VS2020/2040 High-Precision Structure Light 3D Camera
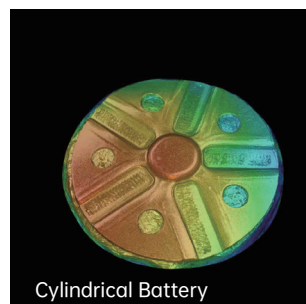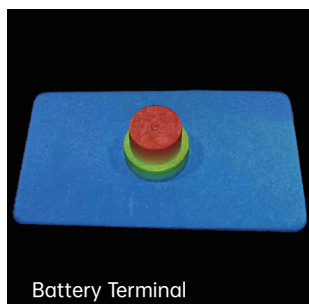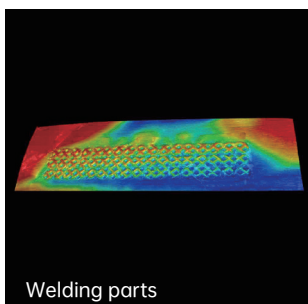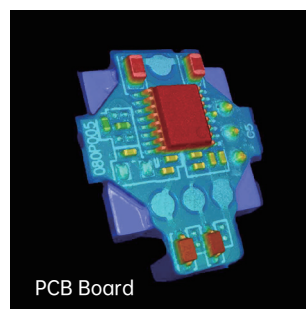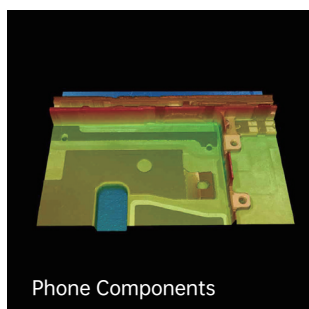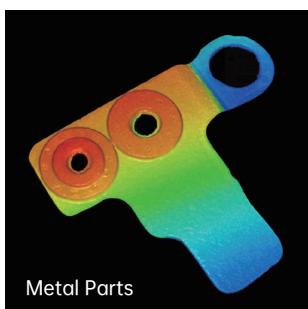
Product Features

VS2020/VS2040 High-Performance Structure Light 3D Camera is engineered for precision-critical applications including dimensional measurement, surface inspection, and 3D positioning guidance. The dual-projection optical architecture with orthogonal fringe encoding technology eliminates projection blind zones, significantly enhancing reconstruction stability and data integrity. The proprietary algorithm compensates for both imaging and projection lens distortion error, achieving micron-level measurement accuracy and submicron-level repeatability.

Product Advantages

- Integrates a high-performance FPGA chip for 3D reconstruction and preprocessing, eliminating dependency on external computing resources.
- A proprietary projection optical design mitigates the impact of micromirror gap, enhancing projection uniformity and measurement consistency.
- Equipped with single-frame HDR and multi-frame exposure fusion capabilities, the system achieves superior dynamic range adaptation for complex lighting environments.
- The SDK adheres to the GenICam interface specification, providing robust secondary development support for seamless hardware-software integration.
- Auto-adaptive parameter tuning enables precise configuration generation without requiring specialized algorithm expertise.
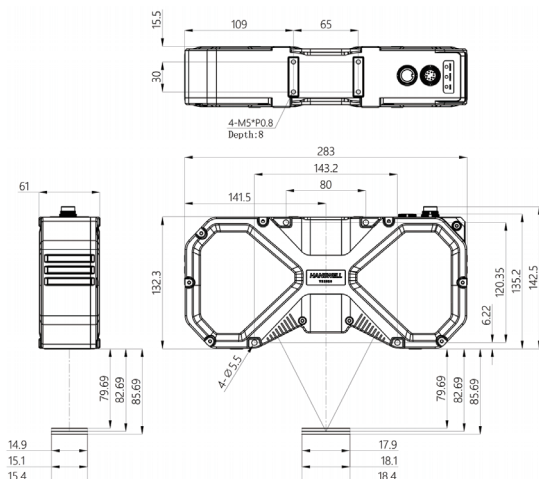
Application

Metal Parts

Phone Components

PCB Board

Welding parts

Battery Terminal

Cylindrical Battery

Specifications

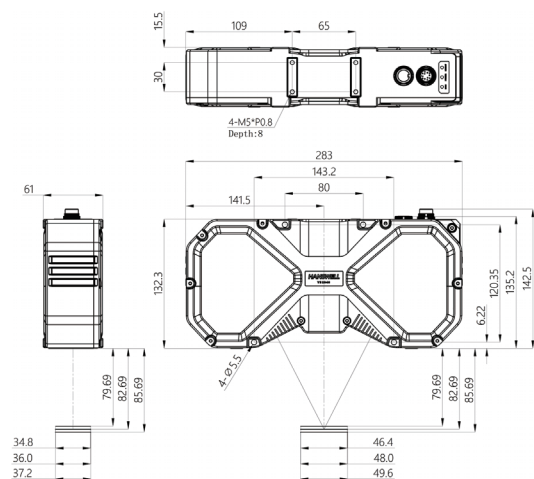| Model	VS2020	VS2040
Image Sensor	Mono CMOS	
Pixel Resolution	3072x2560 pixels	4096x3072 pixels
Exposure time	50 μs to 200 ms	
Frame Rate (Full / Binning)	4 FPS/8 FPS	3 FPS/6 FPS
XY FOV — Near	17.8 x 14.8 mm	46.4 x 34.8 mm
XY FOV — Reference Distance	18.0 x 15.0 mm	48.0 x 36.0 mm
XY FOV — Far	18.4x 15.4 mm	49.6x 37.2 mm
Z Range (from reference distance)	±2.5 mm	±5 mm
Reference distance	82 mm	
Repeatability(σ)	0.2 μm[1]	0.5 μm[1]
XY data interval	5.9 μm	11.7 μm
Light source	Dual projection unit with high brightness blue LEDs	
Interface	PC and Ethernet card supporting 2500/1000BASE-T[2]	
Image transfer protocol	GigE Vision	
Ratings — Supply Voltage	24 VDC+10%	
Ratings — Current consumption	2A	
Vibration resistance — Ingress protection rating	IP67	
Vibration resistance — Operating temperature	0℃ to 40℃	
Vibration resistance — Operating humidity	35% to 85% RH (no condensation)	
Vibration resistance — Vibration damping	10 to 57 HZ : 0.75mm P-P, in X, Y, Z directions, 2 hours respectively	
Vibration resistance — Impact resistance	15 G/6 msec	
Dimensions	283 x132 x 61 mm	
Weight	About 3.1 kg	

1. Value for HANSWELL standard plane workpieces when a 3 x 3 average filter is used once.
2. * 2500BASE-T/1000BAsE-T compatible PC and network card (NIC) are reouired. intele ®Gigabit Server Adapter or its equivalent is recommended
   * Connections to LANs and connections through a switch or router are not covered under warranty.

Dimensions

(VS2020)

(VS2040)

(Unit: mm)

HANSWELL

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