### Overview

**Camera**  Sony XC-HR50

**Running modes**
- Freerunning  [X]
- Restart/Reset  [ ]
- Ext. Synchronized  [ ]
- Trigger Shutter  [X]
- Flash & Reset  [ ]

**Resolution**
- Horizontal  648 pixel
- Vertical  494 pixel

**Binning**  [ ]

**Partial Scan**  [ ]

**Timings**
- Pixel clock  24.545 MHz
- Horizontal  31.468 kHz
- Vertical  60 fps

**MATRIX VISION GmbH Frame Grabber**

<table>
<thead>
<tr>
<th>Typ</th>
<th>mvGAMMA-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line Enable by</td>
<td>camera [X] Frame Grabber [ ] external [ ]</td>
</tr>
<tr>
<td>Frame Enable by</td>
<td>camera [X] Frame Grabber [ ] external [ ]</td>
</tr>
<tr>
<td>Trigger by</td>
<td>external [ ] Frame Grabber [X]</td>
</tr>
<tr>
<td>Flash by</td>
<td>camera [ ] Frame Grabber [ ] external [ ]</td>
</tr>
</tbody>
</table>

**Software**
- mvAcquireControl  [X]
- mvIMPACT Go!  [ ]
- Other  [ ]
Freerunning Mode

The camera runs with its own timing and sends the VD and HD within the video signal.

Signal map

Camera settings set by hardware

Dip-Switch settings:

<table>
<thead>
<tr>
<th>SW 1</th>
<th>SW 2</th>
<th>SW 3</th>
<th>SW 4</th>
<th>SW 5</th>
<th>SW 6</th>
<th>SW 7</th>
<th>SW 8</th>
<th>SW 9</th>
<th>SW 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>X</td>
</tr>
</tbody>
</table>

‘ON’: switched on, ‘OFF’: switched off, ‘X’: switch setting not relevant

Pin connection

<table>
<thead>
<tr>
<th>XC-HR50 12 pin Hirose</th>
<th>Direction</th>
<th>mvGAMMA-G HD26ST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 GND</td>
<td>↔</td>
<td>10 GND</td>
</tr>
<tr>
<td>2 +12 VDC</td>
<td>↔</td>
<td>1 +12 VDC</td>
</tr>
<tr>
<td>3 Video out</td>
<td>→</td>
<td>2 Video 1</td>
</tr>
<tr>
<td>4 GND</td>
<td>↔</td>
<td>12 GND</td>
</tr>
</tbody>
</table>

Recommended cable for this mode from MATRIX VISION GmbH: KS41 03.0 or KS41-E1AJ XT 03.0
Cameradefinition

/* -------------------------- Sony XC-HR50 ------------------------------------ */
DefCamType              "XC-HR50" VM_CCIR NONINTERLACED 50 31468 24545 PCLK_INTERN
DefCamAcquireSetup      "XC-HR50" STANDARD NOT_INV NEXT_FIELD
DefCamAnalogParam       "XC-HR50" AC 1 0 0 1200
DefHorizontalUnit       "XC-HR50" PIXEL
DefCamHorizontalAcquire "XC-HR50" 114L 648L 1
DefCamClamp             "XC-HR50" 100L 5L
DefCamZero              "XC-HR50" 105L 5L
DefCamFieldGate         "XC-HR50" 300L 400L
DefVerticalUnit         "XC-HR50" LINES
DefCamVerticalAcquire   "XC-HR50" 13L 494L 1

Remarks
none
**Trigger Shutter Mode**

The camera is reset by the mvGAMMA-G’s digital output GPout 0 and sends the HD and VD within the video signal. Puls length of the trigger signal (GPout 0) defines shutter time of camera.

**Signal map**

```
<table>
<thead>
<tr>
<th>Video (incl. HD &amp; VD)</th>
<th>mvGAMMA-G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
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**Camera settings set by hardware**

**Dip-Switch settings:**

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<th>SW 6</th>
<th>SW 7</th>
<th>SW 8</th>
<th>SW 9</th>
<th>SW 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
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‘ON’: switched on, ‘OFF’: switched off, ‘X’: switch setting not relevant

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<td>1 GND</td>
<td>← →</td>
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</tr>
<tr>
<td>2 +12VDC</td>
<td>← →</td>
<td>1 +12VDC</td>
</tr>
<tr>
<td>3 Video out</td>
<td>→</td>
<td>2 Video 1</td>
</tr>
<tr>
<td>11 Trigger in</td>
<td>←</td>
<td>19 GPout0</td>
</tr>
</tbody>
</table>

Recommended cable for this mode from MATRIX VISION GmbH: KS41-0231 03.0
Cameradefinition

```c
/* -------------------------- Sony XC-HR50 ------------------------------------ */
DefCamType              "XC-HR50" VM_CCIR NONINTERLACED 50 31468 24545 PCLK_INTERN
DefCamAcquireSetup      "XC-HR50" STANDARD NOT_INV NEXT_FIELD
DefCamAnalogParam       "XC-HR50" AC 1 0 0 1200
DefHorizontalUnit       "XC-HR50" PIXEL
DefCamHorizontalAcquire "XC-HR50" 114L 648L 1
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DefCamFieldGate         "XC-HR50" 300L 400L
DefVerticalUnit         "XC-HR50" LINES
DefCamVerticalAcquire   "XC-HR50" 13L 494L 1
```

Setting up camera trigger

For the camera reset GPout 0 of mvGAMMA-G is used. The best way to setup GPout 0 as a trigger signal is to use the shutter control.

In `mvAcquireControl` switch to register `Shutter` and do the following settings:
- Enable Shutter Control
- Activate High active
- Deactivate Start acquisition after pulse seq.
- Deactivate Start pulse seq. Vsync synchronous
- Set Shutter mode to One Trigger Mode

The setting in `Shuttertime` defines the length of the pulse and so the shutttertime of the camera.

Automatically the Autotrigger in register `Trigger` is activated. Define in `Autotrigger period` the time between two images to acquire.

IMPORTANT: The `Autotrigger period` can just be defined with 10ms accuracy! So 16ms will result in a period of 10ms. As this is to fast for the camera this will result in faulty images. Therefore with ‘real’ trigger signals up to 60 images per sec. can be achieved while with the simulated method just 50 images per sec. are possible.

If you are using the optional external trigger signal connected to the `Trigger In` pin of the mvGAMMA-G switch from `autotrigger` to `ext. trigger` and the camera reset signal will be output right after each external trigger pulse.

If using the shuttercontrol in your own software you have to use the functions `mvDefPulsSeq()` and `mvSetTriggerPeriod()` to define the shutter control method. You will find more about these functions in the mvGAMMA-G’s manual.
## Glossary

<table>
<thead>
<tr>
<th>Expression</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>VD</td>
<td>Vertical drive, signal is sent to signalize next field (noninterlaced) or frame (interlaced). Also called Frame Enable, VSync or frame start signal.</td>
</tr>
<tr>
<td>HD</td>
<td>Horizontal drive, signal is sent to signalize next line. Also called Line Enable, HSync or line start signal.</td>
</tr>
</tbody>
</table>