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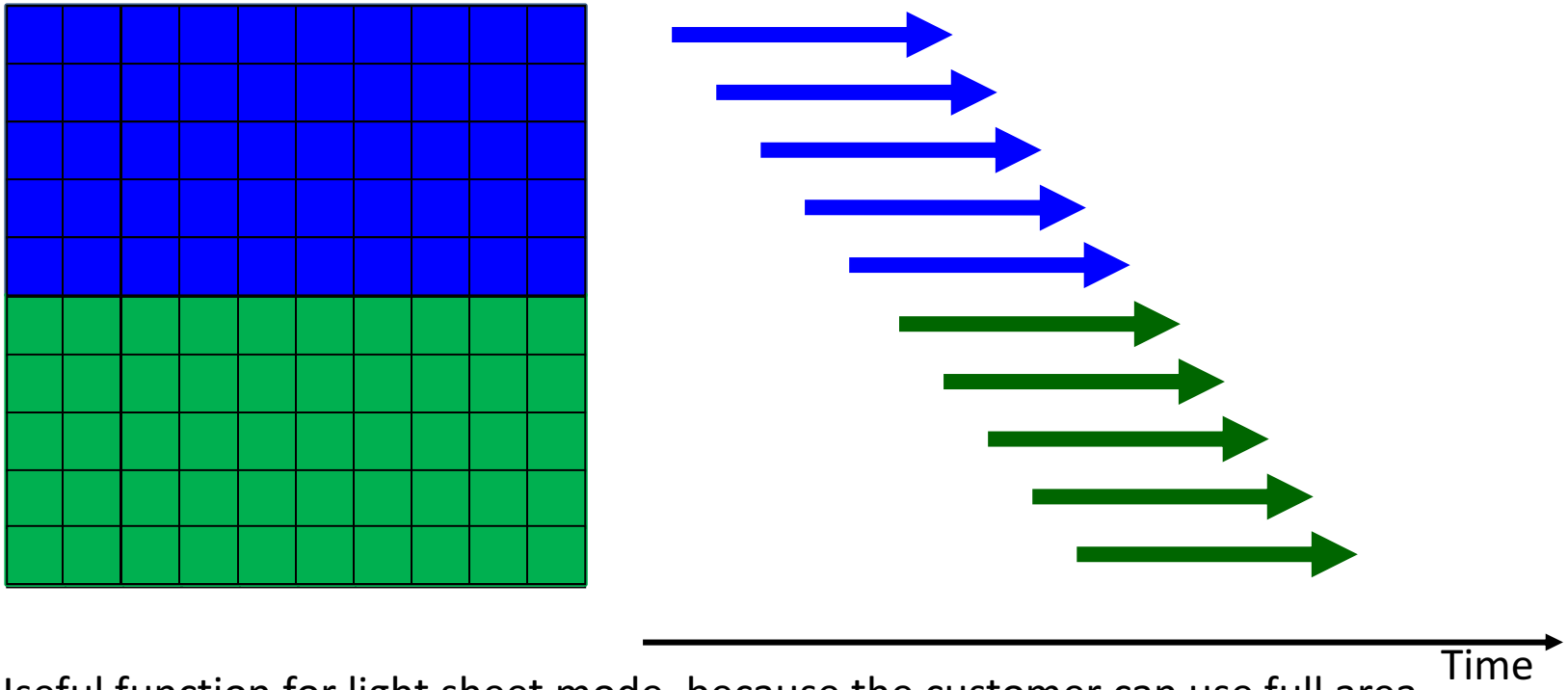
Seamless readout mode in LabVIEW

Dec 3, 2013

HAMAMATSU PHOTONICS K.K.

Specification of seamless readout

- Readout is executed seamlessly from upper area to lower area



- Useful function for light sheet mode, because the customer can use full area.
- Readout time becomes double.
- Support both direction readout (top to bottom / bottom to top)

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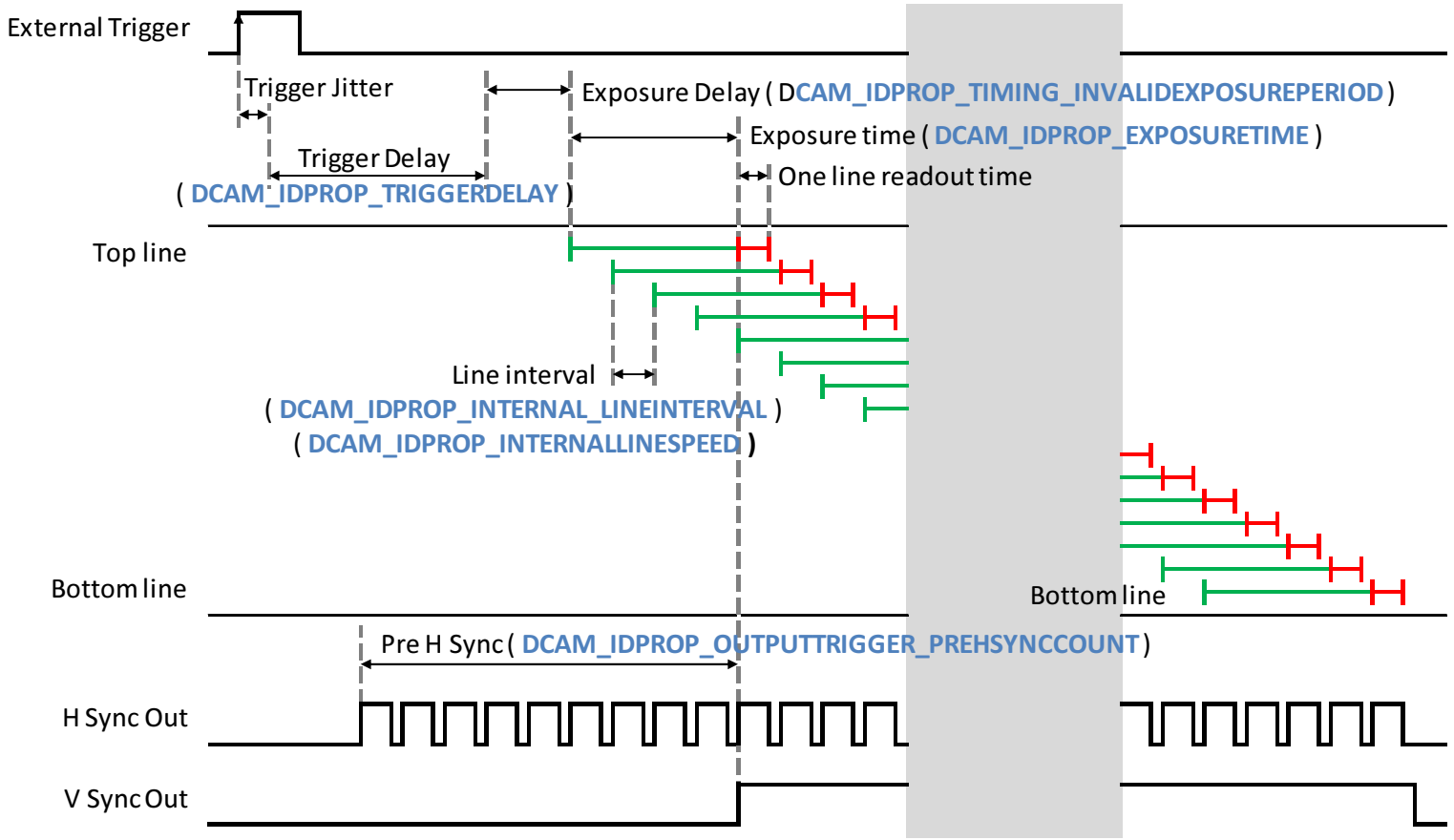
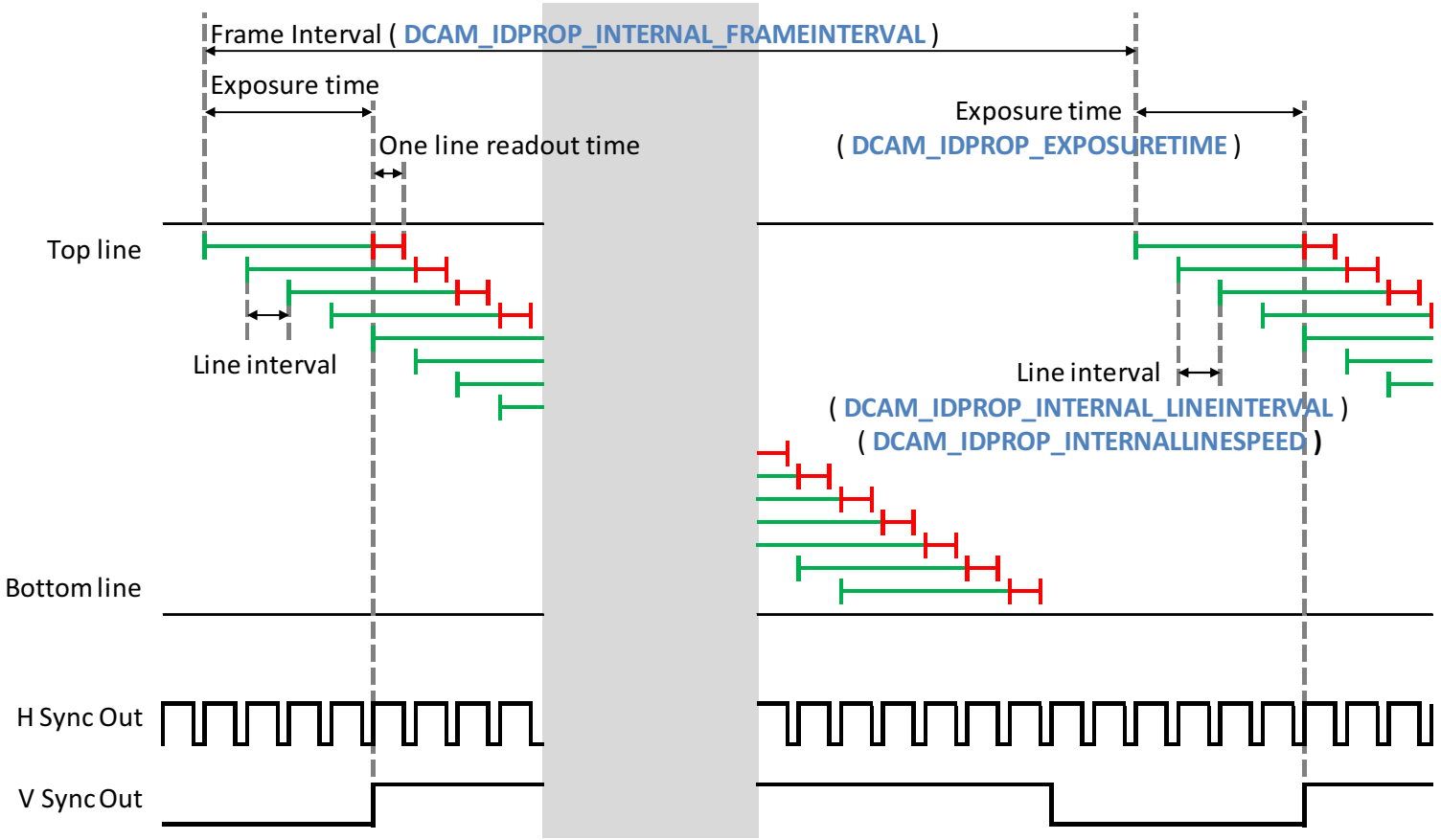
External trigger timing



Internal Trigger timing



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How to start seamless mode

- Set *DCAM_IDPROP_SENSORMODE*
  - To use seamless mode, set following value.

    "*DCAMPROP_SENSORMODE__PROGRESSIVE*"

  - To use standard mode, set following value.

    "*DCAMPROP_SENSORMODE__AREA*"

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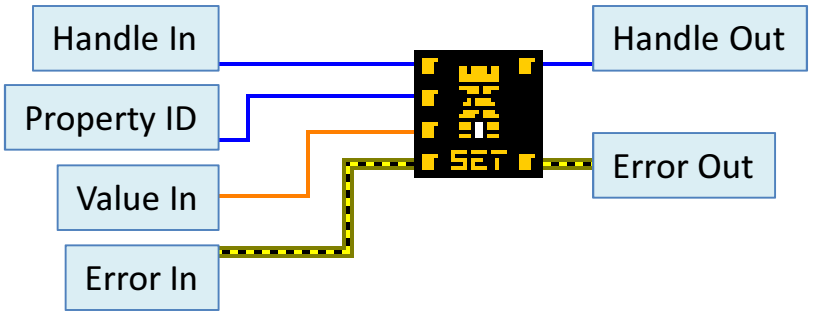
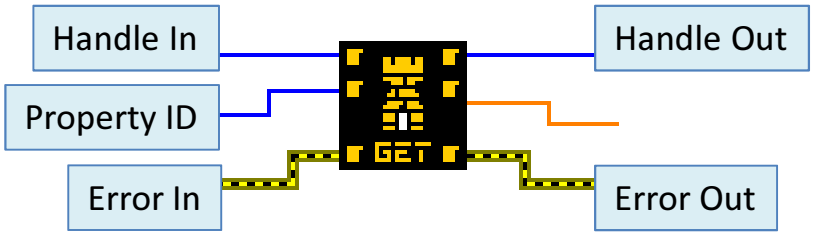
How to access Properties

- Properties are controlled by two vi.
  - tm_setpropertyvalue.vi for setting value.
  - tm_getproeprtyvalue.vi for getting value.

tm_setpropertyvalue.vi



tm_getpropertyvalue.vi



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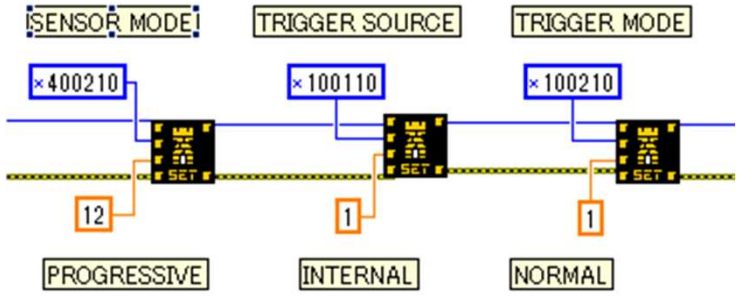
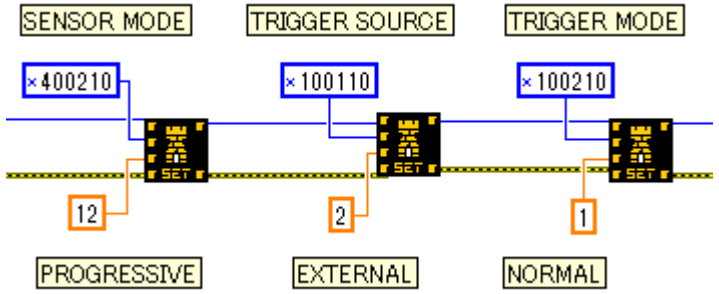
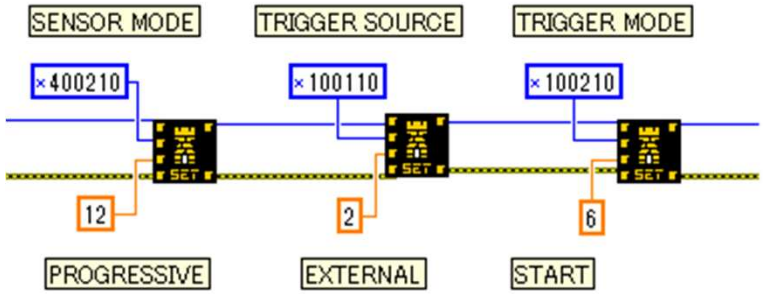
Seamless mode with trigger mode

Internal Trigger	
External Edge Trigger	
External Start Trigger	

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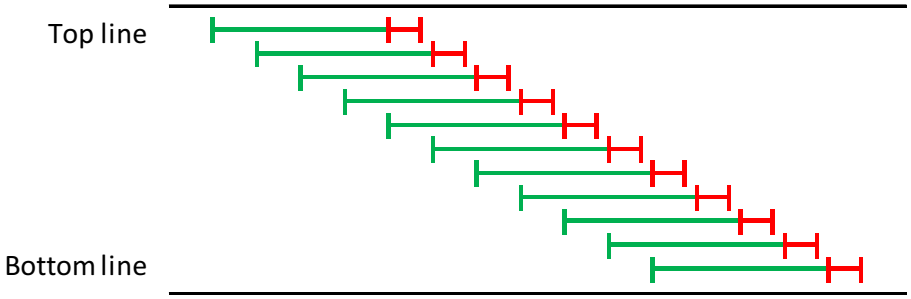
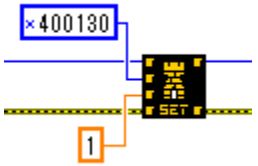
Scanning direction

- Set *DCAM_IDPROP_READOUT_DIRECTION*

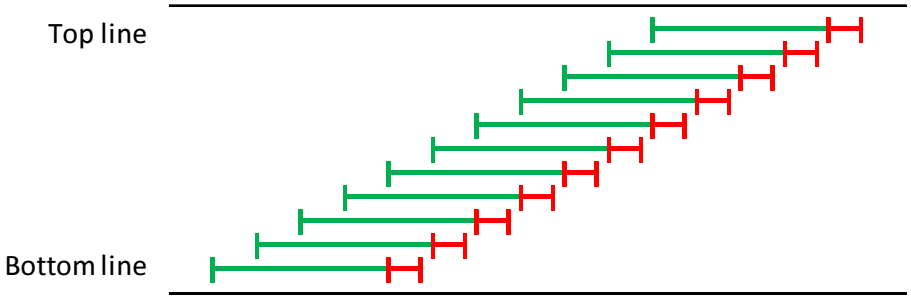
DCAMPROP_READOUT_DIRECTION__FORWARD



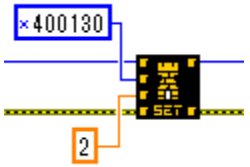
Scanning from Top line to Bottom line



DCAMPROP_READOUT_DIRECTION__BACKWARD



Scanning from Bottom line to Bottom line



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Scanning speed

- There are two way for setting.

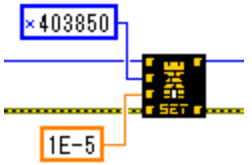
  DCAM_IDPROP_INTERNAL_LINEINTERVAL

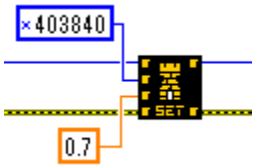
  – This sets the period of one line shift by second.

  DCAM_IDPROP_INTERNALLINESPEED

  – This sets the shifting speed on the sensor.
  The value unit is meter / second.

  – So, you can use following value.





$$LightScanningSpeed \times OpticalMagnification$$

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Output trigger

- To use camera's HSYNC signal, following properties are necessary.

Property ID	
DCAM_IDPROP_OUTPUTTRIGGER_KIND	Choose output trigger type.
DCAMPROP_OUTPUTTRIGGER_KIND__PROGRAMABLE	Programmable trigger is set.
DCAM_IDPROP_OUTPUTTRIGGER_SOURCE	Choose kind of base timing.
DCAMPROP_OUTPUTTRIGGER_SOURCE__HSYNC	Trigger starts by each Hsync rise
DCAM_IDPROP_OUTPUTTRIGGER_DELAY	Period until activate from base timing. 0 - 10 seconds (?)
DCAM_IDPROP_OUTPUTTRIGGER_PERIOD	Period during signal is active. 10 us – 10 seconds (?)
DCAM_IDPROP_OUTPUTTRIGGER_PREHSYNCCOUNT	Number of Hsync timing out before starting exposure.

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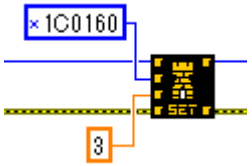
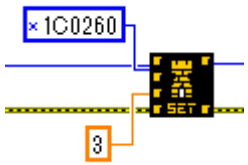
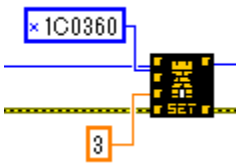
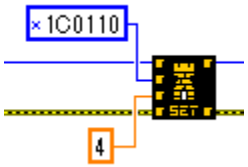
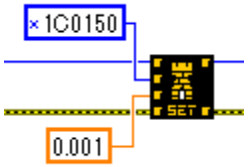
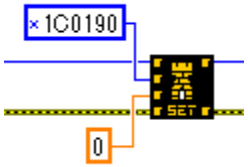
Output trigger properties

Connector	1	2	3
OUTPUTTRIGGER_KIND (OUTPUTTRIGGER_KIND__PROGRAMABLE)			
OUTPUTTRIGGER_SOURCE (OUTPUTTRIGGER_SOURCE__HSYNC)		x1C0220	x1C0320
OUTPUTTRIGGER_PERIOD		x1C0250	x1C0350
OUTPUTTRIGGER _PREHSYNCCOUNT		x1C0290	x1C0390

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