Document Title	Requirements & Specification of ADC Driver
Document Owner	HEX CLAN
Document Responsibility	HEX CLAN

Contents

1. Scope of Document

This document specifies requirements on the module ADC Driver. The ADC driver is targeting Successive Approximation ADC Hardware.

2. API specification

2.1. Imported types

Module	Header File	Imported Type
lib	STD_TYPES.h	OK
	STD_TYPE.h	NOK

2.2. Type definitions

2.2.1. chain_t

Name	Chain_t	
Kind	Struct	
Range	`u8* Channel`	`Pointer to the channel on which a chain conversion will occur`
	`u16* Result`	`Pointer to the result variable that will carry the chain result`
	`u8 Size`	`Number of the continouse ADC conversions that will occur`
	`void``(*NotificationFunc)(`**`void`**`)`	**`Pointer to function which is the notification that all conversions is done`**
Description	Type for configuring the chain asynchronous conversion function	
Available via	ADC_interface.h	

2.3. Functions definitions

2.3.1. ADC_void_Init

Service Name	ADC_void_Init	
Syntax	void ADC_void_Init (void);	
Sync/Async	Configurable via ADC_config.h	
Reentrancy	Non-reentrant	
Parameters (in)	none	
Parameters (inout)	none	
Parameters (out)	none	
Return value	U8	OK: service is done NOK: service is rejected
Description	This API initialize the ADC with the prebuild configuratons via ADC_config.h file and returns error state	
Available via	ADC_interface.h	

2.3.2. ADC_u8_StartSingleConversionSyn

Service Name	ADC_u8_StartSingleConversionSyn	
Syntax	u8 ADC_u8_StartSingleConversionSyn (u8 Copy_u8Channnel , u16 * Copy_u16Result);	
Sync/Async	synchronous	
Reentrancy	reentrant	
Parameters (in)	Copy_u8Channnel	
Parameters (inout)	none	
Parameters (out)	Copy_u16Result	
Return value	U8	OK: service is done NOK: service is rejected
Description	This API starts the ADC synchronous conversion on the Copy_u8Channnel and assign the reading after being done to the pointer Copy_u16Result and returns error state	
Available via	ADC_interface.h	

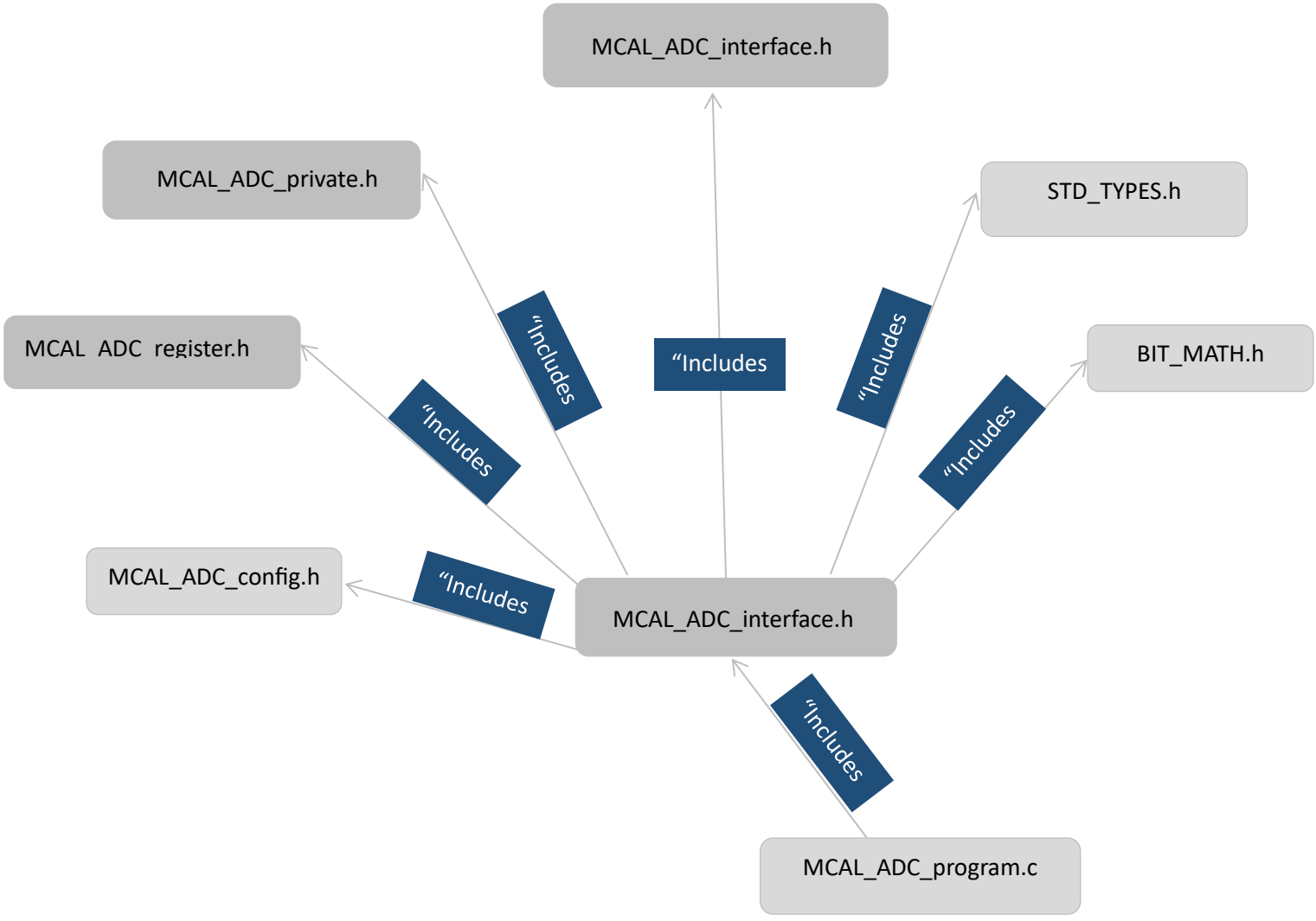
2.3.3. ADC_u8_StartSingleConversionAsyn

Service Name	ADC_u8_StartSingleConversionAsyn	
Syntax	u8 ADC_u8_StartSingleConversionAsyn (u8 Copy_u8Channel ,u16 *Copy_u16Result , void (*Copy_PvNotification)(void));	
Sync/Async	Asynchronous	
Reentrancy	reentrant	
Parameters (in)	Copy_u8Channnel , void (*Copy_PvNotification)(void)	
Parameters (inout)	none	
Parameters (out)	Copy_u16Result	
Return value	U8	OK: service is done NOK: service is rejected
Description	This API starts the ADC Asynchronous conversion on the Copy_u8Channnel and assign the reading after beaing done to the pointer Copy_u16Result and returns error state	
Available via	ADC_interface.h	

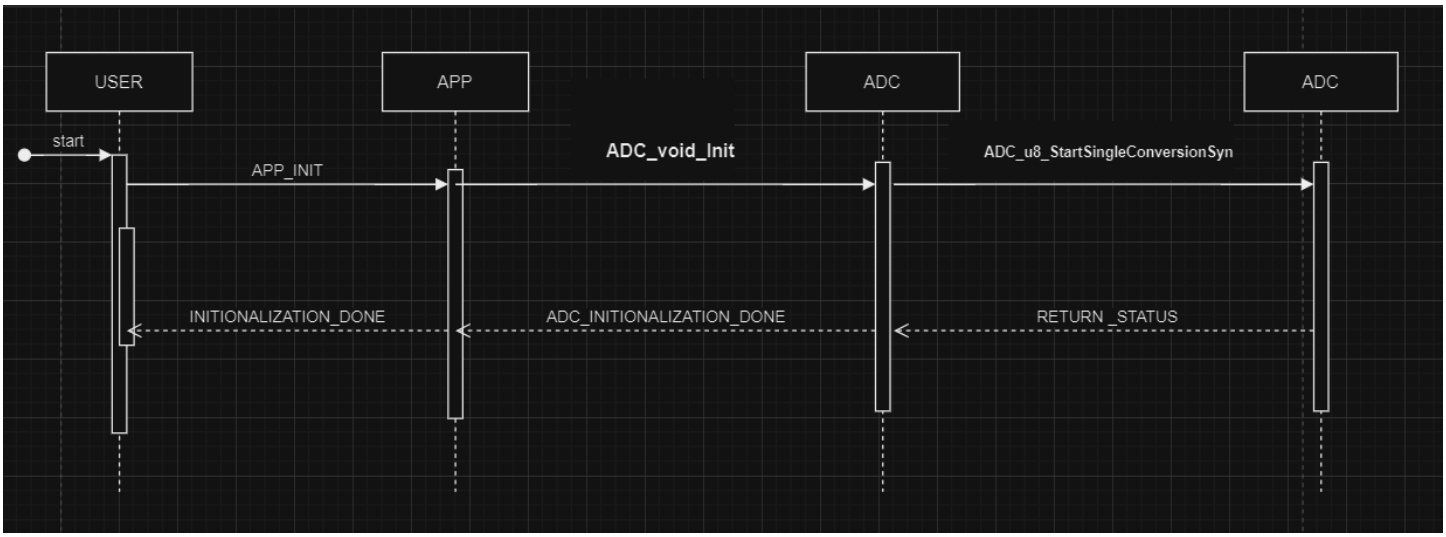
2.3.4. ADC_u8_StartChainConversionAsync

Service Name	**ADC_u8_StartChainConversionAsync**	
Syntax	`u8 ADC_u8_StartChainConversionAsync(chain_t* Copy_usChain);`	
Sync/Async	Asynchronous	
Reentrancy	reentrant	
Parameters (in)	none	
Parameters (inout)	`Copy_usChain`	
Parameters (out)	none	
Return value	U8	OK: service is done NOK: service is rejected
Description	This API starts the ADC chain Asynchronous conversion on `Copy_usChain` ->Copy_u8Channnel and assign the reading after being done to the pointer Copy_u16Result and returns error state	
Available via	ADC_interface.h	

3.File Structure



4.ADC Sequence Diagrams



The sequence in the code involves initializing the ADC, starting single conversions either synchronously or asynchronously, and handling interrupt service routines for ADC conversion completion, while also managing the state and notifying external functions when conversions are complete. This sequence is critical for acquiring analog data in a microcontroller system.