

Hackney Carriage and Private Hire Vehicle Safety Camera Programme Technical Specifications and System Requirements



Technical Specifications

1.0 Operational

Reference	Specification	Details
1.1	100% solid state design	The system cannot have any mechanical components (such as a hard disk drive or fan). The memory must be 100% solid state industrial grade flash.
1.2	8 to 15 Volts DC	Operational between 8 and 15 volts DC
1.3	Reverse polarity protected	System to be protected against reverse voltage.
1.4	Short circuit prevention	System to be protected against short circuits
1.5	Over voltage protection	System to be protected against high voltage transients likely to be encountered in the vehicle electrical system.
1.6	Electromagnetic emissions controlled	Council Directive 2004/108/EC (December 15,2004) on Electromagnetic Compatibility; CISPR 22/EN55022 Council Directive 2004/104/EC (October 14, 2004) on the radio interference (electromagnetic compatibility) of vehicles; Sections 6.5, 6.6, 6.8 and 6.9 Test reports from an accredited test agency shall be provided by the vendor(s).
1.7	Electromagnetic susceptibility controlled	Council Directive 2004/108/EC (December 15,2004) on Electromagnetic Compatibility; CISPR 24/EN55024 Council Directive 2004/104/EC (October 14, 2004) on the radio interference (electromagnetic compatibility) of vehicles; Sections 6.5, 6.6, 6.8 and 6.9 Test reports from an accredited test agency shall be provided by the vendor(s).
1.8	Absence of "on/off" switch	The system must be permanently wired to the power supply of the vehicle, and shall not be equipped with an on/off switch.
1.9	First-in/first-out buffer recording principle	
1.10	Built-in, automatic logging of all access actions, including date and personnel names	
1.11	Security, duration and auto-clearing of log files	
1.12	Image export formats and media	Images must be exported in commercially available formats.
1.13	Image protection during power disruption	The system shall have a back up system to preserve images in the event of loss of power.
1.14	Use of industrial grade flash memory.	The system shall be equipped with industrial grade flash memory. Battery back-up will not be permitted.
1.15	Unit must operate without the ignition being turned on.	The Unit must have the ability to operate at all times even without power from the ignition.
1.16	Image and audio data shall be recorded and stored in a unit separate from the camera head.	
1.17	GPS capability	System must be compatible to allow for GPS capability.
1.18	The system must be capable of recording audio time synchronized to the recorded images.	
1.19	The system shall be	

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	programmed to record audio for event based triggers (door, meter or panic alarm button) but muted for background images.	
1.20	Audio must be available at all supported image capture rates.	
1.21	The audio playback shall be in 'real time' regardless of the image capture rate	
1.22	Digital sampling of the audio signal must exceed 8KHz	
1.23	Digital resolution of the audio samples must exceed 10 bits.	
1.24	The audio microphone shall be integrated within the camera head.	
1.25	Audio data and image data must be stored together, not in separate files, and must be protected against unauthorised access or tampering.	
1.26	The system must support testing of the audio function for installation set-up and inspection purposes.	
1.27	The system must 'go to sleep' to reduce battery drain during prolonged idle time. It must be capable of immediate reactivation	
1.28	Images recorded by the system shall not be displayed within the vehicle.	

Technical Specifications

2.0 Storage Capacity

Reference	Specification	Details
2.1	Minimum of four days of images. Capable of 96 hours of image retention.	The camera system must be capable of recording and storing a minimum of four days of images and each image shall have a minimum effective resolution of 1280 x 576 pixels.
2.2	Images must be clear in all lighting conditions	System to provide clear images in bright sunshine, shade, dark and total darkness. Also, when strong back light is present.

Technical Specifications

3.0 Camera Head

Reference	Specification	Details
3.1	Camera installation non-obstructive	The camera and all system components shall be installed in a manner that does not interfere with the driver's vision or view of mirrors or otherwise normal operation of the vehicle.

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3.2	Protected camera disconnect	The camera head shall be designed to disconnect for ease of removal and replacement by maintenance personnel.
3.3	Special tools for adjustment/removal	
3.4	Field of view to capture all passengers in the vehicle	The lens of the camera must be of a type that captures the driver and all passengers of the vehicle on the recorded image. The lens must be of a style not to create a "fishbowl" effect.
3.5	Images must be clear	System to provide clear images in all lighting conditions and allow different skin tones to be detected
3.6	Compatible for use in vehicles with a partition (shield)	The camera system must be adaptable to provide clear images when a vehicle is equipped with a shield. This may be accomplished with the use of multiple camera heads.
3.7	Multiple cameras	The unit shall be capable of supporting up to four (4) cameras. Four cameras may be required to provide adequate coverage in larger vehicles and/or certain purpose built vehicles.

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4.0 Storage Device (Recorder)

Reference	Specification	Details
4.1	Impact and shock resistance	The recorder shall be impact resistant, sufficient to withstand a typical car accident, or striking with a large, heavy object such as a suitcase.
4.2	Controller in concealed location	The storage unit shall be concealed from view and effectively inaccessible except by authorised personnel.
4.3	Download port provision	The recorder shall be equipped with a communication port for downloading by authorised personnel.
4.4	Download port location (glove compartment)	The recorder download port shall be located in the glove box of the vehicle.
4.5	Download port cable length (1 foot minimum)	Download port shall be at least one foot in length for ease of download.
4.6	Recorder to be securely affixed to the vehicle	
4.7	Log to register each user access	
4.7.1	Log to register camera system parameter modifications	
4.7.2	Log to register each image download session	
4.7.3	Log to register modification/manipulation of downloaded images	
4.7.4	Log to register exporting of downloaded images	
4.7.5	Log to register exporting of downloaded clips	
4.7.6	Log file protected against unauthorised access	
4.7.7	Time/date stamp	All stored images must be time and date stamped.
4.7.8	Vehicle ID number stamp	All stored images must have two fields for vehicle identification (VIN & number plate).

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4.7.9	Controller non-modifiable ID code stamp	Each recorded image shall be automatically stamped with a unique and non-modifiable code that identifies the controller that was used to record the image.
4.7.10	Controller (Storage Recorder)	Manufacturer to supply Southampton City Council Licensing Team with a supply of specialized tools to allow for removal of the Controller when required.

Technical Specifications 5.0 Door/Meter Activated

Reference	Specification	Details
5.1	Record on door open	The recorder shall record a sequence of images when any door is opened.
5.2	Door pre-event and post-event recording	The recorder shall record the 10 seconds prior to any door opening trigger (and the 10 seconds after any door opening trigger) at 1 frame per second per camera.
5.3	Record on meter on	The recorder shall record images at 1 frame every 2 seconds per camera for 20 seconds upon meter activation.
5.4	Record on meter off	The recorder shall record images at 1 frame per 2 seconds per camera for 20 seconds upon meter de-activation.
5.5	Minimum recording rate	Following a door, meter or emergency trigger, the unit shall continue recording images at a rate not less than 1 image per 10 seconds per camera.
5.6	Current sequence must be pre-empted and restarted by subsequent door event	The recorder shall reset for the next door opening event, and shall also reset if a door is opened prior to completing any cycle.
5.7	System to continue to record images when engine is off.	System must continue to record images for 30 minutes after engine is shut off.

Technical Specifications 6.0 Emergency Activation

Reference	Specification	Detail
6.1	Emergency button that allows for overwrite-protected image storage when activated by driver	When activated, system to store 600 pictures per camera spread evenly over 5 minutes. 300 pictures (2.5 minutes) per camera immediately prior to the button activation and 300 pictures (2.5 minutes) per camera immediately following the button activation captured at a rate of 2 frames per second per camera.
6.2	Emergency image overwrite protection capability	Image sequences resulting from emergency activation shall be recorded in an area of memory which is protected from being overwritten
6.3	Overwrite protection capacity for 3 activations	
6.4	Overwrite protection self clear on 96 hr. timer	

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7.0 Downloading

Reference	Specification	Details
7.1	Time to download complete memory not to exceed 30 minutes	Time to download can be accomplished in 30 minutes or less.
7.2	Provision of necessary software, cables, security keys to Southampton City Council Licensing Team	
7.3	Windows XP/Vista compatible.	
7.4	Downloaded images stored in non-volatile media	
7.5	Downloaded images stored in secure format	
7.6	Verifiable image authenticity	Each image shall be stamped with controller ID and vehicle ID and be tamperproof.
7.7	Provision of technical support to Southampton City Council Licensing Team when necessary. Twenty four hours per day, seven days per week.	To assist in accessing system in case of damage to the vehicle or to the system in case of accident.
7.8	Wireless Download Prohibited	Unit must not allow for wireless downloads. Wireless diagnostic may be used. All wireless hardware to be disabled.
7.9	Filter the specific images for events and times for the approximate time of the crime committed.	

System Requirements

8.0 System Information

Reference	Requirement	Details
8.1	Provision of service log sheet with each unit shipped	The unit manufacturer shall have a service log shipped with the unit. The manufacturer shall also enclose detailed instructions for the drivers with each unit shipped. An installation manual shall also be furnished to authorised installers and fleet operators.
8.2	Serial number indication on service log	The unit will be marked with a serial number
8.3	Installation date indication on service log	The provision for the installer to indicate the installation date
8.4	Provision of driver instruction card with each unit shipped	
8.5	Provision of installation manual to installers and fleet operators	
8.6	Clarity of operating instructions	The system shall be provided with clear and concise operation instructions which are written with due consideration to varying levels of literacy.
8.9	Installation by authorised agents	The unit shall be installed by manufacturer's authorised agents.

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8.10	Provision of authorised agents list to Southampton City Council Licensing Team	The manufacturer shall provide a list of all authorised agents to Southampton City Council Licensing Team.
8.11	Documentation	The manufacturer must provide clear and concise operating instructions which are written in layman's terms. (Details on how the system records the images)
8.12	128 Bit Encryption	A minimum encryption level of 128 bit is required for the software access key. A greater level of protection is requested and encouraged so to protect the system and its internal data.

System Requirements

9.0 Vehicle Inspection Facility – Inspections

Reference	Requirement	Details
9.1	Provision of system status/health indicator	The driver shall have an indicator showing when the system is operational and when there is a malfunction.
9.2	Mounting location of system status/health indicator to be seen by driver only	The indicators shall be mounted/installed for the driver's vision only. The indication system shall incorporate the following minimum features (see 9.3, 9.4, 9.5)
9.3	Normal display/system operational – GREEN	
9.4	Valid image capture – FLASHING GREEN	
9.5	System malfunction – RED FLASHING UNTIL FAULT CLEARED	
9.6	Additional indicator requirement	Where a system is fitted with an indicator to show that the system is on, this indicator shall be separate to those listed above or of a different colour to avoid any possible confusion on the part of the drivers using the system.
9.7	Designed/Installed to be testable by Southampton City Council Licensing Team	The system shall be designed and installed such that the system may be easily tested by Southampton City Council Licensing Team staff to ensure that all features are operating and that images are being recorded as prescribed.

System Requirements

10.0 General

Reference	Requirement	Details
10.1	Vandal and tamper resistance	
10.2	Provision of statement of compliance	In addition to a formal test of all aspects of this requirement specification, a statement of compliance shall be provided and signed by an officer of the company.
10.3	Reliability in operational and environmental conditions	The system shall provide reliable and full functionality in all operational and environmental conditions encountered in the operation of taxis.
10.4	Programmability of image timing parameters	It shall be possible to change timing and parameters without the requirement to change components.
10.5	Training and Technical Support and Equipment	Manufacturer must provide Southampton City Council Licensing Team a Training and Technical Manual. Supply a working unit to Southampton City Council for testing purposes.

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10.6	Software and Hardware	Manufacturer to supply Southampton City Council a supply of cables and software to be installed under the supervision of the City's authorised staff.
10.7	Agreement between the Camera Manufacturer and the City of Southampton	Agreement to allow the City of Southampton the software source code from the Manufacturer in the event the Manufacturer goes out of business. The City will be able to support the system.