

The SmartView family of paperless data acquisition platforms provides an innovative approach to streamlining the collection, distribution, and analysis of critical process data. The SV100 helps optimize operations in order to achieve maximum efficiency and profitability.

## SmartView 100 (SV100)

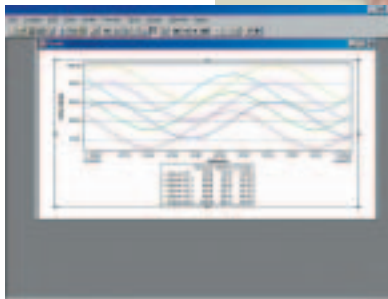
### 100mm Paperless Data Acquisition System



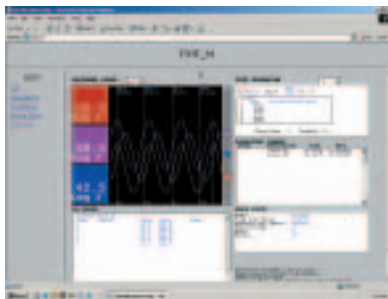
Fast and easy access to process information electronically — no hassles with chart paper and ink



**ProView Plus:** Data analysis and reporting software to document and analyze process parameters from your PC



Real-time data accessed from a standard web browser



The SmartView 100 (SV100) can help efficiently gather process data electronically in real-time from a variety of process sensors.

#### Designed with the engineer in mind

The SV100 comes standard with both an RS232 and RS485 interface with Modbus protocol support. The SV100 also supports Ethernet TCP/IP, TCP, and OCP Modbus. These communication features make the SV100 easy to integrate into existing plant DCS, SCADA, LAN and WAN networks. The SV100 can be configured and its data can be transferred to an assigned server via Ethernet with the File Transfer Protocol (FTP) functionality. Additionally, data can be viewed in real-time from a standard web browser.

#### Designed with the operator in mind

The SV100 features a brilliant color, graphical display and touch screen control. The SV100 provides a wide variety of user-selectable display formats. The touch screen technology and Windows®-style menus allow the operator

to easily program the unit and move from one display format to another. The touch screen also makes it very easy to view real-time data and historical data from internal memory or local storage media simultaneously. In summary, it is infinitely easier for an operator to navigate programming and operation menus with a touch screen rather than a limited number of fixed push buttons.

#### Designed with the technician in mind

The unique SV100 design incorporates a front-access removable chassis as well as front-access removable circuit boards. This makes the SV100 easy to maintain and upgrade. In addition, the SV100 features removable terminal blocks for easy installation. As a result of these important design considerations, the SV100 is the ultimate in serviceability and maintainability.

#### Designed with the purchasing agent in mind

And... the SV100 is loaded with features at an economical price.

**Sample Applications for the SV100**

**Utilities**

- Generator bearing temperatures
- Turbine vibration
- Load dispatch centers

**Chemical & Petrochemical**

- Process temperatures
- Flows/pressures
- Tank level
- Consumption

**Water & Wastewater**

- Conductivity
- Temperature
- pH

**Steel Mills**

- Rolling mill temperatures
- Blast furnace temperatures
- Coke oven temperatures
- Bleeder stack pressure
- Flow

**Aerospace**

- Temperature monitoring in heat treat furnaces

**Plastics**

- Temperature monitoring of extruders

**Air Quality**

- Temperature
- Wind direction/speed
- SO<sub>2</sub> and NO<sub>x</sub>

**Pharmaceutical**

- Batch certifications

**Pipelines**

- Flow
- Pressures



**Flexible Display Modes**

The SV100 lets you see data the way you want to see it. You can configure up to eight different display screens. Each display screen can be defined as one of the seven available display formats. In each display format, the user has total flexibility regarding color assignment to ensure maximum visibility.

**Overview**



**Digital**



**Horizontal bargraph**



**Vertical bargraph**



**Horizontal trend**



**Vertical trend**



**Alarm/Event summary**



### Inputs/Outputs



- The SV100 can accept 6, 12, or 18 direct universal inputs. The SV100 is designed with three card slots that can accommodate any combination of analog input cards and contact output/digital input cards
- Up to 36 calculated and/or conditional points including custom entry of algebraic equations
- All points scanned at 125 mS
- Data can be measured and collected as instantaneous, average, minimum, or maximum values

### Display Options



- Inputs and calculated points can be displayed in a wide variety of user-defined formats
- Points can be programmed to flash and/or change color on alarm
- Intuitive touch screen and Windows®-style menus allow straightforward programming and operation without requiring the use of cumbersome function keys and keypads
- Review of historical data is flexible with the fast forward and review buttons; and time and event search functions

### Storage Media



- 8 MB internal Flash memory protects configuration and data from power loss
- 64 MB internal RAM permits the operator to search through historical data effortlessly and without delay
- Removable Storage: 1.44 MB floppy disk; PC card up to 2 GB; or PC card with USB flash device
- Review data direct from floppy or PC card at unit
- User-selectable for Wrap-Around or Fill-to-End mode of storage
- Media alert pop-up window for added insurance against possible historical data loss due to media error or media full

### Networking



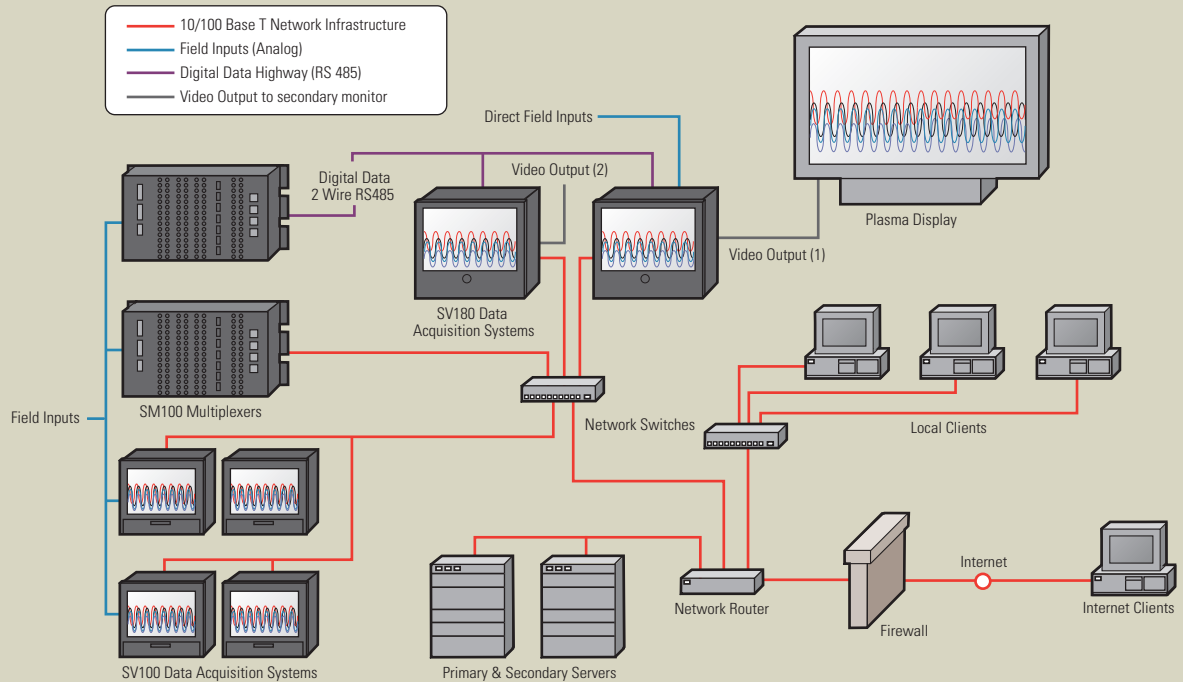
- 10/100 Base-T Ethernet, TCP/IP, TCP/IP Encapsulated Modbus, and OPC support
- Supports FTP (File Transfer Protocol) client and server modes
- RS232, RS485 with Modbus RTU or ASCII as a standard feature
- Configure recorder remotely via Ethernet
- Works with Plant Data Historians and HMIs

### Additional Features



- A standard parallel printer port supports Print Screens and Alarms
- Event Message feature allows the operator to mark the trend screens with custom messages
- Modular compact design
- Simulator support functions for operator training sessions
- Web-enabled

## Plant Networking



### Data Management

The SmartView data acquisition product line excels as a networkable system.

The SmartView networking capabilities will automate and significantly reduce the time required to collect, distribute, and manage process data to make day-to-day business decisions, meet regulatory requirements, analyze process parameters, and much more. The combination of one or several SmartView data acquisition units with supporting PC application software can be built from the ground up or easily integrated into an existing plant-wide data collection system.

The key to data management and networking as a whole is flexibility and scalability. Designing these two characteristics into the SmartView family provides unsurpassed cross-platform functionality. The SV100 along with its paperless counterparts is loaded with an array of communications capabilities to easily reduce the costs associated with managing and distributing process information throughout the enterprise.

Whether a stand-alone system or a more complex data acquisition network is presently required, the SmartView system of today is also designed to meet system needs and demands of tomorrow.

### File Transfer Protocol (FTP)

- Automatic (Client)
- Manual (Server)
- Configuration

The FTP functionality can be configured to automatically and securely transfer all data from the storage media to an assigned network location at a user specified time of day. Stored files can also be accessed directly from any client PC location on demand. The SV100 supports FTP authentication and log-in requirements. The SV100 can also be configured through the network via FTP.

### Data Historians and Human Machine Interface (HMI)

- ProView Plus
- ProServer OPC

Thermo tools with OLE for Process Control (OPC) and Modbus support for existing plant historians and HMI packages to capture and view process parameters on a plant-wide basis. Thermo Electron also offers a turnkey data acquisition solution to upgrade legacy systems or develop new systems.

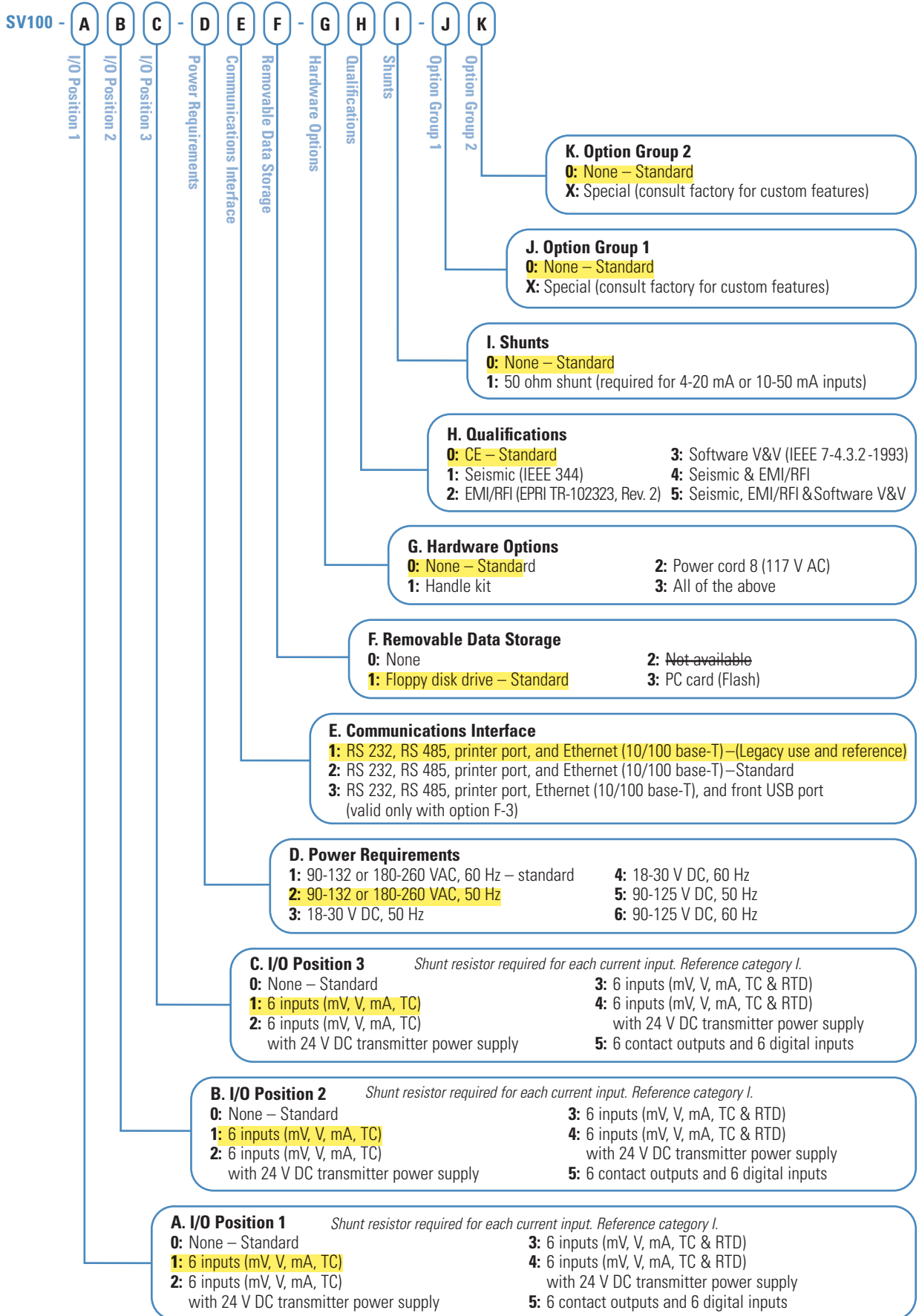
### Real-Time Communications

- ProView Plus
- ProServer OPC
- Web Browser Access

Communications over a plant local area network, intranet, or Internet can be accomplished utilizing the built-in web page or Thermo tools with OPC and Modbus/TCP support. Thermo Electron offers a scalable solution for remote or local communications for any plant network infrastructure.

**SmartView 100 (SV100)**

SV100 – DIN size, 100 mm (6 in x 6 in) paperless data acquisition system



Specification	
<b>Inputs</b>	
Number	6, 12 or 18 isolated inputs
Type	DC Voltage: Linear, log, and square root programmable to 10 VDC (50 mV, 100 mV, 200 mV, 1 V, 5 V and 10 V bipolar ranges) DC Current: Linear, square root and log programmable to 4-20 mA, 10-50 mA and dry contact T/C: J, K, T, E, R, S, B, C, Nicrosil Nisil and Nickel/Nickel Moly RTD: 10 $\Omega$ Cu, 100 $\Omega$ Pt 385, 500 $\Omega$ Pt 385, 100 $\Omega$ Pt 392, 200 $\Omega$ Pt 385, 200 $\Omega$ Pt 392 and 120 $\Omega$ Ni External: computer generated
Accuracy	Voltage: $\pm 0.05\%$ of programmed range Current: $\pm 0.1\%$ using external shunt resistor T/C: $\pm 1.5^\circ\text{C}$ for J, K, T, E, Nicrosil-Nisil and Nickel/Nickel Moly; $\pm 3^\circ\text{C}$ for R, S and C; $\pm 4^\circ\text{C}$ for B RTD: $\pm 0.5^\circ\text{C}$
Resolution	0.012% of full scale
Impedance	>10 M $\Omega$
Common Mode Voltage	300 VAC p-p
Common Mode Noise Rejection	120 dB at 50/60 Hz
Normal Mode Noise Rejection	60 dB at 50/60 Hz
Scan Rates	All points scanned every 125 mS
<b>Recording</b>	
Storage Rates	1 sample/second to 1 sample/24 hours
Format	ASCII or Binary
Internal Memory	64 MB of RAM, 8 MB of Flash, and 500 K NVRAM
Storage Media	1.44 MB floppy disk; PC Card ATA flash or compact flash PC card with Type II adapter (up to 2 GB); USB flash device
Data Saving Methods	Data may be saved to storage media as instantaneous, average, max or min values
Data Saving Selection	Each screen may be saved to media based on a user-defined interval or trigger
File Type	Data file (per screen basis), Alarm/Event file, Configuration file
<b>Display</b>	
Type	5.5-in Color Active Matrix TFT LCD (320 x 240)
Display Modes	Up to 8 user defined screens (Vertical Trend, Vertical Bargraph, Horizontal Bargraph, Horizontal Trend, Digital, Overview, Alarm/Event Summary)
Display Colors	Up to 16 colors
Update Rate	125 mS
Virtual Chart Speed	User programmable in inches or mm per hour.
Virtual Chart Scales	User programmable
<b>Math Package</b>	
Formulas	Algebraic equations, conditional, moving average, hi/lo peak, timer, totalize, time average, programmable linearization curve, logarithmic, true moving average, hi/lo difference and gated timer
<b>Alarm Functions</b>	
Number of Alarms	Up to 5 alarm setpoints per point
Alarm Types	H, L, Rate, Abnormal
Contact Output/Input	6 isolated Form C contact outputs and 6 digital inputs per card 1.0 Amp @ 117 VAC or 25 VDC resistive; 0.5 Amp @ 230 VAC resistive; 0.4 Amp @ 250 VDC resistive 1 common alarm (100 mA @ 250 VDC/VAC)
Deadband/Failsafe/Reflash	User selectable
<b>Power</b>	
Requirements	90-132/180-264 VAC (50/60 Hz), 90-125 VDC, or 18-30 VDC
Consumption	40 VA fully loaded
Power Fail Protection	Programmed parameters stored in nonvolatile Flash memory; Clock battery-backed
Transmitter Power Supply	24 VDC at 120 mA (per input card)
<b>Communications</b>	
Ports	RS232 and RS485 communication with Modbus (RTU or ASCII); front USB port
Parallel Printer Port	Screen Print
Network Type	Ethernet (10/100 base-T), TCP/IP, TCP/IP Encapsulated Modbus, OPC/PI compliant, FTP Client, FTP Server, Web-Enabled (using standard web browsers)
Realtime Monitoring & Data Historian	ProView Plus, ProServer OPC and Modbus (RTU and ASCII) support
<b>Environmental</b>	
Temperature	PC Card Drive: $-10^\circ\text{C}$ to $+50^\circ\text{C}$ ( $+14^\circ\text{F}$ to $+122^\circ\text{F}$ ) Floppy Drive: $-5^\circ\text{C}$ to $+40^\circ\text{C}$ ( $+23^\circ\text{F}$ to $+104^\circ\text{F}$ )
Operating Humidity	10% to 90% RH non-condensing
Enclosure	Splash proof cover available
Dimensions	Bezel: 144 mm x 144 mm / Cutout: 138 mm x 138 mm; Depth: 234 mm (9.25 in)
Weight	3.4 kg (7.5 lb), estimate varies depending upon final model
<b>Qualifications</b>	
Commercial	CE Mark
Nuclear Qualifications	Seismic (IEEE 344-1987), EMI/RFI (EPRI TR-102323, Rev. 2), Software V&V (IEEE Std. 7-4.3.2-1993), 10CFR 21, 10CFR 50 Appendix B and IEEE 323-1983 (mild environment)

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