■ VLT 6000 HVAC

■ 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.

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

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.

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.

■ 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

	Mains voltage, rated:	
Motor power	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

	Mains voltage, rated:	
Motor power	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.

	Mains voltage, rated:	
Motor power	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.

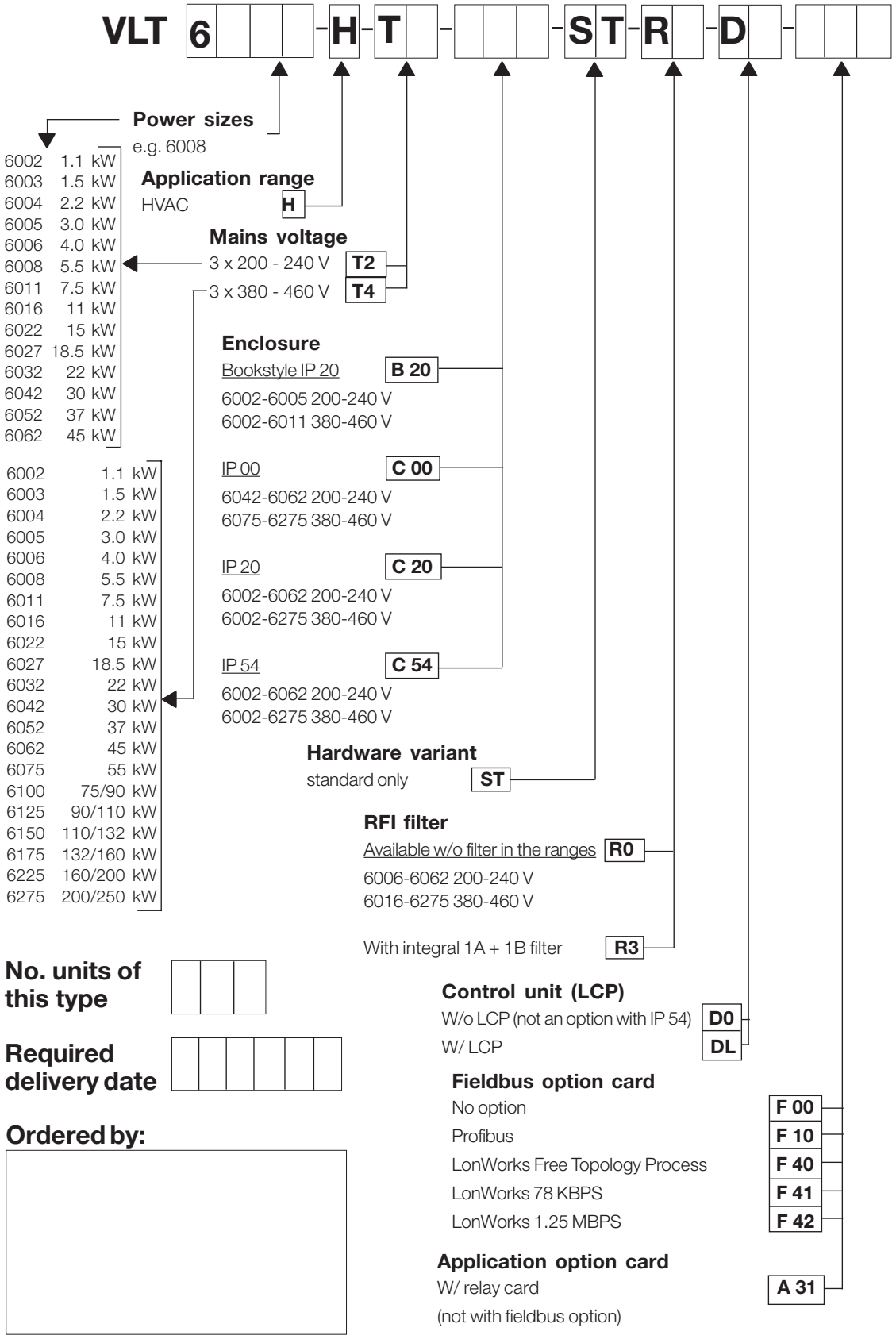
Units for a mains voltage of 240 V and a motor power of up to and including 4.0 kW (VLT 6006) and units for a mains voltage of 380-460 V and a motor power of up to 7.5 kW (VLT 6011) are always supplied with an integral class 1A & 1B filter.

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 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.

■ PC software and serial communication

Danfoss offers various options for serial communication. Using serial communication makes it possible to monitor, programme and control one or several VLT 6000 HVAC from a centrally placed computer. For example, Danfoss offers an option card for Profibus. In addition, all VLT 6000 HVAC 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.

VLT Software Dialog comes in three modules and - as a minimum - contains the programmes included in the Basic module.

The Basic module covers:

TEST RUN
is used for controlling and commissioning of a frequency converter, including:
- setting of reference value,
- simultaneous display of selected parameters in graphs,
- option of DDE link, e.g. to a spreadsheet.

PARAMETER SETUP
is used for setting up and transferring parameter sets, including:
- setting of frequency converter parameters,
- parameter sets can be obtained from and copied to a frequency converter,
- documentation/print-out of the Setup including diagrams.

HISTORY
provides information about the different stages of development of the VLT Software dialogue.

BUS ADDRESS SETUP
is only used for addressing the VLT FCM.

The Logging module covers:

LOGGING
is used for collecting and displaying historical or real-time operating data.
- graphical representation of selected parameters from several frequency converters,
- collection of log data to file,
- option of DDE link e.g. to a spreadsheet.

MODEM SETUP
is used for setting up the frequency converter modem.
- sets the frequency converter modem via the communication port of the PC.

The template module covers:

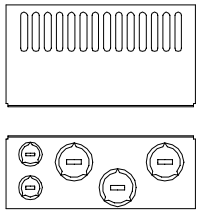
TEMPLATE SETUP
is used for setting up template files for PARAMETER SETUP:
- the template file functions as a mask that limits the number of accessible parameters when a parameter file is to be made or edited in PARAMETER SETUP,
- the template file may contain preset values for the parameters of the frequency converter.

NB!
The logging and template module calls for a Basic module to be installed on the same PC.

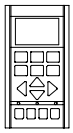
The guided tour covers:

GUIDED TOUR
offers a demonstration of the VLT Software Dialog programme.

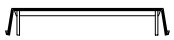
■ Accessories for VLT 6000 HVAC



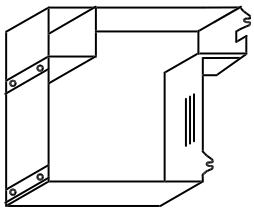
Terminal cover



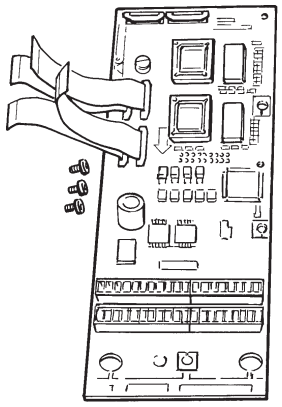
Control unit LCP



IP 4x top cover



IP 20 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.

■ 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 numbers, LC filter modules

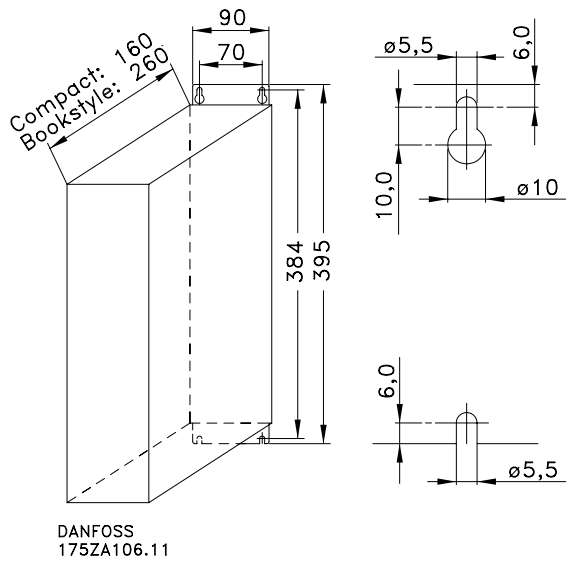
Mains supply 3 x 200 - 240 V

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

■ 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.

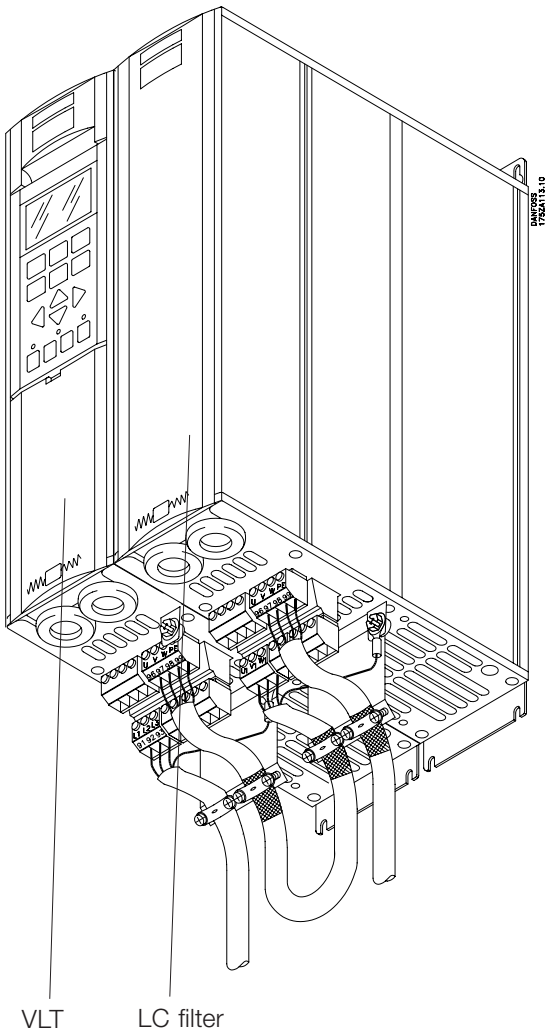
IP 20 LC filters have been designed for side-by-side installation without any space between enclosures.

Max. motor cable length:
- 150 m screened/armoured cable
- 300 m unscreened/unarmoured cable

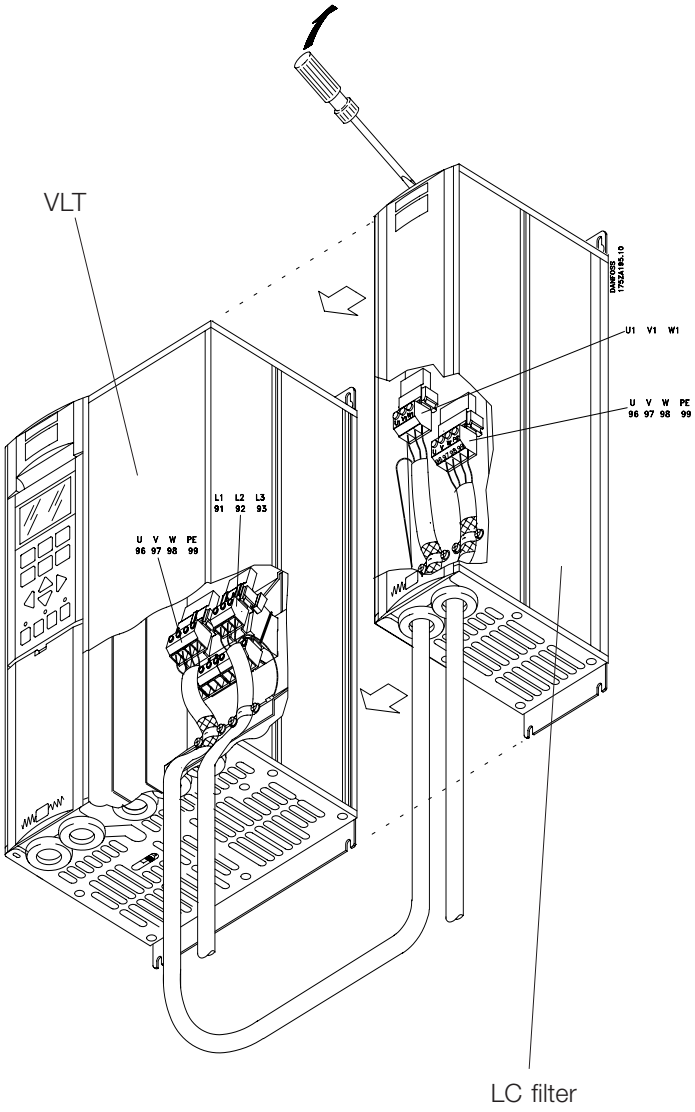
If EMC standards are to be complied with:
- EN 55011-1B: Max. 50 screened/armoured cable
  Bookstyle: Max. 20 m screened/armoured cable
- EN 55011-1A: Max. 150 m screened/armoured cable

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



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

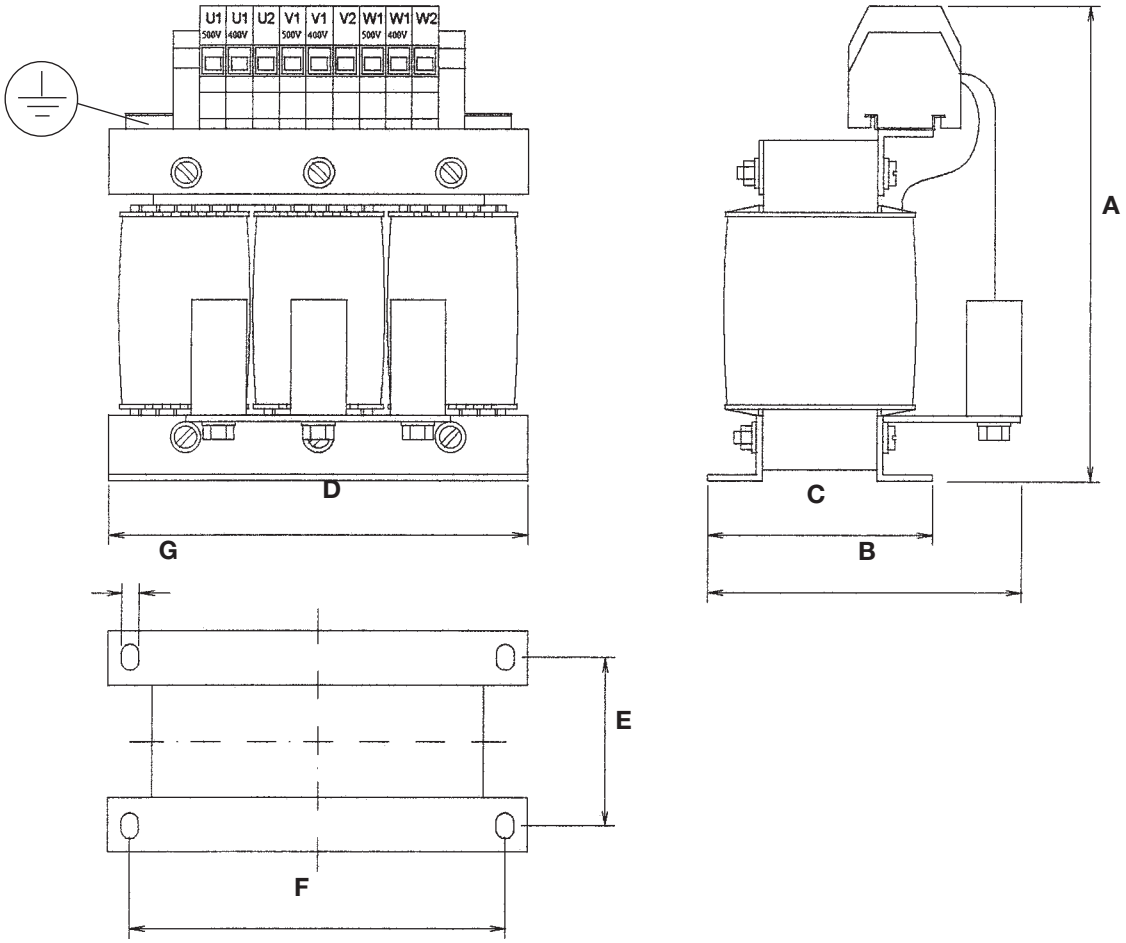
The table and the drawing give the measurements of IP 00 LC filters for Compact units.
IP 00 LC filters must be integrated and protected against dust, water and corrosive gases.

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



■ LC filter 6075-6275 380 - 460 V

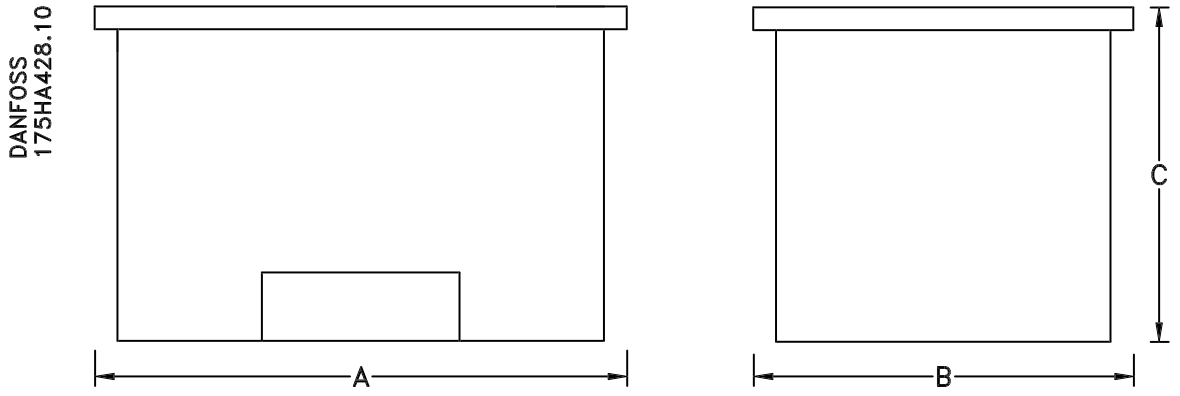
The table and the drawing give the measurements of IP 20 LC filters. IP 20 LC filters must be integrated and protected against dust, water and aggressive gases.

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
  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



■ 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.

■ 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

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)

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

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.

■ Mains supply 3 x 200 - 240 V

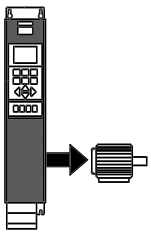
According to international requirements	VLT type	6002	6003	6004	6005	6006	6008	6011
Output current [4]	$I_{VLT,N}$ [A]	6.6	7.5	10.6	12.5	16.7	24.2	30.8
	$I_{VLT, MAX}$ (60 s) [A]	7.3	8.3	11.7	13.8	18.4	26.6	33.9
Output (240 V)	$S_{VLT,N}$ [kVA]	2.7	3.1	4.4	5.2	6.9	10.1	12.8
Typical shaft output	$P_{VLT,N}$ [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]	CI 6	CI 9	CI 12	CI 12	CI 6	CI 9	CI 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

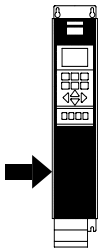
According to international requirements	VLT type	6016	6022	6027	6032	6042	6052	6062
Output current	$I_{VLT,N}$ [A] (200-230 V)	46.2	59.4	74.8	88.0	115	143	170
	$I_{VLT, MAX}$ (60 s) [A] (200-230 V)	50.6	65.3	82.3	96.8	127	158	187
	$I_{VLT,N}$ [A] (240 V)	46.0	59.4	74.8	88.0	104	130	154
	$I_{VLT, MAX}$ (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]	CI 32	CI 32	CI 37	CI 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 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.

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



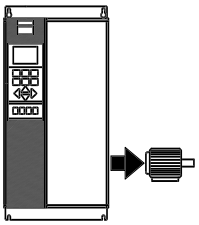
According to international requirements	VLT type	6002	6003	6004	6005	6006	6008	6011
Output current	$I_{VLT,N}$ [A] (380-415 V)	3.0	4.1	5.6	7.2	10.0	13.0	16.0
	$I_{VLT,MAX}$ (60 s) [A] (380-415 V)	3.3	4.5	6.2	7.9	11.0	14.3	17.6
	$I_{VLT,N}$ [A] (440-460 V)	3.0	3.4	4.8	6.3	8.2	11.0	14.0
	$I_{VLT,MAX}$ (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



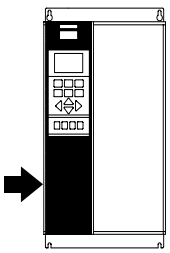
Max. input current (RMS)	$I_{L,N}$ [A] (380 V)	2.8	3.8	5.3	7.0	9.1	12.2	15.0
	$I_{L,N}$ [A] (460 V)	2.5	3.4	4.8	6.0	8.3	10.6	14.0
Max. cable cross-section, power	[mm²]/[AWG] [2)]	4/10	4/10	4/10	4/10	4/10	4/10	4/10
Max. pre-fuses	[A]/UL [1)] [A]	16/6	16/10	16/10	16/15	25/20	25/25	35/30
Mains contactor	[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 (RMS)	$I_{L,N}$ [A] (380 V)	24.0	32.0	37.5	44.0	60.0	72.0	89.0
	$I_{L,N}$ [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, 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	$I_{L,N}$ [A] (400 V)	103	145	174	206	256	317	366
(RMS)	$I_{L,N}$ [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, 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.
5. Connection stud 1 x M8 / 2 x M8.

■ Mechanical 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

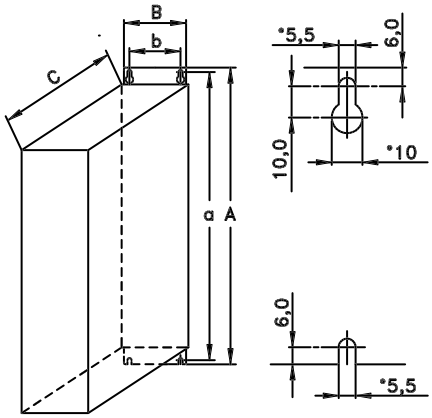
VLT type	A	B	C	D	a	b	a/b	Type
IP 54 200-240 V								
6002 - 6003	460	282	195	85	260	258	100	F
6004 - 6005	530	282	195	85	330	258	100	F
6006 - 6011	810	355	280	70	560	330	200	F
6016 - 6032	940	400	280	70	690	375	200	F
6042 - 6062	937	495	421	-	830	374	225	G
IP 54 380-460 V								
6002 - 6005	460	282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

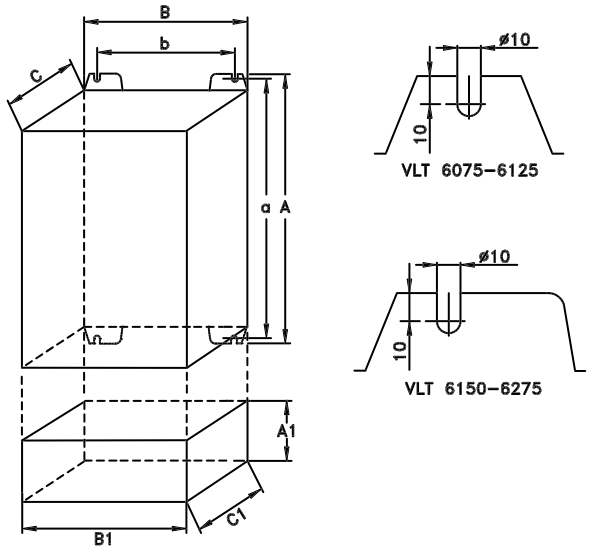
aa: Min. air above enclosure

ab: Min. air below enclosure

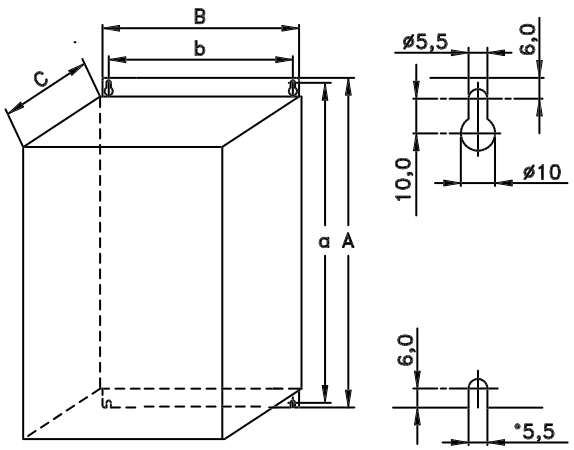
■ Mechanical dimensions



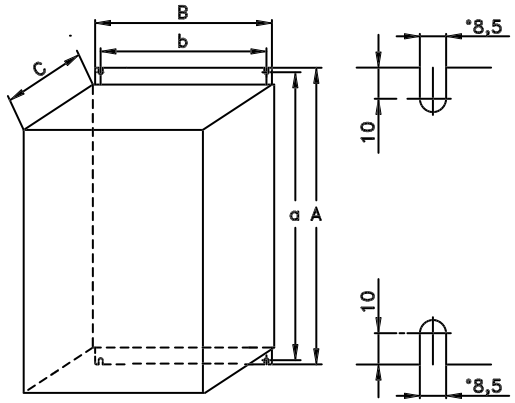
Type A, IP20



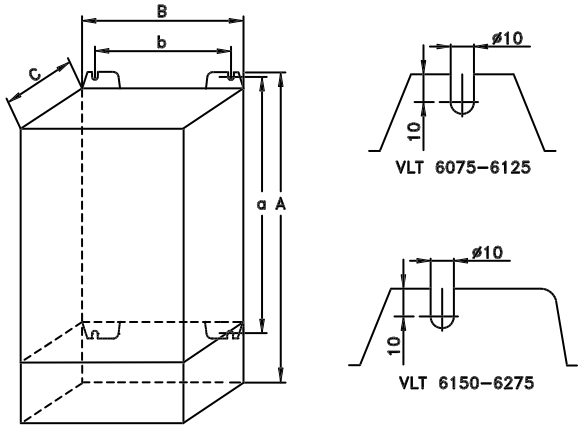
Type B, IP00
With option and enclosure IP20



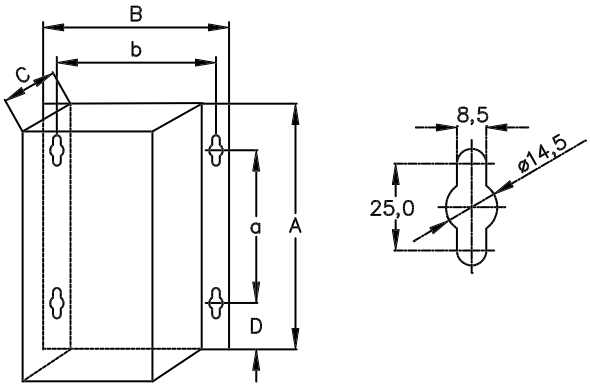
Type C, IP20



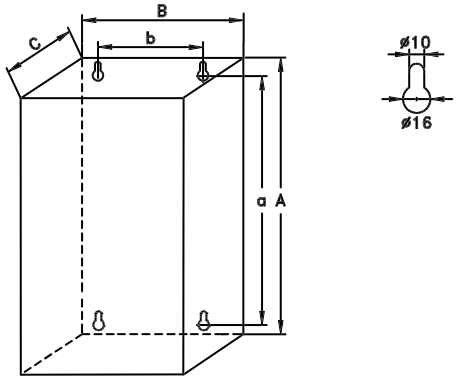
Type D, IP20



Type E, IP20



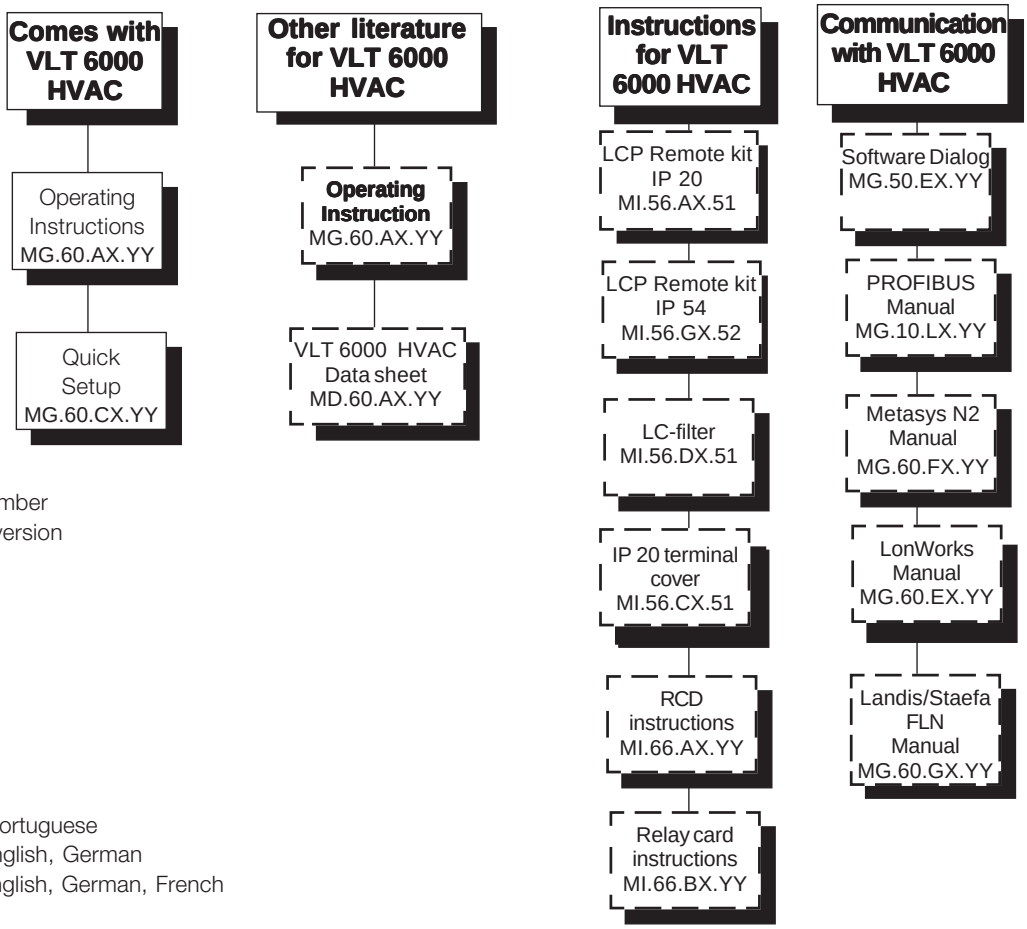
Type F, IP54



Type G, IP54

■ Available literature

The chart below gives an overview of the literature available for the VLT 6000 HVAC.
Please note that variations may occur from one country to the next



X = version number
YY = language version
01 = Danish
02 = English
03 = German
04 = French
05 = Spanish
06 = Italian
07 = Swedish
10 = Dutch
20 = Finnish
28 = Brazilian-Portuguese
51 = Danish, English, German
52 = Danish, English, German, French