

# SYSTICK & NVIC DRIVERS FOR ARM M4 CONTROLLER

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## SysTick Driver

<u>Function Prototype</u>	<u>Description</u>
<b>void SysTick_Init (uint16 a_TimeInMilliseconds)</b>	<ul style="list-style-type: none"><li>• <b>Service Name:</b> SysTick_Init</li><li>• <b>Sync/Async:</b> Synchronous</li><li>• <b>Reentrancy:</b> reentrant</li><li>• <b>Parameters (in):</b> a_TimeInMilliseconds - Time in Milliseconds</li><li>• <b>Parameters (inout):</b> None</li><li>• <b>Parameters (out):</b> None</li><li>• <b>Return value:</b> None</li><li>• <b>Description:</b> Initialize the SysTick timer with the specified time in milliseconds using interrupts. This function is used to setup the timer to generate periodic interrupts every specified time in milliseconds.</li></ul>
<b>void SysTick_StartBusyWait (uint16 a_TimeInMilliseconds)</b>	<ul style="list-style-type: none"><li>• <b>Service Name:</b> SysTick_StartBusyWait</li><li>• <b>Sync/Async:</b> Synchronous</li><li>• <b>Reentrancy:</b> reentrant</li><li>• <b>Parameters (in):</b> a_TimeInMilliseconds - Time in Milliseconds</li><li>• <b>Parameters (inout):</b> None</li><li>• <b>Parameters (out):</b> None</li><li>• <b>Return value:</b> None</li><li>• <b>Description:</b> Initialize the SysTick timer with the specified time in milliseconds using polling or busy-wait technique. The function should exit when the time is elapsed and stops the timer at the end.</li></ul>
<b>void SysTick_Handler(void)</b>	<ul style="list-style-type: none"><li>• <b>Service Name:</b> SysTick_Handler</li><li>• <b>Sync/Async:</b> Synchronous</li><li>• <b>Reentrancy:</b> reentrant</li><li>• <b>Parameters (in):</b> None</li><li>• <b>Parameters (inout):</b> None</li><li>• <b>Parameters (out):</b> None</li><li>• <b>Return value:</b> None</li><li>• <b>Description:</b> Handler for SysTick interrupt use to call the call-back function.</li></ul>

<b>void SysTick_SetCallBack(volatile void (*Ptr2Func) (void))</b>	<ul style="list-style-type: none"> <li>• <b>Service Name:</b> SysTick_SetCallBack</li> <li>• <b>Sync/Async:</b> Synchronous</li> <li>• <b>Reentrancy:</b> reentrant</li> <li>• <b>Parameters (in):</b> Ptr2Func - Pointer to function</li> <li>• <b>Parameters (inout):</b> None</li> <li>• <b>Parameters (out):</b> None</li> <li>• <b>Return value:</b> None</li> <li>• <b>Description:</b> Function to setup the SysTick Timer call back to be executed in the SysTick Handler.</li> </ul>
<b>void SysTick_Stop(void)</b>	<ul style="list-style-type: none"> <li>• <b>Service Name:</b> SysTick_Stop</li> <li>• <b>Sync/Async:</b> Synchronous</li> <li>• <b>Reentrancy:</b> reentrant</li> <li>• <b>Parameters (in):</b> None</li> <li>• <b>Parameters (inout):</b> None</li> <li>• <b>Parameters (out):</b> None</li> <li>• <b>Return value:</b> None</li> <li>• <b>Description:</b> Function to stop (pause) the SysTick Timer.</li> </ul>
<b>void SysTick_Start(void)</b>	<ul style="list-style-type: none"> <li>• <b>Service Name:</b> SysTick_Start</li> <li>• <b>Sync/Async:</b> Synchronous</li> <li>• <b>Reentrancy:</b> reentrant</li> <li>• <b>Parameters (in):</b> None</li> <li>• <b>Parameters (inout):</b> None</li> <li>• <b>Parameters (out):</b> None</li> <li>• <b>Return value:</b> None</li> <li>• <b>Description:</b> Function to resume the SysTick Timer.</li> </ul>
<b>void SysTick_DeInit(void)</b>	<ul style="list-style-type: none"> <li>• <b>Service Name:</b> SysTick_DeInit</li> <li>• <b>Sync/Async:</b> Synchronous</li> <li>• <b>Reentrancy:</b> reentrant</li> <li>• <b>Parameters (in):</b> None</li> <li>• <b>Parameters (inout):</b> None</li> <li>• <b>Parameters (out):</b> None</li> <li>• <b>Return value:</b> None</li> <li>• <b>Description:</b> Function to Deinitialize the SysTick Timer.</li> </ul>

# NVIC Driver

<u>Function Prototype</u>	<u>Description</u>
<b>void NVIC_EnableIRQ (NVIC_IRQType IRQ_Num)</b>	<ul style="list-style-type: none"> <li>• <b>Service Name:</b> NVIC_EnableIRQ</li> <li>• <b>Sync/Async:</b> Synchronous</li> <li>• <b>Reentrancy:</b> reentrant</li> <li>• <b>Parameters (in):</b> IRQ_Num - Number of the IRQ from the target vector table</li> <li>• <b>Parameters (inout):</b> None</li> <li>• <b>Parameters (out):</b> None</li> <li>• <b>Return value:</b> None</li> <li>• <b>Description:</b> Function to enable Interrupt request for specific IRQ</li> </ul>
<b>void NVIC_DisableIRQ (NVIC_IRQType IRQ_Num)</b>	<ul style="list-style-type: none"> <li>• <b>Service Name:</b> NVIC_DisableIRQ</li> <li>• <b>Sync/Async:</b> Synchronous</li> <li>• <b>Reentrancy:</b> reentrant</li> <li>• <b>Parameters (in):</b> IRQ_Num - Number of the IRQ from the target vector table</li> <li>• <b>Parameters (inout):</b> None</li> <li>• <b>Parameters (out):</b> None</li> <li>• <b>Return value:</b> None</li> <li>• <b>Description:</b> Function to disable Interrupt request for specific IRQ</li> </ul>
<b>void NVIC_SetPriorityIRQ ( NVIC_IRQType IRQ_Num, NVIC_IRQPriorityType IRQ_Priority)</b>	<ul style="list-style-type: none"> <li>• <b>Service Name:</b> NVIC_SetPriorityIRQ</li> <li>• <b>Sync/Async:</b> Synchronous</li> <li>• <b>Reentrancy:</b> reentrant</li> <li>• <b>Parameters (in):</b> IRQ_Num - Number of the IRQ from the target vector table IRQ_Priority - Priority of the IRQ</li> <li>• <b>Parameters (inout):</b> None</li> <li>• <b>Parameters (out):</b> None</li> <li>• <b>Return value:</b> None</li> <li>• <b>Description:</b> Function to set the priority of specific IRQ</li> </ul>
<b>void NVIC_EnableException (NVIC_ExceptionType Exception_Num)</b>	<ul style="list-style-type: none"> <li>• <b>Service Name:</b> NVIC_EnableException</li> <li>• <b>Sync/Async:</b> Synchronous</li> <li>• <b>Reentrancy:</b> reentrant</li> <li>• <b>Parameters (in):</b> Exception_Num - Number of the Exception</li> <li>• <b>Parameters (inout):</b> None</li> <li>• <b>Parameters (out):</b> None</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Return value:</b> None</li> <li>• <b>Description:</b> Function to enable specific ARM system or fault exceptions</li> </ul>
<b>void NVIC_EnableException</b> <b>(NVIC_ExceptionType</b> <b>Exception_Num)</b>	<ul style="list-style-type: none"> <li>• <b>Service Name:</b> NVIC_DisableException</li> <li>• <b>Sync/Async:</b> Synchronous</li> <li>• <b>Reentrancy:</b> reentrant</li> <li>• <b>Parameters (in):</b> Exception_Num - Number of the Exception</li> <li>• <b>Parameters (inout):</b> None</li> <li>• <b>Parameters (out):</b> None</li> <li>• <b>Return value:</b> None</li> <li>• <b>Description:</b> Function to disable specific ARM system or fault exceptions</li> </ul>
<b>void NVIC_SetPriorityException</b> <b>(NVIC_ExceptionType</b> <b>Exception_Num,</b> <b>NVIC_ExceptionPriorityType</b> <b>Exception_Priority)</b>	<ul style="list-style-type: none"> <li>• <b>Service Name:</b> NVIC_SetPriorityException</li> <li>• <b>Sync/Async:</b> Synchronous</li> <li>• <b>Reentrancy:</b> reentrant</li> <li>• <b>Parameters (in):</b> Exception_Num - Number of the Exception Exception_Priority - Priority of the Exception</li> <li>• <b>Parameters (inout):</b> None</li> <li>• <b>Parameters (out):</b> None</li> <li>• <b>Return value:</b> None</li> <li>• <b>Description:</b> Function to set the priority of specific Exception</li> </ul>