

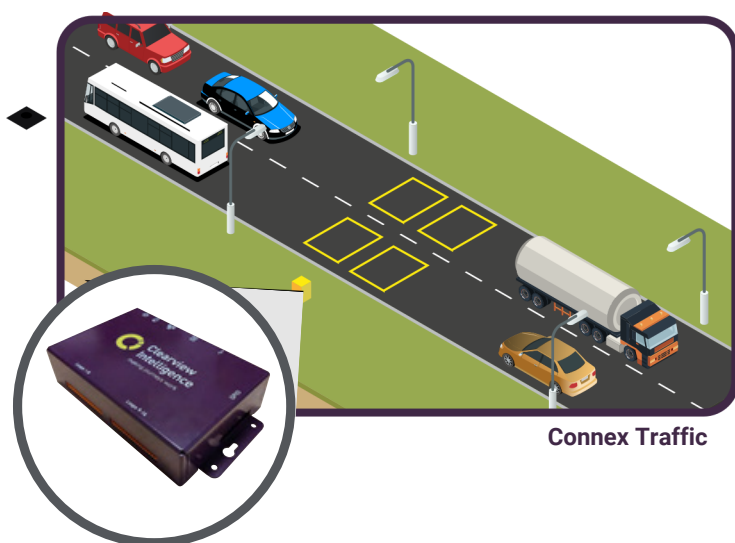
Connex Traffic

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



Connex Traffic is the latest generation of automatic traffic counters, engineered to deliver exceptional flexibility and accuracy.

Built on Clearview's advanced Connex Modular Hardware platform, Connex Traffic supports both inductive loop and wireless sensors, providing real-time vehicle counting and classification. Its versatile design allows for deployment across a wide range of environments and traffic monitoring applications.



Connex Traffic

Connex Traffic is designed from the ground up for seamless integration, utilising open, industry-standard data formats and communication protocols.

The base system supports up to 16 inductive loops and includes two internal module slots that can be configured with a variety of communication or sensor options.

In addition, machine learning technology enhances the accuracy of vehicle classification when using inductive loops, delivering more reliable and intelligent traffic data collection.

COMMUNICATION OPTIONS INCLUDE SUPPORT FOR MODERN LOW-POWER TECHNOLOGIES SUCH AS LTE-M AND NB-IOT, AS WELL AS 2G/4G CELLULAR, POWER OVER ETHERNET (POE), AND RS232/RS485

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.

Key Benefits

- **Superior Classification Accuracy** - machine learning algorithms deliver superior vehicle classification — even distinguishing between similar vehicle types such as buses and HGVs — for more reliable data insights
- **Flexible Configuration Options** - a wide range of sensor and communication combinations allows you to tailor the system to meet your specific budget, performance, and deployment requirements
- **Robust Data Security** - built-in dedicated security hardware ensures real-time data transmission without compromising system integrity or cybersecurity
- **Sustainable, Low-Cost Operation** - solar-powered capabilities enable off-grid operation, reducing energy costs and supporting environmental and climate change goals
- **Simplified Integration** - a single, unified architecture minimises training requirements and reduces integration complexity for faster deployment
- **Future-Proof, Modular Design** - the modular hardware platform allows for rapid adaptation to new technologies, ensuring your investment remains relevant and upgradable over time
- **Seamless IoT Integration** - with support for open data formats and industry-standard IoT communication protocols, integration with existing systems is faster and more cost-effective
- **Combined Modal Detection** - when paired with Connex Active, the system can include pedestrian and cyclist classification via LiDAR—all in a single unit—streamlining installation and minimising communication overhead

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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 system supports up to 16 M100 wireless vehicle detection sensors, each featuring a compact magnetometer embedded directly into the road surface via a small core-drilled hole.

Detection events are transmitted wirelessly to the Connex Traffic unit through an external access point, enabling reliable, real-time data collection without the need for extensive cabling.

When paired with M100 sensors, Connex Traffic provides:

- Vehicle Count
- Presence Detection
- Speed Measurement
- Classification using up to 4 Length Bins

This solution is ideal for scenarios where simple, effective classification is needed, and the advantages of a wireless system—such as minimal disruption during installation—are preferred.

(For more details, refer to the M100 Product Brief.)

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 supports latest IoT cellular technologies such as LTE-M and NB-IoT.

Key Features

- **Real-Time Vehicle Counting** - captures and records individual vehicle data in real time
- **Modular Architecture** - supports a wide range of sensors and communication options for flexible deployment
- **IoT-Ready Connectivity** - compatible with IP-based communications including Ethernet, Cellular (2G/4G), LTE-M, and NB-IoT
- **Versatile Power Options** - operates via mains power, solar panels, or Power over Ethernet (PoE)
- **Comprehensive Data Collection** - measures count, direction, classification, speed, length, gap, and headway, by lane
- **Sensor Compatibility** - supports up to 16 inductive loops or M100 magnetometers via RS485 (optional)
- **Efficient Data Transmission** - sends vehicle data in JSON format using MQTT protocol to Insight Platform, AWS IoT, or a standalone MQTT server
- **Reliable Data Recovery** - automatically retrieves up to 1 million vehicle records after power or communication loss
- **High-Capacity Local Storage** - stores up to 60 million individual vehicle records on an onboard SD card for local or remote access
- **Low Power, Compact Design** - optimised for energy efficiency and ease of installation
- **Rugged Enclosure** (Optional) IP67-rated housing available for harsh or outdoor environments
- **Integrated Control Capabilities** - general Purpose I/O and built-in Programmable Logic Controller (PLC) for external device control. Wireless I/O option coming soon

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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 an 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.

