

# DR1-D2048x1088-192-G2

The Double Rate camera series DR1-D2048x1088(I/C)-G2 is based on the CMOSIS CMV2000 CMOS image sensor

#### **Features**

- Double Rate Technology
- CMOSIS CMV2000 CMOS image sensor
- 2048 x 1088 pixel resolution
- Good NIR spectral response
- Suitable for standard and low light applications
- Up to 85fps @ full resolution

- Global shutter
- Available in monochrome, NIR and color
- Extended sensor and camera features
- Boardlevel and OEM solution available
- GigEVision interface

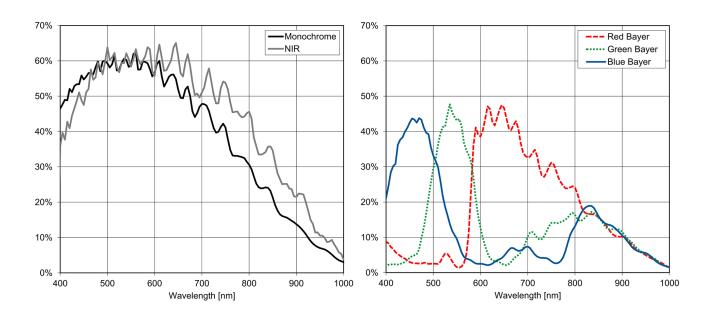






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# **Quantum Efficiency Image Sensor**



## **Image Sensor Specifications**

CMOSIS, CM	<b>√</b> 1∨2000
CMOS	
2/3"	
12.76mm	
2048 x 1088	
5.5µm x 5.5µ	ım
11.26mm x 5	5.98mm
125e-/s	
13e-	
11ke- / 105:1	
Monochrome	e: 350 to 950nm (to 10% of peak responsivity)
NIR:	350 to 1000nm (to 10% of peak responsivity)
Color:	380 to 670nm (to 10% of peak responsivity)
Monochrome	e: 1100 x 10 <sup>3</sup> DN / (J/m <sup>2</sup> ) @ 520nm / 8bit
NIR:	900 x 10 <sup>3</sup> DN / (J/m <sup>2</sup> ) @ 850nm / 8bit
Color:	857 x 10 <sup>3</sup> DN / (J/m <sup>2</sup> ) @ 540nm / 8bit
Monochrome	e: < 60%
NIR:	< 60%
Color:	< 45%
42% without	micro lenses
60dB	
Linear, Piece	ewise linear
	CMOS 2/3" 12.76mm 2048 x 1088 5.5µm x 5.5µ 11.26mm x 5 125e-/s 13e- 11ke- / 105:1 Monochrome NIR: Color: Monochrome NIR: Color: Monochrome NIR: Color: 42% without 60dB

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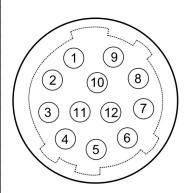
# **Camera Specifications**

Interface	GigE
Frame rate	85fps
Pixel clock	64MHz
Camera taps	2
Greyscale resolution	8Bit
Fixed pattern noise (FPN)	< 1DN RMS @ 8Bit
Exposure time range	13µs - 349ms
Analog gain	yes
Digital gain	0.1 to 15.99 (FineGain)
Trigger Modes	Free running (non triggered), external Trigger, SWTrigger, AB-Trigger
Features	Double Rate technology, Configurable region of interest (ROI), Up to 8
	regions of interest (MROI), Binning in x- and y-direction, Decimation in y-
	direction, 2 look-up tables (12-to-8Bit) on user-defined image region
	(Region-LUT), Constant frame rate independent of exposure time,
	Crosshairs overlay on the image, Temperature monitoring of camera,
	Camera informations readable over SDK, Ultra low trigger delay and low
	trigger jitter, Extended trigger input and strobe output functionality, Status
	line in picture
Operation temperature / moisture	0°C + 50°C / 20% 80%
Storage temperature / moisture	-25°C 60°C / 20% 95%
Power supply	+12VDC (-10%) +24VDC (+10%)
Power consumption	< 5.1W
Lens mount	C-Mount (CS-Mount optional)
I/O Inputs	2x Opto-isolated 2x RS-422 Opto-isolated
I/O Outputs	2x Opto-isolated
Dimensions	55 x 55 x 52mm³
Mass	265g
Connector I/O (Power)	Hirose 12-pole (mating plug HR10A-10P-12S)
Connector Interface	RJ-45
Conformity	CE / RoHS / WEEE
IP Code	

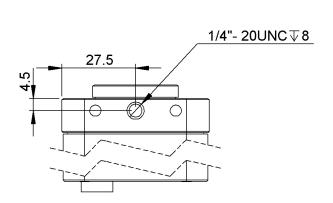
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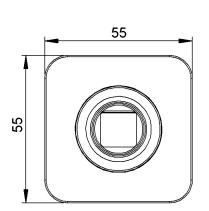
#### **Connectors**

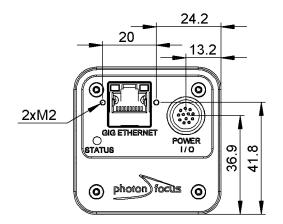
Pin	I/O Type	Name	Description
1	PWR	CAMERA_GND	Camera GND 0V
2	PWR	CAMERA_PWR	Camera Power 12V 24V
3	0	ISO_OUT0	Default Strobe out, internally Pulled up to ISO_PWR with 4k7 Resistor
4	Ţ	ISO_INC0_N	INC0 differential input (G2: RS-422, H2: HTL), negative polarity
5	Ţ	ISO_INC0_P	INC0 differential input (G2: RS-422, H2: HTL), positive polarity
6	PWR	ISO_PWR	Power supply 5V 24V for output signals
7	1	ISO_IN0	IN0 input signal
8	0	ISO_OUT1 (MISC)	Q1 output from PLC, no Pull up to ISO_PWR; can be used as additional output (by adding Pull up) or as controllable switch (max. 100mA, no capacitive or inductive load)
9	1	ISO_IN1(Trigger IN)	Default Trigger IN
10	1	ISO_INC1_N	INC1 differential input (G2: RS-422, H2: HTL), negative polarity
11	Ĭ	ISO_INC1_P	INC1 differential input (G2: RS-422, H2: HTL), positive polarity
12	PWR	ISO GND	I/O GND 0V

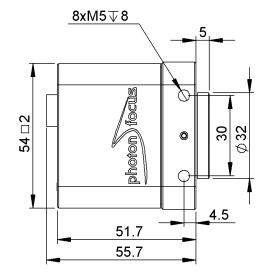


## **Dimensions**









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## **Explanation**

DN DigitalNumber (equals to LSB)

e Electrons

#### **Order Information**

DR1-D2048x1088-192-G2-8	BW model
DR1-D2048x1088I-192-G2-8	NIR model
DR1-D2048x1088C-192-G2-8	Color imager model

## Compatibility







#### **Photonfocus AG**

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# DR1-D2048-192-G2

The Double Rate camera series DR1-D2048(I/C)-G2 is based on the CMOSIS CMV4000 CMOS image sensor

#### **Features**

- Double Rate Technology
- CMOSIS CMV4000 CMOS image sensor
- 2048 x 2048 pixel resolution
- Good NIR spectral response
- Suitable for standard and low light applications
- Up to 45fps @ full resolution

- Global shutter
- Available in monochrome and NIR
- Extended sensor and camera features
- Boardlevel and OEM solution available
- GigEVision interface

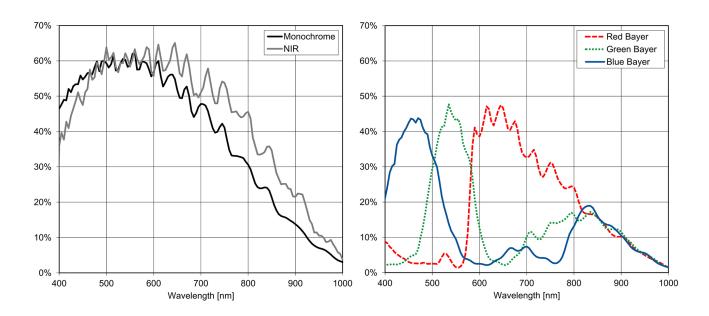






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# **Quantum Efficiency Image Sensor**



## **Image Sensor Specifications**

Manufacturer / Type	CMOSIS, CMV4000	
Technology	CMOS	
Optical format	1"	
Optical diagonal	15.92mm	
Resolution	2048 x 2048	
Pixel size	5.5µm x 5.5µm	
Active optical area	11.26mm x 11.26mm	
Dark current	125e-/s	
Read out noise	13e-	
Full well capacity / SNR	11ke- / 105:1	
Spectral range	Monochrome: 350 to 950nm (to 10% of peak responsivity)	
	NIR: 350 to 1000nm (to 10% of peak responsivity)	
Responsivity	Monochrome: 1100 x 10 <sup>3</sup> DN / (J/m <sup>2</sup> ) @ 520nm / 8bit	
	NIR: 900 x 10 <sup>3</sup> DN / (J/m <sup>2</sup> ) @ 850nm / 8bit	
Quantum Efficiency	Monochrome: < 60%	
	NIR: < 60%	
Optical fill factor	42% without micro lenses	
Dynamic range	60dB	
Characteristic curve	Linear, Piecewise linear	
Shutter mode	Global shutter	

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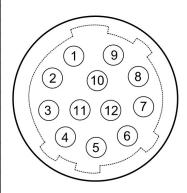
# **Camera Specifications**

Frame rate   45fps   Pixel clock	Interface	GigE
Camera taps       2         Greyscale resolution       8Bit         Fixed pattern noise (FPN)       < 1DN RMS @ 8Bit	Frame rate	45fps
Greyscale resolution 8Bit  Fixed pattern noise (FPN) < 1DN RMS @ 8Bit  Exposure time range 24µs - 349ms  Analog gain yes  Digital gain 0.1 to 15.99 (FineGain)  Trigger Modes Free running (non triggered), external Trigger, SWTrigger, AB-Trigger  Features Double Rate technology, Configurable region of interest (ROI), Up to 8 regions of interest (MROI), Decimation in y-direction, 2 look-up tables (12-to-8Bit) on user-defined image region (Region-LUT), Constant frame rate independent of exposure time, Crosshairs overlay on the image, Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture 0°C + 50°C / 20% 80%  Storage temperature / moisture -25°C 60°C / 20% 80%  Fower supply +12VDC (-10%) +24VDC (+10%)  Power consumption < 5.1W  Lens mount C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs 2x Opto-isolated  Dimensions 55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface RJ-45  Conformity CE / ROHS / WEEE	Pixel clock	64MHz
Fixed pattern noise (FPN) < 1DN RMS @ 8Bit  Exposure time range 24µs - 349ms  Analog gain yes  Digital gain 0.1 to 15.99 (FineGain)  Trigger Modes Free running (non triggered), external Trigger, SWTrigger, AB-Trigger  Features Double Rate technology, Configurable region of interest (ROI), Up to 8 regions of interest (MROI), Decimation in y-direction, 2 look-up tables (12-to-8Bit) on user-defined image region (Region-LUT), Constant frame rate independent of exposure time, Crosshairs overlay on the image, Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture 0°C + 50°C / 20% 80%  Storage temperature / moisture -25°C 60°C / 20% 95%  Power supply +12VDC (-10%) +24VDC (+10%)  Power consumption < 5.1W  Lens mount C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs 2x Opto-isolated  Dimensions 55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface RJ-45  Conformity CE / RoHS / WEEE	Camera taps	2
Exposure time range 24μs - 349ms  Analog gain yes  Digital gain 0.1 to 15.99 (FineGain)  Trigger Modes Free running (non triggered), external Trigger, SWTrigger, AB-Trigger  Peatures Double Rate technology, Configurable region of interest (ROI), Up to 8 regions of interest (MROI), Decimation in y-direction, 2 look-up tables (12-to-8Bit) on user-defined image region (Region-LUT), Constant frame rate independent of exposure time, Crosshairs overlay on the image, Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture 0°C + 50°C / 20% 95%  Power supply +12VDC (-10%) +24VDC (+10%)  Power consumption < 5.1W  Lens mount C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs 2x Opto-isolated  Dimensions 55 x 55 x 52mm³  Mass  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface RJ-45  Conformity CE / RoHS / WEEE	Greyscale resolution	8Bit
Analog gain Digital gain O.1 to 15.99 (FineGain) Trigger Modes Free running (non triggered), external Trigger, SWTrigger, AB-Trigger Features Double Rate technology, Configurable region of interest (ROI), Up to 8 regions of interest (MROI), Decimation in y-direction, 2 look-up tables (12- to-8Bit) on user-defined image region (Region-LUT), Constant frame rate independent of exposure time, Crosshairs overlay on the image, Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture O°C + 50°C / 20% 80% Storage temperature / moisture -25°C 60°C / 20% 95% Power supply +12VDC (-10%) +24VDC (+10%) Power consumption < 5.1W Lens mount C-Mount (CS-Mount optional) I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated I/O Outputs Dimensions 55 x 55 x 52mm³ Mass 265g Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S) Connector Interface RJ-45 Conformity CE / RoHS / WEEE	Fixed pattern noise (FPN)	< 1DN RMS @ 8Bit
Digital gain  O.1 to 15.99 (FineGain)  Trigger Modes  Free running (non triggered), external Trigger, SWTrigger, AB-Trigger  Double Rate technology, Configurable region of interest (ROI), Up to 8 regions of interest (MROI), Decimation in y-direction, 2 look-up tables (12-to-8bit) on user-defined image region (Region-LUT), Constant frame rate independent of exposure time, Crosshairs overlay on the image, Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture  O°C + 50°C / 20% 80%  Storage temperature / moisture  -25°C 60°C / 20% 95%  Power supply  +12VDC (-10%) +24VDC (+10%)  Power consumption  <-5.1W  Lens mount  C-Mount (CS-Mount optional)  I/O Inputs  2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs  Dimensions  55 x 55 x 52mm³  Mass  Connector I/O (Power)  Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface  RJ-45  Conformity  CE / ROHS / WEEE	Exposure time range	24μs - 349ms
Trigger Modes Free running (non triggered), external Trigger, SWTrigger, AB-Trigger  Double Rate technology, Configurable region of interest (ROI), Up to 8 regions of interest (MROI), Decimation in y-direction, 2 look-up tables (12- to-8Bit) on user-defined image region (Region-LUT), Constant frame rate independent of exposure time, Crosshairs overlay on the image, Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture  O°C + 50°C / 20% 80%  Storage temperature / moisture  -25°C 60°C / 20% 95%  Power supply +12VDC (-10%) +24VDC (+10%)  Power consumption  C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs Dimensions  55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface  RJ-45  Conformity CE / RoHS / WEEE	Analog gain	yes
Peatures  Double Rate technology, Configurable region of interest (ROI), Up to 8 regions of interest (MROI), Decimation in y-direction, 2 look-up tables (12-to-8Bit) on user-defined image region (Region-LUT), Constant frame rate independent of exposure time, Crosshairs overlay on the image, Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture  O°C + 50°C / 20% 80%  Storage temperature / moisture  -25°C 60°C / 20% 95%  Power supply  +12VDC (-10%) +24VDC (+10%)  -5.1W  Lens mount  C-Mount (CS-Mount optional)  I/O Inputs  2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs  Dimensions  55 x 55 x 52mm³  Mass  265g  Connector I/O (Power)  Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface  RJ-45  Conformity  CE / RoHS / WEEE	Digital gain	0.1 to 15.99 (FineGain)
regions of interest (MROI), Decimation in y-direction, 2 look-up tables (12-to-8Bit) on user-defined image region (Region-LUT), Constant frame rate independent of exposure time, Crosshairs overlay on the image, Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture 0°C + 50°C / 20% 80%  Storage temperature / moisture -25°C 60°C / 20% 95%  Power supply +12VDC (-10%) +24VDC (+10%)  Lens mount C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs 2x Opto-isolated  Dimensions 55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface RJ-45  Conformity CE / RoHS / WEEE	Trigger Modes	Free running (non triggered), external Trigger, SWTrigger, AB-Trigger
to-8Bit) on user-defined image region (Region-LUT), Constant frame rate independent of exposure time, Crosshairs overlay on the image, Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture  O°C + 50°C / 20% 80%  Storage temperature / moisture  -25°C 60°C / 20% 95%  Power supply +12VDC (-10%) +24VDC (+10%)  Power consumption  < 5.1W  Lens mount  C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs  2x Opto-isolated  Dimensions  55 x 55 x 52mm³  Mass  265g  Connector I/O (Power)  Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface  RJ-45  Conformity  CE / RoHS / WEEE	Features	Double Rate technology, Configurable region of interest (ROI), Up to 8
independent of exposure time, Crosshairs overlay on the image, Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture  O°C + 50°C / 20% 80%  Storage temperature / moisture  -25°C 60°C / 20% 95%  Power supply +12VDC (-10%) +24VDC (+10%)  Power consumption  < 5.1W  Lens mount C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs Dimensions 55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface  RJ-45  Conformity CE / RoHS / WEEE		regions of interest (MROI), Decimation in y-direction, 2 look-up tables (12-
Temperature monitoring of camera, Camera informations readable over SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture  O°C + 50°C / 20% 80%  Storage temperature / moisture  -25°C 60°C / 20% 95%  Power supply +12VDC (-10%) +24VDC (+10%)  Power consumption  C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs 2x Opto-isolated  Dimensions 55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface  RJ-45  Conformity CE / RoHS / WEEE		to-8Bit) on user-defined image region (Region-LUT), Constant frame rate
SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and strobe output functionality, Status line in picture  Operation temperature / moisture  O°C + 50°C / 20% 80%  Storage temperature / moisture  -25°C 60°C / 20% 95%  Power supply +12VDC (-10%) +24VDC (+10%)  Power consumption  < 5.1W  Lens mount C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs Dimensions  55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface  RJ-45  Conformity CE / RoHS / WEEE		independent of exposure time, Crosshairs overlay on the image,
strobe output functionality, Status line in picture  Operation temperature / moisture  O°C + 50°C / 20% 80%  Storage temperature / moisture  -25°C 60°C / 20% 95%  Power supply +12VDC (-10%) +24VDC (+10%)  Power consumption  < 5.1W  Lens mount  C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs  Dimensions  55 x 55 x 52mm³  Mass  265g  Connector I/O (Power)  Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface  RJ-45  Conformity  CE / RoHS / WEEE		Temperature monitoring of camera, Camera informations readable over
Operation temperature / moisture		SDK, Ultra low trigger delay and low trigger jitter, Extended trigger input and
Storage temperature / moisture -25°C 60°C / 20% 95%  Power supply +12VDC (-10%) +24VDC (+10%)  Power consumption < 5.1W  Lens mount C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs 2x Opto-isolated  Dimensions 55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface RJ-45  Conformity CE / RoHS / WEEE		strobe output functionality, Status line in picture
Power supply +12VDC (-10%) +24VDC (+10%)  Power consumption < 5.1W  Lens mount C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs 2x Opto-isolated  Dimensions 55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface RJ-45  Conformity CE / RoHS / WEEE	Operation temperature / moisture	0°C + 50°C / 20% 80%
Power consumption < 5.1W  Lens mount C-Mount (CS-Mount optional)  I/O Inputs 2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs 2x Opto-isolated  Dimensions 55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface RJ-45  Conformity CE / RoHS / WEEE	Storage temperature / moisture	-25°C 60°C / 20% 95%
Lens mount  C-Mount (CS-Mount optional)  I/O Inputs  2x Opto-isolated 2x RS-422 Opto-isolated  I/O Outputs  2x Opto-isolated  Dimensions  55 x 55 x 52mm³  Mass  265g  Connector I/O (Power)  Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface  RJ-45  Conformity  CE / RoHS / WEEE	Power supply	+12VDC (-10%) +24VDC (+10%)
I/O Inputs2x Opto-isolated 2x RS-422 Opto-isolatedI/O Outputs2x Opto-isolatedDimensions55 x 55 x 52mm³Mass265gConnector I/O (Power)Hirose 12-pole (mating plug HR10A-10P-12S)Connector InterfaceRJ-45ConformityCE / RoHS / WEEE	Power consumption	< 5.1W
I/O Outputs  2x Opto-isolated  Dimensions  55 x 55 x 52mm³  Mass  265g  Connector I/O (Power)  Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface  RJ-45  Conformity  CE / RoHS / WEEE	Lens mount	C-Mount (CS-Mount optional)
Dimensions 55 x 55 x 52mm³  Mass 265g  Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface RJ-45  Conformity CE / RoHS / WEEE	I/O Inputs	2x Opto-isolated 2x RS-422 Opto-isolated
Mass 265g Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S) Connector Interface RJ-45 Conformity CE / RoHS / WEEE	I/O Outputs	2x Opto-isolated
Connector I/O (Power) Hirose 12-pole (mating plug HR10A-10P-12S)  Connector Interface RJ-45  Conformity CE / RoHS / WEEE	Dimensions	55 x 55 x 52mm³
Connector Interface RJ-45 Conformity CE / RoHS / WEEE	Mass	265g
Conformity CE / RoHS / WEEE	Connector I/O (Power)	Hirose 12-pole (mating plug HR10A-10P-12S)
	Connector Interface	RJ-45
IP Code IP40		CE / RoHS / WEEE
	IP Code	IP40

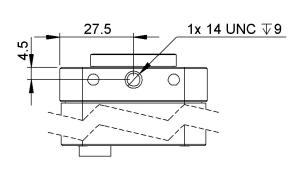
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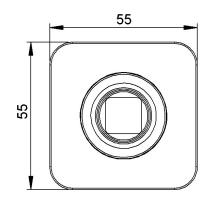
#### **Connectors**

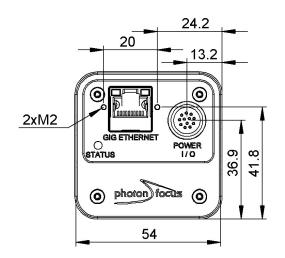
Pin	I/O Type	Name	Description
1	PWR	CAMERA_GND	Camera GND 0V
2	PWR	CAMERA_PWR	Camera Power 12V 24V
3	0	ISO_OUT0	Default Strobe out, internally Pulled up to ISO_PWR with 4k7 Resistor
4	1	ISO_INC0_N	INC0 differential input (G2: RS-422, H2: HTL), negative polarity
5	I	ISO_INC0_P	INC0 differential input (G2: RS-422, H2: HTL), positive polarity
6	PWR	ISO_PWR	Power supply 5V 24V for output signals
7	1	ISO_IN0	IN0 input signal
8	0	ISO_OUT1 (MISC)	Q1 output from PLC, no Pull up to ISO_PWR; can be used as additional output (by adding Pull up) or as controllable switch (max. 100mA, no capacitive or inductive load)
9	1	ISO_IN1(Trigger IN)	Default Trigger IN
10	1	ISO_INC1_N	INC1 differential input (G2: RS-422, H2: HTL), negative polarity
11	1	ISO_INC1_P	INC1 differential input (G2: RS-422, H2: HTL), positive polarity
12	PWR	ISO GND	I/O GND 0V

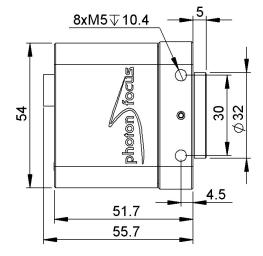


## **Dimensions**









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## **Explanation**

DN DigitalNumber (equals to LSB)

e Electrons

#### **Order Information**

DR1-D2048-192-G2-8	BW model
DR1-D2048I-192-G2-8	NIR model

## Compatibility







#### Photonfocus AG

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# DR1-D1312-200-G2

The Double Rate camera series DR1-D1312(IE)-G2 is based on the Photonfocus A1312 and A1312IE CMOS image sensors with LinLog® technology

#### **Features**

- Double Rate Technology
- Photonfocus A1312 CMOS image sensor
- 1312 x 1082 pixel resolution
- Very good NIR spectral response
- Exceptional SNR up to 300:1
- Dynamic range up to 120dB via LinLog®
- Up to 135fps @ full resolution

- Global shutter
- Available in monochrome and enhanced NIR
- Extended sensor and camera features
- Reduction of ROI in x- and y-direction increases frame rate
- Boardlevel and OEM solution available
- GigEVision interface

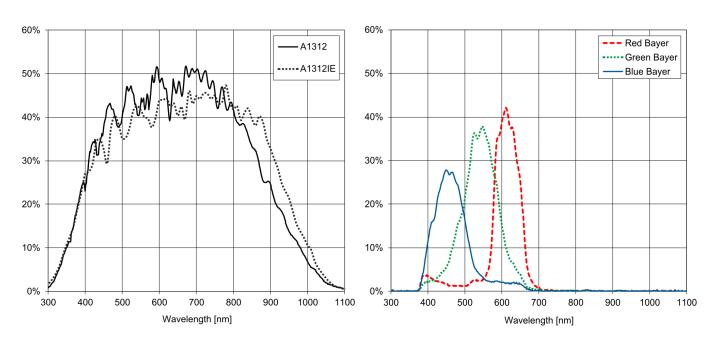






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# **Quantum Efficiency Image Sensor**



## **Image Sensor Specifications**

Manufacturer / Type	Photonfocus, A1312	
Technology	CMOS	
Optical format	1"	
Optical diagonal	13.6mm	
Resolution	1312 x 1082	
Pixel size	8µm x 8µm	
Active optical area	10.48mm x 8.64mm	
Dark current	4000e-/s	
Read out noise	110e-	
Full well capacity / SNR	90ke- / 300:1	
Spectral range	Monochrome: 350 to 980nm (to 10% of peak responsivity)	
	NIR Enhanced: 320 to 1000nm (to 10% of peak responsivity)	
Responsivity	Monochrome: 295 x 10 <sup>3</sup> DN / (J/m <sup>2</sup> ) @ 670nm / 8bit	
	NIR Enhanced: 305 x 10 <sup>3</sup> DN / (J/m <sup>2</sup> ) @ 850nm / 8bit	
Quantum Efficiency	Monochrome: < 50%	
	NIR Enhanced: < 50%	
Optical fill factor	> 60%	
Dynamic range	60dB in linear mode; 120dB with LinLog®	
Characteristic curve	Linear, LinLog®	
Shutter mode	Global shutter	

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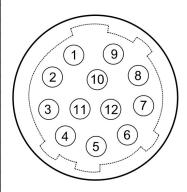
# **Camera Specifications**

Interface	GigE
Frame rate	135fps
Pixel clock	80MHz
Camera taps	2
Greyscale resolution	8Bit
Fixed pattern noise (FPN)	< 1DN RMS @ 8bit
Exposure time range	10μs - 335ms
Analog gain	n/a
Digital gain	0.1 to 15.99 (FineGain)
Trigger Modes	Free running (non triggered), external Trigger, SWTrigger
Features	Double Rate technology, Configurable region of interest (ROI), Up to 512
	regions of interest (MROI), Decimation in y-direction, Image correction, 2
	look-up tables (12-to-8Bit) on user-defined image region (Region-LUT),
	Constant frame rate independent of exposure time, Crosshairs overlay on
	the image, 3x3 convolver for image preprocessing, Temperature monitoring
	of sensor and camera, Ultra low trigger delay and low trigger jitter, Extended
	trigger input and strobe output functionality
Operation temperature / moisture	0°C + 50°C / 20% 80%
Storage temperature / moisture	-25°C 60°C / 20% 95%
Power supply	+12VDC (-10%) +24VDC (+10%)
Power consumption	< 5.0W
Lens mount	C-Mount (CS-Mount optional)
I/O Inputs	2x Opto-isolated 2x RS-422 Opto-isolated
I/O Outputs	2x Opto-isolated
Dimensions	60 x 60 x 51mm³
Mass	310g
Connector I/O (Power)	Hirose 12-pole (mating plug HR10A-10P-12S)
Connector Interface	RJ-45
Conformity	CE / RoHS / WEEE
IP Code	IP40

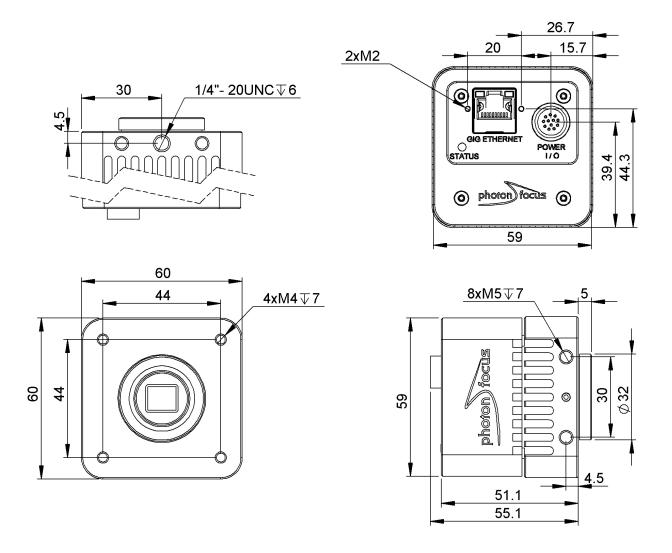
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#### **Connectors**

	4	2	
Pin	I/O Type	Name	Description
1	PWR	CAMERA_GND	Camera GND 0V
2	PWR	CAMERA_PWR	Camera Power 12V 24V
3	0	ISO_OUT0	Default Strobe out, internally Pulled up to ISO_PWR with 4k7 Resistor
4	1	ISO_INC0_N	INC0 differential input (G2: RS-422, H2: HTL), negative polarity
5	I	ISO_INC0_P	INC0 differential input (G2: RS-422, H2: HTL), positive polarity
6	PWR	ISO_PWR	Power supply 5V 24V for output signals
7	I	ISO_IN0	IN0 input signal
8	0	ISO_OUT1 (MISC)	Q1 output from PLC, no Pull up to ISO_PWR; can be used as additional output (by adding Pull up) or as controllable switch (max. 100mA, no capacitive or inductive load)
9	1	ISO_IN1(Trigger IN)	Default Trigger IN
10	1	ISO_INC1_N	INC1 differential input (G2: RS-422, H2: HTL), negative polarity
11	1	ISO_INC1_P	INC1 differential input (G2: RS-422, H2: HTL), positive polarity
12	PWR	ISO GND	I/O GND 0V



#### **Dimensions**



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## **Explanation**

DN DigitalNumber (equals to LSB)

e Electrons

#### **Order Information**

DR1-D1312-200-G2-8	BW model
DR1-D1312IE-200-G2-8	NIR-Enhanced model

## Compatibility







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