ENGINEERING
TOMORROW

VLT® AQUA Drive FC 202

Your efficient solution for industrial variable torque applications

Perfect
match for:
- **Industrial fans**
- **Industrial pumps**
- **Industrial blowers**
- **Industrial compressors**

Danfoss Drives' unsurpassed experience in advanced drive technologies makes the VLT® AQUA Drive the perfect match for Industrial VT Applications. *

Available in a wide range of industrial enclosures from protected chassis to IP 66 (NEMA 4 X Indoor).

**Direct replacement for the VLT® AutomationDrive FC 322*

Power range:

1 x 240 VAC ..... 1-1/2 to 30 HP
1 x 480 VAC ..... 10 to 50 HP
3 x 240 VAC ..... 1/3 to 60 HP
3 x 480 VAC ..... 1/2 to 1350 HP
3 x 575 VAC ..... 1 to 125 HP
3 x 575/690 VAC ..... 11 to 1400 kW

Features	Benefits
Dedicated features	
Modular Product concept with a wide variety of options	Lower initial investment - maximum flexibility field upgradeable possible
Dedicated pump functions	Simplifies programming and commssioning
Smart Logic Controller	Eliminates ancillary equipment reducing installed cost
Pump Cascade Controller	Lower equipment costs
Optional Safe Stop	Lower installed costs safe operation
Integrated DC Link	Eliminates external filter requirements
Intelligent Heat Management	Removes excessive heat promotes longer life
Energy saving	**Less operation cost**
VLT® efficiency	Saves energy
Automatic Energy Optimization	Reduces energy consumption 3% to 8%
Master/follower control	Saves up to 15% energy
Auto Tuning of Staging Speed	Smoothes staging reductin wear and saves energy
Sleep Mode function	Saves energy
Reliable	**Maximum uptime**
NEMA 1, NEMA 12, and NEMA 4X Indoor enclosures	Suitable for harsh wash down environments without the need for customized panels
Ambient temperature rating of 50° C without derating	Eliminates the need for expensive cooling solutions
Main disconnects and integral fusing	Reduces installed cost by eliminating panel space
Optional, built-in RFI suppression	Eliminates the need for external filtering devices
One Wire Safe Stop	Safe operation less wiring
Password protection	Reduce operator error
User-friendly	**Save initial and operation cost**
Plug and Play Design	Easy upgrade and changeovers
Intuitive user interface	Time saved
Multiple language support	Displays all info in native language
Modular design	Enables fast installation of options
Auto tuning of PI-controllers	Eliminates errors

Dimensions [in]

	A1	A2	A3	A4	A5	B1	B2	B3	B4	C1	C2	C3	C4	D1H	D2H	D3H	D4H	E1	E2	F1	F2	F3	F4
H	7.9	10.6		15.7	16.5	18.9	25.6	15.7	20.5	26.8	30.3	21.7	26.0	45.6	41.3	33.2	41.3	78.7	60.9	86.8			
W	3.0	3.5	5.1	7.9	9.5			6.5	9.1	12.1	14.6	12.1	14.6	16.5		9.8	13.8	23.6	23.0	55.1	70.9	78.7	94.5
D	8.1	8.1		7.0	7.7	10.2		9.8	9.5	12.2	13.2	13.2		14.7	14.9	14.8		19.4	19.6	23.9			
H+		14.8		16.5				18.7	26.4			29.7	37.4										
W+		3.5	5.1	7.9				6.5	10.0			13.0	15.4										

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

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Options

Fieldbus Options
- MCA 101 Profibus
- MCA 104 DeviceNet
- MCA 121 Ethernet IP
- MCA 122 Modbus TCP

I/O and feedback options
- MCA 101 General Purpose I/O
- MCB 105 Relay
- MCB 107 24 V input option for control voltage
- MCB 109 Analog I/O with battery backup
- Extended Cascade Controller

Safety options
- Safe Stop Function EN 954-1 Cat 3
- Brake IGBT

Power options
- Brake resistors
- Sine-Wave Filters
- dV/dt Filters
- Harmonic Filters (AHF)
- Integrated Low Harmonic Filters

Other accessories
- IP 21/NEMA 1 Kits (convert IP 20 enclosures to IP 21)
- Sub-D9 Connector
- Decoupling plate for fieldbus cables
- USB connection cable to PC
- Panel through option

PC software tools
- MCT 10: Ideal for commissioning and sevicing the drive including guided programming of cascade controller, real time clock, and smart logic controller.
- VLT® Energy Box: Comprehensive en ergy tool calculates the drives payback time.
- MCT 31: Harmonics calculations tool.

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) 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	1 – 3600 sec.
Closed loop	0 – 132 Hz

VLT® AQUA Drive can provide 110% current for 1 minute. Higher overload rating is achieved by oversizing the drive.

Digital inputs	
Programmable digital inputs	6*
Logic	PNP or NPN
Voltage level	0 – 24 VDC

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

Analog inputs	
Number of analog 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 VDC (PNP positive logic)
Pulse input accuracy	(0.1 – 110 kHz)

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

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	
FC Protocol and Modbus RTU built-in (Optional: Modbus TCP, Profibus, DeviceNet, Ethernet IP)	
Ambient temperature	
Up to 55° C (50°C without derating)	

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