



Model 326



On-Line Measurement of Dissolved Solids

PROCESS REFRACTOMETER



LIQUID SOLIDS CONTROL, INC.

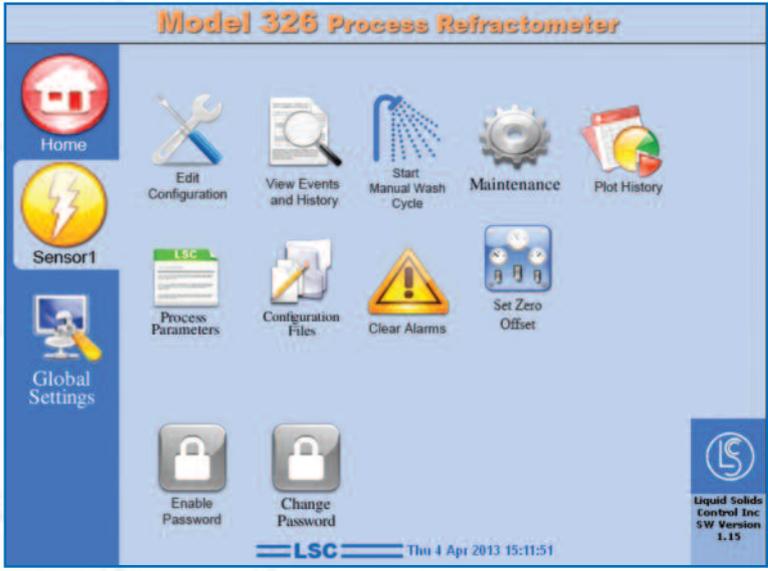




Model 326 Introduction

Liquid Solids Control is stepping out front, once again, with the Model 326 Refractometer. It offers a large 8.4" LED Touch Screen Display, as well as, an Ethernet connection for remote access via a web browser (we recommend Firefox). Providing a direct link to all of the instrument's information, the Model 326 gives the customer the flexibility and convenience of interfacing with the unit from any location within the plant's network (instrument shop/maintenance shop, control room, etc.). Furthermore, when needed, your IT department can set-up a VPN allowing the LSC factory to troubleshoot your refractometer remotely, saving you time and money. For customers that do not have their instruments networked, we have incorporated a USB port which allows the technician to off-load all diagnostic files (history, event alarms and calibration files), so that they can be e-mailed to LSC for troubleshooting assistance.

Engineers / Technicians will simply touch the large, user-friendly icons to change and/or view any of the parameters of the refractometer.



Multiple-level, customer-defined password protection allows limited access to key operational and diagnostic functions.

MODEL 326



Sensors



Liquid Solids Control provides solutions for all installations. A variety of end fittings and flanges are readily available to complement the Model 326 process refractometer.



Sanitary Sensor

The In-Line Sensing Head is designed for sanitary applications. It is encased in a strong, waterproof (sealed) stainless steel housing and is completely maintenance free.



Prism Wash Sensor

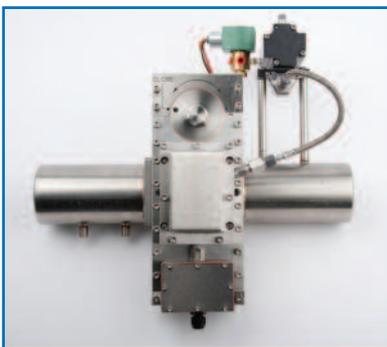
The In-Line Prism Wash Sensing Head comes with an industrial wash nozzle and check valve. This ensures the prism stays clean on tough applications.



Insertion Probe

The probe is designed to be installed on tanks, vacuum pans and large pipe lines. They can be supplied with industrial or sanitary flanges. A prism wash nozzle is available when required.

Flow Cells and End Fittings



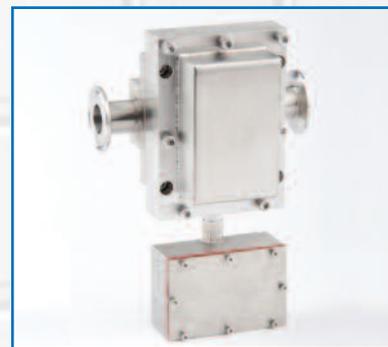
Pipe Section

The Pipe Section is used to mount our in-line sensing head directly into the process line. They are available from 3" to 18" in diameter and can be supplied with or without industrial flanges (ANSI, DIN, JIS).



Valve Body

The Valve Body is typically 2 - 4" in diameter and with industrial flanges for general industry use, or sanitary flanges for use in food processing applications.



Flow-Thru-Block

The Flow-Thru-Block is used in smaller process lines from 1/8" to 3" diameter. Threaded NPT Female connections, Industrial Flanges and Sanitary Tri-Clover Flanges are available.

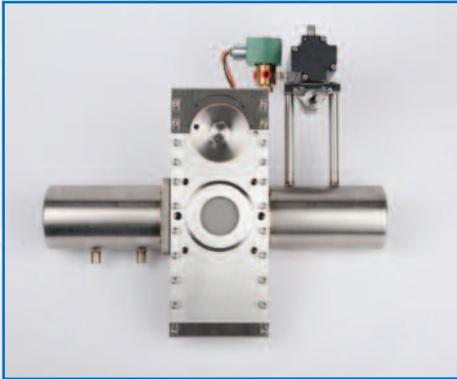
MODEL 326





Pulp & Paper Industry

The Model 326 Process Refractometer can be used to improve the entire efficiency of the "Kraft" liquor process, from the brown-stock washers, through the multiple-effect evaporators, concentrator, recovery boiler and even the dissolving tank.



Key Facts:

- Optimizing consumption of pulp chemicals.
- Improve capacity of Evaporator/Concentrator.
- Increase Recovery Boiler run-time and safety.

Typical Applications:

- Heavy black liquor solids
- Weak black liquor solids
- Red liquor solids
- Stock washer
- Caustic dilution
- Green Liquor

Gate Adaptor

The Liquid Solids Control Gate Adaptor provides the means for simple and quick removal of a sensing head from an active black liquor process pipeline, while ensuring the **ultimate in safety**. This dedicated unit eliminates the need for costly "By-Pass Loops", which tend to be a bother by either leaking or plugging and even unscheduled process line shutdown to allow for maintenance.

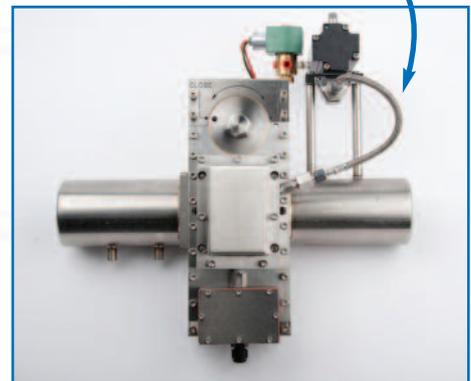
The gate adaptor (duplex 2205) employs a completely captive slide plate, mechanically sure, operated by an eccentric cam. Operation of the Gate Adaptor is accomplished by turning a 1" (25 mm) hex operator just under 1/2 turn. Double Teflon seals are provided against both sides of the slide plate.

The Gate Adaptor provides for an external lock "fully open" or locked "fully closed" additionally providing with positive and physical indication of "fully open" or "fully closed".

Prism Wash

The Model 326 Transmitter can be programmed to wash the sensing window (prism) on a time basis with steam or water. The 326 incorporates Smart Wash Technology, which means it monitors itself and self-adjusts to wash for only "as long as necessary", eliminating most prism wash maintenance problems.

Ball Valve and Stainless Steel Flex Hose



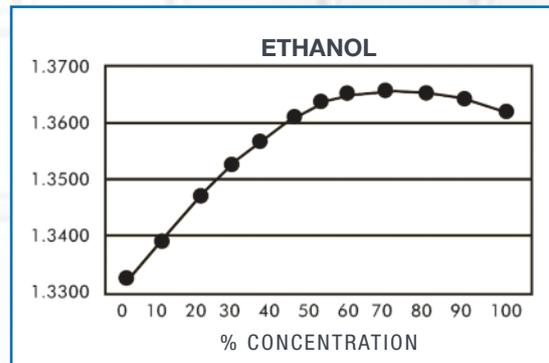
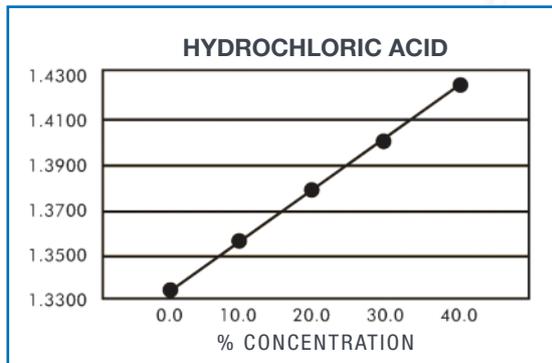
Chemical Industry



The LSC Model 326 offers accurate in-line concentration measurements in the chemical, petrochemical and other various industrial process applications. Continuous monitoring enables uniform product quality and minimizes waste, as well as provides instant feedback on any process changes.

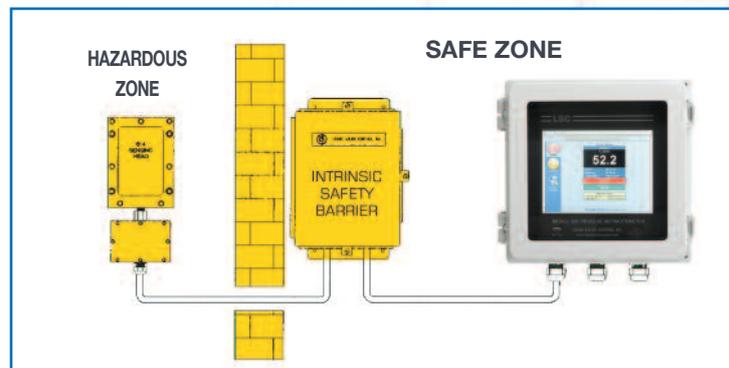
Linear and Non-Linear Applications

There are hundreds of ideal applications for process refractometers within the chemical and petrochemical industries. Some process measurements are linear, and some are not. The Model 326 has the ability to linearize/shape, or reverse, any customer's product characteristics. This allows the process refractometer to track and produce accurate concentration measurements of products with a non-linear refractive index curve. Multiple linearized calibration tables may be stored and selected, as required. If desired, the measurement units, calibration, and correction points can selectively be changed at will, via the user-friendly touchscreen or remote web browser interface. The 4-20 mA output signal is automatically calibrated to the selected measurement range.



Intrinsically Safe Installations

Through the use of intrinsic safety barriers, the LSC Model 326 Sensing Head (either the in-line style or insertion probe) can easily be operated in a hazardous area, being intrinsically safe to the highest level. The sensing head is classified as a "Simple Apparatus". Our system's unique design allows for the sensing head to be located up to 500 feet (150 meters) away from the electronic enclosure. This exclusive feature eliminates various cumbersome problems associated with distance limitations that can occur when using other process instruments. The flexibility of the Model 326 allows the user to locate the electronics enclosure in the most convenient "safe zone".



Food, Dairy & Sugar Industries

The most important aspect of "Quality Control" is to maintain optimum product consistency. Doing so will have many positive benefits, among them: consistent end product, maximum energy efficiency and an increased production capacity.

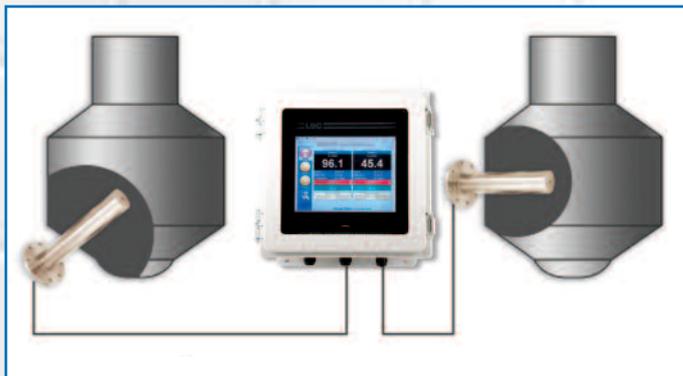


Typical Applications:

- Various tomato products
- Applesauce, fruit syrups
- Various jams & jellies
- Gelatin
- Various candy products
- Various milk products
- Various cheese products
- Yogurt, yogurt with fruit
- Syrups, sucrose, corn, etc.
- Crystallization (Vacuum Pan)
- Molasses

Evaporator Installation

One of the most common applications would be on a multiple-effect evaporator; where the customer installs a refractometer on the input and output of the evaporator. The 4-20 mA output supplied by the LSC Brix meter will be connected to the customer's PLC / Control System and from there an automatic control valve would increase or decrease the flow through the evaporator, ensuring the end product is always within the product's specifications.



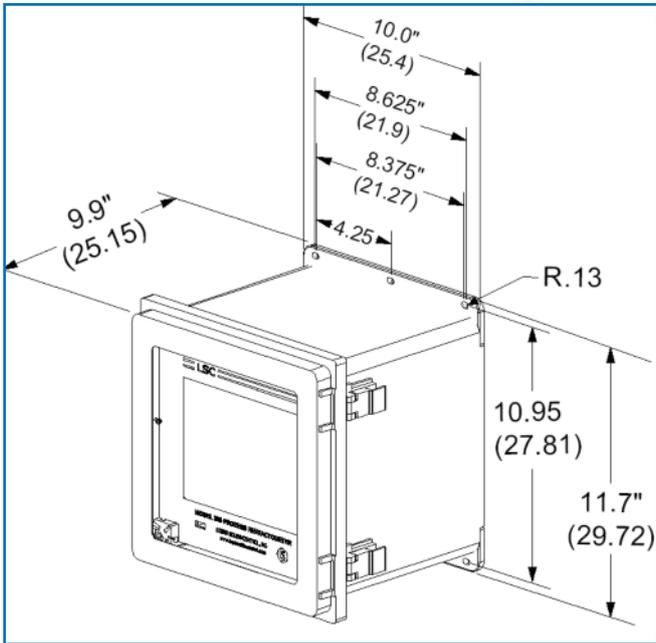
Tank Installation

The Model 326 Insertion Probe is most useful for blending and mixing batch processes. This could be jelly pans, sugar pans or even reaction-type processes.

Dimensions & Weights

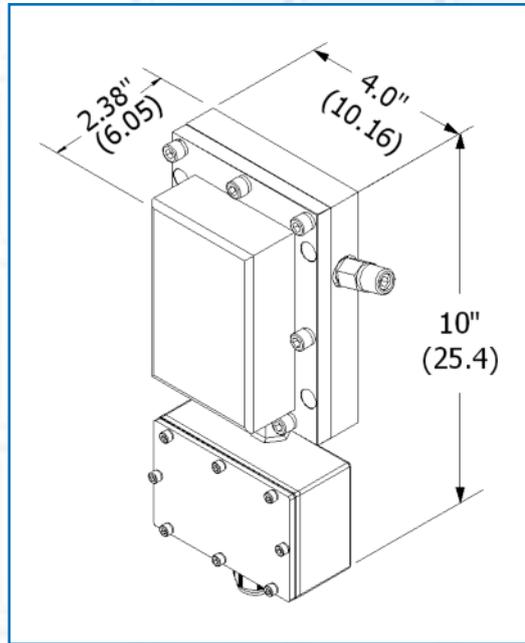


All flow cells that Liquid Solids Control manufacture are tailor-made to the requirements of the customer's installation. This includes the line size, connection type and material. Typical length for single flanged pipe sections is 18" face to face. Dual pipe spools are 28".



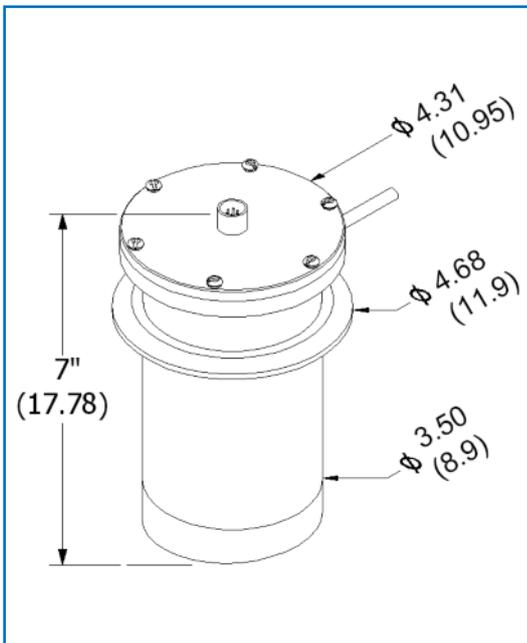
Model 326

10 lbs. / 4.5 kg.



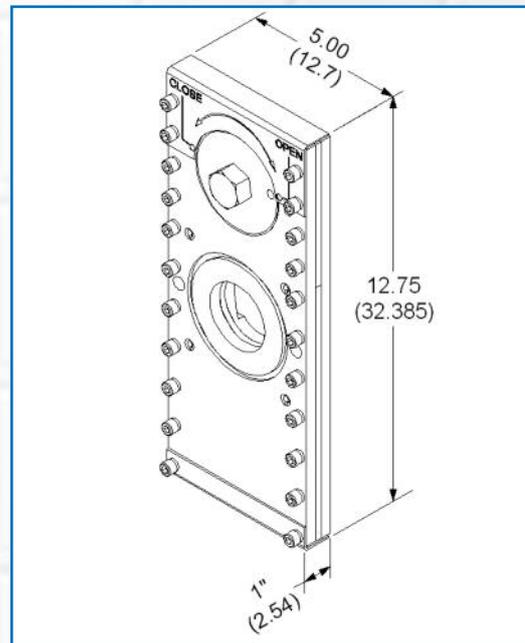
In-Line Sensing Head

7 lbs. / 3.2 kg.



4" Insertion Probe

5 lbs. / 2.3 kg.



Gate Adaptor

15 lbs. / 6.8 kg.

DIMENSIONS & WEIGHTS



LSC Model 326 Technical Specifications

Input Power Required	80 to 240 VAC, 50/60 Hz, < 25 Watts		
Refractive Index Range % Solids or Brix Range	1.3000 - 1.6000 0 - 100		
Span (calibration)	Minimum	Maximum	
Ri	0.0015	0.2000	
Brix	1.0	85.0	
Solids*	1%	100%	
	*May vary with some process materials or applications		
Accuracy	±0.5% of selected span range		
Repeatability	0.1% by weight		
Speed and Response	500 milli-seconds		
Process Temperature Range	-25° to 150° C		
Temperature Compensation	Automatic (Can be calculated for any range)		
Process Line Pressure	Up to 1000 PSIG (68 Bar)		
Interconnecting Cable Length	1,500 feet maximum (455 meters)		
Process Measurement Outputs	Standard and included Isolated 4 - 20mA DC, (15 V compliance) Isolated 0 - 10 VDC		
Optional Local Display	8.4" Touch Screen (800x600 RES)		
Remote Communication	Web Browser via Ethernet		
Process Temperature Output	0 - 10 VDC		
Diagnostic Port	RS 232		
Alarm Set Points	LO / HI or OUT OF SPEC / SYSTEM Relays normally energized or normally not energized LO / HI set points are fully adjustable		
Prism Wash	Automatic "Settable"		
Wetted Material	Duplex 2205, 316SS, Alloy 20, Hastelloy-C, Teflons, Other materials available upon request		
Prism	Industrial Grade Sapphire		
Processor Enclosure	Polypro Nema 4X Enclosure with SS Latches		
Electronic Enclosure Ambient Temp.	Up to 50° C		

NOTES:

(1) 2205 Duplex and 316L Stainless Steel are used as our standard wetted material. Many other materials are available for specialty applications. (2) Due to ongoing Research and Development and product improvement, all specifications are subject to change.

TWO YEAR WARRANTY

The Model 326 Process Refractometer manufactured by Liquid Solids Control, Inc. is warranted against any/all defects in materials, components, and workmanship for a period of two (2) years from the date of shipment. In the unlikely event that this product proves to be defective during the warranty period, return it to Liquid Solids Control, Inc., and it will be, at our discretion, repaired or replaced free of charge for both labor and parts.



**LIQUID SOLIDS
CONTROL, INC.**
P.O. Box 259
Farm Street
Upton, MA 01568
USA
Tel: (508) 529-3377
Fax: (508) 529-6591
www.liquidsolidscontrol.com

**LIQUID SOLIDS
CONTROL**
Div. of Liquid Solids
Control, Inc.
5723 Old West
Saanich Road
Victoria, BC, Canada
V9E 2H2
Tel: (250) 474-2243
Fax: (250) 474-3339

**MONTENGEL
ENGENHARIA**
Av. Getúlio Vargas, 234
Calmon Viana - Poá
São Paulo - Brazil
Code 08560-000
Tel: +55 11 4634-8900