

# INDUSTRIAL DIVISION

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## GENERAL OVERVIEW

### What do your systems do?

Tekscan's systems solve your tactile pressure needs by measuring, displaying and documenting contact force, area, and pressure distribution between two mating surfaces. Our versatile pressure measurement systems: [L-Scan](#)<sup>®</sup>, [BPMS](#)<sup>™</sup>, [CONFORMat](#)<sup>®</sup>, [Wiper](#)<sup>™</sup> and [TireScan](#)<sup>™</sup> include software, scanning electronics and sensors, turning your PC into a complete pressure measurement system. The sensors are very thin and minimally disruptive to the true pressure patterns. Our array of sensors coupled with our systems allow for a wide variety of applications to be addressed.

### Why are they better than using carbon paper?

Our systems offer **dynamic** pressure rather than a static, peak event. These dynamic measurements allow pressure differences across a contact area to be readily visualized in vibrantly colored, 2-D and 3-D displays. View a sample of a dynamic pressure ["movie."](#)

Like carbon paper, our sensors are extremely thin (0.004") and minimally intrusive.

### What are some applications your systems have been used in?

Our systems address a very diverse group of applications. If you have a need to measure an interface pressure distribution between mating surfaces – we have a solution for you. Our sensors have been used in applications that:

- Require high pressure such as engine gaskets and low pressures such as door seal
- Are very soft and conformable such as ergonomics and seating or very hard such as teeth biting and chewing
- Are very large such as metal stamping machines or very small such as electronic connectors
- Are very aggressive such as grinding wheels and very benign such as rubber door seals
- Require very fast data acquisition such as crash testing and very slow changing such as soil movement

The list is virtually limitless. For further information on these or additional applications, please refer to the [Application List](#) or [contact](#) us to speak to an Industrial Sales Engineer.

### Where can I learn more about how the systems are being used?

Tekscan has numerous papers, proceedings, case studies, and articles available referencing and describing the effectiveness of our industrial systems. You can find this information in our [Industrial Literature List](#). You can also contact us directly at [marketing@tekscan.com](mailto:marketing@tekscan.com) to request product flyers that provide additional information.

### Do you have representation in my area?

Tekscan products are sold directly by our own staff of sales engineers, as well as through local sales agents, and internationally through distributors. Please contact us at [marketing@tekscan.com](mailto:marketing@tekscan.com) and we will direct you to the appropriate representative. Refer to our [Distributor List](#) for a list of countries where we have local representation.

## SYSTEM

### What is included with a system?

- **Software** that enables you to view the output of the sensor in real time. Our software records data, displays it and has built-in tools to analyze and interpret your data. It allows you to perform comparative analysis, print out the test data and import it into programs that read comma delimited ASCII, such as Microsoft™ Excel.
- **Sensors** are available in various shapes, sizes, spatial resolutions and pressure ranges. Sensor selection depends on application requirements. Refer to our full catalog of standard sensors, [Industrial Sensor Catalog](#). Our Sales Engineers will advise you about the best sensor(s) for your application.
- **Scanning Electronics** that interface between the sensor(s) and your desktop or laptop. Tekscan offers (depending on the system selected) an Evolution or VersaTek data acquisition Handle, both of which connect to your computer through a USB port. These Handles convert the data into a form that can be processed by your computer. The sensor(s) is plugged into a Handle(s), which provides excitation to the sensor, scans individual sensing elements (sensels), and conditions and digitizes the data. You can purchase one Handle up to a maximum of eight Handles.
- **Training and Support** within 90 days of the system purchase. You will receive either a day of on-site training or internet-based training depending on the system you purchase. Each system also comes with an operational manual.

### What is the cost of a system?

Prices for our systems vary depending on your application and needs. Your Industrial Sales Engineer or local sales agent will work with you on your application and recommend the solution that is most appropriate for your requirements. We offer various ways for you to acquire a system as well, including purchasing and rent-to-own.

### How can I get a demonstration of a system?

Contact Tekscan and we will be happy to discuss your application. If our product might serve your needs, we can arrange a demonstration via the Internet or an on-site demonstration.

### What are your system's computer requirements?

Please refer to [Computer Requirements](#).

### Are there additional hardware features available?

Tekscan offers additional features to add on to your system, which can be purchased initially with your system or added as your needs evolve. They include:

- **Equilibration Devices** – These devices apply a uniform pressure to the active area of the sensor to normalize output of each sensing element. The system electronically compensates for each individual sensing element variation.
- **External Trigger / Sync hardware box** – Converts RS-232 levels to TTL levels when external devices are to be interfaced with *I-Scan*.
- **Additional Handles** – Increase the amount of handles to allow for the use of more sensors simultaneously.

## **How can the systems be used with laptop PC's?**

Our state of the art systems can be used with any laptop PC that has the required system specifications. To use the system, simply download the software from the software CD provided with the system and attach the proper scanning electronics to the PC. To view our required system specifications please see our [Computer Requirements](#).

## **What are the main features of VersaTek electronics, compared to previous electronics?**

VersaTek electronics are the latest generation of hardware for Tekscan systems. This new technology improves the ability of multiple Handles to scan a large number of sensor elements and provides high speed scanning.

In the past, Tekscan offered "Dual Handles" to address large numbers of rows and columns. The Dual Handles operated independently. Each pair of Dual Handles could address an array of up to  $88 \times 104$  elements (9,152 sensels). A sensor with two sets of Dual Handles (visually, a total of four Handles) would actually be two individual sensors, printed on the same substrate, with two separate sensing areas, each with  $88 \times 104$  rows and columns for two times 9,152 or 18,304 sensing elements. VersaTek has Cross Handle Scanning which means all the Handles of a multiple Handle sensor work together. With four VersaTek Handles there is one, unified sensing area, with maximum array size of  $176 \times 208$  (36,608 sensels). As the number of Handles in the sensor increases, the increase of the number of sensels is geometric.

## SOFTWARE

### What are the software's key features?

- Real-time display of static and dynamic measurement
- Easy to use & understand DVD like controls that allow for simple recording and play back of pressure recorded “movies”
- Graphing features such as force vs. time and/or peak pressure vs. time
- Data can be exported to any text-delimited program for further analysis

### Can I upgrade my software?

Yes. However, depending on how long you have had your system, you may need to purchase additional hardware to be compatible with the most current software version. [Contact](#) us in order to learn more about your upgrade options. Please have the serial numbers of your software and hardware available.

### Are there additional software features available and what are they?

Tekscan offers additional features to add on to your system; these can be purchased initially with your system or added as your needs evolve. They include:

- [Video Synchronization](#) – Video sequences can be synchronized with your pressure movie and visualized in Tekscan software, enhancing the utility of collected data. To view a sample please click on [Dynamic I-Scan .AVI](#)
- [Automatic Sequential Recording](#) – At the end of a recording “movie”, that movie is saved with a unique name, and the system is reset to be ready to record the next movie without any operator control actions.
- VSA – Virtual System Architecture accommodates your larger areas needs. VSA allows you to view multiple sensors, positioned adjacent to one another, creating a continuous measurement region.
- [API](#) – Application Peripheral Interface enables a user, with programming knowledge, to write programs that directly access Tekscan sensors and electronics or our sensors data buffers.

### Does your software support local languages?

Tekscan systems support a multitude of languages, including English, Chinese, French, German, Italian, Japanese, Korean, Russian and Spanish.

## SENSORS

### Can I just purchase Tekscan sensors?

Tekscan's patented ARRAY or GRID sensors are designed to only work with our proprietary software and hardware; therefore you cannot simply purchase sensors unless you already own a Tekscan system.

However, our SINGLE POINT or [FlexiForce®](#) sensor is manufactured with a standard solderable termination and thus can be easily interfaced to a circuit that you might design. These sensors do not have any unique electronic or connector requirements.

### What sensor pressure ranges are available?

Sensors are available with full range response of 0-2 psi (15kPa) and other sensors have a full range of 0-20,000 psi (140 MPa). For a list of our standard sensors and correlating pressure ranges, please see [Sensor Selection](#).

### What is the temperature range for sensor use?

Standard Tekscan sensors are specified to operate in a temperature range from 15 °F to 140 °F (-9 °C to 60 °C). If the sensor is used at a temperature different than the calibration temperature, there will be a temperature effect.

The operating temperature range of the Handle is 32 °F to 122 °F (0 °C to 50 °C). Thus, if the application involves extremes of temperature, the Handle should be insulated or otherwise protected from the extremes of temperature.

Many sensors can be produced with high temperature ink and substrate for use over a temperature range from 15 °F to 400 °F (-9 °C to 204 °C). The appropriate sensor for prospective high temperature applications is individually evaluated, and quoted.

### What sizes are sensors available in?

We have sensors in many shapes and sizes. Please refer to our [Industrial Sensor Catalog](#) to see diagrams of our standard sensors. Contact Tekscan for the sensor that would best fit your application. Custom sensors are also available.

### What is the maximum spatial resolution?

An X-Y dimensional spacing of 0.025" (0.62mm), other sensors have larger sensing elements, for example 0.67" (17mm). This results in a sensing cell density as high as 1,600 per in<sup>2</sup> (248 per cm<sup>2</sup>).

### What are the sensors sampling rates?

Our sensors are scanned at up to 1,000,000 sensing elements per second. The scan rate for a sensor depends on the number of sensing elements in the sensor and the type of electronic interface you have. Our USB interface allows sampling of up to 100 Hz. Our VersaTek interface allows for faster scans at 250 Hz and our high speed interface scans at up to 20,000 Hz.

### How many tests/runs do sensors last for?

The life or durability of our sensors depends greatly on the pressures they are subjected to, as well as the test environment itself. Sensors used to measure lower pressure interfaces and between softer surfaces will last longer than those exposed to higher pressure, more aggressive environments. Therefore, our sensors may last for only a few tests in some environments to thousands of tests in others.

**What are the sensors made of?**

The sensors are made of either a polyester or kapton sheet substrate with semi-conductive ink in a matrix format.

**How are the sensors constructed?**

Array sensors consist of a matrix of rows and columns of a semi-conductive material that changes electrical resistance when a force is applied. These rows and columns intersect to form sensing elements (sensels). By electronically scanning and measuring the change in resistance of each sensel, the timing, force, and location of contacts on the sensor surface can be determined.

**Can I customize a sensor's size and/or pressure range?**

Tekscan can custom design and manufacture SINGLE POINT or GRID (ARRAY) sensors in virtually any shape, size and force sensitivity you require. We have created sensing areas as large as 100 Ft<sup>2</sup> (9.3 m<sup>2</sup>) and with sensing cell densities as high as 1,600 per in<sup>2</sup> (248 per cm<sup>2</sup>). These custom sensors can be manufactured to interface to your circuits using numerous connection methods.

**Can your sensors be cut or trimmed to a smaller size or shape?**

Several sensors available are trimmable. Please refer to our [Industrial Sensor Catalog](#).

**Will my system work with all Tekscan sensors?**

When you purchase a system, your software allows you to read only the sensors that come standard with that system. You can purchase additional sensor "maps" (drivers) for your software that will allow you to use the system with additional types of sensors. This can be done at the time of the initial purchase, or later on if your application needs change.

## CALIBRATION AND EQUILIBRATION

### **What is calibration?**

Calibration is the method by which the digital output of the system is converted to an actual engineering unit. Calibration enables you to compare the output of the same sensor in various environments and allows you to compare calibrated outputs of various sensors.

### **Do sensors come calibrated?**

Sensors should be calibrated by the user with the material (or a material similar) to the one being used in the application.

### **Is calibration possible for dynamic loads?**

Yes.

### **What is equilibration?**

Equilibration is a method of normalizing the sensor and system so that the output of every sensing element is the same when a uniform pressure is applied. The software then determines a unique scale factor for that sensing element to compensate for the slight variation.

### **Do sensors come equilibrated?**

No.

### **Do you sell equilibrators?**

Yes, Tekscan offers a line of equilibration fixtures.

## SUPPORT & TRAINING

### **What is the warranty on a system?**

There is a one-year hardware warranty.

### **What type of training comes with a purchase of a system?**

Our goal is to make sure you receive all the training you need to in order to get your system installed and running as quickly as possible. Before you even purchase a system, Tekscan's Sales Engineers will work with you to decide on the appropriate system and sensors that will suit your application needs. After purchase you will receive either a day of on-site training or an internet-based training on the system you purchase. Each system also comes with an operational manual.

### **What type of technical support comes with the purchase of a system?**

You receive 90 days of free technical phone support with the purchase of any system. Beyond that, we offer yearly support plans on your system. Your Sales Engineer can provide additional information on your support options.

### **Where can I find software drivers?**

Software drivers are also published as needed and are easily downloadable from our [Support Page](#).

## HOW TO FIND US?

Experience Tekscan's eye-opening technology for yourself by taking part in a Web demonstration. Your Sales Engineer will provide you with an interactive demo of Tekscan's software; all you need is a telephone and an Internet connection – we take care of the rest. To make arrangements or for more information:

Call us at (800) 248-3669  
(International 001-617-464-4500)

Email us at [marketing@tekscan.com](mailto:marketing@tekscan.com)

Mail us at  
307 West First Street  
South Boston, MA 02127-1309

Visit us at a [Trade Show](#) near you

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