

# VLT® Safety Option MCB 150/151

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



**Ordering number**  
 MCB 150 - Coated 130B3280  
 MCB 151 - Coated 130B3290

## Additional safety

The VLT® Safety Option MCB 150/151 expands the Safe Torque Off STO function, which is integrated in a standard VLT® AutomationDrive. By using the Safe Stop 1 function it is possible to perform a controlled stop, before removing torque. Using the Safely Limited Speed SLS function it is also able to monitor whether a specified speed is exceeded.

Flexible speed control can be used in upgraded or retrofitted applications. Safety input devices such as guard locking switches, light curtains and emergency stops, can be connected directly to the module and eliminate the need for a separate, dedicated safety controller.

## Quick commissioning and wiring

Visual instructions in the setup software (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. In service cases the safety parameters can be copied easily via the Local Control Panel (LCP copy function).

## Safety

Built-in functional safety as per EN IEC 61508, EN IEC 62061, EN ISO13849-1, EN IEC 61800-5-2, personnel safety directly into the drive.

## More advantages:

- Additional standards-compliant safety functions
- Replacement of external safety equipment
- Reduced space requirements
- 2 safe inputs
- 1 safe output (for T37)
- 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%**

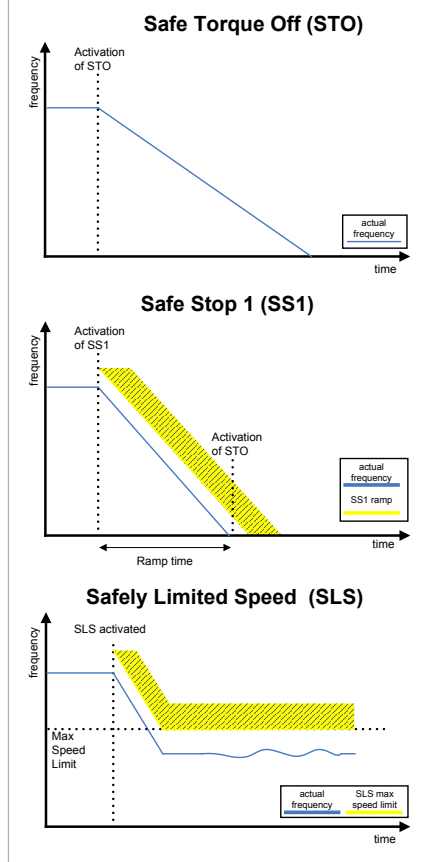
integrated into the drive due to internal databus connection.

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> Integrated in the drive as standard	<ul style="list-style-type: none"> <li>• Increased productivity and availability</li> <li>• Eliminates one or more power contactors</li> <li>• Eliminates the need for additional feedback monitoring</li> </ul>
<b>Safe Stop 1 (SS1)</b> Monitors deceleration and then shuts off the torque	<ul style="list-style-type: none"> <li>• Machine is restarted quickly and more simply</li> <li>• Greater operational safety, as the machine is protected against unexpected restart</li> </ul>
<b>Safely Limited Speed (SLS)</b> Monitors whether a specified velocity is exceeded	<ul style="list-style-type: none"> <li>• Makes it possible to work safely with the guards open</li> <li>• Reduced set-up times thanks to a better view into the set-up area</li> <li>• Safe Jog function</li> </ul>

## Approvals

The VLT® Safety Option MCB 150/151 is approved for use in safety related control systems and complies with EN ISO 13849-1 PL d, EN/IEC 61508 SIL 2 and EN IEC 62061.

The safety Option offers the following safety functions as per IEC 61800-5-2:



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.

Connect active and passive sensors directly to the pluggable safety option over two

## 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

### Digital output (Safe output)

Number of outputs	1
Output voltage low	< 2 VDC
Output voltage high	> 19,5 VDC
Nominal output current	< 100 mA @ 24 V / < 0.5 mA @ 0 V
Short circuit-proof	Yes
Cable length	< 30 m

### 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
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

channels. In many applications these drives allow external components, such as safety switchgear, over-speed monitors and motor/mains contactors, to be eliminated.

There are two different hardware variants for HTL (MCB 151) and TTL (MCB 150) encoder input. Both make use of the existing Safe Stop, terminal 37, via an external wire.

