

-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

**Hanover House
24 Douglas Street
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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number-	4110222	-Session-	1992-93
-Superclass-	QH		

-Title-	ELECTRICAL INSTALLATION: INTRODUCTION TO CALL AND ALARM SYSTEMS (x¹/₂)
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-DESCRIPTION-

Purpose	This half-module is designed to provide an understanding of basic call and alarm systems. It can be delivered in the context of fire and/or intruder alarm systems.
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It is aimed at those following a career in electrical installation and receiving complementary work experience in the industry.

Preferred Entry Level	2160010	Electrical Fundamentals or 64160 Introduction to Electrical Systems (x 1/2).
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Outcomes	The student should: <ol style="list-style-type: none">1. identify the basic parts of an alarm or call circuit;2. compare basic open and closed alarm or call systems;3. produce a wiring diagram from a circuit diagram for basic call and alarm systems;4. wire a circuit for a basic alarm or call system.
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Assessment Procedures	Acceptable performance in this module will be satisfactory achievement of all the Performance Criteria specified for each Outcome.
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The following abbreviations are used below:

PC Performance Criteria
IA Instrument of Assessment

Note: The Outcomes and PCs are mandatory and cannot be altered. The IA may be altered by arrangement with SQA. (Where a range of performance is indicated, this should be regarded as an extension of the PCs and is therefore mandatory.)

OUTCOME 1 IDENTIFY THE BASIC PARTS OF AN ALARM OR CALL CIRCUIT

PCs (a) The identification is correct in terms of the type of component and the system to which it belongs.

IA Objective Items

The student will be set an exercise consisting of objective items, to test the knowledge required to identify the basic parts of an alarm or call circuit.

The student will be given a display of 16 basic components of both alarm and call circuits. The student will be required to identify each component in terms of:

- (i) the type of the component;
- (ii) the type of system to which it belongs.

The components included in the display will be allocated as follows:

visual warning devices	3
audible warning devices	2
actuating devices	6
relays	1
sources of supply	4
Total items	16

Objective Items could be either short answer questions, multiple choice questions, a matching exercise, a grid exercise or a completion exercise.

Satisfactory achievement of the Outcome will be based on the student attaining the Performance Criterion. This will be demonstrated by the student giving correct answers to all the questions.

OUTCOME 2 COMPARE BASIC OPEN AND CLOSED ALARM OR CALL SYSTEMS

- PCs
- (a) An accurate comparison is drawn between the two systems.
 - (b) The outline makes accurate and relevant reference to the basic features and characteristics of each system.
 - (c) The outline is in accordance with current relevant IEE and Health and Safety regulations.

IA Restricted Response

The student will be set an exercise consisting of restricted response questions to test the knowledge required to compare basic open and closed alarm or call systems.

The exercise will consist of 3 questions, allocated as follows:

the basic features and characteristics
of open systems 1

the basic features and characteristics of
closed systems 1

comparison of the 2 types of systems 1

Satisfactory achievement of the Outcome will be based on the student attaining all the Performance Criteria.

OUTCOME 3 PRODUCE A WIRING DIAGRAM FROM A CIRCUIT DIAGRAM, FOR BASIC CALL AND ALARM SYSTEMS

- PCs
- (a) The wiring diagrams are correct in terms of:
 - (i) clear and accurate labelling;
 - (ii) a comprehensive and accurate account of the component parts and their interconnections;
 - (iii) accurate transfer of information from the circuit diagram.
 - (b) The wiring diagrams are in accordance with current relevant IEE and Health and Safety regulations.

IA Practical Exercise

The student will be set a practical exercise to test the knowledge required to produce a wiring diagram from a circuit diagram, for basic call and alarm systems.

The student will be provided with 2 circuit diagrams for the following:

- (1) A call system with:
 - 3 call points
 - 1 sounder
 - 3 visual indicators (1 for each call point)
- (2) An open, closed or monitored alarm system with:
 - 4 actuating devices
 - 2 sounders

The student will be required to make use of the circuit diagrams to produce 2 clearly labelled wiring diagrams, one for each system, showing:

- (i) the interconnections between actuating devices;
- (ii) sounders;
- (iii) a main control panel.

Satisfactory achievement of the Outcome will be based on the student attaining all the Performance Criteria.

OUTCOME 4**WIRE A CIRCUIT FOR A BASIC ALARM OR CALL SYSTEM**

PCs

- (a) The wiring of the circuit is correct in terms of:
 - (i) the mechanically and electrically sound connection of all conductors;
 - (ii) correct operation of the circuit, confirmed by testing.
- (b) The wiring of the circuit is in accordance with current relevant IEE and Health and Safety regulations.

IA Practical Exercise

The student will be set a practical exercise to test the knowledge and skills required to wire a circuit for a basic alarm or call system.

The student will be provided with a circuit diagram and a simulator of a basic alarm or call system and will be required to carry out the wiring and testing of the circuit.

Satisfactory achievement of the Outcome will be based on the student attaining both Performance Criteria.

The following sections of the descriptor are offered as guidance. They are not mandatory.

CONTENT/CONTEXT

Corresponding to Outcomes 1-4:

1. Visual warning devices: signal lamp, flag indicator, zenon beacon, light emitting diode.
 - Audible warning devices: bell, buzzer, motorised siren, electronic sounder.
 - Actuating devices: push button, key switch, break glass point, smoke detector, heat detector, sound detector, presence detector, magnetic reed switch.
 - Relays
 - Sources of supply: mains voltage, step-down transformer, transformer/rectifier, primary batteries, trickle charged secondary batteries.
 - Wiring: protected wiring systems: M I cable, FP200, steel conduit. Low voltage muticore PVC insulated and sheathed.
 2. Basic features and characteristics of simple open and closed circuits and their operations for alarm or call systems. Current IEE and Health and Safety regulations.
 - 3&4. Basic audio visual call system. Basic open, closed and monitored alarm systems.
- Common components for the above systems to include: call points, sounders, visual indicators, actuating devices, control panel, interconnectors.
- Labelled circuit diagrams for above systems.
- Current IEE regulations and Health and Safety regulations.

SUGGESTED LEARNING AND TEACHING APPROACHES

Practical demonstrations and hands-on experience would be of benefit in the delivery of this module.

Students should be encouraged to familiarise themselves with diagrams, catalogues and actual examples of components and available systems on the market.

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