

■ Contents

Introduction	2
Ordering	2
Unpacking and ordering a VLT frequency converter	2
Type code ordering number string	2
TYPE CODE Table/Ordering form	6
Control principle	7
AEO - Automatic Energy Optimization	7
Serial communication	8
Cascade Controller Option	8
Control unit LCP	10
Installation	18
General technical data	18
Technical data, mains supply 3 x 200 - 240 V	23
Technical data, mains supply 3 x 380 - 480 V	25
Technical data, mains supply 3 x 525 - 600 V	30
Fuses	34
Mechanical dimensions	37
Index	40

■ Unpacking and ordering a VLT frequency converter

If you are in doubt as to which frequency converter you have received and which options it contains, use the following to find out.

■ Type code ordering number string

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

VLT-8008-A-T4-C20-R3-DL-F10-A00-C0

This means that the frequency converter ordered is a VLT 8008 for three-phase mains voltage of 380-480 V (**T4**) in Compact enclosure IP 20 (**C20**). 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**). No option card (A00) and no conformal coating (C0) Character no. 8 (**A**) indicates the application range of the unit: **A** = AQUA.

IP 00: This enclosure is only available for the larger power sizes of the VLT 8000 AQUA series. It is recommended for installation in standard cabinets.

IP 20/NEMA 1: This enclosure is used as standard enclosure for VLT 8000 AQUA. It is ideal for cabinet installation in areas where a high degree of protection is required. This enclosure 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.

Hardware variant

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

- ST: Standard unit with or without control unit. Without DC terminals, except for VLT 8042-8062, 200-240 V
VLT 8016-8300, 525-600 V
- SL: Standard unit with DC terminals.
- EX: Extended unit with control unit, DC terminals, connection of external 24 V DC supply for back-up of control PCB.
- DX: Extended unit with control unit, DC terminals, built-in mains fuses and disconnect, connection of external 24 V DC supply for back-up of control PCB.
- PF: Standard unit with 24 V DC supply for back-up of control PCB and built-in main fuses. No DC terminals.
- PS: Standard unit with 24 V DC supply for back-up of control PCB. No DC terminals.
- PD: Standard unit with 24 V DC supply for back-up of control PCB, built-in main fuses and disconnect. No DC terminals.

RFI filter

Units for a mains voltage of 380-480 V and a motor power of up to 7.5 kW (VLT 8011) are always supplied with an integral class A1 & B filter. Units for higher motor power than these can be ordered either with or without an RFI filter. RFI filters are not available for 525-600 V units.

Control unit (keypad and display)

All types of units in the programme, except for IP 54 units (and IP 21 VLT 8452-8652, 380-480 V), can be ordered either with or without the control unit. IP 54 units always come *with* a control unit. All types of units in the programme are available with built-in application options including a relay card with four relays or a cascade controller card.

Conformal Coating

All types of units in the programme are available with or without conformal coating of the PCB. Please note VLT 8452-8652, 380-480 V and VLT 8052-8402 are only available as conformal coated.

200-240 V

Typecode	T2	C00	C20	CN1	C54	ST	SL	R0	R1	R3
Position in string	9-10	11-13	11-13	11-13	11-13	14-15	14-15	16-17	16-17	16-17
4.0 kW/5.0 HP	8006		X		X	X	X	X		X
5.5 kW/7.5 HP	8008		X		X	X	X	X		X
7.5 kW/10 HP	8011		X		X	X	X	X		X
11 kW/15 HP	8016		X		X	X	X	X		X
15 kW/20 HP	8022		X		X	X	X	X		X
18.5 kW/25 HP	8027		X		X	X	X	X		X
22 kW/30 HP	8032		X		X	X	X	X		X
30 kW/40 HP	8042	X		X	X	X		X	X	
37 kW/50 HP	8052	X		X	X	X		X	X	
45 kW/60 HP	8062	X		X	X	X		X	X	

380-480 V

Typecode	T4	C00	C20	CN1	C54	ST	SL	EX	DX	PS	PD	PF	R0	R1	R3
Position in string	9-10	11-13	11-13	11-13	11-13	14-15	14-15	14-15	14-15	14-15	14-15	14-15	16-17	16-17	16-17
4.0 kW/5.0 HP	8006		X		X	X				X					X
5.5 kW/7.5 HP	8008		X		X	X				X					X
7.5 kW/10 HP	8011		X		X	X				X				X	
11 kW/15 HP	8016		X		X	X	X			X			X		X
15 kW/20 HP	8022		X		X	X	X			X			X		X
18.5 kW/25 HP	8027		X		X	X	X			X			X		X
22 kW/30 HP	8032		X		X	X	X			X			X		X
30 kW/40 HP	8042		X		X	X	X			X			X		X
37 kW/50 HP	8052		X		X	X	X			X			X		X
45 kW/60 HP	8062		X		X	X	X			X			X		X
55 kW/75 HP	8072		X		X	X	X			X			X		X
75 kW/100 HP	8102		X		X	X	X			X			X		X
90 kW/125 HP	8122		X		X	X	X			X			X		X
110 kW/150 HP	8152	X		X	X	X		X	X	X	X	X	X	X	
132 kW/200 HP	8202	X		X	X	X		X	X	X	X	X	X	X	
160 kW/250 HP	8252	X		X	X	X		X	X	X	X	X	X	X	
200 kW/300 HP	8302	X		X	X	X		X	X	X	X	X	X	X	
250 kW/350 HP	8352	X		X	X	X		X	X	X	X	X	X	X	
315 kW/450 HP	8452	X		X	X	X		X	X	X	X	X	X	X	
355 kW/500 HP	8502	X		X	X	X		X	X	X	X	X	X	X	
400 kW/550 HP	8602	X		X	X	X		X	X	X	X	X	X	X	
450 kW/600 HP	8652	X		X	X	X		X	X	X	X	X	X	X	

Voltage

T2: 200-240 VAC

T4: 380-480 VAC

Enclosure

C00: Compact IP 00

C20: Compact IP 20

CN1: Compact NEMA 1

C54: Compact IP 54

Hardware variant

ST: Standard

SL: Standard with DC terminals

EX: Extended with 24 V supply and DC terminals

DX: Extended with 24 V supply, DC terminals, disconnect and fuse

PS: Standard with 24 V supply

PD: Standard with 24 V supply, fuse and disconnect

PF: Standard with 24 V supply and fuse

RFI filter

R0: Without filter

R1: Class A1 filter

R3: Class A1 and B filter


NB!:

NEMA 1 exceeds IP 20

525-600 V

Typecode	T6	C00	C20	CN1	ST	R0
Position in string	9-10	11-13	11-13	11-13	14-15	16-17
1.1 kW/1.5 HP	8002		X	X	X	X
1.5 kW/2.0 HP	8003		X	X	X	X
2.2 kW/3.0 HP	8004		X	X	X	X
3.0 kW/4.0 HP	8005		X	X	X	X
4.0 kW/5.0 HP	8006		X	X	X	X
5.5 kW/7.5 HP	8008		X	X	X	X
7.5 kW/10 HP	8011		X	X	X	X
11 kW/15 HP	8016			X	X	X
15 kW/20 HP	8022			X	X	X
18.5 kW/25 HP	8027			X	X	X
22 kW/30 HP	8032			X	X	X
30 kW/40 HP	8042			X	X	X
37 kW/50 HP	8052			X	X	X
45 kW/60 HP	8062			X	X	X
55 kW/75 HP	8072			X	X	X

525-690 V

Typecode	T7	C00	CN1	C54	ST	EX	DX	PS	PD	PF	R0	R1 ¹⁾
Position in string	9-10	11-13	11-13	11-13	11-13	11-13	14-15	14-15	14-15	14-15	16-17	16-17
45 kW/50 HP	8052	X	X	X	X	X	X	X	X	X	X	X
55 kW/60 HP	8062	X	X	X	X	X	X	X	X	X	X	X
75 kW/75 HP	8072	X	X	X	X	X	X	X	X	X	X	X
90 kW/100 HP	8102	X	X	X	X	X	X	X	X	X	X	X
110 kW/125 HP	8122	X	X	X	X	X	X	X	X	X	X	X
132 kW/150 HP	8152	X	X	X	X	X	X	X	X	X	X	X
160 kW/200 HP	8202	X	X	X	X	X	X	X	X	X	X	X
200 kW/250 HP	8252	X	X	X	X	X	X	X	X	X	X	X
250 kW/300 HP	8302	X	X	X	X	X	X	X	X	X	X	X
315 kW/350 HP	8352	X	X	X	X	X	X	X	X	X	X	X
400 kW/400 HP	8402	X	X	X	X	X	X	X	X	X	X	X

1) R1 is not available with DX, PF and PD variants.

- T7: 525-690 VAC
- C00: Compact IP 00
- C20: Compact IP 20
- CN1: Compact NEMA 1
- ST: Standard
- R0: Without filter
- R1: Class A1 filter

NB!:
NEMA 1 exceeds IP 20

Optional selections, 200-600 V

Display		Position: 18-19
D0 ¹⁾	Without LCP	
DL	With LCP	
Fieldbus option		Position: 20-22
F00	No options	
F10	Profibus DP V1	
F30	DeviceNet	
F40	LonWorks free topology	
Application option		Position: 23-25
A00	No options	
A31 ²⁾	Relay card 4 relays	
A32	Cascade Controller	
Coating		Position: 26-27
C0 ³⁾	No coating	
C1	With coating	

1) Not available with enclosure compact IP 54

2) Not available with fieldbus options (Fxx)

3) Not available for power sizes from 8452 to 8652, 380-480 V and VLT 8052-8402, 525-690 V

TYPE CODE Table/Ordering form

VLT	8			A	T	C			R	D	F		A		C
-----	---	--	--	---	---	---	--	--	---	---	---	--	---	--	---

Power sizes
e.g. 8008

Application range
A

Mains voltage
T2
T4
T6
T7

Enclosure
C00
C20
C54
CN1

Hardware variant
ST
SL
PS
PD
PF
EX
DX

RFI filter
R0
R1
R3

Display unit (LCP)
DO
DL

Fieldbus option card
F00
F10
F30
F40

Application option card
A00
A31
A32

Coating
C0
C1

No. units of this type

Required delivery date

Ordered by:

Date: _____

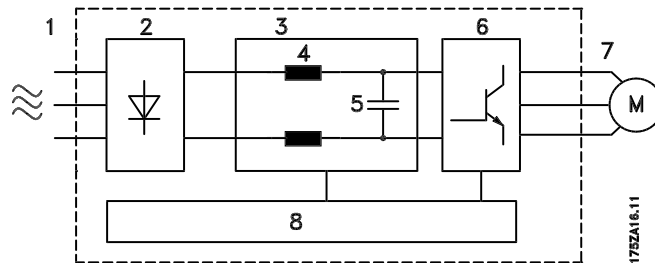
Take a copy of the ordering forms. Fill them in and send or fax your order to the nearest office of the Danfoss sales organisation

176FA206.13

■ Control principle

A frequency converter rectifies AC voltage from mains into DC voltage, after which this DC voltage is converted into a AC current with a variable amplitude and frequency.

The motor is thus supplied with variable voltage and frequency, which enables infinitely variable speed control of three-phased, standard AC motors.



1. Mains voltage

- 3 x 200 - 240 V AC, 50 / 60 Hz.
- 3 x 380 - 480 V AC, 50 / 60 Hz.
- 3 x 525 - 600 V AC, 50 / 60 Hz.
- 3 x 525 - 690 V AC, 50 / 60 Hz.

2. Rectifier

A three-phase rectifier bridge that rectifies AC current into DC current.

3. Intermediate circuit

DC voltage = 1.35 x mains voltage [V].

4. Intermediate circuit coils

Even out the intermediate circuit voltage and reduce the harmonic current feedback to the mains supply.

5. Intermediate circuit capacitors

Even out the intermediate circuit voltage.

6. Inverter

Converts DC voltage into variable AC voltage with a variable frequency.

7. Motor voltage

Variable AC voltage, 0-100% of mains supply voltage.

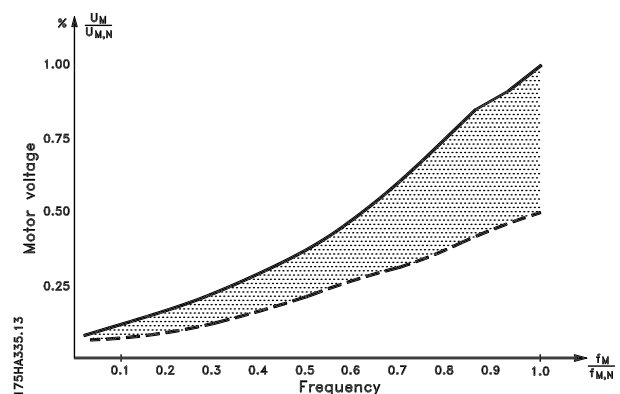
8. Control card

This is where to find the computer that controls the inverter which generates the pulse pattern by which the DC voltage is converted into variable AC voltage with a variable frequency.

■ AEO - Automatic Energy Optimization

Normally, the U/f characteristics have to be set on the basis of the expected load at different frequencies. However, knowing the load at a given frequency in an installation is often a problem. This problem can be solved by using a VLT 8000 AQUA with its integral Automatic Energy Optimization (AEO), which ensures optimum energy utilization. All VLT 8000 AQUA units feature this function as a factory setting, i.e. it is not necessary to adjust the frequency converter U/f ratio in order to obtain maximum energy savings. In other frequency converters, the given load and voltage/frequency ratio (U/f) must be assessed to carry out correct setting of the frequency converter. Using Automatic Energy Optimization (AEO), you no longer need to calculate or assess the system characteristics of the installation, since Danfoss VLT 8000 AQUA units guarantee optimum, load-dependent energy consumption by the motor at all times.

The figure on the right illustrates the working range of the AEO function, within which energy optimization is enabled.



If the AEO function has been selected in parameter 101, *Torque characteristics*, this function will be constantly active. If there is a major deviation from the optimum U/f ratio, the frequency converter will quickly adjust itself.

Advantages of the AEO function

- Automatic energy optimization
- Compensation if an oversize motor is used
- AEO matches operations to daily or seasonal fluctuations
- Energy savings in a constant air volume system
- Compensation in the oversynchronous working range
- Reduces acoustic motor noise

Serial communication

Serial communication allows monitoring, programming and controlling one or several units from a centrally placed computer.

All VLT 8000 AQUA units have an RS 485 port and FC protocol as standard. Option cards are available to support these protocols:

- Profibus
- Modbus RTU
- DeviceNet
- LonWorks

Consult your Danfoss Sales Office for specific Instruction Manuals/Literature.

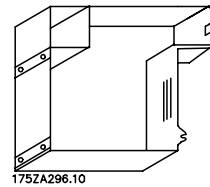
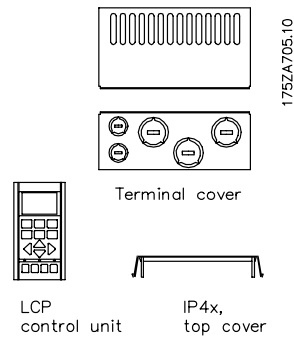
Cascade Controller Option

In "Standard Mode", one motor is controlled by the drive that has the Cascade Controller Option card installed in it. Up to four additional fixed speed motors can be sequenced on & off, as required by the process, in lead-lag mode.

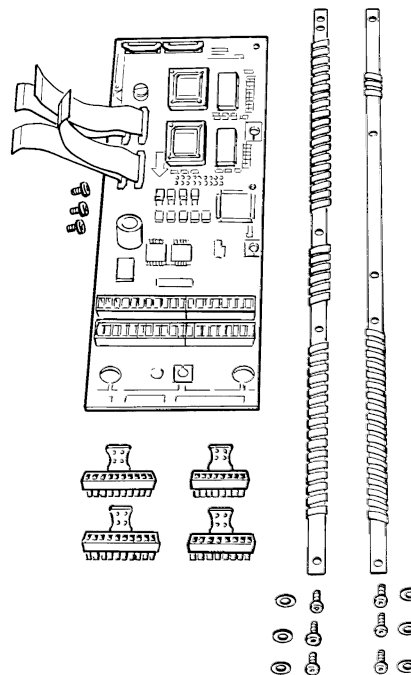
In "Master/Slave Mode", the drive that has the Cascade Controller option card installed in it, along with its associated motor, is designated as the master. Up to four additional motors, each with its own drive, can be operated in slave mode. The Cascade Controller functions to stage the slave drives/motors - on & off (as required), as a function of "best system operating efficiency".

In "Lead Pump Alternation Mode", it is possible to average out the usage of the pumps. This is done by making the frequency converter switch between the pumps (max. 4) by means of a timer. Please note that this mode requires an external relay setup.

Consult your Danfoss Sales Office for additional information.

Accessories


IP 20 bottom cover



Application option

Type	Description	Order no.
IP 4x top cover IP ¹⁾	Option, VLT type 8006-8011 380-480 V compact	175Z0928
IP 4 x top cover ¹⁾	Option, VLT type 8002-8011 525-600 V compact	175Z0928
NEMA 12 bonding plate ²⁾	Option, VLT type 8006-8011 380-480 V	175H4195
IP 20 terminal cover	Option, VLT type 8006-8022 200-240 V	175Z4622
IP 20 terminal cover	Option, VLT type 8027-8032 200-240 V	175Z4623
IP 20 terminal cover	Option, VLT type 8016-8042 380-480 V	175Z4622
IP 20 terminal cover	Option, VLT type 8016-8042 525-600 V	175Z4622
IP 20 terminal cover	Option, VLT type 8052-8072 380-480 V	175Z4623
IP 20 terminal cover	Option, VLT type 8102-8122 380-480 V	175Z4280
IP 20 terminal cover	Option, VLT type 8052-8072 525-600 V	175Z4623
IP 20 bottom cover	Option, VLT type 8042-8062 200-240 V	176F1800
Terminal adaptor kit	VLT type 8042-8062 200-240 V, IP 54	176F1808
Terminal adaptor kit	VLT type 8042-8062 200-240 V, IP 00/NEMA 1	176F1805
Control panel LCP	Separate LCP	175Z7804
LCP remote-mounting kit IP 00 & 20 ³⁾	Remote-mounting kit, incl. 3 m cable	175Z0850
LCP remote-mounting kit IP 54 ⁴⁾	Remote-mounting kit, incl. 3 m cable	175Z7802
LCP blind cover	for all IP00/IP20 drives	175Z7806
Cable for LCP	Separate cable (3 m)	175Z0929
Relay card	Application card with four relay outputs	175Z3691
Cascade controller card	With conformal coating	175Z3692
Profibus option	Without/with conformal coating	175Z3685/175Z3686
LonWorks option, Free topology	Without conformal coating	176F0225
Modbus RTU option	Without conformal coating	175Z3362
DeviceNet option	Without conformal coating	176F0224
MCT 10 Set-up software	CD-Rom	130B1000
MCT 31 Harmonic calculation	CD-Rom	130B1031

Rittal Installation Kit

Type	Description	Order No.
Rittal TS8 enclosure for IP00 ⁵⁾	Installation kit for 1800mm high enclosure, VLT8152-8202, 380-480V; VLT8052-8202, 525-690V	176F1824
Rittal TS8 enclosure for IP00 ⁵⁾	Installation kit for 2000mm high enclosure, VLT8152-8202, 380-480V; VLT8052-8202, 525-690V	176F1826
Rittal TS8 enclosure for IP00 ⁵⁾	Installation kit for 1800mm high enclosure, VLT8252-8352, 380-480V; VLT8252-8402, 525-690V	176F1823
Rittal TS8 enclosure for IP00 ⁵⁾	Installation kit for 2000mm high enclosure, VLT8252-8352, 380-480V; VLT8252-8402, 525-690V	176F1825
Rittal TS8 enclosure for IP00 ⁵⁾	Installation kit for 2000mm high enclosure, VLT8452-8652, 380-480V	176F1850
Floor stand for IP21 and IP54 enclosure ⁵⁾	Option, VLT8152-8352, 380-480V; VLT 8052-8402, 525-690V	176F1827
Mains shield kit	Protection kit, VLT 8152-8352, 380-480 V; VLT 8052, 525-600 V	176F0799
Mains shield kit	Protection kit, VLT 8452-8652, 380-480 V	176F1851

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 remote-mounting kit is IP 65.

4) The remote-mounting kit is only for IP 54 units. Enclosure of the remote-mounting kit is IP 65.

5) For details: See High Power Installation Guide, MI.90.JX.YY.

VLT 8000 AQUA 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 frequency converter with an option.

■ **Control unit LCP**

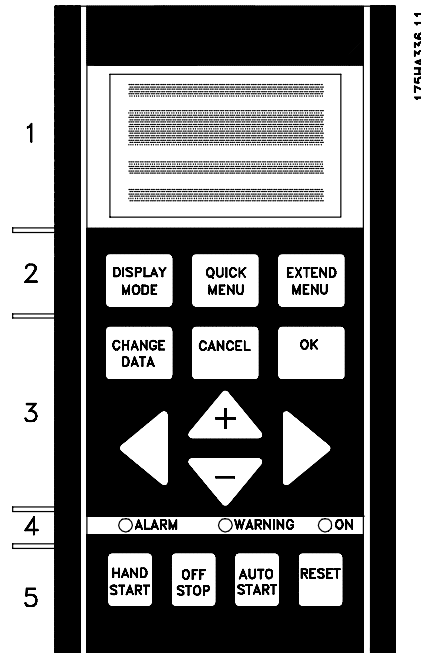
The front of the frequency converter features a control panel - LCP (Local Control Panel). This is a complete interface for operation and programming of the VLT 8000 AQUA. The control panel is detachable and can - as an alternative - be installed up to 3m/10 ft away from the frequency converter, e.g. on the front panel, by means of a mounting kit option.

The functions of the control panel can be divided into five groups:

1. Display
2. Keys for changing display mode
3. Keys for changing program parameters
4. Indicator lamps
5. Keys for local operation.

All data are indicated by means of a 4-line alpha-numeric display, which, in normal operation, is able to show 4 operating data values and 3 operating condition values continuously. During programming, all the information required for quick, effective parameter Setup of the frequency converter will be displayed. As a supplement to the display, there are three indicator lamps for voltage (ON),

warning (WARNING) and alarm (ALARM), respectively. All frequency converter parameter Setups can be changed immediately via the control panel, unless this function has been programmed to be *Locked* [1] via parameter 016 *Lock for data change* or via a digital input, parameters 300-307 *Lock for data change*.



■ **LC filters for VLT 8000 AQUA**

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 8000 AQUA, 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 an 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.

contacted for clarification of requirements. It is recommended to use a LC filter if a frequency converter is used for well pump applications.

Well pumps

If immersion pumps are used, e.g. submerged pumps or well pumps, the supplier should be

■ 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.
8006-8008	IP 00	25.0 A	60 Hz	110 W	175Z4600
8011	IP 00	32 A	60 Hz	120 W	175Z4601
8016	IP 00	46 A	60 Hz	150 W	175Z4602
8022	IP 00	61 A	60 Hz	210 W	175Z4603
8027	IP 00	73 A	60 Hz	290 W	175Z4604
8032	IP 00	88 A	60 Hz	320 W	175Z4605
8042	IP 00	115 A	60 Hz	600 W	175Z4702
8052	IP 00	143 A	60 Hz	600 W	175Z4702
8062	IP 00	170 A	60 Hz	700 W	175Z4703

Mains supply 3 x 380 - 480

LC filter for VLT type	LC filter enclosure	Rated current at 400/480 V	Max. output frequency	Power loss	Order no.
8006-8011	IP 20	16 A / 16 A	120 Hz		175Z0832
8016	IP 00	24 A / 21.7 A	60 Hz	170 W	175Z4606
8022	IP 00	32 A / 27.9 A	60 Hz	180 W	175Z4607
8027	IP 00	37.5 A / 32 A	60 Hz	190 W	175Z4608
8032	IP 00	44 A / 41.4 A	60 Hz	210 W	175Z4609
8042	IP 00	61 A / 54 A	60 Hz	290 W	175Z4610
8052	IP 00	73 A / 65 A	60 Hz	410 W	175Z4611
8062	IP 00	90 A / 78 A	60 Hz	480 W	175Z4612
8072	IP 20	106 A / 106 A	60 Hz	500 W	175Z4701
8102	IP 20	147 A / 130 A	60 Hz	600 W	175Z4702
8122	IP 20	177 A / 160 A	60 Hz	750 W	175Z4703
8152	IP 20	212 A / 190 A	60 Hz	750 W	175Z4704
8202	IP 20	260 A / 240 A	60 Hz	900 W	175Z4705
8252	IP 20	315 A / 302 A	60 Hz	1000 W	175Z4706
8302	IP 20	395 A / 361 A	60 Hz	1100 W	175Z4707
8352	IP 20	480 A / 443 A	60 Hz	1700 W	175Z3139
8452	IP 20	600 A / 540 A	60 Hz	2100 W	175Z3140
8502	IP 20	658 A / 590 A	60 Hz	2100 W	175Z3141
8602	IP 20	745 A / 678 A	60 Hz	2500 W	175Z3142

Regarding LC filters for 525 - 600 V and VLT 8652, 380-480 V, please contact Danfoss.


NB!:

When using LC filters, the switching frequency must be 4.5 kHz (see parameter 407).

For VLT 8452-8602 parameter 408 must be set to *LC filter fitted* to obtain proper operation.

Mains supply 3 x 690 V

VLT	Rated Current at 690 V	Max. output frequency (Hz)	Power dissipation (W)	Ordering no. IP00	Ordering no. IP20
8052	54	60	290	130B2223	130B2258
8062	73	60	390	130B2225	130B2260
8072	86	60	480	130B2225	130B2260
8102	108	60	600	130B2226	130B2261
8122	131	60	550	130B2228	130B2263
8152	155	60	680	130B2228	130B2263
8202	192	60	920	130B2229	130B2264
8252	242	60	750	130B2231	130B2266
8302	290	60	1000	130B2231	130B2266
8352	344	60	1050	130B2232	130B2267
8402	400	60	1150	130B2234	130B2269

dU/dt filters

The dU/dt filters reduce dU/dt to approx. 500 V / μ sec. These filters do not reduce noise or Upeak.

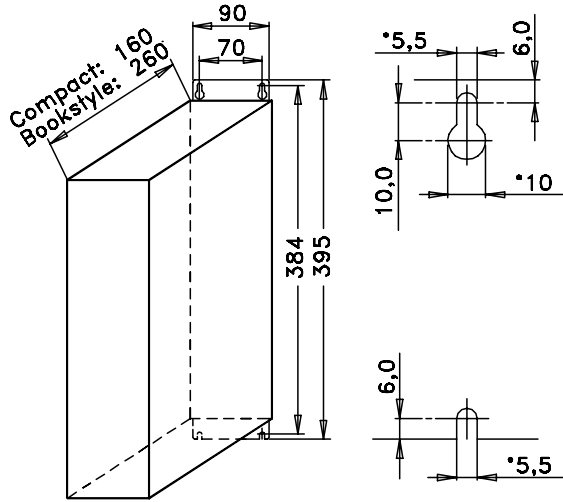

NB!:

When using dU/dt filters, the switching frequency must be 1.5 kHz (see parameter 411)

Mains supply 3 x 690 V

VLT	Rated Current at 690 V	Max. output frequency (Hz)	Power dissipation (W)	Ordering no. IP 00	Ordering no. IP20
8052	54	60	90	130B2154	130B2188
8062	73	60	100	130B2155	130B2189
8072	86	60	110	130B2156	130B2190
8102	108	60	120	130B2157	130B2191
8122	131	60	150	130B2158	130B2192
8152	155	60	180	130B2159	130B2193
8202	192	60	190	130B2160	130B2194
8252	242	60	210	130B2161	130B2195
8302	290	60	350	130B2162	130B2196
8352	344	60	480	130B2163	130B2197
8402	400	60	540	130B2165	130B2199

■ LC filters VLT 8006-8011 380 - 480 V



175ZA106.11

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:

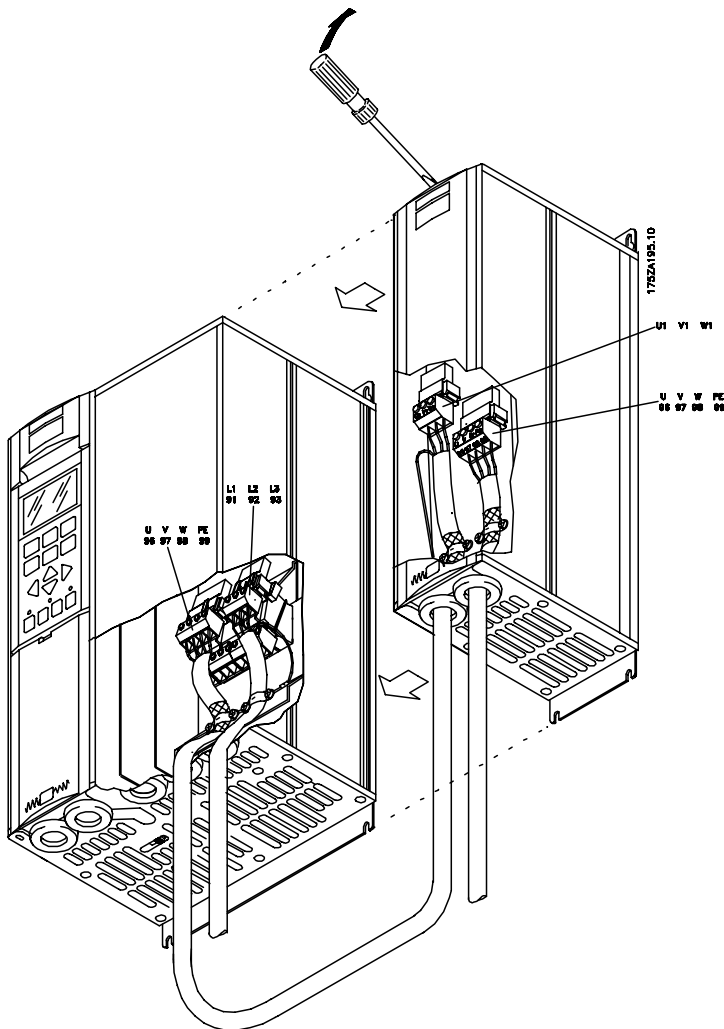
- EN 55011-1B: Max. 50 screened/armoured cable
- EN 55011-1A: Max. 150 m screened/armoured cable

Weight: 175Z0832

9.5 kg

Introduction

■ Installation of LC filter IP 20



■ LC filters VLT 8006-8032, 200 - 240 V /
8016-8062 380 - 480 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:

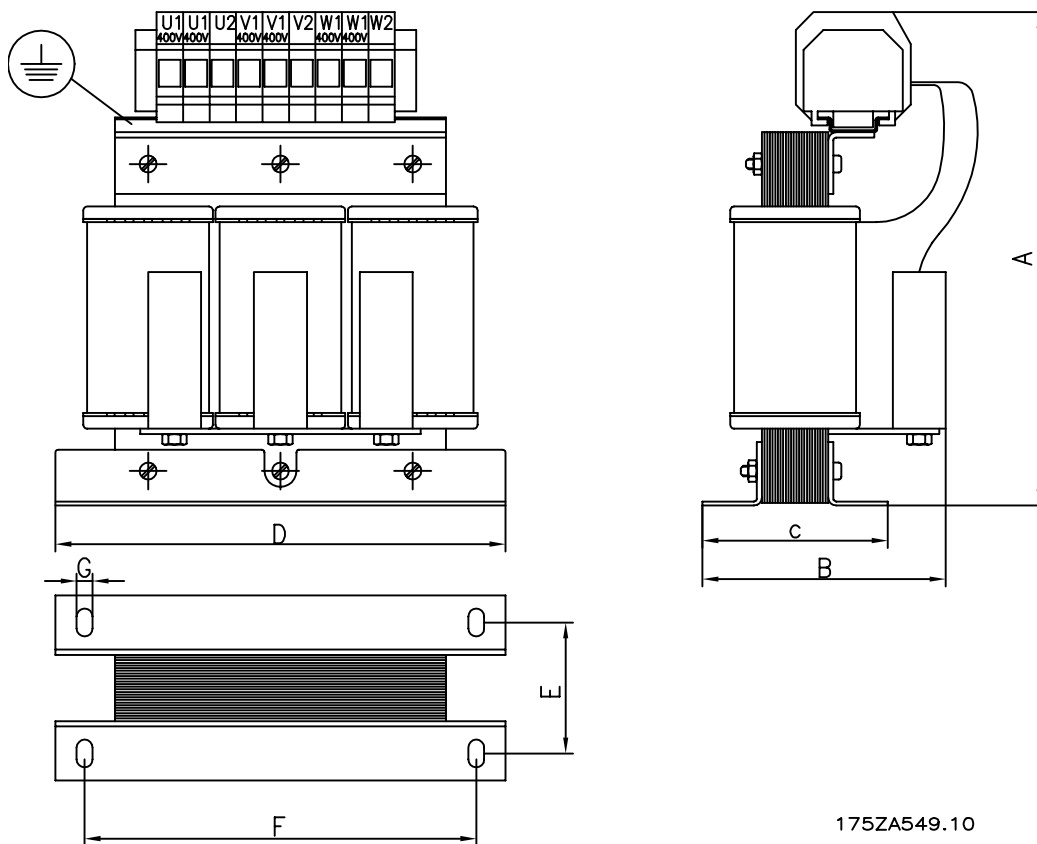
- 150 m screened/armoured cable
- 300 m unscreened/unarmoured cable

If EMC standards are to be complied with:

- EN 55011-1B: Max. 50 screened/armoured cable
- 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



■ LC filter VLT 8042-8062 200-240 V /
8072-8602 380 - 480 V

The table and the drawing give the measurements of IP 20 LC filters. IP 20 LC filters must be integrated and protected against dust, water and aggressive gases.

Max. motor cable length:

- 150 m screened/armoured cable
- 300 m unscreened/unarmoured cable

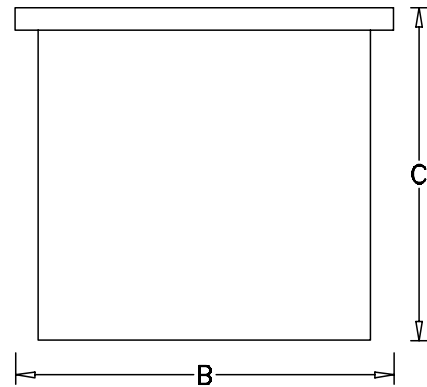
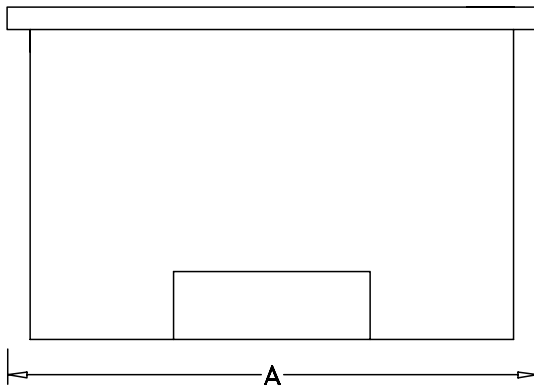
If EMC standards are to be complied with:

- EN 55011-1B: Max. 50 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
175Z3139	1350	800	1000					350
175Z3140	1350	800	1000					400
175Z3141	1350	800	1000					400
175Z3142	1350	800	1000					470

175HA428.10



■ Harmonic filter

Harmonic currents do not directly affect the electricity consumption but has an impact on following conditions:

- Higher total current to be handled by the installations
- Increases load on transformer (sometimes it will require a larger transformer, particular at retrofit)
 - Increases heat losses in transformer and installation
 - In some cases demands larger cables, switches and fuses
- Higher voltage distortion due to higher current
- Increase risk for disturbing electronic equipment connected to same grid

A high percentage of rectifier load from eg frequency converters, will increase the harmonic current, which must be reduced to avoid the above consequences. Therefore the frequency converter has as standard, built in DC coils reducing the total current with about 40% (compared to devices without any arrangement for harmonic suppression), down to 40-45% ThID.

In some cases there is a need for further suppression (eg retrofit with frequency converters). For this purpose Danfoss can offer two advanced harmonic filters AHF05 and AHF10, bringing the harmonic current down to around 5% and 10% respectively. For further details see instruction MG.80.BX.YY.

■ Ordering numbers, Harmonic filters

Harmonic filters are used to reduce mains harmonics

- AHF 010: 10% current distortion
- AHF 005: 5% current distortion

380-415 V, 50 Hz

I _{AHF,N}	Typical Motor Used [kW]	Danfoss ordering number		VLT 8000
		AHF 005	AHF 010	
10 A	4, 5.5	175G6600	175G6622	8006, 8008
19 A	7.5	175G6601	175G6623	8011, 8016
26 A	11	175G6602	175G6624	8022
35 A	15, 18.5	175G6603	175G6625	8027
43 A	22	175G6604	175G6626	8032
72 A	30, 37	175G6605	175G6627	8042, 8052
101 A	45, 55	175G6606	175G6628	8062, 8072
144 A	75	175G6607	175G6629	8102
180 A	90	175G6608	175G6630	8122
217 A	110	175G6609	175G6631	8152
289 A	132, 160	175G6610	175G6632	8202, 8252
324 A		175G6611	175G6633	
370 A	200	175G6688	175G6691	8302
Higher ratings can be achieved by paralleling the filter units				
434 A	250	Two 217 A units		8352
578 A	315	Two 289 A units		8452
613 A	355	289 A and 324 A units		8502
648 A	400	Two 324 A units		8602
740 A	450	Two 370 A units		8652

Please note that the matching of the typical Danfoss frequency converter and filter is pre-calculated based on 400 V and assuming typical motor load (4 or 2 pole motor). VLT 8000 is based on a max. 110% torque application.

The pre-calculated filter current may be different than the input current ratings of VLT 8000 as stated in the respective operating instructions, as these numbers are based on different operating conditions.

440-480 V, 60 Hz

I _{AHF,N}	Typical Motor Used [HP]	Danfoss ordering number		VLT 8000
		AHF 005	AHF 010	
19 A	10, 15	175G6612	175G6634	8011, 8016
26 A	20	175G6613	175G6635	8022
35 A	25, 30	175G6614	175G6636	8027, 8032
43 A	40	175G6615	175G6637	8042
72 A	50, 60	175G6616	175G6638	8052, 8062
101 A	75	175G6617	175G6639	8072
144 A	100, 125	175G6618	175G6640	8102, 8122
180 A	150	175G6619	175G6641	8152
217 A	200	175G6620	175G6642	8202
289 A	250	175G6621	175G6643	8252
324 A	300	175G6689	175G6692	8302
370 A	350	175G6690	175G6693	8352
Higher ratings can be achieved by paralleling the filter units				
506 A	450	217 A and 289 A units		8452
578 A	500	Two 289 A units		8502
578 A	550	Two 289 A units		8602
648 A	600	Two 324 A units		8652

Please note that the matching of the Danfoss frequency converter and filter is pre-calculated based on 480 V and assuming typical motor load. VLT 8000 is based on 110 % torque application.

The pre-calculated filter current may be varying from the input current ratings of VLT 8000 as stated in the respective operating instructions, as these numbers are based on different operating conditions.

690 V, 50 Hz

I _{AHF,N}	Typical motor used	Ordering no. AHF 005	Ordering no. AHF 010	VLT 8000 110%
43	37, 45	130B2328	130B2293	8052
72	55, 75	130B2330	130B2295	8062, 8072
101	90	130B2331	130B2296	8102
144	110, 132	130B2333	130B2298	8122, 8152
180	160	130B2334	130B2299	8202
217	200	130B2335	130B2300	8252
289	250	130B2331 & 130B2333	130B2301	8302
324	315	130B2333 & 130B2334	130B2302	8352
370	400	130B2334 & 130B2335	130B2304	8402

■ 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 380-480 V units	3 x 380/400/415/440/460/480 V ±10%
Supply voltage 525-600 V units	3 x 525/550/575/600 V ±10%
Supply voltage 525-690 V units	3 x 525/550/575/600/690 V ±10%
Supply frequency	48-62 Hz +/- 1%

Max imbalance of supply voltage:

VLT 8006-8011/380-480 V and VLT 8002-8011/525-600 V	±2.0% of rated supply voltage
VLT 8016-8072/525-600 V, 380-480 V and VLT 8006-8032/200-240 V	±1.5% of rated supply voltage
VLT 8102-8652/380-480 V and VLT 8042-8062/200-240 V	±3.0% of rated supply voltage
VLT 8052-8402/525-690 V	±3.0% of rated supply voltage
Displacement factor / cos. ϕ	near unity (> 0.98)
True Power Factor (λ)	nominal 0.90 at rated load
Input Mains (L1, L2, L3) Allowable On-OFF Switching Sequences	approx. 1 time/2 min.
Max. short-circuit current	100 kA

VLT output data (U, V, W):

Output voltage	0-100% of supply voltage
Output frequency 8006-8032, 200-240V	0 - 120 Hz, 0-1000 Hz
Output frequency 8042-8062, 200-240V	0 - 120 Hz, 0-450 Hz
Output frequency 8072-8652, 380-460V	0 - 120 Hz, 0-450 Hz
Output frequency 8002-8016, 525-600V	0 - 120 Hz, 0-1000 Hz
Output frequency 8022-8062, 525-600V	0 - 120 Hz, 0-450 Hz
Output frequency 8072, 525-600V	0 - 120 Hz, 0-450 Hz
Output frequency 8052-8352, 525-690V	0 - 132 Hz, 0-200 Hz
Output frequency 8402, 525-690V	0 - 132 Hz, 0-150 Hz
Rated motor voltage, 200-240 V units	200/208/220/230/240 V
Rated motor voltage, 380-480 V units	380/400/415/440/460/480 V
Rated motor voltage, 525-600 V units	525/550/575 V
Rated motor voltage, 525-690 V units	525/550/575/690 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 <i>High break-away torque</i>)	Max. torque: 130% 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 k Ω
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. See switches 1-4.

Control card, analog inputs:

No. of programmable analog voltage inputs/thermistor inputs	2
Terminal nos.	53, 54
Voltage level	0 - 10 V DC (scalable)
Input resistance, R_i	approx. 10 Ω
No. of programmable analog current inputs	1
Terminal no. earth	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 analog inputs are galvanically isolated from the supply voltage (PELV) and other high-voltage terminals.

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 k Ω
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. See switches 1-4.

Control card, digital/pulse and analog outputs:

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

Reliable galvanic isolation: All digital and analog 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. earth	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 analog outputs.

 Control card, RS 485 serial communication :

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

Reliable galvanic isolation: Full galvanic isolation (PELV).

 Relay outputs:1)

No. of programmable relay outputs	2
Terminal nos., control card (resistive load only)	4-5 (make)
Max. terminal load (AC1) on 4-5, control card	50 V AC, 1 A, 50 VA
Max. terminal load (DC1 (IEC 947)) on 4-5, control card	25 V DC, 2 A / 50 V DC, 1 A, 50 W
Max. terminal load (DC1) on 4-5, control card for UL/cUL applications	30 V AC, 1 A / 42.5 V DC, 1A
Terminal nos., power card (resistive and inductive load)	1-3 (break), 1-2 (make)
Max. terminal load (AC1) on 1-3, 1-2, power card	250 V AC, 2 A, 500 VA
Max. terminal load (DC1 (IEC 947)) on 1-3, 1-2, power card	25 V DC, 2 A / 50 V DC, 1A, 50 W
Min. terminal load (AC/DC) on 1-3, 1-2, power card	24 V DC, 10 mA / 24 V AC, 100 mA

1) Rated values for up to 300,000 operations.

At inductive loads the number of operations are reduced by 50%, alternatively the current can be reduced by 50%, thus the 300,000 operations are maintained.

 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	150m/500 ft
Max. motor cable length, unscreened cable	300m/1000 ft
Max. motor cable length, screened cable VLT 8011 380-480 V	100m/330 ft
Max. motor cable length, screened cable VLT 8011 525-600 V	50m/164 ft
Max. DC-bus cable length, screened cable	25m/82 ft from frequency converter to DC bar.
<i>Max. cable cross-section to motor, see next section</i>	
Max. cross-section for 24 V external DC supply	2.5 mm ² /12 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

If UL/cUL is to be complied with, copper cable with temperature class 60/75°C / 140/167°F must be used (VLT 8002 - 8072 (525 - 600 V), VLT 8006 - 8072 (380 - 480 V) and VLT 8002 - 8032 (200 - 240V). If UL/cUL is to be complied with, copper cable with temperature class 75°C/167°F must be used (VLT 8102 - 8652 (380 - 480 V), VLT 8042 - 8062 (200 - 240 V), VLT 8052 - 8402 (525-690 V)).

Connectors are for use of both copper and aluminium cables, unless other is specified.

Control characteristics:

Frequency range	0 - 120 Hz
Resolution on output frequency	±0.003 Hz
System response time	3 msec.
Speed, control range (open loop)	1:100 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, 0 - 140% load	Max. error: ±2.0% of rated output current
Power kW, Power HP, 0 - 90% load	Max. error: ±5.0% of rated output power

Externals:

Enclosure	IP00/Chassis, IP20/IP21/NEMA 1, IP54/NEMA 12
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
Aggressive environment (IEC 721-3-3)	Uncoated class 3C2
Aggressive environment (IEC 721-3-3)	Coated class 3C3
Ambient temperature, VLT 8006-8011 380-480 V, 8002-8011 525-600 V, IP 20//NEMA 1	
Max. 45°C (117°F) (24-hour average max. 40°C (104°F))	
Ambient temperature IP00/Chassis, IP20/NEMA 1, IP54/NEMA 12	Max.
40°C/104°F (24-hour average max. 35°C/95°F)	
<i>see Derating for high ambient temperature</i>	
Min. ambient temperature in full operation	0°C (32°F)
Min. ambient temperature at reduced performance	-10°C (14°F)
Temperature during storage/transport	-25° - +65°/70°C (-13° - +149°/158°F)
Max. altitude above sea level	1000 m (3300 ft)
<i>see Derating for high air pressure</i>	

Installation



NB!:

VLT 8002-8072, 525-600 V units do not comply with EMC, Low Voltage or PELV directives.

VLT 8000 AQUA protection:

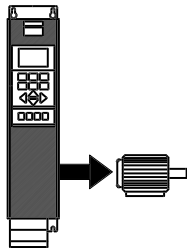
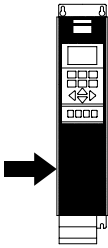
- Electronic motor thermal protection against overload.
- Temperature monitoring of heat-sink ensures that the frequency converter cuts out if the temperature reaches 90°C (194 °F) for IP00, IP20 and NEMA 1. For IP54, the cut-out temperature is 80°C (176 °F). An overtemperature can only be reset when the temperature of the heat-sink has fallen below 60°C (140 °F).

For the units mentioned below, the limits are as follows:

- VLT 8152, 380-480 V, cuts out at 75 °C (167 °F) and can be reset if the temperature is below 60 °C (140 °F).
- VLT 8202, 380-480 V, cuts out at 80 °C (176 °F) and can be reset if the temperature has fallen below 60° C (140 °F).
- VLT 8252, 380-480 V, cuts out at 95 °C (203 °F) and can be reset if the temperature has fallen below 65° C (149 °F).
- VLT 8302, 380-480 V, cuts out at 95 °C (203 °F) and can be reset if the temperature has fallen below 65° C (149 °F).
- VLT 8352, 380-480 V, cuts out at 105 °C (221 °F) and can be reset if the temperature has fallen below 75° C (167 °F).
- VLT 8452-8652, 380-480 V, cuts out at 85 °C (185 °F) and can be reset if the temperature has fallen below 60° C (140 °F).
- VLT 8052-8152, 525-690 V, cuts out at 75 °C (167 °F) and can be reset if the temperature has fallen below 60° C (140 °F).
- VLT 8202-8402, 525-690 V, cuts out at 100°C (212 °F) and can be reset if the temperature has fallen below 70° C (158 °F).

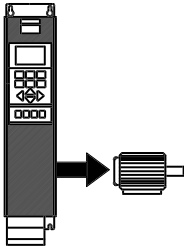
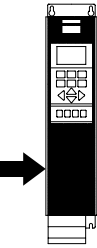
- The frequency converter is protected against short-circuiting on motor terminals U, V, W.
- The frequency converter is protected against earth fault on motor terminals U, V, W.
- Monitoring of the intermediate circuit voltage ensures that the frequency converter cuts out if the intermediate circuit voltage gets too high or too low.
- If a motor phase is missing, the frequency converter cuts out.
- If there is a mains fault, the frequency converter is able to carry out a controlled deceleration.
- If a mains phase is missing, the frequency converter will cut out or autoderate when a load is placed on the motor.

■ Technical data, mains supply 3 x 200 - 240 V

According to international requirements		VLT type	8006	8008	8011	
	Output current ⁴⁾	$I_{VLT,N}$ [A]	16.7	24.2	30.8	
		$I_{VLT, MAX}$ (60 s) [A]	18.4	26.6	33.9	
	Output power (240 V)	$S_{VLT,N}$ [kVA]	6.9	10.1	12.8	
	Typical shaft output	$P_{VLT,N}$ [kW]	4.0	5.5	7.5	
	Typical shaft output	$P_{VLT,N}$ [HP]	5	7.5	10	
Max. cable cross-section to motor and DC-bus	$[mm^2] / [AWG]$		10/8	16/6	16/6	
	Max. input current	$(200\text{ V}) (RMS)_{L,N}$ [A]	16.0	23.0	30.0	
	Max. cable cross-section power	$[mm^2] / [AWG]^2$	4/10	16/6	16/6	
	Max. pre-fuses	$[-] / UL^1$ [A]	35/30	50	60	
	Mains contactor	[Danfoss type]	CI 6	CI 9	CI 16	
	Efficiency ³⁾		0.95	0.95	0.95	
	Weight IP 20	[kg/lbs]	23/51	23/51	23/51	
	Weight IP 54	[kg/lbs]	35/77	35/77	38/84	
	Power loss at max. load. [W]	Total	194	426	545	
	Enclosure	VLT type	IP 20/ NEMA 1, IP 54/NEMA 12			

1. For type of fuse, see section *Fuses*.
2. American Wire Gauge.
3. Measured using 30 m/100 ft screened motor cables at rated load and rated frequency.
4. Current ratings fulfill UL requirements for 208-240 V.

■ Technical data, mains supply 3 x 200 - 240 V

According to international requirements		VLT type	8016	8022	8027	8032	8042	8052	8062
 Output current ⁴⁾	$I_{VLT,N}$ [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 power	$S_{VLT,N}$ [kVA] (240 V)		19.1	24.7	31.1	36.6	41.0	52.0	61.0
	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 [mm ²]/[AWG] ^{2) 5)}	Copper		16/6	35/2	35/2	50/0	70/1/0	95/3/0	120/4/0
	Aluminium ⁶⁾		16/6	35/2	35/2	50/0	95/3/0 ⁵⁾	90/250 mcm ⁵⁾	120/300 mcm ⁵⁾
Min. cable cross-section to motor and DC-bus [mm ²]/[AWG] ²⁾			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 [mm ²]/[AWG] ^{2) 5)}	Copper		16/6	35/2	35/2	50/0	70/1/0	95/3/0	120/4/0
	Aluminium ⁶⁾		16/6	35/2	35/2	50/0	95/3/0 ⁵⁾	90/250 mcm ⁵⁾	120/300 mcm ⁵⁾
Max. pre-fuses [-]/UL ¹⁾ [A]			60	80	125	125	150	200	250
Mains contactor [Danfoss type] [AC value]			CI 32	CI 32	CI 37	CI 61	CI 85	CI 85	CI 141
			AC-1	AC-1	AC-1	AC-1			
Efficiency ³⁾			0.95	0.95	0.95	0.95	0.95	0.95	0.95
Weight IP 00/Chassis		[kg/lbs]	-	-	-	-	90/198	90/198	90/198
Weight IP 20/NEMA 1		[kg/lbs]	23/51	30/66	30/66	48/106	101/223	101/223	101/223
Weight IP 54		[kg/lbs]	38/84	49/108	50/110	55/121	104/229	104/229	104/229
Power loss at max. load.		[W]	545	783	1042	1243	1089	1361	1613
Enclosure			IP 00/IP 20/NEMA 1/IP 54/NEMA 12						

1. For type of fuse, see section *Fuses*.

2. American Wire Gauge.

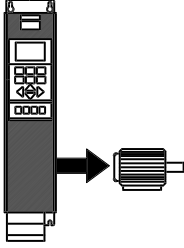
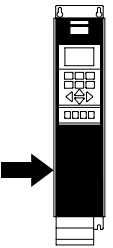
3. Measured using 30 m/100 ft screened motor cables at rated load and rated frequency.

4. Current ratings fulfill UL requirements for 208-240 V.

5. Connection stud 1 x M8 / 2 x M8.

6. Aluminium cables with cross section above 35 mm² must be connected by use of an Al-Cu connector.

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

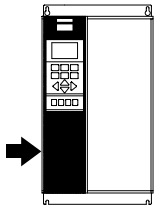
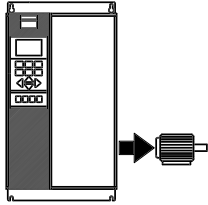
According to international requirements		VLT type	8006	8008	8011
	Output current	$I_{VLT,N}$ [A] (380-440 V)	10.0	13.0	16.0
		$I_{VLT, MAX}$ (60 s) [A] (380-440 V)	11.0	14.3	17.6
		$I_{VLT,N}$ [A] (441-480 V)	8.2	11.0	14.0
		$I_{VLT, MAX}$ (60 s) [A] (441-480 V)	9.0	12.1	15.4
	Output power	$S_{VLT,N}$ [kVA] (400 V)	7.2	9.3	11.5
		$S_{VLT,N}$ [kVA] (460 V)	6.5	8.8	11.2
	Typical shaft output	$P_{VLT,N}$ [kW]	4.0	5.5	7.5
	Typical shaft output	$P_{VLT,N}$ [HP]	5	7.5	10
	Max. cable cross-section to motor	[mm ²] / [AWG] ^{2) 4)}	4/10	4/10	4/10
	Max. input current (RMS)	$I_{L,N}$ [A] (380 V)	9.1	12.2	15.0
		$I_{L,N}$ [A] (480 V)	8.3	10.6	14.0
	Max. cable cross-section power	[mm ²] / [AWG] ^{2) 4)}	4/10	4/10	4/10
	Max. pre-fuses	[-] / [UL ¹⁾] [A]	25/20	25/25	35/30
	Mains contactor	[Danfoss type]	CI 6	CI 6	CI 6
	Efficiency ³⁾		0.96	0.96	0.96
	Weight IP 20/NEMA 1	[kg/lbs]	10.5/23	10.5/23	10.5/23
	Weight IP 54/NEMA 12	[kg/lbs]	14/31	14/31	14/31
	Power loss at max. load. [W]	Total	198	250	295
		Enclosure	VLT type	IP 20/NEMA 1 / IP 54/NEMA 12	

Installation

1. For type of fuse, see section *Fuses*.
 2. American Wire Gauge.
 3. Measured using 30 m/100 ft screened motor cables at rated load and rated frequency.
 4. Max. cable cross section is the maximum possible cable cross section that can be fitted on the terminals.
- Always comply with national and local regulations on min. cable cross-section.

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

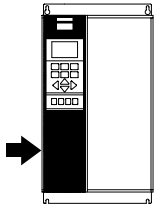
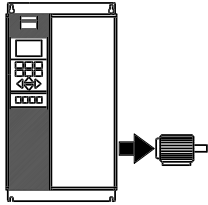
According to international requirements		VLT type	8016	8022	8027	8032	8042
Output current	$I_{VLT,N}$ [A] (380-440 V)		24.0	32.0	37.5	44.0	61.0
	$I_{VLT,MAX}$ (60 s) [A] (380-440 V)		26.4	35.2	41.3	48.4	67.1
	$I_{VLT,N}$ [A] (441-480 V)		21.0	27.0	34.0	40.0	52.0
	$I_{VLT,MAX}$ (60 s) [A] (441-480 V)		23.1	29.7	37.4	44.0	57.2
Output power	$S_{VLT,N}$ [kVA] (400 V)		17.3	23.0	27.0	31.6	43.8
	$S_{VLT,N}$ [kVA] (460 V)		16.7	21.5	27.1	31.9	41.4
Typical shaft output	$P_{VLT,N}$ [kW]		11	15	18.5	22	30
Typical shaft output	$P_{VLT,N}$ [HP]		15	20	25	30	40
Max. cable cross-section to motor and DC-bus, IP 20	[mm ²]/[AWG] ^{2) 4)}		16/6	16/6	16/6	35/2	35/2
Max. cable cross-section to motor and DC-bus, IP 54			16/6	16/6	16/6	16/6	35/2
Min. cable cross-section to motor and DC-bus	[mm ²]/[AWG] ^{2) 4)}		10/8	10/8	10/8	10/8	10/8
Max. input current (RMS)	$I_{L,N}$ [A] (380 V)		24.0	32.0	37.5	44.0	60.0
	$I_{L,N}$ [A] (480 V)		21.0	27.6	34.0	41.0	53.0
Max. cable cross-section power, IP 20	[mm ²]/[AWG] ^{2) 4)}		16/6	16/6	16/6	35/2	35/2
Max. cable cross-section power, IP 54			16/6	16/6	16/6	16/6	35/2
Max. pre-fuses	[-]/UL ¹⁾ [A]		63/40	63/40	63/50	63/60	80/80
Mains contactor	[Danfoss type]		CI 9	CI 16	CI 16	CI 32	CI 32
Efficiency at rated frequency			0.96	0.96	0.96	0.96	0.96
Weight IP 20/NEMA 1	[kg/lbs]		21/46	21/46	22/49	27/60	28/62
Weight IP 54/NEMA 12	[kg/lbs]		41/90	41/90	42/93	42/93	54/119
Power loss at max. load.	[W]		419	559	655	768	1065
Enclosure			IP 20/NEMA 1/ IP 54/NEMA 12				



1. For type of fuse, see section *Fuses*.
 2. American Wire Gauge.
 3. Measured using 30 m/100 ft 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. Max. cable cross section is the maximum possible cable cross section that can be fitted on the terminals.
- Always comply with national and local regulations on min. cable cross-section.

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

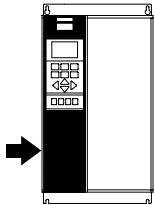
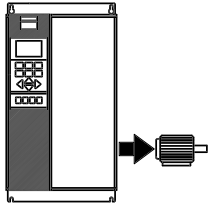
According to international requirements		VLT type	8052	8062	8072	8102	8122
Output current	$I_{VLT,N}$ [A] (380-440 V)		73.0	90.0	106	147	177
	$I_{VLT, MAX}$ (60 s) [A] (380-440 V)		80.3	99.0	117	162	195
	$I_{VLT,N}$ [A] (441-480 V)		65.0	77.0	106	130	160
	$I_{VLT, MAX}$ (60 s) [A] (441-480 V)		71.5	84.7	117	143	176
Output power	$S_{VLT,N}$ [kVA] (400 V)		52.5	64.7	73.4	102	123
	$S_{VLT,N}$ [kVA] (460 V)		51.8	61.3	84.5	104	127
Typical shaft output	$P_{VLT,N}$ [kW]		37	45	55	75	90
Typical shaft output	$P_{VLT,N}$ [HP]		50	60	75	100	125
Max. cable cross-section to motor and DC-bus, IP 20	$[mm^2]/[AWG]^{2) 4) 6)}$		35/2	50/0	50/0	120 / 250	120 / 250
						mcm ⁵⁾	mcm ⁵⁾
Max. cable cross-section to motor and DC-bus, IP 54	$[mm^2]/[AWG]^{2) 4) 6)}$		35/2	50/0	50/0	150 / 300	150 / 300
						mcm ⁵⁾	mcm ⁵⁾
Min. cable cross-section to motor and DC-bus	$[mm^2]/[AWG]^{2) 4)}$		10/8	16/6	16/6	25/4	25/4
Max. input current (RMS)	$I_{L,N}$ [A] (380 V)		72.0	89.0	104	145	174
	$I_{L,N}$ [A] (480 V)		64.0	77.0	104	128	158
Max. cable cross-section power, IP 20	$[mm^2]/[AWG]^{2) 4) 6)}$		35/2	50/0	50/0	120 / 250	120 / 250
						mcm	mcm
Max. cable cross-section power, IP 54	$[mm^2]/[AWG]^{2) 4) 6)}$		35/2	50/0	50/0	150 / 300	150 / 300
						mcm	mcm
Max. pre-fuses	$[-]/[UL^1)$ [A]		100/100	125/125	150/150	225/225	250/250
Mains contactor	[Danfoss type]		CI 37	CI 61	CI 85	CI 85	CI 141
Efficiency at rated frequency			0.96	0.96	0.96	0.98	0.98
Weight IP 20/NEMA 1	[kg/lbs]		41/90	42/93	43/96	54/119	54/119
Weight IP 54/NEMA 12	[kg/lbs]		56/123	56/123	60/132	77/170	77/170
Power loss at max. load.	[W]		1275	1571	1322	1467	1766
Enclosure			IP 20/NEMA 1/IP 54/NEMA 12				



1. For type of fuse, see section *Fuses*.
2. American Wire Gauge.
3. Measured using 30 m/100 ft 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.
Max. cable cross section is the maximum possible cable cross section that can be fitted on the terminals.
Always comply with national and local regulations on min. cable cross-section.
5. DC connection 95 mm²/AWG 3/0.
6. Aluminium cables with cross-section above 35 mm² must be connected by use of an Al-Cu connector.

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

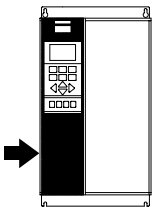
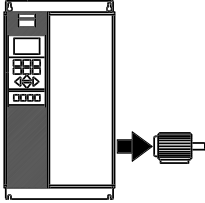
According to international requirements		VLT type	8152	8202	8252	8302	8352
Output current	$I_{VLT,N}$ [A] (380-440 V)		212	260	315	395	480
	$I_{VLT,MAX}$ (60 s) [A] (380-440 V)		233	286	347	435	528
	$I_{VLT,N}$ [A] (441-480 V)		190	240	302	361	443
	$I_{VLT,MAX}$ (60 s) [A] (441-480 V)		209	264	332	397	487
Output power	$S_{VLT,N}$ [kVA] (400 V)		147	180	218	274	333
	$S_{VLT,N}$ [kVA] (460 V)		151	191	241	288	353
Typical shaft output (380-440 V) $P_{VLT,N}$ [kW]			110	132	160	200	250
Typical shaft output (441-480 V) $P_{VLT,N}$ [HP]			150	200	250	300	350
Max. cable cross-section to motor and DC-bus [mm ²] ^{2) 4) 5)}			2x70	2x70	2x185	2x185	2x185
Max. cable cross-section to motor and DC-bus [AWG] ^{2) 4) 5)}			2x2/0	2x2/0	2x350	2x350	2x350
Min. cable cross-section to motor and DC-bus [mm ² /AWG] ^{2) 4) 5)}			35/2	35/2	35/2	35/2	35/2
Max. input current	$I_{L,N}$ [A] (380 V)		208	256	317	385	467
	(RMS) $I_{L,N}$ [A] (480 V)		185	236	304	356	431
Max. cable cross-section to power [mm ²] ^{2) 4) 5)}			2x70	2x70	2x185	2x185	2x185
Max. cable cross-section to power [AWG] ^{2) 4) 5)}			2x2/0	2x2/0	2x350	2x350	2x350
Max. pre-fuses [-]/UL ¹⁾ [A]			300/300	350/350	450/400	500/500	630/600
Mains contactor	[Danfoss type]		CI 141	CI 250EL	CI 250EL	CI 300EL	CI 300EL
Weight IP 00/Chassis	[kg/lbs]		82/181	91/201	112/247	123/271	138/304
Weight IP 20/NEMA 1	[kg/lbs]		96/212	104/229	125/276	136/300	151/333
Weight IP 54/NEMA 12	[kg/lbs]		96/212	104/229	125/276	136/300	151/333
Efficiency at rated frequency			0.98				
Power loss at max. load.	[W]		2619	3309	4163	4977	6107
Enclosure			IP 00/Chassis/IP 21/NEMA 1/IP 54/NEMA 12				



1. For type of fuse, see section *Fuses*.
2. American Wire Gauge.
3. Measured using 30 m/100 ft 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. Max. cable cross section is the maximum possible cable cross section that can be fitted on the terminals.
Always comply with national and local regulations on min. cable cross-section.
5. Connection bolt 1 x M10 / 2 x M10 (mains and motor), connection bolt 1 x M8 / 2 x M8 (DC-bus).

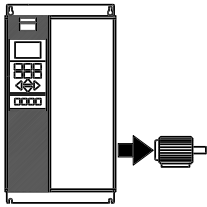
■ Technical data, mains supply 3 x 380 - 480 V

According to international requirements	VLT type	8452	8502	8602	8652
Output current	$I_{VLT,N}$ [A] (380-440 V)	600	658	745	800
	$I_{VLT,MAX}$ (60 s) [A] (380-440 V)	660	724	820	800
	$I_{VLT,N}$ [A] (441-480 V)	540	590	678	730
	$I_{VLT,MAX}$ (60 s) [A] (441-480 V)	594	649	746	803
Output power	$S_{VLT,N}$ [kVA] (400 V)	416	456	516	554
	$S_{VLT,N}$ [kVA] (480 V)	430	470	540	582
Typical shaft output (380-440 V)	$P_{VLT,N}$ [kW]	315	355	400	450
Typical shaft output (441-480 V)	$P_{VLT,N}$ [HP]	450	500	550/600	600
Max. cable cross-section to motor and DC-bus		4 x 240	4 x 240	4 x 240	4 x 240
	[mm ²] ^{4) 5)}				
Max. cable cross-section to motor and DC-bus		4 x 500 mcm	4 x 500 mcm	4 x 500 mcm	4 x 500 mcm
	[AWG] ^{2) 4) 5)}				
Max. input current (RMS)	$I_{L,MAX}$ [A] (380 V)	584	648	734	787
	$I_{L,MAX}$ [A] (480 V)	526	581	668	718
Max. cable cross-section to power	[mm ²] ^{4) 5)}	4 x 240	4 x 240	4 x 240	4 x 240
Max. cable cross-section to power	[AWG] ^{2) 4) 5)}	4 x 500 mcm	4 x 500 mcm	4 x 500 mcm	4 x 500 mcm
Max. pre-fuses (mains)	[-/UL] [A] ¹⁾	700/700	900/900	900/900	900/900
Efficiency ³⁾		0.98	0.98	0.98	0.98
Mains contactor	[Danfoss type]	CI 300EL	-	-	-
Weight IP 00/Chassis	[kg/lbs]	221/488	234/516	236/521	277/611
Weight IP 20/NEMA 1	[kg/lbs]	263/580	270/596	272/600	313/690
Weight IP 54/NEMA 12	[kg/lbs]	263/580	270/596	272/600	313/690
Power loss at max. load	[W]	7630	7701	8879	9428
Enclosure		IP 00/Chassis/IP 21/NEMA 1/IP 54/NEMA 12			



1. For type of fuse, see section *Fuses*.
2. American Wire Gauge.
3. Measured using 30 m/100 ft screened motor cables at rated load and rated frequency.
4. Always comply with national and local regulations on min. cable cross-section. Max. cable cross section is the maximum possible cable cross section that can be fitted on the terminals.
5. Connection bolt, power supply, motor and load sharing: M10 (compression lug), 2 x M8 (box lug)

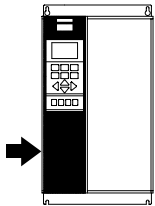
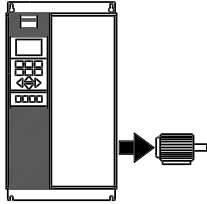
■ Technical data, mains supply 3 x 525 - 600 V

According to international requirements	VLT type	8002	8003	8004	8005	8006	8008	8011	
	Output current $I_{VLT,N}$ [A] (550 V)	2.6	2.9	4.1	5.2	6.4	9.5	11.5	
	$I_{VLT, MAX}$ (60 s) [A] (550 V)	2.9	3.2	4.5	5.7	7.0	10.5	12.7	
	$I_{VLT,N}$ [A] (575 V)	2.4	2.7	3.9	4.9	6.1	9.0	11.0	
	$I_{VLT, MAX}$ (60 s) [A] (575 V)	2.6	3.0	4.3	5.4	6.7	9.9	12.1	
	Output S $S_{VLT,N}$ [kVA] (550 V)	2.5	2.8	3.9	5.0	6.1	9.0	11.0	
	$S_{VLT,N}$ [kVA] (575 V)	2.4	2.7	3.9	4.9	6.1	9.0	11.0	
	Typical shaft output $P_{VLT,N}$ [kW]	1.1	1.5	2.2	3	4	5.5	7.5	
	Typical shaft output $P_{VLT,N}$ [HP]	1.5	2	3	4	5	7.5	10	
	Max. copper cable cross-section to motor and loadsharing								
		[mm ²]	4	4	4	4	4	4	4
	[AWG] ²⁾	10	10	10	10	10	10	10	
Rated Input	$I_{VLT,N}$ [A] (550 V)	2.5	2.8	4.0	5.1	6.2	9.2	11.2	
Current	$I_{VLT,N}$ [A] (600 V)	2.2	2.5	3.6	4.6	5.7	8.4	10.3	
Max.copper cable cross-section, power									
	[mm ²]	4	4	4	4	4	4	4	
	[AWG] ²⁾	10	10	10	10	10	10	10	
Max. prefuses (mains) ¹⁾ [-]/UL [A]		3	4	5	6	8	10	15	
Efficiency		0.96							
Weight IP 20 / NEMA 1	[kg/lbs]	10.5/ 23	10.5/ 23	10.5/ 23	10.5/ 23	10.5/ 23	10.5/ 23	10.5/ 23	
Estimated power loss at max. load (550 V) [W]		65	73	103	131	161	238	288	
Estimated power loss at max. load (600V) [W]		63	71	102	129	160	236	288	
Enclosure		IP 20/NEMA 1							

1. For type of fuse, see section *Fuses*.
2. American Wire Gauge (AWG).
3. Min. cable cross-section is the smallest cable cross-section allowed to be fitted into the terminals to comply with IP20. Always comply with national and local regulations on min. cable cross-section.

■ Technical data, mains supply 3 x 525 - 600 V

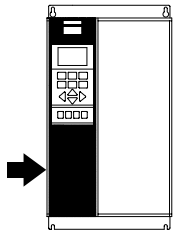
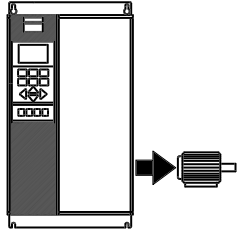
According to international requirements		8016	8022	8027	8032	8042	8052	8062	8072
Output current $I_{VLT,N}$ [A] (550 V)		18	23	28	34	43	54	65	81
$I_{VLT,MAX}$ (60 s) [A] (550V)		20	25	31	37	47	59	72	89
$I_{VLT,N}$ [A] (575 V)		17	22	27	32	41	52	62	77
$I_{VLT,MAX}$ (60 s) [A] (575 V)		19	24	30	35	45	57	68	85
Output	$S_{VLT,N}$ [kVA] (550 V)	17	22	27	32	41	51	62	77
	$S_{VLT,N}$ [kVA] (575 V)	17	22	27	32	41	52	62	77
Typical shaft output $P_{VLT,N}$ [kW]		11	15	18.5	22	30	37	45	55
Typical shaft output $P_{VLT,N}$ [HP]		15	20	25	30	40	50	60	75
Max. copper cable cross-section to motor and loadsharing ⁴⁾	[mm ²]	16	16	16	35	35	50	50	50
	[AWG] ²⁾	6	6	6	2	2	1/0	1/0	1/0
Min. cable cross-section to motor and loadsharing ³⁾	[mm ²]	0.5	0.5	0.5	10	10	16	16	16
	[AWG] ²⁾	20	20	20	8	8	6	6	6
Rated Input Current									
$I_{VLT,N}$ [A] (550 V)		18	22	27	33	42	53	63	79
$I_{VLT,N}$ [A] (600 V)		16	21	25	30	38	49	38	72
Max copper cable cross section, power ⁴⁾	[mm ²]	16	16	16	35	35	50	50	50
	[AWG] ²⁾	6	6	6	2	2	1/0	1/0	1/0
Max. prefuses (mains) ¹⁾ [-]/UL [A]		20	30	35	45	60	75	90	100
Efficiency		0.96							
Weight IP 20/NEMA 1	[kg/lbs]	23/51	23/51	23/51	30/66	30/66	48/106	48/106	48/106
Estimated power loss at max. load (550 V) [W]		451	576	702	852	1077	1353	1628	2029
Estimated power loss at max. load (600 V) [W]		446	576	707	838	1074	1362	1624	2016
Enclosure		IP 20/NEMA 1							



1. For type of fuse, see section *Fuses*.
2. American Wire Gauge (AWG).
3. Min. cable cross-section is the smallest cable cross-section allowed to be fitted into the terminals to comply with IP 20. Always comply with national and local regulations on min. cable cross-section.
4. Aluminium cables with cross-section above 35 mm² must be connected by use of an Al-Cu connector.

■ Technical data, mains supply 3 x 525 - 690 V

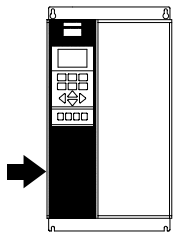
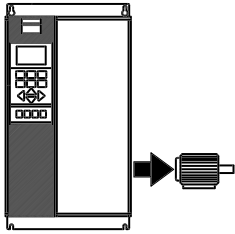
According to international requirements		VLT type	8052	8062	8072	8102	8122
Output current	$I_{M,TN}$ [A] (525-550 V)		56	76	90	113	137
	$I_{VLT,MAX}$ (60 s) [A] (525-550 V)		62	84	99	124	151
	$I_{M,TN}$ [A] (551-690 V)		54	73	86	108	131
	$I_{VLT,MAX}$ (60 s) [A] (551-690 V)		59	80	95	119	144
Output	$S_{VLT,N}$ [kVA] (550 V)		53	72	86	108	131
	$S_{VLT,N}$ [kVA] (575 V)		54	73	86	108	130
	$S_{VLT,N}$ [kVA] (690 V)		65	87	103	129	157
Typical shaft output	[kW] (550 V)		37	45	55	75	90
	[HP] (575 V)		50	60	75	100	125
	[kW] (690 V)		45	55	75	90	110
Max. cable cross-section to motor	[mm ²] ^{4,5}		2 x 70				
	[AWG] ^{2,4,5}		2 x 2/0				
Max. cable cross-section to loadsharing and brake	[mm ²] ^{4,5}		2 x 70				
	[AWG] ^{2,4,5}		2 x 2/0				
Rated input current	$I_{L,N}$ [A] (550 V)	60	77	89	110	130	
	$I_{L,N}$ [A] (575 V)	58	74	85	106	124	
	$I_{L,N}$ [A] (690 V)	58	77	87	109	128	
Max. cable cross-section power supply	[mm ²] ^{4,5}		2 x 70				
	[AWG] ^{2,4,5}		2 x 2/0				
Min. cable cross-section to motor and power supply	[mm ²] ^{4,5}		35				
	[AWG] ^{2,4,5}		2				
Min. cable cross-section to brake and loadsharing	[mm ²] ^{4,5}		10				
	[AWG] ^{2,4,5}		8				
Max. pre-fuses (mains) [-]/UL	[A] ¹	125	160	200	200	250	
Efficiency ³		0.97	0.97	0.98	0.98	0.98	
Power loss	[W]	1458	1717	1913	2262	2662	
Weight	IP 00 [kg]		82				
Weight	IP 21/Nema1 [kg]		96				
Weight	IP 54/Nema12 [kg]		96				
Enclosure		IP 00, IP 21/Nema 1 and IP 54/Nema12					



1. For type of fuse see section *Fuses*
2. American Wire Gauge.
3. Measured using 30 m screened motor cables at rated load and rated frequency.
4. Max. cable cross-section is the maximum possible cable cross-section allowed to be fitted on the terminals. Min. cable cross-section is the minimum allowed cross-section. Always comply with national and local regulations on min. cable cross-section.
5. Connection bolt 1 x M10 / 2 x M10 (mains and motor), connection bolt 1 x M8 / 2 x M8 (DC-bus).

■ Technical data, mains supply 3 x 525 - 690 V

According to international requirements		VLT type	8152	8202	8252	8302	8352	8402
Output current	$I_{VLT,N}$ [A] (525-550 V)		162	201	253	303	360	418
	$I_{VLT, MAX}$ (60 s) [A] (525-550 V)		178	221	278	333	396	460
	$I_{VLT,N}$ [A] (551-690 V)		155	192	242	290	344	400
	$I_{VLT, MAX}$ (60 s) [A] (551-690 V)		171	211	266	319	378	440
	Output	$S_{VLT,N}$ [kVA] (550 V)	154	191	241	289	343	398
		$S_{VLT,N}$ [kVA] (575 V)	154	191	241	289	343	398
Typical shaft output	$S_{VLT,N}$ [kVA] (690 V)	185	229	289	347	411	478	
	[kW] (550 V)	110	132	160	200	250	315	
	[HP] (575 V)	150	200	250	300	350	400	
Max. cable cross-section to motor	[mm ²] ^{4,6}	2 x 70				2 x 185		
	[AWG] ^{2,4,5}	2 x 2/0				2 x 350 mcm		
Max. cable cross-section to loadsharing and brake	[mm ²] ^{4,6}	2 x 70				2 x 185		
	[AWG] ^{2,4,5}	2 x 2/0				2 x 350 mcm		
Rated input current	$I_{L,N}$ [A] (550 V)	158	198	245	299	355	408	
	$I_{L,N}$ [A] (575 V)	151	189	234	286	339	390	
	$I_{L,N}$ [A] (690 V)	155	197	240	296	352	400	
Max. cable cross-section power supply	[mm ²] ^{4,6}	2 x 70				2 x 185		
	[AWG] ^{2,4,5}	2 x 2/0				2 x 350 mcm		
Min. cable cross-section to motor and power supply	[mm ²] ^{4,6}				35			
	[AWG] ^{2,4,5}				2			
Min. cable cross-section to brake and loadsharing	[mm ²] ^{4,6}				10			
	[AWG] ^{2,4,5}				8			
Max. pre-fuses (mains)	[A] ¹	315	350	350	400	500	550	
	[-]/UL							
Efficiency ³					0,98			
Power loss	[W]	3114	3612	4293	5156	5821	6149	
Weight	IP 00 [kg]	82	91	112	123	138	151	
Weight	IP 21/Nema1 [kg]	96	104	125	136	151	165	
Weight	IP 54/Nema12 [kg]	96	104	125	136	151	165	
Enclosure		IP 00, IP 21/Nema 1 and IP 54/Nema12						



Installation

1. For type of fuse see section *Fuses*
2. American Wire Gauge.
3. Measured using 30 m screened motor cables at rated load and rated frequency.
4. Max. cable cross-section is the maximum possible cable cross-section allowed to be fitted on the terminals. Min. cable cross-section is the minimum allowed cross-section. Always comply with national and local regulations on min. cable cross-section.
5. Connection bolt 1 x M10 / 2 x M10 (mains and motor), connection bolt 1 x M8 / 2 x M8 (DC-bus).

■ Fuses
UL compliance

To comply with UL/cUL approvals, pre-fuses according to the table below must be used.

200-240 V

VLT	Bussmann	SIBA	Littel fuse	Ferraz-Shawmut
8006	KTN-R30	5017906-032	KLN-R30	ATM-R30 or A2K-30R
8008	KTN-R50	5012406-050	KLN-R50	A2K-50R
8011, 8016	KTN-R60	5014006-063	KLN-R60	A2K-60R
8022	KTN-R80	5014006-080	KLN-R80	A2K-80R
8027, 8032	KTN-R125	2028220-125	KLN-R125	A2K-125R
8042	FWX-150	2028220-150	L25S-150	A25X-150
8052	FWX-200	2028220-200	L25S-200	A25X-200
8062	FWX-250	2028220-250	L25S-250	A25X-250

380-480 V

VLT	Bussmann	SIBA	Littel fuse	Ferraz-Shawmut
8006	KTS-R20	5017906-020	KLS-R20	ATM-R20 or A6K-20R
8008	KTS-R25	5017906-025	KLS-R25	ATM-R25 or A6K-25R
8011	KTS-R30	5012406-032	KLS-R30	ATM-R30 or A6K-30R
8016, 8022	KTS-R40	5014006-040	KLS-R40	A6K-40R
8027	KTS-R50	5014006-050	KLS-R50	A6K-50R
8032	KTS-R60	5014006-063	KLS-R60	A6K-60R
8042	KTS-R80	2028220-100	KLS-R80	A6K-80R
8052	KTS-R100	2028220-125	KLS-R100	A6K-100R
8062	KTS-R125	2028220-125	KLS-R125	A6K-125R
8072	KTS-R150	2028220-160	KLS-R150	A6K-150R
8102	FWH-220	2028220-200	L50S-225	A50-P225
8122	FWH-250	2028220-250	L50S-250	A50-P250
8152*	FWH-300/170M3017	2028220-315	L50S-300	A50-P300
8202*	FWH-350/170M3018	2028220-315	L50S-350	A50-P350
8252*	FWH-400/170M4012	206xx32-400	L50S-400	A50-P400
8302*	FWH-500/170M4014	206xx32-500	L50S-500	A50-P500
8352*	FWH-600/170M4016	206xx32-600	L50S-600	A50-P600

* Circuit Breakers manufactured by General Electric, Cat. No. SKHA36AT0800 with the rating plug listed below can be used to meet UL requirement.

8152	rating plug No.	SRPK800 A 300
8202	rating plug No.	SRPK800 A 400
8252	rating plug No.	SRPK800 A 400
8302	rating plug No.	SRPK800 A 500
8352	rating plug No.	SRPK800 A 600

525-600 V

	Bussmann	SIBA	Littel fuse	Ferraz-Shawmut
8002	KTS-R3	5017906-004	KLS-R003	A6K-3R
8003	KTS-R4	5017906-004	KLS-R004	A6K-4R
8004	KTS-R5	5017906-005	KLS-R005	A6K-5R
8005	KTS-R6	5017906-006	KLS-R006	A6K-6R
8006	KTS-R8	5017906-008	KLS-R008	A6K-8R
8008	KTS-R10	5017906-010	KLS-R010	A6K-10R
8011	KTS-R15	5017906-016	KLS-R015	A6K-15R
8016	KTS-R20	5017906-020	KLS-R020	A6K-20R
8022	KTS-R30	5017906-030	KLS-R030	A6K-30R
8027	KTS-R35	5014006-040	KLS-R035	A6K-35R
8032	KTS-R45	5014006-050	KLS-R045	A6K-45R
8042	KTS-R60	5014006-063	KLS-R060	A6K-60R
8052	KTS-R75	5014006-080	KLS-R075	A6K-80R
8062	KTS-R90	5014006-100	KLS-R090	A6K-90R
8072	KTS-R100	5014006-100	KLS-R100	A6K-100R

525-600 V (UL) and 525-690 V (CE) drives

	Bussmann	SIBA	FERRAZ-SHAWMUT
8052	170M3013	2061032,125	6.6URD30D08A0125
8062	170M3014	2061032,16	6.6URD30D08A0160
8072	170M3015	2061032,2	6.6URD30D08A0200
8102	170M3015	2061032,2	6.6URD30D08A0200
8122	170M3016	2061032,25	6.6URD30D08A0250
8152	170M3017	2061032,315	6.6URD30D08A0315
8202	170M3018	2061032,35	6.6URD30D08A0350
8252	170M4011	2061032,35	6.6URD30D08A0350
8302	170M4012	2061032,4	6.6URD30D08A0400
8352	170M4014	2061032,5	6.6URD30D08A0500
8402	170M5011	2062032,55	6.6URD32D08A550

KTS-fuses from Bussmann may substitute KTN for 240 V drives.
 FWH-fuses from Bussmann may substitute FWX for 240 V drives.

KLSR fuses from LITTEL FUSE may substitute KLNR fuses for 240 V drives.
 L50S fuses from LITTEL FUSE may substitute L25S fuses for 240 V drives.

A6KR fuses from FERRAZ SHAWMUT may substitute A2KR for 240 V drives.
 A50X fuses from FERRAZ SHAWMUT may substitute A25X for 240 V drives.

Installation

Non UL compliance

If UL/cUL is not to be complied with, we recommend the above mentioned fuses or:

VLT 8006-8032	200-240 V	type gG
VLT 8042-8062	200-240 V	type gR
VLT 8006-8072	380-480 V	type gG
VLT 8102-8122	380-480 V	type gR
VLT 8152-8352	380-480 V	type gG
VLT 8452-8652	380-480 V	type gR
VLT 8002-8072	525-600 V	type gG

Not following the recommendation may result in damage of the drive in case of malfunction. Fuses must be designed for protection in a circuit capable of supplying a maximum of 100000 A_{rms} (symmetrical), 500 V /600 V maximum.

■ Mechanical dimensions

All the below listed measurements are in mm/in

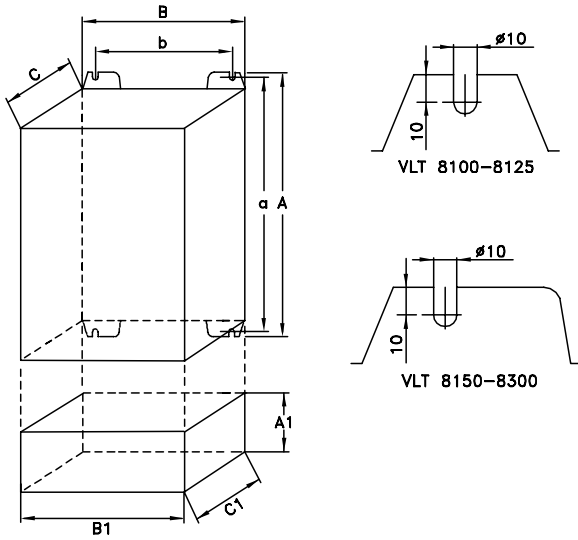
VLT type	A	B	C	a	b	aa/bb	Type	
IP 00/Chassis 200 - 240 V								
8042 - 8062	800/31.5	370/14.6	335/13.2	780/30.7	270/10.6	225/8.9	B	
IP 00 380 - 480 V								
8152 - 8202	1046/41.2	408/16.1	373/14.7 ¹⁾	1001/39.4	304/12.0	225/8.9	J	
8252 - 8352	1327/52.2	408/16.1	373/14.7 ¹⁾	1282/50.5	304/12.0	225/8.9	J	
8452 - 8652	1547/60.9	585/23.0	494/19.4 ¹⁾	1502/59.1	304/12.0	225/8.9 (aa)	I	
IP 00 525 - 690 V								
8052 - 8202	1046/41.1	408/16	373 ¹⁾ /14.7	1001/39.4	304/12	225/8.7	J	
8252 - 8402	1327/52.2	408/16	373 ¹⁾ /14.7	1282/50.4	304/12	225/8.7	J	
IP 20/NEMA 1 200 - 240 V								
8006 - 8011	560/22.0	242/9.5	260/10.2	540/21.3	200/7.9	200/7.9	D	
8016 - 8022	700/27.6	242/9.5	260/10.2	680/26.8	200/7.9	200/7.9	D	
8027 - 8032	800/31.5	308/12.1	296/11.7	780/30.7	270/10.6	200/7.9	D	
8042 - 8062	954/37.6	370/14.6	335/13.2	780/30.7	270/10.6	225/8.9	E	
IP 20/NEMA 1 380 - 480 V								
8006 - 8011	395/15.6	220/8.7	200/7.9	384/15.1	200/7.9	100/3.9	C	
8016 - 8027	560/22.0	242/9.5	260/10.2	540/21.3	200/7.9	200/7.9	D	
8032 - 8042	700/27.6	242/9.5	260/10.2	680/26.8	200/7.9	200/7.9	D	
8052 - 8072	800/31.5	308/12.1	296/11.7	780/30.7	270/10.6	200/7.9	D	
8102 - 8122	800/31.5	370/14.6	335/13.2	780/30.7	330/13.0	225/8.9	D	
IP 21/NEMA 1 380-480 V								
8152 - 8202	1208/47.5	420/16.5	373/14.7 ¹⁾	1154/45.4	304/12.0	225/8.9	J	
8252 - 8352	1588/62.5	420/16.5	373/14.7 ¹⁾	1535/60.4	304/12.0	225/8.9	J	
8452 - 8652	2000/78.7	600/23.6	494/19.4 ¹⁾	-	-	225/8.9 (aa)	H	
IP 20/NEMA 1 525 - 690 V								
8002 - 8011	395/15.55	220/8.66	200/7.87	384/15.12	200/7.87	100/3.94	C	
8016 - 8027	560/22.05	242/9.53	260/10.23	540/21.26	200/7.87	200/7.87	D	
8032 - 8042	700/27.56	242/9.53	260/10.23	680/26.77	200/7.87	200/7.87	D	
8052 - 8072	800/31.50	308/12.13	296/11.65	780/30.71	270/10.63	200/7.87	D	
IP 21/NEMA 1 525 - 690 V								
8052 - 8202	1208/47.5	420/16.5	373 ¹⁾ /14.7	1154/45.4	304/12	225/8.7	J	
8252 - 8402	1588/62.5	420/16.5	373 ¹⁾ /14.7	1535/60.4	304/12	225/8.7	J	
IP 54/NEMA 12 200 - 240 V								
8006 - 8011	810/31.9	350/13.8	280/11.0	70/2.8	560/22.0	326/12.8	200/7.9	F
8016 - 8032	940/37.0	400/15.7	280/11.0	70/2.8	690/27.2	375/14.8	200/7.9	F
8042 - 8062	937/36.9	495/9.5	421/16.6	-	830/32.7	374/14.8	225/8.9	G
IP 54/NEMA 12 380 - 480 V								
8006 - 8011	530/20.9	282/11.1	195/7.7	85/3.3	330/13.0	258/10.2	100/3.9	F
8016 - 8032	810/31.9	350/13.8	280/11.0	70/2.8	560/22.0	326/12.8	200/7.9	F
8042 - 8072	940/37.0	400/15.7	280/11.0	70/2.8	690/27.2	375/14.8	200/7.9	F
8102 - 8122	940/37.0	400/15.7	360/14.2	70/2.8	690/27.2	375/14.8	225/8.9	F
8152 - 8202	1208/47.5	420/16.3	373/14.7 ¹⁾	-	1154/45.4	304/12.0	225/8.9	J
8252 - 8352	1588/62.5	420/16.3	373/14.7 ¹⁾	-	1535/60.4	304/12.0	225/8.9	J
8452 - 8652	2000/78.7	600/23.6	494/19.4 ¹⁾	-	-	225/8.9 (aa)	H	
IP 54/NEMA 12 525 - 690 V								
8052 - 8202	1208/47.5	420/16.5	373 ¹⁾ /14.7	1154/45.4	304/12	225/8.7	J	
8252 - 8402	1588/62.5	420/16.5	373 ¹⁾ /14.7	1535/60.4	304/12	225/8.7	J	

Installation

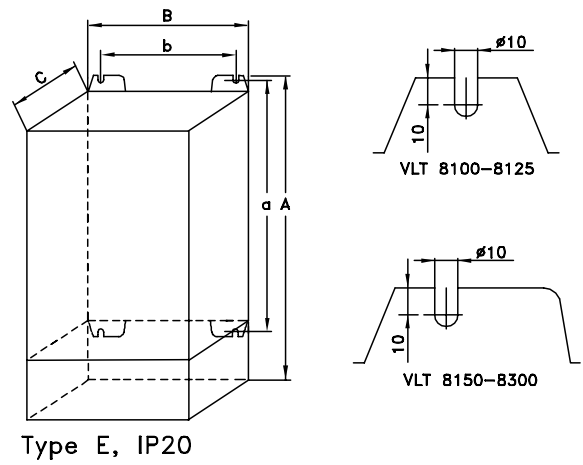
1. With disconnect add 44 mm/1.7 in

 aa: Minimum space above enclosure
 bb: Minimum space below enclosure

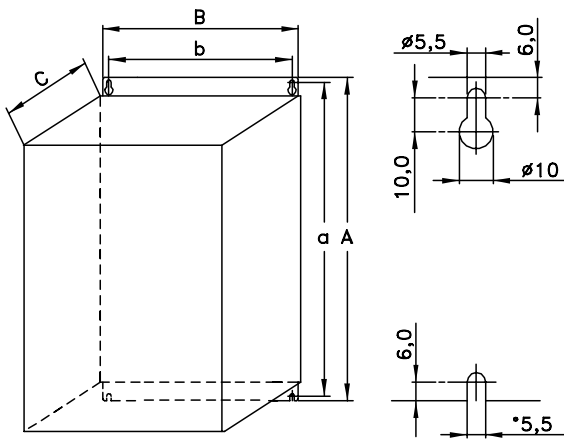
■ Mechanical dimensions



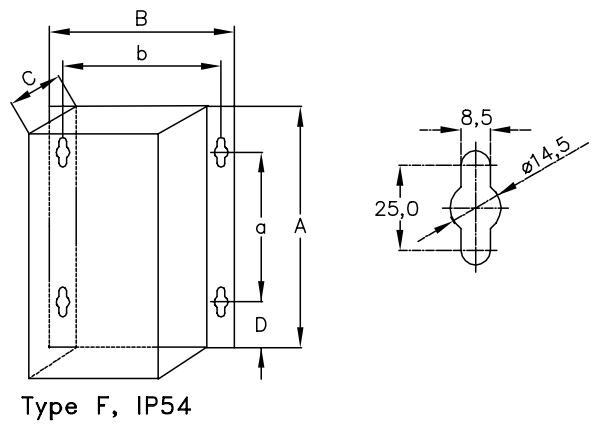
Type B, IP00
With option and enclosure IP20



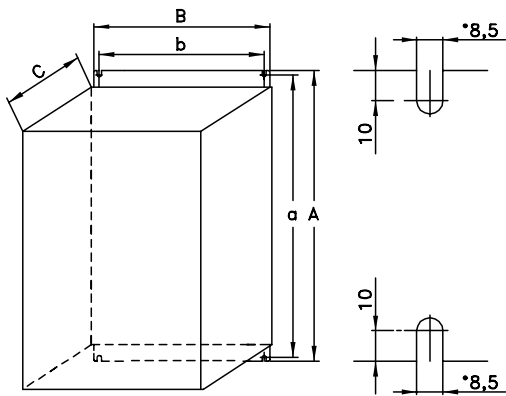
Type E, IP20



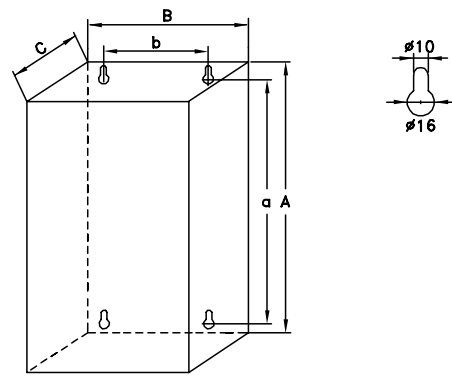
Type C, IP20



Type F, IP54



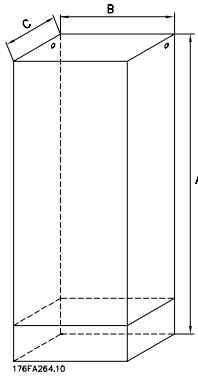
Type D, IP20



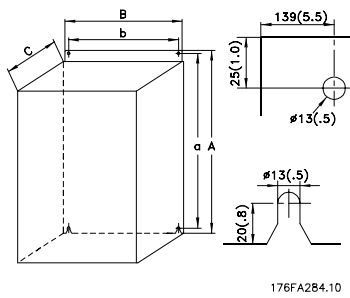
Type G, IP54

176FA224.10

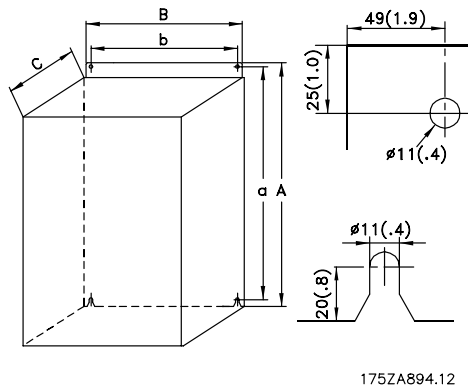
■ Mechanical dimensions (cont.)



Type H, IP 20, IP 54



Type I, IP 00



Type J, IP 00, IP 21, IP 54

Installation

■ Index**A**

analog inputs	20
analog outputs	20
AEO - Automatic Energy Optimization.....	7

C

Cable lengths and cross-sections	22
Control characteristics	21
Control principle	7

D

Digital inputs	19
----------------------	----

E

External 24 Volt DC supply	21
Externals.....	21

F

Fuses.....	34
------------	----

G

General technical data	18
------------------------------	----

H

Harmonic filter	16
Harmonic filters	18

M

Mains supply	18
Max imbalance of supply voltage	18

O

Output data.....	19
------------------	----

P

Protection	22
Pulse input	19

R

Relay outputs:.....	20
RS 485 serial communication	20

T

Technical data, mains supply 3 x 200 - 240 V	23, 24
Technical data, mains supply 3 x 380 - 480 V	25, 27, 28
Technical data, mains supply 3 x 525 - 600 V	30, 31
Type code ordering number string.....	2