CASE STUDY

SMART CURRENT METERING

This project is designed to measure the current consumption in a company using a current sensor. Through a database in the Ethernet PLC itself, it is possible to know the consumption statistics for medium and long-term tracing and even stop the current in case they exceed the allowed limit.

The information can be accessed remotely, through a VPN connected to our MQTT server.
In the company, a Panel PC based on Raspberry Pi3 will monitor the results in graphic form.

SUMMARY

The current sensor is located at a strategic point of current flow.
The data is processed in the PLC based on Arduino and these are sent to the Panel PC, where the database is located. In the Panel PC there is also a broker server (MQTT) that is responsible for receiving and sending data between the PLC and the Panel PC.
To monitor the data, Node-Red has been used.

OBJECTIVE

The main points to solve are the following:

- Accuracy in the measurement.
- In the taking of measurement no longer intervene people, reason why it is effective against the errors of reading.
- Measurement and control of cutting and pre-cutting of electrical energy from the control center in a fully automatic way.
- It offers data storage, event log, lack of voltage and current. With this feature it would not be necessary for the final consumer to notify or complain due to lack of energy since the team immediately warns the center.
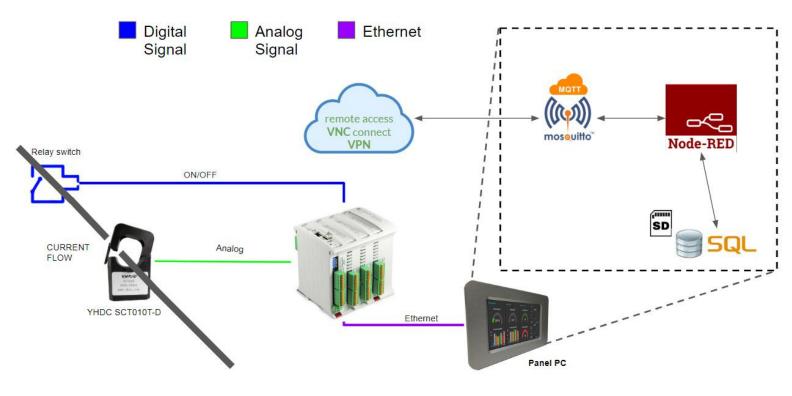
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FINAL SOLUTION (HARDWARE)

The YHDC current sensor SCT010T-D will be connected to the Ethernet PLC on an analog input. The data is received periodically and it will be sent to the Panel PC via ethernet using the MQTT protocol for sending and receiving data.

Once the data arrives at the Panel PC, these are stored in the SD memory. The database located inside the Panel PC will collect the data received from the PLC, and using the Node-Network tool to monitor all the data, in graphic format, to observe the results in the medium and long term.
The client also wanted to remotely access the information, for this reason the system has been connected to a VPN so that a web client can access the server remotely as long as it has permissions.

If an anomaly is detected in the system, the PLC automatically cuts the electrical current with a relay output.

Digital Signal · Analog Signal · Ethernet
Relay switch · ON/OFF · remote access VNC connect VPN · MQTT mosquitto · Node-RED · SD · SQL · CURRENT FLOW · Analog · YHDC SCT010T-D · Ethernet · Panel PC