MAKING MODERN LIVING POSSIBLE

The VLT® Micro Drive
Small drive – maximum strength and reliability

www.danfossdrives.com

VLT® THE REAL DRIVE

Ready—Set—Go!

Manufactured to the highest quality standards
The VLT® Micro Drive is a UL-listed product made in an ISO 9001-2000 certified facility.

1	**Well protected IP20 enclosure with NEMA/UL Type 1 kit optional** No forced airflow through electronics	8	**Potentiometer**
2	**Removable cover for convenient access to control terminals**	9	**EIA-485 connection**
3	**High quality capacitors**	10	**Customer relay screw terminals** Wire inlet from the bottom
4	**RFI Filter**	11	**Safety ground** Min. 10 AWG accessible from front
5	**DC-link access**	12	**I/O terminals**
6	**Hot-pluggable LCP**	13	**Mains screw terminals**
7	**LCD display**	14	**Motor screw terminals**

Compact VLT® quality

The VLT Micro Drive is a genuine VLT variable frequency drive with unsurpassed reliability, user-friendliness and condensed functionality that is extremely easy to commission. Terminal numbers are named in the same manner as in the rest of the VLT family. It's developed and manufactured by Danfoss Drives, the leading drives experts since 1968 and creators of the VLT Series, the world's first mass-produced variable frequency drive.

User friendly

• Plug-and-play	–	Streamlined installation
• Minimal commissioning requirements	–	Quicker startup
• Settings can be copied via the local control panel	–	Easy setup of multiple drives
• Intuitive parameter structure	–	Minimal manual reading
• Compatible with MCT 10 Setup Software	–	Faster startup and greater control of large installations

Reliable

• Optimal heat dissipation	–	Longer lifetime
• High quality electronics/capacitors	–	Low lifetime cost
• All drives full-load tested from factory	–	High reliability
• Ground fault, temperature and short circuit protection	–	High level of protection without the need for external devices
• Circuit boards well protected and coated	–	Increased robustness

Small drive—high performance

Despite its compact size and ease of installation, the VLT Micro Drive can deliver exceptional performance even in complex applications. Approximately 100 parameters are available to optimize energy efficiency and operation.

• Process PI controller	–	Removes need for external controller
• Automatic Energy Optimization (AEO)	–	Lowers energy consumption
• Automatic Motor Adaptation (AMA)	–	Utilizes motor's full potential
• 150% motor torque up to 1 minute	–	Removes need for bigger drive
• Flying start (catch a spinning motor)	–	Provides smooth starts without tripping
• Electronic Thermal Relay (ETR)	–	Replaces external motor protection
• Smart Logic Controller	–	Often makes PLC unnecessary
• Built-in RFI filter	–	Minimizes radio frequency disturbances

Inputs and outputs

- 5 programmable digital inputs
- PNP/NPN selection
- Pulse input 20–5000 Hz
- 1 analog input (0–10 V or 0–20 mA)
- 1 analog input 0–20 mA
- Thermistor input (analog/digital)
- 1 analog output 0–20 mA
- 1 Relay 240 VAC, 2 A
- EIA-485 port with FC or Modbus RTU protocol

Compact general purpose drive

The VLT Micro Drive is a general purpose drive designed to control AC motors up to 30 HP.

Compact design—Uncompromised quality

Ensured reliability and maximum uptime

True side-by-side mounting

A compact bookstyle design allows space-saving mounting without derating.

Built-in brake functions

With built-in DC and AC brake functions, the VLT® Micro Drive can transform kinetic energy in the application into braking.

power to slow the motor. A brake chopper is built into all VLT Micro drives 2 HP and up.

Minimal penetration of dust

The VLT Micro Drive is designed to separate forced ventilation air from the electronics. Printed circuit boards are well protected inside the drive.

Built-in RFI protection

A built-in RFI filter limits radio disturbance from motor cables, allowing for 45' motor cables (shielded).

Designed for robust operation in a variety of applications

Coated electronics are standard

All VLT Micro Drives come with conformally coated circuit boards for greater longevity and reliability.

Energy efficiency 98%

High-quality VLT power modules ensure low power losses, resulting in cooler operation.

Intelligent heat management

Heat from the power semiconductors is transferred through the heatsink to the external airflow, which is routed through the cooling fins. This minimizes the air exchange inside the enclosure and protects the control circuitry from dirt and other contaminants.

104˚ F (40˚ C) ambient temperature
122˚ F (50˚ C) maximum with derating

Highly efficient cooling allows for operation in high ambient temperatures.

Built-in Smart Logic Controller

The smart logic controller is a simple, clever way to enable the drive, motor and application to work together.

The smart logic controller is able to monitor any parameter that can be characterized as "true" or "false." This includes digital commands and also logic expressions, which allows even sensor outputs to influence the operation.

Temperature, pressure, flow, time, load, frequency, voltage and other parameters combined with the operators ">", "<", "=", "and" and "or" form logic expressions that are false or true.

Hot-pluggable display

Packed with features

- LCP copy function—transfer parameter settings from one drive to another
- Parameter numbers and values visible simultaneously
- Unit indications (A., V, Hz, RPM, %, s, HP and kW)
- Rotation direction indication
- Setup and status indications
- Removable during operation

Quick Menus

- Easy access to parameters commonly used in startup procedures
- PI controller parameters grouped for easy access

Large, bright display

- Easy to read from a distance
- Operation buttons illuminated when active

User-friendly menu structure

- Uses the same familiar and proven format as other VLT® Series drives
- Easy shortcuts for the experienced user
- Edit and operate in different setups simultaneously

Remote mountable

Illuminated LCD display

Navigation buttons

Indicators

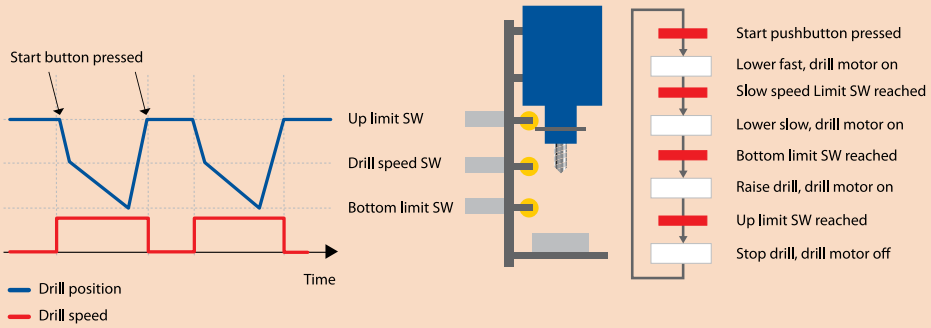
Operation buttons

Two control panels are available for either local or remote mounting:

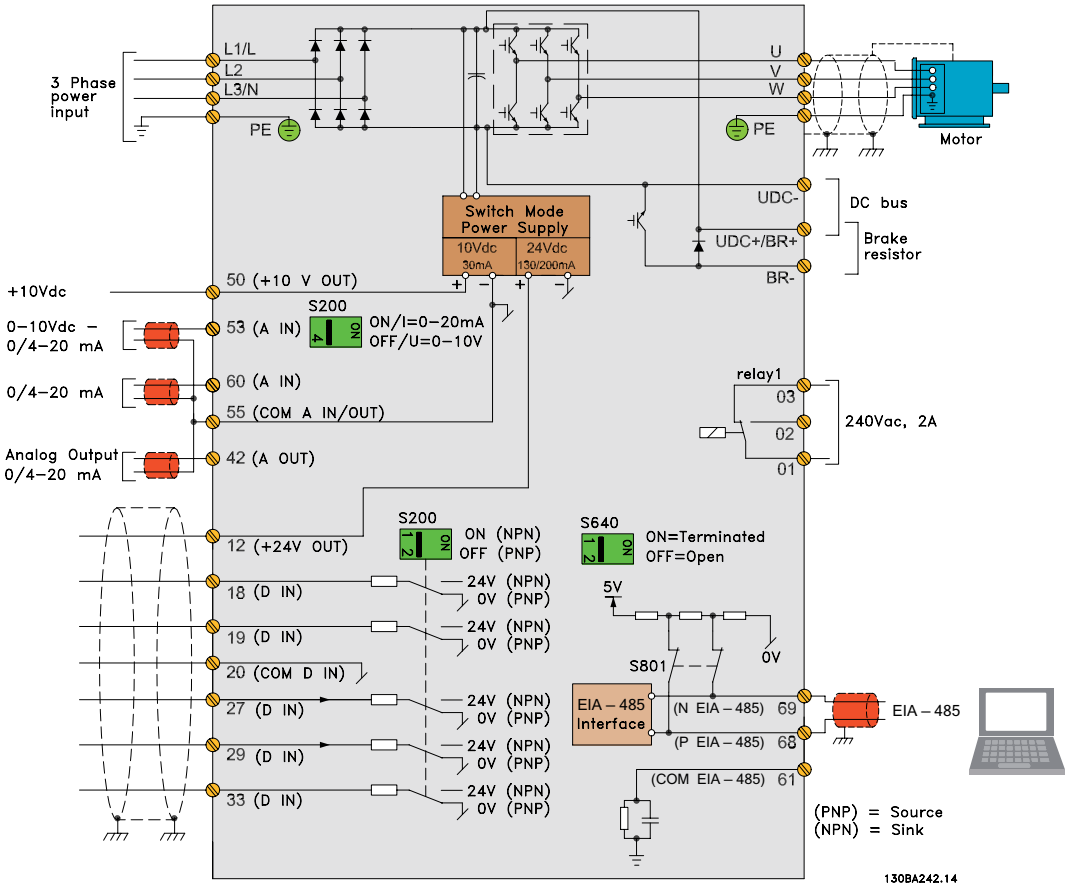
- LCP 11 with UP/DOWN buttons for speed setting *(NEMA/UL Type 12 protection when remotely mounted)*
- LCP 12 with rotary potentiometer for speed setting *(NEMA/UL Type 1 protection)*

Control panels shown actual size:
3.3"H x 2.6"W x 0.8"D
(D = 1.1" with potentiometer)

That is why Danfoss calls it a "logic" controller. As a result, you can program the controller to react on literally any event.



Connections



Factory settings

Accessories

Remote mounting kit

A dedicated mounting kit is available for mounting the local control panel (LCP) in a cabinet door. Includes 10' cable. Part #132B0102.

Options

DESCRIPTION	PART NUMBER
VLT LCP 11 w/o potentiometer	132B0100
VLT LCP 12 with potentiometer.	132B0101
Remote Mounting Kit for LCP	132B0102
NEMA 1 kit for M1 frame	132B0103
NEMA 1 kit for M2 frame	132B0104
NEMA 1 kit for M3 frame	132B0105
NEMA 1 kit for M4 frame	132B0120
NEMA 1 kit for M5 frame	132B0121
Decoupling plate kit For M1 and M2 frames	132B0106
Decoupling plate kit For M3 frame	132B0107
Decoupling plate kit For M4 and M5	132B0122
IP21 for M1 frame	132B0108
IP21 for M2 frame	132B0109
IP21 for M3 frame	132B0110
DIN Rail mounting kit for M1 and M2	132B0111

Specifications

Mains supply (L1, L2, L3)	
Supply voltage	1 x 200 – 240 V ± 10%
Supply voltage	3 x 200 – 240 V ± 10%
Supply voltage	3 x 380 – 480 V ± 10%

Output data (U, V, W)	
Output voltage	0 – 100% of supply voltage
Output frequency	0 – 200 Hz (VVC+ mode)
Output frequency	0 – 400 Hz (V/Hz mode)
Switching on output	Unlimited
Ramp times	0.05 – 3600 sec.

Digital inputs	
Programmable inputs	5
Logic	PNP or NPN
Voltage level	0 – 24 V
Maximum voltage on input	28 V DC
Input Resistance, Ri	Approx. 4 kΩ

Pulse inputs	
Programmable pulse inputs	1
Voltage level	0 – 24 V DC (PNP positive logic)
Pulse input accuracy (0.1 – 110 kHz)	Max. error: 0.1% of full scale
Pulse input frequency	20 – 5000 Hz

Analog input	
Analog inputs	2
Modes	1 current/1 voltage or current
Voltage level	0–10 V (scaleable)
Current level	0/4–(scaleable)

Analog output	
Programmable analog outputs	1
Current range at analog output	0/4 – 20 mA
Max. load to common at analog output	500 Ω
Accuracy on analog output	Max. error: 1% of full scale

On-board power supply	
Output voltage	10.5 ± 0.5 V
Max. load (10 V)	15 mA
Max. load (24 V)	130 mA

Relay outputs	
Programmable relay outputs	1
Max. terminal load	240 VAC, 2 A

Cable lengths	
Max. motor cable length, shielded	50'
Max. motor cable length, unshielded	164'

Surroundings/ External	
Enclosure	IP20 standard; NEMA/UL Type 1 and IP21 optional
Vibration test	0.7 g
Max. relative humidity	5% – 95% (IEC 721-3-3; Class 3K3 (non-condensing) during operation
Aggressive environment	(IEC 721-3-3), coated class 3C3
Ambient temperature	Max. 122° F
24-hour average	Max. 104° F

Protection and features
• Electronic thermal motor protection against overload
• Temperature monitoring of the heat sink protects the drive from overheating
• The drive is protected against short-circuits on motor terminals U, V, W
• The drive is protected against ground fault on motor terminals U, V, W

Frame Sizes

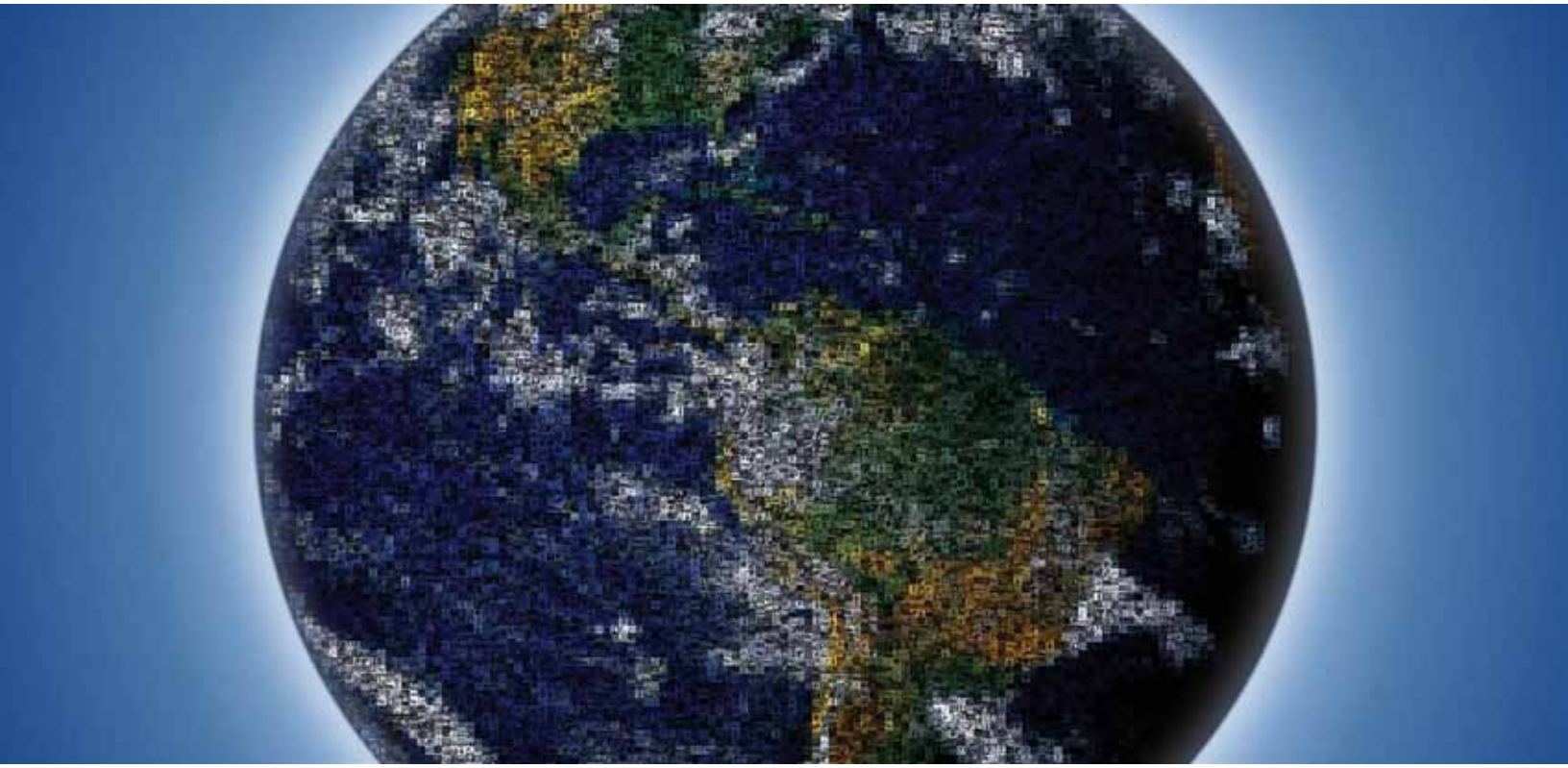
(mounting flange incl.)

[inches]	M1	M2	M3	M4	M5
Height	5.90	6.92	9.41	11.49	13.18
Width	2.76	2.95	3.54	4.92	6.49
Depth	5.82	6.61	7.63	9.48	9.76

+ .236 (1/4") inch with Potentiometer

Ordering code numbers

	200 - 240 V			440 - 480 V	
Power [HP]	Current (I)	1-phase	3-phase	Current (I)	3-phase
1/4	1.2	132F0001	-	-	-
1/3	1.5	-	132F0008	-	-
1/2	2.2	132F0002	132F0009	1.1	132F0017
1	4.2	132F0003	132F0010	2.1	132F0018
2	6.8	132F0005	132F0012	3.4	132F0020
3		-	-	4.8	132F0022
3	9.6	132F0007	132F0014	-	-
4		-	-	6.3	132F0024
5	15.2	-	132F0016	8.2	132F0026
7.5				11	132F0028
10				14	132F0030
15	*Micro drives 2 HP and up*			21	132F0058
20	*have built-in brake chopper*			27	132F0059
25				34	132F0060
30				40	132F0061



EnVisioneering

As a world leader in components and solutions, Danfoss meets our customers' challenges through "EnVisioneering." This approach expresses our views on engineering innovation, energy efficiency, environmental responsibility and sustainable business growth that creates strong customer partnerships. This vision is realized through a global production, sales, and service network focused on refrigeration, air conditioning, heating and water, and motion control. Through EnVisioneering, Danfoss is Making Modern Living Possible.

Danfoss "EnVisioneering":

- Engineered solutions to improve performance and profitability
- Energy efficiency to meet higher standards and to lower operating costs
- Environmental sustainability to provide a financial and social payback
- Engaged partnerships to foster trust, reliability, and technological superiority

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