



CASE STUDY

INDUSTRIAL SHIELDS



WEATHER STATION AND WIND STUDY IN PANAMA

Panama is a country affected by strong storms and meteorological phenomena like tornadoes, that can be very dangerous, and it is important to study them in order to predict and avoid their consequences.

Using Industrial Shields devices, a weather station can be built to study the wind and all related weather factors. All data can be taken by the appropriate sensors and sent to a PLC for processing and monitoring through one of our Panel PCs.

CHALLENGE

The aim is to **manage a weather station based on open source technology** and then **monitor it through a cloud platform**. The main parameters that will be recorded by the sensors are the following:

- Wind speed and direction
- Temperature and humidity (internal and external)
- Current and accumulated rainfall (daily, monthly, yearly)
- Rainfall intensity
- Current atmospheric pressure
- Weather forecast

IMPLEMENTED SOLUTION

This project is based on the **MDuino.42+ w/GPRS & GSM** industrial PLC.

The different types of sensors already mentioned are connected to the PLC through different kinds of connections. Depending on the type and model of the sensor, it uses a specific communication or another (analogical, I2C, SPI, etc.).

After that, the PLC processes all the input data, and the output information is sent through GPRS signals. This is because GPRS is the only communication available in most areas where sensors need to be located to record data correctly. This output signal is sent to the cloud and the customer can display the information using his own devices such as computers, tablets or Industrial Shields Panel PCs, which are perfect for monitoring all kinds of data.



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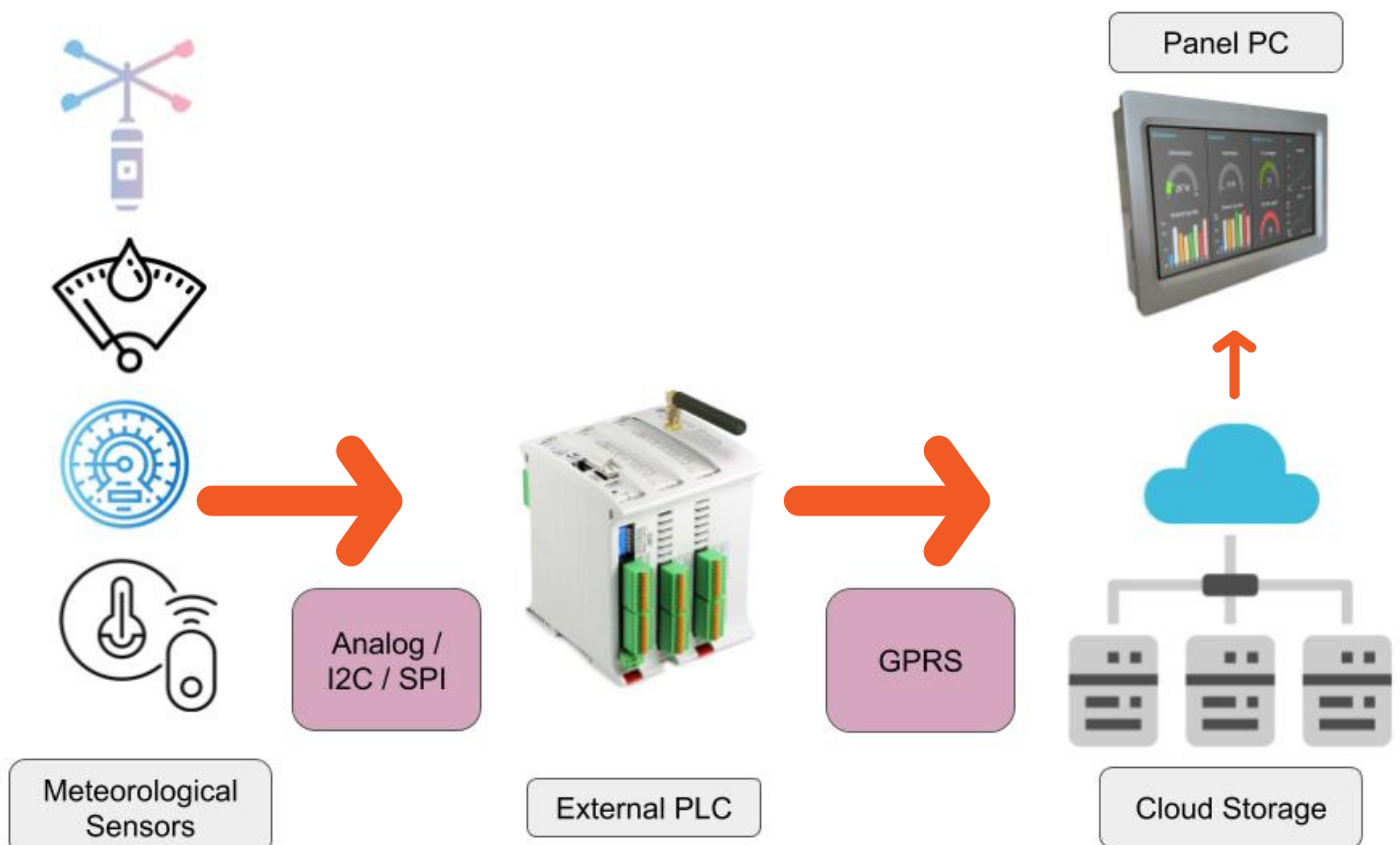
This idea starts with a main objective: **to keep a record and monitor the climatic phenomena in Panama. Firstly, the data are captured by all the different sensors.** The information is sent to the PLC using the appropriate communication method for each sensor, connected as input. The sensor communication is chosen according to the model and data type and the update time.

In the next stage, the PLC receives all the incoming data and, through a previously uploaded code, can manage and process all the information. Using the GPRS module and its corresponding antenna, it sends this data to the cloud, taking advantage of protocols as HTTP or others.

All the information stored in the cloud is accesible through many devices, as long as they have a type of communication compatible with the protocol of the cloud you need to use. Therefore, data can be monitored by computers, tablets, HMI displays or Industrial Shields Panel PCs, which have a large number of communications and additional I/Os that can be very useful in most cases.

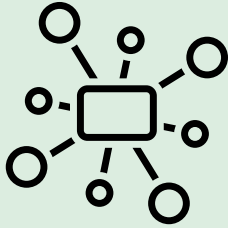
Monitoring cannot be done without an API or platform. This is developed to monitor all the information and make possible a tracking and a real-time view of the weather to ensure a good forecast of these phenomena. To work with the platform, a database is also needed, so that the current information is as useful as the previous one, especially when making weather forecasts.

In short, although this project may seem complicated at first glance, separating each section while keeping a common goal in mind is the key to a successful outcome.



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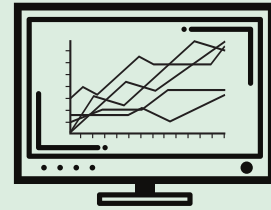
BENEFITS



Good communications

Thanks to the GPRS system, Industrial Shields PLCs have great versatility, as they can be installed where communication via Ethernet or Wifi is not possible.

Moreover, the GPRS/GMS controller family contains several communication ports which provide more flexibility and control.



Data monitoring

The information can be displayed on computers, tablets, or on Industrial Shields touch screens. These industrial Panel PCs are perfect for monitoring all types of data.

All information can be monitored and tracked to get a real time view of the weather and ensure a good weather forecast.

WHY INDUSTRIAL SHIELDS?

Industrial Shields won this project and beat its major competitor thanks to:



Open solution. No license fees.



Modular solution: The project can be extended in the future if the client requires it,



24/7 technical support: Our technical team is available to help you 24/7 via phone, mail or WhatsApp.



Equipment designed and manufactured for **industrial use** at a **lower price** than competitive products.