

**Correctional Service Canada  
Technical Services Branch  
Electronics Systems**

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**ES/STD-0221  
Revision 2  
6 April, 2009**

**ELECTRONICS ENGINEERING  
STANDARDS**

**FIXED NETWORK COLOUR  
CLOSED CIRCUIT TELEVISION CAMERA**

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**Approved by:**



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## RECORD OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue.
1	7.1	Imager changed to ¼ inch or larger
	7.9	Remove numeric quantity on AGC, just yes
	7.12	Added iris requirement
	7.12 – 7.17	Renumber paragraphs
2	6.1	Added CMOS imager

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## 1.0 SCOPE

This standard defines the requirements of Correctional Service Canada (CSC) for Closed Circuit Television (CCTV) colour network capable cameras at federal correctional institutions.

## 2.0 GENERAL

The colour camera is used in indoor security surveillance and assessment applications and outdoor applications under controlled lighting conditions. In indoor applications, it is housed in tamper-proof secure enclosures mounted on walls or hanging from ceilings. In outdoor applications, the camera is housed in environmental tamper-proof enclosures mounted on building walls or roofs.

## 3.0 ENVIRONMENTAL REQUIREMENTS

The camera shall operate over the following environmental conditions:

- 3.1 Temperature:  $-10^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ ; and
- 3.2 Humidity: 0 to 90% relative, non-condensing.

## 4.0 POWER REQUIREMENTS

The camera shall use power within the following limits:

- 4.1 Voltage:  $\leq 24\text{ VAC} \pm 10\%$  @  $60\text{ Hz} \pm 1.5\%$ ; or  $\leq 24\text{ VDC}$ ; and
- 4.2 Power: power consumption shall not exceed ten watts.

## 5.0 MECHANICAL REQUIREMENTS

The mechanical requirements are as follows:

- 5.1 Weight: 1 kg;
- 5.2 Height: 75 mm;
- 5.3 Width: 75 mm;

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- 5.4 Length: 200 mm; and
  - 5.5 Mount: ¼"-20 UNC threaded mounting holes, bottom.

## 6.0 DESIGN REQUIREMENTS

The camera shall be colour with the following requirements:

- 6.1 interline transfer Charge-Coupled Device (CCD) or Complementary Metal Oxide Semiconductor (CMOS) pick up device;
- 6.2 electronic circuits shall use solid state devices with Digital Signal Processing (DSP);
- 6.3 built-in character generator for camera location identification;
- 6.4 compact size and light weight;
- 6.5 test points used during calibration, setup and testing shall be easily accessible and permanently labelled;
- 6.6 modular with plug-in circuit cards and assemblies;
- 6.7 high quality construction standard and have a designed MTBF (Mean Time Between Failure) of at least 5 years; and
- 6.8 labels, permanently affixed to the exterior of the unit, which identifies the manufacturer, the model or assembly number, the serial number and the mains power requirement.

## 7.0 TECHNICAL REQUIREMENTS

The colour camera shall meet all applicable EIA Standards and the following minimum specifications:

- 7.1 Image Sensor: 1/4 inch or larger;
- 7.2 Resolution : minimum VGA (640 x 480 pixels) at 30 images/second;
- 7.3 Frame Rate (Var): adjustable from 1 frame/second to 30 frames/second;
- 7.4 Bandwidth: Adjustable;
- 7.5 Image Quality: Adjustable;

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7.6	Compression:	Intraframe coding;
7.7	Compression Options:	Shall provide configuration of the video encoder to select compression features;
7.8	Sensitivity:	0.1 fc scene illumination at f1.4;
7.9	AGC:	yes;
7.10	Lens output:	8-16 VDC, to 100 ma;
7.11	Lens Mount:	standard C-mount or CS-mount;
7.12	Iris:	F1.4 to F20, automatic with manual override;
7.13	SNR:	>45 dB (AGC off);
7.14	Distortion:	<2% of picture height;
7.15	Light Control:	Auto/manual back light compensation, electronic light control (ELC);
7.16	Interface:	10Base-T/100Base-T;
7.17	Protocol :	Internet Interface Protocol; and
7.18	Character Generator:	≥ 8 characters.

## 8.0 FUNCTIONAL REQUIREMENTS

The following external functions shall be available:

- 8.1 AGC on/off switch;
- 8.2 Mechanical focus (Imager position);
- 8.3 Network Interface connector (RJ45 type); and
- 8.4 Auto Iris Lens connector.

**9.0 INTERFERENCE**

Performance of the camera and video quality shall not be affected by the use of standard electronic equipment used at the institution. Distance limits of standard electronic equipment are as follows:

- 9.1 CB transceivers at 1 metre or more;
- 9.2 VHF and UHF transceivers at 1 metre or more;
- 9.3 Other radio frequency transmitting, receiving and distribution equipment at 5 metres or more; and
- 9.4 Personal computer and/or computer work stations at 5 metres or more.

**10.0 SAFETY**

The camera must be CSA, UL, ULC or CE approved, as required by law.

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