



Bytewise Measurement Systems Splice Width Monitor Technical Description

Bytewise Measurement Systems USA

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Bytewise Splice Width Monitor

Technical Description

February 21, 2011

Summary

- The Bytewise Splice Width Monitor system utilizes non-contact laser triangulation sensors to monitor the thickness of the calendered material being spliced. The sensors detect the change in thickness in the splice overlap area, where two ply thicknesses are present. Splice width (overlap) is calculated based on the amount of travel of the material exhibiting the two-ply thickness.
- Sensors are pre-mounted into C-Frame assemblies.
- C-Frame Assemblies are pre-mounted onto lead-screw slides that permit manual positioning.
- A non-contact encoder is utilized to measure the material movement.
- The system is available in three configurations:
 - One Channel (right or left edge only)
 - Two Channel (right or left edge and center)
 - Two Channel (right and left edges)
 - Three Channel (right, left, and center)

Specifications

- Measurement range 10 mm
- Sampling frequency 16 kHz
- Splice width accuracy +/- 0.15mm (0.006 inches)
- Minimum splice width measurement 0.015 inches
(Based on 1meter/second line speed)

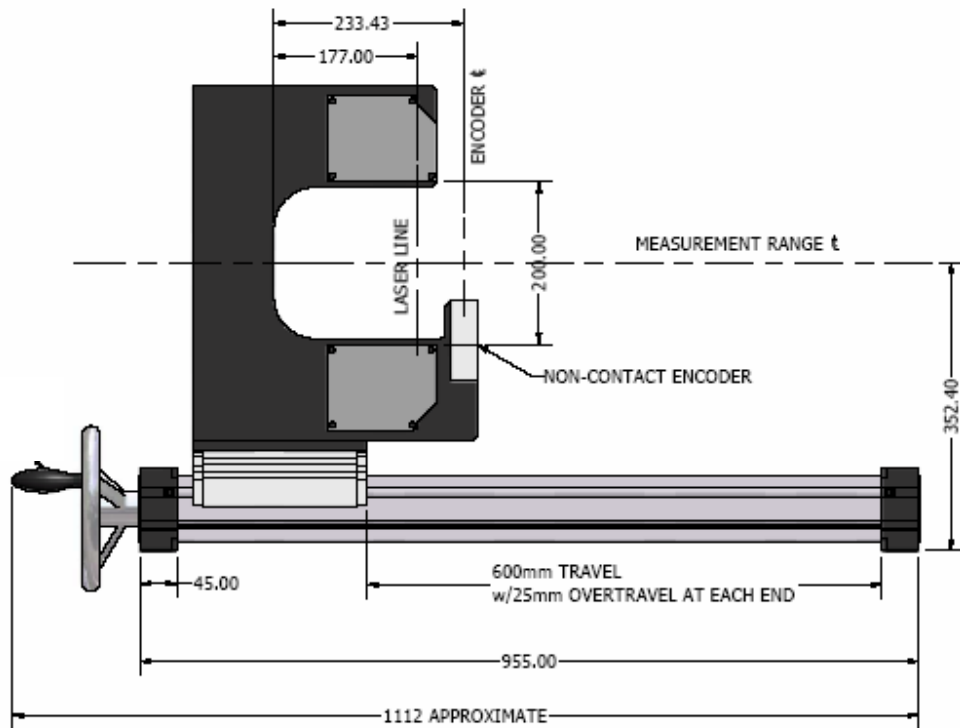
Single Channel System (Right or Left Edge)

The mechanical system consists of a C-Frame that holds two laser distance sensors (top and bottom) and the non-contact speed encoder. The C-Frame is mounted onto a lead-screw operated slide. The slide can be manually-positioned by a hand-wheel. The measurement point can be adjusted up to 170mm from the edge of the material. The slide can be mounted horizontally for material moving in the horizontal plane, and vertically, for material moving in the vertical plane.



Single-Side System with extended throat depth and manual width adjustment

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Mechanical System for Single-Channel System

Single Channel with Extended Throat Depth

The single channel unit is extended approximately 500mm in addition to the 177mm shown. This permits the measurement point to be positioned near the center of a 1000mm or larger web.

Two-Channel System (Right or Left Edge and Center)

The two-channel system consists of two single-channel mechanical systems. The non-contact encoder is provided on one side only.

Three-Channel System (Right, Center, Left)

The three-channel system consists of two single-channel mechanical systems, with one side extended to add an addition pair of sensors. The second set of sensors is positioned 500mm from the edge sensor pair. Note that in this case the third channel is not always in the geometric center of the material, as the distance from the edge sensors is always fixed, and not adjustable. The non-contact encoder is provided on one side only.

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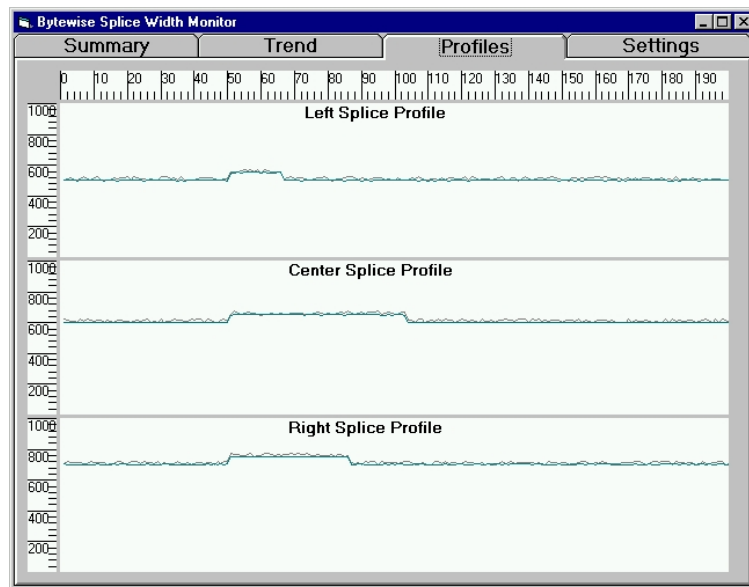
Software



	Left	Center	Right	Avg
Current	0.211"	0.094"	0.311"	0.205"
Trend Avg	0.236"	0.229"	0.216"	0.227"
Trend Max	0.369"	0.369"	0.375"	0.316"
Trend Min	0.094"	0.094"	0.088"	0.135"
Trend Sigma	0.000"	0.000"	0.000"	0.000"

Summary Screen

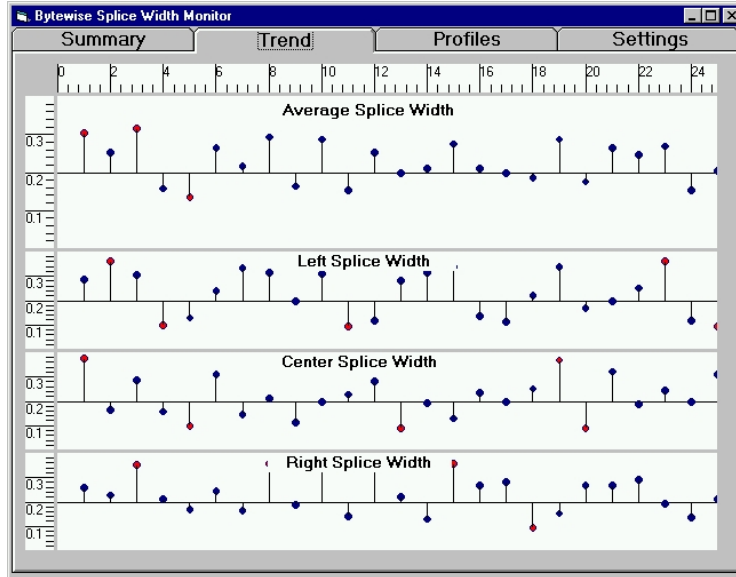
Splice width values, allowable limits, and pass/fail status for the most recent test, plus population statistics for current set up: average, maximum, minimum, standard deviation.



Profile View

This is a physical rendering of the splice width profiles.

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Trend View Showing Three Channels and Average
 This displays the last 25 measurements compared to limits

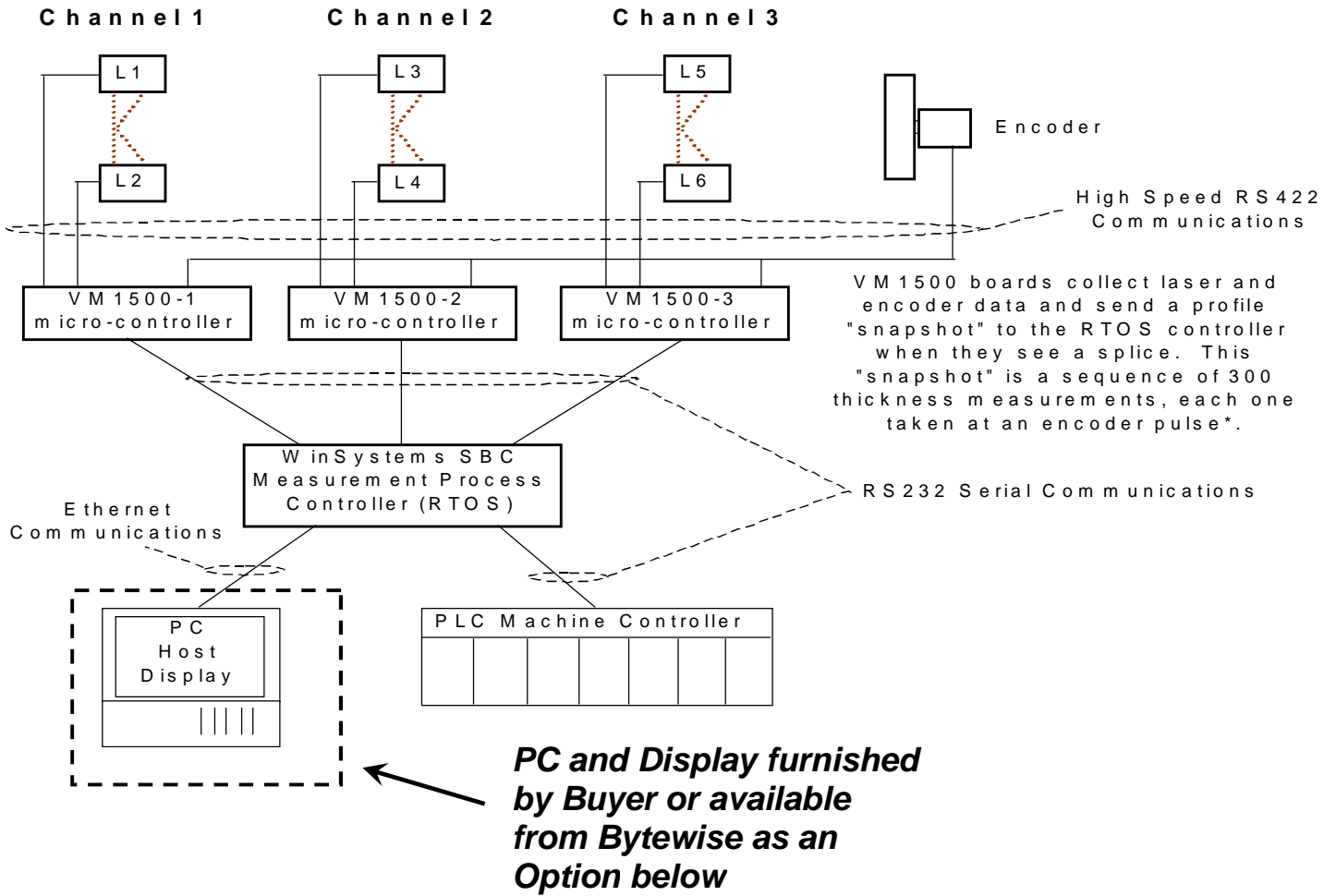
Parameter	Value	Description
Splice Grouping	4.002"	Individual splice separated by more than this distance will not be grouped.
Profile Filter	15	The filtering level applied to the splice profile before width measurements are taken. 3 is min 21 is max.
Single Splice Narrow Alarm	.053"	Any splice measured for a single channel which is below this width value will trigger an alarm.
Single Splice Wide Alarm	.398"	Any splice measured for a single channel which is above this width value will trigger an alarm.
Avg Splice Narrow Alarm	.100"	Any average splice width (avg of left, center, right) which is below this width value will trigger an alarm.
Avg Splice Wide Alarm	.352"	Any average splice width (avg of left, center, right) which is above this width value will trigger an alarm.
Left Channel Splice Threshold	4150	The thickness reading for each channel that will trigger a splice reading.
Center Channel Splice Threshold	4550	
Right Channel Splice Threshold	4175	
Left Channel Correction	.000"	The splice width correction to correct for laser mis-alignment
Center Channel Correction	.000"	
Right Channel Correction	.029"	

Settings View
 This displays the set-up parameters

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Electronics

The system is provided with a small junction box that houses the laser sensor controllers, power supplies, and Real-Time Processor.



Optional Operator's Terminal

The Viewer Software requires a dedicated PC. The Buyer can provide a PC with Monitor. The Operator's Terminal Option provides a NEMA4 rated electrical cabinet with a 19" CRT, UPS, Air Conditioner, PC, and mounting for all electronics.