XS26-2/SC26-2 Base Safety Controllers

Datasheet

Important: 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 for the instruction manual, p/n 174868.

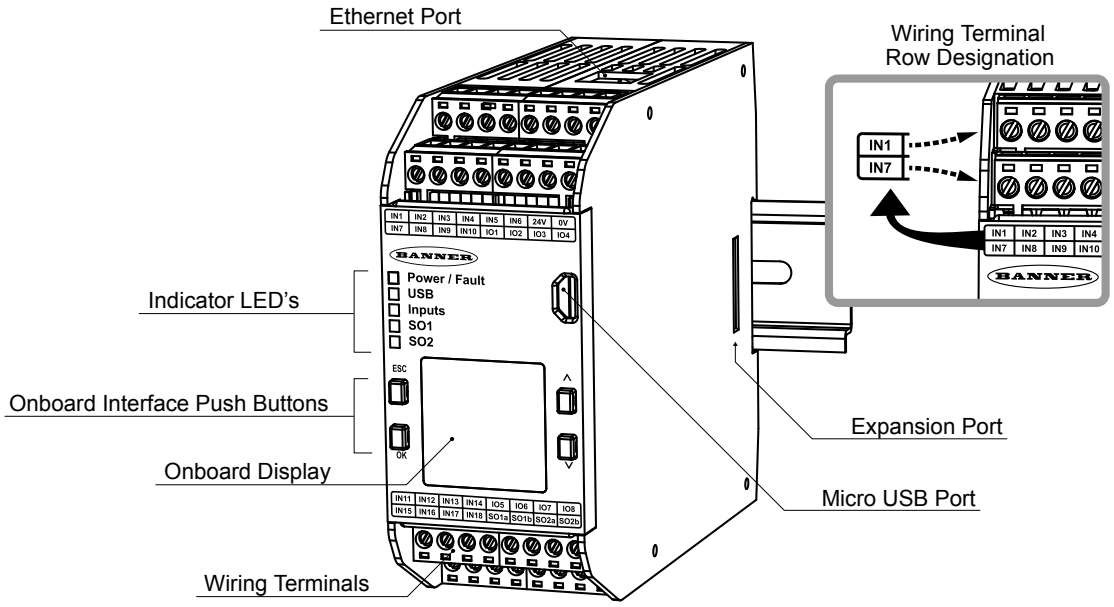
- Control System monitors a variety of input devices such as e-stop buttons, rope pulls, enabling devices, protective safety stops, interlocked guards or gates, optical sensors, two-hand controls, and safety mats
- Pre-configured safety function blocks including Two-Hand Control, Muting, Enabling Device, and more to simplify application programming
- Boolean logic functions for programming flexibility
- Intuitive programming environment for easy implementation
- Expandable models for adding up to 8 additional I/O modules for larger scale applications
- Base controller has 2 pairs of safety outputs and 26 safety inputs of which 8 may be configured as non-safety status outputs
- Ethernet models available providing up to 64 virtual status outputs on FID 1 Base Controllers and up to 256 virtual status outputs on FID 2 and later Base Controllers
- Optional onboard LCD display for system status and diagnostic information
- Optional accessories:

SC-USB2	USB Cable
SC-XM2	External Memory Drive

Model	Features
XS26-2	Expandable
XS26-2d	Expandable + Display
XS26-2e	Expandable + Ethernet
XS26-2de	Expandable + Display + Ethernet
SC26-2	Non-Expandable
SC26-2d	Non-Expandable + Display
SC26-2e	Non-Expandable + Ethernet
SC26-2de	Non-Expandable + Display + Ethernet

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

Features Diagram



Specifications

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)

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

Product Performance Standards
See Standards and Regulations section in the Instruction Manual 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

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 max. 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: EtherNet/IP (with PCCC), Modbus/TCP, and PROFINET (FID 2 or later)
Data: 64 configurable virtual Status Outputs on FID 1 Base Controllers or 256 virtual Status Outputs on FID 2 or later Base Controllers; fault diagnostic codes and messages; access to fault log

Convertible I/O
Sourcing current: 80 mA maximum (overcurrent protected)

Automatic Terminal Optimization Feature
Up to two devices

Test Pulse
Width: 200 µs max.
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

Certifications

c UL us LISTED IND. CONT. EQ. 3NVF
UL LISTED Programmable Safety Controller 3NBN
PI CERTIFIED PROFIBUS • PROFINET

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)

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 1 wire only. If more than 1 wire is connected to a terminal, a wire could loosen or become completely disconnected from the terminal, causing a short.*
Wire size: 24 to 16 AWG (0.20 to 1.31 mm²)
Wire strip length: 8.00 mm (0.315 in)

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 µF
- Max. capacity between bottom plate and ground: 0.22 µF
- 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 µA max. with open 0 V
Load: 0.1 µF 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): Turn 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): 6 to 14 ms typical, ±25 ms max.
Output X to Output Y turn on Differential (same input, same delay, any module): 3 scan times +25 ms max.
Virtual Input (Mute Enable and On/Off) Timing (FID 2 or later): RPI + 200 ms typical 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%

Feature ID (FID) Compatibility
Base modules with FID 1 or 2 are compatible with all expansion modules: XS2so and XS4so (FID 1), XS8si and XS16si (FID 1), and XS1ro and XS2ro (FID 1).

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

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