



Choose  
the future

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Choose  
**BRAUMS**  
*"ITS" Moving Traffic*

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## **BRAUMS INTELLIGENT OUTSTATION (BIO)**

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Improves the provision of traffic delays  
and incident information to road users

Collects data for travel time evaluations

Users are alerted via application on  
phone or tablet

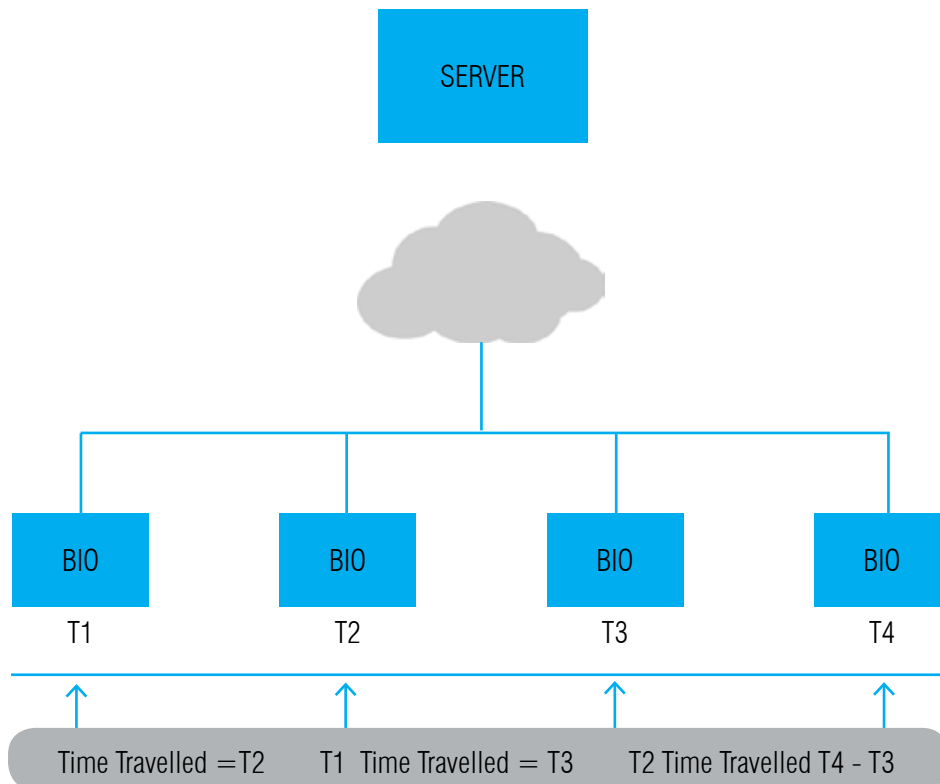
Future-proof with V2X capabilities

Three power options available

## BRAUMS INTELLIGENT OUTSTATION

The BRAUMS Intelligent Outstation (BIO) is powered by the new generation BIO-Core, and has numerous applications such as street-lighting control and monitoring, co-operative ITS applications such as Vehicle-To-Infrastructure (V2X), and travel time calculation and monitoring systems.

The BIO-N (Networked), BIO-Cellular, BIO-R (Roadside cabinet), BIO-RC (Roadside cabinet with Cellular) and BIO-Solar are a series of data collection devices dedicated to the collection of classic Bluetooth, LAP Bluetooth and WiFi MAC Address data. This collected data can then be collated and sent onto a server system for the correlation of this data via either cabled or cellular connections.



This data is used for travel time calculations as well as determining travel patterns around an urban environment. The server also uses these data collectors to send information and traffic conditions to road users that have the associated application installed on their personal phone or tablet device. This allows the server to issue public broadcasts to the road users using our BIO device to send warnings that can convert text to speech to inform the driver in real time.

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## BRAUMS INTELLIGENT OUTSTATION

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# Coverage of Data Collection

The BRAUMS BIO has a number of sensors on board that include:

- Bluetooth (Classic & LE)
- Bluetooth LAP – Bluetooth Paired Devices
- WiFi (optional)

All three interfaces work at 2.4GHz in the publicly approved frequency band so no special licenses are needed to operate these devices and collect data.

The Bluetooth LAP capability occurs because conventional Bluetooth receivers cannot detect paired devices, so an additional receiver is included to detect paired devices such as mobile phones and car entertainment systems, in order to provide better data collection for the server.

The sensors have a typical coverage of approximately 100 meters subject to local conditions and location of the antenna. The collected data can then be sent to the server via an Ethernet interface onboard if the BIO is connected to a local broadband router or via a Cellular link (3G, 4G and soon 5G).

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## BIO Models

### **BIO-N**

This model is designed to be located within a standalone post-mounted enclosure and powered by an AC to DC converter. This unit collects Bluetooth and / or WiFi data if this module is installed. The collected data is sent back to the server via an onboard ethernet interface connected to an existing broadband router.

### **BIO-R**

This model is designed to be located within a traffic signal controller or other roadside cabinet powered by an AC to DC converter. This unit collects Bluetooth and / or WiFi data if this module is installed. The collected data is sent back to the server via an onboard ethernet interface connected to an existing broadband router.

### **BIO-Cellular**

This model is designed to be installed standalone on a pole such as a public lighting pole and is powered by a local mains AC connection. This unit is fitted with a cellular modem which transmits any Bluetooth or WiFi data collected.

### **BIO-RC:**

This model is designed to be located within a traffic signal controller or other roadside cabinet and is powered by a local mains AC connection. This unit is fitted with a cellular modem which transmits any Bluetooth or WiFi data collected.

### **BIO-Solar**

This model is designed to be installed standalone and derive its power from a 50 Watt Solar Panel system with battery that can be pole mounted. This model is also fitted with a cellular modem and is able to communicate with the server. This unit only requires a fixture location so can become quickly operational (within 15 minutes of fixing).

## BRAUMS INTELLIGENT OUTSTATION

### Specifications

The BIO series of devices typically operates on a 12VDC supply and the BIO is supplied with an AC-DC converter for the BIO-N and BIO-Cellular Models. The BIO-Solar is also powered by a 12VDC battery subsystem. The BIO is a low power device consuming only 4.5 Watts and designed with an industrial temperature rating of -15 to +75 degrees Celsius for outdoor operation.

BIO-N / BIO-R	BIO-Cellular / BIO-RC	BIO-Solar
Bluetooth Classic and Low energy MAC address capture	Bluetooth Classic and Low energy MAC address capture	Bluetooth Classic and Low energy MAC address capture
Bluetooth Low Address Part (LAP) paired device MAC address capture	Bluetooth Low Address Part (LAP) paired device MAC address capture	Bluetooth Low Address Part (LAP) paired device MAC address capture
WiFi MAC address capture	WiFi MAC address capture	WiFi MAC address capture
Ethernet 100Mbps backhaul link (IEEE802.3 100BaseT)	3G/4G Cellular Modem backhaul link	3G/4G cellular modem backhaul link
12VDC power supply 15 Watt rating	12VDC power supply 15 Watt rating	MPPT solar charger 50W PA solar panel 12VDC 18AH Battery Backup
Operating temperature -15°C - + 75°C	Operating temperature -15°C - + 75°C	Operating temperature -15°C - + 75°C
Single multiband antenna option	Single multiband antenna option	Single multiband antenna option
Quad single band antenna option	Quad single band antenna option	Quad single band antenna option
Power consumption 4.0 Watts with 3 sensor antennas fitted	Power consumption 4.3 Watts with 3 sensor antennas fitted	Power consumption 4.3 Watts with 3 sensor antennas fitted
BT and cellular antenna – SMA-M	BT and cellular antenna – SMA-M	BT and cellular antenna – SMA-M
BT LAP antenna uF.L	BT LAP antenna uF.L	BT LAP antenna uF.L
Housing IP45 rated *BIO-N only	Housing IP45 rated *BIO-Cellular only	Housing IP45 rated

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