



LPTIM internal peripheral



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==Article purpose== The purpose of this article is to * briefly introduce the "LPTIM" peripheral and its main features * indicate the level of security supported by this hardware block * explain how each instance can be allocated to the three runtime contexts and linked to the corresponding software components * explain how to configure the LPTIM peripheral ==Peripheral overview== The "LPTIM" peripheral is a single channel low-power timer unit, that can continue to run even during [\[Power overview|low power modes\]](#) when it selects a clock source that remains active in [\[RCC internal peripheral|RCC\]](#). ==Features== Refer to [\[STM32MP15 resources#Reference manuals|STM32MP15 reference manuals\]](#) for the complete list of features, and to the software components, introduced below, to know which features are really implemented. The LPTIM peripheral is available in different configurations, depending on the selected instance : * LPTIM1 and LPTIM2 can act as PWM, quadrature encoder<ref name="quadrature_encoder">https://en.wikipedia.org/wiki/Rotary_encoder#Incremental_rotary_encoder Quadrature encoder</ref>, external event counter, trigger source for other internal peripherals like: ADC<ref name="adc_internal">[\[ADC internal peripheral\]](#)</ref>, DAC<ref name="dac_internal">[\[DAC internal peripheral\]](#)</ref>, DFSDM<ref name="dfsdm_internal">[\[DFSDM internal peripheral\]](#)</ref>. * LPTIM3 can act as PWM, external event counter, trigger source for other internal peripherals like ADC<ref name="adc_internal"/>, DFSDM<ref name="dfsdm_internal"/>. * LPTIM4 and LPTIM5 can act as PWM. ==Security support== The LPTIM is a "non-secure" peripheral. ==Peripheral usage and associated software== ==Boot time== The LPTIM is not used at boot time. ==Runtime== ==Overview== LPTIM instances can be allocated to: *the Arm^{®} Cortex^{®}-A7 non-secure to be used under Linux^{®} with [\[PWM overview|PWM\]](#) and/or [\[IIO overview|IIO\]](#) frameworks. or * the Arm^{®} Cortex^{®}-M4 to be used with STM32Cube MPU Package with [\[STM32CubeMP1 architecture|LPTIM HAL driver\]](#) ==Software frameworks== {{:Internal_peripherals_software_table_template}} | Core/Timers | [\[LPTIM internal peripheral|LPTIM\]](#) | | [\[PWM overview|Linux PWM framework\]](#) |
[\[IIO overview|Linux IIO framework\]](#) | [\[STM32CubeMP1 architecture|STM32Cube LPTIM driver\]](#) | | - } ==Peripheral configuration== The configuration is applied by the firmware running in the context to which the peripheral is assigned. The configuration by itself can be performed via [\[STM32CubeMX\]](#) tool for all internal peripherals. It can then be manually completed (especially for external peripherals) according to the information given in the corresponding software framework article. For Linux kernel configuration, please refer to [\[LPTIM device tree configuration\]](#) and [\[LPTIM Linux driver|STM32 LPTIM Linux driver\]](#) articles. ==Peripheral assignment== {{:Internal_peripherals_assignment_table_template}} <onlyinclude> | rowspan="5" | Core/Timers | rowspan="5" | [\[LPTIM internal peripheral|LPTIM\]](#) | LPTIM1 | | | | Assignment (single choice) |- | LPTIM2 | | | | Assignment (single choice) |- | LPTIM3 | | | | Assignment (single choice) |- | LPTIM4 | | | | Assignment (single choice) |- | LPTIM5 | | | | Assignment (single choice) |- </onlyinclude> } ==References== <references/> <noinclude> [\[Category:Timers peripherals\]](#) [\[PublicationRequestId | 7894 | 2018-07-03 | AlainF\]](#) [\[ArticleBasedOnModel | Internal peripheral article model\]](#) [\[ReviewsComments|JCT 1840: alignment needed with the last version of the model
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