

Clarification Document.

Ref: PIKE/EVO/T2/0216

Date: 5th February 2016

Project: Portable Traffic Signal Controller.

Product Code: EVO T2.

Applicable Specifications:

TR 2502B - Performance Specification for Portable Traffic Signal Control Equipment for use at Roadworks.

TR 2537A – Performance Specification for Portable Traffic Signal Control Equipment with Pedestrian Facilities, for use at Roadworks.

TR 2538A – Performance Specification for Portable traffic Signal Control Equipment for a stand-alone Pedestrian Facility.

TR 2503B – Performance Specification for Pedestrian Facilities at Temporary Stand-alone Traffic Signals.

1. Object.

The purpose of this document is to outline the functionality of the **T2** controller where it may differ from the requirements of the above specification and where there are additional functional features which enhance the operation of the system.

2. Description.

The controller, **T2** may be configured to operate as a system to TR 2502B or as a Slave when controlled by either a PT5 or T5 to TR 2537A, TR 2538A or TR 2503B.

3. Technical.

a) SA/SD Loops.

The **T2** does not provide a speed assessment and speed discrimination facility.

b) Signal Monitoring.

T2 controller monitors the pedestrian tactile.

T2 will monitor pedestrian red signals and upon failure will enter a category 1 Failure

c) Lights Off.

When operated, the shutdown sequence is as follows. Run any remaining minimum green time, through amber to red, run the maximum set all red time, then all signals off.

d) Category 1 Failure.

In the event of a category 1 failure condition there are 2 failure conditions.

- 1.1. If there is a category 1 failure condition when the system is in Vehicle Actuation (VA) or Fixed Time (FT) operation modes. The system will revert to All Red, run the maximum allowable red time, on the expiry of which, all signals will switch off.
- 1.2. If there is a category 1 failure condition when the system is in either Manual (M) or Hold All Red (HAR) mode or legacy, the system will revert to and remain on All Red. It is considered these modes were selected to prevent traffic flowing in one or more directions and to switch off would have a safety impact.
- 1.3. For category 1 failure mode conditions on communications failure, see section (e).

e) Automatic Communications Loss Restart.

The system, when connected, will operate an automatic communications failure and recovery function. This function monitors the number of consecutive lost comms messages from a single device.

There are two stages which the system enters.

- Stage 1 is when there are 2 consecutive lost messages and will clear if then a valid message is received. Stage 1 signal condition is to hold the current lamp settings until cleared (category 2 failure mode) or Stage 2 is entered.
- Stage 2 is when 4 consecutive messages (8 in legacy mode) are lost from a single device. There are two process paths followed simultaneously when in stage 2, shutdown and restart.

1.1. Shutdown.

An "All Red" message is sent from the master.

Then, after running the allowable maximum all red time, "All Off" is sent from the master.

If any of the following conditions are present then the lights will remain on red. This is considered a safe option as there might be important reasons for the system being in these states and by switching the lights off might compromise the safety of individuals.

- Hold All Red mode running.
- Hold All Red call received.
- Manual Mode running.
- Legacy mode.

1.2. Restart.

At the detection of good comms, the master will (re)start a recovery timer. Good comms remains valid as long as stage 1 doesn't (re)occur.

- 1.2.1.** If the comms failure count is less than 4, then after 8 seconds of good comms the master will recover. Should the comms recovery process begin towards the end of the allowable all red time. The allowable all red time will be extended by up to 7 seconds to accommodate the recovery.
- 1.2.2.** If the comms failure count is greater than 3, then after 10 minutes of good comms the master will recover.
- 1.2.3.** Comms failure count is reset to zero after 10 minutes of good comms
- 1.2.4.** Comms must fully recover and then fail within 10 minutes of the last comms recovery time, to increase the comms failure count.

1.3. Recover means.

If all lights are OFF, then restart will show specified start up light sequence.

If lights are RED then restart will commence with the next phase in sequence displaying the standard signal sequence.

f) Legacy

T2 incorporates a limited backwards compatibility function when used with earlier Pike controllers. **T2** will automatically recognise an earlier control unit as being part of the system. The operation and functionality of the system will revert to that of the earlier control unit.