



Banner In-Series Diagnostics



Cut costs by preventing and reducing downtime
Local operator guidance and remote actionable data



Reduce and simplify wiring
Up to 32 plug-n-play devices with one in-series connection — achieves the highest level of safety; up to Category 4, PL e, SIL CL 3



Intuitive setup and PLC integration
Easy to use software and auto tag export



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Software To Design, Configure, and Manage Your Safety System

Prevent Downtime:

Marginal Alert to check Door 1 for misalignment before it causes downtime

Warning Alert to check E-Stop 1 for low voltage before it causes downtime

Troubleshooting Made Easy:

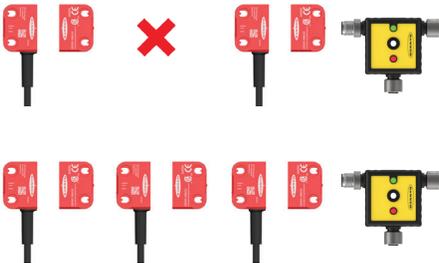
Terminator missing



Actuator not taught



Wrong number of devices



Equipment Functional View Wiring Diagram Ladder Logic Configuration Summary Live Mode ISD

Terminator Plug	Name	Status	Alert	Actuator
		On	Marginal	Detected
		Off	Warning	
		Reset	Fault	
1	Door 1	Green	Yellow	Green
2	Door 2	Red	Red	Green
3	Door 3	Red	Red	Green
4	Door 4	Red	Blue	Green
	M0:Chain 1	Red	Yellow	

Terminator Plug	Name	Status	Alert	Actuator
		On	Marginal	Detected
		Off	Warning	
		Reset	Fault	
1	EStop 1	Red	Orange	
2	EStop 2	Green	Blue	
3	EStop 3	Green	Blue	
4	EStop 4	Red	Blue	
	M0:Chain 2	Red	Blue	

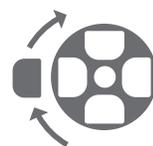
Chain:1	Device:1	Close
Expected Code	9D1A	
Received Code	9D1A	
Internal Temperature	75 C	
Actuator Distance	13.8 mm	
Supply Voltage	21.5 V	
Output 1	False	
Output 2	False	
Actuator Detected	True	
Wrong Actuator	False	
Marginal Range	True	
Input 1	False	
Input 2	False	
Local Reset Expected	False	
Output Error	False	
Safety Input Fault	False	
ISD Data Error	False	
Operating Voltage Error	False	
Power Cycle Required	False	
Operating Voltage Warning	False	
Sensor Not Paired	False	
Device	Door Switch	
Teach-ins Remaining	0	
Number of Voltage Errors	0	
Output Switch-off Time	Inactive	
Range Warning Count	0	
Expected Company Name	0000	
Received Company Name	0000	
Internal Error A	0000	
Internal Error B	0000	
Local Reset Unit	False	
High Coding Level	True	
Cascadable	True	
Fault Tolerant Outputs	True	

Terminator Missing; Actuator not Taught

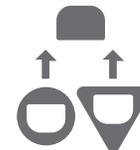
Up to 32 ISD safety devices in any order per chain

Reduce Downtime:
Local operator guidance to activated E-Stop

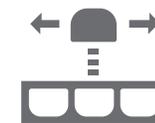
Additional uses for ISD



Rotation/Indexing



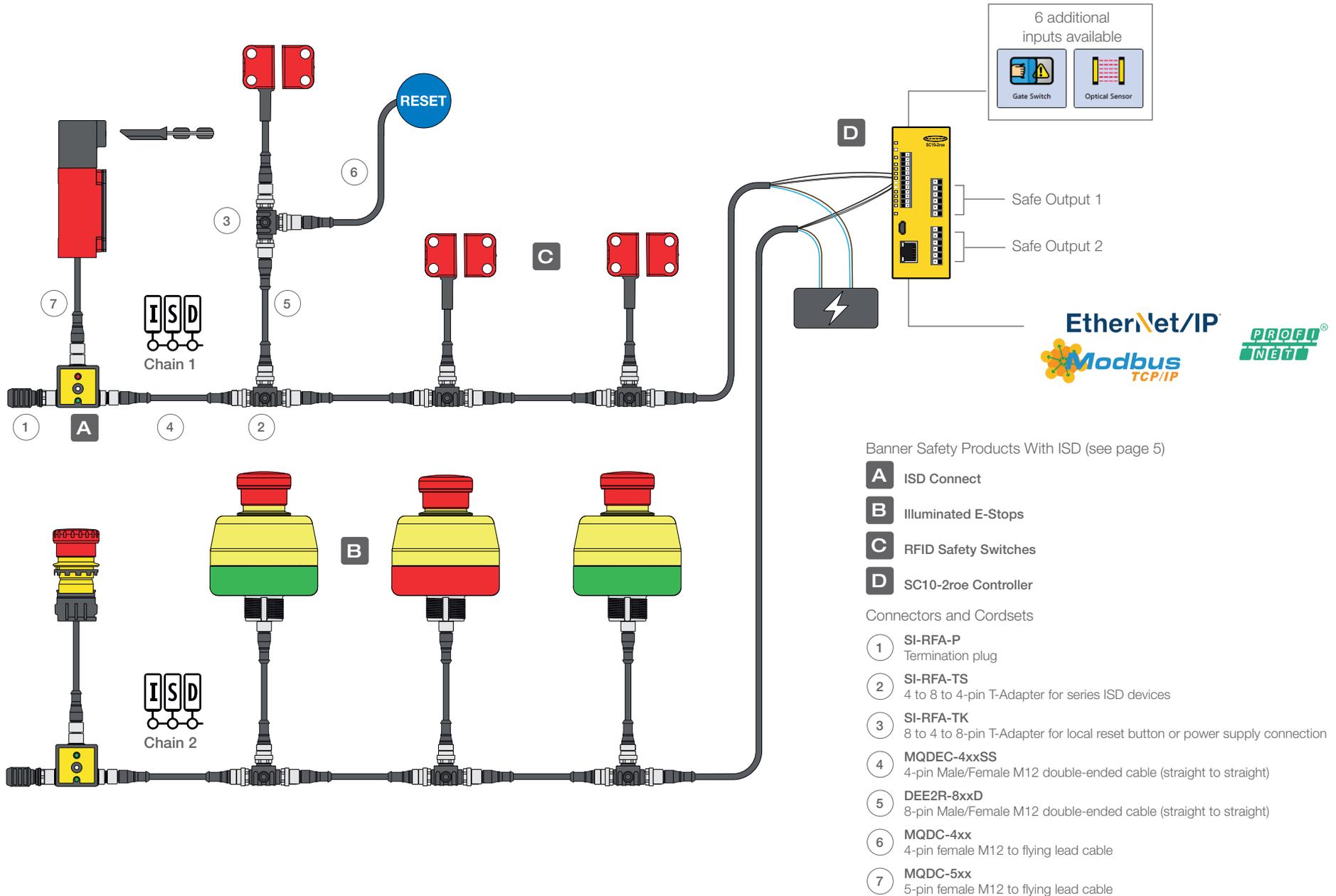
Tool Identification



Position Verification

Your Guide to Completing Your Safety System

- Simplified wiring using T-adapters and cost-effective 4-pin cables
- Achieves the highest level of safety; up to Category 4, PL e, SIL CL 3



Banner Safety Products With ISD (see page 5)

- A** ISD Connect
- B** Illuminated E-Stops
- C** RFID Safety Switches
- D** SC10-2roe Controller

Connectors and Cordsets

- 1** SI-RFA-P Termination plug
- 2** SI-RFA-TS 4 to 8 to 4-pin T-Adapter for series ISD devices
- 3** SI-RFA-TK 8 to 4 to 8-pin T-Adapter for local reset button or power supply connection
- 4** MQDEC-4xxSS 4-pin Male/Female M12 double-ended cable (straight to straight)
- 5** DEE2R-8xxD 8-pin Male/Female M12 double-ended cable (straight to straight)
- 6** MQDC-4xx 4-pin female M12 to flying lead cable
- 7** MQDC-5xx 5-pin female M12 to flying lead cable

RFID Safety Switches



- High tolerance to misalignment and provides data to prevent downtime
- Basic, medium and high tamper resistance models available
- Features an IP69 rating and resistance to both vibration and metal shavings
- Cascade up to 32 sensors while achieving the highest level of safety

Illuminated E-Stops



- Illuminated base flashes red to quickly identify which button has been pressed
- Illuminated base turns green, yellow or unlit to indicate it is armed and ready for operation
- Unique OSSD Safety outputs simplify wiring and allowing it to be included in an In-Series Diagnostics (ISD) chain
- Cascade up to 32 devices while achieving the highest level of safety

ISD Connect



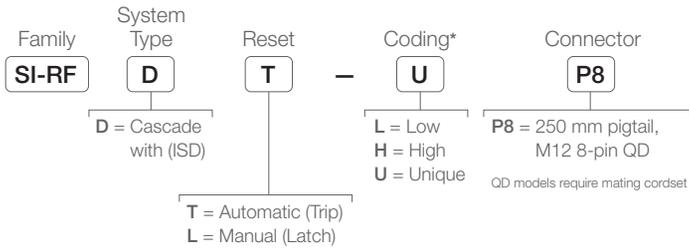
- Add a Non-ISD device to an ISD chain
- Requires 2 normally closed sets of contacts on any safety device such as a mechanical switch on RFID ISD Chain or a panel E-stop on Illuminated e-stop ISD Chain
- Bright LEDs for simplified local diagnostics
- Flexible mounting in any orientation with integral mounting holes and visible LEDs on both sides
- Add up to 32 Non-ISD devices to an ISD Chain and achieve up to the highest level of safety

SC10 Safety Controller



- Free and intuitive PC configuration software
- Connects up to 64 ISD devices, and has 6 available safe inputs for other devices
- Two independently controlled safety relay outputs, with 6 Amps each
- Industrial Ethernet two-way communication enables 256 virtual non-safe status outputs and 80 virtual non-safe inputs

RFID Safety Switches

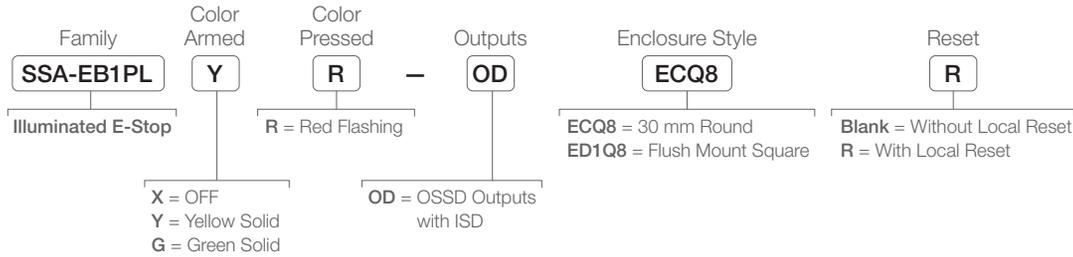


NOTE: SI-RF-A Actuator is required to complete a sensor solution. Ordered separately.

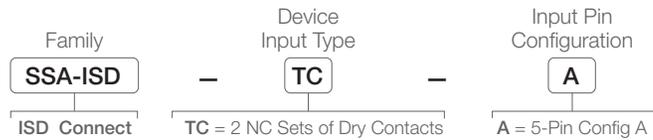
* Tamper Resistant Coding

Low (L)—The SI-RF Safety Switch accepts any SI-RF-A actuator
 High (H)—The SI-RF Safety Switch only accepts the last taught-in actuator, a maximum of 12 teach-in processes are possible
 Unique (U)—The SI-RF Safety Switch only accepts the taught-in actuator, and only one teach-in process is possible

Illuminated E-Stops



ISD Connect



SC10-2roe

Expedite PLC Integration with Tag Export Feature

- Eliminates error-prone manual entries
- Import tags to PLC via .csv or .xml files
- Defines actionable In-Series Diagnostic data within the PLC
- For more information visit bannerengineering.com/safetycontroller



SC-XM3 Fast Programming and Swapout

- Backup copy of configuration, password, network settings
- Download configuration without a PC
- Save time during panel build
- Fast swapout minimizes downtime

In-Series Diagnostics System Overview



HMI



PLC



View the comprehensive collection of machine safety products which provide up to the highest levels of safety without compromising productivity. For more information visit [bannerengineering.com/machinesafety](https://www.bannerengineering.com/machinesafety)

