

# Safety

## Safety Relays and Devices Maintenance and Troubleshooting Course Description

### Course Agenda

#### Day 1

- Identifying Relay-Based Machine Functional Safety Systems and Components
- Maintaining Relay-Based Machine Functional Safety Systems
- Interpreting and Clearing Faults at the Safety Relay
- Interpreting and Clearing Faults for Wiring in Safety Systems

#### Day 2

- Interpreting and Clearing Faults for E-Stop Pushbuttons and Grip Enabling Switches
- Interpreting and Clearing Faults for Interlock and Non-Contact Switches
- Interpreting and Clearing Faults for Light Curtains and Safety Sensors
- Interpreting and Clearing Faults for Safety Mats
- Interpreting and Clearing Faults for Safety Outputs



### Course Number

SAF-COM101

### Course Purpose

This course will introduce you to monitoring safety relays and input and output devices used to configure safety systems according to industry standards for functional safety of machinery.

You will have the opportunity for hands-on experience with several of these components, which will help you to learn how they interact in safety systems.

After completing this course, you should be able to maintain and troubleshoot relay-based machine functional safety systems with the following devices:

- Monitoring Safety relays
- Operator interface devices (e-stop pushbutton and grip enabling switch)
- Electromechanical switches (interlock)
- Electronic switches (non-contact RFID interlock)
- Opto-electronic presence sensing devices (light curtain and safety sensor)
- Pressure sensing devices (safety mat)

## Who Should Attend

Individuals who maintain and troubleshoot electrical circuits or machine systems and need to learn more about how to apply their skills to relay-based machine functional safety systems should attend this course.

## Prerequisites

To successfully complete this course, the following prerequisites are required:

- Interpreting industrial electrical circuit schematics
- Maintaining industrial electrical circuits or machine systems

## Technology Requirements

All technology is provided for student use in the classroom by Rockwell Automation. It is not necessary for students to bring any technology with them when attending this course.

## Student Materials

To enhance and facilitate students' learning experience, the following materials are provided to each student as part of the course package:

- Student Manual:
  - Includes the key concepts, definitions, examples, and activities presented in this course.
- Lab Book:
  - Provides learning activities and hands-on practice. Solutions are included after each exercise for immediate feedback.
- Troubleshooting Safety Systems Flowchart:
  - Offers an overview of the decision-making process that can be used later on the job

## Hands-On Practice

Throughout this course, you will have the opportunity to practice the skills you have learned through a variety of hands-on exercises using a safety components workstation (Catalog Number ABT-TDSAFCOMP). Exercises focus on the skills introduced in each lesson.

## Next Learning Level

Once you have an understanding of the topics and skills covered in this course, you may want to attend specific safety training such as:

- *Functional Safety for Machinery Technician Certification (TÜV Rheinland)* (Course Number SAF-TUV0T)
- *GuardLogix Application Development* (Course Number SAF-LOG101)
- *GuardLogix Fundamentals and Troubleshooting* (Course Number SAF-LOG103)

## Course Length

This is a two-day course.

## IACET CEUs

Rockwell Automation is authorized by IACET to offer 1.4 CEUs for this program.



## To Register

To register for this or any other Rockwell Automation training course, contact your local authorized Allen-Bradley® Distributor or your local Sales/Support office for a complete listing of courses, descriptions, prices, and schedules.

You can also access course information via the Web at <http://www.rockwellautomation.com/training>

Rockwell Automation is accredited by the International Association for Continuing Education and Training (IACET) and is authorized to issue the IACET CEU. [Click here](#) to view the Rockwell Automation Certificate of Accreditation.

Allen-Bradley, LISTEN. THINK. SOLVE., and Rockwell Software are trademarks of Rockwell Automation, Inc. Trademarks not belonging to Rockwell Automation are property of their respective companies.

[www.rockwellautomation.com](http://www.rockwellautomation.com)

## Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846