

Requirements for CCTV Installation



The Private Security Authority

An tÚdarás Slándála Príobháidí

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1. Introduction

The objective of this document is to provide a reference against which Installers of CCTV systems can be inspected to ensure that the functions and performance of CCTV systems installed by them are within levels agreed by the licensed contractor and the client or user of the CCTV system during the System Design phase of the process.

This document is not a technical reference but sets out the PSA licensing requirements for the installation of CCTV systems. Its function is to facilitate the licensing process for CCTV installers by the Private Security Authority. It is a companion document to the Standard Recommendation 40 (SR40) and any provision, paragraph, clause or sentence within SR40 that is in conflict with this document shall be disregarded.

This document has been prepared by the Private Security Authority in consultation with representatives from the private security industry and An Garda Síochána. This document may be an interim measure which will be used to underpin the licensing of installers of CCTV systems. When an agreed standard becomes available which is adopted nationally, this document may be superseded and replaced by that standard for CCTV installation.

This is a working document and is subject to alteration or withdrawal in consultation with the relevant private security industry stakeholders at the discretion of the Private Security Authority.

2. Normative References

This document incorporates provisions and extracts from other publications as follows by kind permission of the National Standards Authority of Ireland:-

I.S. EN 50131-1, Alarm systems – Intrusion systems – Part 1 General requirements

I.S. CLC/TS 50131-7, Alarm systems – Intrusion systems – Part 7 Application Guidelines

I.S. EN 50132, Alarm systems – CCTV surveillance for use in security applications.

ET 101, National rules for electrical installations

Low Voltage Directive (LVD) 2006/95/EC

SR 45:2009 – Remote Monitoring of CCTV Systems

3. Definitions

CCTV system: A system consisting of electronic or other devices designed constructed or adapted to monitor or record images on or in the vicinity of premises.

CCTV surveillance installation (installation): An installation consisting of the hardware and software components of a CCTV system, fully installed and operational for monitoring on or in the vicinity of premises.

CCTV camera (camera): A unit containing an imaging device producing a video signal from an optical image.

CCTV camera equipment: A unit containing a CCTV camera plus appropriate lens and necessary ancillary equipment.

camera housing: An enclosure to provide physical and/or environmental protection of the camera, lens and ancillary equipment.

client: The purchaser of the CCTV system or representative(s) of the purchaser appointed for the purpose of purchasing the CCTV system.

data: image, meta and other data of the CCTV system.

documentation: paperwork (or other media) prepared during the design, installation and hand over of the CCTV system, recording details of the CCTV system, including paperwork (or other media) related to maintenance (where applicable).

event: incident in the real world.

EXAMPLE: A fire (burning house), an intrusion (broken door) or moving person, a power failure, a short circuit, an intruder passing into or into the vicinity of a premises.

export: transfer of data from the original location to a secondary storage location with a minimum of necessary changes.

fault condition: condition of the system which prevents the CCTV system or parts thereof functioning normally.

frame rate: numbers of frames per second.

illumination: level of illumination on the area to be kept under surveillance.

image: visible representation of a frame as a rectangular grid of pixels.

interconnections: means by which messages and/or signals are transmitted between CCTV system components.

lens: an optical device for projecting an image of a desired scene on to the photo-sensitive surface of the imaging device.

notification: passing an alarm or a message of the CCTV system to an external system.

operator: authorised individual (a user) using a CCTV system for its intended purpose.

response: every control command, change of system conditions or information to external devices or persons driven by alarms, faults, messages or triggers.

risk: potential negative impact to an asset or value that may arise from some future event respecting the probability of loss.

surveillance: observation or inspection of persons or premises for security purposes through alarm systems, CCTV systems, or other monitoring methods.

system components: individual items of equipment which make up a CCTV system when configured together.

Uninterrupted Power Supply (UPS): A device that provides battery backup in the event that the primary power source to an electrical system is interrupted, fails or falls below a level of power which is required for the operation of the electrical system in question. The UPS system may provide backup power for a period of minutes or several hours.

User: authorised individual using a CCTV system for its intended purpose.

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4. Overview

4.1 There is no theoretical limit to the number of cameras and monitors which may be used in a CCTV installation but, in practice, this will be limited by the efficient combination of control and display equipment and the operators' ability to manage the system. The process flow chart at Appendix 1, sets out the process flow from location survey through to commissioning and handover of the CCTV System.

5. Location Survey

5.1 The criteria above will be determined by a location survey of the site where the CCTV system is to be installed. This location survey shall also take account of the following:

- a) Risk
- b) Contents
- c) Building
- d) Supervision levels

5.2 The location survey shall have, at least, sufficient detail to address the security requirements of the client and shall lead to a site plan being prepared with the optimal positioning points for cameras being indicated on the site plan. The purpose of the location survey and site plan is to identify the best placings for cameras, the direction of natural light, potential and actual environmental problems.

6. System Design

6.1 The objectives of the system design stage are to determine the extent of the CCTV system; select the appropriate equipment and to prepare a system design proposal. The system design shall also be informed by the client's and/or user's requirements as to the purpose of the camera images.

6.2 Where the objective of the CCTV system design is solely for the purposes of observing images of persons or where this is among the objectives of the system design there is a relationship between the operator task and the size of the target (person) on the screen (see Appendix 2 under *Level of Quality*). If the target is a person and the CCTV system has an installed limiting resolution of better than 400 tv lines, the minimum sizes of the target¹ shall be:

- (i) for identification the target shall represent not less than 120% of screen height.
- (ii) for recognition the target shall represent not less than 50% of screen height.
- (iii) for detection the target shall represent not less than 10% of the picture height.
- (iv) for monitoring (e.g. crowd control) the target shall represent not less than 5% of the picture height.

¹ An illustrative example of this would be a 10 inch monitor screen. For monitoring the target shall take up at least 5% of the screen height available (i.e. at least ½ inch of the screen height in this example). For detection the target shall take up at least 10% of the screen height available (i.e. at least 1 inch of the screen height in this example). For recognition the target shall take up at least 50% of the screen height available (i.e. at least 5 inches of the screen height in this example). For identification the target shall require at least 120% of the screen height available (i.e. at least a 12 inch screen to view the entire target in this example).



Figure 1 - Graphic Example of Clause 6.2 requirements

6.3 When designing the system, installers shall conduct a risk assessment to determine the risk level and shall also design the system paying attention to the function of the observation or surveillance as described by the client and/or user. The function of the observation or surveillance can include:

- crowd control
- theft
- unauthorised entry

6.4 When designing a CCTV surveillance installation, the following criteria shall be taken into account under the headings Operational Requirements and documented in an easily understood and clear format:

Operational Requirements

- a) Purpose(s) of the surveillance.
- b) Potential threat or activity to be monitored and/or recorded.
- c) Determination of the zones or objects requiring surveillance.
- d) Determination of the number of cameras, and their locations, required to monitor the agreed zones and objects.
- e) Intended target(s) of the surveillance and the frame rate appropriate to the target's speed within the location under surveillance.
- f) Response required on detection of an event.
- g) Manner in which images will be viewed and recorded.
- h) How data will be exported from the system to permanent record.
- i) Individuals who will require access to the recorded data.
- j) Selection of cameras and equipment depending on the operating environmental conditions.
- k) Control centre configuration including secure location of control equipment.
- l) Power supplies; the use of a mini UPS System should be considered in situations where there is no UPS in place.
- m) Functional and operating procedures.
- n) Maintenance and repair.
- o) Evaluation of existing lighting and consideration of new or additional illumination including the use of Infra Red cameras or lamps.
- p) Image resolution required.
- q) Determination of the most appropriate transmission method to be utilised.
- r) Compression technique to be used in recording (where appropriate).

6.5 The system design shall reflect the client's and/or user's instructions or requests regarding the system requirements including, where required, alert function(s)², display³, recording⁴ and export/archive.

6.6 An operational requirements form shall be completed for each camera in a CCTV System installation as set out in Appendix 2. Where cameras have identical operational requirements they may be grouped together on one form, providing the camera reference and location are included for each camera.

6.7 Where a CCTV system is installed and integrated with detectors (see 2. *Detectors* in Appendix 5) the following requirements shall be adhered to:

- 6.7.1 Detectors shall be installed in accordance with the requirements of I.S. EN 50131-1, as applicable. Manufacturer's recommendations shall be complied with in the installation of cameras using video detection.
- 6.7.2 The range of any detector shall not be greater than the field of view of any associated camera.
- 6.7.3 The range of any detector shall not cover any area outside of the site or location.
- 6.7.4 The position of any detector shall be chosen so that it is not adversely affected by the rising or setting of the sun.
- 6.7.5 Multiple detectors shall not be connected to a single input unless individually identified by the CCTV control equipment.

² e.g. Audible alarm, visual alarm, text message or image, emergency relay to Garda station.

³ e.g. No of screens required, number of cameras per display screen, type of display.

⁴ Duration of retention of images before being overwritten. Desired image quality of recorded image. Any additional information to be recorded with the image.

6.8 Where the location survey and system design documentation demonstrates that additional lighting is required and where this has been advised to, and agreed with, the client and/or user, the installation of such lighting shall be sufficient to illuminate the fields of view of each camera. The replacement of lighting shall be carried out in accordance with the manufacturer's requirements.

7. System Design Proposal

7.1 A System Design Proposal shall be prepared for submission to the client. The proposal shall include the information detailed in Appendix 3. A sample System Design Proposal is included at Appendix 4.

7.2 The System Design Proposal may be subject to alteration at other stages in the implementation of the system. Any such changes shall be agreed between the licensed contractor and the client and/or user. In these cases the documentation shall be amended accordingly.

8. Installation Planning

Prior to commencing the installation of the components of the CCTV system, the following issues shall be considered.

8.1 Manufacturer's recommendations

All system components shall be installed in accordance with the manufacturer's recommendations. If installation of a component in accordance with the manufacturer's recommendations is not possible, advice should be sought from the manufacturer or supplier.

8.2 Environmental considerations

System components shall be suitable for the environmental conditions in which they are to operate. Examples of environmental considerations include potential impact of changes in foliage from season to season, potential impact of daily and seasonal variations in light and climatic conditions.

9. CCTV Installation

9.1 Competence

9.1.1 The installation shall be carried out by installers with the necessary training and experience. Installers shall have the appropriate tools and test equipment necessary to install the CCTV system correctly. Where measuring equipment is used, the equipment must be of a standard necessary to provide the required precision and accuracy to install and test the system.

9.1.2 Prior to commencing work all relevant health and safety requirements shall be considered. These will vary with the nature of the premises and may involve special installation equipment when working in hazardous areas.

9.1.3 Electrical installation methods shall comply with current national and site regulations and the electrical installation shall be carried out by technicians who are qualified to the appropriate level.

10. Test and Commission

10.1 Inspection

An inspection of the system shall be carried out and documented on completion of the installation of the CCTV system to confirm that the CCTV system has been installed in accordance with the System Design Proposal. Any deviations shall be recorded for inclusion in the As Fitted Document. A sample Inspection Checklist is included at Appendix 5.

10.2 Functional testing

The CCTV system shall be tested and compared with the requirements included in the System Design Proposal as amended by the As Fitted Document.

11. As Fitted Document

A document shall be prepared, based upon the System Design Proposal, amended to reflect any changes to the CCTV design found to be necessary during the installation process. The As Fitted Document shall be an accurate record of the installed CCTV system including any information relating to the equipment installed and its location. A signed and dated copy of the As Fitted Document shall be given to the client after satisfactory completion of inspection and testing.

12. Maintenance

Regular preventative maintenance or servicing should be carried out to ensure that the CCTV system performs to the same level as pertained at the time of commissioning and hand-over of the system.

12.1 Maintenance, servicing and repair of CCTV systems shall only be carried out by a contractor in possession of a current, valid CCTV Installer's licence issued by the PSA.

12.2 It is the client's responsibility to arrange for the CCTV system to be properly maintained (inspected and serviced) and repaired as scheduled or necessary. A documented arrangement should be made between the client and a licensed company for the repair and maintenance of the CCTV system. The arrangements shall specify the schedule of maintenance agreed including:

- the frequency of maintenance required,
- whether the maintenance is undertaken remotely or on-site, and
- the requirements of such maintenance

Preventative maintenance shall include the items contained in Appendix 6 of this document. The client shall be informed, in writing, of the date the maintenance was carried out and the identity of the person who carried out the maintenance.

12.3 Where any on-site maintenance is carried out, a documented record shall be signed by the maintenance technician/engineer and the client and/or user. Where any agreed remote

maintenance is undertaken, the maintenance technician/engineer shall supply the client and/or user with details of the maintenance undertaken.

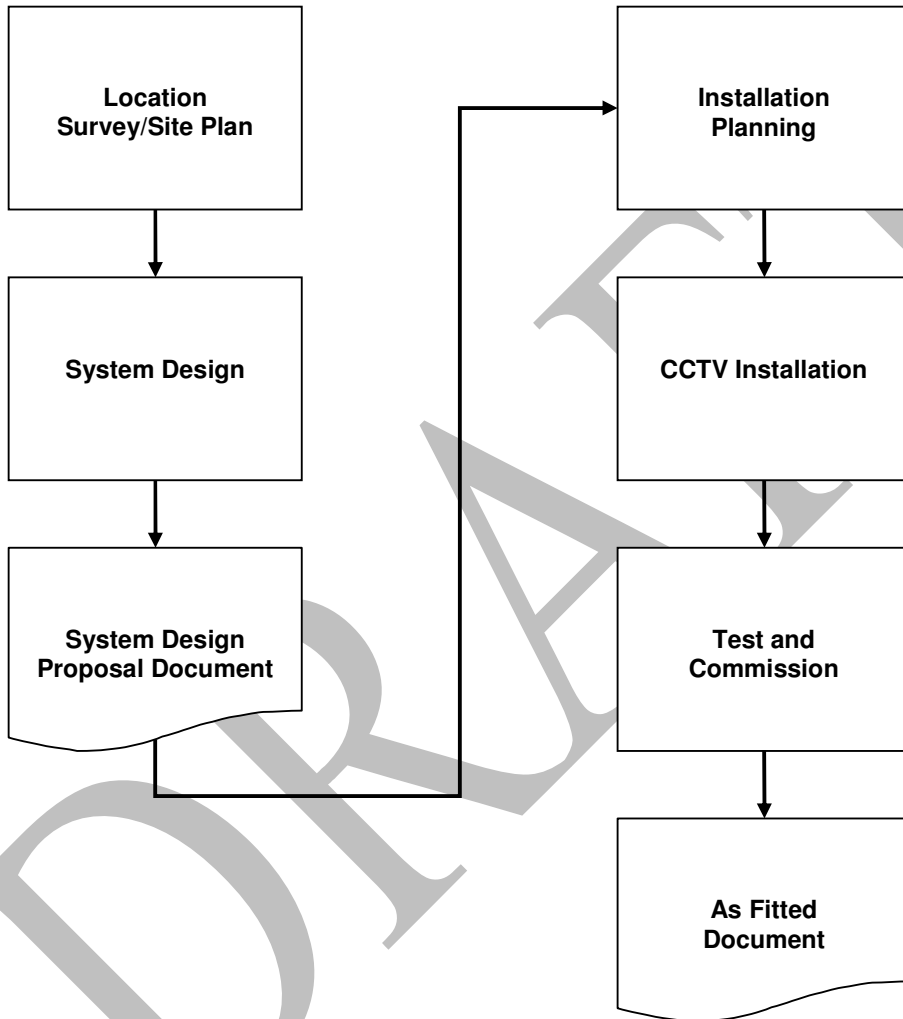
12.4 Where the person carries out corrective or responsive maintenance, the client shall receive, in writing, a document

- outlining the fault condition requiring correction or repair,
- the actions taken to remedy the fault condition, and
- an undertaking that the system has been returned to the operational status pertaining before the fault condition occurred.

12.5 Modifications made to the CCTV installation or its configuration, shall be documented and notified in writing to the client and/or user and an inspection test shall be carried out on the relevant components or parts of the system.

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Flow Chart of CCTV installations



Appendix 2 (Informative)

OPERATIONAL REQUIREMENTS FOR CCTV SYSTEMS

N.B. This Form should be filled out for each camera¹ prior to installation.

Client Name: _____
Address: _____ _____
Supervised Area (if different from above):
Name: _____
Address: _____ _____
Telephone No. _____
Fax No. _____
E-Mail: _____

Details of CCTV System Contractor:
Name: _____
Address: _____ _____
Telephone No. _____
Fax No. _____
E-Mail: _____
Job Reference No.: _____

Camera Reference(s)		Camera Location(s)	
Target(s) to be observed		Supply of images to Gardai	
Activity or activities to be observed		What Response is needed to event or activity	
Purpose of observation			
Level of Quality Tick Box		Expectations from recording Tick Box	
1. Identification		Prevention	
2. Recognition		Detection	
3. Detect		Analysis of Risk Levels	
4. Monitor		Management Information	
5. Number Plate Recording		Evidential	
		Duration of Retention of Recorded Images on hard drive.	
6. Other (give details)		Other (give details)	

¹ Where cameras have identical operational requirements they may be grouped together on one form, providing the camera reference and location as above are included for each camera.

Appendix 3

Information to be included in the System Design Proposal

A system design proposal shall be prepared for the attention of the client or specifier (or his/her agent) of the CCTV system. The proposal shall include all the information necessary to enable the client or specifier to ensure the CCTV system is appropriate for the application. The information provided in the proposal shall include the following.

Client details

The name, address and the trading name (if different from the name of the client) and any other information necessary to clearly identify the client

Contractor details

The name, address and trading name of the contractor (if a trading name is used) shall be included along with any other information necessary for the client to identify and/or contact the contractor. Headed company stationery with contractor details is acceptable in this regard.

Supervised area details

The name and address of the supervised area shall be included if different from the address of the client. This shall also include a description of the supervised area and an indication of what the area is used for.

Schedule of equipment

A schedule of the type and location of operational equipment (in words and/or diagrammatic form) shall be included.

Notification

Details of the proposed notification equipment shall be included along with the name and contact details of the remote monitoring station, in the event that the CCTV system is subject to remote monitoring.

Legislation

Details of any claims of compliance of the system components to any local or National legislation shall be included.

Standards

Details of any claims of compliance of the system components to any National or European Standards shall be included.

Other regulations

Details of any claims of compliance of systems components to any other regulations shall be included.

Certification

Details of any claims for certification of the system components shall be included.

Maintenance

The system design proposal shall include recommendations for the scheduled maintenance of the CCTV system or individual components including details of the frequency of any maintenance visits and a list of the work to be carried out during each visit.

When serviced the CCTV system shall be inspected, tested and adjusted to ensure correct operation in line with the functional requirements of the CCTV system as outlined in the As Fitted Document.

Care should be taken to ensure that the equipment is properly reinstated after testing. All maintenance shall be carried out in reference to the manufacturer's recommendations.

Repair

Details of the proposed repair service to be provided including contact names and telephone numbers.

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Appendix 4 (Informative)

CCTV SYSTEMS SAMPLE LAYOUT FOR SYSTEM DESIGN PROPOSAL

Client Name: _____

Address: _____

Supervised Area (if different from above):

Name: _____

Address: _____

Telephone No. _____

Fax No. _____

E-Mail: _____

Details of CCTV System Contractor:

Name: _____

Address: _____

Telephone No. _____

Fax No. _____

E-Mail: _____

Job Reference No.: _____

Schedule of Equipment:

(A schedule of the type and location of operational equipment. This may be supplemented by a diagrammatic layout of the operational equipment. A continuation sheet may be used as and if required.)

Product Description:	Equipment Manufacturer:	Manufacturer Product Ref.:	Location:	Operational Requirement: (Monitor, Detect, Recognise, Identify, Record)

Notification:

Details of proposed notification equipment shall be included along with the name and contact details of the remote monitoring station, in the event that the CCTV system is subject to remote monitoring.

Legislation: (Details of any claims of compliance of the system components to any local or National legislation shall be included.)

Standards: (Details of any claims of compliance of the system components to National or European Standards shall be included.)

Other Regulations:
(Details of any claims of compliance of the system components to any other regulations shall be included.)

Certification

(Details of any claims for certification of the system components shall be included.)

Intervention:

(Planned response to faults during the operation of the system shall be detailed.)

Maintenance:

(A maintenance Contract/Agreement will be offered on completion of the CCTV System installation.)

Repair:

(Details of the proposed repair service to be provided including contact names and telephone numbers.)

Signed on behalf of CCTV System Contractor: _____ **Date:** _____

Signed on behalf of the Client: _____ **Date:** _____

(Note: Two signed copies required: one for installer and one to be retained by the client.)

Appendix 5 (Informative)

Checklist for CCTV Installation

1. Customer Needs and Requests

<input type="checkbox"/> System design addresses risks and meets customer’s overall needs.
<input type="checkbox"/> Products used meet the system features that customer requested.
COMMENTS: _____

2. Detectors

<input type="checkbox"/> Installed to manufacturer’s installation instructions.
<input type="checkbox"/> Cover only within site boundaries (i.e. does not cover public areas).
<input type="checkbox"/> Each detector uniquely identifiable to the system.
<input type="checkbox"/> All cabling and detection devices incorporate tamper protection.
<input type="checkbox"/> PIRs are not easily subject to false triggering (where installed).
COMMENTS: _____

3. Positioning and Configuration of Cameras

<input type="checkbox"/> Camera’s field of view covers areas of associated detectors.
<input type="checkbox"/> Cameras do not face directly into sun or light.
<input type="checkbox"/> Cameras do not overlook public places.
<input type="checkbox"/> Camera type (e.g. PTZ, fixed, etc) is appropriate for the position and use.
COMMENTS: _____

4. System Performance, Management and Integrity

<ul style="list-style-type: none"><input type="checkbox"/> Appropriate level of training and/or demonstration given to customer.<input type="checkbox"/> Appropriate signage in place.<input type="checkbox"/> System management procedures documentation given to customer.<input type="checkbox"/> Probable application of Data Protection Act communicated to customer.<input type="checkbox"/> Back-up UPS installed where requested or appropriate.<input type="checkbox"/> Event log-system history is held and retained in secure method.<input type="checkbox"/> Recording settings and duration of retention of recorded images documented.<input type="checkbox"/> Indication of video loss, tampering and failure can be properly conveyed to remote centre, where it exists. <p>COMMENTS: _____ _____ _____</p>
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5. Testing and Commissioning

<ul style="list-style-type: none"><input type="checkbox"/> Tests carried out on:<ul style="list-style-type: none"><input type="checkbox"/> Detectors<input type="checkbox"/> Cameras<input type="checkbox"/> Accuracy of recorded data<input type="checkbox"/> Comparison of reference images against live operations<input type="checkbox"/> Walk Test (for each camera)<input type="checkbox"/> Results of testing documented and given to customer.<input type="checkbox"/> Client/Owner/User provided with system spec including equipment inventory.<input type="checkbox"/> Setting/Unsetting device installed and tested.<input type="checkbox"/> Client/User informed of any inspection and servicing routines. <p>COMMENTS: _____ _____ _____</p>
--

Installers Signature: _____

Company/Trading Name: _____

Date Installation Completed: _____

Client/Owner/User Signature: _____

RECORD OF MAINTENANCE

CLIENT'S NAME AND ADDRESS: _____

MAINTENANCE DUE ON: _____

DATE MAINTENANCE CARRIED OUT: _____

MAINTENANCE CARRIED OUT BY: _____

I CERTIFY THAT I HAVE CARRIED OUT THE FOLLOWING MAINTENANCE ON THE CCTV SYSTEM LOCATED AT _____ ON THE DATE ABOVE:

- System History since last maintenance visit checked
- Signs of deterioration or damage checked for, through visual inspection.
- Cameras, lenses and housing checked and cleaned.
- Remote signalling equipment (where fitted) checked and tested.
- Recording and playback quality checked
- Lenses and pictures checked for correct field of view and adjusted (if necessary)
- All CCTV control equipment (e.g. monitors, multiplexers, DVR, etc) checked.
- Transmission of images to remote centre checked (where applicable)
- All test results logged and available for inspection
- CCTV system returned to operational status (date and time conveyed to client)

Additional Comments (if required)

Signature of Maintenance Operative: _____

Date: _____

Signature of Client: _____