PEMBROKE INSTRUMENTS, LLC

SWIR CAMERA DATA SHEET

WIDY SenS 640ML STE

Manufacturer: New Imaging Technologies (NIT)

Technical data reproduced from the original manufacturer datasheet.

For a quote or more information email

sales@pembrokeinstruments.com

Ordering Information

Commercial Reference

Commercial reference	Description	Ordering information
WiDy SenS 640M-STE	WiDy SenS 640 Cameralink embedded **SDR26 & HR10-10R connector**	9SEC1601AE31MC0# #: **product revision, A to C**
WiDy SenS 640M-STPE	WiDy SenS 640 Cameralink embedded With gated mode (100ns exposure time) **SDR26 & HR10-10R connector**	9SEG1601AE31MC0# #: **product revision, A to C**
WiDy SenS 640L-STE	WiDy SenS 640 Cameralink embedded LSHM130 connector	9SEC1601AE31LC0# #: **product revision, A to C**
WiDy SenS 640L-STPE	WiDy SenS 640 Cameralink embedded With gated mode (100ns exposure time) **LSHM130 connector**	9SEG1601AE31LC0# #: **product revision, A to C**

Included Accessories

- Power and trigger Cable (Hirose HR10 connector)
- 12V power supply
- NITLink GUI
- Cardboard shipping and storage box

Optional Accessories

- Heatsinks
- Optical Filter mount
- 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)
- …

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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)
	Sensor diagonal	12.3mm
	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	Up to 177Hz (full frame)
	Sensor Readout	Global shutter (standard): • ITR (Integrate Then Read) • IWR (Integrate While Read) Gated mode (optional **-STPE version**)
	Sensor modes	4 modes: Log, Linear Low Gain, Linear High Gain and Linear High Gain with CDS
	Output Type	8/14 bits pixel formats
	Exposure time	Minimum Integration time: 10us (Linear) / 100us (Log) Gated mode (optional **-STPE version**): 100ns to 9 μs Controlled by camera register or Trigger width
	Trigger	Internal/External (LVTTL)
	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)	On/Off Automatic exposure time adjustment User-Selectable parameters: from 0 to 100% related to the entire dynamic in 14 bits (0 to 16383)
	AGC (Histogram Stretching)	Automatic/Manual Automatic: continuous offset and gain adjustment based on current image histogram 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
	Temperature monitoring	Image Sensor
	Overlay	Histogram ROI + CrossHair
	User Configuration	Camera configuration at bootup modifiable by user
	Image Flip	Horizontal/Vertical/Both

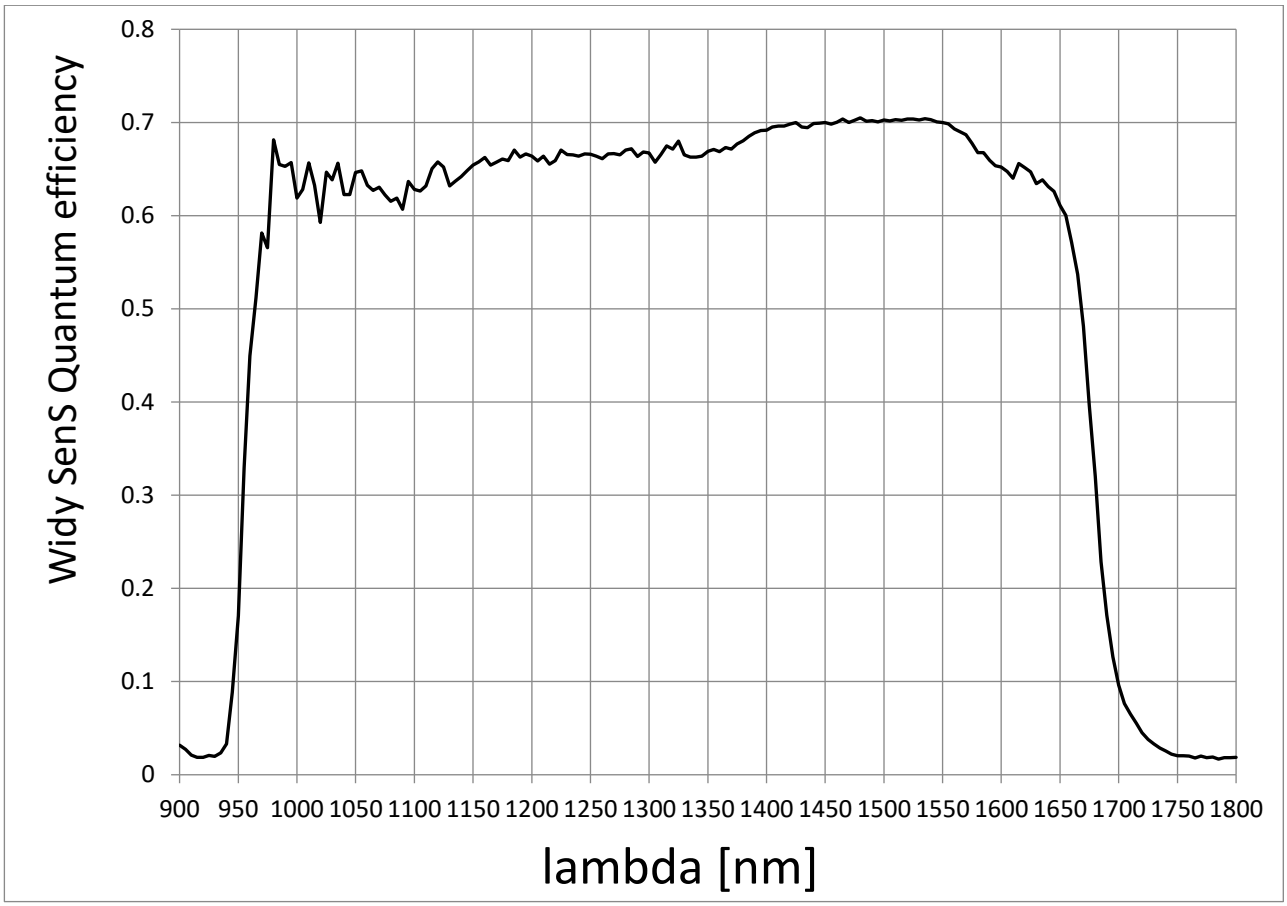
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Environment and mechanical characteristics	Power consumption (12V supply)	• Camera: <5.5W
		• Cooling: User-Selectable TEC power limit
		  ○ Off
		  ○ Low: <1Ws
		  ○ Medium: <2W
		  ○ High: <4W (Default, user defined value)

	Supply voltage range	6 to 15V, 12V nominal (Overvoltage, reverse polarity protection). PoCL available upon request
	Storage temperature	-40 to +80°C
	Operating temperature	-40 to +71°C
	Size (WxHxL, mm)	46x46x65.6 (M-ST(P)E) / 54.9 (L-ST(P)E) 90x46x65.6 with heatsinks
	Weight	<240g <340g with heatsinks
	Lens mount	C-Mount
Software	Control Protocol	NITLink Protocol
	NIT Software	NITLink GUI (Windows/Linux, x64/aarch64 platforms, only for camera control)

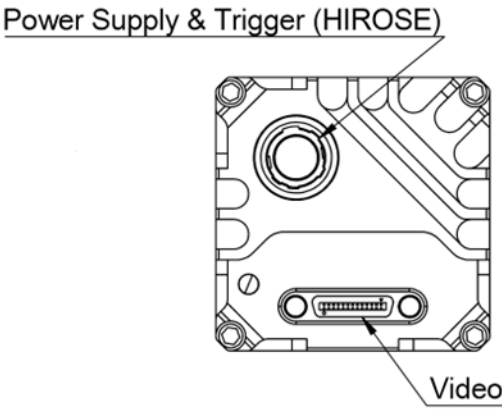
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QE Curve (typical)



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Electrical ICD (M-ST(P)E – SDR26 video output)



Reference	Designation	Manufacturer
HR10-10R-12SA	12 pins female connector	Hirose

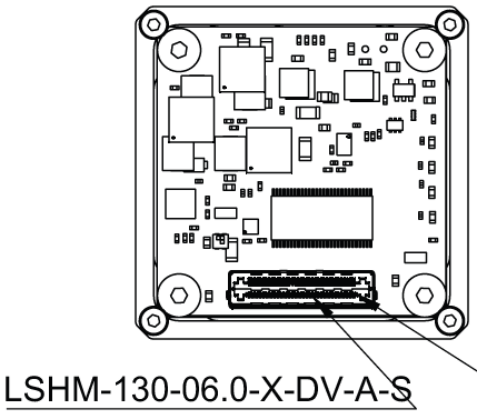
Reference	Designation	Manufacturer
12226-1150-00FR	SDR26 connector	3M

Power supply possible via the HR10 connector or the SDR26 with PoCL (available on request).

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

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Electrical ICD (L-ST(P)E – LSHM130 output)

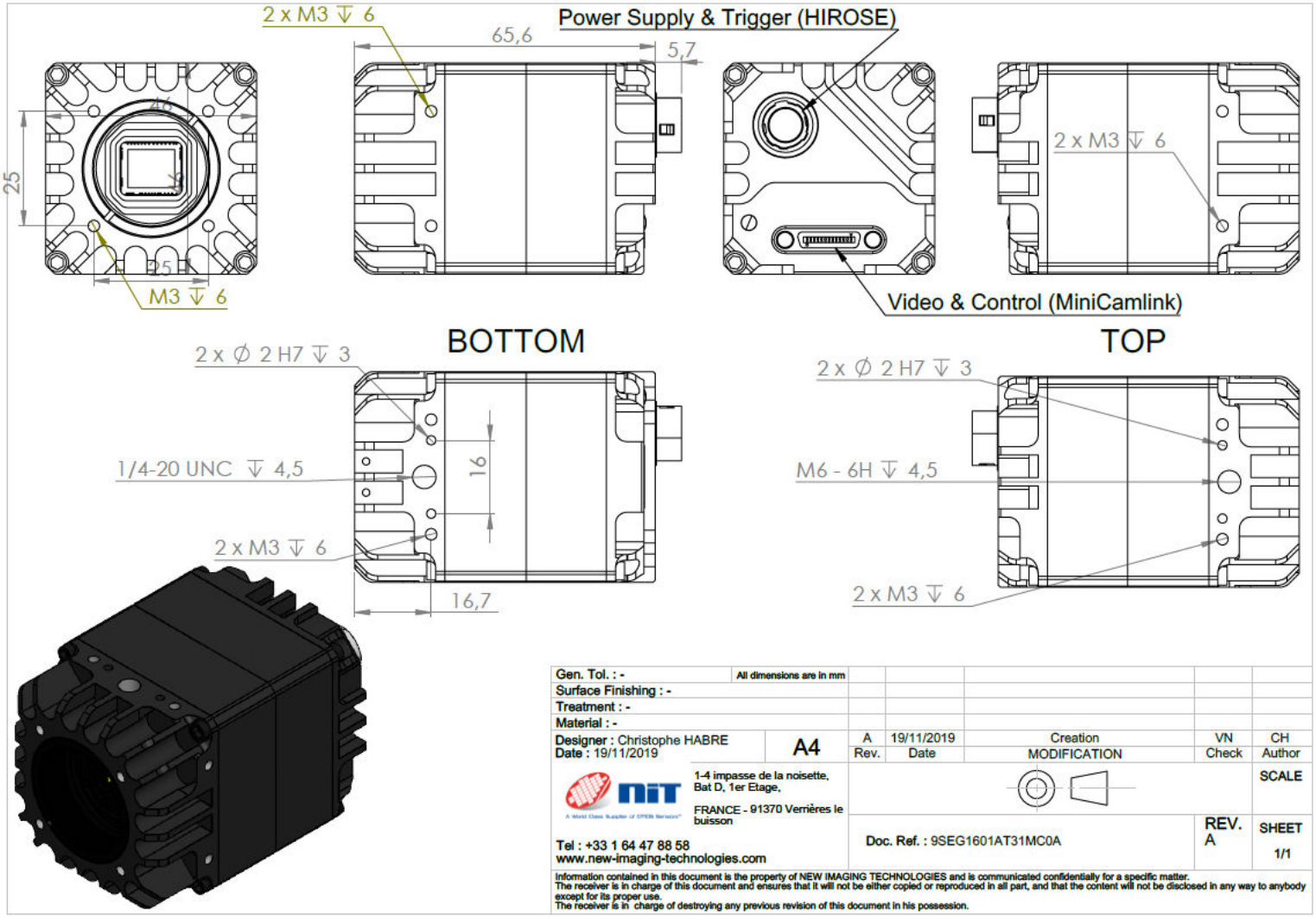


Reference	Designation	Manufacturer
12226-1150-00FR	SDR26 connector	3M

Pin Number	Name	Type	Comment	Pin Number	Name	Type	Comment
1	GND	Power	Supply voltage groun	31	NC		
2	GND	Power	Supply voltage groun	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/Ou	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
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

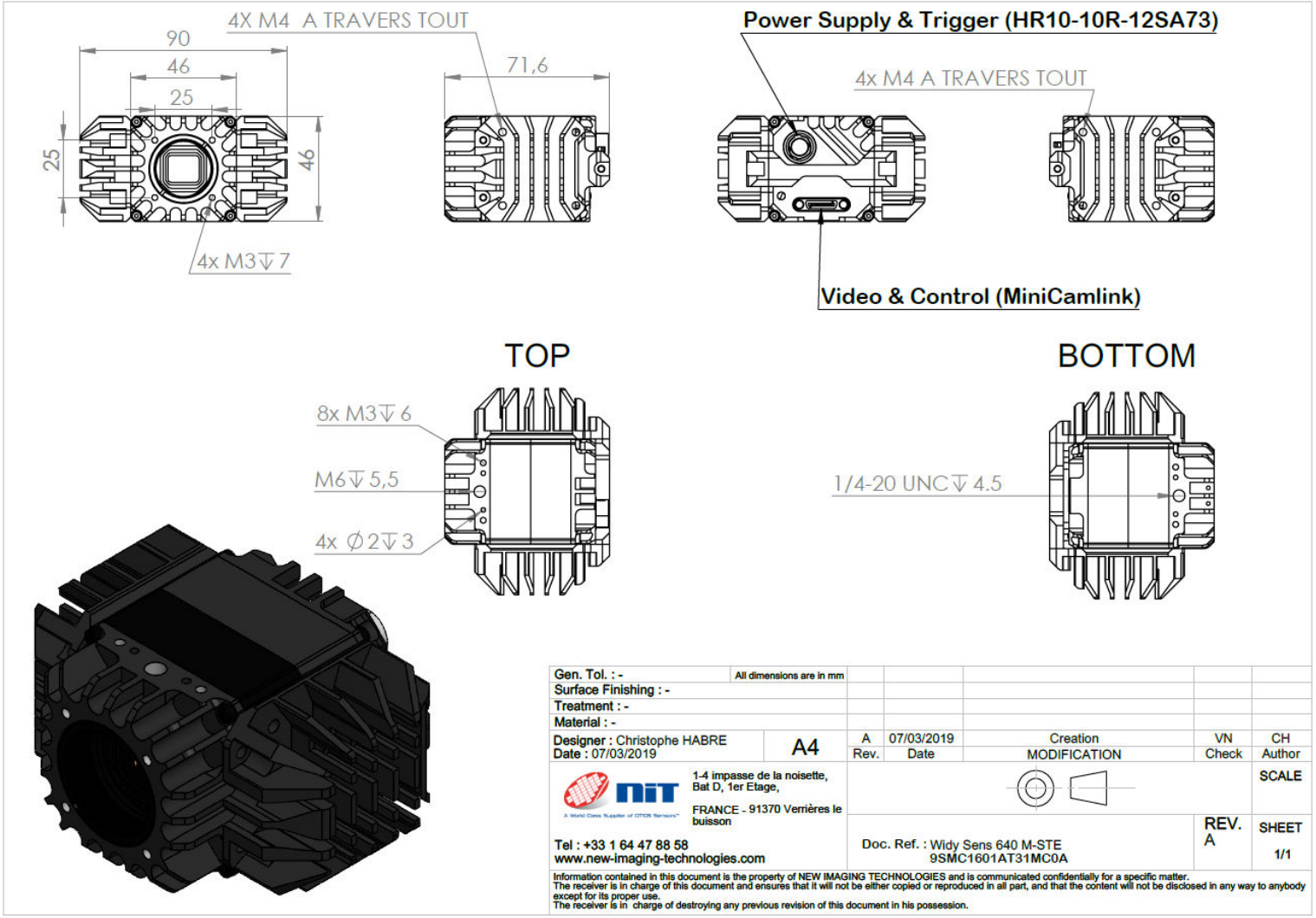
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Mechanical ICD - (WiDy SenS 640 M-ST(P)E)



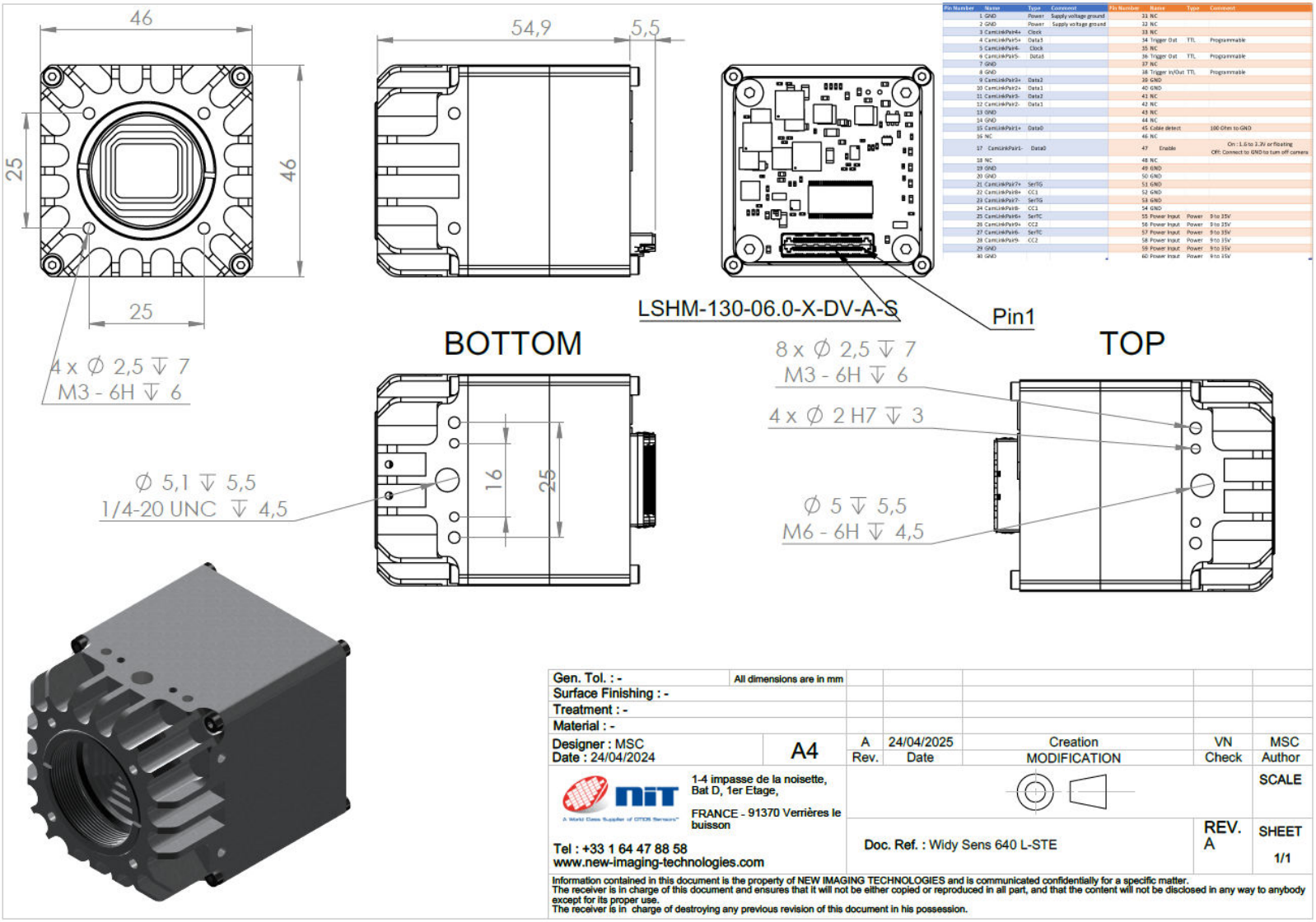
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Mechanical ICD - With Heatsinks (WiDy SenS 640 M-ST(P)E)



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Mechanical ICD - (WiDy SenS 640 L-ST(P)E)



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 1.2V or floating Off: Connect to GND to turn off camera
18	NC			48	NC		
19	GND			49	GND		
20	GND			50	GND		
21	CamLinkPair7+	SerTFG		51	GND		
22	CamLinkPair8+	CC1		52	GND		
23	CamLinkPair7-	SerTFG		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

Gen. Tol. : -	All dimensions are in mm						
Surface Finishing : -							
Treatment : -							
Material : -							
Designer : MSC Date : 24/04/2024	A4	A Rev.	24/04/2025 Date	Creation MODIFICATION		VN Check	MSC Author

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SCALE

Doc. Ref. : Widy Sens 640 L-STE

REV. A

SHEET 1/1

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