

# DIGITAL REFRACTOMETER FOR ON LINE ANALYSIS OF CONCENTRATION

# UR 24

The microprocessor-based model **UR24** digital refractometer is a self-contained multifunction analyzer which mounts directly on the process line. It continuously measures the concentration, displays the temperature-compensated concentration value, and transmits this value to both analogue and digital remote receivers.

The UR24 incorporates modern technologies such as:

- **Abrasion resistant sapphire prism**
- **Long life LED light source**
- **High resolution CCD digital optical sensor**

The instrument's membrane faceplate contains a back-lighted liquid crystal display and input keypad.

It is possible to personalize the instrument in the field, either from the keypad or remotely through the RS485 serial port.

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

A set of specially designed adapters, customized for each application, allow easy installation of the unit on a process line or on the side wall of a tank:

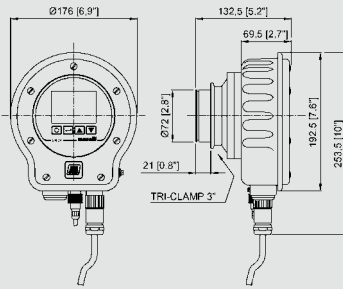
- Food & Beverage (Tri-Clamp®, 3-A, DIN 11851, Varivent®, weld ends)
- Industrial (weld ends, threaded ends, flange ends).



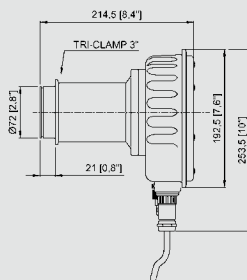
# UR 24

## OVERALL DIMENSIONS

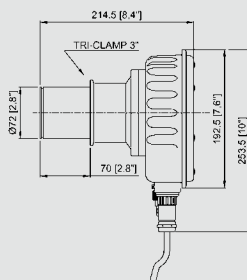
### Standard Probe Version



### LP Long Probe Version, 21 mm



### LP Long Probe Version, 70 mm



MASELLI MISURE s.p.a.

43125 Parma - Italy  
Via Baganza 4/3  
Tel. +39.0521.257411  
Fax +39.0521.250484  
info@masellimisure.com  
www.masellimisure.com

## TECHNICAL FEATURES

### UR-24 Standard Accuracy STD or LP version

Measurement limits:  
sapphire prism  
1.3170...1.5318 nD (0...95 Brix),  
balf4 prism (\*)  
1.3305...1.4907 nD (0...80 Brix)  
HR sapphire prism  
1.3812...1.5687 nD (30...100 Brix),  
crown prism  
1.3170...1.4201 nD (0...50 Brix),  
Maximum accuracy:  
±0.0002 nD (±0.15 Brix)

### UR-24 High Accuracy (HA) STD or LP version

Measurement limits:  
sapphire prism  
1.3170...1.5318 nD (0...95 Brix),  
balf4 prism (\*)  
1.3305...1.4907 nD (0...80 Brix)  
Maximum accuracy:  
±0.00007 nD (±0.05 Brix)  
(\*) balf4 prism with the following range limits:  
0 Brix with 40 °C max./80 Brix with 20 °C min.

### UR-24 Super Accuracy (SA) LP version only

Measurement limits:  
N-BK10 prism  
1.3170...1.3725 nD (0...25 Brix)  
Maximum accuracy:  
±0.00003 nD (±0.02 Brix),  
valid for maximum product and/or ambient  
temperature variations of ±10 °C

### Measurement scales:

- BRIX scale (based on the nD/Bx ICUMSA conversion tables 1974).
- USER scale configurable in accordance with the measurement parameter requested.

### Temperature compensation:

- Automatic between -5 °C...+105 °C.
- -5...+95 °C for Super Accuracy version.
- "LP" version for temperatures up to 140 °C, excluding the Super Accuracy version.
- For the USER scale range compensation refers to the personalized values entered.

### Interfaces:

(optically isolated from the power supply)

- Analog:  
0...20mA o 4...20mA (su 470Ω).
- Digital:  
RS422/485.
- Input contacts:  
1 input for "Line Stopped" (HOLD).
- Output contacts:  
1 relay output with contact of a maximum capacity of 24V/500mA DC/AC.

### Power supplies:

- AC 24V ±10%, 50...60Hz, 0.6A
- DC 24V ±10%, 0.6A
- on request, connection box with transformer:  
AC 115/230V ±10% 50...60Hz 25VA

## MAIN FEATURES

## CONSTRUCTION FEATURES

### Measurement prism:

Synthetic sapphire or optical glass

### Light source:

Electronically compensated, high efficiency LED diode

### Refractometric measurement element:

High resolution CCD

### Temperature measurement element:

- With Pt100 installed on the line
- Inside the appliance on request

### Commands:

Scratch-resistant polyester keypad

### Indications:

128x64 pixel LCD graphic display with backlighting

### Languages:

5 language options (Italian, English, German, Spanish, French) for menu and message display.

### Execution:

- AISI 316 stainless steel and PEEKTM
- Degree of Protection: IP67 (EN60529)
- "3-A" USDA approval (on request)

### Weight:

3.3 kg - Standard version

5.0 kg - LP/SA version

Materials in contact with the fluid:

- AISI 316 stainless steel
- Synthetic sapphire or optical glass
- Kalrez 6230
- Viton or EPDM (others on request)

### Dehumidification:

The optical section of the equipment is dehumidified by means of a desiccant molecular sieve cartridge.

### FLUID LIMIT CONDITIONS

#### Maximum temperature during sanitization:

125 °C x 30 min or 145 °C x 30 min for the "LP" version

#### Pressure:

max. 10 bar (145 psi) at 20 °C  
max. 8 bar (116 psi) at 100 °C  
operation up to 15 bar (217 psi) on request

### ACCESSORIES (OPTIONAL)

- Join for piping of various sizes
- Adapter flange for installation on tank
- Cleaning system
- RC-24 Receiver: indicator, transmitter and alarm generator.  
Panel or wall mounting.  
Permits complete management of the refractometer without having to access the UR24 keypad.  
Particularly useful when the refractometer is located in a zone which is difficult to reach.

