# Guardian-HD Series

## MOISTURE, COAT WEIGHT & FILM THICKNESS MEASUREMENT




## Continually Scan Web Widths to Analyze Important Quality Parameters

### OVERVIEW

The Guardian-HD Web Profiling Series is a rugged and world-class analyzer to measure moisture, coat weight, adhesive thickness, and web temperature for all paper, film, and web-converting processes. It provides a non-contact, non-destructive on-line measurement of a complete zoned web profile, helping operators reduce quality issues caused by improper moisture control, including edge curl and lay flat challenges. This translates to improved quality and consistency, less waste, and a quick return on investment.

Hundreds of web-converting operations trust the Guardian-HD Web Profiling Series to identify production inefficiencies. They help operators control moisture and coat weight parameters within one-tenth of a percent to meet product specs every time. Moisture and coat weight measurements from the Guardian-HD Series can be made on many substrates for wet-end and dry-end application processes.



### APPLICATIONS

The Guardian-HD Series is the optimal moisture and coat weight control system that serves a diverse array of applications for the web converting market.

- Moisture and coatings on paper webs
- Thickness of hot melts
- Thickness of pressure sensitive adhesives
- Thickness of water-based adhesives
- Paper pulp
- Plastic film thickness
- Biax film
- PVB & EVA film
- Exit and inlet dryer moisture measurement
- Cast film
- Coated abrasives
- Wax coatings
- Extrusion coatings on paper/foil
- Moisture in corrugated board
- Textiles
- Pattern coatings (move and park)
- Flexible packaging
- Flooring

### GUARDIAN-HD FEATURES

- Rugged, sealed industrial frame and linear actuator withstands hot and humid environments common with paper and converting processes
- Automatic edge detection senses roll width to streamline set-up processes, and realigns to accommodate web drift
- Configurations available to monitor and control multiple Guardian-HD systems simultaneously
- Easily connect to closed-loop control systems or local alarms







# Guardian-HD Series

## SELECT THE GUARDIAN-HD FOR YOUR OPERATION

Whether you are measuring simple product quality parameters on a single web, or seeking in-depth information across multiple zones, there is a Guardian-HD configuration that is right for any web converting operation. Each Guardian-HD is custom built for its operation, providing non-contact, non-destructive on-line measurements.

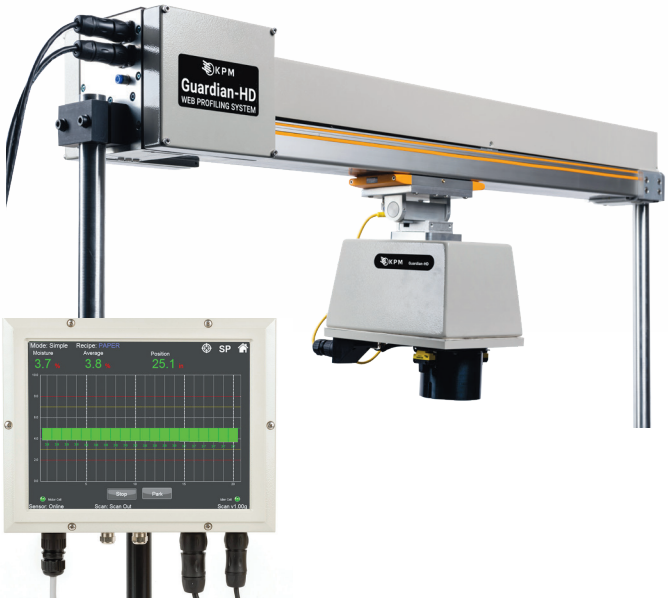
### GUARDIAN-HD BASIC




An entry-level, single-scanner operation to measure moisture, coat weight, and temperature (optional)

- **Product recipe codes:** Up to 50
- **Total zones across the web for analysis:** Up to 16 with optional data bus interface output
- **Software:** Non-Windows®-Based software, allowing for optional USB raw data-logging capabilities to save data in user-friendly file formats
- **Display:** 145 mm (5.7 in) high-resolution non-Windows®-based display

### GUARDIAN-HD ESSENTIAL




Single-scanner operation with advanced functionality to measure moisture, coat weight, and temperature (optional), along with lane (move & park) and machine direction measurements

- **Product recipe codes:** Up to 100
- **Total zones across the web for analysis:** Up to 50
- **Software:** Non-Windows®-Based software, allowing for optional USB raw data-logging capabilities to save data in user-friendly file formats
- **Display:** 305 mm (12 in) high-resolution non-Windows®-based touch screen display

# Guardian-HD Series

## TOTAL CONTROL OF IMPORTANT WEB PROFILING PARAMETERS

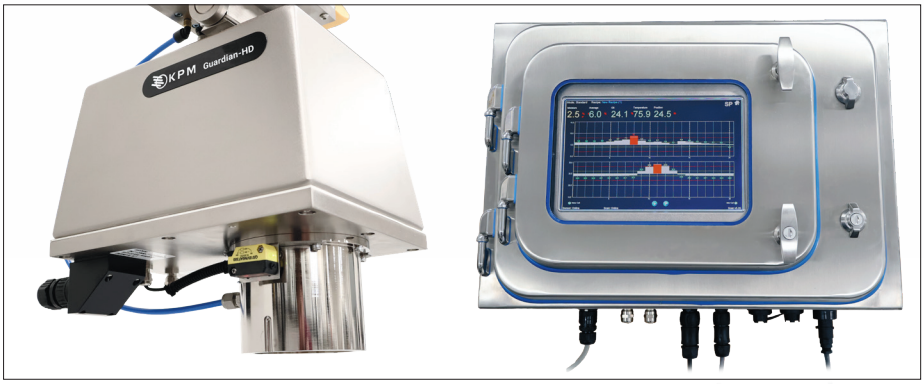
Each Guardian-HD features a near-infrared (NIR) sensor that is connected to a traversing frame to continually scan the full width of a web profile for moisture and coat weigh parameters. Real-time data is presented on an easy-to-understand touch screen display for cross detection web profiling, lane and machine direction measurements.

Every Guardian-HD frame is custom-built for its specific application. The NIR sensor can also be positioned in different ways to accommodate reflective surfaces, as well has horizontal, vertical, and underside viewing.

**Food grade option available:** The Guardian-HD sensor is available with a food grade electroless nickel finish and sapphire window (or KEL-F) for food production applications, along with washdown (IP69-rated) digital display configuration options. This allows companies to scan a full array of product entering or exiting an oven.



*Guardian-HD Scanning Paper*



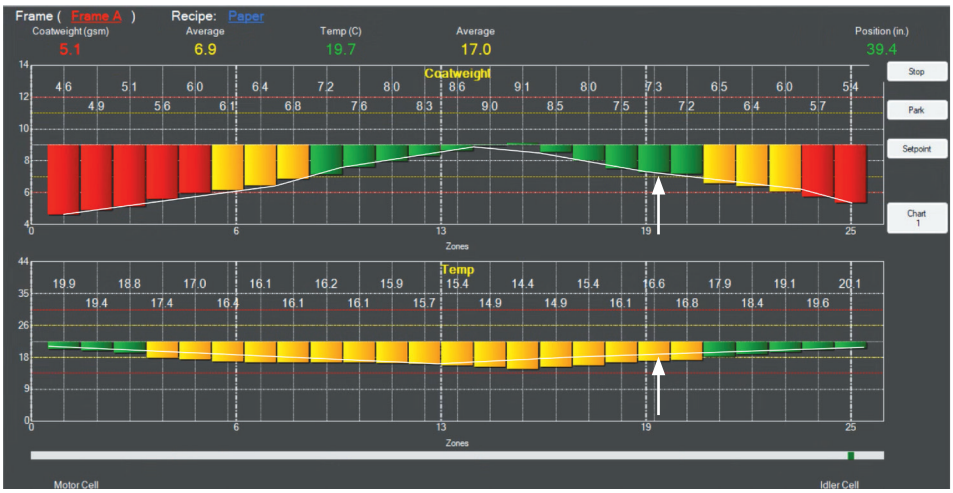

*(Left) Guardian-HD sensor finished with food grade electroless nickel. (Right) IP69-rated stainless-steel-enclosed digital display.*

# SensorVu™

## PROPRIETARY SOFTWARE PLATFORM

The Guardian-HD Series uses SensorVu™ Windows® - based PC software, allowing operators to insert set-up parameters, perform or adjust calibrations, select product codes, examine internal diagnostic values and remotely view moisture and temperature trends. SensorVu™ can also connect to multiple Guardian-HD Series analyzers in a single location for multi-system monitoring.

- Complete roll recording including measurement value, date, time, length, product name, etc.
- Web scan average and individual zone measurements
- Automatic sync of roll reports to a local network




*The white line indicates the moisture profile of the last scan*



*Manage multiple Guardian-HD systems at once*

## CONFIGURATIONS

| Part Number | Description |
|---|---|
| 500-000-BASE | Guardian-HD Basic unit assembly. NIR sensor, traversing frame, 145 mm (5.7 in) U.I. display |
| 500-000-ESSE | Guardian-HD Essential unit assembly. NIR sensor, traversing frame, 305 mm (12 in) U.I. display |

## ACCESSORIES

| Part Number | Description |
|---|---|
| 230-000A-S | Hi/low moisture-only calibration check standards |
| 240-094A | Ethernet IP interface |
| 240-199A | ModBus TCP/IP interface |
| 240-198A | ProfiNet interface |
| 240-192A | ProfiBus interface |

| Part Number | Description |
|---|---|
| 240-021A-460 | Internally mounted product temperature kit |
| 240-141A | Stack light assembly |
| 500-195A | Background reflector assembly |

## SCANNING FRAME

| | |
|---|---|
| Outputs: | • 3x 4-20mA Selectable sources<br>• Live NIR Value<br>• Scan NIR Average Values<br>• Live Temperature & Scan Temperature Average Value |
| Inputs | • Web Break<br>• Web Length<br>• Cooling Air<br>• Sensor Window Purge |
| Ambient Temperature: | 0-50°C (32-120°F) with air cooling up to 80°C (160°F) |
| Options: | • Data Bus Interfaces<br>• Simultaneous Temperature Measurement<br>• Stack Light Alarm |

## NIR MEASUREMENTS

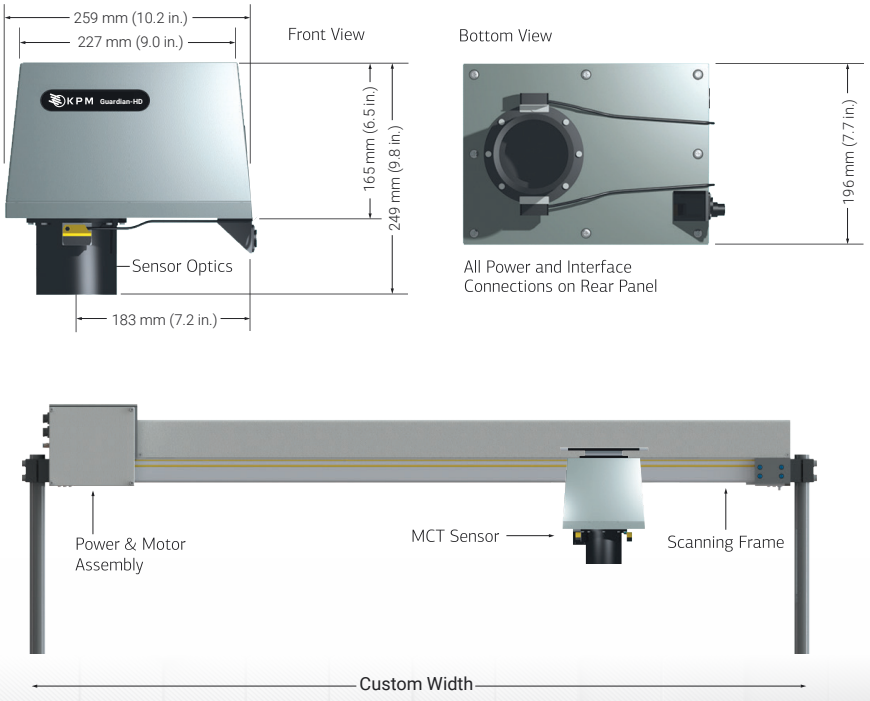
| | |
|---|---|
| Moisture Range: | Min 0.1%, Max 95% |
| Coatings Range: | Min 0.1 GSM, Max 250 GSM |
| Moisture Accuracy: | ±0.1% |
| Coatings Accuracy: | ±0.1 gr/m |
| Repeatability: | ±0.1% |

## OPERATOR INTERFACES

| **BASIC 145 mm (5.7 in) Touch Screen: Non-PC based, Single Frame Operation** | |
|---|---|
| Profiles: | 2 |
| Constituents: | Up to two (2 NIR, or 1 NIR and product temperature) |
| Communication to Frame: | RS485 |
| Power: | 24VDC from Frame |

| **ESSENTIAL 305 mm (12 in) Touch Screen: Non-PC based, Single Frame Operation, Cross Web Profile, Machine Direction Trends** | |
|---|---|
| Profiles: | 2 |
| Constituents: | Up to two (2 NIR, or 1 NIR and product temperature) |
| Communication to Frame: | RS485 |
| Power: | 24VDC from Frame |

## GUARDIAN-HD DIMENSIONS




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