**Description**

**Data acquisition and transmission module for flowmeters**

It is intended to develop a low-cost data acquisition and transmission module using free hardware and software. The prototype must be able to read different sensors, although initially we will focus on flowmeters. It must be able to read values ​​of voltage (0-5V), current (4-20mA) and PWM signals. The reading must be performed with a certain frequency depending on the characteristics of the process, the data obtained must be stored and transmitted to the central control station. ESP32 will be used as system controller due to its characteristics, it offers communication via Wi-Fi and Bluetooth and has, among other potentialities, 4Mb of flash memory. The ESP32 offers us 2 communication channels to transmit the data to the central control station, mainly when the distance between them is relatively short.

In addition, a method is necessary to establish communication when the distance is long, since it is known of processes that have sensors that are more than 10 km from the central control station. To solve this possible problem, a GSM module is included, this allows data to be sent using mobile telephony.

What ESP32 reads is voltage signals so, in addition to the elements mentioned above, a 4-20 mA to voltage or PWM to voltage converter module is needed depending on the sensor output. A booster module is also needed to supply the GSM module with the required voltage and current.

Two variants of the prototype are intended to be developed, one that works with mains power, in this case a power supply would be needed to convert 100-240 V to 5V. The other variant will work with solar panels and rechargeable batteries, this allows it to be more autonomous and save money that would be used to pay for the energy consumption of the module, also contributing to caring for the environment.