

SHD-4000-Series Sensors

for small hole detection

Overview

The SCAN-A-LINE™ Hole Detection SHD-4000-Series sensor(s) from Harris Instrument Corporation provides highly reliable inspection of web materials where hole defects of 0.062" [1.6mm] and larger can pose serious quality or production problems.

The SHD-4000-Series sensor is a non-contact, electro-optical sensor designed specifically for the detection of hole defects in strip materials. Hole defects can be detected to within 0.5" [13mm] of the strip edge without the use of mechanical shutters.

The SHD-4000-Series sensor(s) are compatible with the SCAN-A-LINE™ Model HDPC Hole Detection Processing Computer. Because of its versatility and reliability, the SHD-4000-Series sensor is one of the most flexible & cost effective hole detection sensors on the market today.

Features

- Detects holes as small as 0.062" [1.6mm]
- Detects holes within 0.5" [13mm] of strip edge
- Available in three sizes:
 - 10 inch [254mm]
 - 20 inch [508mm]
 - 30 inch [762mm]
- Standard Type 'B' anodized aluminum housing with Lexan® window, neoprene gaskets and stainless steel hardware.
- LED light source is virtually maintenance free.
- System fail safe contacts
- System is highly tolerate of dirt, smoke, steam, etc.
- Multiple Mode Hole Detection: any hole, edge & 1 hole, 2 edges & hole
- Compatible with HDPC Hole Detection Processing Computer



SHD-4000-Series Sensor Set

Description

The SHD-4000-Series Sensor set consist of a Scanned-LED Emitter and a Synchronous Detector Receiver. A 15' [4.4 m] cable is supplied for connecting the receiver to the emitter. A 20' [6.1 m] cable is provided for connecting the emitter to the Hole Detection Processing Computer - Model HDPC. Emitters are supplied in three lengths, 10" [254 mm], 20" [508 mm], and 30" [762 mm]. The Model SHD-4000-10 emitter has a scan time of 0.125 milliseconds. Since the LED IR source scans at 80,000"/sec, longer emitters require greater scan times and in some cases multiple short emitters may be required to achieve required system performance on higher speed lines or lines with thicker materials.

The emitters are housed in an extruded aluminum enclosure with a Lexan™ polycarbonate window. In normal operation, the synchronous receiver is placed in a position above the emitter where there is an unobstructed view of all of the emitter LEDs. The optimum separation distance for the emitter and receiver varies with the emitter size as shown in the following table. The optimum product to emitter spacing (product passline), however, is fixed at 1" [25mm]. Passline changes will effect minimum hole size and other performance variables.

Sensor Model/Size	Emitter Scan Time	Emitter-to-Receiver Separation
SHD-4000-10E-B / 10"	0.125ms	14" [356mm]
SHD-4000-20E-B / 20"	0.250ms	24" [610mm]
SHD-4000-30E-B / 30"	0.375ms	34" [864mm]

NOTE:

Small hole sensitivity can be degraded at the ends of the scan by the thickness of the material. As the inspected product thickness increases, the minimum detectable hole size increases.

Line speeds faster than 1000'/min must be verified by Harris Instrument Corporation.



Harris Instrument Corporation
 155 Johnson Drive Delaware, OH 43015
 Voice: 740-369-3580 Fax: 740-369-2653
 info@harris-instrument.com www.harris-instrument.com