HR1S-AF Safety Relay Modules

Small and high function (welding detection of start switch)
- Removable terminal block (HR1S-AC5121P) allows for easy module replacement.
- Fault diagnosis function with dual safety circuits.
- Internal relay operations can be monitored with LED indicator.
- Finger-safe protection
- 35-mm-wide DIN rail mounting
- EN, IEC compliant.
- TÜV NORD approved.
- UL listed, CSA approved.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Voltage</th>
<th>Terminal Style</th>
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<tbody>
<tr>
<td>HR1S-AF5130B</td>
<td>24V AC, -15 to +10%, 50/60 Hz</td>
<td>Integrated Terminal Block</td>
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<tr>
<td>HR1S-AF5130PB</td>
<td>24V DC, -15 to +10%</td>
<td>Removable Terminal Block</td>
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</table>

Specifications

- Operating Temperature: –25 to +55°C (no freezing)
- Degree of Protection: Terminal: IP20, Housing: IP40
- Rated Voltage: 24V AC (-15 to +10%) 50/60 Hz, 24V DC (-15 to +10%)
- Power Consumption: 5 VA maximum
- Overcurrent Protection: Electronic (Note)
- Control Circuit Voltage: 24V
- Applicable 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
- No. of Outputs: Safety Circuit 3NO, Time-delay Circuit —, Auxiliary Contact —, Transistor —
- Output Contact Ratings: Safety Circuit AC-15 C 300 Ue = 240V AC / Ie = 0.75A, DC-13 24V/1.5A, Ue = 24V DC / Ie = 1.5A, Time-delay Circuit AC-15 —, DC-13 —, Auxiliary Circuit AC-15 —, DC-13 —, Transistor Circuit —
- Minimum Applicable Load: 17V/10 mA (initial value)
- Operating Frequency: 1200 operations/h maximum
- Mechanical Durability: 10,000,000 operations minimum
- Rated Current: Safety circuit output total: 18A maximum, Each safety circuit output: 6A maximum
- Wire Size: HR1S-AF5130B: 1 x 2.5 mm², 2 x 0.75 mm² maximum, HR1S-AF5130PB: 1 x 2.5 mm², 2 x 1.5 mm² maximum
- Weight (approx.): 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.

LED Indicators
- 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.
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Wiring Diagram
Safety Category 4 Circuit (using an emergency stop switch)

Safety category is achieved by an entire control system. Take the connected safety equipment and wiring into consideration.

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)

Safety Category 3 Circuit (using multiple emergency stop switches)

Limit switch or interlock switch for guard opening/closing
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Operation Chart

When Using the Emergency Stop Switch

When not Using the Safety Guard (Automatic Start)

Output Contact Electrical Life