

**Danfoss A/S**6430 Nordborg
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CVR nr.: 20 16 57 15Telephone: +45 7488 2222
Fax: +45 7449 0949**MANUFACTURER'S DECLARATION****Danfoss A/S****Danfoss Drives A/S****Short circuit protection to PE for Variable Speed Drives**

Securing protection against electric shock when using VLT Automation Drive Series FC-301, VLT Automation Drive Series FC-302, VLT AQUA Drive Series FC-202, VLT HVAC Drive Series FC-102, VLT Refrigeration Drive Series FC-103, VLT HVAC Basic Drive Series FC-101, VLT HVAC Basic Drive Series FC-111, VLT Automation Drive Series FC-311, VLT Automation Drive Series FC-312, VLT Automation VT Drive Series FC-322, VLT Automation Drive Series FC-360, VLT Midi Drive Series FC-280, VLT DriveMotor Series FCP106, VLT Lift Drive Series LD-302, VLT Decentral Drive Series FCM300/FCD300, VLT Decentral Drive Series FCD302, VLT MicroDrive Series FC-51 and VLT2800, according to EN/IEC61800-5-1:2007+A1:2016.

This Manufacturer's Declaration states compliance to IEC/HD 60364-6:2016 (DIN VDE 0100-600 ;VDE 0100-600) and IEC/HD 60204-1 Annex A: 2016, for initial verification and periodic verification according to EN 50110-1:2013 (DIN VDE 0105-100 ;VDE 0105-100).

TN-Grid:

Fault protection according to IEC/HD 60364-4-41:2005/AMD1:2017 (DIN VDE 0100-410:2018-10; VDE 0100-410:2018-10) for all output circuits of above mentioned equipment is secured under the following conditions:

- The above mentioned equipment is installed according to the safety instructions of the manual.
- The installation meets the requirement of applicable standards of the IEC/HD 60364 (DIN VDE 0100; VDE 0100) series.
- The continuity of all associated PE and equipotential bonding conductors is secured including the bonding and connection points.
- The installation has a minimum grid R_{sc}e value of 50 according to IEC61000-3-12:2011 and overcurrent protection on output terminals.

Date: 2020.02.26 Place of issue: Graasten, DK	Issued by  Signature: Name: Gert Kjær Title: Senior Director, GDE	Date: 2020.02.26 Place of issue: Graasten, DK	Approved by  Signature: Name: Michael Termansen Title: VP, PD Center Denmark
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- For installations with a R_{sce} value lower than 50 according to IEC61000-3-12:2011, IEC 60364-4-41:2005 must be complied with by either using a RCD or supplementary protective equipotential bonding.

The above mentioned equipment complies with the protection measure “automatic disconnection of the supply” according to IEC/HD 60364-4-41:2005 (DIN VDE 0100-410:2018-10; VDE 0100-410:2018-10):2007-06 clause 411.3.2.5 if above mentioned requirements are fulfilled.

This is based on following principle:

In case of a short circuit with negligible impedance to a PE conductor or against earth the above mentioned equipment will disconnect by means of the specified over current protective devices on the supply side of the drive and will disconnect the current path within the time which is required by table 41.1 of IEC/HD 60364-4-41:2005 (DIN VDE 0100-410:2018-10; VDE 0100-410:2018-10):2007-06.

Special condition with three current sensors on motor output port, or one DC-link current sensor with additional means for full earth fault protection:

For VLT Automation Drive Series FC-301, VLT Automation Drive Series FC-302, VLT AQUA Drive Series FC-202, VLT HVAC Drive Series FC-102, VLT Refrigeration Drive Series FC-103, VLT HVAC Basic Drive Series FC-101 (30-90kW), 3 phased VLT Midi Drive Series FC-280, VLT Automation Drive Series FC-360 (30-75kW), VLT2800, VLT Decentral Drive Series FCM300/FCD300, VLT Decentral Drive Series FCD302, VLT Lift Drive Series LD-302 following apply:

In case of a short circuit on the motor output port with negligible impedance to a PE conductor or against earth the above mentioned equipment will reduce the output voltage within a time which is required by table 41.1 of IEC/HD 60364-4-41:2005 (DIN VDE 0100-410:2018-10; VDE 0100-410:2018-10):2007-06.

TT-Grid:

- The use of RCD's or supplementary protective bonding according to IEC60364-4-41:2005 clause 415.2 is required.