

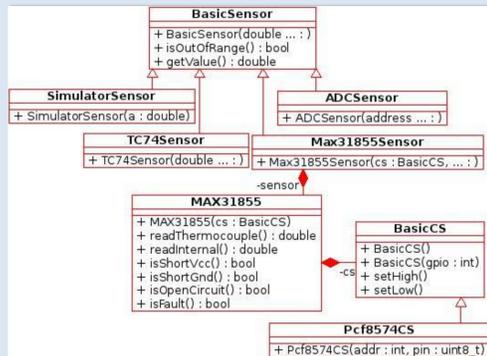
## REQUEST

ALBA has some diagnostics needs to be covered; mainly temperature acquisition in several different locations around the facility: inside tunnel, service area, experimental area, laboratories and auxiliary facilities. There is a big area to be covered and the measurable spots are variable in the time and they have a strong correlation with the machine startup configuration. This has a sizable impact on traditional cabled installation, generated by the huge numbers of measurement points to be covered, in addition, the tight machine access schedule makes their installation difficult.

## Esp8266

### Firmware

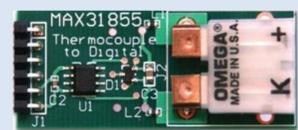
- Based on Arduino
- Telnet server
- ASCII commands
- Sensors classes
- Polymorphism



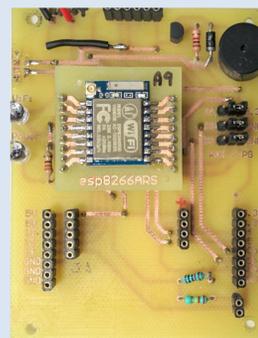
### Hardware



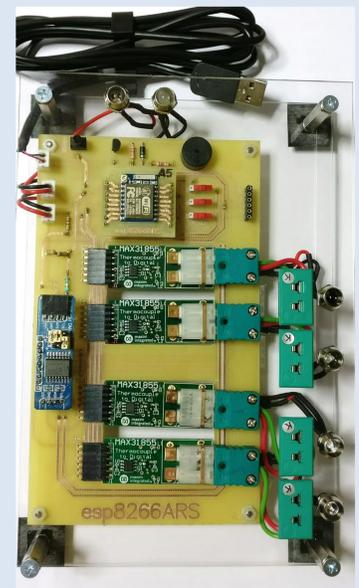
GPIO expansion



Thermocouple sensor



Main board



4 thermocouples prototype

### Python library esp8266ARS

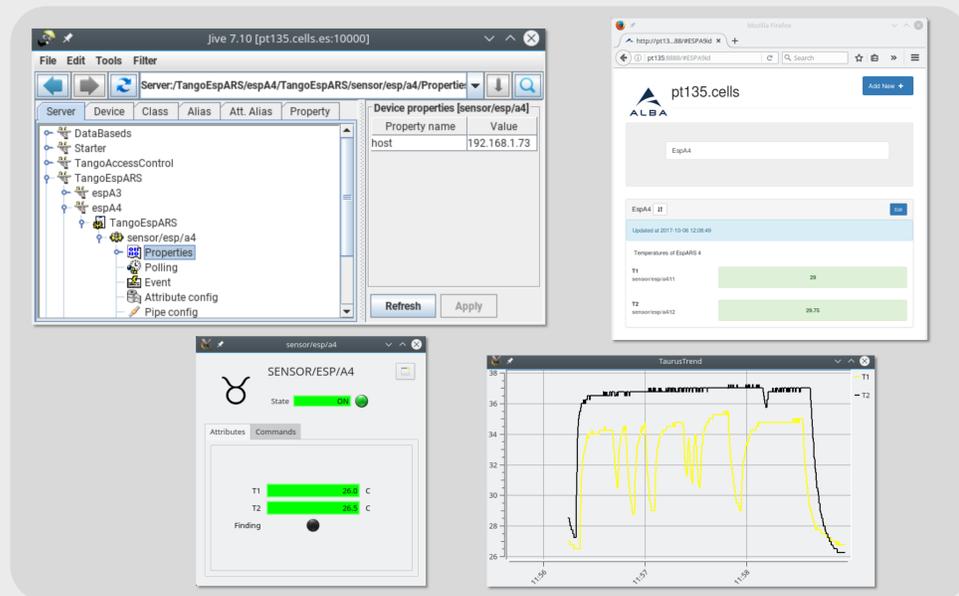
- Friendly controls of the ESP
- TemperatureSensors class
- Dynamic temperatures attributes
- Bash script to test device

```
>> from esp8266ARS import TemperatureSensor
>> dev = TemperatureSensor('192.168.1.35')
>> dev.T1
32.8
>> dev.state
OK; Finding False;
```

```
$> esp8266ARS 192.168.1.73
NrSensor: 2
T1: 25.4
T2: 27.0
Device State: 'OK' 'All sensors are in range'
Device is finding: False
```

## APPLICATIONS

A Tango Device Server is the interface to the archiving system, alarm system, web report [TUPHA173] and the Taurus widgets. The tango device uses dynamic generation of the temperatures by the library and creates an attribute for each one.



## CONCLUSION

The entire system design had as main premises being functional and economic. From the beginning, a special attention was paid to cost and effectiveness.

Next step will be to produce some devices with 4 thermocouples sensors per unit to be used by accelerators and beamlines groups, with as main goal to do a punctual diagnostic and without the cost on installation time and equipment on the EPS system. This first diagnostic allows them to identify the future sensors installation on the system.

## ACKNOWLEDGEMENT

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