



CONCENTRATION, BRUX (%) & REFRACTIVE INDEX MEASURING SOLUTIONS

PROFESSIONAL MANUFACTURER
FOR MEASUREMENT AND CONTROL





Welcome

ZHYQ is based in Melbourne, Australia, specializes in sensor technology and product design, development, sales and technical support to build and ensure high reliability and timely customized solutions for customers. With the advantage of having our own production facilities in China, we aim to serve international customers from more than 50 countries with reliable technology and excellent service.

Our product range includes:

- Sensors and transmitters for measuring pressure, weight, force and weighing.
- Sensors and transmitters for pressure, differential, temperature and concentration measurements.
- Structural health monitoring and highway weighing systems for Bridges, subways and tunnels Industry 4.0 wireless sensor network systems.

About Our Manufacturer

Shanghai Zhaohui Pressure Apparatus Co., Ltd. (ZHYQ) is our leading professional manufacturer in the industrial of pressure, flow, temperature, liquid level and Internet of Things (IoT). ZHYQ found in 1999. We are an ISO9001 (2015) Quality management certificated company, we acquired the certificates of CMC, Ex, MA, CE, RoHS and more. We are qualified for 7 Invention patents and more than 70 utility model patent technologies.



Why choose ZHYQ ?



Technical advice from our highly experienced and trained experts staff



15,000m² plant, annual output 200,000 pieces transmitters



Nearly 60 national invention patents and utility model patents



ISO 9001: 2015 accredited quality systems



CMC, Ex, MA, CE, RoHS, ATEX, SIL certification



A whole new Research & Development centre in Shang Hai



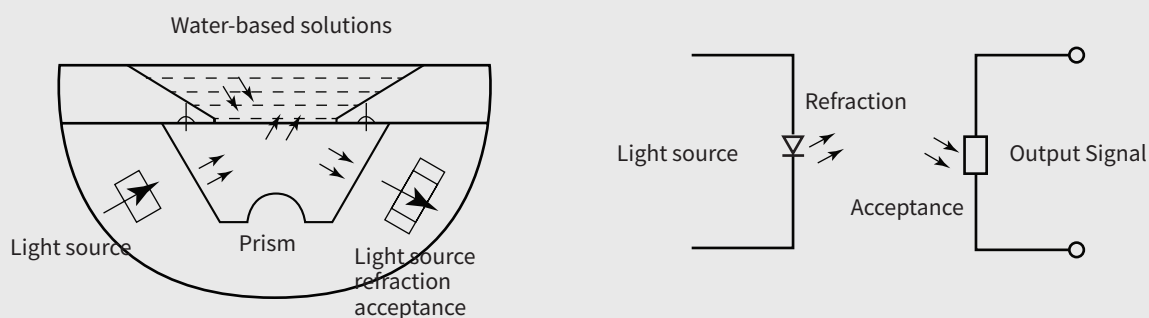
The first in the industry to obtain a high-range 500MPa metering license



Efficient and complete production line of monocrystalline silicon sensor



Working Principle



In-line Process Refractometer is consisted of a luminous source, a sapphire, an optical receiver and a signal modulation circuit. The luminous source sends a stable optical signal that contacts the measured medium through the sapphire. The refractive index corresponding to the measured medium is generated by the concentration of the measured medium. Internal automatic temperature calibration is used to reduce the impact from temperature drift.

Features

CZ series in-line process refractometer from ZHYQ is mainly used to measure real-time data for liquid. It is often used together with IoT control system. It can significantly improve the performance of all types of refining, manufacturing and quality control operations. Real-time data can give operators a reliable hypothesis of the final concentration. Production and control costs can be reduced by reducing the variation of the average mean of product concentration. Fast and accurate response of this product can help manufacturers to optimize their production process.

Applications

Battery



Chemical



Food and Beverage



Life and Science
Pharmaceutical



Oil, Gas & Petrochemicals



Paper & Wood



Semiconductor



Sugar



Starchy sweeteners
and sugar substitutes



Machining and mining



Electricity & Energy



Biology and
fermentation



CZ- C series Stainless Steel

■ Product Feature:

- Stainless Steel cover with clamp connection;
- High precision, stable and reliable result;
- Real-time continuous data output;
- Signal optional 4-20mA/RS485;



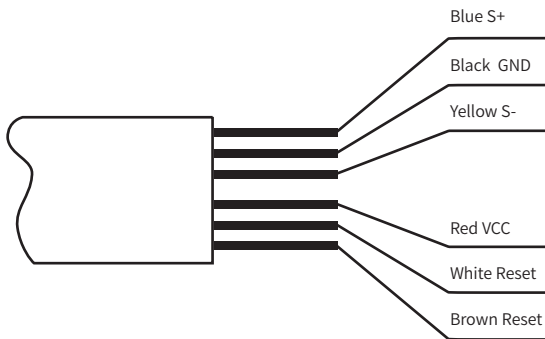
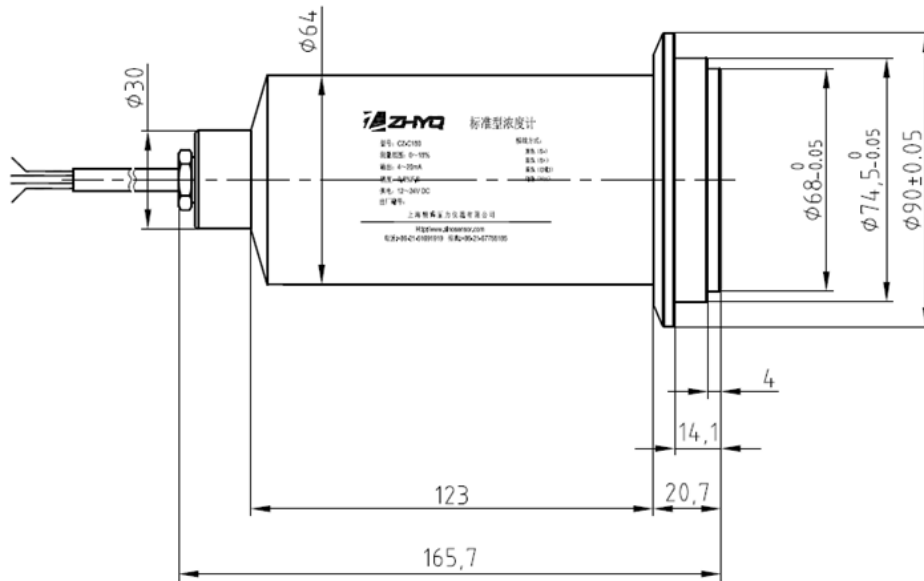
■ Applications:

- Continuous monitoring of soluble solid content (Brix value) in evaporation, dissolution, mixing, dilution, extraction and other processes.
- Real-time measurement of all kinds of industrial solutions, such as: cutting oil, lubricating oil, cleaning fluid, emulsion, release agent concentration;

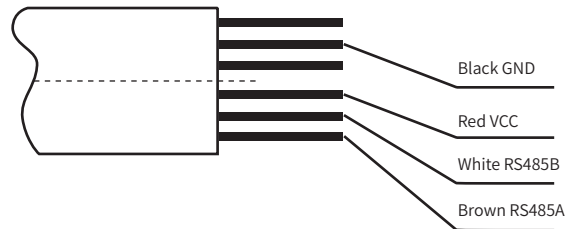
■ Technical Specifications:

Product Model	CZ-C
Measuring Type	Refractive Index (nD), Temperature (T), Brix (%)
Measuring Range	nD: 1.33299-1.35568 / Brix:0.0-15.0%, nD:1.33299-1.42009 / Brix: 0.0~50.0 %, nD:1.33299-1.5177 / Brix:0.0~90.0 %
Resolution	nD:0.0001 / Brix:0.1% / T:0.1°C, nD:0.0005 / Brix:0.5% / T:0.1°C
Accuracy	nD:±0.0003 / Brix:±0.3% / T:±1°C, nD:±0.0005 / Brix:±0.5% / T:±1°C
Temperature Compensation	(10 ~ 60) °C
Measuring Temperature	(10 ~ 60) °C
Prism Material	Artificial sapphire
Contact Surface Material	316L (customizable :2205, Hastelloy C-276)
Power Input	(12 ~ 24)24V DC
Output Signal	4-20mA/ RS485
Communication Protocol	Standard Modbus (Customizable)
Protection Grade	IP65
Process Pressure	1.5MPa max tolerance
Medium Types	Cutting oil, emulsion, sugar, fruit juice;
Connection	Quick load chuck type (optional: thread, flange)
Cleaning Device	Manual Device (QX-S01) / Ultrasonic Device (CQX-1A)
Pipe adaptation options	Quick load chuck type four-way connector, flange four-way connector, thread four-way connector
Size & Weight	120 x 120 x 175mm / 1.95Kg

Size & Connection



4-20 mA Connection



RS485 Connection



Output single

2 kinds of signal output optional, 4-20mA & RS485.



Prism

The prism surface adopts a flat groove design, which can effectively prevent the liquid from adhering.

CZ- B Series Standard With Monitor

■ Product Feature:

- High precision, stable and reliable result;
- High resolution and precision;
- Real-time continuous data output;
- Signal optional 4-20mA/RS485;

■ Applications:

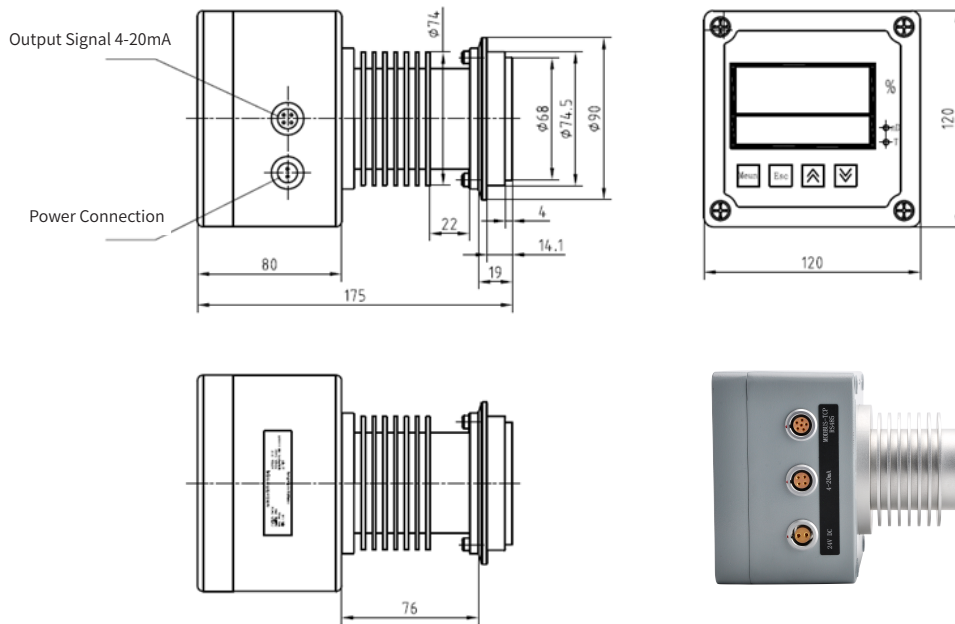
- Real-time monitoring of soluble solids (Brix value) of various beverage manufacturers;
- Continuous monitoring of soluble solid content (Brix value) of evaporation, dissolution, mixing, dilution, extraction and other processes.
- Real-time measurement of all kinds of industrial solutions, such as: cutting oil, lubricating oil, cleaning fluid, emulsion, release agent concentration;
- Concentration detection of various aqueous solutions (food, sauce, beer, wort, beverage, fruit juice, pharmaceutical stock solution, chemical solution, slurry, etc.)

■ Technical Specifications:

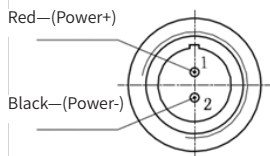
Product Model	CZ-B
Measuring Type	Refractive Index (nD), Temperature (T), Brix (%)
Measuring Range	nD: 1.33299-1.35568 / Brix:0.0-15.0%, nD: 1.33299-1.42009 / Brix: 0.0~50.0 %, nD: 1.33299-1.5177 / Brix:0.0~90.0 %
Resolution	nD:0.0001 / Brix:0.1% / T:0.1°C, nD:0.0005 / Brix:0.5% / T:0.1°C
Accuracy	nD:±0.0003 / Brix:±0.3% / T:±1°C, nD:±0.0005 / Brix:±0.5% / T:±1°C
Temperature Compensation	(0 ~ 60) °C
Measuring Temperature	(0 ~ 85) °C
Prism Material	Artificial sapphire
Contact Surface Material	316L (customizable :2205, Hastelloy C-276)
Power Input	(12 ~ 24)24V DC
Output Signal	4-20mA/ RS485
Communication Protocol	Standard Modbus (Customizable)
Protection Grade	IP67
Process Pressure	1.5MPa max tolerance
Medium Types	Cutting oil, emulsion, sugar, fruit juice
Connection	Quick load chuck type (optional: thread, flange)
Cleaning Device	Manual Device (QX-S01) / Ultrasonic Device (CQX-1A)
Pipe adaptation options	Quick load chuck type four-way connector, flange four-way connector, thread four-way connector;
Reset	Short-circuit Reset (4/20mA output) or protocol Reset (RS485 output)
Size & Weight	90mm Diameters x 174mm Height/ 2Kg



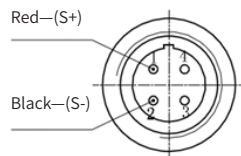
Size & Connection



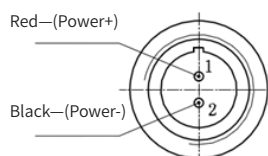
Power Connection Point



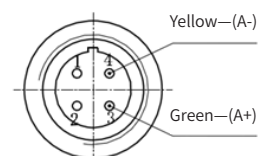
4-20mA Connection



Power Connection Point



RS485 Connection



Better Heat Resistance

Integrated ring heat sink structure can absorb the internal high temperature and keep standard stability.



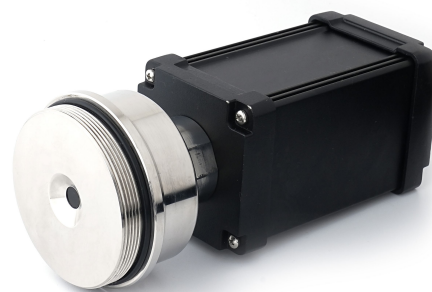
Operation Panel

Visual operation interface, detection data at a glance.

CZ- S Series Economical & Flexible Type

■ Product Feature:

- Evolutional Design based on new optical theory;
- Smart and flexible in size, perfect for snag operation space;
- Compact and flexible probe mounting;
- A definable intelligent output signal;



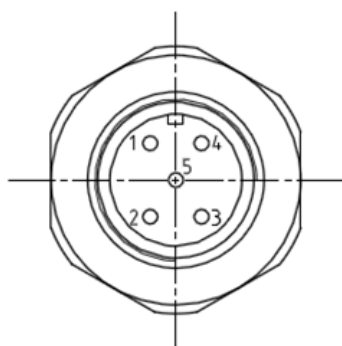
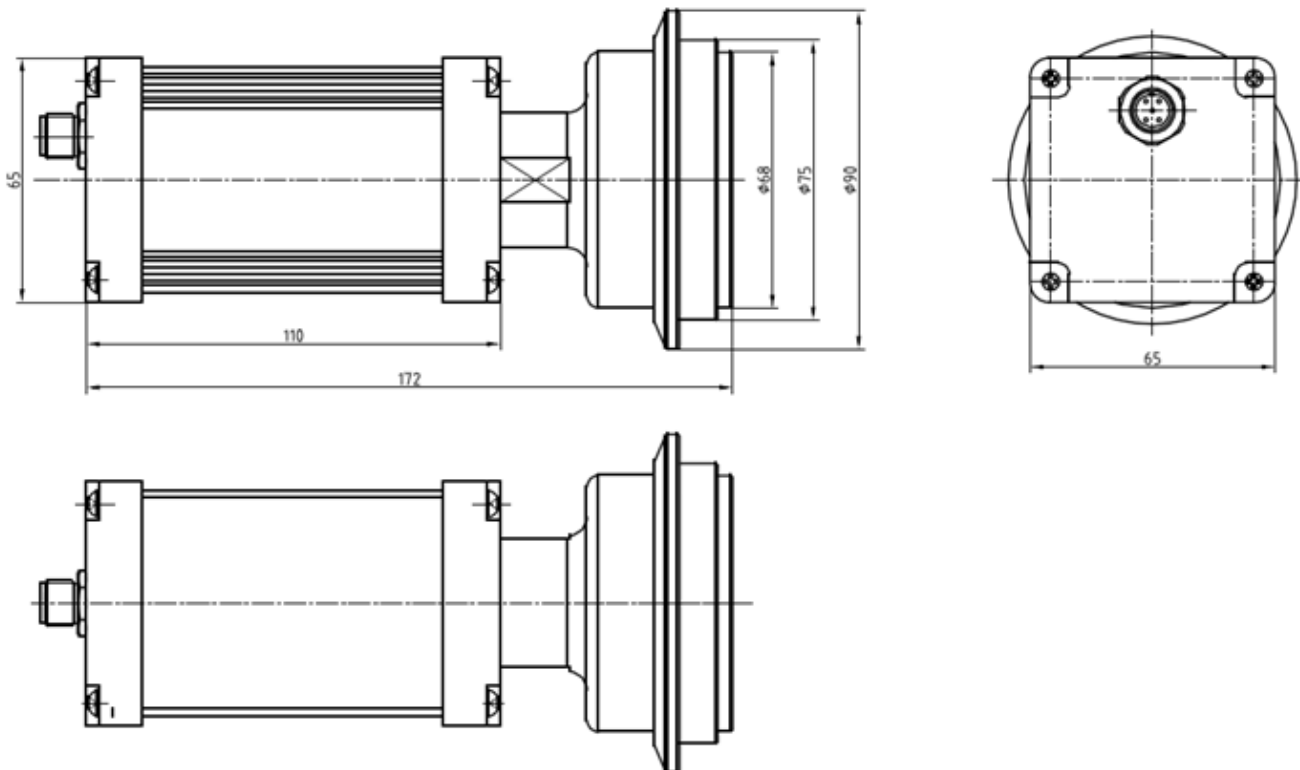
■ Applications:

- Real-time monitoring of soluble solids (Brix value) of various beverage manu
- Continuous monitoring of soluble solid content (Brix value) of evaporation, dissolution, mixing, dilution, extraction and other processes.
- Real-time measurement of all kinds of industrial solutions, such as: cutting oil, lubricating oil, cleaning fluid, emulsion, release agent concentration;
- Concentration detection of various aqueous solutions (food, sauce, beer, wort, beverage, fruit juice, pharmaceutical stock solution, chemical solution, slurry, etc.)

■ Technical Specifications:

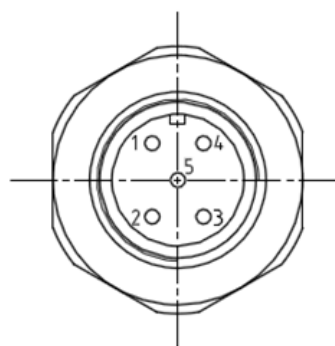
Product Model	CZ-S
Measuring Type	Refractive Index (nD), Temperature (T), Brix (%)
Measuring Range	nD: 1.33299-1.35568 / Brix: 0.0-15.0% nD: 1.33299-1.42009 / Brix: 0.0~50.0 %
Resolution	nD:0.0001 / Brix:0.1% / T:0.1°C
Accuracy	nD:±0.0003 / Brix:±0.3% / T:±1°C
Temperature Compensation	(0 ~ 60) °C
Measuring Temperature	(0 ~ 85) °C
stock temperature	-20 ~ 85°C
Prism Material:	Artificial sapphire
Contact Surface Material	316L
Power Input	(12 ~ 24)24V DC
Output Signal	4-20mA/ RS485
Communication Protocol	Standard Modbus (Customizable)
Protection Grade	IP66
Process Pressure	1MPa max tolerance
Medium Types	Cutting oil, emulsion, sugar, fruit juice;
Connection	Quick load chuck type
Cleaning Device	Manual Device (QX-S01) / Ultrasonic Device (CQX-1A)
Pipe adaptation options	Quick load chuck type four-way connector, flange four-way connector, thread four-way connector;
Size & Weight	65 x 65 x 172mm / 1Kg

Size & Connection



4-20mA Connection

1. VCC Red
2. GND Yellow
3. Iout Blue
4. K1(Reset)White
5. DGND Black



RS485 Connection

1. VCC Red
2. GND Yellow
3. 458A+ Blue
4. 485B- White
5. NC

CZ- L Series Long Neck Type

■ Product Feature:

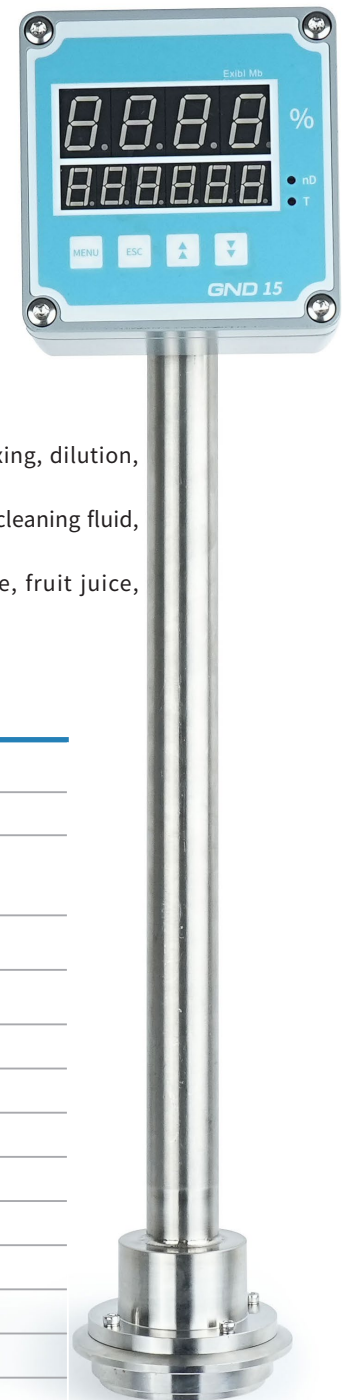
- Long neck design to fit into special area;
- Easy installation, maintenance, cost- effective;
- Adopt optical grade sapphire, high scratch resistance & long product life;
- Automatic temperature compensation, high precision reliability;
A definable intelligent output signal;

■ Applications:

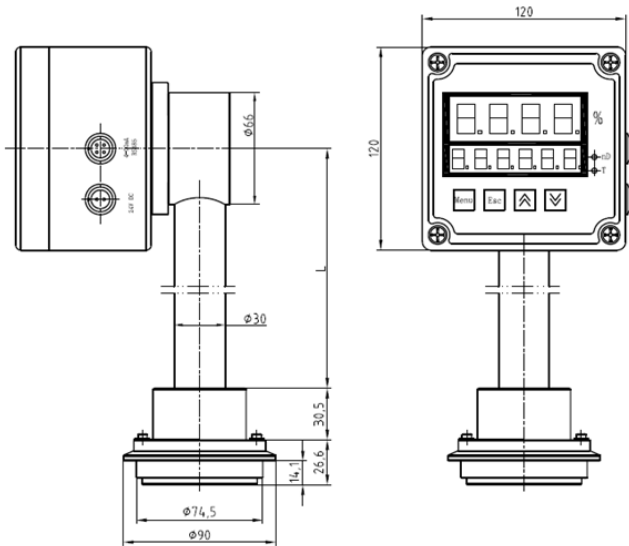
- Real-time monitoring of soluble solids (Brix value) of various beverage manufacturers;
- Continuous monitoring of soluble solid content (Brix value) of evaporation, dissolution, mixing, dilution, extraction and other processes.
- Real-time measurement of all kinds of industrial solutions, such as: cutting oil, lubricating oil, cleaning fluid, emulsion, release agent concentration;
- Concentration detection of various aqueous solutions (food, sauce, beer, wort, beverage, fruit juice, pharmaceutical stock solution, chemical solution, slurry, etc.

■ Technical Specifications:

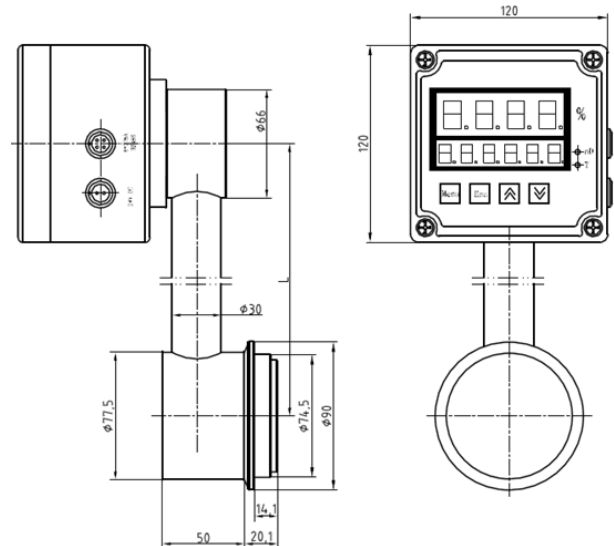
Product Model	CZ-L
Measuring Type	Refractive Index (nD), Temperature (T), Brix (%)
Measuring Range	nD: 1.33299-1.35568 / Brix:0.0-15.0%, nD:1.33299-1.42009 / Brix: 0.0~50.0 % , nD:1.33299-1.5177 / Brix:0.0~90.0 %
Resolution	nD:0.0001 / Brix:0.1% / T:0.1°C nD:0.0005 / Brix:0.5% / T:0.1°C
Accuracy	nD:±0.0003 / Brix:±0.3% / T:±1°C nD:±0.0005 / Brix:±0.5% / T:±1°C
Temperature Compensation	(0 ~ 60) °C
Measuring Temperature	(0 ~ 85) °C
Prism Material	Artificial sapphire
Contact Surface Material	316L (customizable :2205, Hastelloy C-276)
Power Input	(12 ~ 24)24V DC
Output Signal	4-20mA/ RS485
Communication Protocol	Standard Modbus (Customizable)
Protection Grade	IP65
Process Pressure	1.5MPa max tolerance
Medium Types	Cutting oil, emulsion, sugar, fruit juice;
Connection	Plug in installation
Min & Max value pre-set	Available
Fitting Direction	Variable angles available
Neck Length	400mm~1.2m(Optional)
Size & Weight	120 x 120 x (537-1337) mm / 3.58-6.18Kg



Size & Connection

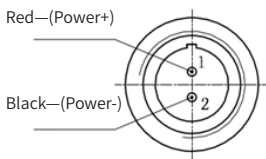


Front Installation

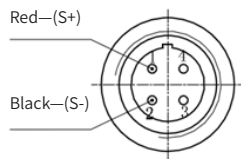


Side Installation

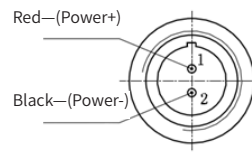
Power Connection Point



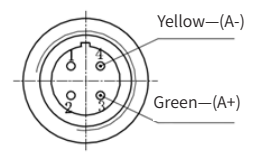
4-20mA Connection



Power Connection Point



RS485 Connection



front

One-piece long pole immersion design, easy and fast installation.



side

Long pole immersion side-mounted design, according to the working conditions to deal with special installation places.

CZ- H 系列 High Temperature

■ Product Feature:

- Precision, fast, stable and reliable
- Very high resolution and precision
- 4-hour real-time concentration measurement output
- Measure material temperature up to 150 degrees



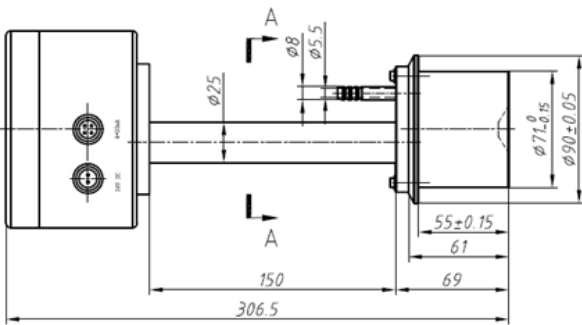
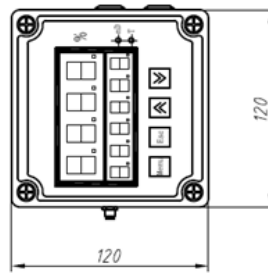
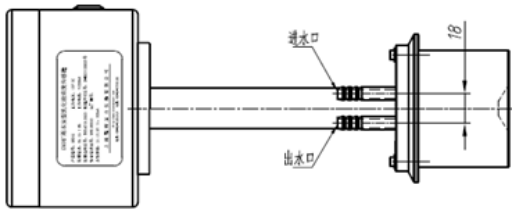
■ Applications:

- Real-time monitoring of product soluble solids (BRIX value) by vario
- Continuous monitoring of soluble solids content (BRIX value) in technological processes such as evaporation, dissolution, mixing, dilution, and extraction.
- Real-time detection of various industrial solutions, such as: cutting oil, lubricating oil, cleaning fluid, emulsion, release agent concentration;
- Concentration detection of various aqueous solutions (food, sauce, beer, wort, beverage, fruit juice, pharmaceutical stock solution, chemical solution, slurry, etc.)

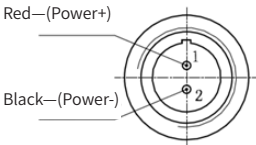
■ Technical Specifications:

Product Model	CZ-H
Measuring Type	Refractive Index (nD), Temperature (T), Brix (%)
Measuring Range	nD: 1.33299-1.35568 / Brix:0.0-15.0%, nD:1.33299-1.42009 / Brix: 0.0~50.0 %, nD:1.33299-1.5177 / Brix:0.0~90.0 %
Resolution	nD:0.0001 / Brix:0.1% / T:0.1°C nD:0.0005 / Brix:0.5% / T:0.1°C
Accuracy	nD:±0.0003 / Brix:±0.3% / T:±1°C nD:±0.0005 / Brix:±0.5% / T:±1°C
Temperature Compensation	(0 ~ 85) °C
Measuring Temperature	(0 ~ 150) °C
Prism Material	Artificial sapphire
Contact Surface Material	316L (customizable :2205, Hastelloy C-276)
Power Input	(12 ~ 24)24V DC
Output Signal	4-20mA/ RS485
Communication Protocol	Standard Modbus (Customizable)
Protection Grade	IP65
Process Pressure	1.5MPa max tolerance
Medium Types	Cutting oil, emulsion, sugar, fruit juice;
Connection	Plug in installation (optional: thread, flange)
Cleaning Device	Manual Device (QX-S01)
Pipe adaptation options	Quick load chuck type four-way connector, flange four-way connector, thread four-way connector;
Min & Max value pre-set	Available
Size & Weight	120 x 120 x 313mm; 2.83Kg

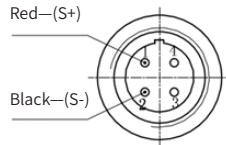
Size & Connection



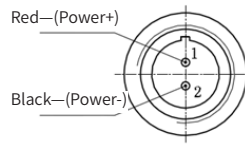
Power Connection Point



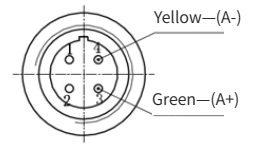
4-20mA Connection



Power Connection Point



RS485 Connection



Water Cooling Design

Water cooling function designed to fill water into the loop in order to cool down the temperature for better stability.



Sapphire

Shell material is 316L Stainless Steel. Smooth design to avoid liquid sticking on the surface.

Manual Cleaning Device

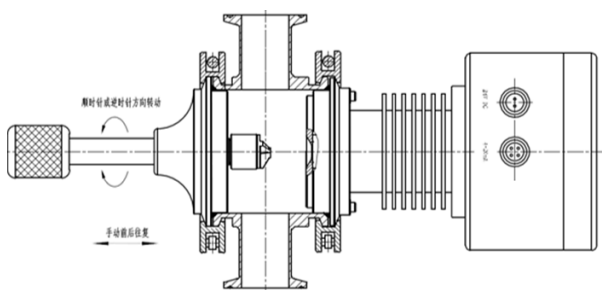
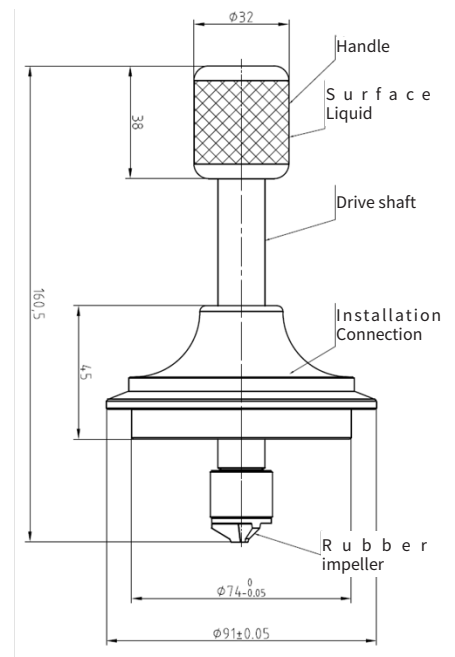
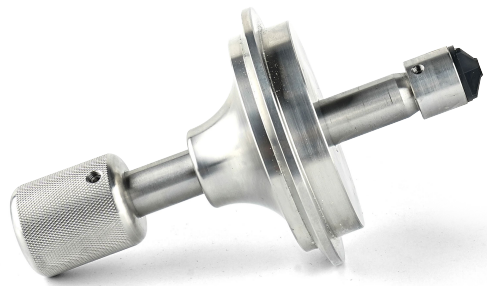
About:

- This is an optional accessory for CZ Series In-line process refractometer. It is suitable to be used when testing medium (solution) is dirty. The device will keep the testing area clean for better result. This product is cost-effective for high precision result requirement. It is mainly used for dilute liquid, especially suitable for oil pollution prisms, not suitable for particularly strong corrosive liquid cleaning.

Feature:

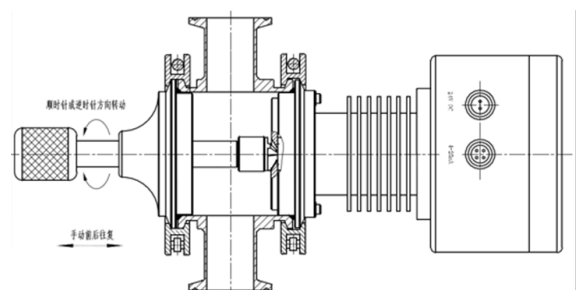
- Simple cleaning cycle (No need to disassemble the refractometer);
- Explosion Proof and easy to use under coal mine;
- Cleaning frequency can be set by operator;
- Rubber cleaning wipe, can effectively clean the probe mirror;
- Clamp fixed installation mode, easy to disassemble and maintain the equipment;

Cleaning Process



Position while Measuring

Handle at pulled out position, grant access for medium to reach measuring area.



Position while Cleaning

Push handle in to let rubber impeller to touch sapphire. Then gently turning rubber impeller to clean the surface of sapphire.

Ultrasonic Cleaning Device

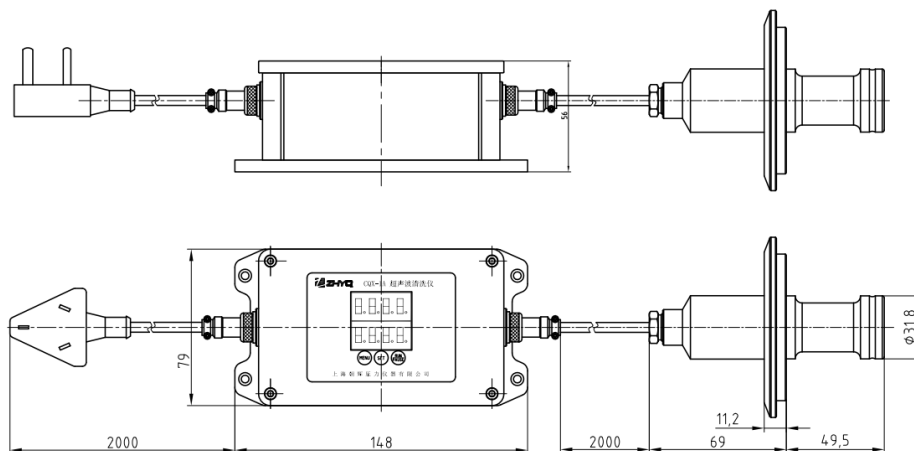
■ Working Principle:

This ultrasonic cleaning device is a smart cleaning device with digital display. From control panel, operators can customise process time and steps. The device uses the transducer to convert into high-frequency mechanical oscillation and is transmitted to the liquid to generate cavitation effect. In the cavitation effect, the water molecular bubbles will cover the surface of the cleaning object. After reaching a certain level of air pressure, micro-explosion will be generated, resulting in an impact force, which makes the dirt in the first level gap on the surface of the object free, thus achieving a cleaning purpose without damaging the object. The ultrasonic cleaning probe is made of high hardness aluminium alloy, and the surface is treated by insulating oxidation sandblasting, which greatly improves the service life of the probe. The system in this device allows operators to set automatic cleaning control program. It can reduce the time and cost consumed during operation. The cleaning device is flexible, easy to operate, easy to debug, safe and reliable.



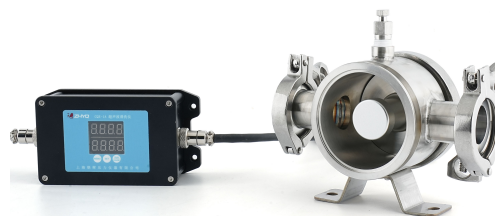
■ About:

This is an optional accessory for CZ Series In-line process refractometer. It is suitable to be used when testing medium (solution) is dirty. The device will keep the testing area clean for better result. This product is cost-effective for high precision result requirement. Automatic program is the key feature in this device. It is a representative product of industrial automation.

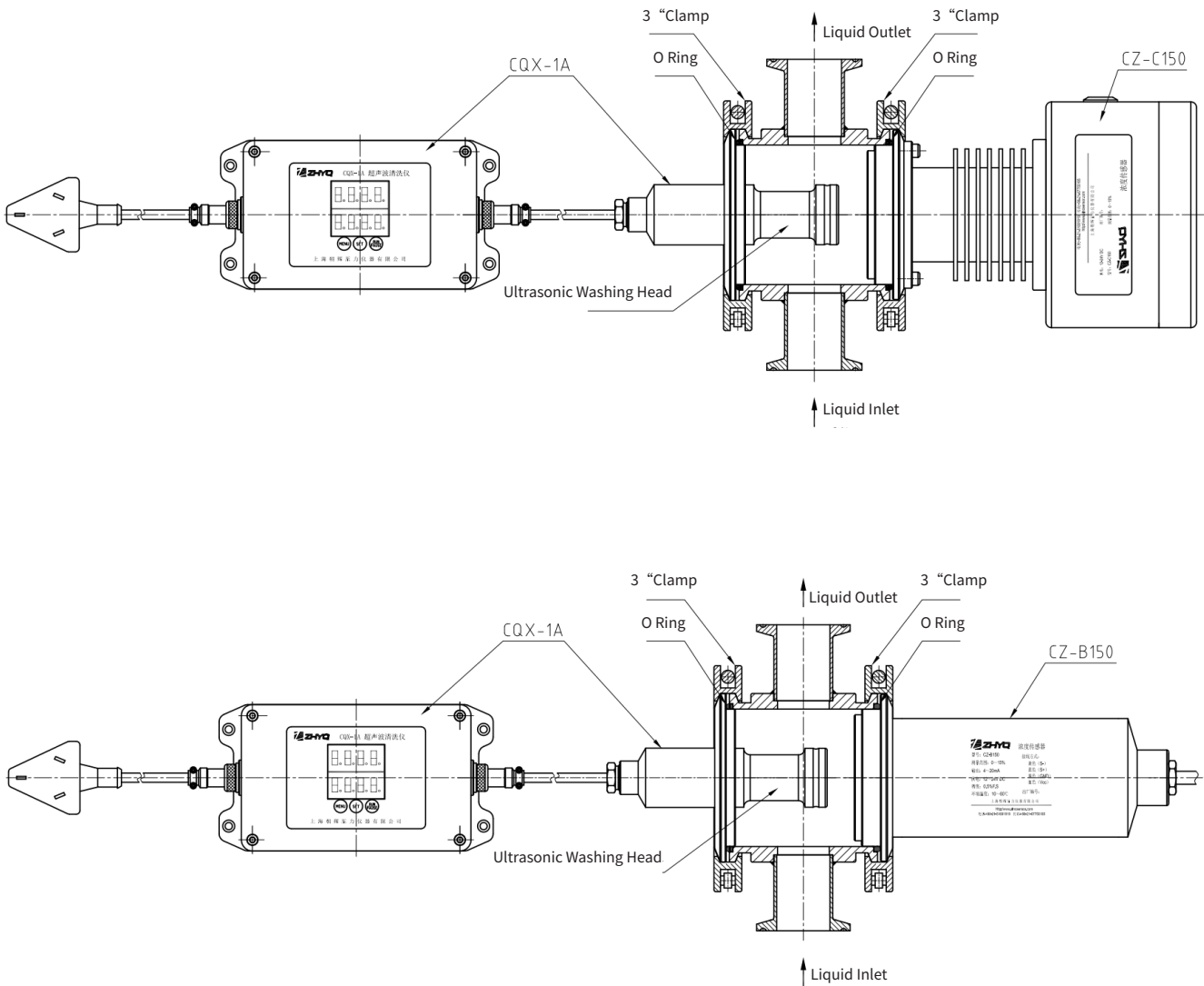


■ Technical Specifications:

Model	CQX-1A
Voltage	AC220V
Power	70W
Ultrasonic frequency	50KHz
Working Type	Manual/Automatic
Washing cycle	≤ 5 分钟
Washing Temperature	10~50°C
Working Temperature	-20~80°C



Installation Instruction



■ Installation Instruction

- Make sure both power plug and ultrasonic cleaning probe are respectively inserted on the main shell;
- When installing, the ultrasonic cleaning probe should be completely immersed in the liquid (do not expose in the air or part of the liquid surface);
- The cleaning device is installed in the form of a hoop, and the ultrasonic cleaning probe is installed in the four-way connectors, the installation position is shown in the figure above;

Pipe Line Installation Accessories

■ Product information:

This is an optional accessory for CZ Series In-line process refractometer cleaning device. There are three different types of connection for every situation. They are quick load chuck type four-way connector, flange four-way connector, thread four-way connector;

■ Accessories are shown below::



Quick Load Chuck Type Four-way Connector
(Standard 1.5" -DIN32676)



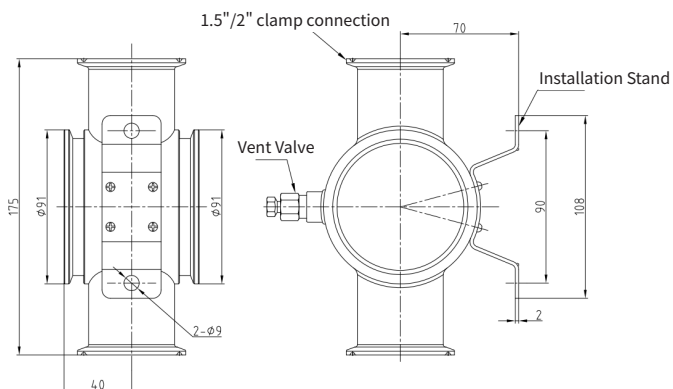
Flange Four-way Connector
(Standard 1.5" -DN25)



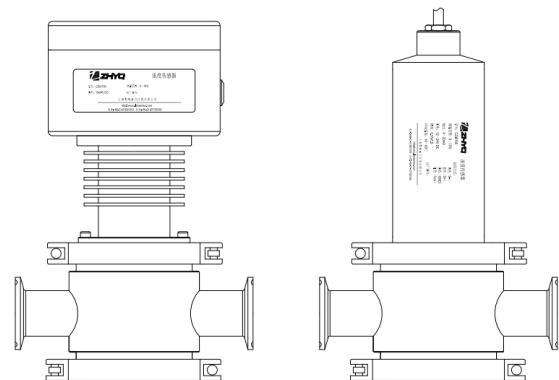
Thread Four-way Connector
(Standard 1.5" -DN25/PN16-HG20592)

Installation instruction

■ Quick Load Chuck Type Four-way Connector:

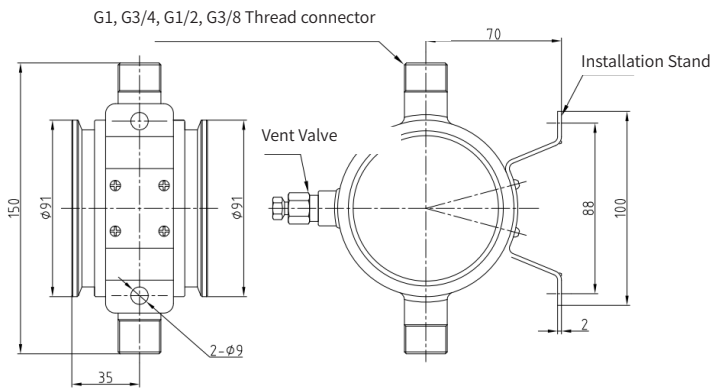


Size

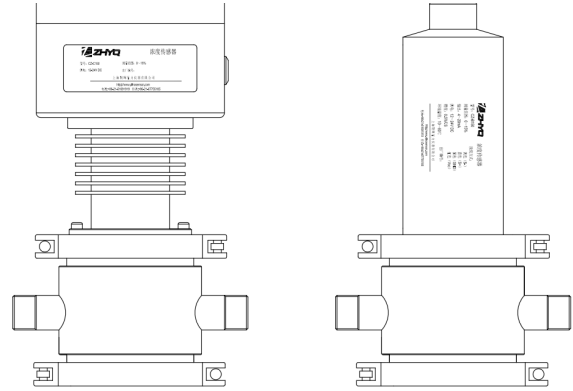


Installation Hint

■ Thread Four-way Connector:

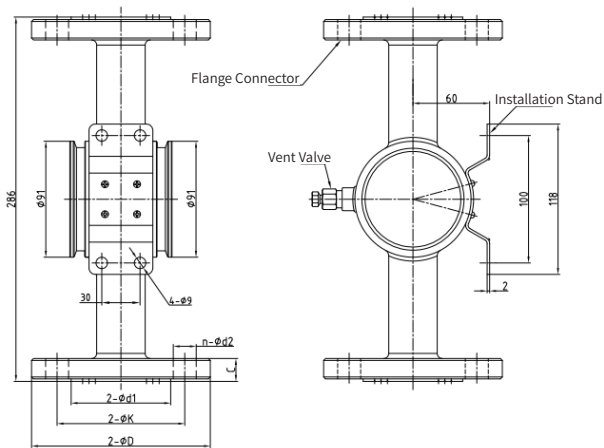


Size



Installation Hint

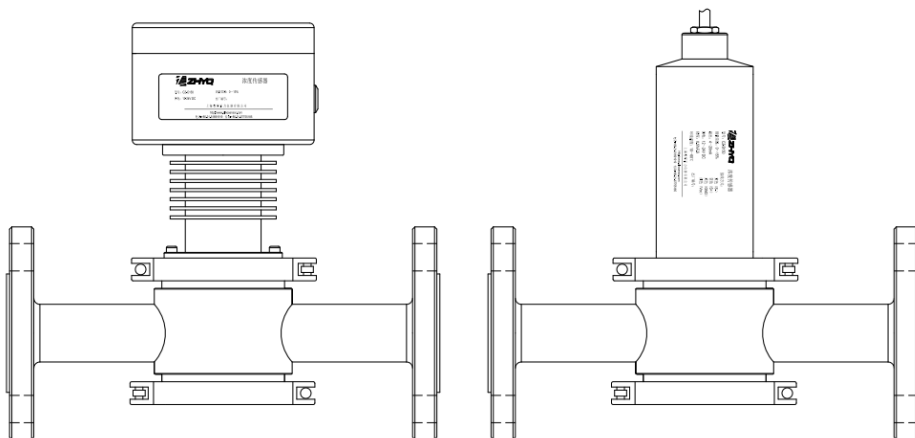
■ Flange Four-way Connector:



Size

■ Flange Executive Standard: HG/T20592-2009

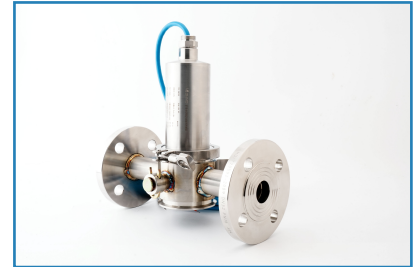
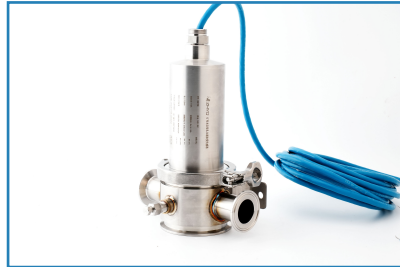
Nominal Pressure PN	Nominal Diameter DN	Connector Size				Flange thickness C	Sealing surface diameter d1
		Flange External Diameter D	Bolt hole center circle diameter K	Bolt hole diameter d2	Numbers of bolt hole n		
16	25	115	85	14	4	16	65
	32	140	100	18	4	18	76
	40	150	110	18	4	18	85



Installation Examples

Installation instruction

■ Installation Examples:



■ Standard optional accessories:

- Quick Load Chuck Type Four-way Connector:

1.5" standard clamp (304) *2

2-3"+2-1.5" four-way connector (304) *1



- Thread Four-way Connector

2-3"+2-DN25 Thread four-way connector (304) *1



- Flange Four-way Connector

2-3"+2-DN25/PN16-HG20592 flange four-way connector (304) *1



Relation graph between concentration value and refractive index

分辨率 Nd/Brix	0.0001 / 0.1	0.0001 / 0.1	0.0001 / 0.1	0.0001 / 0.1	0.0001 / 0.1
	0.0001 / 0.1	0.0001 / 0.1	0.0001 / 0.1	0.0001 / 0.1	0.0001 / 0.1
	0.0005 / 0.5	0.0005 / 0.5	0.0005 / 0.5	0.0005 / 0.5	0.0005 / 0.5
测量精度 nD/Brix	±0.0003 / ±0.3	±0.0003 / ±0.3	±0.0003 / ±0.3	±0.0003 / ±0.3	±0.0003 / ±0.3
	±0.0003 / ±0.3	±0.0003 / ±0.3	±0.0003 / ±0.3	±0.0003 / ±0.3	±0.0003 / ±0.3
	±0.0005 / ±0.5	±0.0005 / ±0.5	±0.0005 / ±0.5	±0.0005 / ±0.5	±0.0005 / ±0.5





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