Why choose Danfoss?
Danfoss manufactured the world´s first mass-produced frequency converter back in 1968. We have set the standard for quality drives ever since. That is why our VLT frequency converter are today sold and serviced in more than 100 countries covering six continents.

Sales and service world-wide

More than 25 years ago we were the first to launch the mass-produced frequency converter. Today all Danfoss VLT frequency converters are manufactured to ISO 9000 standards.

We pride ourselves in giving the best service. Our global organisation is always ready to support you with application, commissioning, product training and service on VLT frequency converters. You can contact us round-the-clock the world over.

CE marking and Danfoss VLT® frequency converters

CE marking can cover many different specifications. Appreciation of what the marking means is therefore highly necessary.

We will CE mark our VLT® frequency converters according to the low-voltage directive. This means that we guarantee that it complies with the low-voltage directive, provided the frequency converter is correctly installed. We issue a declaration of conformity to the low-voltage directive.

The demands to CE marking according to the EMC directive depends upon how the frequency converter is used. As we can not be absolutely sure how our customers will use the VLT® frequency converters, we will CE mark them according to the EMC directive. We will issue a declaration of conformity to the EMC directive.

To you as a customer this still means that you must follow our installation instructions to achieve the right EMC behavior of your frequency converter..

It is the responsibility of the installer or the plant builder that the machine, the plant or the system lives up to the EMC directive, but to ensure that your installation is EMC-correct, our manuals provide detailed instructions for installation. Furthermore, we specify which norms that are complied with by our products.

We offer of course the filters that meet the specifications. Many of these filters are fitted integrally to our products, and in addition to test results we will give all the support our customers may need to achieve the optimum EMC performance.

We do not just follow standards we set them

VLT® 2800

The small and compact VLT® 2800 Series is the ideal solution if space is limited in the control cabinet.

Additionally, most frequency converters need free space around them for cooling and mounting purposes. Not the VLT® 2800 Series which has been designed to be mounted side by side so giving the best utilisation of the space available.

Technical data:

■ General technical data

Mains supply (L1, L2, L3):

Supply voltage VLT 2803-2815 200-240 V (L1, L2) ..... 1 x 220/230/240 V ±10%
Supply voltage VLT 2803-2822 200-240 V ..... 3 x 200/208/220/230/240V ±10%
Supply voltage VLT 2805-2840 380-480 V ..... 3 x 380/400/415/440/480V ±10%
Supply frequency ..... 50/60 Hz
Max. imbalance on supply voltage ..... ± 2.0 % of rated supply voltage
Power factor / cos. Φ ..... 0.90 / 1.0 at rated load
No. of switches on the supply input L1, L2, L3 ..... 2 times/min.
Max. short-circuit value ..... 100,000 A
See section: Special conditions in the Design Guide

Output data (U, V, W):

Output voltage ..... 0 - 100% of supply voltage
Output frequency ..... 0.2 - 132 Hz, 1 - 1000 Hz
Rated motor voltage, 200-240 V units 200/208/220/230/240V
Rated motor voltage, 380-480 V units 380/400/415/440/460/480V
Rated motor frequency ..... 50/60 Hz
Switching on output ..... Unlimited
Ramp times ..... 0.02 - 3600 sec.

Torque characteristics:

Starting torque (parameter 101 Torque characteristic = Constant torque) ..... 160% for 1 min.
Starting torque (parameter 101 Torque characteristics = Variable torque) ..... 110% for 1 min.
High starting torque (parameter 119 *High starting torque*) ..... 180% for 0.5 sec.
Acceleration torque 80%
Overload torque (parameter 101 Torque characteristic = Constant torque) 160%
Overload torque (parameter 101 Torque characteristic = Variable torque) 110%

Control card, digital inputs

Number of programmable digital inputs ..... 5 pcs.
Terminal number 18, 19, 27, 29, 33
Voltage level ..... 0 - 24 V DC (PNP positive logic)
Voltage level, logic '0' ..... < 5 V DC
Voltage level, logic '1' ..... > 10 V DC
Maximum voltage on input ..... 28 V DC
Input resistance, R_i (terminals 18, 19, 27, 29) ..... approx. 4 kΩ
Input resistance, R_i (terminal 33) ..... approx. 2 kΩ
Reliable galvanic isolation: All digital inputs are galvanically isolated from the supply voltage (PELV) and other high voltage terminals

Technical data:

Control card, analogue inputs

Number of analogue voltage inputs 1
Terminal number 53
Voltage level ..... 0 - 10 V DC (scaleable)
Input resistance, R_i ..... ca. 10 kΩ
Max. voltage ..... 20 V
Number of analogue voltage inputs ..... 1 pcs.
Terminal number 60
Current level ..... 0/4 - 20 mA (scaleable)
Input resistance, R_i ..... approx.300 Ω
Max. current ..... 30 mA
Resolution ..... 10 bit
Accuracy on input ..... Max. error 1% of full scale
Scan interval ..... 10 msec
Reliable galvanic isolation: All analogue inputs are galvanically isolated from the supply voltage (PELV) and other high voltage terminals

Control card, pulse inputs:

Number of programmable pulse inputs 1
Terminal number 33
Max. frequency on terminal 33 ..... 67.6 kHz (Push-pull)
Max. frequency on terminal 33 ..... 5 kHz (open collector)
Voltage level ..... 0 - 24 V DC (PNP positive logic)
Voltage level, logic '0' ..... < 5 V DC
Voltage level, logic '1' ..... > 10 V DC
Maximum voltage on input ..... 28 V DC
Input resistance, R_i ..... approx. 2 kΩ
Scan interval ..... 20 msec
Resolution ..... 10 bit
Accuracy (100 - 1 kHz) terminal 33 ..... Max. error: 0.5% of full scale
Accuracy (1 - 67.6 kHz) terminal 33 ..... Max. error: 0.1% of full scale
Reliable galvanic isolation The pulse input (terminal 33) is galvanically isolated from the supply voltage (PELV) and other high voltage terminals

Control card, digital/frequency output:

Number of programmable digital/pulse outputs 1
Terminal number 46
Voltage level at digital/frequency output ..... 0 - 24 V DC (O.C PNP)
Max. output current to common (terminal 55) at digital/frequency output ..... 25 mA.
Max. load to common (terminal 55) at digital/frequency output ..... 1 kΩ
Max. capacity to common (terminal 55) at frequency output ..... 10 nF
Minimum output frequency at frequency output ..... 16 Hz
Maximum output frequency at frequency output ..... 10 kHz
Accuracy on frequency output ..... Max. error: 0.2% of full scale
Resolution on frequency output ..... 10 bit
Reliable galvanic isolation: The digital output is galvanically isolated from the supply voltage (PELV) and other high voltage terminals

Technical data:

Control card, analogue output:

Number of programmable analogue outputs 1
Terminal number 42
Current range at analogue output ..... 0/4 - 20 mA
Max. load to common at analogue output ..... 500 Ω
Accuracy on analogue output ..... Max. error:1.5 % of full scale
Resolution on analogue output ..... 10 bit
Reliable galvanic isolation: The analogue output is galvanically isolated from the supply voltage (PELV) and other high voltage terminals

Control card, 24 V DC supply:

Terminal number 12
Max. load ..... 130 mA
Reliable galvanic isolation: The 24 V DC supply is galvanically isolated from the supply voltage (PELV) , but has the same potential is the analogue and digital in- and outputs

Control card, 10 V DC supply:

Terminal number 50
Output voltage ..... 10.5 V ±0,5 V
Max. load ..... 15 mA
Reliable galvanic isolation: The 10 V DC supply is galvanically isolated from the supply voltage (PELV) and other high voltage terminals

Control card, RS 485 serial communication:

Terminal number ..... 68 (TX+, RX+), 69 (TX-, RX-)
Terminal number 67 ..... + 5 V
Terminal number 70 ..... Common for terminals 67, 68 and 69
Reliable galvanic isolation: Full galvanic isolation

Relay outputs:

Number of programmable relay outputs 1
Terminal number, control card ..... 1-3 (break), 1-2 (make)
Max. terminal load (AC) on 1-3, 1-2, control card ..... 240 V AC, 2 A
Min. terminal load on 1-3, 1-2, control card ..... 24 V DC 10 mA, 24 V AC 100 mA

Cable lengths and cross-sections

Max. motor cable length, screened/armoured cable ..... 15 m
Max. motor cable length, unscreened/unarmoured cable ..... 75 m
Max. motor cable length, screened/armoured cable and motor/LC-module ..... 150 m
Max. motor cable length, unscreened/unarmoured cable and motor/LC-module ..... 300 m
Max. cross-section to motor, see next section
Max. cross-section to control cables ..... 1.5 mm^2/16 AWG
Max. cross-section to serial communication ..... 1.5 mm^2/16 AWG

Technical data:

Control characteristics:

Frequency range ..... 0.2 - 132 Hz, 1 - 1000 Hz
Resolution on output frequency ..... 0.13 Hz (0.2 - 132 Hz), 0.98 Hz (1 - 1000 Hz)
System response time (terminals 18, 19) ..... ≤ 10 msec
System response time (terminals 27, 29, 33) ..... ≤ 20 msec
Speed control range (open loop) ..... 1:100 of synchronous speed
Speed control range (closed loop) ..... 1:1000 of synchronous speed
Speed accuracy (open loop) ..... 90 - 3600 rpm: Max. error of ±23 rpm
Speed accuracy (closed loop) ..... 30 - 3600 rpm: Max error of ±7.5 rpm
All control characteristics are based on a 4-pole asynchronous motor

Accuracy of display readout:

Motor current [6], 0 - 140 % load ..... Max error: ±2.0 % of rated output current

Surroundings:

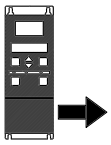
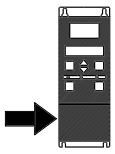
Enclosure ..... IP 20
Enclosure with options ..... NEMA 1
Vibration test ..... 0.7 g
Max. relative humidity ..... 5% - 85% during operation
Ambient temperature IP 20 ..... Max. 45 °C (24-hour average max. 40 °C)
Ambient temperature NEMA 1 ..... Max. 40 °C (24-hour average max. 35 °C)
Derating for high ambient temperature, see special conditions in the Design Guide
Min. ambient temperature during full-scale operation ..... 0 °C
Min. ambient temperature at reduced performance ..... - 10 °C
Temperature during storage/transport ..... -25 - +65/70 °C
Max. altitude above sea level ..... 1000 m
Derating for high air pressure, see special conditions in the Design Guide
EMC standards used, Emission ..... EN 50081-1/2, EN 61800-3, EN 55011
EMC standards used, immunity ..... EN 50082-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, VDE 0160/1990.12
See section on special conditions in the Design Guide

Protection:

- Electronic thermal motor protection against overload.
- Temperature monitoring of the heatsink ensures that the frequency converter cuts out if the temperature reaches 100 °C. An overload temperature cannot be reset until the temperature of the heatsink is below 70 °C.
- The frequency converter is protected against shortcircuits on motor terminals U, V, W.
- If a motor phase is missing, the frequency converter will cut out
- Monitoring of the intermediate circuit voltage ensures that the frequency converter cuts out if the intermediate circuit voltage is too low or too high.
- The frequency converter is protected against ground fault on motor terminals U, V, W.

Technical data:

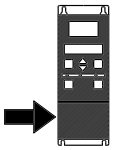
■ **Technical data, mains supply 1 x 220 - 240 V / 3 x 200-240V**

Acc. to international requirements	Type	2803	2805	2807	2811	2815	2822
 Output current	$I_{INV.}$ [A]	2.2	3.2	4.2	6.0	6.8	9.6
(1/3 x 200-240V)	I_{MAX} (60 s) [A]	3.5	5.1	6.7	9.6	10.8	15.3
Output power (230 V)	$S_{INV.}$ [KVA]	0.9	1.3	1.7	2.4	2.7	3.8
Typical shaft output	$P_{M,N}$ [kW]	0.37	0.55	0.75	1.1	1.5	2.2
Typical shaft output	$P_{M,N}$ [HP]	0.5	0.75	1.0	1.5	2.0	3.0
Max. cable cross-section motor	[mm²/AWG] 1)	4/10	4/10	4/10	4/10	4/10	4/10
 Input current	$I_{L,N}$ [A]	5.9	8,3	10.6	14.5	15.2	-
(1 x 220-240 V)	$I_{L,MAX}$ (60 s) [A]	9.4	13.3	16.7	23.2	24.3	-
Input current	$I_{L,N}$ [A]	2.9	4.0	5.1	7.0	7.6	8.8
(3 x 200-240 V)	$I_{L,MAX}$ (60 s) [A]	4.6	6.4	8.2	11.2	12.2	14.1
Max. cable cross-section power	[mm²/AWG] 1)	4/10	4/10	4/10	4/10	4/10	4/10
Max. pre-fuses	[A]/UL 2) [A]	16/10	16/10	16/10	16/10	16/10	20/15
Efficiency 3)	[%]	95					
Power loss at max. load	[W]	25	37	50	73	100	147
Weight	[kg]	2,1	2,1	2,1	2,1	2,1	3,7
Enclosure	type	IP 20 / NEMA 1					

1. American Wire Gauge. Max. cable cross-section is the biggest cable cross-section that can be fitted on the terminals. Always comply with the national and local regulations.
2. Pre-fuses of type gG must be used. Where UL/cUL is to be observed, pre-fuses of type Bussmann KTN-R 200 V, KTS-R 500 V or similar must be used. The fuses must provide protection in a circuit capable of supplying max. 100,000 amps (symmetrical), 500 V maximum.
3. Measured used a 25 m screened/armoured motor cable at rated load and rated frequency.

Technical data:

■ **Technical data, mains supply 3 x 380 - 480 V**

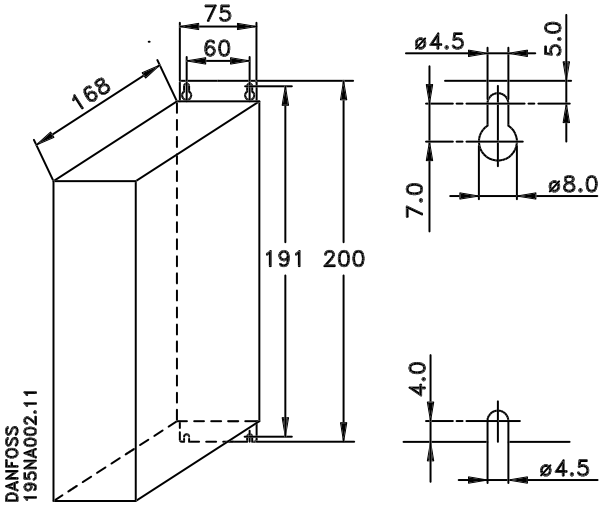
Acc. to international requirements	Type	2805	2807	2811	2815	2822	2830	2840
 Output current	$I_{INV.}$ [A]	1.7	2.1	3.0	3.7	5.2	7.0	9.1
(3 x 380-480V)	I_{MAX} (60s) [A]	2.7	3.8	4.6	5.9	8.3	11.2	14.5
Output power (400 V)	$S_{INV.}$ [KVA]	1.1	1.7	2.0	2.6	3.6	4.8	6.3
Typical shaft output	$P_{M,N}$ [kW]	0.55	0.75	1.1	1.5	2.2	3.0	4.0
Typical shaft output	$P_{M,N}$ [HP]	0.75	1.0	1.5	2.0	3.0	4.0	5.0
Max. cable cross-section motor	[mm²/AWG] 1)	4/10	4/10	4/10	4/10	4/10	4/10	4/10
 Input current	$I_{L,N}$ [A]	1.6	1.9	2.6	3.2	4.7	6.1	8.1
(3 x 380-480 V)	$I_{L,MAX}$(60s)[A]	2.6	3.0	4.2	5.1	7.5	9.8	13.0
Max.cable cross-section power	[mm²/AWG] 1)	4/10	4/10	4/10	4/10	4/10	4/10	4/10
Max. pre-fuses	[A]/UL 2) [A]	16/10	16/10	16/10	16/10	16/10	16/10	20/15
Efficiency3)	[%]	96						
Power-loss at max. load	[W]	29	40	59	80	117	160	213
Weight	[kg]	2,1	2,1	2,1	2,1	3,7	3,7	3,7
Enclosure	type	IP 20 / NEMA 1						

1. American Wire Gauge. Max. cable cross-section is the biggest cable cross-section that can be fitted on the terminals. Always comply with the national and local regulations.
2. Pre-fuses of type gG must be used. Where UL/cUL is to be observed, pre-fuses of type Bussmann KTN-R 200 V, KTS-R 500 V or similar must be used. The fuses most provide protection of a circuit capable of supplying max. 100,000 amps (symmetrical), 500 V maksimum.
3. Measured using a 25 m screened/armoured motor cable at rated load and rated frequency

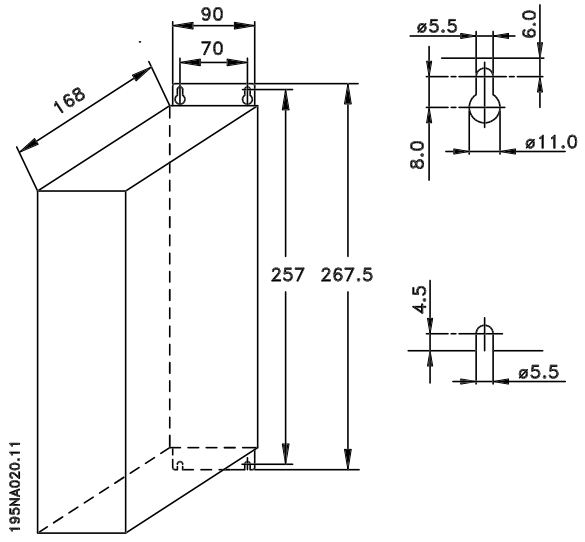
Dimensions:

■ Mechanical dimensions

The drawing below gives the mechanical dimensions of VLT 2803-2815 200-240 Volt and VLT 2805-2815 380-480 Volt. All dimensions are in mm.



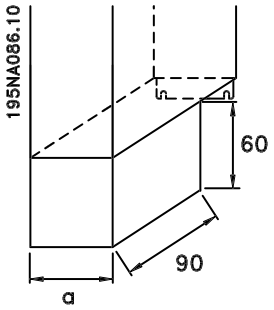
The drawing below gives the mechanical dimensions of VLT 2822 200-240 Volt and VLT 2822-2840 380-480 Volt. All dimensions are in mm.



■ Terminal cover

The drawing below gives the dimensions for NEMA 1 terminal cover.

Dimension 'a' depends on the unit type.



Ordering:

■ Ordering guide

■ Order form

This section makes it easier for you to specify and order a VLT 2800.

Choice of frequency converter

A frequency converter must be selected on the basis of the given motor current at maximum load on the system.The rated output current of the frequency converter, $I_{,INV.}$ must be equal to or higher than the required motor current

Mains voltage

VLT 2800 is available for two mains voltage ranges:200-240 V and 380-480 V.

Select whether the frequency converter is to receive a mains voltage of:

- 1 x 220 - 240 V three-phase AC voltage
- 3 x 200 - 240 V three-phase AC voltage
- 3 x 380 - 480 V three-phase AC voltage

1 x 220 - 240 Volt mains voltage

Typical shaft output $P_{INV.}$			Max. constant output current $I_{INV.}$	Max. constant output at 230 V $S_{INV.}$
Type	[kW]	[HP]	[A]	[kVA]
2803	0.37	0.5	2.2	0.9
2805	0,55	0.75	3.2	1.3
2807	0.75	1.0	4.2	1.7
2811	1.1	1.5	6.0	2.4
2815	1.5	2.0	6.8	2.7

3 x 200 - 240 Volt mains voltage

Typical shaft output $P_{INV.}$			Max. constant output current $I_{INV.}$	Max. constant output at 230 V $S_{INV.}$
Type	[kW]	[HP]	[A]	[kVA]
2803	0.37	0.5	2.2	0.9
2805	0.55	0.75	3.2	1.3
2807	0.75	1.0	4.2	1.7
2811	1.1	1.5	6.0	2.4
2815	1.5	2.0	6.8	2.7
2822	2.2	3.0	9.6	3.8

Ordering:

3 x 380 - 480 Volt mains voltage

Typical shaft output $P_{INV.}$			Max. constant output current$_{INV.}$	Max. constant output at 400 V $S_{INV.}$
Type	[kW]	[HP]	[A]	[kVA]
2805	0.55	0.75	1.7	1.1
2807	0.75	1.0	2.1	1.7
2811	1.1	1.5	3.0	2.0
2815	1.5	2.0	3.7	2.6
2822	2.2	3.0	5.2	3.6
2830	3.0	4.0	7.0	4.8
2840	4.0	5.0	9.1	6.3

■ **Enclosure**

All VLT 2800 units are supplied with IP 20 enclosure as standard.

This enclosure level is ideal for panel mounting in areas where a high degree of protection is required; at the same time IP 20 enclosures allow side-by-side installation without any need for extra cooling equipment.

IP 20 units can be upgraded to NEMA 1 by fitting a terminal cover. See ordering number for terminal cover under *Accessories for VLT 2800*.

■ **Brake**

VLT 2800 is available with or without an integral brake transistor. See also the section *Brake resistors* for ordering a brake resistor.

■ **RFI filter**

The VLT 2800 is available with and without an integral 1A RFI filter. The integral 1A RFI filter complies with the EMC standards EN 55011-1A, provided that max. 15 m screened motor cable is used and parameter 411 *Switching frequency* is set to 3000 Hz

■ **Harmonic filter**

The harmonic currents do not affect power consumption directly, but they increase thermal losses in the installation (transformer, cables). That is why in a system with a relatively high percentage of rectifier load it is important to keep the harmonic currents at a low level so as to avoid a transformer overload and high cable temperature. For the purpose of ensuring low harmonic currents, VLT 2822 3 x 200-240 V and VLT 2805-2840 380-480 V, are fitted with coils in their intermediate circuit as standard. This reduces the input current I_{RMS} by typically 40 %.

Please note that 1 x 220-240 V units are not supplied with coils in their intermediate circuit.

■ **Control unit**

VLT 2800 is always supplied with an integral control unit.

All displays of data are via a six-digit LED display, which under normal operation is able to show an operating data item continuously. As a supplement to the display, there are three indicator lamps for voltage (ON), warning (WARNING) and alarm (ALARM). The parameter Setup of all frequency converters can be changed immediately via the integral control panel.

A LCP control panel to be connected to the front of the frequency converter is available as an option.The LCP control panel can be fitted up to 3 metres away from the frequency converter, e.g. in a panel front by means of the accessory kit that comes with the unit. All displays of data are via a 4-line alpha-numerical display, which in normal operation is able to show 4 operating data items and 3 operation modes. During programming, all the information required for quick, efficient parameter Setup of the frequency converter is displayed. As a supplement to the display, there are three indicator lamps for voltage (ON), warning (WARNING) and alarm (ALARM). All frequency converter parameter Setups can be changed imme-

Ordering:

diately via the LCP control panel. See also the section *The control unit LCP* in the Design guide.

■ Fieldbus protocols

Danfoss VLT frequency converters are able to fulfil many different functions in a control system. The frequency converter can be integrated directly in an overall surveillance system, which will allow detailed process data to be transferred via serial communication.

The protocols listed below are based on a RS 485 bus system with a maximum transmission speed of 9600 baud. As standard, the followoing protocols are supported:

- Danfoss FC protocol
- Profibus protocol

■ Fieldbus options

The increasing information requirements in industry make it necessary to collect or visualize many different process data. Important process data help the system technician with the daily monitoring of the system.The large amounts of data involved in major systems make a higher transmission speed than 9600 baud desirable.

Profibus is a fieldbus system, which can be used for linking automation devices such as sensors and actuators with the controls by means of a two-conductor cable.

Profibus DP is a very fast communication protocol, made specially for communication between the automation system and various types of equipment. Danfoss VLT 2800 is available with Profibus® DP, which offers a higher performance than the standard integral serial communication facility.

Ordering:

■ **Ordering numbers for VLT 2800 200-240 V**

0.37 kW		**VLT 2803 1/3 x 200-240 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N0001
-	SB	-	195N0002
R1	ST	-	195N0003
R1	SB	-	195N0004
-	ST	✓	195N0005
-	SB	✓	195N0006
R1	ST	✓	195N0007
R1	SB	✓	195N0008

0.55 kW		**VLT 2805 1/3 x 200-240 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N0013
-	SB	-	195N0014
R1	ST	-	195N0015
R1	SB	-	195N0016
-	ST	✓	195N0017
-	SB	✓	195N0018
R1	ST	✓	195N0019
R1	SB	✓	195N0020

0.75 kW		**VLT 2807 1/3 x 200-240 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N0025
-	SB	-	195N0026
R1	ST	-	195N0027
R1	SB	-	195N0028
-	ST	✓	195N0029
-	SB	✓	195N0030
R1	ST	✓	195N0031
R1	SB	✓	195N0032

1.1 kW		**VLT 2811 1/3 x 200-240 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N0037
-	SB	-	195N0038
R1	ST	-	195N0039
R1	SB	-	195N0040
-	ST	✓	195N0041
-	SB	✓	195N0042
R1	ST	✓	195N0043
R1	SB	✓	195N0044

1.5 kW		**VLT 2815 1/3 x 200-240 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N0049
-	SB	-	195N0050
R1	ST	-	195N0051
R1	SB	-	195N0052
-	ST	✓	195N0053
-	SB	✓	195N0054
R1	ST	✓	195N0055
R1	SB	✓	195N0056

2.2 kW		**VLT 2822 3 x 200-240 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N0061
-	SB	-	195N0062
R1	ST	-	195N0063
R1	SB	-	195N0064
-	ST	✓	195N0065
-	SB	✓	195N0066
R1	ST	✓	195N0067
R1	SB	✓	195N0068

ST: Standard unit.
SB: Standard unit with integral brake.
R1: With RFI-filter which complies with EN 55011-1A.
✓: With integral Profibus DP.

Ordering:

■ **Ordering numbers for VLT 2800 380-480 V**

0.55 kW		**VLT 2805 3 x 380-480 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N1001
-	SB	-	195N1002
R1	ST	-	195N1003
R1	SB	-	195N1004
-	ST	✓	195N1005
-	SB	✓	195N1006
R1	ST	✓	195N1007
R1	SB	✓	195N1008

0.75 kW		**VLT 2807 3 x 380-480 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N1013
-	SB	-	195N1014
R1	ST	-	195N1015
R1	SB	-	195N1016
-	ST	✓	195N1017
-	SB	✓	195N1018
R1	ST	✓	195N1019
R1	SB	✓	195N1020

1.1 kWR1		**VLT 2811 3 x 380-480 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N1025
-	SB	-	195N1026
R1	ST	-	195N1027
R1	SB	-	195N1028
-	ST	✓	195N1029
-	SB	✓	195N1030
R1	ST	✓	195N1031
R1	SB	✓	195N1032

1.5 kW		**VLT 2815 3 x 380-480 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N1037
-	SB	-	195N1038
R1	ST	-	195N1039
R1	SB	-	195N1040
-	ST	✓	195N1041
-	SB	✓	195N1042
R1	ST	✓	195N1043
R1	SB	✓	195N1044

2.2 kW		**VLT 2822 3 x 380-480 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N1049
-	SB	-	195N1050
R1	ST	-	195N1051
R1	SB	-	195N1052
-	ST	✓	195N1053
-	SB	✓	195N1054
R1	ST	✓	195N1055
R1	SB	✓	195N1056

3.0 kW		**VLT 2830 3 x 380-480 V**	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N1061
-	SB	-	195N1062
R1	ST	-	195N1063
R1	SB	-	195N1064
-	ST	✓	195N1065
-	SB	✓	195N1066
R1	ST	✓	195N1067
R1	SB	✓	195N1068

ST: Standard unit.
SB: Standard unit with integral brake
R1: With RFI-filter which complies with EN 55011-1A.
✓: With integral Profibus DP.

Ordering:

4.0 kW		VLT 2840 3 x 380-480 V	
RFI	App.	Profibus DP	Ordering no.
-	ST	-	195N1073
-	SB	-	195N1074
R1	ST	-	195N1075
R1	SB	-	195N1076
-	ST	✓	195N1077
-	SB	✓	195N1078
R1	ST	✓	195N1079
R1	SB	✓	195N1080

ST: Standard unit.
SB: Standard unit with integral brake
R1: With RFI-filter which complies with EN 55011-1A.
✓: With integral Profibus DP.

Ordering:

■ Ordering numbers for brake resistors

Brake resistor with 10 % duty cycle

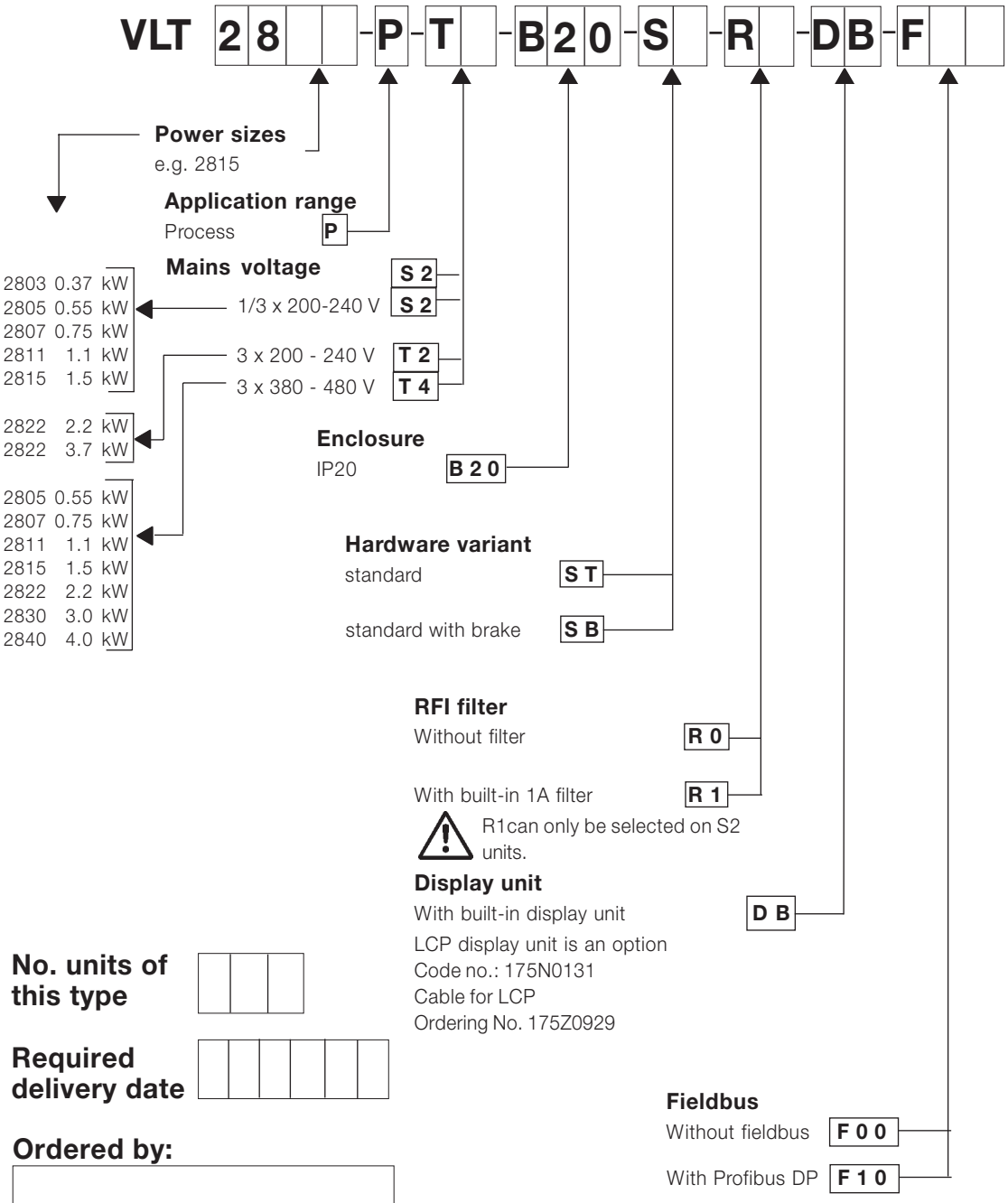
Type	P_{motor} [kW]	R_{MIN} [Ω]	R_{REC} [Ω]	P_{peak} [kW]	$P_{avg.}$ [kW]	Ordering no. 175U0xxx
2803 (200 V)	0.37	297	330	0.44	0.04	800
2805 (200 V)	0.55	198	220	0.66	0.07	801
2807 (200 V)	0.75	135	150	0.90	0.09	802
2811 (200 V)	1.1	99	110			
2815 (200 V)	1.5	74	82	1.8	0.18	803
2822 (200 V)	2.2	50	56	2.6	0.26	804
2805 (400 V)	0.55	747	830			
2807 (400 V)	0.75	558	620	0.9	0.09	810
2811 (400 V)	1.1	387	430	1.32	0.13	811
2815 (400 V)	1.5	297	330	1.8	0.18	812
2822 (400 V)	2.2	198	220	2.6	0.26	813
2830 (400 V)	3.0	135	150	3.6	0.36	814
2840 (400 V)	4.0	99	110			

Brake resistor with 40 % duty cycle

Type	P_{MOTOR} [kW]	R_{MIN} [Ω]	R_{REC} [Ω]	P_{PEAK} [kW]	P_{MAX} [kW]	Ordering no. 175U0xxx
2803 (200 V)	0.37	297	330	0.44	0.18	900
2805 (200 V)	0.55	198	220	0.66	0.26	901
2807 (200 V)	0.75	135	150	0.90	0.36	902
2811 (200 V)	1.1	99	110			
2815 (200 V)	1.5	74	82	1.8	0.72	903
2822 (200 V)	2.2	50	56	2.6	1.06	904
2805 (400 V)	0.55	747	830			
2807 (400 V)	0.75	558	620	0.9	0.36	910
2811 (400 V)	1.1	387	430	1.32	0.53	911
2815 (400 V)	1.5	297	330	1.8	0.72	912
2822 (400 V)	2.2	198	220	2.6	1.06	913
2830 (400 V)	3.0	135	150	3.6	1.44	914
2840 (400 V)	4.0	99	110		1,6	

R_{REC} = Recommended brake resistor.
P_{peak} = Max. braking power at 160% braking torque.
P_{AVG} = Mean power based on duty cycle.

■ Ordering form - VLT 2800



No. units of this type

Required delivery date

Ordered by:

Date:

Take a copy of the ordering form.
Fill it in and send or fax your order
to the nearest Danfoss rep. office.

195NA026.10

VLT® 5000

With the new VLT® 5000 Series we are introducing VVC^{PLUS}. This is our new sensorless Vector Drive System for torque and speed control of induction motors.

The entire VLT® 5000 Series is extremely small in size and covers the range from 0.75 to 450 kW.

Technical data:

Mains supply (L1, L2, L3):

Supply voltage 200-240 V units ..... 3 x 200/208/220/230/240 V ±10%
Supply voltage 380-500 V units ..... 3 x 380/400/415/440/460/500 V ±10%
Supply frequency ..... 50/60 Hz +/- 1%
Max. imbalance of supply voltage:
VLT 5001-5011 / 380-500 V and VLT 5001-5006 / 200-240 V ..... ±2% of rated supply voltage
VLT 5016-5052 / 380-500 V and VLT 5008-5027 / 200-240 V ..... ±1.5% of rated supply voltage
VLT 5060-5250 / 380-500 V and VLT 5032-5052 / 200-240 V ..... ±3% of rated supply voltage
Power factor / cos. φ ..... 0.90/1.0 at rated load
No. of switches on supply input L1, L2, L3 ..... approx. 1 time/min.
Max. shortcircuit rating ..... 100,000 A
See the section on special conditions in the Design Guide

VLT output data (U, V, W):

Output voltage ..... 0-100% of supply voltage
Output frequency ..... 0 - 132 Hz, 0 - 1000 Hz
Rated motor voltage, 200-240 V units ..... 200/208/220/230/240 V
Rated motor voltage, 380-500 V units ..... 380/400/415/440/460/480/500 V
Rated motor frequency ..... 50/60 Hz
Switching on output ..... Unlimited
Ramp times ..... 0.05-3600 sec.

Torque characteristics:

Starting torque, VLT 5001-5027, 200-240 V and VLT 5001 - 5052, 380 - 500 V ..... 160% for 1 min.
Starting torque, VLT 5032-5052, 200 - 240 V and VLT 5060-5250, 380-500 V ..... 150% for 1 min.
Starting torque ..... 180% for 0.5 sec.
Acceleration torque 100%
Overload torque, VLT 5001-5027, 200 - 240 V and VLT 5001-5052, 380 - 500 V 160%
Overload torque, VLT 5032-5052, 200 - 240 V and VLT 5060-5250, 380 - 500 V 150%
Arresting torque at 0 rpm (closed loop) 100%
The torque characteristics given are for the VLT frequency converter at the high overload torque level (160%). At the normal overload torque (110%), the values are lower.

Control card, digital inputs:

Number of programmable digital inputs 8
Terminal nos. 16, 17, 18, 19, 27, 29, 32, 33
Voltage level ..... (0-24 V DC (PNP positive logics)
Voltage level, logical ´0´ ..... < 5 V DC
Voltage level, logical ´1´ ..... > 10 V DC
Maximum voltage on input ..... 28 V DC
Input resistance, R_i ..... approx. 2 kΩ
Scanning time per input ..... 3 msec.
Reliable galvanic isolation: All digital inputs are galvanically isolated from the supply voltage (PELV). In addition, the digital inputs can be isolated from the other terminals on the control card by connecting an external 24 V DC supply and opening switch 4.

Technical data:

Control card, analogue inputs:

No. of programmable analogue voltage inputs/thermistor inputs 2
Terminal nos. 53, 54
Voltage level ..... 0 - ±10 V DC (scalable)
Input resistance, R_i ..... approx. 10 kΩ
No. of programmable analogue current inputs 1
Terminal no. 60
Current range ..... 0/4 - ±20 mA (scalable)
Input resistance, R_i ..... approx. 200 Ω
Resolution ..... 10 bit + sign
Accuracy on input ..... Max. error 1% of full scale
Scanning time per input ..... 3 msec.
Terminal no. ground 55
Reliable galvanic isolation: All analogue inputs are galvanically isolated from the supply voltage (PELV) as well as other inputs and outputs.

Control card, pulse/encoder input:

No. of programmable pulse/encoder inputs 4
Terminal nos. 17, 29, 32, 33
Max. frequency on terminal 17 ..... 5 kHz
Max. frequency on terminals 29, 32, 33 ..... 20 kHz (PNP open collector)
Max. frequency on terminals 29, 32, 33 ..... 65 kHz (Push-pull)
Voltage level ..... 0-24 V DC (PNP positive logics)
Voltage level, logical '0' ..... < 5 V DC
Voltage level, logical '1' ..... > 10 V DC
Maximum voltage on input ..... 28 V DC
Input resistance, R_i ..... approx. 2 kΩ
Scanning time per input ..... 3 msec.
Resolution ..... 10 bit + sign
Accuracy (100-1 kHz), terminals 17, 29, 33 ..... Max. error: 0.5% of full scale
Accuracy (1-5 kHz), terminal 17 ..... Max. error: 0.1% of full scale
Accuracy (1-65 kHz), terminals 29, 33 ..... Max. error: 0.1% of full scale
Reliable galvanic isolation: All pulse/encoder inputs are galvanically isolated from the supply voltage (PELV). In addition, pulse and encoder inputs can be isolated from the other terminals on the control card by connecting an external 24 V DC supply and opening switch 4.

Control card, digital/pulse and analogue outputs:

No. of programmable digital and analogue outputs 2
Terminal nos. 42, 45
Voltage level at digital/pulse output ..... 0 - 24 V DC
Minimum load to ground (terminal 39) at digital/pulse output ..... 600 Ω
Frequency ranges (digital output used as pulse output) ..... 0-32 kHz
Current range at analogue output ..... 0/4 - 20 mA
Maximum load to ground (terminal 39) at analogue output ..... 500 Ω
Accuracy of analogue output ..... Max. error: 1.5% of full scale
Resolution on analogue output. ..... 8 bit
Reliable galvanic isolation: All digital and analogue outputs are galvanically isolated from the supply voltage (PELV) as well as other inputs and outputs.

Technical data:

Control card, 24 V DC supply:

Terminal nos. 12, 13
Max. load (short-circuit protection) ..... 200 mA
Terminal nos. ground 20, 39
Reliable galvanic isolation: The 24 V DC supply is galvanically isolated from the supply voltage (PELV), but has the same potential as the analogue outputs.

Control card, RS 485 serial communication:

Terminal nos. ..... 68 (TX+, RX+), 69 (TX-, RX-)
Reliable galvanic isolation: Full galvanic isolation.

Relay outputs:

No. of programmable relay outputs 2
Terminal nos., control card ..... 4-5 (make)
Max. terminal load (AC) on 4-5, control card ..... 50 V AC, 1 A, 60 VA
Max. terminal load (DC) on 4-5, control card ..... 75 V DC, 1 A, 30 W
Max. terminal load (DC) on 4-5, control card for UL/cUL applications ..... 30 V AC, 1 A/42.5 V DC, 1 A
Terminal nos., power card ..... 1-3 (break), 1-2 (make)
Max. terminal load (AC) on 1-3, 1-2, power card ..... 240 V AC, 2 A, 60 VA
Max. terminal load on 1-3, 1-2, power card ..... 50 V DC, 2 A
Min. terminal load on 1-3, 1-2, power card ..... 24 V DC 10 mA, 24 V AC 100 mA

Brake resistor terminals (only SB and EB units):

Terminal nos. 81, 82

External 24 Volt DC supply:

Terminal nos. 35, 36
Voltage range ..... 24 V DC ±15% (max. 37 V DC for 10 sec.)
Max. voltage ripple ..... 2 V DC
Power consumption ..... 15 W - 50 W (50 W for start-up, 20 msec.)
Min. pre-fuse ..... 6 Amp
Reliable galvanic isolation: Full galvanic isolation if the external 24 V DC supply is also of the PELV type.

Cable lengths and cross-sections:

Max. motor cable length, screened cable ..... 150 m
Max. motor cable length, unscreened cable ..... 300 m
Max. motor cable length, screened cable VLT 5011 380-500 V ..... 100 m
Max. brake cable length, screened cable ..... 20 m
Max. loadsharing cable length, screened cable ..... 25 m from frequency converter to DC bar.
Max. cable cross-section for motor, brake and loadsharing, see next section
Max. cable cross-section for 24 V external DC supply ..... 4.0 mm^2/10 AWG
Max. cross-section for control cables ..... 1.5 mm^2/16 AWG
Max. cross-section for serial communication ..... 1.5 mm^2/16 AWG

Accuracy of display readout (parameters 009-012):

Motor current [6] 0-140% load ..... Max. error: ±2.0% of rated output current
Torque % [7], -100 - 140% load ..... Max. error: ±5% of rated motor size
Output [8], power HP [9], 0-90% load ..... Max. error: ±5% of rated output

Technical data:

Control characteristics:

Frequency range ..... 0 - 1000 Hz
Resolution on output frequency ..... ±0.003 Hz
System response time ..... 3 msec.
Speed, control range (open loop) ..... 1:100 of synchro. speed
Speed, control range (closed loop) ..... 1:1000 of synchro. speed
Speed, accuracy (open loop) ..... < 1500 rpm: max. error ± 7.5 rpm
> 1500 rpm: max. error of 0.5% of actual speed
Speed, accuracy (closed loop) ..... < 1500 rpm: max. error ± 1.5 rpm
> 1500 rpm: max. error of 0.1% of actual speed
Torque control accuracy (open loop) ..... 0- 150 rpm: max. error ±20% of rated torque
150-1500 rpm: max. error ±10% of rated torque
> 1500 rpm: max. error ±20% of rated torque
Torque control accuracy (speed feedback) ..... Max. error ±5% of rated torque
All control characteristics are based on a 4-pole asynchronous motor

Externals:

Enclosure ..... IP 00, IP 20, IP 54
Vibration test ..... 0.7 g RMS 18-1000 Hz random. 3 directions for 2 hours (IEC 68-2-34/35/36)
Max. relative humidity ..... 93 % (IEC 68-2-3) for storage/transport
Max. relative humidity ..... 95 % non condensing (IEC 721-3-3; class 3K3) for operation
Ambient temperature IP 20 (high overload torque 160%) ..... Max. 45°C (24-hour average max. 40°C)
Ambient temperature IP 20 (normal overload torque 110%) ..... Max. 40°C (24-hour average max. 35°C)
Ambient temperature IP 54 (high overload torque 160%) ..... Max. 40°C (24-hour average max. 35°C)
Ambient temperature IP 54 (normal overload torque 110%) ..... Max. 40°C (24-hour average max. 35°C)
Ambient temperature IP 20/54 VLT 5011 500 V ..... Max. 40°C (24-hour average max. 35°C)
Derating for high ambient temperature, see page 86 of the Design Guide
Min. ambient temperature in full operation ..... 0°C
Min. ambient temperature at reduced performance ..... -10°C
Temperature during storage/transport ..... -25 - +65/70°C
Max. altitude above sea level ..... 1000 m
Derating for high air pressure, see page 86 of the Design Guide
EMC standards applied, Emission ..... EN 50081-1/2, EN 61800-3, EN 55011, EN 55014
Immunity ..... EN 50082-2, EN 61000-4-2, IEC 1000-4-3, EN 61000-4-4
EN 61000-4-5, ENV 50140, ENV 50141, VDE 0160/1990.12
See section on special conditions in the Design Guide

VLT 5000 Series protection:

- Electronic motor thermal protection against overload.
- Temperature monitoring of heat-sink ensures that the VLT frequency converter cuts out if the temperature reaches 90°C for IP 00 and IP 20. For IP 54, the cut-out temperature is 80°C. An overtemperature can only be reset when the temperature of the heat-sink has fallen below 60°C.
- The VLT frequency converter is protected against short-circuiting on motor terminals U, V, W.
- The VLT frequency converter is protected against earth fault on motor terminals U, V, W.
- Monitoring of the intermediate circuit voltage ensures that the VLT frequency converter cuts out if the intermediate circuit voltage gets too high or too low.
- If a motor phase is missing, the VLT frequency converter cuts out.
- If there is a mains fault, the VLT frequency converter is able to carry out a controlled deramping.
- If a mains phase is missing, the VLT frequency converter will cut out when a load is placed on the motor.

Technical data:

■ Mains supply 3 x 200 - 240 V

According to international requirements	VLT type	5001	5002	5003	5004	5005	5006
Output current	$I_{VLT,N}$ [A]	3.7	5.4	7.8	10.6	12.5	15.2
	$I_{VLT,MAX}$ (60 s) [A]	5.9	8.6	12.5	17	20	24.3
Output (240 V)	$S_{VLT,N}$ [kVA]	1.5	2.2	3.2	4.4	5.2	6.3
Typical shaft output	$P_{VLT,N}$ [kW]	0.75	1.1	1.5	2.2	3.0	3.7
Typical shaft output	$P_{VLT,N}$ [HP]	1	1.5	2	3	4	5
Max. cable cross-section to motor, brake and loadsharing	[mm²]/[AWG] 2)	4/10	4/10	4/10	4/10	4/10	4/10
Rated input current	(200 V) $I_{L,N}$ [A]	3.4	4.8	7.1	9.5	11.5	14.5
Max. cable cross-section power	[mm²]/[AWG] 2)	4/10	4/10	4/10	4/10	4/10	4/10
Max. pre-fuses	[-]/UL 1) [A]	16/10	16/10	16/15	25/20	25/25	35/30
Efficiency 3)		0.95					
Weight IP 20 EB	[kg]	7	7	7	9	9	9,5
Power loss at max. load. [W]	Total	58	76	95	126	172	194
Enclosure	VLT type	IP 20					

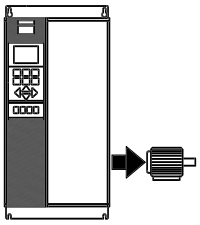
■ Mains supply 3 x 380 - 500 V

According to international requirements	VLT type	5001	5002	5003	5004	5005	5006	5008	5011
Output current	$I_{VLT,N}$ [A] (380-440 V)	2.2	2.8	4.1	5.6	7.2	10	13	16
	$I_{VLT,MAX}$ (60 s) [A] (380-440 V)	3.5	4.5	6.5	9	11.5	16	20.8	25.6
	$I_{VLT,N}$ [A] (441-500 V)	1.9	2.6	3.4	4.8	6.3	8.2	11	14.5
	$I_{VLT,MAX}$ (60 s) [A] (441-500 V)	3	4.2	5.5	7.7	10.1	13.1	17.6	23.2
Output	$S_{VLT,N}$ [kVA] (380-440 V)	1.7	2.1	3.1	4.3	5.5	7.6	9.9	12.2
	$S_{VLT,N}$ [kVA] (441-500 V)	1.6	2.3	2.9	4.2	5.5	7.1	9.5	12.6
Typical shaft output	$P_{VLT,N}$ [kW]	0.75	1.1	1.5	2.2	3.0	4.0	5.5	7.5
Typical shaft output	$P_{VLT,N}$ [HP]	1	1.5	2	3	4	5	7.5	10
Max. cable cross-section to motor, brake and loadsharing	[mm²]/[AWG] 2)	4/10	4/10	4/10	4/10	4/10	4/10	4/10	4/10
Rated input current	$I_{L,N}$ [A] (380 V)	2.3	2.6	3.8	5.3	7	9.1	12.2	15.0
	$I_{L,N}$ [A] (460 V)	1.9	2.5	3.4	4.8	6	8.3	10.6	14.0
Max. cable cross-section, power	[mm²]/[AWG]2)	4/10	4/10	4/10	4/10	4/10	4/10	4/10	4/10
Max. pre-fuses	[-]/UL1) [A]	16/6	16/6	16/10	16/10	16/15	25/20	25/25	35/30
Efficiency3)		0.96							
Weight IP 20 EB	[kg]	7	7	7	7.5	7.5	9.5	9.5	9.5
Power loss at max. load. [W]	Total	55	67	92	110	139	198	250	295
Enclosure	VLT type	IP 20							

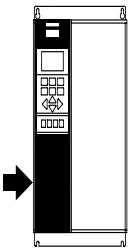
1. If UL/cUL is to be complied with, pre-fuses type Bussmann KTN-R 200 V, KTS-R 500 V or similar must be used. Pre-fuses type gG must be used for VLT 5001 - VLT 5027, 200/240 V and VLT 5001 - VLT 5052, 380/500 V. Pre-fuses type gR must be used for VLT 5032 - 5052, 200/240 V and VLT 5060 - VLT 5250, 380/500 V. Fuses must be designed for protection in a circuit capable of supplying a maximum of 100,000 Amps ms (symmetrical), 500 V maximum.
2. American Wire Gauge.
3. Measured using 30 m screened motor cables at rated load and rated frequency.

Technical data:

■ Mains supply 3 x 200 - 240 V

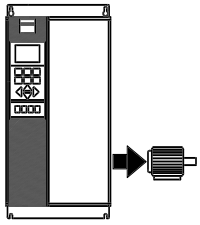


According to international requirements	VLT type	5001	5002	5003	5004	5005	5006
High overload torque (160 %):							
Output current	$I_{VLT,N}$ [A]	3.7	5.4	7.8	10.6	12.5	15.2
	$I_{VLT,MAX}$ (60 s) [A]	5.9	8.6	12.5	17	20	24.3
Output (240 V)	$S_{VLT,N}$ [kVA]	1.5	2.2	3.2	4.4	5.2	6.3
Typical shaft output	$P_{VLT,N}$ [kW]	0.75	1.1	1.5	2.2	3.0	3.7
Typical shaft output	$P_{VLT,N}$ [HP]	1	1.5	2	3	4	5
Max. cable cross-section to motor, brake and loadsharing	[mm²]/[AWG][2]	4/10	4/10	4/10	4/10	4/10	4/10

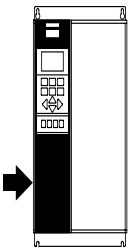


Rated input current (200 V)	$I_{L,N}$ [A]	3.4	4.8	7.1	9.5	11.5	14.5
Max. cable cross-section, power	[mm²]/[AWG][2]	4/10	4/10	4/10	4/10	4/10	4/10
Max. pre-fuses	[-]/UL [1] [A]	16/10	16/10	16/15	25/20	25/25	35/30
Efficiency [3]		0.95					
Weight IP 20 EB	[kg]	8	8	8	10	10	10
Weight IP 54	[kg]	11.5	11.5	11.5	13.5	13.5	13.5
Power loss at max. load. [W]	Total	58	76	95	126	172	194
Enclosure		IP 20/IP 54					

■ Mains supply 3 x 200 - 240 V



According to international requirements	VLT type	5008	5011	5016	5022	5027
Normal overload torque (110 %):						
Output current	$I_{VLT,N}$ [A]	32	46	61,2	73	88
	$I_{VLT,MAX}$ (60 s) [A]	35.2	50.6	67.3	80.3	96.8
Output (240 V)	$S_{VLT,N}$ [kVA]	13.3	19.1	25.4	30.3	36.6
Typical shaft output	$P_{VLT,N}$ [kW]	7.5	11	15	18.5	22
Typical shaft output	$P_{VLT,N}$ [HP]	10	15	20	25	30
High overload torque (160 %):						
Output current	$I_{VLT,N}$ [A]	25	32	46	61,2	73
	$I_{VLT,MAX}$ (60 s) [A]	40	51.2	73.6	97.9	116.8
Output (240 V)	$S_{VLT,N}$ [kVA]	10	13	19	25	30
Typical shaft output	$P_{VLT,N}$ [kW]	5.5	7.5	11	15	18.5
Typical shaft output	$P_{VLT,N}$ [HP]	7.5	10	15	20	25
Max. cable cross-section to motor, IP 54	[mm²]/AWG[2]	16/6	16/6	35/2	35/2	50
brake and loadsharing IP 20	[mm²]/AWG[2]	16/6	35/2	35/2	35/2	50/0
Min. cable cross-section to motor, brake and loadsharing [4]	[mm²]/AWG[2]	10/8	10/8	10/8	10/8	16/6



Rated input current (200 V)	$I_{L,N}$ [A]	32	46	61	73	88
Max. cable cross-section, IP 54		16/6	16/6	35/2	35/2	50/0
power IP 20	[mm²]/[AWG] [2]	16/6	35/2	35/2	35/2	50/0
Max. pre-fuses	[-]/UL [1] [A]	50	60	80	125	125
Pre-fuse SMPS	[-]/UL [1] [A]	4.0/4.0				
Efficiency [3]		0.95				
Weight IP 00	[kg]					
Weight IP 20 EB	[kg]	23	23	30	30	48
Weight IP 54	[kg]	35	38	49	50	55
Power loss at max. load.						
- high overload torque (160 %)	[W]	340	426	626	833	994
- normal overload torque (110 %)	[W]	426	545	783	1042	1243
Enclosure		IP 20+NEMA 1 kit, IP 54/NEMA 12				

1. If UL/cUL is to be complied with, pre-fuses type Bussmann KTN-R or similar must be used. Pre-fuses type gG must be used for VLT 5001 - VLT 5027, 200/240 V and VLT 5001 - VLT 5052, 380/500 V. Pre-fuses type gR must be used for VLT 5032 - 5052, 200/240 V and VLT 5060 - VLT 5250, 380/500 V. Fuses must be designed for protection in a circuit capable of supplying a maximum of 100,000 Amps ms (symmetrical), 500 V maximum.
2. American Wire Gauge.
3. Measured using 30 m screened motor cables at rated load and rated frequency.
4. Min. cable cross-section is the smallest cable cross-section allowed to be fitted on the terminals. Always comply with national and local regulations on min. cable cross-section.

Technical data:

■ Mains supply 3 x 380 - 500 V

According to international requirements	VLT type	5001	5002	5003	5004	5005	5006	5008	5011
High overload torque (160 %):									
Output current	$I_{VLT,N}$ [A] (380-440 V)	2.2	2.8	4.1	5.6	7.2	10	13	16
	$I_{VLT, MAX}$ (60 s) [A] (380-440 V)	3.5	4.5	6.5	9	11.5	16	20.8	25.6
	$I_{VLT,N}$ [A] (441-500 V)	1.9	2.6	3.4	4.8	6.3	8.2	11	14.5
	$I_{VLT, MAX}$ (60 s) [A] (441-500 V)	3	4.2	5.5	7.7	10.1	13.1	17.6	23.2
Output	$S_{VLT,N}$ [kVA] (380-440 V)	1.7	2.1	3.1	4.3	5.5	7.6	9.9	12.2
	$S_{VLT,N}$ [kVA] (441-500 V)	1.6	2.3	2.9	4.2	5.5	7.1	9.5	12.6
Typical shaft output	$P_{VLT,N}$ [kW]	0.75	1.1	1.5	2.2	3.0	4.0	5.5	7.5
Typical shaft output	$P_{VLT,N}$ [HP]	1	1.5	2	3	4	5	7.5	10
Max. cable cross-section to motor, brake and loadsharing	[mm²]/[AWG][2)]	4/10	4/10	4/10	4/10	4/10	4/10	4/10	4/10
Rated input current	$I_{L,N}$ [A] (380 V)	2.3	2.6	3.8	5.3	7	9.1	12.2	15.0
	$I_{L,N}$ [A] (460 V)	1.9	2.5	3.4	4.8	6	8.3	10.6	14.0
Max. cable cross-section, power	[mm²]/[AWG][2)]	4/10	4/10	4/10	4/10	4/10	4/10	4/10	4/10
Max. pre-fuses	[-]/UL [1)] [A]	16/6	16/6	16/10	16/10	16/15	25/20	25/25	35/30
Efficiency [3)]		0.96							
Weight IP 20 EB	[kg]	8	8	8	8.5	8.5	10.5	10.5	10.5
Weight IP 54	[kg]	11.5	11.5	11.5	12	12	14	14	14
Power loss at load [W]	Total	55	67	92	110	139	198	250	295
Enclosure		IP 20/IP 54							

1. If UL/cUL is to be complied with, pre-fuses type Bussmann KTS-R or similar must be used. Pre-fuses type gG must be used for VLT 5001 - VLT 5027, 200/240 V and VLT 5001 - VLT 5052, 380/500 V. Pre-fuses type gR must be used for VLT 5032 - 5052, 200/240 V and VLT 5060 - VLT 5250, 380/500 V. Fuses must be designed for protection in a circuit capable of supplying a maximum of 100,000 Amps ms (symmetrical), 500 V maximum.
2. American Wire Gauge.
3. Measured using 30 m screened motor cables at rated load and rated frequency.

Technical data:

■ Mains supply 3 x 380 - 500 V

According to international requirements	VLT type		5016	5022	5027	5032	5042	5052
Normal overload torque (110 %):								
Output current	$I_{VLT,N}$ [A] (380-440 V)		32	37.5	44	61	73	90
	$I_{VLT, MAX}$ (60 s) [A] (380-440 V)		35.2	41.3	48.4	67.1	80.3	99
	$I_{VLT,N}$ [A] (441-500 V)		27.9	34	41.4	54	65	78
	$I_{VLT, MAX}$ (60 s) [A] (441-500 V)		30.7	37.4	45.5	59.4	71.5	85.8
Output	$S_{VLT,N}$ [kVA] (380-440 V)		24.4	28.6	33.5	46.5	55.6	68.6
	$S_{VLT,N}$ [kVA] (441-500 V)		24.2	29.4	35.8	46.8	56.3	67.5
Typical shaft output	$P_{VLT,N}$ [kW]		15	18.5	22	30	37	45
Typical shaft output	$P_{VLT,N}$ [HP]		20	25	30	40	50	60
High overload torque (160 %):								
Output current	$I_{VLT,N}$ [A] (380-440 V)		24	32	37.5	44	61	73
	$I_{VLT, MAX}$ (60 s) [A] (380-440 V)		38.4	51.2	60	70.7	97.6	116.8
	$I_{VLT,N}$ [A] (441-500 V)		21.7	27.9	34	41.4	54	65
	$I_{VLT, MAX}$ (60 s) [A] (441-500 V)		34.7	44.6	54.4	66.2	86	104
Output	$S_{VLT,N}$ [kVA] (380-440 V)		18.3	24.4	28.6	33.5	46.5	55.6
	$S_{VLT,N}$ [kVA] (441-500 V)		18.8	24.2	29.4	35.9	46.8	56.3
Typical shaft output	$P_{VLT,N}$ [kW]		11	15	18.5	22	30	37
Typical shaft output	$P_{VLT,N}$ [HP]		15	20	25	30	40	50
Max. cable cross-section to motor,		IP 54	16/6	16/6	16/6	35/2	35/2	50/0
brake and loadsharing [mm2]/[AWG][2)]		IP 20	16/6	16/6	35/2	35/2	35/2	50/0
Min. cable cross-section to motor,								
brake and loadsharing [mm2]/[AWG]			10/8	10/8	10/8	10/8	10/8	16/6
Rated input current	$I_{L,N}$ [A] (380 V)		32	37.5	44	60	72	89
	$I_{L,N}$ [A] (460 V)		27.6	34	41	53	64	77
Max. cable cross-section,		IP 54	16/6	16/6	16/6	35/2	35/2	50/0
power	[mm²]/[AWG]	IP 20	16/6	16/6	35/2	35/2	35/2	50/0
Max. pre-fuses	[-]/UL [1)] [A]		63/40	63/50	63/60	80/80	100/100	125/125
Pre-fuse SMPS	[-]/UL [1)] [A]		4.0/4.0					
Efficiency			0.96					
Weight IP 20 EB	[kg]		23	23	30	30	48	48
Weight IP 54	[kg]		48	48	51	61	67	70
Power loss at max. load.								
- high overload torque (160 %)	[W]		419	559	655	768	1065	1275
- normal overload torque (110 %)	[W]		559	655	768	1065	1275	1571
Enclosure			IP 20/IP 54					

1. If UL/cUL is to be complied with, pre-fuses type Bussmann KTS-R or similar must be used. Pre-fuses type gG must be used for VLT 5001 - VLT 5027, 200/240 V and VLT 5001 - VLT 5052, 380/500 V. Pre-fuses type gR must be used for VLT 5032 - 5052, 200/240 V and VLT 5060 - VLT 5250, 380/500 V. Fuses must be designed for protection in a circuit capable of supplying a maximum of 100,000 Amps ms (symmetrical), 500 V maximum.
2. American Wire Gauge.
3. Measured using 30 m screened motor cables at rated load and rated frequency.
4. Min. cable cross-section is the smallest cable cross-section allowed to be fitted on the terminals. Always comply with national and local regulations on min. cable cross-section.

Technical data:

■ Mains supply 3 x 200 - 240 V

According to international requirements

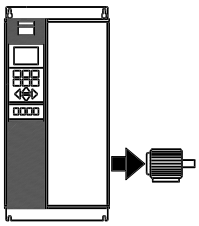
VLT type			5032	5042	5052
Normal overload torque (110 %):					
Output current	$I_{VLT,N}$	[A] (200-230 V)	115	143	170
	$I_{VLT,MAX}$ (60 s)	[A] (200-230 V)	127	158	187
	$I_{VLT,N}$	[A] (231-240 V)	104	130	154
	$I_{VLT,MAX}$ (60 s)	[A] (231-240 V)	115	143	170
Output	$S_{VLT,N}$	[kVA] (200-230 V)	41	52	61
	$S_{VLT,N}$	[kVA] (231-240 V)	41	52	61
Typical shaft output (200-240 V)	$P_{VLT,N}$	[kW]	30	37	45
Typical shaft output (200-240 V)	$P_{VLT,N}$	[HP]	40	50	60
High overload torque (150 %):					
Output current	$I_{VLT,N}$	[A] (200-230 V)	88	115	143
	$I_{VLT,MAX}$ (60 s)	[A] (200-230 V)	132	173	215
	$I_{VLT,N}$	[A] (231-240 V)	80	104	130
	$I_{VLT,MAX}$ (60 s)	[A] (231-240 V)	120	156	195
Output	$S_{VLT,N}$	[kVA] (200-230 V)	32	41	52
	$S_{VLT,N}$	[kVA] (231-240 V)	32	41	52
Typical shaft output (200-240 V)	$P_{VLT,N}$	[kW]	22	30	37
Typical shaft output (200-240 V)	$P_{VLT,N}$	[HP]	30	40	50
Max. cross-section of copper cable to motor, brake and loadsharing (200-240 V)		[mm²][5]	70	90	120
Max. cross-section of aluminium cable to motor, brake and loadsharing (200-240 V)		[mm²][5]	95	95	120
Max. cross-section of copper cable to motor, brake and loadsharing (200-240 V)		[AWG][2) 5]	1/0	3/0	4/0
Max. cross-section of aluminium cable to motor, brake and loadsharing (200-240 V)		[AWG][2) 5]	3/0	250mcm	300mcm
Min. cable cross-section to motor, brake and loadsharing [4]		[mm²/AWG][2) 5]	10/8	10/8	10/8
Rated input current	$I_{L,N}$	[A] (230 V)	101.3	126.6	149.9
Max. cross-section of copper cable to power (200-240 V)		[mm²][5]	70	90	120
Max. cross-section of aluminium cable to power (200-240 V)		[mm²][5]	95	95	120
Max. cross-section of copper cable to power (200-240 V)		[AWG][2) 5]	1/0	3/0	4/0
Max. cross-section of aluminium cable to power (200-240 V)		[AWG][2) 5]	3/0	250mcm	300mcm
Min. cable cross-section to motor, brake and loadsharing [4]		[mm²/AWG][2) 5]	10/8	10/8	10/8
Max. pre-fuses (mains)		[-]/UL [1)] [A]	150	200	250
Integral pre-fuses (softcharge circuit)		[-]/UL [1)] [A]	15/15	15/15	15/15
Integral pre-fuses (softcharge resistors)		[-]/UL [1)] [A]	12/12	12/12	12/12
Integral pre-fuses (SMPS)		[-]/UL [1)] [A]	12/12		
Efficiency [3]			0.96-0.97		
Weight IP 00		[kg]	90	90	90
Weight IP 20 EB		[kg]	101	101	101
Weight IP 54		[kg]	104	104	104
Power loss at max. load		[W]	1089	1361	1613
Enclosure			IP 00 / IP 20/ IP 54		

1. If UL/cUL is to be complied with, pre-fuses type Bussmann FWH and FWX or similar must be used. Pre-fuses type gG must be used for VLT 5001 - VLT 5027, 200/240 V and VLT 5001 - VLT 5052, 380/500 V. Pre-fuses type gR must be used for VLT 5032 - 5052, 200/240 V and VLT 5060 - VLT 5250, 380/500 V. Fuses must be designed for protection in a circuit capable of supplying a maximum of 100,000 Amps ms (symmetrical), 500 V maximum.
2. American Wire Gauge.
3. Measured using 30 m screened motor cables at rated load and rated frequency.
4. Min. cable cross-section is the smallest cable cross-section allowed to be fitted on the terminals. Always comply with national and local regulations on min. cable cross-section.
5. Connection stud 1 x M8 / 2 x M8.

Technical data:

■ Mains supply 3 x 380-500 V

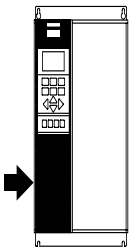
According to international requirements	VLT type	5060	5075	5100	5125	5150	5200	5250
Normal overload torque (110 %):								
Output current	$I_{VLT,N}$ [A] (380-440 V)	106	147	177	212	260	315	368
	$I_{VLT, MAX}$ (60 s) [A] (380-440 V)	117	162	195	233	286	347	405
	$I_{VLT,N}$ [A] (441-500 V)	106	130	160	190	240	302	361
	$I_{VLT, MAX}$ (60 s) [A] (441-500 V)	117	143	176	209	264	332	397
Output	$S_{VLT,N}$ [kVA] (380-440 V)	73	102	123	147	180	218	255
	$S_{VLT,N}$ [kVA] (441-500 V)	92	113	139	165	208	262	313
Typical shaft output (380-440 V)	$P_{VLT,N}$ [kW]	55	75	90	110	132	160	200
Typical shaft output (380-440 V)	$P_{VLT,N}$ [HP]	75	100	125	150	200	250	300
Typical shaft output (441-500 V)	$P_{VLT, N}$ [kW]	75	90	110	132	160	200	250
Typical shaft output (441-500 V)	$P_{VLT, N}$ [HP]	100	125	150	200	250	300	350
High overload torque (150 %):								
Output current	$I_{VLT,N}$ [A] (380-440 V)	90.0	106	147	177	212	260	315
	$I_{VLT, MAX}$ (60 s) [A] (380-440 V)	135	159	221	266	318	390	473
	$I_{VLT,N}$ [A] (441-500 V)	80.0	106	130	160	190	240	302
	$I_{VLT, MAX}$ (60 s) [A] (441-500 V)	120	159	195	240	285	360	453
Output	$S_{VLT,N}$ [kVA] (380-440 V)	62.0	73.0	102	123	147	180	218
	$S_{VLT,N}$ [kVA] (441-500 V)	69.0	92.0	113	139	165	208	262
Typical shaft output (380-440 V)	$P_{VLT,N}$ [kW]	45	55	75	90	110	132	160
Typical shaft output (380-440 V)	$P_{VLT,N}$ [HP]	60	75	100	125	150	200	250
Typical shaft output (441-500 V)	$P_{VLT, N}$ [kW]	55	75	90	110	132	160	200
Typical shaft output (441-500 V)	$P_{VLT, N}$ [HP]	75	100	125	150	200	250	300
Max. cross-section of copper cable to motor, brake and loadsharing (380-440 V)	[mm^2][5]	70	95	120	2x70	2x70	2x95	2x120
Max. cross-section of copper cable to motor, brake and loadsharing (441-500 V)	[mm^2][5]	70	70	95	2x70	2x70	2x95	2x120
Max. cross-section of aluminium cable to motor, brake and loadsharing (380-440 V)	[mm^2][5]	95	120	150	2x70	2x120	2x120	2x150
Max. cross-section of aluminium cable to motor, brake and loadsharing (441-500 V)	[mm^2][5]	70	90	120	2x70	2x95	2x120	2x150
Max. cross-section of copper cable to motor, brake and loadsharing (380-440 V)	[AWG][2) 5)]	1/0	3/0	4/0	2x1/0	2x2/0	2x3/0	2x250mcm
Max. cross-section of copper cable to motor, brake and loadsharing (441-500 V)	[AWG][2) 5)]	1/0	2/0	3/0	2x1/0	2x1/0	2x3/0	2x4/0
Max. cross-section of aluminium cable to motor, brake and loadsharing (380-440 V)	[AWG][2) 5)]	3/0	250mcm	300mcm	2x2/0	2x4/0	2x250mcm	2x350mcm
Max. cross-section of aluminium cable to motor, brake and loadsharing (441-500 V)	[AWG][2) 5)]	3/0	4/0	250mcm	2x2/0	2x3/0	2x250mcm	2x300mcm
Min. cable cross-section to motor, brake and loadsharing [4]	[mm^2/AWG][2) 5)]	10/8	10/8	10/8	10/8	10/8	16/6	



1. If UL/cUL is to be complied with, pre-fuses type Bussmann FWH and FWX or similar must be used. Pre-fuses type gG must be used for VLT 5001 - VLT 5027, 200/240 V and VLT 5001 - VLT 5052, 380/500 V. Pre-fuses type gR must be used for VLT 5032 - 5052, 200/240 V and VLT 5060 - VLT 5250, 380/500 V. Fuses must be designed for protection in a circuit capable of supplying a maximum of 100,000 Amps ms (symmetrical), 500 V maximum.
2. American Wire Gauge.
3. Measured using 30 m screened motor cables at rated load and rated frequency.
4. Min. cable cross-section is the smallest cable cross-section allowed to be fitted on the terminals. Always comply with national and local regulations on min. cable cross-section.
5. Connection stud 1 x M8 / 2 x M8.

Technical data:

■ Mains supply 3 x 380-500 V



According to international requirements	VLT type	5060	5075	5100	5125	5150	5200	5250
Max input current	$I_{L,MAX}$ [A] (400 V)	131	155	217	262	310	384	476
	$I_{L,MAX}$ [A] (460 V)	117	155	192	236	277	355	457
Max. cross-section of copper cable to power (380-440 V)	[mm²][5]	70	95	120	2x70	2x70	2x95	2x120
Max. cross-section of copper cable to power (460-500 V)	[mm²][5]	70	70	95	2x70	2x70	2x95	2x120
Max. cross-section of aluminium cable to power (380-440 V)	[mm²][5]	95	120	150	2x70	2x120	2x120	2x150
Max. cross-section of aluminium cable to power (460-500 V)	[mm²][5]	70	90	120	2x70	2x95	2x120	2x150
Max. cross-section of copper cable to power (380-440 V)	[AWG][2) 5]	1/0	3/0	4/0	2x1/0	2x2/0	2x3/0	2x250mcm
Max. cross-section of copper cable to power (460-500 V)	[AWG][2) 5]	1/0	2/0	3/0	2x1/0	2x1/0	2x3/0	2x4/0
Max. cross-section of aluminium cable to power (380-440 V)	[AWG][2) 5]	3/0	250mcm	300mcm	2x2/0	2x4/0	2x250mcm	2x350mcm
Max. cross-section of aluminium cable to power (460-500 V)	[AWG][2) 5]	3/0	4/0	250mcm	2x2/0	2x3/0	2x250mcm	2x300mcm
Min. cable cross-section to motor, brake and loadsharing [4]	[mm²/AWG][2) 5]	10/8	10/8	10/8	10/8	10/8	16/6	
Max. pre-fuses (mains)	[-]/UL [1)] [A]	150/150	250/220	250/250	300/300	350/350	450/400	500/500
Integral pre-fuses (softcharge circuit)	[-]/UL [1)] [A]	15/15	15/15	15/15	30/30	30/30	30/30	30/30
Integral pre-fuses (softcharge resistors)	[-]/UL [1)] [A]	12/12	12/12	12/12	12/12	12/12	12/12	12/12
Integral pre-fuses (SMPS)	[-]/UL [1)] [A]	5.0/5.0						
Efficiency		0.96-0.97						
Weight IP 00	[kg]	109	109	109	146	146	146	146
Weight IP 20 EB	[kg]	121	121	121	161	161	161	161
Weight IP 54	[kg]	124	124	124	177	177	177	177
Power loss at max. load	[W]	1430	1970	2380	2860	3810	4770	5720
Enclosure		IP 00 / IP 20/ IP 54						

1. If UL/cUL is to be complied with, pre-fuses type Bussmann FWH and FWX or similar must be used. Pre-fuses type gG must be used for VLT 5001 - VLT 5027, 200/240 V and VLT 5001 - VLT 5052, 380/500 V. Pre-fuses type gR must be used for VLT 5032 - 5052, 200/240 V and VLT 5060 - VLT 5250, 380/500 V. Fuses must be designed for protection in a circuit capable of supplying a maximum of 100,000 Amps ms (symmetrical), 500 V maximum.
2. American Wire Gauge.
3. Measured using 30 m screened motor cables at rated load and rated frequency.
4. Min. cable cross-section is the smallest cable cross-section allowed to be fitted on the terminals. Always comply with national and local regulations on min. cable cross-section.
5. Connection stud 1 x M8 / 2 x M8.

Dimensions:

■ Bookstyle IP 20

IP 20 enclosure 200-240 V

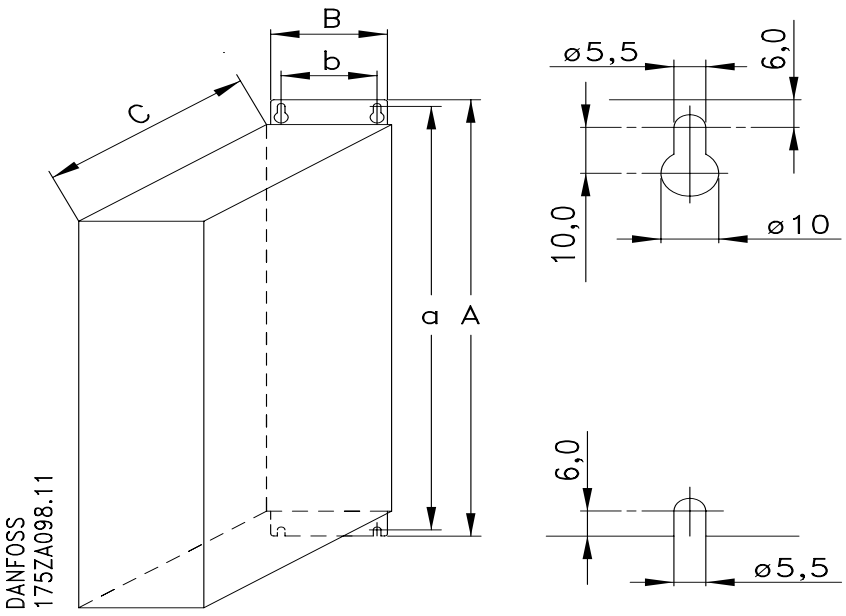
VLT type	A (mm)	B (mm)	C (mm)	a (mm)	b (mm)	ab/be (mm)	l/r (mm)
5001 - 5003	395	90	260	384	70	100	0
5004 - 5006	395	130	260	384	70	100	0

IP 20 enclosure 380-500 V

VLT type	A (mm)	B (mm)	C (mm)	a (mm)	b (mm)	ab/be (mm)	l/r (mm)
5001 - 5005	395	90	260	384	70	100	0
5006 - 5011	395	130	260	384	70	100	0

ab:Min. space above enclosure.
be:Min. space below enclosure.
l/r: Min. distance between VLT frequency converter and other plant components, left and right sides.

VLT 5001 - 5006/200-240 V
VLT 5001 - 5011/380-500 V



Dimensions:

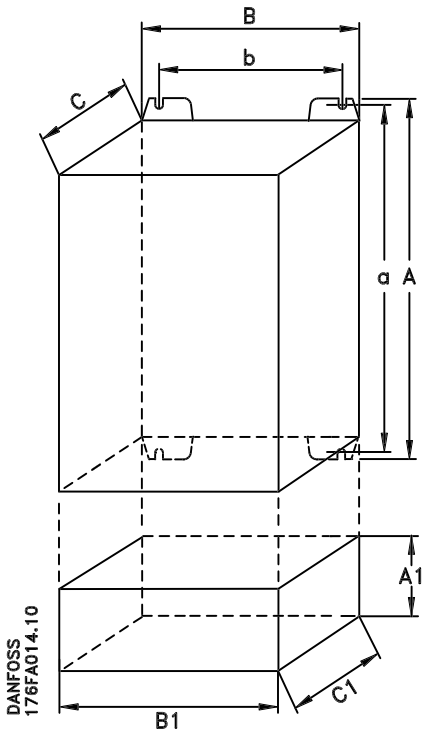
■ Compact IP 00

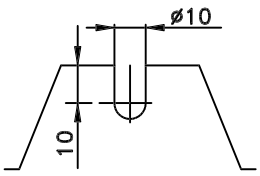
IP 00 enclosure 200-240 V							
VLT type	A (mm)	B (mm)	C (mm)	a (mm)	b (mm)	ab/be (mm)	l/r (mm)
5032 - 5052	800	370	335	780	270	225	0

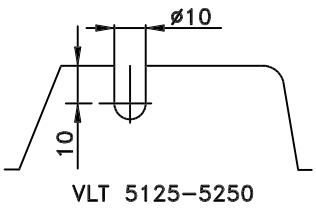
IP 00 enclosure 380-500 V							
VLT type	A (mm)	B (mm)	C (mm)	a (mm)	b (mm)	ab/be (mm)	l/r (mm)
5060 - 5100	800	370	335	780	270	225	0
5125 - 5250	1400	420	400	1380	350	225	0

ab:Min. space above enclosure.
be:Min. space below enclosure.
l/r: Min. distance between VLT frequency converter and other plant components, left and right sides.

VLT 5060 - 5250







IP 20 bottom cover			
VLT type	A1 (mm)	B1 (mm)	C1 (mm)
5060 - 5100	175	370	335
5125 - 5250	175	420	400

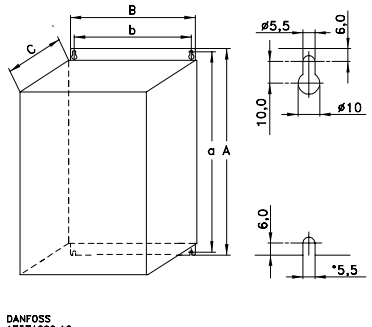
Dimensions:

■ Compact IP 20

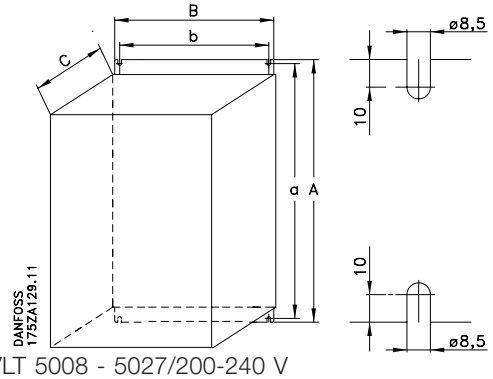
IP 20 enclosure	200-240 V						
VLT type	A (mm)	B (mm)	C (mm)	a (mm)	b (mm)	ab/be (mm)	l/r (mm)
5001 - 5003	395	220	160	384	200	100	0
5004 - 5006	395	220	200	384	200	100	0
5008	560	242	260	540	200	200	0
5011 - 5016	700	242	260	680	200	200	0
5022 - 5027	800	308	296	780	270	200	0
5032 - 5052	954	370	335	780	270	225	0

IP 20 enclosure	380-500 V						
VLT type	A (mm)	B (mm)	C (mm)	a (mm)	b (mm)	ab/be (mm)	l/r (mm)
5001 - 5005	395	220	160	384	200	100	0
5006 - 5011	395	220	200	384	200	100	0
5016 - 5022	560	242	260	540	200	200	0
5027 - 5032	700	242	260	680	200	200	0
5042 - 5052	800	308	296	780	270	200	0
5060 - 5100	975	370	335	780	270	225	0
5125 - 5250	1575	420	400	1380	350	225	0

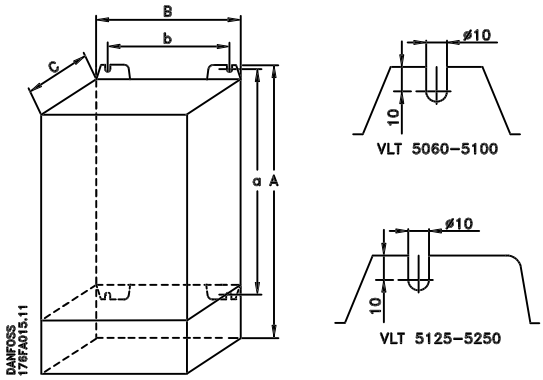
ab:Min. space above enclosure.
be:Min. space below enclosure.
l/r: Min. distance between VLT frequency converter and other plant components, left and right sides.



VLT 5001 - 5006/200-240 V
VLT 5001 - 5011/380-500 V



VLT 5008 - 5027/200-240 V
VLT 5016 - 5052/380-500 V



VLT 5032 - 5052/200-240 V
VLT 5060 - 5250/380-500 V

Dimensions:

■ Compact IP 54

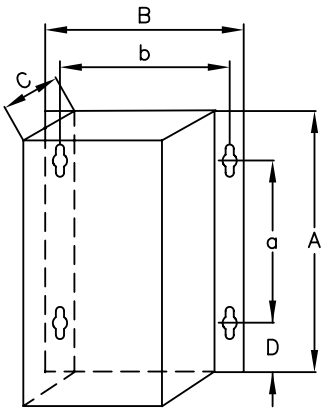
IP 54 enclosure 200-240 V

VLT type	A (mm)	B (mm)	C (mm)	D (mm)	a (mm)	b (mm)	ab/be (mm)	l/r (mm)
5001 - 5003	460	282	195	85	260	258	100	0
5004 - 5006	530	282	195	85	330	258	100	0
5008 - 5011	810	355	280	70	560	330	200	0
5016 - 5027	940	400	280	70	690	375	200	0
5032 - 5052	937	495	421	70	830	374	225	50

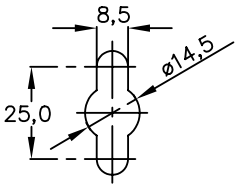
IP 54 enclosure 380-500 V

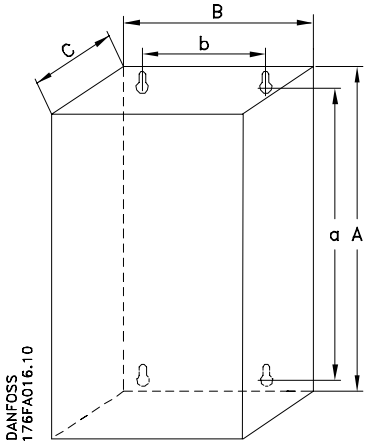
VLT type	A (mm)	B (mm)	C (mm)	D (mm)	a (mm)	b (mm)	ab/be (mm)	l/r (mm)
5001 - 5005	460	282	195	85	260	258	100	0
5006 - 5011	530	282	195	85	330	258	100	0
5016 - 5027	810	355	280	70	560	330	200	0
5032 - 5052	940	400	280	70	690	375	200	0
5060 - 5100	937	495	421	70	830	374	225	50
5125 - 5250	1572	495	425	-	1465	445	225	0

ab:Min. space above enclosure.
be:Min. space below enclosure.
l/r: Min. distance between VLT frequency converter and other plant components, left and right sides.

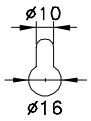


VLT 5001 - 5027/200-240 V
VLT 5001 - 5052/380-500 V





VLT 5060 - 5250/380-500 V



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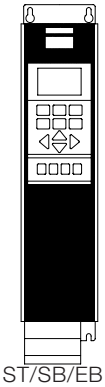
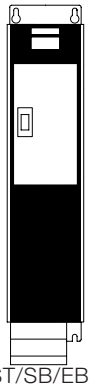
175HA130.00

Ordering:

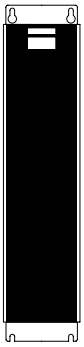
■ Product range, Bookstyle



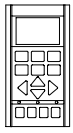
ST/SB/EB with control unit



ST/SB/EB without control unit



LC filter (IP 20)



LCP control unit

DANFOSS 175ZA061.11

See ordering numbers of various options and LC filters for VLT 5000 Series on page 47-48.

■ Ordering numbers, Bookstyle

IP 20 / Chassis
200 / 208 / 220 / 230 / 240 V

VLT type	kW	Vers.	RFI	Ordering No. W/ LCP	Ordering No. W/o LCP
		ST	R3	175Z0004	175Z0001
5001	0.75	SB	R3	175Z0005	175Z0002
		EB	R3	175Z0006	175Z0003
		ST	R3	175Z0010	175Z0007
5002	1.1	SB	R3	175Z0011	175Z0008
		EB	R3	175Z0012	175Z0009
		ST	R3	175Z0016	175Z0013
5003	1.5	SB	R3	175Z0017	175Z0014
		EB	R3	175Z0018	175Z0015
		ST	R3	175Z0022	175Z0019
5004	2.2	SB	R3	175Z0023	175Z0020
		EB	R3	175Z0024	175Z0021
		ST	R3	175Z0028	175Z0025
5005	3.0	SB	R3	175Z0029	175Z0026
		EB	R3	175Z0030	175Z0027
		ST	R1	175Z0167	175Z0164
5006	3.7	SB	R1	175Z0168	175Z0165
		EB	R1	175Z0169	175Z0166

LCP: Control unit with display and keypad.
ST: Standard unit with/without control unit.
SB: Standard unit with or without display and integrated brake chopper.
EB: Extended unit with/without control unit, integrated brake chopper, connection of external 24 volt DC supply for back-up of control card, connection to DC intermediate circuit for load-sharing (load equalisation between several VLT frequency converters), as well as quick discharging of DC intermediate circuit.

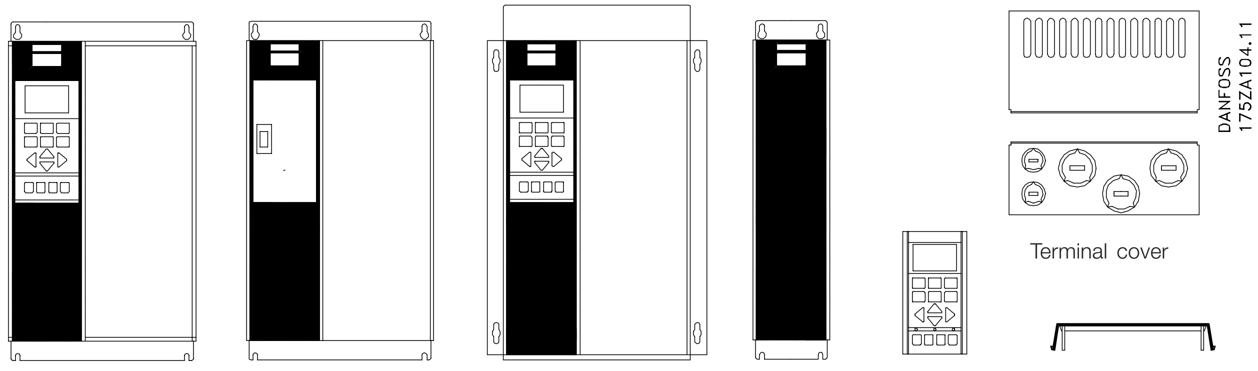
IP 20 / Chassis
380 / 400 / 415 / 440 / 460 / 500 V

VLT type	kW	Vers.	RFI	Ordering No. W/ LCP	Ordering No. W/o LCP
		ST	R3	175Z0034	175Z0031
5001	0.75	SB	R3	175Z0035	175Z0032
		EB	R3	175Z0036	175Z0033
		ST	R3	175Z0040	175Z0037
5002	1.1	SB	R3	175Z0041	175Z0038
		EB	R3	175Z0042	175Z0039
		ST	R3	175Z0046	175Z0043
5003	1.5	SB	R3	175Z0047	175Z0044
		EB	R3	175Z0048	175Z0045
		ST	R3	175Z0052	175Z0049
5004	2.2	SB	R3	175Z0053	175Z0050
		EB	R3	175Z0054	175Z0051
		ST	R3	175Z0058	175Z0055
5005	3.0	SB	R3	175Z0059	175Z0056
		EB	R3	175Z0060	175Z0057
		ST	R3	175Z0064	175Z0061
5006	4.0	SB	R3	175Z0065	175Z0062
		EB	R3	175Z0066	175Z0063
		ST	R3	175Z0070	175Z0067
5008	5.5	SB	R3	175Z0071	175Z0068
		EB	R3	175Z0072	175Z0069
		ST	R1	175Z0076	175Z0073
5011	7.5	SB	R1	175Z0077	175Z0074
		EB	R1	175Z0078	175Z0075

R1: With RFI filter option, compliance of EN 55011-1A with 150 m screened motor cable.
R3: Integrated RFI filter complying with EN 55011-1B with 50 m (Bookstyle 20 m) screened motor cable and EN 55011-1A with 150 m screened motor cable.

Ordering:

■ Product range, Compact



IP 20 with control unit | IP 20 without control unit | IP 54 with control unit | LC-filter 200 V 5001 - 5006, 500 V 5001 - 5011 | IP 4x, top cover

See ordering numbers of options and LC filters for VLT 5000 Series on page 47-48.

■ Ordering numbers, Compact

200 / 208 / 220 / 230 / 240 V

					Ordering No.	
VLT	kW	Enclosure	Vers.	RFI	W/ LCP	W/o LCP
			ST	R3	175Z0083	175Z0080
5001	0.75	IP 20	SB	R3	175Z0084	175Z0081
			EB	R3	175Z0085	175Z0082
			ST	R3	175Z0173	
5001	0.75	IP 54	SB	R3	175Z0174	
			EB	R3	175Z0175	
			ST	R3	175Z0089	175Z0086
5002	1.1	IP 20	SB	R3	175Z0090	175Z0087
			EB	R3	175Z0091	175Z0088
			ST	R3	175Z0185	
5002	1.1	IP 54	SB	R3	175Z0186	
			EB	R3	175Z0187	
			ST	R3	175Z0095	175Z0092
5003	1.5	IP 20	SB	R3	175Z0096	175Z0093
			EB	R3	175Z0097	175Z0094
			ST	R3	175Z0197	
5003	1.5	IP 54	SB	R3	175Z0198	
			EB	R3	175Z0199	
			ST	R3	175Z0107	175Z0104
5004	2.2	IP 20	SB	R3	175Z0108	175Z0105
			EB	R3	175Z0109	175Z0106
			ST	R3	175Z0209	
5004	2.2	IP 54	SB	R3	175Z0210	
			EB	R3	175Z0211	
			ST	R3	175Z0113	175Z0110
5005	3.0	IP 20	SB	R3	175Z0114	175Z0111
			EB	R3	175Z0115	175Z0112
			ST	R3	175Z0221	
5005	3.0	IP 54	SB	R3	175Z0222	
			EB	R3	175Z0223	

					Ordering No.	
VLT	kW	Enclosure	Vers.	RFI	W/ LCP	W/o LCP
			ST	R1	175Z0916	175Z0910
5006	3.7	IP 20	SB	R1	175Z0917	175Z0911
			EB	R1	175Z0918	175Z0912
			ST	R1	175Z0922	
5006	3.7	IP 54	SB	R1	175Z0923	
			EB	R1	175Z0924	

LCP: Control unit with display and keypad.
ST: Standard unit with/without control unit.
SB: Standard unit with/without control unit and integral brake chopper.
EB: Extended unit with/without control unit, integral brake chopper, connection of external 24 volt DC supply for back-up of control card, connection to DC intermediate circuit for load-sharing (load equalisation between several VLT frequency converters), and quick discharging of DC intermediate circuit.
R1: With RFI filter option, compliance of EN 55011-1A with 150 m screened motor cable.
R3: Integrated RFI filter complying with EN 55011-1B with 50 m (Bookstyle 20 m) screened motor cable and EN 55011-1A with 150 m screened motor cable.

COMPACT

Ordering:

Ordering numbers, Compact 200/ 208 / 220 / 230 / 240 V

VLT	kW	Enclosure	Vers.	RFI[1)]	Ordering No. W/ LCP	Ordering No. W/o LCP
5008	5.5	IP 20	ST	R0	175Z4006	175Z4000
			SB	R0	175Z4007	175Z4001
			EB	R0	175Z4008	175Z4002
			ST	R3	175Z4009	175Z4003
			SB	R3	175Z4010	175Z4004
			EB	R3	175Z4011	175Z4005
5008	5.5	IP 54	ST	R0	175Z4012	
			SB	R0	175Z4013	
			EB	R0	175Z4014	
			ST	R3	175Z4015	
			SB	R3	175Z4016	
			EB	R3	175Z4017	
5011	7.5	IP 20	ST	R0	175Z4024	175Z4018
			SB	R0	175Z4025	175Z4019
			EB	R0	175Z4026	175Z4020
			ST	R3	175Z4027	175Z4021
			SB	R3	175Z4028	175Z4022
			EB	R3	175Z4029	175Z4023
5011	7.5	IP 54	ST	R0	175Z4030	
			SB	R0	175Z4031	
			EB	R0	175Z4032	
			ST	R3	175Z4033	
			SB	R3	175Z4034	
			EB	R3	175Z4035	
5016	11	IP 20	ST	R0	175Z4042	175Z4036
			SB	R0	175Z4043	175Z4037
			EB	R0	175Z4044	175Z4038
			ST	R3	175Z4045	175Z4039
			SB	R3	175Z4046	175Z4040
			EB	R3	175Z4047	175Z4041
5016	11	IP 54	ST	R0	175Z4048	
			SB	R0	175Z4049	
			EB	R0	175Z4050	
			ST	R3	175Z4051	
			SB	R3	175Z4052	
			EB	R3	175Z4053	
5022	15	IP 20	ST	R0	175Z4060	175Z4054
			SB	R0	175Z4061	175Z4055
			EB	R0	175Z4062	175Z4056
			ST	R3	175Z4063	175Z4057
			SB	R3	175Z4064	175Z4058
			EB	R3	175Z4065	175Z4059
5022	15	IP 54	ST	R0	175Z4066	
			SB	R0	175Z4067	
			EB	R0	175Z4068	
			ST	R3	175Z4069	
			SB	R3	175Z4070	
			EB	R3	175Z4071	
5027	18,5	IP 20	ST	R0	175Z4078	175Z4072
			SB	R0	175Z4079	175Z4073
			EB	R0	175Z4080	175Z4074
			ST	R3	175Z4081	175Z4075
			SB	R3	175Z4082	175Z4076
			EB	R3	175Z4083	175Z4077
5027	18,5	IP 54	ST	R0	175Z4084	
			SB	R0	175Z4085	
			EB	R0	175Z4086	
			ST	R3	175Z4087	
			SB	R3	175Z4088	
			EB	R3	175Z4089	

VLT	kW	Enclosure	Vers.	RFI[1)]	Ordering No. W/ LCP	Ordering No. W/o LCP
5032	22	IP 00	ST	R0	176F0337	176F0331
			SB	R0	176F0338	176F0332
			EB	R0	176F0339	176F0333
			ST	R3	176F0340	176F0334
			SB	R3	176F0341	176F0335
			EB	R3	176F0342	176F0336
5032	22	IP 20	ST	R0	176F0349	176F0343
			SB	R0	176F0350	176F0344
			EB	R0	176F0351	176F0345
			ST	R3	176F0352	176F0346
			SB	R3	176F0353	176F0347
			EB	R3	176F0354	176F0348
5032	22	IP 54	ST	R0	176F0355	
			SB	R0	176F0356	
			EB	R0	176F0357	
			ST	R3	176F0358	
			SB	R3	176F0359	
			EB	R3	176F0360	
5042	30	IP 00	ST	R0	176F0367	176F0361
			SB	R0	176F0368	176F0362
			EB	R0	176F0369	176F0363
			ST	R3	176F0370	176F0364
			SB	R3	176F0371	176F0365
			EB	R3	176F0372	176F0366
5042	30	IP 20	ST	R0	176F0379	176F0373
			SB	R0	176F0380	176F0374
			EB	R0	176F0381	176F0375
			ST	R3	176F0382	176F0376
			SB	R3	176F0383	176F0377
			EB	R3	176F0384	176F0378
5042	30	IP 54	ST	R0	176F0385	
			SB	R0	176F0386	
			EB	R0	176F0387	
			ST	R3	176F0388	
			SB	R3	176F0389	
			EB	R3	176F0390	
5052	37	IP 00	ST	R0	176F0397	176F0391
			SB	R0	176F0398	176F0392
			EB	R0	176F0399	176F0393
			ST	R3	176F0400	176F0394
			SB	R3	176F0401	176F0395
			EB	R3	176F0402	176F0396
5052	37	IP 20	ST	R0	176F0409	176F0403
			SB	R0	176F0410	176F0404
			EB	R0	176F0411	176F0405
			ST	R3	176F0412	176F0406
			SB	R3	176F0413	176F0407
			EB	R3	176F0414	176F0408
5052	37	IP 54	ST	R0	176F0415	
			SB	R0	176F0416	
			EB	R0	176F0417	
			ST	R3	176F0418	
			SB	R3	176F0419	
			EB	R3	176F0420	

Ordering:

380 / 400 / 415 / 440 / 460 / 500 V

					Ordering No.	
VLT	kW	Enclosure	Vers.	RFI	W/ LCP	W/o LCP
			ST	R3	175Z0119	175Z0116
5001	0.75	IP 20	SB	R3	175Z0120	175Z0117
			EB	R3	175Z0121	175Z0118
			ST	R3	175Z0233	
5001	0.75	IP 54	SB	R3	175Z0234	
			EB	R3	175Z0235	
			ST	R3	175Z0125	175Z0122
5002	1.1	IP 20	SB	R3	175Z0126	175Z0123
			EB	R3	175Z0127	175Z0124
			ST	R3	175Z0245	
5002	1.1	IP 54	SB	R3	175Z0246	
			EB	R3	175Z0247	
			ST	R3	175Z0131	175Z0128
5003	1.5	IP 20	SB	R3	175Z0132	175Z0129
			EB	R3	175Z0133	175Z0130
			ST	R3	175Z0257	
5003	1.5	IP 54	SB	R3	175Z0258	
			EB	R3	175Z0259	
			ST	R3	175Z0137	175Z0134
5004	2.2	IP 20	SB	R3	175Z0138	175Z0135
			EB	R3	175Z0139	175Z0136
			ST	R3	175Z0269	
5004	2.2	IP 54	SB	R3	175Z0270	
			EB	R3	175Z0271	
			ST	R3	175Z0143	175Z0140
5005	3.0	IP 20	SB	R3	175Z0144	175Z0141
			EB	R3	175Z0145	175Z0142
			ST	R3	175Z0281	
5005	3.0	IP 54	SB	R3	175Z0282	
			EB	R3	175Z0283	
			ST	R3	175Z0149	175Z0146
5006	4.0	IP 20	SB	R3	175Z0150	175Z0147
			EB	R3	175Z0151	175Z0148
			ST	R3	175Z0293	
5006	4.0	IP 54	SB	R3	175Z0294	
			EB	R3	175Z0295	
			ST	R3	175Z0155	175Z0152
5008	5.5	IP 20	SB	R3	175Z0156	175Z0153
			EB	R3	175Z0157	175Z0154
			ST	R3	175Z0305	
5008	5.5	IP 54	SB	R3	175Z0306	
			EB	R3	175Z0307	
			ST	R1	175Z0161	175Z0158
5011	7.5	IP 20	SB	R1	175Z0162	175Z0159
			EB	R1	175Z0163	175Z0160
			ST	R1	175Z0317	
5011	7.5	IP 54	SB	R1	175Z0318	
			EB	R1	175Z0319	

380 / 400 / 415 / 440 / 460 / 500 V

					Ordering No.	
VLT	kW	Enclosure	Vers.	RFI	W/ LCP	W/o LCP
			ST	R0	175Z4096	175Z4090
			SB	R0	175Z4097	175Z4091
5016	11	IP 20	EB	R0	175Z4098	175Z4092
			ST	R3	175Z4099	175Z4093
			SB	R3	175Z4100	175Z4094
			EB	R3	175Z4101	175Z4095
			ST	R0	175Z4102	
			SB	R0	175Z4103	
5016	11	IP 54	EB	R0	175Z4104	
			ST	R3	175Z4105	
			SB	R3	175Z4106	
			EB	R3	175Z4107	
			ST	R0	175Z4114	175Z4108
			SB	R0	175Z4115	175Z4109
5022	15	IP 20	EB	R0	175Z4116	175Z4110
			ST	R3	175Z4117	175Z4111
			SB	R3	175Z4118	175Z4112
			EB	R3	175Z4119	175Z4113
			ST	R0	175Z4120	
			SB	R0	175Z4121	
5022	15	IP 54	EB	R0	175Z4122	
			ST	R3	175Z4123	
			SB	R3	175Z4124	
			EB	R3	175Z4125	
			ST	R0	175Z4132	175Z4126
			SB	R0	175Z4133	175Z4127
5027	18.5	IP 20	EB	R0	175Z4134	175Z4128
			ST	R3	175Z4135	175Z4129
			SB	R3	175Z4136	175Z4130
			EB	R3	175Z4137	175Z4131
			ST	R0	175Z4138	
			SB	R0	175Z4139	
5027	18.5	IP 54	EB	R0	175Z4140	
			ST	R3	175Z4141	
			SB	R3	175Z4142	
			EB	R3	175Z4143	

LCP: Control unit with display and keypad.
ST: Standard unit with/without control unit.
SB: Standard unit with/without control unit and integral brake chopper.
EB: Extended unit with/without control unit, integral brake chopper, connection of external 24 volt DC supply for back-up of control card, connection to DC intermediate circuit for load-sharing (load equalisation between several VLT frequency converters), and quick discharging of DC intermediate circuit.
R0: The VLT frequency converter is supplied without a RFI filter.
R1: With RFI filter option, compliance of EN 55011-1A with 150 m screened motor cable.
R3: With RFI filter option, compliance of EN 55011-1B with 50 m (Bookstyle 20 m) screened motor cable and EN 55011-1A with 150 screened motor cable.

Ordering:

380 / 400 / 415 / 440 / 460 / 500 V

					Ordering No.	
VLT	kW	Enclosure	Vers.	RFI	W/ LCP	W/o LCP
5032	22	IP 20	ST	R0	175Z4150	175Z4144
			SB	R0	175Z4151	175Z4145
			EB	R0	175Z4152	175Z4146
			ST	R3	175Z4153	175Z4147
			SB	R3	175Z4154	175Z4148
			EB	R3	175Z4155	175Z4149
5032	22	IP 54	ST	R0	175Z4156	
			SB	R0	175Z4157	
			EB	R0	175Z4158	
			ST	R3	175Z4159	
			SB	R3	175Z4160	
			EB	R3	175Z4161	
5042	30	IP 20	ST	R0	175Z4168	175Z4162
			SB	R0	175Z4169	175Z4163
			EB	R0	175Z4170	175Z4164
			ST	R3	175Z4171	175Z4165
			SB	R3	175Z4172	175Z4166
			EB	R3	175Z4173	175Z4167
5042	30	IP 54	ST	R0	175Z4174	
			SB	R0	175Z4175	
			EB	R0	175Z4176	
			ST	R3	175Z4177	
			SB	R3	175Z4178	
			EB	R3	175Z4179	
5052	37	IP 20	ST	R0	175Z4186	175Z4180
			SB	R0	175Z4187	175Z4181
			EB	R0	175Z4188	175Z4182
			ST	R3	175Z4189	175Z4183
			SB	R3	175Z4190	175Z4184
			EB	R3	175Z4191	175Z4185
5052	37	IP 54	ST	R0	175Z4192	
			SB	R0	175Z4193	
			EB	R0	175Z4194	
			ST	R3	175Z4195	
			SB	R3	175Z4196	
			EB	R3	175Z4197	
5060	45	IP 00	ST	R0	176F0007	176F0001
			SB	R0	176F0008	176F0002
			EB	R0	176F0009	176F0003
			ST	R3	176F0010	176F0004
			SB	R3	176F0011	176F0005
			EB	R3	176F0012	176F0006
5060	45	IP 20	ST	R0	176F0019	176F0013
			SB	R0	176F0020	176F0014
			EB	R0	176F0021	176F0015
			ST	R3	176F0022	176F0016
			SB	R3	176F0023	176F0017
			EB	R3	176F0024	176F0018
5060	45	IP 54	ST	R0	176F0025	
			SB	R0	176F0026	
			EB	R0	176F0027	
			ST	R3	176F0028	
			SB	R3	176F0029	
			EB	R3	176F0030	

					Ordering No.	
VLT	kW	Enclosure	Vers.	RFI	W/ LCP	W/o LCP
5075	55	IP 00	ST	R0	176F0037	176F0031
			SB	R0	176F0038	176F0032
			EB	R0	176F0039	176F0033
			ST	R3	176F0040	176F0034
			SB	R3	176F0041	176F0035
			EB	R3	176F0042	176F0036
5075	55	IP 20	ST	R0	176F0049	176F0043
			SB	R0	176F0050	176F0044
			EB	R0	176F0051	176F0045
			ST	R3	176F0052	176F0046
			SB	R3	176F0053	176F0047
			EB	R3	176F0054	176F0048
5075	55	IP 54	ST	R0	176F0055	
			SB	R0	176F0056	
			EB	R0	176F0057	
			ST	R3	176F0058	
			SB	R3	176F0059	
			EB	R3	176F0060	
5100	75	IP 00	ST	R0	176F0067	176F0061
			SB	R0	176F0068	176F0062
			EB	R0	176F0069	176F0063
			ST	R3	176F0070	176F0064
			SB	R3	176F0071	176F0065
			EB	R3	176F0072	176F0066
5100	75	IP 20	ST	R0	176F0079	176F0073
			SB	R0	176F0080	176F0074
			EB	R0	176F0081	176F0075
			ST	R3	176F0082	176F0076
			SB	R3	176F0083	176F0077
			EB	R3	176F0084	176F0078
5100	75	IP 54	ST	R0	176F0085	
			SB	R0	176F0086	
			EB	R0	176F0087	
			ST	R3	176F0088	
			SB	R3	176F0089	
			EB	R3	176F0090	

LCP: Control unit with display and keypad.
ST: Standard unit with/without control unit.
SB: Standard unit with/without control unit and integral brake chopper.
EB: Extended unit with/without control unit, integral brake chopper, connection of external 24 volt DC supply for back-up of control card, connection to DC intermediate circuit for load-sharing (load equalisation between several VLT frequency converters), and quick discharging of DC intermediate circuit.
R0: The VLT frequency converter is supplied without a RFI filter.
R1: With RFI filter option, compliance of EN 55011-1A with 150 m screened motor cable.
R3: With RFI filter option, compliance of EN 55011-1B with 50 m (Bookstyle 20 m) screened motor cable and EN 55011-1A with 150 screened motor cable.

Ordering:

380 / 400 / 415 / 440 / 460 / 500 V

					Ordering No.	
VLT	kW	Enclosure	Vers.	RFI	W/ LCP	W/o LCP
5125	90	IP 00	ST	R0	176F0097	176F0091
			SB	R0	176F0098	176F0092
			EB	R0	176F0099	176F0093
			ST	R3	176F0100	176F0094
			SB	R3	176F0101	176F0095
			EB	R3	176F0102	176F0096
5125	90	IP 20	ST	R0	176F0109	176F0103
			SB	R0	176F0110	176F0104
			EB	R0	176F0111	176F0105
			ST	R3	176F0112	176F0106
			SB	R3	176F0113	176F0107
			EB	R3	176F0114	176F0108
5125	90	IP 54	ST	R0	176F0115	
			SB	R0	176F0116	
			EB	R0	176F0117	
			ST	R3	176F0118	
			SB	R3	176F0119	
			EB	R3	176F0120	
5150	110	IP 00	ST	R0	176F0127	176F0121
			SB	R0	176F0128	176F0122
			EB	R0	176F0129	176F0123
			ST	R3	176F0130	176F0124
			SB	R3	176F0131	176F0125
			EB	R3	176F0132	176F0126
5150	110	IP 20	ST	R0	176F0139	176F0133
			SB	R0	176F0140	176F0134
			EB	R0	176F0141	176F0135
			ST	R3	176F0142	176F0136
			SB	R3	176F0143	176F0137
			EB	R3	176F0144	176F0138
5150	110	IP 54	ST	R0	176F0145	
			SB	R0	176F0146	
			EB	R0	176F0147	
			ST	R3	176F0148	
			SB	R3	176F0149	
			EB	R3	176F0150	
5200	132	IP 00	ST	R0	176F0157	176F0151
			SB	R0	176F0158	176F0152
			EB	R0	176F0159	176F0153
			ST	R3	176F0160	176F0154
			SB	R3	176F0161	176F0155
			EB	R3	176F0162	176F0156
5200	132	IP 20	ST	R0	176F0169	176F0163
			SB	R0	176F0170	176F0164
			EB	R0	176F0171	176F0165
			ST	R3	176F0172	176F0166
			SB	R3	176F0173	176F0167
			EB	R3	176F0174	176F0168
5200	132	IP 54	ST	R0	176F0175	
			SB	R0	176F0176	
			EB	R0	176F0177	
			ST	R3	176F0178	
			SB	R3	176F0179	
			EB	R3	176F0180	

					Ordering No.	
VLT	kW	Enclosure	Vers.	RFI	W/ LCP	W/o LCP
5250	160	IP 00	ST	R0	176F0187	176F0181
			SB	R0	176F0188	176F0182
			EB	R0	176F0189	176F0183
			ST	R3	176F0190	176F0184
			SB	R3	176F0191	176F0185
			EB	R3	176F0192	176F0186
5250	160	IP 20	ST	R0	176F0199	176F0193
			SB	R0	176F0200	176F0194
			EB	R0	176F0201	176F0195
			ST	R3	176F0202	176F0196
			SB	R3	176F0203	176F0197
			EB	R3	176F0204	176F0198
5250	160	IP 54	ST	R0	176F0205	
			SB	R0	176F0206	
			EB	R0	176F0207	
			ST	R3	176F0208	
			SB	R3	176F0209	
			EB	R3	176F0210	

LCP: Control unit with display and keypad.

ST: Standard unit with/without control unit.

SB: Standard unit with/without control unit and integral brake chopper.

EB: Extended unit with/without control unit, integral brake chopper, connection of external 24 volt DC supply for back-up of control card, connection to DC intermediate circuit for load-sharing (load equalisation between several VLT frequency converters), and quick discharging of DC intermediate circuit.

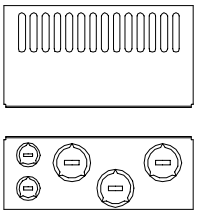
R0: The VLT frequency converter is supplied without a RFI filter.

R1: With RFI filter option, compliance of EN 55011-1A with 150 m screened motor cable.

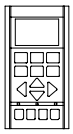
R3: With RFI filter option, compliance of EN 55011-1B with 50 m (Bookstyle 20 m) screened motor cable and EN 55011-1A with 150 screened motor cable.

Ordering:

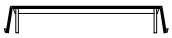
■ Accessories for VLT 5000 Series



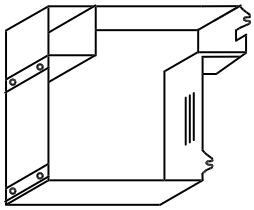
Terminal cover



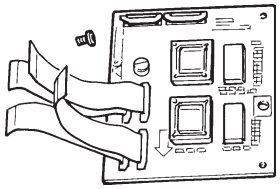
LCP: Control unit



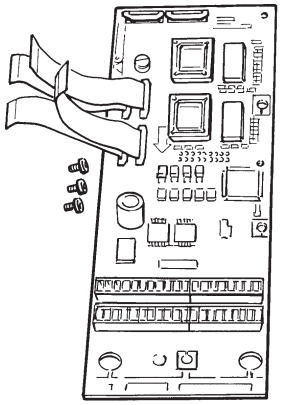
IP 4x, top cover



IP 20 bottom cover



Memory option



Application option

■ Ordering numbers, misc. hardware:

Type	Description	Ordering no.
IP 4x top cover [1]	Option, VLT type 5001-5006, 200-240 V	175Z0928
IP 4x top cover [1]	Option, VLT type 5001-5011, 380-500 V	175Z0928
NEMA 12 bonding plate [2]	Option, VLT type 5001-5006, 200-240 V	175H4195
NEMA 12 bonding plate [2]	Option, VLT type 5001-5011, 380-500 V	175H4195
IP 20 terminal cover	Option, VLT type 5008-5016, 200-240 V	175Z4622
IP 20 terminal cover	Option, VLT type 5022-5027, 200-240 V	175Z4623
IP 20 terminal cover	Option, VLT type 5016-5032, 380-500 V	175Z4622
IP 20 terminal cover	Option, VLT type 5042-5052, 380-500 V	175Z4623
IP 20 bottom cover	Option, VLT type 5060-5100, 380 - 500 V	176F1800
IP 20 bottom cover	Option, VLT type 5032-5052, 200 - 240 V	176F1800
IP 20 bottom cover	Option, VLT type 5125-5250, 380 - 500 V	176F1801
Terminal Adapter Kit	VLT type 5060-5100, IP 00/IP 20, ST	176F1805
Terminal Adapter Kit	VLT type 5060-5100, IP 00/IP 20, SB	176F1806
Terminal Adapter Kit	VLT type 5060-5100, IP 00/IP 20, EB	176F1807
Terminal Adapter Kit	VLT type 5060-5100, IP 54, ST	176F1808
Terminal Adapter Kit	VLT type 5060-5100, IP 54, SB	176F1809
Terminal Adapter Kit	VLT type 5060-5100, IP 54, EB	176F1810
Terminal Adapter Kit	VLT type 5125-5250, IP 00/IP 20/IP 54, ST	176F1811
Terminal Adapter Kit	VLT type 5125-5250, IP 00/IP 20/IP 54, SB	176F1812
Terminal Adapter Kit	VLT type 5125-5250, IP 00/IP 20, EB	176F1813
Terminal Adapter Kit	VLT type 5125-5250, IP 54, EB	176F1814
Encoder converter / 5 V TTL Linedriver / 24 V DC		175Z1929

■ Ordering numbers, control card options, etc.:

LCP:

Type	Description	Ordering no.	
IP 65 LCP option	Separate LCP, only for IP 20 units	175Z0401	
LCP remote-mounting kit [3]	Remote-mounting kit for LCP 175Z0850	175Z0850	incl. 3 m cable
Cable for LCP	Separate cable	175Z0929	3 m cable

LCP: Control unit with display and keypad.
Supplied excl. LCP.

1) IP 4xNEMA 1 top cover is for Compact IP 20 units only and is only intended for horizontal surfaces that comply with IP 4x. The kit also contains a bonding plate (UL).

2) NEMA 12 bonding plate (UL) is for compact IP 54 units only.

3) The remote-mounting kit is only for IP 00 and IP 20 units.

VLT 5000 Series is available with an integral fieldbus option and/or application option. Ordering numbers for the individual VLT types with integrated options can be seen from the relevant manuals or instructions. In addition, the ordering number system can be used for ordering a VLT frequency converter with an option. See page 52.

If the VLT 5000 has a serial number lower than xxxx10Gwwy, contact Danfoss before installing the Profibus option.

Ordering:

■ Fieldbus options:

Profibus:

Type	Description	Ordering no.
Profibus option	Incl. memory option	175Z0404
Profibus option	excl. memory option	175Z0402

LonWorks:

LonWorks option, Free topology	Incl. memory option	176F1500
LonWorks option, Free topology	excl. memory option	176F1512
LonWorks option, 78 KBPS	Incl. memory option	176F1501
LonWorks option, 78 KBPS	excl. memory option	176F1513
LonWorks option, 1.25 MBPS	Incl. memory option	176F1502
LonWorks option, 1.25 MBPS	excl. memory option	176F1514

DeviceNet:

DeviceNet option	Incl. memory option	176F1580
DeviceNet option	excl. memory option	176F1584

Modbus Plus:

Modbus Plus for Compact units	Incl. memory option	176F1550
Modbus Plus for Compact units	Excl. memory option	176F1589
Modbus Plus for Bookstyle units	Incl. memory option	176F1551
Modbus Plus for Bookstyle units	Excl. memory option	176F1558

■ Application options:

Synchronising/positioning:

Synchronising/positioning	Application option	175Z0833

■ Ordering numbers, PC software tools:

VLT Software Dialog	CD-ROM version*	175Z0953

* Incl. Basic, Logging, Template, Guided tour modules in 6 languages (Danish, English, German, Italian, Spanish and French).

Ordering:

■ LC filters for VLT 5000

When a motor is controlled by a frequency converter, resonance noise will be heard from the motor. This noise, which is the result of the design of the motor, arises every time one of the inverter switches in the frequency converter is activated. The frequency of the resonance noise thus corresponds to the switching frequency of the frequency converter.

For the VLT 5000 Series, Danfoss is able to supply a LC filter to dampen the acoustic motor noise.

The filter reduces the ramp-up time of the voltage, the peak load voltage U_{PEAK} and the ripple current ΔI to the motor, which means that current and voltage become almost sinusoidal. Consequently, the acoustic motor noise is reduced to a minimum.

Because of the ripple current in the coils, there will be some noise from the coils. This problem can be solved by integrating the filter in a cabinet or similar.

■ Ordering numbers, LC filter modules

Mains supply 3 x 200-240 V

LC filter for VLT type	LC filter enclosure	Rated current at 200 V	Max. torque at CT/VT	Max. output frequency	Power dissipation	Ordering no.
5001-5003	Bookstyle IP 20	7.8 A	160%	120 Hz		175Z0825
5004-5006	Bookstyle IP 20	15.2 A	160%	120 Hz		175Z0826
5001-5006	Compact IP 20	15.2 A	160%	120 Hz		175Z0832
5008	Compact IP 00	25 A	160%	60 Hz	85 W	175Z4600
5008	Compact IP 00	32 A	110%	60 Hz	90 W	175Z4601
5011	Compact IP 00	32 A	160%	60 Hz	90 W	175Z4601
5011	Compact IP 00	46 A	110%	60 Hz	110 W	175Z4602
5016	Compact IP 00	46 A	160%	60 Hz	110 W	175Z4602
5016	Compact IP 00	61 A	110%	60 Hz	170 W	175Z4603
5022	Compact IP 00	61 A	160%	60 Hz	170 W	175Z4603
5022	Compact IP 00	73 A	110%	60 Hz	250 W	175Z4604
5027	Compact IP 00	73 A	160%	60 Hz	250 W	175Z4604
5027	Compact IP 00	88 A	110%	60 Hz	320 W	175Z4605
5032	Compact IP 20	88 A	150 %	60 Hz		175Z4700
5032	Compact IP 20	115 A	110 %	60 Hz		175Z4702
5045	Compact IP 20	115 A	150 %	60 Hz		175Z4702
5045	Compact IP 20	143 A	110 %	60 Hz		175Z4702
5052	Compact IP 20	143 A	150 %	60 Hz		175Z4702
5052	Compact IP 20	170 A	110 %	60 Hz		175Z4703

NB!:
When using LC-filters, the switching frequency must be 4.5 kHz (see parameter 411 in the operating instruction).

Ordering:

Mains supply 3 x 380 - 500 V

LC filter for VLT type	LC filter enclosure	Rated current at 400/500 V	Max. torque at CT/VT	Max. Output frequency	Power dissipation	Ordering no.
5001-5005	Bookstyle IP 20	7.2 A / 6.3 A	160%	120 Hz		175Z0825
5006-5011	Bookstyle IP 20	16 A / 14.5 A	160%	120 Hz		175Z0826
5001-5011	Compact IP 20	16 A / 14.5 A	160%	120 Hz		175Z0832
5016	Compact IP 00	24 A / 21.7 A	160%	60 Hz	125 W	175Z4606
5016	Compact IP 00	32 A / 27.9 A	110%	60 Hz	130 W	175Z4607
5022	Compact IP 00	32 A / 27.9 A	160%	60 Hz	130 W	175Z4607
5022	Compact IP 00	37.5 A / 32 A	110%	60 Hz	140 W	175Z4608
5027	Compact IP 00	37.5 A / 32 A	160%	60 Hz	140 W	175Z4608
5027	Compact IP 00	44 A / 41.4 A	110%	60 Hz	170 W	175Z4609
5032	Compact IP 00	44 A / 41.4 A	160%	60 Hz	170 W	175Z4609
5032	Compact IP 00	61 A / 54 A	110%	60 Hz	250 W	175Z4610
5042	Compact IP 00	61 A / 54 A	160%	60 Hz	250 W	175Z4610
5042	Compact IP 00	73 A / 65 A	110%	60 Hz	360 W	175Z4611
5052	Compact IP 00	73 A / 65 A	160%	60 Hz	360 W	175Z4611
5052	Compact IP 00	90 A / 78 A	110%	60 Hz	450 W	175Z4612
5060	Compact IP 20	90 A / 80 A	150 %	60 Hz		175Z4700
5060	Compact IP 20	106 A / 106 A	110 %	60 Hz		175Z4701
5075	Compact IP 20	106 A / 106 A	150 %	60 Hz		175Z4701
5075	Compact IP 20	147 A / 130 A	110 %	60 Hz		175Z4702
5100	Compact IP 20	147 A / 130 A	150 %	60 Hz		175Z4702
5100	Compact IP 20	177 A / 160 A	110 %	60 Hz		175Z4703
5125	Compact IP 20	177 A / 160 A	150 %	60 Hz		175Z4703
5125	Compact IP 20	212 A / 190 A	110 %	60 Hz		175Z4704
5150	Compact IP 20	212 A / 190 A	150 %	60 Hz		175Z4704
5150	Compact IP 20	260 A / 240 A	110 %	60 Hz		175Z4705
5200	Compact IP 20	260 A / 240 A	150 %	60 Hz		175Z4705
5200	Compact IP 20	315 A / 302 A	110 %	60 Hz		175Z4706
5250	Compact IP 20	315 A / 302 A	150 %	60 Hz		175Z4706
5250	Compact IP 20	368 A / 361 A	110 %	60 Hz		175Z4707
5300	Compact IP 20	395 A / 361 A	150 %	60 Hz		175Z4707

Ordering:

■ Ordering numbers, Brake resistors

VLT 5001 - 5052 / 200 - 240 V

	10% duty cycle			40% duty cycle		
VLT	Resistance [ohm]	Power [kW]	Code No.	Resistance [ohm]	Power [kW]	Code No.
5001	145	0.065	175U0820	145	0.260	175U0920
5002	90	0.095	175U0821	90	0.430	175U0921
5003	65	0.250	175U0822	65	0.80	175U0922
5004	50	0.285	175U0823	50	1.00	175U0923
5005	35	0.430	175U0824	35	1.35	175U0924
5006	25	0.8	175U0825	25	3.00	175U0925
5008	20	1.0	175U0826	20	3.50	175U0926
5011	15	1.8	175U0827	15	5.00	175U0927
5016	10	2.8	175U0828	10	9.0	175U0928
5022	7	4.0	175U0829	7	10.0	175U0929
5027	6	4.8	175U0830	6	12.7	175U0930
5032	4.7	6	175U0954	4.7	NA*	NA*
5042	3.3	8	175U0955	3.3	NA*	NA*
5052	2.7	10	175U0956	2.7	NA*	NA*

VLT 5001 - 5052 / 380 - 500 V

	10% duty cycle			40% duty cycle		
VLT	Resistance [ohm]	Power [kW]	Code No.	Resistance [ohm]	Power [kW]	Code No.
5001	620	0.065	175U0840	620	0.260	175U0940
5002	425	0.095	175U0841	425	0.430	175U0941
5003	310	0.250	175U0842	310	0.80	175U0942
5004	210	0.285	175U0843	210	1.35	175U0943
5005	150	0.430	175U0844	150	2.0	175U0944
5006	110	0.60	175U0845	110	2.4	175U0945
5008	80	0.85	175U0846	80	3.0	175U0946
5011	56	1.0	175U0847	56	4.5	175U0947
5016	40	1.8	175U0848	40	5.0	175U0948
5022	30	2.8	175U0849	30	9.3	175U0949
5027	25	3.5	175U0850	25	12.7	175U0950
5032	20	4.0	175U0851	20	13.0	175U0951
5042	15	4.8	175U0852	15	15.6	175U0952
5052	12	5.5	175U0853	12	19.0	175U0953
5060	7.8	12	175U0957	7.8	NA*	NA*
5075	5.7	14	175U0958	5.7	NA*	NA*
5100	4.7	18	175U0959	4.7	NA*	NA*
5125	3.8	22	175U0960	3.8	NA*	NA*
5150	3.2	27	175U0961	3.2	NA*	NA*
5200	2.6	32	175U0962	2.6	NA*	NA*
5250	2.1	39	175U0963	2.1	NA*	NA*

*= Not available.

Ordering:

■ Type code ordering number system

Using the ordering number system, it is possible to design a VLT 5000 Series frequency converter. VLT 5000 Series with integral options can only be ordered if Danfoss receives an ordering number string. In addition, the ordering number system can easily be used for ordering basic units.

■ Type code ordering number string

On the basis of your order, the VLT frequency converter is given an ordering number that can be seen from the nameplate on the unit. The number may look as follows:

VLT-5008-P-T5-B20-EB-R3-DL-F10-A10

This means that the frequency converter ordered is a VLT 5008 for three-phase mains voltage of 380-500 V (T5) in Bookstyle enclosure IP 20 (B20). The hardware variant is an extended unit with brake chopper (EB), with integral RFI filter, classes A & B (R3). The frequency converter features a control unit (DL) with a PROFIBUS option card (F10) and a synchronising and positioning option card (A10). Character no. 8 (P) indicates the application range of the unit - for VLT 5000 Series: P = process.

Bookstyle IP 20 at 160% CT/VT

	Mains voltage, rated:	
Motor power	240 V	380-500 V
0.75 kW	VLT 5001	VLT 5001
1.1 kW	VLT 5002	VLT 5002
1.5 kW	VLT 5003	VLT 5003
2.2 kW	VLT 5004	VLT 5004
3.0 kW	VLT 5005	VLT 5005
3.7 kW	VLT 5006	
4.0 kW		VLT 5006
5.5 kW		VLT 5008
7.5 kW		VLT 5011

Compact at 160% CT/VT

	Mains voltage, rated:	
Motor power	240 V	380-500 V
0.75 kW	VLT 5001	VLT 5001
1.1 kW	VLT 5002	VLT 5002
1.5 kW	VLT 5003	VLT 5003
2.2 kW	VLT 5004	VLT 5004
3.0 kW	VLT 5005	VLT 5005
3.7 kW	VLT 5006	
4.0 kW		VLT 5006
5.5 kW	VLT 5008	VLT 5008
7.5 kW	VLT 5011	VLT 5011
11 kW	VLT 5016	VLT 5016
15 kW	VLT 5022	VLT 5022
18.5 kW	VLT 5027	VLT 5027
22 kW	VLT 5032	VLT 5032
30 kW	VLT 5042	VLT 5042
37 kW	VLT 5052	VLT 5052

Compact units in the range of 0.75-37 kW come with enclosure IP 20, IP 54 or NEMA 1.

Compact at 150% CT/VT

	Mains voltage, rated:	
Motor power	400 V [1]	500 V [1]
45 kW	VLT 5060	
55 kW	VLT 5075	VLT 5060
75 kW	VLT 5100	VLT 5075
90 kW	VLT 5125	VLT 5100
110 kW	VLT 5150	VLT 5125
132 kW	VLT 5200	VLT 5150
160 kW	VLT 5250	VLT 5200
200 kW	VLT 5300	VLT 5250
250 kW	VLT 5350	VLT 5300
300 kW	VLT 5400	VLT 5350
355 kW	VLT 5500	VLT 5400
400 kW		VLT 5500

Compact units in the range of 45-400 kW come with enclosure IP 00, IP 20 or IP 54.

[1] The max. output depends on the mains voltage connected to the unit.

Hardware variants

All units in the programme are available in the following hardware variants:

ST: Standard unit w/ or w/o control unit.

SB: Standard unit w/ or w/o control unit and integral brake chopper.

EB: Extended unit w/ or w/o control unit, integral brake chopper, connection of external 24 V DC supply for back-up of control PCB, connection to DC intermediate circuit for load-sharing, as well as quick discharging of DC intermediate circuit.

RFI filter

Bookstyle units always come with an integral RFI filter that complies with EN 55011-1B with 20 m screened motor cable and EN 55011-1A with 150 m screened motor cable.

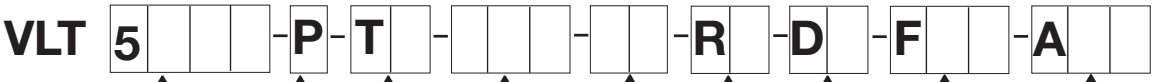
Compact units for mains voltage of 240 V and a motor power of up to and including 3.7 kW (VLT 5006) and Compact units for a mains voltage of 380-500 V and a motor power of up to 7.5 kW (VLT 5011) are always supplied *with* an integral class A & B filter.

Compact units for higher motor power than these (3.7 and 7.5 kW, respectively) can be ordered either with or without an RFI filter.

Control unit (keypad and display)

All types of units in the programme, except for IP 54 units, can be ordered either with or without the control unit. IP 54 units always come *with* a control unit.

■ Ordering form VLT 5000 Series - Typecode



Power sizes
e.g. 5008

5001	160%	0.75 kW
5002	160%	1.1 kW
5003	160%	1.5 kW
5004	160%	2.2 kW
5005	160%	3.0 kW
5006	160%	3.7 kW
5008	110/160%	7.5/5.5 kW
5011	110/160%	11/7.5 kW
5016	110/160%	15/11 kW
5022	110/160%	18.5/15 kW
5027	110/160%	22/18.5 kW
5032	110/160%	30/22 kW
5042	110/160%	37/30 kW
5052	110/160%	45/37 kW

5001	160%	0.75 kW
5002	160%	1.1 kW
5003	160%	1.5 kW
5004	160%	2.2 kW
5005	160%	3.0 kW
5006	160%	3.7 kW
5008	160%	5.5 kW
5011	160%	7.5 kW
5016	110/160%	15/11 kW
5022	110/160%	18.5/15 kW
5027	110/160%	22/18.5 kW
5032	110/160%	30/22 kW
5042	110/160%	37/30 kW
5052	110/160%	45/37 kW
5060	110/150%	55/45 kW
5075	110/150%	75/55 kW
5100	110/150%	90/75 kW
5125	110/150%	110/90 kW
5150	110/150%	132/110 kW
5200	110/150%	160/132 kW
5250	110/150%	200/160 kW

Application
Process **P**

Mains voltage
3 x 200 - 240 V **T 2**
3 x 380 - 500 V **T 5**

Enclosure
Bookstyle IP 20 **B 2 0**
5001-5006 / 200-240 V
5001-5011 / 380-500 V

IP 00 **C 0 0**
5032-5052 / 200-240 V
5060-5250 / 380-500 V

IP 20 **C 2 0**
5001-5052 / 200-240 V
5001-5250 / 380-500 V

IP 54 **C 5 4**
5001-5052 / 200-240 V
5001-5250 / 380-500 V

Hardware variant
Standard **S T**
Standard with brake **S B**
Extended with brake, loadsharing and external 24 V DC. **E B**

RFI-filter
Available w/o filter in the ranges **R 0**
5008-5052 / 200-240 V
5016-5250 / 380-500 V

With integral 1A-filter, see p. 94 **R 1**
With integral 1A +1B-filter, see p. 94 **R 3**

Control unit (LCP)
W/o LCP (not an option with IP 54) **D 0**
W/ LCP **D L**

Fieldbus-optionscard
No option **F 0 0**
Profibus DP/FMS **F 1 0**
Modbus Plus **F 2 0**
DeviceNet **F 3 0**
LonWorks Free Topology Process **F 4 0**
LonWorks 78 KBPS **F 4 1**
LonWorks 1,25 MBPS **F 4 2**

No. units of this type

Required delivery date

Ordered by:

Date:

Take a copy of the ordering forms. Fill them in and send or fax your order to the nearest office of the Danfoss sales organisation.

VLT® 6000 HVAC

The VLT® 6000 HVAC frequency converters improve the indoor climate by ensuring healthy and comfortable working conditions.

They do this by keeping temperatures and ventilation at the level you choose and by relieving you from the distraction of noise from fans running at full speed.

Technical data:

■ General technical data

Mains supply (L1, L2, L3):

Supply voltage 200-240 V units	3 x 200/208/220/230/240 V ±10%
Supply voltage 380-460 V units	3 x 380/400/415/440/460 V ±10%
Supply frequency	50/60 Hz +/- 1%
Max. imbalance of supply voltage:	
VLT 6002 - 6011 / 380 - 460 V and VLT 6002 - 6005 / 200 - 240 V	±2.0% of rated supply voltage
VLT 6016 - 6062 / 380 - 460 V and VLT 6006 - 6032 / 200 - 240 V	±1.5% of rated supply voltage
VLT 6075 - 6275 / 380 - 460 V and VLT 6042 - 6062 / 200 - 240 V	±3.0% of rated supply voltage
Power factor / cos. φ	0.90/1.0 at rated load
No. of switches on supply input L1, L2, L3	approx. 1 time/min.
Max. short-circuit current	100.000 A

VLT output data (U, V, W):

Output voltage	0-100% of supply voltage
Output frequency	0 - 120 Hz, 0 - 1000 Hz
Rated motor voltage, 200-240 V units	200/208/220/230/240 V
Rated motor voltage, 380-460 V units	380/400/415/440/460/500 V
Rated motor frequency	50/60 Hz
Switching on output	Unlimited
Ramp times	1- 3600 sec.

Torque characteristics:

Starting torque	110% for 1 min.
Starting torque (parameter 110 *High break-away torque*)	Max. torque: 160% for 0.5 sec.
Acceleration torque	100%
Overload torque	110%

Control card, digital inputs:

Number of programmable digital inputs	8
Terminal nos.	16, 17, 18, 19, 27, 29, 32, 33
Voltage level	0-24 V DC (PNP positive logics)
Voltage level, logical ´0´	< 5 V DC
Voltage level, logical ´1´	> 10 V DC
Maximum voltage on input	28 V DC
Input resistance, R_i	approx. 2 kΩ
Scanning time per input	3 msec.

Reliable galvanic isolation: All digital inputs are galvanically isolated from the supply voltage (PELV). In addition, the digital inputs can be isolated from the other terminals on the control card by connecting an external 24 V DC supply and opening switch 4.

Control card, analogue inputs:

No. of programmable analogue voltage inputs/thermistor inputs	2
Terminal nos.	53, 54
Voltage level	0 - 10 V DC (scalable)
Input resistance, R_i	approx. 10 kΩ
No. of programmable analogue current inputs	1
Terminal no. ground	55
Current range	0/4 - 20 mA (scalable)
Input resistance, R_i	approx. 200 Ω
Resolution	10 bit + sign
Accuracy on input	Max. error 1% of full scale
Scanning time per input	3 msec.

Reliable galvanic isolation: All analogue inputs are galvanically isolated from the supply voltage (PELV) and other high-voltage terminals.

Technical data:

■ General technical data

Control card, pulse input:

No. of programmable pulse inputs	3
Terminal nos.	17, 29, 33
Max. frequency on terminal 17	5 kHz
Max. frequency on terminals 29, 33	20 kHz (PNP open collector)
Max. frequency on terminals 29, 33	65 kHz (Push-pull)
Voltage level	0-24 V DC (PNP positive logics)
Voltage level, logic '0'	< 5 V DC
Voltage level, logic '1'	> 10 V DC
Maximum voltage on input	28 V DC
Input resistance, R_i	approx. 2 kΩ
Scanning time per input	3 msec.
Resolution	10 bit + sign
Accuracy (100-1 kHz), terminals 17, 29, 33	Max. error: 0.5% of full scale
Accuracy (1-5 kHz), terminal 17	Max. error: 0.1% of full scale
Accuracy (1-65 kHz), terminals 29, 33	Max. error: 0.1% of full scale

Reliable galvanic isolation: All pulse inputs are galvanically isolated from the supply voltage (PELV). In addition, pulse inputs can be isolated from the other terminals on the control card by connecting an external 24 V DC supply and opening switch 4.

Control card, digital/pulse and analogue outputs:

No. of programmable digital and analogue outputs	2
Terminal nos.	42, 45
Voltage level at digital/pulse output	0 - 24 V DC
Minimum load to ground (terminal 39) at digital/pulse output	600 Ω
Frequency ranges (digital output used as pulse output)	0-32 kHz
Current range at analogue output	0/4 - 20 mA
Maximum load to ground (terminal 39) at analogue output	500 Ω
Accuracy of analogue output	Max. error: 1.5% of full scale
Resolution on analogue output.	8 bit

Reliable galvanic isolation: All digital and analogue outputs are galvanically isolated from the supply voltage (PELV) and other high-voltage terminals.

Control card, 24 V DC supply:

Terminal nos.	12, 13
Max. load	200 mA
Terminal nos. ground	20, 39

Reliable galvanic isolation: The 24 V DC supply is galvanically isolated from the supply voltage (PELV), but has the same potential as the analogue outputs.

Control card, RS 485 serial communication:

Terminal nos.	68 (TX+, RX+), 69 (TX-, RX-)

Reliable galvanic isolation: Full galvanic isolation (PELV).

Relay outputs:

No. of programmable relay outputs	2
Terminal nos., control card	4-5 (make)
Max. terminal load on 4-5, control card	50 V AC, 1 A, 60 VA, 75 V DC, 1 A, 30 W
Max. terminal load on 4-5, control card for UL/cUL applications	30 V AC, 1 A / 42.5 V DC, 1A
Terminal nos., power card and relay card	1-3 (break), 1-2 (make)
Max. terminal load on 1-3, 1-2, power card and relay card	240 V AC, 2 A, 60 VA
Max. terminal load on 1-3, 1-2, power card	50 V DC, 2 A

Technical data:

■ General technical data

Cable lengths and cross-sections:

Max. motor cable length, screened cable ..... 150 m
Max. motor cable length, unscreened cable ..... 300 m
Max. motor cable length, screened cable VLT 6011 380-460 V ..... 100 m
Max. DC-bus cable length, screened cable ..... 25 m from frequency converter to DC bar.
Max. cable cross-section to motor, see next section
Max. cross-section for control cables ..... 1.5 mm^2/16 AWG
Max. cross-section for serial communication ..... 1.5 mm^2/16 AWG

Control characteristics:

Frequency range ..... 0 - 1000 Hz
Resolution on output frequency ..... ±0.003 Hz
System response time ..... 3 msec.
Speed, control range (open loop) ..... 1:100 of synchro. speed
Speed, control range (closed loop) ..... 1:1000 of synchro. speed
Speed, accuracy (open loop) ..... < 1500 rpm: max. error ± 7.5 rpm
> 1500 rpm: max. error of 0.5% of actual speed
Process, accuracy (closed loop) ..... < 1500 rpm: max. error ± 1.5 rpm
> 1500 rpm: max. error of 0.1% of actual speed
All control characteristics are based on a 4-pole asynchronous motor

Accuracy of Display readout (parameters 009-012 *Display readout)*:

Motor current [5], 0 - 140% load ..... Max. error: ±2.0% of rated output current
Power kW [6], Power HP [7], 0 - 90% load ..... Max. error: ±5.0% of rated output power

Externals:

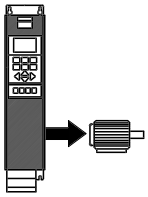
Enclosure ..... IP 00, IP 20, IP 54
Vibration test ..... 0.7 g RMS 18-1000 Hz random. 3 directions for 2 hours (IEC 68-2-34/35/36)
Max. relative humidity ..... 93 % +2 %, -3 % (IEC 68-2-3) for storage/transport
Max. relative humidity ..... 95% non condensing (IEC 721-3-3; class 3K3) for operation
Ambient temperature .....
VLT 6002-6005 200-240V, 6002-6011 380-460V, Bookstyle, IP20 ..... Max. 45°C (24-hour average max. 40°C)
VLT 6006-6062 200-240V, 6016-6275 380-460V, IP00, IP20 ..... Max. 40°C (24-hour average max. 35°C)
VLT 6002-6062 200-240V, 6002-6275 380-460V, IP54 ..... Max. 40°C (24-hour average max. 35°C)
Derating for high ambient temperature, see page 160 in the design guide.
Min. ambient temperature in full operation ..... 0°C
Min. ambient temperature at reduced performance ..... -10°C
Temperature during storage/transport ..... -25 - +65/70°C
Max. altitude above sea level ..... 1000 m
Derating for high air pressure, see page 160 in the design guide.
EMC standards applied,Emission ..... EN 50081-1/2, EN 61800-3, EN 55011, EN 55014
Immunity ..... EN 50082-2, EN 61000-4-2, IEC 1000-4-3, EN 61000-4-4
EN 61000-4-5, ENV 50204, EN 61000-4-6, VDE 0160/1990.12

VLT 6000 HVAC protection:

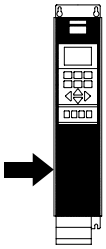
- Electronic motor thermal protection against overload.
- Temperature monitoring of heat-sink ensures that the VLT frequency converter cuts out if the temperature reaches 90°C for IP 00 and IP 20. For IP 54, the cut-out temperature is 80°C. An overtemperature can only be reset when the temperature of the heat-sink has fallen below 60°C.
- The VLT frequency converter is protected against short-circuiting on motor terminals U, V, W.
- The VLT frequency converter is protected against earth fault on motor terminals U, V, W.
- Monitoring of the intermediate circuit voltage ensures that the VLT frequency converter cuts out if the intermediate circuit voltage gets too high or too low.
- If a motor phase is missing, the VLT frequency converter cuts out.
- If there is a mains fault, the VLT frequency converter is able to carry out a controlled deramping.
- If a mains phase is missing, the VLT frequency converter will cut out when a load is placed on the motor.

Technical data:

■ Mains supply 3 x 200 - 240 V

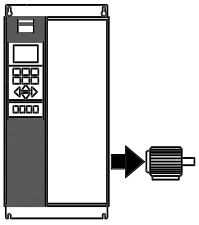


According to international requirements	VLT type	6002	6003	6004	6005	6006	6008	6011
Output current [4]	$I_{VLT,N}$ [A]	6.6	7.5	10.6	12.5	16.7	24.2	30.8
	$I_{VLT,MAX}$ (60 s) [A]	7.3	8.3	11.7	13.8	18.4	26.6	33.9
Output (240 V)	$S_{VLT,N}$ [kVA]	2.7	3.1	4.4	5.2	6.9	10.1	12.8
Typical shaft output	$P_{VLT,N}$ [kW]	1.1	1.5	2.2	3.0	4.0	5.5	7.5
Typical shaft output	$P_{VLT,N}$ [HP]	1.5	2	3	4	5	7.5	10
Max. cable cross-section to motor and DC-bus	[mm²/AWG]	4/10	4/10	4/10	4/10	4/10	16/6	16/6

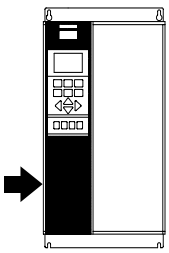


Max. input current (200 V) (RMS)	$I_{L,N}$ [A]	6.0	7.0	10.0	12.0	16.0	23.0	30.0
Max. cable cross-section power [mm²]/[AWG] [2]		4/10	4/10	4/10	4/10	4/10	16/6	16/6
Max. pre-fuses	[A]/UL [1] [A]	16/10	16/15	25/20	25/25	35/30	50	60
Mains contactor	[Danfoss type]	Cl 6	Cl 9	Cl 12	Cl 12	Cl 6	Cl 9	Cl 16
	[AC value]	AC-3	AC-3	AC-3	AC-3	AC-1	AC-1	AC-1
Efficiency [3]		0.95						
Weight IP 20	[kg]	7	7	9	9	23	23	23
Weight IP 54	[kg]	11.5	11.5	13.5	13.5	35	35	38
Power loss at max. load. [W]	Total	76	95	126	172	194	426	545
Enclosure	VLT type	Bookstyle IP 20/Compact IP 20/IP 54 (Bookstyle IP 20 is available in power range VLT 6002-6005).						

■ Mains supply 3 x 200 - 240 V



According to international requirements	VLT type	6016	6022	6027	6032	6042	6052	6062
Output current	$I_{VLT,N}$ [A] (200-230 V)	46.2	59.4	74.8	88.0	115	143	170
	$I_{VLT,MAX}$ (60 s) [A] (200-230 V)	50.6	65.3	82.3	96.8	127	158	187
	$I_{VLT,N}$ [A] (240 V)	46.0	59.4	74.8	88.0	104	130	154
	$I_{VLT,MAX}$ (60 s) [A] (240 V)	50.6	65.3	82.3	96.8	115	143	170
Output	$S_{VLT,N}$ [kVA] (240 V)	19.1	24.7	31.1	36.6	41.0	52.0	61.0
Max. cable cross-section to motor and DC-bus [mm²/AWG]	copper	16/6	35/2	35/2	50/0	70/1/0	95/3/0	120/4/0
	aluminium	16/6	35/2	35/2	50/0	95/3/0[5]	90/250mcm[5]	120/300mcm[5]
Min. cable cross-section to motor and DC-bus	[mm²/AWG]	10/8	10/8	10/8	16/6	10/8	10/8	10/8

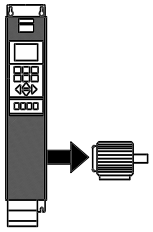


Max. input current (200 V) (RMS)	$I_{L,N}$ [A]	46.0	59.2	74.8	88.0	101.3	126.6	149.9
Max. cable, cross-section power [mm²/AWG]	copper	16/6	35/2	35/2	50/0	70/1/0	95/3/0	120/4/0
	aluminium	16/6	35/2	35/2	50/0	95/3/0[5]	90/250mcm[5]	120/300mcm[5]
Max. pre-fuses	[A]/UL [1] [A]	60	80	125	125	150	200	250
Mains contactor	[Danfoss type]	Cl 32	Cl 32	Cl 37	Cl 45	-	-	-
	[AC value]	AC-1	AC-1	AC-1	AC-1			
Efficiency [3]		0.95						
Weight IP 00	[kg]	-	-	-	-	90	90	90
Weight IP 20	[kg]	23	30	30	48	101	101	101
Weight IP 54	[kg]	38	49	50	55	104	104	104
Power loss at max. load:	[W]	545	783	1042	1243	1089	1361	1613
Enclosure		IP 20+NEMA 1 kit, IP 54/NEMA 12						

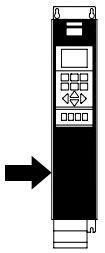
1. If UL/cUL is to be complied with, pre-fuses type Bussmann KTS-R or similar must be used. Pre-fuses type gG must be used for VLT 6002 - VLT 6032, 200/240 V and VLT 6002 - VLT 6062, 380/460 V. Pre-fuses type gR must be used for VLT 6042 - 6062, 200/240 V and VLT 6075 - VLT 6275, 380/460 V. The fuses must be placed to protect a circuit capable of supplying max. 100,000 amps rms (symmetrical), 500 V maximum.
2. American Wire Gauge.
3. Measured using 30 m screened motor cable at rated load and rated frequency.
4. Min. cable cross-section is the smallest cable cross-section allowed to be fitted on the terminals. Always comply with national and local regulations on min. cable cross-section

Technical data:

■ Technical data, mains supply 3 x 380 - 460 V

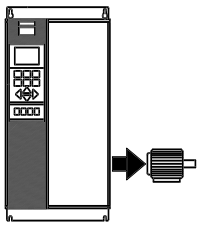


According to international requirements	VLT type	6002	6003	6004	6005	6006	6008	6011
Output current	$I_{VLT,N}$ [A] (380-415 V)	3.0	4.1	5.6	7.2	10.0	13.0	16.0
	$I_{VLT,MAX}$ (60 s) [A] (380-415 V)	3.3	4.5	6.2	7.9	11.0	14.3	17.6
	$I_{VLT,N}$ [A] (440-460 V)	3.0	3.4	4.8	6.3	8.2	11.0	14.0
	$I_{VLT,MAX}$ (60 s) [A] (440-460 V)	3.3	3.7	5.3	6.9	9.0	12.1	15.4
Output	$S_{VLT,N}$ [kVA] (400 V)	2.2	2.9	4.0	5.2	7.2	9.3	11.5
	$S_{VLT,N}$ [kVA] (460 V)	2.4	2.7	3.8	5.0	6.5	8.8	11.2
Typical shaft output	$P_{VLT,N}$ [kW]	1.1	1.5	2.2	3.0	4.0	5.5	7.5
Typical shaft output	$P_{VLT,N}$ [HP]	1.5	2	3	-	5	7.5	10
Max. cable cross-section to motor	[mm²/AWG]	4/10	4/10	4/10	4/10	4/10	4/10	4/10

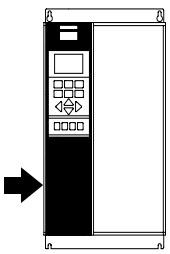


Max. input current	$I_{L,N}$ [A] (380 V)	2.8	3.8	5.3	7.0	9.1	12.2	15.0
(RMS)	$I_{L,N}$ [A] (460 V)	2.5	3.4	4.8	6.0	8.3	10.6	14.0
Max. cable cross-section, power	[mm²]/[AWG] [2)]	4/10	4/10	4/10	4/10	4/10	4/10	4/10
Max. pre-fuses	[A]/UL [1)] [A]	16/6	16/10	16/10	16/15	25/20	25/25	35/30
Mains contactor	[Danfoss type]	CI 6	CI 6	CI 6	CI 9	CI 12	CI 5	CI 6
	[AC value]	AC-3	AC-3	AC-3	AC-3	AC-3	AC-1	AC-1
Efficiency [3)]		0.96						
Weight IP 20	[kg]	8	8	8,5	8,5	10,5	10,5	10,5
Weight IP 54	[kg]	11.5	11.5	12	12	14	14	14
Power loss at max. load. [W]	Total	67	92	110	139	198	250	295
Enclosure	VLT type	Bookstyle IP 20/Compact IP 20/IP 54						
		(Bookstyle IP 20 is available in the VLT 6002-6011 power range)						

■ Mains supply 3 x 380 - 460 V



According to international requirements	VLT type	6016	6022	6027	6032	6042	6052	6062
Output current	$I_{VLT,N}$ [A] (380-415 V)	24.0	32.0	37.5	44.0	61.0	73.0	90.0
	$I_{VLT,MAX}$ (60 s) [A] (380-415 V)	26.4	35.2	41.3	48.4	67.1	80.3	99.0
	$I_{VLT,N}$ [A] (440-460 V)	21.0	27.0	34.0	40.0	52.0	65.0	77.0
	$I_{VLT,MAX}$ (60 s) [A] (440-460 V)	23.1	29.7	37.4	44.0	57.2	71.5	84.7
Output	$S_{VLT,N}$ [kVA] (400 V)	17.3	23.0	27.0	31.6	43.8	52.5	64.7
	$S_{VLT,N}$ [kVA] (460 V)	16.7	21.5	27.1	31.9	41.4	51.8	61.3
Typical shaft output	$P_{VLT,N}$ [kW]	11	15	18.5	22	30	37	45
Typical shaft output	$P_{VLT,N}$ [HP]	15	20	25	30	40	50	60
Max. cable cross-section to motor and DC-bus	[mm²/AWG]	16/6	16/6	16/6	16/6	35/2	35/2	50/0
Min. cable cross-section to motor and DC-bus [4)]	[mm²/AWG]	10/8	10/8	10/8	10/8	10/8	10/8	16/6

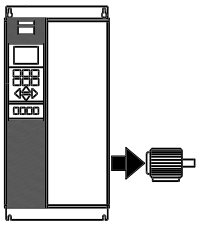


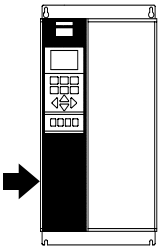
Max. input current	$I_{L,N}$ [A] (380 V)	24.0	32.0	37.5	44.0	60.0	72.0	89.0
(RMS)	$I_{L,N}$ [A] (460 V)	21.0	27.6	34.0	41.0	53.0	64.0	77.0
Max. cable cross-section, power	[mm²]/[AWG]	16/6	16/6	16/6	16/6	35/2	35/2	50/0
Max. pre-fuses	[A]/UL [1)] [A]	63/40	63/40	63/50	63/60	80/80	100/100	125/125
Efficiency at rated frequency		0.96						
Weight IP 20	[kg]	23	23	23	30	30	48	48
Weight IP 54	[kg]	48	48	48	51	61	67	70
Power loss at max. load.	[W]	419	559	655	768	1065	1275	1571
Enclosure		IP 20/IP 54						

1. If UL/cUL is to be complied with, pre-fuses type Bussmann KTS-R or similar must be used. Pre-fuses type gG must be used for VLT 6002 - VLT 6032, 200/240 V and VLT 6002 - VLT 6062, 380/460 V. Pre-fuses type gR must be used for VLT 6042 - 6062, 200/240 V and VLT 6075 - VLT 6275, 380/460 V. The fuses must be placed to protect a circuit capable of supplying max. 100,000 amps rms (symmetrical), 500 V maximum.
2. American Wire Gauge.
3. Measured using 30 m screened motor cable at rated load and rated frequency.
4. Min. cable cross-section is the smallest cable cross-section allowed to be fitted on the terminals. Always comply with national and local regulations on min. cable cross-section.

Technical data:

■ Technical data, mains supply 3 x 380 - 460 V





According to international requirements	VLT type	6075	6100	6125	6150	6175	6225	6275
Output current	$I_{VLT,N}$ [A] (380-415 V)	106	147	177	212	260	315	368
	$I_{VLT, MAX}$ (60 s) [A] (380-415 V)	117	162	195	233	286	347	405
	$I_{VLT,N}$ [A] (440-460 V)	106	130	160	190	240	302	361
	$I_{VLT, MAX}$ (60 s) [A] (440-460 V)	117	143	176	209	264	332	397
Output	$S_{VLT,N}$ [kVA] (400 V)	73	102	123	147	180	218	255
	$S_{VLT,N}$ [kVA] (460 V)	84,5	104	127	151	191	241	288
Typical shaft output (380-415 V)	$P_{VLT,N}$ [kW]	55	75	90	110	132	160	200
Typical shaft output (440-460 V)	$P_{VLT, N}$ [HP]	75	100	125	150	200	250	300
Max. cross-section of copper cable to motor and DC-bus (380-415 V)	[mm²][5]	70	95	120	2x70	2x70	2x95	2x120
Max. cross-section of copper cable to motor and DC-bus (440-460 V)	[mm²][5]	70	70	95	2x70	2x70	2x95	2x120
Max. cross-section of aluminium cable to motor and DC-bus (380-415 V)	[mm²][5]	95	90	120	2x70	2x95	2x120	2x150
Max. cross-section of aluminium cable to motor and DC-bus (440-460 V)	[mm²][5]	70	120	150	2x70	2x120	2x120	2x150
Max. cross-section of copper cable to motor and DC-bus (380-415 V)	[AWG][5]	1/0	3/0	4/0	2x1/0	2x2/0	2x3/0	2x250mcm
Max. cross-section of copper cable to motor and DC-bus (440-460 V)	[AWG][5]	1/0	2/0	3/0	2x1/0	2x1/0	2x3/0	2x4/0
Max. cross-section of aluminium cable to motor and DC-bus (380-415 V)	[AWG][5]	3/0	250mcm	300mcm	2x2/0	2x4/0	2x250mcm	2x350mcm
Max. cross-section of aluminium cable to motor and DC-bus (440-460 V)	[AWG][5]	3/0	4/0	250mcm	2x2/0	2x3/0	2x250mcm	2x300mcm
Max. cross-section of cable to motor, and DC-bus [4]	[mm²/AWG][5]	10/8	10/8	10/8	10/8	10/8	16/6	16/6
Max. input current (RMS)	$I_{L,N}$ [A] (400 V)	103	145	174	206	256	317	366
	$I_{L,N}$ [A] (460 V)	103	128	158	185	236	304	356
Max. cross-section of copper cable to power (380-415 V)	[mm²][5]	70	95	120	2x70	2x70	2x95	2x120
Max. cross-section of copper cable to power (440-460 V)	[mm²][5]	70	70	95	2x70	2x70	2x95	2x120
Max. cross-section of aluminium cable to power (380-415 V)	[mm²][5]	95	90	120	2x70	2x95	2x120	2x150
Max. cross-section of aluminium cable to power (440-460 V)	[mm²][5]	70	120	150	2x70	2x120	2x120	2x150
Max. cross-section of copper cable to power (380-415 V)	[AWG][5]	1/0	3/0	4/0	2x1/0	2x2/0	2x3/0	2x250mcm
Max. cross-section of copper cable to power (440-460 V)	[AWG][5]	1/0	2/0	3/0	2x1/0	2x1/0	2x3/0	2x4/0
Max. cross-section of aluminium cable to power (380-415V)	[AWG][5]	3/0	250mcm	300mcm	2x2/0	2x4/0	2x250mcm	2x350mcm
Max. cross-section of aluminium cable to power (440-460 V)	[AWG][5]	3/0	4/0	250mcm	2x2/0	2x3/0	2x250mcm	2x300mcm
Min. cable cross-section to motor, and DC-bus [4]	[mm²/AWG][5]	10/8	10/8	10/8	10/8	10/8	16/6	
Max. pre-fuses	[A]/UL [1] [A]	150/150	250/220	250/250	300/300	350/350	450/400	500/500
Integral pre-fuses	[A]/UL [1] [A]	15/15	15/15	15/15	30/30	30/30	30/30	30/30
Pre-fuses SMPS	[A]/UL [1] [A]	5.0/5.0						
Weight IP 00	[kg]	109	109	109	146	146	146	146
Weight IP 20	[kg]	121	121	121	161	161	161	161
Weight IP 54	[kg]	124	124	124	177	177	177	177
Efficiency at rated frequency		0.96-0.97						
Power loss at max. load	[W]	1430	1970	2380	2860	3810	4770	5720
Enclosure		IP 00 / IP 20/ IP 54						

1. If UL/cUL is to be complied with, pre-fuses type Bussmann KTN-R, FWH and FWX or similar must be used. Pre-fuses type gG must be used for VLT 6002 - VLT 6032, 200/240 V and VLT 6002 - VLT 6062, 380/460 V. Pre-fuses type gR must be used for VLT 6042 - 6062, 200/240 V and VLT 6075 - VLT 6275, 380/460 V. Fuses must be designed for protection in a circuit capable of supplying a maximum of 100,000 Amps ms (symmetrical), 500 V maximum.
2. American Wire Gauge.
3. Measured using 30 m screened motor cable at rated load and rated frequency.
4. Current ratings fulfill UL requirements for 208-240 V
5. Connection stud 1 x M8 / 2 x M8.

Dimensions:

All measurements in mm.

VLT type	A	B	C	a	b	aa/bb	Type
Bookstyle IP 20 200-240 V							
6002 - 6003	395	90	260	384	70	100	A
6004 - 6005	395	130	260	384	70	100	A
Bookstyle IP 20 380-460 V							
6002 - 6005	395	90	260	384	70	100	A
6006 - 6011	395	130	260	384	70	100	A
IP 00 200-240 V							
6042 - 6062	800	370	335	780	270	225	B
IP 00 380-460 V							
6075 - 6125	800	370	335	780	270	225	B
6150 - 6275	1400	420	400	1380	350	225	B
IP 20 200-240 V							
6002 - 6003	395	220	160	384	200	100	C
6004 - 6005	395	220	200	384	200	100	C
6006 - 6011	560	242	260	540	200	200	D
6016 - 6022	700	242	260	680	200	200	D
6027 - 6032	800	308	296	780	270	200	D
6042 - 6062	954	370	335	780	270	225	E
IP 20 380-460 V							
6002 - 6005	395	220	160	384	200	100	C
6006 - 6011	395	220	200	384	200	100	C
6016 - 6027	560	242	260	540	200	200	D
6032 - 6042	700	242	260	680	200	200	D
6052 - 6062	800	308	296	780	270	200	D
6075 - 6125	954	370	335	780	270	225	E
6150 - 6275	1554	420	400	1380	350	225	E

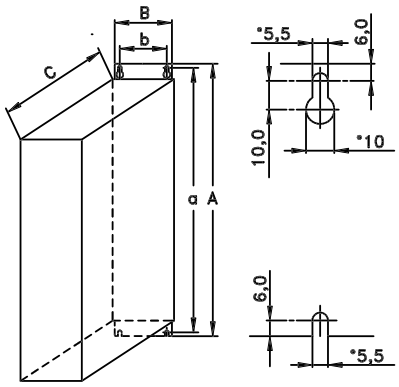
VLT type	A	B	C	D	a	b	a/b	Type
IP 54 200-240 V								
6002 - 6003	460	282	195	85	260	258	100	F
6004 - 6005	530	282	195	85	330	258	100	F
6006 - 6011	810	355	280	70	560	330	200	F
6016 - 6032	940	400	280	70	690	375	200	F
6042 - 6062	937	495	421	-	830	374	225	G
IP 54 380-460 V								
6002 - 6005	460	282	195	85	260	258	100	F
6006 - 6011	530	282	195	85	330	258	100	F
6016 - 6032	810	355	280	70	560	330	200	F
6042 - 6062	940	400	280	70	690	375	200	F
6075 - 6125	937	495	421	-	830	374	225	G
6150 - 6275	1572	495	425	-	1465	445	225	G

Option for IP 00 VLT 6075-6275	A1	B1	C1
IP 20 bottom cover			
6075 - 6125	175	370	335
6150 - 6275	175	420	400

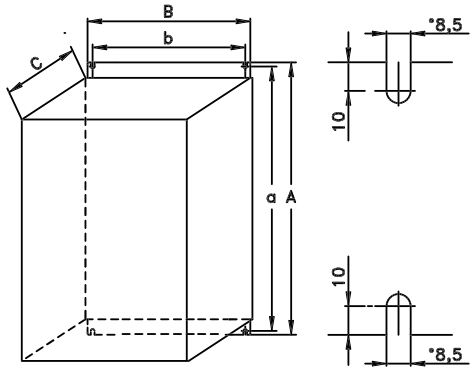
aa: Min. air above enclosure

ab: Min. air below enclosure

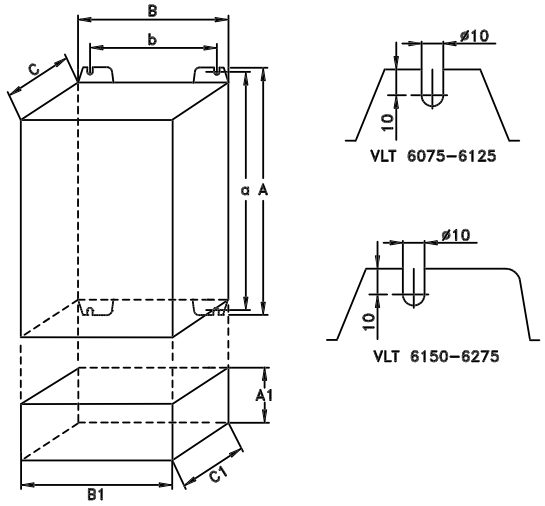
Dimensions:



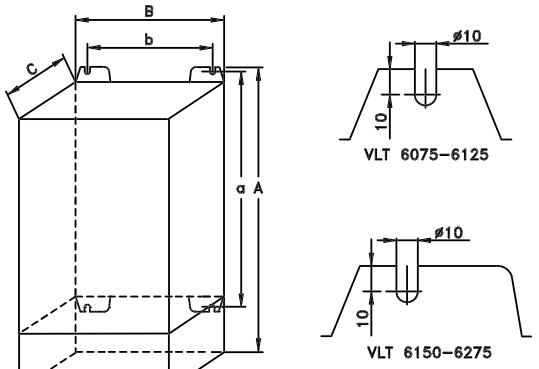
Type A, IP20



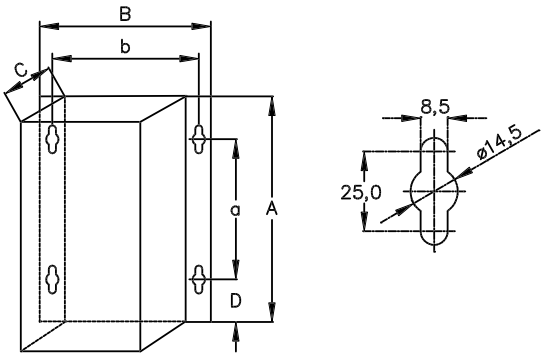
Type D, IP20



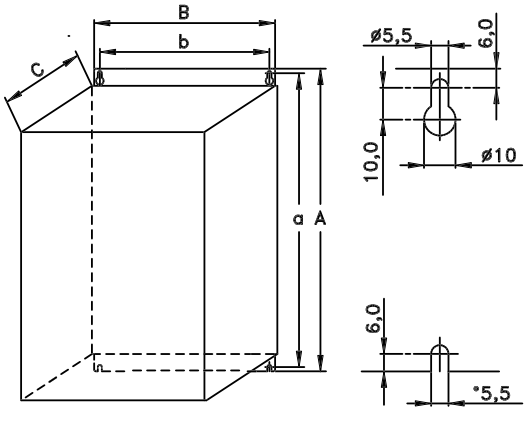
Type B, IP00
With option and enclosure IP20



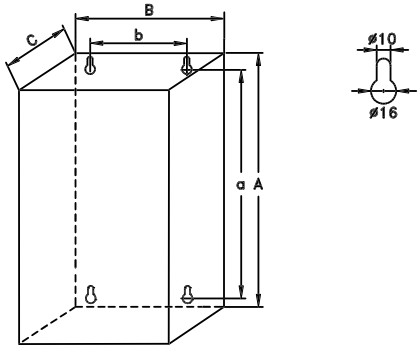
Type E, IP20



Type F, IP54



Type C, IP20



Type G, IP54

Ordering:

■ Ordering guide

This section makes it easier for you to specify and order a VLT 6000 HVAC.

■ Choice of frequency converter

The frequency converter should be chosen on the basis of the given motor current at maximum load on the system. The rated output current $I_{VLT,N}$ must be equal to or higher than the required motor current.

VLT 6000 HVAC is available for two mains voltage ranges: 200-240 V and 380-460 V.

■ Mains voltage

Choose mains voltage for 50(60 Hz:
- 200 - 240 V three-phase AC voltage
- 380 - 460 V three-phase AC voltage

Mains voltage 200 - 240 V

Typical shaft output $P_{VLT,N}$			Max continuous output current $I_{VLT,N}$	Max continuous output power at 240 V $S_{VLT,N}$
VLT type	[kW]	[HP]	[A]	[kVA]
6002	1.1	1.5	6.6	2.7
6003	1.5	2.0	7.5	3.1
6004	2.2	3.0	10.6	4.4
6005	3.0	4.0	12.5	5.2
6006	4.0	5.0	16.7	6.9
6008	5.5	7.5	24.2	10.1
6011	7.5	10	30.8	12.8
6016	11	15	46.2	19.1
6022	15	20	59.4	24.7
6027	18.5	25	74.8	31.1
6032	22	30	88.0	36.6
6042	30	40	115/104*	43.2
6052	37	50	143/130*	54.0
6062	45	60	170/154*	64.0

* The first figure is for a motor voltage of 200-230 V.
The next figure is for a motor voltage of 231-240 V.

Ordering:

Mains voltage 380 - 415 V

	Typical shaft output $P_{VLT.N}$		Max continuous output current $I_{VLT.N}$	Max continuous output power at 400 V $S_{VLT.N}$
VLT type	[kW]	[HP]	[A]	[kVA]
6002	1.1	1.5	3.0	2.2
6003	1.5	2.0	4.1	2.9
6004	2.2	3.0	5.6	4.0
6005	3.0	-	7.2	5.2
6006	4.0	5.0	10.0	7.2
6008	5.5	7.5	13.0	9.3
6011	7.5	10	16.0	11.5
6016	11	15	24.0	17.3
6022	15	20	32.0	23.0
6027	18.5	25	37.5	27.0
6032	22	30	44.0	31.6
6042	30	40	61.0	43.8
6052	37	50	73.0	52.5
6062	45	60	90.0	64.7
6075	55	75	106	73.0
6100	75	100	147	102
6125	90	125	177	123
6150	110	150	212	147
6175	132	200	260	180
6225	160	250	315	218
6275	200	300	368	255

Mains voltage 440 - 460 V

	Typical shaft output $P_{VLT.N}$		Max continuous output current $I_{VLT.N}$	Max continuous output power at 460 V $S_{VLT.N}$
VLT type	[kW]	[HP]	[A]	[kVA]
6002	1.1	1.5	3.0	2.4
6003	1.5	2.0	3.4	2.7
6004	2.2	3.0	4.8	3.8
6005	3.0	-	6.3	5.0
6006	4.0	5.0	8.2	6.5
6008	5.5	7.5	11.0	8.8
6011	7.5	10	14.0	11.2
6016	11	15	21.0	16.7
6022	15	20	27.0	21.5
6027	18.5	25	34.0	27.1
6032	22	30	40.0	31.9
6042	30	40	52.0	41.4
6052	37	50	65.0	51.8
6062	45	60	77.0	61.3
6075	55	75	106	84.5
6100	75	100	130	104
6125	90	125	160	127
6150	110	150	190	151
6175	132	200	240	191
6225	160	250	302	241
6275	200	300	361	288

Ordering:

■ Enclosure

VLT 6000 HVAC is available with the following enclosures:

- IP 00: 30 to 45 kW / 200-240 V
- IP 00: 55 to 200 kW / 380-460 V
- Bookstyle IP 20: 1.1 to 3.0 kW / 200-240 V
- Bookstyle IP 20: 1.1 to 7.5 kW / 380-460 V
- IP 20: 1.1 to 45 kW / 200-240 V
- IP 20: 1.1 to 200 kW / 380-460 V
- IP 54: 1.1 to 45 kW / 200-240 V
- IP 54: 1.1 to 200 kW / 380-460 V

IP 00: This enclosure is only available for the larger power sizes of the VLT 6000 HVAC series. It is recommended for installation in standard cabinets.

IP 20 Bookstyle: This enclosure is designed for cabinet installation. It takes up a minimum of space and can be fitted side-by-side without installation of extra cooling equipment.

IP 20: This enclosure is used as standard enclosure for VLT 6000 HVAC. It is ideal for cabinet installation in areas where a high degree of protection is required. This enclose also permits side-by-side installation.

IP 54: This enclosure can be fitted direct to the wall. Cabinets are not required. IP 54 units can also be installed side-by-side.

■ RFI filter

As standard, the VLT 6000 HVAC has an integral RFI filter up to and including 7.5 kW (3 kW 200 V).

These RFI filters comply with EMC standards EN 55011-1A, provided max. 150 m screened/armoured cable is used, and with EN 55011-1B, provided 50 m screened/armoured cable is used (Bookstyle max. 20 m screened/armoured).

Select a RFI filter for dampening of interference in accordance with EN 55011-1A and EN 55011-1B.

■ Harmonic filter

The harmonic currents do not directly affect the electricity consumption, but they do increase the heat losses in the installation (transformers, cables). That is why in systems with a rather high percentage of rectifier load it is important to keep the harmonic currents at a low level in order to avoid transformer overloads and high cable temperatures.

As standard, the VLT 6000 HVAC has coils in the intermediate circuit in order to ensure low harmonic currents. This typically reduces the input current I_{RMS} by 40 %.

■ Control unit (LCP)

The VLT 6000 HVAC is available with or without control unit (LCP); however, IP 54 units always come with the control unit.
This control unit makes up a complete interface for control and programming of the VLT 6000 HVAC. The control panel is detachable and may - as an alternative - be mounted up to 3 metres away from the VLT frequency converter, i.e. in a cabinet, by means of a fitting kit delivered with the unit.

Data information is given in a 4-line alpha-numerical display, which under normal operation is able to continuously show four operating data items and three operating modes. During programming, all the information required for quickly and efficiently setting up VLT frequency converter parameters will be shown.

As a supplement to the display, there are three indicator lamps for voltage (ON), warning (WARNING) and alarm (ALARM).
All VLT frequency converter parameter Setups can be changed directly via the control panel.

The following options are available:

- Control panel LCP (only for IP 20 units).
- LCP remote-mounting kit for remote control of IP 00 and IP 20 units.
- LCP remote-mounting kit for remote control of IP 54.
- 3 metre cable for LCP.

Ordering:

■ Fieldbus protocols

Danfoss VLT frequency converters are able to fulfil many different functions in an automated building management system. The VLT frequency converter can be integrated directly in an overall monitoring system.
This means that detailed process data can be transmitted via serial communication. The protocols listed below are based on a RS 485 bus system with a maximum transmission speed of 9600 bauds.

As standard, the following protocols are supported:
- Danfoss FC protocol
- Johnson's Control Metasys N2
- Landis & Staefa FLN

A frequency converter can be set and applied in all building management control systems.
Status messages, warnings and alarms provide valuable assistance in visualising and assessing processes.

■ Fieldbus options

The increasing need for information in building management systems makes it necessary to collect or visualise many different types of process data. Important process data can help the system technician in the day-by-day monitoring of the system, which means that a negative development - e.g. an increase in energy consumption - can be rectified in time.

The substantial amount of data in large buildings may generate a need for a higher transmission speed than 9600 baud. Danfoss VLT 6000 HVAC is available with LonWorks® or Profibus®, both of which have higher performance than standard integrated serial communication.

■ Profibus

Profibus is a fieldbus system with FMS and DP, which can be used for linking automation units, such as sensors and actuators, to the controls by means of a two-conductor cable.

Profibus **FMS** is used if major communication tasks are to be solved at cell and system level by means of large volumes of data.

Profibus **DP** is an extremely fast communication protocol, made specially for communication between the automation system and various units.

■ LON - Local Operating Network

LonWorks is an intelligent fieldbus system which improves the possibility of decentralising control, as communication is enabled between individual units in the same system (Peer-to-Peer).
This means that there is no need for a big main station for handling all the signals of the system (Master-Slave). Signals are sent direct to the unit that needs them via a common network medium. This makes communication much more flexible and the central building state control and monitoring system can be changed into a dedicated building state monitoring system whose task is to ensure that everything is running as planned. If the potential of LonWorks is fully utilised, sensors will also be connected to the bus, which means that a sensor signal can quickly be moved to another controller. If room dividers are mobile, this is a particularly useful feature.
Two feedback signals can be linked to the VLT 6000 HVAC by means of LonWorks, thereby enabling the internal PID regulator to regulate directly on the bus feedback.

Ordering:

■ Unpacking and ordering a VLT frequency converter

Are you are in doubt as to which VLT frequency converter you have received and which options it contains? Use the following table to find out. The table can also be used for ordering a VLT 6000 HVAC.

■ Type code ordering number string

On the basis of your order, the VLT frequency converter is given an ordering number that can be seen from the nameplate on the unit. The number may look as follows:

VLT-6008-H-T4-B20-R3-DL-F10-A10

This means that the frequency converter ordered is a VLT 6008 for three-phase mains voltage of 380-460 V (**T4**) in Bookstyle enclosure IP 20 (**B20**). The hardware variant is with integral RFI filter, classes A & B (**R3**). The frequency converter features a control unit (**DL**) with a PROFIBUS option card (**F10**). Character no. 8 (**H**) indicates the application range of the unit: **H** = HVAC.

Bookstyle IP 20

Motor power	Mains voltage, rated: 200-240 V	380-460 V
1.1 kW	VLT 6002	VLT 6002
1.5 kW	VLT 6003	VLT 6003
2.2 kW	VLT 6004	VLT 6004
3.0 kW	VLT 6005	VLT 6005
4.0 kW		VLT 6006
5.5 kW		VLT 6008
7.5 kW		VLT 6011

Motor power	Mains voltage, rated: 200-240 V	380-460 V
1.1 kW	VLT 6002	VLT 6002
1.5 kW	VLT 6003	VLT 6003
2.2 kW	VLT 6004	VLT 6004
3.0 kW	VLT 6005	VLT 6005
4.0 kW	VLT 6006	VLT 6006
5.5 kW	VLT 6008	VLT 6008
7.5 kW	VLT 6011	VLT 6011
11 kW	VLT 6016	VLT 6016
15 kW	VLT 6022	VLT 6022
18.5 kW	VLT 6027	VLT 6027
22 kW	VLT 6032	VLT 6032
30 kW	VLT 6042	VLT 6042
37 kW	VLT 6052	VLT 6052
45 kW	VLT 6062	VLT 6062

Units in the range of 1.1-45 kW come with enclosure IP 20, IP 54.

Motor power	Mains voltage, rated: 400 V [1]	460 V [1]
55 kW	VLT 6075	-
75 kW	VLT 6100	VLT 6075
90 kW	VLT 6125	VLT 6100
110 kW	VLT 6150	VLT 6125
132 kW	VLT 6175	VLT 6150
160 kW	VLT 6225	VLT 6175
200 kW	VLT 6275	VLT 6225
250 kW		VLT 6275

Units in the range of 55-250 kW come with enclosure IP 00, IP 20 or IP 54.

[1] The max. output depends on the mains voltage connected to the unit

Hardware variants

All units in the programme are available in the following hardware variants:

ST: Standard unit w/ or w/o control unit.

RFI-filter

Bookstyle units always come *with* an integral RFI filter that complies with EN 55011-1B with 20 m screened /armoured motor cable and EN 55011-1A with 150 m screened/armoured motor cable.

Units for a mains voltage of 240 V and a motor power of up to and including 4.0 kW (VLT 6006) and units for a mains voltage of 380-460 V and a motor power of up to 7.5 kW (VLT 6011) are always supplied with an integral class 1A & 1B filter.

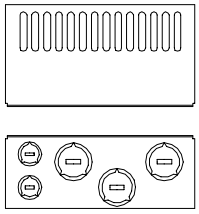
Units for higher motor power than these (4.0 and 7.5 kW, respectively) can be ordered either with or without an RFI filter.

Control unit (keypad and display)

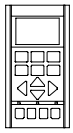
All types of units in the programme, except for IP 54 units, can be ordered either with or without the control unit. IP 54 units always come *with* a control unit.

Ordering:

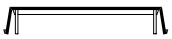
■ Accessoires pour VLT 6000 HVAC



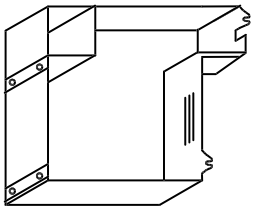
Terminal cover



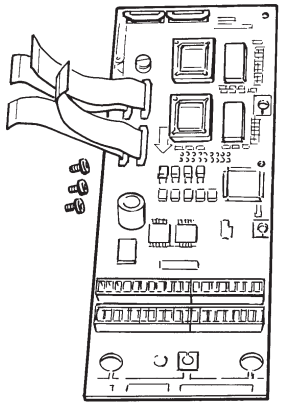
Control unit LCP



IP 4x top cover



IP20 bottom cover



Application option

■ Ordering numbers, misc.

Type	Description		Order no.	
IP 4x top cover [1]	Option, VLT type 6002-6005 200-240 V		175Z0928	
IP 4x top cover [1]	Option, VLT type 6002-6011 380-460 V		175Z0928	
NEMA 12 bonding plate[2]	Option, VLT type 6002-6005 200-240 V		175H4195	
NEMA 12 bonding plate [2]	Option, VLT type 6002-6011 380-460 V		175H4195	
IP 20 terminal cover	Option, VLT type 6006-6016 200-240 V		175Z4622	
IP 20 terminal cover	Option, VLT type 6022-6027 200-240 V		175Z4623	
IP 20 terminal cover	Option, VLT type 6016-6032 380-460 V		175Z4622	
IP 20 terminal cover	Option, VLT type 6042-6062 380-460 V		175Z4623	
IP 20 bottom cover	Option, VLT type 6042-6062 200-240 V		176F1800	
IP 20 bottom cover	Option, VLT type 6060-6100 380-460 V		176F1800	
IP 20 bottom cover	Option, VLT type 6125-6250 380-460 V		176F1801	
Control panel LCP	Separate LCP		175Z7804	
LCP remote-mounting kit IP 00 & 20 [3]	Remote-mounting kit for LCP, for IP 00 and IP 20 units		175Z0850	incl. 3 m cable
LCP remote-mounting kit IP 54 [4]	Remote-mounting kit for LCP, for IP 54 units		175Z7802	incl. 3 m cable
LCP blind cover				
for all IP00/IP20 drives			175Z7806	
Cable for LCP	Separate cable		175Z0929	3 m cable
VLT® Software, Dialog	Basic module	Danish manual	175Z0900	
VLT® Software, Dialog	Basic module	English manual	175Z0903	
VLT® Software, Dialog	Basic module	German manual	175Z0904	
VLT® Software, Dialog	Basic module	Italian manual	175Z0905	
VLT® Software, Dialog	Basic module	Spanish manual	175Z0906	
VLT® Software, Dialog	Basic module	French manual	175Z0907	
VLT® Software, Dialog	Logging module		175Z0909	
VLT® Software, Dialog	Template module		175Z0908	
VLT® Software, Dialog	Guided tour		175Z0952	
Relay card	Application card with four relay outputs		175Z7803	3 m cable
Profibus option			175Z7800	
LonWorks option, Free topology			176F1515	
LonWorks option, 78 KBPS			176F1516	
LonWorks option, 1.25 MBPS			176F1517	

1) IP 4x/NEMA 1 top cover is for IP 20 units only and only horizontal surfaces comply with IP 4x. The kit also contains a bonding plate (UL).
2) NEMA 12 bonding plate (UL) is only for IP 54 units.
3) The remote-mounting kit is only for IP 00 and IP 20 units. Enclosure of the remotemounting kit is IP 65.
4) The remote-mounting kit is only for IP 54 units. Enclosure of the remote-mounting kit is IP 65.

VLT 6000 HVAC is available with an integral fieldbus option or application option. Ordering numbers for the individual VLT types with integrated options can be seen from the relevant manuals or instructions. In addition, the ordering number system can be used for ordering a VLT frequency converter with an option.

Ordering:

■ LC filters for VLT 6000 HVAC

When a motor is controlled by a frequency converter, resonance noise will be heard from the motor. This noise, which is caused by the design of the motor, occurs each time one of the inverter switches in the frequency converter is activated. Consequently, the resonance noise frequency corresponds to the switching frequency of the frequency converter.

For the VLT 6000 HVAC, Danfoss offers a LC filter to dampen the acoustic motor noise.

This filter reduces the voltage rise time, the peak voltage U_{PEAK} and the ripple current ΔI to the motor, thereby making current and voltage almost sinusoidal. The acoustic motor noise is therefore reduced to a minimum.

Because of the ripple current in the coils, there will be some noise from the coils. This problem can be solved entirely by integrating the filter in a cabinet or similar.

■ Examples of the use of LC filters

Submersible pumps

For small motors with up to and including 5.5 kW rated motor power, use a LC filter, unless the motor is equipped with phase separation paper. This applies e.g. to all wet running motors. If these motors are used without LC filter in connection with a frequency converter, the motor windings will short-circuit. If in doubt, ask the motor manufacturer whether the motor in question is equipped with phase separation paper.

Long motor cables

If screened/armoured motor cables longer than 150 m or unscreened/unarmoured motor cables longer than 300 m are used, a LC filter should be applied. The LC filter reduces the capacitive earth leakage currents and the voltage peak loads.

NB!:
If a VLT frequency converter controls several motors in parallel, the motor cables must be added up to give the total cable length.

Well pumps

If immersion pumps are used, e.g. submerged pumps or well pumps, the supplier should be contacted for clarification of requirements. It is recommended to use a LC filter if a VLT frequency converter is used for immersion operations.

Ordering:

■ Ordering numbers, LC filter modules

Mains supply 3 x 200 - 240 V

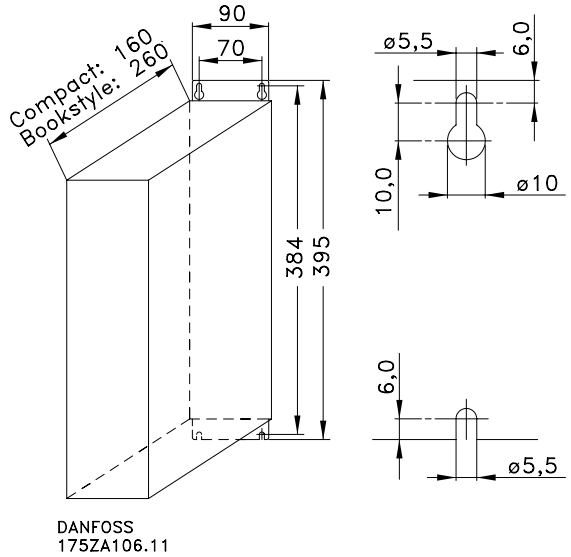
LC filter for VLT type	LC filter enclosure	Rated current at 200 V	Max. output frequency	Power loss	Order no.
6002-6003 Bookstyle	IP 20 Bookstyle	7.8 A	120 Hz		175Z0825
6004-6005 Booksyle	IP 20 Bookstyle	15.2 A	120 Hz		175Z0826
6002-6005	IP 20	15.2 A	120 Hz		175Z0832
6006-6008	IP 00	25.0 A	60 Hz	85 W	175Z4600
6011	IP 00	32 A	60 Hz	90 W	175Z4601
6016	IP 00	46 A	60 Hz	110 W	175Z4602
6022	IP 00	61 A	60 Hz	170 W	175Z4603
6027	IP 00	73 A	60 Hz	250 W	175Z4604
6032	IP 00	88 A	60 Hz	320 W	175Z4605

Mains supply 3 x 380 - 460 V

LC filter for VLT type	LC filter enclosure	Rated current at 400/460 V	Max. output frequency	Power loss	Order no.
6002-6005 Bookstyle	IP 20 Bookstyle	7.2 A / 6.3 A	120 Hz		175Z0825
6006-6011 Bookstyle	IP 20 Bookstyle	16 A / 16 A	120 Hz		175Z0826
6002-6011	IP 20	16 A / 16 A	120 Hz		175Z0832
6016	IP 00	24 A/ 21.7 A	60 Hz	125 W	175Z4606
6022	IP 00	32 A / 27.9 A	60 Hz	130 W	175Z4607
6027	IP 00	37.5 A / 32 A	60 Hz	140 W	175Z4608
6032	IP 00	44 A / 41.4 A	60 Hz	170 W	175Z4609
6042	IP 00	61 A / 54 A	60 Hz	250 W	175Z4610
6052	IP 00	73 A / 65 A	60 Hz	360 W	175Z4611
6062	IP 00	90 A / 78 A	60 Hz	450 W	175Z4612
6075	IP 20	106 A / 106 A	60 Hz		175Z4701
6100	IP 20	147 A / 130 A	60 Hz		175Z4702
6125	IP 20	177 A / 160 A	60 Hz		175Z4703
6150	IP 20	212 A / 190 A	60 Hz		175Z4704
6175	IP 20	260 A / 240 A	60 HZ		175Z4705
6225	IP 20	315 A / 302 A	60 HZ		175Z4706
6275	IP 20	395 A / 361 A	60 Hz		175Z4707

Ordering:

■ LC filters 6002-6006, 200 - 240 V / 6002-6011 380 - 460 V



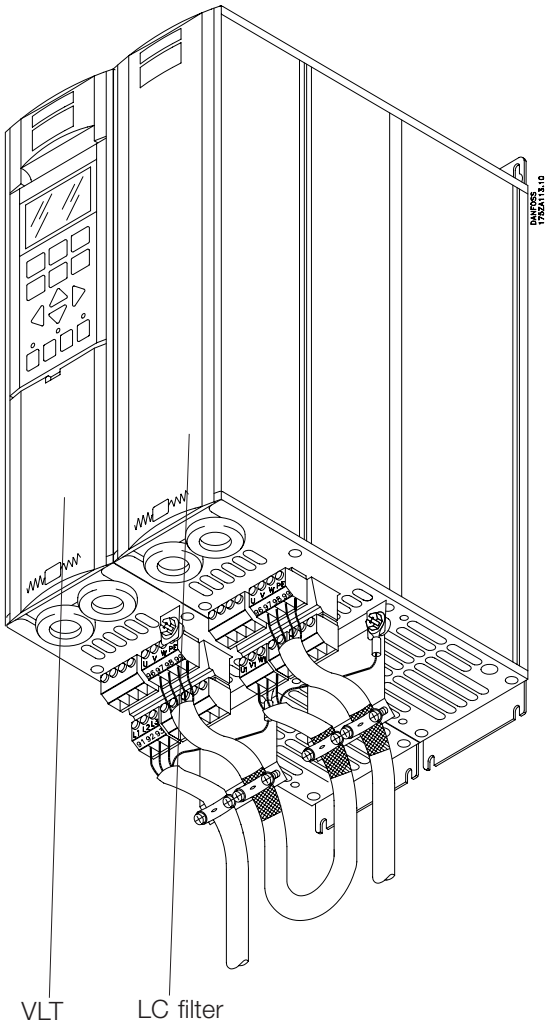
The drawing on the left gives the measurements of IP 20 LC filters for the above-mentioned power range.
Min. space above and under enclosure: 100 mm.

IP 20 LC filters have been designed for side-by-side installation without any space between enclosures.

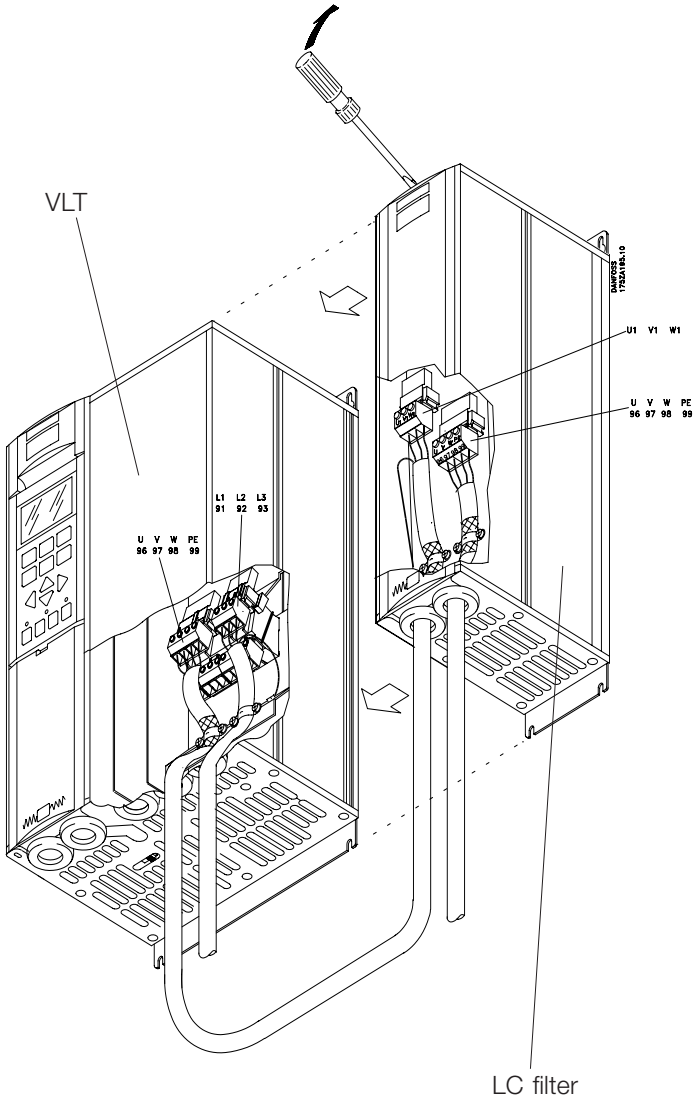
Max. motor cable length:
- 150 m screened/armoured cable
- 300 m unscreened/unarmoured cable
  If EMC standards are to be complied with:
- EN 55011-1B: Max. 50 screened/armoured cable
  Bookstyle: Max. 20 m screened/armoured cable
- EN 55011-1A: Max. 150 m screened/armoured cable

Weight:	175Z0825	7.5 kg
	175Z0826	9.5 kg
	175Z0832	9.5 kg

■ Installation of LC filter IP 20 Bookstyle



■ Installation of LC filter IP 20



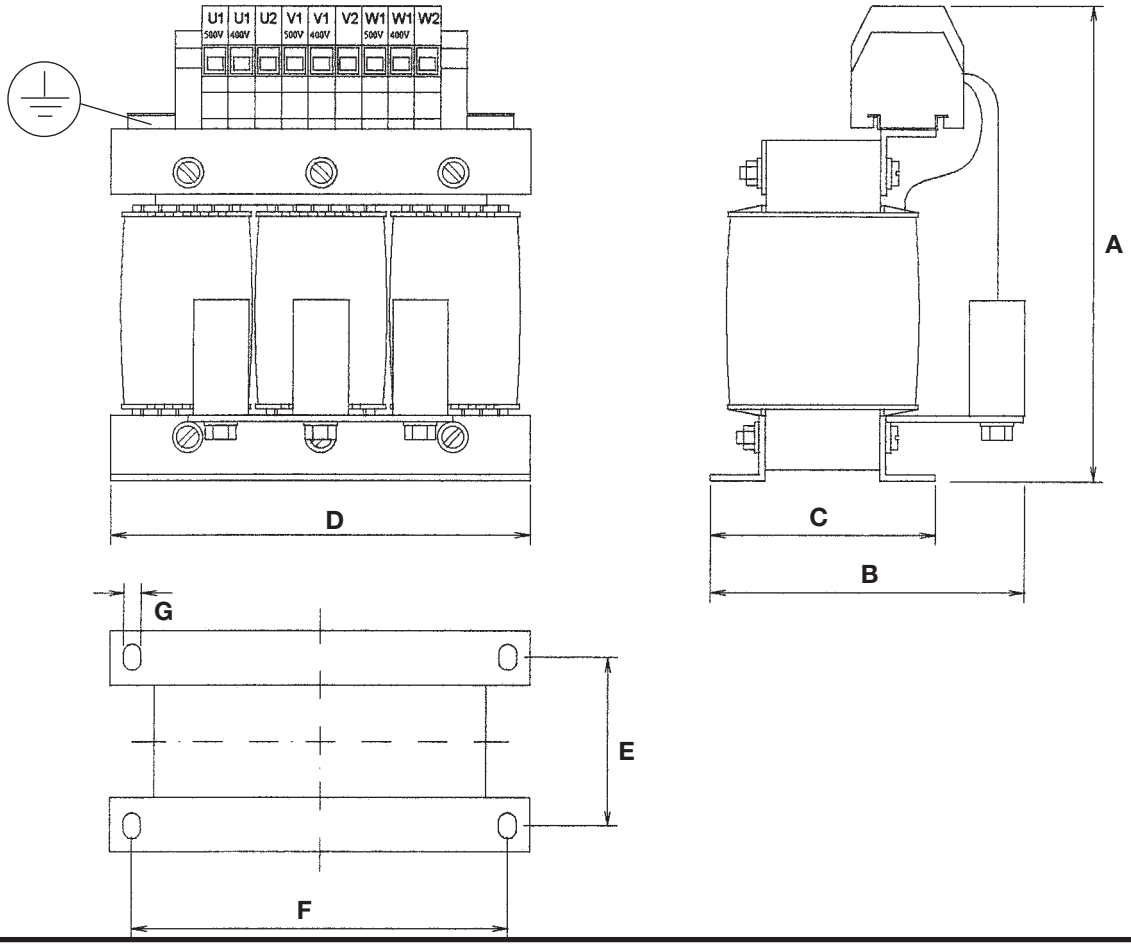
Ordering:

■ LC filters VLT 6008-6032, 200 - 240 V / 6016-6062 380 - 460 V

The table and the drawing give the measurements of IP 00 LC filters for Compact units.
IP 00 LC filters must be integrated and protected against dust, water and corrosive gases.

Max. motor cable length:
- 150 m screened/armoured cable
- 300 m unscreened/unarmoured cable
  If EMC standards are to be complied with:
- EN 55011-1B: Max. 50 screened/armoured cable
  Bookstyle: Max. 20 m screened/armoured cable
- EN 55011-1A: Max. 150 m screened/armoured cable

LC filter IP 00								
LC type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	Weight[kg]
175Z4600	220	135	92	190	68	170	8	10
175Z4601	220	145	102	190	78	170	8	13
175Z4602	250	165	117	210	92	180	8	17
175Z4603	295	200	151	240	126	190	11	29
175Z4604	355	205	152	300	121	240	11	38
175Z4605	360	215	165	300	134	240	11	49
175Z4606	280	170	121	240	96	190	11	18
175Z4607	280	175	125	240	100	190	11	20
175Z4608	280	180	131	240	106	190	11	23
175Z4609	295	200	151	240	126	190	11	29
175Z4610	355	205	152	300	121	240	11	38
175Z4611	355	235	177	300	146	240	11	50
175Z4612	405	230	163	360	126	310	11	65



Ordering:

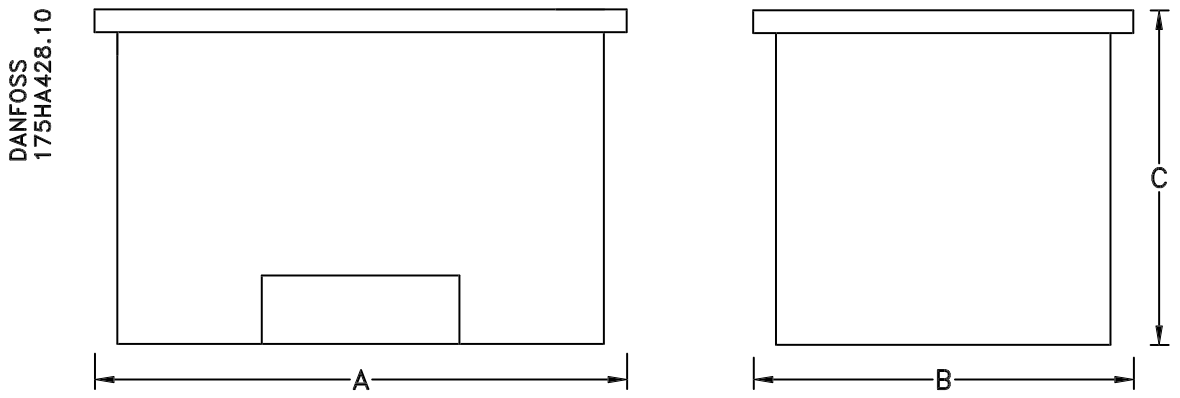
■ LC filter 6075-6275 380 - 460 V

The table and the drawing give the measurements of IP 00 LC filters for Compact units.
IP 00 LC filters must be integrated and protected against dust, water and corrosive gases.

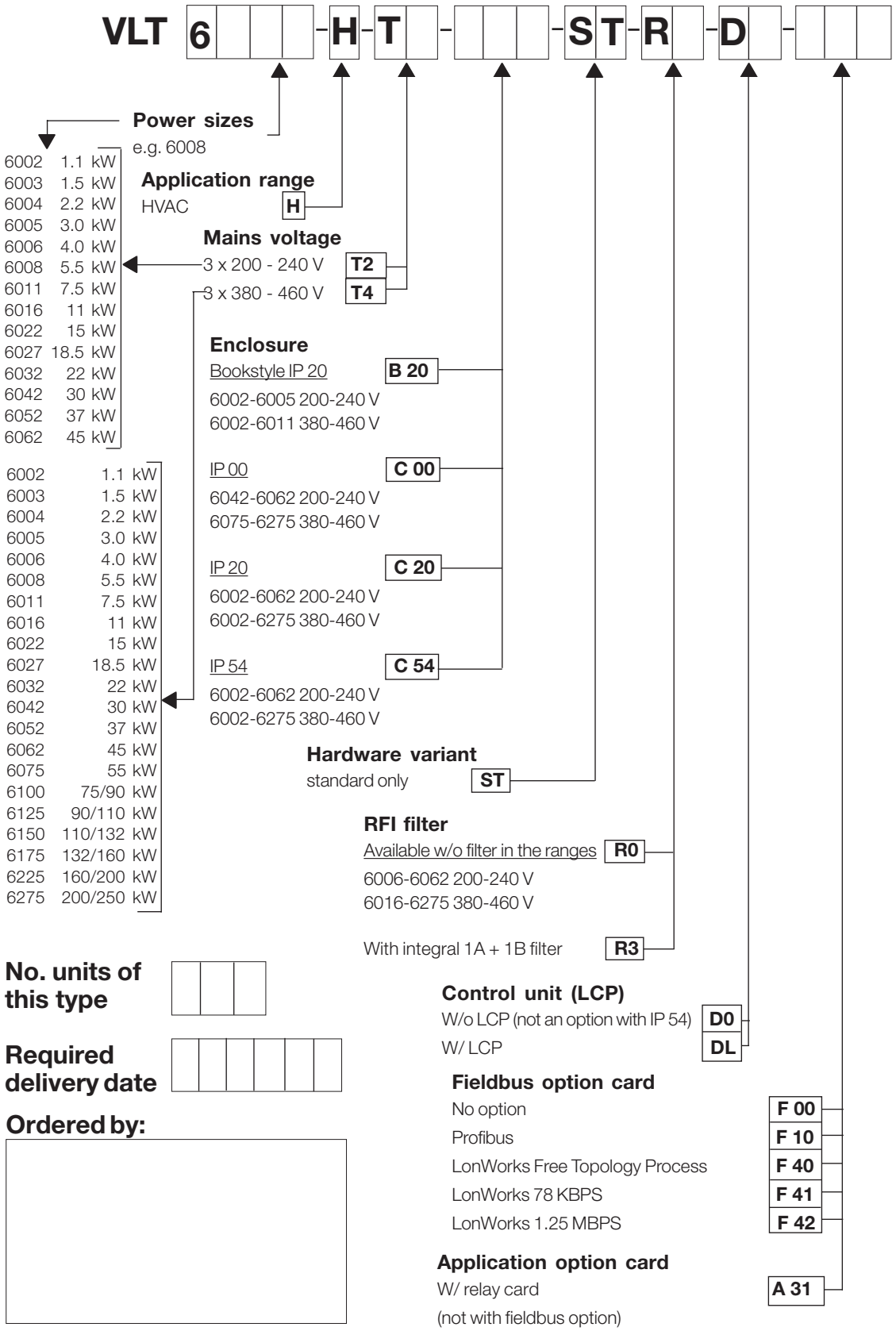
Max. motor cable length:
- 150 m screened/armoured cable
- 300 m unscreened/unarmoured cable
  If EMC standards are to be complied with:
- EN 55011-1B: Max. 50 screened/armoured cable
  Bookstyle: Max. 20 m screened/armoured cable
- EN 55011-1A: Max. 150 m screened/armoured cable

LC-filter IP 20

LC type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	Weight [kg]
175Z4701	740	550	600					70
175Z4702	740	550	600					70
175Z4703	740	550	600					110
175Z4704	740	550	600					120
175Z4705	830	630	650					220
175Z4706	830	630	650					250
175Z4707	830	630	650					250



■ Ordering form VLT 6000 HVAC



No. units of this type

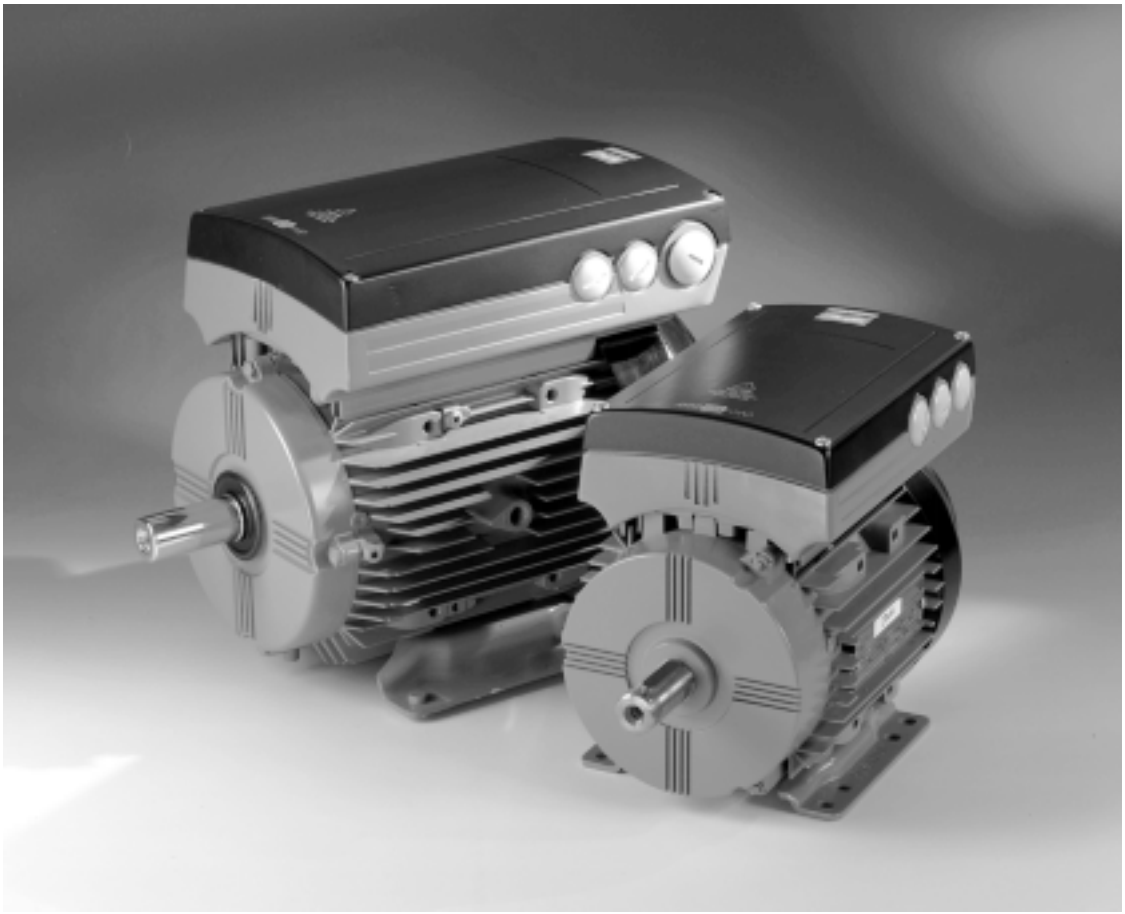
Required delivery date

Ordered by:

Date:

Take a copy of the ordering forms. Fill them in and send or fax your order to the nearest office of the Danfoss sales organisation.

FCM 300



The VLT® frequency converter motor FCM 300 Series is a very compact alternative to the ordinary solution with VLT® frequency converter and motor as separate units.

The frequency converter is attached instead of the motor terminal box, and it is no higher than the standard terminal box, nor wider or longer than the motor.

Technical data:

■ FCM 305-375 for 3 phases, 380-480 V

Type	Motor output [kW]	Frame size [mm]	Weight [kg]	Input current 380 V [A]	Input current 480 V [A]	Max. prefuse [A]	Gland sizes
FCM 305	0.55	80	11	1.4	1.1	16	3XPG16
FCM 307	0.75	80	13	1.7	1.4	16	3XPG16
FCM 311	1.1	90	17	2.5	2.0	16	3XPG16
FCM 315	1.5	90	20	3.3	2.6	16	3XPG16
FCM 322	2.2	100	26	4.7	3.7	16	3XPG16
FCM 330	3.0	100	28	6.4	5.1	16	3XPG16
FCM 340	4.0	112	37	8.4	6.6	25	1XPG21, 2XPG16
FCM 355	5.5	132	56	11.1	8.8	25	1XPG21, 2XPG16
FCM 375	7.5	132	61	15.1	11.9	25	1XPG21, 2XPG16

Protection:

Thermal overload protection of motor and electronics.

Protection against missing phase, under-/ overvoltage, overcurrent, and voltage transients.

Standards applied:

- Safety: EN 60146, EN 61800-2, EN 50178, EN 60204, UL 508
- EMC: EN 61800-3, EN 50081, EN 50082.

■ General technical data

Mains supply, TT and NT (L1, L2, L3):

- Supply voltage 380-480 V units ..... 3 x 380/400/415/440/460/480 V ±10%
- Supply frequency ..... 50/60 Hz
- Max. imbalance of supply voltage ..... ±2% of rated supply voltage
- Power factor / cos φ ..... 0.88/1.0 at rated load
- No. of switches on supply input L1, L2, L3 ..... approx. 1 time/2 min
- Power terminals ..... 4 mm^2

Torque characteristics:

- Starting torque/overload torque ..... 160 % for 1 min
- Starting torque ..... 200 % for 5 sec
- Continuous torque ..... see the design guide page 78

Control card, digital/pulse inputs:

- Number of programmable digital inputs 4
- Terminal nos. ..... X101-2, -3, -4, -5
- Voltage level ..... 0-24 V DC (PNP positive logics)
- Voltage level, logic ´0´ ..... < 5 V DC
- Voltage level, logic ´1´ ..... > 10 V DC
- Maximum voltage on input ..... 28 V DC
- Input resistance, R_i ..... approx. 2 kΩ
- Scanning time per input ..... 20 msec

Technical data:

Control card, pulse input:

- No. of programmable pulse inputs 1
- Terminal nos. X101-3
- Max. frequency on terminal 3, open collector/push pull 24 V ..... 12 kHz/70 kHz
- Resolution ..... 10 bit
- Accuracy (0.1-1 kHz), terminal 3 ..... Max. error: 0.5% of full scale
- Accuracy (1-12 kHz), terminal 3 ..... Max. error: 0.1% of full scale

Control card, analogue inputs:

- No. of programmable analogue voltage inputs 1
- Terminal nos. X101-2
- Voltage level ..... 0 - 10 V DC (scalable)
- Input resistance, R_i ..... approx. 10 kΩ
- No. of programmable analogue current inputs 1
- Terminal no. X101-1
- Current range ..... 0 - 20 mA (scalable)
- Input resistance, R_i ..... approx. 300 Ω
- Resolution ..... 9 bit
- Accuracy on input ..... Max. error 1% of full scale
- Scanning time per input ..... 20 msec.

Control card, digital/pulse and analogue outputs:

- No. of programmable digital and analogue outputs 1
- Terminal nos. X101-9
- Voltage level at digital output ..... 0 - 24 V DC
- Current ..... 0 - 20 mA
- Minimum load to frame (terminal 8) at digital output ..... 600 Ω
- Maximum load to frame (terminal 8) at analogue output ..... 500 Ω
- Accuracy of analogue output ..... Max. error: 1.5% of full scale
- Resolution on analogue output. ..... 8 bit

Control card, RS 485 serial communication:

- Terminal nos. ..... X100-1, -2

Control characteristics:

- Frequency range ..... 0 - 132 Hz
- Resolution on output frequency ..... 0.1 %
- System response time ..... Max. 40 msec.

Externals:

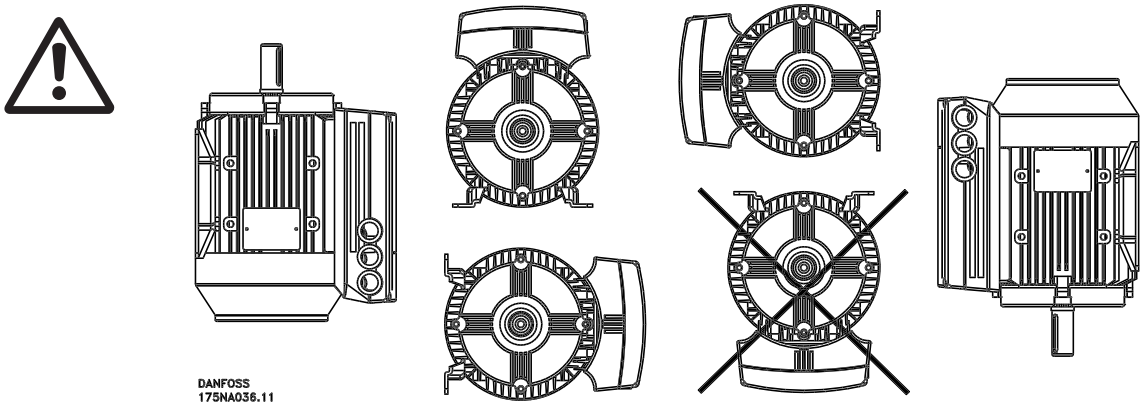
- Enclosure ..... IP 55
- Vibration test ..... (IEC 68 see the design guide page 79) 1 g
- Max. relative humidity ..... 93 % +2 %, -3 % (IEC 68-2-3) for storage/transport
- Ambient temperature ..... Max. 40°C (24-hour average max. 35°C)

Derating for high ambient temperature, see chapter 10.

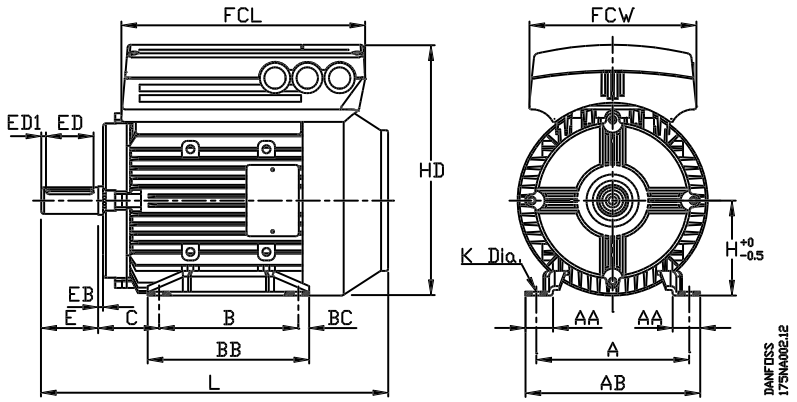
- Min. ambient temperature in full operation ..... 0°C
- Min. ambient temperature at reduced performance ..... -10°C
- Temperature during storage/transport ..... -25 - +65/70°C
- Max. altitude above sea level ..... 1000 m

Dimensions:

Ways of mounting the FC motor

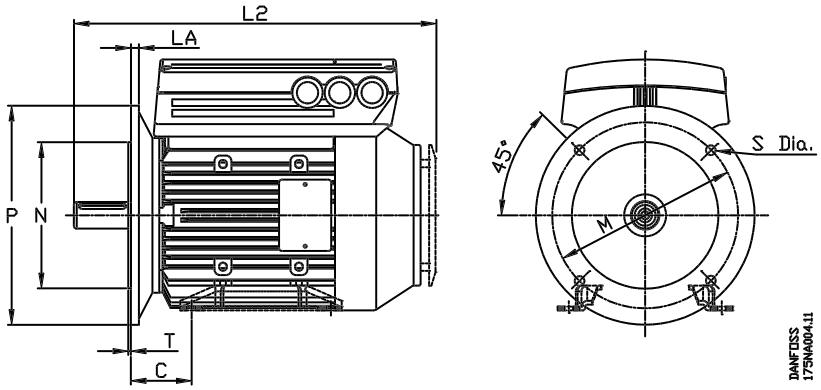


Foot mounting - B3

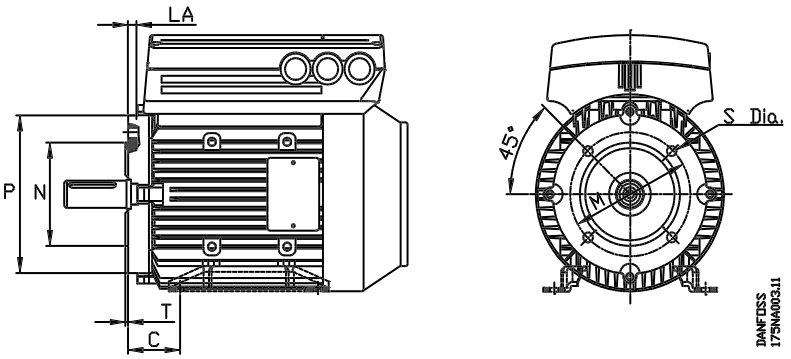


Dimensions:

Flange mounting - B5, B35 (B3+B5)



Face mounting - B14, B34 (B3+B14)



Dimensions:

General		FCM 305	FCM 307	FCM 311	FCM 315	FCM 322	FCM 330	FCM 340	FCM 355	FCM 375
A	[mm]	125	125	140	140	160	160	190	216	216
B	[mm]	100	100	100	125	140	140	140	140	178
C	[mm]	50	50	56	56	63	63	70	89	89
H	[mm]	80	80	90	90	100	100	112	132	132
K	[mm]	10	10	10	10	12	12	12	12	12
AA	[mm]	27	27	28	28	28	28	35	38	38
AB	[mm]	157	157	174	174	184	184	218	242	242
BB	[mm]	127	127	152	152	170	170	170	208	208
BC	[mm]	13.5	13.5	38.5	13.5	15	15	15	53	15
L	[mm]	295	295	322	322	368	368	381	451	451
L2	[mm]	315	315	342	342	397	397	410	490	490
AC	[mm]	158	158	178	178	199	199	215	255	255
HD	[mm]	219	219	234	234	264	264	291	335	335
EB	[mm]	1.5	1.5	1.5	1.5	6	6	6	6	6
FCL	[mm]	205	205	230	230	256	256	286	340	340
FCW	[mm]	141	141	158	158	176	176	197	235	235

B5		FCM 305	FCM 307	FCM 311	FCM 315	FCM 322	FCM 330	FCM 340	FCM 355	FCM 375
M	[mm]	165	165	165	165	215	215	215	265	265
N	[mm]	130	130	130	130	180	180	180	230	230
P	[mm]	200	200	200	200	250	250	250	300	300
S	[mm]	12	12	12	12	15	15	15	15	15
T	[mm]	3.5	3.5	3.5	3.5	4	4	4	4	4
LA	[mm]	12	12	12	12	12	12	12	12	12

B14		FCM 305	FCM 307	FCM 311	FCM 315	FCM 322	FCM 330	FCM 340	FCM 355	FCM 375
M	[mm]	100	100	115	115	130	130	130	165	165
N	[mm]	80	80	95	95	110	110	110	130	130
P	[mm]	120	120	140	140	160	160	164	200	200
S		M6	M6	M8	M8	M8	M8	M8	M10	M10
T	[mm]	3	3	3	3	3.5	3.5	3.5	3.5	3.5
LA	[mm]	9	9	9	9	12.5	12.5	13	14	14

Shaft DE		FCM 305	FCM 307	FCM 311	FCM 315	FCM 322	FCM 330	FCM 340	FCM 355	FCM 375
Dia.	[mm]	19	19	24	24	28	28	28	38	38
E	[mm]	40	40	50	50	60	60	60	80	80
ED	[mm]	25	25	32	32	50	50	50	70	70
ED1	[mm]					5	5	5	5	5
Hole		M6x16	M6x16	M8x19	M8x19	M10x22	M10x22	M10x22	M12x28	M12x28

Ordering:

■ Product range

VLT® DriveMotor FCM 300 Series, 2/4 poled motors

Type	Motor output	Mains supply
FCM 305	0.55 kW	1 / 3 phase 200-240 V* or 3 phase 380-480 V
FCM 307	0.75 kW	
FCM 311	1.1 kW	
FCM 315	1.5 kW	
FCM 322	2.2 kW	
FCM 330	3.0 kW	3 phase 380-480 V
FCM 340	4.0 kW	
FCM 355*	5.5 kW	
FCM 375*	7.5 kW	

* Not available yet, please contact Danfoss.

Each type in the product range is available in different versions.

Inverter versions

Drive control:

- *ST:* Standard version
- *SP:* Version for PROFIBUS

RFI filter:

Inverter with integrated RFI filter, class A1 (industrial) or classes A1 and B1 (domestic)*.

Cooling:

- TEFV: Motor cooled by a shaft mounted fan (IC 411)
- FV: Motor cooled by an independent fan (IC 416)

Mounting versions

- Foot mounting (B3)
- Flange mounting (B5)
- Face mounting (B14)
- Foot + flange mounting (B35)
- Foot + face mounting (B34)

Inverter box position: Top, right side or left side.
Drainhole (+ position): None, between feet, opposite feet, vertical drive end, vertical non-drive end.
Brake kits: None, AC or DC, with or without hand-release.

■ Ordering

Take a copy of the ordering forms on page 89. Fill in and post or fax your order to the nearest branch office of the Danfoss sales organisation. On the basis of your order, the FCM 300 Series motor is given a type code, which may look as follows:

FCM 330-P-T4-ST-S55-R1-100LT-4-1-B05-215-T-D1-00

This means that the FC motor ordered is a FCM 330 for three-phase mains voltage of 380-480 V (T4) and for process applications (P). The inverter is a standard version for remote control (ST) in an IP55 enclosure (S55) with integrated RFI filter, class A1 (R1). The motor frame size is 100LT. The motor has 4 poles (4) and is cooled by a shaft mounted fan (1). The motor is for flange mounting (B05) and the flange size is 215 mm. The inverter box is mounted on the top of the motor (T) and the drainhole is placed between feet (D1). The motor comes without brake kit (00).

If you wish to place your order by using the type code directly, please use the codes given in parenthesis on the left-hand side of the ordering forms. The code sequence in the type code is stated at the top of each part of the form (character number).

The ordering form for the basic unit must always be completed. When the type code is written, always state the characters of the basic string (1-30).
Together with the order confirmation the customer receives an 8-figure code number to be used when reordering.

Danfoss PC software for serial communication

All FCM 300 Series units have an RS 485 port as standard, which enables them to communicate e.g. with a PC. A programme entitled VLT® Software Dialog is available for this purpose.

Ordering numbers, VLT® Software Dialog

Basic module	with Danish manual	175Z0900
Basic module	with English manual	175Z0903
Basic module	with German manual	175Z0904
Basic module	with Italian manual	175Z0905
Basic module	with Spanish manual	175Z0906
Basic module	with French manual	175Z0907
Logging module		175Z0909
Template module		175Z0908
Guided tour		175Z0952

Accessories for the FC motor

A Local Operation Pad (LOP) for local set point and start/stop is available for the FC motor. The LOP is IP 66 enclosed. A Local Control Panel (LCP) which makes up a complete interface for operation, programming and monitoring of the FC motor is also available.

Ordering numbers, accessories

Local Operation Pad (LOP)	175N0128
Local Control Panel (LCP)	175N0131
Remote mounting kit	175N0160
Plug kit	175N0161

Ordering:

■ 4 and 2 poled FC motors

Frame sizes and the corresponding flange sizes for different mounting versions

Type	Motor frame size		Mounting version	Flange size, standard (S) [mm]	Flange size, alternatives (A) [mm]	Flange size alternatives (B) [mm]
	4 poled	2 poled				
FCM 305	080MG	080MF	B5/B35	165	85/100/115/130	
			B14/B34	100		75/85/115/130/165
FCM 307	080MA	080MF	B5/B35	165	85/100/115/130	
			B14/B34	100		75/85/115/130/165
FCM 311	090LK	090SJ	B5/B35	165	100/115/130	
			B14/B34	115		85/100/130/165
FCM 315	090LT	090SJ	B5/B35	165	100/115/130	
			B14/B34	115		85/100/130/165
FCM 322	100LA	100LJ	B5/B35	215	165	
			B14/B34	130	165	85/100/115/215
FCM 330	100LT	100LM	B5/B35	215	165	
			B14/B34	130	165	85/100/115/215
FCM 340	112MT	112MS	B5/B35	215	115/130/165	
			B14/B34	130	165	85/100/115/215
FCM 355	132SJ	132SF	B5/B35	265	215	
			B14/B34	165	215	
FCM 375	132MT	132SJ	B5/B35	265	215	
			B14/B34	165	215	

Flange size according to IEC ref. FFxxx

S: Available as standard shaft

A: Available as an alternative with specially elongated shaft to provide standard shaft for frame

B: Available as an alternative with standard shaft for frame, requiring no modification

Ordering form **FCM 300 Series**

FCM type (character nos. 1-6) **FCM** ☐☐☐

Select the required FCM type from the product range on the previous page and fill in the squares.

Application range (char. no. 7)

(P) **Process**

Mains voltage (char. nos. 8-9)

(C2) **1/3-phase 200-240 V AC** ☐

(T4) **3-phase 380-480 V AC** ☐

Tick off as appropriate.

Inverter vs. (char. nos. 10-11)

(ST) **Standard** ☐

(SP) **PROFIBUS** ☐

Tick off as appropriate.

Enclosure (char. no. 12-14)

(S55) **IP55**

RFI filter (char. nos. 15-16)

(R1) **W/ integrated filter, class A1** ☐

(R2) **W/integrated filter, classes A1 & B1***

Tick off as appropriate.

*Not available yet, please contact Danfoss.

Frame size (char. nos. 17-21) ☐☐☐☐☐

Fill in the squares with the appropriate value from column 2 in the table on page 88.

Polarity (char. no. 22)

(4) **4 poles** ☐

(2) **2 poles** ☐

Tick off as appropriate.

Cooling (char. no. 23)

(1) **Shaft mounted fan** ☐

(6) **Independent fan** ☐

Tick off as appropriate.

Ordering form **FCM 300 Series**

Mounting vs. and flange size (char. nos. 24-29)

(B03) **Foot** ☐ **0 0 0**

(B05) **Flange** ☐ **flange size** ☐☐☐

(B35) **Foot & flange** ☐ **flange size** ☐☐☐

(B14) **Face** ☐ **flange size** ☐☐☐

(B34) **Foot & face** ☐ **flange size** ☐☐☐

Tick off as appropriate and select flange size from the table on page 88.

Inverter box position (char. no. 30)

(T) **Top** ☐

(R) **Right side** ☐

(L) **Left side** ☐

Tick off as appropriate.

Drain hole position (char. nos. 31-32)

(00) **None** ☐

(D1) **Between feet** ☐

(D2) **Opposite feet** ☐

(D3) **Vertical drive end** ☐

(D4) **Vertical non-drive end** ☐

Tick off as appropriate.

Mechanical brake kit (char. nos. 33-34)

(00) **None** ☐

(AO) **AC** ☐

(AH) **AC, hand-released** ☐

(DO) **DC** ☐

(DH) **DC, hand-released** ☐

Tick off as appropriate.

Number of FCM 300 Series ordered ☐☐☐

Ordered by:

Date: _____