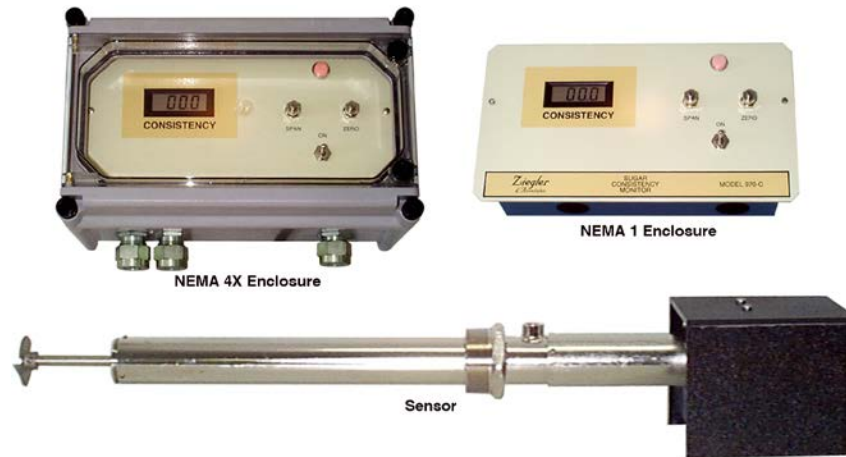


# SUGAR CONSISTENCY MONITOR

Model 970-C



## PRODUCT DESCRIPTION

This consistency monitor is designed primarily to reliably measure massecuite consistency in sugar vacuum pans. The instrument provides a continuous indication of this important variable in pan operation over all ranges encountered in high- or low-grade sugar boiling.

This monitor is a convenient guide for experienced operators and an invaluable tool for training new sugar boilers. The zero and span adjustments expand readability in critical viscosity or consistency ranges. The monitor has a standard electrical output signal of 4 to 20mA, and other outputs are available.

In addition to pan consistency measurement, this instrument's narrow viscosity range makes it useful in measuring concentration in sugar melters, evaporator syrups and molasses dilution tanks, and even slurries such as milk of lime where density is a troublesome measurement and can introduce serious time lags into control loops. In industries other than sugar where consistency is an important variable, it monitors the concentration of evaporated whey, distillery slops, fruit and vegetables or tomato products.

Since optimum consistency varies by pan, operators can experiment to find the ideal level for a particular pan. Using the 970-C monitor to maintain this level, boilers can avoid excessively "tight" massecuites and therefore avoid poor pan circulation. Likewise, operators can pinpoint an optimum dropping consistency that produces high crystal yield without unduly long discharging time.

## FEATURES

- Simple installation
- Wide dynamic range
- Linear isolated output
- High accuracy and reliability
- Field serviceable
- Stainless steel sensor
- Designed for durability
- Low maintenance
- One-year limited warranty

## PRINCIPLE OF OPERATION

The measuring element consists of a stainless steel probe terminating in a small propeller-type rotor driven by a DC motor. This sensor is installed below the pan heating surface. Increasing viscosity of pan contents raises the torque on the rotating element and lowers its speed, causing an increase in motor armature current, which is measured by the monitor.

The 0 to 100 scale of the monitor can be set to cover one or several decades of viscosity by means of the span and zero adjustments on the cover. For sugar pans, the zero is normally set with the probe running in syrup of the lowest concentration of interest, say 60 Brix (6 to 8 centipoise), and the span set to read 100 with the motor stalled (infinite viscosity). When boiling relatively high purity strikes, the reading will be around 35% with the massecuite well "pulled together" to a 15 or 20% crystal yield and rise to 85 or 90% during final concentration to dropping consistency. Mid-scale will be about 450 cp.

## SPECIFICATIONS

### SENSOR

Type	Insertion probe
Rotor Size	1.75"
Wetted Parts	316 stainless steel, high temperature plastic
Process Temp.	32°F to 250°F (0°C to 125°C)
Pressure	0 to 30 psia
Water Supply	Less than 0.5 gallons/hour at 10 psi above process
Mounting	2" NPT male
Wiring	#22 AWG or larger 2-conductor
Dimensions	
Probe Diameter	1.75"
Probe Length	24"
Junction Box	6" x 6" x 6"

### TRANSMITTER

Display	3-1/2 digit LCD (0 to 199.9 scale)
Range	2 to 200,000 cP
Input	Model 970-C sensor
Output	4 to 20 mA into 600 ohms max., other outputs available
Resolution	0.05% full scale
Repeatability	0.5% full scale
Ambient Temperature	32°F to 120°F (0°C to 50°C)
Enclosure	NEMA 1 or NEMA 4X
Dimensions	
NEMA 1	11" wide x 6" high x 4" deep
NEMA 4X	11.875" wide x 7.25" high x 6.75" deep
Mounting	
NEMA 1	Panel or wall mount
NEMA 4X	Wall or pipe mount
Power	115 or 230 VAC @ 50/60 Hz, 25 Watts
Shipping Weight	20 to 25 lbs. depending on options

## ZIEGLER & ASSOCIATES

11180 Ranchette Dr.

Jackson CA 95642

USA

Phone : 209-223-1090

Fax : 209-223-1090

Email: [info@zieglerassociates.com](mailto:info@zieglerassociates.com)

Web: [www.zieglerassociates.com](http://www.zieglerassociates.com)