BANNER®

*more sensors, more solutions*

# SC22-3/-3E
## Safety Controller

## Who else but Banner could take the complexity out of safety control.
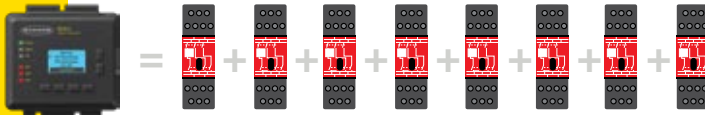
### Replace multiple safety modules with a single controller.

SC22-3 Safety Controller and SC22-3E with Ethernet communications are totally configurable and flexible safety modules. Because they incorporate numerous input devices and manage multiple safety-related functions, they can easily replace several traditional safety modules to integrate light screens, E-stops, interlocking switches, safety mats, two-hand controls, muting functions and many others. The cost savings in design, safety modules, wiring and installation are significant.

*One Safety Controller... replaces multiple dedicated safety modules*

### Dramatically reduce the complexity of interfacing multiple safety functions and devices.

Banner's intuitive PC Interface application allows you to quickly create and document even complex safety logic configurations, incorporating multiple safety inputs and outputs, in minutes. There are 14 types of safety and non-safety input device categories from which to choose, and several Dual- and Single-Channel circuit types that can be used.

### Vastly reduce installation and troubleshooting time too.

Using either the PC Interface or the Controller's Onboard Interface, setup is simple. All that is required is to define each device and what combination of the three independent safety outputs each device will control. User-friendly icons, circuit symbols and multilingual support make the process easy. Faulty devices or wiring configuration errors are automatically detected and displayed along with built-in diagnostic information to help quickly locate and clear faults.

The SC22-3E Safety Controller includes Ethernet communications for non-safety monitoring of the inputs (both safety and non-safety) and the safety outputs of the SC22-3E. The Ethernet communications protocols include Modbus/TCP, EtherNet/IP™ and PCCC.

Safety Input Devices

HMI

Ethernet

Status Outputs

PLC

Safety Outputs
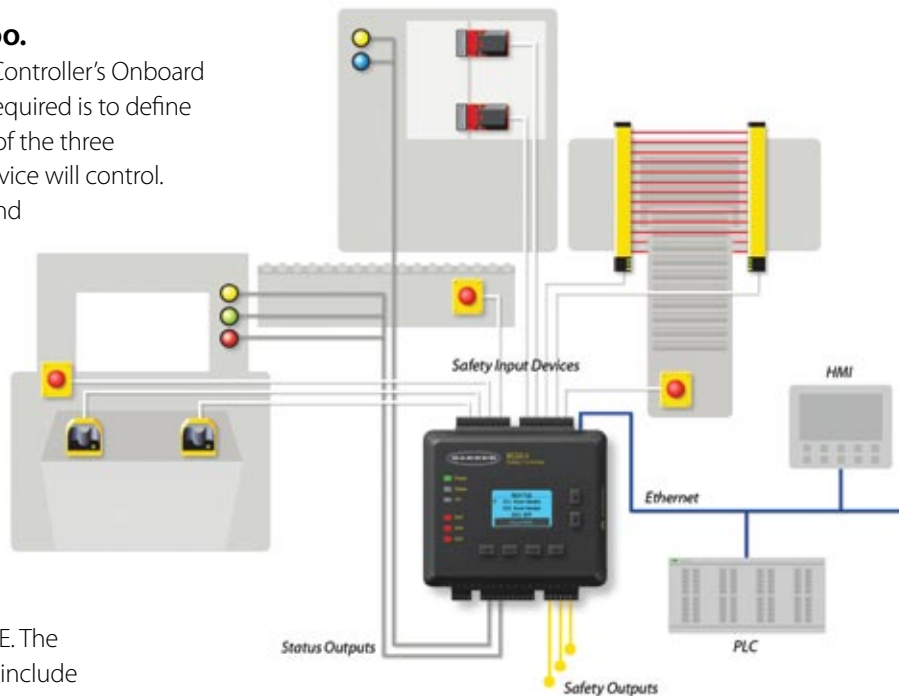
**Easy to learn. Easy to use.**
**Safety made simple.**

# Totally configurable. Remarkably easy.

## The versatile input circuit for both safety and non-safety devices.

22 input terminals can monitor both contact-based and PNP solid-state input devices. Each input circuit is configurable with the ability to monitor an input signal or provide 24V dc sources when needed. Versatile input circuitry accommodates a wide range of input device types from a variety of manufacturers including:

- E-Stops
- Interlock Switches
- Safety Light Screens
- Two-Hand Controls
- Safety Mats and Edges

- Rope Pulls
- Muting Sensors
- Enabling Devices
- Bypass Switches
- And More

## Three redundant PNP safety outputs.

The SC22-3 is designed to meet stringent standards, including Safety Integrity Level (SIL) 3 per IEC 62061 and IEC 61508, and Category 4 Performance Level (PL e) per ISO 13849-1. Outputs can also be used with selectable one- or two-channel external device monitoring.

## Combine safety and muting functions in one controller.

The SC22-3 allows you to perform multiple safety monitoring functions, including muting and bypass functions. The flexible functions greatly simplify setup and troubleshooting, while minimizing concerns about the level of safety achieved.

Green: Power ON

OFF: RUN Mode
Red flashing: I/O Fault

OFF: RUN Mode
Green flashing: Data transfer with PC

Green: Safety Output ON
Green flashing: Waiting for Reset
Red: Safety Output OFF

Cursor Up or Select

Cursor Down or Select

Cursor Left or Select     Back or Escape     Enter, Store or Toggle     Cursor Right or Select

## Built-in front panel display keeps you in the loop.

The front panel LCD screen and LEDs offer easy setup and provide exceptional diagnostics. The SC22-3 can be configured with its built-in LCD display and push buttons, or using a PC interface. The LCD display and LED status indicators keep you informed of power, faults, output status and communication status with your PC.

## SC22-3E with EtherNet/IP™ and Modbus/TCP network communications

The SC22-3E provides 32 configurable Virtual Status Outputs (VO), in addition to the functionality provided on the SC22-3 model. The "Auto Configure" option is used to automatically assign these VO to track the status of previously configured inputs, outputs, and system status. VO can later be reassigned or added. I/O status is available over the network within 100 milliseconds; changes to other configuration tables, such as the onboard Fault Log, is available within 1 second.

# Set up multiple safety functions in minutes, not hours.

With your Windows XP, 2000, Vista or Windows 7 PC you can configure all safety and non-safety functions for the SC22-3 right on your computer using the USB port and the SC22-3 PC Interface, or the XM card and programming tool. This all-new, click-and-go system brings a new level of simplicity to configuring safeguarding functions.
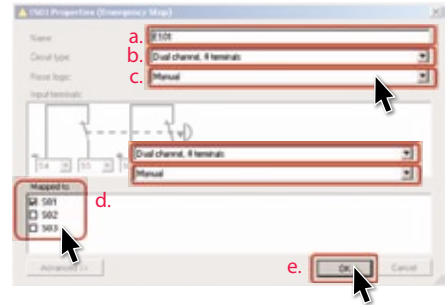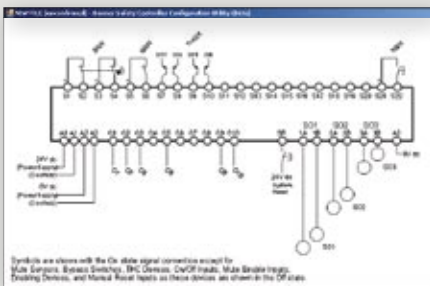
**❶ Add safety input**
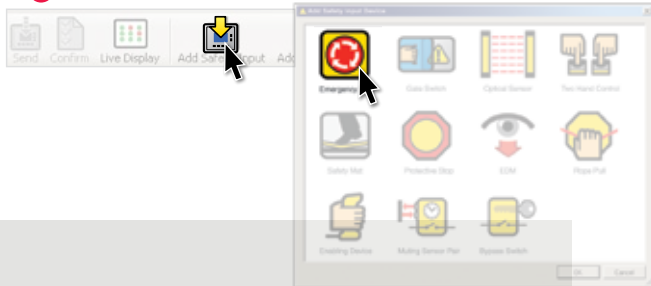
**❷ Select a device**

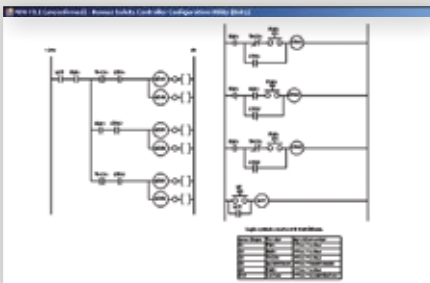**❸ Modify device properties:**

a. *Rename device*
b. *Select device circuit type*
c. *Select reset logic*
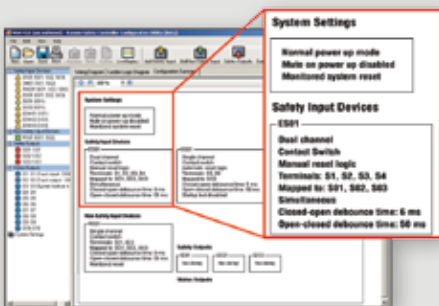d. *Map inputs to outputs*
e. *Click "OK"*

## More information at your fingertips.

*Wiring Diagram*

*Ladder Logic Diagram*

*Configuration Summary*

### Quickly configure Safety Output ON- and OFF-delay.
Set ON- and OFF-delay and time in seconds. Delay time values are automatically displayed in the ladder logic diagram.

### Confirm proper configuration and test.
Once created, you can review and confirm the validity of the configuration and parameters in seconds. Once complete, the configuration can be stored for future use with no additional confirmation.

### Easily establish status of input, output and system properties.
Ten non-safety status outputs are capable of 0.5A output individually (up to 1.0A in total for all used). With simple menu selections, you can monitor a variety of output status functions including:

- Track Input
- Track Output
- System Lockout Status
- I/O Fault Status
- System Waiting for Reset
- Output Waiting for Reset
- Muting Status
- Track Input Group

Advanced diagnostics and troubleshooting hints are available using either the front panel display or your PC.

### Store system configurations on the optional XM card.
Using external, non-volatile memory, system configurations are easily stored on the optional SC-XM1 external memory (XM) card. This allows the downloading of preset configurations to multiple systems or rapid changeovers without reconfiguring the system—another significant time-saver. Store system configurations on a hard drive, or on a CD-ROM, or email them anywhere in the world for fast efficient upgrades.

oll-free: (800) 876-4444 • Tel: (203) 426-7700 • Fax: (203) 426-7800 • www.walkeremd.com

| ADDITIONAL INFORMATION | |
| --- | --- |
| Product Manual | 133487 |
| Quick Start Guide | 133485 |
| Controller/PC Interface Software | 134534 |

| SAFETY CONTROLLER MODELS | | Terminal Type | USB Cable | XM Card | XM Programming Tool |
| --- | --- | --- | --- | --- | --- |
| STANDARD | ETHERNET | | | | |
| SC22-3-SU1 | SC22-3E-SU1 | Screw | 1.8 m | Yes | Yes |
| SC22-3-CU1 | SC22-3E-CU1 | Clamp | | | |
| SC22-3-S | SC22-3E-S | Screw | — | Yes | — |
| SC22-3-C | SC22-3E-C | Clamp | | | |
| SC-SC22-3 | SC-SC22-3E | None | Replacement Controller only (no terminals) | | |

| SC22-3/-3E SAFETY CONTROLLER ACCESSORIES | |
| --- | --- |
| SC-XM1 | External memory card (XM card) |
| SC-TS1 | Screw terminal replacement set for SC22-3 |
| SC-TC1 | Clamp terminal replacement set for SC22-3 |
| SC-USB1 | USB A/B Cable, 1.8 m |
| SC-XMP | XM card USB programming tool |
| SC-IM9A | 10A Interface module for 1 Safety Output (3 NO per output) |
| SC-IM9B | 10A Interface module for 2 Safety Outputs (3 NO per output) |
| SC-IM9C | 10A Interface module for 3 Safety Outputs (3 NO per output) |
| IM-T-9A | 6A Interface module (3 NO) |
| IM-T-11A | 6A Interface module (2 NO, 1 NC) |

| SPECIFICATIONS | SC22-3 | SC22-3E |
| --- | --- | --- |
| Power | 24V dc +/- 20%<br>400 mA max (no output loads)<br>5.9A (all outputs ON at maximum load) | 24V dc +/- 20%<br>400 mA max (no output loads)<br>4.9A (all outputs ON at maximum load) |
| Housing | 35 mm DIN Mount    IEC IP20 rating | Plug-in Terminals |
| Inputs | 22 (Safety or Non-Safety inputs)<br>Configurable for solid state or contact based input devices | |
| Safety Outputs (6 terminals) | 3 Independent , Dual Channel, PNP<br>750 mA each @ 24V dc (per output) | 3 Independent , Dual Channel, PNP<br>500 mA each @ 24V dc (per output) |
| Status Outputs (non-safety) | 10 Single Channel PNP outputs<br>0.5A max each @ 24V dc<br>1.0A max @ 24V dc total | 10 Single Channel PNP outputs<br>0.5A max each @ 24V dc<br>1.0A max @ 24V dc total<br>32 Virtual Status outputs (Ethernet communication) |
| Performance Standards | SIL CL 3 per IEC 62061, SIL 3 per IEC 61508,<br>Category 4, PL e per EN ISO 13849-1 | |
| Approvals | UL (NBN), cULus (3NVF) and CE per Machinery Directive 2006/42/2006 | |

## Choose from Banner's complete line of machine safety products.

*Safety Light Screens*

*Perimeter & Area Optical Guards*

*Safety Modules*

*Emergency Stop Devices*

*Two-Hand Controls*

*Safety Interlock Switches*

*Fiber Optic Safety Devices*

# From simple to advanced,
## Banner solves more applications in your plant!

## Sensors
· Presence
· Absence
· Inspection
· Gating
· Counting
· Measurement
· Position
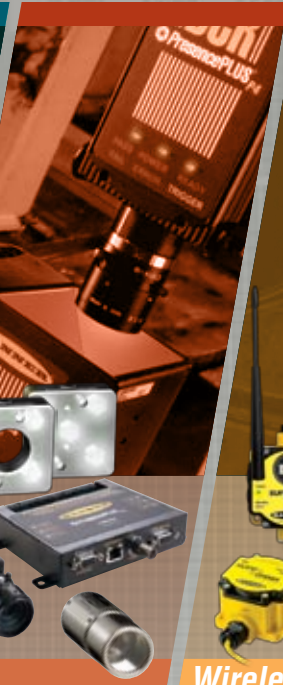
## Vision
· Pattern Recognition
· Complex Part Inspection
· Multi-Component Gauging
· Part ID/Orientation
· Assembly Verification
· Print Verification
· Traceability (Bar Code and Text)

## Wireless
· Process Control & Monitoring
· Factory Automation
· Agriculture & Water Management
· Traffic Monitoring & Control
· Commercial & Consumer Monitoring

## Indicator Lights
· Bin & Part Picking
· Error Proofing
· Pick-to-Light & Call for Parts
· Visual & Audible Indication
· Operator Guidance
· Visual Management
· Andon Indication
· Pilot & Stack Light Replacement

## Machine Safety
· Safety Light Screens
· Fiber Optic Safety Systems
· Safety Modules & Controllers
· Emergency Stop Devices
· Safety Interlocks
· Ergonomic Two-Hand Control & Run Bars

**BANNER** ®

more sensors, more solutions

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