VACON 20 X Danfoss Drives User Guide

VACON®

VACON® 20 X AC DRIVES
INSTALLATION
IN US AND CANADA
QUICK GUIDE

DPD01821B

Download and read VACON ® 20 X Installation Manual, wall-mounted drives at:
http://drives.danfoss.com/knowledge-center/technical-documentation/

Contents

20 X Danfoss Drives

CABLE AND FUSE SIZES, NORTH AMERICA
The recommended fuse types are class T (UL & CSA). The fuse voltage rating should be selected according to the supply network. The final selection should be made according to local regulations, cable installation conditions and cable specifications. Bigger fuses than those recommended below shall not be used. Check that the fuse operating time is less than 0.4 seconds. Operating time depends on used fuse type and impedance of the supply circuit. Consult the factory about faster fuses. VACON® also recommends for high speed J (UL & CSA) fuse ranges.

UL STANDARDS ON CABLING
To obey the UL (Underwriters Laboratories) regulations, use a UL-approved Class 1 copper wire with a minimum heat resistance of +158 or +167 °F (+70 or +75°C).
You can use the drive on a circuit that gives a maximum of 50 000 rms symmetrical amperes, and a maximum of 500 V AC, when the drive is protected by Class T and J fuses.

The dimensions of the cables must agree with the requirements of the UL508C.

- The cables must be PVC-isolated.
- The maximum ambient temperature is +104 °F (+40°C).
- The maximum temperature of the cable surface is +158 or +167 °F (+70 or +75°C).
- Use only cables with a concentric copper shield.
- The maximum number of parallel cables is 9.

When you use parallel cables, make sure that you obey the requirements of the cross-sectional area and the maximum number of cables.
For important information on the requirements of the grounding conductor, see the UL508C.
For the correction factors for each temperature, see the instructions of the UL508C.

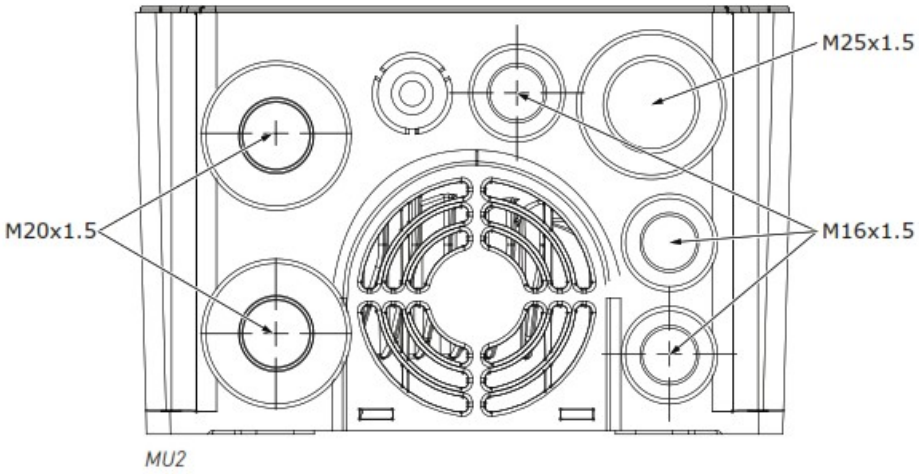
THE CABLE AND FUSE SIZES FOR VACON® 20 X IN NORTH AMERICA, MAINS VOLTAGE 208-240 V AND 380-500 V

Frame	Type	IL [A]	Fuse (class T) [A]	Mains and motor cable Cu	Terminal cable size	
					Main terminal	Earth terminal
MU2	0004 2 0003 4 – 0004 4	4.3 3.2 – 4.0	6	AWG14	AWG24-AWG12	AWG17-AWG I 0
	0005 2 – 0007 2 0005 4 – 0006 4	6.8 – 8.4 5.6 – 7.3	10	AWG14	AWG24-AWG12	AWG17-AWG10
	0008 4	9.6	15	AWG14	AWG24-AWG12	AWG I 7-AWGIO
MU2 1-phase	0004 2	8.3	20	AWG14	AWG24-AWG12	AWG17-AWG10
	0005 2	11.2	20	AWG14	AWG24-AWG12	AWG17-AWG10
	0007 2	14.1	25	AWG14	AWG24-AWG12	AWGI7-AWG10
MU3	0011 2 0009 4	13.4 11.5	15	AWG14	AWG20-AWG6	AWG17-AWG10
	0012 2 0012 4	14.2 14.9	20	AWG12	AWG20-AWG6	AWG17-AWG10
	0017 2 0016 4	20.6 20.0	25	AWG10	AWG20-AWG6	AWG17-AWG10

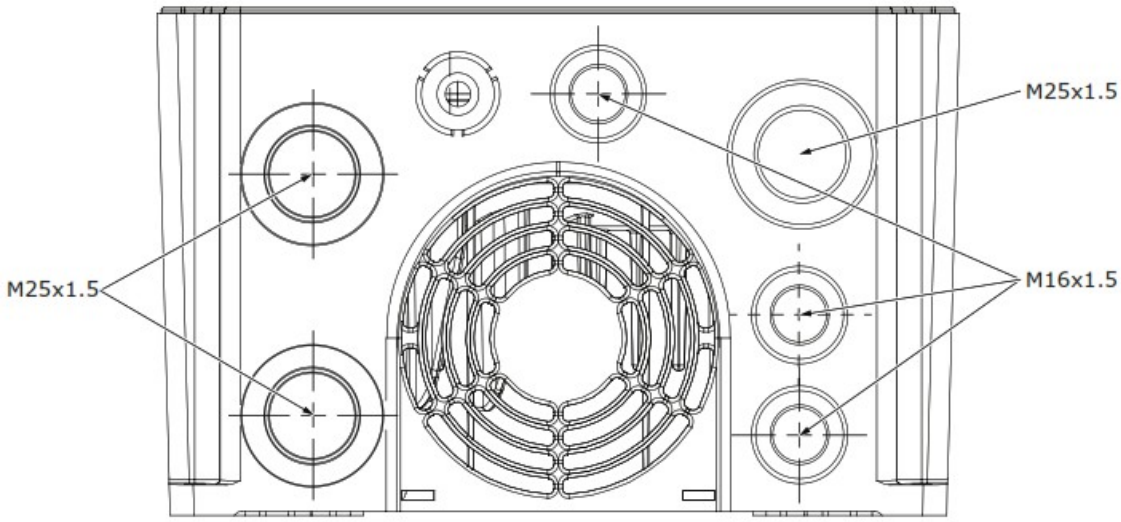
THE TIGHTENING TORQUES OF CABLE TERMINALS

Frame	Type	Tightening torque Power and motor terminals		Tightening torque EMC grounding clamps		Tightening torque Grounding terminals	
		[Nm]	lb-in.	[Nm]	lb-in.	[Nm]	lb-in.
MU2	0003 4—0008 4 0004 2—0007 2	0.5—0.6	4.5—5.3	1.5	13.3	2.0	17.7
MU3	0009 4—0016 4 0011 2—0017 2	1.2—1.5	10.6—13.3	1.5	13.3	2.0	17.7

CABLE ENTRIES, MU2 AND MU3 INSTALLATIONS



MU2



MU3

TIGHTENING TORQUE OF NPT ADAPTERS TO METRIC THREADS CABLE ENTRIES

Frame	Thread male metric	Thread male NPT	Tightening torque	
			[Nm]	lb-in.
MU2	M20	1/2”	2.0	17.7
	M25	3/4”	4.0	35.5
MU3	M25	3/4”	4.0	35.5

NPT adapter order information
M20: ADEC M20-T12
M25: ADEM M25-T34

THE TECHNICAL DATA OF THE VACON® 20 X AC DRIVE

Technical item or function		Technical data
Mains connection	Input voltage U in	3AC 208…240V 1AC 208…240V 3AC 380…480V
	Input voltage tolerance	-15%…+10% continuously
	Input frequency	50/60 Hz
	Input frequency tolerance	45…66 Hz
	Protection class	I
	Connection to mains	Once per minute or less
	Starting delay	4 s
	Supply network	IT and TN-networks (cannot be used with corner earthed networks)
	Short-circuit current	Maximum short-circuit current has to be <50kA
	DC connection	Available as standard in MU2 single-phase frames and MU3
Motor connection	Output voltage	3AC 0…U in
	Rated output current	IN: Ambient temperature max. +40°C
	Overload output current	1.5 x IN (1 min/10 min)
	Starting current	Is for 2 s every 20 s (Is = 2.0 * IN)
	Output frequency	0…320 Hz
	Frequency resolution	0.01 Hz
	Protection class	I
	Motor characteristics	AC squirrel cage motors Permanent magnet motors
	Cable type	Screened motor cable
	Cable maximum length	30 m
Control characteristics	Switching frequency	Programmable 2…16 kHz; Default 6 kHz. Automatic switching frequency deratinq in case of ove rheating
	Frequency reference: Analogue input Panel reference	Resolution t0.05 (11-bit), accuracy ±1% Resolution 0.01 Hz
	Field weakening point	8…320 Hz
	Acceleration time	0.1…3000 sec
	Deceleration time	0.1…3000 sec
	Braking	Brake chopper standard in all three-phase frames. Ex ternal brake resistor optional.

Documents / Resources

	VACON 20 X Danfoss Drives [pdf] User Guide 20 X Danfoss Drives, 20 X, Danfoss Drives, Drives

References

- Drives knowledge center | Danfoss
- User Manual