

## VS-1000B Series Inline Brix Sensors for the Beverage Industry



*Inline Networked Smart Infrared Sensors for Real-Time Process Monitoring:  
Continuous Accurate Brix measurement of Regular and Diet Beverages*



VitalSensors Technologies LLC is an applications specific spectroscopy company that designs, manufactures and markets leadership **Inline Networked Smart Infrared Sensors** for real-time process control. VitalSensors' products are designed for use by the Beverage and Food industries worldwide.

VitalSensors' VS Series of sensors are the next generation of process sensors. They combine smart spectrometer technology with state of the art networking and software in a compact form factor that fits in the palm of the user's hand. The VS Series sensors have been designed to be implemented inline in a process stream for **direct real-time measurement** and thus can be used to make analyses in situ. Real-time **measurements of carbonation levels, Brix, carbohydrates, water in solvents, fats, and proteins** are among the many applications for the VS Series of sensors.

VS Series sensors are solid state and provide reliable and instantaneous data when integrated into a company's process and quality control network applications. The breakthrough economics and functionality of the VS Series address the limitations of older technology instruments that measure processes through indirect methods. It is a more accurate, reliable, true direct measurement instrument that operates 24x7 at lower acquisition and operating costs

### **BEVERAGE BRUX APPLICATIONS:**

- Inline Blending of Juices
- Blending of Soft Drinks and Diet Drinks
- Measuring Brix in Wines
- Juice Concentration Process
- Wastewater Brix Measurement

## DIRECT INFRARED MEASUREMENT 24x7

The VS-1000B Series Brix Inline Sensors directly measure in real-time the Brix or mBrix content of beverages after the mixer in pipes, tanks, or fillers. The Sensors can be implemented in flow or no flow environments and are not affected by pressure spikes or extreme working conditions. The Sensor also measures process temperature very accurately.

## SERVICE and MAINTENANCE SAVINGS - NEW LEVELS OF RELIABILITY

The VS-1000B Series Brix Inline Sensors are maintenance free 24x7 solid state devices saving users thousands of dollars in maintenance costs as well as supporting plant production optimization.

## INSTALLATION SAVINGS

The Sensors are physically installed in under thirty minutes and are shipped with a factory standard calibration. No special installation requirements are required except for the proper pipe or tank fittings. Total weight of the system is 9 kg or 20lbs.

## NETWORKING FLEXIBILITY

A Sensor Management Station contained in a small NEMA 4 enclosure is available. When connected to the VS-1000B Sensors it provides broad communications flexibility for plant floor networks.

## FEATURES of VS-1000B SENSOR:

- Network capable; two way communication with check sum
- Clean and sterilize in place
- Varivent fittings - (4 inch + Tri-Clamp adapters available upon request)
- Maintenance free device
- Sensor weighs less than three pounds
- Shock resistance: 100G 1/2 sine wave or 6 foot drop on concrete floor
- Solid state - no moving parts



VS-1000B  
inline  
installation in  
Beverage Plant

24x7  
Operation  
Maintenance  
Free

## SENSOR TECHNOLOGY

The VS-1000B Series Brix Sensor is a compact solid state "smart" spectrometer comprised of infrared detectors with optical filters that use reference wavelengths and an active wavelength to monitor the molecular absorption of high fructose corn syrup and sucrose every 100 ms.

The VS-1000B Series Brix Sensor uses an ATR (attenuated total reflection) crystal. Using an ATR crystal permits a cumulative increase in absorption resulting in an improvement in signal to noise ratio, which is additive by number of reflections and improves accuracy and resolution. ATR is an ideal sampling technique for inline monitoring because there is no path through air and very rugged optical elements including diamond and sapphire can be used for the sample interface.

## VS-300 SENSOR MANAGEMENT SHOWING (Diet Scale)



VS-1000B Series Brix Sensors are complemented by the VS-300 Sensor Management Console software. The Console allows for the on-line management and instantaneous data representation of the sensor output. It has a digital display of temperature and concentration in volumes, parts per million, milligrams per 100 milliliters or Brix %. The data is graphed over time and has both control and specification limits.

The Console can act as a standalone application, send data to the Sensor Monitor Client PC application or feed data transparently to plant floor PLCs. Data log files are optional allowing the user to view data in other programs such as Excel and MathCad. The VS-300 software automatically uses the temperature correction coefficient as well as the sensor calibration coefficients stored in the sensor EEprom.

The VS-300 Software has both offset and gain correction available so that the sensor can provide data relative to a customer's historical methods and process analysis database.



VS-300 Sensor Management Station

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## SPECIFICATIONS FOR BRIX

Measurement Type	Direct infrared
Measuring Range <ul style="list-style-type: none"> <li>• Brix</li> <li>• Diet Scale</li> <li>• Brix</li> </ul>	0 – 20 Brix (Regular Scale) 0 – 999 Mg/l or ppm 0 – 100 Brix (customizable)
Accuracy In Brix <ul style="list-style-type: none"> <li>• Brix</li> <li>• mBrix</li> </ul>	± .01 (Regular Scale) ± .1 (Diet Scale)
Resolution <ul style="list-style-type: none"> <li>• Brix</li> <li>• mBrix</li> </ul>	.01 1
Repeatability Test <ul style="list-style-type: none"> <li>• Brix</li> <li>• mBrix</li> </ul>	.008 – 8 hour test 8 – 8 hour test
Operating Temperature Extended Temperature	-5 to +85°C 28.4° to 185°F to 120°C - 248°F
Storage Temperature	-40° to 70°C, -40° to 156°F
Line Pressure	max. 10 bar 150 psi
Measuring Interval Data Output Interval	100 ms 500 ms to 30 secs. (user defined)
Operation <ul style="list-style-type: none"> <li>• CIP</li> <li>• SIP</li> </ul>	Continuous 24x7 85°C or 185°F Extended to 120°C - 248°F
Inputs/Outputs <ul style="list-style-type: none"> <li>• Ethernet</li> <li>• 4-20mA</li> <li>• EtherNet/IP</li> <li>• Modbus</li> <li>• Profibus PA</li> </ul>	Standard Standard with converter Option Please call Option
Dimensions (WxHxD) Sensor Sensor Mgt. Station	82.6x82.6x82.6mm 222.3x290.8x37.922mm
Weight	9.07 kg (20 lbs) total system
Shock Resistance	100G ½ sine wave or 6 foot drop on concrete
Degree of Protection	IP65 NEMA4X
Process Connection Process Pipes Tanks Fillers	VARIVENT™ (DN65) Adapters available for various size pipe and tank fittings
Flow Rate	Not required
Materials in contact with the beverage	316 stainless steel, Sapphire crystal, virgin PEEK
Power Supply <ul style="list-style-type: none"> <li>• VS-1000 Sensor</li> <li>• VS SMS</li> </ul>	5VDC @ 2 amps Autosensing 120V AC @ 1 amp

### Part Numbers:

<b>VS-1000B</b>	Inline Brix Sensor System One year warranty
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## ***VS-1000B Brix Sensor Installation***

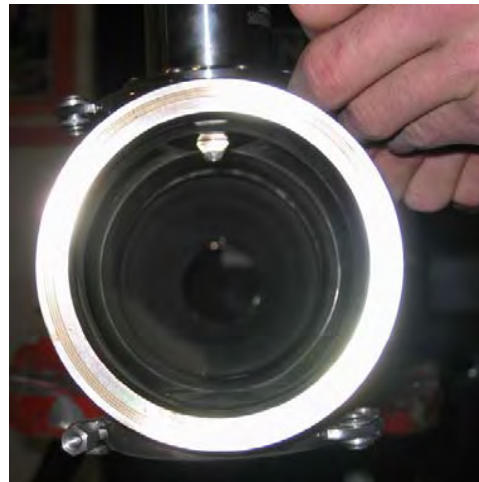
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***VS-1000B Sensor mechanical installation is straightforward....***

***Function: Infrared detector for dissolved Brix, sends data to SMS, high speed sampling with .01 Brix resolution 1 mBrix resolution***



Sensor and Varivent fitting prior to installation



Sensor installed in Varivent fitting with Sapphire crystal showing



Sensor installed in finished pipe