

# INDUCTIVE CONDUCTIVITY ANALYZERS ISC202/ISC40



## ***ISC202/ISC40***

### *INDUCTIVE CONDUCTIVITY ANALYZERS*

*The EXA ISC202 Inductive SC is a user programmable instrument for conductivity measurements in medium to highly conductive process liquids, using inductive measuring principles.*

Bulletin 12D06A03-01E

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# ISC202G/SJ and ISC40GJ/SJ 2-Wire Inductive Conductivity Analyzers

Wide, programmable conductivity ranges, from 0-100  $\mu\text{S}/\text{cm}$  to 0-1999 mS/cm, covers a broad spectrum of applications

The inductive conductivity analyzer consists of the ISC202G/SJ inductive conductivity transmitter and the ISC40GJ/SJ inductive conductivity sensor. The analyzer provides accurate measurements over a wide conductivity range, from 0-100  $\mu\text{S}/\text{cm}$  to 0-1999 mS/cm, and process temperature range, from -10 to 130°C, without change of the cell constant or recalibration.

Due to its non-contact, inductive measurement principle, the inductive conductivity analyzer is suitable for a broad spectrum of applications, such as the chemical industry where the concentration of acid, alkaline, or salt-containing solutions should be monitored, the food and pharmaceutical industries, the melting and surface treatment industries, and the pulp and paper industries.

Housed in a cast aluminum case, the ISC202 is suitable for harsh environments. It is also designed for ease of use, and operating parameters, output ranges, output linearization function, temperature compensation coefficient and other settings are user programmable.



The ISC202

ISC202

a two-wire inductive conductivity analyzer with an

incorporated microprocessor,

can bring you the benefit of flexibility,

reliability and low maintenance based on Yokogawa's extensive liquid

conductivity measurement experience.

## Features

- Auto zeroing eliminates drift caused by magnetic offset between the two toroids.
- A single sensor covers wide conductivity ranges up to 1-1999 mS/cm.
- Auto-ranging display achieves optimum resolution.
- User programmable output span ranges from 100  $\mu\text{S}/\text{cm}$  to 1999 mS/cm. Zero suppression is up to 90% full scale (Minimum Span: 100  $\mu\text{S}/\text{cm}$ ).
- Four fully programmable contact outputs for process control or alarms.
- Process control functions like on/off output, proportional duty cycle control and proportional pulse frequency control are available.

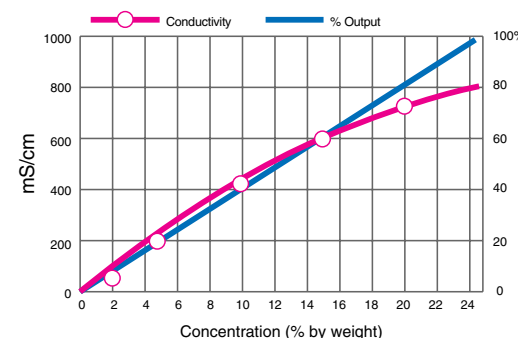
## Applications

- All applications where severe electrode fouling prevents the use of contacting electrodes.
- All slurry applications where conventional systems suffer from plugging or corrosion, except slurry containing obstacles such as iron powder that affects the magnetic field, and fine particles that are likely to be electrically charged.
- Processes where precise control with high accuracy and reliability is paramount.
- All conductivity ranges except (ultra) pure water's.
- Most chemical processes.

## Output Range Programmable to Suit the Application

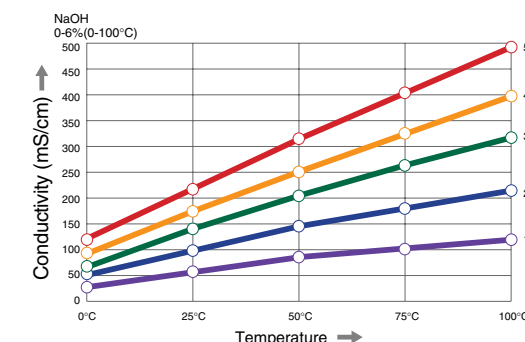
### Linearization

As a concentration meter, the programmable output function provides outputs linearized to concentration.



### Matrix Temperature Compensation

Incorporated to ensure accurate temperature compensation. Five preprogrammed matrices and one 25-point user programmable matrix are available.



## Sensors with Excellent Abrasion and Chemical Resistance

The ISC40GJ/SJ sensors use a high performance engineering plastic of PEEK (polyetheretherketone) that provides abrasion and corrosion resistance.

The sensor is provided with a rugged stainless steel mounting thread/nut/gasket combination for ultimate flexibility in installation using bulkhead installation technique. There is also a wide range of holders and options available for reliable in-line or off-line installation with double O-ring seals (Viton or ethylene propylene copolymer rubber) for long service life of the sensor.

The sensor has a large bore (17 mm) for optimal resistance to fouling processes and when properly installed, the flow will keep the sensor clean, to help avoid measuring errors. This large bore also allows quick response even in low flow measurement.

Also available upon request is a Teflon lined sensor that provides excellent heat and chemical resistance. Its main applications include the chlorine-alkali industry, sulfuric acid and nitric acid manufacturing industries, and semiconductor industry. The sensor has different shape and specifications from the standard sensor's. For details, contact Yokogawa or a sales representative.

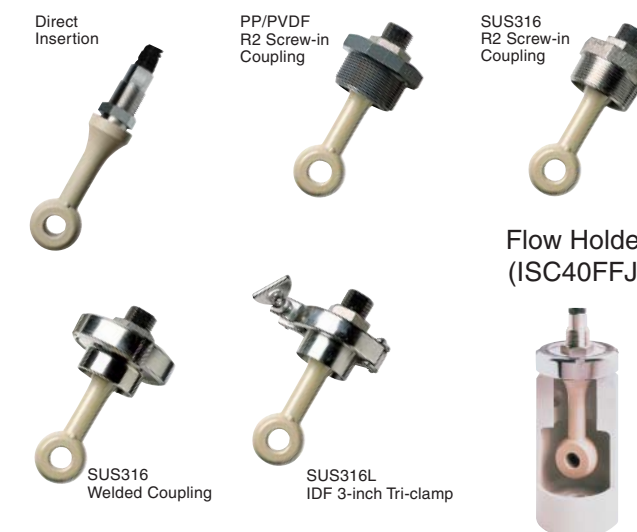


## Various Holders for Installation Flexibility

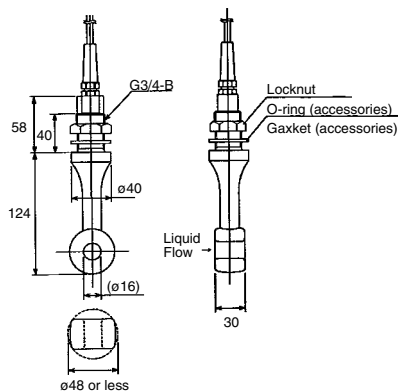
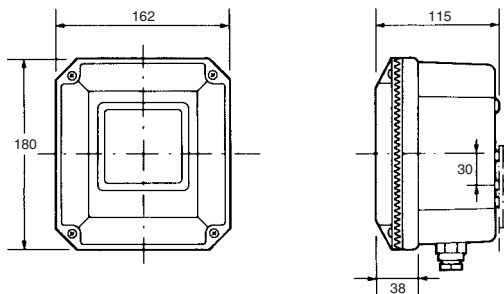
The ISC40GJ/SJ sensors are mounted directly to the process or using flow or immersion holder.

A wide choice of construction materials gives the user the optimal solution for any process considering chemical resistance, pressure and temperature specifications.

### Direct Insertion Subassembly (ISC40FSJ)



Unit : mm



Output : 4 to 20 mA DC (2-wire)  
 Power supply : 17 to 40 V DC (16.3 to 31.5 V DC for the ISC202SJ)  
 Measuring range : 0 to 1999 mS/cm at 25°C reference temperature  
 Span on output : Min. 100 μS/cm Max. 1999 mS/cm  
 Temperature compensation algorithm : User selectable

- According to IEC 764-3 tables for NaCl.
- User selectable values for specific process liquids including H<sub>2</sub>SO<sub>4</sub>, HCl, HNO<sub>3</sub> and NaOH.
- User programmable values for specific process liquids (user defined). (Refer to GS12D06A03-01E)

Concentration measurement : Output and display can read concentration units directly.  
 Probe material : PEEK (Poly Ether Ether Ketone)  
 O-ring material : Viton  
 Mounting : Flow fitting, Immersion fitting and Direct Insertion Subassemblies  
 Temperature range : -10 to 130°C (-10 to 105°C for the ISC40SJ-TT)  
 Pressure : Maximum 2 MPa (300 psi) dependent on mounting.  
 Chemical resistance : Fluids except some concentrated acids (H<sub>2</sub>SO<sub>4</sub>, HNO<sub>3</sub> and HF). (Refer to GS12D06B01-01E)

### 2-wire Inductive Conductivity Transmitter (Non-explosionproof type)

Model	Suffix Code	Option Code	Description
ISC202G			2-wire Inductive Conductivity Transmitter
Type	-A -P -F		mA with HART Profibus FF
Language	-J -E		Japanese English
Option	Mounting Hardware Hood Tag Plate Conduit Adapter	/J /PM /H /H2 /SCT /AFTG /ANSI /TB /X1	Pipe, wall mounting bracket (Stainless steel) Panel Mounting bracket (Stainless steel) Hood for sun protection (Carbon steel) Hood for sun protection (Stainless steel) Stainless steel tag plate G1/2 1/2NPT Screw terminal*1 Epoxy baked finish*2

\*1 It can be specified when the suffix code -A is selected.  
 \*2 The housing is coated with epoxy resin.

[Style: S2]

### 2-wire Inductive Conductivity Transmitter (Explosionproof type)

Model	Suffix Code	Option Code	Description
ISC202SJ			Intrinsic Safe Inductive Conductivity Transmitter
Type	-1		TIIS certification*1
Language	-J -E		Japanese English
Option	Mounting Hardware Hood Tag Plate Conduit Adapter	/J /PM /H /H2 /SCT /AFTG /ANSI /X1	Pipe, wall mounting bracket (Stainless steel) Panel Mounting bracket (Stainless steel) Hood for sun protection (Carbon steel) Hood for sun protection (Stainless steel) Stainless steel tag plate G1/2 1/2NPT Epoxy baked finish*2

\*1 "TIIS Certification" as a certified explosion approval from the Technology Institution of Industrial Safety. [Style: S1]  
 \*2 The housing is coated with epoxy resin.

### Inductive Conductivity Detector (Non-explosionproof type)

Model	Suffix code	Option Code	Description
ISC40GJ			General Purpose Inductive Conductivity Detector
Construction	-GG		Standard type
Temperature Sensor	-T1 -T3		Pt1000* Thermistor
Cable length and Cable end type	-05 -10 -15 -20 -Y1 -Y2 -Y3 -Y4		5 m (pin terminals) 10 m (pin terminals) 15 m (pin terminals) 20 m (pin terminals) 5 m (M3 ring terminals)*3 10 m (M3 ring terminals)*3 15 m (M3 ring terminals)*3 20 m (M3 ring terminals)*3
Option	Adapter O-ring, gasket	/SFJ /PFJ /FFJ5 /SFD /SFA /SSG /PSG /FSJ /EP	JIS 10K-50-RF flange, JIS SUS316 JIS 10K-50-FF flange, PVC JIS 10K-50-FF flange, PVDF DIN PN16-DN50 flange, JIS SUS316 ANSI CLASS150-2 flange, JIS SUS316 R2 screw-in adapter, JIS SUS316 R2 screw-in adapter, PVC R2 screw-in adapter, PVDF Ethylene propylene rubber O-ring and gasket*2

\*1 Choose thermistor (-T3) only, when connecting with ISC200G.  
 \*2 For use in highly alkaline solutions, be sure to check the process conditions and contact us.  
 \*3 Used for connection to ISC450G, ISC202G/TB.

[Style: S1]

### Inductive Conductivity Detector (Explosionproof type)

Model	Suffix code	Option Code	Description
ISC40SJ			Intrinsic Safe Inductive Conductivity Detector
Construction	-GG -TT		TIIS certification type (for ISC200S) TIIS certification type (for ISC202SJ)
Temperature Sensor	-T1 -T3		Pt1000*1 Thermistor
Cable length	-05 -10 -15 -20		5 m (pin terminals) 10 m (pin terminals) 15 m (pin terminals) 20 m (pin terminals)
Option	Adapter O-ring, gasket	/SFJ /PFJ /FFJ5 /SFD /SFA /SSG /PSG /FSJ /EP	JIS 10K-50-RF flange, SUS316 JIS 10K-50-FF flange, PVC JIS 10K-50-FF flange, PVDF DIN PN16-DN50 flange, SUS316 ANSI CLASS150-2 flange, SUS316 R2 screw-in adapter, SUS316 R2 screw-in adapter, PVC R2 screw-in adapter, PVDF O-ring and gasket, ethylene propylene rubber*2

\*1 Choose thermistor (-T3) only, when connecting with ISC200S. [Style: S2]  
 \*2 For use in highly alkaline solutions, be sure to check the process conditions and contact us.  
 (Note) "TIIS Certification" as a certified explosion approval from the Technology Institution of Industrial Safety.

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