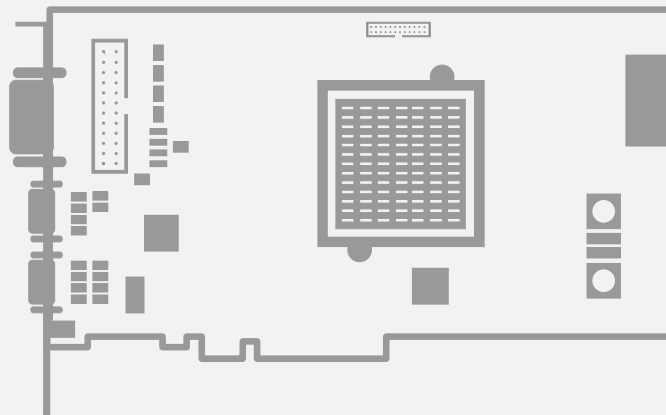


# MultiCam

## MultiCam Storage Formats





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# 1. Introduction

MultiCam frame grabbers store image pixel data into the user buffer according to a format designated by the Channel parameter **ColorFormat**.

This document provides for each format:

- The **MultiCam name**, i.e. the **ColorFormat** value
- The **PFNC name** as specified in the Pixel Format Naming Convention of GenICam
- The **storage type**:
  - **PACKED** when all the components of a pixel are stored consecutively
  - **PLANAR** when each component of a pixel is stored separately in different planes
- The **memory layout** describing how the first pixels of the first line(s) are stored in the user buffer.

## 2. Monochrome Pixel Formats

MultiCam Name	PFNC Name	Link
Y8	Mono8	<a href="#">"8-bit Monochrome" on page 6</a>
Y10	Mono10	<a href="#">"10-bit Monochrome" on page 7</a>
Y10P	Mono10p	<a href="#">"10-bit Monochrome lsb Packed" on page 8</a>
N/A	Mono10pmsb	<a href="#">"10-bit Monochrome msb Packed" on page 9</a>
Y12	Mono12	<a href="#">"12-bit Monochrome" on page 10</a>
Y14	Mono14	<a href="#">"14-bit Monochrome" on page 11</a>
Y16	Mono16	<a href="#">"16-bit Monochrome" on page 12</a>

## 2.1. 8-bit Monochrome

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
Y8	Mono8	N/A	1 Byte/pixel

### Memory Layout

@	+3	+2	+1	+0
0	Pixel[3,0]	Pixel[2,0]	Pixel[1,0]	Pixel[0,0]

## 2.2. 10-bit Monochrome

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
Y10	Mono10	N/A	2 Bytes/pixel

### Memory Layout

@	+3	+2	+1	+0
0	0 0 0 0 0 0 0	Pixel[1,0]	0 0 0 0 0 0	Pixel[0,0]

## 2.3. 10-bit Monochrome lsb Packed

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
Y10P	Mono10p	N/A	1.25 Bytes/pixel

### Memory Layout

	3				2					1					8					0
@	+3				+2				+1				+0							
0	...	Pixel[2,0]				Pixel[1,0]				Pixel[0,0]										
4	...	Pixel[5,0]				Pixel[4,0]				Pixel[3,0] (9:2)...										
8	...	Pixel[8,0]				Pixel[7,0]				Pixel[6,0] (9:4)...										
12	Pixel[12,0] ...(7:0)				Pixel[11,0]				Pixel[10,0]				Pixel[9,0] (9:6)...							
16	Pixel[15,0]				Pixel[14,0]				Pixel[13,0]				... (9:8)							



#### NOTE

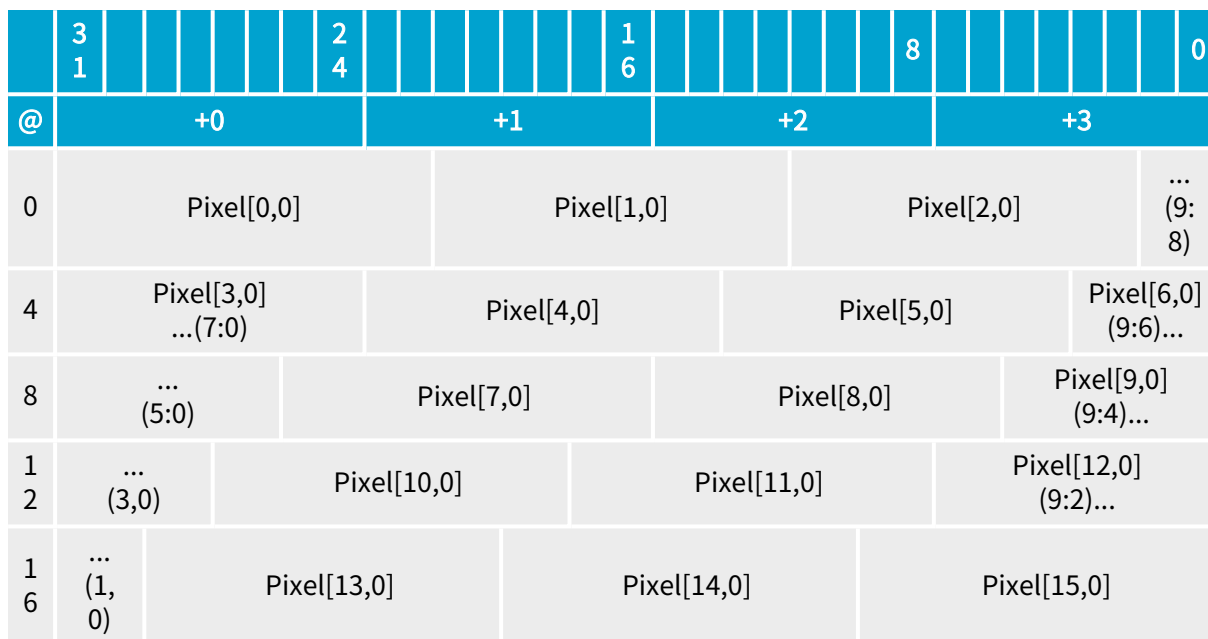
A pixel boundary is aligned to a 32-bit word boundary every 16 pixels (20 bytes)



## 2.4. 10-bit Monochrome msb Packed

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
N/A	Mono10pmsb	N/A	1.25 Bytes/pixel

### Memory Layout



**NOTE**

A pixel boundary is aligned to a 32-bit word boundary every 16 pixels (20 bytes)

## 2.5. 12-bit Monochrome

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
Y12	Mono12	N/A	2 Bytes/pixel

### Memory Layout

@	+3				+2	+1				+0
0	0	0	0	0	Pixel[1,0]	0	0	0	0	Pixel[0,0]

## 2.6. 14-bit Monochrome

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
Y14	Mono14	N/A	2 Bytes/pixel

### Memory Layout

@	+3		+2	+1		+0
0	0	0	Pixel[1,0]	0	0	Pixel[0,0]

## 2.7. 16-bit Monochrome

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
Y16	Mono16	N/A	2 Bytes/pixel





### Memory Layout

@	+3	+2	+1	+0
0	Pixel[1,0]		Pixel[0,0]	

## 3. Bayer CFA Pixel Formats

MultiCam Name	PFNC Name	Link
BAYER8	BayerBG8 BayerGB8 BayerGR8 BayerRG8	<a href="#">"8-bit Bayer CFA" on page 14</a>
BAYER10	BayerBG10 BayerGB10 BayerGR10 BayerRG10	<a href="#">"10-bit Bayer CFA" on page 15</a>
BAYER12	BayerBG12 BayerGB12 BayerGR12 BayerRG12	<a href="#">"12-bit Bayer CFA" on page 16</a>
BAYER14	BayerBG14 BayerGB14 BayerGR14 BayerRG14	<a href="#">"14-bit Bayer CFA" on page 17</a>
BAYER16	BayerBG16 BayerGB16 BayerGR16 BayerRG16	<a href="#">"16-bit Bayer CFA" on page 18</a>

## 3.1. 8-bit Bayer CFA

MultiCam Name	PFNC Name	Color Filter Array	Storage Requirement
Bayer8	BayerBG8		1 Byte/pixel
	BayerGB8		
	BayerGR8		
	BayerRG8		

### Memory Layout - BG CFA





@	+3	+2	+1	+0
0	Pixel[3,0]:G	Pixel[2,0]: B	Pixel[1,0]: G	Pixel[0,0]: B
:	:	:	:	:
H	Pixel[3,1]: R	Pixel[2,1]: G	Pixel[1,1]: R	Pixel[0,1]: G
:	:	:	:	:



#### NOTE

H = buffer pitch (in bytes)

## 3.2. 10-bit Bayer CFA

MultiCam Name	PFNC Name	Color Filter Array	Storage Requirement
Bayer10	BayerBG10		2 Bytes/pixel
	BayerGB10		
	BayerGR10		
	BayerRG10		

### Memory Layout - BG CFA





@	+3	+2	+1	+0
0	0 0 0 0 0 0 0	Pixel[1,0]: G	0 0 0 0 0 0	Pixel[0,0]: B
:	:	:	:	:
H	0 0 0 0 0 0 0	Pixel[1,1]: R	0 0 0 0 0 0	Pixel[0,1]: G
:	:	:	:	:



#### NOTE

H = buffer pitch (in bytes)

### 3.3. 12-bit Bayer CFA

MultiCam Name	PFNC Name	Color Filter Array	Storage Requirement
Bayer12	BayerBG12		2 Bytes/pixel
	BayerGB12		
	BayerGR12		
	BayerRG12		

#### Memory Layout - BG CFA

@	+3	+2	+1	+0
0	0 0 0 0	Pixel[1,0]: G	0 0 0 0	Pixel[0,0]: B
:	:	:	:	:
H	0 0 0 0	Pixel[1,1]: R	0 0 0 0	Pixel[0,1]: G
:	:	:	:	:







#### NOTE

H = buffer pitch (in bytes)



## 3.4. 14-bit Bayer CFA

MultiCam Name	PFNC Name	Color Filter Array	Storage Requirement
Bayer14	BayerBG14		2 Bytes/pixel
	BayerGB14		
	BayerGR14		
	BayerRG14		

### Memory Layout - BG CFA





@	+3		+2	+1		+0
0	0	0	Pixel[1,0]: G	0	0	Pixel[0,0]: B
:	:	:	:	:	:	:
H	0	0	Pixel[1,1]: R	0	0	Pixel[0,1]: G
:	:	:	:	:	:	:



#### NOTE

H = buffer pitch (in bytes)

## 3.5. 16-bit Bayer CFA

MultiCam Name	PFNC Name	Color Filter Array	Storage Requirement
Bayer16	BayerBG16		2 Bytes/pixel
	BayerGB16		
	BayerGR16		
	BayerRG16		

### Memory Layout - BG CFA

@	+3	+2	+1	+0
0	Pixel[1,0]: G		Pixel[0,0]: B	
:	:	:	:	:
H	Pixel[1,1]: R		Pixel[0,1]: G	
:	:	:	:	:



#### NOTE

H = buffer pitch (in bytes)

## 4. RGB Color Pixel Formats

MultiCam Name	PFNC Name	Link
RGB15	BGR555	<a href="#">"5-5-5-bit BGR" on page 20</a>
RGB16	BGR565	<a href="#">"5-6-5-bit BGR" on page 21</a>
RGB24	BGR8	<a href="#">"8-bit BGR " on page 22</a>
N/A	RGB8	<a href="#">"8-bit RGB" on page 23</a>
RGB32	BGRa8	<a href="#">"8-bit BGRa" on page 24</a>
N/A	RGBa8	<a href="#">"8-bit RGBa" on page 25</a>
RGB30P	BGR10p	<a href="#">"10-bit BGR lsb Packed" on page 26</a>
N/A	BGR10pmsb	<a href="#">"10-bit BGR msb Packed" on page 27</a>
RGBI40P	BGRa10p	<a href="#">"10-bit BGRa lsb Packed" on page 28</a>

## 4.1. 5-5-5-bit BGR

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGB15	BGR555	PACKED	2 Bytes/pixel

### Memory Layout

@	+3		+2		+1		+0	
0	0	Pixel[1,0]: R	Pixel[1,0]: G	Pixel[1,0]: B	0	Pixel[0,0]: R	Pixel[0,0]: G	Pixel[0,0]: B

## 4.2. 5-6-5-bit BGR

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGB16	BGR565	PACKED	2 Bytes/pixel

### Memory Layout

@	+3		+2	+1		+0
0	Pixel[1,0]: R	Pixel[1,0]: G	Pixel[1,0]: B	Pixel[0,0]: R	Pixel[0,0]: G	Pixel[0,0]: B

## 4.3. 8-bit BGR

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGB24	BGR8	PACKED	3 Bytes/pixel

### Memory Layout

@	+3	+2	+1	+0
0	Pixel[1,0]: B	Pixel[0,0]: R	Pixel[0,0]: G	Pixel[0,0]: B
4	Pixel[2,0]: G	Pixel[2,0]: B	Pixel[1,0]: R	Pixel[1,0]: G
8	Pixel[3,0]: R	Pixel[3,0]: G	Pixel[3,0]: B	Pixel[2,0]: R

## 4.4. 8-bit RGB

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
N/A	BGR8	PACKED	3 Bytes/pixel

### Memory Layout

@	+3	+2	+1	+0
0	Pixel[1,0]: R	Pixel[0,0]: B	Pixel[0,0]: G	Pixel[0,0]: R
4	Pixel[2,0]: G	Pixel[2,0]: R	Pixel[1,0]: B	Pixel[1,0]: G
8	Pixel[3,0]: B	Pixel[3,0]: G	Pixel[3,0]: R	Pixel[2,0]: B

## 4.5. 8-bit BGRa

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGB32	BGRa8	PACKED	4 Bytes/pixel

### Memory Layout

@	+3								+2	+1	+0
0	0	0	0	0	0	0	0	0	Pixel[0,0]: R	Pixel[0,0]: G	Pixel[0,0]: B



## 4.6. 8-bit RGBa

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
N/A	RGBa8	PACKED	4 Bytes/pixel

### Memory Layout

@	+3								+2	+1	+0
0	0	0	0	0	0	0	0	0	Pixel[0,0]: B	Pixel[0,0]: G	Pixel[0,0]: R

## 4.7. 10-bit BGR lsb Packed

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGB30P	BGR10p	N/A	3.75 Bytes/pixel

### Memory Layout

	3					2						1					8						0
@	+3					+2					+1					+0							
0	...	(1,	Pixel[0,0]R					Pixel[0,0]G					Pixel[0,0]B					0					
4	...	(3,0)	Pixel[1,0]R					Pixel[1,0]G					Pixel[1,0]B (9:2)...					0					
8	...	(5:0)	Pixel[2,0]R					Pixel[2,0]G					Pixel[2,0]B (9:4)...					0					
12	Pixel[4,0]B ...(7:0)					Pixel[3,0]R					Pixel[3,0]G					Pixel [3,0]B (9:6)...					0		
16	Pixel[5,0]B					Pixel[4,0]R					Pixel[4,0]G					...					(9:8)		
:																							
56	Pixel[15,0]R					Pixel[15,0]G					Pixel[15,0]B					...					(9:8)		



#### NOTE

A pixel boundary is aligned to a 32-bit word boundary every 16 pixels (60 bytes)

## 4.8. 10-bit BGR msb Packed

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
N/A	BGR10pmsb	N/A	1.25 Bytes/pixel

### Memory Layout

	3 1					2 4										1 6							8								0
@	+0				+1				+2				+3																		
0	Pixel[0,0]B				Pixel[0,0]G				Pixel[0,0]R				... (9:8)																		
4	Pixel[1,0]B ...(7:0)				Pixel[1,0]G				Pixel[1,0]R				Pixel [2,0]B (9:6)...																		
8	... (5:0)				Pixel[2,0]G				Pixel[2,0]R				Pixel[3,0]B (9:4)...																		
1 2	... (3,0)				Pixel[3,0]G				Pixel[3,0]R				Pixel[4,0]B (9:2)...																		
1 6	... (1,0)				Pixel[4,0]G				Pixel[4,0]R				Pixel[5,0]B																		
:																															
5 6	... (1,0)				Pixel[15,0]B				Pixel[15,0]G				Pixel[15,0]R																		



#### NOTE

A pixel boundary is aligned to a 32-bit word boundary every 16 pixels (60 bytes)

## 4.9. 10-bit BGRa lsb Packed

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGBI40P	BGRa10p	N/A	5 Bytes/pixel

### Memory Layout

	3					2						1					8					0
@	+3					+2					+1					+0						
0	...	(1,	Pixel[0,0]R					Pixel[0,0]G					Pixel[0,0]B									
4	...	(3,0)	Pixel[1,0]G					Pixel[1,0]B					Pixel[0,0]a (9:2)...									
8	...	(5:0)	Pixel[2,0]B					Pixel[1,0]a					Pixel[1,0]R (9:4)...									
1	Pixel[3,0]B ...(7:0)					Pixel[2,0]a					Pixel[2,0]R					Pixel [2,0]G (9:6)...						
1	Pixel[3,0]a					Pixel[3,0]R					Pixel[3,0]G					...					(9: 8)	



#### NOTE

A pixel boundary is aligned to a 32-bit word boundary every 4 pixels (20 bytes)

## 5. RGB Color Planar Pixel Formats

MultiCam Name	PFNC Name	Link
RGB24PL	N/A	<a href="#">"8-bit RGB Planar" on page 30</a>
RGB30PL	N/A	<a href="#">"10-bit RGB Planar" on page 31</a>
RGB36PL	N/A	<a href="#">"12-bit RGB Planar" on page 32</a>
RGB42PL	N/A	<a href="#">"14-bit RGB Planar" on page 33</a>
RGB48PL	N/A	<a href="#">"16-bit RGB Planar" on page 34</a>

## 5.1. 8-bit RGB Planar

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGB24PL	N/A	PLANAR	3 Bytes/pixel

### Memory Layout - Plane 0

@	+3	+2	+1	+0
0	Pixel[3,0]: R	Pixel[2,0]: R	Pixel[1,0]: R	Pixel[0,0]: R

### Memory Layout - Plane 1

@	+3	+2	+1	+0
0	Pixel[3,0]: G	Pixel[2,0]: G	Pixel[1,0]: G	Pixel[0,0]: G

### Memory Layout - Plane 2

@	+3	+2	+1	+0
0	Pixel[3,0]: B	Pixel[2,0]: B	Pixel[1,0]: B	Pixel[0,0]: B

## 5.2. 10-bit RGB Planar

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGB30PL	N/A	PLANAR	6 Bytes/pixel

### Memory Layout - Plane 0

@	+3	+2	+1	+0
0 0 0 0 0 0 0	Pixel[1,0]: R	0 0 0 0 0 0	Pixel[0,0]: R	

### Memory Layout - Plane 1

@	+3	+2	+1	+0
0 0 0 0 0 0 0	Pixel[1,0]: G	0 0 0 0 0 0	Pixel[0,0]: G	

### Memory Layout - Plane 2

@	+3	+2	+1	+0
0 0 0 0 0 0 0	Pixel[1,0]: B	0 0 0 0 0 0	Pixel[0,0]: B	

## 5.3. 12-bit RGB Planar

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGB36PL	N/A	PLANAR	6 Bytes/pixel

### Memory Layout - Plane 0

@	+3	+2	+1	+0
0	0 0 0 0 0	Pixel[1,0]: R	0 0 0 0	Pixel[0,0]: R

### Memory Layout - Plane 1

@	+3	+2	+1	+0
0	0 0 0 0 0	Pixel[1,0]: G	0 0 0 0	Pixel[0,0]: G

### Memory Layout - Plane 2

@	+3	+2	+1	+0
0	0 0 0 0 0	Pixel[1,0]: B	0 0 0 0	Pixel[0,0]: B



## 5.4. 14-bit RGB Planar

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGB42PL	N/A	PLANAR	6 Bytes/pixel

### Memory Layout - Plane 0

@	+3			+2	+1			+0
0	0	0		Pixel[1,0]: R	0	0		Pixel[0,0]: R

### Memory Layout - Plane 1

@	+3			+2	+1			+0
0	0	0		Pixel[1,0]: G	0	0		Pixel[0,0]: G

### Memory Layout - Plane 2

@	+3			+2	+1			+0
0	0	0		Pixel[1,0]: B	0	0		Pixel[0,0]: B

## 5.5. 16-bit RGB Planar

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RGB48PL	N/A	PLANAR	6 Bytes/pixel

### Memory Layout - Plane 0

@	+3	+2	+1	+0
0	Pixel[1,0]: R		Pixel[0,0]: R	

### Memory Layout - Plane 1

@	+3	+2	+1	+0
0	Pixel[1,0]: G		Pixel[0,0]: G	

### Memory Layout - Plane 2

@	+3	+2	+1	+0
0	Pixel[1,0]: B		Pixel[0,0]: B	

## 6. YUV Color Pixel Formats

MultiCam Name	PFNC Name	Link
YUV411 Y41P	YUV411_8_UYVYUYVYYYYY	<a href="#">"8-bit YUV 4:1:1" on page 36</a>
YUV422 Y42P	YUV422_8_YUYV	<a href="#">"8-bit YUV 4:2:2" on page 37</a>
YUV444 IYU2	YUV444_8_UYV	<a href="#">"8-bit YUV 4:4:4" on page 38</a>

## 6.1. 8-bit YUV 4:1:1

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
YUV411	YUV411_8_ UYVYUYVYYYYY	PACKED	1.5 Bytes/pixel
Y41P			

### Memory Layout

@	+3	+2	+1	+0
0	Pixel[1,0]: Y	Pixel[0,0]: V(Cr)	Pixel[0,0]: Y	Pixel[0,0]: U(Cb)
4	Pixel[3,0]: Y	Pixel[4,0]: V(Cr)	Pixel[2,0]: Y	Pixel[4,0]: U(Cb)
8	Pixel[7,0]: Y	Pixel[6,0]: Y	Pixel[5,0]: Y	Pixel[4,0]: Y



#### NOTE

Only 1 U(Cb) and 1 V(Cr) samples are captured every 4 pixels

## 6.2. 8-bit YUV 4:2:2

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
YUV422	YUV422_8_YUYV	PACKED	2 Bytes/pixel
Y42P			

### Memory Layout

@	+3	+2	+1	+0
0	Pixel[0,0]: V(Cr)	Pixel[1,0]: Y	Pixel[0,0]: U(Cb)	Pixel[0,0]: Y



#### NOTE

Only 1 U(Cb) and 1 V(Cr) samples are captured every 2 pixels

## 6.3. 8-bit YUV 4:4:4

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
YUV444	YUV444_8_UYV	PACKED	3 Bytes/pixel
IYU2			

### Memory Layout

@	+3	+2	+1	+0
0	Pixel[1,0]: U(Cb)	Pixel[0,0]: V(Cr)	Pixel[0,0]: Y	Pixel[0,0]: U(Cb)
4	Pixel[2,0]: Y	Pixel[2,0]: U(Cb)	Pixel[1,0]: V(Cr)	Pixel[1,0]: Y
8	Pixel[3,0]: V(Cr)	Pixel[3,0]: Y	Pixel[3,0]: U(Cb)	Pixel[2,0]: V(Cr)

## 7. YUV Color Planar Pixel Formats

MultiCam Name	PFNC Name	Link
YUV411PL_Dec YUV9 YVU9	YUV410_8_Planar	<a href="#">"8-bit YUV 4:1:0 Planar" on page 40</a>
YUV411PL Y41B	YUV411_8_Planar	<a href="#">"8-bit YUV 4:1:1 Planar" on page 41</a>
YUV422PL_Dec I420 IYUV YV12	YUV420_8_Planar	<a href="#">"8-bit YUV 4:2:0 Planar" on page 42</a>
YUV422PL Y42B	YUV422_8_Planar	<a href="#">"8-bit YUV 4:2:2 Planar" on page 43</a>
YUV444PL	YUV444_8_Planar	<a href="#">"8-bit YUV 4:4:4 Planar" on page 44</a>

## 7.1. 8-bit YUV 4:1:0 Planar

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
YUV411PL_Dec	YUV410_8_Planar	PLANAR	1.125 Bytes/pixel
YUV9			
YVU9			

### Memory Layout - Plane 0

@	+3	+2	+1	+0
0	Pixel[3,0]: Y	Pixel[2,0]: Y	Pixel[1,0]: Y	Pixel[0,0]: Y



#### NOTE

H = buffer pitch (in bytes)

### Memory Layout - Plane 1

@	+3	+2	+1	+0
0	Pixel[12,0]: U(Cb)	Pixel[8,0]: U(Cb)	Pixel[4,0]: U(Cb)	Pixel[0,0]: U(Cb)
:	:	:	:	:
H	Pixel[12,4]: U(Cb)	Pixel[8,4]: U(Cb)	Pixel[4,4]: U(Cb)	Pixel[0,4]: U(Cb)
:	:	:	:	:



#### NOTE

Only 1 U(Cb) sample is captured every 4 pixels in 1 line every 4 lines

### Memory Layout - Plane 2

@	+3	+2	+1	+0
0	Pixel[12,0]: V(Cr)	Pixel[8,0]: V(Cr)	Pixel[4,0]: V(Cr)	Pixel[0,0]: V(Cr)
:	:	:	:	:
0	Pixel[12,4]: V(Cr)	Pixel[8,4]: V(Cr)	Pixel[4,4]: V(Cr)	Pixel[0,4]: V(Cr)
:	:	:	:	:



#### NOTE

Only 1 V(Cr) sample is captured every 4 pixels in 1 line every 4 lines



## 7.2. 8-bit YUV 4:1:1 Planar

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
YUV411PL	YUV411_8_Planar	PLANAR	1.5 Bytes/pixel
Y41B			

### Memory Layout - Plane 0

@	+3	+2	+1	+0
0	Pixel[3,0]: Y	Pixel[2,0]: Y	Pixel[1,0]: Y	Pixel[0,0]: Y
4	Pixel[7,0]: Y	Pixel[6,0]: Y	Pixel[5,0]: Y	Pixel[4,0]: Y
8	Pixel[11,0]: Y	Pixel[10,0]: Y	Pixel[9,0]: Y	Pixel[8,0]: Y
12	Pixel[15,0]: Y	Pixel[14,0]: Y	Pixel[13,0]: Y	Pixel[12,0]: Y

### Memory Layout - Plane 1

@	+3	+2	+1	+0
0	Pixel[12,0]: U(Cb)	Pixel[8,0]: U(Cb)	Pixel[4,0]: U(Cb)	Pixel[0,0]: U(Cb)



#### NOTE

Only 1 U(Cb) sample is captured every 4 pixels

### Memory Layout - Plane 2

@	+3	+2	+1	+0
0	Pixel[12,0]: V(Cr)	Pixel[8,0]: V(Cr)	Pixel[4,0]: V(Cr)	Pixel[0,0]: V(Cr)



#### NOTE

Only 1 V(Cr) sample is captured every 4 pixels

## 7.3. 8-bit YUV 4:2:0 Planar

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
YUV422PL_Dec	YUV420_8_Planar	PLANAR	1.5 Bytes/pixel
I420			
IYUV			
YV12			

### Memory Layout - Plane 0

@	+3	+2	+1	+0
0	Pixel[3,0]: Y	Pixel[2,0]: Y	Pixel[1,0]: Y	Pixel[0,0]: Y

### Memory Layout - Plane 1

@	+3	+2	+1	+0
0	Pixel[6,0]: U(Cb)	Pixel[4,0]: U(Cb)	Pixel[2,0]: U(Cb)	Pixel[0,0]: U(Cb)
:	:	:	:	:
2H	Pixel[6,2]: U(Cb)	Pixel[4,2]: U(Cb)	Pixel[2,2]: U(Cb)	Pixel[0,2]: U(Cb)
:	:	:	:	:



#### NOTE

Only 1 U(Cb) sample is captured every 2 pixels in 1 line every 2 lines

### Memory Layout - Plane 2

@	+3	+2	+1	+0
0	Pixel[6,0]: V(Cr)	Pixel[4,0]: V(Cr)	Pixel[2,0]: V(Cr)	Pixel[0,0]: V(Cr)
:	:	:	:	:
H	Pixel[6,2]: V(Cr)	Pixel[4,2]: V(Cr)	Pixel[2,2]: V(Cr)	Pixel[0,2]: V(Cr)
:	:	:	:	:



#### NOTE

Only 1 V(Cr) sample is captured every 2 pixels in 1 line every 2 lines

## 7.4. 8-bit YUV 4:2:2 Planar

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
YUV422PL	YUV422_8_Planar	PLANAR	2 Bytes/pixel
Y42B			

### Memory Layout - Plane 0

@	+3	+2	+1	+0
0	Pixel[3,0]: Y	Pixel[2,0]: Y	Pixel[1,0]: Y	Pixel[0,0]: Y
4	Pixel[7,0]: Y	Pixel[6,0]: Y	Pixel[5,0]: Y	Pixel[4,0]: Y

### Memory Layout - Plane 1

@	+3	+2	+1	+0
0	Pixel[6,0]: U(Cb)	Pixel[4,0]: U(Cb)	Pixel[2,0]: U(Cb)	Pixel[0,0]: U(Cb)



#### NOTE

Only 1 U(Cb) sample is captured every 2 pixels

### Memory Layout - Plane 2

@	+3	+2	+1	+0
0	Pixel[6,0]: V(Cr)	Pixel[4,0]: V(Cr)	Pixel[2,0]: V(Cr)	Pixel[0,0]: V(Cr)



#### NOTE

Only 1 V(Cr) sample is captured every 2 pixels

## 7.5. 8-bit YUV 4:4:4 Planar

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
YUV444PL	YUV444_8_Planar	PLANAR	3 Bytes/pixel

### Memory Layout - Plane 0

@	+3	+2	+1	+0
0	Pixel[3,0]: Y	Pixel[2,0]: Y	Pixel[1,0]: Y	Pixel[0,0]: Y

### Memory Layout - Plane 1

@	+3	+2	+1	+0
0	Pixel[3,0]: U(Cb)	Pixel[2,0]: U(Cb)	Pixel[1,0]: U(Cb)	Pixel[0,0]: U(Cb)

### Memory Layout - Plane 2

@	+3	+2	+1	+0
0	Pixel[3,0]: V(Cr)	Pixel[2,0]: V(Cr)	Pixel[1,0]: V(Cr)	Pixel[0,0]: V(Cr)

## 8. Raw Data Formats

MultiCam Name	PFNC Name	Link
RAW8	Raw8	<a href="#">"8-bit Raw Data" on page 46</a>
RAW10	Raw10	<a href="#">"10-bit Raw Data" on page 47</a>
RAW12	Raw12	<a href="#">"12-bit Raw Data" on page 48</a>
RAW14	Raw14	<a href="#">"14-bit Raw Data" on page 49</a>
RAW16	Raw16	<a href="#">"16-bit Raw Data" on page 50</a>

<b>8.1. 8-bit Raw Data</b> .....	<b>46</b>
<b>8.2. 10-bit Raw Data</b> .....	<b>47</b>
<b>8.3. 12-bit Raw Data</b> .....	<b>48</b>
<b>8.4. 14-bit Raw Data</b> .....	<b>49</b>
<b>8.5. 16-bit Raw Data</b> .....	<b>50</b>

## 8.1. 8-bit Raw Data

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RAW8	Raw8	N/A	1 Byte/pixel

### Memory Layout

@	+3	+2	+1	+0
0	Pixel[3,0]	Pixel[2,0]	Pixel[1,0]	Pixel[0,0]

## 8.2. 10-bit Raw Data

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RAW10	Raw10	N/A	2 Bytes/pixel

### Memory Layout

@	+3	+2	+1	+0
0	0 0 0 0 0 0 0	Pixel[1,0]	0 0 0 0 0 0	Pixel[0,0]

## 8.3. 12-bit Raw Data

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RAW12	Raw12	N/A	2 Bytes/pixel

### Memory Layout

@	+3	+2	+1	+0
0	0 0 0 0 0	Pixel[1,0]	0 0 0 0	Pixel[0,0]



## 8.4. 14-bit Raw Data

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RAW14	Raw14	N/A	2 Bytes/pixel

### Memory Layout

@	+3			+2	+1			+0
0	0	0		Pixel[1,0]	0	0		Pixel[0,0]

## 8.5. 16-bit Raw Data

MultiCam Name	PFNC Name	Storage Type	Storage Requirement
RAW16	Raw16	N/A	2 Bytes/pixel

### Memory Layout

@	+3	+2	+1	+0
0	Pixel[1,0]		Pixel[0,0]	