Safety Control Relay HR1S-AC

- 1NC or 2NC safety input type, such as E-Stops or Interlock Switches
- EN ISO 13849-1 PLe, Safety Cat 3 compliant, and EN 62061 SIL 3
- 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

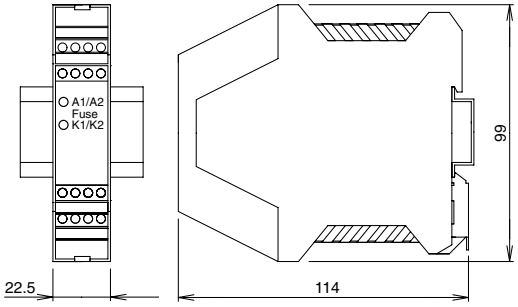
Part Numbers	Terminal Style
HR1S-AC5121	Integrated Terminal Block
HR1S-AC5121P	Removable Terminal Block

Specifications

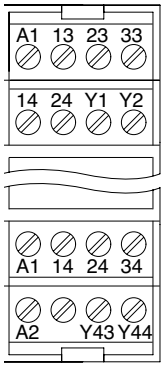
Operating Temperature			–10 to 55°C (no freezing)
Degree of Protection			Terminal: IP20, Housing: IP40
Rated Power Voltage			24V AC (–20 to +10%) 50/60 Hz 24V DC (±20%)
Power Consumption			AC: 2.2 VA (24V AC) maximum DC: 1.2W (24V DC) maximum
Overcurrent Protection			Electronic
Control Circuit Voltage			24V
Performance Level (PL)			e (EN ISO 13849-1)
Safety Category			3 (EN 954-1)
Safety Integrity Level (SIL)			3 (EN 62061)
Response Time			100ms maximum
Input Synchronization Time			Unlimited
Overvoltage Category			III
Pollution Degree			2
Rated Insulation Voltage			300V
Safety Outputs	Instantaneous (Stop Cat 0)		3NO
	Auxiliary Contact		1NO (transistor, PNP)
Output Contact Ratings	Safety Circuit	AC-15	C300: Ue= 240VAC, Ie=0.75A
		DC-13	Ue=24VDC, Ie=2A
	Transistor Circuit		24V/20mA
	Minimum Applicable Load		17V/10mA (initial value)
Operation Frequency			1200 operations/h maximum
Rated Current			Safety circuit output total: 10.5A maximum
Wire Size			HR1S-AC5121: 1 × 2.5mm², 2 × 0.75mm² maximum HR1S-AC5121P: 1 × 2.5mm², 2 × 1.5mm² maximum
Weight			160g

Use a 4A fuse (Type gL) for power fuse protection.
Use a 4A (Type gL) or a 6A fast blow fuse for output fuse protection.

Dimensions (mm)



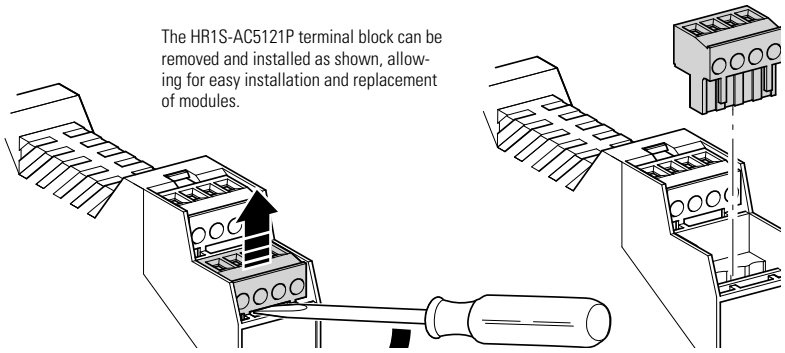
Terminal Arrangement



LED Indicator

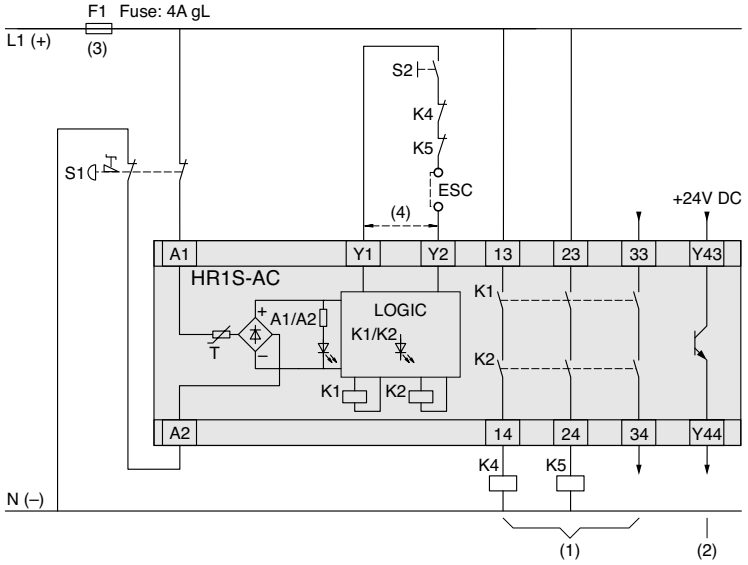
- A1/A2 Fuse:
  Turns on when power circuit is normal.
  Turns off when power is interrupted or the electronic fuse blows.
- K1: Turns on when K1 relay operates.
- K2: Turns on when K2 relay operates.

The HR1S-AC5121P terminal block can be removed and installed as shown, allowing for easy installation and replacement of modules.

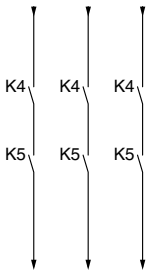


HR1S-AC Wiring Diagram

Safety Category 3 Example Circuit (using an emergency stop switch with 2NC contacts)



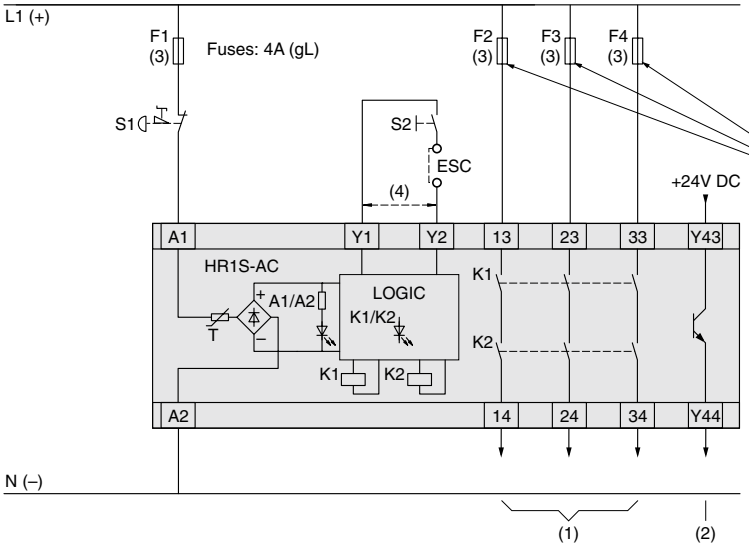
ESC: External Start Condition
S1: Emergency Stop Switch
S2: Start Switch
F1: Protection fuse for safety relay module po
K4, K5: Safety contactor



The Safety Category is achieved by the entire control system. Take any connected safety equipment and wiring into consideration.

(1) Three safety outputs
(2) One transistor output
(3) See the specifications for maximum fuse size
(4) Jumper for terminal Y1-Y2 (for automatic start)

Safety Category 1 Example Circuit (using an emergency stop switch with 1NC contact)

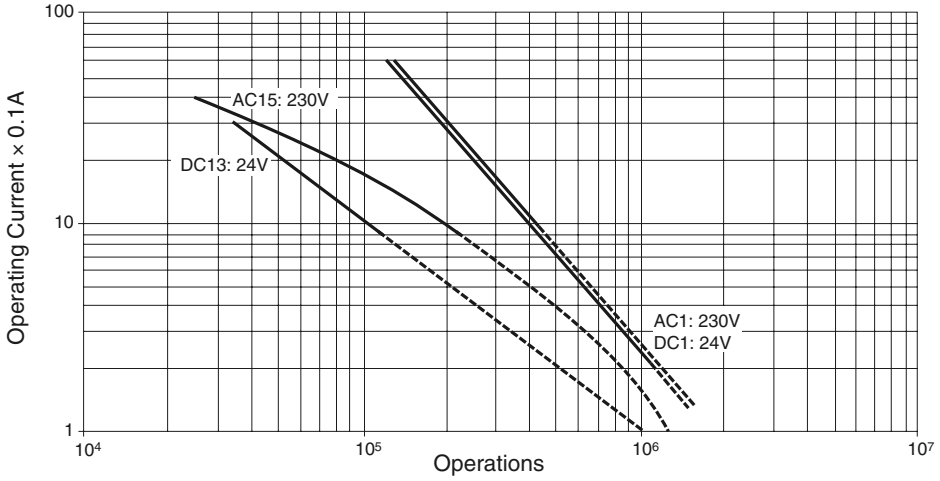


ESC: Exernal Start Condition
S1: Emergency Stop Switch
S2: Start Switch
F1: Protection fuse for the power of safety relay module
F2 to F4: Protection fuse for the output of safety relay module

Fuses: 4A (gL) or 6A fast blow type

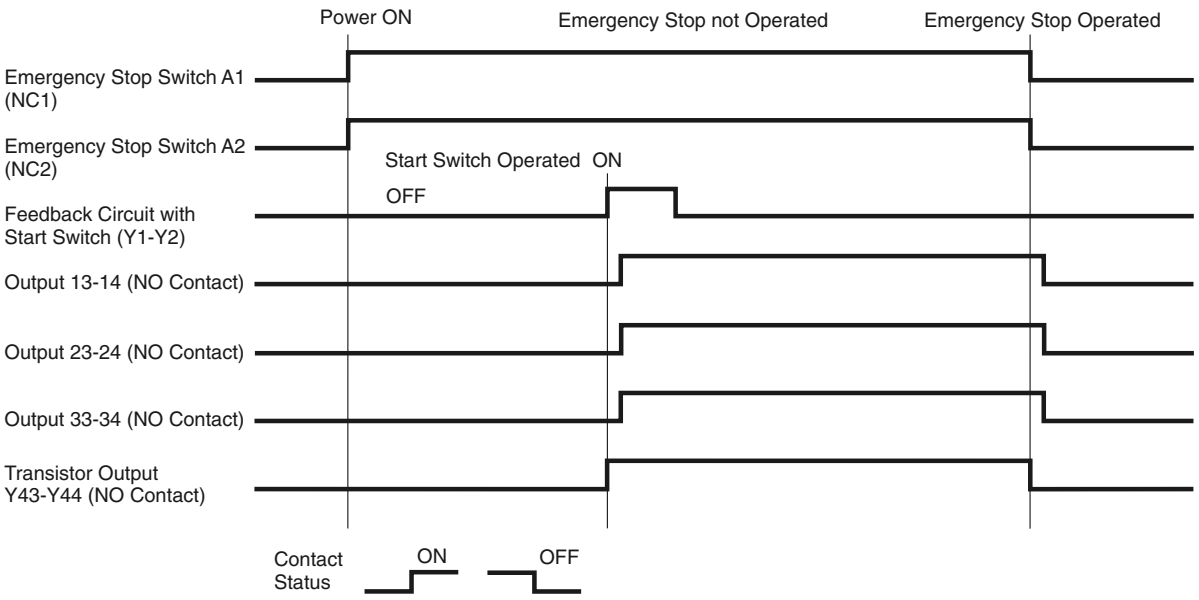
(1) Three safety outputs
(2) One transistor output
(3) See the specifications for maximum fuse size

Output Contact Electrical Life

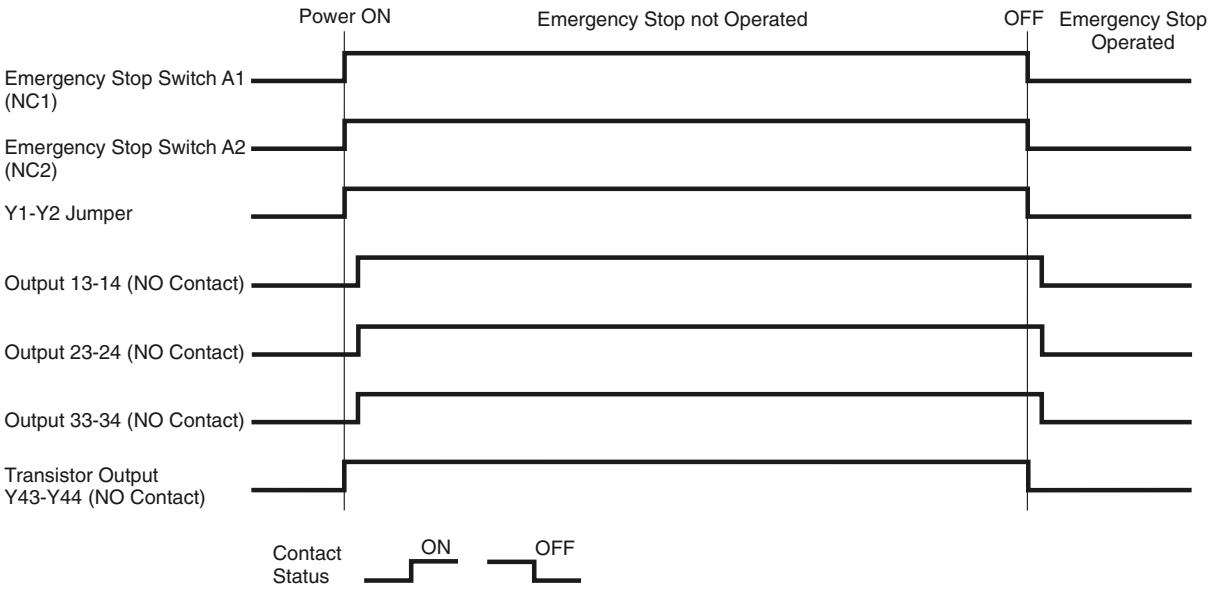


HR1S-AC Safety Relay Module Operation Chart

When Using a Start Switch



When not Using the Start Switch



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