

CNZ SERIES INLINE VISCOMETER

Industrial Process Viscosity Solutions

Precision. Stability. Process Control.



SINCE 1999

Thank you for purchasing process refractometer. The manual is specifically designed to guide you in understanding the refractometer functions and characteristics. Please read this manual carefully before using the instrument to ensure safe and correct operation. Please keep this manual safe for future reference.

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1.Product Highlights

The CNZ Series Inline Viscometer is engineered for continuous, real-time viscosity monitoring in demanding industrial environments.

Designed for global process industries, it delivers high-accuracy measurement, fast response, and exceptional repeatability, helping customers optimize product consistency, process efficiency, and quality control.

Ideal for:

- Oil & Gas
- Petrochemical
- Chemical Processing
- Polymer & Resin
- Paints, Coatings & Ink
- Food & Beverage
- Adhesives & Latex
- Glass & High-temperature Fluids

2.Why Choose CNZ?

High Precision Measurement

Advanced torsional vibration sensing technology ensures:

- Accuracy up to $\pm 0.5\%$
- Repeatability up to $\pm 0.3\%$
- Excellent long-term stability

Real-Time Process Control

Continuous inline monitoring allows immediate response to viscosity fluctuations during production.

Dual Parameter Output

Simultaneous output of:

- Viscosity
- Temperature

with built-in PT1000 temperature sensing.

Maintenance-Free Design

- No moving wear parts
- Long service life
- Minimal maintenance costs

Flexible Installation

Available for:

- Tanks
- Pipelines
- Reactors
- Pressure vessels
- High-temperature processes

3. Technical Parameters

3.1. Main Technical Parameters of Viscosity Meter

Viscosity measuring range	0-1,000,000,000 cP
Accuracy	±0.5%
Repeatability	±0.3%
Temperature measurement range	-50 to 450°C
Temperature accuracy	0.50%
Pressure range	< 6.4 MPa (customized above 6.4 MPa)
Temperature resistance	< 450°C
Power-on response time	60 s
Measurement response time	2 s
Material	SS316 stainless steel (standard)
	Hastelloy C-276 with PTFE coating(Optional)
Power supply	24V DC
Output	Viscosity:4-20 mA DC
	Temperature:4-20 mA DC
Communication interface	RS-485
Protocol	Modbus
Protection class	IP67
Explosion-proof rating	ExdIIB T6 Gb
Calibration	Standard sample liquid
Viscosity unit	freely configurable
Connection	Flange:DN50 / DN40 ; Thread:M42×1.5 / G1½ / 1½NPT
Nominal pressure	< 32 MPa
Flange standard	HG20592-2009

3.2. Main Technical Parameters of Controller

Communication interface	RS232 / RS485
Viscosity-temperature curves show	1,2,3,4,5
1.Display screen	7-inch color LCD touchscreen
2.Display parameters	viscosity / density / compensated viscosity / temperature
3.Display range	0-9999
4.Unit selection	optional
5.Historical data logging	adjustable interval
Network interface	Ethernet
Data storage	20 months
Installation	wall-mounted / panel-mounted
Enclosure size	400 × 300 × 200 mm

4. Main Product Series

4.1. CNZ-50 Series

Compact and versatile solutions for standard industrial applications.

Available Models:

- CNZ-50-1 Integrated Type
- CNZ-50-2 Split Type
- CNZ-50-G High-temperature Type

Best for:

- Tanks
- Mixers
- Standard pipelines

4.2. CNZ-80 Series

Heavy-duty industrial solutions for demanding environments.

Available Models:

- CNZ-80I General Type
- CNZ-80W High Temperature
- CNZ-80D Explosion-proof
- CNZ-80J Micro Probe
- CNZ-80L Extended Probe
- CNZ-80PW High Temp / High Pressure

Designed for:

- High pressure
- High temperature
- Hazardous areas
- Limited installation spaces

4.3. CNZ Portable Viscometer

- Suitable for flexible application scenarios

Industries Served

CNZ viscometers are widely used across global industries:

- Petroleum & Refining
- Chemical Manufacturing
- Silicone & Resin
- Coatings & Ink
- Food Processing
- Latex & Adhesives
- Optical Fiber Materials
- Aviation Fuel
- Glass & Ceramic Melt

Customer Value

By integrating CNZ inline viscosity monitoring into your process, you can achieve:

- Improved product consistency
- Reduced batch-to-batch variation
- Lower production waste
- Faster process optimization
- Better quality assurance
- Reduced maintenance downtime

Custom Engineering Support

We provide tailored solutions based on customer process conditions, including:

- Special material options
- Extended insertion lengths
- Custom flanges and threads
- High-pressure design
- High-temperature customization
- Explosion-proof solutions

Contact / OEM Support

Suitable for:

- Distributors
- OEM integration
- Industrial automation projects
- International EPC projects

Custom branding and technical support available.

4.1. CNZ-50 Series

4.1.1. CNZ-50-1 Integrated Inline Viscometer

Compact all-in-one design with integrated sensor and transmitter. Suitable for tank top, bottom, and side installations.



Technical Parameters

Viscosity measuring range	0~10 to 0~100000 mPa·s (optional)
Accuracy	±0.5%
Repeatability	±0.3%
Temperature range	-50~150°C (Accuracy ±0.5%)
Medium temperature	-40~150°C
Pressure range	≤32MPa,
Ambient temperature	-40~85°C
Ambient humidity	0~95% R.H
Output parameters	Viscosity 4-20mADC; Temperature 4-20mADC, Modbus
Response time	≤2s
Power supply	24V DC
Protection	IP67
Insertion depth	L=80mm
Material	316 Stainless Steel (standard), Hastelloy C276 (optional); Highly polished; Teflon coating optional

Application fields	Widely used in petroleum extraction, oil refining, chemical industry, silicone oil and rubber, resin, food, chemical fiber, ink, paint, optical fiber, latex, solvent, plastic, glass, aviation kerosene, various adhesive industries
Installation mode	Pipeline, pressure vessel, reactor,
Process connection	G1½

4.1.2.CNZ-50-2 Split-type Inline Viscometer

Designed for stirred reactors and high-speed mixing applications to prevent impact and bending damage.



Technical Parameters

Viscosity measuring range	0~10 to 0~100000 mPa·s (optional)
Accuracy	±0.5%
Repeatability	±0.3%
Temperature range	-50~150℃ (Accuracy ±0.5%)
Medium temperature	-40~150℃
Pressure range	≤32MPa
Ambient temperature	-40~85℃
Ambient humidity	0-95% R.H
Output Parameters	Viscosity 4-20mADC; Temperature 4-20mADC, Modbus
Response Time	≤2S
Power Supply	24V DC
Insertion Depth	L=150mm
Protection	IP67
Material	316 Stainless Steel (standard); Highly polished; Teflon coating optional
Application Fields	Widely used in petroleum extraction, oil refining, chemical industry, silicone oil and rubber, resin, food, chemical fiber, ink, paint, optical fiber, latex, solvent, plastic, glass, aviation kerosene, various adhesive industries
Installation Mode	Pipeline, pressure vessel, reactor, direct flange/thread installation
Configuration	With LCD display head integrated or split type
Process connection	Flange: DN25, 40, 50, 80 ; thread: M32*1.5, M42*1.5

4.1.3.CNZ-50-G High-temperature Inline Viscometer

Suitable for crude oil, heavy oil, lubricating oil, optical glass melts, metallic glass, and ceramic melts.



Viscosity measuring range	0~10 to 10 ⁶ mPa·s (optional)
Accuracy	±0.5%
Repeatability	±0.3%
Temperature range	-50~500°C (Accuracy ±0.5%)
Medium temperature	-40~450°C
Pressure range	≤32MPa
Ambient temperature	-40~85°C
Ambient humidity	0~95% R.H
Output Parameters	Viscosity 4~20mADC; Temperature 4~20mADC, Modbus
Response Time	≤2S
Power Supply	24V DC
Protection Level	IP67
Explosion-proof	Ex d IIB T6
Insertion Depth	L=100~500mm
Sensor Material	SS316 (standard), Hastelloy C276 (optional); Highly polished; Teflon coating optional
Application Fields	Widely used in petroleum extraction, oil refining, chemical industry, silicone oil and rubber, resin, food, chemical fiber, ink, paint, optical fiber, latex, solvent, plastic, glass, aviation kerosene, various adhesive industries
Installation Mode	Pipeline, pressure vessel, reactor, direct flange/thread installation
Configuration	With LCD display head integrated or split type
Process connection	Flange DN25, 40, 50, 80; thread M32*1.5, M42*1.5, G1½

4.2. CNZ-80 Series

4.2.1. CNZ-801 General Inline Viscometer

Ideal for petrochemical, chemical processing, polymer, cosmetic, coating, and printing industries.



Viscosity measuring range	0~10 to 10 ⁶ mPa·s (optional)
Accuracy	±0.5%
Repeatability	±0.3%
Temperature range	-50~150°C (Accuracy ±0.5%)
Medium temperature	-40~450°C
Pressure range	≤32MPa
Ambient temperature	-40~85°C
Ambient humidity	0~95% R.H
Output Parameters	Viscosity 4~20mADC; Temperature 4~20mADC, Modbus
Response Time	≤2S
Power Supply	24V DC
Protection Level	IP67
Insertion Depth	L=80~300mm
Sensor Material	SS316(standard), Hastelloy C276 (optional); Highly polished; Teflon coating optional

Application Fields	Widely used in petroleum extraction, oil refining, chemical industry, silicone oil and rubber, resin, food, chemical fiber, ink, paint, optical fiber, latex, solvent, plastic, glass, aviation kerosene, various adhesive industries
Installation Mode	Pipeline, pressure vessel, reactor, direct flange/thread installation
Configuration	With LCD display head integrated or split type
Process connection	Flange DN25, 40, 50, 80; thread M32*1.5, M42*1.5, G1½

4.2.2.CNZ-80W High-Temperature Inline Viscometer

Designed for high-temperature viscosity and flow characteristic measurement under demanding thermal conditions.



Viscosity measuring range	0~10 to 10 ⁶ mPa·s (optional)
Accuracy	±0.5%
Repeatability	±0.3%
Temperature range	-50~500℃ (Accuracy ±0.5%)
Medium temperature	-40~500℃
Pressure range	≤32MPa
Ambient temperature	-40~85℃
Ambient humidity	0~95% R.H
Output Parameters	Viscosity 4~20mADC; Temperature 4~20mADC, Modbus
Response Time	≤2S
Power Supply	24V DC
Protection Level	IP67
Insertion Depth	L=150~300mm
Material	SS316(standard), Hastelloy C276 (optional); Highly polished; Teflon coating optional
Application Fields	Widely used in petroleum extraction, oil refining, chemical industry, silicone oil and rubber, resin, food, chemical fiber, ink, paint, optical fiber, latex, solvent, plastic, glass, aviation kerosene, various adhesive industries
Installation Mode	Pipeline, pressure vessel, reactor, direct flange/thread installation
Configuration	With LCD display head integrated or split type
Process connection	Flange DN25, 40, 50, 80; thread M32*1.5, M42*1.5

4.2.3.CNZ-80D Explosion-proof Inline Viscometer

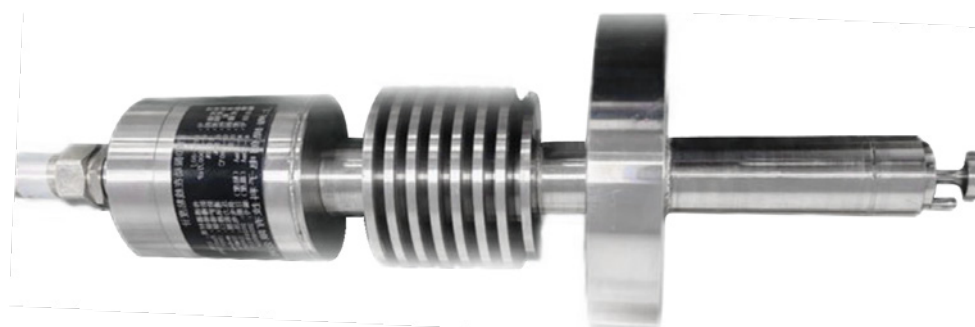
Suitable for flammable and explosive media with explosion-proof rating ExdIIBT6.



Viscosity measuring range	0~10 to 10 ⁶ mPa·s (optional)
Accuracy	±0.5%
Repeatability	±0.3%
Temperature range	-50~500°C (Accuracy ±0.5%)
Medium temperature	-40~450°C
Pressure range	≤32MPa
Ambient temperature	-40~85°C
Ambient humidity	0~95% R.H
Output parameters	Viscosity 4~20mADC; Temperature 4~20mADC, Modbus
Response time	≤2S
Power supply	24V DC
Protectionl	IP67
Explosion-proof standard	Ex d IIB T6
Insertion depth	L=150~300mm
Sensor material	SS316 (standard), Hastelloy C276 (optional); Highly polished; Teflon coating optional
Application fields	Widely used in petroleum extraction, oil refining, chemical industry, silicone oil and rubber, resin, food, chemical fiber, ink, paint, optical fiber, latex, solvent, plastic, glass, aviation kerosene, various adhesive industries
Installation mode	Pipeline, pressure vessel, reactor, direct flange/thread installation
Configuration	With LCD display head integrated or split type
Process connection	Flange DN25, 40, 50, 80; thread M32*1.5, M42*1.5

4.2.4.CNZ-80J Micro-probe Inline Viscometer

Designed for limited installation spaces such as extruders and wall-scraper stirred reactors.



Viscosity measuring range	0~10 to 10 ⁶ mPa·s (optional)
Accuracy	±0.5%
Repeatability	±0.3%
Temperature range	-50~500°C (Accuracy ±0.5%)
Medium temperature	-40~450°C
Pressure range	≤32MPa
Ambient temperature	-40~85°C
Ambient humidity	0~95% R.H
Output Parameters	Viscosity 4~20mADC; Temperature 4~20mADC, Modbus
Response Time	≤2S
Power Supply	24V DC
Protection	IP67
Explosion-proof Standard	Ex d IIB T6
Insertion depth	L=150~300mm
Sensor Material	SS316 (standard), Hastelloy C276 (optional); Highly polished; Teflon coating optional

Application Fields	Widely used in petroleum extraction, oil refining, chemical industry, silicone oil and rubber, resin, food, chemical fiber, ink, paint, optical fiber, latex, solvent, plastic, glass, aviation kerosene, various adhesive industries
Installation Mode	Pipeline, pressure vessel, reactor, direct flange installation
Configuration	With LCD display head integrated or split type
Process connection	Flange DN25, 40, 50, 80; thread M32*1.5, M42*1.5

4.2.5.CNZ-80L Extended-length Inline Viscometer

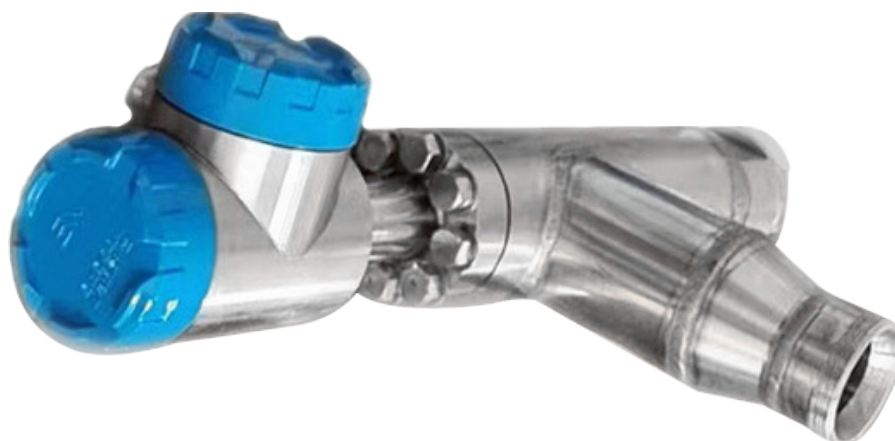
Extended insertion depth for large tanks and deep vessels.



Viscosity measuring range	0~10 to 10 ⁶ mPa·s (optional)
Accuracy	±0.5%
Repeatability	±0.3%
Temperature range	-50~150°C (Accuracy ±0.5%)
Medium temperature	-40~150°C
Pressure range	≤32MPa
Ambient temperature	-40~85°C
Ambient humidity	0~95% R.H
Output parameters	Viscosity 4~20mADC; Temperature 4~20mADC, Modbus
Response time	≤2S
Power supply	24V DC
Protection	IP67
Explosion-proof standard	Ex d IIB T6
Insertion depth	L=900~2000mm
Sensor material	SS316 (standard), Hastelloy C276 (optional); Highly polished; Teflon coating optional
Application fields	Widely used in petroleum extraction, oil refining, chemical industry, silicone oil and rubber, resin, food, chemical fiber, ink, paint, optical fiber, latex, solvent, plastic, glass, aviation kerosene, various adhesive industries
Installation mode	Pipeline, pressure vessel, reactor, direct flange installation
Configuration	With LCD display head integrated or split type
Process connection	Flange above DN80

4.2.6.CNZ-80PW High-temperature High-pressure Inline Viscometer

Suitable for severe industrial environments involving both elevated temperature and pressure.



Viscosity measuring range	0~10 to 10 ⁶ mPa·s (optional)
Accuracy	±0.5%
Repeatability	±0.3%
Temperature range	-50~150℃ (Accuracy ±0.5%)
Medium temperature	-40~150℃
Pressure range	≤32MPa
Ambient temperature	-40~85℃
Ambient humidity	0~95% R.H
Output parameters	Viscosity 4~20mADC; Temperature 4~20mADC, Modbus
Response time	≤2S
Power supply	24V DC
Protection	IP67
Explosion-proof standard	Ex d IIB T6
Insertion depth	L=900~2000mm
Sensor material	SS316 (standard), Hastelloy C276 (optional); Highly polished; Teflon coating optional
Application fields	Widely used in petroleum extraction, oil refining, chemical industry, silicone oil and rubber, resin, food, chemical fiber, ink, paint, optical fiber, latex, solvent, plastic, glass, aviation kerosene, various adhesive industries
Installation mode	Pipeline, pressure vessel, reactor, direct flange installation
Configuration	With LCD display head integrated or split type
Process connection	Flange above DN80

4.3. Portable Series

Battery-powered portable solution for on-site viscosity and temperature measurement, with LCD display and historical data recording via PC connection.

Viscosity measuring range	0-10,000 cP
Accuracy	±0.5%
Repeatability	±0.3%
Temperature measuring range	0-100℃
Temperature accuracy	±0.5%
Sensor pressure range	Atmospheric pressure
Sensor temperature resistance range	<120℃
Startup signal response time	60s
Material	SS316 (standard); Other materials are optional
Treatment	Standard - Highly polished with Teflon coating
Environmental level	IP68
Power supply	Lithium battery powered 12V DC
Standby time	24h
Field viscosity sensor communication interface	RS485
Display range	LCD screen 0-9999 (viscosity, temperature)
Historical data recording when connected to computer	

5.Field Application

5.1.Hardware

- a. Viscosity sensor
- b. Charging communication connector
- c. Computer and sensor connection
- d. Power cord



5.2.Application Instructions

- a. Charge for more than 2 hours before measurement.
- b. Check zero point before measurement after powering on. If not at zero point, connect to computer, open interface and adjust gain to make signal voltage 3400 ± 50 .
- c. Open the probe protective cover, immerse the probe in the medium to be measured, and read the measurement data. If continuous measurement and data recording are required, connect to computer. (Refer to software operation)



6.Installation Forms of Inline Viscometer



6.1 Flange Installation



6.2 Threaded Installation



6.3 Elbow Pipe Flange Installation



6.4 Micro-pipe Installation



6.5 Reactor Side Installation

Focus on sensor & control Since 1999

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