

PROCESS REFRACTOMETER mod. URX1
OPERATIVE SPECIFICATIONS

Application:	Measurement of liquid products in process lines in Food, Chemicals, Textiles, Petrochemical industries, etc. in continuous or batch plants
Measurement type:	Continuous refractometric measurement of Refraction Index and display in "BRIX" or "USER" scale of relative concentration, with automatic temperature compensation
Measurement limits	<p>Prism in Sapphire: 1.3170...1.5318 nD 0...95 Brix</p> <p>Prism in Balf: 13305...1.4907 nD 0...80 Brix 0 Brix con 40 °C max. 80 Brix with 20 °C min</p> <p>Prism in Sapphire HR: 1.3812...1.5687 nD 30...100 Brix</p> <p>Prism in Crown: 1.3170...1.4201 nD 0...50 Brix</p> <p>Prism in N-BK10: 1.3170...1.3725 nD 0...25 Brix</p>
Scale range Span	<p>Standard Accuracy Version</p> <p>Prism in Sapphire: min. 0.0387 nD – max. 0.2148 nD min. 15 Brix – max. 95 Brix</p> <p>Prism in Balf: min. 0.0387 nD – max. 0.1602 nD min. 15 Brix – max. 80 Brix</p> <p>Prism in Sapphire HR : min. 0.0642 nD – max. 0.1875 nD min. 30 Brix – max. 70 Brix</p> <p>Prism in Crown : min. 0.0387 nD – max. 0.1031 nD min. 15 Brix – max. 50 Brix</p> <p>Super Accuracy (SA) Version</p> <p>Prism in N-BK10 : 0.0555 nD - 25 Brix</p>
Accuracy	<p>Regarding the accuracy, the values provided refer to standard sucrose solutions:</p> <p>Standard Accuracy Version: 0.3% of Scale range; maximum accuracy ± 0.00007 nD (± 0.05 Brix)</p> <p>Super Accuracy (SA) Version: 0.1% of Scale range; accuracy ± 0.00003 nD (± 0.02 Brix), valid for maximum product and/or ambient temperature variations of ± 10 °C (± 18 °F).</p>
Measurement scale:	"BRIX" or "USER"; the "BRIX" scale refers to the nD/Bx ICUMSA (1974) conversion tables; the "USER" scale can be configured at the time of the order
Response time:	1.8 seconds
Product temperature during measuring:	<p>-5...+105 °C (23...221 °F).</p> <p>-5...+95 °C (23...203 °F) for Super Accuracy (SA) version.</p> <p>"LP" version for temperature up to 140 °C (284 °F), except for the Super Accuracy (SA) version</p> <p>Automatic compensation of temperature measured by Pt1000 temperature sensor in 316 AISI stainless steel ¼", Class "A" to IEC751.</p>
Maximum temperature during sanitization:	125 °C (257 °F) x 30 min or 145 °C (293 °F) x 30 min for the "LP" version
Response time to variations in temperature:	2'/10 °C (18 °F).
Relative line pressure:	<p>max. 10 bar (145 psi) at 20 °C (68 °F)</p> <p>max. 8 bar (116 psi) at 100 °C (212 °F)</p> <p>Special version for pressure up to 25 bar (362 psi) at 100 °C (212 °F)</p>

GENERAL SPECIFICATIONS

Supplies	Electrical: By means of ATEX certified equipment II (1) G [Ex ia] IIB. DC 14.5V 100mA (CPU), DC 14V 50mA (mA). DC 12V 40mA (RS485) for version without Barriers and without Junction box. DC 24V 1A for version with Barriers and with Junction box without power supply unit. AC 100...240V 1A for version with Barriers and with Junction box provided with power supply unit.
Barriers	Power supply: By means of 2 safety barriers with galvanic separation, connected in parallel and with DC 24V, model D1043Q GM or similar. (mA) Analog: By means of 1 Safety barrier (optional) with three-wire galvanic separation, with DC 24V power supply, model D1010D GM or similar. (RS485) Digital: By means of 1 Safety barrier (optional) with galvanic separation, with DC 24V power supply, model D1043Q GM or similar (Power Supply Section). By means of 1 Safety barrier (optional) with galvanic separation, with DC 24V power supply, model D1061S GM or similar (Signal Management Section). The RS485 signal coming from the instrument (Hazardous Area) will be converted for the user into RS232 (Safe Area).
Interfaces	Analog: 0...20mA or 4...20mA in to 470Ω. Digital: RS485 by the instrument (RS232 converted by Barrier). PROFIBUS by means of 1 Module (optional) for Profibus-DP network with DC 24V power supply.
Notes:	All connections to the instrument to be made by means of round 16 pin metallic connector.

CONSTRUCTION FEATURES

Execution:	One-piece enclosure with 304 AISI stainless steel cover, Thermal isolation flange in PEEK™, 316 AISI stainless steel prism holder with 3" Tri-Clamp® BS 4825 ASME-BPE connection for installation on process line. Tank mounting version (LP) features attachment with 70 mm offset.
Measure section:	Measurement prism in "Synthetic Sapphire" or "Optical Glass" (Crown "N-K5", Barium Light Flint "BaLF4", Borosilicate Crown "N-BK10"). Electronically compensated LED light source. CCD sensor element. "Pt1000" temperature sensor to install in line or internally to unit for tank applications.
Notes:	The optical section of the unit is dehumidified by means of a Molecular Sieve desiccant cartridge
Electronic section:	Microprocessor CPU. Measurement readings, program menus and error messages presented on a 128x64 point backlit graphic LCD display with "LCD Saving" function. Moulded keypad in scratchproof polyester with dome keys. Choice of 5 interface languages (English, German, French, Italian, Spanish) for the display of menus and messages. Temperature readings in °C or °F.
Product contact materials:	Pt1000 and Prism Holder in 316 AISI stainless steel (Hastelloy, Incoalloy on request). O-rings and Seals in Kalrez 6230 + Viton or EPDM (Silicone, Kalrez 6375 or 6380 on request). Measurement prism in "Synthetic Sapphire" or "Optical Glass" (Crown "N-K5", Barium Light Flint "BaLF4", Borosilicate Crown "N-BK10").
Accessories:	Pipe Unions for pipes of various sizes and with unions to be welded (optional: flanged, threaded, Tri-Clamp®, DIN 11851 and other types). Adapter Flange for direct insertion on tanks or large pipes.
Dimensions and weight:	Standard version Ø176 (w) x 192.5 (h) x 132.5 (d), 3.3 kg LP version Ø176 (w) x 192.5 (h) x 214.5 (d), 5.0 kg

TECHNICAL SPECIFICATIONS AND STANDARDS

<p>Ambient characteristics</p>	<p>Temperature limits: Ambient: -10...+45 °C (14...113 °F) with product to T. max Storage: -20...+70 °C (-4...+158 °F) Humidity limits: Ambient: 5%...95% (R.H. non-condensing) Storage: 5%...95% (R.H. non-condensing) Altitude limits: <2000 m a.s.l. Protection Category: IP65 to EN60529</p>
<p>Conformity to Directives:</p>	<p>ATEX CERTIFICATION: CE 0722 - II 1 G - Ex ia IIB T4 Ga (Tamb.=45°C) CESI 03 ATEX 320 X ATEX: 2014/34/EU EMC: 2014/30/EU EC: REGULATIONS 1935/04/EC CE mark shows conformity to listed EU Directives "3A" USDA approval (on request)</p>

	URX1 Standard Accuracy version	URX1 Super Accuracy (SA) version
<p>Scale Range</p>	<p>Prism in Sapphire: 0...95 Brix Prism in Balf: 0...80 Brix (0 Brix con 40 °C max. - 80 Brix con 20 °C min.) Prism in Sapphire HR: 30...100 Brix Prism in Crown: 0...50 Brix</p>	<p>Prism in NB-K10: 0...25 Brix</p>
<p>Scale Range Span</p>	<p>Prism in Sapphire: min. 15 - max. 95 Brix Prism in Balf: min. 15 - max. 80 Brix Prism in Sapphire HR: min. 30 - max. 70 Brix Prism in Crown: min. 15 - max. 50 Brix</p>	<p>Prism in NB-K10: 25 Brix</p>
<p>Accuracy (the values provided refer to standard sucrose solutions)</p>	<p>0.3% of Scale Range / max. ±0.05 Brix</p>	<p>0.1% of the Scale Range max. ±0.02 Brix valid for per maximum product and/or ambient temperature variations of ±10 °C (±18 °F)</p>
<p>Temperature</p>	<p>-5...+105 °C (23...221 °F) "LP" version for temperature up to 140 °C (284 °F)</p>	<p>-5...+95 °C (23...203 °F)</p>
<p>Maximum temperature during sanitization</p>	<p>125 °C (257 °F) x 30 minutes 145 °C (293 °F) x 30 minutes in the "LP" version</p>	<p>145 °C (293 °F) x 30 minutes</p>
<p>Pressure</p>	<p>max. 10 bar (145 psi) at 20 °C (68 °F) max. 8 bar (116 psi) at 100 °C (212 °F)</p>	<p>equal to the Standard Accuracy version</p>