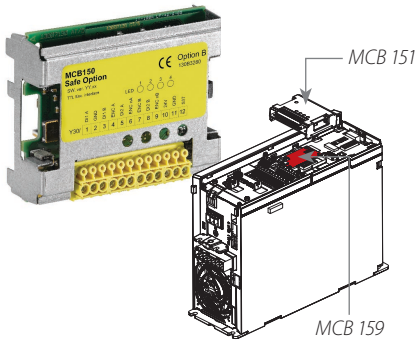


Fact Sheet

Operate safely and reduce system cost

VLT® Safety Option MCB 150/151 and VLT® Sensorless Safety MCB 159



Ordering number

MCB 150 130B3280 coated
 MCB 151 130B3290 coated

MCB 159 – select this option in the configurator when ordering a new drive. Not available for retrofit.

Reduce overall system cost, improve flexibility and increase productivity by enabling operators to perform maintenance safely, even while the machine is still in motion.

Additional safety

The VLT® Safety Option MCB 150/151 expands the integrated Safe Torque Off (STO) function of the VLT® Automation-Drive. Use the Safe Stop 1 (SS1) function to perform a controlled stop, before removing torque. Use the Safely Limited Speed (SLS) and Safe Maximum Speed (SMS) functions to monitor whether a specified speed is exceeded.

When the VLT® Safety Option MCB 151 is combined with the built-in VLT® Sensorless Safety MCB 159 option, an external sensor is no longer required for safe speed monitoring.

Use flexible speed control in upgraded or retrofitted applications. Connect input devices – such as guard locking switches, light curtains and emergency stops – directly to the module and eliminate the need for a separate, dedicated safety controller.

Quick commissioning and wiring

Visual instructions in VLT® Motion Control Tool MCT 10 ensure both fault-free wiring and that safety parameters are correctly transferred from the PC to the drive. The software also offers a dynamic commissioning report which can be used in the technical file for the machine.

More advantages

- Integrated functional safety replaces external safety equipment
- Reduced space requirements
- Can send status messages via Fieldbus
- Password function
- Logging function
- Simpler feedback sensor systems
- Compliance with international standards
- Easier machine certification
- Drive can be powered continuously

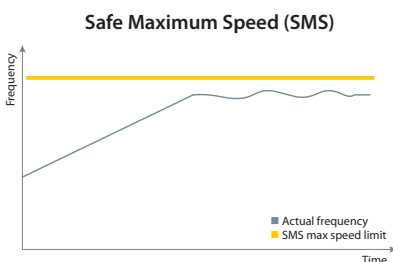
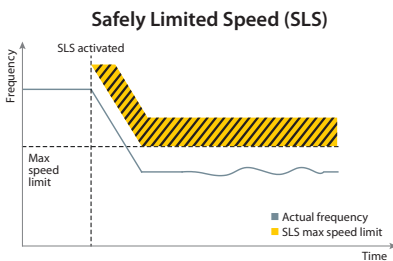
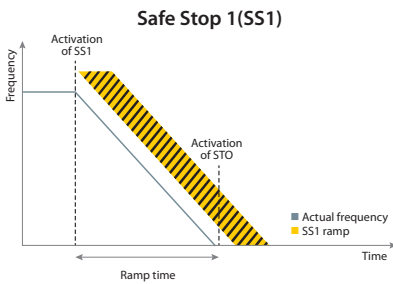
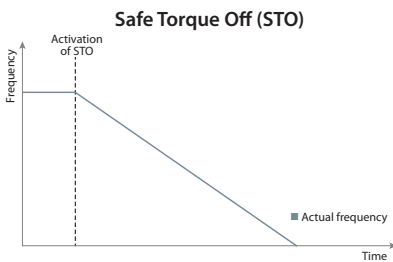
100%
 integrated into the drive due to internal databus connection

Feature	Benefit
No need to power cycle the drive after a demand on the safety system	– Minimized wear on the drive
Two logic safety inputs	– Provide redundancy without needing an external safety module
Maintenance can be performed while the machine is still in motion	– Minimized time and effort required for service and installation work
Safe Torque Off (STO) Integrated in the drive as standard	– Increased productivity and availability – Eliminates one or more power contactors – Eliminates the need for additional feedback monitoring
Safe Stop 1 (SS1) Monitors deceleration and then shuts off the torque	– Machine is restarted quickly and more simply – Greater operational safety, as the machine is protected against unexpected restart
Safely Limited Speed (SLS)/ Safe Maximum Speed (SMS) Monitors whether a specified velocity is exceeded	– Safe protection against overspeed – Makes it possible to work safely with the guards open – Reduced set-up times thanks to a better view into the set-up area – Safe Jog function

Approvals

The VLT® Safety Options are approved for use in safety related control systems and comply with EN ISO 13849-1 PL d, EN IEC 61508 SIL 2 and EN IEC 62061.

The safety options offer the following safety functions in compliance with IEC 61800-5-2:



Specifications

Digital inputs	
Number of programmable digital inputs	4 (2 x 2-channel Digital Safety Input)
Input voltage range	0-24 VDC
Input voltage	Low: < 5 VDC / High: > 12 VDC
Input current (min)	6 mA @Vin=24V (for keeping contacts clean)
Galvanic isolation	No
Reaction time	< 5ms (in total for HW and SW response time)
Short circuit-proof	Yes
TTL Encoder input (MCB 150)	
Number of encoder inputs	(4 x differential inputs A/A ; B/B)
Encoder types	TTL, RS422/RS485 incremental encoders
Input voltage range	-7 to 12 VDC
Maximum frequency	410 KHz
Short circuit-proof	Yes
Cable length	< 100 m (shielded cable)
HTL Encoder input (MCB 151)	
Number of encoder inputs	2 (2 x single ended inputs A; B)
Encoder types	HTL incremental encoders; HTL Proximity sensor, no encoder (when equipped with MCB 159)
Input voltage range	0 to 24 VDC
Input voltage	Low: < 5 VDC / High: > 12 VDC
Maximum frequency	110 KHz
Short circuit-proof	Yes
Cable length	< 100 m (shielded cable)
24 V supply output	
Supply voltage	24 VDC (Voltage tolerance: +10%, -15%)
Maximum output current	150 mA
Short circuit-proof	Yes
Certifications	
Safety integrity level (SIL1, 2) according to EN IEC 62061, EN IEC 61508 standard (parts 1, 2 and 3)	
Performance level (PL "d") according to EN ISO 13849-1 Category 3	

The VLT® Safety Option MCB 150/151 provides an intelligent, programmable solution to meet EN IEC 61800-5-2 functional safety standards. It fits within the drive and helps to reduce cabling, requiring no cabinet space or external power supply.

There are different hardware variants for HTL (MCB 151), sensorless operation (MCB 151 with MCB 159), and TTL (MCB 150) encoder input. Each makes use of the existing Safe Stop, terminal 37, via an external wire.

Connect active and passive sensors directly to the pluggable safety option over two channels. In many applications you can then eliminate external components, such as safety switchgear, over-speed monitors, speed encoders, and motor/mains contactors.

