

Safety Control Relay HR1S-AF

- 2NC safety input type, such as E-Stops or Interlock Switches
- EN ISO 13849-1 PL_e, Safety Cat 4 compliant, and EN 62061 SIL 3
- Welding detection of start switch
- Fault diagnosis function with dual safety circuits.
- Internal relay operations can be monitored with LED Indicator.
- Finger-safe protection
- 22.5mm wide, 35mm DIN rail mounting
- UL listed, CSA certified, TÜV NORD approved



Part Numbers

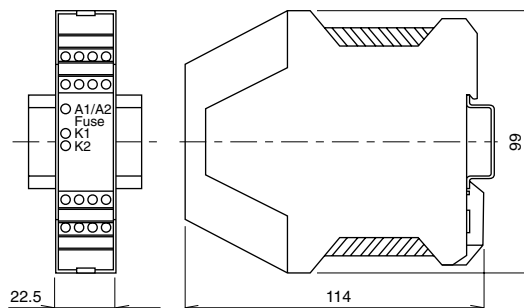
Part Numbers	Terminal Style
HR1S-AF5130B	Integrated Terminal Block
HR1S-AF5130PB	Removable Terminal Block

Specifications

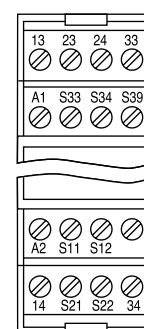
Operating Temperature	-25 to +55°C (no freezing)	
Degree of Protection	Terminal: IP20, Housing: IP40	
Rated Power Voltage	24V AC (-15 to +10%) 50/60 Hz 24V DC (-15 to +10%)	
Power Consumption	5 VA maximum (24V AC) 2.5W maximum (24V DC)	
Overcurrent Protection	Electronic (Note)	
Control Circuit Voltage	24V	
Performance Level (PL)	e (EN ISO 13849-1)	
Safety Category	4 (EN ISO 13849-1)	
Safety Integrity Level (SIL)	3 (EN 62061)	
Response Time	When S11-S12, S21-S22 are interrupted: 20 ms maximum When power is interrupted: 60 ms maximum	
Input Synchronization Time	Unlimited	
Overvoltage Category	III	
Pollution Degree	2	
Rated Insulation Voltage	300V	
Maximum Input Resistance	90Ω	
Safety Outputs	Instantaneous (Stop Cat 0)	3NO
Output Contact Ratings	Safety Circuit	AC-15 C300: U _e = 240VAC, I _e =0.75A
		DC-13 U _e =24VDC, I _e =2A
	Minimum Applicable Load	17V/10mA (initial value)
Operation Frequency	1200 operations/h maximum	
Rated Current	Safety circuit output total: 18A maximum Each safety circuit output: 6A maximum	
Wire Size	HR1S-AF5130B: 1 × 2.5 mm ² , 2 × 0.75 mm ² maximum HR1S-AF5130PB: 1 × 2.5 mm ² , 2 × 1.5 mm ² maximum	
Weight	250g	

Note: Short-circuit of S11 and S21 activates the overcurrent protection circuit, interrupting the power supply. The safety output turns off.
Normal status is restored when the short-circuit is removed.
Use a 4A fuse (Type gL) for power line protection.
Use a 4A fuse (Type gL) or a 6A fast blow fuse for output line protection.

Dimensions (mm)

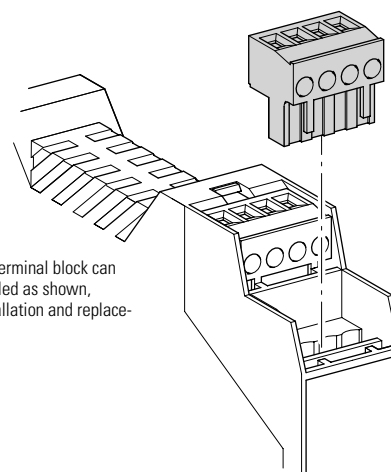


Terminal Arrangement



LED Indicator

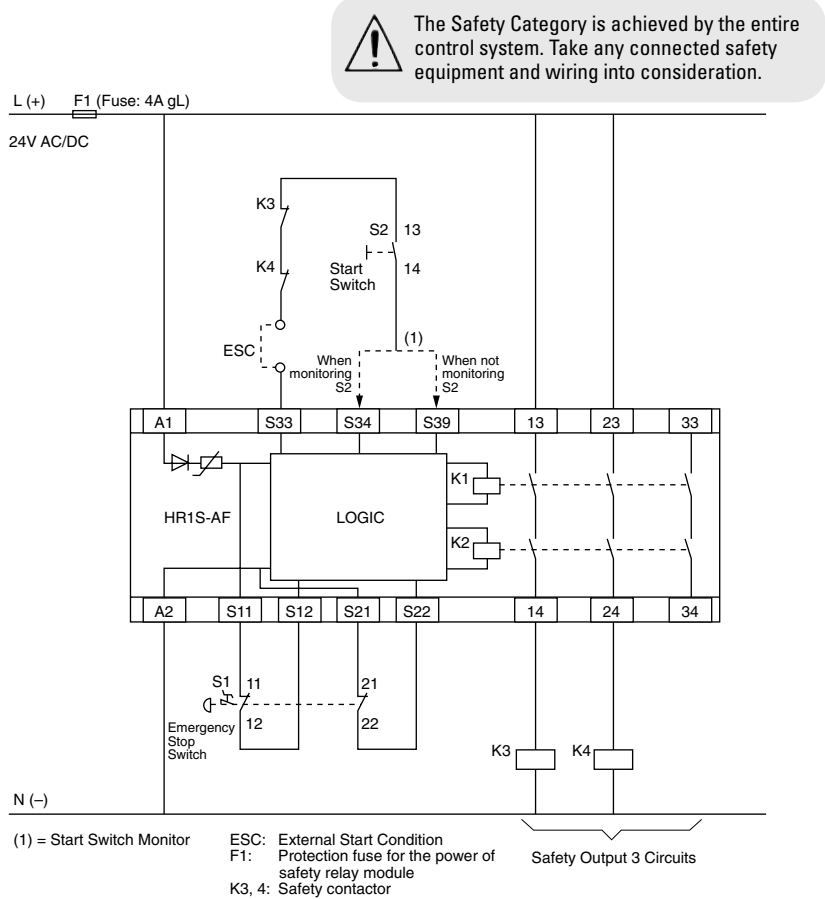
- A1/A2 Fuse:
Turns on when power circuit is normal.
Turns off when power is interrupted or the electronic fuse blows.
- K1: Turns on when K1 relay operates.
- K2: Turns on when K2 relay operates.



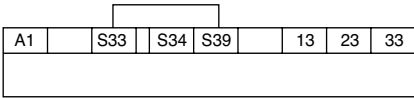
The HR1S-AF5130PB terminal block can be removed and installed as shown, allowing for easy installation and replacement of modules.

HR1S-AF Wiring Diagram

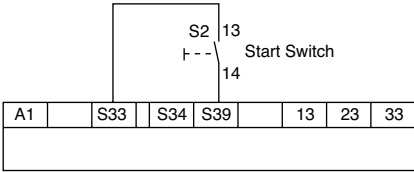
Safety Category 4 Example Circuit (using an emergency stop switch)



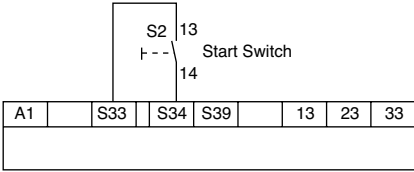
When not using a start switch (automatic start)



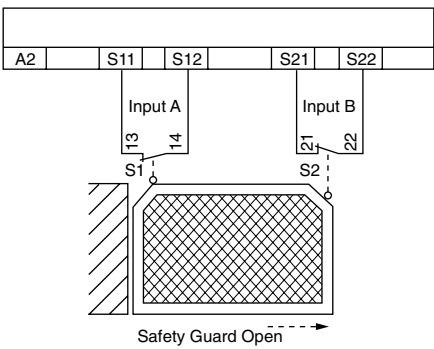
When not monitoring the start switch (welding of start switch cannot be detected)



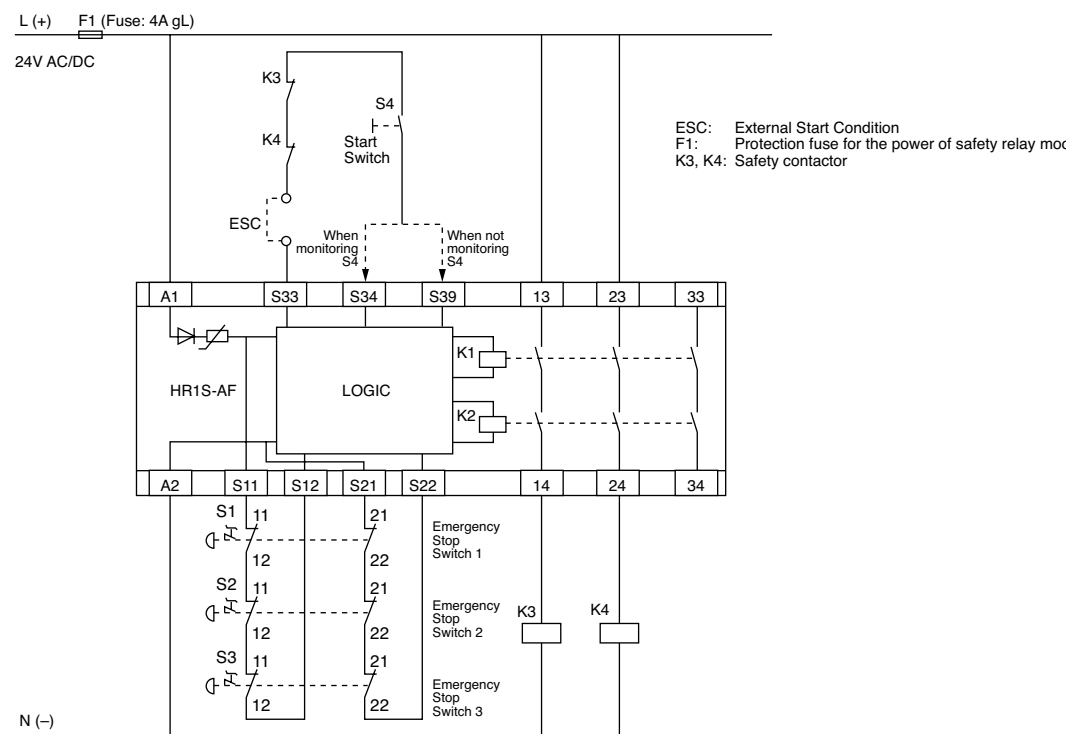
When monitoring the start switch (detecting the OFF status of start switch)



Limit switch or interlock switch for guard opening/closing

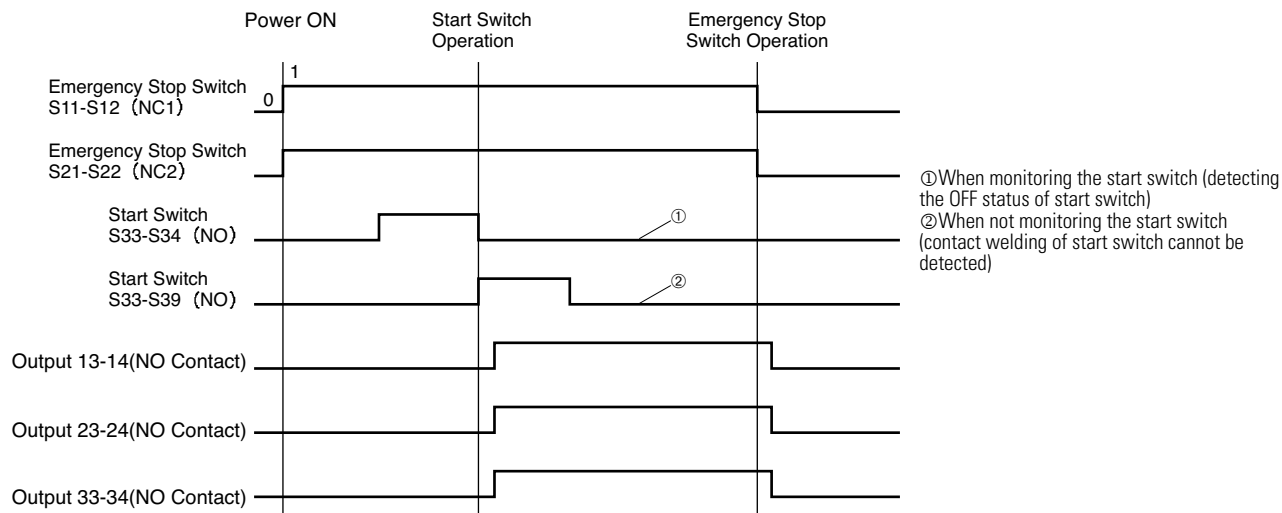


Safety Category 3 Example Circuit (using multiple emergency stop switches)

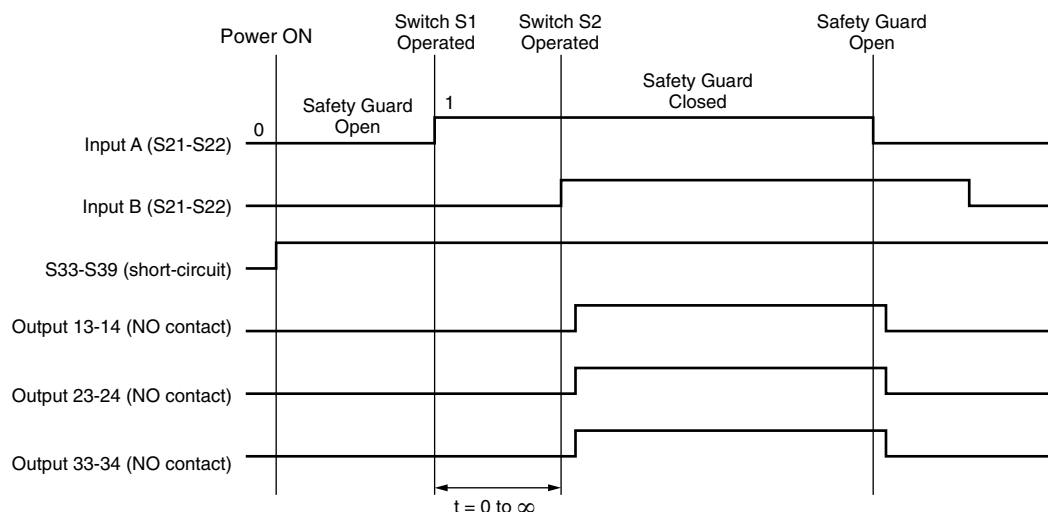


HR1S-AF Operation Chart

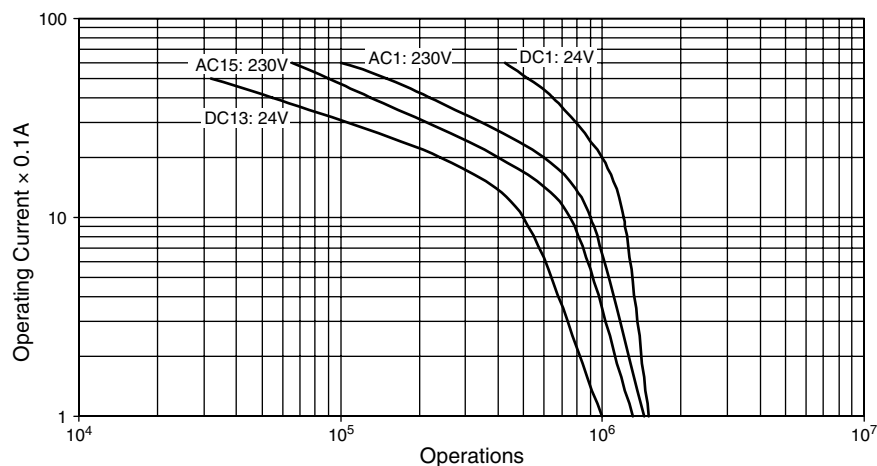
When Using the Emergency Stop Switch



When not Using the Safety Guard (Automatic Start)



Output Contact Electrical Life



Specifications and other descriptions in this document are subject to change without notice.



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