HYGIENIC BY DESIGN

ANDERSON-NEGELE

Refractive Index Meter IRM-11

Application / Specified Usage

· Inline Measurement of dissolved solids in liquid media via refractive index scales such as °Brix, °Plato or nD.

Application Examples

· Sugar concentration measurement for quality monitoring in beverage manufacture
· Measurement of alcohol content in brewing and wine making
· °Brix based blending control for juice manufacture

Hygienic Design / Process Connection

· Conforming to 3-A Sanitary Standard for versions with Tri-Clamp 2"
· All wetted materials are FDA-conform
· Sensor completely made of stainless steel
· Complete overview of process connections: see order code

Features / Advantages

· Open front flush design for easy cleaning and fast reaction to product changes
· CIP-/SIP-cleaning up to 140 °C (284 °F) / maximum 60 minutes
· Protection class IP69K all stainless steel design
· ±0.10 °Brix (±0.12 %) accuracy
· Compact sensor design does not require a wall or panel mounted analyzer
· Simple to use calibration and configuration software
· Easy to see status light shows sensor state
· Analog output 4...20 mA freely adjustable
· Custom scales available for measurements other than °Brix, °Plato, and Refractive Index
· Optics made of high resistant sapphire

Options / Accessories

· Electrical connection with M12 plug
· Pre-assembled molded cordset with M12 plug
· Calibration and configuration software available for download

Measuring Principle of the Refractive Index Meter

An LED light source directs light into the process media. The density of the liquid will directly impact the speed of light changing the index of refraction. A receiver array which senses the index of refraction communicates a temperature compensated value in the scale of the customer's choosing.
The units are communicated in °Brix, °Plato, refractive index, or other units depending on scale selection.
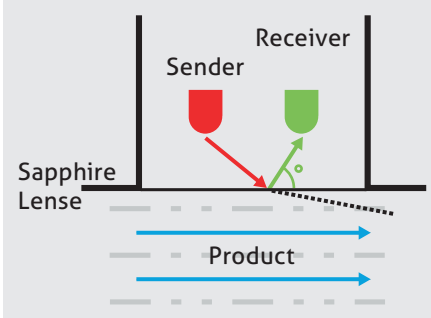
Communication

▦ **4...20 mA**

IRM-11

IRM-11

Measurement Principle

Specification		
Measurement category	Can be factory configured	°Brix, °Plato, Refractive Index, others on request
Measurement range	Factory selected	1.3330...1.5000 Refractive Index (nD) 0...85 °Brix 0...30 °Plato
Process connection		Tri-Clamp 2" Varivent type N, DN40/50
Process pressure		-1...20 bar (-14.5 psi...290 psi)
Materials	Connecting head Sensor Lens Plastic cover/sight glass	Stainless steel AISI 304 Stainless steel AISI 316L Sapphire Polycarbonate
Temperature ranges	Ambient Process CIP / SIP	-10...60 °C (14...140 °F) -20...100 °C (-4...212 °F) temperature compensated range Up to 140 °C (284 °F) max. 60 min
Repeatability	°Brix °Plato nD	±0.1 ±0.1 0.0001
Accuracy	°Brix °Plato nD	±0.1 ±0.1 ±0.0002
Response time		3 s
Communication	Zero adjustment	via USB and PC interface
Electrical connection	Cable gland Cable connection Supply voltage Protection class	M16 x 1.5 M12 plug 5...24 V DC max. 190 mA IP69K
Output	1 analog output	4...20 mA (scaled to measurement range)
Weight		480 g (1 lbs)

Mechanical Connection / Installation

· Installation in or in front of an ascending pipe is recommended. Do not mount the IRM-11 on top or bottom of piping as resulting air space or sediment collection may cause errenous reading. The IRM-11 is designed to be installed in a feed line.

Conditions for a measuring point according to 3-A Sanitary Standard 46-03

· The Sensor IRM-11 with process connection Tri-Clamp 2" is conforming to the 3-A Sanitary Standard.
· Sensors are designed for CIP-/SIP cleaning. Maximum 140 °C (284 °F) / 60 min.
· The mounting position and self-draining properties must be in accordance with the current 3-A Sanitary Standard.

Transport / Storage

· No outdoor storage
· Dry and dust free
· Not exposed to corrosive media
· Protected against solar radiation
· Avoiding mechanical shock and vibration
· Storage temperature -20...+60 °C (-4...+140 °F)
· Relative humidity max. 80 %

Notice on conformity

· Applicable directives:
  Electromagnetic Compatibility Directive 2014/30/EC
· The CE label confirms compliance of this product with the applicable EC directives.
· You have to guarantee the compliance of all guidelines applicable for the entire equipment.

IRM-11 with Tri-Clamp 2"

Ø 65,8   90,4

96,6   82,9

Ø 51
Ø 63,9
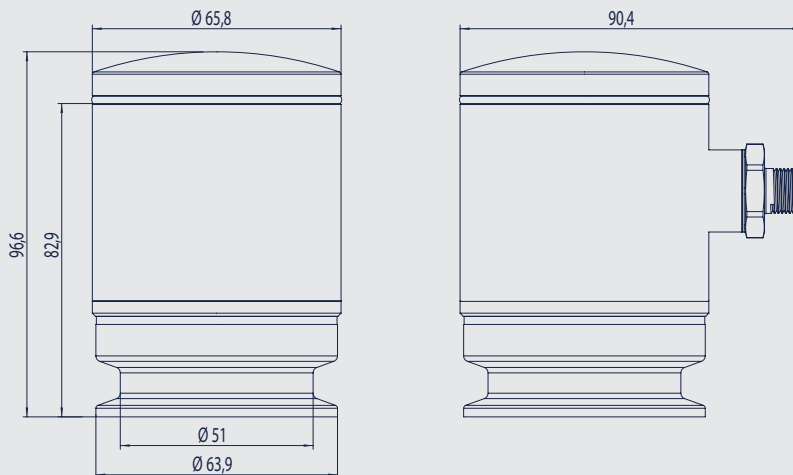
IRM-11 with Varivent type N, DN40/50

65,8   90,4

96,6   82,9

Ø 67,9
Ø 83,9
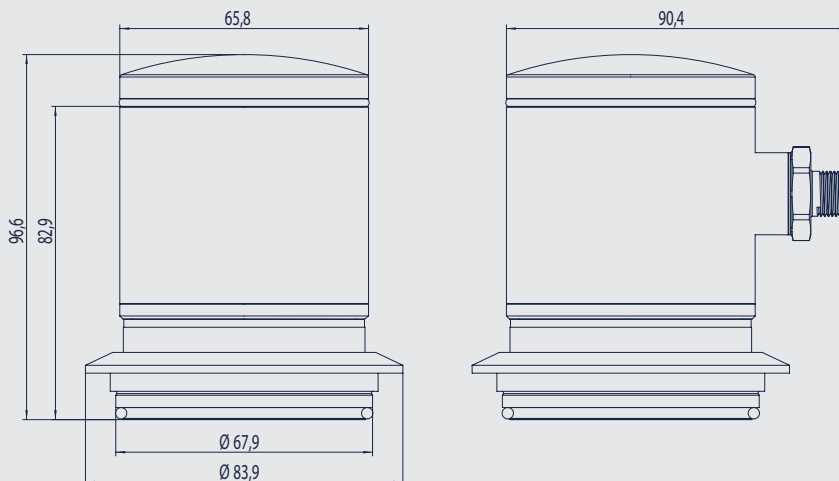
Disposal

· Electrical devices should not be disposed of with household trash. They must be recycled in accordance with national laws and regulations.
· Take the device directly to a specialized recycling company and do not use municipal collection points.

Reshipment

· Sensors shall be clean and must not be contaminated with dangerous media! Note the cleaning information!
· Use suitable transport packaging only to avoid damage of the equipment!

Cleaning / Maintenance

· Don't use sharp items or aggressive detergents for cleaning the optics.
· In case of using pressure washers, don´t point nozzle directly to electrical connections!
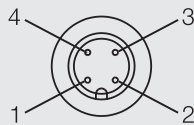
Conventional Usage

· Not suitable for applications in explosive areas.
· Not suitable for applications in security-relevant equipments (SIL).

Electrical Connection

mA OUT - (red wire)
mA OUT + (black wire)
GND (blue wire)
+24 V DC (green wire)
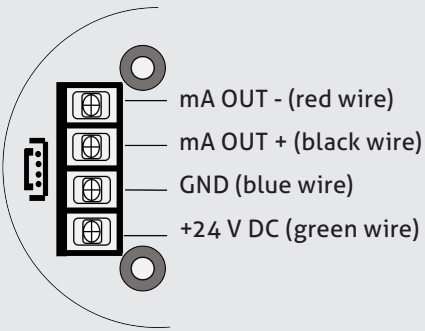
M12 plug (4 pin)

1: Analog output -
2: Analog output +
3: Power supply +24 V DC
4: Power supply -

Commissioning

Following mounting and electrical connections, the IRM-11 is now ready for use. Once powered, confirm that the device displaying the measurement is porperly interpreting the 4...20 mA signal from the IRM-11 and that it is showing a green status light.

Parameterization

The Anderson-Negele software e-Prism (free download on the Anderson-Negele Website) and a USB to mirco USB cable (included) is needed to make changes in measurement scale, time interval, and also to field adjust the calibration.

Micro USB Port
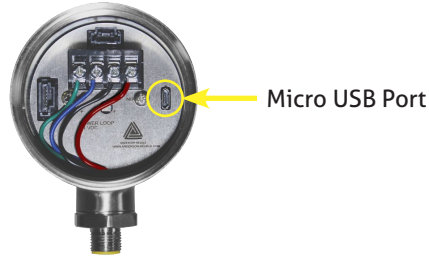
Calibration

Although a full calibration of the IRM-11 requires the device to be returned to the factory it is possible to check and correct the IRM-11s performance against known liquids. For further information please refer to the manual.

Order code

IRM-11   Refractive index meter

Process connection
TC2   Tri-Clamp 2"
V40   Varivent type N, DN40/50

Surface quality of wetted parts
1   Mechanically polished
2   Electropolished

Scale
BR   °Brix
RN   Refractive Index
PL   °Plato
XX   Other (consult factory)

Electrical connection
M   M12 plug, 4 pin
P   Cable gland M16 × 1.5

Cap
1   Opaque plastic
2   Stainless steel

IRM-11 /   TC2 /   1 /   BR /   M /   1