



Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa

Tel: +27 12 004 8389 · Mobile: +27 65 077 6310

Email: apply@aaticd.co.za · Website: www.aaticd.co.za

COURSE BROCHURE

Switches and Triggering Devices Application

Law, Military Science and Security / Safety in Society

Unit Standard 257278 · NQF Level 5 · 11 Credits · 8 Days

COURSE OVERVIEW

This course equips learners with the practical knowledge and skills to apply switches and triggering devices in various electronic and electrical applications. Participants will understand the principles, types, and selection criteria for switches and triggering devices, enabling them to confidently install, test, and maintain these components in industrial and domestic environments.

Category	Law, Military Science and Security
Subfield	Safety in Society
Unit Standard	257278
Accreditation	SAQA Accredited · NQF Level 5 · 11 Credits
Duration	8 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply knowledge of different types of switches and triggering devices in practical circuits.
- Analyze the operating principles and characteristics of switches and triggering devices.
- Select appropriate switches and triggering devices for specific applications based on specifications.
- Demonstrate the correct installation and connection of switches and triggering devices.
- Evaluate the performance and troubleshoot faults in switching and triggering circuits.
- Implement safety procedures when working with switches and triggering devices.

WHO SHOULD ATTEND

- This course is intended for technicians, electricians, and maintenance personnel who need to work with switching and triggering devices in electrical or electronic systems.
- It is also suitable for individuals seeking foundational knowledge in this area for career advancement.

COURSE OUTLINE

Day 1: Introduction to Switches and Triggering Devices

- Overview of switches and triggering devices in industry
- Classification: mechanical, electromechanical, solid-state
- Basic switch parameters: voltage, current, contact configuration
- Introduction to triggering devices: relays, contactors, timers
- Safety considerations when working with switches
- Reading and interpreting switch symbols on circuit diagrams
- Common applications: lighting control, motor start/stop, safety interlocks

Day 2: Mechanical Switches and Contactors

- Toggle, pushbutton, limit, and selector switches
- Contactors: construction, coil operation, main and auxiliary contacts
- Arc suppression and contact protection
- Switch ratings: electrical life, mechanical life, IP ratings
- Testing continuity and insulation resistance
- Wiring exercises: simple on/off control circuits
- Practical: testing a contactor coil and contacts

Day 3: Relays and Timers

- Electromechanical relays: types, coil ratings, contact configurations
- Solid-state relays (SSRs): advantages, zero-crossing switching
- Timer relays: pneumatic, electronic, motor-driven
- Timing diagrams and sequence control
- Relay logic: latching, interlocking, and sequencing
- Practical: wiring a motor start/stop with timer delay
- Troubleshooting relay coil failure and contact welding

Day 4: Proximity Sensors and Photoelectric Switches

- Inductive proximity sensors: principle, sensing range, target material
- Capacitive proximity sensors: applications for liquids and non-metals
- Photoelectric sensors: through-beam, retro-reflective, diffuse
- Sensor output types: NPN/PNP, NO/NC, analog
- Wiring sensors to PLC inputs or relays
- Practical: setting up a photoelectric sensor for object detection
- Troubleshooting sensor misalignment and noise

Day 5: Temperature, Pressure, and Level Switches

- Temperature switches: bimetallic, thermistor, RTD-based
- Pressure switches: diaphragm, bellows, piston types
- Level switches: float, capacitive, ultrasonic, vibrating fork
- Setpoint adjustment and hysteresis
- Integration with alarm and shutdown systems
- Practical: calibrating a pressure switch and setting trip point
- Testing a level switch in a simulated tank

Day 6: Solid-State Switching Devices: Thyristors and Triacs

- Silicon Controlled Rectifier (SCR): structure, triggering, latching
- TRIAC: bidirectional switching, gate control
- DIAC: triggering TRIACs in AC circuits
- Phase control and dimmer circuits
- Snubber circuits for dv/dt protection
- Practical: building a light dimmer circuit using TRIAC
- Testing triggering with a pulse generator

Day 7: Integration of Switches and Triggering Devices in Control Systems

- Control system architecture: input devices, logic, output devices
- Designing a conveyor control system with sensors and relays
- Emergency stop circuits: categories and wiring
- Interlocking for safety: guard switches, two-hand controls
- Practical: wiring a control panel with start/stop, limit switches, and a timer
- Testing and commissioning the system

Day 8: Troubleshooting, Maintenance, and Final Assessment

- Troubleshooting methodology: visual inspection, measurement, isolation
- Common faults: contact wear, coil burnout, sensor drift
- Preventive maintenance: cleaning, tightening, calibration checks
- Documentation and reporting
- Review of key concepts
- Final practical assessment: fault-finding on a simulated system
- Written test (if applicable)

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **11 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 32,200.00	R 32,200.00
1	In-House	R 41,900.00	R 41,900.00
1	On-Campus (Pretoria)	R 48,300.00	R 48,300.00

UPCOMING SESSIONS

Start	End	Method	Venue
10 Aug 2026	19 Aug 2026	On-Campus	Durban, South Africa
10 Aug 2026	19 Aug 2026	On-Campus	Mauritius
11 Aug 2026	20 Aug 2026	On-Campus	Cape Town, South Africa
12 Aug 2026	21 Aug 2026	On-Campus	Dubai, UAE
13 Aug 2026	24 Aug 2026	On-Campus	Pretoria, South Africa
14 Aug 2026	25 Aug 2026	On-Campus	Abu Dhabi, UAE
17 Aug 2026	26 Aug 2026	On-Campus	Shenzhen, China
18 Aug 2026	27 Aug 2026	On-Campus	Dubai, UAE

Contact us if no suitable date is listed – on-demand sessions can be arranged for groups.

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard 257278) and click **Get A Quote / Apply**. Select your training method and number of delegates – your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to apply@aaticd.co.za – our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call **+27 12 004 8389** or WhatsApp **+27 65 077 6310** and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically – the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

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