

PROCESS REFRACTOMETER mod. UR24
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 with 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> <p>Prism in Sapphire LR: 1.3170...1.4030 nD 0...40 Brix</p>
Scale range	<p>Standard Accuracy Version</p> <p>Prism in Sapphire: min. 0.0642 nD – max. 0.2148 nD min. 35 Brix – max. 95 Brix</p> <p>Prism in Balf: min. 0.0642nD – max. 0.1602 nD min. 30 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. 0.0642 nD – max. 0.1031 nD min. 30 Brix – max. 50 Brix</p> <p>High Accuracy (HA) Version</p> <p>Prism in Sapphire: min. 0.0387 nD – max. 0.2148 Brix 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 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> <p>Prism in Sapphire LR: 0.0856 nD - 40 Brix</p>
Accuracy	<p>Regarding the Accuracies, the values provided refer to standard sucrose solutions:</p> <p>Standard Accuracy version: 0.5% of Scale Range; maximum accuracy ± 0.0002 nD (± 0.15 Brix)</p> <p>High Accuracy version (HA): 0.3% of Scale Range; maximum accuracy ± 0.00007 nD (± 0.05 Brix)</p> <p>Super Accuracy version (SA): 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 scales:	"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 Pt100 Temperature Sensor in 316 AISI stainless steel, ¼", Class "A" to IEC751; for the "User" scale range compensation refers to the configured values.</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:	max. 10 bar (145 psi) at 20 °C (68 °F) max. 8 bar (116 psi) at 100 °C (212 °F) Special configuration for pressures till 25 bar (362 psi) at 100 °C (212 °F)

GENERAL SPECIFICATIONS

Supplies	<p>Electrical: AC 24V ±10%, 50...60Hz, 0.6A DC 24V ±10%, 0.6A Connection box without Transformer (optional): Supply as UR24 specifications. Connection by means of terminal board. Connection box with Transformer(optional): AC 115/230V ±10% 50...60Hz 25VA Connection by means of terminal board. Pneumatic (only when equipped with Automatic Cleaning system): Dehumidified air 4...8 bar (58...116 psi). Connection by means of "Quick Coupler" for 6x4 mm diameter tube.</p>
Interfaces	<p>Analog: 0...20mA or 4...20mA into 470Ω. Digital: RS422/485 for connection to Repeater, PC or Automation Systems. N°1 PROFIBUS by means of 1 Module (optional) for Profibus-DP network with DC 24V power supply. Inputs: N°1 "Line Stop" input (HOLD). Outputs: N°1 relay output for alarm signal or control of Cleaning System, with contact rating of DC/AC 24V/500mA</p>
Notes:	All the interfaces are optically decoupled from the power supply (VDE0160) and completely configurable from the keypad. All connections to be made by means of round 16 pin metallic connector.

CONSTRUCTION FEATURES

Execution:	One-piece enclosure with 316 AISI stainless steel cover, Thermal isolation flange in PEEK™, 316 AISI stainless steel prism holder with 3" Tri-Clamp® BS 4825 ASME-BPE or Varivent® type "N" 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. Pt100" 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 moisture extractor
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:	Pt100 and Prism Holder in 316 AISI stainless steel (Hastelloy, Incolloy 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:	Mounting fittings for in-line or by-pass installation, made of 316 AISI stainless steel (other materials on request) with Tri-Clamp® connections, weldable, flanged, to DIN standards and pipelines from 1" to 4". Adapter flanges in 316 AISI stainless steel (other materials on request) for mounting on tanks or on

	angle fittings.	
Dimensions and weight:	Standard version	Ø176 (b) x 192.5 (h) x 132.5 (p), 3.3 kg
	LP and SA version	Ø176 (b) x 192.5 (h) x 214.5 (p), 5.0 kg

TECHNICAL SPECIFICATIONS AND STANDARDS

Ambient characteristics	<p>Temperature Limits: Ambient: -10...+45 °C (14...113 °F) Storage: -20...+70 °C (-4...+158 °F)</p> <p>Humidity Limits: Ambient: 5%...95% (R.H. non-condensing) Storage: 5%...95% (R.H. non-condensing)</p> <p>Altitude Limits: <2000 m a.s.l.</p> <p>Protection Category IP67 to EN60529</p>
Conformity to Directives:	<p>EMC: 2014/30/UE EC: REGOLAMENTO 1935/04/CE EC mark shows conformity to listed EU Directives. "3A" USDA approval (on request).</p>

	UR24 Standard Accuracy version	UR24 High Accuracy (HA) version	UR24 Super Accuracy (SA) version
Scale range	<p>Prism in Sapphire : 0...95 Brix Prism in Balf: 0...80 Brix (0 Brix with 40 °C max. 80 Brix with 20 °C min.) Prism in Sapphire HR: 30...100 Brix Prism in Crown: 0...50 Brix</p>	<p>Prism in Sapphire : 0...95 Brix Prism in Balf: 0...80 Brix (0 Brix with 40 °C max. 80 Brix with 20 °C min.) Prism in Crown: 0...50 Brix</p>	<p>Prism in NB-K10: 0...25 Brix Prism in Sapphire LR: 0...40 Brix</p>
Scale range Span	<p>Prism in Sapphire : min. 30 - max. 95 Brix Prism in Balf: min. 30 - max. 80 Brix Prism in Sapphire HR: min. 30 - max. 70 Brix Prism in Crown: min. 30 - max. 50 Brix</p>	<p>Prism in Sapphire: min. 15 - max. 95 Brix Prism in Balf: min. 15 – max. 80 Brix Prism in Crown: min. 15 – max. 50 Brix</p>	<p>Prism in NB-K10: 25 Brix Prism in Sapphire LR: 40 Brix</p>
Accuracy (the values provided refer to standard sucrose solutions)	0.5% of Scale Range / max. ±0.15 Brix	0.3% of Scale Range / max. ±0.05 Brix	0.1% of Scale Range / max. ±0.02 Brix valid for maximum product and/or ambient temperature variations of ±10 °C (±18 °F)
Temperature	-5...+105 °C (23...221 °F) "LP" version for temperature up to 140 °C (284 °F)	equal to the Standard Accuracy version	-5...+95 °C (23...203 °F)
Maximun temperature during sanitization	125 °C (257 °F) x 30 minutes 145 °C (293 °F) x 30 minutes in the "LP" version	equal to the Standard Accuracy version	145 °C (293 °F) x 30 minutes
Pressure	max. 10 bar (145 psi) at 20 °C (68 °F) max. 8 bar (116 psi) at 100 °C (212 °F)	Special configuration for pressures till 25 bar (362 psi) at 100 °C (212 °F)	