



RWIS: Road Weather Information Stations

Data acquisition specifically designed for road operations weather monitoring



Road Weather Information Stations (RWIS) are essential components in a road maintenance tool kit, which includes equipment, chemicals, trained staff, specialized winter operations forecast, and pavement sensors. Campbell Scientific offers state-of-the-art RWIS technology and has deployed approximately 200 RWIS stations across Canada. Our RWIS stations are compliant with Annex A specifications of the Road Weather System for Canada (RWSC).

Active versus Passive Surface Sensors

The latest RWIS technology features an 'active' surface sensor that measures the freezing temperature by actively cooling and heating the sensor surface, providing the true freeze point of the road. The freeze point also includes the residual anti-icing chemical detected by the sensor. The freeze point is independent of the anti-icing chemicals used, enabling the municipality to experiment with different anti-icing chemicals. Passive surface sensors are pre-programmed to one anti-icing chemical.

AC Powered versus Solar Powered

Campbell Scientific dataloggers and instrumentation are designed as efficient power systems. Road agencies have the choice of AC or solar powered sites. Installing a solar powered system can save significant electrical connection costs and enables the user to install the RWIS station where the data is required, not necessarily where

power is available. Solar RWIS stations are limited to passive surface sensors since active sensors have a higher power draw.

Benefits of our systems

1. Compliant with the Road Weather System for Canada Annex A for RWIS station accuracy and instrumentation requirements specifications.
2. Rugged, low power design allows for operation in harsh environments for long periods of time.
3. Customized AC or solar powered systems.
4. Campbell Scientific dataloggers are compatible with a vast array of sensors.
5. Dataloggers have on-board scaling, mathematical, and statistical capabilities.
6. Supports communication technologies such as TCP/IP, RS-485, cellular, satellite, spread spectrum radio.
7. Our RWIS systems can be configured to your budget and data requirements.
8. Campbell Scientific can provide complete turn-key RWIS systems including instrumentation, installation, data, and maintenance services.

Evolution of RWIS and Instrumentation

Consistent with climate change trends, recent winters have produced fluctuations of bitter cold and mild temperatures, freezing rain incidents, and heavy snowfall. Municipalities are increasingly interested in the expanded use of the RWIS station beyond road applications to other applications such as a climate station to establish a local climate baseline. To expand its use, new RWIS often include a rainfall gauge and snow depth sensor. Snowfall measurements can be compared against salt use for salt management planning or to compare salt use to winter severity. Additionally, rainfall data will be shared with engineering and hydrology departments to track severe rainfall events; another use of the RWIS station's capabilities. The worst weather hazard for winter road maintenance is freezing rain, and Campbell Scientific has a variety of ice detection equipment for measuring different icing conditions.

More info: 780.454.2505

campbellsci.ca/road-weather-rwis



Improved Temperature Measurement

Campbell Scientific RWIS stations typically include a motor aspirated radiation shield. By using a continuous blower, the motor aspirated radiation shield draws ambient air over the sensor while protecting the sensor from the interference of solar radiation. An aspirated shield is the international standard for weather stations and provides greater accuracy by as much as 5-8°C especially around 0°C in certain weather conditions. Accuracy is essential at 0°C because this is when water changes to ice which poses the greatest hazard for winter road maintenance.

High Mean Time Between Failure

Campbell Scientific has gained a reputation for supplying rugged weather systems for the demanding environmental conditions in the arctic. The same robustness that enables Campbell Scientific systems to remain operational in harsh arctic conditions has also established our reputation for High Mean Time Between Failure. Road agencies are selecting Campbell Scientific systems due to their reliability and reasonable maintenance costs.

Communications

Multiple telemetry and on-site options for retrieving data or reporting site conditions allow our systems to be customized. Communications options include direct connect, Ethernet, cellular phone, and satellite. Systems can be programmed to send alarms or report site conditions by calling out to computers, phones and radios, or by sending SMS or email.

Field Services

Campbell Scientific offers installation, maintenance and commissioning services in support of your project. No matter the application or station location, we are here to help.

Knowledgeable Staff

Campbell Scientific staff has experience in all facets of RWIS: instrumentation configuration, site analysis, and network analysis for the geographical distribution of RWIS sites according to micro-climates of the area. Our staff have served on the RWIS Technical Committee and the ITS Canada Technology Sub-Committee.



Cameras installed in RWIS stations can provide a visual of current road conditions.

Common RWIS components

ROAD SURFACE

ARS31- Pro Active Intelligent Road Sensor



Overview

The active ARS31- Pro Active sensor is flush mounted in the road/runway surface and measures the freezing temperature by means of active cooling and heating of the sensor surface. In addition, it measures dry/wet conditions and the road surface temperature; this surface temperature is integrated into a second housing which is connected with the ARS31 - Pro Active.

NIRS31 Optical Non-inva- sive Road Surface Sensor



Lufft road sensors use optical measuring principles. Without a need to install the embedded sensors, these non-intrusive multi-sensor-systems have integrated microprocessors to identify all road and runway conditions.

CS230 Temperature Profiler



The CS230 temperature profiler uses advanced SDI-12 digital technology. The CS230's rigid probe assembly maintains the precise position of the temperature points within the profile, while protecting the temperature sensors in all mediums, including roadbeds, for the long-term.

OTHER SENSORS

CC5MPX Digital Network Camera



The CC5MPX is a high-resolution digital network camera with video capabilities used for visual representation of road weather conditions. It requires little power, making it ideal for battery-powered installations.

05103-10 Wind Monitor



The 05103-10 Wind Monitor is a light-weight, sturdy instrument for measuring wind speed and direction in harsh environments.

HC-S3 Temperature & Relative Humidity Probe



The HC-S3 Temperature and Relative Humidity Probe is a rugged, accurate probe manufactured by Rotronic Instrument Corp. and is ideal for long-term, unattended applications.

0871LH1 Freezing Rain Sensor



Freezing rain is the harshest precipitation for road maintenance operations yet very few agencies have a freezing rain sensor. The 0871LH1 detects the presence of an icing condition and provides such information as start time, end time, yes/no, and can be programmed to give freezing rain warnings.

Ask about our equipment leasing options!