



## 1. Description

### 1.1. Project

Project Name	Retrofrigeration-firmware_DavidBoard
Board Name	custom
Generated with:	STM32CubeMX 6.5.0
Date	03/14/2022

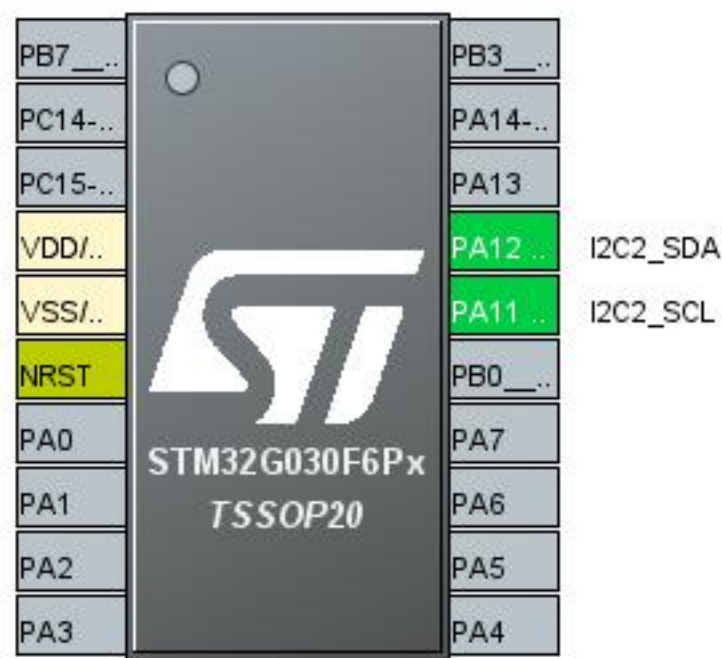
### 1.2. MCU

MCU Series	STM32G0
MCU Line	STM32G0x0 Value line
MCU name	STM32G030F6Px
MCU Package	TSSOP20
MCU Pin number	29

### 1.3. Core(s) information

Core(s)	ARM Cortex-M0+
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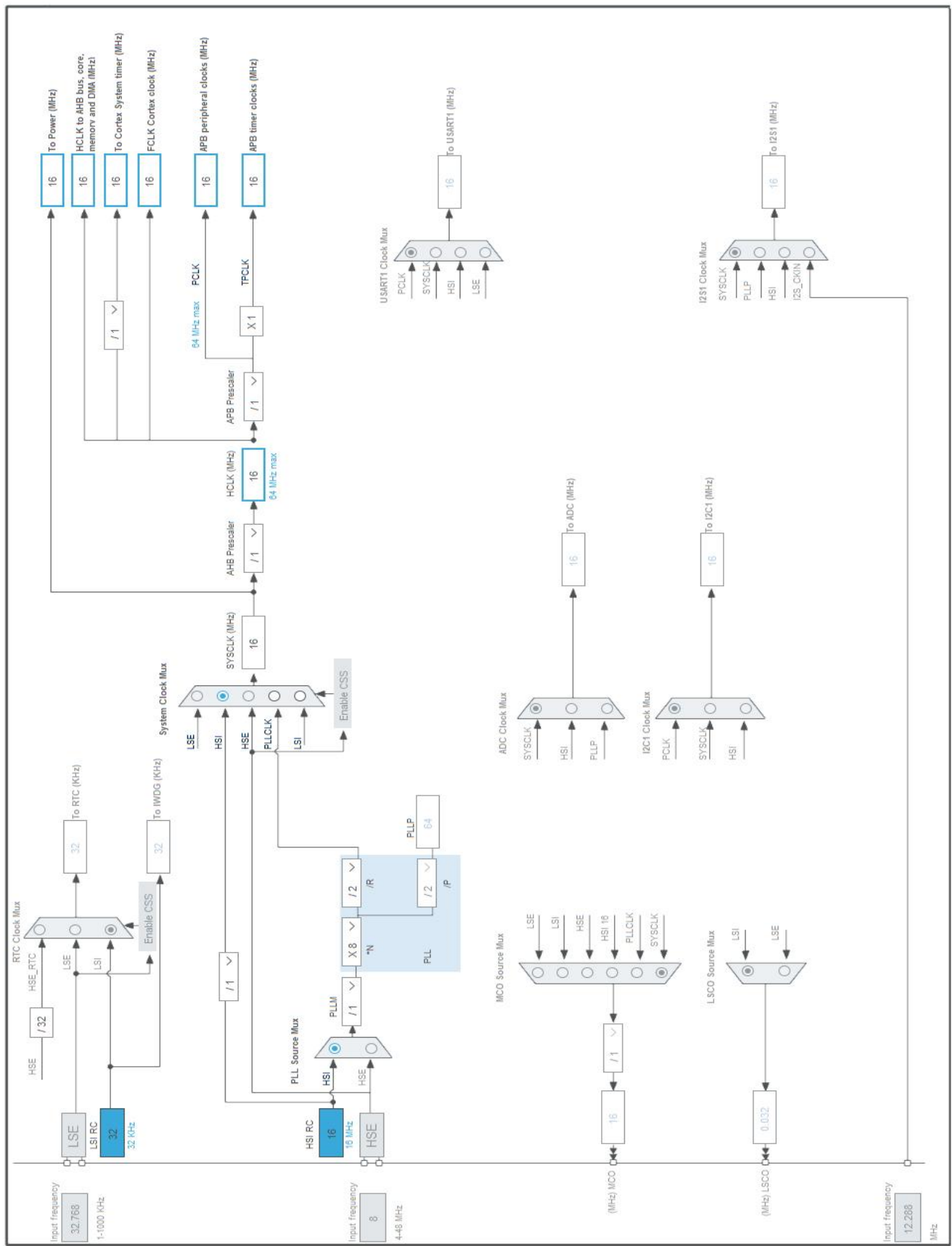
## 2. Pinout Configuration



### 3. Pins Configuration

Pin Number TSSOP20	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
4	VDD/VDDA	Power		
5	VSS/VSSA	Power		
6	NRST	Reset		
16	PA11 [PA9]	I/O	I2C2_SCL	
17	PA12 [PA10]	I/O	I2C2_SDA	

## 4. Clock Tree Configuration



## 5. Software Project

### 5.1. Project Settings

Name	Value
Project Name	Retrofrigeration-firmware_DavidBoard
Project Folder	C:\Users\lejren\STM32CubeIDE\workspace_1.9.0\Retrofrigeration-
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_G0 V1.5.0
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

### 5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	Copy only the necessary library files
Generate peripheral initialization as a pair of '.c/.h' files	No
Backup previously generated files when re-generating	No
Keep User Code when re-generating	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No
Enable Full Assert	No

### 5.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_I2C2_Init	I2C2
4	MX_TIM3_Init	TIM3

## 6. Power Consumption Calculator report

### 6.1. Microcontroller Selection

Series	STM32G0
Line	STM32G0x0 Value line
MCU	STM32G030F6Px
Datasheet	DS12991_Rev1

### 6.2. Parameter Selection

Temperature	25
Vdd	3.0

### 6.3. Battery Selection

Battery	Li-SOCL2(AAA700)
Capacity	700.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	10.0 mA
Max Pulse Current	30.0 mA
Cells in series	1
Cells in parallel	1

#### 6.4. Sequence

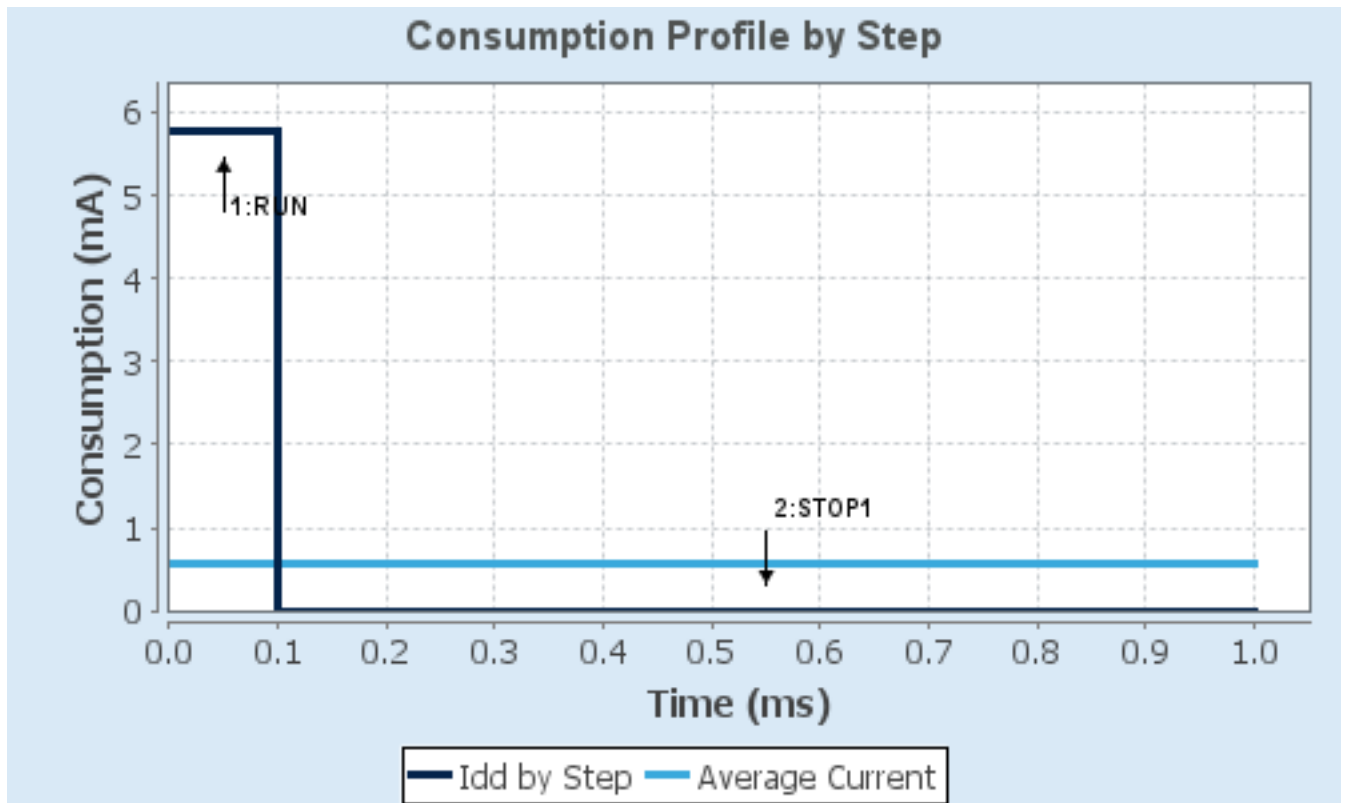
<b>Step</b>	Step1	Step2
<b>Mode</b>	RUN	STOP1
<b>Vdd</b>	3.0	3.0
<b>Voltage Source</b>	Battery	Battery
<b>Range</b>	Range1-High	NoRange
<b>Fetch Type</b>	FLASH	Flash-PowerDown
<b>CPU Frequency</b>	64 MHz	16 MHz
<b>Clock Configuration</b>	HSI PLL	HSI
<b>Clock Source Frequency</b>	16 MHz	16 MHz
<b>Peripherals</b>		
<b>Additional Cons.</b>	0 mA	0 mA
<b>Average Current</b>	5.77 mA	3.7 $\mu$ A
<b>Duration</b>	0.1 ms	0.9 ms
<b>DMIPS</b>	80.0	0.0
<b>Ta Max</b>	128.68	130
<b>Category</b>	In DS Table	In DS Table

#### 6.5. Results

Sequence Time	1 ms	Average Current	580.33 $\mu$ A
Battery Life	1 month, 19 days, 18 hours	Average DMIPS	80.0 DMIPS

#### 6.6. Chart





## 7. Peripherals and Middlewares Configuration

### 7.1. I2C2

#### mode: I2C

##### 7.1.1. Parameter Settings:

###### Timing configuration:

Custom Timing	Disabled
I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	0x00303D5B

###### Slave Features:

Clock No Stretch Mode	Disabled
General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

### 7.2. RCC

##### 7.2.1. Parameter Settings:

###### System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	0 WS (1 CPU cycle)

###### RCC Parameters:

HSI Calibration Value	64
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000

###### Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1
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###### Peripherals Clock Configuration:

Generate the peripherals clock configuration	TRUE
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### 7.3. SYS

Timebase Source: SysTick

### 7.4. TIM3

mode: Clock Source

#### 7.4.1. Parameter Settings:

##### Counter Settings:

Prescaler (PSC - 16 bits value)	<b>640 *</b>
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value )	<b>1000 *</b>
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

##### Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection TRGO	Reset (UG bit from TIMx_EGR)

\* User modified value

## 8. System Configuration

### 8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
I2C2	PA11 [PA9]	I2C2_SCL	Alternate Function Open Drain	No pull-up and no pull-down	Low	
	PA12 [PA10]	I2C2_SDA	Alternate Function Open Drain	No pull-up and no pull-down	Low	

### 8.2. DMA configuration

nothing configured in DMA service

### 8.3. NVIC configuration

#### 8.3.1. NVIC

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
System service call via SWI instruction	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	3	0
TIM3 global interrupt	true	0	0
I2C2 global interrupt	true	0	0
Flash global interrupt	unused		
RCC global interrupt	unused		

#### 8.3.2. NVIC Code generation

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
System service call via SWI instruction	false	true	false
Pendable request for system service	false	true	false
System tick timer	false	true	true
TIM3 global interrupt	false	true	true
I2C2 global interrupt	false	true	true

\* User modified value

## 9. System Views

### 9.1. Category view

#### 9.1.1. Current

Middleware

System Core	Analog	Timers	Connectivity	Multimedia	Computing
DMA		TIM3 ✓	I2C2 ✓		
GPIO ✓					
IVVIC ✓					
RCC ✓					
SYS ✓					

## 10. Docs & Resources

Type	Link
Presentations	<a href="https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf">https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf</a>
Presentations	<a href="https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf">https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf</a>
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Training Material	<a href="https://www.st.com/resource/en/sales_guide/sg_sc2155.pdf">https://www.st.com/resource/en/sales_guide/sg_sc2155.pdf</a>
Training Material	<a href="https://www.st.com/resource/en/training_certification/faecp_stm32g0_cubemx5_edr.pdf">https://www.st.com/resource/en/training_certification/faecp_stm32g0_cubemx5_edr.pdf</a>
Training Material	<a href="https://www.st.com/resource/en/training_certification/faecp_stm32g0_overview_edr.pdf">https://www.st.com/resource/en/training_certification/faecp_stm32g0_overview_edr.pdf</a>
Flyers	<a href="https://www.st.com/resource/en/flyer/flnucleolrwan.pdf">https://www.st.com/resource/en/flyer/flnucleolrwan.pdf</a>
Flyers	<a href="https://www.st.com/resource/en/flyer/flstm32g0.pdf">https://www.st.com/resource/en/flyer/flstm32g0.pdf</a>
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Flyers	<a href="https://www.st.com/resource/en/flyer/fldpstpf11120.pdf">https://www.st.com/resource/en/flyer/fldpstpf11120.pdf</a>
Application Notes	<a href="https://www.st.com/resource/en/application_note/an1181-electrostatic-discharge-sensitivity-measurement-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an1181-electrostatic-discharge-sensitivity-measurement-stmicroelectronics.pdf</a>
Application Notes	<a href="https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf</a>
Application Notes	<a href="https://www.st.com/resource/en/application_note/an2548-using-the-stm32f0f1f3gxl-series-dma-controller-stmicroelectronics.pdf">https://www.st.com/resource/en/application_note/an2548-using-the-stm32f0f1f3gxl-series-dma-controller-stmicroelectronics.pdf</a>

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- Application Notes [https://www.st.com/resource/en/application\\_note/an4286-spi-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4286-spi-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf)
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