YUTECH Brix Analyzer

Serving the Sugar Industry since 1978

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YUTECH Brix Analyzer
YUTECH Auto Cleaning Self Retractable Brix Sensor:

Brix Analyzer with Auto Purity Compensation
Product Code: ASD-BA-1005-XX-XX

Auto Retractable Self Cleaning Brix Sensor
Product Code: ASD-BS-1005-2E-SC-AR

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YUTECH Brix Sensor
Self Cleaning Auto Retractable Brix Sensor in Operation

Auto Retracting Self Cleaning Brix Sensor installed on Continuous Vacuum Pan

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Auto Retractable Self Cleaning Brix Sensor:
Product Code: ASD-BS-1005-2E-SC-AR

- Sensor operates on High Frequency Signal generated by the Analyzer cum Transmitter
- 2 Electrode operation where one acts a transmitter and other as detector as well as Washer.
- PT 100 RTD provided for Massecuite Temperature Sensing
- Self Cleaning Auto Retraction by Pneumatic Cylinder
- Sensor sheathed in Teflon Bar with Whiton Oil Seals hence no leakage when retracted and the Oil Seals work as Scraping Cleaners as well
- Sensor Material: SS 304
- Sheath and Oil Seals: Teflon and Whiton respectively
Salient Features of YUTECH Brix Analyzer cum Transmitter:

- Brix Sensor Electrodes Receive High Frequency Signal from the Analyzer; Receiving Electrode Detects Signal Deviation with respect to Solution Brix
- This Signal Deviation is then Processed to get Brix Reading
- YUTECH Brix Analyzer is equipped with Intelligent Auto Purity Compensation Algorithm to derive the Brix accurately in Massecuites of varying Purity
- Very Easy Calibration
- In-Built Automatic Temperature Compensation
- In-Built Self Cleaning and Washing of Sensor with pre adjustable timing cycle
- 4-20 mA Output, Separate Modbus and Ethernet Communications

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Brix Sensor and Analyzer:

Brix Equation:

This equation is used to derive the Final Brix Reading by the Brix Algorithm after Analyzing the Incoming Electric Signals from the Sensor.

\[ Brix = (g \int_{0}^{t} z \, dt + c) + qT \]

Where:

- \( g = \) Process Gain;
- \( z = \) Average Scaled Value \(((Zr + Zc)/n)\);
- \( c = \) Electric Constant; \( qT = \) Temperature Coefficient
- \( t = \) Sampling Time (Typically 1 - 10 Seconds after which its reset to run another cycle to prevent Integral Saturation)
- \( n = \) Number of Readings

\( Z \) is the Impedance offered by the Massecuite (which is sensed as the Resistive and Capacitive Component of the Opposition faced by the Source Current).
Brix Analyzer Specifications:

Auto Retractable Self Cleaning Brix Sensor Assembly:

- SS 316 Sensor Electrode
- Fitted with Pneumatic Cylinder For Auto-Retraction
- Cleaning Water Spray Nozzle cum Electrode fitted with Hand Valve and Solenoid Type On-Off Valve
- Sensor Mounting Sleeve and Counter Flange
- Utility Requirement for Sensor
  - Hot Water (½” Line Size) for Sensor Cleaning
  - 2 Kg/cm² Clean Dust, Oil and Moisture Free Air

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Brix Analyzer Specifications:

Brix Analyzer:

- Power Supply: 230 VAC 50 – 60Hz / 24 VDC
- Analyzer Enclosure: Field Mounted Dust and Moisture Proof
- Input:
  - Brix Sensor Signal
  - RTD PT 100 Signal
  - Pan Body Level (Optional additional Input)
- Calibration: From Keyboard / Remote PC / IoT
- Display: 4 Digit LED Dual Display
- Sensor Cleaning Output: In-Built Potential Free Relay
- Sensor Cleaning Timing Cycle: Adjustable from Keyboard, default 15 Minutes
- Signal Output:
  - 4 - 20 mA Temperature Compensated Brix
  - 4-20mA Temperature
  - Communication: Modbus RTU, Ethernet
- Calibration Range: Selectable as per Model between 0 to 110 Brix

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Brix Analyzer Specifications:
Product Code for different applications:

For Continuous Pans:

B Type:
ASD-BA-1005-CVP-B
Range: 50 – 110 Brix
Accuracy: Within +/- 1 Brix

C Type:
ASD-BA-1005-CVP-C
Range: 50 – 110 Brix
Accuracy: Within +/- 1 Brix

For Batch Pan:

A Type:
ASD-BA-1005-BVP-A
Range: 50 – 100 Brix
Accuracy: Within +/- 2 Brix

B Type:
ASD-BA-1005-BVP-B
Range: 50 – 110 Brix
Accuracy: Within +/- 1 Brix

C Type:
ASD-BA-1005-BVP-C
Range: 50 – 110 Brix
Accuracy: Within +/- 1 Brix

For related applications:

Juice Filtrate:
ASD-BA-1005-JF
Range: 10 – 30 Brix
Accuracy: Within +/- 1 Brix

Sugar Melt:
ASD-BA-1005-SM
Range: 50 – 70 Brix
Accuracy: Within +/- 1 Brix

Molasses Conditioners:
ASD-BA-1005-MOL
Range: 50 – 70 Brix
Accuracy: Within +/- 1 Brix

Evaporator:
ASD-BA-1005-EVP
Range: 10 – 60 Brix
Accuracy: Within +/- 1 Brix

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B and C Type:
Accuracy for Brix Sensing of Continuous and Batch Type Pans of B and C Type is better than that of A Type, as the purity-of and variation-in intake materials is not drastically different as in A Type and Our Purity Compensation Algorithm gives corrections for this change limiting our Accuracy to within 1 to 2% Brix.

Brix Analyzers for Batch Type Vacuum Pan:
Brix Analyzers for Batch Type Vacuum Pans come with different Purity Compensation Algorithm and as Batch Pans undergo periodic washings, there is Wash and Pan Drop Compensation Algorithm, with Alarms for Pan Drop.

Brix Analyzers for Continuous Type Vacuum Pan:
Brix Analyzers for Continuous Type Vacuum Pans are designed to work in conditions where the Pan is not cleaned periodically.
Brix Analyzer:
The A Type Woes!

A Type Massecuite:

- Inputs to the A Pan are Syrup, A-Light/Heavy Molasses, Sugar Melt and Water.
- Sugar Melt and Molasses are materials of drastically different purities.
- These Materials are often introduced into the A Pan in the same batch or in separate batches
- Cut-In Practice adds to difference in purities of the materials inside and sensing becomes virtually impossible.
- After a lot of R & D we have developed the Integral Purity Compensation Algorithm which compensates for all these purity variations to come to a reasonably good accuracy of less than 2-3% Brix for A Pan.
- Claims of better accuracy than that stated above for A – Type Massecuite by whatever on-line methods would be Unrealistic.
Brix Analyzer:
Juice Filtrate, Evaporators, Molasses Conditioners & Sugar Melters

Juice Filtrate:
Brix Analyzer is Factory Calibrated for Clarified Juice Filtrate which has low Brix of about 15 – 18 Brix.

Evaporator:
Brix Analyzers are Factory Calibrated for Sugar Syrup at the Evaporator Brix Range. The Unit is suitable for all Evaporators Bodies. Its also suitable for Rising as well as Falling Film Evaporators.

Molasses Conditioner and Sugar Melter:
Both these Equipment are similar in working and build. But Materials inside them are different and of different purities. Hence Brix Analyzers come Factory Calibrated for these applications.
Automation Screen Shots:

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YUTECH Sugar Factory Specific Products:

**Mill Section**
- Infra Red Type Donnelly Chute Level Sensors, Indicators & Transmitters
- Hall’s Effect Type Cane Blanket Level Sensors Indicators & Transmitters
- Hall’s Effect Type Top Roller Lift Sensors Indicators & Transmitters
- Head Mounted RTD Transmitters for Bearing Temperature Sensing
- RPM Transmitters for All Types of Drives
- Overhead Displays for Flow

**Process & Boiler Section**
- Brix Analyzers for Clarified Juice and Evaporators
- Brix Analyzers for A, B and C Pans
- Brix Analyzers for Brix Analyzers for Sugar Melt and Molasses Conditioners
- Conductivity Analyzers for Steam Condensate and Feed Water
- pH Analyzers for Sugar Cane Juice, Liming, Boiler Feed Water, Steam Condensate and Feed Water
- Vacuum Transmitters
- Draft Range Negative & Positive Composite Pressure Transmitters
- Iris Type Control Valve for Continuous Centrifugal Machine
- 3 Way Valve for Steam Condensate Bypass
- RTD Temperature Transmitters
- Thermo-couple Temperature Transmitters
- Pneumatic Linear Position Controllers for Bagasse Gates, Large Valves, Dampers etc
- Electric Actuators for Pan Discharge Valve

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THANK YOU!
For your Time and Presence

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REDUCE CARBON FOOTPRINT
MAKE THE WORLD GREENER

AND YET, MAKE MONEY

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