SC10-2 Safety Controller

Datasheet

For complete technical information about this product, including installation instructions, application requirements and guidelines, EU Declaration of Conformity, technical specifications, and accessories, see www.bannerengineering.com and search 174868.

- Intuitive, icon-based programming with drag-and-drop PC configuration simplifies device setup and management
- Two six-amp safety relay outputs, each with three N.O. sets of contacts
- Ten inputs, including four that can be used as non-safe outputs
- Automatic Terminal Optimization (ATO) can increase the inputs from 10 to up to 14
- Industrial Ethernet two-way communication
  - 256 virtual non-safe status outputs
  - 80 virtual non-safe inputs (reset, on/off, cancel off-delay, mute enable)
- SC-XM3 external drive for fast swap and quick configuration without a PC

Model	Description
SC10-2roe	Configurable safety relay controller - 10 inputs (4 convertible), two 3-channel safety relay outputs, industrial ethernet

Note: Configuration software is required.
The software is available at www.bannerengineering.com/safetycontroller.

SC10-2 Features and Indicators

Connection points are push-in spring clamp connectors.

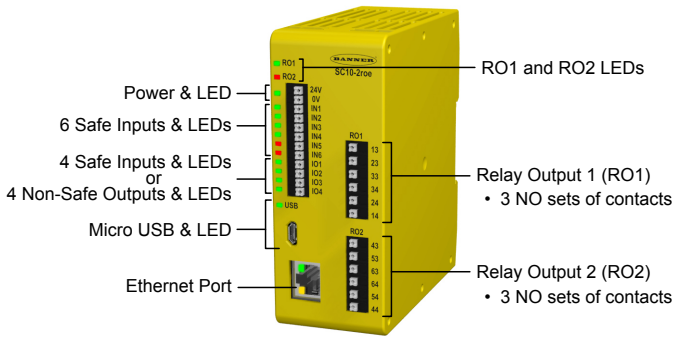

Figure 1. Features and Indicators

SC10-2 Specifications

Power
Voltage: 24 V dc ±20% (SELV)
Current:
240 mA maximum, no load (relays on)
530 mA maximum, full load (IO1 to IO4 used as auxiliary outputs)

Safety Inputs (and Convertible I/O when used as inputs)
Input On threshold: > 15 V dc (guaranteed on), 30 V dc maximum
Input Off threshold: < 5 V dc and < 2 mA, –3 V dc minimum
Input On current: 5 mA typical at 24 V dc, 50 mA peak contact cleaning current at 24 V dc
Input lead resistance: 300 Ω maximum (150 Ω per lead)
Input requirements for a 4-wire Safety Mat:
• Maximum capacity between plates: 0.22 µF[1]
• Maximum capacity between bottom plate and ground: 0.22 µF[1]
• Maximum resistance between the 2 input terminals of one plate: 20 Ω

Convertible I/O
Sourcing current: 80 mA maximum (overcurrent protected)
Test Pulses: ~1 ms every 25 to 75 ms

Automatic Terminal Optimization Feature
Up to three devices connected with user-provided terminal blocks

Network Interface
Ethernet 10/100 Base-T/TX, RJ45 modular connector
Selectable auto negotiate or manual rate and duplex
Auto MDI/MDIX (auto cross)
Protocols: EtherNet/IP (with PCCC), Modbus/TCP, and PROFINET
Data: 256 virtual Status Outputs; fault diagnostic codes and messages; access to fault log

[1] If the safety mats share a convertible I/O, this is the total capacitance of all shared safety mats.

Response and Recovery Times

Input to Output Response Time (Input Stop to Output Off): see the Configuration Summary in the Software, as it can vary
Input Recovery Time (Stop to Run): Turn On Delay (if set) plus 250 ms typical (400 ms maximum)
Virtual Input (Mute Enable and On/Off) Timing: RPI + 200 ms typical
Virtual Input (Manual Reset and Cancel Delay) Timing: see the Instruction Manual for details

Off Delay Tolerance

The maximum is the response time given in the configuration summary plus 0.02%
The minimum is the configured off delay time minus 0.02% (assuming no power loss or faults)

On Delay Tolerance

The maximum is the configured on delay plus 0.02% plus 250ms typical (400 ms maximum)
The minimum is the configured on delay minus 0.02%

Safety Outputs

3 NO sets of contacts for each output channel (RO1 and RO2). Each normally open output is a series connection of contacts from two forced-guided (mechanically linked) relays. RO1 consists of relays K1 and K2. RO2 consists of relays K3 and K4.
See the Instruction Manual for output ratings.

EMC

Meets or exceeds all EMC requirements for immunity per IEC 61326-3-1:2012 and emissions per CISPR 11:2004 for Group 1, Class A equipment

Safety

Category 4, PL e (EN ISO 13849)
SIL CL 3 (IEC 62061, IEC 61508)

Safety Ratings

PFH [1/h]: 5.01×10^{-10}
Proof Test Interval: 20 years

Product Performance Standards

See Standards and Regulations section in the Instruction Manual for a list of industry applicable U.S. and international standards

Certifications

PROFIBUS • PROFINET
c UL us LISTED PROGRAMMABLE SAFETY CONTROLLER NRGF

Operating Conditions

Temperature: 0 °C to +55 °C (+32 °F to +131 °F) (see Temperature Derating graph)
Storage Temperature: –30 °C to +65 °C (–22 °F to +149 °F)
Humidity: 90% at +50 °C maximum relative humidity (non-condensing)
Operating Altitude: 2000 m maximum (6562 ft maximum)

Environmental Rating

NEMA 1 (IEC IP20), for use inside NEMA 3 (IEC IP54) or better enclosure

Mechanical Stress

Shock: 15 g for 11 ms, half sine, 18 shocks total (per IEC 61131-2)
Vibration: 3.5 mm occasional / 1.75 mm continuous at 5 Hz to 9 Hz, 1.0 g occasional and 0.5 g continuous at 9 Hz to 150 Hz: all at 10 sweep cycles per axis (per IEC 61131-2)

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.
Supply wiring leads < 24 AWG shall not be spliced.
For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

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