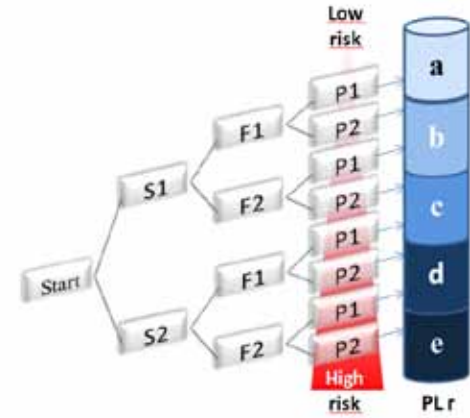


# AC890 and AC890PX

## STO Safe Torque Off



## Reduce costs and increase productivity

The STO function helps customers to ensure the safety of persons and the machine components by preventing the drive from starting unexpectedly. Furthermore, it offers :

- reduced costs and cabinet space by eliminating the need for contactors
- increased productivity through reduced response times.

The Safe Torque Off (STO) feature is available as a standard feature on our AC890 and AC890PX range.

The AC890 STO feature is the highest safety category (SIL3 / PLe) permitted for a variable speed drive (EN61800-5-2:2007), allowing users to meet the safety requirements of the most demanding applications.



## Contact Information:

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## Features:

- STO is a standard feature in accordance with EN13849-1 (PLe) and EN62061 (SIL3)
- STO prevents the drive from restarting unexpectedly
- STO is an electronic inhibit intended for use during normal operation of the machine
- When STO is invoked, the drive pulses are disabled by hardware and power (therefore torque) is removed from the motor which coasts to stop
- STO can eliminate the need for contactors used to disable rotation of the motor under an emergency stop condition



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# Safety functionality

## Standard Features:

### Safe Torque Off (STO)

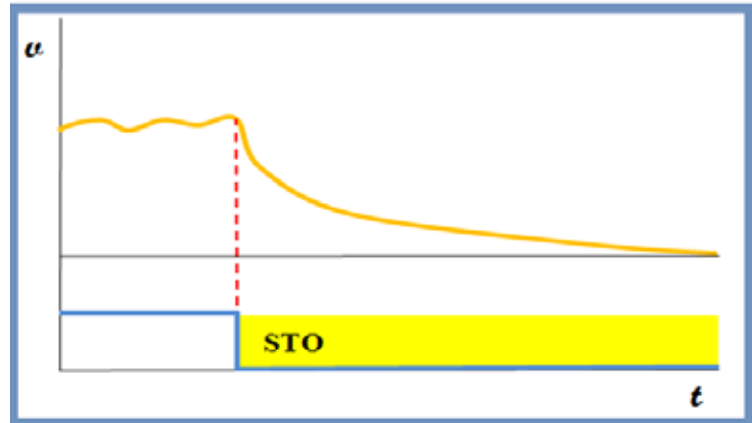
- Requirements of EN 61800-5-2 Paragraph 4.2.2.2
- STO inputs comply with IEC61131-2
- Stop Category = 0 (EN60204-1:2006) Drive stops by removing energy. Drive decelerates in idle mode.
- It is certified by BGIA, the German Trades Association for Industrial Safety
- All STO connections are made at terminal block X11.

### Safety Category = 3, PLe (EN ISO 13849-1:2006)

- Average probability of dangerous failure per hour is under  $10^{-7}$  (One in 10 billion)
- If single fault occurs, safety function is still maintained

### Safety Integrity Level = SIL3 (EN62061:2005)

- Derived from EN61508 family
- SIL 4 not defined for drives only systems



### What is Safe Torque Off (STO) ?

It is an electronic means of preventing the AC890 drive from delivering torque and power to its connected motor. The STO implementation is by hardware only, it being a 2 channel implementation designed for nominal 24Vdc operation. There is a single digital output which may be used for monitoring purposes. The status of the STO function is communicated to the drive software so that this may report and sequence in unison with it.

### Where could STO be used?

In safety control schemes for safety ratings up to category 3 PLe or SIL3. To replace expensive but less reliable drive output contactors, including for emergency stop purposes. The AC890 STO function can also be used to implement Safe Stop 1 (SS1).

### What should I do next to use the STO function ?

The use of the STO product feature is subject to suitable user risk assessment and formal and appropriate design evaluation to confirm the user's implementation meets the risk assessment requirements. The AC890 and AC890PX STO product manual must be fully consulted before use and for full details relating to the above.

*Note:* STO is an electronic inhibit intended for use during normal operation of the machine. It is not intended for use during machine maintenance, repair, replacement or other similar activities. For these activities recognized electrical power isolation devices and lock-out procedures must be used.