PEEK Tolling

SmartToll

AVC System

Tolling

The SmartToll system uses inductive loops to detect and collect the magnetic signatures of vehicles. This vehicle signature is representative of a vehicles' magnetic profile. The information gathered from the loops is used to separate vehicles, count the vehicle axles, and measure vehicle speed and length. The vehicle can then be classified very accurately on the basis of this information.

SmartToll's patented Idris® technology also enables the system to properly detect lane straddling and overtaking vehicles (in multilane situations). It also can distinguish between tailgating vehicles and vehicles towing, and sense vehicle reversals and lane changing without double-counting or missing vehicles.

An accurate trigger output to an external VES system is available to allow capture of system violators.

SmartToll provides a robust and reliable solution for operation in all weather conditions and extreme environments. Correctly installed, SmartToll can operate up to 10 years, requiring minimal maintenance, resulting in very low cost of ownership compared to other technologies. SmartToll is a cost-effective, proven product currently yielding excellent results in incident detection and tolling worldwide.

Features

- Complete Automatic Vehicle Classification (AVC) solution
- Overall axle class accuracy in a standard vehicle population = 99.5%. (99.8% is typical in ORT)
- Socket-based communications via TCP/IP
- Simple to set up and operate
- Low total cost of ownership (TCO)
- High return on investment (ROI)
- Accurate in stop and go and tailgating
- All weather capability
- Applications include:
  - Open Road Tolling
  - Express Lanes
  - Pre-Class Lanes
  - Post-Class Lanes
- Loop-based intelligent detection
- Axle detection
- Supports reversible lanes
- Supports multi-lane express configurations
- Optional VES trigger output (front and/or rear)

SmartToll Unit and a typical AVC tolling plaza

Specifications

Property	Description
Physical Description	SmartToll is packaged in an instrument rack-based unit expandable by plug-in modules. SmartToll can also be shelf or panel mounted. Electrical connections (external) are via rear-mounted plugs and sockets for loop inputs and serial communications. Optional plug-in modules are additional.
Operational Characteristics	SmartToll is a modular single or multilane toll data collection system that offers vehicle separation, classification, and trigger outputs. SmartToll can be set up and operated by remote telemetry or directly in the field with a computer using simple communications software. The remote telemetry link can be via modem, direct, or Ethernet connection and can be simple ASCII transfer or protocol protected.

Control Methods	Setup	Operate
♦ **Laptop Connection**	YES	YES
♦ **Remote Telemetry**	YES	YES

Vehicle Classes	Application dependent based on length, axles, tire width, axle spacing, and vehicle profile
Inputs	Up to 32 inductive loops.
Detector Temperature	-40°F to + 158°F (-40°C to + 70°C)
Accuracy	Axle Based Classes: = 99.5% (99.8% typical in ORT) (95% Confidence Internal)
Operating System	Linux® (POSIX compliant)
Weight	Less than 8 pounds.
Dimensions (4 detector unit)	5.75"H × 9.25"D × 10.0"W (146mm × 235mm × 254mm)
(6 detector unit)	5.75"H × 9.25"D × 18.5"W (146mm × 235mm × 470mm) Rack mounting hardware is not included in above dimensions

Property	Description
Power supply	115 VAC
Communications	**(Direct)** Two front RS-232 type serial ports, with baud rates configurable from 300 to 38,400 via UL and CSA approved male plug. ♦ One of them port is configured as a local terminal port ♦ The other port is configurable for modem or CCITT X3.28 communications
Communications	**(TCP/IP)** Separate optional 10 Base-T/100 Base-T Ethernet port. Typical communications with Lane Controller takes place via IP socket
Communications	**(Online)** Of importance to all toll applications is stability of data. Normally SmartToll is expected to be part of an integrated system and continuously online. Per Vehicle Records (PVR) are available indicating time, date, vehicle length, vehicle speed, FHWA classification, axle count, dual/twin tire notations, and more. Configurable Intermediate Messages are also available, indicating the exact position of a vehicle as it travels over the loops. This includes front and rear predictive trigger information typically used to fire VES cameras. SmartToll has adapted with technological changes and now support the above functionality by communicating with the Lane Controller over an IP socket. SmartToll can also utilize a CCITT X3.28 compliant link. The protocol specifications for both interfaces are available along with the minimum applications interface. Due to the specific nature of each tolling application, the application level of the interface is expandable to accommodate appropriate project requirements.
Configuration Options	May be purchased as either: ♦ Complete rack-mounted product ♦ Embedded product
Software Options	The PEEK SmartToll tolling system is implemented in ANSI standard "C" and a "POSIX" compliant multitasking operating system. Where a per-lane computer is used with a POSIX compliant operating system, it can be possible to integrate SmartToll software into the lane computer.
Other Options	♦ VES enforcement trigger - a 3 main-loop-per-lane system is required for VES trigger when output congestion is expected ♦ A 4 main-loop-per-lane system can be implemented to align loops with front & rear VES camera focal points ♦ Up to 4 lanes of full axle classification from one unit ♦ A single unit can handle the typical ORT configuration of 3 travel lanes providing axle classification plus 2 shoulder lanes providing detection

One Year Limited Warranty

Peek Traffic warrants this product against manufacturing defects in materials and workmanship for one year from date of shipment from Peek Traffic. Specific contracts and regional laws may vary or alter these terms.

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