

# ON-LINE REFRACTOMETER WITH INTRINSIC SAFETY

# UR X1

The UR-X1 refractometric unit with intrinsic safety is made up of a multifunctional monobloc which works in conjunction with power supply and transducer barriers for output signals as required by its ATEX certification:

**CE 0722 - II 1 G - Ex ia IIB T4 Ga (Tamb.=45°C)**

**CESI 03 ATEX 320 X**

The refractometer is connected directly to the production line using its auxiliary attachment, and it can determine in real time the refractive index of products in a liquid state.

The data obtained can be displayed and transmitted directly or processed and transformed into concentration level measurements.

The instrument uses the most up to date technology in the field of refractometry such as:

- **hard wearing synthetic sapphire prism;**
- **long-life LED light source;**
- **high resolution CCD optical transducer.**

On the front of the instrument are situated the LCD digital graphic indicator and the control keyboard.

The instrument can be configured on site using the keyboard or remotely using the RS485 connection.

Further more versions with interfaces for ANYBUS COMMUNICATOR (PROFIBUS DP, or others on request) modules are available.

A series of our own attachments;

- food and drink (to be soldered, Tri-clamp®, 3-A, DIN11851, Varivent®)
- industrial (to be soldered, threaded, flanged)

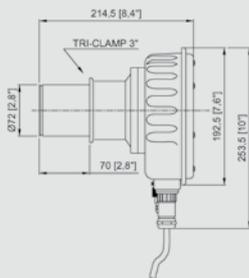
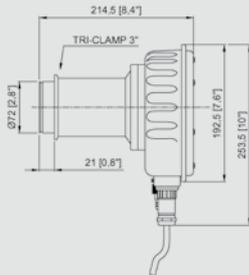
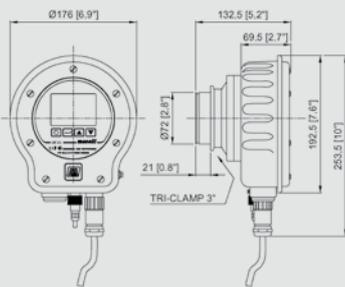
allow the unit to be attached quickly and easily both on the production line and on liquid reservoirs.

The UR-X1 refractometer can be applied on the surface, belongs to category 1 and can be installed in '0 zone', in the presence of atmospheres containing group IIB gas. Its temperature class is T4.



# UR X1

## Overall dimensions



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## GENERAL CHARACTERISTICS

### TECHNICAL CHARACTERISTICS

#### Measurement limits:

1.3170...1.5318 nD (0...95 Brix)

#### Amplitude Scale Range:

Minimum 0.0387 nD (15 Brix)  
Maximum 0.2148 nD (95 Brix)

#### Accuracy:

Accuracy 0.3% of Scale Range  
Max accuracy  $\pm 0.00007$  nD ( $\pm 0.05$  Brix)

#### Measurement Scales:

- Brix Scale (refers to the nD/Brix ICUMSA 1974 Conversion tables)
- USER scale can be configured depending on measurement parameters required

#### Temperature Compensation:

- Automatic between  $-5$  °C... $+105$  °C ( $+23$  °F... $+221$  °F)
- Special Version up to  $140$  °C ( $284$  °F)
- Via external Pt1000 AISI 316 (standard) or internal (special)

#### Interfaces through Barriers:

- Analogue:  
0...20mA or 4...20mA (on  $470\Omega$ )
- Digital:  
RS422/485 and RS232 which can be connected to ANYBUS COMMUNICATOR Module (fed by DC 24V)

#### Power supply via interconnection box:

- DC 24V 1A if version with Barriers but without power supply
- AC 100...240V 1A if version with Barriers and power supply

#### Equipment power supply:

By means of ATEX certified equipment II (1) G [Ex ia] IIB

#### - CPU section power supply

N° 2 Barriers with galvanic separation, fed by DC 24V mod. D1043Q GM or similar

#### - Analogue Interface output power supply\*

N° 1 Barrier with galvanic separation, fed by DC 24V mod. D1010D GM or similar

#### - Digital Interface power supply\*

N° 1 Barrier with galvanic separation, fed by DC 24V mod. D1043Q GM or similar

#### - Digital Interface output power supply\*

N° 1 Barrier with galvanic separation, fed by DC 24V mod. D1061S GM or similar

(\*Optional)

### CONSTRUCTION CHARACTERISTICS

#### Measurement prism:

In synthetic sapphire or optical glass

#### Light source:

High efficiency LED electronically compensated

#### Element of refractometric measurement:

High resolution CCD

#### Element of temperature measurement:

- With Pt1000 inserted on line
- Inside the appliance on request

#### Controls:

Keypad in scratch-proof polyester

#### Display:

Graphic LCD display 128x64 point

#### Language:

Choice of 5 interface languages (English, German, French, Italian, Spanish) for the display of menus and messages

#### Execution:

- ATEX II 1 G - Ex ia IIB T4 Ga (Tamb.= $45$  °C)
- In 304-316 AISI stainless steel and PEEKTM
- Protection IP65 (EN60529)

#### Weight:

- 3.3 kg (7.3 lb) - Standard Version
- 5 kg (11 lb) - LP Version

#### Materials in contact with the process fluid:

- 316 AISI stainless steel
- Synthetic sapphire or optical glass
- Viton
- (others on request)

#### Dehumidification:

The optical section of the unit is dehumidified by means of a Molecular Sieve dessicant cartridge

#### FLUID OPERATING LIMITS WITH UNIT SWITCHED OFF

#### Temperature:

$-20$  °C... $+125$  °C ( $-4$ ... $257$  °F) x 30 min or  $145$  °C ( $293$  °F) x 30 min for the LP version

#### 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)

#### ACCESSORIES

- Attachment for pipelines of various dimensions
- Adapter flanges for mounting on tanks or large pipes

