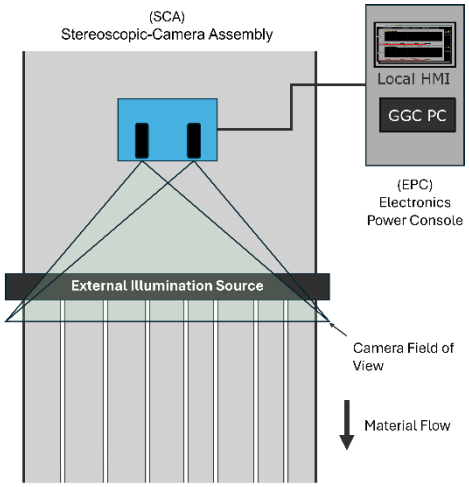
TECHNICAL SPECIFICATION

Stereoscopic Vision Width Measurement System
Slitting Line Configuration | Doc SVW-8K2-SL Rev A



The GGC Stereoscopic Vision Width Measurement System employs dual 8K area scan cameras in a calibrated stereo configuration, operating in a quasi-linescan mode through multi-row region of interest averaging. The stereo geometry provides continuous passline height compensation, eliminating the dominant error source in single-camera width measurement on slitting lines. The system measures master coil width and all post-slit mult widths simultaneously in a single field of view.

1. System Configuration

Parameter	Specification
Camera arrangement	2x 8K (8192 px) monochrome area scan cameras, rigid stereo pair
Stereo baseline	400 to 600 mm, factory set per line geometry
Standoff distance	Approximately 2,000 mm above passline (configurable 1,500 to 3,000 mm)
Field of view	2,000 mm standard (72 in class lines); 1,650 mm option (60 in class)
Acquisition mode	Quasi-linescan: 8 to 16 row ROI readout with row averaging at each measurement location
Illumination	LED backlight (preferred) or high-angle darkfield; strobed, camera-synchronized
Thermal referencing	Fixed fiducial targets at known separation, imaged every frame for continuous scale correction
Measurement location	Downstream of separator or over-arm where mult gaps are open (2 mm minimum gap)
Enclosure	Sealed, air-purged camera housings; mill-duty rigid mounting beam

2. Optical and Measurement Performance

Parameter	Specification
Optical resolution	0.24 mm/px at 2,000 mm FOV; 0.20 mm/px at 1,650 mm FOV
Edge localization	1/10 to 1/20 px (laboratory); 1/4 to 1/10 px (production conditions)
Passline compensation range	±50 mm strip flutter, fully compensated by stereo disparity
Effective depth resolution	Approximately 0.1 mm with subpixel disparity matching
ROI readout rate	200 to 2,000 Hz
Reported measurement rate	100 to 500 Hz after row averaging
Line speed capability	600 m/min and above with no measurement degradation
Simultaneous measurements	Master width plus all mult widths and positions; automatic mult count verification and edge pairing

3. Accuracy Specifications

Specification	Theoretical (2σ)	Field Production (2σ)
Width accuracy, master coil	±0.05 to ±0.08 mm	±0.10 to ±0.15 mm sustained; ±0.10 mm with disciplined calibration verification
Width accuracy, individual mults	±0.05 to ±0.08 mm	±0.10 to ±0.15 mm; edge burr condition may add up to 0.05 mm systematic bias per mult
Repeatability	±0.03 mm	±0.05 to ±0.10 mm
Thermal drift (with fiducial referencing)	Not applicable	Less than 0.025 mm residual over 10 °C ambient swing
Thermal drift (without referencing)	Not applicable	±0.20 to ±0.30 mm diurnal wander (referencing is standard; shown for comparison)

Accuracy statements assume backlit illumination, fiducial-based thermal referencing, calibration traceable to a certified target, and measurement location downstream of the separator with mult gaps of 2 mm or greater. Against ASTM A568 slit width tolerances, the system provides a 3:1 or better gauge-to-tolerance ratio on typical ±0.4 mm products and approximately 1:1 to 2:1 on the tightest ±0.13 mm narrow mult tolerances (trend monitoring application).

4. Error Budget Summary (Theoretical, 2σ)

Error Source	Contribution	Basis
Edge localization (two edges)	17 to 35 µm	0.05 to 0.1 px subpixel at 0.24 mm/px, root sum square of two edges
Stereo passline residual	35 to 40 µm per edge	0.1 px disparity accuracy projected at 750 mm off-axis
Calibration residual	15 to 25 µm	Lens distortion model plus traceable calibration target
Thermal (fiducial corrected)	Less than 25 µm	Continuous per-frame scale correction from fixed targets
Combined (root sum square)	±0.05 to ±0.08 mm	Quadrature sum of independent terms

5. Application Conditions and Notes

Parameter	Specification
Product range	Cold rolled, galvanized, and coated steel strip; aluminum on request
Master width range	300 to 1,850 mm (2,000 mm FOV configuration)
Minimum resolvable mult gap	2 mm (approximately 8 px); measurement placed after separator where gaps are open
Edge condition sensitivity	Slit burr and rollover of 10 to 50 µm introduce systematic per-edge bias, largely canceling on width; worst on outermost mults adjacent to edge trim
Vibration immunity	Row averaging plus common-mode stereo rejection suppress passline vibration effects
Ambient temperature	0 to 45 °C at camera enclosure with air purge; wider on request
Data outputs	Width, mult widths, mult positions, mult count, camber trend; Ethernet/IP, OPC UA, TCP/IP Level 2 telegrams
Calibration verification	Certified width standard placed in FOV; recommended quarterly, less than 15 minutes

6. Global Customer Support