



<b>Subject: Traffic Signal/Railway Signal Interconnects.</b>	
<b>Date:</b> August 30, 2007	<b>Author:</b> Ross Casey
<b>Bulletin Number:</b> TE-2007-02 <b>Bulletin Type:</b> Requirement	<b>Effective Date:</b> Immediately.
<b>Audience</b>	<b>Standards Affected</b>
Ministry Electrical Trades Supervisors and Managers; all holders of the Electrical and Traffic Engineering Manual; all Project Managers and Traffic Engineers; all Design Consultants	Electrical and Traffic Engineering Manual

**Background:**

Transport Canada regulates railway crossing safety and has implemented the following standard; Railway Signal & Traffic Control Systems Standards 3. Railway Signaling Design Principles

- 3.1 Railway signal and traffic control systems shall be designed using fail safe principles.
- 3.2 Railway signal and traffic control systems shall, so far as possible, be arranged so that failure of any part of the system shall cause affected signals to give the most restrictive indications that the condition requires.
- 3.3 All control circuits, the functioning of which affects safety of train operation, shall be designed on the closed circuit principle.
- 3.4 Railway signal and traffic control systems shall be so interconnected that aspects to proceed cannot be displayed simultaneously for conflicting movements, except that opposing signals may indicate "proceed at restricted speed" at the same time for switching movements only.

This standard has been enacted to ensure traffic signals interconnected to railway signals do not conflict with train movements when any components of the systems fail (railway crossing signal, interconnection cables/components or the traffic controller). This will allow the traffic controller to clear traffic from the crossing prior to going into four way flash at the traffic light. This type of interconnection is to be implemented at all new or reconstructed interconnected traffic signals where the railway signal system will accept this type of interconnection.

**Policy:**

Six wire double break and supervisor circuits shall be utilized on all new traffic signal/railway signal interconnects and shall be also wired in the traffic signal controller for all retrofit traffic signal/railway signal.

Project Traffic Engineers shall include this requirement on all applicable traffic engineering check sheets and signal timing sheets.

**Procedure:**

Project Traffic Engineers shall contact the appropriate railway signal designers when undertaking a traffic design involving a traffic signal/railway signal interconnect to ensure designs are coordinated and shall show the requirement for six wire double break and supervisor circuits on all traffic engineering check sheets and signal timing sheets.



# TECHNICAL BULLETIN

Ministry of Transportation

ENGINEERING BRANCH  
TRAFFIC, ELECTRICAL, HIGHWAY SAFETY &  
GEOMETRIC STANDARDS SECTION  
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Traffic controllers shall be equipped with two relays and internally wired as noted in the attached schematic, railway controllers shall be equipped with one relay and wired as noted in the attached schematic.

Traffic signals designers shall specify interconnect wiring as noted on the attached table.

## **CONTACT:**

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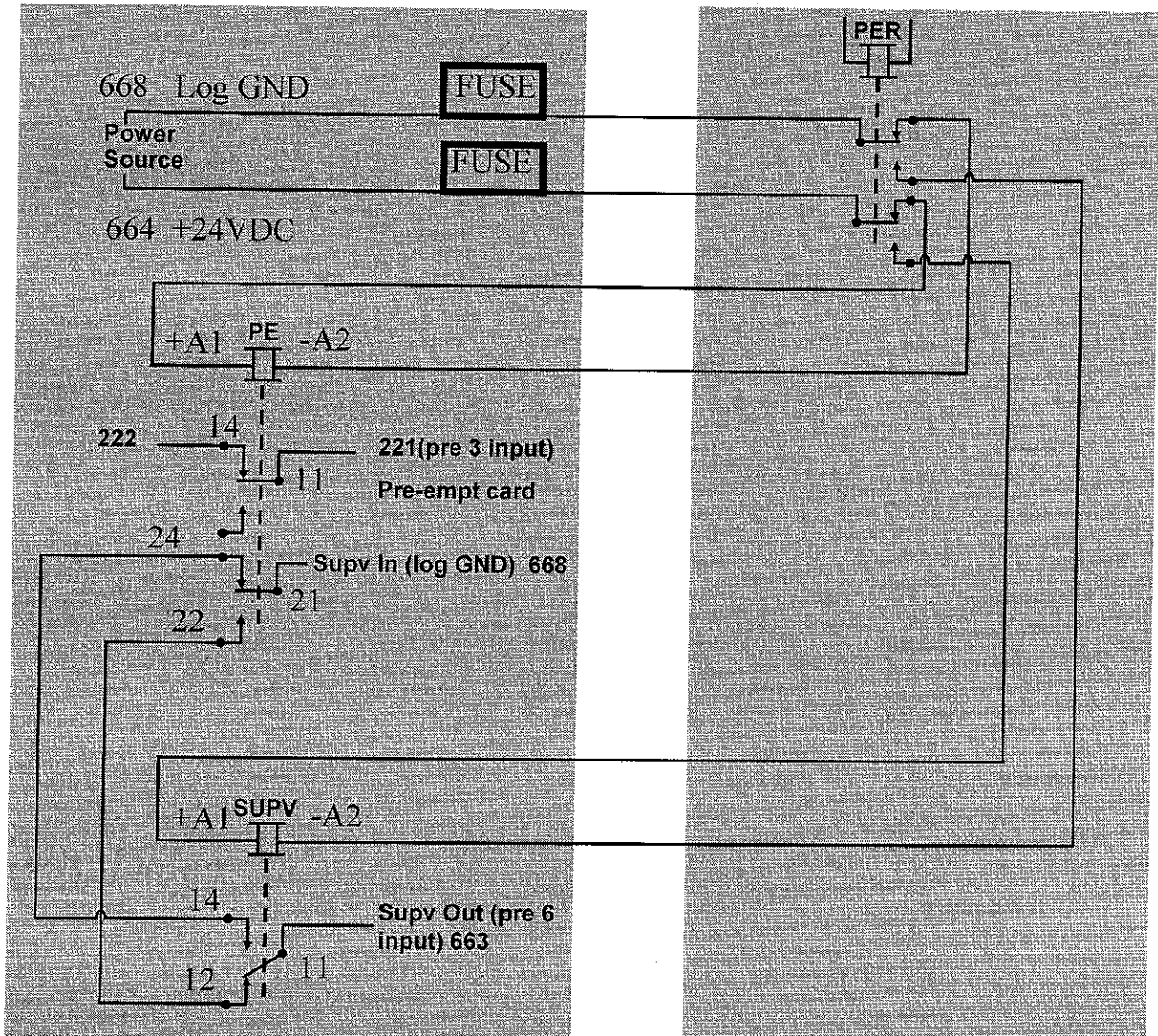
# **6-Wire Interconnect** **with Double-Break &** **Supervisor Circuits**

In the traffic signal control cabinet, relays should normally be in opposite states with or without train approaching. If both relays are energized or both deenergized, the interconnect cable may be cut or shorted and the traffic signal should be programmed to implement track clearance green followed by all-red flash.

# 6-Wire Interconnect with Double-Break & Supervisor Circuits

- The double-break circuit resolves the issue of a short circuit between two wires in the interconnect cable.
- The Supervisor circuit resolves the issue of a cut or disconnected interconnect cable.
- Need one additional relay in traffic signal cabinet but still just one relay in railroad cabinet.
- Track Clear Green Time needed to avoid preempt trap because of no gate down circuit.

# 6-Wire Double-Break & Supervisor Circuit (No Train)



Traffic Signal Cabinet

Railroad Cabinet

CONTROLLER ASSEMBLY INTERCONNECT CABLE (CAIC*)					
			BELDON 9388	IMPULSE 181804	TERM
POWER FROM TRAFFIC CONTROLLER TO RAIL CABINET	PAIR 1	1-1	(BLACK)	(BLACK)	CB8-1
		1-2	(RED)	(RED)	CB9-1
		SHIELDING			*
K50 RELAY PE ENERGISED	PAIR 2	2-1	(BLACK)	(BLACK)	K50-A2
		2-2	(RED)	(BLUE)	K50-A1
		SHIELDING			*
K51 RELAY SUPV	PAIR 3	3-1	(BLACK)	(BLACK)	K51-A2
		3-2	(RED)	(YELLOW)	K51-A1
		SHIELDING			*
*	PAIR 4	4-1	(BLACK)	(BLACK)	*
		4-2	(RED)	(WHITE)	*
		SHIELDING			*