

**VicRoads Guideline**

**TCG  
008-1-2009**

# Speed / Red Light Cameras

At

# Traffic Signals



# Contents

<b>SECTION 1 - SCOPE AND GENERAL .....</b>	<b>5</b>
1.1 PURPOSE .....	5
1.2 GENERAL.....	5
1.4 STANDARDS.....	5
<b>SECTION 2 – TOP-HAT .....</b>	<b>6</b>
2.1 GENERAL.....	6
2.2 EXTERIOR .....	6
2.3 APPROVAL .....	6
<b>SECTION 3 – ELECTRICAL .....</b>	<b>7</b>
3.1 GENERAL.....	7
3.2 MAXIMUM DEMAND CALCULATION .....	7
3.3 240 VOLT MAINS POWER SUPPLY .....	7
3.4 SEPARATE SWITCHBOARD.....	8
3.5 PHASE RELAYS .....	8
3.6 WIRING.....	8
<b>SECTION 4 – ENVIRONMENTAL REQUIREMENTS.....</b>	<b>9</b>
4.1 EMC COMPLIANCE .....	9
4.2 IP RATING.....	9
<b>SECTION 5 - DOCUMENTATION.....</b>	<b>10</b>
5.1 DOCUMENTATION.....	10

Page intentionally left blank

## SECTION 1 - SCOPE AND GENERAL

### 1.1 PURPOSE

- 1.1.1 The purpose of this document is to provide requirements and guidance on carrying out the modifications to traffic signal controllers which are necessary to provide a power supply and triggering inputs for the operation of Speed/Red Light Camera (SRLC) equipment.
- 1.1.2 This Guideline is intended to ensure that the interface between the Speed/Red Light Camera control equipment and the traffic signal controller is installed in a standard way.

### 1.2 GENERAL

- 1.2.1 When Speed/Red Light cameras are installed at locations controlled by traffic signals, the power supply for the SRLC is sourced from the traffic signal controller.
- 1.2.2 Only the items necessary to provide the power supply for the SRLC are to be installed in the traffic signal controller.
- 1.2.3 No other equipment associated with the SRLC installation is to be installed within the traffic signal controller cabinet.
- 1.2.4 All control equipment associated with the SRLC installation is to be located within a 'top-hat' in accordance with Section 2.
- 1.2.5 All works associated with the traffic signal controller component of SRLC installation can only be undertaken by contractors that are pre-qualified at the STS level under the VicRoads contractor pre-qualification scheme.

### 1.4 STANDARDS

- 1.4.1 All components associated with the SRLC installation are to conform to the relevant Australian Standards.
- 1.4.2 All works associated with the SRLC installation shall comply with the relevant requirements of VicRoads specification TCS 013 for traffic signal works and VicRoads Standard Section 733 for Conduits and Pits.

## SECTION 2 – TOP-HAT

### 2.1 GENERAL

- 2.1.1 A 'top-hat' cabinet, to be mounted on top of the traffic signal controller cabinet, shall be used to house the phase relays (see Section 3.5) and isolating circuit breaker (see Section 3.3).
- 2.1.2 The cabinet shall be constructed from marine grade aluminium (A5251 - H34) treated to ensure optimum performance under exposure to atmospheric and site conditions, prevalent in the state of Victoria. The aluminium shall be protected against electrolytic and chemical corrosion.
- 2.1.2 The 'top-hat' shall be designed to fit the specific traffic signal controller.

### 2.2 EXTERIOR

- 2.2.1 The exterior of the "top-hat" enclosure is to have a durable gloss finish of an approved polyurethane, non-sacrificial anti-graffiti pigmented coating applied in accordance with the manufacturers directions.
- 2.2.2 The coating is to be coloured Smoke Blue - T33, in accordance with AS 2700.
- 2.2.3 No markings are to be made on the exterior of the enclosure which could enable it to be identified as associated with the SRLC system.

### 2.3 APPROVAL

- 2.3.1 Each 'controller specific' top-hat design needs to be accepted by VicRoads prior to it being installed. To obtain acceptance, detailed drawings should be submitted to the following at least six weeks prior to the proposed date of installation.

Team Leader, Specifications and Standards  
Traffic Systems Operations  
Road User Services  
VicRoads  
60 Denmark Street  
Kew 3101

## SECTION 3 – ELECTRICAL

### 3.1 GENERAL

- 3.1.1 All electrical works shall comply with the relevant requirements of AS/NZS 3000:2008.
- 3.1.2 The installation of circuit breakers and cabling within the traffic signal controller shall not affect access to the existing components of the controller.
- 3.1.3 All electrical connections between the traffic signal controller and the SRLC are to be made within the traffic signal controller housing.
- 3.1.4 No connections shall be made within a traffic signal pole.
- 3.1.5 No cables associated with the SRLC installation are to be installed in any traffic signal poles.

### 3.2 MAXIMUM DEMAND CALCULATION

- 3.2.1 Prior to installation works commencing, a maximum demand calculation is to be undertaken to determine whether the existing mains cable supplying the controller will be adequate to meet the additional load of the SRLC system.
- 3.2.2 The calculation of the maximum demand shall take into account the potential maximum power load of all equipment which is, or which may be, connected to the camera system. This would include, but not be limited to:
  - A camera unit (typically 3 amps);
  - A flash unit (typically up to 12 amp when charging); and
  - A 10 amp socket outlet within the camera housing.
- 3.2.3 The exact current rating of each device is to be determined by contacting the manufacturer of the camera system.
- 3.2.4 The detailed calculations shall be provided to the responsible officer of the respective VicRoads Region for approval prior to works commencing.

### 3.3 240 VOLT MAINS POWER SUPPLY

- 3.3.1 The existing traffic signal controller mains power supply, including any cabling, circuit breakers and/or fuses, must be adequate to meet the new calculated maximum demand.
- 3.3.2 If the existing traffic signal controller mains power supply is deemed to be inadequate to meet the combined demand of the traffic signals and the camera system, it will need to be upgraded by the traffic signal contractor.
- 3.3.3 The power supply to the SRLC shall be provided from the switched side of the traffic signal controllers main switch through a 16 amp circuit breaker.

- 3.3.4 If the traffic signal controller switchboard has spare capacity, the above circuit breaker shall be mounted within the existing switchboard. If not, the SRLC circuit breaker shall be installed within a separate switchboard as detailed in Clause 3.4.
- 3.3.5 The circuit breaker shall be clearly marked as "Speed/Red Light Camera".
- 3.3.6 A second circuit breaker shall be located within the top-hat to enable the SRLC equipment to be isolated from the power supply by a SRLC technician.

### **3.4 SEPARATE SWITCHBOARD**

- 3.4.1 Where a separate switchboard is required for mounting the SRLC circuit breaker, it shall be installed within the traffic signal controller in such a position that it does not interfere with access to any of the other equipment within the controller housing.
- 3.4.2 The switchboard shall be no more than one module wide.
- 3.4.3 No holes shall be made in the traffic signal controller housing to facilitate the mounting of this switchboard.

### **3.5 PHASE RELAYS**

- 3.5.1 To provide protection to VicRoads equipment, the interface between the traffic signal controller and the camera system shall be isolated by means of a phase relay module or similar.
- 3.5.2 The output from this module to the camera system shall be via an ELV contact closure.
- 3.5.3 Phase relays shall be connected to the appropriate traffic signal group at the field wiring terminals.
- 3.5.4 Where possible, the phase relay wiring should be connected to an unused terminal in the traffic signal controller.

### **3.6 WIRING**

- 3.6.1 All wiring installed in the traffic signal controller as part of the modifications necessary to cater for the camera installation are to be identified by wrapping, sleeving, cable tying or some other manner approved by the responsible VicRoads officer and clearly labelled to identify it as SRLC wiring.
- 3.6.2 All cables shall be insulated for 240 volts.
- 3.6.3 The cables supplying power to the camera and flash unit, as well as the detection to initiate camera operation may be run through the traffic signal conduits provided that a maximum of 60% of the conduit capacity is not exceeded.

## **SECTION 4 – ENVIRONMENTAL REQUIREMENTS**

### **4.1 EMC COMPLIANCE**

- 4.1.1 The installation of Speed/Red Light Camera equipment shall not adversely affect the traffic signal controller's compliance with all relevant requirements of the Australian Communications Authority (ACA) for EMC.

### **4.2 IP RATING**

- 4.2.1 The complete top-hat enclosure when installed on the traffic signal controller is to retain the degree of protection IP45 as defined in AS 60529.

## SECTION 5 - DOCUMENTATION

### 5.1 DOCUMENTATION

5.1.1 The following documentation shall be supplied with each installation:

- (a) A schematic diagram showing the site specific power supply wiring details:
- (b) A contact telephone number in the event of a fault with the equipment.

5.1.2 Two hard copies and one soft copy of the above documentation shall be provided by the Contractor who installs the power supply equipment for VicRoads records.

5.1.3 In addition, a hard copy of (a) and (b) are to be stored within the traffic signal controller cabinet.