PEMBROKE INSTRUMENTS, LLC

SWIR CAMERA DATA SHEET

WiDy SenS 640 320ML STE2

Manufacturer: New Imaging Technologies (NIT)

Technical data reproduced from the original manufacturer datasheet.

For a quote or more information email

sales@pembrokeinstruments.com



Ordering Informations

Commercial Reference

Commercial reference	Description	Ordering information
WIDY SenS 640M-STE2	WiDy SenS 640 CL (SDR26)	9SEC1601AE31MC0# # : product revision, D or higher
WIDY SenS 640L-STE2	WiDy SenS 640 CL (LSHM130)	9SEC1601AE31LC0# # : product revision, D or higher
WIDY SenS 320M-STE2	WiDy SenS 320 CL (SDR26)	9SEC2001AE31MC0# #: product revision, D or higher
WIDY SenS 320L-STE2	WiDy SenS 320 CL (LSHM130)	9SEC2001AE31LC0# #: product revision, D or higher

Included Accessories

- Power and trigger Cable (Hirose HR10 connector)
- 12V power supply
- Heatsinks (M-STE2 version only)
- Cardboard shipping and storage box

Optional Accessories

- Optical Filter mount (640 model)
- Hardened protective case

Custom variants (OEM)

Various options may be available depending on your camera model:

- Open frame housing
- Sensor without cover glass
- Flex configuration (sensor board split from camera electronics)
- …

*Products and specifications discussed herein are for evaluation and reference purposes only and are subject to change by NIT without notice.
Products are only warranted by NIT to meet NIT's production data sheet specifications.

FUNCTIONALITIES

Camera

Main camera features (For full documentation contact):

Sensor characteristics	Sensor type	InGaAs (0.9-1.7 spectral response, see QE curve)
	Pixel pitch	$15\mu m$
	Resolution	640x512 (VGA, Widy SenS 640) / 320x256 (QVGA; Widy SenS 320)
	Sensor noise	• High gain (CDS): <50e^- • Low gain : < 270e^- • Log: <340e^-
	Dynamic range	• High gain (CDS): 49dB typical • Low gain: 63dB typical • Log: 120dB typical
	Peak QE	>70%
Camera features	Frame rate	>260Hz (VGA), >820Hz (QVGA)
	Sensor Readout	Global shutter ITR (Integrate Then Read) and IWR (Integrate While Read).
	Sensor modes	4 modes: Log, Linear Low Gain, Linear High Gain and Linear High Gain with CDS.
	Output Type	8/10/12/14 bits pixel formats. Configurable output geometry: 1X_1Y / 1X2_1Y
	Exposure time	Minimum Integration time: 10us (Linear) / 100us (Log) Controlled by camera register or Trigger width
	Trigger	Internal/External (LVTTL) Software Trigger Trigger over Cameralink
	Trigger delay	User-Selectable
	Partial reading mode	Region of Interest (ROI). User-Selectable with a step of 8 pixels. Maximum FPS increase with reduced ROI.
	AET (automatic exposure time)	Continuous/Once/Off Automatic exposure time adjustment. User-Selectable parameters: speed, target mean level, tolerance, min/max exposure time
	AGC (Histogram Stretching)	Automatic/Manual. Automatic: continuous offset and gain adjustment based on current image histogram. User Selectable parameters: temporal averaging, ROI Manual: User-Selectable gain and offset.
	Histogram calculation	User Selectable parameters: % pixels to ignore, ROI
	NUC correction	Correction 1-Point or 2-Point. 2 Point factory calibrated. (25°C sensor Temperature)
	Bad pixel correction	Factory calibrated Bad Pixel Map
	File Management	Upload/Download via camera communication interface Firmware Update. Correction table (NUC and BPM) download and upload. File management software provided (Windows compatible)
	Temperature monitoring	Mainboard & Image Sensor
	Overlay	Histogram ROI + CrossHair
	User Configuration	4 User-defined presets. Selectable boot-up preset.
	Image Flip	Horizontal/Vertical

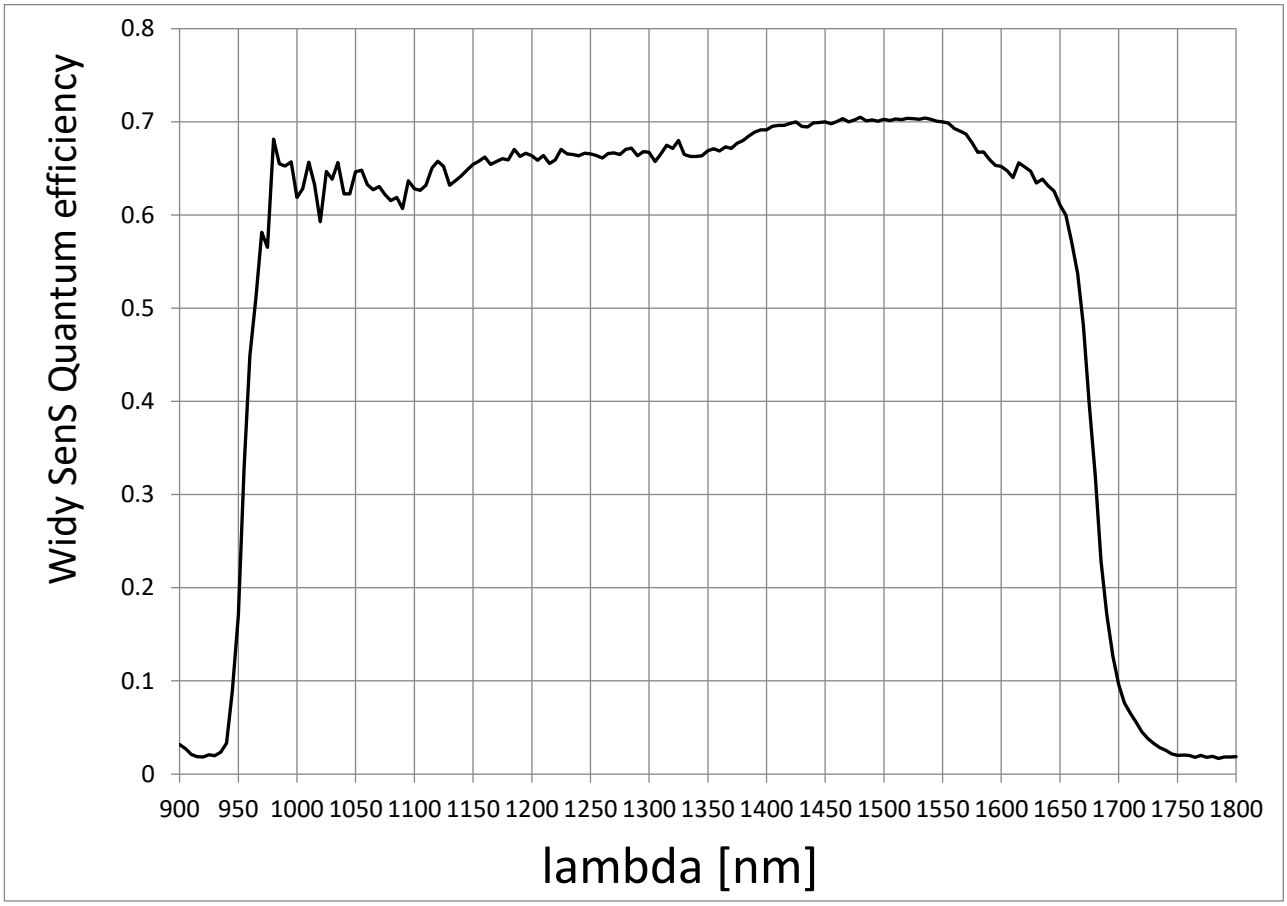
*Products and specifications discussed herein are for evaluation and reference purposes only and are subject to change by NIT without notice.
Products are only warranted by NIT to meet NIT's production data sheet specifications.

Environment and mechanical characteristics	Power consumption (12V supply)	• Camera: <5.5W
		• Cooling: User-Selectable TEC power limit
		  ○ Off
		  ○ Low : <1W
		  ○ Medium : <2W
		  ○ High : <4W (Default, user defined value)

	Supply voltage range	6 to 24V (Overvoltage, reverse polarity protection).
	Storage temperature	-40 to +80°C
	Operating temperature	-40 to +71°C
	Size (WxHxL, mm)	46x46x65.4(640) / 59.7(320) 77.3x46x65.4(640) / 59.7(320) with heatsinks
	Weight	<250g <340g with heatsinks
	Lens mount	C-Mount
Software	Control protocol	GenCP (Genicam) compliant
	NIT Software	NITGenicamControlTool (Windows, camera control only)
	Third party	Genicam/GenCP compliant software

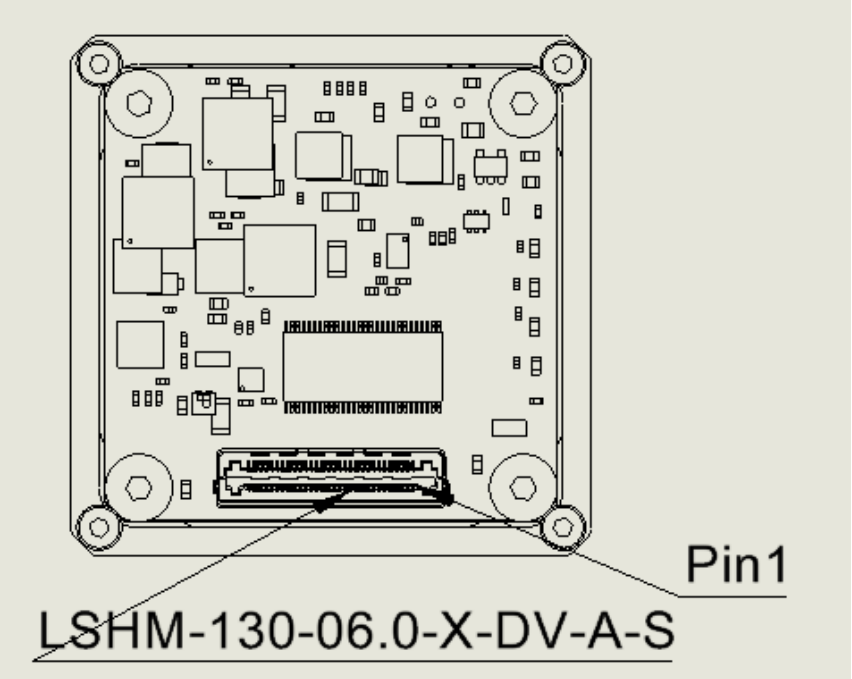
*Products and specifications discussed herein are for evaluation and reference purposes only and are subject to change by NIT without notice.
Products are only warranted by NIT to meet NIT's production data sheet specifications.

QE Curve (typical)



*Products and specifications discussed herein are for evaluation and reference purposes only and are subject to change by NIT without notice.
Products are only warranted by NIT to meet NIT's production data sheet specifications.

Electrical ICD (L-STE2 – LSHM130 output)



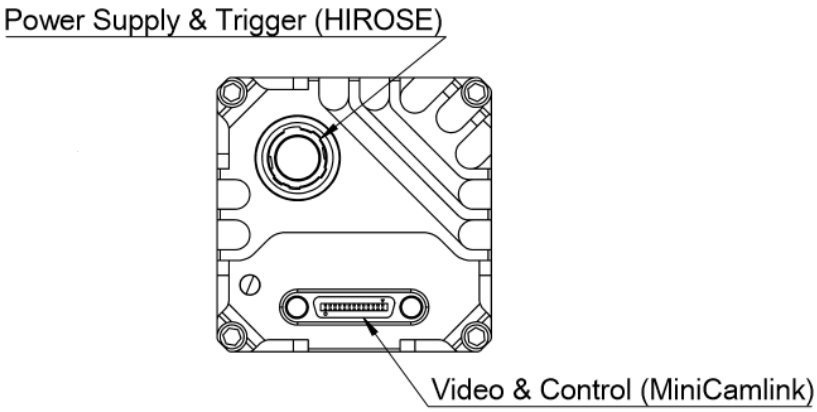
- LSHM-130-06.0-X-DV-A-S Pinout

Pin Number	Name	Type	Comment	Pin Number	Name	Type	Comment
1	GND	Power	Supply voltage ground	31	NC		
2	GND	Power	Supply voltage ground	32	NC		
3	CamLinkPair4+	Clock		33	NC		
4	CamLinkPair5+	Data3		34	Trigger Out	TTL	Programmable
5	CamLinkPair4-	Clock		35	NC		
6	CamLinkPair5-	Data3		36	Trigger Out	TTL	Programmable
7	GND			37	NC		
8	GND			38	Trigger In/Out	TTL	Programmable
9	CamLinkPair3+	Data2		39	GND		
10	CamLinkPair2+	Data1		40	GND		
11	CamLinkPair3-	Data2		41	NC		
12	CamLinkPair2-	Data1		42	NC		
13	GND			43	NC		
14	GND			44	NC		
15	CamLinkPair1+	Data0		45	Cable detect		100 Ohm to GND
16	NC			46	NC		
17	CamLinkPair1-	Data0		47	Enable		On : 1.6 to 3.3V
18	NC			48	NC		
19	GND			49	GND		
20	NC			50	GND		
21	CamLinkPair7+	SerTG		51	GND		
22	CamLinkPair8+	CC1		52	GND		
23	CamLinkPair7-	SerTG		53	GND		
24	CamLinkPair8-	CC1		54	GND		
25	CamLinkPair6+	SerTC		55	Power Input	Power	6 to 24V
26	CamLinkPair9+	CC2		56	Power Input	Power	6 to 24V
27	CamLinkPair6-	SerTC		57	Power Input	Power	6 to 24V
28	CamLinkPair9-	CC2		58	Power Input	Power	6 to 24V
29	GND			59	Power Input	Power	6 to 24V
30	GND			60	Power Input	Power	6 to 24V

*Products and specifications discussed herein are for evaluation and reference purposes only and are subject to change by NIT without notice.
Products are only warranted by NIT to meet NIT's production data sheet specifications.

Electrical ICD (M-STE2 – SDR26 video output)

Reference	Designation	Manufacturer
HR10-10R-12SA	Connector Female 12 positions	Hirose

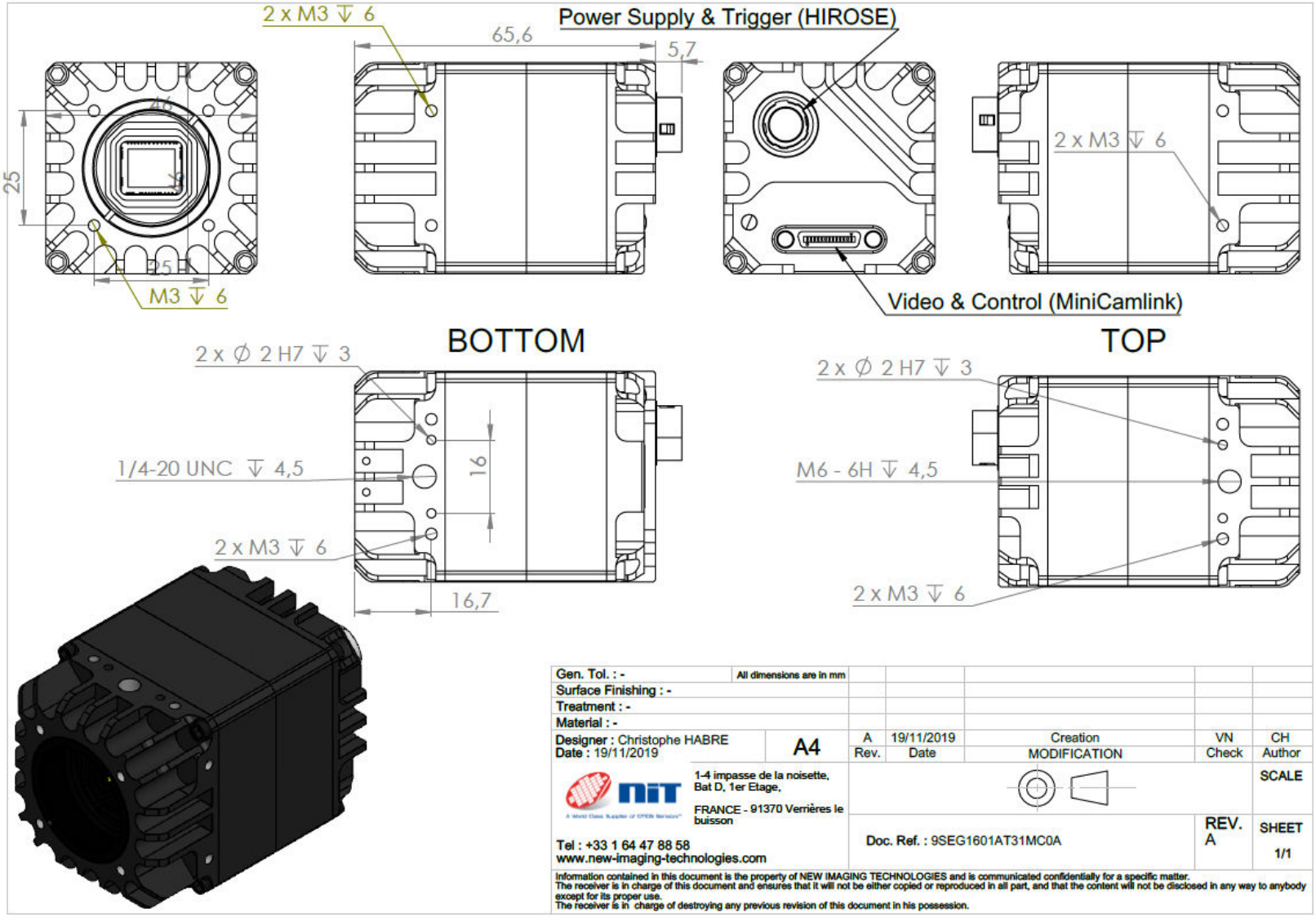


Reference	Designation	Manufacturer
12226-1150-00FR	SDR26 connector	3M

Hirose Connector Pinout		
Pin	Signal Name	Cable color
1	Power (6-24V)	Red/Purple/(Orange)
2	Power GND	Blue/Brown
3	Trigger OUT2	White
4	Trigger OUT1	Yellow
5	NC	
6	NC	
7	Reserved	
8	Power GND	Blue/Brown
9	Power (6-24V)	Red/Purple/(Orange)
10	Trigger IN/OUT (LVTTL)	Green
11	Not connected	
12	Trigger GND	Black

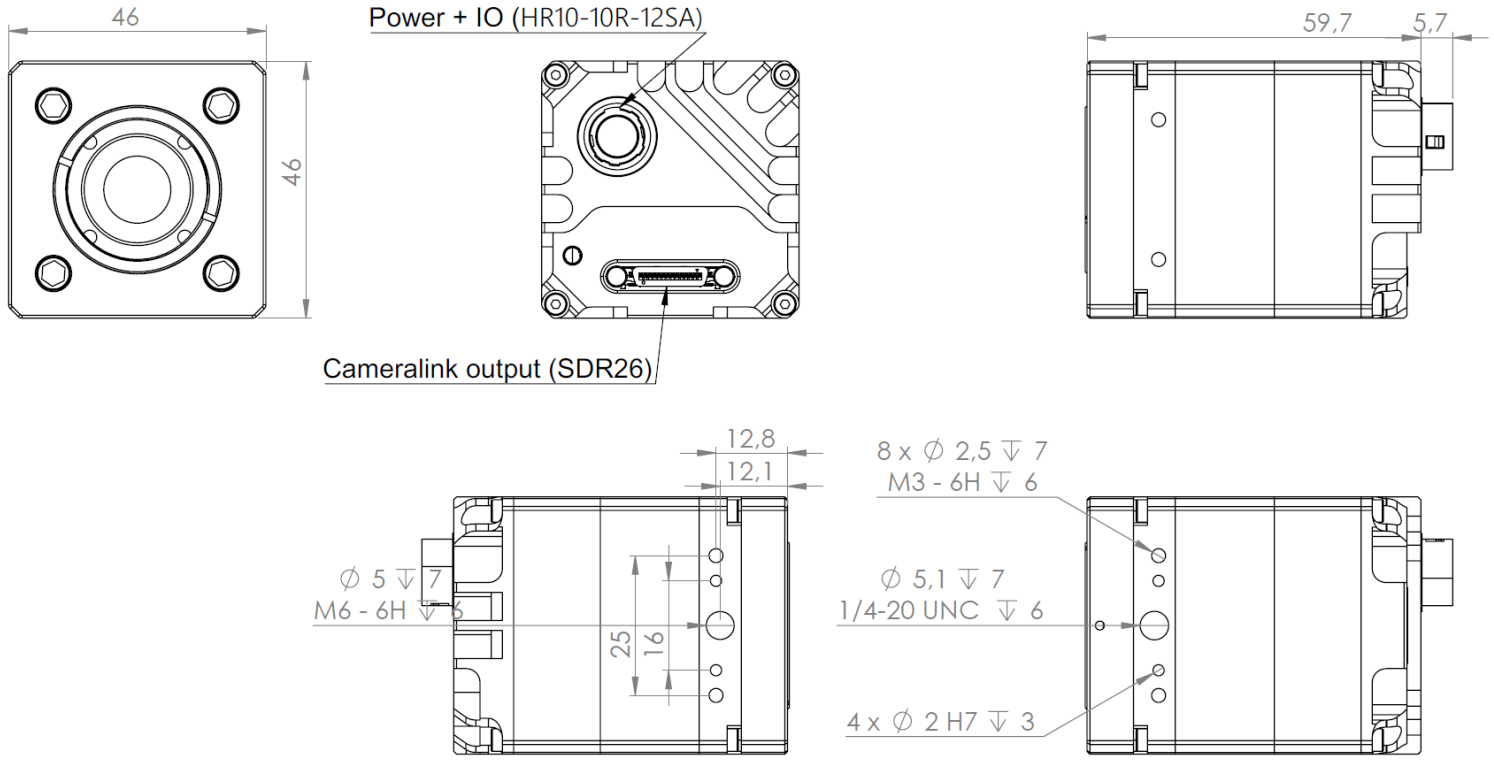
*Products and specifications discussed herein are for evaluation and reference purposes only and are subject to change by NIT without notice.
Products are only warranted by NIT to meet NIT's production data sheet specifications.

Mechanical ICD (Widy SenS 640 M-STE2)



*Products and specifications discussed herein are for evaluation and reference purposes only and are subject to change by NIT without notice.
Products are only warranted by NIT to meet NIT's production data sheet specifications.

Mechanical ICD - With Heatsinks (Widy SenS 320 M-STE2)



Gen. Tol. : +/- 0.100000mm All dimensions are in mm		E				
Surface Finishing: Black Anodization		D				
Treatment: Surtec 650		C				
Material: Aluminium 7075		B				
Designer: VN	A4	A	29/09/2022	Creation	Check	VN
Date: 29/09/2022		Rev.	Date	Modification	Check	Author

1-4 impasse de la noisette,
Bat D, 1er Etage,
FRANCE - 91370 Verrières le buisson
Tel : +33 1 64 47 88 58
www.new-imaging-technologies.com

SCALE 1:1

Doc. Ref. : Widy SenS 320 M-ST

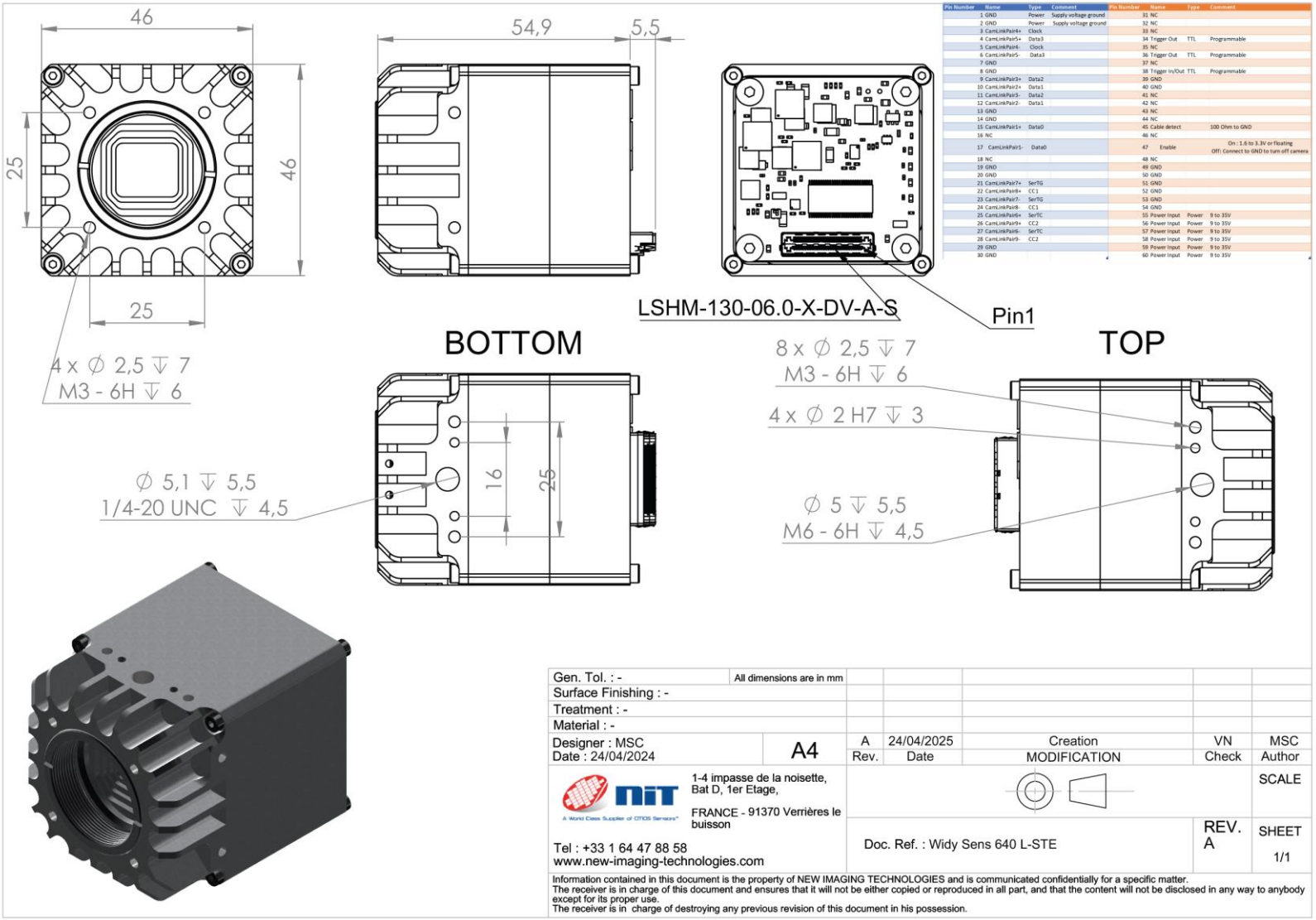
REV. A

SHEET 1/1

Information contained in this document is the property of NEW IMAGING TECHNOLOGIES and is communicated confidentially for a specific matter.
The receiver is in charge of this document and ensures that it will not be either copied or reproduced in all part, and that the content will not be disclosed in any way to anybody except for its proper use.
The receiver is in charge of destroying any previous revision of this document in his possession.

*Products and specifications discussed herein are for evaluation and reference purposes only and are subject to change by NIT without notice.
Products are only warranted by NIT to meet NIT's production data sheet specifications.

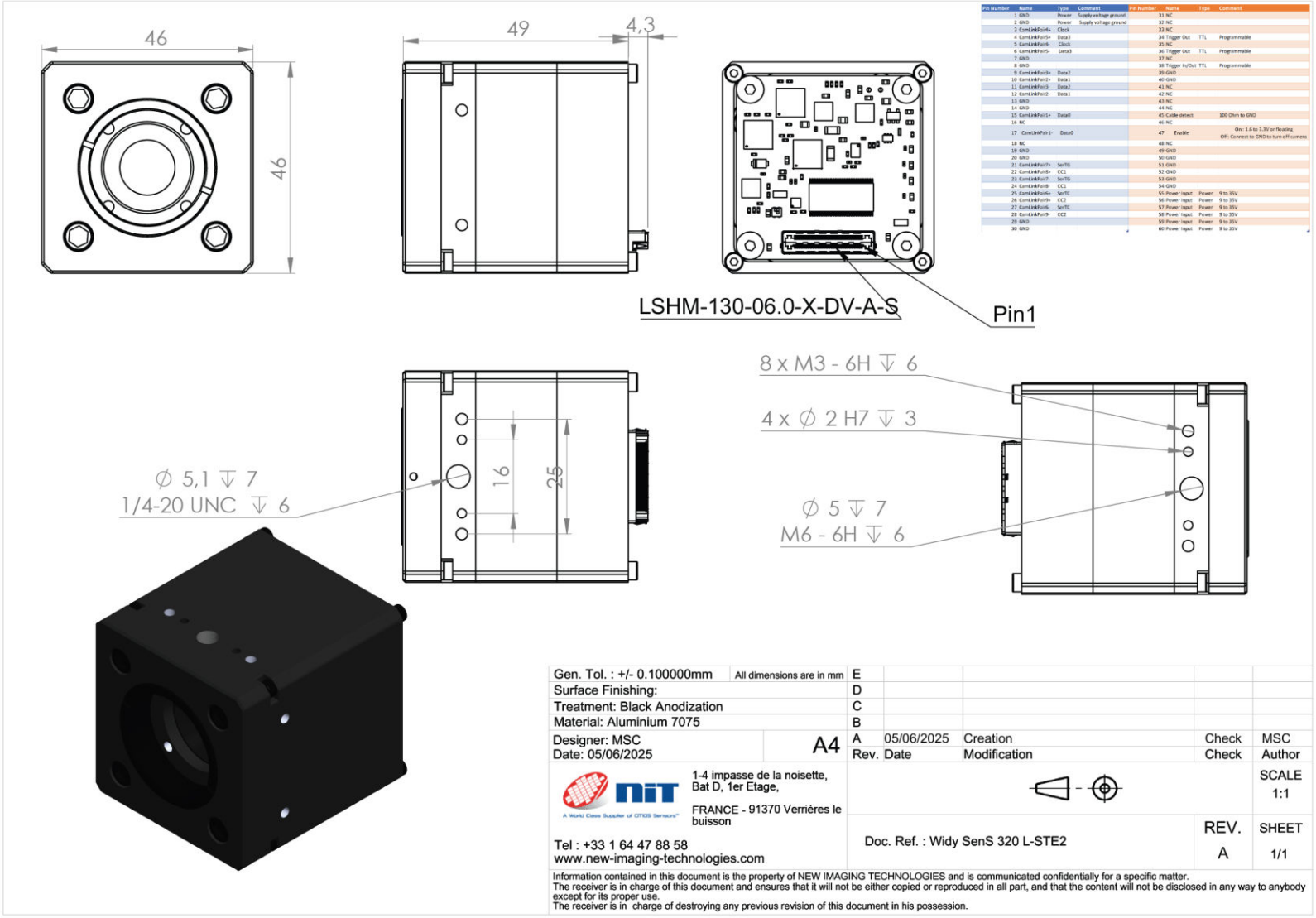
Mechanical ICD (Widy SenS 640 L-STE2)



Pin Number	Name	Type	Comment	Pin Number	Name	Type	Comment
1	GND	Power	Supply voltage ground	31	NC		
2	GND	Power	Supply voltage ground	32	NC		
3	CamLinkPair4+	Clock		33	NC		
4	CamLinkPair5+	Data3		34	Trigger Out	TTL	Programmable
5	CamLinkPair4-	Clock		35	NC		
6	CamLinkPair5-	Data3		36	Trigger Out	TTL	Programmable
7	GND			37	NC		
8	GND			38	Trigger In/Out	TTL	Programmable
9	CamLinkPair3+	Data2		39	GND		
10	CamLinkPair2+	Data1		40	GND		
11	CamLinkPair3-	Data2		41	NC		
12	CamLinkPair2-	Data1		42	NC		
13	GND			43	NC		
14	GND			44	NC		
15	CamLinkPair1+	Data0		45	Cable detect		100 Ohm to GND
16	NC			46	NC		
17	CamLinkPair1-	Data0		47	Enable		On : 1.6 to 3.3V or floating Off: Connect to GND to turn off camera
18	NC			48	NC		
19	GND			49	GND		
20	GND			50	GND		
21	CamLinkPair7+	SerTG		51	GND		
22	CamLinkPair8+	CC1		52	GND		
23	CamLinkPair7-	SerTG		53	GND		
24	CamLinkPair8-	CC1		54	GND		
25	CamLinkPair6+	SerTC		55	Power Input	Power	9 to 35V
26	CamLinkPair9+	CC2		56	Power Input	Power	9 to 35V
27	CamLinkPair6-	SerTC		57	Power Input	Power	9 to 35V
28	CamLinkPair9-	CC2		58	Power Input	Power	9 to 35V
29	GND			59	Power Input	Power	9 to 35V
30	GND			60	Power Input	Power	9 to 35V

*Products and specifications discussed herein are for evaluation and reference purposes only and are subject to change by NIT without notice.
Products are only warranted by NIT to meet NIT's production data sheet specifications.

Mechanical ICD (Widy SenS 320 L-STE2)



Pin Number	Name	Type	Comment	Pin Number	Name	Type	Comment
1	GND	Power	Supply voltage ground	31	NC		
2	GND	Power	Supply voltage ground	32	NC		
3	CamLinkPair0+	Clock		33	NC		
4	CamLinkPair0-	Data3		34	Trigger Out	TTL	Programmable
5	CamLinkPair4-	Clock		35	NC		
6	CamLinkPair5-	Data3		36	Trigger Out	TTL	Programmable
7	GND			37	NC		
8	GND			38	Trigger In/Out	TTL	Programmable
9	CamLinkPair3+	Data2		39	GND		
10	CamLinkPair2+	Data1		40	GND		
11	CamLinkPair3-	Data2		41	NC		
12	CamLinkPair2-	Data1		42	NC		
13	GND			43	NC		
14	GND			44	NC		
15	CamLinkPair1+	Data0		45	Cable detect		100 Ohm to GND
16	NC			46	NC		
17	CamLinkPair1-	Data0		47	Enable		On : 1.6 to 3.3V or floating Off: Connect to GND to turn off camera
18	NC			48	NC		
19	GND			49	GND		
20	GND			50	GND		
21	CamLinkPair7+	SerTG		51	GND		
22	CamLinkPair8+	CC1		52	GND		
23	CamLinkPair7-	SerTG		53	GND		
24	CamLinkPair8-	CC1		54	GND		
25	CamLinkPair6+	SerTC		55	Power Input	Power	9 to 35V
26	CamLinkPair9+	CC3		56	Power Input	Power	9 to 35V
27	CamLinkPair6-	SerTC		57	Power Input	Power	9 to 35V
28	CamLinkPair9-	CC2		58	Power Input	Power	9 to 35V
29	GND			59	Power Input	Power	9 to 35V
30	GND			60	Power Input	Power	9 to 35V

Gen. Tol. : +/- 0.100000mm All dimensions are in mm		E					
Surface Finishing:		D					
Treatment: Black Anodization		C					
Material: Aluminium 7075		B					
Designer: MSC Date: 05/06/2025	A4	A	05/06/2025	Creation		Check	MSC
		Rev.	Date	Modification		Check	Author

1-4 impasse de la noisette,
Bat D, 1er Etage,
FRANCE - 91370 Verrières le buisson
Tel : +33 1 64 47 88 58
www.new-imaging-technologies.com

	SCALE 1:1	
Doc. Ref. : Widy SenS 320 L-STE2	REV. A	SHEET 1/1

Information contained in this document is the property of NEW IMAGING TECHNOLOGIES and is communicated confidentially for a specific matter.
The receiver is in charge of this document and ensures that it will not be either copied or reproduced in all part, and that the content will not be disclosed in any way to anybody except for its proper use.
The receiver is in charge of destroying any previous revision of this document in his possession.

*Products and specifications discussed herein are for evaluation and reference purposes only and are subject to change by NIT without notice.
Products are only warranted by NIT to meet NIT's production data sheet specifications.


PEMBROKE
INSTRUMENTS
Imagining a Brighter Tomorrow
Advanced
Imaging Solutions
for a Smarter World
greateyes
CHARLIE
Avenir
PHOTONICS
ARIS
Compact USS spectrometer
NYLIS
High resolution spectrometer
pembrokeinstruments.com
sales@pembrokeinstruments.com
+1-650-550-8618
CAMERAS | SPECTROMETERS | IMAGING SOLUTIONS