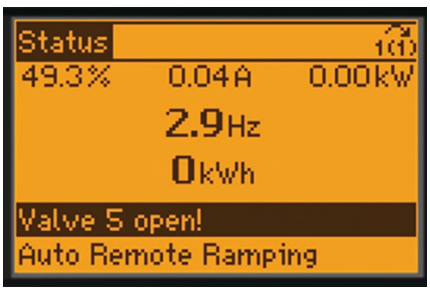
** Two of the inputs can be used as digital outputs.*

Analog inputs	
Number of analogue 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 V DC (PNP positive logic)
Pulse input accuracy (0.1 – 1 kHz)	Max. error: 0.1% of full scale

** Two of the digital inputs can be used for pulse inputs.*

Analog 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	
FC Protocol and Modbus RTU built-in	
Ambient temperature	
Up to 55° C (50°C without derating)	
Hardware specifications	
IP20 – IP66 enclosures (depending on power size)	
All power sizes available in IP 54/55 enclosures	

** Up to 2000 kW available on request*



User-configurable texts allow the perfect adaptation to the application.