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RAP 4G 4C12 采集卡

如何同时触发两台 VT 相机

目录

| | |
|-------------------------------|---|
| 一、同步触发-硬件连接 | 1 |
| 第一步：连接相机 1 并设置相机与采集卡的参数 | 1 |
| 第二步：连接相机 2 并设置相机与采集卡的参数 | 6 |
| 第三步：两台相机同时采集图像 | 7 |
| 二、采集卡的异步触发 | 7 |

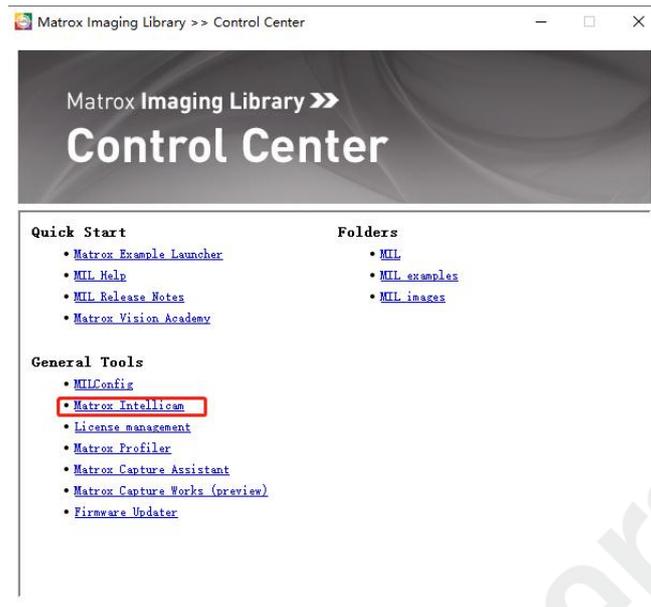
一、同步触发-硬件连接

RAP 4G 4C12 有 4 个 HD-BNC 接口，分别将两台相机接到采集卡的接口上：

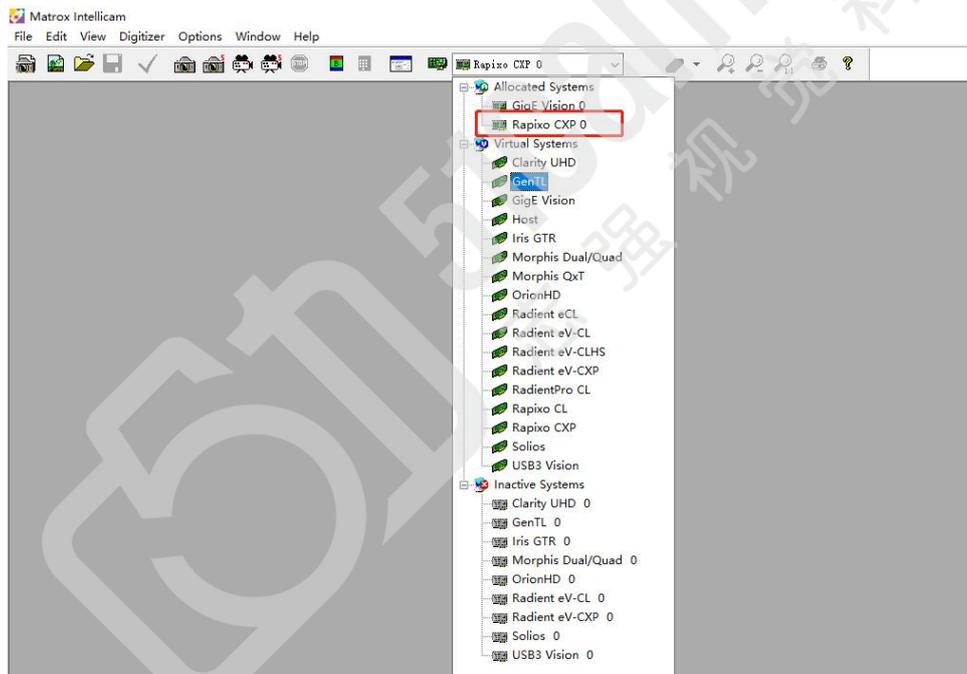
触发器两个通道的正负分别连接采集卡的 4+,5- 和 6+,8-管脚。

第一步：连接相机 1 并设置相机与采集卡的参数

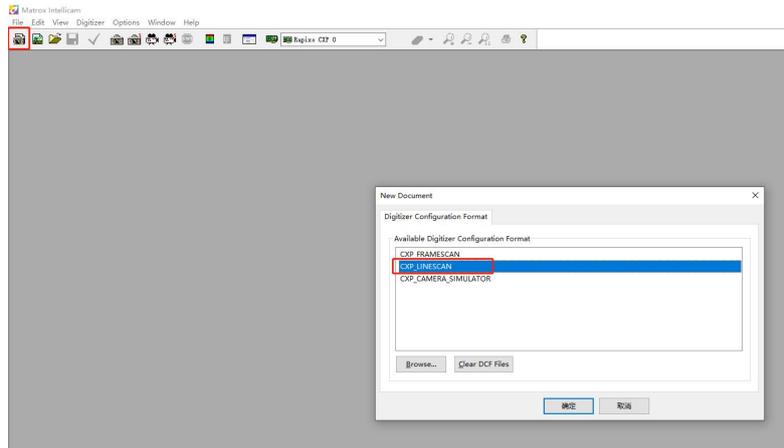
连接好相机后打开 MIL Control Center 软件选择 Matrox Intellicam



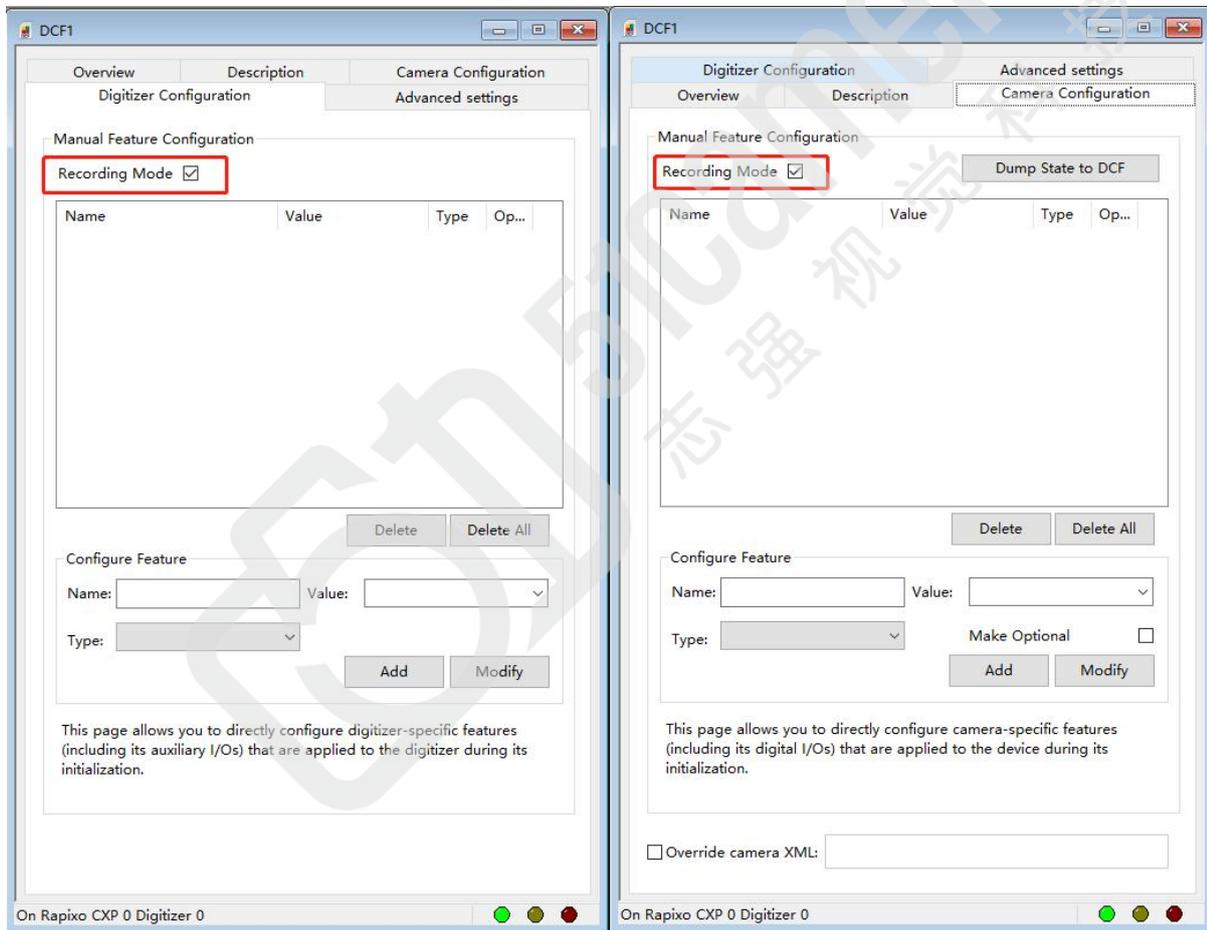
选择采集卡



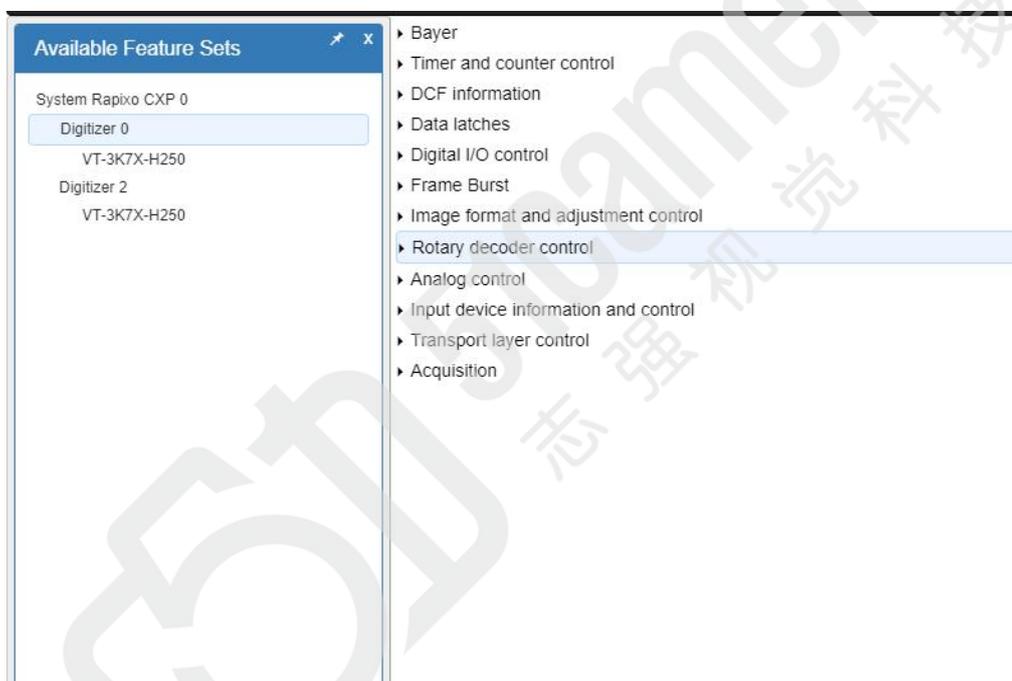
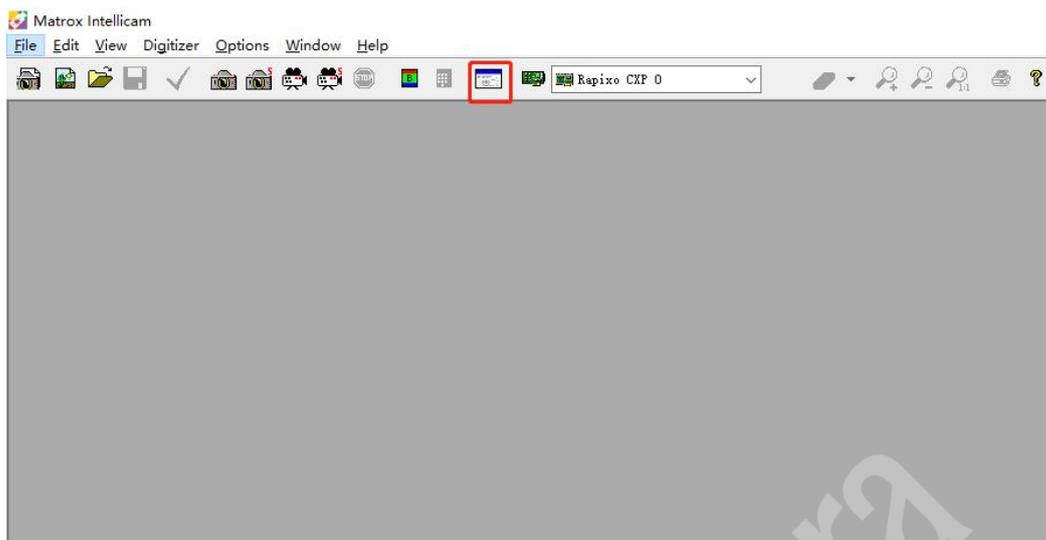
连接相机，选择线阵相机



勾选 Digitizer Configuration 和 Camera Configuration 下的 Recoeding Mode 保存采集卡以及相机的参数设置



打开 (Feature Browser) 相机和采集卡的设置



相机端参数设置:

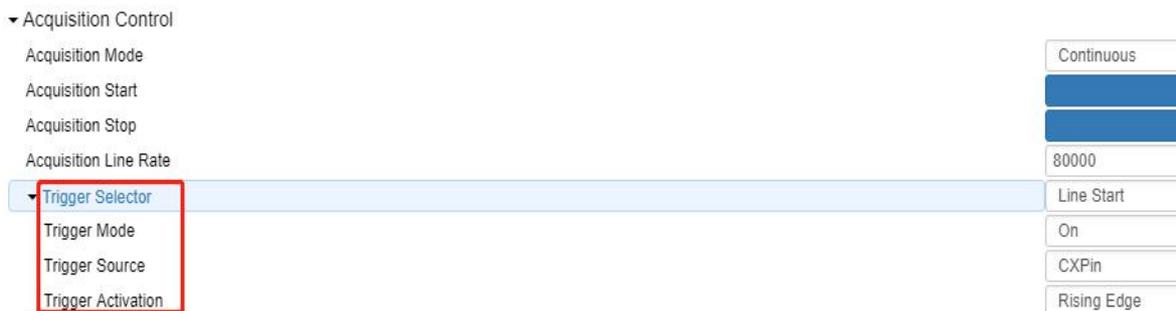
Acquisition Control 参数如下:

Trigger Selector=Line Start

Trigger Mode=on

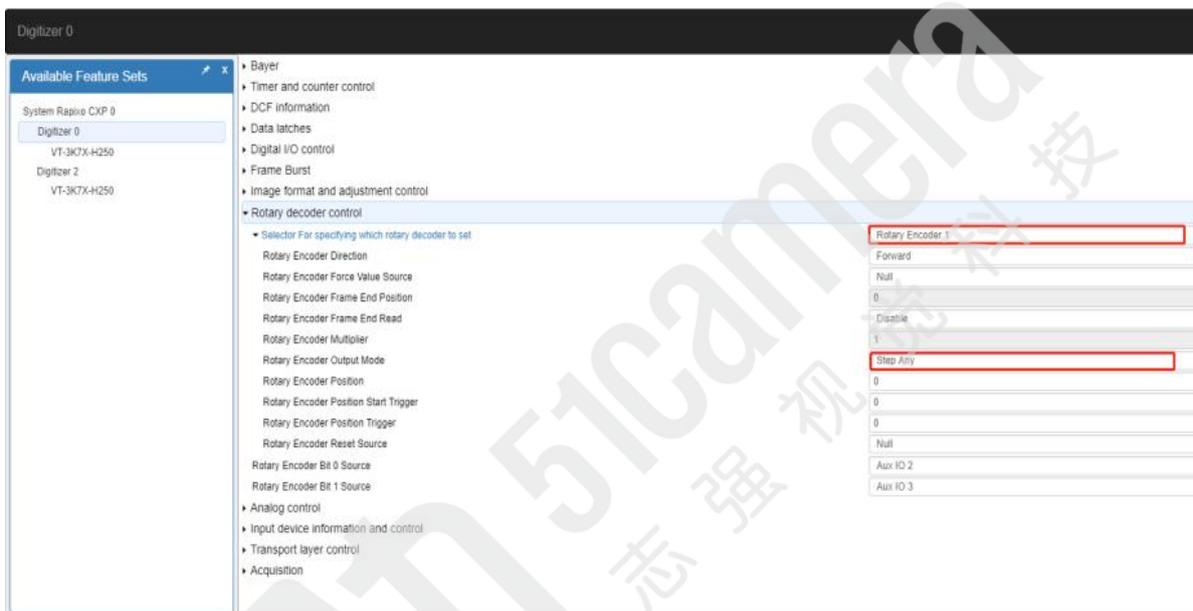
Trigger source=CXPin

Trigger Activation =Rising Edge



设置 Rotary decoder control / Rotary Encoder Output Mode 更改为 Step Any

Rotary decoder control 下的蓝色字体更改为 Rotary Encoder 1



采集卡参数设置:

Digitall I/O control 设置如下图所示:

Selector for specifying the type and number of the I/O signal to affect =TL Trigger

IO Interrupt State=Enable

IO Mode=Output,

IO Source=Timer 1

▼ Digital I/O control

- ▶ Selector For specifying the bit in a static-user-output register to affect
- ▶ Selector For specifying the static-user-output register
- ▼ Selector For specifying the type and number of the I/O signal to affect
 - IO Format
 - IO Interrupt Activation
 - IO Interrupt State
 - IO Mode
 - IO Source
 - IO Status
- ▶ Selector For specifying the type of I/O signal to inquire

Aux IO Count

Aux IO Count In

Aux IO Count Out

TL Trigger Count

TL Trigger Count In

TL Trigger Count Out

User Bit Count

| |
|-----------------------|
| User Bit TL Trigger 0 |
| User Bit |
| TL Trigger |
| Any Edge |
| Enable |
| Output |
| Timer 1 |
| Unknown |
| Null |
| 32 |
| 28 |
| 16 |
| 2 |
| 1 |
| 1 |
| 32 |

Timer and counter control 设置如下:

Selector for specifying which on-board timer to control =Timer 1

Timer Delay 和 Timer Duration =2000

Timer State= Enable

Timer Trigger Source =Rotary Encoder 1

▼ Timer and counter control

▼ Selector For specifying which on-board timer to control

Timer Arm: Timer 1

Timer Arm Activation: Disable

Timer Arm Source: Edge Rising

Timer Clock Frequency: Continuous

Timer Clock Source: 125000000.000000 Hz

Timer Clock Source: Sysclk

Timer Delay: 2000 ns

Timer Delay 2: 0 ns

Timer Duration: 2000 ns

Timer Duration 2: 0 ns

Timer Output Inverter: Disable

Timer Reset Source: Null

Timer State: Enable

Timer Trigger Activation: Edge Rising

Timer Trigger Missed: Disable

Timer Trigger Overlap: Reset

Timer Trigger Rate Divider: 1

Timer Trigger Software: Execute

Timer Trigger Source: Rotary Encoder 1

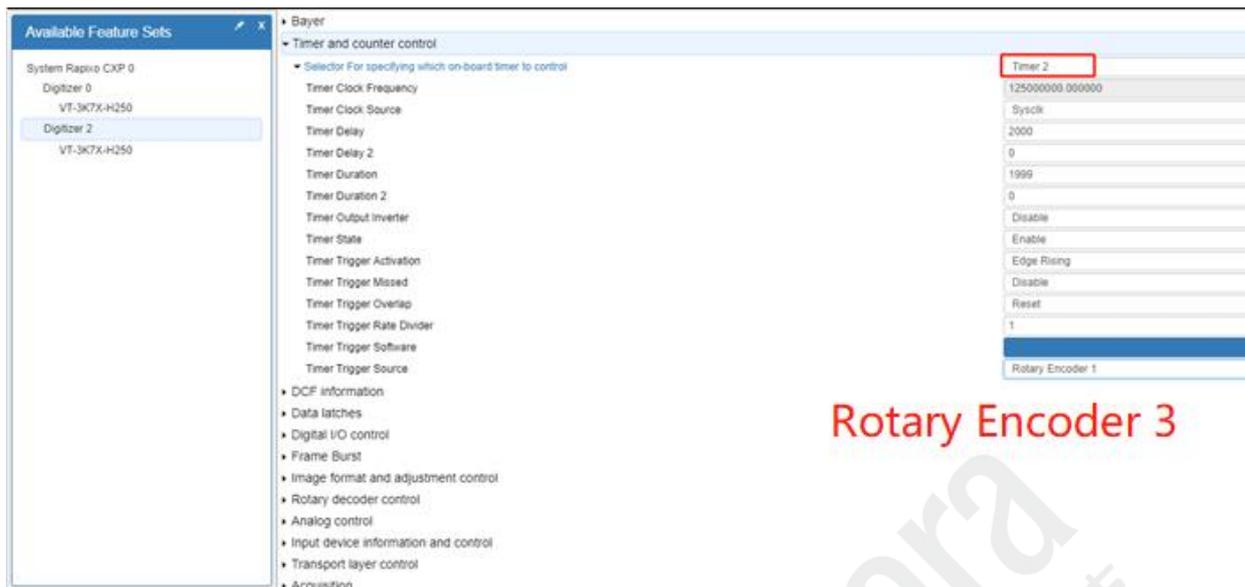
发送信号, 点击 Grab 采集, 看图像帧率是否正常。

第二步: 连接相机 2 并设置相机与采集卡的参数

相机 2 参数设置与相机 1 相同。

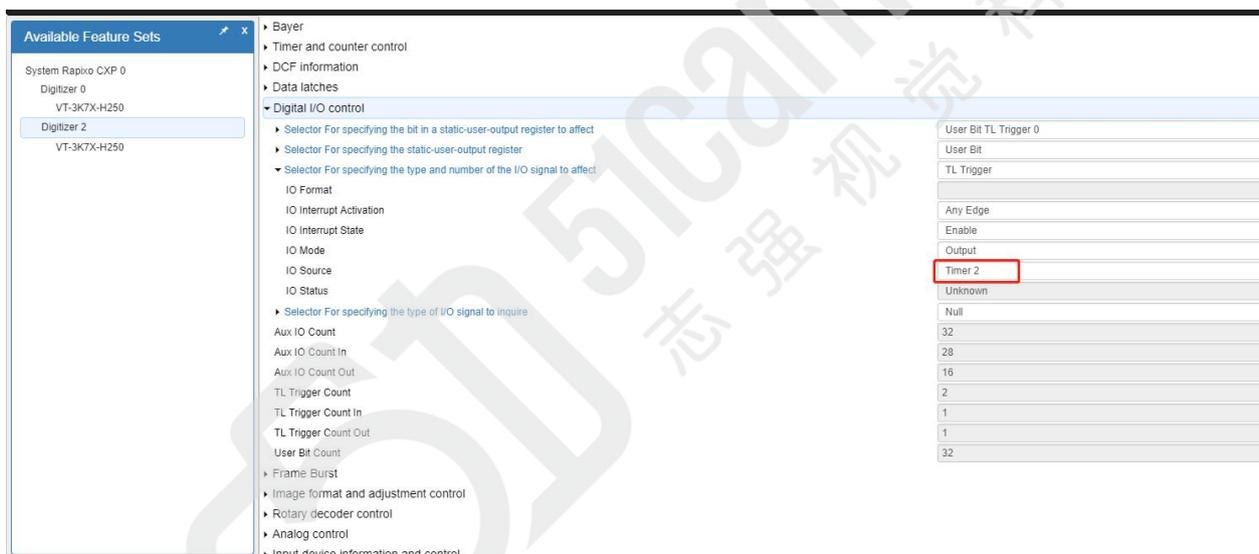
Digitizer2 设置如下:

Timer and counter control=Timer 2 , Timer Trigger Source =Rotary Encoder 3 其余设置同 Digitizer0



Rotary Encoder 3

IO Source=Timer 2.



第三步：两台相机同时采集图像

在相机 1 与相机 2 设置完成后，发送信号，对两台相机进行 Grab 采集，实现两个相机同时采集，看图像帧率是否正常。

二、采集卡的异步触发

本文档异步触发以 TTL 信号和差分信号为例

1、硬件连接

RAP 4G 4C12 有 4 个 HD-BNC 接口，分别将两台相机接到采集卡的接口上：

Timer 1 连接采集卡的 4+,5-；（本文档相机 1 使用差分信号做线触发）

Timer 2 连接采集卡的 1+,7-; (本文档相机 2 使用 TTL 信号做线触发)

2、参数设置

相机端参数设置:

▼ Acquisition Control

- Acquisition Mode: Continuous
- Acquisition Start: [Blue Button]
- Acquisition Stop: [Blue Button]
- Acquisition Line Rate: 80000
- ▼ Trigger Selector
 - Trigger Mode: Line Start
 - Trigger Source: On
 - Trigger Activation: CXPin

Digitizer0 参数设置与同步采集时相同 (详见第一步中 timer1 的设置)

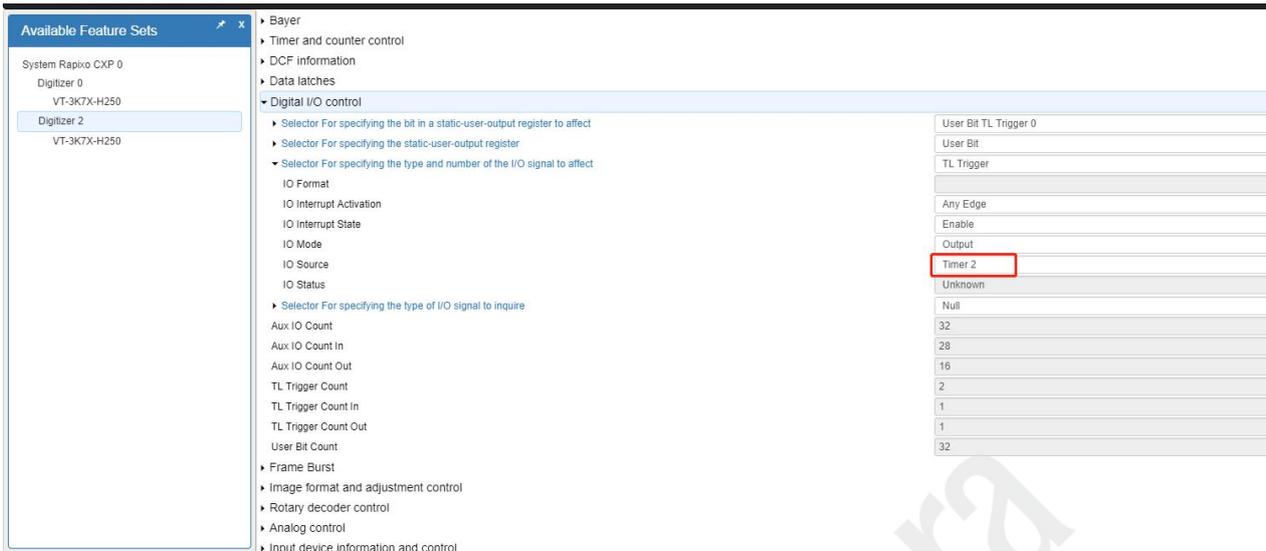
采集卡 digitizer2 参数设置:

Timer and counter control=Timer 2

Timer Trigger Source =Aux IO 4

The screenshot shows the 'Available Feature Sets' window on the left, with 'Digitizer 2' selected. The main configuration area is expanded to 'Timer and counter control', where 'Timer 2' is selected in the dropdown menu. The right-hand side shows the configuration parameters for Timer 2, with 'Aux IO 4' selected in the 'Timer Trigger Source' dropdown.

IO Source=Timer 2。



3、在相机 1 与相机 2 设置完成后，发送不同频率的信号，对两台相机进行 Grab 采集，实现两个相机同时采集不同帧率，实现异步采集，看图像帧率是否正常。

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