-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

HIGHER NATIONAL UNIT SPECIFICATION

GENERAL INFORMATION

-Unit number-	**D7YM 04**
-Unit title-	**CLOSED CIRCUIT TELEVISION CAMERAS LENSES AND MONITORS**
-Superclass category-	**QH**
-Date of publication- (month and year)	**JANUARY 2002**
-Originating centre for unit-	**SQA**

-DESCRIPTION-

GENERAL COMPETENCE FOR UNIT: Developing knowledge and understanding of closed circuit television cameras lenses and monitors within the Security Industry CCTV Sector.

OUTCOMES:

1. identify, describe and compare basics components of Video Signals;

2. describe the use and operation of devices used in a CCTV system;

3. describe the set up procedure for cameras, lenses, and monitors with reference to the intruder CCTV Industry.

CREDIT VALUE: 1 HN Credit.

ACCESS STATEMENT: Access to this unit is at the discretion of the centre. However, it would be beneficial if the candidate has completed Introduction to the Security Industry CCTV unit and prior knowledge of Electrical/Electronic Principles and Components.

Additional copies of this unit can be obtained from:

The Committee and Administration Unit, SQA, Hanover House, 24 Douglas Street, Glasgow G2 7NQ, (Tel: 0141-242 2168).

At the time of publication the cost is £2.50 per unit (minimum order £5.00).

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STATEMENT OF STANDARDS

Unit number: D7YM 04

Unit title: CLOSED CIRCUIT TELEVISION CAMERAS LENSES AND MONITORS

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME

1. IDENTIFY, DESCRIBE AND COMPARE BASICS COMPONENTS OF VIDEO SIGNALS

PERFORMANCE CRITERIA

(a) Describe the process by which light is converted to an electrical signal, transferred and converted back to an image.
(b) Identify the composition of the video signals with respect to the elements listed in the range statement.
(c) Compare the advantages and disadvantages of video transmission formats listed in the Range.
(d) Describe the relationship between the video bandwidth and picture definition.

RANGE STATEMENT

Video transfer: video transmission formats composite, Y/C. Component video composition of video signals, luminance and chrominance, relative bandwidths, synchronisation pulses colour burst signal.

EVIDENCE REQUIREMENTS

Written and/or oral evidence of the candidate's ability to explain the features for all performance criteria and the range.

OUTCOME

2. DESCRIBE THE USE AND OPERATION OF DEVICES USED IN A CCTV SYSTEM

PERFORMANCE CRITERIA

(a) With reference to each of the devices listed in the range statement, describe its operation and features.
(b) Explain the relative advantages and disadvantages of each device listed in the range statement.
(c) Select the most suitable device for a given risk and situation.
(d) Describe the design features incorporated in the devices listed in the range, designed, to reduce cost or enhance performance.
(e) Produce a dimensioned diagram to show the selection of appropriate camera, lens combination for a given target size and area of coverage.
(f) Describe the precautions and requirements to be taken when installing the devices listed in the range statement.

RANGE STATEMENT

Lenses spectral response: format, size, mount types, aspherical, fixed, varied, telephoto, pinhole, wide angled auto iris, direct drive infra-red corrected.

Cameras: characteristics: format, tube, solid state, fully functional, resolution, spectral response, shuttering integration, artificial light, lighting effects colour rendering, infrared lighting.

Adjustment: beam control, electronic focus, black level, white level, frequency, gamma control, target.

Rotakin standards operational requirements, testing, rotakin target.

Monitors: television picture make up, scanning, field and line frequencies.
Beam modulation, resolution, TVL.
The cathode ray tube, monochrome and colour devices, operation.
Television monitor principles, LUW and video inputs, RGB.
Impedance matching, timebase and timebase adjustments.
Audio, signal processing, mains, termination, loop-through size, ergonomics, common faults.

EVIDENCE REQUIREMENTS

Written and/or oral responses covering the interpretation of terminology in current industry standards.

Written and/or oral evidence of the candidate's ability to establish the purpose of a CCTV system, and produce evidence to satisfy the remaining performance criteria and range.

OUTCOME

3. DESCRIBE THE SET UP PROCEDURE FOR CAMERAS, LENSES, AND MONITORS WITH REFERENCE TO THE INTRUDER CCTV INDUSTRY

PERFORMANCE CRITERIA

(a) Describe the effects of the adjustments used when setting up a camera.
(b) Correctly describe the setting up procedure for a fixed lens using the adjustments available on the lens and camera.
(c) Correctly describe the setting up procedure for a zoom lens using the adjustments available on the lens and camera.
(d) Connect and adjust CCTV monitors as part of a system.
(e) Recognise the standards of monitors commonly available.
(f) Identify the symbols commonly used in CCTV systems for each device listed in the range statement.

RANGE STATEMENT

Lenses
Spectral response: format, size, mount types, aspherical, fixed, varied, telephoto, pinhole, wide angled auto iris, direct drive infra-red corrected.

Cameras:
Characteristics: format, tube, solid state, fully functional, resolution, TVL spectral response, shuttering integration.

Adjustment: beam control, electronic focus, black level, white level, frequency, gamma control, target.

Monitors
Television picture make up, scanning, field and line frequencies.
Beam modulation.
The cathode ray tube, monochrome and colour devices, operation.
Television monitor principles, LUW and video inputs, impedance matching, timebase and timebase adjustments.
Size, resolution, ergonomics.
Common Faults.
Rotakin standards operational requirements, testing, ratakin target.

EVIDENCE REQUIREMENTS

Written and/or oral evidence of the candidate's ability to provide explanations and identifications which satisfy all performance criteria and cover the range.

MERIT STATEMENT: To gain a pass in this unit, a candidate must meet the standards set out in the outcomes, performance criteria, range statements and evidence requirements.

To achieve a merit in this unit, a candidate must demonstrate a superior or more sophisticated level of performance. In this unit this might be shown in the following ways:

(i) working independently with minimum supervision by relating theory to practice;
(ii) demonstrating systems capabilities using cameras, lenses and monitors.

ASSESSMENT

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the Scottish Qualifications Authority (SQA) assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Accurate records should be made of the assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

SPECIAL NEEDS

Proposals to modify outcomes, range statements or agreed assessment arrangements should be discussed in the first place with the external verifier.

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SUPPORT NOTES

Unit number: D7YM 04

Unit title: CLOSED CIRCUIT TELEVISION CAMERAS LENSES AND MONITORS

SUPPORT NOTES: This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

Outcome 1

The candidate should be made aware of the different types of processors used by manufacturers for converting light into video signals. The candidate should have an understanding of the makeup and components of a video signal.

Outcome 2

Candidates should have an understanding of the functions and features of the equipment listed. The candidate should be made aware of the features of the equipment and test methods.

Outcome 3

Here the candidate must be made aware of some of the set-up requirements for equipment that may not be available in their workplace.

NOTIONAL DESIGN LENGTH: SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 40 hours. The use of notional design length for programme design and timetabling is advisory only.

PURPOSE SQA publishes summaries of HN units for easy reference, publicity purposes, centre handbooks, etc. The summary statement for this unit is as follows:

On completion of this module, the candidate will have a good knowledge of the Security Industry CCTV Sector.

RECOGNITION This unit has been developed in conjunction with SQA and the unit has the full support of the Security Industry, as forming part of the underpinning knowledge component for the Security Industry PDA in CCTV.

Many SQA HN units are recognised for entry/recruitment purposes. For up-to-date information see the SQA guide ‘Recognised Groupings of National Certificate Modules’.

REFERENCES

1. Guide to unit writing, SQA, 1993 (Code: A018).
2. Guide to assessment, SQA, 1993 (Code: B005).
3. Guide to certification, SQA, 1996 (Code: F025).
4. Notes for unit writers, SQA, 1995 (Code: A041).

For details of other SQA publications, please contact staff in the Sales and Despatch section (Tel: 0141-242 2168) who can supply you with a copy of the publication list (Code: X037).