Option overview for the
VLT® AutomationDrive

VLT®

THE REAL DRIVE
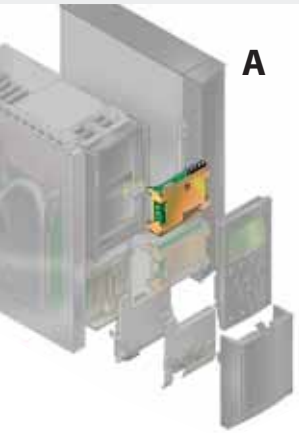
A

VLT® PROFIBUS DP V1 MCA 101

Operating the VLT® HVAC Drive frequency converter via a field bus lets you reduce the cost of your system, communicate faster and more efficiently, and benefit from an easier user interface.

- PROFIBUS DP V1 gives you wide compatibility, a high level of availability, support for all major PLC vendors, and compatibility with future versions
- Fast, efficient communication, transparent installation, avanced diagnosis and parameterisation and auto-configuration of process data via GSD-file
- A-cyclic parameterization using PROFIBUS DP V1, PROFIdrive or Danfoss FC profile state machines, PROFIBUS DP V1, Master Class 1 and 2

Uncoated: 130B1100, Coated: 130B1200

VLT® Profisafe-Stop MCA 103

The Profisafe Option allows the user to build a network that handles both standard control signals & safety. This heavily reduces the engeering time and cost for the enduser.

The Profisafe Option has onbard safety inputs and outputs. This combined with the easy configuration make the option suitable for many safety application.
The Option is aproved by the authoritys and is suitable in application that requires Categoy 4 safety (EN954)

VLT® DeviceNet MCA 104

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

- This modern communications model offers key capabilities that let you effectively determine what information is needed and when
- You'll also benefit from ODVA's strong conformance testing policies, which ensure that products are interoperable

Uncoated: 130B1102, Coated:130B1202

VLT® CAN Open MCA 105

High flexibility and low cost is two of the "cornerstones" for CAN Open. The CAN Open option for the AutomationDrive is fully equipt with both high priority access to control and status of the Drive (PDO Com-

munication) and access to all Parameters through acyclic data (SDO Communication).
For interoperability the option has implemented the DSP402 AC drive Profile.
This all guaranties the use standardized handling, interoperability and low Cost.

Uncoated: 130B1103, Coated: 130B1205

VLT® 3000 Connector

The convertion kit is a special versions of the fieldbus options that emulates the VLT® 3000 commands in the AutomationDrive. This is a usefull for users who want to keep the PLC program.

The VLT® 3000 can then be exchanged by the VLT® AutomationDrive, or the system can be expanded without costly change of the PLC program.
For upgrade to a different fieldbus is eas, the installed con-verter is easily removed and replaced with at new option. This secures the investment without suffering flexibility.

130B1245

VLT® EtherNet IP MCA 121

EtherNet will become the future standard for communication at the factory floor.

The EtherNet Option is based on the newest technology available for the Industrial use and handles even the most demanding requirements.

EtherNet/IP extends commercial off-the-shelf EtherNet to the Common Industrial Protocol (CIP™) – the same upper-layer protocol and object model found in DeviceNet.
The VLT® MCA 121 offers advanced features as:

- Built-in high performance switch enabling line-topology, and eliminating the need for external switches
- Advanced switch and diagnoses functions
- Built-in web server
- E-mail client for service notification
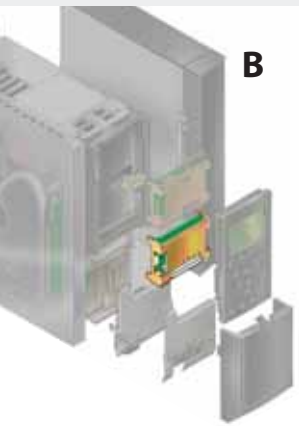
VLT® General Purpose I/O MCB 101

I/O option offers an extended numbers of control inputs and outputs.

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

VLT® Encoder Input MCB 102

A universal option for connection of encoder feedback from either a motor or a process. Feedback for asynchronous or brushless servo (Permanent Magnet) motors.

Uncoated: 130B1115, Coated: 130B1203

- Encoder module supports:
  – Incremental encoders
  – SinCos encoders as Hyperface®
- Power supply for encoders
- RS422 interface
- Plug and Play principle
- Fit to all FC 300 AutomationDrives
- Connection to all standard 5V incremental encoders
- Spring loaded connection

VLT® Resolver Input MCB 103

Supports resolver feedback from brushless servo motors, and feedback for flux vector controlled asynchronous motors in rough environment.

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- Primary Voltage ....2 -8 Vrms
- Primary Frequency ....2.0 kHz – 15 kHz
- Primary current max ....50 mA rms
- Secondary input voltage...4 Vrms
- Spring loaded connection
- Separate parameter settings

VLT® Relay Option MCB 105

Lets you extend relay functions with 3 additional relay outputs.
The relay option fits into slot B.

Uncoated:130B1110,
Coated: 130B1210

Max. terminal load:
- AC-1 Resistive load .... 240 V AC 2A
- AC-15 Inductive load @cos fi 0.4 ....240 V AC 0.2 A
- DC-1 Resistive load .... 240 V AC 1A
- DC-13 Inductive load @cos fi 0.4 ....240 V AC 0.1 A

Min. terminal load:
- DC 5 V... 10 mA
- Max switch rate at rated load / min. load ....6 min^{-1} / 20 sec^{-1}
- Plug-and-play principle, fits into slot B
- Protects control cable connection
- Spring-loaded control wire connection
- Selection of relay functions in normal parameter settings

VLT® Safe PLC I/O MCB 108

The FC 302 provides a safety input based on a single pole 24 V DC input.

Uncoated: 130B1120, Coated: 130B1220

- For the majority of applications this input enables the user to implement Safety in a cost-effective way. For application that works with more advanced products like Safety PLC, Lightcurtains etc. the new Safe PLC interface enables the connection of a two wire safety link
- The Safe PLC Interface alowe the Safe PLC to interrupt on the plus or the minus link without interfering the sense signal of the Safe PLC

VLT® PTC Thermistor Card MCB 112

Lets you extend relay functions with 3 additional relay outputs.
The relay option fits into slot B.

130B1137

- Protects the motor from overheating
- ATEX approved for use in potentially explosive atmospheres
- Uses Safe Stop function, which is approved in accordance with Cat. 3 EN954-1

VLT® Motion Control MCO 305

An integrated programmable Motion Controller for FC 301 and FC 302; it adds fuctionality and flexibility to the already very comprehensive standard functionality of these drives.

MCO 305 is optimized for all types of positioning and synchronizing applications.

- Basic features: Synchronisation (electronic shaft), Positioning and electronic Cam control
- 2 inputs supporting both incremental and absolute encoders
- 1 encoder output (virtual master function)
- 10 digital inputs
- 8 digital outputs
- Sending and receiving data via fieldbus interface (requires fieldbus option)
- PC software tools for programming and commissioning

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VLT® Synchronizing Control MCO 350

The Synchronizing Controller option for VLT® AutomationDrive expands the functional properties of the converter in synchronizing applications. It replaces traditional mechanical solutions.

- Display of actual synchronizing error on frequency converter control panel
- Speed synchronizing
- Position (angle) synchronizing with or without marker correction
- On-line adjustable gear ratio
- On-line adjustable position (angle) offset
- Encoder output with virtual master function for synchronization of multiple slaves
- Homing

Uncoated: 130B1152, Coated: 130B1252

VLT® Positioning Control MCO 351

The Positioning Controller option offers a host of user-friendly benefits for positioning applications in many industries. They are based on a range of thought-through and innovative features.

- Direct positioning via Fieldbus
- Relative positioning
- Absolute positioning
- Touch probe positioning
- End limit handling (software and hardware)
- Mechanical brake handling (programmable hold delay)
- Error handling
- Jog speed/manual operation
- Marker related positioning
- Home function

Uncoated: 130B1153, Coated: 130B1253

VLT® Center Winder MCO 352

With the closed loop center winder control material is evenly wound up regardless of the production speed.

- Follows line speed
- Diameter calculator adjusts winder reference
- Tension PID adjusts reference

Uncoated: 130B1165, Coated: 130B1166

D

VLT® 24 V DC Supply Option MCB 107

The option is used to connect an external DC supply to keep the control section and any installed option active by mains power down. Slot D.

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Coated:130B1208

- Input voltage range .... 24 V DC +/- 15% (max. 37 V in 10 sec.)
- Max. inpput current ....2.2 A
- Max. cable length .... 75 m
- Input capitance load ....< 10 uF
- Power-up delay ....< 0.6 s
- Easy to install in drives in existing machines
- Keep the control board and options active by power cut
- Keep fieldbuses active by power cuts

LCP

LCP 102 Graphical Local Control Panel

- Multi-language display
- Status messages
- Quick menu for easy commissioning
- Parameter setting and explanation of parameter function
- Adjusting of parameters
- Full parameter backup and copy function

- Alarm logging
- Info bottom – explains the function of the selected item on display
- Hand-operated start/stop, or Automatic mode selection
- Reset function
- Trend graph

130B1107

LCP 101 Numerical Local Control Panel

The numeric control panel offers an excellent MMI interface to the VLT® HVAC Drive.

130B1124

- Status messages
- Quick menu for easy commissioning
- Parameter setting and adjusting
- Hand-operated start/stop function or Automatic mode select
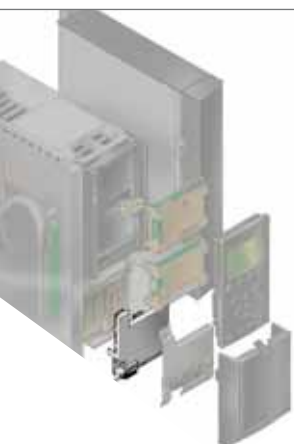- Reset function

LCP Panel Mounting Kit

Incl. graphical LCP, fasteners, 3 m cable and gasket: *130B1113*
Incl. numerical LCP, fasteners and gasket: *130B1114*
Mounting kit for all LCP's including fasteners, 3 m cable and gasket: *130B1117*

IP 21/Type 12 (NEMA1) Kit

The IP 21/Type 12 (NEMA1) kit is used for installation of VLT HVAC drives in dry environments. The enclosure kits are available for frame sizes A2 and A3.

For frame size A2: 130B1122. For frame size A3: 130B1123

- Supports VLT® HVAC Drives from 1.1 to 7.5 kW
- Used on standard VLT® HVAC Drive with or without mounted option modules
- IP 41 on top side
- PG 16 and PG 21 holes for glands

Profibus Adaptor Sub-D9 Connector

The adaptor makes linking of fieldbus connections pluggable.

130B1112

VLT®
Accessory

Decoupling Plate for Fieldbus Cables

Strengthens fieldbus mounting.

130B0524, to be used only for IP 20/ NEMA type 1 units up to 7.5 kW

For use with option A

VLT® Power Options

VLT® Brake Resistors

Energy generated during braking is absorbed by the resistors, protecting electrical components from heating up. Danfoss brake resistors cover the full power range.

- Quick braking of heavy load
- Braking energy is only absorbed into the brake resistor
- External mounting makes it possible to use the generated heat
- All necessary approvals are available

For ordering numbers please see relevant Design Guide

VLT® Harmonic Filter AHF 005/010 MCE

Easy, effective harmonic distortion reduction by connecting the AHF 005/010 harmonic filter in front of a Danfoss frequency converter.

- AHF 005 reduces total harmonic current distortion to 5%
- AHF 010 reduces total harmonic current distortion to 10%
- Small compact housing that ...fits into a panel
- Easy to use in retrofit applications
- User-friendly start-up – no adjustment necessary
- No routine maintenance required

For ordering numbers please see relevant Design Guide

VLT® Sine-Wave Filters MCC 101

Sine-wave filters are placed between the frequency converter and the motor to optimize the motor power current. It provides a sinusoidal phase-to-phase motor voltage. The filters reduce motor insulation stress, acoustic noise from the motor, and bearing currents (especially in large motors).

- Reduce motor insulation stress
- Reduce acoustic noise from the motor
- Reduce bearing currents (especially in large motors).
- Enables use of longer motor cables.
- Reduce losses in the motor
- Prolongs service lifetime

VLT® dV/dt filter MCC 102

VLT® dv/dt filters are placed between the frequency converter and the motor to eliminate very fast voltage changes. The motor terminal phase-to-phase voltage is still pulse shaped but its dv/dt values are reduced.

- These filters reduce stress on the motor's insulation and are recommended in applications with older motors, aggressive environments or frequent braking which cause increased DC link voltage.