WIDEPIX®

Synchronization of

WIDEPIX devices

Version 1.0

User Guide

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General description

Introduction

WIDEPIX® devices in general (**FITPIX**, **MODUPIX**, **WIDEPIX**$_{2x5}$) allow:

1. mutual time synchronization of two or more devices
2. external triggering of one or more devices

To achieve synchronization or triggering, one device must be defined as ***Master***, and others are ***Slaves***.

In this document, **FITPIX** is used as an example on all photographs.

Physical interconnection

When connecting several **WIDEPIX**® devices to computer only using USB cable, the precise timing (<1us) is not possible due to frame granularity of USB communication (1ms). For this purpose ADVACAM s.r.o. delivers ***synchronization cable*** (with labeled Master end) allowing direct

interconnection among devices. *Synchronization cable* is then connected to ***I/O connector***.

I/O connector description

The I/O digital connector contains four signals (pins 4,6,8,10) that are used for mutual synchronization.

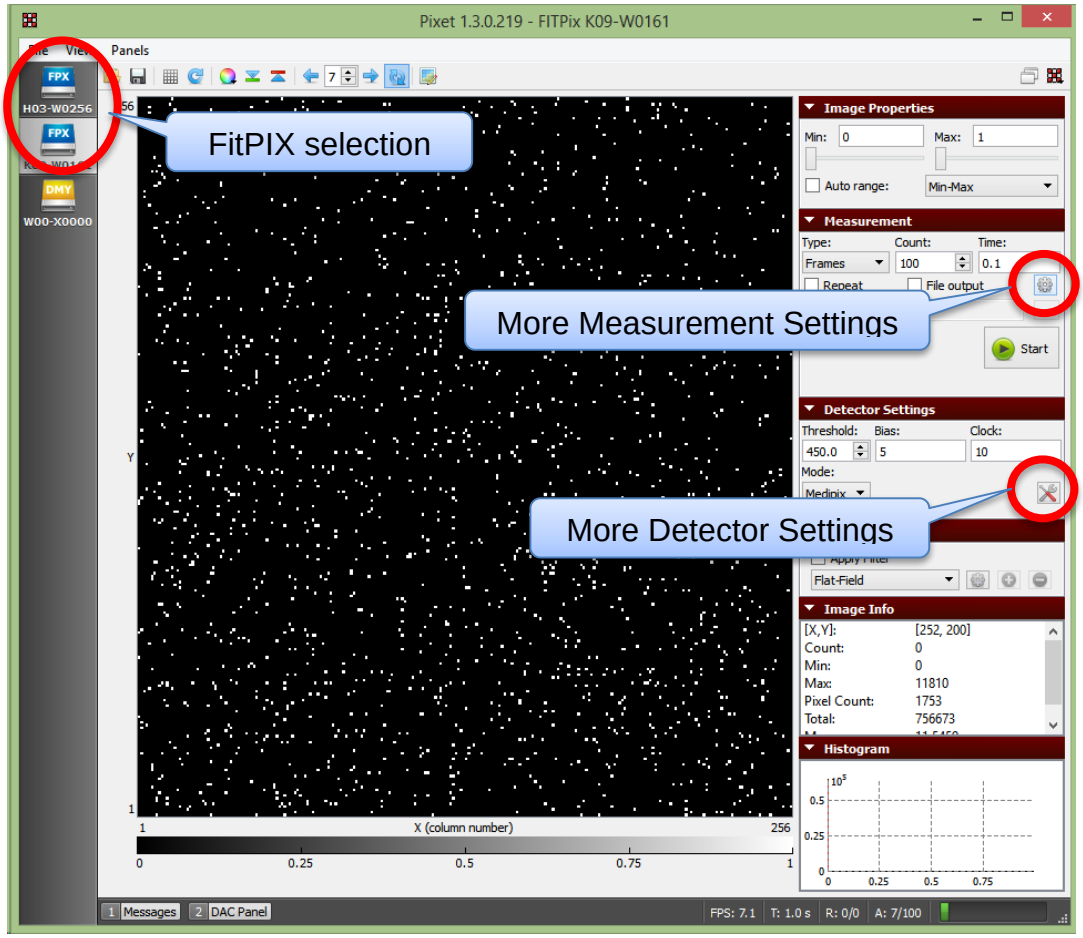
1	**GND**	**2**	**+5V**
3	Reserved	4	Ready In
5	Reserved	6	Trigger In
7	Reserved	8	Ready Out
9	Reserved	10	Trigger Out

Logic level voltages for input signals

I/O Conn. Input CMOS (pin 4,6)		**Min**	**Max**	
VINL	Voltage Low	0	1.15	V
VINH	Voltage High	2.15	5.0	V

Software

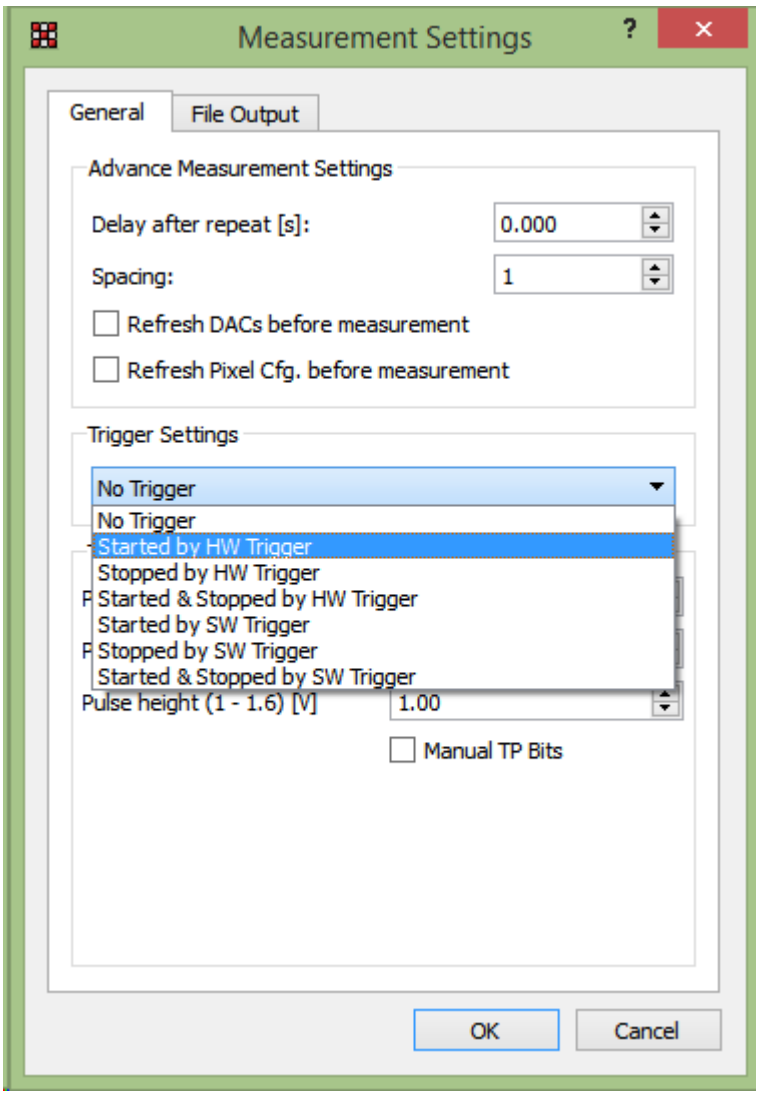
Synchronization is only working with **PIXET PRO** software.



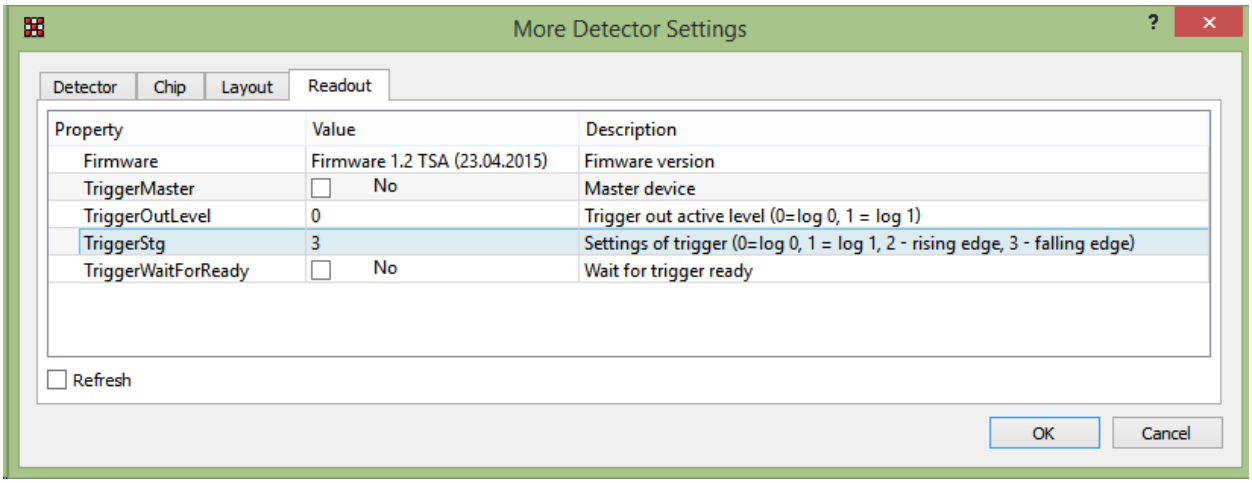
Step-by-step procedures

Triggeing of one WIDEPIX® devices with external source (without feedback)

1. Connect external triggering signal to ***Trigger In*** pin (6).
2. Start **PIXET PRO** software
3. Open ***More Measurement Settings***, and select trigger settings to ***Started by HW Trigger***.

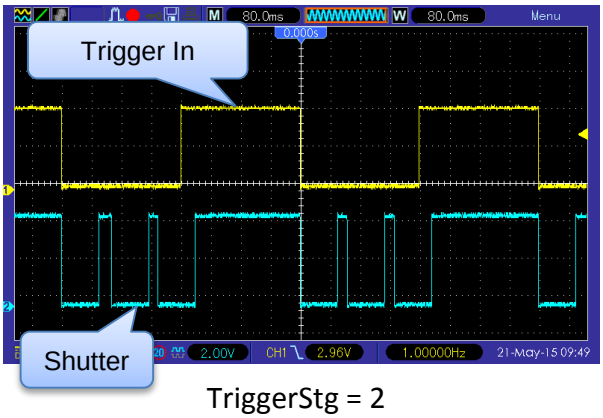


4. Open Select ***More Detector Settings*** window and under tab ***Readout***.

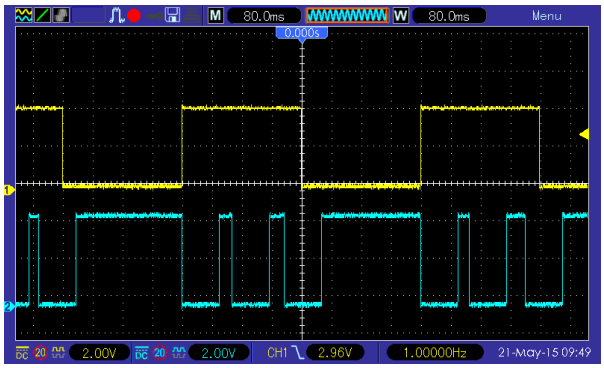


5. Depending on the ***TriggerStg*** value, the behavior of shutter signal is following.

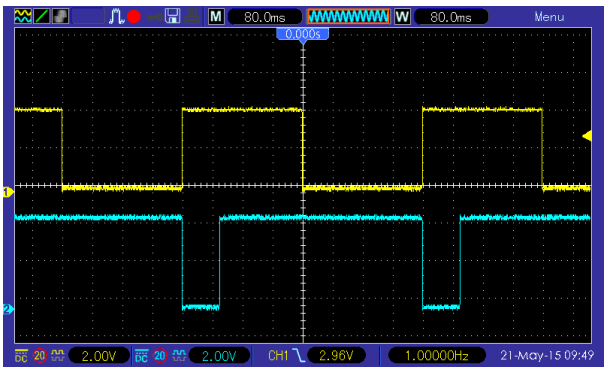
TriggerStg = 0



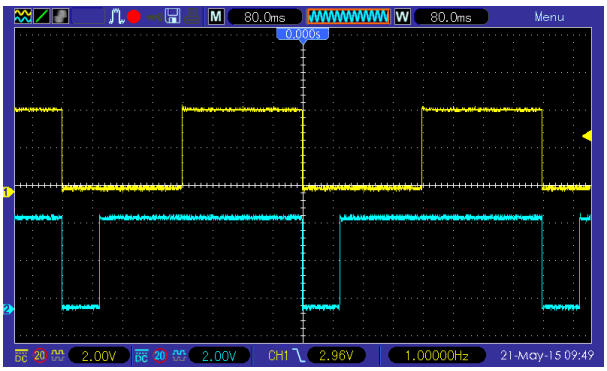
TriggerStg = 1



TriggerStg = 2



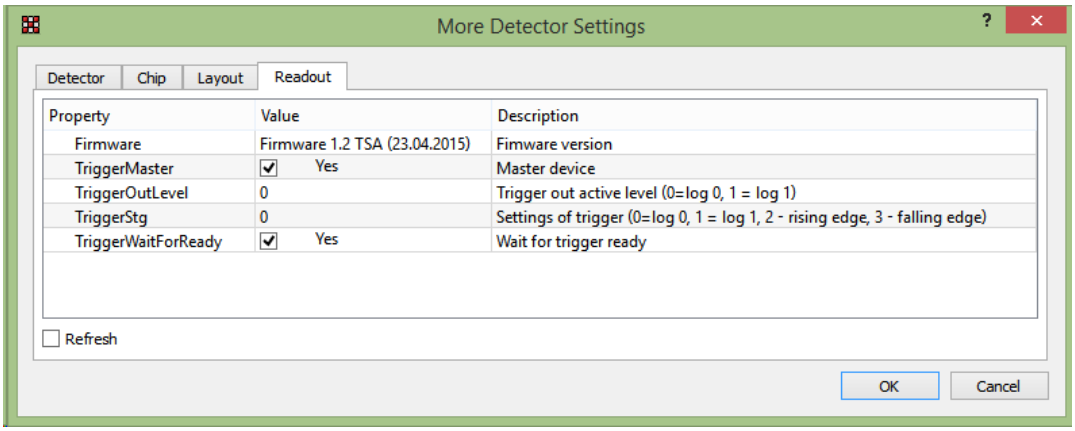
TriggerStg = 3



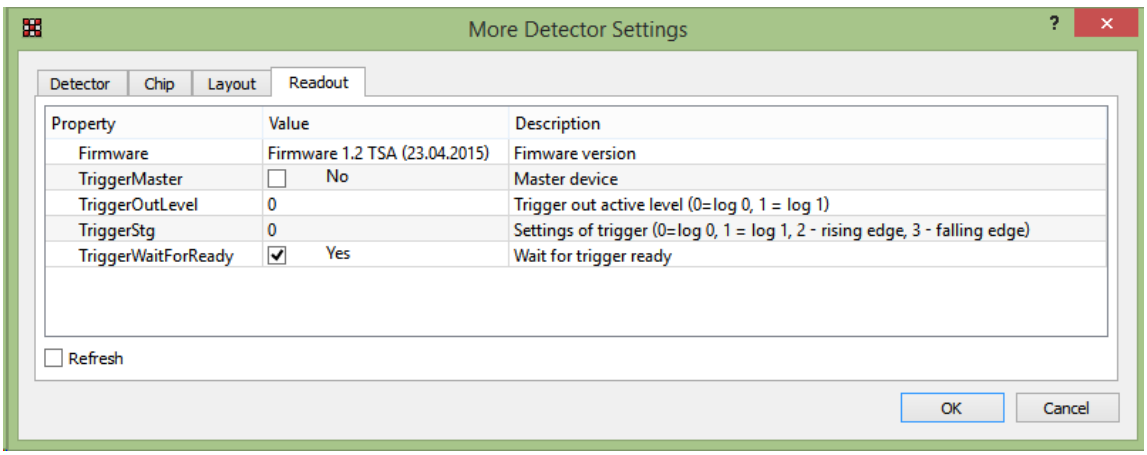
Two FitPIX devices working in synchronization

1. Connect both **WIDEPIX**® devices to USB
2. Connect ***synchronization cable*** to ***I/O connector*** of both **WIDEPIX**® devices (observe wich one is Master/Slave)

3. Start **PIXET PRO** software
4. Open ***More Detector Settings*** window and under tab Readout

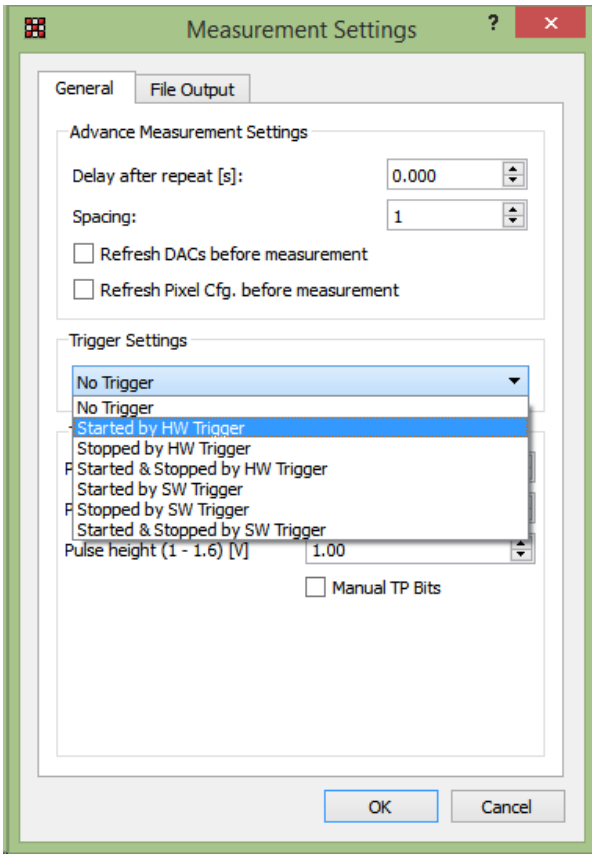


If the selected **WIDEPIX**® device is Master, then check ***TriggerMaster*** to set Yes,



otherwise leave unchecked to set No.

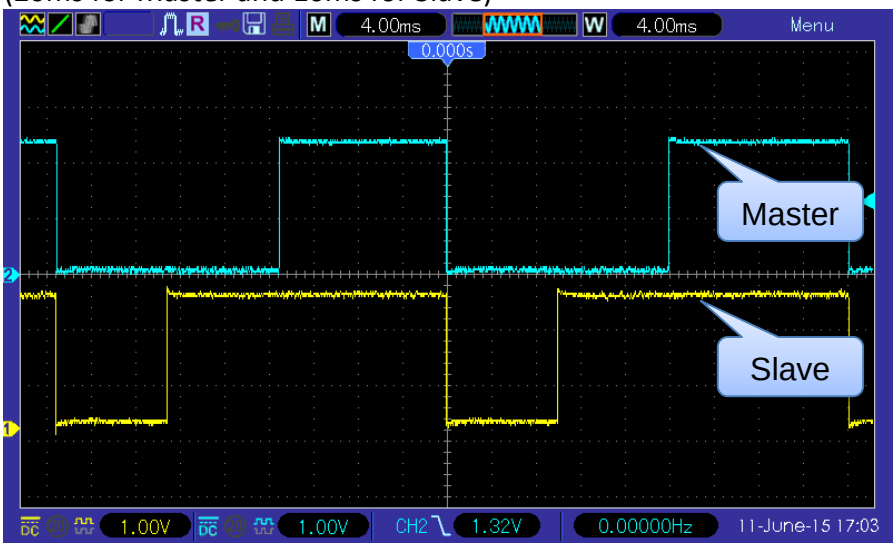
5. Open ***More Measurement Settings***, and select trigger settings to ***Started by HW Trigger***.



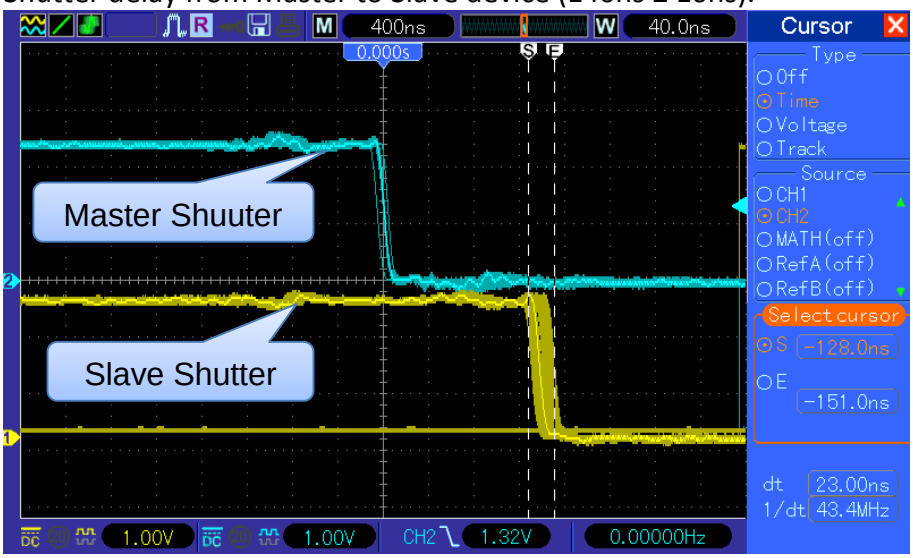
6. Now press ***Start*** button on both **WIDEPIX**® devices (in any order) to start synchronized measurement.

Performance

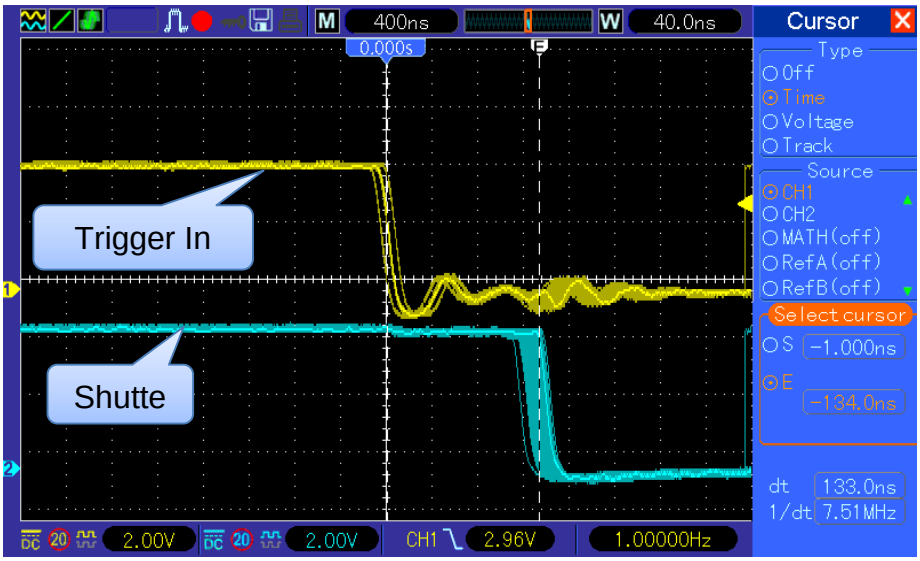
- Two **WIDEPIX**® devices with different Time of measurement
- (20ms for Master and 10ms for Slave)



- Shutter delay from Master to Slave device (140ns ± 10ns).



- Delay from ***Trigger In*** to ***Shutter*** (140ns ± 10ns).


M
400ns
W
40.0ns
0.000s
Cursor
Type
Off
Time
Voltage
Track
Source
CH1
CH2
MATH(off)
RefA(off)
RefB(off)
Select cursor
S
-1.000ns
E
-134.0ns
dt
133.0ns
1/dt
7.51MHz
Trigger In
Shutte
2.00V
2.00V
CH1
2.96V
1.00000Hz

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