## 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

<table>
<thead>
<tr>
<th>Prism in Sapphire</th>
<th>1.3170...1.5318 nD</th>
<th>0...95 Brix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prism in Balf</td>
<td>13305...1.4907 nD</td>
<td>0...80 Brix</td>
</tr>
<tr>
<td></td>
<td>0 Brix con 40 °C max. 80 Brix with 20 °C min.</td>
<td></td>
</tr>
<tr>
<td>Prism in Sapphire HR</td>
<td>1.3812...1.5687 nD</td>
<td>30...100 Brix</td>
</tr>
<tr>
<td>Prism in Crown</td>
<td>1.3170...1.4201 nD</td>
<td>0...50 Brix</td>
</tr>
<tr>
<td>Prism in N-BK10</td>
<td>1.3170...1.3725 nD</td>
<td>0...25 Brix</td>
</tr>
</tbody>
</table>

### Scale range Span

<table>
<thead>
<tr>
<th>Prism in Sapphire</th>
<th>min. 0.0387 nD – max. 0.2148 nD</th>
<th>min. 15 Brix – max. 95 Brix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prism in Balf</td>
<td>min. 0.0387 nD – max. 0.1602 nD</td>
<td>min. 15 Brix – max. 80 Brix</td>
</tr>
<tr>
<td>Prism in Sapphire HR</td>
<td>min. 0.0642 nD – max. 0.1875 nD</td>
<td>min. 30 Brix – max. 70 Brix</td>
</tr>
<tr>
<td>Prism in Crown</td>
<td>min. 0.0387 nD – max. 0.1031 nD</td>
<td>min. 15 Brix – max. 50 Brix</td>
</tr>
<tr>
<td>Super Accuracy (SA) Version</td>
<td>Prism in N-BK10 : 0.0555 nD - 25 Brix</td>
<td></td>
</tr>
</tbody>
</table>

### Accuracy

Regarding the accuracy, the values provided refer to standard sucrose solutions:

- **Standard Accuracy Version:**
  0.3% of Scale range; maximum accuracy ±0.00007 nD (±0.05 Brix)

- **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).

### 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:
-5...+105 °C (23...221 °F).
-5...+95 °C (23...203 °F) for Super Accuracy (SA) version.

### 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 version for pressure up to 25 bar (362 psi) at 100 °C (212 °F)
### 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

**mA Analog:**

- By means of 1 Safety barrier (optional) with three-wire galvanic separation, with DC 24V power supply, model D1010D GM

**RS485 Digital:**

- By means of 1 Safety barrier (optional) with galvanic separation, with DC 24V power supply, model D1061S GM (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).
- PROFINIBUS 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.

### CONTRUCTION 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:

- 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 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:

- 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).

#### 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

<table>
<thead>
<tr>
<th>Ambient characteristics</th>
<th>Temperature limits:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ambient: -10...+45 °C (14...113 °F) with product to T. max</td>
</tr>
<tr>
<td></td>
<td>Storage: -20...+70 °C (-4...+158 °F)</td>
</tr>
<tr>
<td>Humidity limits:</td>
<td>Ambient: 5%...95% (R.H. non-condensing)</td>
</tr>
<tr>
<td></td>
<td>Storage: 5%...95% (R.H. non-condensing)</td>
</tr>
<tr>
<td>Altitude limits:</td>
<td>&lt;2000 m a.s.l.</td>
</tr>
<tr>
<td>Protection Category:</td>
<td>IP65 to EN60529</td>
</tr>
</tbody>
</table>

### Conformity to Directives:
- 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
  - EC mark shows conformity to listed EU Directives
  - "3A" USDA approval (on request)

### Scale Range

| 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 |
| Prism in NB-K10:       | 0...25 Brix |

### Scale Range Span

| 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 |
| Prism in NB-K10:       | 25 Brix |

### Accuracy (the values provided refer to standard sucrose solutions)

<table>
<thead>
<tr>
<th>URX1 Standard Accuracy version</th>
<th>URX1 Super Accuracy (SA) version</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3% of Scale Range / max. ±0.05 Brix</td>
<td>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)</td>
</tr>
</tbody>
</table>

### Temperature

-5...+105 °C (23...221 °F) 
"LP" version for temperature up to 140 °C (284 °F) 
-5...+95 °C (23...203 °F)

### Maximum temperature during sanitization

| 125 °C (257 °F) x 30 minutes |
| 145 °C (293 °F) x 30 minutes in the "LP" 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) 
equal to the Standard Accuracy version