Optical Emergency Vehicle Pre-Emption (EVP) Equipment
Traffic Signal
03/29/2017

1. SCOPE

This specification covers optical emergency vehicle preemption (EVP) equipment for use in traffic control signal systems. The equipment specified is installed at signalized intersections. Supply the optical preemption detectors and the optical signal processor as a matched set.

2. Optical Preemption Detectors

2.1. Provide detectors with one of the following site tube options:

2.1.1. One way - one channel
2.1.2. Two way - one channel
2.1.3. Two way - two channel

2.2. Made of firm and rigid construction.

2.3. A solid-state device.

2.4. Operates over an ambient temperature range of -34º C to +74º C (-30º F to +165 º F).

2.5. Weatherproof.

2.6. Capable of providing a wide coverage reception angle and a distance range variable up to approximately 2500 feet.

2.7. Responsive to optical energy impulses generated from a distance of 2500 feet with a visible light strobe lamp or infrared light emitting diode (LED) source:

2.8. Uses the following wire terminations:

2.8.1. Blue conductor – Ground
2.8.2. Yellow conductor – Signal
2.8.3. Orange conductor - +12 to 30VDC
2.8.4. Drain wire – tied to DC ground at the traffic signal cabinet
3. **Optical Detector Signal Processors (Phase Selector)**

3.1. A rack mounted type unit for each detector signal processor.

3.2. Operates on an input voltage of 89 to 135 VAC (rms).

3.3. Operates over an ambient temperature range of -37° C to +74° C (-34.6° F to +165 ° F).

3.4. A two channel or 4 channel unit.

3.5. Compatible with NEMA TS 2-2003 v02.06.

3.6. Compatible with the detector card rack within the Mn/DOT traffic signal cabinet.

3.7. Provide emergency (high priority) preemption and transit signal priority (low priority) preemption.

3.8. Adjustable detection range and programming of emergency (high priority) preemption and transit signal priority (low priority) preemption from within the traffic signal cabinet.

3.9. Deliver a constant steady state signal for emergency (high priority) preemption activation on each channel output.

3.10. Deliver a pulsed output for transit signal priority (low priority) preemption activation on each channel output.

3.11. Provide priority override where an emergency (high priority) preemption call overrides a transit signal priority (low priority) preemption call.

3.12. Service preemption calls on a first come first served basis with the exception of section 3.11 above.

3.13. Include the control timer "MAX CALL TIME" that will limit or modify the duration of a preemption control condition for each detector signal processor.

3.13.1. The capability to program the max call time from a computer or mechanically select.

3.13.2. 120 second default setting.

3.14. Manufactured by the same manufacturer as the optical preemption detectors for each EVP detector signal processor (phase selector).

3.15. An Ethernet port that supports TCP/IP communications for each EVP detector signal processor (phase selector).

3.16. Support communications between itself and a central office communications software package for each EVP detector signal processor (phase selector).
4. **Product Submittal Requirements**

4.1. Submit equipment to fully equip one complete 4 approach intersection. This intersection will require 4 separate EVP input channels.
   4.1.1. Provide a minimum of 4 one direction one channel optical detectors.

4.2. This equipment becomes the property of the State of Minnesota.

5. **MnDOT Product Evaluation Criteria**

5.1. A minimum 6 month field evaluation period.
   5.1.1. Conducted over the winter months.

5.2. MnDOT will solicit local Police Departments, Fire Departments, and State Patrol Feedback on the performance of the equipment.

5.3. Catastrophic Failure of the equipment will result in complete rejection of the product being submitted for inclusion on MnDOT’s APL.