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.

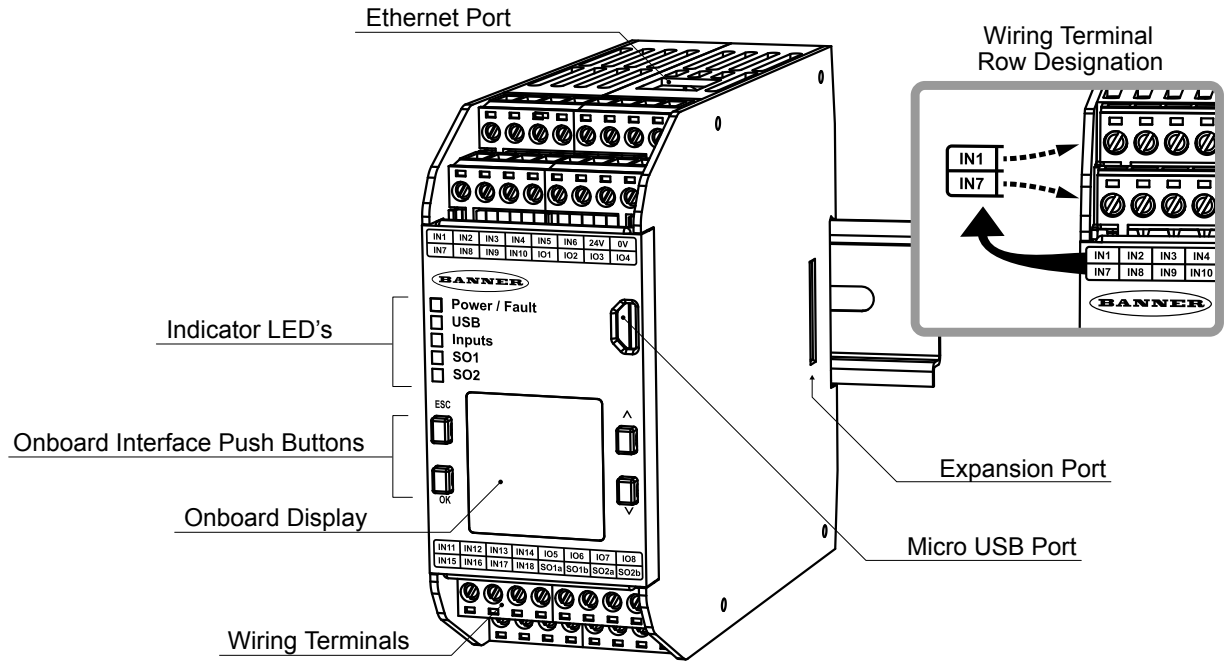
- Control System monitors a variety of input devices such as e-stop buttons, rope pulls, enabling devices, protective safety stops, interlocked guards or gates, optical sensors, two-hand controls, and safety mats
- Pre-configured safety function blocks including Two-Hand Control, Muting, Enabling Device, 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 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/xs26*.

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 only)
Data: 64 configurable virtual Status Outputs on FID 1 Base Controllers or 256 virtual Status Outputs on FID 2 Base Controllers; fault diagnostic codes and messages; access to fault log

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

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
Industrial Control Equipment 3NVF
Programmable Safety Controller 3NBN

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)
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 PC Interface, as it can vary
Input Recovery Time (Stop to Run): 250 ms typical, 400 ms max.
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 only): RPI + 200 ms typical
Virtual Input (Manual Reset and Cancel Delay) Timing (FID 2 only): see the Instruction Manual for details

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 Safety Controller and all solid state output expansion modules should be connected only to a SELV (Safety Extra-Low Voltage), for circuits without earth ground or a PELV (Protected Extra-Low Voltage), for circuits with earth ground power supply.

Banner Engineering Corp. Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: *www.bannerengineering.com*.

BANNER®
more sensors, more solutions