

ENGINEERING DOCUMENTATION

Compact USB Stereo Vision Camera

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-CV-C00-S001-V001	DRAFT-08 / 28 Aug 2026	Engineering Integration Reference

Integration Overview

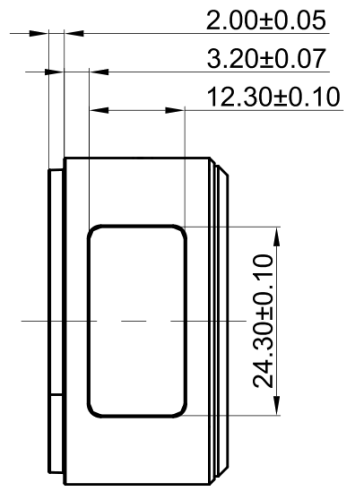
Compact close-range stereo vision camera for space-constrained depth sensing. This guide supports optical-envelope, mounting, USB-C, power, thermal, ingress and commissioning planning for ES-CV-C00-S001-V001.

Key Integration Facts

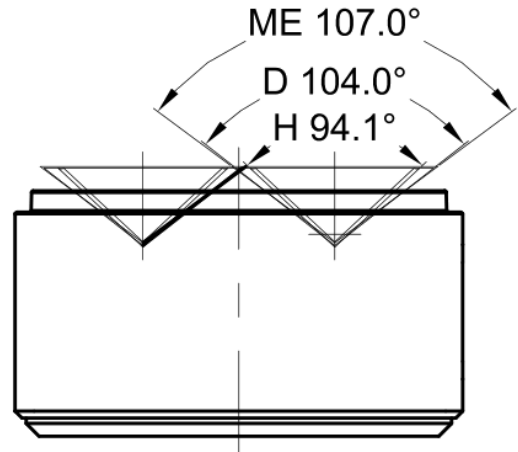
INTEGRATION ITEM	VALUE
Depth Technology	Stereo Vision
Depth Resolution and Frame Rate	Up to 1280 x 800 @ 30fps 848 x 530 @ 60fps
Operating Range	4 - 100cm
Depth Field of View	H 88° x V 65° ± 3° (1280 x 800 @ 20cm)
Baseline	18 mm
Data Connection	USB 3.0 (recommended) & USB 2.0
Ingress Protection Rating	IP54 (only when the Type-C interface is properly connected and the screws are tightened)
Dimensions	42 x 42 x 23 mm

Product Structure & Views

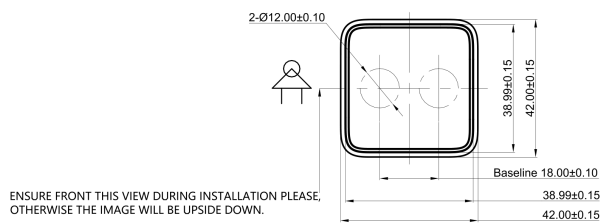
These views present product structure, mounting interfaces and relevant integration geometry for this SKU.



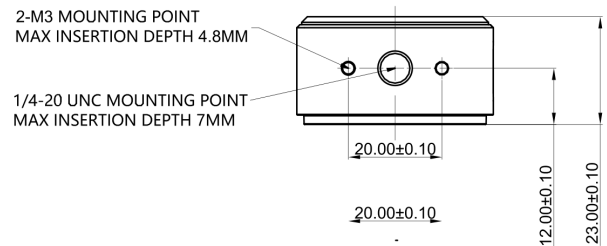
Side Envelope View



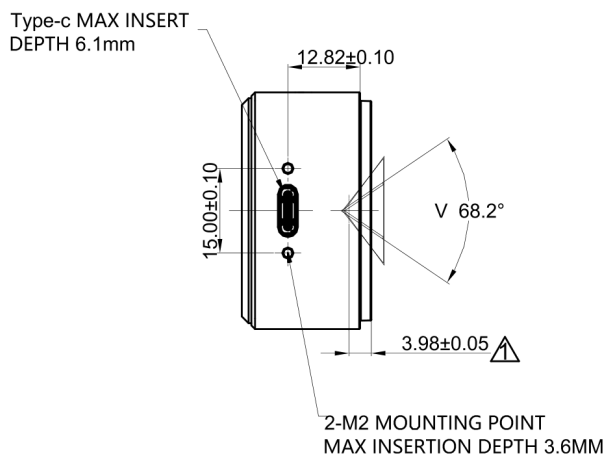
Optical Field Geometry



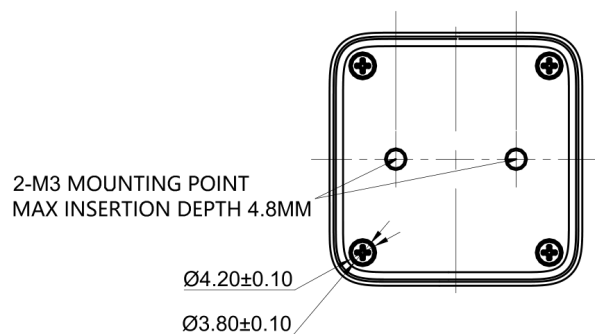
Front Envelope and Baseline



Bottom Mounting Interface



USB Type-C Interface View



Rear Mounting Interface

VIEW	FIELD	VALUE
Side Envelope View	Left step or flange offset depth	2.00 ± 0.05
	Main body depth or length	12.30 ± 0.10
	Main body height	24.30 ± 0.10
Optical Field Geometry	ME angular field specification	ME angle 107.0 degrees
	D angular field specification	D angle 104.0 degrees
	H angular field specification	H angle 94.1 degrees
Front Envelope and Baseline	M2 mounting hole center spacing	3.98±0.05 mm
	M2 mounting hole specification	2× M2 threaded mounting holes
	M2 screw maximum insertion depth	3.6 mm maximum screw insertion depth
Bottom Mounting Interface	Mounting hole diameter and position	2 holes, Ø12.00±0.10 mm
	Front view vertical dimension 1	38.99±0.15 mm
	Front view vertical dimension 2 (total height)	42.00±0.15 mm
	Baseline distance	Baseline 18.00±0.10 mm
	Front view horizontal dimension 1	38.99±0.15 mm
	Front view horizontal dimension 2 (total width)	42.00±0.15 mm
	M3 Mounting Hole	2× M3 threaded mounting holes
	M3 Hole Max Insertion Depth	Max insertion depth 4.8mm
USB Type-C Interface View	1/4-20 UNC Mounting Hole	1/4-20 UNC threaded mounting hole
	1/4-20 UNC Hole Max Insertion Depth	Max insertion depth 7mm
	Width	20.00±0.10
	Partial Height	12.00±0.10
	Total Height	23.00±0.10
	Bottom Width	20.00±0.10
	M3 mounting point quantity	2× M3 threaded mounting holes
	Maximum screw insertion depth	4.8 mm maximum
Rear Mounting Interface	Mounting hole diameter (outer/through hole)	Ø4.20 ±0.10 mm
	Mounting hole diameter (inner/threaded hole)	Ø3.80 ±0.10 mm

Technical Specifications

PARAMETER	VALUE	UNIT
Operating Range	4 - 100cm	
Baseline	18	mm
Depth Field of View	H 88° x V 65° ± 3° (1280 x 800 @ 20cm)	
Depth Technology	Stereo Vision	
Depth Filter	IR-Cut	
Ideal Range	7 - 50cm	
Spatial Precision	≤1% (1280 x 800 @ 50cm & 90% x 90% ROI)	
Depth Resolution and Frame Rate	Up to 1280 x 800 @ 30fps 848 x 530 @ 60fps	

Technical Specifications - Continued

PARAMETER	VALUE	UNIT	
Color Resolution and Frame Rate	Up to 1280 x 800 @ 60fps		
Color Field of View	H 94° x V 68° ± 3°		
Camera Image Sensor Type	Stereo Color: Global Shutter		
Power Supply	DC 5V & 700mA		
POWER INPUT	SPECIFICATION		
DC input	5 V DC, minimum 700 mA		
Maximum Average Power Consumption	<2.0	W	
Power Consumption	Typical average 1.57; maximum-disparity configuration average 1.88		
Weight	68	g	
Installation Interface	Bottom:1x 1/4-20 UNC, 2x M3 Back :2x M3		
LOCATION	INTERFACE	MAX TORQUE	MAX INSERTION DEPTH
Bottom	1 x 1/4-20 UNC	Not specified	Not specified
	2 x M3		
Back			

Technical Specifications - Continued

PARAMETER	VALUE	UNIT
Data Connection	USB 3.0 (recommended) & USB 2.0	
Interface	USB Type-C	
Supported Functions	Dual color streams; hardware and software multi-camera synchronization; depth and color presets	
Operating Environment	-10 ~ 45°C @ 128 disparity search range -10 ~ 40°C @ 256 disparity search range	
Use Environment	Suitable for indoor and protected outdoor environments	
Backside Case Temperature	-10°C ~ 60°C	
Storage Environment	Short Term: -20°C ~ 70°C, 5%-90% RH (non-condensing) Long Term: 0°C ~ 60°C, 5%-90% RH (non-condensing)	
Ingress Protection Rating	IP54 (only when the Type-C interface is properly connected and the screws are tightened)	
Design Lifespan	5	years
ESD Performance	Contact discharge: ±8 kV Class A; Air discharge: ±15 kV Class A	
EMC Performance	ESD: Class A Contact discharge: ±8kV, Air discharge: ±15kV RE: ±6 dB	
Radiated Emissions	±6	dB
Dimensions	42 x 42 x 23	mm

Coordinate and Optical Reference

- Use a right-handed product coordinate frame with +X to the right, +Y downward and +Z forward when viewed from the optical face.
- Use the primary left imaging-module optical center as the depth and color reference origin, and use active-unit calibration data for the final host transform.
- Treat the nominal optical field and the mechanical cable keep-out as separate integration envelopes.

USB-C, Ingress and Close-Range Integration

PARAMETER	VALUE	UNIT
Power Supply	DC 5V & ≥ 700 mA	
POWER INPUT	SPECIFICATION	
DC input	5 V DC, minimum 700 mA	
Data Connection	USB 3.0 (recommended) & USB 2.0	
Interface	USB Type-C	
Ingress Protection Rating	IP54 (only when the Type-C interface is properly connected and the screws are tightened)	
Operating Environment	-10 ~ 45°C @ 128 disparity search range -10 ~ 40°C @ 256 disparity search range	

- Use a USB Type-C cable that supports both power and data. For extended runs, use a certified cable and validate operation in the final host configuration.
- Before commissioning, confirm that the selected cable supports the required power delivery and data transfer.
- The ingress condition applies only with a compatible rated cable assembly fully seated and mechanically secured; the unmated receptacle is not ingress protected.
- Validate the selected disparity mode against the required minimum distance, power budget and ambient-temperature limit in the final enclosure.

USB-C Connection and IP54 Conditions

CONDITION	INTEGRATION REQUIREMENT
Cable capability	Use a USB Type-C cable that supports both power and data. For extended runs, use a certified cable and validate operation in the final host configuration.
IP54 (only when the Type-C interface is properly connected and the screws are tightened)	The ingress condition applies only with a compatible rated cable assembly fully seated and mechanically secured; the unmated receptacle is not ingress protected.

Mounting, Optical, Thermal and Environmental Integration

- Use the documented product coordinate frame and active-unit calibration when transforming depth or color data into the host robot frame.
- Reserve separate optical, mechanical and cable-routing keep-out volumes and validate them throughout the complete motion envelope.
- Validate the selected disparity mode against the required minimum distance, power budget and ambient-temperature limit in the final enclosure.
- If an external housing is used for dust protection, place a suitable foam or rubber interface between the product front and the housing. This interface alone does not establish an enclosure protection rating.
- Support the product at its documented mounting points and avoid applying external loads to the chassis during installation.
- Protect the product from drops, impact and mechanical stress during handling and assembly.
- Do not open or modify the product chassis as part of normal integration.
- Avoid touching optical surfaces during installation and handling because contamination can affect image quality.
- Inspect the product for visible external damage before installation and do not apply power to a damaged unit.
- Keep direct heat sources away from the product and its immediate operating environment.
- Provide adequate free space inside an external housing to support heat dissipation.
- An external enclosure may require active temperature control or another cooling solution to keep the product within its operating limits.
- Allow for surface-temperature rise during extended operation when defining enclosure and thermal-management provisions.

Integration Checklist

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|----|--|
| 01 | Confirm the 42 x 42 x 23 mm product envelope against the host assembly. |
| 02 | Confirm the selected mounting face, thread engagement and insertion depth for the host interface. |
| 03 | Inspect the product for visible external damage before installation and do not apply power to a damaged unit. |
| 04 | Support the product at its documented mounting points and avoid applying external loads to the chassis during installation. |
| 05 | Avoid touching optical surfaces during installation and handling because contamination can affect image quality. |
| 06 | Keep direct heat sources away from the product and its immediate operating environment. |
| 07 | Before commissioning, confirm that the selected cable supports the required power delivery and data transfer. |
| 08 | Keep the optical field clear of enclosure walls, protective windows and adjacent equipment. |
| 09 | Confirm thermal and environmental limits in the final enclosure. |
| 10 | Verify that the USB Type-C assembly provides the required power and data capability and that its locking screws are fully engaged. |
| 11 | Validate the selected disparity mode against minimum range, power consumption and the permitted ambient-temperature limit. |

[View SKU Product Datasheet](#) [Request controlled 2D drawing](#) [Request controlled STEP review](#) [Request a Quote](#)

Engineering Use and Verification Notice

01. This Dimensional & Integration Guide applies only to EmbodyStack SKU ES-CV-C00-S001-V001 and is intended for dimensional evaluation and preliminary integration. It is not a manufacturing drawing, camera application approval, optical-performance guarantee, network-design approval, wiring definition, machinery risk assessment, safety validation or production authorization. Before design freeze, installation or energization, verify all dimensions, mounting and locating features, optical fields, connector geometry, cable envelopes, power and data interfaces, calibration, timing, environmental boundaries, thermal condition, ingress configuration, maintenance access and fault response against the current EmbodyStack product documentation for this exact SKU. Validate the complete installed system under intended operating and fault conditions.