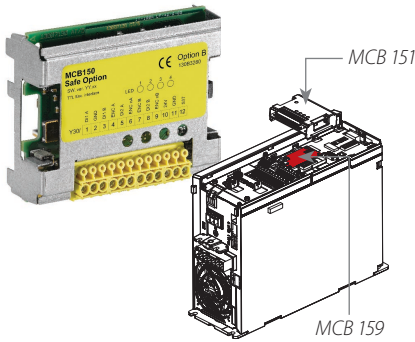


Fact Sheet

# 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

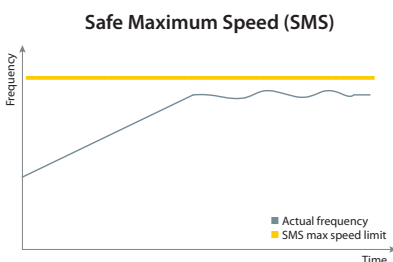
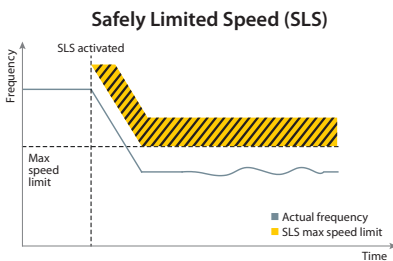
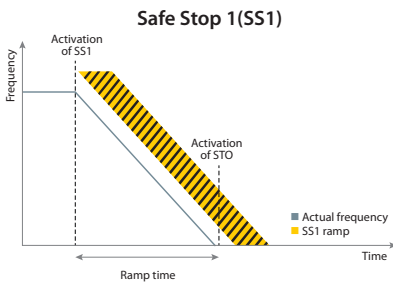
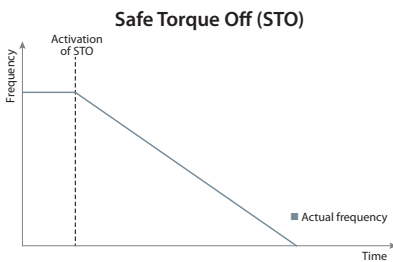
**100%**  
 integrated into the drive due to internal databus connection

| 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   |
| <b>Safe Torque Off (STO)</b><br>Integrated in the drive as standard  | – Increased productivity and availability<br>– Eliminates one or more power contactors<br>– Eliminates the need for additional feedback monitoring   |
| <b>Safe Stop 1 (SS1)</b><br>Monitors deceleration and then shuts off the torque                                  | – Machine is restarted quickly and more simply<br>– Greater operational safety, as the machine is protected against unexpected restart   |
| <b>Safely Limited Speed (SLS)/ Safe Maximum Speed (SMS)</b><br>Monitors whether a specified velocity is exceeded | – Safe protection against overspeed<br>– Makes it possible to work safely with the guards open<br>– Reduced set-up times thanks to a better view into the set-up area<br>– 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.

