

Specifications

Process refractometer PIOX® R

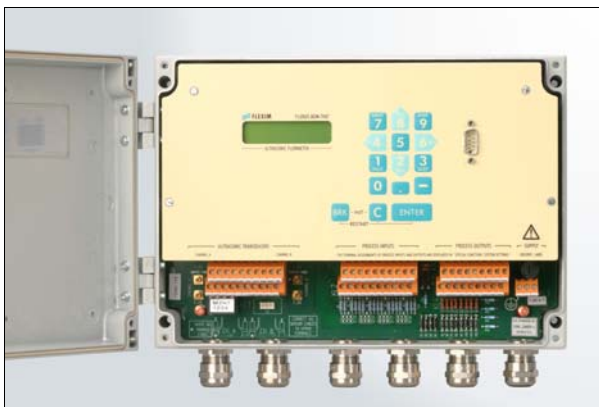


The process refractometer PIOX® R allows for an online measurement of the refractive index, the density or the concentration directly in the product stream or in a bypass. Various sensor enclosures are available for the connection to the existent pipe system.

The refractometer works with transmitted light. The measuring value is thus determined by the whole probe, and not only by a thin layer on the surface. This type of instrument has a higher precision and resolution than the usual critical angle refractometers, and also has the advantage of not being sensitive to deposits forming on the prism, it is thus drift free. The measurement is independent of viscosity, not sensitive to bubbles and requires no minimum flow.

Characteristics

- Drift free measurement without need of a cleaning mechanism
- Precision and resolution higher than for critical angle refractometers
- Combined measurement of refractive index and other parameters (e.g. °Brix) possible with only one device
- Can be used in bypass or in product stream
- Various process connections available (DIN flange, Varivent, dairy connection)
- No minimum flow
- Short reaction time



Transmitter TR374



Sensor enclosure for the foodstuff industry



Sensor enclosure with flanged connection for the chemical industry

Typical Applications

Foodstuff and Beverage Industry

- Metering of alcoholic beverages
- Determination of wort
- Beer analysis (alcohol, wort and original wort) in combination with a density measurement
- Density measurement
- Concentration measurements on soft drinks and juices (°Brix, °Oechsle)
- Sugar metering

Chemical Industry/Process Technology

- Measurement of spinning solutions (DMA, DMF)
- Concentration measurement (e.g. distillation or rectification)
- Process control
- Quality control

Technical Data

Measurement

Measuring principle:	transmitted light refractometer
Measuring range:	nD: 1,2 ... 1.8 °Bx: 0 ... 95
Sensitivity:	nD: 0,000 1 ... 0,000 01 (corresponds typically to 0,005 mass%)
Reaction time:	0,7 s
Process temperature:	standard: -18°C ... 120°C optional: -18°C ... 150°C
Process pressure:	10 bar to 40 bar depending on the process connection
Temperature measurement	
Probe:	Pt1000 class A
Temperature range:	-30°C... 200°C
Precision, Transmitter	0,05°C
Temperature compensation:	linear or not linear, can be parametrized

Sensor Enclosure

Material:	Stainless steel
Ambient temperature:	5°C to 55°C
Deg. of protection:	IP65 acc. to EN60529
Material:	Body: Stainless steel, Hastelloy, Titanium, others on inquiry Optics: quartz glass or sapphire Gaskets: EPDM, Viton or Kalrez
Dimensions:	see drawings on the next pages

Transmitter type PLOX® TR

Ambient temperature:	-10°C...60°C
Power supply:	(100...240) VAC (18...36) VDC
Display:	2 x 16 characters dot matrix, backlit
Power consumption:	< 15 W

Field housing TR374

- Mass:	ca. 2,8 kg
- Deg. of protection:	IP65 acc. to EN60529
- Material:	Aluminum, powder coated
- Dimensions:	(280 x 200 x 70) mm (WxHxD)
- Channels:	1 or 2

Housing for 19" rack unit TR379

- Mass:	approx. 1,7 kg
- Deg. of protection:	IP20 acc. to EN60529
- Material:	Aluminum
- Dimensions:	(213x129x170) mm (WxHxD) (without backpanel)
- Channels:	2

Software

Operating systems:	all Windows™ versions
Functions:	Modulation and administration of the media's characteristic curves, upload and download to and from the transmitter

Process outputs (optional)

- The outputs are galvanically isolated from the main device.
- The number of outputs that can be installed depends on the output type. Consult Flexim for more information.

Current

- Range:	(0/4...20) mA
- Precision:	0,1% of reading ± 15 µA
- Active output:	$R_{ext} < 500 \Omega$
Passive output:	$U_{ext} < 24 V, R_{ext} < 1k\Omega$

Voltage

- Range:	(0...1) V or (0...10) V
- Precision:	0...1 V: 0,1% v. MW ± 1 mV 0...10 V: 0,1% v. MW ± 10 mV
- Internal resistance:	$R_i = 500 \Omega$

Frequency:

- Type:	Open collector, 24 V/4 mA
- Range:	0...1 kHz or 0...10 kHz

Binary

- Open collector:	24 V/4 mA
- Reed relay:	48 V/0,1 A
Function:	Limit

Process inputs (optional)

- The outputs are galvanically isolated from the main device.
- A maximum of 4 inputs can be installed.

Temperature

- Type:	Pt100 four-wire circuit
- Range:	-50°C...400°C
- Resolution:	0,1 K
- Precision:	± (0,2 K + 0,1% of reading)

Current

- Range:	active: (0...20) mA passive: (-20...20) mA
- Precision:	0,1% of reading ± 10 µA
- Internal resistance:	$R_i = 50 \Omega$

Voltage

- Range:	(0...1) V or (0...10) V
- Precision:	0...1 V: 0,1% v. MW ± 1 mV 0...10 V: 0,1% v. MW ± 10 mV
- Internal resistance:	$R_i = 1 M\Omega$

Available Process Connection

Inline:

Flanged connection for the chemical industry (DIN 2633 PN 16): DN 25 to DN 80, other norms on request

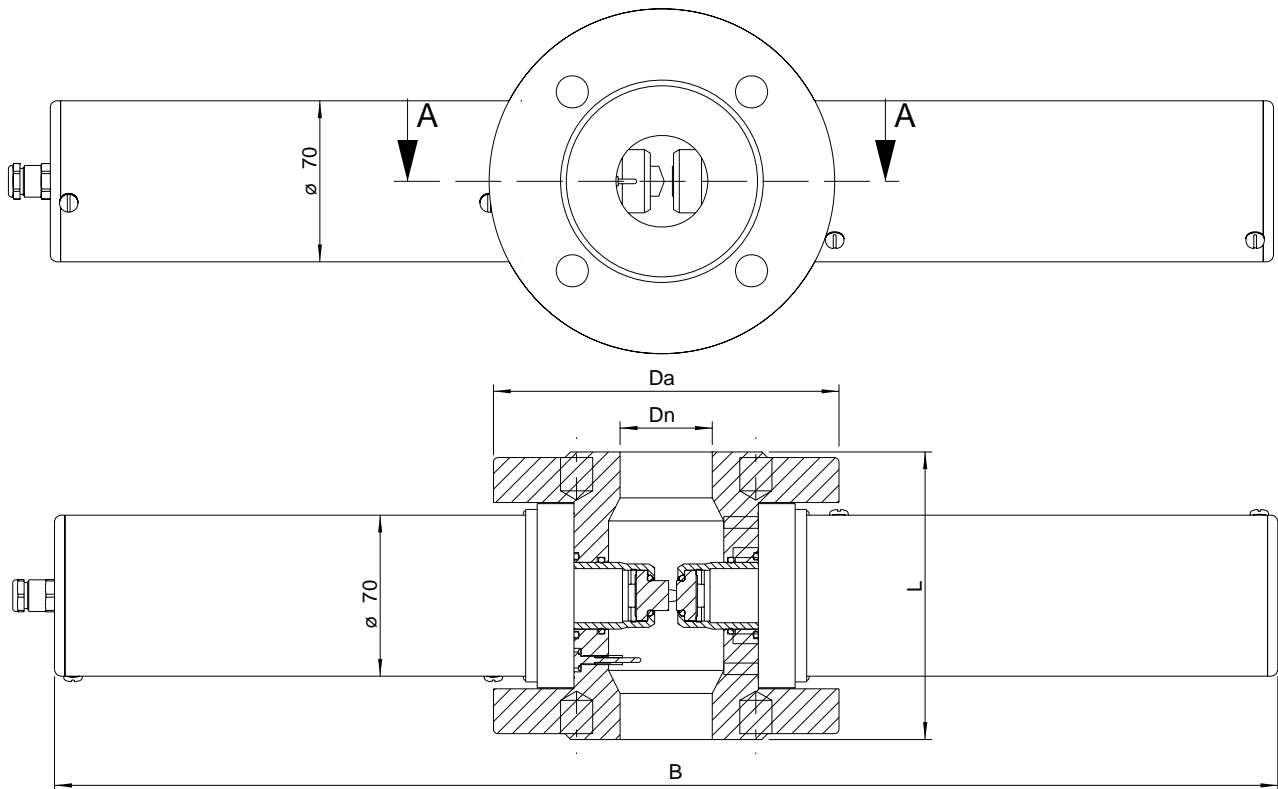
Varivent flanged connection (DIN 11850): DN 25 to 100

Varivent threaded connection (DIN 11851, "dairy" connection): DN 25 to 65

Bypass:

Ermeto, 3/8" thread

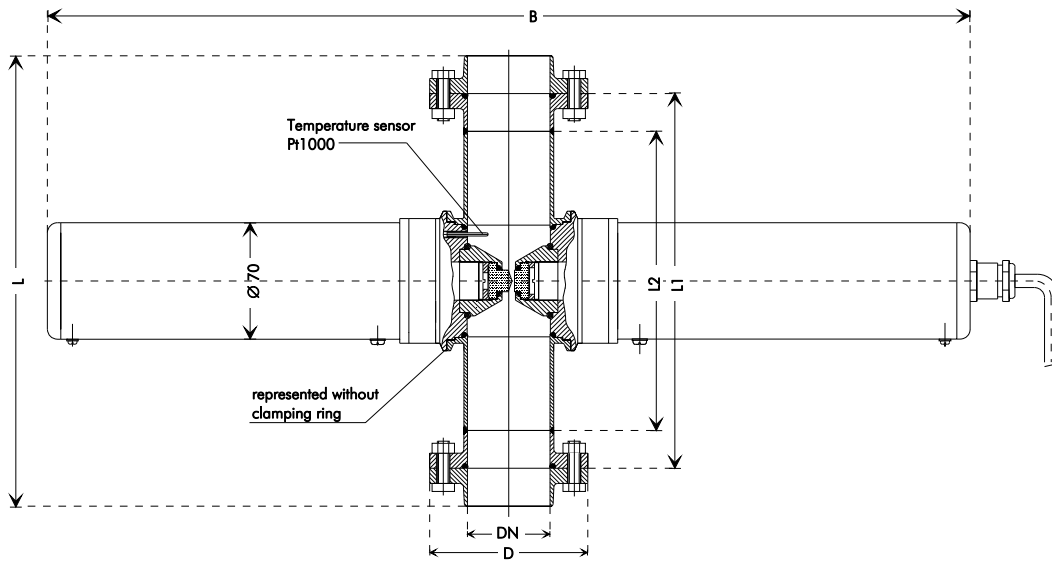
Sensor Enclosure with Flanged Connection acc. to DIN 2633



Dimensions in mm

Nominal diameter (DN)	Out. diam. flange (Da)	Width (B)	Overall length (L)
15	95	495	115
25	115	495	120
40	150	531	125
50	165	531	125
65	185	561	130
80	200	561	130

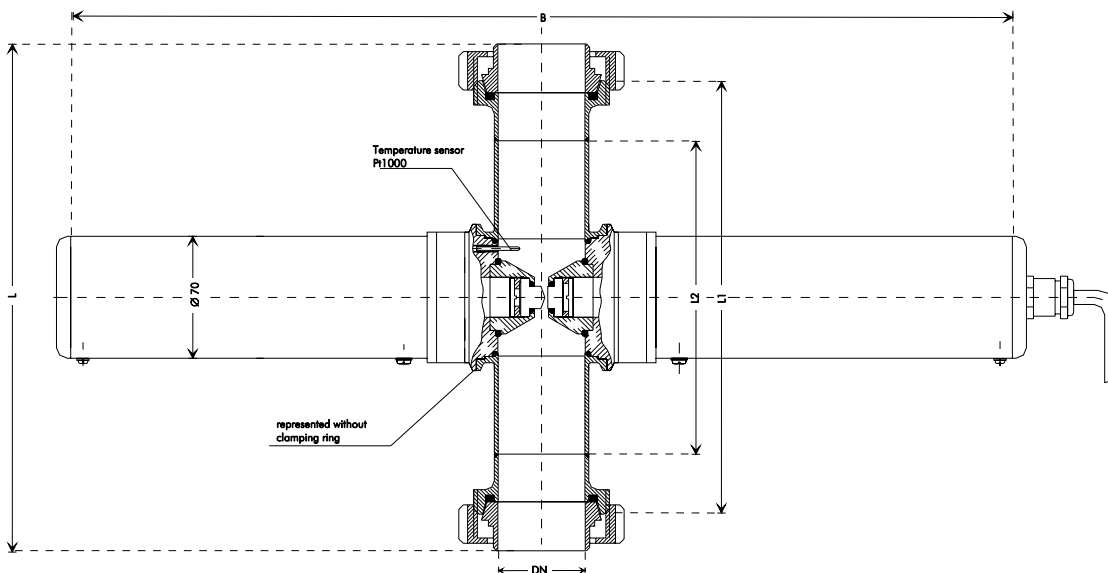
Varivent Flanged Connection



Dimensions in mm

Nominal diameter (DN)	Out. diam. flange (Da)	Width (B)	Overall length (L)	Fitting length (L1)	Fitting length weldings (L2)
40	82	534	280	230	180
50	94	546	280	230	180
65	113	562	350	300	250
80	128	577	350	300	250
100	159	596	350	300	250

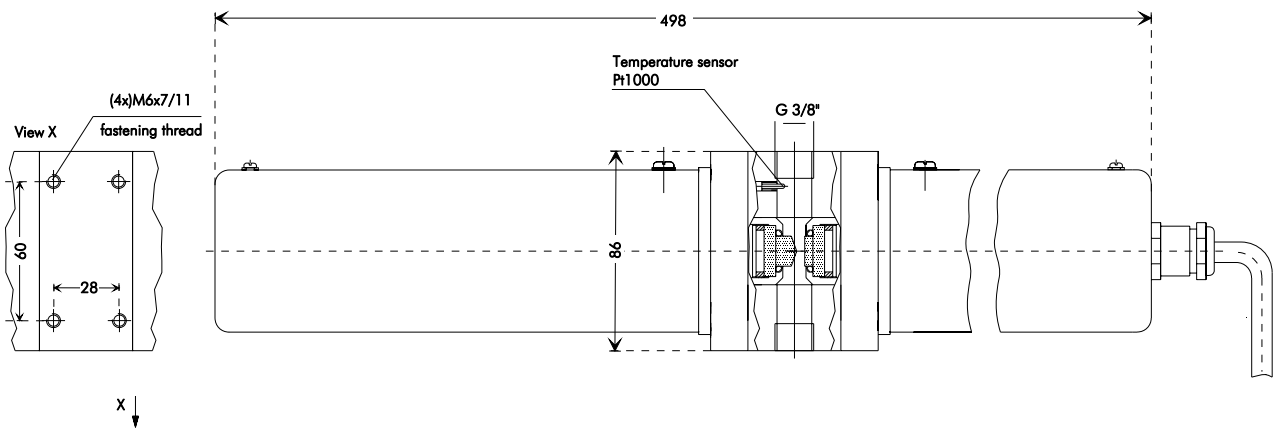
Varivent Threaded Connection ("Dairy" Connection)



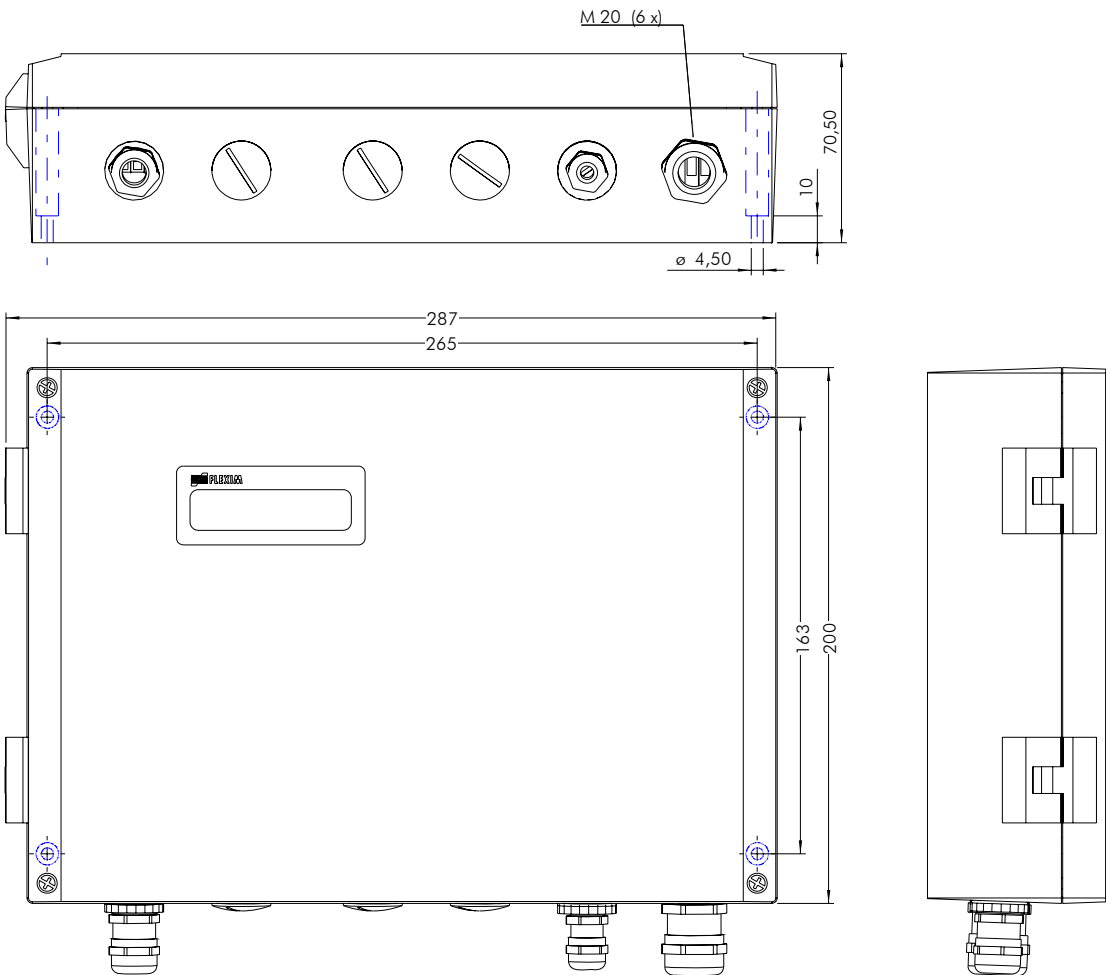
Dimensions in mm

Nominal diameter (DN)	Width (B)	Overall length (L)	Fitting length (L1)	Fitting length weldings (L2)
40	534	284	246	180
50	546	292	250	180
65	562	378	330	250

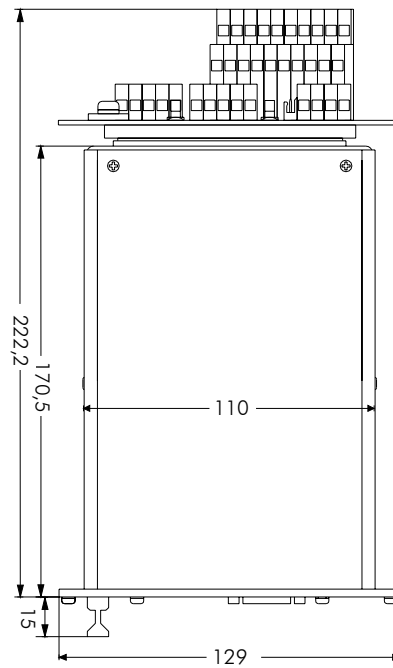
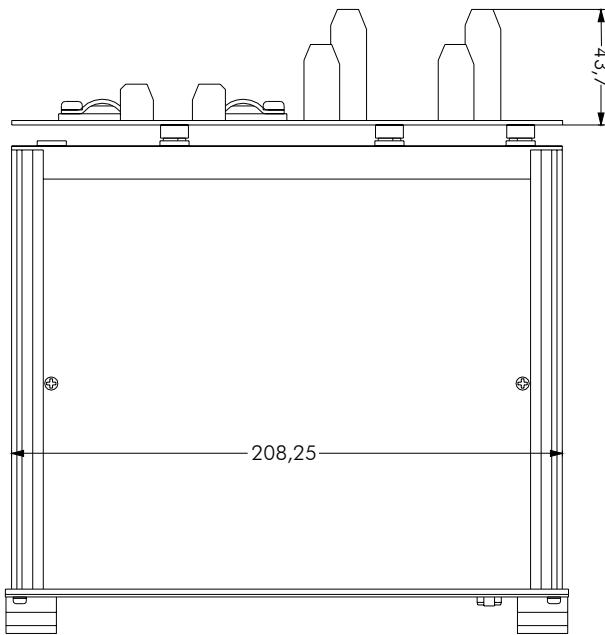
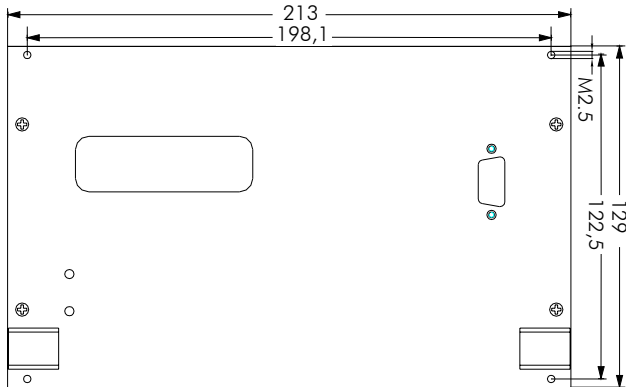
Sensor Enclosure for Bypass Operation (Ermeto)



Dimensions, Field Housing (TR374)



Dimensions, 19" Rack Unit (TR379)



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