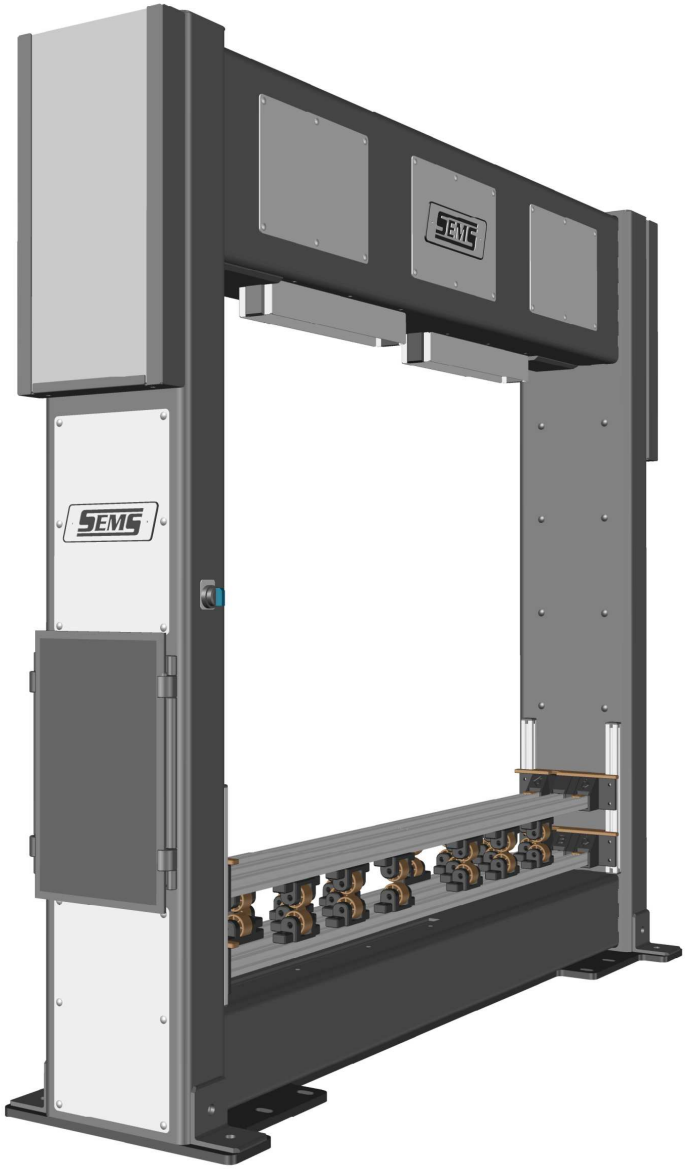
SEMS, INC.

SEMS
Optical Pinhole Detector



294E 600N
Valparaiso, IN 46383
USA

Phone: 1-219-462-2373
Email: info@sems-inc.com

250129

SEMS
Optical Pinhole Detector

294E 600N
Valparaiso, IN 46383
USA

Phone: 1-219-462-2373
Email: info@sems-inc.com

A) Description of Operation:

The SEMS Pinhole Detector works by examining the surface of moving web based product. The system detects, measures, and logs holes, edge cracks, and web width. The customer's product is back-lit with LED lighting to provide a sharp image for the sensors.

The system uses highly sensitive CMOS cameras with optical lenses and LED frequency matching monochrome filters that see only a single line across the product. Two overlapping cameras with continuous imaging guarantee inspection of the entire web. These cameras take pictures of the moving product at 3880 images per second. Each image is processed and evaluated for pinholes, weld holes, edge cracks, and product width. The on-board computer receives data from the two cameras and displays the results in real time on the built-in Operator's Station.

The Operator's Station is conveniently located on the operator's side of the hole detector – No additional desk space is required. Operator and maintenance setups are made on the Operator's screen. Maintenance setups can be protected with a customer supplied password. These setups and additional factory-set setups are contained in a text file that is read during system power-up. The Operator's Station keeps a record of all Small Holes, Large Holes, Edge Cracks, Weld Holes and Strip Width until the end of the coil is detected. A report is then saved and a new report begins once the next coil is started. Optional Speed and Footage displays are available with the addition of a customer supplied pulse tachometer. The last 11 months of data is always available locally for customer download, and is shared on the network.

The system is self-contained and does not require plant air or water on hot mill applications.

SEMS
Optical Pinhole Detector

Typical Installation:

294E 600N
Valparaiso, IN 46383
USA

Phone: 1-219-462-2373
Email: info@sems-inc.com

SEMS
Optical Pinhole Detector

294E 600N
Valparaiso, IN 46383
USA

Phone: 1-219-462-2373
Email: info@sems-inc.com

B) SYSTEM SPECIFICATIONS

1) Standard and Custom Industrial Frames available
   a) Frames designed and manufactured by SEMS to function on your production line without interfering with existing operations
   b) Manufactured from rectangular steel tube with 3/16” wall

2) Solid state Industrial Sensing Arrays
   a) Highly sensitive multi-element sensors
   b) Precision high speed optical lenses
   c) Long lasting LED illumination with matching optical filters

3) Dual on-board purging and cooling systems
   a) The air purging system allows the sensor arrays, optics and LED back-lighting to remain clean, even in oily environments associated with production lines
   b) Uses 'toolless quick-change' 10” x 20” x 2” air filters

4) Includes strip threading table with polyurethane wheels

5) Minimum installation requirements
   a) 120Vac at 5A or optional 240Vac at 3A
   b) Run Permissive electrical input
   c) Hole Detected output
   d) No plant air required
   e) No plant water required (even on hot mill applications)

6) Minimum pinhole size = 0.0004” (0.010mm)

7) Maximum operating line speed
   a) Detects 0.001” (25um) pinholes up to 3000fpm (900mpm)
   b) Detects 0.0004” (10um) pinholes up to 2000fpm (600mpm)

8) Automatic LED back-light status check at the end of each coil

9) Electronic edge detection of product
   a) Non contact edge mask is located in Back-light assembly

SEMS
Optical Pinhole Detector

10) Scans all product to 0.12" (3mm) of material edge
    a) Edge crack detected when it propagates beyond 0.12” from edge

11) Width measurement = +/- 0.04" (1mm)
    a) Continuously measures and displays strip width
    b) Continuously displays strip speed (with optional tach)
    c) Continuously displays strip length (with optional tach)

12) Includes Operator Station with Touch Screen
    a) LCD Touch Screen display with real-time imaging and trending
    b) Maintenance setups may be password protected
    c) Ethernet interface for customer data collection and control

Inputs and Outputs found in 13) and 14) are all included with the system. 13(a) and 14(m) are the only required connections.

13) System inputs . . . (customer terminated)
    a) Run Permissive (Required)
    b) End of Strip 1 (Make Report 1)
    c) End of Strip 2 (Make Report 2)
    d) Tracking adjustment for wavy edge
    e) Pulse Tachometer for speed and length

14) System outputs . . . (customer terminated)
    a) Small Hole Detected
    b) Large Hole Detected
    c) Edge Crack Detected
    d) Weld Hole Detected
    e) Hole Detected
    f) System On-Line
    g) Logging
    h) Tracking Left-Left
    i) Tracking Left
    j) Tracking Right
    k) Tracking Right-Right
    l) System Ready
    m) Hole Detected (12µs fast output) (Required)
    n) Data and Reports available via TCPIP Ethernet

294E 600N
Valparaiso, IN 46383
USA

Phone: 1-219-462-2373
Email: info@sems-inc.com

SEMS
Optical Pinhole Detector

C) SOFTWARE

1) Windows Workstation software license is supplied.

2) All system application software is supplied - no license required
   a) No customer programming required for system operation
   b) Customer setup via Operator Touch Screen

3) Ethernet interface allows access to system data and reports

D) OPTIONS

1) Field installation by SEMS is available

2) Custom Industrial Frames available

294E 600N
Valparaiso, IN 46383
USA

Phone: 1-219-462-2373
Email: info@sems-inc.com

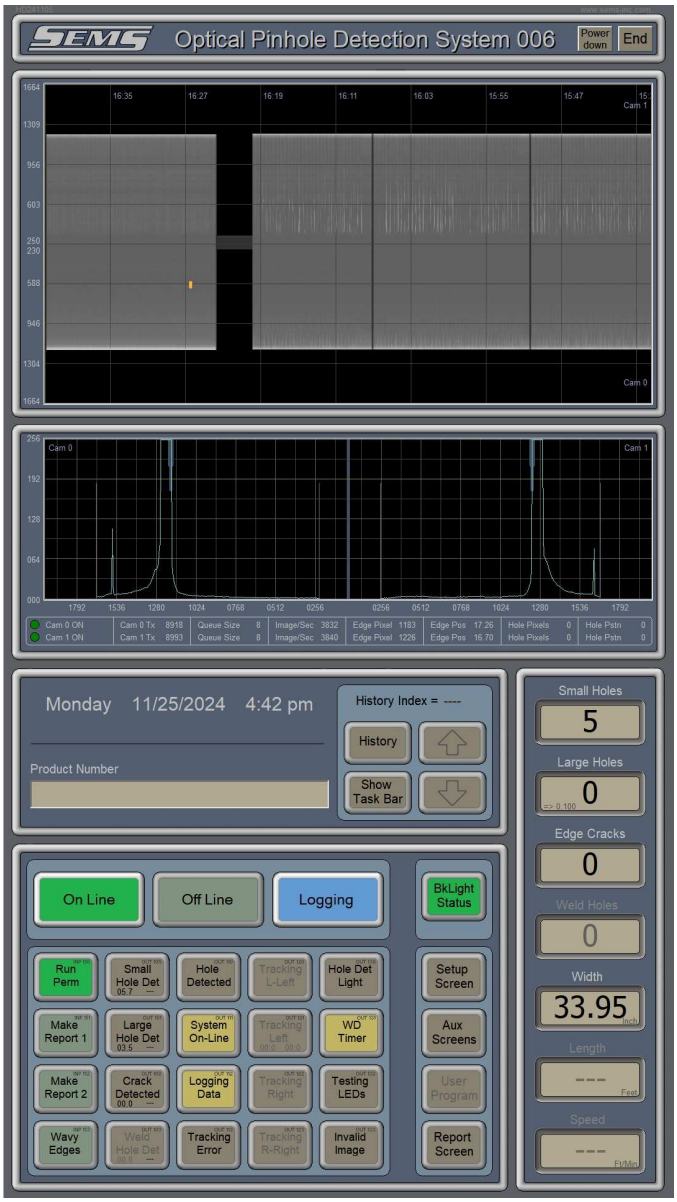
SEMS
Optical Pinhole Detector

294E 600N
Valparaiso, IN 46383
USA

Phone: 1-219-462-2373
Email: info@sems-inc.com

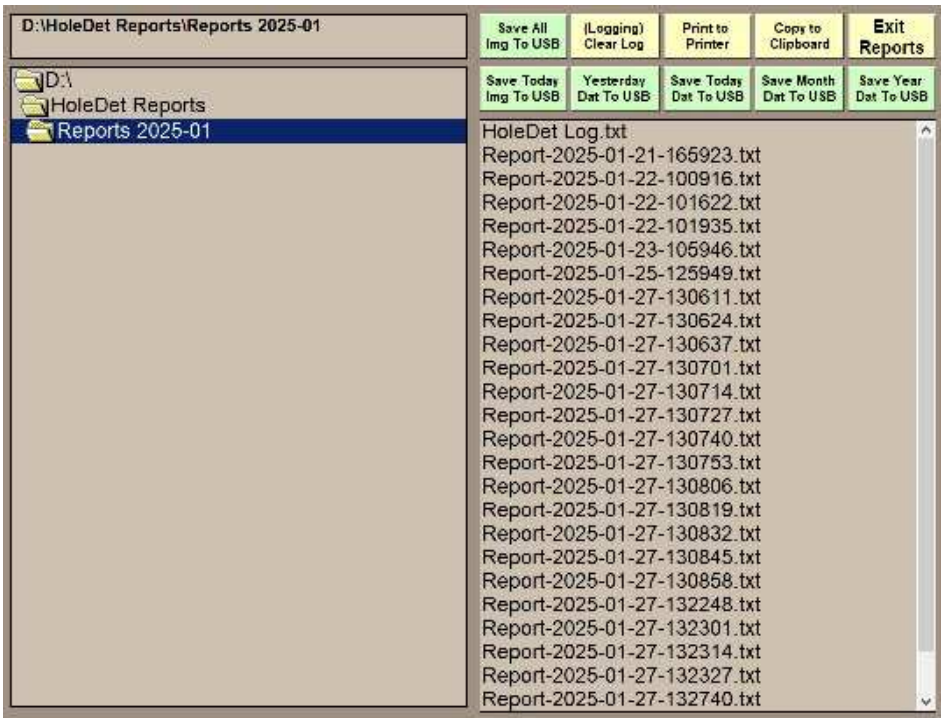
OPERATOR'S STATION Screen Shots :

Main Screen:



SEMS
Optical Pinhole Detector

Report Screen

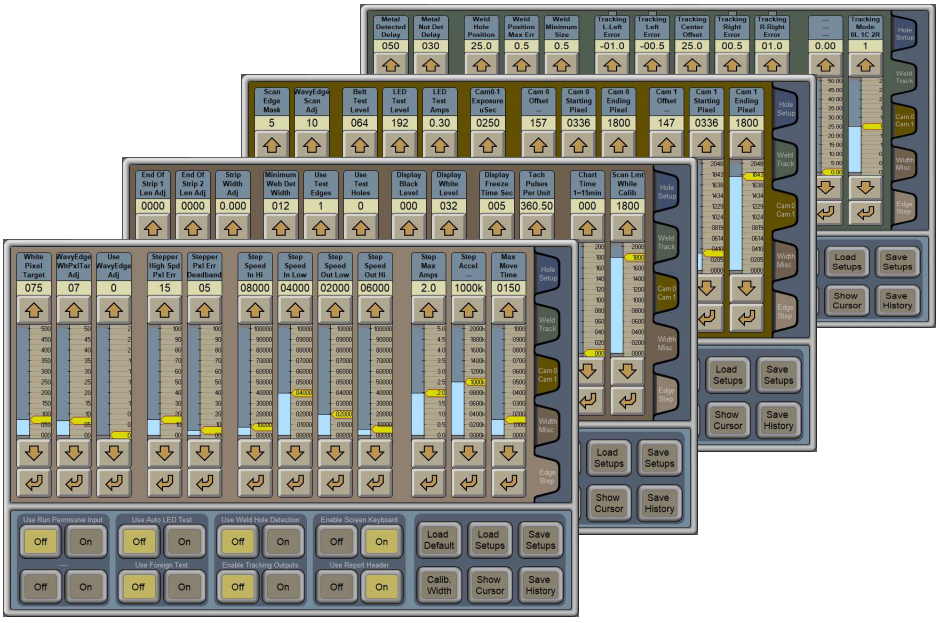


294E 600N
Valparaiso, IN 46383
USA

Phone: 1-219-462-2373
Email: info@sems-inc.com

SEMS
Optical Pinhole Detector

Setup Screens

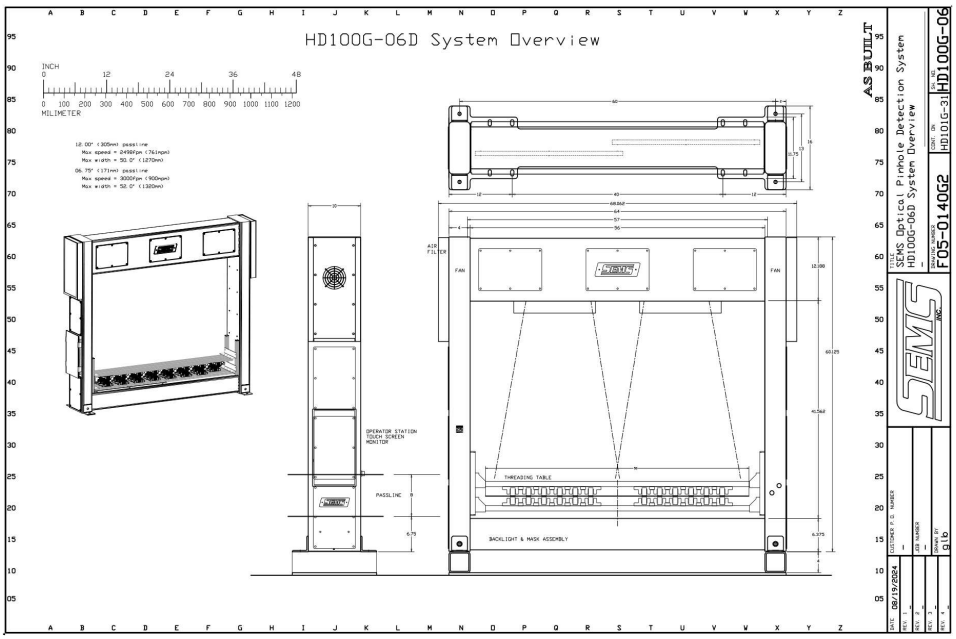


294E 600N
Valparaiso, IN 46383
USA

Phone: 1-219-462-2373
Email: info@sems-inc.com

SEMS
Optical Pinhole Detector

Typ. Configuration:



294E 600N
Valparaiso, IN 46383
USA

Phone: 1-219-462-2373
Email: info@sems-inc.com