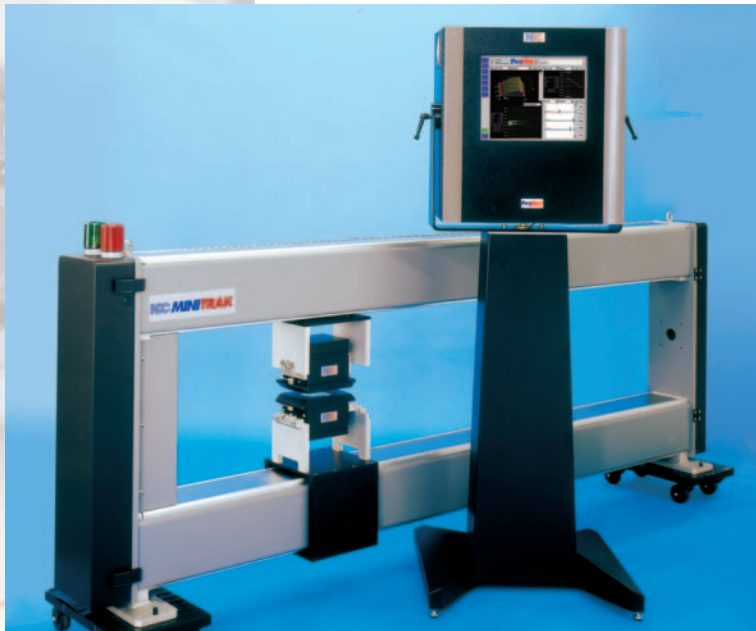


# Open Network Gauging & Control System

**ProNet TDI**



*Pro.Net TDI measurement and control console*

An on-line web measurement and control system based on “Total Distributed Intelligence” and open industry standard computer workstation and networking technology to manage even the most complex measurement requirements

Pro.Net TDI™ is an advanced gauging system based on NDC's TDI (Total Distributed Intelligence) Architecture – a design fundamentally different than other gauging systems.

What makes Pro.Net TDI different is that every critical device in the system is intelligent – the operator workstation, the scanning frame(s) and the product measurement sensor(s). These intelligent frames (iFrames™) and intelligent sensors (iSensors™) are designed to work in tandem, breaking down complex gauging tasks to their simplest components. This distribution of intelligence simplifies the gauging system experience:

- Installation is simple – only Ethernet and Power required
- System Expansion is simplified as devices are simply added to the System Ethernet
- System troubleshooting is easier because each iFrame and iSensor has a unique GUI (Graphical User Interface) which dramatically simplifies troubleshooting

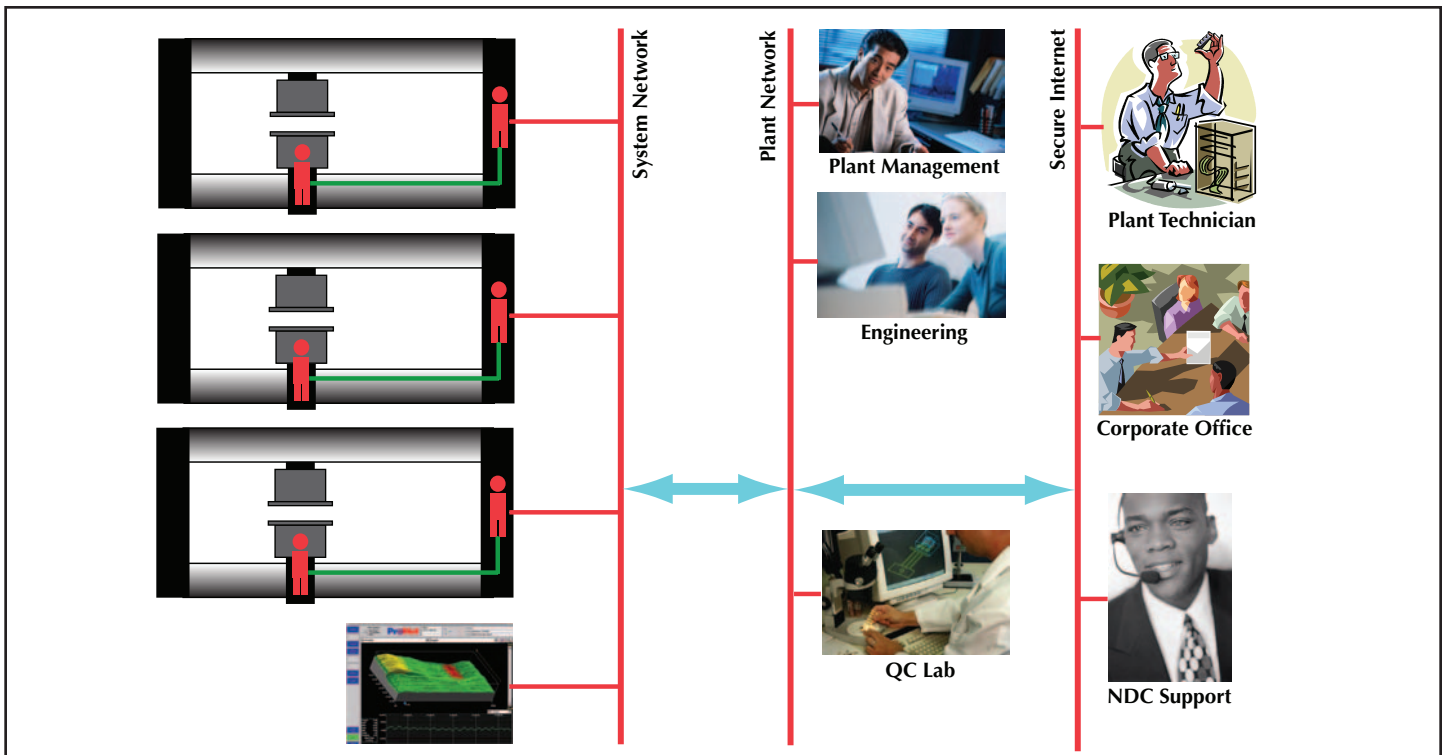
A fully configurable touchscreen interface ensures ease-of-use and maximum flexibility. Pro.Net enables users to configure multiple displays, set-up and troubleshoot remotely, and view multiple process lines from a centralized workstation. Pro.Net includes an industrialized computer sub-system and uses industry-standard hardware.

## Features

- 17" high resolution touchscreen interface with 1280 x 1024 pixel resolution
- Optional 19" super-high resolution touchscreen interface with 1600 x 1200 pixel resolution
- Control of up to six scanners and 18 sensors, with multiple configurable control loops
- Industry-standard workstation hardware
- Configurable displays
- Multiple process line viewing from any workstation
- High performance real-time database
- Java programming for portability and ease of customization
- Network accessible data through any PC
- Multiple level security
- Compatible with other software using OPC protocol
- Integrated network printing
- Upgradable from existing 6000 and 8000 systems
- Full operational redundancy (up to 3 scanners) – operate system as 8000 TDI if PC software fails

## Benefits

- Faster line start-up
- Improved quality
- Increased yield and reduced scrap
- Rapid payback
- Remote set-up and diagnostics
- Information delivered where it is needed within the organization – line-side, QC process engineering or management
- Improved “fail-safe” operation



*Schematic of multiple-line Pro.Net installations providing information where and when it is needed*

## Displays and Reports

### Typical Displays:

- Multiple, configurable displays
- Last scan profile
- Composite profile
- Roll profile
- Histogram
- Sample variance displays on many charts
- 3-D contour profile display
- Trend - minimum, average, maximum
- Machine direction strip chart
- Display zoom
- Displays in 13 languages
- FFT (optional)
- SPC (optional)

### Typical Reports:

- Job report - current and last
- Shift report - current and last
- Roll report - current and last
- Roll defect report
- Optional configurable reports with Microsoft Excel
- Automatic screen printing

Any report or display can be printed out automatically (end of roll, end of shift, etc.) or upon demand; alternatively any data can be exported to your PC for your own application.

## Automatic Control

Pro.Net TDI™ supports a wide range of control options to meet specific application and customer requirements.

- Speed control: line, pump or screw
- Auto profile control (APC)
- Dual gap control
- Cross-axis control
- Roll bending control
- BIAX control
- Target optimization control
- Delta presets

## Applications

- Extruded cast sheet and film
- Biaxially oriented film and sheet
- Coatings and laminations
- Nonwovens, textiles, carpet
- Paper, Felt
- Rubber, vinyl
- Composites, SMC, SRP
- Adhesives
- Plastic on paper
- Hot melt
- Epoxy
- Metallic Coatings

## Data Access

Pro.Net™ includes an open OPC-compliant object database. Information generated by the system is available to authorized users anywhere in the plant or on the corporate intranet. TCP/IP protocols enable remote viewing, set-up, tuning, maintenance and real-time help from any display terminal, as well as providing an interface to other plant automation or SCADA systems. Thousands of third party software packages can “plug & play” with Pro.Net™.

## Configurations

The Pro.Net™ system can control up to six scanning frames and up to 18 sensors on a single process line. Multiple scanner configurations are generally used for coating applications where the scanners must be synchronized for exact same-spot measurement. Furthermore, many non-NDC sensors can easily interface to the Pro.Net system. Additional operator workstations can be added wherever needed and can access and control any line in the plant.

## Sensor Technology

NDC specializes in the development and application of sensors that are unique in the marketplace, characterized by their small size, lower activity radioactive sources, and exceptional stability.

- Gamma Backscatter (GBS)
- Beta transmission
- Near infrared - backscatter and transmission
- X-Ray backscatter, fluorescence and transmission
- Caliper - Laser triangulation and Mechanical

## Scanner Technology

NDC offers a wide variety of sensor mounting assemblies and scanning frames appropriate for the sensor application:

- MiniTrak-S Series single-sided scanners, for use with “backscatter” measurement sensors
- MiniTrak-C, MiniTrak-O and AccuTrak Frames for dual-sided measurement sensors

In addition, legacy NDC scanners and sensors can be upgraded to take advantage of the Pro.Net TDI system’s capabilities.

Further information may be found on specific data sheets for each scanning frame.

## Industry Standards

- Microsoft Windows operating system
- TCP/IP networking
- Java based application
- Object database
- Internet protocols
- OPC compliance (server)

## Hardware and Software

NDC’s TDI (Total Distributed Intelligence) Hardware Platform provides the most advanced system architecture available in the continuous web process control industry.

At the heart of TDI is the D-BRIC, an amazing Real Time Process Controller which incorporates the latest in high-speed DSP (Digital Signal Processing) technology to assure real time control without skipping a beat. Unlike PC’s, which are not designed to perform Real-time control functions, the D-BRIC speeds through real time tasks to significantly improve the measurement and control performance of your processing line. And the D-BRIC is hardly larger than a pack of cigarettes, allowing it to be easily located virtually anywhere in the system.

Each critical device in the TDI system is matched up with a D-BRIC to create an “iD™” or intelligent Device. Integrate a D-BRIC with a measurement sensor, to form an iSensor™ - a stand-alone intelligent measuring device that operates at maximum performance. Similarly integrate a D-BRIC with a scanning frame and create an iFrame™ - an intelligent measurement and control station on your process line; one that can control the process, generate measurement profiles, and work in tandem with other iFrames to control coaters, laminators, and other more complex processing lines. Since the D-BRIC is an Ethernet-based device, communications between devices is fast, efficient and conforms to industry standards.

NDC’s iSensors and iFrames put real time control intelligence where it belongs – locally managing the real time devices.

TDI combines the assurance of full-time real-time control with the ability to integrate seamlessly into the transactional world of PC’s, for the ultimate in measurement, control and data management.



*Sensor and scanner assembly for measurement of film*

The operator workstation PC is an industry-standard, Intel-based, Windows™ machine, which runs the Pro.Net™ software. It also stores and accesses the database, and archives data such as recipes and reports. The high resolution touchscreen monitor provides a fully configurable interface which allows the user to access the information to meet his needs. As the Pro.Net adds PC flexibility as an “overlay” to NDC’s TDI system, there is still full real time control software operating “under” the PC. Thus, if the PC hardware fails, a quick switch to almost any available PC with Ethernet and a 2-minute software load gives the user full NDC 8000 TDI system capabilities (up to three scanners) via the D-BRIC’s until the Pro.Net PC can be restored to normal operation. If the Pro.Net software develops a problem, the same 8000 TDI software is resident on the Pro.Net PC as a back-up to keep the system running (up to three scanners).

## Specifications

### Electronics Console

**Power:** 115 or 230 VAC, ± 10%, 50/60 Hz, 15A

**Size:** HWD: 25 x 23 x 14.5 in. (635 x 584 x 368 mm)

**Weight:** 100 lbs. (45 kg)

**Ambient Temperature:** To 113° F (45° C)

**CE Mark:** Conforms with EC directives

### Hardware

**Sensors:** See specific data sheets

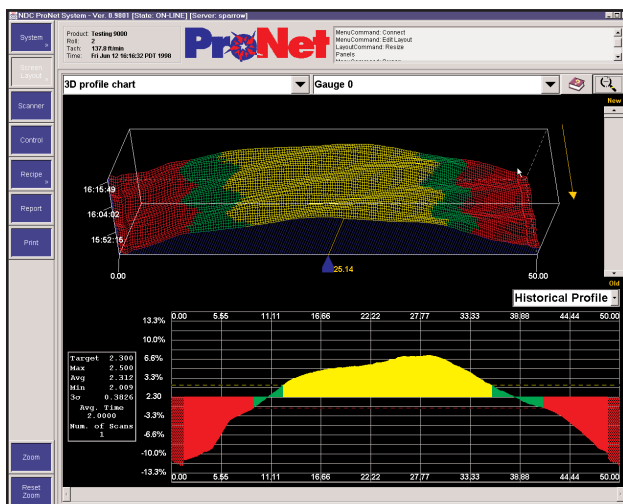
**Scanning Frames:** See specific data sheets

### Hardware Options

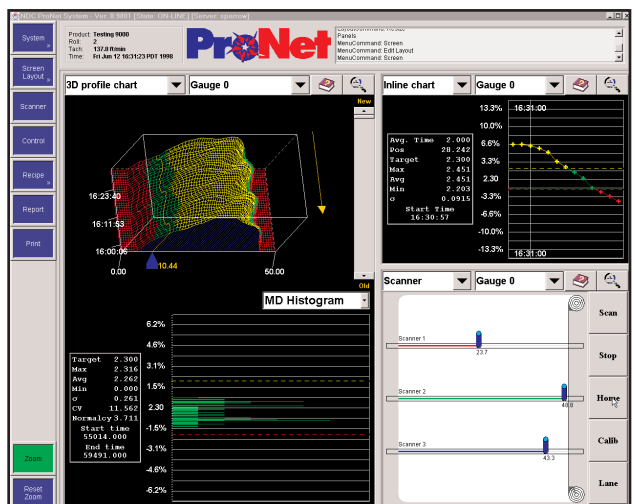
**Printer:** All Windows compatible printers, black & white or color will work with the Pro.Net system. All compatible network printers can also be used.

**Cabinet Cooling:** For operation in high ambient temperature environments.

**Operation in Hazardous Environments:** Sensor and scanner assemblies can be supplied with an NEC/ISA Type X air purge for operation in Class 1, Group C or D, Division 1 atmospheres. Complete purged workstations can also be provided.



3-D contour profile with color-coded alarms



Each display can be independently configured to meet the needs of individual users

NDC Infrared Engineering



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