Danfoss VACON 20 X AC Drives User Guide

Danfoss VACON 20 X AC Drives User Guide

Contents

THE TECHNICAL DATA OF THE VACON® 20 X AC DRIVE

Technical item or function		Technical data
Mains connection	Input voltage Uin	3AC 208…240V1AC 208…240V3AC 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 earth ed networks)
	Short-circuit current	Maximum short-circuit current has to be <50kA
	DC connection	Available as standard inMU2 single-phase frames and MU3
Motor connection	Output voltage	3AC 0…Uin
	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 characteri stics	Switching frequency	Programmable 2…16 kHz; Default 6 kHz. Automatic s witching frequency derating in case of overheating
	Frequency reference: Analogue i nput Panel reference	Resolution ±0.05% (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. Ext ernal brake resistor optional.

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.

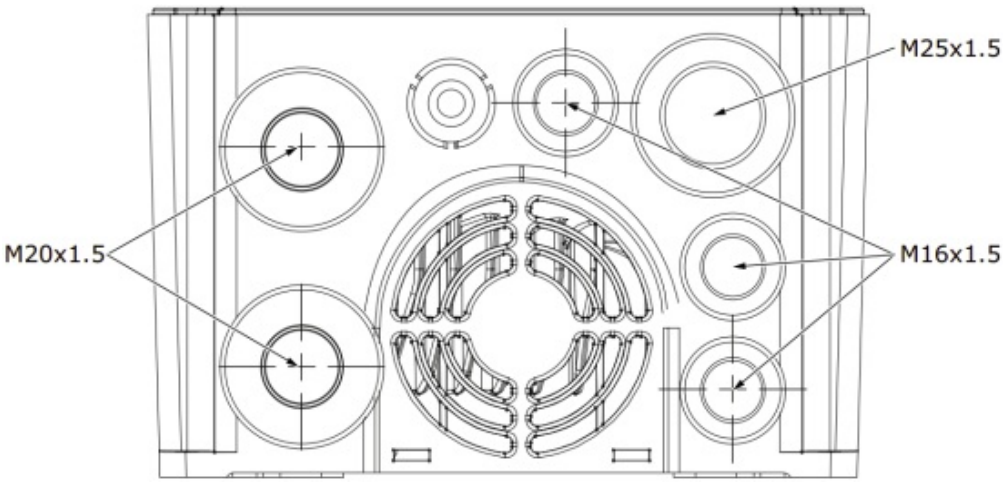
THE CABLE AND FUSE SIZES FOR VACON® 20 X IN NORTH AMERICA, MAINS VOLTAGE 208-240 V AND 380-500 V

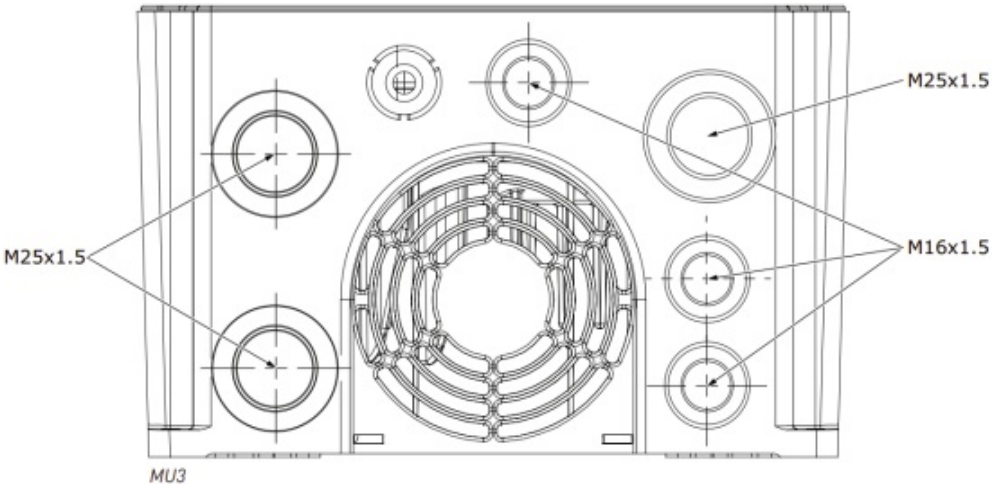
Frame	Type	IL [A]	Fuse (class T) [A]	Mains and motor cable Cu	Terminal cable sizeMain terminal Earth terminal	
MU2	0004 20003 4 – 0004 4	4.33.2 – 4.0	6	AWG14	AWG24-AWG12	AWG17-AWG10
	0005 2 – 0007 20005 4 – 0006 4	6.8 – 8.45.6 – 7.3	10	AWG14	AWG24-AWG12	AWG17-AWG10
	0008 4	9.6	15	AWG14	AWG24-AWG12	AWG17-AWG10
MU21-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	AWG17-AWG10
MU3	0011 20009 4	13.411.5	15	AWG14	AWG20-AWG6	AWG17-AWG10
	0012 20012 4	14.214.9	20	AWG12	AWG20-AWG6	AWG17-AWG10
	0017 20016 4	20.620.0	25	AWG10	AWG20-AWG6	AWG17-AWG10

THE TIGHTENING TORQUES OF CABLE TERMINALS

Frame	Type	Tightening torque Power and motor terminals [Nm]	lb-in.	Tightening torque EMC grounding clamps[Nm]	lb-in.	Tightening torque Grounding terminals[Nm]	lb-in.
MU2	0003 4—0008 40004 2—0007 2	0.5—0.6	4.5—5.3	1.5	13.3	2.0	17.7
MU3	0009 4—0016 40011 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





TIGHTENING TORQUE OF NPT ADAPTERS TO METRIC THREADS CABLE ENTRIES

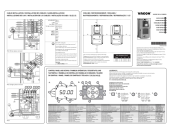
Frame	Thread male metric	Thread male NPT	Tightening torque[Nm] lb-in.	
MU2	M20	1/2”	2.0	17.7
	M25	3/4”	4.0	35.5
MU3	M25	3/4”	4.0	35.5

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

Download and read VACON® 20 X Installation Manual, wall-mounted drives at:

http://drives.danfoss.com/knowledge-center/ technical-documentation/

Documents / Resources

	Danfoss VACON 20 X AC Drives [pdf] User Guide VACON 20 X AC Drives, 20 X AC Drives, AC Drives
	Danfoss VACON 20 X AC Drives [pdf] User Guide MU2, MU3, VACON 20 X AC Drives, 20 X AC Drives, AC Drives

References

- User Manual