

C. scan P.Nr.:10

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Version history

1.12	Aug 2019	Counter Conig add. IO4 0 Counter Input / 1= Status Input
1.11	Jan 2020	Encoder can be used as Step/Dir Beta, no Tango Support jet!
1.10	Aug 2019	Add HW Inhibit IO 15 and SW Inhibit Reg. 15
1.9	Okt 2018	Fix: Disable Output Tigger and Gate when it is in extrenal trigger / gate mode
1.8	Okt 2018	Add New Trigger Mode: External Gate
1.7	Sep 2018	Disable Output Tigger and Gate when it is in external trigger mode
1.6	Feb 2018	Last Release

Tigger Modi

For the continuous scans with the PiLC there are different Trigger modi:

Number	Start	Steps	Example	Important Information
1	Encoder Position	Encoder Position	Trigger generation starts at encoder pos. 100 and every 10 encoder steps a trigger is generated	
2	Time based	Time based	Trigger generation starts after 100ms and every 10ms a trigger is generated	
3	Encoder Position	Time based	Trigger generation starts at encoder pos. 100 and every 10ms a trigger is generated	
4	Time based	Encoder Position	Trigger generation starts after 100ms and every 10 encoder steps a trigger is generated	
5	External Trigger	External Trigger	A external device generate the trigger	To get all measurement points, one needs to send 1 extra triggers or set the number of triggers larger and disarm after the scan to save the last measurement.
8	External Gate	External Gate	A external device generate a gate signal	To get all measurement points, one needs to send 1 extra Gate or set the number of triggers larger and disarm after the scan to save the last measurement.

Number	Start	Steps	Pause	Example
6	Encoder Position	Encoder Position	Encoder Position	Trigger generation starts at encoder pos. 100 and every 10 encoder steps a trigger is generated. The Trigger generation pause, when encoder pos. is 1000
7	Encoder Position	Time	Encoder Position	Beta. Please don't use!!!



Position based triggering

Be aware that when you use position based triggering that the position of the encoder only can have discrete values which are determined by the resolution of the used encoder. E.G. When your encoder has a resolution of 20 nm you will only get position increments and thus positions which are multiple of this value away from your calibration value. In this example you will thus not be able to generate position triggers which are 150 nm apart since this is not a multiple of the encoder resolution, being 20 nm.



Gate Outout

When you use the Gate Output and the timing Mode, be sure that the TriggerPulseLength must be >0.00001s!

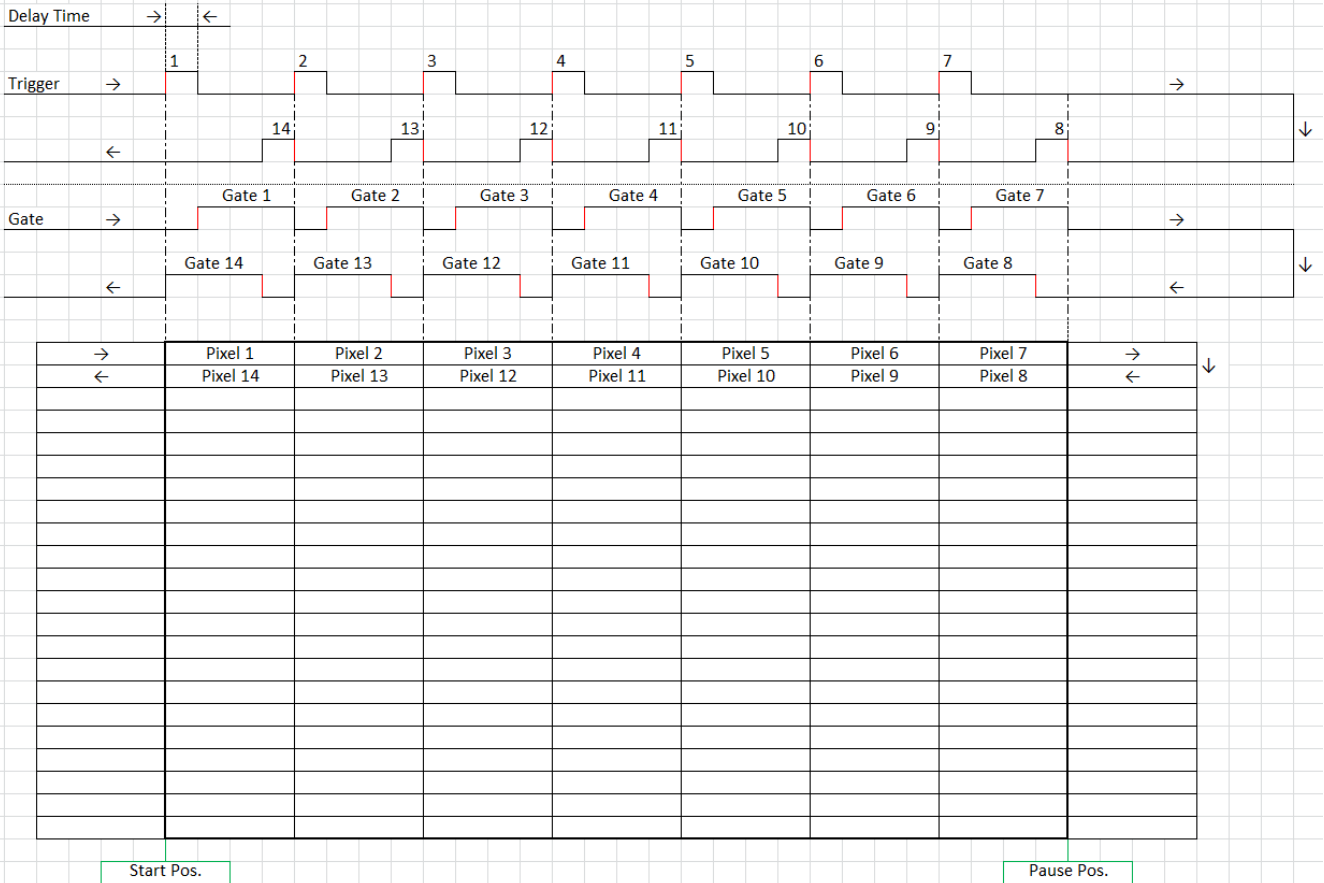


PiLCTGConnected

When you use the function "PiLCTGConnected" and the timing Mode, be sure that "TimeTriggerStart" must be >0.5s

V1.3 Zick Zack Mode

Rising Edge/Store Data



Dataset

By the rising edge of the Trigger, one of the follow dataset will be saved in the 32MB ram.

Trigger counter	Encoder 1 Position	Counter	Encoder 2 Position	Encoder 3 Position	Encoder 4 Position	Encoder 5 Position	Checksum (Xor from Data 1 to 7)
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Encoder Splitter

To get the Encoder signals in the PiLC you need a Encoder Splitter

The Splitter converts the differential signals to singled ended.

I/Os

Number	Typ	Function
1	Input	Encoder 1 A
2	Input	Encoder 1 B
3	Input	External Trigger
4	Input	Counter
5	Input	Encoder 2 A
6	Input	Encoder 2 B
7	Input	Encoder 3 A
8	Input	Encoder 3 B

9	Input	Encoder 4 A
10	Input	Encoder 4 B
11	Input	Encoder 5 A
12	Input	Encoder 5 B
13	Output	Trigger
14	Output	Gate
15	N/A	N/A
16	N/A	N/A

Register

Number	In Register	Out Register
1	Control	Position ENC 1
2	ENC/Time Start Pos	Position ENC 2
3	ENC/Time Step	Position ENC 3
4	ENC/Time Stop Pos	Position ENC 4
5	ENC Load 1	Position ENC 5
6	Tigger Delay	Trigger Counter
7	ENC Load 2	Save Counter
8	ENC Load 3	N/A
9	ENC Load 4	N/A
10	ENC Load 5	N/A
11	ENC_Select	N/A
12	ENC Pause Pos	N/A
13	ENC Config	N/A
14	Counter Config	Counter Out
15	N/A	N/A
16	N/A	N/A



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