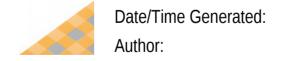
Diagram Report

Version •



24.10.2022 15:05:51 Thomas Batt

EA Repository:



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1.1.1 Architecture_Overview diagram

Class diagram in package 'Measurement System Embedded Software'

Architecture_Overview Version 1.1

Thomas Batt created on 27.01.2017. Last modified 11.04.2022

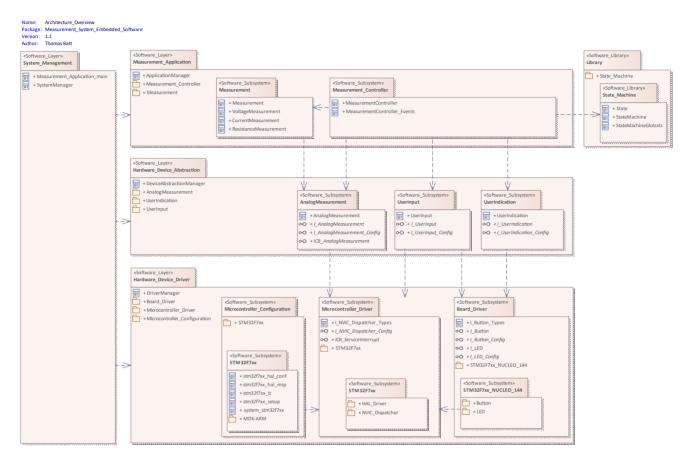


Figure 1: Architecture_Overview

1.1.1.1 System_Management diagram

Class diagram in package 'System_Management'

System_Management Version 1.0
Thomas Batt created on 06.02.2017. Last modified 11.04.2022

Name: System_Management

Package: «Software_Layer» System_Management

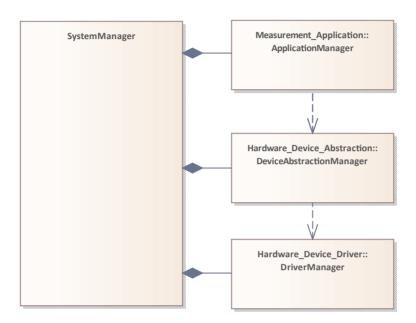


Figure 2: System_Management

1.1.1.2 System_Management_extended diagram

Class diagram in package 'System Management'

System_Management_extended Version 1.0
Thomas Batt created on 09.03.2017. Last modified 11.04.2022

Name: System_Management_extended
Package: «Software_Layer» System_Management
Version: 1.0
Author: Thomas Batt

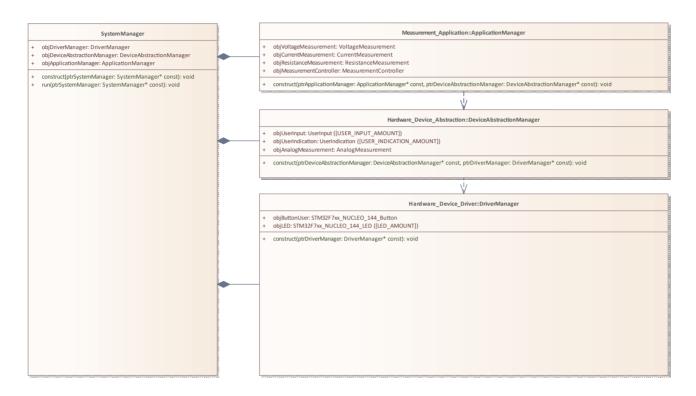


Figure 3: System_Management_extended

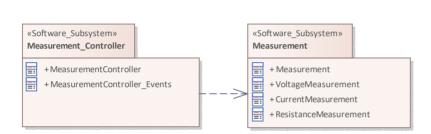
1.1.1.3 Measurement_Application diagram

Class diagram in package 'Measurement_Application'

Measurement_Application
Version 1.0
Thomas Batt created on 06.02.2017. Last modified 11.04.2022

Name: Measurement_Application

Package: «Software_Layer» Measurement_Application



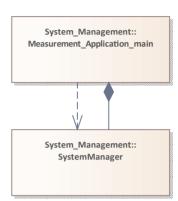


Figure 4: Measurement_Application

1.1.1.4 Measurement_Application_Manager diagram

Class diagram in package 'Measurement_Application'

Measurement_Application_Manager
Version 1.0
Thomas Batt created on 09.03.2017. Last modified 11.04.2022

Name: Measurement_Application_Manager
Package: «Software_Layer» Measurement_Application

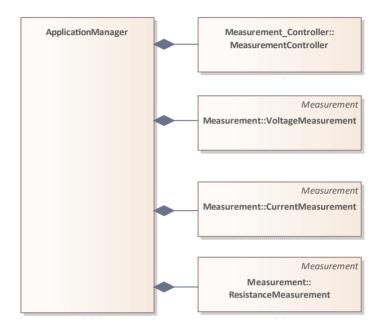


Figure 5: Measurement_Application_Manager

1.1.1.5 Measurement_Application_Manager_extended diagram

Class diagram in package 'Measurement_Application'

Measurement_Application_Manager_extended Version 1.0
Thomas Batt created on 06.02.2017. Last modified 11.04.2022



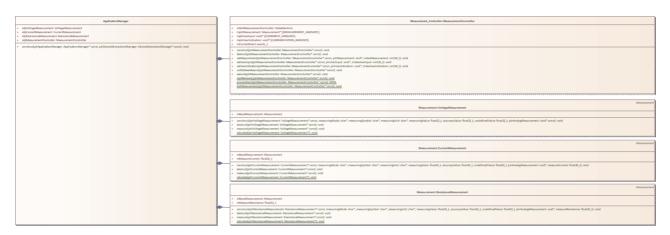


Figure 6: Measurement_Application_Manager_extended

1.1.1.5.1 Measurement_Controller diagram

Class diagram in package 'Measurement Controller'

Measurement_Controller Version 1.0

Thomas Batt created on 09.02.2017. Last modified 11.04.2022

Name: Measurement_Controller

Package: «Software_Subsystem» Measurement_Controller

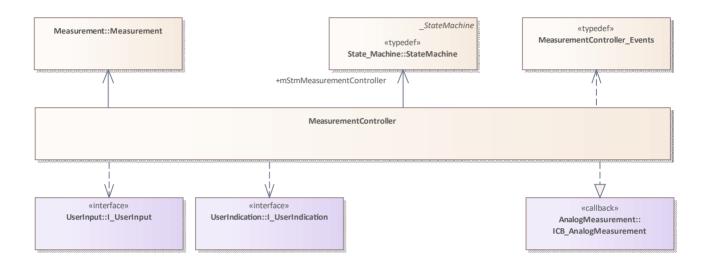


Figure 7: Measurement_Controller

1.1.1.5.2 Measurement_Controller_extended diagram

Class diagram in package 'Measurement_Controller'

Measurement_Controller_extended Version 1.0
Thomas Batt created on 09.03.2017. Last modified 11.04.2022

Name: Measurement_Controller_extended
Package: «Software_Subsystem» Measurement_Controller
Version: 1.0
Name: Rott

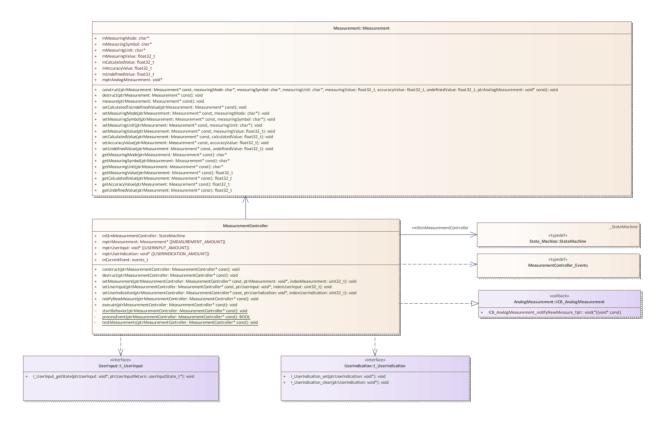


Figure 8: Measurement_Controller_extended

1.1.1.5.2.1 StateMachine_MeasurementController diagram

StateMachine diagram in package 'Measurement Controller'

StateMachine_MeasurementController Version 1.0
Thomas Batt created on 07.03.2017. Last modified 23.04.2020

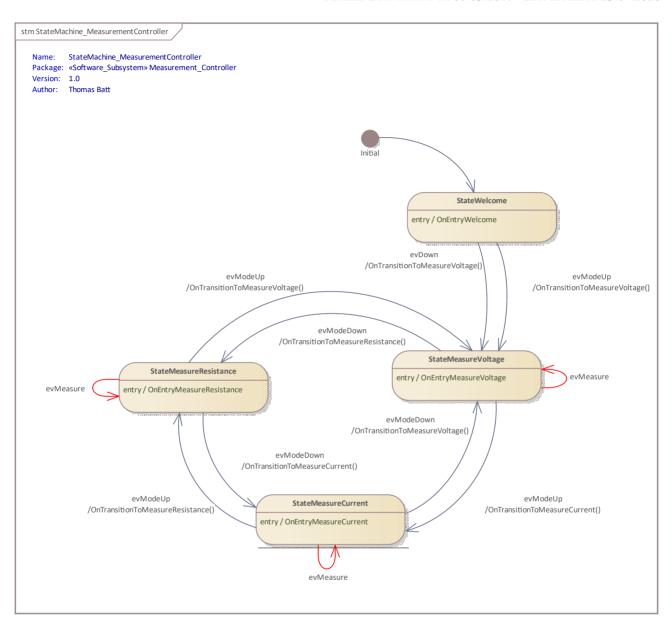


Figure 9: StateMachine_MeasurementController

1.1.1.5.3 Measurement diagram

Class diagram in package 'Measurement'

Measurement Version 1.0 Thomas Batt created on 09.02.2017. Last modified 11.04.2022

Name: Measurement

Package: «Software_Subsystem» Measurement

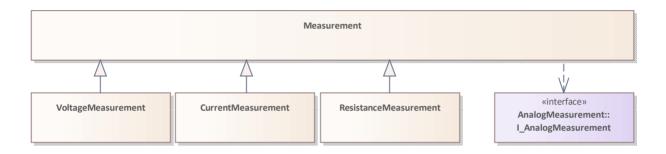


Figure 10: Measurement

1.1.1.5.4 Measurement_extended diagram

Class diagram in package 'Measurement'

Measurement_extended Version 1.0
Thomas Batt created on 09.03.2017. Last modified 11.04.2022

Indigitation of the control of the c

Figure 11: Measurement_extended

1.1.1.6 Hardware_Device_Abstraction diagram

Class diagram in package 'Hardware_Device_Abstraction'

Hardware_Device_Abstraction
Version 1.0
Thomas Batt created on 06.02.2017. Last modified 24.10.2022

Name: Hardware_Device_Abstraction

Package: «Software_Layer» Hardware_Device_Abstraction

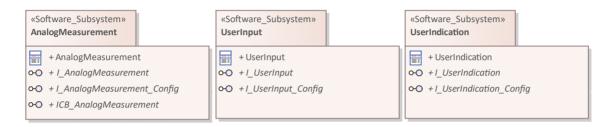


Figure 12: Hardware_Device_Abstraction

1.1.1.7 Hardware_Device_Abstraction_Manager diagram

Class diagram in package 'Hardware_Device_Abstraction'

Hardware_Device_Abstraction_Manager
Version 1.0
Thomas Batt created on 07.02.2017. Last modified 24.10.2022

Name: Hardware_Device_Abstraction_Manager
Package: «Software_Layer» Hardware_Device_Abstraction

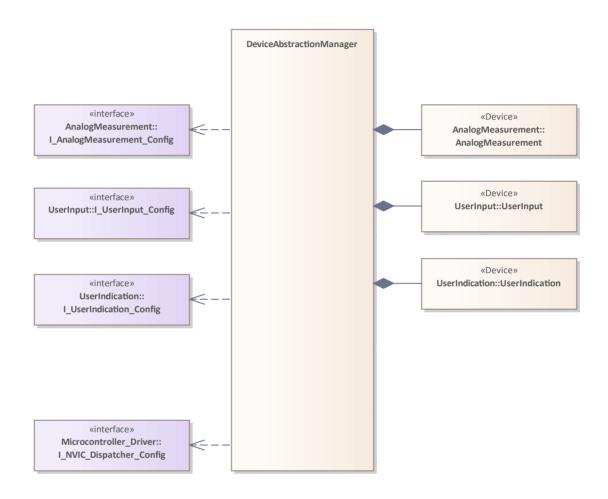


Figure 13: Hardware Device Abstraction Manager

1.1.1.8 Hardware_Device_Abstraction_Manager_extended diagram

Class diagram in package 'Hardware_Device_Abstraction'

Hardware_Device_Abstraction_Manager_extended Version 1.0
Thomas Batt created on 09.03.2017. Last modified 11.04.2022

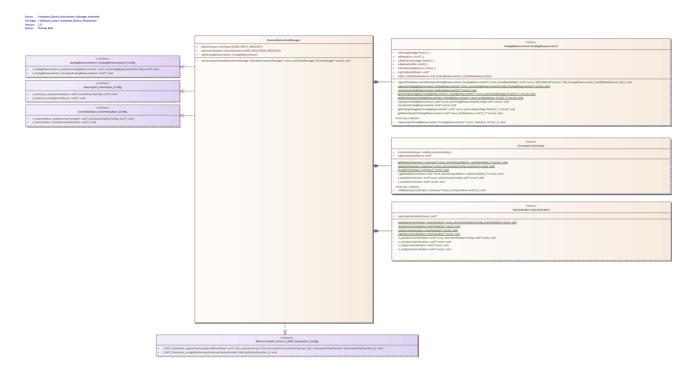


Figure 14: Hardware_Device_Abstraction_Manager_extended

1.1.1.8.1 AnalogMeasurement diagram

Class diagram in package 'AnalogMeasurement'

AnalogMeasurement Version 1.0 Thomas Batt created on 06.02.2017. Last modified 24.10.2022

Name: AnalogMeasurement

Package: «Software_Subsystem» AnalogMeasurement

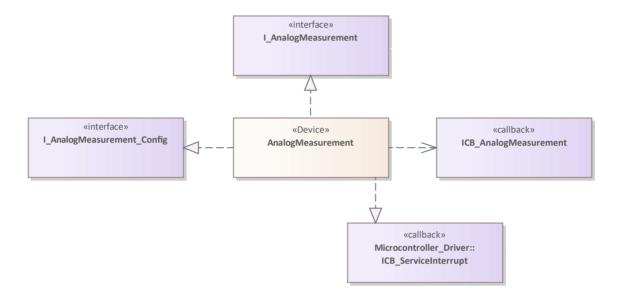


Figure 15: AnalogMeasurement

1.1.1.8.2 AnalogMeasurement_extended diagram

Class diagram in package 'AnalogMeasurement'

AnalogMeasurement_extended Version 1.0 Thomas Batt created on 09.03.2017. Last modified 24.10.2022

Name: AnalogMeasurement_extended
Package: «Software_Subsystem» AnalogMeasurement
Version: 1.0
Author: Thomas Ratt

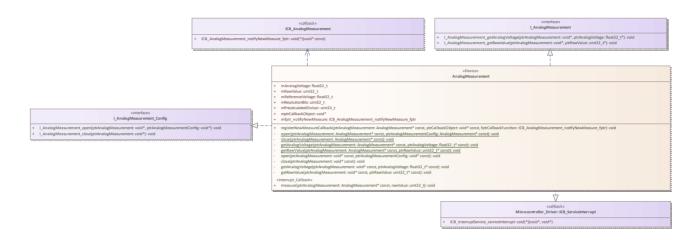


Figure 16: AnalogMeasurement_extended

1.1.1.8.3 UserIndication diagram

Class diagram in package 'UserIndication'

UserIndication Version 1.0 Thomas Batt created on 06.02.2017. Last modified 24.10.2022

Name: UserIndication

Package: «Software_Subsystem» UserIndication

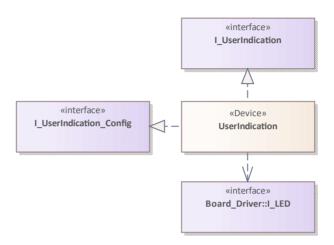


Figure 17: UserIndication

1.1.1.8.4 UserIndication_extended diagram

Class diagram in package 'UserIndication'

UserIndication_extended Version 1.0 Thomas Batt created on 09.03.2017. Last modified 24.10.2022

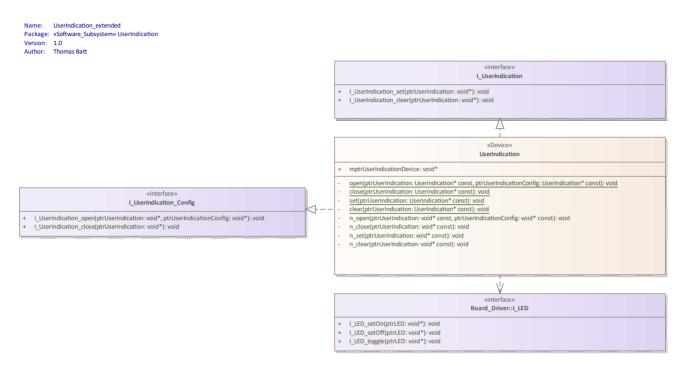


Figure 18: UserIndication_extended

1.1.1.8.5 UserInput diagram

Class diagram in package 'UserInput'

Name: UserInput

Package: «Software_Subsystem» UserInput

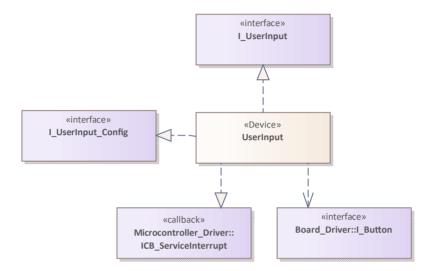


Figure 19: UserInput

1.1.1.8.6 UserInput extended diagram

Class diagram in package 'UserInput'

UserInput extended

Package: «Software_Subsystem» UserInput

Name:

Version: 1.1

UserInput_extended Version 1.1 Thomas Batt created on 09.03.2017. Last modified 11.04.2022

Author: Thomas Batt «interface» «interface» I_UserInput_Config I_UserInput + I_UserInput_open(ptrUserInput: void*, ptrUserInputConfig: void*): void + I_UserInput_close(otrUserInnut: void*): void I_UserInput_getState(ptrUserInput: void*, ptrUserInputReturn: userInputState_t*): void I_UserInput_close(ptrUserInput: void*): void «Device» UserInput mCurrentUserInput: volatile userInputState_t + mptrUserInputDevice: void* getState(ptrUserInput: UserInput* const, ptrUserInputReturn: userInputState_t* const): void open(ptrUserInput: UserInput* const, ptrUserInputConfig: UserInput* const): void close(ptrUserInput: UserInput* const): void
t_getState(ptrUserInput: void* const, ptrUserInputReturn: userInputState_t* const): void Lopen(ptrUserInput: void* const, ptrUserInputConfig: void* const): void t_close(ptrUserInput: void* const): void «Interrupt_Callback» notifyInput(ptrUserInput: UserInput* const, ptrInputValue: uint32_t): void «interface» «callback» Microcontroller_Driver::ICB_ServiceInterrupt Board Driver:: Button + I_Button_getState(ptrButton: void*): buttonState_t + ICB_InterruptService_serviceInterrupt: void(*)(void*, void*)

Figure 20: UserInput_extended

1.1.1.9 Hardware_Device_Driver diagram

Class diagram in package 'Hardware_Device_Driver'

Hardware_Device_Driver
Version 1.0
Thomas Batt created on 06.02.2017. Last modified 24.10.2022

Name: Hardware_Device_Driver

Package: «Software_Layer» Hardware_Device_Driver

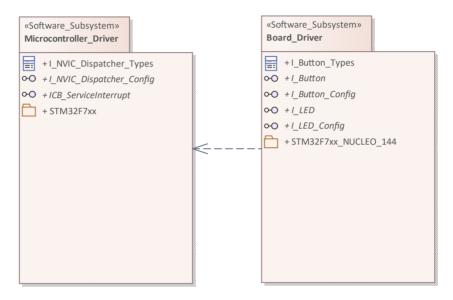


Figure 21: Hardware_Device_Driver

1.1.1.10 Hardware_Device_Driver_Manager diagram

Class diagram in package 'Hardware_Device_Driver'

Hardware_Device_Driver_Manager
Version 1.0
Thomas Batt created on 07.02.2017. Last modified 24.10.2022

Name: Hardware_Device_Driver_Manager
Package: «Software_Layer» Hardware_Device_Driver

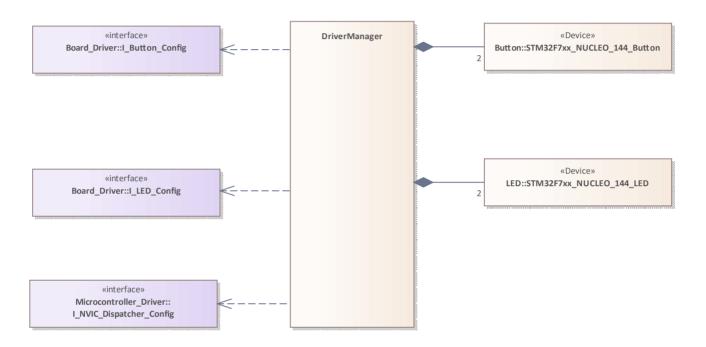


Figure 22: Hardware Device Driver Manager

1.1.1.11 Hardware_Device_Driver_Manager_extended diagram

Class diagram in package 'Hardware_Device_Driver'

Hardware_Device_Driver_Manager_extended Version 1.0 Thomas Batt created on 09.03.2017. Last modified 24.10.2022

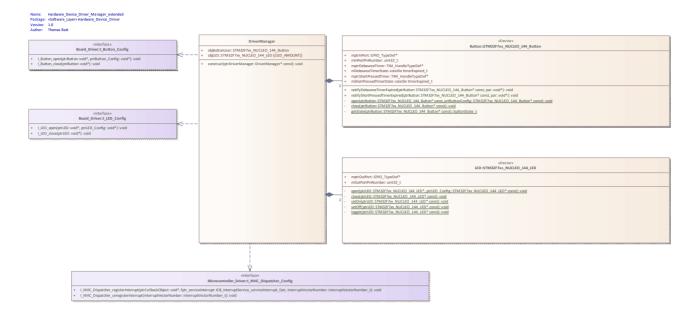


Figure 23: Hardware_Device_Driver_Manager_extended

1.1.1.11.1 Board_Driver diagram

Class diagram in package 'Board Driver'

Board_Driver Version 1.0 Thomas Batt created on 06.02.2017. Last modified 24.10.2022

Name: Board_Driver

Package: «Software_Subsystem» Board_Driver

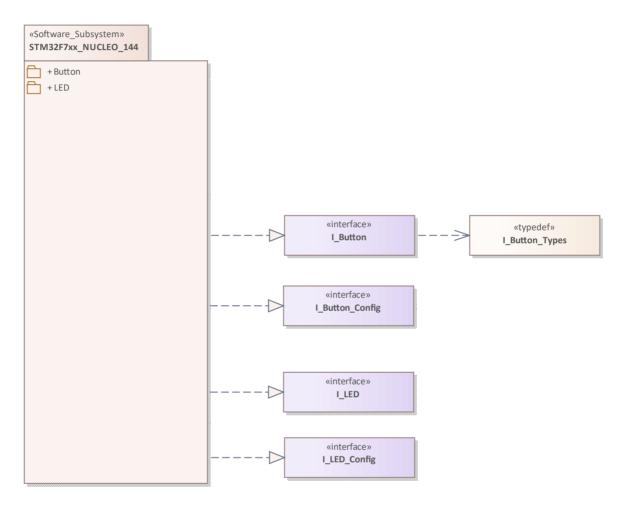


Figure 24: Board_Driver

1.1.1.11.1.1 Button diagram

Class diagram in package 'Button'

 $\begin{array}{c} Button \\ Version~1.0 \\ Thomas~Batt~created~on~09.03.2017.~Last~modified~23.04.2020 \end{array}$

Name: Button
Package: «Driver» Button
Version: 1.0
Author: Thomas Batt

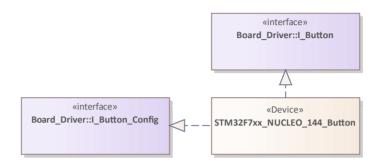


Figure 25: Button

1.1.1.1.1.2 Button_extended diagram

Class diagram in package 'Button'

Button_extended

Name:

Button_extended Version 1.0 Thomas Batt created on 07.02.2017. Last modified 23.04.2020

Package: «Driver» Button Version: 1.0 Author: Thomas Batt «interface» Board_Driver::I_Button + I_Button_getState(void*): buttonState_t «Device» STM32F7xx_NUCLEO_144_Button mptrInPort: GPIO TypeDef* mInPortPinNumber: uint32 t mptrDebounceTimer: TIM_HandleTypeDef* «interface» mDebounceTimerState: volatile timerExpired_t Board_Driver::I_Button_Config mptrShortPressedTimer: TIM_HandleTypeDef*
mShortPressedTimerState: volatile timerExpired t I_Button_open(void*, void*): void I_Button_close(void*): void notifyDebounceTimerExpired(STM32F7xx_NUCLEO_144_Button* const, void*): void notifyShortPressedTimerExpired(STM32F7xx_NUCLEO_144_Button* const, void*): void open(STM32F7xx NUCLEO 144 Button* const, STM32F7xx NUCLEO 144 Button* const): void close(STM32F7xx NUCLEO 144 Button* const): void getState(STM32F7xx NUCLEO 144 Button* const): buttonState t

Figure 26: Button extended

1.1.1.11.1.3 LED diagram

Class diagram in package 'LED'

 $\begin{array}{c} LED \\ Version \ 1.0 \end{array}$ Thomas Batt created on 09.03.2017. Last modified 23.04.2020

Name: LED
Package: «Driver» LED
Version: 1.0
Author: Thomas Batt

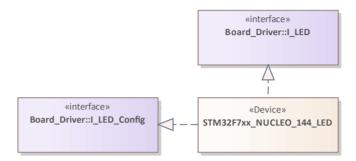


Figure 27: LED

1.1.1.1.1.1.4 LED_extended diagram

Class diagram in package 'LED'

Name:

LED extended Version 1.0 Thomas Batt created on 07.02.2017. Last modified 23.04.2020

LED_extended Package: «Driver» LED Version: 1.0 Author: Thomas Batt «interface» Board_Driver::I_LED I_LED_setOn(void*): void I_LED_setOff(void*): void
I_LED_toggle(void*): void «Device» STM32F7xx_NUCLEO_144_LED mptrOutPort: GPIO_TypeDef* + mOutPortPinNumber: uint32_t «interface» open(STM32F7xx NUCLEO 144 LED*, STM32F7xx NUCLEO 144 LED* const): void Board_Driver::I_LED_Config close(STM32F7xx_NUCLEO_144_LED* const): void I_LED_open(void*, void*): void
I_LED_close(void*): void setOn(STM32F7xx_NUCLEO_144_LED* const): void setOff(STM32F7xx_NUCLEO_144_LED* const): void toggle(STM32F7xx_NUCLEO_144_LED* const): void

Figure 28: LED_extended

1.1.1.11.2 Microcontroller_Driver diagram

Class diagram in package 'Microcontroller_Driver'

Microcontroller_Driver
Version 1.0
Thomas Batt created on 06.02.2017. Last modified 24.10.2022

Figure 29: Microcontroller_Driver

1.1.1.11.2.1.1 NVIC_Dispatcher diagram

Class diagram in package 'NVIC_Dispatcher'

NVIC_Dispatcher Version 1.0 Thomas Batt created on 09.03.2017. Last modified 24.10.2022

Name: NVIC_Dispatcher
Package: «Driver» NVIC_Dispatcher

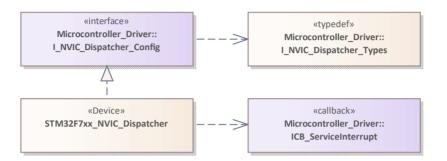


Figure 30: NVIC_Dispatcher

1.1.1.12.1.2 NVIC_Dispatcher_extended diagram

Class diagram in package 'NVIC Dispatcher'

NVIC_Dispatcher_extended Version 1.0 Thomas Batt created on 06.02.2017. Last modified 24.10.2022

Figure 31: NVIC_Dispatcher_extended

1.1.1.12 Library diagram

Class diagram in package 'Library'

Library Version 1.0 Thomas Batt created on 07.03.2017. Last modified 23.04.2020

Name: Library

Package: «Software_Library» Library

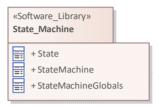


Figure 32: Library

1.1.1.12.1 State_Machine diagram

Class diagram in package 'State_Machine'

State_Machine Version 1.0 Thomas Batt created on 27.02.2017. Last modified 09.03.2017

Name: State_Machine

Package: «Software_Library» State_Machine

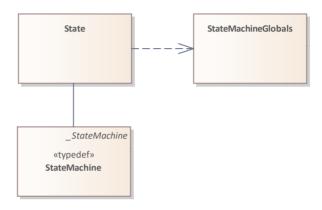


Figure 33: State_Machine

1.1.1.13 Exercise[1.1] diagram

Class diagram in package 'Exercise[1]'

Exercise[1.1] Version 1.0

Thomas Batt created on 14.03.2017. Last modified 11.04.2022

Name: Exercise[1.1]
Package: Exercise[1]
Version: 1.0
Author: Thomas Batt

Measurement_Controller::
MeasurementController

Measurement::Measurement

Measurement:: VoltageMeasurement Measurement:: CurrentMeasurement Measurement:: ResistanceMeasurement «interface»
AnalogMeasurement::
I_AnalogMeasurement

Figure 34: Exercise[1.1]

1.1.1.14 Exercise[1.2] diagram

Class diagram in package 'Exercise[1]'

Exercise[1.2] Version 1.0

Thomas Batt created on 09.03.2017. Last modified 11.04.2022

Name: Exercise[1.2]
Package: Exercise[1]
Version: 1.0
Author: Thomas Batt

System_Management::SystemManager

- + objDriverManager: DriverManager
- + objDeviceAbstractionManager: DeviceAbstractionManager
- + objApplicationManager: ApplicationManager
- + construct(ptrSystemManager: SystemManager* const): void
- + run(ptrSystemManager: SystemManager* const): void

System_Management:: Measurement_Application_main

Measurement_Controller::MeasurementController

+ execute(ptrMeasurementController: MeasurementController* const): void

Measurement_Application::ApplicationManager

- + objVoltageMeasurement: VoltageMeasurement
- + objCurrentMeasurement: CurrentMeasurement
- + objResistanceMeasurement: ResistanceMeasurement
- + objMeasurementController: MeasurementController
- + construct(ptrApplicationManager: ApplicationManager* const, ptrDeviceAbstractionManager: DeviceAbstractionManager* const): void

Measurement

Measurement:: VoltageMeasurement Measurement

Measurement:: CurrentMeasurement Measurement

Measurement:: ResistanceMeasurement

Figure 35: Exercise[1.2]

Class diagram in package 'Exercise[2]'

Exercise[2.1] Version 1.0 Thomas Batt created on 09.03.2017. Last modified 11.04.2022

Name: Exercise[2.1]
Package: Exercise[2]
Version: 1.0
Author: Thomas Batt

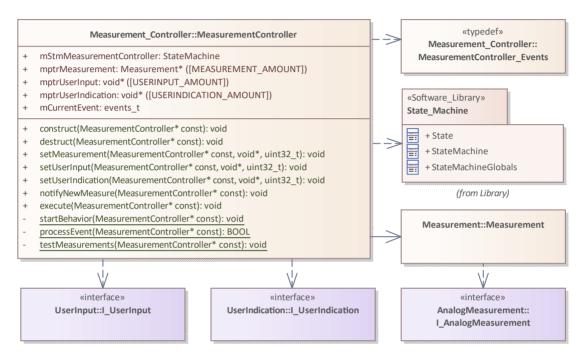


Figure 36: Exercise[2.1]

StateMachine diagram in package 'Exercise[2]'

Exercise[2.2] Version 1.0 Thomas Batt created on 13.03.2017. Last modified 11.04.2022

Name: Exercise[2.2]
Package: Exercise[2]
Version: 1.0
Author: Thomas Batt

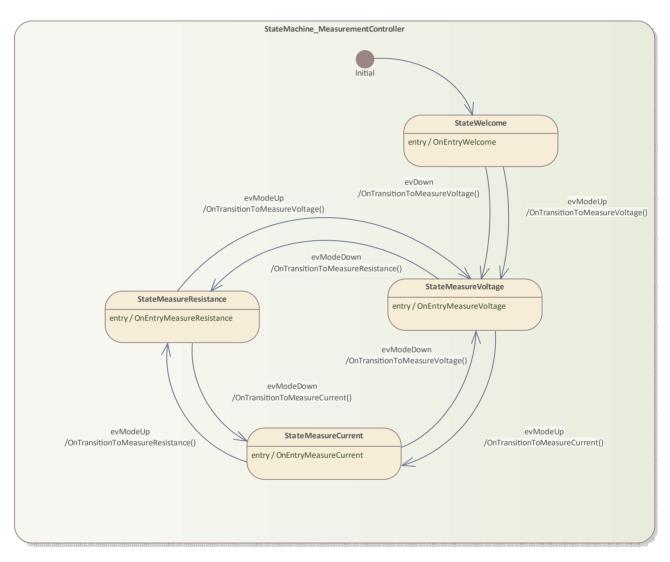


Figure 37: Exercise[2.2]

Class diagram in package 'Exercise[3]'

Exercise[3.1] Version 1.0

Thomas Batt created on 09.03.2017. Last modified 11.04.2022

Name: Exercise[3.1]
Package: Exercise[3]
Version: 1.0
Author: Thomas Batt

Measurement_Controller::MeasurementController

+ notifyNewMeasure(MeasurementController*const): void

«interface»
AnalogMeasurement::
I_AnalogMeasurement_Config

«interface»
AnalogMeasurement::
I_AnalogMeasurement

«callback»

AnalogMeasurement::ICB_AnalogMeasurement

+ ICB_AnalogMeasurement_notifyNewMeasure_fptr: void(*)(void* const)

«Device»
AnalogMeasurement::AnalogMeasurement

+ measure(AnalogMeasurement* const, uint32_t): void

«callback»

Microcontroller_Driver::
ICB_ServiceInterrupt

Figure 38: Exercise[3.1]

1.1.1.18 Exercise[3.2] diagram

Class diagram in package 'Exercise[3]'

Exercise[3.2] Version 1.0 Thomas Batt created on 13.03.2017. Last modified 11.04.2022

Name: Exercise[3.2]
Package: Exercise[3]
Version: 1.0
Author: Thomas Batt

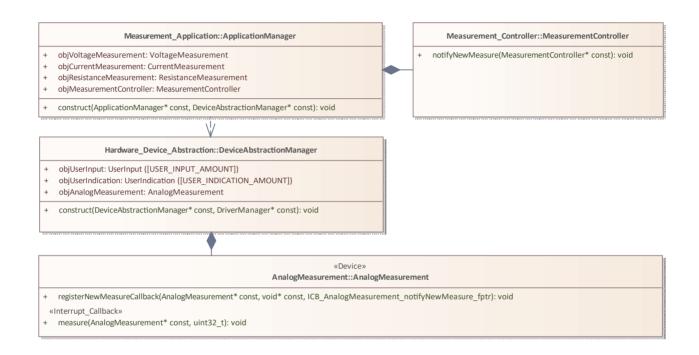


Figure 39: Exercise[3.2]

1.1.1.19 Exercise[3.2] diagram

StateMachine diagram in package 'Exercise[3]'

Exercise[3.2] Version 1.0 Thomas Batt created on 13.03.2017. Last modified 11.04.2022

Name: Exercise[3.2]
Package: Exercise[3]
Version: 1.0
Author: Thomas Batt

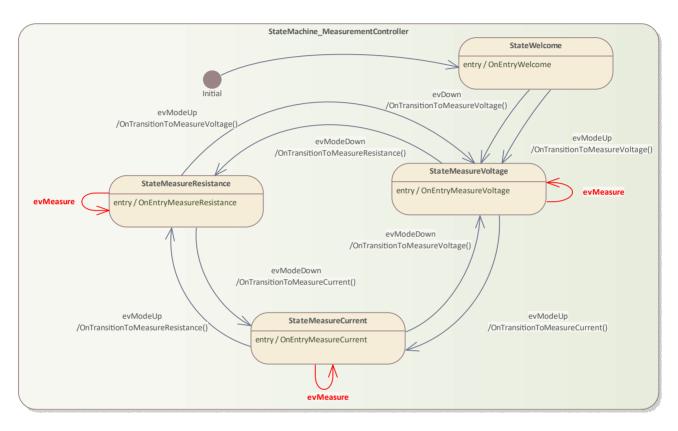


Figure 40: Exercise[3.2]

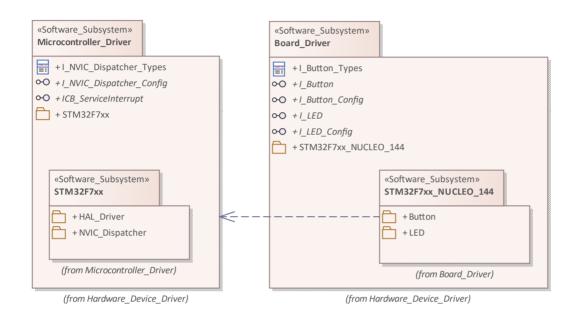
Exercise[4.1] diagram 1.1.1.20

Class diagram in package 'Exercise[4]'

Exercise[4.1] Version 1.0

Thomas Batt created on 09.03.2017. Last modified 11.04.2022

Exercise[4.1] Name: Package: Exercise[4] Version: 1.0 Author: Thomas Batt



UserIndication::I_UserIndication_Config I_UserIndication_open(ptrUserIndication: void*, ptrUserIndicationConfig: void*): void I_UserIndication_close(ptrUserIndication: void*): void

UserIndication::I_UserIndication

- I_UserIndication_set(ptrUserIndication: void*): void
- I_UserIndication_clear(ptrUserIndication: void*): void

«Device» UserIndication::UserIndication



«interface» Board_Driver::I_LED

- I_LED_setOn(ptrLED: void*): void
- I_LED_setOff(ptrLED: void*): void
- I_LED_toggle(ptrLED: void*): void

«Device» LED::STM32F7xx_NUCLEO_144_LED

Figure 41: Exercise[4.1]

1.1.1.21 Exercise[4.2] diagram

Class diagram in package 'Exercise[4]'

Exercise[4.2] Version 1.0

Thomas Batt created on 10.03.2017. Last modified 11.04.2022

Name: Exercise[4.2]
Package: Exercise[4]
Version: 1.0
Author: Thomas Batt

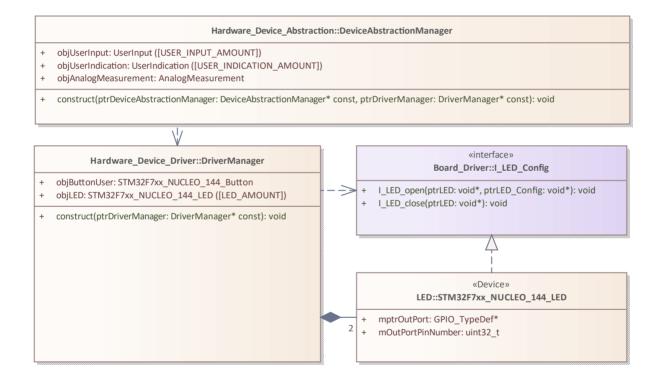


Figure 42: Exercise[4.2]