Proyecto innovación MS

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# Adquisición de datos

## Sistema global:



## Raspberry Pi:

Hardware:

* Alimentación IN – 5 V (Pin 4)
* Alimentación OUT – 3.3 V (Pin 1), 5 V (Pin 2), GND (Pin 6)
* ¿Otros?

Configuración usada para Raspberry:

- habilitar ssh, vnc, spi

- editar configuración de compilación en geany: (para programar en C++)

Build: g++ -lstdc++ -lwiringPi -Wall -Wno-narrowing -o "%e" "%f"

Run: sudo chmod +x "%e"; "-/%e"

*Opcional:*

*- seguir tutorial* [*https://www.raspberrypi.org/documentation/configuration/wireless/access-point.md*](https://www.raspberrypi.org/documentation/configuration/wireless/access-point.md) *para crear WIFI AP?*

*- instalar samba?*

Conexión remota:

Wifi móvil: “Alberto”

Clave: “albertos”

SSH(terminal): ssh [pi@betoberry.local](mailto:pi@betoberry.local)

Contra: betoberry

Actualizar: sudo apt update ; sudo apt upgrade

Software:

File structure:

Desktop

* Main.sh
* Rasp-main
* datosISCMoto.json
* datosISCMoto.db
* CAN

🡪 src

🡪 main.cxx

* Scripts

🡪 …

* SQL

🡪 …

Main.cxx

Read data from CAN bus 0 and 1

Save messages in buffer

Process messages and update datosISCMoto.json

Call python script to update datosISCMoto.db

datosISCMoto.json

{

"data": {

"timeStamp": 1234,

"allOK": 1,

"comment": "Testing",

"BMS": [{

"cellVoltagemV": [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],

"temperatures": [0, 0]

}, {

"cellVoltagemV": [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],

"temperatures": [0, 0]

}, {

"cellVoltagemV": [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],

"temperatures": [0, 0]

}],

"SEVCON": {

"TPDO1\_1": 0

},

"CHARGER": {

"Vtotal": 0,

"Icharge": 0,

"flags": [0, 0, 0, 0, 0]

}

}

}

Data.SEVCON:

TPDO (Transmission Process Data Object) -> To be defined (5 TPDOs x 2-4 pieces of data each)

Data.CHARGER.flags:

* Flag0: *Hardware Failure* 0: Normal

1: Hardware Failure

* Flag1: *Temperature of Charger* 0: Normal 2: Over Temperature protection
* Flag2: *Input Voltage* 0: Normal

1: Input voltage is wrong = charger stops

* Flag3: *Starting State* 0: Charger detects battery voltage and starts charging

1: Charger stays turned off (to prevent reverse polarity)

* Flag4: *Communication State* 0: Communication is normal

1: Communication receive time-out

## Arduino

Arduino MEGA

Read CAN 0 messages

Analyze if anything is wrong

Act on shutdown if anything is wrong

### Otros Sensores

* Acelerómetro
* GPS
* Galgas extensiométricas
* Micrófono
* Temperatura

## Estados de la moto

OFF, StandBy, Charge, Run, Error??

## Subsistemas

### BMS12v3

Hay que decidir cómo se van a medir las celdas

### Cargador PFC500

Cuidado con dirección (es distinta a la del manual) -> mirar en el conector

### SEVCON GEN 4 SIZE 6

Comunicación CANOpen. Recibimos 5 TPDO (Transmission Process Data Object). La información de qué transmite cada uno la encontramos en el programa SEVCON (para usar con IXXAT).

Importante: COB-ID = CAN ID

*Example messages:*

*10:00:34.493 -> Received packet with id 0x274 = 628 (dec) and length 8*

*10:00:34.493 -> 0 0 0 0 7 0 F 0 = 28912*

*10:00:34.493 ->*

*10:00:34.493 -> Received packet with id 0x195 = 405 (dec) and length 5*

*10:00:34.493 -> C7 0 13 0 0*

*10:00:34.493 ->*

*10:00:34.493 -> Received packet with id 0x146 = 326 (dec) and length 8*

*10:00:34.493 -> F6 0 0 0 0 0 0 0*

*10:00:34.493 ->*

*10:00:34.493 -> Received packet with id 0x168 = 360 (dec) and length 8*

*10:00:34.493 -> 4F 1 0 0 0 0 0 0*

*10:00:34.526 ->*

*10:00:34.526 -> Received packet with id 0x370 = 880 (dec) and length 8*

*10:00:34.526 -> 0 0 0 0 0 0 0 0*

# Subida de datos a la nube

Main.cxx guarda datos en datosISCMoto.json

Main.cxx ejecuta script en Python para leer datos y pasarlos a datosISCMoto.db (sqlite3)

Al final de la carrera subir datos a la nube todo a la vez