

Biral *visibly better*

TRANSPORT

Biral offer a comprehensive range of sensors to measure the road and rail environment. Each system can be tailored to your precise needs and provides data to your forecast provider.



METEOROLOGICAL SENSORS



Meteorological Sensors for Roads and Transport Use

Wherever you are in the world, the weather provides significant challenges to those organisations and individuals charged with maintaining highways and road networks to ensure the safe and efficient passage of traffic. Road maintenance, especially in winter, is costly in terms of time, people, machines and materials. Even more so if the weather information on which the work is based does not reflect the local conditions or is badly timed.

Road users rely on very high levels of accuracy from roadside warnings and require timely gritting of ice prone roads to maintain safety, so it is important to get it right first time.

Additionally, the economic effects of traffic congestion caused by bad weather and the associated accidents can only be minimised by effective action and management from the agencies responsible.

Providing the Solution

Getting the information needed at the time it is needed and in a format that makes the decision making process quick and simple requires accurate sensors located in the most suitable locations.

Biral visibility and present weather sensors are especially well suited to this application where the combination of serial and analogue interfaces allow both local signage control and direct connection to a wider network. The ability to provide present weather information in addition to visibility allows intelligent transport systems (ITS) to not only ensure that the road users have the most accurate information but also allows planned maintenance activities such as salt spreading or sand clearance.

Visibility sensors are used in tunnels where they monitor pollution levels and control ventilation systems. Visibility sensors can also assist with the detection of fire in tunnels due to their sensitivity to smoke particles. The compact forward scatter design and the availability of 4-20mA signalling makes the RWS-20 particularly suited to this application.

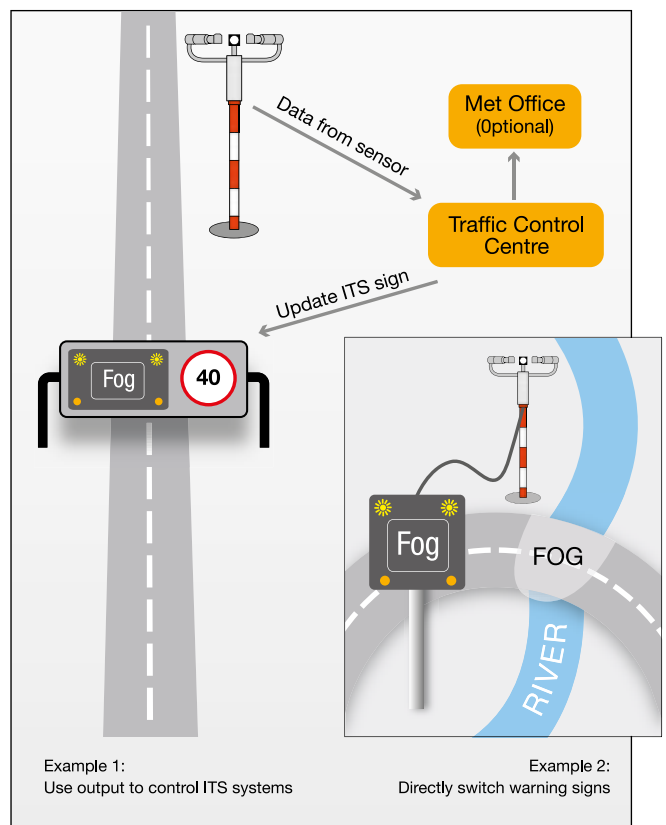
Biral sensors are used in single installations or multiple sensor networks and are used world-wide. They are in operation 24/7 in many safety critical applications in transport projects on major roads, bridges and in tunnels.

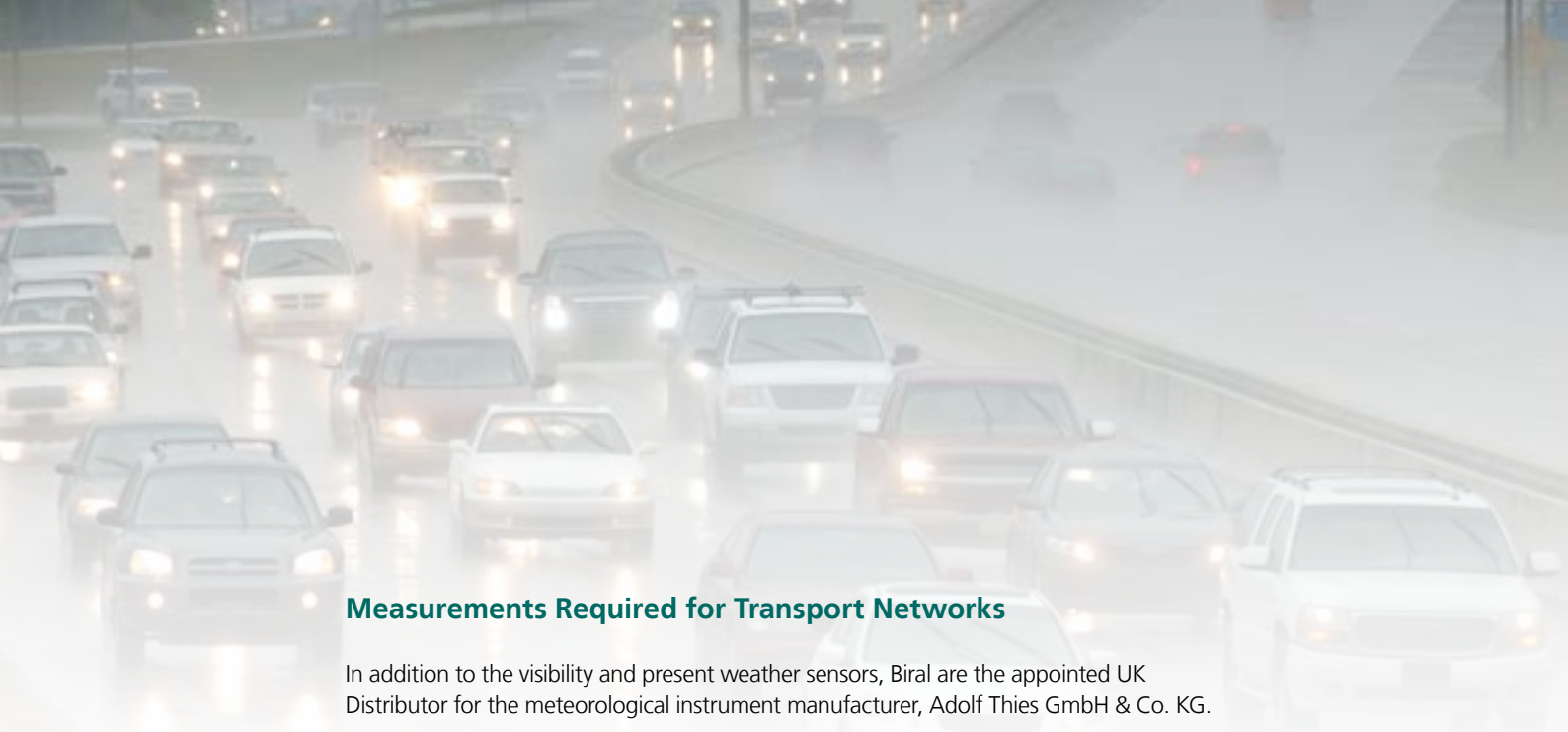
Use Biral SWS Sensors to Improve Safety

Sensors are typically installed within 3m of the roadside and measure the local weather conditions (fog, snow, rain, spray, and related parameters).

The information provided by the sensors is easy to understand and integrates into any control system. The sensors can switch a local warning sign via a relay and / or transmit the data via a second output to an ITS regional control centre.

The Biral sensors provide reliable, consistently accurate weather information day and night. This allows timely decisions to be made about spraying or gritting road surfaces and for switching road warning signs, achieving the best results from limited and valuable resources.





Measurements Required for Transport Networks

In addition to the visibility and present weather sensors, Biral are the appointed UK Distributor for the meteorological instrument manufacturer, Adolf Thies GmbH & Co. KG.

The Thies Clima range of meteorological sensors is highly respected and used globally in many advanced meteorological applications. It offers a complete and complimentary range of sensors allowing a highly specified meteorological monitoring station or system to be constructed. The range includes cup and vane and ultrasonic anemometers, temperature, humidity, pressure and radiation sensors, as well as a wide range of compact weather stations and precipitation sensors.



Air Temperature & Humidity

A hygro-thermo transmitter mounted inside a weather shield and mounted on a mast (typically 4m above the road surface), this measures ambient temperature and relative humidity for the calculation of dew point.



Air Pressure

These are usually mounted inside the data logger control cabinet at the road-side. The sensor measures the local air pressure.



Precipitation

This can either be a simple rain alarm (yes/no) or a distrometer to measure both rainfall rate and total rainfall. The distrometer can also differentiate between different types of precipitation including drizzle, snow and hail.



Global & UV Radiation

One sensor can measure both the direct and diffuse radiation from the sun whilst another can measure both UVA & UVB radiation. These readings can be used to forecast how quickly the road surface will warm up after a cold weather event.

NB: Biral's SWS-200, SWS-250 and VPF-730 sensors will also measure precipitation in addition to visibility.

Wind Speed & Direction

Mounted at the top of the mast to ensure unobstructed air flow, both mechanical vane or ultrasonic anemometer sensors are available to measure the horizontal component of the wind speed and direction. Velocity measurements are independent of the wind direction and the direction measurement is referenced to true north.



Visibility & Present Weather

A forward scatter visibility sensor measures the meteorological optical range (MOR) and provides information about what is causing reductions in visibility (i.e. fog, rain, spray, dust, etc.). The unique back scatter head of the Biral present weather sensors allow more accurate and reliable detection of precipitation type and are especially suitable for correctly identifying freezing precipitation including snow.

Sensor	Visibility Range	Present Weather Codes
VPF-730	10m to 99.99km	15 WMO 17 METAR
SWS-250	10m to 99.99km	42 WMO 36 METAR
SWS-200	10m to 99.99km	14 WMO 0 METAR
SWS-100	10m to 99.99km	Visibility and precipitation type
RWS-30	200m to 40km	Visibility only
RWS-20	10m to 7.5km	Visibility only



VPF-730



SWS-200 / SWS-250



RWS-20 / RWS-30 / SWS-100

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