

VLT® AQUA Drive technical data

Basic unit without extensions

Main 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.
Harmonic disturbance	Meets EN 61000-3-12
* Up to 2000 kW available on request	
Output data (U, V, W)	
Output voltage	0 – 100% of supply voltage
Output frequency (dependent on power size)	0-590 Hz
Switching on output	Unlimited
Ramp times	0.1 – 3600 sec.
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*
Changeable to digital output	2 (terminal 27, 29)
Logic	PNP or NPN
Voltage level	0-24 V DC
Maximum voltage on input	28 V DC
Input resistance, Ri	Approx. 4 kΩ
Scan interval	5 ms
* Two of the inputs can be used as digital outputs.	
Analog inputs	
Analog inputs	2
Modes	Voltage or current
Voltage level	0 to +10 V (scaleable)
Current level	0/4 to 20 mA (scaleable)
Accuracy of analog inputs	Max. error: 0.5% of full scale
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.	
Digital outputs	
Programmable digital/pulse outputs	2
Voltage level at digital/frequency output	0-24 V DC
Max. output current (sink or source)	40 mA
Maximum output frequency at frequency output	0 to 32 kHz
Accuracy on frequency output	Max. error: 0.1% of full scale
Analogue output	
Programmable analogue outputs	1
Current range at analogue output	0/4-20 mA
Max. load to common at analogue output (clamp 30)	500 Ω
Accuracy on analogue output	Max. error: 1% of full scale
Control card	
USB interface	1.1 (Full Speed)
USB plug	Type "B"
RS485 interface	Up to 115 kBaud
Max. load (10 V)	15 mA
Max. load (24 V)	200 mA

Relay output	
Programmable relay outputs	2
Max. terminal load (AC) on 1-3 (break), 1-2 (make), 4-6 (break) power card	240 V AC, 2 A
Max. terminal load (AC) on 4-5 (make) power card	400 V AC, 2 A
Min. terminal load on 1-3 (break), 1-2 (make), 4-6 (break), 4-5 (make) power card	24 V DC 10 mA, 24 V AC 20 mA
Surroundings/external	
Enclosure	IP: 20/21/54/55/66 UL Type: Chassis/1/12/4x Outdoor
Vibration test	1.0 g (D, E & F-enclosures: 0.7 g)
Max. relative humidity	5%-95% (IEC 721-3-3; Class 3K3 (non-condensing) during operation)
Ambient temperature	-25 °C to 50 °C without derating up to 315 kW
Galvanic isolation of all	I/O supplies according to PELV
Aggressive environment	Designed for coated/uncoated 3C3/3C2 (IEC 60721-3-3)
Fieldbus communication	
Standard built-in: FC Protocol Modbus RTU	Optional: VLT® PROFIBUS DP V1 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
Ambient temperature	
Electronic thermal motor protection against overload	
-25 °C to 50 °C without derating up to 315 kW	
Temperature monitoring of the heatsink ensures that the AC drive trips in case of overtemperature	
The AC drive is protected against short-circuits on motor terminals U, V, W	
The AC drive is protected against earth faults on motor terminals U, V, W	
Protection against mains phase loss	
Special version	
Digital Cascade Controller	
Condition based monitoring	
Digital cascade controller + condition based monitoring	
Application 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® Real-time Clock MCB 117	
Relay and analogue I/O option	
– VLT® Relay Card MCB 105	
– VLT® Analog I/O MCB109)	
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 Active Filter	
– VLT® Advanced Harmonic Filter	
– VLT® dU/dt filter	
– VLT® Sine wave filter (LC filter)	
High power options	
See the VLT® High Power Drive Selection Guide for a complete list.	
PC software tools	
– VLT® Motion Control Tool MCT 10	
– VLT® Energy Box	
– VLT® Motion Control Tool MCT 31	



Enclosure overview A, B and C

3 phases

VLT® AQUA Drive			T2 200-240 V				T4 380-480 V				T6 525-600 V				T7 525-690 V		
FC 200	kW		IP20	IP21	IP55	IP66	IP20	IP21	IP55	IP66	IP20	IP21	IP55	IP66	IP20	IP21	IP55
	HO	NO															
PK25	0.25																
PK37	0.37																
PK55	0.55																
PK75	0.75		A2	A2	A4/A5	A4/A5											
P1K1	1.1						A2	A2	A4/A5	A4/A5							
P1K5	1.5										A3	A3	A5	A5			
P2K2	2.2														A3		
P3K0	3.0		A3	A3	A5	A5											
P3K7	3.7																
P4K0	4.0						A2	A2	A4/A5								
P5K5	3.7	5.5					A2	A2	A4/A5	A5	A5						
P7K5	5.5	7.5	B3	B1	B1	B1					A3	A3	A5	A5			
P11K	7.5	11															
P15K	11	15	B4	B2	B2	B2	B3	B1	B1	B1	B3	B1	B1	B1			
P18K	15	18.5													B4	B2	B2
P22K	18.5	22															
P30K	22	30	C3	C1	C1	C1	B4	B2	B2	B2	B4	B2	B2	B2			
P37K	30	37															
P45K	37	45	C4	C2	C2	C2											
P55K	45	55					C3	C1	C1	C1	C3	C1	C1	C1	C3	C2	C2
P75K	55	75															
P90K	75	90					C4	C2	C2	C2	C4	C2	C2	C2			

1 phase

VLT® AQUA Drive		S2 200-240 V				S4 380-480 V		
FC 200	kW	IP20	IP21	IP55	IP66	IP21	IP55	IP66
P1K1	1.1	A3		A5	A5			
P1K5	1.5							
P2K2	2.2							
P3K0	3.0		B1	B1	B1			
P3K7	3.7							
P5K5	5.5							
P7K5	7.5		B2	B2	B2	B1	B1	B1
P11K	11					B2	B2	B2
P15K	15		C1	C1	C1			
P18K	18.5					C1	C1	C1
P22K	22		C2	C2	C2			
P37K	37					C2	C2	C2

- IP20/Chassis
- IP21/Type 1
- IP21 with upgrade kit
– available in North America only
- IP55/Type 12
- IP66/NEMA 4X



Electrical data – A, B and C enclosures

[S2] 1 x 200-240 V AC – normal overload

Normal overload (110% 1 min/10 min)							Enclosure size			
Type code	Output current (3 x 200-240 V)		Typical shaft output power		Continuous input current	Estimated power loss	Protection rating [IEC/UL]			
	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 208 V	Hp @ 230 V			[A]	[W]	IP20	IP21
Chassis					Type 1	Type 12			Type 4X	
FC-202										
P1K1	6.6	7.3	1.1	1.5	12.5	44	A3	–	A5	A5
P1K5	7.5	8.3	1.5	2.0	15	30	–	B1	B1	B1
P2K2	10.6	11.7	2.2	2.9	21	44	–	B1	B1	B1
P3K0	12.5	13.8	3	4.0	24	60	–	B1	B1	B1
P3K7	16.7	18.4	3.7	4.9	32	74	–	B1	B1	B1
P5K5	24.2	26.6	5.5	7.5	46.0	110	–	B1	B1	B1
P7K5	30.8	33.4	7.5	10	59	150	–	B2	B2	B2
P15K	59.4	65.3	15	20	111	300	–	C1	C1	C1
P22K	88	96.8	22	30	172	440	–	C2	C2	C2

[T2] 3 x 200-240 V AC – normal overload

Normal overload (110% 1 min/10 min)							Enclosure size			
Type code	Output current (3 x 200-240 V)		Typical shaft output power		Continuous input current	Estimated power loss	Protection rating [IEC/UL]			
	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 208 V	Hp @ 230V			[A]	[W]	IP20/21	IP21
Chassis					Type 1	Type 12			Type 4X	
FC-202										
PK25	1.8	2	0.25	0.34	1.6	21	A2	A2*	A4/A5**	A4/A5**
PK37	2.4	2.6	0.37	0.5	2.2	29	A2	A2*	A4/A5**	A4/A5**
PK55	3.5	3.9	0.55	0.75	3.2	42	A2	A2*	A4/A5**	A4/A5**
PK75	4.6	5.1	0.75	1	4.1	54	A2	A2*	A4/A5**	A4/A5**
P1K1	6.6	7.3	1.1	1.5	5.9	63	A2	A2*	A4/A5**	A4/A5**
P1K5	7.5	8.3	1.5	2	6.8	82	A2	A2*	A4/A5**	A4/A5**
P2K2	10.6	11.7	2.2	3	9.5	116	A2	A2*	A4/A5**	A4/A5**
P3K0	12.5	13.8	3	4	11.3	155	A3	A3*	A5	A5
P3K7	16.7	18.4	3.7	5	15	185	A3	A3*	A5	A5
P5K5	24.2	26.6	5.5	7.5	22	310	B3	B1	B1	B1
P7K5	30.8	33.9	7.5	10	28	310	B3	B1	B1	B1
P11K	46.2	50.8	11	15	42	514	B3	B1	B1	B1
P15K	59.4	65.3	15	20	54	602	B4	B2	B2	B2
P18K	74.8	82.3	18.5	25	68	737	B4	C1	C1	C1
P22K	88	96.8	22	30	80	845	C3	C1	C1	C1
P30K	115	127	30	40	104	1140	C3	C1	C1	C1
P37K	143	157	37	50	130	1353	C4	C2	C2	C2
P45K	170	187	45	60	154	1636	C4	C2	C2	C2

* Requires an IP21/Type 1 kit. Available in North America only.

** A4 does not accept any C options

[T2] 3 x 200-240 V AC – high overload

Type code	High overload (160% 1 min/10 min)						Enclosure size			
	Output current (3 x 200-240 V)		Typical shaft output power		Continuous input current	Estimated power loss	Protection rating [IEC/UL]			
	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 208 V	Hp @ 230 V			IP20/21	IP21	IP55	IP66
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 208 V	Hp @ 230 V	[A]	[W]	Chassis	Type 1	Type 12	Type 4X
PK25	1.8	2.7	0.25	0.34	1.6	21	A2	A2*	A4/A5**	A4/A5**
PK37	2.4	3.6	0.37	0.5	2.2	29	A2	A2*	A4/A5**	A4/A5**
PK55	3.5	5.3	0.55	0.75	3.2	42	A2	A2*	A4/A5**	A4/A5**
PK75	4.6	6.9	0.75	1	4.1	54	A2	A2*	A4/A5**	A4/A5**
P1K1	6.6	9.9	1.1	1.5	5.9	63	A2	A2*	A4/A5**	A4/A5**
P1K5	7.5	11.3	1.5	2	6.8	82	A2	A2*	A4/A5**	A4/A5**
P2K2	10.6	15.9	2.2	3	9.5	116	A2	A2*	A4/A5**	A4/A5**
P3K0	12.5	18.8	3	4	11.3	155	A3	A3*	A5	A5
P3K7	16.7	25	3.7	5	15.0	185	A3	A3*	A5	A5
P5K5	16.7	26.7	3.7	5	15.0	239	B3	B1	B1	B1
P7K5	24.2	38.7	5.5	7.5	22	239	B3	B1	B1	B1
P11K	30.8	49.3	7.5	10	28	371	B3	B1	B1	B1
P15K	46.2	73.9	11	15	42	463	B4	B2	B2	B2
P18K	59.4	89.1	15	20	54	624	B4	C1	C1	C1
P22K	74.8	112	18.5	25	68	740	C3	C1	C1	C1
P30K	88	132	22	30	80	874	C3	C1	C1	C1
P37K	115	173	30	40	104	1143	C4	C2	C2	C2
P45K	143	215	37	50	130	1400	C4	C2	C2	C2

* Requires an IP21/Type 1 kit. Available in North America only.
 ** A4 does not accept any C options

[S4] 1 x 380-480 V AC – normal overload

Type code	Normal overload (110% 1 min/10 min)							Enclosure size				
	Output current				Typical shaft output power		Continuous input current	Estimated power loss	Protection rating [IEC/UL]			
	(3 x 380-440 V)		(3 x 441-480 V)		kW @ 400 V	Hp @ 460 V			IP20/21	IP21	IP55	IP66
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)			kW @ 400 V	Hp @ 460 V	[A] @ 400 V	[W]	Chassis	Type 1
P7K5	16	17.6	14.5	15.4	7.5	10	33	300	-	B1	B1	B1
P11K	24	26.4	21	23.1	11	15	48	440	-	B2	B2	B2
P18K	37.5	41.2	34	37.4	18.5	25	78	740	-	C1	C1	C1
P37K	73	80.3	65	71.5	37	50	151	1480	-	C2	C2	C2

[T4] 3 x 380-480 V AC – normal overload

Type code	Normal overload (110% 1 min/10 min)								Enclosure size			
	Output current				Typical shaft output power	Continu-ous input current	Estimated power loss	Protection rating [IEC/UL]				
	(3 x 380-440 V)		(3 x 441-500 V)					IP20/21	IP21	IP55	IP66	
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 400 V	Hp @ 460 V	[A] @ 400 V	[W]	Chassis	Type 1	Type 12	Type 4X
PK37	1.3	1.4	1.2	1.3	0.37	0.5	1.2	35	A2	A2*	A4/A5**	A4/A5**
PK55	1.8	2	1.6	1.8	0.55	0.75	1.6	42	A2	A2*	A4/A5**	A4/A5**
PK75	2.4	2.6	2.1	2.3	0.75	1	2.2	46	A2	A2*	A4/A5**	A4/A5**
P1K1	3	3.3	2.7	3	1.1	1.5	2.7	58	A2	A2*	A4/A5**	A4/A5**
P1K5	4.1	4.5	3.4	3.7	1.5	2	3.7	62	A2	A2*	A4/A5**	A4/A5**
P2K2	5.6	6.2	4.8	5.3	2.2	3	5.0	88	A2	A2*	A4/A5**	A4/A5**
P3K0	7.2	7.9	6.3	6.9	3	4	6.5	116	A2	A2*	A4/A5**	A4/A5**
P4K0	10	11	8.2	9	4	5	9.0	124	A2	A2*	A4/A5**	A4/A5**
P5K5	13	14.3	11	12.1	5.5	7.5	11.7	187	A3	A3*	A5	A5
P7K5	16	17.6	14.5	16	7.5	10	14.4	225	A3	A3*	A5	A5
P11K	24	26.4	21	23.1	11	15	22	392	B3	B1	B1	B1
P15K	32	35.2	27	29.7	15	20	29	392	B3	B1	B1	B1
P18K	37.5	41.3	34	37.4	18.5	25	34	465	B3	B1	B1	B1
P22K	44	48.4	40	44	22	30	40	525	B4	B2	B2	B2
P30K	61	67.1	52	61.6	30	40	55	739	B4	B2	B2	B2
P37K	73	80.3	65	71.5	37	50	66	698	B4	C1	C1	C1
P45K	90	99	80	88	45	60	82	843	C3	C1	C1	C1
P55K	106	117	105	116	55	75	96	1083	C3	C1	C1	C1
P75K	147	162	130	143	75	100	133	1384	C4	C2	C2	C2
P90K	177	195	160	176	90	125	161	1474	C4	C2	C2	C2

* Requires an IP21/Type 1 kit. Available in North America only.

** A4 does not accept any C options

[T4] 3 x 380-480 V AC – high overload

Type code	High overload (160% 1 min/10 min)								Enclosure size			
	Output current				Typical shaft output power	Continu-ous input current	Estimated power loss	Protection rating [IEC/UL]				
	(3 x 380-440 V)		(3 x 441-500 V)					IP20/21	IP21	IP55	IP66	
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 400 V	Hp @ 460 V	[A] @ 400 V	[W]	Chassis	Type 1	Type 12	Type 4X
PK37	1.3	2	1.2	1.8	0.37	0.5	1.2	35	A2	A2*	A4/A5**	A4/A5**
PK55	1.8	2.7	1.6	2.4	0.55	0.75	1.6	42	A2	A2*	A4/A5**	A4/A5**
PK75	2.4	3.6	2.1	3.2	0.75	1	2.2	46	A2	A2*	A4/A5**	A4/A5**
P1K1	3	4.5	2.7	4.1	1.1	1.5	2.7	58	A2	A2*	A4/A5**	A4/A5**
P1K5	4.1	6.2	3.4	5.1	1.5	2	3.7	62	A2	A2*	A4/A5**	A4/A5**
P2K2	5.6	8.4	4.8	7.2	2.2	3	5.0	88	A2	A2*	A4/A5**	A4/A5**
P3K0	7.2	10.8	6.3	9.5	3	4	6.5	116	A2	A2*	A4/A5**	A4/A5**
P4K0	10	15	8.2	12.3	4	5	9.0	124	A2	A2*	A4/A5**	A4/A5**
P5K5	13	19.5	11	16.5	5.5	7.5	11.7	187	A3	A3*	A5	A5
P7K5	16	24	14.5	21.8	7.5	10	14.4	225	A3	A3*	A5	A5
P11K	16	25.6	14.5	23.2	7.5	10	14	291	B3	B1	B1	B1
P15K	24	38.4	21	33.6	11	15	22	291	B3	B1	B1	B1
P18K	32	51.2	27	43.2	15	20	29	379	B3	B1	B1	B1
P22K	37.5	60	34	54.4	18.5	25	34	444	B4	B2	B2	B2
P30K	44	70.4	40	64	22	30	40	547	B4	B2	B2	B2
P37K	61	91.5	52	78	30	40	55	570	B4	C1	C1	C1
P45K	73	110	65	97.5	37	50	66	697	C3	C1	C1	C1
P55K	90	135	80	120	45	60	82	891	C3	C1	C1	C1
P75K	106	159	105	158	55	75	96	1022	C4	C2	C2	C2
P90K	147	221	130	195	75	100	133	1232	C4	C2	C2	C2

* Requires an IP21/Type 1 kit. Available in North America only.

** A4 does not accept any C options

[T6] 3 x 525-600 V AC – normal overload

Type code	Normal overload (110% 1 min/10 min)						Enclosure size			
	Output current (3 x 525-600 V)		Typical shaft output power		Continuous input current [A] @ 575 V	Estimated power loss [W]	Protection rating [IEC/UL]			
	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 575 V	Hp @ 575 V			IP20/21	IP21	IP55	IP66
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 575 V	Hp @ 575 V	[A] @ 575 V	[W]	Chassis	Type 1	Type 12	Type 4X
PK75	1.7	1.9	0.75	1	1.7	35	A3	A3	A5	A5
P1K1	2.4	2.6	1.1	1.5	2.4	50	A3	A3	A5	A5
P1K5	2.7	3	1.5	2	2.7	65	A3	A3	A5	A5
P2K2	3.9	4.3	2.2	3	4.1	92	A3	A3	A5	A5
P3K0	4.9	5.4	3	4	5.2	122	A3	A3	A5	A5
P4K0	6.1	6.7	4	5	5.8	145	A3	A3	A5	A5
P5K5	9	9.9	5.5	7.5	8.6	195	A3	A3	A5	A5
P7K5	11	12.1	7.5	10	10.4	261	A3	A3	A5	A5
P11K	18	20	11	15	16	300	B3	B1	B1	B1
P15K	22	24	15	20	20	300	B3	B1	B1	B1
P18K	27	30	18.5	25	24	370	B3	B1	B1	B1
P22K	34	37	22	30	31	440	B4	B2	B2	B2
P30K	41	45	30	40	37	600	B4	B2	B2	B2
P37K	52	57	37	50	47	740	B4	C1	C1	C1
P45K	62	68	45	60	56	900	C3	C1	C1	C1
P55K	83	91	55	75	75	1100	C3	C1	C1	C1
P75K	100	110	75	100	91	1500	C4	C2	C2	C2
P90K	131	144	90	125	119	1800	C4	C2	C2	C2

[T6] 3 x 525-600 V AC – high overload

Type code	High overload (160% 1 min/10 min)						Enclosure size			
	Output current (3 x 525-600 V)		Typical shaft output power		Continuous input current [A] @ 575 V	Estimated power loss [W]	Protection rating [IEC/UL]			
	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 575 V	Hp @ 575 V			IP20/21	IP21	IP55	IP66
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 575 V	Hp @ 575 V	[A] @ 575 V	[W]	Chassis	Type 1	Type 12	Type 4X
PK75	1.7	2.6	0.75	1	1.7	35	A3	A3	A5	A5
P1K1	2.4	3.6	1.1	1.5	2.4	50	A3	A3	A5	A5
P1K5	2.7	4.1	1.5	2	2.7	65	A3	A3	A5	A5
P2K2	3.9	5.9	2.2	3	4.1	92	A3	A3	A5	A5
P3K0	4.9	7.4	3	4	5.2	122	A3	A3	A5	A5
P4K0	6.1	9.2	4	5	5.8	145	A3	A3	A5	A5
P5K5	9	13.5	5.5	7.5	8.6	195	A3	A3	A5	A5
P7K5	11	16.5	7.5	10	10.4	261	A3	A3	A5	A5
P11K	11	17.6	7.5	10	9.8	220	B3	B1	B1	B1
P15K	18	29	11	15	16	220	B3	B1	B1	B1
P18K	22	35	15	20	20	300	B3	B1	B1	B1
P22K	27	43	18.5	25	24	370	B4	B2	B2	B2
P30K	34	54	22	30	31	440	B4	B2	B2	B2
P37K	41	62	30	40	37	600	B4	C1	C1	C1
P45K	52	78	37	50	47	740	C3	C1	C1	C1
P55K	62	93	45	60	56	900	C3	C1	C1	C1
P75K	83	125	55	75	75	1100	C4	C2	C2	C2
P90K	100	150	75	100	91	1500	C4	C2	C2	C2

[T7] 3 x 525-690 V AC – normal overload

Type code	Normal overload (110% 1 min/10 min)								Enclosure size		
	Output current				Typical shaft output power		Continu-ous input current	Estimat-ed power loss	Protection rating [IEC]*		
	(3 x 525-550 V)		(3 x 551-690 V)		kW @ 690 V	Hp @ 575 V			IP20	IP21	IP55
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)							
P1K1	2.1	2.3	1.6	1.8	1.1	1.5	1.4	44	A3	-	-
P1K5	2.7	3	2.2	2.4	1.5	2	2.0	60	A3	-	-
P2K2	3.9	4.3	3.2	3.5	2.2	3	2.9	88	A3	-	-
P3K0	4.9	5.4	4.5	5	3	4	4.0	120	A3	-	-
P4K0	6.1	6.7	5.5	6.1	4	5	4.9	160	A3	-	-
P5K5	9	9.9	7.5	8.3	5.5	7.5	6.7	220	A3	-	-
P7K5	11	12.1	10	11	7.5	10	9.0	300	A3	-	-
P11K	14	15.4	13	14.3	11	15	14.5	220	B4	B2	B2
P15K	19	20.9	18	19.8	15	20	19.5	220	B4	B2	B2
P18K	23	25.3	22	24.2	18.5	25	24	300	B4	B2	B2
P22K	28	30.8	27	29.7	22	30	29	370	B4	B2	B2
P30K	36	39.6	34	37.4	30	40	36	440	B4	B2	B2
P37K	43	47.3	41	45.1	37	50	48	740	B4	C2	C2
P45K	54	59.4	52	57.2	45	60	58	900	C3	C2	C2
P55K	65	71.5	62	68.2	55	75	70	1100	C3	C2	C2
P75K	87	95.7	83	91.3	75	100	86	1500	-	C2	C2
P90K	105	115.5	100	110	90	125		1800	-	C2	C2

*Note: T7 drives are not UL certified. Select T6 for UL certification.

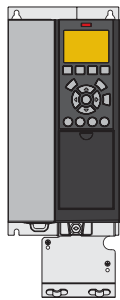
[T7] 3 x 525-690 V AC – high overload

Type code	High overload (160% 1 min/10 min)								Enclosure size		
	Output current				Typical shaft output power		Continu-ous input current	Estimat-ed power loss	Protection rating [IEC]*		
	(3 x 525-550 V)		(3 x 551-690 V)		kW @ 690 V	Hp @ 575 V			IP20	IP21	IP55
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)							
P1K1	2.1	3.2	1.6	2.4	1.1	1.5	1.4	44	A3	-	-
P1K5	2.7	4.1	2.2	3.3	1.5	2	2.0	60	A3	-	-
P2K2	3.9	5.9	3.2	4.8	2.2	3	2.9	88	A3	-	-
P3K0	4.9	7.4	4.5	6.8	3	4	4.0	120	A3	-	-
P4K0	6.1	9.2	5.5	8.3	4	5	4.9	160	A3	-	-
P5K5	9	13.5	7.5	11.3	5.5	7.5	6.7	220	A3	-	-
P7K5	11	16.5	10	15	7.5	10	9.0	300	A3	-	-
P11K	11	17.6	10	16	7.5	10	9.0	150	B4	B2	B2
P15K	14	22.4	13	20.8	11	15	14.5	150	B4	B2	B2
P18K	19	30.4	18	28.8	15	20	19.5	220	B4	B2	B2
P22K	23	36.8	22	35.2	18.5	25	24	300	B4	B2	B2
P30K	28	44.8	27	43.2	22	30	29	370	B4	B2	B2
P37K	36	54	34	51	30	40	36	600	B4	C2	C2
P45K	43	64.5	41	61.5	37	50	48	740	C3	C2	C2
P55K	54	81	52	78	45	60	58	900	C3	C2	C2
P75K	65	97.5	62	93	55	75	70	1100	-	C2	C2
P90K	87	130.5	83	124.5	75	100		1500	-	C2	C2

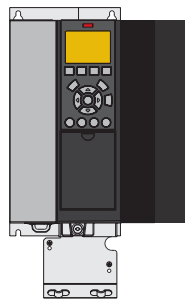
*Note: T7 drives are not UL certified. Select T6 for UL certification.

Dimensions enclosure sizes A, B and C

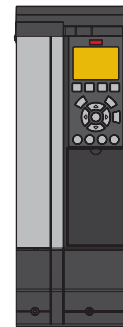
Enclosure size		VLT® AQUA Drive													
		A2		A3		A4	A5	B1	B2	B3	B4	C1	C2	C3	C4
Protection rating [IEC/UL]		IP20 Chassis	IP21 Type 1	IP20 Chassis	IP21 Type 1	IP55/Type 12 IP66/Type 4X	IP21/Type 1 IP55/Type 12 IP66/Type 4X	IP21/Type 1 IP55/Type 12 IP66/Type 4X	IP20/Chassis	IP20/Chassis	IP21/Type 1 IP55/Type 12 IP66/Type 4X	IP21/Type 1 IP55/Type 12 IP66/Type 4X	IP20/Chassis	IP20/Chassis	
[mm]	Height	268	375	268	375	390	420	480	650	399	520	680	770	550	660
	Height with decoupling plate	374	-	374	-	-	-	-	-	420	595	-	-	630	800
	Width	90	90	130	130	200	242	242	242	165	230	308	370	308	370
	Width with one C option	130	130	170	170	-	242	242	242	205	230	308	370	308	370
	Depth	205	207	205	207	175	200	260	260	249	242	310	335	333	333
	Depth with A, B option	220	222	220	222	175	200	260	260	262	242	310	335	333	333
	Depth with mains disconnect	-	-	-	-	206	224	289	290	-	-	344	378	-	-
[kg]	Weight	4.9	5.3	6	7	9.7	14.2	23	27	12	23.5	45	64	35	50
[in]	Height	10.6	14.8	10.6	14.8	15.4	16.6	18.9	25.6	15.8	20.5	26.8	30.4	21.7	26
	Height with decoupling plate	14.8	-	14.8	-	-	-	-	-	16.6	23.5	-	-	24.8	31.5
	Width	3.6	3.6	5.2	5.2	7.9	9.6	9.6	9.6	6.5	9.1	12.2	14.6	12.2	14.6
	Width with one C option	5.2	5.2	6.7	6.7	-	9.6	9.6	9.6	8.1	9.1	12.2	14.6	12.2	14.6
	Depth	8.1	18.2	8.1	8.2	6.9	7.9	10.3	10.3	9.8	9.6	12.3	13.2	13	13
	Depth with mains disconnect	-	-	-	-	8.2	8.9	11.4	11.5	-	-	13.6	14.9	-	-
	Depth with A, B option	8.7	8.8	8.7	8.8	6.9	7.9	10.3	10.3	10.4	9.6	12.3	13.2	13	13
[lb]	Weight	10.8	11.7	14.6	15.5	21.5	31.5	50.7	59.6	26.5	52	99.3	143.3	77.2	110.2



A3 IP20/Chassis with decoupling plate



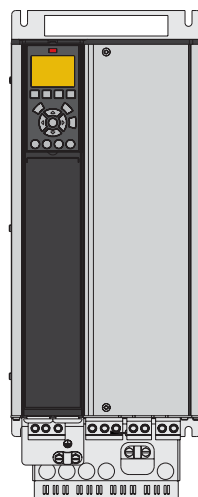
A3 IP20 with option C



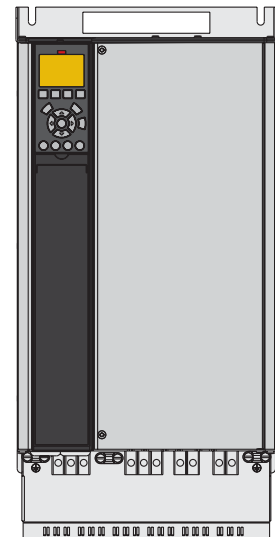
A3 with IP21/Type 12 NEMA 1 Kit



A4 IP55 with mains disconnect



B4 IP20



C3 IP20

Ordering **typecode** for **A, B** and **C** enclosures



[1] Application (character 4-6)	
202	VLT® AQUA Drive FC 202
[2] Power size (character 7-10)	
PK25	0.25 kW/0.33 Hp
PK37	0.37 kW/0.50 Hp
PK55	0.55 kW/0.75 Hp
PK75	0.75 kW/1.0 Hp
P1K1	1.1 kW/1.5 Hp
P1K5	1.5 kW/2.0 Hp
P2K2	2.2 kW/3.0 Hp
P3K0	3.0 kW/4.0 Hp
P3K7	3.7 kW/5.0 Hp
P4K0	4.0 kW/5.5 Hp
P5K5	5.5 kW/7.5 Hp
P7K5	7.5 kW/10 Hp
P11K	11 kW/15 Hp
P15K	15 kW/20 Hp
P18K	18.5 kW/25 Hp
P22K	22 kW/30 Hp
P30K	30 kW/40 Hp
P37K	37 kW/50 Hp
P45K	45 kW/60 Hp
P55K	55 kW/75 Hp
P75K	75 kW/100 Hp
P90K	90 kW/125 Hp
[3] AC Line Voltage (character 11-12)	
S2	1 x 200/240 V AC
T2	3 x 200-240 V AC
S4	1 x 380/480 V AC
T4	3 x 380-480 V AC
T6	3 x 525-600 V AC
T7	3 x 525-690 V AC ²⁾
[4] IP/UL protection ratings (character 13-15)	
IP20 / Chassis enclosures	
E20	IP20/Chassis
P20	IP20/Chassis + backplate
IP21 / UL Type 1 enclosures	
E21	IP21 / Type 1
P21	IP21 / Type 1 + backplate
IP55 / UL Type 12 enclosures	
E55	IP55/Type 12
P55	IP55/Type 12 + backplate
Y55	IP55/Type 12 + backplate (A4 enclosure, no C-options)
Z55	IP55/Type 12 (A4 enclosure, no C-options)
UL Type 3R enclosures	
E3R	UL Type 3R (North America only)
P3R	UL Type 3R + backplate (North America only)
IP66 / UL Type 4X enclosures	
E66	IP66/Type 4X
Y66	IP66/Type 4X + backplate (A4 enclosure, no C-options)
Z66	IP66/Type 4X (A4 enclosure, no C-options)

[5] RFI filter, terminal and monitoring options – EN/IEC 61800-3 (character 16-17)	
H1	RFI-Filter Class A1/B (C1)
H2	RFI-Filter, Class A2 (C3)
H3	RFI-Filter Class A1/B ¹⁾
H4	RFI-Filter, Class A1 (C2)
H5	RFI-Filter, Class A2 (C3) Marine ruggedized
HX	No RFI-Filter
[6] Braking and safety (character 18)	
X	No brake IGBT
B	Brake IGBT
T	Safe Stop without brake
U	Brake IGBT plus Safe Torque Off
[7] LCP Display (character 19)	
X	Blank faceplate, no LCP installed
N	Numerical Local Control Panel (LCP 101)
G	Graphical Local Control Panel (LCP 102)
W	VLT® Wireless Communication Panel LCP 103
[8] PCB Coating – IEC 721-3-3 (character 20)	
X	Standard coated PCB Class 3C2
C	Coated PCB Class 3C3
[9] Mains input (character 21)	
X	No mains option
1	Mains disconnect (A4, A5, B1, B2, C1 and C2 enclosures only)
8	Mains disconnect and load sharing (B1, B2, C1 and C2 enclosures only)
D	Load sharing terminals (B1, B2, C1, C2 enclosures only)
[10] Hardware option A (character 22)	
X	Standard cable entries
O	Metric cable entry (threaded)
S	Imperial cable entry
[11] Hardware option B (character 23)	
X	No adaptation
[12] Special version (character 24-27)	
SXXX	Latest released standard software
LXX1	Digital Cascade Controller
LX1X	Condition based monitoring
LX11	Digital Cascade Controller + conditional based monitoring
[13] LCP language (character 28)	
X	Standard language package including English, German, French, Spanish, Danish, Italian, Finnish and others
Contact factory for other language options	
[14] A-options: Fieldbus (character 29-30)	
AX	No option
A0	VLT® PROFIBUS DP V1 MCA 101
A4	VLT® DeviceNet MCA 104
AL	VLT® PROFINET MCA 120
AN	VLT® EtherNet/IP MCA 121
AQ	VLT® Modbus TCP MCA 122
AK	VLT® BACnet/IP MCA 125

[15] B-options (character 31-32)	
BX	No option
BK	VLT® General Purpose MCB 101
BP	VLT® Relay Option MCB 105
B2	VLT® PTC Thermistor Card MCB 112
B4	VLT® Sensor Input Card MCB 114
BY	VLT® Extended Cascade Controller MCO 101
[16] C0-option (character 33-34)	
CX	No option
[17] C1-option (character 35)	
X	No option
5	VLT® Advanced Cascade Controller MCO 102
R	VLT® Extended Relay Card MCB 113
[18] C1-option software (character 36-37)	
XX	No software option
[19] D-option (character 38-39)	
DX	No DC input installed
D0	VLT® 24 V DC Supply Option MCB 107
D1	VLT® Real-time Clock Option MCB 117

1) Reduced motor cable length

2) Note: T7 drives are not UL certified.
Select T6 for UL certification.

Please beware that not all combinations are possible.
Find help configuring your drive with the online
configurator found under: driveconfig.danfoss.com

Enclosure overview D, E and F

6-pulse

VLT® AQUA Drive			T2 3 x 200-240 V			T4 380-480 V			T7 525-690 V		
FC 200	kW		IP20	IP21	IP54	IP20	IP21	IP54	IP20	IP21	IP54
	NO	HO									
N55K	55	45	D3h	D1h	D1h						
N75K	75	55									
N90K	90	75									
N110	110	90									
N132	132	110	D4h	D2h	D2h	D3h	D1h D5h D6h	D1h D5h D6h	D3h	D1h D5h D6h	D1h D5h D6h
N160	160	132									
N200	200	160									
N250	250	200				D4h	D2h D7h D8h	D2h D7h D8h	D4h	D2h D7h D8h	D2h D7h D8h
N315	315	250									
N355	355	315									
N400	400	355				E3h	E1h	E1h	D4h	D2h D7h D8h	D2h D7h D8h
N450	450	400									
N500	500	450				E4h	E2h	E2h	E3h	E1h	E1h
N560	560	500									
N630	630	560									
N710	710	630							E4h	E2h	E2h
N800	800	710									
P500	500	450									
P560	560	500									
P630	630	560					F1/F3	F1/F3			
P710	710	630									
P800	800	710					F2/F4	F2/F4	F1/F3	F1/F3	
P900	900	800									
P1M0	1000	900					F2/F4	F2/F4			
P1M2	1200	1000							F2/F4	F2/F4	
P1M4	1400	1200									

12-pulse

VLT® AQUA Drive			T4 380-480 V				T7 525-690 V			
FC 200	kW		IP21	IP21 + options	IP54	IP54 + options	IP21	IP21 + options	IP54	IP54 + options
	NO	HO								
P315	315	250								
P355	355	315	F8	F9	F8	F9				
P400	400	355								
P450	450	400								
P500	500	450								
P560	560	500					F8	F9	F8	F9
P630	630	560	F10	F11	F10	F11				
P710	710	630								
P800	800	710	F12	F13	F12	F13	F10	F11	F10	F12
P900	900	800								
P1M0	1000	800	F12	F13	F12	F13				
P1M2	1200	1000					F12	F13	F12	F13
P1M4	1400	1200								

- IP20/Chassis
- IP21/Type 1
- IP54/Type 12



Electrical data – D, E and F enclosures

[T2] 3 x 200-240 V AC – normal overload

Type code	Normal overload (110% 1 min/10 min)						Enclosure size		
	Output current (3 x 200-240 V)		Typical shaft output power		Continuous input current	Estimated power loss	Protection rating [IEC/UL]		
	Con. I _N	Inter. I _{MAX} (60 s)	kW	HP @ 230 V	[A]	[W]	IP20	IP21	IP54
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	kW	HP @ 230 V	[A]	[W]	Chassis	Type 1	Type 12
N55K	190	209	55	75	183	1505	D3h	D1h	
N75K	240	264	75	100	231	2398	D3h	D1h	
N90K	302	332	90	120	291	2623	D4h	D2h	
N110	361	397	110	150	348	3284	D4h	D2h	
N150	443	487	150	200	427	4117	D4h	D2h	
N160	535	589	160	215	516	5209	D4h	D2h	

[T2] 3 x 200-240 V AC – high overload

Type code	High overload (150% 1 min/10 min)						Enclosure size		
	Output current (3 x 200-240 V)		Typical shaft output power		Continuous input current	Estimated power loss	Protection rating [IEC/UL]		
	Con. I _N	Inter. I _{MAX} (60 s)	kW	HP @ 230 V	[A]	[W]	IP20	IP21	IP54
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	kW	HP @ 230 V	[A]	[W]	Chassis	Type 1	Type 12
N55K	160	240	45	60	154	1482	D3h	D1h	
N75K	190	285	55	75	183	1794	D3h	D1h	
N90K	240	360	75	100	231	1990	D4h	D2h	
N110	302	453	90	120	291	2613	D4h	D2h	
N150	361	542	110	150	348	3195	D4h	D2h	
N160	443	665	150	200	427	4103	D4h	D2h	

[T4] 3 x 380-480 V AC – normal overload

Normal overload (110% 1 min/10 min)									Enclosure size		
Type code	Output current				Typical shaft output power		Con- tinuous input current	Estimat- ed power loss	Protection rating [IEC/UL]		
	(3 x 380-440 V)		(3 x 441-500 V)						IP20	IP21	IP54
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 400 V	Hp @ 460 V	[A] @ 400 V	[W]	Chassis	Type 1	Type 12
N110	212	233	190	209	110	150	204	2559	D3h	D1h/D5h/D6h	
N132	260	286	240	264	132	200	251	2954	D3h	D1h/D5h/D6h	
N160	315	347	302	332	160	250	304	3770	D3h	D1h/D5h/D6h	
N200	395	435	361	397	200	300	381	4116	D4h	D2h/D7h/D8h	
N250	480	528	443	487	250	350	463	5137	D4h	D2h/D7h/D8h	
N315	588	647	535	588	315	450	567	6674	D4h	D2h/D7h/D8h	
N355	658	724	590	649	355	500	634	6928	E3h	E1h	E1h
N400	745	820	678	746	400	600	718	8036	E3h	E1h	E1h
N450	800	880	730	803	450	600	771	8783	E3h	E1h	E1h
N500	880	968	780	858	500	650	848	9473	E4h	E2h	E2h
N560	990	1089	890	979	560	750	954	11102	E4h	E2h	E2h
P500	880	968	780	858	500	650	848	10162	–	F1/F3	F1/F3
P560	990	1089	890	979	560	750	954	11822	–	F1/F3	F1/F3
P630	1120	1232	1050	1155	630	900	1079	12512	–	F1/F3	F1/F3
P710	1260	1386	1160	1276	710	1000	1214	14674	–	F1/F3	F1/F3
P800	1460	1606	1380	1518	800	1200	1407	17293	–	F2/F4	F2/F4
P1M0	1720	1892	1530	1683	1000	1350	1658	19278	–	F2/F4	F2/F4

[T4] 3 x 380-480 V AC – high overload

High overload (150% 1 min/10 min)									Enclosure size		
Type code	Output current				Typical shaft output power		Con- tinuous input current	Estimat- ed power loss	Protection rating [IEC/UL]		
	(3 x 380-440 V)		(3 x 441-500 V)						IP20	IP21	IP54
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 400 V	Hp @ 460 V	[A] @ 400 V	[W]	Chassis	Type 1	Type 12
N110	177	266	160	240	90	125	171	2031	D3h	D1h/D5h/D6h	
N132	212	318	190	285	110	150	204	2289	D3h	D1h/D5h/D6h	
N160	260	390	240	360	132	200	251	2923	D3h	D1h/D5h/D6h	
N200	315	473	302	453	160	250	304	3093	D4h	D2h/D7h/D8h	
N250	395	593	361	542	200	300	381	4039	D4h	D2h/D7h/D8h	
N315	480	720	443	665	250	350	463	5005	D4h	D2h/D7h/D8h	
N355	600	900	540	810	315	450	578	6178	E3h	E1h	E1h
N400	658	987	590	885	355	500	634	6851	E3h	E1h	E1h
N450	695	1043	678	1017	400	550	670	7297	E3h	E1h	E1h
N500	800	1200	730	1095	450	600	771	8352	E4h	E2h	E2h
N560	880	1320	780	1170	500	650	848	9449	E4h	E2h	E2h
P500	800	1200	730	1095	450	600	771	9031	–	F1/F3	F1/F3
P560	880	1320	780	1170	500	650	848	10146	–	F1/F3	F1/F3
P630	990	1485	890	1335	560	750	954	10649	–	F1/F3	F1/F3
P710	1120	1680	1050	1575	630	900	1079	12490	–	F1/F3	F1/F3
P800	1260	1890	1160	1740	710	1000	1214	14244	–	F2/F4	F2/F4
P1M0	1460	2190	1380	2070	800	1200	1407	15466	–	F2/F4	F2/F4

[T7] 3 x 525-690 V AC – normal overload

Normal overload (110% 1 min/10 min)									Enclosure size		
Type code	Output current				Typical shaft output power		Continuous input current	Estimated power loss	Protection rating [IEC/UL]		
	(3 x 525-550 V)		(3 x 551-690 V)						IP20	IP21	IP54
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 690 V	Hp @ 575 V	[A] @ 690 V	[W]	Chassis	Type 1	Type 12
N75K	90	99	86	95	75	75	83	1162	D3h	D1h/D5h/D6h	
N90K	113	124	108	119	90	100	104	1428	D3h	D1h/D5h/D6h	
N110	137	151	131	144	110	125	126	1740	D3h	D1h/D5h/D6h	
N132	162	178	155	171	132	150	149	2101	D3h	D1h/D5h/D6h	
N160	201	221	192	211	160	200	185	2649	D3h	D1h/D5h/D6h	
N200	253	278	242	266	200	250	233	3074	D4h	D2h/D7h/D8h	
N250	303	333	290	319	250	300	279	3723	D4h	D2h/D7h/D8h	
N315	360	396	344	378	315	350	332	4465	D4h	D2h/D7h/D8h	
N400	418	460	400	440	400	400	385	5028	D4h	D2h/D7h/D8h	
N450	470	517	450	495	450	450	434	6062	E3h	E1h	E1h
N500	523	575	500	550	500	500	482	6879	E3h	E1h	E1h
N560	596	656	570	627	560	600	549	8076	E3h	E1h	E1h
N630	630	693	630	693	630	650	607	9208	E3h	E1h	E1h
N710	763	839	730	803	710	750	704	10346	E4h	E2h	E2h
N800	889	978	850	935	800	950	819	12723	E4h	E2h	E2h
P710	763	839	730	803	710	750	704	9212	–	F1/F3	F1/F3
P800	889	978	850	935	800	950	819	10659	–	F1/F3	F1/F3
P900	988	1087	945	1040	900	1050	911	12080	–	F1/F3	F1/F3
P1M0	1108	1219	1060	1166	1000	1150	1022	13305	–	F2/F4	F2/F4
P1M2	1317	1449	1260	1386	1200	1350	1214	15865	–	F2/F4	F2/F4
P1M4	1479	1627	1415	1557	1400	1550	1364	18173	–	F2/F4	F2/F4

[T7] 3 x 525-690 V AC – high overload

High overload (150% 1 min/10 min)									Enclosure size		
Type code	Output current				Typical shaft output power		Continuous input current	Estimated power loss	Protection rating [IEC/UL]		
	(3 x 525-550 V)		(3 x 551-690 V)						IP20	IP21	IP54
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 690 V	Hp @ 575 V	[A] @ 690 V	[W]	Chassis	Type 1	Type 12
N75K	76	122	73	117	55	60	70	1098	D3h	D1h/D5h/D6h	
N90K	90	135	86	129	75	75	83	1162	D3h	D1h/D5h/D6h	
N110	113	170	108	162	90	100	104	1430	D3h	D1h/D5h/D6h	
N132	137	206	131	197	110	125	126	1742	D3h	D1h/D5h/D6h	
N160	162	243	155	233	132	150	149	2080	D3h	D1h/D5h/D6h	
N200	201	302	192	288	160	200	185	2361	D4h	D2h/D7h/D8h	
N250	253	380	242	363	200	250	233	3012	D4h	D2h/D7h/D8h	
N315	303	455	290	435	250	300	279	3642	D4h	D2h/D7h/D8h	
N400	360	540	344	516	315	350	332	4146	D4h	D2h/D7h/D8h	
N450	395	593	380	570	355	400	366	4989	E3h	E1h	E1h
N500	429	644	410	615	400	400	395	5419	E3h	E1h	E1h
N560	523	785	500	750	500	500	482	6833	E3h	E1h	E1h
N630	596	894	570	855	560	600	549	8069	E3h	E1h	E1h
N710	659	989	630	945	630	650	607	8543	E4h	E2h	E2h
N800	763	1145	730	1095	710	750	704	10319	E4h	E2h	E2h
P710	659	989	630	945	630	650	607	7826	–	F1/F3	F1/F3
P800	763	1145	730	1095	710	750	704	8983	–	F1/F3	F1/F3
P900	889	1334	850	1275	800	950	819	10646	–	F1/F3	F1/F3
P1M0	988	1482	945	1418	900	1050	911	11681	–	F2/F4	F2/F4
P1M2	1108	1662	1060	1590	1000	1150	1022	12997	–	F2/F4	F2/F4
P1M4	1317	1976	1260	1890	1200	1350	1214	15763	–	F2/F4	F2/F4



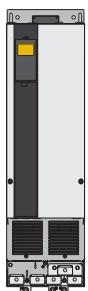
Dimensions enclosure size D

Enclosure size		VLT® AQUA Drive									
Protection rating [IEC/UL]		IP21 /Type 1 IP54 /Type 12		IP20 /Chassis				IP21 /Type 1 IP54 /Type 12			
[mm]	Height	901.0	1107.0	909.0	1027.0	1122.0	1294.0	1324.0	1663.0	1978.0	2284.0
	Width	325.0	420.0	250.0	250.0	350.0	350.0	325.0	325.0	420.0	420.0
	Depth	378.4	378.4	375.0	375.0	375.0	375.0	381.0	381.0	386.0	406.0
[kg]	Weight	62.0	125.0	62.0	108.0	125.0	179.0	99.0	128.0	185.0	232.0
[in]	Height	35.5	43.6	35.8	39.6	44.2	50.0	52.1	65.5	77.9	89.9
	Width	12.8	12.8	19.8	9.9	14.8	13.8	12.8	12.8	16.5	16.5
	Depth	14.9	14.9	14.8	14.8	14.8	14.8	15.0	15.0	15.2	16.0
[lb]	Weight	136.7	275.6	136.7	238.1	275.6	394.6	218.3	282.2	407.9	511.5

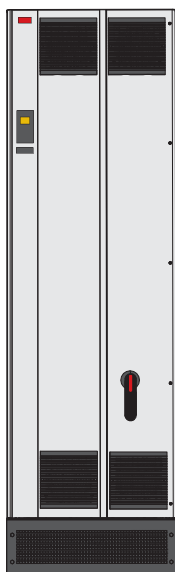
- ⁽¹⁾ dimensions with regeneration or load share terminals
- ⁽²⁾ D5h is used with disconnect and/or brake chopper options
- ⁽³⁾ D6h is used with contactor and/or circuit breaker options
- ⁽⁴⁾ D7h is used with disconnect and/or brake chopper options
- ⁽⁵⁾ D8h is used with contactor and/or circuit breaker options

Dimensions enclosure sizes E and F

Frame		VLT® AQUA Drive							
Protection rating [IEC/UL]		IP21 /Type 1 IP54 /Type 12		IP20 /Chassis		IP21 /Type 1 IP54 /Type 12			
[mm]	Height	2043.0	2043.0	1578.0	1578.0	2204.0	2204.0	2204.0	2204.0
	Width	602.0	698.0	506.0	604.0	1400.0	1800.0	2000.0	2400.0
	Depth	513.0	513.0	482.0	482.0	606.0	606.0	606.0	606.0
[kg]	Weight	295.0	318.0	272.0	295.0	1017.0	1260.0	1318.0	1561.0
[in]	Height	80.4	80.4	62.1	62.1	86.8	86.8	86.8	86.8
	Width	23.7	27.5	199.9	23.9	55.2	70.9	78.8	94.5
	Depth	20.2	20.2	19.0	19.0	23.9	23.9	23.9	23.9
[lb]	Weight	650.0	700.0	600.0	650.0	2242.1	2777.9	2905.7	3441.5



D3h/D4h



E1h



F

Electrical data and dimensions

– VLT® 12-Pulse

[T4] 6 x 380-480 V AC – normal overload

Type code	Normal overload (110% 1 min/10 min)								Enclosure size			
	Output current				Typical shaft output power		Continuous input current	Estimated power loss	Protection rating [IEC/UL]			
	(3 x 380-440 V)		(3 x 441-480 V)						IP21/Type 1		IP54/Type 12	
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 400 V	Hp @ 460 V	[A] @ 400 V	[W]	AC drive	+ options	AC drive	+ options
P315	600	660	540	594	315	450	590	6790	F8	F9	F8	F9
P355	658	724	590	649	355	500	647	7701	F8	F9	F8	F9
P400	745	820	678	746	400	600	733	8879	F8	F9	F8	F9
P450	800	880	730	803	450	600	787	9670	F8	F9	F8	F9
P500	880	968	780	858	500	650	857	10647	F10	F11	F10	F11
P560	990	1089	890	979	560	750	964	12338	F10	F11	F10	F11
P630	1120	1232	1050	1155	630	900	1090	13201	F10	F11	F10	F11
P710	1260	1386	1160	1276	710	1000	1227	15436	F10	F11	F10	F11
P800	1460	1606	1380	1518	800	1200	1422	18084	F12	F13	F12	F13
P1M0	1720	1892	1530	1683	1000	1350	1675	20358	F12	F13	F12	F13

[T4] 6 x 380-480 V AC – high overload

Type code	High overload (150% 1 min/10 min)								Enclosure size			
	Output current				Typical shaft output power		Continuous input current	Estimated power loss	Protection rating [IEC/UL]			
	(3 x 380-440 V)		(3 x 441-480 V)						IP21/Type 1		IP54/Type 12	
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 400 V	Hp @ 460 V	[A] @ 400 V	[W]	AC drive	+ options	AC drive	+ options
P315	480	720	443	665	250	350	472	5164	F8	F9	F8	F9
P355	600	900	540	810	315	450	590	6960	F8	F9	F8	F9
P400	658	987	590	885	355	500	647	7691	F8	F9	F8	F9
P450	695	1043	678	1017	400	550	684	8178	F8	F9	F8	F9
P500	800	1200	730	1095	450	600	779	9492	F10	F11	F10	F11
P560	880	1320	780	1170	500	650	857	10631	F10	F11	F10	F11
P630	990	1485	890	1335	560	750	964	11263	F10	F11	F10	F11
P710	1120	1680	1050	1575	630	900	1090	13172	F10	F11	F10	F11
P800	1260	1890	1160	1740	710	1000	1227	14967	F12	F13	F12	F13
P1M0	1460	2190	1380	2070	800	1200	1422	16392	F12	F13	F12	F13

[T7] 6 x 525-690 V AC – normal overload

Normal overload (110% 1 min/10 min)									Enclosure size			
Type code	Output current				Typical shaft output power		Con- tinuous input current	Estimated power loss	Protection rating [IEC/UL]			
	(3 x 525-550 V)		(3 x 551-690 V)						IP21/Type 1		IP54/Type 12	
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 690 V	Hp @ 575 V	[A] @ 690 V	[W]	AC drive	+ options	AC drive	+ options
P450	470	517	450	495	450	450	434	5529	F8	F9	F8	F9
P500	523	575	500	550	500	500	482	6239	F8	F9	F8	F9
P560	596	656	570	627	560	600	549	7653	F8	F9	F8	F9
P630	630	693	630	693	630	650	607	8495	F8	F9	F8	F9
P710	763	839	730	803	710	750	711	9863	F10	F11	F10	F11
P800	889	978	850	935	800	950	828	11304	F10	F11	F10	F11
P900	988	1087	945	1040	900	1050	920	12798	F10	F11	F10	F11
P1M0	1108	1219	1060	1166	1000	1150	1032	13801	F12	F13	F12	F13
P1M2	1317	1449	1260	1386	1200	1350	1227	16821	F12	F13	F12	F13
P1M4	1479	1627	1415	1557	1400	1550	1378	19247	F12	F13	F12	F13

[T7] 6 x 525-690 V AC – high overload

High overload (150% 1 min/10 min)									Enclosure size			
Type code	Output current				Typical shaft output power		Con- tinuous input current	Estimated power loss	Protection rating [IEC/UL]			
	(3 x 525-550 V)		(3 x 551-690 V)						IP21/Type 1		IP54/Type 12	
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 690 V	Hp @ 575 V	[A] @ 690 V	[W]	AC drive	+ options	AC drive	+ options
P450	395	593	380	570	355	400	366	4589	F8	F9	F8	F9
P500	429	644	410	615	400	400	395	4970	F8	F9	F8	F9
P560	523	785	500	750	500	500	482	6707	F8	F9	F8	F9
P630	596	894	570	855	560	600	549	7633	F8	F9	F8	F9
P710	659	989	630	945	630	650	613	8388	F10	F11	F10	F11
P800	763	1145	730	1095	710	750	711	9537	F10	F11	F10	F11
P900	889	1334	850	1275	800	950	828	11291	F10	F11	F10	F11
P1M0	988	1482	945	1418	900	1050	920	12524	F12	F13	F12	F13
P1M2	1108	1662	1060	1590	1000	1150	1032	13801	F12	F13	F12	F13
P1M4	1317	1976	1260	1890	1200	1350	1227	16719	F12	F13	F12	F13

Dimensions enclosure size F

Enclosure size		VLT® AQUA Drive					
		F8	F9	F10	F11	F12	F13
Protection rating [IEC/UL]		IP21 /Type 1 IP54 /Type 12					
[mm]	Height	2204.0	2204.0	2204.0	2204.0	2204.0	2204.0
	Width	800.0	1400.0	1600.0	2400.0	2000.0	2800.0
	Depth	606.0	606.0	606.0	606.0	606.0	606.0
[kg]	Weight	447.0	669.0	893.0	1116.0	1037.0	1259.0
[in]	Height	86.8	86.8	86.8	86.8	86.8	86.8
	Width	31.5	55.2	63.0	94.5	78.8	110.2
	Depth	23.9	23.9	23.9	23.9	23.9	23.9
[lb]	Weight	985.5	1474.9	1968.8	2460.4	2286.4	2775.7

Electrical data and dimensions

– Enclosed Drive

[T5] 3 x 380-500 V AC – high overload

High overload (150% 1 min/10 min)										
Type code	Output current				Typical shaft output power		Continuous input current	Estimated power loss	Protection rating	
	(3 x 380-440 V)		(3 x 441-480 V)		kW @ 400 V	Hp @ 460 V			IP21	IP54
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)					[A] @ 400 V	[W]
N110	177	266	160	240	90	125	171	2031	D9h	D9h
N132	212	318	190	285	110	150	204	2289	D9h	D9h
N160	260	390	240	360	132	200	251	2923	D9h	D9h
N200	315	473	302	453	160	250	304	3093	D10h	D10h
N250	395	593	361	542	200	300	381	4039	D10h	D10h
N315	480	720	443	665	250	350	463	5005	D10h	D10h
N355	600	900	540	810	315	450	578	6178	E5h	E5h
N400	658	987	590	885	355	500	634	6851	E5h	E5h
N450	695	1043	678	1017	400	550	718	7297	E5h	E5h
N500	800	1200	730	1095	450	600	771	8352	E6h	E6h
N560	880	1320	780	1170	500	650	848	9449	E6h	E6h

[T5] 3 x 380-500 V AC – normal overload

Normal overload (110% 1 min/10 min)										
Type code	Output current				Typical shaft output power		Continuous input current	Estimated power loss	Protection rating	
	(3 x 380-440 V)		(3 x 441-480 V)		kW @ 400 V	Hp @ 460 V			IP21	IP54
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)					[A] @ 400V	[W]
N110	212	233	190	209	110	150	204	2559	D9h	D9h
N132	260	286	240	264	132	200	251	2954	D9h	D9h
N160	315	347	302	332	160	250	304	3770	D9h	D9h
N200	395	435	361	397	200	300	381	4116	D10h	D10h
N250	480	528	443	487	250	350	463	5137	D10h	D10h
N315	588	647	535	588	315	450	578	6674	D10h	D10h
N355	658	724	590	649	355	500	634	6928	E5h	E5h
N400	745	820	678	746	400	600	718	8036	E5h	E5h
N450	800	880	730	803	450	600	771	8783	E5h	E5h
N500	880	968	780	858	500	650	848	9473	E6h	E6h
N560	990	1089	890	979	560	750	954	11102	E6h	E6h

[T7] 3 x 525-690 V AC – high overload

High overload (150% 1 min/10 min)									Protection rating	
Type code	Output current				Typical shaft output power		Continuous input current	Estimated power loss	IP21	IP54
	(3 x 525-550 V)		(3 x 551-690 V)		kW @ 690 V	Hp @ 575 V			Type 1	Type 12
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)					[A] @ 690 V	[W]
N110	113	170	108	162	90	100	109	1479	D9h	D9h
N132	137	206	131	197	110	125	132	1798	D9h	D9h
N160	162	243	155	233	132	150	156	2157	D9h	D9h
N200	201	302	192	288	160	200	193	2443	D10h	D10h
N250	253	380	242	363	200	250	244	3121	D10h	D10h
N315	303	455	290	435	250	300	292	3768	D10h	D10h
N355	360	540	344	516	315	350	347	4254	D10h	D10h
N400	395	593	380	570	355	400	381	4989	E5h	E5h
N500	429	644	410	615	400	400	413	5419	E5h	E5h
N560	523	785	500	750	500	500	504	6833	E5h	E5h
N630	596	894	570	855	560	600	574	8069	E5h	E5h
N710	659	989	630	945	630	650	635	8543	E6h	E6h
N800	763	1145	730	1095	710	750	735	10319	E6h	E6h

[T7] 3 x 525-690 V AC – normal overload

Normal overload (110% 1 min/10 min)									Protection rating	
Type code	Output current				Typical shaft output power		Continuous input current	Estimated power loss	IP21	IP54
	(3 x 525-550 V)		(3 x 551-690 V)		kW @ 690 V	Hp @ 575 V			Type 1	Type 12
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)					[A] @ 690 V	[W]
N110	137	151	131	144	110	125	132	1796	D9h	D9h
N132	162	178	155	171	132	150	156	2165	D9h	D9h
N160	201	221	192	211	160	200	193	2738	D9h	D9h
N200	253	278	242	266	200	250	244	3172	D10h	D10h
N250	303	333	290	319	250	300	292	3848	D10h	D10h
N315	360	396	344	378	315	350	347	4610	D10h	D10h
N355	418	460	400	440	400	400	381	5150	D10h	D10h
N400	470	517	450	495	450	450	413	6062	E5h	E5h
N500	523	575	500	550	500	500	504	6879	E5h	E5h
N560	596	656	570	627	560	600	574	8076	E5h	E5h
N630	630	693	630	693	630	650	635	9208	E5h	E5h
N710	763	839	730	803	710	750	735	10346	E6h	E6h
N800	889	978	850	935	800	950	857	12723	E6h	E6h



Dimensions for Enclosed Drive

VLT® AQUA Drive				
	D9h	D10h	E5h	E6h
Enclosed Drive				
Rated power at 380–500 V [kW (hp)]	90–132 (125–200)	160–250 (250–350)	315–400 (450–550)	450–500 (600–650)
Rated power at 525–690 V [kW (hp)]	90–132 (100–150)	160–315 (200–350)	355–560 (400–600)	630–710 (650–950)
Protection rating	IP21/Type 1 IP54/Type 12	IP21/Type 1 IP54/Type 12	IP21/Type 1 IP54/Type 12	IP21/Type 1 IP54/Type 12
Drive cabinet				
Height [mm (in)] ¹⁾	2100 (82.7)	2100 (82.7)	2100 (82.7)	2100 (82.7)
Width [mm (in)] ²⁾	400 (15.8)	600 (23.6)	600 (23.6)	800 (31.5)
Depth [mm (in)]	600 (23.6)	600 (23.6)	600 (23.6)	600 (23.6)
Weight [kg (lb)] ²⁾	280 (617)	355 (783)	400 (882)	431 (950)
Input filter cabinet				
Height [mm (in)] ¹⁾	–	2100 (82.7)	2100 (82.7)	2100 (82.7)
Width [mm (in)]	–	600 (23.6)	600 (23.6)	600 (23.6)
Depth [mm (in)]	–	600 (23.6)	600 (23.6)	600 (23.6)
Weight [kg (lb)]	–	380 (838)	380 (838)	380 (838)
Sine-wave filter cabinet				
Height [mm (in)] ¹⁾	2100 (82.7)	2100 (82.7)	2100 (82.7)	2100 (82.7)
Width [mm (in)]	600 (23.6)	600 (23.6)	1200 (47.2)	1200 (47.2)
Depth [mm (in)]	600 (23.6)	600 (23.6)	600 (23.6)	600 (23.6)
Weight [kg (lb)]				
dV/dt filter cabinet				
Height [mm (in)] ¹⁾	–	–	2100 (82.7)	2100 (82.7)
Width [mm (in)] ³⁾	–	–	400 (15.8)	400 (15.8)
Depth [mm (in)]	–	–	600 (23.6)	600 (23.6)
Weight [kg (lb)]	–	–	240 (529)	240 (529)
Top entry/exit cabinet				
Height [mm (in)] ¹⁾	2100 (82.7)	2100 (82.7)	2100 (82.7)	2100 (82.7)
Width [mm (in)] ³⁾	400 (15.8)	400 (15.8)	400 (15.8)	400 (15.8)
Depth [mm (in)]	600 (23.6)	600 (23.6)	600 (23.6)	600 (23.6)
Weight [kg (lb)]	164 (362)	164 (362)	164 (362)	164 (362)

¹⁾ Cabinet height includes standard 100 mm (3.9 in) plinth. A 200 mm (7.9 in) or 400 mm (15.8 in) plinth is optional.

²⁾ Without options.

³⁾ The E5h and E6h enclosures contain 2 sine wave cabinets. The provided width is the total of both cabinets.



PLV-

AE	AC socket+cabinet light + extended I/O terminals + cabinet heater
AF	AC socket+cabinet light + extended I/O terminals + motor heater control
AG	AC socket+cabinet light + extended I/O terminals + insulation monitor
AH	AC socket+cabinet light + extended I/O terminals + cabinet heater + motor heater control
AI	AC socket+cabinet light + extended I/O terminals + cabinet heater + insulation monitor
AJ	AC socket+cabinet light + extended I/O terminals + motor heater control + insulation monitor
AK	AC socket+cabinet light + extended I/O terminals + cabinet heater + motor heater control + insulation monitor
AL	AC socket+cabinet light + cabinet heater + motor heater control
AM	AC socket+cabinet light + cabinet heater + insulation monitor
AN	AC socket+cabinet light + cabinet heater + motor heater control + insulation monitor
AO	AC socket+cabinet light + motor heater control + insulation monitor
AP	Extended I/O terminals + cabinet heater
AQ	Extended I/O terminals + motor heater control
AR	Extended I/O terminals + insulation monitor
AS	Extended I/O terminals + cabinet heater + motor heater control
AT	Extended I/O terminals + cabinet heater + insulation monitor
AU	Extended I/O terminals + cabinet heater + motor heater control + insulation monitor
AV	Extended I/O terminals + motor heater control + insulation monitor
AW	Cabinet heater + motor heater control
A8	Cabinet heater + insulation monitor
AY	Cabinet heater + motor heater control + insulation monitor
AZ	Motor heater control + insulation monitor
[16] LCP display (character 25)	
L	LCP at door
N	No LCP
[17] Enclosure rating (character 26-27)	
21	IP21
54	IP54

[18] Door-mounted option (character 28-29)	
XX	None
D1	Signal lights and reset button
D2	Emergency switch off and emergency press button
D3	STO with emergency press button (no functional safety)
D4	STO/SS1 with emergency press button + SLS (TTL Enc)
D5	STO/SS1 with emergency press button + SLS (HTL Enc)
DA	Signal lights and reset button + emergency switch off and emergency press button
DB	Signal lights and reset button + STO with emergency press button (no functional safety)
DC	Signal lights and reset button + STO/SS1 with emergency press button +SLS (TTL Enc)
DE	Signal lights and reset button + STO/SS1 with emergency press button +SLS (HTL Enc)
[19] A-options: Fieldbus (character 30)	
X	No option
0	VLT® PROFIBUS DP MCA 101
4	VLT® DeviceNet MCA 104
L	VLT® PROFINET MCA 120
N	VLT® EtherNet/IP MCA 121
Q	VLT® Modbus TCP MCA 122
K	VLT® BACnet/IP MCA 125
[20] B-options (character 31)	
X	No application option
K	VLT® General Purpose MCB 101
P	VLT® Relay Option MCB 105
2	VLT® PTC Thermistor Card MCB 112
4	VLT® Sensor Input Card MCB 114
Y	VLT® Extended Cascade Controller MCO 101
[21] C0-option (character 32)	
X	No option
[22] C1-option (character 33)	
X	No option
5	VLT® Advanced Cascade Controller MCO 102
R	VLT® Extended Relay Card MCB 113
[23] C-option software (character 34)	
X	No software option

[24] D-option (character 35)	
X	No option
0	VLT® 24 V DC Supply Option MCB 107
1	VLT® Real-time Clock Option MCB 117
[25] EMC filter (character 36)	
2	(H2) RFI class A2 (C3)
4	(H4) RFI class A1 (C2)
6	IT Grid
[26] Reserved (character 37)	
X	None
[27] Reserved (character 38-39)	
XX	None
[28] Documentation language (character 40)	
X	English only
G	English + German
F	English + French

Please beware that not all combinations are possible. Find help configuring your drive with the online configurator found under: driveconfig.danfoss.com

Electrical data – VLT® Low Harmonic Drive and VLT® Advanced Active Filters

[T4] 3 x 380-480 V AC – VLT® Low Harmonic Drive

Type code	High overload (150% 1 min/10 min)								Enclosure size	
	Output current				Typical shaft output power		Continu-ous input current	Estimat-ed power loss	Protection rating [IEC/UL]	
	(3 x 380-440 V)		(3 x 441-480 V)						IP21	IP55
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 400 V	Hp @ 460 V	[A]	[W]	Type 1	Type 12
N160	260	390	240	360	132	200	251	7428	D1n	D1n
N200	315	473	302	453	160	250	304	8048	D2n	D2n
N250	395	593	361	542	200	300	381	9753	D2n	D2n
P315	480	720	443	665	250	350	472	11587	E9	E9
P355	600	900	540	810	315	450	590	14140	E9	E9
P400	658	987	590	885	355	500	647	15286	E9	E9
P450	695	1043	678	1017	400	550	684	16063	E9	E9
P500	800	1200	730	1095	450	600	779	20077	F18	F18
P560	880	1320	780	1170	500	650	857	21851	F18	F18
P630	900	1485	890	1335	560	750	964	23320	F18	F18
P710	1120	1680	1050	1575	630	900	1090	26559	F18	F18

[T4] 3 x 380-480 V AC – VLT® Low Harmonic Drive

Type code	Normal overload (110% 1 min/10 min)								Enclosure size	
	Output current				Typical shaft output power		Continu-ous input current	Estimat-ed power loss	Protection rating [IEC/UL]	
	(3 x 380-440 V)		(3 x 441-480 V)						IP21	IP55
FC-202	Con. I _N	Inter. I _{MAX} (60 s)	Con. I _N	Inter. I _{MAX} (60 s)	kW @ 400 V	Hp @ 460 V	[A]	[W]	Type 1	Type 12
N160	315	347	302	332	160	250	304	8725	D1n	D1n
N200	395	435	361	397	200	300	381	9831	D2n	D2n
N250	480	528	443	487	250	350	463	11371	D2n	D2n
P315	600	660	540	594	315	450	590	14051	E9	E9
P355	658	724	590	649	355	500	647	15320	E9	E9
P400	745	820	678	746	400	600	733	17180	E9	E9
P450	800	880	730	803	450	600	787	18447	E9	E9
P500	800	968	780	858	500	650	857	21909	F18	F18
P560	990	1089	890	979	560	750	964	24592	F18	F18
P630	1120	1232	1050	1155	630	900	1090	26640	F18	F18
P710	1260	1380	1160	1276	710	1000	1227	30519	F18	F18

[T4] 3 x 380-480 V AC VLT® Advanced Active Filter

Type code	Normal overload (110% 1 min/10 min automatically regulated)									Enclosure size		
	Output current								Recom-mended fuse and disconnect rating*	Estimat-ed power loss	Protection rating [IEC/UL]	
	@ 400 V		@ 460 V		@ 480 V		@ 500 V				IP21	IP54
AAF006	Reac-tive	Harmo-nics	Reac-tive	Harmo-nics	Reac-tive	Harmo-nics	Reac-tive	Harmo-nics	[A]	[W]	Type 1	Type 12
A190	190	171	190	171	190	171	190	152	350	5000	D14	D14
A250	250	225	250	225	250	225	250	200	630	7000	E1	E1
A310	310	279	310	279	310	279	310	248	630	9000	E1	E1
A400	400	360	400	360	400	360	400	320	900	11100	E1	E1

* Built-in options for fuses and disconnect recommended

Dimensions – VLT® Low Harmonic Drive and VLT® Advanced Active Filter

Enclosure size		VLT® Low Harmonic Drive				VLT® Advanced Active Filter	
		D1n	D2n	E9	F18	D14	E1
Protection rating [IEC/UL]		IP21 /Type 1 IP54 /Type 12				IP21 /Type 1 IP54 /Type 12	
[mm]	Height	1781.70	1781.7	2000.7	2278.4	1780.0	2000.0
	Width	929.2	1024.2	1200.0	2792.0	600.0	600.0
	Depth	418.4	418.4	538.0	605.8	418.4	538.0
[kg]	Weight	353.0	413.0	676.0	1900.0	238.0	453.0
[in]	Height	70.1	70.1	78.8	89.7	70.0	78.7
	Width	36.6	40.3	47.2	109.9	23.6	23.6
	Depth	16.5	16.5	21.0	23.9	16.5	21.0
[lb]	Weight	777.0	910.0	1490.0	4189.0	524.7	998.7

Specifications VLT® Advanced Active Filter

Filter type	3P/3W, Active Shunt Filter (TN, TT, IT)	Harmonics currents capability in % from the rated current	I5: 63%, I7: 45%, I11: 29%, I13: 25%, I17: 18%, I19: 16%, I23: 14%, I25: 13%
Frequency	50 to 60 Hz, ± 5%	Reactive current compensation	Yes, leading (capacitive) or lagging (inductive) to target power factor
Enclosures	IP21 – NEMA 1, IP54 – NEMA 12	Flicker reduction	Yes
Max. voltage pre-distortion	10% 20% with reduced performance	Compensation priority	Programmable to harmonics or displacement power factor
Operating temperature	0-40 °C +5 °C with reduced performance -10 °C with reduced performance	Paralleling option	Up to 4 units of same power rating in master-follower setup
Altitude	1000 m without derating 3000 m with reduced performance (5%/1000 m)	Current Transformer Support (Customer supply and field mounting)	1 A or 5 A secondary with auto tuning Class 0.5 or better
EMC standards	IEC61000-6-2 IEC61000-6-4	Digital inputs /outputs	4 (2 programmable) Programmable PNP or NPN logic
Circuitry coating	Conformal coated – per ISA S71.04-1985, class G3	Communication interface	RS485, USB1.1
Languages	18 different	Control type	Direct harmonic control (for faster response)
Harmonic compensation modes	Selective or overall (90% RMS for harmonic reduction)	Response time	< 15 ms (including HW)
Harmonic compensation spectrum	2 nd to 40 th in overall mode, including triplens 5 th , 7 th , 11 th , 13 th , 17 th , 19 th , 23 rd , 25 th in selective mode	Harmonic settling time (5-95%)	< 15 ms
		Reactive settling time (5-95%)	< 15 ms
		Maximum overshoot	5%
		Switching frequency	Progressive control in the range of 3-18 kHz
		Average switching frequency	3-4.5 kHz

Typecode VLT® Advanced Active Filter

The different VLT® Active Filters can easily be configured according to customer request at drives.danfoss.com

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	..	39
A	A	F	0	0	6	A	x	x	x	T	4	E	x	x	H	x	x	G	C	x	x	x	S	.	X
8-10: 190: 190 A correction current 250: 250 A correction current 310: 310 A correction current 400: 400 A correction current						13-15: E21: IP 21/NEMA 1 E2M: IP 21/NEMA 1 w. mains shield C2M: IP 21/NEMA 1 w. stainless steel back-channel and mains shield						E54: IP 54/NEMA 12 E5M: IP 54/NEMA 12 w. mains shield C5M: IP 54/NEMA 12 w. stainless steel back-channel and mains shield						16-17: HX: No RFI Filter H4: RFI class A1			21: X: No mains options 3: Disconnect & Fuse 7: Fuse				

A options: Fieldbuses

Available for the full product range

Fieldbus	Typecode position
A	
VLT® PROFIBUS DP MCA 101	14
VLT® DeviceNet MCA 104	
VLT® PROFINET MCA 120	
VLT® EtherNet/IP MCA 121	
VLT® Modbus TCP MCA 122	
VLT® BACnet/IP MCA 125	

PROFIBUS DP

Operating the AC drive via a fieldbus enables you to reduce the cost of your system, communicate faster and more efficiently and benefit from an easier user interface.

Other features:

- Wide compatibility, a high level of availability, support for all major PLC vendors, and compatibility with future versions
- Fast, efficient communication, transparent installation, advanced diagnosis and parameterization and auto-configuration of process data via GSD-file
- Acyclic parameterization using PROFIBUS DP-V1, PROFIdrive or Danfoss FC (MCA 101 only) profile state machines, PROFIBUS DP-V1, Master Class 1 and 2

VLT® PROFIBUS DP MCA 101

Order code

130B1100 standard
130B1200 coated

DeviceNet

DeviceNet offers robust, efficient data handling thanks to advanced Producer/Consumer technology.

- Support of ODVA's AC drive profile supported via I/O instance 20/70 and 21/71 secures compatibility to existing systems
- Benefit from ODVA's strong conformance testing policies, which ensure that products are interoperable
- Built-in web server
- E-mail client for service notification

VLT® DeviceNet MCA 104

Order code

130B1102 standard
130B1202 coated

PROFINET

PROFINET uniquely combines the highest performance with the highest degree of openness. The option is designed so that many of the features from the PROFIBUS can be reused, minimizing user effort to migrate PROFINET and securing the investment in a PLC program.

- Same PPO types as PROFIBUS for easy migration to PROFINET
- Support of MRP
- Support of DP-V1 Diagnostic allows easy, fast and standardized handling of warning and fault information into the PLC, improving bandwidth in the system
- Implementation in accordance with Conformance Class B
- Built-in web server
- E-mail client for service notification

VLT® PROFINET MCA 120

Order code

130B1135 standard, dual-port
130B1235 coated, dual-port

EtherNet/IP

Ethernet is the future standard for communication at the factory floor. EtherNet/IP is based on the newest technology available for industrial use and handles even the most demanding requirements.

EtherNet/IP™ extends commercial off-the-shelf Ethernet to the Common Industrial Protocol (CIP™) – the same upper-layer protocol and object model found in DeviceNet.

The option offers advanced features such as:

- Built-in high performance switch enabling line-topology, and eliminating the need for external switches
- DLR Ring
- Advanced switch and diagnosis functions
- Built-in web server
- E-mail client for service notification
- Unicast and Multicast communication

VLT® EtherNet/IP MCA 121

Order code

130B1119 standard, dual-port
130B1219 coated, dual-port

Modbus TCP

Modbus TCP is the first industrial Ethernet-based protocol for automation. Modbus TCP is able to handle connection intervals down to 5 ms in both directions, positioning it among the fastest performing Modbus TCP devices in the market. For master redundancy, it features hot swapping between two masters.

Other features:

- Dual Master PLC connection for redundancy in dual port options (MCA 122 only)

VLT® Modbus TCP MCA 122

Order code

130B1196 standard, dual-port
130B1296 coated, dual-port

BACnet/IP

The BACnet/IP option optimizes the use of VLT® AQUA Drive together with building management systems (BMS) using the BACnet/IP protocol or running BACnet on Ethernet. BACnet/IP makes it easy to control or to monitor points required in typical HVAC applications, reducing overall cost of ownership.

Other features:

- COV, Change Of Value
- Read/WritePropertyMultiple
- Alarm/Warning notifications
- PID Loop object
- Segmented data transfer
- Trend Objects
- Schedule Objects

VLT® BACnet/IP MCA 125

Order code

134B1586 coated, dual-port

B options: Functional extensions

Available for the full product range

Functional extensions	Typecode position
B	
VLT® General Purpose MCB 101	15
VLT® Relay Option MCB 105	
VLT® Analog I/O Option MCB 109	
VLT® PTC Thermistor Card MCB 112	
VLT® Sensor Input Card MCB 114	
VLT® Extended Cascade Controller MCO 101	

VLT® General Purpose I/O MCB 101

This I/O option offers an extended number of control inputs and outputs:

- 3 digital inputs 0-24 V: Logic '0' < 5 V; Logic '1' > 10V
- 2 analog inputs 0-10 V: Resolution 10 bit plus sign
- 2 digital outputs NPN/PNP push pull
- 1 analog output 0/4-20 mA
- Spring-loaded connection

Ordering number

130B1125 standard
130B1212 coated (Class 3C3/IEC 60721-3-3)

VLT® Relay Card MCB 105

Makes it possible to extend relay functions with 3 additional relay outputs.

- Max. switch rate at rated load/min. load6 min⁻¹/20 sec⁻¹
- Protects control cable connection
- Spring-loaded control wire connection

Max. terminal load:

- AC-1 Resistive load240 V AC 2 A
- AC-15 Inductive load @cos phi 0.4240 V AC 0.2 A
- DC-1 Resistive load24 V DC 1 A
- DC-13 Inductive load @cos phi 0.424 V DC 0.1 A

Min. terminal load:

- DC 5 V10 mA

Ordering number

130B1110 standard
130B1210 coated (Class 3C3/IEC 60721-3-3)

VLT® Analog I/O Option MCB 109

This analog input/output option is easily fitted in the AC drive for upgrading to advanced performance and control using the additional I/O. This option also upgrades the AC drive with a battery back-up supply for the AC drive built-in clock. This provides stable use of all AC drive clock functions as timed actions.

- 3 analog inputs, each configurable as both voltage and temperature input
- Connection of 0-10 V analog signals as well as Pt1000 and Ni1000 temperature inputs
- 3 analog outputs each configurable as 0-10 V outputs
- Back-up supply for the standard clock function in the AC drive

The back-up battery typically lasts for 10 years, depending on environment.

Ordering number

130B1143 standard
130B1243 coated (Class 3C3/IEC 60721-3-3)

VLT® PTC Thermistor Card MCB 112

The VLT® PTC Thermistor Card MCB 112 enables improved surveillance of the motor condition compared to the built-in ETR function and thermistor terminal.

- Protects the motor from overheating
- ATEX-approved for use with Ex d and Ex e motors
- Uses Safe Torque Off function, which is approved in accordance with SIL 2 IEC 61508

Ordering number

130B1137 coated (Class 3C3/IEC 60721-3-3)

VLT® Sensor Input Card MCB 114

This option protects the motor from being overheated by monitoring the temperature of bearings and windings in the motor.

- Protects the motor from overheating
- 3 self-detecting sensor inputs for 2 or 3 wire PT100/PT1000 sensors
- 1 additional analog input 4-20 mA

Ordering number

130B1172 standard
130B1272 coated (Class 3C3/IEC 60721-3-3)

VLT® Extended Cascade Controller MCO 101

Easily fitted and upgrades the built-in cascade controller to operate more pumps and more advanced pump control in master/follower mode.

- Up to 6 pumps in standard cascade setup
- Up to 5 pumps in master/follower setup
- Technical specifications: See VLT® Relay Option MCB 105

Ordering number

130B1118 standard
130B1218 coated (Class 3C3/IEC 60721-3-3)

C options: Cascade controller and relay card

Available for the full product range

Motion control and relay card	Typecode position
C	
VLT® Advanced Cascade Controller MCO 102	16
VLT® Extended Relay Card MCB 113	17

VLT® Advanced Cascade Controller MCO 102

Easy to fit, the VLT® Advanced Cascade Controller MCO 102 upgrades the built-in cascade controller to operate up to 8 pumps and more advanced pump control in master/follower mode.

MCO 102 supports the combination of multiple variable speed and fixed speed pumps, as well as configurations with pumps of differing capacity (mixed pump control). The additional 7 digital inputs and the 24 V DC connection to the drive enable flexible adaptation to the application. The same cascade-controller hardware is compatible with for the entire power range up to 2 MW.

- Up to 8 pumps in standard cascade set-up
- Up to 8 pumps in master/follower set-up

Ordering number

130B1154 standard
130B1254 coated (Class 3C3/IEC 60721-3-3)

VLT® Extended Relay Card MCB 113

The VLT® Extended Relay Card MCB 113 adds inputs/outputs for increased flexibility.

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

Ordering number

130B1164 standard
130B1264 coated (Class 3C3/IEC 60721-3-3)

D option: 24 V back-up power supply

Available for the full product range

24 V back-up power supply	Typecode position
D	
VLT® 24 V DC Supply Option MCB 107	19
VLT® Real-time Clock MCB 117	

VLT® 24 V DC Supply MCB 107

Connect an external DC supply to keep the control section and any installed option functioning during power failure.

This enables full operation of the LCP (including the parameter setting) and all installed options without connection to mains.

- Input voltage range 24 V DC +/- 15% (max. 37 V for 10 sec.)
- Max. input current 2.2 A
- Max. cable length 75 m
- Input capacitance load < 10 uF
- Power-up delay < 0.6 s

Ordering number

130B1108 standard
130B1208 coated (Class 3C3/IEC 60721-3-3)

VLT® Real-time Clock MCB 117

The option provides advanced data-logging functionality. It allows events to be time and date stamped, providing vast amounts of actionable data. The option keeps the drive updated with daily date and real-time data.

- Availability of real time data with reference to run-time data
- Programmable both locally and remotely via option
- Advanced data logging using real-time stamps

Ordering number

134B6544 coated (Class 3C3/IEC 60721-3-3)



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