

Microsonic® Thru-Beam Web Sensing System

Web inspecting
applications



This innovative sensing solution is applicable to industries that convert plies of materials into embossed napkins, paper towels, plastic-lined paper table cloths, and other consumer products. The Model SS100 Web Sensing System uses MICROSONIC®, thru-beam sensors to eliminate the costly problem of broken plies wrapping around, heating up, and damaging embossing rolls, as well as the resulting downtime required to make necessary repairs. They also eliminate false trips or no trips at all resulting from dusty environments, or problems associated with sensors not immune to changing colors and materials.

What does the SS100 Web Sensing System do?

Equipped with up to three pairs (transmitter and receiver) of MICROSONIC®, thru-beam sensors, the SS100 system monitors the entire width of the embossed web as it leaves the embossing rolls. Machine speeds in excess of 26 feet per second as well as dust, different colors and textures have no effect on the sensing capability of these sensors. During operation, when one of the sensors detects a tear in the web, a missing ply or even a hole in the web of predetermined size, the SS100 system immediately out-

puts an alarm signal. The signal can be used to alert an operator, automatically shear the paper ahead of the embossing rolls, or automatically stop the machine. As a result, the embossing rolls are saved from severe damage and time-consuming repairs. After the web is rethreaded, the embossing part of the operation can resume.

Using the amount of sound energy transmitted through the plies of material to calibrate the system and detect the breaks, the SS100 system operates on a supply voltage of 85 to 270 VAC (50/60 Hz). The supply current ranges from 10 to 40 (typical) mA. Three push-buttons are provided to calibrate the detector, set and reset the indications of a ply break, and view and sometimes change the various settings. A digital display provides various information on each of the sensor pair channels and a numeric display shows, sequentially, the signal strength

- **Eliminates damage to embossing rolls**
- **Monitors the entire width of the embossed web as it leaves the embossing rolls**
- **Alarm signal can alert operator, automatically shear the paper ahead of the embossing roll, or automatically stop the machine**
- **Uses up to three pairs (transmitter/receiver) of MICROSONIC® ultra-sonic thru-beam sensors**

How does it work?

Ultrasonic energy can be transmitted through certain materials, even numerous plies of paper. With the SS100, the user calibrates the amount of energy passing through the plies. This calibration automatically adjusts the gain to obtain an output which is about 25% of full scale. Because many factors can affect the transmission through the good plies of paper, a threshold percentage is set which is then automatically adjusted to track the average signal transmitted through the paper. For example, say the calibrated gain for three plies of embossed paper being run is 25%. With a threshold setting of 10% if the variation readings are continuously above the threshold level of 35% (25% + 10%), the SS100 signals a break. A second setting available to signal a break involves the minimum duration of time (displayed in hundredths of a second) the variation readings are continuously above the threshold level. A third setting, minimum length, is the distance traveled by the plies (displayed in pulses of the position sensor) when the readings are continuously above the threshold level.

For the user's convenience, the SS100 Web Sensing System provides:

- three push-buttons (CALIBRATE, VIEW SETTINGS, RESET INDICATORS) to calibrate the detector, set and reset the indications (minimum duration and minimum length) of a ply break and view and sometimes change the various settings.
- a digital display for various information on each of the sensor pair channels. The numeric display shows, sequentially, the signal strength and signal variation for each channel.
- an LED for each transmitter/receiver pair to indicate the operational status of the particular sensor pair during operation. For example, solid green means normal operation; solid red means this particular transmitter/receiver pair has

Specifications

PARAMETER	Minimum	Maximum
Environmental		
Operating Temperature	5°C (40°F)	50°C(120°F)
Operating Humidity	10%	90% (non condensing)
Power		
Supply Voltage	85VAC (50/60 Hz)	270 VAC (50/60 Hz)
Supply Current	10 mA	140 mA (typical)
Physical		
Weight	0.5Kg (1.1 lbs)	
Depth	21 mm (0.825 in) top to panel	
Height	159 mm (6.25 in) bottom to top of mounting	
Width	210 mm (8.25 in) side to side of mounting panel	

detected a ply breakage.

The SCC also offers an SS100-13 Splice Sensing System which uses the same operating principle as the SS100 Web Sensing System.

External Connections

