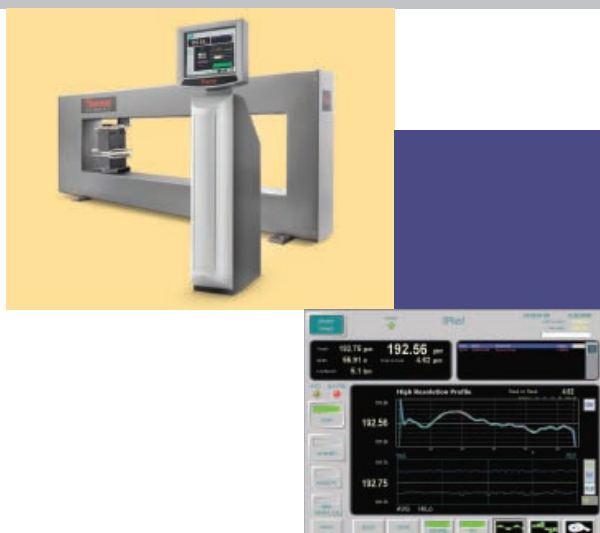


The Thermo Scientific IPlus! is a robust and reliable total basis weight or thickness measurement and control system. Our advanced sensor technology and powerful software, packaged in an intuitive, easy-to-use system, provides users with high performance and a low cost of ownership.

## Thermo Scientific IPlus! Effective Measurement and Control System



### Features

- Basis weight, direct thickness, or moisture weight measurement
- AutoDie Profile Control with accurate non-linear flow mapping
- Two- or three-zone calendering control
- Up to 2000 measurement profile points
- Advanced application controls
- Intuitive HMI operator displays
- Advanced system diagnostics and remote support capability

### Benefits

- High precision and high resolution sensor provides accurate, real-time measurement of material production
- Reduce scrap or non-conforming production with precise and effective process control
- Advanced Wonderware™ user interface with Windows® operating system offers easier data management and archiving
- System software backup allows for quick and easy system restoration in case of accidental damage
- High reliability for less downtime

The Thermo Scientific IPlus! measures basis weight, direct thickness or moisture weight in applications such as cast film extrusion, sheet extrusion, nonwovens, vinyl calendering and extrusion sheet coating. This gauging platform is easy to use, with an intuitive operator interface, and is also easy to maintain.

### Sheet and Film Solutions

- The application package is specifically tailored to cast film extrusion, extrusion coating or sheet extrusion measurement and process control requirements. A single scanner and sensor are used for measuring total basis weight, moisture weight or direct thickness.
- Optional closed loop Machine Direction (MD) control greatly improves yield quality by automatically adjusting either the linespeed or screw-speed to maintain product target.

- An AutoDie Profile Control (APC) with advanced, non-linear mapping is highly recommended to achieve optimal production quality by minimizing cross-directional variation. When coupled with MD control, the total package can help increase product uniformity, reduce scrap and increase material savings for a higher return on investment. This package comes with both software and hardware for direct connection to the extrusion die with up to 160 die bolts.
- For the roll coating processes, a two-zone control package can be used to make adjustment via side to side.

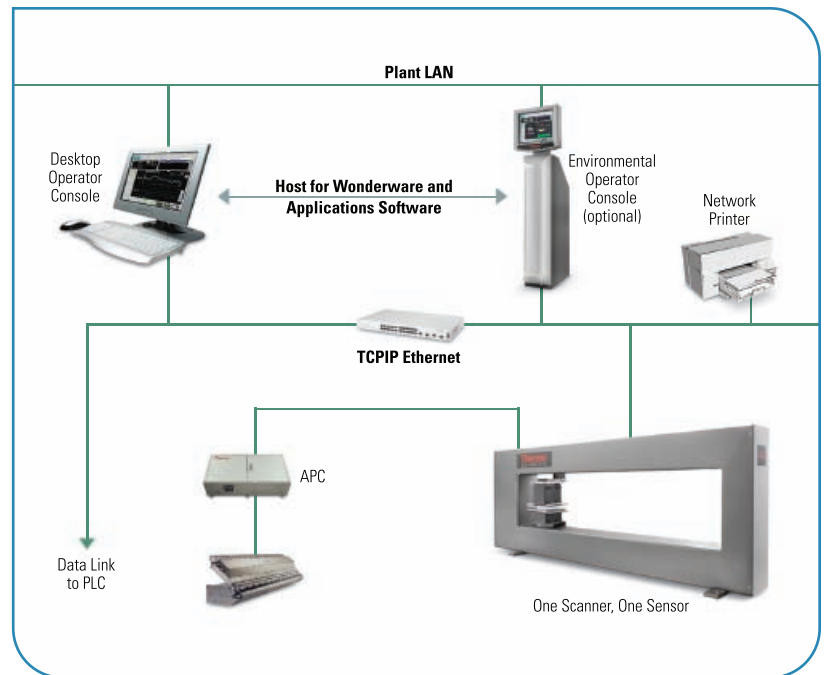
## Calendering Solutions

The vinyl calendering application package is specifically designed for roll calendering. For total basis weight or total thickness control, it can be coupled with an advanced algorithm such as two zone control by roll gap, or three zone control by roll gap and either cross axis or roll bending. Additionally, feed forward control is also available.

## Nonwovens Solutions

The nonwovens application package is optimized for the spunbond, spunlace, carded, airlaid, and needle punch processes. Online measurement is highly recommended for these applications because the raw material distribution can vary drastically across the web. Closed loop MD control can also be added to enhance quality.

## Standard IPlus! system configuration schematic



## Thermo Scientific IPlus!

### General Specifications

Applications	Cast film, sheet extrusion, extrusion coating, nonwovens, vinyl calendering
Scanners	L400 Scanner, L220, L220-Shadow; Measurement of sheet width up to 4000 mm
Measurements	Basis weight measurement by Thermo Scientific sensors: Krypton-85 and Stontium-90 Direct thickness measurement by non-nuclear, non-contacting Thermo Scientific sensors: ShadowMaster, X-Ray Master and IR Master Moisture weight measurement by IR Master sensor Up to 2000 measurement profile points
Controls	Closed loop MD control Non-linear die mapping APC control up to 160 die bolts Two- or three-zone calender control with feed forward
Other Features	Advanced roll report capability Powerful diagnostics Wonderware HMI and Windows operating system

### Performance Specifications

Scanner	L400 Scanner for up to 4000-mm web width
Sensor	Kr-85 1250 mCi Beta Sensor
Effective Measurement Range	10 - 1000 gsm
Measurement Repeatability (2σ)	±0.1 gsm or ±0.025% which ever is greater
Measurement Reproducibility (2σ)	±0.2 gsm or ±0.05% which ever is greater
Dynamic Accuracy During Scan (2σ)	±0.15 gsm or ±0.1% which ever is greater
Max Possible Variation by Sheet Flutter (2σ)	±0.25 gsm or ±0.2% which ever is greater

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