ADLINK Technical Document

| Abstract	How to Measure Edge Separation		
OS	Windows		
Keyword	GPTC		
Related Products	USB-1901, USB-1902, USB-1903, USB-1210		
Date	2021-12-28	No.	202110001

● Issue Details:

This document outlines how to measure edge separation, one of the several GPTC functions available to users.

● More information:

Measures the time differentiation between two different pulse signals. The first pulse signal is connected to GPTC_GATE and the second signal is connected to GPTC_AUX. Clocks that pass between the rising edge signal of two different pulses through the 80 MHz internal clock or external clock are calculated.
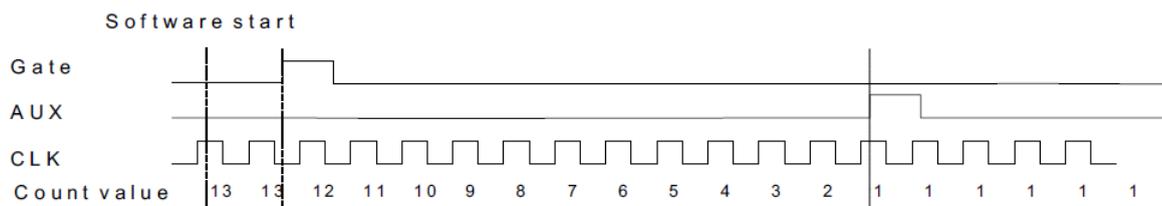
- Solution:

Step 1: Identify pins

Refer to the user manual and check the pin definitions to find the GPTC_AUX and GPTC_GATE pins. For the USB-1210, the GPTC_AUX is pin 16 and the GPTC_GATE is pin 17.

	Pin	Pin	
IGND	20	40	IGND
GPTC_CLK	19	39	GPTC_OUT0
GPTC_UD0	18	38	GPTC_OUT1
GPTC_GATE0	17	37	GPTC_OUT2
GPTC_AUX0	16	36	GPTC_OUT3
GPTC_CLK2	15	35	IGND
GPTC_UD2	14	34	N/C*
GPTC_GATE2	13	33	N/C*
GPTC_AUX2	12	32	N/C*
IGND	11	31	N/C*

For the USB-1900 series, the GPTC_AUX is pin 34, and the GPTC_GATE is pin 33.

| Pin	Function	Pin	Function
		38	GPTC_AUX2
17	GPTC_OUT3	37	GPTC_GATE2
16	GPTC_OUT2	36	GPTC_UD2
15	GPTC_OUT1	35	GPTC_CLK2
14	GPTC_OUT0	34	GPTC_AUX0
13	DGND	33	GPTC_GATE0
		32	GPTC_UD0
		31	GPTC_CLK
		30	DGND

Table 4-5: Timer/Counter Pin Definition

*For other DAQ pin definitions, please consult the user manual.

Step 2: Connect pins

Connect the two source signals for measurement to GPTC_GATE (pin 17) and GPTC_AUX (pin 16).
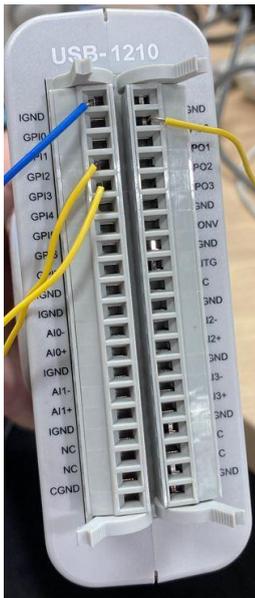
	Pin	Pin	
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GPTC_UD0	18	38	GPTC_OUT1
GPTC_GATE0	17	37	GPTC_OUT2
GPTC_AUX0	16	36	GPTC_OUT3
GPTC_CLK2	15	35	IGND
GPTC_UD2	14	34	N/C*
GPTC_GATE2	13	33	N/C*
GPTC_AUX2	12	32	N/C*
IGND	11	31	N/C*

Step 3: Install U-Test

Download and install the U-test utility from the ADLINK website.

U-Test

U-Test v. 18.11 Configuration-based Testing Software for ADLINK USB DAQ Series (NOTE: Please install MAPS Core BEFORE installing U-Test)
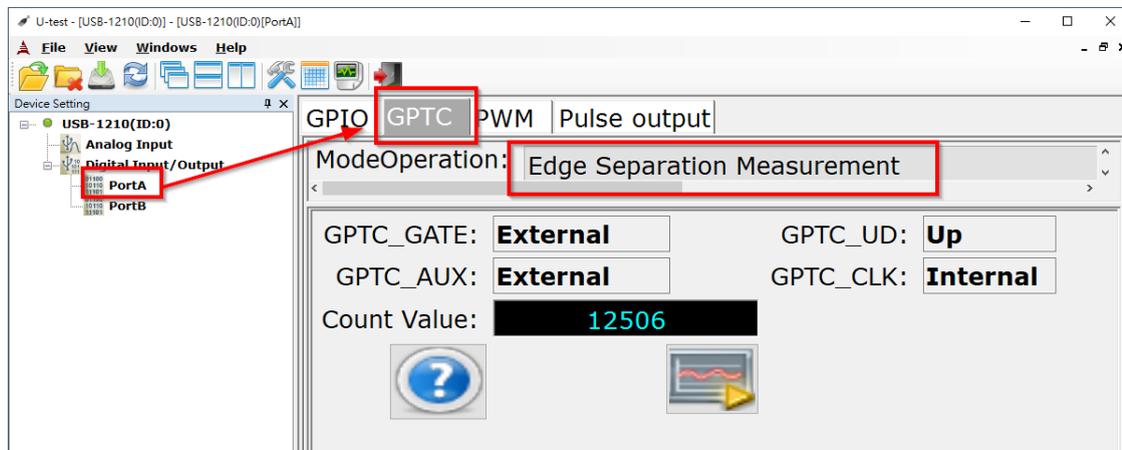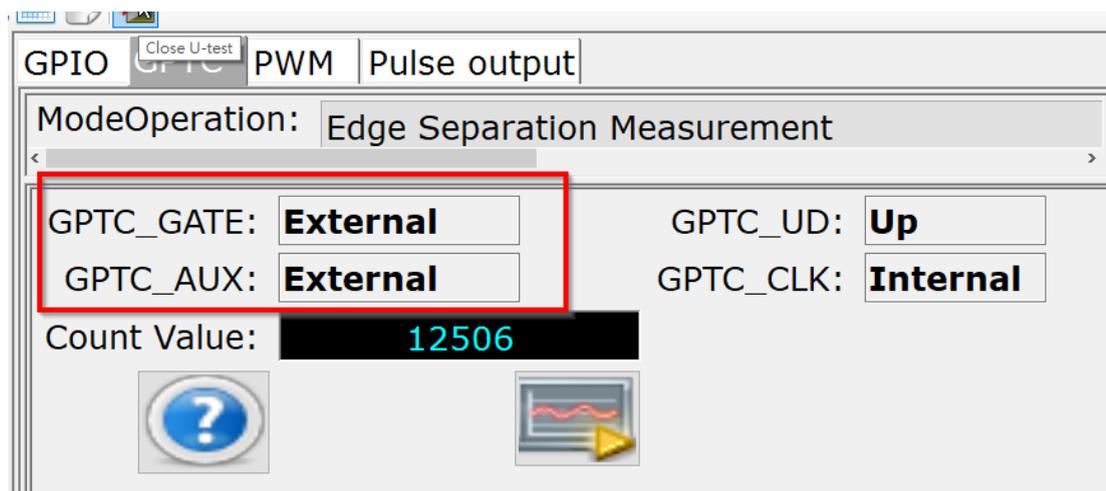
(7.50MB)
Upload: 2019-05-10

Step 4: Launch sample program

1. Launch U-Test
2. Click **Digital Input/Output** in the left pane
3. Select the **GPTC** tab in the right pane
4. Under **ModeOperation**, select **Edge Separation Measurement**

Step 5: Set gate and clock

Set **GPTC_GATE** and **GPTC_AUX** to External.

Step 6: Run

Press the run button (highlighted below) and the DAQ card will start to measure the edge separation. The two clocks are 1MHz and 5kHz, so the edge separation is 12506/80M = 0.000156325(s).