

Detailed Design of PIR Sensor

Team X

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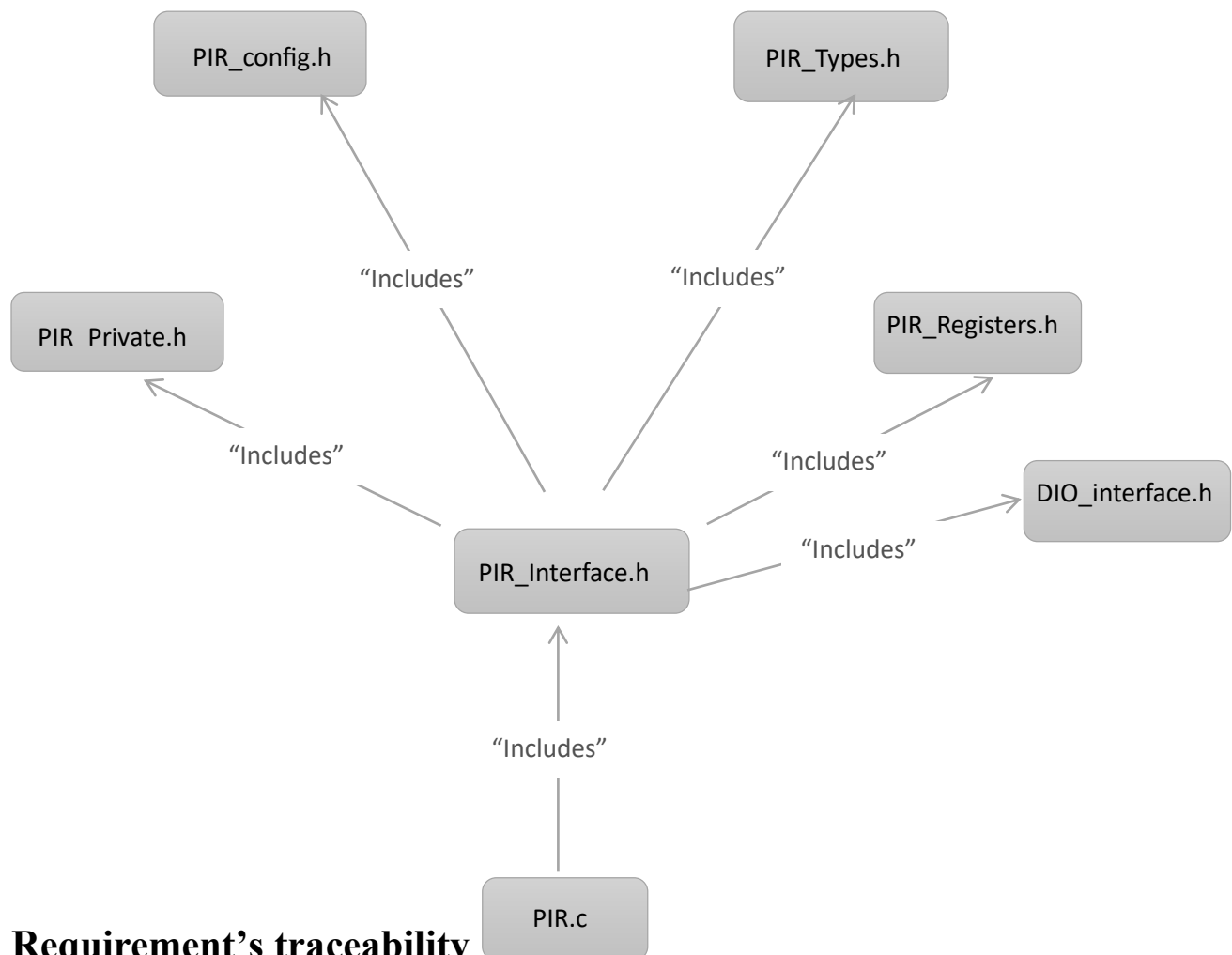
Introduction and functional overview

This Document specifies the detailed design of PIR Sensor.

Dependencies to other modules

Dio Driver as requires the implemented functions on this driver such as initialization and read the required pin.

File Structure



Requirement's traceability

| Requirement | Description | Satisfied By |
|----------------|--|---------------|
| [SRS_PIR_4600] | The PIR sensor driver shall support symbolic name for PIR Port & Pin | [DD_RTC_5700] |
| [SRS_PIR_4601] | The PIR Driver shall provide a service to initialize the PIR sensor | [DD_RTC_5701] |
| [SRS_PIR_4602] | The PIR Driver shall provide a service to read the output signal of the sensor | [DD_RTC_5702] |

API specification

Type definitions:

1-[DD_RTC_5700]

| | |
|-----------------------------|---|
| Name | S_PIR |
| type | Dio Structure |
| Range | -- |
| Description | It contains the configuration port and pin for the sensor |
| Covered requirements | -- |

Function definitions:

1-[DD_RTC_5701]

| | |
|----------------------------|---|
| Service name: | PIR Initialization |
| Syntax: | E_ErrorType HAL_PIR_Init (S_Dio *S_PIR) |
| Sync/Async: | Synchronous |
| Re-entrancy: | Re-entrant |
| Parameters (in): | Dio structure |
| Parameters (out): | -- |
| Parameters (inout): | -- |
| Return type: | E_ErrorType |
| Description: | It Initializes the configured port and pin for the sensor |

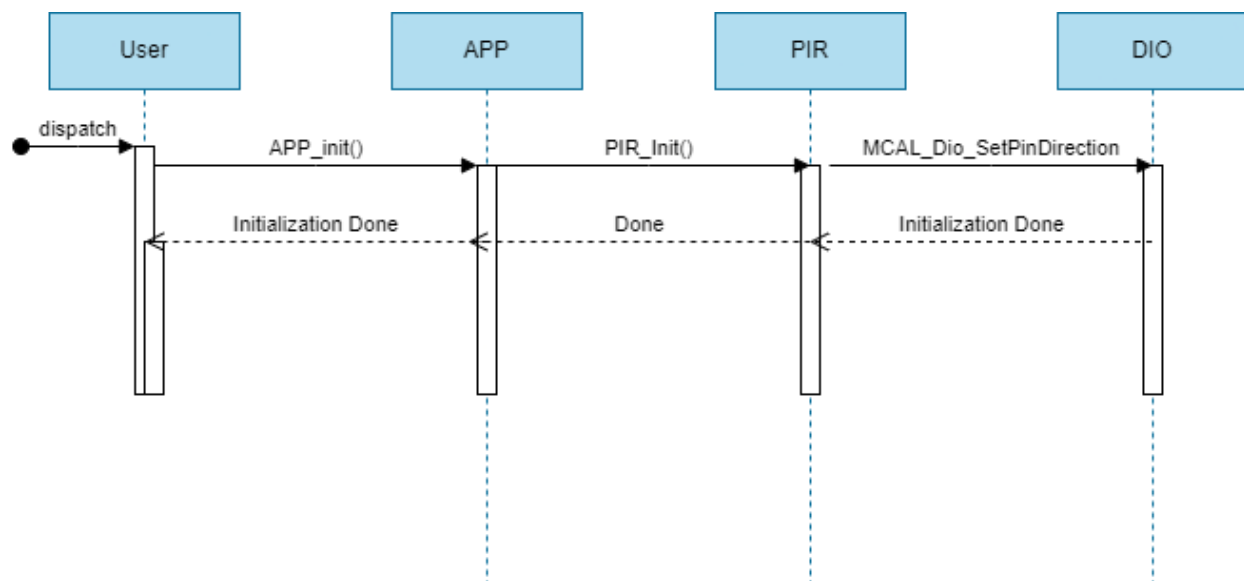
Covered requirements:

2-[DD_RTC_5702]

| | |
|------------------------------|---|
| Service name: | PIR Read Sensor |
| Syntax: | E_ErrorType HAL_PIR_Read () |
| Sync/Async: | Synchronous |
| Re-entrancy: | Re-entrant |
| Parameters (in): | -- |
| Parameters (out): | -- |
| Parameters (inout): | -- |
| Return type: | E_ErrorType |
| Description: | It reads the status of the sensor at this specific time |
| Covered requirements: | |

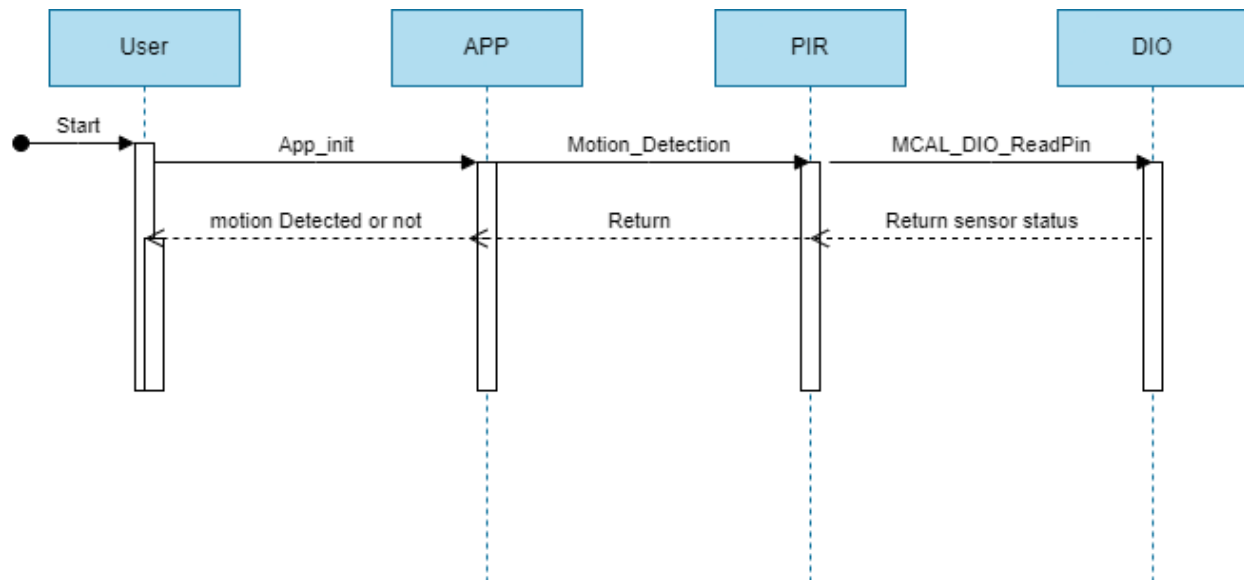
Sequence Diagram

PIR Initialization



When user initializes the application, it initializes the PIR sensor by calling the DIO setPin direction to configure the sensor to be ready to be used

PIR Read Sensor



The application always monitors the motion detection inside the house to control the lighting, it calls the PIR read sensor which asks the dio to read its signal and give back the signal value which describes whether there is motion detected or not