

# RAP 4G 4C12 采集卡

# <u>如何同时触发两台 VT 相机</u>

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### 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

Matrox Intellicam     Re, Edit View Digitizer Options Window Help	
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	New Document X Digitizer Configuration Format Autilable Digitizer Configuration Format OV FRANKAS OV CONTRACT OF CONTRACT Browse Disc Disc Trilles Browse Disc Disc Disc Disc Trilles Browse Disc Disc Disc Disc Disc Disc Disc Disc

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

Overview	Description	Camera Configuration	Digitizer Configura	tion	Advanced settings
Digitizer Configi	uration	Advanced settings	Overview	Description	Camera Configuration
1anual Feature Config	juration		Manual Feature Configura	ation	
lecording Mode 🗹			Recording Mode 🗹	-//	Dump State to DCF
Name	Value	Туре Ор	Name	Value	Туре Ор
		Delete All	15		Delete Delete All
Configure Feature		Delete Delete All	Configure Feature		Delete Delete All
Configure Feature	Value:	Delete All	Configure Feature	Value:	Delete Delete All
Configure Feature Name:	Value:	Delete All	Configure Feature Name:	Value:	Delete Delete All
Configure Feature Name: Type:	Value:	Delete All	Configure Feature Name: Type:	Value:	Delete Delete All           Make Optional           Add
Configure Feature Name: Type: This page allows you (including its auxiliary nitialization.	Value:	Delete Delete All	Configure Feature Name: Type: This page allows you to (including its digital I/Os initialization.	Value: Value: v directly configure c i) that are applied t	Delete Delete All           Delete         Delete All           Make Optional            Add         Modify           amera-specific features o the device during its

打开(Feature Browser)相机和采集卡的设置



Trigger Activation =Rising Edge

Acquisition Control	
Acquisition Mode	Continuous
Acquisition Start	
Acquisition Stop	
Acquisition Line Rate	80000
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

Digitizer 0		
Available Feature Sets	x      Bayer     Timer and counter control	
System Rapixo CXP 0	DCF information	
Digitizer 0	Data latches	
VT-3K7X-H250 Digitizer 2 VT-3K7X-H250	Digital I/O control     Frame Burst     image format and adjustment control	
	Rotary decoder control	
	Selector Are Spacingly suitor for the selection     Rotary Encoder Direction     Rotary Encoder Frame End Position     Rotary Encoder Frame End Position     Rotary Encoder Frame End Read     Rotary Encoder Mutoiler     Rotary Encoder Mutoiler     Rotary Encoder Position     Rotary Encoder Rist Source     Rotary Encoder Rist Source     Rotary Encoder Rist Source     Rotary Encoder Rist Source     Rotary Encoder Rist 1 Source     Rotary Encoder Rist 1 Source     Analog control     Input device Information and control	Notif       Porward       Nut       0       -Dumble       3       Step Any       0
	Transport layer control     Acquisition	

## 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

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•	Digital	1/0	control	
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<ul> <li>Selector For specifying the bit in a static-user-output register to affect</li> </ul>	User Bit TL Trigger 0
<ul> <li>Selector For specifying the static-user-output register</li> </ul>	User Bit
<ul> <li>Selector For specifying the type and number of the I/O signal to affect</li> </ul>	TL Trigger
IO Format	
IO Interrupt Activation	Any Edge
IO Interrupt State	Enable
IO Mode	Output
IO Source	Timer 1
IO Status	Unknown
<ul> <li>Selector For specifying the type of I/O signal to inquire</li> </ul>	Null
Aux IO Count	32
Aux IO Count In	28
Aux IO Count Out	16
TL Trigger Count	2
TL Trigger Count In	1
TL Trigger Count Out	1
User Bit Count	32
mer and counter control 设置如下:	
elector 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

▶ Bayer		
Connection		
Timer and counter control		
- Selector For specifying which on-board timer to co	ntrol Timer 1	
Timer Arm	Disable	
Timer Arm Activation	Edge Rising	
Timer Arm Source	Continuous	
Timer Clock Frequency	12500000.000000	Hz
Timer Clock Source	Syscik	
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 DigitizerO

Available Contine Cote	<ul> <li>* Bayer</li> </ul>	
Available Feature Sets	Timer and counter control	
System Rapixo CXP 0	<ul> <li>Selector For specifying which on-board timer to control</li> </ul>	Timer 2
Digitizer 0	Timer Clock Frequency	125000000 000000
VT-3K7X-H250	Timer Clock Source	Sysch
Dipitizer 2	Timer Delay	2000
VT-3K7X-H250	Timer Delay 2	0
	Timer Duration	1999
	Timer Duration 2	0
	Timer Output Inverter	Disable
	Timer State	Enable
	Timer Trigger Activation	Edge Rising
	Timer Trigger Missed	Disable
	Timer Tripper Overlap	Reset
	Timer Trigger Rate Divider	1
	Timer Trigger Software	
	Timer Trigger Source	Rotary Encoder 1
	DOF information	
	Data latches	Potany Encodor 2
	Digital I/O control	Rolary Encouer 5
	Frame Burst	
	<ul> <li>Image format and adjustment control</li> </ul>	
	Rotary decoder control	
	Analog control	
	<ul> <li>Input device information and control</li> </ul>	
	Transport layer control	
	Acquisition	

#### 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:

A annuighting Manda	Orationa	
Acquisition Mode	Continuous	
Acquisition Start	J.	
Acquisition Stop	[	
Acquisition Line Rate	80000	
<ul> <li>Trigger Selector</li> </ul>	Line Start	
Trigger Mode	On	
Trigger Source	CXPin	
Trigger Activation	Rising Edg	

Timer and counter control=Timer 2

Timer Trigger Source = Aux IO 4



IO Source=Timer 2.

Ausilable Facture Coto 🛛 🖈 X	▶ Bayer	
Available Feature Sets	Timer and counter control	
System Rapixo CXP 0	DCF information	
Digitizer 0	Data latches	
VT-3K7X-H250	Digital I/O control	
Digitizer 2	Selector For specifying the bit in a static-user-output register to affect	User Bit TL Trigger 0
VT-3K7X-H250	Selector For specifying the static-user-output register	User Bit
	✓ Selector For specifying the type and number of the I/O signal to affect	TL Trigger
	IO Format	
	IO Interrupt Activation	Any Edge
	IO Interrupt State	Enable
	IO Mode	Output
	IO Source	Timer 2
	IO Status	Unknown
	Selector For specifying the type of I/O signal to inquire	Null
	Aux IO Count	32
	Aux IO Count In	28
	Aux IO Count Out	16
	TL Trigger Count	2
	TL Trigger Count In	1
	TL Trigger Count Out	1
	User Bit Count	32
	<ul> <li>Frame Burst</li> </ul>	
	Image format and adjustment control	
	Rotary decoder control	
	Analog control	
L	Input device information and control	

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。

联系我们:

北京志强视觉科技发展有限公司
 电话: +86 (010) 80482120
 传真: +86 (010) 80483130
 邮箱: 51camera@51camera.com.cn
 网址: www.51camera.com.cn