



Xtium-CL MX4 采集卡

如何连接双向编码器实现线触发采集

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第一步: 了解采集卡 I/O 端口管脚定义

Xtium-CL MX4 采集卡的 I/O 接口为 DH60-27P 接口, 图示为下图黑色方框内的 D1:



其管脚定义如下(未说明的管脚为预留):

功能	管脚	管脚	功能
GND	1	10	GND
RS-422 Shaft Encoder Phase A (-)	2	11	Strobe 1 / General Output 1
RS-422 Shaft Encoder Phase A (+)	3	12	General Output 2

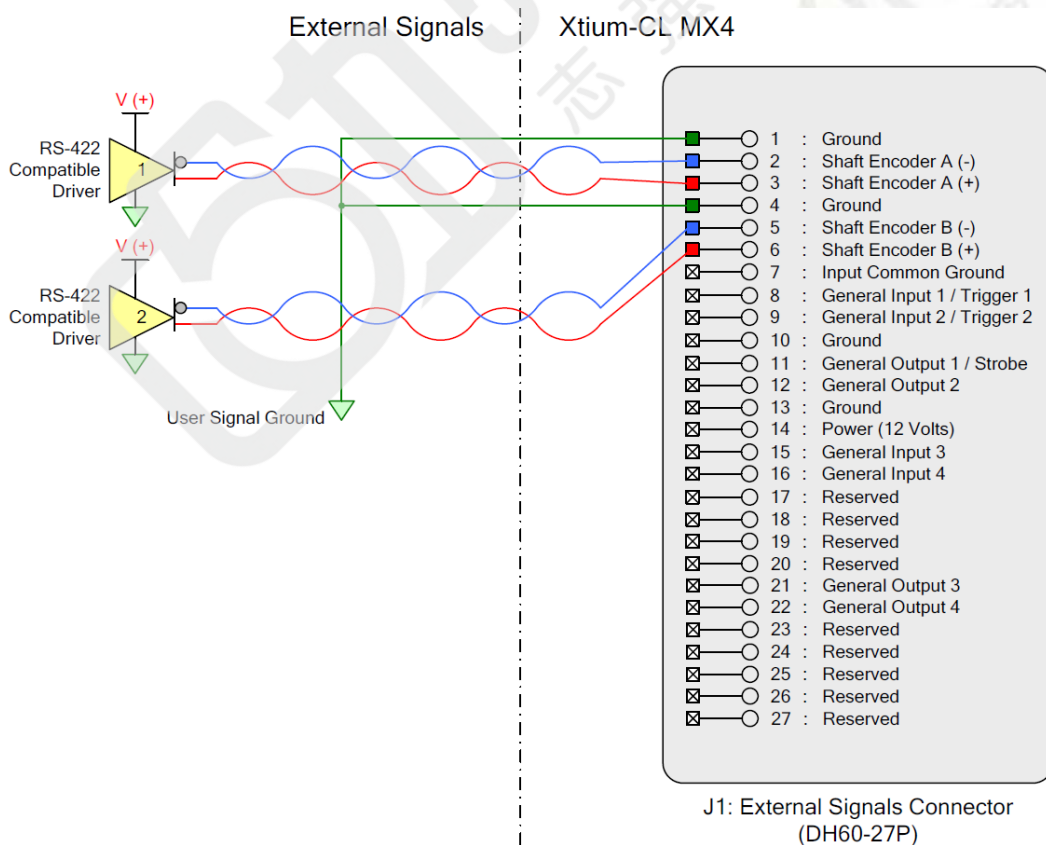
GND	4	13	GND
RS-422 Shaft Encoder Phase B (-)	5	14	Power Output 12 Volts, 350mA max
RS-422 Shaft Encoder Phase B (+)	6	15	General Input 3
General Input Common			
External Trigger Input 1 (-)	7	16	General Input 4
General Input 1 (-)			
External Trigger Input 1 (+)	8	21	General Output 3
General Input 1 (+)			
External Trigger Input 2	9	22	General Output 4
General Input 2			

第二步：正确连接触发信号

Xtimun-CL MX4 采集卡可以连接的 RS-422 Shaft Encoder 编码器信号电气特性如下：

RS-422 External Driver	MIN	TYP
Differential Output Voltage High (V_{ODH})	2 V	14 V
Differential Output Voltage Low (V_{ODL})	-14 V	-2 V

连接 RS-422 Shaft Encoder 编码器的接线示意图如下：



即: 编码器信号 A+ —— Pin3,
 编码器信号 A- —— Pin2
 编码器信号 B+ —— Pin6
 编码器信号 B- —— Pin5
 编码器信号 GND —— Pin1
 编码器信号 GND —— Pin4

第三步: 设置相机参数

将相机工作模式设置成线触发方式, 具体如何设置请咨询相机供应商。

第四步: 设置采集卡参数

要实现线触发功能, 需要设置的参数:

1) Board-->Advanced Control 下属相关参数, 如下图所示:

Parameters		
Category	Parameter	Value
Basic Timing	Line Sync Source	Shaft Encoder input
Advanced Control	Internal Line Trigger Frequency (in Hz)	5000
External Trigger	Camera Line Trigger Frequency Min (in Hz)	1
Image Buffer and ROI	Camera Line Trigger Frequency Max (in Hz)	16777215
	Camera Control method selected	Line Integration
	Line Integration Method Setting	Method 3
	Line Trigger Method Setting	None
	Strobe Method Setting	None
	Time Stamp Base	Microseconds
	Board Sync Output 1 Source	Disabled
	Board Sync Output 2 Source	Disabled
	CC1	Pulse #1
	CC2	Not Used
	CC3	Not Used
	CC4	Not Used

设置: Line Sync Source = Shaft Encoder input
 Camera Control method selected = Line Integration
 Camera Integration Method Setting = Method 3
 CC1 = Pulse #1

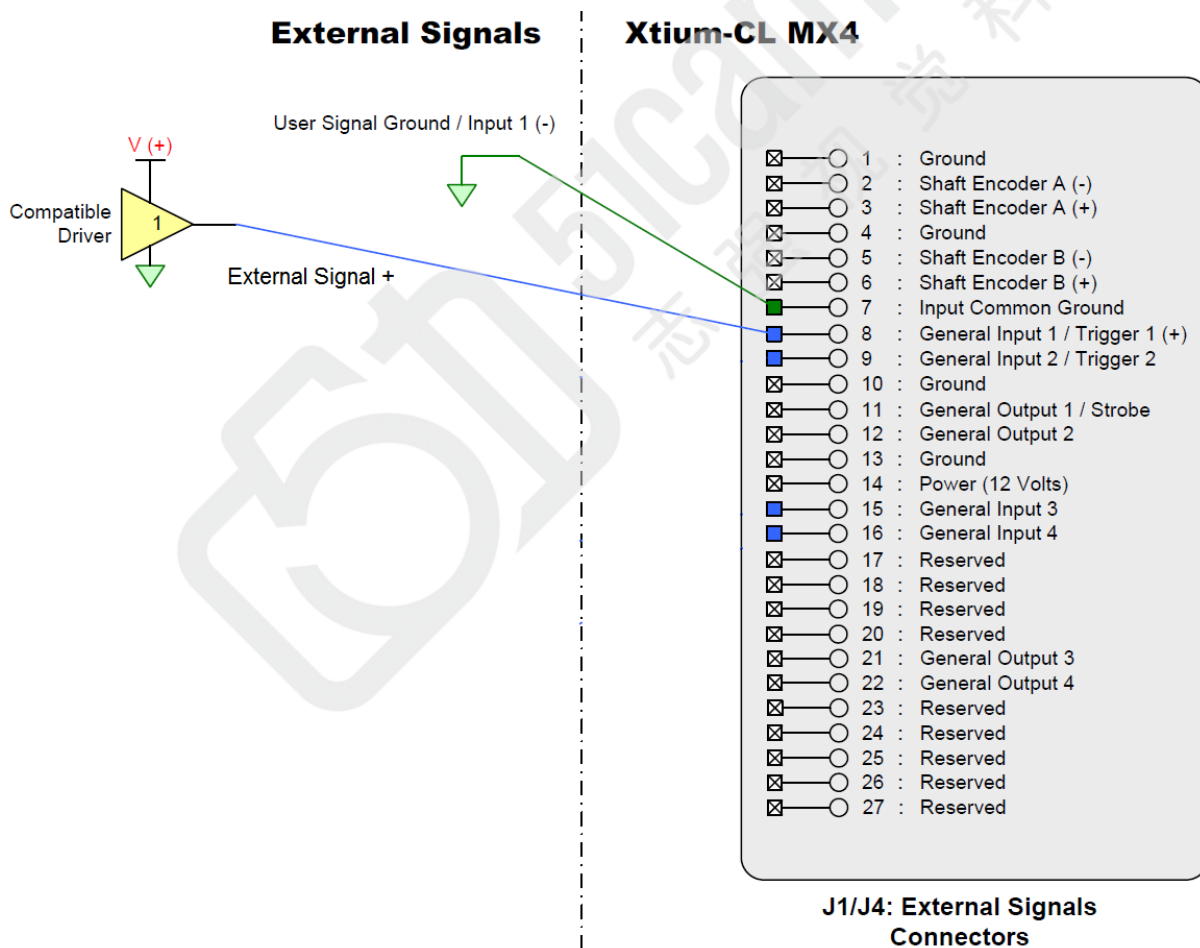
2) Board-->External Trigger 下属相关参数, 如下图所示:

Category	Parameter	Value
Basic Timing	External Trigger	Enable
Advanced Control	External Trigger Detection	Rising Edge
External Trigger	External Trigger Level	12V
Image Buffer and ROI	External Trigger Source	External Trigger #1
	External Trigger Minimum Duration (in us)	20
	Frame Count per External Trigger	1
	External Trigger Delay	0
	External Trigger Delay Time Base	Nanoseconds
	Shaft Encoder Direction	Ignored
	Shaft Encoder Edge Drop	0
	Shaft Encoder Edge Multiplier	1
	Shaft Encoder Order	Device Specific
	External Line Trigger Detection	Rising Edge
	External Line Trigger Source	Shaft Encoder Phase A and B

设置: External Line Trigger Source = Shaft Encoder Phase A and B

第五步: 根据需要连接并设置帧触发功能

1) 连接帧触发信号, 接线示意图如下:



即: 帧触发信号+ —— Pin8
 帧触发信号- (即 GND) —— Pin7

2) 设置帧触发参数。Board-->External Trigger 下属相关参数, 如下图所示:

Parameters		
Category	Parameter	Value
Basic Timing	External Trigger	Enable
Advanced Control	External Trigger Detection	Rising Edge
External Trigger	External Trigger Level	12V
Image Buffer and ROI	External Trigger Source	External Trigger #1
	External Trigger Minimum Duration (in us)	20
	Frame Count per External Trigger	1
	External Trigger Delay	0
	External Trigger Delay Time Base	Nanoseconds
	Shaft Encoder Direction	Ignored
	Shaft Encoder Edge Drop	0
	Shaft Encoder Edge Multiplier	1
	Shaft Encoder Order	Device Specific
	External Line Trigger Detection	Rising Edge
	External Line Trigger Source	Shaft Encoder Phase A and B

设置: External Trigger = Enable

External Trigger Source = External Trigger #1

另外根据实际情况, 设置 External Trigger Level = TTL / 12V / 24V

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