

Guardian-HD Series

MOISTURE, COAT WEIGHT &
FILM THICKNESS MEASUREMENT



Continually Scan Web Widths to Analyze Important Quality Parameters

OVERVIEW

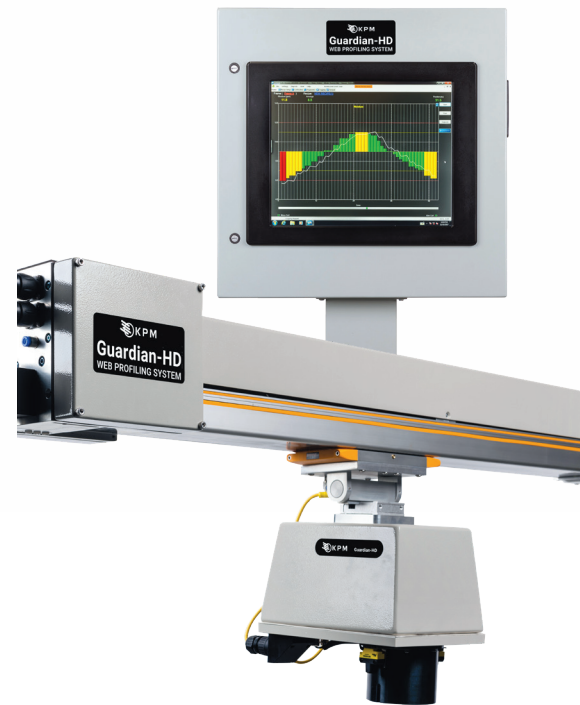
The Guardian-HD Web Profiling Series is a rugged and world-class analyzer to measure moisture, coat weight, adhesive thickness, and web temperature for all paper, film, and web-converting processes. It provides a non-contact, non-destructive on-line measurement of a complete zoned web profile, helping 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



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

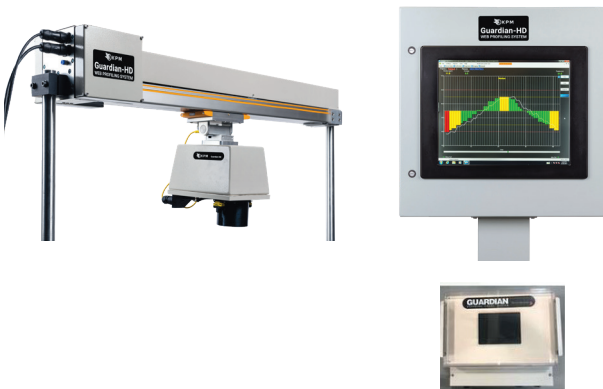
GUARDIAN-HD ESSENTIAL



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 ELITE



Central monitoring of single or multiple Guardian-HD systems
Advanced roll reporting and raw data-logging capabilities for traceability and audits

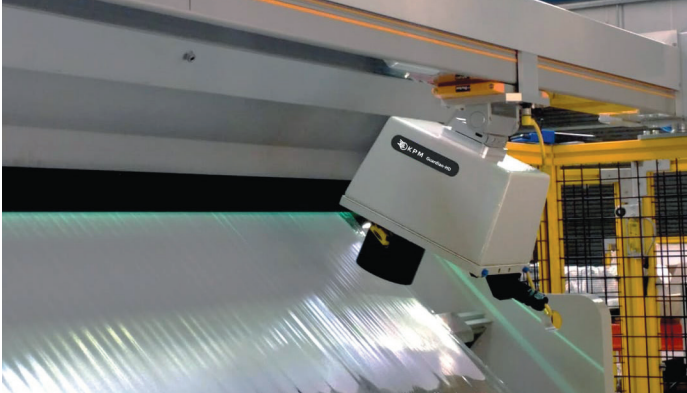
- **Product recipe codes:** Up to 100
- **Total zones across the web for analysis:** Up to 100
- **Software:** Industrial PC with proprietary ViewerSuite software
- **Display:** Windows®-based 483 mm (19 in) touch screen along with an additional 145 mm (5.7 in) touch screen display for local monitoring

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 as 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. This allows companies to scan a full array of product entering or exiting an oven.



Guardian-HD Scanning Paper



Guardian-HD sensor finished with food grade electroless nickel

GUARDIAN-HD ELITE: MANAGE A NETWORK OF GUARDIAN-HD SYSTEMS

Only Guardian-HD Elite users have access to powerful features to monitor and control single or multiple Guardian-HD systems simultaneously. The Windows®-based ViewerSuite software provides enhanced capabilities that allows operators to make on-the-fly adjustments to their settings with ease and manage multiple frames on a single screen. This provides significant productivity savings, helping larger web-converting operations control moisture and coat weight properties of a wide range of materials at once.

- 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
500-000-ELITE	Guardian-HD Elite unit assembly. NIR sensor, traversing frame, 483 mm (19 in) Windows-based & 145 mm (5.7 in) U.I. displays

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

SCANNING FRAME

Outputs:	<ul style="list-style-type: none"> • 3x 4-20mA Selectable sources • Live NIR Value • Scan NIR Average Values • Live Temperature & Scan Temperature Average Value
Inputs	<ul style="list-style-type: none"> • Web Break • Web Length • Cooling Air • Sensor Window Purge
Ambient Temperature:	0-50°C (32-120°F) with air cooling up to 80°C (160°F)
Options:	<ul style="list-style-type: none"> • Data Bus Interfaces • Simultaneous Temperature Measurement • Stack Light Alarm

OPERATOR INTERFACES

ELITE Touch Screen PC: Windows-based, Cross Web Profile Displays, Machine Direction Trends, Scan Average Trends

Profiles:	3
Constituents:	Up to three (2 NIR plus product temperature)
Communication to Frame:	Ethernet
Power:	90-260VA
Multi Frame Operation:	483 mm (19 in) Screen (Larger Options Available) & 145 mm (5.7 in) Screen

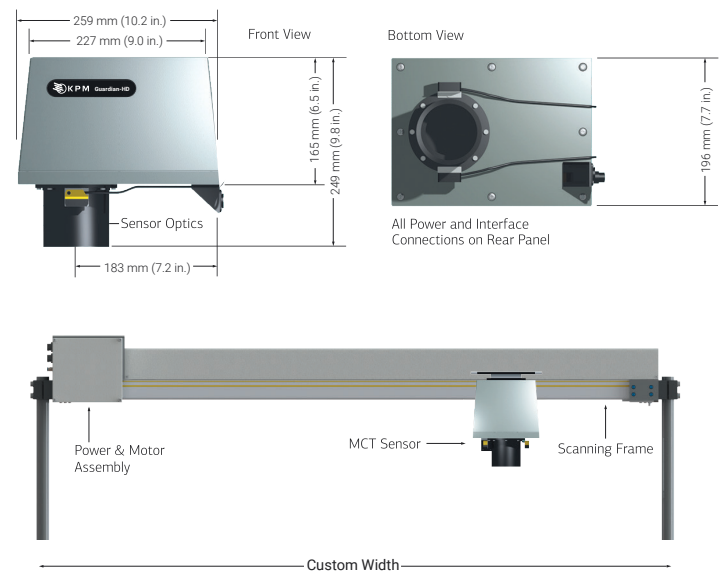
ESSENTIAL 305 mm (12 in) Touch Screen: Non-PC based, Single Frame Operation, Cross Web Profile, Machine Direction Trends

Profiles:	2
Constituents:	Up to two (2 NIR, or 1 NIR and product temperature)
Communication to Frame:	RS485
Power:	24VDC from Frame

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%

GUARDIAN-HD DIMENSIONS



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