

VLT® Safety Option MCB 140/141

Integrate the most important safety functions in a single, compact device that works with all drives.



MCB 141 – for external mounting outside the drive enabling use of the MCB 140 functionality if another B- option is installed.

Ordering no. MCB 140 130b6443
Ordering no. MCB 141 130b6447

The VLT® Safety Option MCB 140/141 series expands the Safe Torque Off (STO) function that is integrated into the drive, by adding a safe measurement of the ramp-down time, also called SS1, Safe Stop 1.

Extensive speed monitoring features have also been integrated into the system.

- SMS (Safe Maximum Speed) protects both operators and equipment from dangerous overspeed.
- SLS (Safely Limited Speed) is activated by a dedicated input that allows operators to carry out work at the machine without interrupting the production process.
- SSM (Safe Speed Monitor)

The MCB 140/141 has been designed to provide drive-integrated safety without needing to change the overall safety concept. This means that the option can be commissioned and used in a similar way as external safety devices. By integrating the safety option into the drive owners save both space and wiring, without losing the ability to commission the safety system without using a PC.

Setup is fast and user-friendly. The integrated display guides users through a limited number of easy to understand parameters, enabling them to set up the safety system in a matter of minutes.

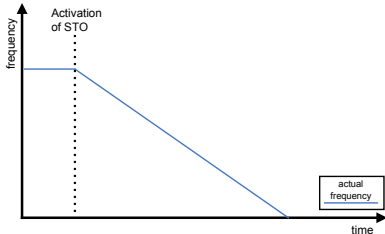
Feature	Benefit
Scalable from single channel PL c to dual channel PL e	Less wiring, fewer external components, only pay for what you need.
Internal and external version available	Use the same safety concept no matter which drive is used.
No need to power cycle the drive after a demand on the safety system	Minimized wear on the drive, longer lifetime expectancy and reliability.
Three logic safe inputs	A dedicated input for each safety function, easy to connect without needing an additional safety component.
Maintenance can be performed while the machine is still in motion	Minimize time and effort required for service and installation work.
Safe Torque Off (STO)	Prevention of unexpected startup without power contactors. No maintenance needed.
Safe Stop 1 (SS1) Monitors ramp down time and shuts off the torque	Controlled ramp-down results in faster standstill compared to STO, without losing all benefits of the STO. Makes it possible to work safely with the guards open.
Safely Limited Speed (SLS) Monitors whether a specified velocity is exceeded	Reduce set-up times thanks to a better view into the set-up area. Greater operational safety by means of safely limited set-up speed.
Safe Maximum Speed (SMS) Protection of over speed during automatic production	Protect your machine from destruction due to over-speed.
Standstill output	Use this output to control movable guard interlocking devices. Enables the user to enter the machine only if it is in standstill. Show the user that it is safe to enter the machine.
Pulsed voltage supply	Check wiring, connectors and switches for correct function. Higher efficient failure finding resulting in less downtime.

50%

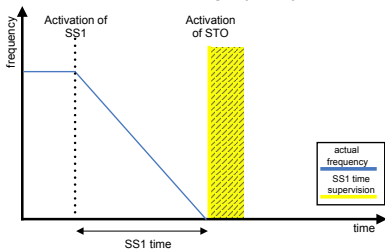
saving on wiring can be achieved in low safety-critical applications, compared to traditional dual-channel solutions.

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

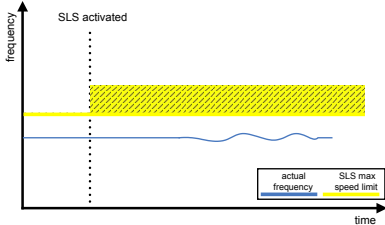
Safe Torque Off (STO)



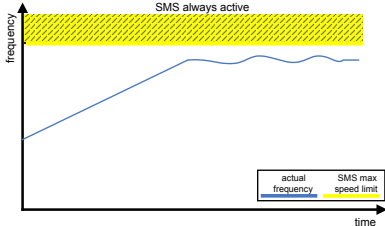
Safe Stop1 (SS1)



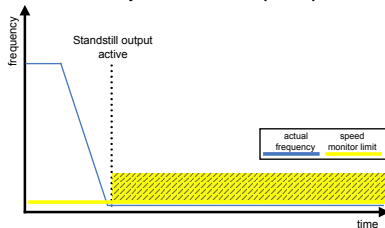
Safely Limited Speed (SLS)



Safe Maximum Speed (SMS)



Safe Speed Monitor (SMS)



Specifications

General

Supply voltage	24V, PELV required
Supply current	80 mA + load current
Reaction time of safety functions	20 ms
Category according to ISO13849-1	4 (2 if single channel is used)
Performance Level (PL) according to ISO13849-1	e (c if single channel is used)

Digital inputs

Number of digital inputs	6 (3x2-channel Digital Safety Input) 1 input for feedback circuit
Input voltage range	0 V up to supply voltage
Input voltage	Low: < 1 V / High: > 21,6 V
Input current	2,5 mA at 24 V / -2,75 mA at 0 V
Galvanic isolation	No
Short circuit proof	Yes

Digital outputs

Number of outputs	3 safe outputs (1 x 2-channel Digital Safety Output, 1 x 1-channel Digital Safety Output) 2 additional outputs
Output voltage low	0 V (high side switch with pull down)
Output voltage high	Supply voltage
Nominal output current	0,5 A
Short circuit proof	Yes

Pulsed Outputs

Number of outputs	2 (1 for each safety channel)
Output voltage low	0 V (high side switch with pull down)
Output voltage high	Supply voltage
Nominal output current	100 mA
Short circuit proof	Yes

Proximity switch inputs

Number of inputs	2
Suitable output types	PNP
Input voltage range	0 V – Supply voltage
Input frequency	Max. 12,5 kHz
Galvanic isolation	No
Short circuit proof	Yes

Certifications

Certified according to ISO 13849-1 cat. 4 and PL e

Highly scalable, the VLT® Safety Option MCB 140/141 can adapt to your exact needs. In less critical applications the option can be configured as a single channel system, which saves wiring and costs. In more critical applications it can be configured as a two-channel system.

Extensive built-in diagnostics help find failures quickly and reduce downtime. To enable diagnostics by using dynamic signals, the MCB 140 features two pulsed outputs, making it possible to find wiring faults.

