LASER GAUGE® PRODUCTS

HS410 Sensor

Overview

The HS410 provides the best resolution of the controller-based sensors and is used to inspect and measure small features such as pitting, scratches, gouges, small radii, and laser welds. It has a 0.250" field-of-view and an expanded depth-of-focus of 0.125". The sensor is used with the LG1102 graphical controller.

Operating Features

Measuring Pitting Depth & Width

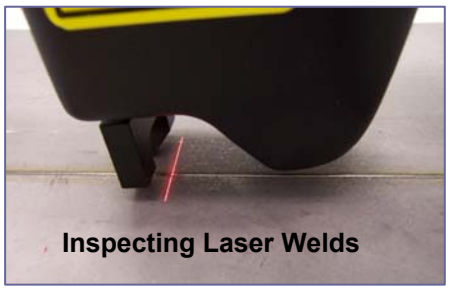
Scanning Resolution – With a 0.250" field-of-view (FOV), the HS410 has a horizontal scanning resolution of 0.0005". The vertical or depth accuracy is ± 0.00025" (6μm).

Depth-of-Focus (DOF) – The sensor has a DOF range of 0.125" during a single scan. Surface features that are within ± 0.0625" of the optimum DOF are within focus and are profiled. The entire DOF range can be moved 0.100" towards or away from the surface by rotating a thumb wheel, thus creating a potential range of focus of over 0.3". Being able to move the DOF range can bring previously inaccessible surface features into view.

Operator Feedback – Three LED's located on the top of the sensor provide feedback on scanning errors and can be used to signal the acquisition of a good scan. The LED's also indicate out-of-focus conditions.

Standoffs – The standoff on the HS410 is removable and can be replaced with a different design based on the requirements of the application.

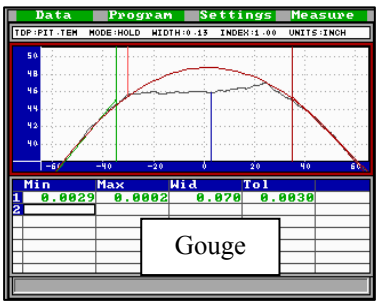
Controller - Features measured with the HS410 are small, so the real-time plots displayed on the LG1102 controller are essential to accurately positioning the laser stripe over the feature. An operator can watch the movement of the feature on the controller's display and adjust the position of the sensor accordingly. Messages are displayed on the controller instructing the user to move the thumb wheel in one direction or the other to bring the feature into focus. Once the feature appears on the display, the user releases the sensor trigger and the measurements are calculated and displayed in a data table.

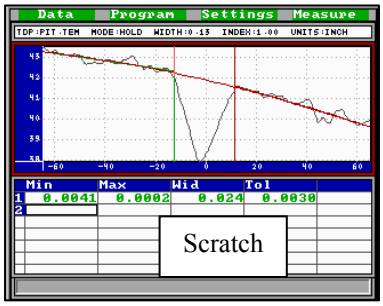


Inspecting Laser Welds

Applications

Pitting and Corrosion	Width from 0.020" to 0.200" and depth from 0.001" to 0.100"
Scratches	Width from 0.005" to 0.200" and depth from 0.001" to 0.100"
Laser-Welded Blanks	Mismatch and angle on panels of varying thickness. Weld concavity, convexity and undercut
Step and Angle	Step height from 0.000" to 0.100”, angles from -60° to +60°
Radius	Radii as small as 0.010”
Dents and Gouges	Width to 0.200" and depth from 0.001” to 0.100”





Advantages

Resolution – A horizontal scanning resolution of 0.0005” and a depth accuracy of 0.00025” assures accurate and repeatable measurements to within 0.001 of an inch on shallow features such pitting, corrosion and scratches.

Portable – The HS410 sensor used with the battery-powered LG1102 controller creates a truly portable system capable of measuring the smallest of features. Inspections can be made in the repair shop, in the plant, on the flight-line, or wherever the part is located. Parts do not have to be transported to a central location for inspection.

Sensor Specifications

Type	Handheld, must be used with a LG1102 Controller
Size	7.8" (l) x 4.2" (h) x 1.7" (w)
Weight	14 oz
User Interface	3 LED’s, thumb wheel for depth-of-focus adjustment
Cable Length	Removable coiled cable, 6’ extended length
FOV Options: Horizontal Scanning Resolution, Depth Accuracy	0.250” (6mm): 0.0005” (12μm), +/- 0.00025” (6μm)
Shock Protection	Cast urethane housing
Environment	0° – 70° C

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