

10 Safety Function STO(Safe Torque Off)

The iS7 Inverter series provides resilient safety features via optional safety expansion module. When an emergency arises, it instantly blocks inverter output to protect the operator and reduce the risk.

10.1 Safety Standard Product

The performance levels for the safety function are as follows.

EN ISO 13849-1: Category 3, PL Class d

EN 61508: SIL 2 (EN 60204-1, Stop Category 0)

⚠ Caution

When using the safety function, perform a risk assessment for the system and ensure that it meets the safety requirements.

Note

When wiring the inverter or performing maintenance, the inverter must be turned off. The safety function is not used to block the power supply to the motor or insulate the inverter electrically.

10.2 About the Safety Function

The safety function is a safety torque off (STO) function used to prevent a torque and to block the power supply to the motor by interrupting the gate using hard wires.

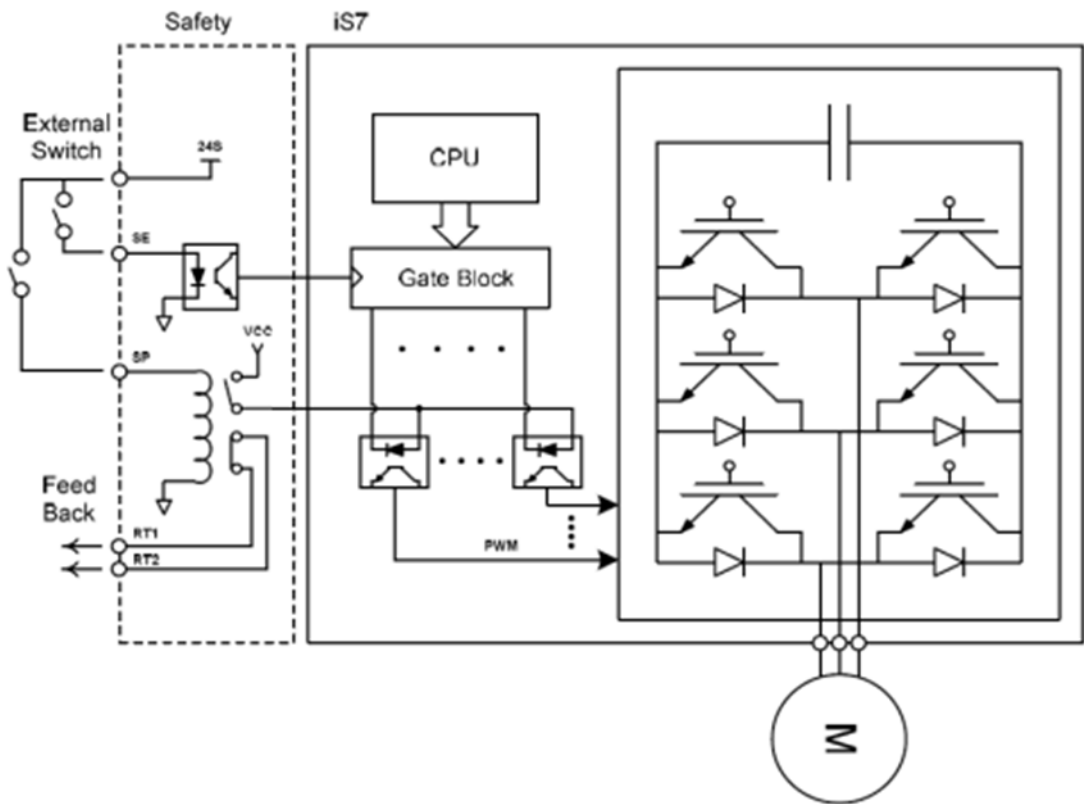
STO (Safety Torque Off): IEC61800-5-2

The STO function is independently connected to each input signal for 2 channels (SE(SFT11) and SP(SFT2)). The connected circuit cuts off the operation signal for the inverter output and turns off the power modules.

If the safety function is activated during operation, the inverter blocks the output and the motor enters Free Run mode. Also, the "Safety Opt Err" message is displayed on the keypad.

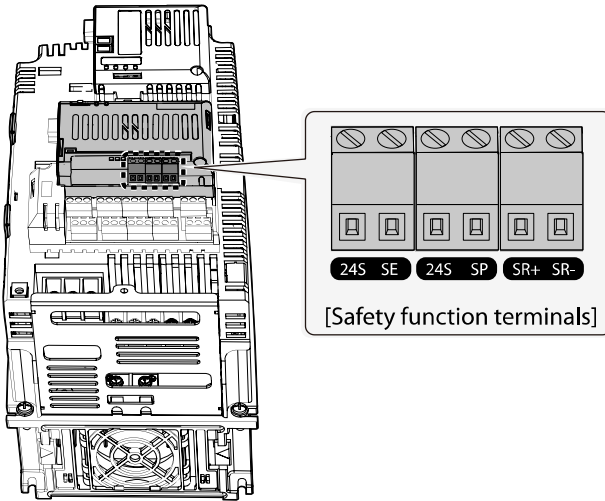
To release the fault trip, short-circuit terminal block to return to the normal operation status and press the [STOP/RESET] key.

10.21 Safety Function Wiring Diagram



Safety
Function

10.2.2 Installing the Safety Board to 0.75–160 kW Product



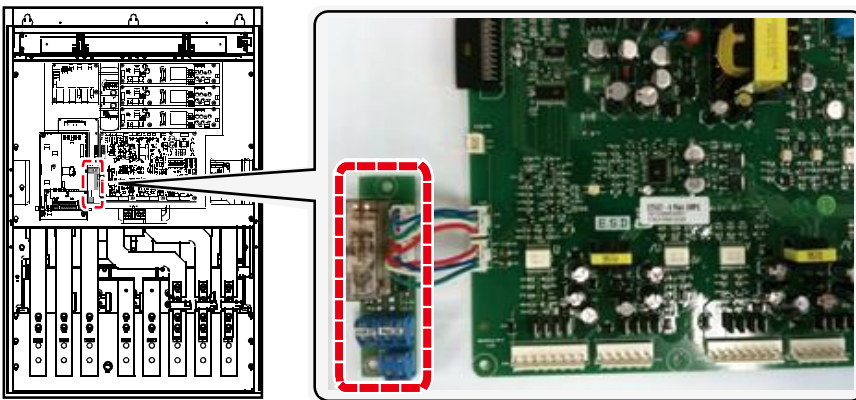
⚠ Caution

Because 0.75-160kW products provide safety purpose product, therefore please use this product with safety option.

Safety options are not available for general products.

10.2.3 Installing the Safety Board to 185–375 kW Product

Please buy safety option and apply to standard products because there is no safety product for 185-375kW.



Refer to the following figure and install the safety board to the main SMPS board of the inverter using cable connectors.

10.24 Safety Function Terminal Description

24S – SE (SFT1)	24S – SP (SFT2)	SR + SR-
Short: Normal operation	Short: Normal operation	B Contact relay output terminal
Open: Safety Trip (output blockage)	Open: Safety Trip (output blockage)	

10.25 Cable Specification for Signal Terminal Block Wiring

Terminal		Wire Thickness		Electrical Standard
Variety	Name	mm ²	AWG	
24S	Safety Input power	0.33–1.25mm ² (16–22 AWG) Shield type twisted-pair wire		24 VDC, Max. 10 mA
SE	Safety Input 1 (SFT1)			Short: Safety function stop (24S-SE or SP) Open: Safety function operation (24S-SP or SP)
SP	Safety Input 2 (SFT2)			
SR+,SR-	Safety function completion output relay			DC 24 V, 5 A below (B contact)

⚠ Caution

The length of the safety wiring at the input terminal must be less than 30 m. Using over 30M may cause malfunctions because of noise.