

MicroCoriolis Technology

The heart of the WineSense™ is an innovative liquid density measurement technology using a patented* ISSYS microCoriolis sensor. The traditional components of a vibrating steel density meter have been miniaturized using silicon micromachining technology. The result is a small sensor that can do big things. An integrated temperature sensor is closely coupled to the density sensor. The combination of density measurement, temperature measurement, sophisticated electronics and software result in a powerful system that can convert these measurements into data useful in wine production. These capabilities are incorporated into a package that is simple in operation, but robust in design. Finally, the following liquid properties, useful in wine production, can be measured using the same instrument.

Brix Measurement

The density of grape must is an indication of its sugar content. Historically the specific gravity of sucrose sugar solutions in water was measured very accurately and tables of SG versus sucrose content in %w/w were published for use by the beverage industry. WineSense accurately measures must density and temperature. Integral software in WineSense converts these measurements into an accurate measurement of Brix.



Alcohol Measurement



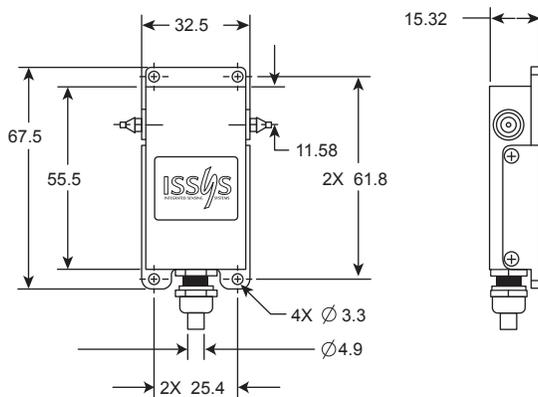
Liquid density measurement is recognized as an official method for determining the concentration of ethyl alcohol in alcoholic beverages. WineSense is the perfect measurement solution for monitoring the conversion of sugar into ethanol during the fermentation process. A sample of liquid is collected and presented to the instrument. Density and temperature are measured and integral software based on government-recognized density/temperature/alcohol data converts these measurements into the determination of alcohol content.

Viscosity Measurement

For certain wine varieties, the viscosity of the wine is important in how the wine is perceived by the customer. An instrument to affordably measure wine viscosity, has not been available to the wine industry until the development of the WineSense. WineSense measures viscosity as an artifact of density measurement using the microCoriolis sensor. Wine viscosity is affected by various components in the wine such as residual sugar and glycerol. Viscosity measurement provides vintners another tool to access wine quality



MicroCoriolis Sensor Dimensions



WineSense Specifications

Available Measurements	: Density, Specific Gravity, Brix, Alcohol Content Temperature, and Viscosity
Power Requirements	: 24vdc Power Supply
Analog Output	: Voltage or Current
Digital Output	: RS-232 to External Computer
Density Measurement Range	: 0.6-1.3 grams/cc
Density Accuracy	: +/- 0.001 gram/cc
Temp Measurement Range	: 5-70 C
Temp Accuracy	: +/- 0.3 C
Viscosity Measurement Range	: 0-50 Cp
Brix Measurement	: 0-15 degrees
Alcohol Measurement	: 0-15 wt%
Measurement Time	: <5 seconds
Wetted Materials	: Stainless steel, silicon, glass, epoxy
WineSense™ is a trademark of Integrated Sensing Systems, Inc.	

* US Patents 6,477,901, 6,499,354, 6,637,257, 6,647,778, 6,923,625, 6,932,114, 6,935,010, 7,059,176, 7,228,735, 7,263,882, 7,351,603, 7,381,628, 7,437,912, 7,568,399, 7,581,429, 7,628,082, 7,789,949, 7,823,445, 7,921,737B2, 8,016,798, 8,021,961 and Japanese Patent 4,568,763



391 Airport Industrial Drive, Ypsilanti, Michigan 48198

http://www.mems-issys.com Phone: 734-547-9896 Fax: 734-547-9964 Email: density@mems-issys.com