Detailed Design of IR Driver

Team X

Contents

Introduction and functional overview:

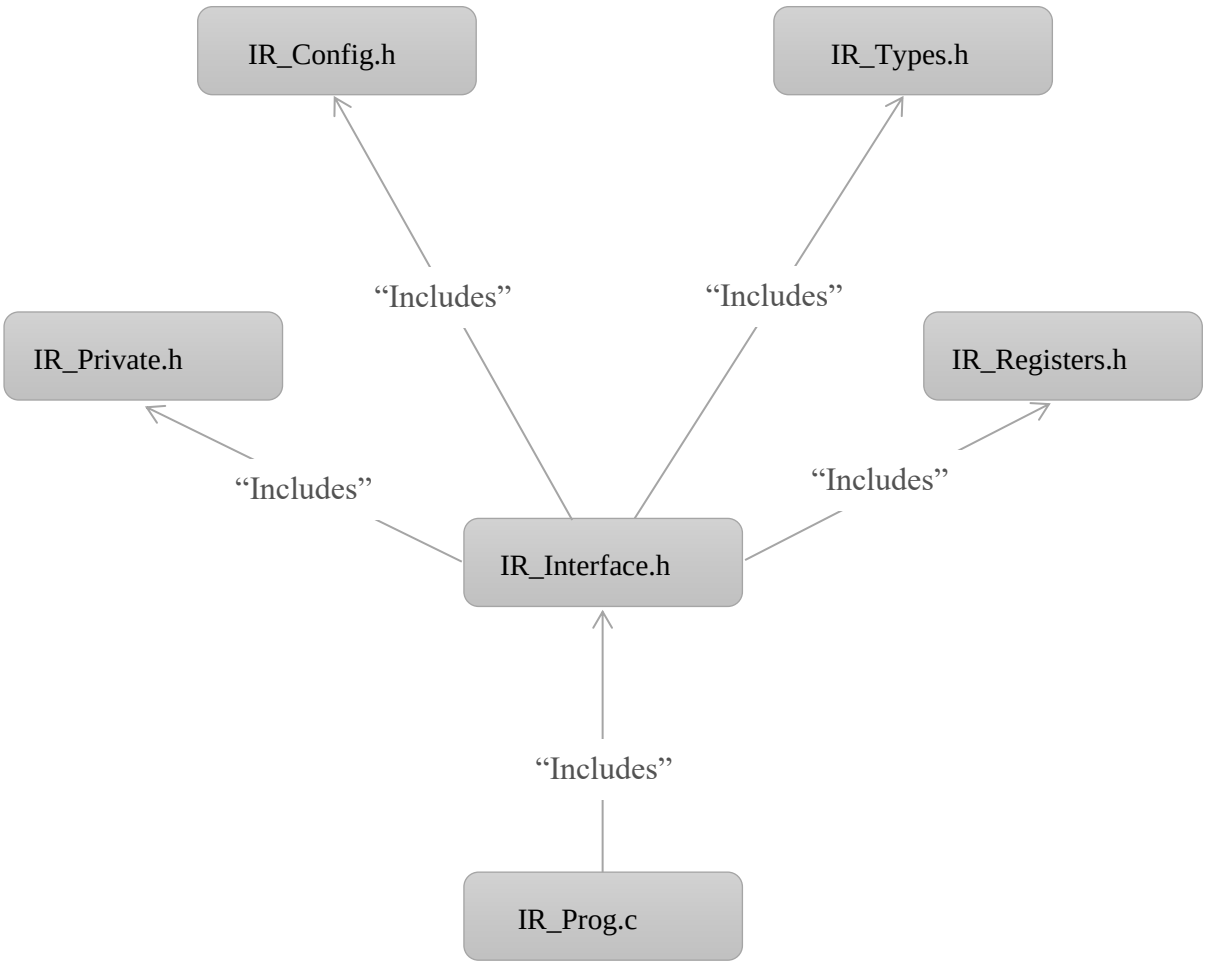
This document specifies detailed design of the module e IR Driver. The IR driver is targeting IR (Infra-Red) sensor Hardware.

The IR driver provides service for detecting objects.

The behaviour of those services is synchronous.

File structure:

The LM35 module shall comply with the following file structure:



Requirements traceability:

Requirement	Description	Satisfied by
[SRS_IR_6101]	The IR Driver shall support symbolic names for IR channels.	[DD_IR_6101] [DD_IR_6102] [DD_IR_6103] [DD_IR_6104] [DD_IR_6105] [DD_IR_6106]
[SRS_IR_6102]	The IR driver shall provide a service that initializes the IR.	[DD_IR_6107]
[SRS_IR_6103]	The IR driver shall provide a service that reads the IR signal.	[DD_IR_6108]

API specification:
Type definitions:

1- [DD_IR_6101]

Name:	IR_SENSOR_PIN
Type	Macro
Range:	0…7
Description:	The pin connected to IR sensor
Covered requirements:	[SRS_IR_6101]

2- [DD_IR_6102]

Name:	IR_PORT
Type	Macro
Range:	DIO_PORTA… DIO_PORTD
Description:	The port register that contains the IR pin
Covered requirements:	[SRS_IR_6101]

3- [DD_IR_6103]

Name:	IR_DDR
Type	Macro
Range:	DIO_DDRA…DIO_DDRD
Description:	The DDR register that contains the IR pin
Covered requirements:	[SRS_IR_6101]

4- [DD_IR_6104]

Name:	IR_PIN
Type	Macro
Range:	DIO_PINA…DIO_PIND
Description:	The PIN register that contains the IR pin
Covered requirements:	[SRS_IR_6101]

5- [DD_IR_6105]

Name:	DETECTED
Type	Macro
Range:	1
Description:	Value for the IR signal that indicates that an object is detected
Covered requirements:	[SRS_IR_6101]

6- [DD_IR_6106]

Name:	NOT_DETECTED
Type	Macro
Range:	0
Description:	Value for the IR signal that indicates that nothing is detected
Covered requirements:	[SRS_IR_6101]

Function definitions:

1- [DD_IR_6107]

Service name:	Initialize the IR sensor
Syntax:	void HAL_IR_Init()
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	none
Parameters (out):	none
Parameters (inout):	none
Return type:	void
Description:	Function that initializes the IR sensor
Covered requirements:	[SRS_IR_6102]

2- [DD_IR_6108]

Service name:	Read the IR sensor's state	
Syntax:	unsigned char HAL_IR_Read()	
Sync/Async:	Synchronous	
Re-entrancy:	Re-entrant	
Parameters (in):	none	
Parameters (out):	none	
Parameters (inout):	none	
Return type:	Unsigned char	DETECTED 1 NOT_DETECTED 0
Description:	Function that reads the IR sensor’s signal	
Covered requirements:	[SRS_IR_6103]	