



XS/SC26 and SC10-2 Safety Controllers Product Manual

Original Instructions
p/n: 174868 Rev. ZAA
07-Aug-25

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- Bypass Block
- Delay Block (XS/SC26 FID 2 or later and SC10-2)
- Enabling Device Block
- Latch Reset Block
- Muting Block
- THC (Two-Hand Control) Block
- One Shot Block (XS/SC26 FID 4 or later)
- Press Control Block (XS/SC26 FID 4 or later)

See ["Function Blocks " on page 126](#) for more information.

2.6 Password (Ethernet) or PIN (USB)

To confirm and write the configuration to the Safety Controller and to access the Password Manager via the Software, a password is required if the connection is via an Ethernet port (XS/SC26 FID7 or later Safety Controller only) or a PIN is required if the connection is via an USB port.

See [" XS/SC26 Password Manager" on page 142](#) and ["SC10-2 Password Manager" on page 143](#) for more information.

2.7 SC-XM2/3 Drive and SC-XMP2 Programming Tool

Use the SC-XM2 and SC-XM3 drives to store a **confirmed** configuration.

XS/SC26: The configuration can be written directly by the Safety Controller, when the drive is plugged into the micro-USB port (see ["XS/SC26 Configuration Mode " on page 190](#)), or via the SC-XMP2 Programming Tool using only the Software without the need to plug in the Safety Controller.

IMPORTANT: Verify that the configuration that is being imported to the Safety Controller is the correct configuration (via the Software or writing on the white label on the SC-XM2/3 drive).

Click  to access the programming tool options:

- **Read**—reads the current Safety Controller configuration from the SC-XM2/3 drive and loads it to the Software
- **Write**—writes a confirmed configuration from the Software to the SC-XM2/3 drive
- **Lock**—locks the SC-XM2/3 drive preventing any configurations from being written to it (an empty drive cannot be locked)

NOTE: You will not be able to unlock the SC-XM2/3 drive after it has been locked.

IMPORTANT: For a Safety Controller with Configuration via Network or Live Monitor via Network enabled (FID 7 or higher), using an SC-XM2/3 drive created prior to Banner Safety Controller Software version 5.0 or for a Controller with an FID less than 7 may result in disabling the Configuration via Network or Live Monitor via Network feature. If this happens, re-enable Configuration via Network or Live Monitor via Network using the USB connection.

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Chapter 3 XS/SC26 Overview

With the option to add up to eight I/O expansion modules, the XS26 Expandable Safety Controller has the capacity to adapt to a variety of machines, including large scale machines with multiple processes.

Figure 1. XS/SC26 Safety Controller



- Program in minutes with intuitive, easy-to-use configuration software
- Up to eight expansion I/O modules can be added as automation requirements grow or change
- Choose from six expansion module models
- Expansion module models have a variety of safety inputs, solid-state safety outputs and safety relay outputs
- Innovative live display feature and diagnostics allow for active monitoring of I/O on a PC and assist in troubleshooting and commissioning
- Safety Controller and input modules allow safety inputs to be converted to status outputs for efficient terminal use
- Ethernet-enabled models can be configured for up to 256 virtual status outputs
- Optional SC-XM2/3 external drive for fast swap and quick configuration without a PC
- In-Series Diagnostic (ISD) provides detailed status and performance data from each connected safety device which can be accessed with an HMI or similar device (XS26-ISD models only)
- Configure and Live view via an Ethernet connection on the expandable base controller

3.1 XS/SC26 Models

All Expandable and Non-Expandable Base controllers have 18 Safety Inputs, 8 Convertible Safety I/Os, and 2 Solid-State Safety Output pairs. Up to eight expansion modules, in any combination of input and output modules, can be added to the expandable models of the Base Controller. One communication gateway can be added to FID 6 and later expandable, Ethernet-enabled models of Base Controller.

Table 1. Expandable Base Models

Model	Display	Ethernet-enabled	# of ISD Channels
XS26-2	No	No	0
XS26-2d	Yes	No	0
XS26-2e	No	Yes	0
XS26-2de	Yes	Yes	0
XS26-ISDd	Yes	Yes	8

Table 2. Non-Expandable Base Models

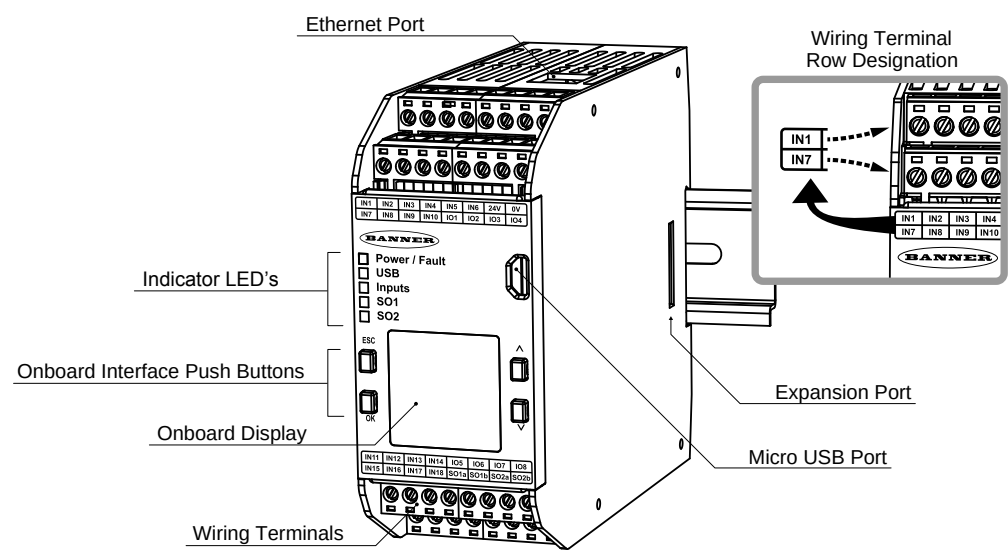
Model	Display	Ethernet-enabled	# of ISD Channels
SC26-2	No	No	0
SC26-2d	Yes	No	0
SC26-2e	No	Yes	0
SC26-2de	Yes	Yes	0

Table 3. I/O Expansion Modules

Model	Description
XS16si	Safety Input Module - 16 inputs (4 convertible)
XS8si	Safety Input Module - 8 inputs (2 convertible)
XS2so	2 Dual Channel Solid-State Safety Output Module
XS4so	4 Dual Channel Solid-State Safety Output Module
XS1ro	1 Dual Channel Safety Relay Module
XS2ro	2 Dual Channel Safety Relay Module
XSeCAT	EtherCAT Communication Gateway

3.2 XS/SC26 Features and Indicators

Figure 2. XS/SC26 Features and Indicators



3.3 Using XS/SC26 Safety Controllers with Different FIDs

Over time, Banner adds new features to some devices. The Feature ID (FID) identifies the set of features and functions included in a particular model. Generally, an increasing FID number corresponds to an increasing feature set. A configuration using a higher numbered FID feature is not supported by a Safety Controller of a lower FID. Feature sets are forward compatible, not backwards compatible.

XS/SC26 Base Controllers that have different FIDs, can be used in the same application, however steps must be taken to ensure compatibility. See the side label on the module ("Figure: Example Label" on page 14) or query the Module Information of the Base Controller to determine the FID of a particular device. In order to have one configuration file that applies to a device of any FID, create configurations without using the features listed in the following table. Confirm all configurations after loading to ensure that they are correct.

Figure 3. Example Label

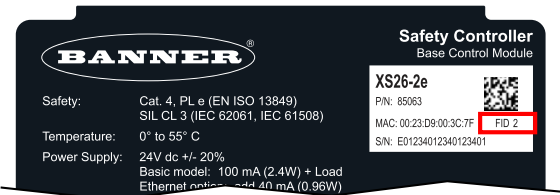
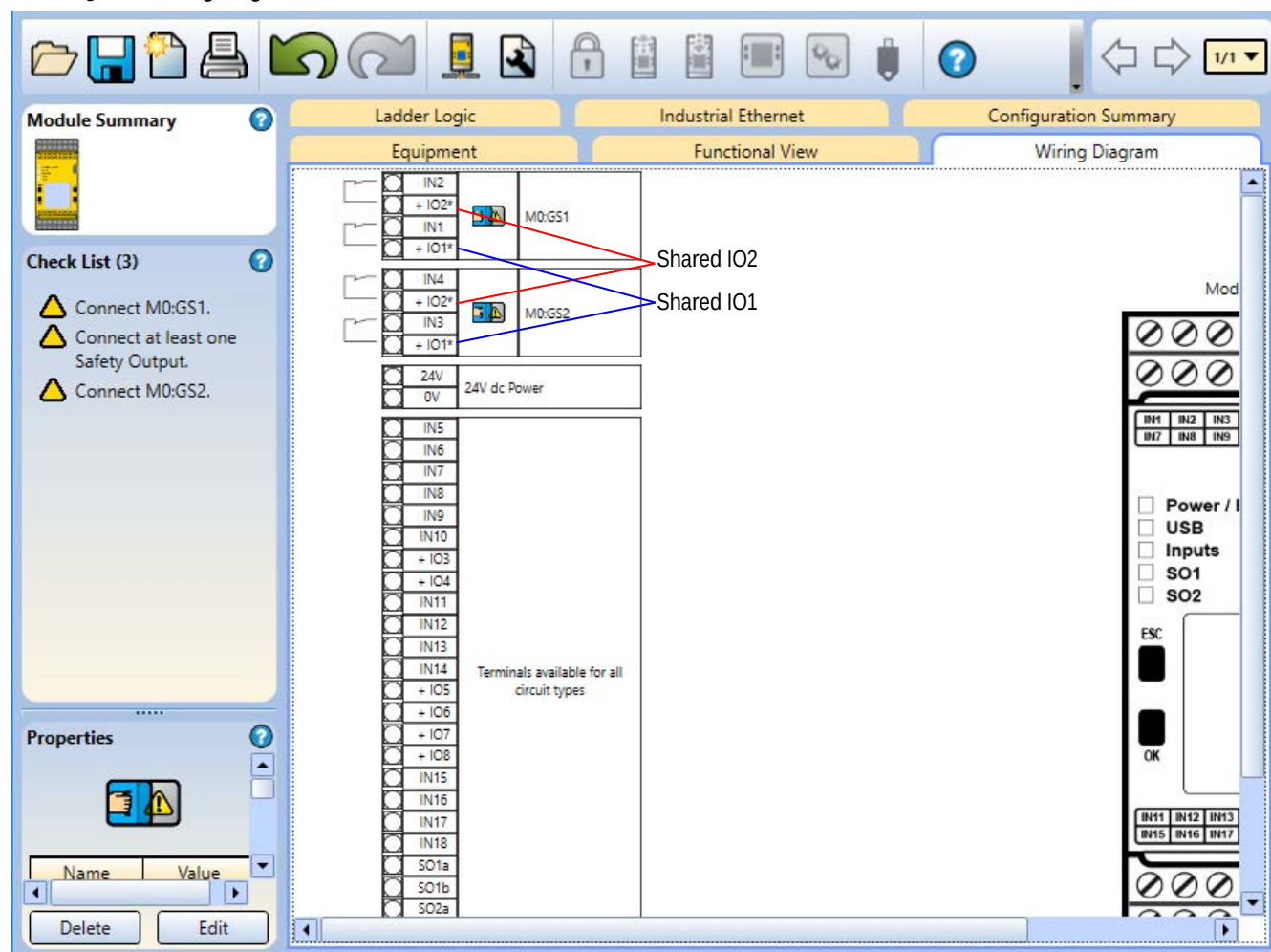


Figure 7. *Wiring Diagram* Tab View of Shared I/Os

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Chapter 4 SC10-2 Overview

The SC10-2 configurable safety relay controller is an easy-to-use and cost-effective alternative to safety relay modules. It replaces the functionality and capability of two independent safety relay modules while offering the configurability, simplicity, and advanced diagnostics capabilities offered by the rest of the Banner Engineering Corp. Safety Controller line-up.

Figure 8. SC10-2 Safety Controller



- [In-Series Diagnostics](#) (ISD) provides detailed status and performance data from each connected safety device which can be accessed with an HMI or similar device
- Intuitive, icon-based programming with drag-and-drop PC configuration simplifies device setup and management
- Supports a wide range of safety devices, eliminating the need to buy and stock safety relay modules dedicated to specific safety devices
- Two six-amp safety relay outputs, each with three normally open (NO) 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)
- Optional SC-XM3 external drive for fast swap and quick configuration without a PC (see "[SC10-2: Using the SC-XM3](#)" on [page 361](#))

4.1 SC10-2 Models

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

4.2 SC10-2 Features and Indicators

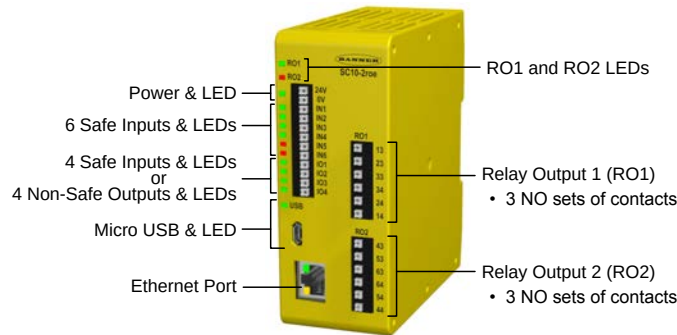
Connection points are push-in spring clamp connectors.

Wire Size: 24 to 16 AWG, 0.2 mm² to 2.08 mm²

IMPORTANT: Clamp terminals are designed for one wire only. If more than one wire is connected to a terminal, a wire could loosen or become completely disconnected from the terminal, causing a short. Use a stranded wire or a wire with an accompanying ferrule. Tinned wires are not recommended.

After inserting the wire into the terminal, tug the wire to make sure it is properly retained. If the wire is not retained, consider using a different wiring solution.

Figure 9. Features and Indicators



4.3 Using SC10-2 Safety Controllers with Different FIDs

Over time, Banner adds new features to some devices. The Feature ID (FID) identifies the set of features and functions included in a particular model. Generally, an increasing FID number corresponds to an increasing feature set. A configuration using a higher numbered FID feature is not supported by a Safety Controller of a lower FID. Feature sets are forward compatible, not backwards compatible.

Figure 10. Example SC10-2 Label

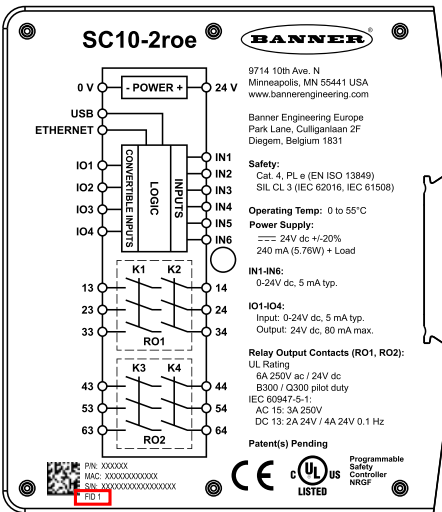


Table 5. FID Descriptions

FID Number	Added Feature Set
FID 1	Initial feature set
FID 2	Added the ability to directly convert In-Series Diagnostic information to USB (using the Software) and Industrial Ethernet protocols.

The checklist in the Banner Safety Controller Software shows a warning when a feature is added that requires a Safety Controller with firmware other than an FID 1 Safety Controller.

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Chapter 5 Specifications and Requirements

5.1 XS/SC26 Specifications

5.1.1 Base Controller and Expansion Modules

Mechanical Stress

Shock: 15 *g* for 11 ms, half-sine wave, 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)

Safety

Category 4, PL e (EN ISO 13849)

SIL CL 3 (IEC 62061, IEC 61508)

Product Performance Standards

See "Standards and Regulations" on page 383 for a list of industry applicable U.S. and international standards

EMC

Meets or exceeds all EMC requirements in IEC 61131-2, IEC 62061 Annex E, Table E.1 (increased immunity levels), IEC 61326-1:2006, and IEC61326-3-1:2008

Operating Conditions

Temperature: 0 °C to +55 °C (+32 °F to +131 °F)

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) per IEC 61010-1

Environmental Rating

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

Removable Screw Terminals

Wire size: 24 to 12 AWG (0.2 to 3.31 mm²)

Wire strip length: 7 to 8 mm (0.275 in to 0.315 in)

Tightening torque: 0.565 N·m (5.0 in-lb)

Removable Clamp Terminals

Important: *Clamp terminals are designed for one wire only. If more than one wire is connected to a terminal, a wire could loosen or become completely disconnected from the terminal, causing a short. If more than one wire is required, a ferrule or an external terminal block should be used.*

Wire size: 24 to 16 AWG (0.20 to 1.31 mm²)

Wire strip length: 8.00 mm (0.315 in)

IMPORTANT: The power supply must meet the requirements for extra low voltages with protective separation (SELV, PELV).

5.1.2 XS26-2, SC26-2, and XS26-ISD Base Safety Controller Modules

Power

24 V DC ± 20% (incl. ripple), 100 mA no load

Ethernet models: add 40 mA

Display models: add 20 mA

Expandable models: 3.6 A maximum bus load

Network Interface (Ethernet models only)

Ethernet 10/100 Base-T/TX, RJ45 modular connector

Selectable auto-negotiate or manual rate and duplex

Auto MDI/MDIX (auto-cross)

Protocols:⁽¹⁾ EtherNet/IP™ (with PCCC), Modbus® TCP, PROFINET® (FID 2 or later), and EtherCAT® (requires XSeCAT gateway)

Data: 64 configurable virtual Status Outputs on FID 1 XS/SC26 Safety Controllers or 256 virtual Status Outputs on FID 2 or later XS/SC26 Safety Controllers; fault diagnostic codes and messages; access to fault log

⁽¹⁾ EtherNet/IP™ is a trademark of ODVA, Inc.; Modbus® is a registered trademark of Schneider Electric USA, Inc.; PROFINET® is a registered trademark of PROFIBUS Nutzerorganisation e.V.; EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Convertible I/O

Sourcing current: 80 mA maximum (overcurrent protected)

Test Pulses: about 1 ms every 25 ms to 75 ms

Automatic Terminal Optimization Feature

Up to two devices

Test Pulse

Width: 200 µs maximum

Rate: 200 ms typical

Output Protection

All solid-state outputs (safety and non-safety) are protected from shorts to 0 V or +24 V, including overcurrent conditions

Safety Ratings

PFH [1/h]: 1.05 × 10^{–9}

Proof Test Interval: 20 years

Safety Inputs (and Convertible I/O when used as inputs)

Input ON threshold: > 15 V DC (guaranteed on), 30 V DC max.

Input OFF threshold: < 5 V DC and < 2 mA, -3 V DC min.

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 max. (150 Ω per lead)

Input requirements for a 4-wire Safety Mat:

- Max. capacity between plates: 0.22 μ F
- Max. capacity between bottom plate and ground: 0.22 μ F
- Max. resistance between the 2 input terminals of one plate: 20 Ω

Solid-State Safety Outputs

0.5 A max. at 24 V DC (1.0 V DC max. drop), 1 A max. inrush

Output OFF threshold: 1.7 V DC typical (2.0 V DC max.)

Output leakage current: 50 μ A max. with open 0 V

Load: 0.1 μ F max., 1 H max., 10 Ω max. per lead

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): ON-Delay (if set) plus 250 ms typical (400 ms maximum)

Output xA to Output xB turn On differential (used as a pair, not split): 5 ms max.

Output X to Output Y turn on Differential (same input, same delay, any module): 3 scan times + 25 ms maximum

Virtual Input (Mute Enable and On/Off) Timing (FID 2 or later): RPI + 200 ms typical

Virtual Input (Manual Reset and Cancel Delay) Timing (FID 2 or later): see "Virtual Non-Safety Input Devices" on page 65 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 250 ms typical (400 ms maximum)

The minimum is the configured ON-Delay minus 0.02%

Certifications

EtherNet/IP®



Does not apply to XS26-ISDd.

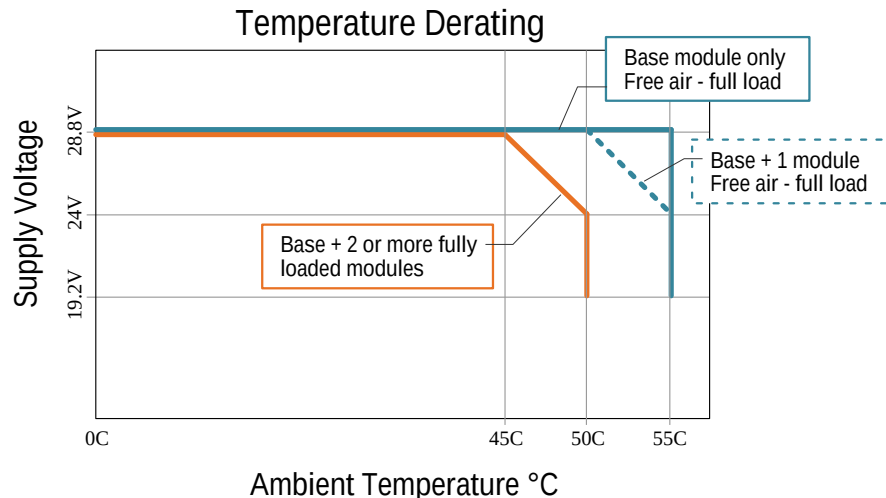


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Figure 12. XS26-ISD Temperature Derating



5.1.3 XS2so and XS4so Solid-State Safety Output Modules

Solid-State Safety Outputs

XS2so: 0.75 A maximum at 24 V DC (1.0 V DC maximum drop)

XS4so: 0.5 A maximum at 24 V DC (1.0 V DC maximum drop)

Inrush: 2 A maximum

Output off threshold: 1.7 V DC typical (2.0 V DC maximum)

Output leakage current: 50 μ A maximum with open 0 V

Load: 0.1 μ F max., 1 H max., 10 Ω maximum per lead

Safety Ratings

PFH [1/h]: 5.8×10^{-10}

Proof Test Interval: 20 years

External Power

XS2so: 24 V DC $\pm$ 20% (including ripple); 0.075 A no-load, 3.075 A maximum load

XS4so: 24 V DC $\pm$ 20% (including ripple); 0.1 A no-load, 4.1 A maximum load

Maximum Power-up Delay: 5 seconds after the Base Controller

Limited Isolation: $\pm$ 30 V DC maximum referenced to 0 V on the Base Controller

Bus Power

0.02 A

Test Pulse

Width: 200 μ s maximum

Rate: 200 ms typical

Output Protection

All solid-state outputs (safety and non-safety) are protected from shorts to 0 V or +24 V, including overcurrent conditions

Certifications

IND. CONT. EQ.
3N VF



3NBN



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5.1.4 XS8si and XS16si Safety Input Modules

Convertible I/O

Sourcing current: 80 mA maximum at 55 °C (131 °F) operating ambient temperature (overcurrent protected)

Test Pulses: about 1 ms every 25 ms to 75 ms

Bus Power

XS8si: 0.07 A no load; 0.23 A maximum load

XS16si: 0.09 A no load; 0.41 A maximum load

Safety Ratings

PFH [1/h]: 4×10^{-10}

Proof Test Interval: 20 years

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 max. (150 Ω per lead)

Input requirements for a 4-wire Safety Mat:

- Maximum capacity between plates: 0.22 μ F
- Maximum capacity between bottom plate and ground: 0.22 μ F
- Maximum resistance between the 2 input terminals of one plate: 20 Ω

Output Protection

The convertible inputs are protected from shorts to 0 V or +24 V, including overcurrent conditions

Certifications

IND. CONT. EQ.
3N VF



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5.1.5 XS1ro and XS2ro Safety Relay Modules

Bus Power

XS1ro: 0.125 A (outputs On)

XS2ro: 0.15 A (outputs On)

Maximum Power

2000 VA, 240 W

Electrical Life

50,000 cycles at full resistive load

Overvoltage Category

III

Safety Ratings

PFH [1/h]: 7.6×10^{-10}

Proof Test Interval: 20 years

Pollution Degree

2

Mechanical Life

40,000,000 cycles

NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.

Contact Rating**UL/NEMA:**

- **NO Contacts:** 6 A 250 V AC/24 V DC resistive; B300/Q300 pilot duty
- **NC Contacts:** 2.5 A 150 V AC/24 V DC resistive; Q300 pilot duty

IEC 60947-5-1:

- **NO Contacts:** 6 A 250 V AC/DC continuous; AC 15: 3 A 250 V; DC13: 1 A 24 V/4 A 24 V 0.1 Hz
- **NC Contacts:** 2.5 A 150 V AC/DC continuous; AC 15: 1 A 150 V; DC13: 1 A 24 V/4 A 24 V 0.1 Hz

B10d Values

Voltage	Current	B10d
230 V AC	3 A	300,000
230 V AC	1 A	750,000
24 V DC	≤ 2 A	1,500,000

Contact Ratings to preserve 5 µm AgNi gold plating

	Minimum	Maximum
Voltage	100 mV AC/DC	60 V AC/DC
Current	1 mA	300 mA
Power	1 mW (1 mVA)	7 W (7 VA)

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

CertificationsIND. CONT. EQ.
3N VFProgrammable
Safety
Controller
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5.1.6 XSeCAT EtherCAT Communications Gateway Module**Network Interface**

EtherCAT® ⁽²⁾

Data Transmission Rate: 100 Mbits/s, 100 Base-T Autosensing

Connection Type: Two female RJ-45 connectors

Mechanical Stress

Shock: 15 g for 11 ms, half-sine wave, 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)

EMC

Meets or exceeds all EMC requirements in IEC 61131-2, IEC 62061 Annex E, Table E.1 (increased immunity levels), IEC 61326-1:2006, and IEC61326-3-1:2008

Bus Power

0.06 A

⁽²⁾ EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Operating Conditions

Temperature: 0 °C to +55 °C (+32 °F to +131 °F)

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) per IEC 61010-1

Environmental Rating

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

CertificationsIND. CONT. EQ.
3N VF**5.2 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 ⁽³⁾
- Maximum capacity between bottom plate and ground: 0.22 μF ⁽³⁾
- Maximum resistance between the 2 input terminals of one plate: 20 Ω

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): 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 "Virtual Non-Safety Input Devices" on page 65 for details

⁽³⁾ If the safety mats share a convertible I/O, this is the total capacitance of all shared safety mats.

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.

Contacts

AgNi + 0.2 μm gold

Overvoltage Category

Output relay contact voltage of 1 V to 150 V AC/DC: Category III
Output relay contact voltage of 151 V to 250 V AC/DC: Category II (Category III, if appropriate overvoltage reduction is provided, as described in this document.)

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

NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts (see Warning).

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" on page 383 for a list of industry applicable U.S. and international standards

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:⁽⁴⁾ EtherNet/IP™ (with PCCC), Modbus® TCP, and PROFINET®

Data: 256 virtual Status Outputs; fault diagnostic codes and messages; access to fault log

⁽⁴⁾ EtherNet/IP™ is a trademark of ODVA, Inc. Modbus® is a registered trademark of Schneider Electric USA, Inc. PROFINET® is a registered trademark of PROFIBUS Nutzerorganisation e.V.

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) per IEC 61010-1

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 wave, 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)

Mechanical Life

20,000,000 cycles

Electrical Life

50,000 cycles at full resistive load

UL Pilot Duty

B300 Q300

Push-in Spring Clamp Terminals

Wire Size: 24 to 16 AWG, 0.2 mm² to 2.08 mm²

IMPORTANT: Clamp terminals are designed for one wire only. If more than one wire is connected to a terminal, a wire could loosen or become completely disconnected from the terminal, causing a short. Use a stranded wire or a wire with an accompanying ferrule. Tinned wires are not recommended.

After inserting the wire into the terminal, tug the wire to make sure it is properly retained. If the wire is not retained, consider using a different wiring solution.

B10d Values

Voltage	Current	B10d
230 V AC	2 A	350,000
230 V AC	1 A	1,000,000
24 V DC	≤ 4 A	10,000,000

Individual Contact Current Rating

Refer to the Temperature Derating graph when more than one contact output is used.

	Minimum	Maximum
Voltage	10 V AC/DC	250 V AC / 24 V DC
Current	10 mA AC/DC	6 A
Power	100 mW (100 mVA)	200 W (2000 VA)

Switching Capacity (IEC 60947-5-1)

AC 15	NO: 250 V AC, 3 A
DC 13	NO: 24 V DC, 2 A
DC 13 at 0.1 Hz	NO: 24 V DC, 4 A

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

Certifications

PROGRAMMABLE
SAFETY
CONTROLLER
NRGF



PROFIBUS • PROFINET



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Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM



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GREAT BRITAIN

Figure 13. SC10-2 Temperature Derating

