

# Connex Traffic

Automatic traffic counter designed to provide a high degree of flexibility and accuracy.



Connex Traffic is the latest generation of automatic traffic counter designed to provide a high degree of flexibility and accuracy.

Based on Clearview's Connex Modular Hardware platform the Connex Traffic offers both inductive loop and wireless sensors for real-time count and classification enabling deployment in a variety of environments and applications.



Connex Traffic

Designed from the ground up for ease of integration utilising open industry standard data formats and communication protocols. The base system provides 16 inductive loops and two internal module slots for different combinations of communications or sensors. The Connex Traffic incorporates machine learning technology to provide a higher degree of classification when using inductive loops for data collection.

Communication options include support for the latest low power LTE-M and NB-IoT technologies alongside 2G/4G, PoE and RS232/485.

## Key Benefits

- Superior vehicle classification accuracy utilising Machine Learning to better identify similar classes (Bus, HGV).
- Flexibility of sensors and communications enables a large range of configuration options to maximise budget and performance.
- Dedicated security hardware ensures real-time data delivery without compromising security.
- Sustainable operation using solar power to reduce costs and support climate change objectives.
- Single architecture reduces learning curve and complexity of integration.
- Modular approach enables rapid development of new technologies provide a future proof solution.
- Open data format simplifies integration and costs with an IoT industry message protocol.
- Can be combined with Connex Active to provide Pedestrian and Cycle classification via LiDAR sensor in a single unit reduce complexity and communication costs.

The Connex Traffic provides additional functionality to enable the intelligent control of external devices such as Variable Message Signs via the General Purpose I/O port and Programmable Logic Controller. This combination of external control and logic enables the Connex Traffic to form the backbone of innovative solutions to monitor and inform of potential hazards such as queuing vehicles, turning vehicles and tailgating.

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## Vehicle Counting & Classification – Inductive Loop Technology

The Connex Traffic device uses the proven Clearview Machine Learning Loop Detector (MLLD) technology to provide greater levels of accuracy per class than traditional methods.

This is achieved by using hundreds of validated vehicle data samples to train the algorithm to recognise each vehicle type. The benefits of this approach ensure that class schemes are trained against the actual vehicle types on the road today.

Connex Traffic device has been currently trained to classify vehicles using Euro6, Swiss10, Italy10 and LPSIG9. Other class schemes can be trained and introduced as required.

## Vehicle Counting and Presence Detection – M100 Sensors

The Connex Traffic device can receive data from up to 16 x M100 wireless vehicle detection sensors which utilise a compact magnetometer sensor that is core drilled into a small hole in the road. The vehicle detection events from the sensors are relayed back to the Connex Traffic via an external access point.

The Connex Traffic with M100 provides Speed, Count, Detection and up to 4 length bins for classification and is used where simple classification is required alongside the benefits of a wireless system (see the M100 Product Brief for further details.)

## Communications

An RJ45 Power over Ethernet (PoE) port enables the Connex Traffic device to carry both data and power over a single cable reducing deployment and infrastructure costs. RS232 and RS485 serial communication options are also available.

The Connex Traffic supports traditional cellular technologies such as 2G and 4G to transmit data. As an IoT platform the Connex also supports latest IoT cellular technologies such as LTE-M and NB-IoT.

## Key Features

- Real time vehicle counter providing individual vehicle records.
- Modular architecture supports different sensors and communications.
- Supports latest IoT technologies with IP communications over Ethernet, Cellular (2G/4G), LTE-M, NB-IOT.
- Can be mains, solar or PoE powered.
- Provides Count, Direction, Class, Speed, Length, Gap and Headway by lane.
- 16 x inductive loop ports/M100 magnetometers via RS485 (option).
- Sends vehicle data in JSON format using MQTT messaging protocol to Insight Platform/AWS IoT or standalone MQTT server (available 2021).
- Automatic retrieval of up to 1 Million individual vehicle records after a power/communications outage.
- Stores up to 60 Million individual vehicle data records in the onboard SD card for local or remote download.
- Low power consumption and compact design.
- Optional IP67 enclosure to provide flexibility with deployment.
- Output to control external devices via General Purpose Input/Output (integrated wireless option due in 2021) and built in Programmable Logic Controller.

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## Power

The power input is designed for use with an 18V mains power supply or a solar panel. If using a mains power supply the recommendation is for a minimum capability of 15Watts, although the average consumption is considerably less, depending on configuration

With a solar panel the Connex Traffic device uses Maximum Power Point Tracking (MPPT) to get the most energy out of the solar panel by targeting a maximum power voltage of 18V.

The built-in battery charger, which can be configured via a jumper for use with a 12V (6 cell) lead-acid battery or a 7.2V (2 cell) Li-Ion battery, provides a maximum charging current of 500mA (subject to sufficient energy being available from the solar panel) and automatically manages the battery charging through pre-conditioning, constant current and constant voltage phases.

## Insight Platform

Insight is a Smart Mobility Platform which provides a suite of applications for the monitoring, management, reporting and analysis of different technologies associated with multi-modal transport systems and environments. The mobile first application is developed to meet the needs of operators in all sectors with a suite of tools designed to maximise workflows and usability.

With vertical targeted platforms available to analyse and monitor devices, manage car parks, get crowdsourced journey time information, and get vehicle count and classification reports, the tool provides a complete package to any traffic data analyst.

Insight platform provides full support for the Connex Traffic with configuration and status information built into the application. Data is streamed from the device into the application where it is consolidated into Count and Classification information for dashboards, reports and APIs.



## PLC Controller

The Connex device has embedded PLC (Programmable Logic Controller) which enables intelligent real-time decision making at the edge.

The PLC controller in Connex can be configured to control GPIO and remote devices such as VAS (Vehicle Activated Signs), Traffic signals and Barriers by responding to inputs from the sensors (Inductive loops, Magnetometers, LiDAR) and, classification data generated by the internal machine learning capability.

