

A large, central rectangular area with a blue background and a white, intricate, web-like or cellular pattern. The pattern consists of interconnected lines forming irregular, organic shapes, resembling a network or a microscopic view of a material.

# FLOW METERS

PRODUCTS GUIDE

**NITTO SEIKO**

**ROTOMECH**

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**"High Performance" and "High Liability"  
Are Guaranteed for NITTO SEIKO's  
Wide-ranged Line of Products from  
Flow Meters to Precision Machine Equipment  
to Meet the Needs from Various Industries.**

Since 1949 when NITTO SEIKO started the manufacture and sales of water meters, it has fully covered most of the measurement products measuring water, gas, oil and liquid. It continues to expand its product line to meet the needs of various industries. The series of "NITTO SEIKO" flow meters is a steady expansion of its product line into various industries of water, gas, oil and liquid. The expansion of product line is a continuous program to meet the requirements for water, gas and liquid measurement of high-precision flow meters in such as manufacturing equipment. NITTO SEIKO has been steadily expanding its product line to meet the needs of various industries.

The series of "NITTO SEIKO" products are of high-precision accuracy, including not only the products that measuring equipment for flow, the high-precision products measuring all kinds of liquids, gas, oil and liquid. The series of products for gas meters, compared to production meter and further the expansion of product line to various industries.

NITTO SEIKO will make its best effort to provide flow for the measurement and expansion which can contribute to the world's peace and stability.



## Creation of New Applications for Micro Flow Measurement



### Nico Flow (Micro Flow Meter)

#### Types **NH, NH-VV**

In the fields of heat control and engine performance control or chemical industry, food industry and medical supply industry, high precision measurement of micro flow and liquid feeding in preset quantity are required. The Nico Flow is a high precision micro flow meter which adopts the rotary piston suitable for the measurement of micro flow. Beside the Nico Flow (Type NH) for flow measurement of ordinary liquid, the PVC Nico Flow (Type NH-VV) for flow measurement of strongly corrosive liquid which uses hard vinyl chloride resin at the wetted parts.

#### General Specifications (Type NH)

Liquid to be measured: Cold and hot water, petroleum, chemical liquids, food liquids etc.  
 Size: 1/4B, 1/2B (Screw type), 15A, 20A (Flange type)  
 Liquid viscosity: 0.4~100mPas  
 Liquid temperature: -5~+120°C  
 Liquid pressure: Working pressure - less than 1.0MPa (meter withstanding the pressure up to 21.0MPa is also available.)  
 Accuracy: Within  $\pm 0.75\%$   
 Material: SCS14, SUS316

• Explosion-proof and flame-proof type (Exd II BT4) is also available.

#### Flow Range (NH Type --- L/h)

( $\times 0.75\%$ )

| Liquid Viscosity | Gasoline    | Water & equivalents | Kerosene | Light oil | A-B Heavy oil |
|------------------|-------------|---------------------|----------|-----------|---------------|
| Model            | 0.4~0.8mPas | 0.8~1.0mPas         | 1~2mPas  | 2~10mPas  | 10~100mPas    |
| NH15MC           | 3~15        | 3~15                | 3~15     | 1~15      | 0.3~15        |
| NH15LD           | 7~80        | 7~80                | 7~80     | 2~80      | 1~80          |
| NH15LM           | 12~100      | 12~100              | 8~100    | 3~100     | 2~100         |
| NH15LL           | 15~200      | 15~200              | 10~200   | 3~200     | 4~200         |
| NH15LDJ          | 40~600      | 30~600              | 20~600   | 15~600    | 10~600        |

• As for the connection with the instrument, refer to the "System 2" on page 19.  
 • One is requires on PVC Nico Flow (NH-VV).  
 Note: Pressure: 1MPa=10.2 kgf/cm<sup>2</sup>  
 Viscosity: 1mPas=1cp



# Reliable Nico Flow Loaded with High-functional Electronic Counter



## Electronic Flow Meter for Small Flow Rate

### Type **NE**

Electronic flow meter for small flow rate is a flow meter specially designed for small flow rate area, loaded with an electronic indicator-counter on the measuring unit of a rotary piston type positive displacement flow meter. It is loaded with "user setting function" which enables the user to change the setting easily in the field, and can be used for a wide variety of applications. This flow meter is available for measurement control of small flow rates such as process control of additives, control of mixed water, etc.

#### General Specifications

Figures in parenthesis are for special specification.

Liquid to be measured: Chemical liquids, food liquids, petroleum, water etc.  
 Size: 1/4B, 1/2B (Screw type), 1.5A, 2.0A (Flange type)  
 Liquid viscosity: 0.4~100mPa·s  
 Liquid temperature: -5~80°C  
 Liquid pressure: Material symbol LS: 1.0Mpa or under  
 Material symbol S2: 2.0~6.3Mpa  
 Accuracy: Within  $\pm 0.75\%$

#### Materials

| Main parts | Body   | Pressure proof cover | Rotor                    |
|------------|--------|----------------------|--------------------------|
| LD         | GC514  | GC514                | Special carbon, aluminum |
| S2         | SUS316 | SUS316               | Special carbon, sapphire |

#### Flow Range

| Viscosity (mPa·s) | Flow Range (L/h) |        |        |        |
|-------------------|------------------|--------|--------|--------|
|                   | LD               | LM     | LL     | LG     |
| 0.4~              | 7~50             | 12~100 | 15~200 | 40~600 |
| 0.9~              | 7~50             | 12~100 | 15~200 | 30~600 |
| 1~                | 7~50             | 8~100  | 10~200 | 20~600 |
| 5~                | 2~50             | 5~100  | 8~200  | 15~600 |
| 10~100            | 1~50             | 2~100  | 4~200  | 10~600 |

#### Specification of Counting Unit

| Counting unit                | Pulse & alarm output type                                                                                                                                                                                                                                                                               | Analogue output type |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Flow rate calculation system | Periodical measured flow rate calculation                                                                                                                                                                                                                                                               |                      |
| Indicator                    | Numerical indication: 7 segment LCD, SW x 10H 8-digits<br>Mode indication, alarm indication: LCD 2H                                                                                                                                                                                                     |                      |
| Indication items             | Integrated flow rate, momentary flow rate (switched by mode button)<br>• Total integrated flow rate: 8-digits MODE 1<br>• Momentary flow rate (%): 8-digits MODE 2<br>or (1/min.): 8-digits MODE 3<br>• Integrated flow rate (countable): 8-digits MODE 4<br>• Momentary flow rate (%): 4-digits MODE 5 |                      |
| Output signal                | Pulse signal or alarm signal                                                                                                                                                                                                                                                                            | 4~20mA DC            |
| Internal power               | Lithium battery (built-in), service life approx. 3 years                                                                                                                                                                                                                                                |                      |
| External power               | DC12/24V                                                                                                                                                                                                                                                                                                | DC24V                |
| Ambient temperature          | -10~60°C                                                                                                                                                                                                                                                                                                |                      |
| Casing material              | Aluminum die casting                                                                                                                                                                                                                                                                                    |                      |
| Construction                 | Non-explosion proof, JIS C920 drip proof                                                                                                                                                                                                                                                                |                      |

## Simplicity in Design and Ease in Maintenance and Check



### Small Size Rotary Piston Flow Meter

#### Types **A, Z, C, H**

This flow meter for small flow measurement is characterized in its structural simplicity. Material can be selected from various options. The structural simplicity facilitates the maintenance and check. The pressure loss is extremely small and even high viscous liquid can be measured with ease. This small size rotary piston flow meter is now used for the measurement and control of liquid in every industry.

#### General Specifications

Figures in parentheses are for special specification.

Liquid to be measured: Cold and hot water, petroleum, chemical liquids, food liquids etc.  
20A, 25A

Size: Liquid viscosity: 0.5~3,000mPas (0.2~30,000Pa·s)

Room temp. -80°C (-20~+200°C)

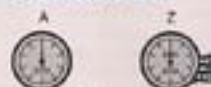
Liquid temperature: Working pressure - less than 1.0MPa (working pressure - less than 2.0MPa)

Liquid pressure: Accuracy: Within ±0.5%

Material: FC200/CAC406, FC200/FC200, FC200/SCS14, SCS14/SCS14

- The size 20mm can not be manufactured for other flow meters than made of FC200/CAC406 (for oil) and SCS14/SCS14 (Material approved of the use for high-pressure gas).

#### Kind of Direct Totalizer



Direct reading type: Direct totalizing type with setback register

#### Kind of Pulse Generator

##### Unit pulse generator (C)

This generator is to be connected with a totalizer, printer, preset counter, etc.

Pulse generator for DA conversion (H)  
This generator, when combined with DA converter, can be connected with an indicator, recorder, controller, etc. for analog signal, and with a totalizer, printer, preset counter, etc. for unit pulse signal.

- Explosion-proof and flame-proof type (d, G4) and explosion-proof and intrinsically safe type (ia, G4) are also available.

- As for the connection with the instrument, refer to the "System 1" on page 18.

#### Flow Range (L/h)

(±0.5%)

| Size (mm) | Material           | 0.5mPas     | 1mPas                | 2mPas       | 5mPas       | 10mPas     | 20mPas     | 100mPas    |
|-----------|--------------------|-------------|----------------------|-------------|-------------|------------|------------|------------|
|           | Number of capacity | Capacity    | Water (Normal temp.) | Capacity    | Capacity    | Capacity   | Capacity   | Capacity   |
| 20        | 20C                | 50 - 200    | —                    | 40 - 200    | 20 - 200    | 25 - 200   | 10 - 200   | 5 - 200    |
|           | 20A                | 50 - 400    | —                    | 50 - 400    | 50 - 400    | 50 - 400   | 20 - 400   | 10 - 400   |
| 25        | 25C                | 200 - 800   | 200 - 800            | 100 - 800   | 100 - 800   | 80 - 800   | 30 - 800   | 15 - 800   |
|           | 25A                | 200 - 1,600 | 200 - 1,600          | 100 - 1,600 | 100 - 1,600 | 80 - 1,600 | 40 - 1,600 | 20 - 1,600 |

①: In the flow meter with pulse generator, the minimum flow rate of the symbol of capacity 200 differs somewhat.

Note) Pressure: 1MPa=10.2 kgf/cm<sup>2</sup>  
Viscosity: 1mPas=1cp

## Excellent in Durability and Wide in Application Field



### Rotary Flow Meter

## Types AO, Z8, IO, CN

The positive displacement flow meter has many advantages such as versatility in its application field, high accuracy in measurement with wide-ranged flow rate etc. and is now used widely in every industry. In the range of positive displacement flow meters, the rotary flow meter has a particularly simple structure, and ceramic is used as standard material for the bearings which come in contact with liquid. Besides, a special resin excellent in resistance to chemicals, wear, heat and impact is employed for the rotor. A large-size legible register is used in the direct totalizer. This rotary flow meter is an easy-to-use durable liquid flow meter.

#### General Specifications

Figures in parentheses are for special specification.  
**Liquids to be measured:** Cold and hot water, petroleum, chemical liquids, food liquids etc.  
**Size:** 25A, 40A, 50A, 80A, 100A  
**Liquid viscosity:** 0.5~500cP (0.2~30,000mPa·s)  
**Liquid temperature:** Normal temp. ~80°C (-20~200°C)  
**Liquid pressure:** Working pressure - less than 1.0MPa (Working pressure - less than 2.0MPa)  
**Accuracy:** Within  $\pm 0.5\%$  (within  $\pm 0.2\%$ )  
**Material:** FC200CAC406, FC200FC200, FC200SCS14, SCS14SCS14

#### Kind of Direct Totalizer



Direct totaling type: Direct totaling type with preset register  
 Direct totaling type: Direct totaling type with preset register and flow indicator  
 Direct totaling type: Field counter type  
 Direct totaling type: Pneumatic batch counter

#### Kind of Pulse Generator

**Unit pulse generator**  
 Unit pulse generator is to be connected with a totalizer, printer, preset counter, etc.  
**Pulse generator for DA conversion**  
 This generator, when combined with DA converter can be connected with an indicator, recorder, controller, etc. for analog signal, and with a totalizer, printer, preset counter, etc. for unit pulse signal.  
 • Explosion-proof and flame-proof type (Exd I BT4) and explosion-proof and intrinsically safe type (IaD4) are also available.  
 • As for the connection with the instrument, refer to the "System 1" on page 11.

#### Flow Range (L/h)

| Size | Symbol or capacity | Flowing condition | Water (Normal temp.) | Hot water (50°C ~ 120°C) | 20cP s <sup>-1</sup> |                | 100cP s <sup>-1</sup> |                | 500cP s <sup>-1</sup> |  |
|------|--------------------|-------------------|----------------------|--------------------------|----------------------|----------------|-----------------------|----------------|-----------------------|--|
|      |                    |                   |                      |                          | Gasoline             | Kerosene       | Light oil             | A Heavy oil    | C Heavy oil           |  |
| 025  | BD                 | Continuous        | 500 ~ 2,500          | 650 ~ 2,000              | 600 ~ 3,000          | 500 ~ 3,000    | 360 ~ 3,600           | 200 ~ 3,500    | 170 ~ 3,500           |  |
|      | AD                 | Intermittent      | 500 ~ 3,500          | 650 ~ 2,500              | 800 ~ 4,000          | 500 ~ 5,000    | 360 ~ 5,000           | 200 ~ 5,000    | 170 ~ 5,000           |  |
| 040  | BD                 | Continuous        | 1,200 ~ 6,000        | 1,500 ~ 4,000            | 1,500 ~ 7,500        | 1,200 ~ 7,500  | 850 ~ 8,400           | 500 ~ 8,400    | 360 ~ 8,400           |  |
|      | AD                 | Intermittent      | 1,200 ~ 6,500        | 1,500 ~ 4,000            | 1,500 ~ 10,000       | 1,200 ~ 12,000 | 850 ~ 12,000          | 500 ~ 12,000   | 360 ~ 12,000          |  |
| 050  | BD                 | Continuous        | 2,400 ~ 12,000       | 3,000 ~ 9,000            | 3,000 ~ 15,000       | 2,400 ~ 15,000 | 1,200 ~ 17,000        | 1,000 ~ 17,000 | 750 ~ 17,000          |  |
|      | AD                 | Intermittent      | 2,400 ~ 17,000       | 3,000 ~ 12,000           | 3,000 ~ 20,000       | 2,400 ~ 24,000 | 1,200 ~ 24,000        | 1,000 ~ 24,000 | 750 ~ 24,000          |  |
| 080  | BD                 | Continuous        | 5,000 ~ 25,000       | 6,000 ~ 20,000           | 6,000 ~ 30,000       | 5,000 ~ 30,000 | 2,500 ~ 30,000        | 2,000 ~ 30,000 | 1,500 ~ 30,000        |  |
|      | AD                 | Intermittent      | 5,000 ~ 35,000       | 6,000 ~ 25,000           | 6,000 ~ 40,000       | 5,000 ~ 50,000 | 2,500 ~ 50,000        | 2,000 ~ 50,000 | 1,500 ~ 50,000        |  |

Note) Pressure: 1MPa=10.2 kgf/cm<sup>2</sup>  
 Viscosity: 1mPa·s=1cP

(±0.5%)



## Positive Displacement Flow Meters Provide Greater Precision and More Functionality



### Super Rotary Flow Meter

#### Type **RQ**

We have improved the simple and dependable design of the rotary piston type positive displacement flow meter by adding a microchip to perform the calculation functions. This result is greater precision, improved durability, and applicability to a wider range flow measurement jobs.

#### Unit of Integrated Indication and Unit of Output Pulse

| Symbol of capacity | Minimum unit L, L/P |
|--------------------|---------------------|
| 0100L, 0100L/P     | 0.01                |
| 0400L, 0600L/P     | 0.1                 |
| 0800L, 1000L/P     | 1                   |

#### General Specifications

Figures in parentheses are for special specification.

Liquids to be measured: Petroleum, chemical liquids, cold and hot water, food liquids etc.

Size: 25A, 40A, 50A, 80A, 100A

Liquid viscosity: 0.5~500mPa·s (0.3~30,000mPa·s)

Liquid temperature: Normal temp. ~80°C

(-10~150°C)

Liquid pressure: Working pressure - less than 1.0MPa (Working pressure

- less than 2.0MPa)

Accuracy: Within ±0.2% (within ±0.5%)

Material: PC200/CAC40K, PC200/FC200

PC200/SCS14, SCS14/SCS14

Display: 7-segment LCD 10H 8-digit

Indicated items: Non-resizable totalizing, instantaneous flow rate (L/h), instantaneous flow rate (L/min), resizable totalizing, instantaneous flow rate (%), alarm for excessive flow, alarm for high flow, alarm for low flow, alarm for battery

Analog signal: 4~20mA DC

Pulse and alarm: Voltage non-contact or

open collector pulse

• Explosion proof type

Field totalizing type: Inhibit safe type

(Exia I BT4X)

Output type: Explosion-proof and flame-proof type (Exia I BT4X)

#### Flow Range (L/h) (Operating condition: intermittent)

+0.2% (±0.5%)

| Size | Symbol of capacity | Viscosity (mPa·s)               | Pressure (MPa)                 |                                |                                |                                |                                |
|------|--------------------|---------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|      |                    |                                 | 0.5                            | 1                              | 2                              | 4                              | 10                             |
|      |                    |                                 | Gasoline                       | Water                          | Kerosene                       | Light oil                      | Heavy oil                      |
| 025  | AO                 | 700~1,200<br>(300~1,800)        | 800~1,100<br>(300~1,600)       | 800~1,200<br>(160~1,500)       | 400~1,400<br>(130~1,800)       | 300~1,400<br>(130~1,800)       | 200~1,400<br>(80~1,600)        |
|      | BO                 | 1,100~3,500<br>(400~4,000)      | 840~3,500<br>(250~3,000)       | 800~4,000<br>(250~5,000)       | 420~5,000<br>(250~5,000)       | 250~5,000<br>(140~5,000)       | 210~5,000<br>(120~5,000)       |
| 040  | BO                 | 2,500~8,500<br>(1,100~10,000)   | 2,100~8,500<br>(540~5,500)     | 3,200~10,000<br>(540~12,000)   | 1,100~12,000<br>(480~12,000)   | 880~12,000<br>(350~12,000)     | 690~12,000<br>(250~12,000)     |
|      | AO                 | 4,900~17,000<br>(2,100~20,000)  | 4,200~17,000<br>(1,700~17,000) | 4,200~20,000<br>(1,700~24,000) | 2,100~24,000<br>(840~24,000)   | 1,100~24,000<br>(700~24,000)   | 800~24,000<br>(330~24,000)     |
| 080  | BO                 | 11,000~35,000<br>(4,200~40,000) | 8,400~35,000<br>(3,500~35,000) | 8,200~40,000<br>(3,500~40,000) | 3,200~50,000<br>(1,800~40,000) | 2,500~50,000<br>(1,400~40,000) | 2,100~50,000<br>(1,100~40,000) |
|      | AO                 | 11,000~35,000<br>(4,200~40,000) | 8,400~35,000<br>(3,500~35,000) | 8,200~40,000<br>(3,500~40,000) | 3,200~50,000<br>(1,800~40,000) | 2,500~50,000<br>(1,400~40,000) | 2,100~50,000<br>(1,100~40,000) |

Note) Pressure: 1MPa=10.2 kg/cm<sup>2</sup>

Viscosity: 1mPa·s=1cp

## Getting Easy Handling with New Function and Shape



### Floweye (Positive Displacement Flow Meter)

Type **FE**

#### Flow Range

| Viscosity (cP) | Flow Range (L/h) |            |            |
|----------------|------------------|------------|------------|
|                | 25A              | 25A        | 40A        |
| Water          | 100 - 700        | 200 - 2100 | 500 - 4000 |
| 0.3 -          | 130 - 850        | 260 - 2500 | 650 - 5000 |
| 1 -            | 100 - 800        | 200 - 2500 | 500 - 3000 |
| 4 -            | 70 - 1000        | 200 - 3000 | 400 - 3000 |
| 18 -           | 40 - 1000        | 120 - 3000 | 300 - 2000 |
| 50 -           | 25 - 1000        | 75 - 3000  | 150 - 2000 |
| 100 -          | 15 - 1000        | 45 - 3000  | 100 - 2000 |
| 500 -          | 15 - 800         | 45 - 2400  | 100 - 2000 |
| 1000 -         | 15 - 600         | 45 - 1800  | 100 - 2000 |
| 3000 - 10000   | 15 - 300         | 45 - 900   | 100 - 2000 |

#### Specifications of Measuring Unit

|                                   |                                                              |
|-----------------------------------|--------------------------------------------------------------|
| Measured liquid                   | Chemical liquid, acidic liquid, petroleum, etc.              |
| Measuring principle               | Rotary piston type                                           |
| Size                              | 25A, 25A, 40A                                                |
| Viscosity of liquid               | 0.3 - 10,000cP                                               |
| Liquid temperature                | -10 - 80°C                                                   |
| Liquid pressure                   | 1.0MPa or under                                              |
| Measuring accuracy                | Within ±0.5%                                                 |
| Connection                        | JS 10K RF flange                                             |
| Material                          | Body: SCS14<br>Rotor: PPS resin<br>Eccentric bearing: Carbon |
| Min. unit of integrated indicator | 25A: 0.01L<br>25A: 0.1L<br>40A: 0.1L                         |

Floweye is a flow meter loaded with an electronic indicator-counter on the measuring unit of a rotary piston type of simplest construction among positive displacement flow meters. It is loaded with a "user setting function" which enables the user to change the setting easily in the field and a "viscosity compensating function" enabling adaptation to various kinds of viscous liquid, and can be used for a wide variety of applications.

#### Specification of Counting Unit

| Counting unit                | Pulse & alarm output type                                                                                                                                                                                                                                                                                                                                                                                                | Analogue output type                | Batch type                   |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------|
| Flow rate calculation system | Periodical measured flow rate calculation                                                                                                                                                                                                                                                                                                                                                                                |                                     |                              |
| Indicator                    | Numerical indication: 7-segment LCD, 5V x 10H 8-digits<br>Mode indication, alarm indication: LCD 2H                                                                                                                                                                                                                                                                                                                      |                                     |                              |
| Indication items             | Integrated flow rate, momentary flow rate (switched by mode button)<br><ul style="list-style-type: none"> <li>Total integrated flow rate: 8-digits MODE 1</li> <li>Momentary flow rate ( / h ): 8-digits MODE 2</li> <li>or ( / min ): 8-digits MODE 3</li> <li>Integrated flow rate (resettable): 8-digits MODE 4 (batch counter when batch type selected)</li> <li>Momentary flow rate (%): 4-digits MODE 5</li> </ul> |                                     |                              |
| Output signal                | Pulse signal or alarm signal                                                                                                                                                                                                                                                                                                                                                                                             | 4-20mA DC                           | Pulse signal or alarm signal |
| Internal power               | Lithium battery (built-in, service life approx. 3 years)                                                                                                                                                                                                                                                                                                                                                                 |                                     |                              |
| External power               | DC1224V                                                                                                                                                                                                                                                                                                                                                                                                                  | DC24V                               | AC100-240V or DC24V          |
| Ambient temperature          | -10 - 60°C                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                              |
| Casing material              | Aluminum die casting                                                                                                                                                                                                                                                                                                                                                                                                     |                                     |                              |
| Construction                 | Non-explosion proof, JISG3020 dip proof                                                                                                                                                                                                                                                                                                                                                                                  | Non-explosion proof, non-oily proof |                              |



# Flow Meter for Oil Loaded with High-functional Electronic Counter



## Electronic Flow Meter for Oil Type **OE**

Electronic flow meter for oil is a flow meter for oil & non-corrosive liquid realized by loading an electronic indicator-counter on the measuring unit of a rotary piston type positive displacement flow meter. It is loaded with a "user setting function" which enables the user to change the setting easily in the field, and can be used for a wide variety of applications. The flow meter is available for measurement and control of feed oil to boilers, fuel oil, non-corrosive medium and high-viscosity liquid, etc.

### General Specifications

Figures in parentheses are for special specification.

Liquid to be measured: Kerosene, light oil, A B C heavy oil, non-corrosive medium and high-viscosity liquid  
 Size: 20A, 25A, 40A  
 Liquid viscosity: 2~1000mPas  
 Liquid temperature: 0~80°C (120°C for high-temperature specification)  
 Liquid pressure: Less than 1.0Mpa  
 Accuracy: Within  $\pm 0.5\%$   
 Connection: JIS 10K FF flange  
 Materials: Body: FC200  
 Rotor: AC2A  
 Eccentric bearing: C3604B0

### Flow Range

| Viscosity (mPa·s) | Nominal diameter |        |          |          |          |
|-------------------|------------------|--------|----------|----------|----------|
|                   | 20B              | 30M    | 20L      | 25L      | 40L      |
| 2~                | 40~200           | 60~400 | 100~1000 | 250~2500 | 600~6000 |
| 10~               | 30~200           | 40~400 | 50~1000  | 100~2500 | 250~6000 |
| 50~               | 20~200           | 25~400 | 40~1000  | 60~2500  | 150~6000 |
| 100~              | 10~200           | 15~400 | 20~1000  | 40~2500  | 100~6000 |
| 500~1000          | 10~180           | 15~320 | 20~800   | 40~2000  | 100~4800 |

### Specification of Counting Unit

| Counting unit                | Pulse & alarm output type                                                                           | Analogic output type                                     | Batch type                                       |
|------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------|
| Flow rate calculation system | Periodical measured flow rate calculation                                                           |                                                          |                                                  |
| Indicator                    | Numerical indication; 7-segment LCD, 5W x 10H 8-digits<br>Mode indication, alarm indication: LCD 2H |                                                          |                                                  |
| Indication items             | Integrated flow rate, momentary flow rate (switched by mode button)                                 |                                                          |                                                  |
|                              | ● Total integrated flow rate                                                                        | 8-digits MODE 1                                          |                                                  |
|                              | ● Momentary flow rate ( /h )<br>or ( /min )                                                         | 8-digits MODE 2<br>8-digits MODE 3                       |                                                  |
|                              | ● Integrated flow rate (resettable)                                                                 | 8-digits MODE 4 (Batch counter when batch type selected) |                                                  |
|                              | ● Momentary flow rate (%)                                                                           | 4-digits MODE 5                                          |                                                  |
| Output signal                | Pulse signal or alarm signal                                                                        | 4~20mA DC                                                | Pulse signal or alarm signal, measurement signal |
| Internal power               | Lithium battery (built in), service life approx. 3 years                                            |                                                          |                                                  |
| External power               | DC120V                                                                                              | DC24V                                                    | AC100~240V or DC24V                              |
| Ambient temperature          | -10~60°C                                                                                            |                                                          |                                                  |
| Casing material              | Aluminum die casting                                                                                |                                                          |                                                  |
| Construction                 | Non-explosion proof, JISCOMD drip proof                                                             |                                                          | Non-explosion proof, non-drip proof              |

**Compact and Low-cost  
Flow Meter Exclusive  
for Oils**

**Small in Size, Light in  
Weight and Outstanding  
Easiness in Operation**



**Micro Oil Meter  
Type RE10LF**

Liquid crystal counter is adopted in the display section. This oil flow meter designed compact is a quite new type flow meter exclusive for the measurement of oils. It has a flow range as wide as 1:125 (for heavy oil). The minimum flow rate of 2L/h (for heavy oil) makes this meter super-sensitive.

**General Specifications**

**Liquids to be measured:** Kerosene, light oil and heavy oil  
**Size:** 38B  
**Liquid temp.:** Body & counter-incorporated type: -10~+55°C  
 Body & counter separate type: -10~+120°C  
**Liquid press.:** Working press. - less than 0.7MPa  
**Accuracy:** Within ±1.0%  
**Material:** ADC + surface treatment  
**Flow range:** Kerosene: 10~250 L/h  
 Heavy oil: 2~250 L/h

Note) Pressure: 1MPa=10.2 kgf/cm<sup>2</sup>  
 Viscosity: 1mPa s=1cp

**Oil Meter  
Type BR**

A high performance oil meter which realizes smallness in size, lightness in weight and easiness in operation is used for the measurement of fuel oil (for small boiler, burner, central heating) in heat piping industry.

**General Specifications**

**Liquids to be measured:** Kerosene, light oil and heavy oil  
 (Two types of oils can be measured by one meter)  
**Size:** 15A, 20A, 25A  
**Liquid temp.:** Normal temp. - 80°C  
**Liquid press.:** Working press. - less than 0.7MPa  
**Accuracy:** Within ±0.5%  
**Material:** FC200  
**Pulse generator:** Reed switch (Option): 1 L/p

**Flow Range (L/h) (±0.5%)**

| Model  | Size (mm) | Flow range (L/h) |             |
|--------|-----------|------------------|-------------|
|        |           | Kerosene         | Heavy oil   |
| BR15-3 | 15        | 30 - 200         | 10 - 200    |
| BR20-2 | 20        | 100 - 1,000      | 30 - 1,000  |
| BR25-2 | 25        | 250 - 2,500      | 150 - 2,500 |

Note) Pressure: 1MPa=10.2 kgf/cm<sup>2</sup>  
 Viscosity: 1mPa s=1cp

## Stable Performance Attained for Small to Large Flows



### Slide Vane Flow Meter

## Types **AO, Z8, IO, CN**

This flow meter is a large capacity flow meter whose measuring section employs an outer-cam type slide vane. It solves problems of noise vibration and pulsation often seen in large-size flow meter, and exerts a stable performance for small to large flows. It is used widely in the fields of petrochemical refinement, chemicals, foods, power generation and ship-building.

#### General Specifications

Figures in parentheses are for special specification.

**Liquids to be measured:** Cold and hot water, petroleum, chemical liquids, food liquids etc.

**Size:** 80A, 100A, 150A  
**Liquid viscosity:** 0.4~500mPa·s  
**Liquid temperature:** Normal temp. ~80°C (0~120°C)  
**Liquid pressure:** Working pressure - less than 1.0MPa (Working pressure - less than 2.0MPa)

**Accuracy:** Within  $\pm 0.5\%$  (within  $\pm 0.2\%$ )

**Material:** FC200/FC200, SCS13/SCS13

#### Flow Range (m<sup>3</sup>/h)

( $\pm 0.5\%$ )

| Size | Capacity of capacity | Measuring method | Heavy liquids | Water (Normal temp.) |        |          |            |              |
|------|----------------------|------------------|---------------|----------------------|--------|----------|------------|--------------|
|      |                      |                  |               | 0.4~10Pa·s           | 10~100 | 100~1000 | 1000~10000 | 10000~100000 |
| 200  | B                    | Continuous       | 10~30         | 12~60                | 10~80  | 8~80     | 5~60       | 3~60         |
|      | A                    | Intermittent     | 10~80         | 12~80                | 10~100 | 8~100    | 5~100      | 3~80         |
| 100  | B                    | Continuous       | 20~100        | 24~100               | 20~160 | 16~160   | 10~160     | 5~120        |
|      | A                    | Intermittent     | 20~160        | 24~160               | 20~200 | 16~200   | 10~200     | 5~150        |

#### Kind of Direct Totalizer

|                                                                                           |                                                                                           |                                                                                            |                                                                                             |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| AO<br> | Z8<br> | IO<br> | CN<br> |
| Direct totalizing type                                                                    | Direct totalizing type with setback register                                              | Direct totalizing type with instant flow indicator                                         | Field counter type pneumatic batch counter                                                  |

#### Kind of Pulse Generator

**Unit pulse generator** - This pulse generator is to be connected with a totalizer, printer, preset counter, etc.

**Pulse generator for DA** - This pulse generator, when combined with DA converter, can be connected with an indicator, recorder, controller, etc. for analog signal, and with a totalizer, printer, preset counter, etc. for unit pulse signal.

•Explosion-proof and flame-proof type (Exd IIBT4) and explosion-proof and intrinsically safe type (IaIaG4) are also available.

•As for the connection with the instrument, refer to the "System 1" on page 18.

Note) Pressure: 1MPa=10.2 kgf/cm<sup>2</sup>

Viscosity: 1mPa·s=1cp



# Excellent Durability and Easiness of maintenance Proven by Numerous Results



## Turbine Flow Meter

Types **KA, KZ, KI**

This flow meter is an axial-flow fan wheel type flow meter excellent in durability and easiness of maintenance proven by numerous results. It is widely used for the water controls in every industry, such as water control of water supply sources, various plants, air conditioning in the building, etc.

### General Specifications

Figures in parenthesis are for special specification

Liquids to be measured: Cold and hot water, and seawater

Size: 50A, 80A, 100A, 125A  
150A, 200A, 250A  
300A, 350A, 400A

Liquid temperature: Normal temp. ~80°C(0~150°C)

Liquid pressure: Working press. — less than 1.0MPa  
(Working press. — less than 2.0MPa)

Accuracy: Within ±2.0%

Material: FC200/CAC406,  
FC200/SCS13,  
SCS13/SCS13

### Flow range (m<sup>3</sup>/h) (±2.0%)

| Size (mm) | Flow Range  |
|-----------|-------------|
| 50        | 4 ~ 25      |
| 80        | 8 ~ 50      |
| 100       | 10 ~ 80     |
| 125       | 15 ~ 120    |
| 150       | 20 ~ 150    |
| 200       | 30 ~ 250    |
| 250       | 40 ~ 300    |
| 300       | 60 ~ 450    |
| 350       | 100 ~ 650   |
| 400       | 150 ~ 1,000 |

### Kind of Direct Totalizer



Direct totalizing type



Direct totalizing type with setback counter



Direct totalizing type with instant flow indicator

### Kind of Pulse Generator

Unit pulse generator..... This pulse generator is to be connected with a totalizer, printer, preset counter, etc.

Pulse generator for..... This pulse generator, when combined with DA converter, can be connected with an indicator, recorder, controller, etc. for analog signal, and with a totalizer, printer, preset counter, etc. for pulse signal.

- Explosion-proof and flame-proof type (d2 G4) is also available.
- As for the connection with the instrument, refer to "System 1" on page18.

Note) Pressure: 1MPa = 10.2 kgf/cm<sup>2</sup>

## Loaded with Electronic Counter Enhancing Workability in the Field



### Electronic Flow Meter for Water Supply

Type **AE**

Electronic flow meter for water supply is a flow meter for water realized by loading an electronic indicator-counter on the measuring unit of an impeller type flow meter for water. It is equipped with a "user setting function" which enables the user to change the setting easily in the field, and can be used for a wide variety of applications. This flow meter is available for measurement and control of cold water and hot water such as cooling/heating water, feed water to boilers, service water for various plants, etc.

#### General Specifications

Figures in parenthesis are for special specification.

Liquid to be measured: Cold water, hot water (Inquire in the case of a liquid containing acid or alkali contents.)  
 Size: 25A, 40A, 50A  
 Liquid viscosity: 1mPa·s or equivalent  
 Liquid temperature: 0~80°C (110°C for high-temperature specification)  
 Liquid pressure: Less than 1.0MPa (less than 2.0MPa)  
 Accuracy: Within  $\pm 1.0\%$   
 Connection: JIS 10K FF flange (JIS20K)

#### Materials

| Material symbol   | FD      | F7      | ST     |
|-------------------|---------|---------|--------|
| Body              | FCD400  | FCD400  | SC313  |
| Measuring chamber | SCS13F1 | SCS13F9 | SC613  |
| Impeller          | CS191F  | SUG304  | SUG304 |

#### Flow Range (m<sup>3</sup>/h)

| Nominal dia. | Flow range |
|--------------|------------|
| 25A          | 0.5 ~ 2.5  |
| 35B          | 1.0 ~ 5.0  |
| 40A          | 1.5 ~ 7.0  |
| 40B          | 3.0 ~ 15.0 |
| 50A          | 3.0 ~ 15.0 |
| 50B          | 6.0 ~ 25.0 |

Note: Range of products of size 50B is only F7 and F7 type.  
 \*1 Material of size 50B is SAC40B. \*2 Material of size 50B is SUG304.

#### Specification of Counting Unit

| Counting unit                | Pulse & alarm output type                                                                                                                                                                                                                                                                                                                       | Analogue output type | Batch type                                       |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------|
| Flow rate calculation system | Periodical measured flow rate calculation                                                                                                                                                                                                                                                                                                       |                      |                                                  |
| Indicator                    | Numerical indication: 7-segment LCD, 4W x 10H 8-digits<br>Mode indication, alarm indication: LCD 2H                                                                                                                                                                                                                                             |                      |                                                  |
| Indication items             | Integrated flow rate, momentary flow rate (switched by mode button)<br>● Total integrated flow rate: 8-digits MODE 1<br>● Momentary flow rate (RS): 6-digits MODE 2<br>or (RHS): 6-digits MODE 3<br>● Integrated flow rate (resettable): 8-digits MODE 4 (Batch counter when batch type selected)<br>● Momentary flow rate (%): 4-digits MODE 5 |                      |                                                  |
| Output signal                | Pulse signal or alarm signal                                                                                                                                                                                                                                                                                                                    | 4~20mA DC            | Pulse signal or alarm signal, measurement signal |
| Internal power               | Lithium battery (built-in), service life approx. 3 years                                                                                                                                                                                                                                                                                        |                      |                                                  |
| External power               | DC12-24V                                                                                                                                                                                                                                                                                                                                        | DC24V                | AC100-240V or DC24V                              |
| Ambient temperature          | -10 ~ 60°C                                                                                                                                                                                                                                                                                                                                      |                      |                                                  |
| Casting material             | Aluminum die casting                                                                                                                                                                                                                                                                                                                            |                      |                                                  |
| Construction                 | Non-explosion proof, JISCO805 die proof                                                                                                                                                                                                                                                                                                         |                      | Non-explosion proof, sand-blast proof            |



Widely Used for Cold, Hot and High-temperature Water.



### Cold & Hot Water Meter

## Types BF, BFZ

This flow meter has realized high accuracy and lightness in weight required for the measurement and control of cold, hot and high-temperature water used as industrial water for air conditioning, water supply to boiler, chemical plant, water treatment plant. It is a tangential fan wheel type flow meter being used in many fields of application.

#### General Specifications

Figures in parenthesis are for special specification

**Liquids to be measured:** Cold water, hot water and high-temperature water

**Size:** 25A, 40A, 50A  
**Liquid temperature:** Normal temp. — 110°C for general use  
 110 ~ 200°C for high-temperature water

**Liquid pressure:** Working press. — less than 1.0MPa  
 (Working press. — less than 2.0MPa)

**Accuracy:** Within  $\pm 1.0\%$   
**Material:** FCD450/CAC100,  
 FCD450/SCS13,  
 SCS13/SCS13

#### Flow Range (m<sup>3</sup>/h)

( $\pm 1.0\%$ )

| Symbol of capacity | General use | High-temp. water |
|--------------------|-------------|------------------|
| 25A                | 0.5 ~ 2.5   | 0.5 ~ 1.5        |
| 25B                | 1.0 ~ 5.0   | 1.0 ~ 3.0        |
| 40A                | 1.5 ~ 7.0   | 1.5 ~ 4.5        |
| 40B                | 3.0 ~ 15.0  | 3.0 ~ 9.0        |
| 50A                | 3.0 ~ 15.0  | 3.0 ~ 9.0        |
| 50B                | 6.0 ~ 25.0  | 6.0 ~ 18.0       |

#### Kind of Direct Totalizer



Direct totaling type



Direct totaling type with setback register

#### Kind of Pulse Generator

**Unit pulse generator** — This pulse generator is to be connected with a totalizer, printer, preset counter, etc.

**Pulse generator for DA conversion** — This pulse generator, when combined with DA converter, can be connected with an indicator, recorder, controller, etc. for analog signal, and with a totalizer, printer, preset counter, etc. for pulse signal.

• Explosion-proof and flame-proof type (D2G4) is also available.

• As for the connection with the instrument, refer to "System 1" on page 18.

Note) Pressure: 1MPa=10.2 kgf/cm<sup>2</sup>



# NITTO SEIKO's Flow Meters Enhance the System Quality and Realize More Sophisticated Liquid Control.



Field Counter Type Pneumatic Batch Counter RSCN

Vortex Type Flow Sensor FLOP

## Field Counter Type Pneumatic Batch Counter

### Type **RSCN**

This batch counter which is equipped with a mechanical preset counter and total counter enables you to do on-site batch counting simply by adding a pneumatic valve. The batch can be set as desired by the preset button. The valve closes automatically when the flow volume reaches the preset batch. Since this counter is actuated by pneumatic signal alone, it can be used safely in a place where the explosion-proof structure is required.

## Vortex Type Flow Sensor FLOP

### Type **QS**

Vortex type flow sensor FLOP is a flow sensor based on the principle of Karman's vortex. Realized with a simple construction without any moving part or liquid stay portion, this flow sensor is capable of high-accuracy flow rate measurement and has excellent durability. By adopting linear type PPS resin for the wetted part, this sensor can be used not only for cold water and hot water but also for super pure water and various kinds of chemical products.

#### General Specifications

|                        |                                               |
|------------------------|-----------------------------------------------|
| Liquid to be measured: | Various kinds of water (1MPa-s or equivalent) |
| Capacity symbol:       | 10, 15, 20, 25, 40                            |
| Liquid temperature:    | 0~90°C                                        |
| Liquid pressure:       | Less than 1.0MPa                              |
| Accuracy:              | ±2% FS                                        |
| Indicating function:   | Total, instantaneous flow rate                |

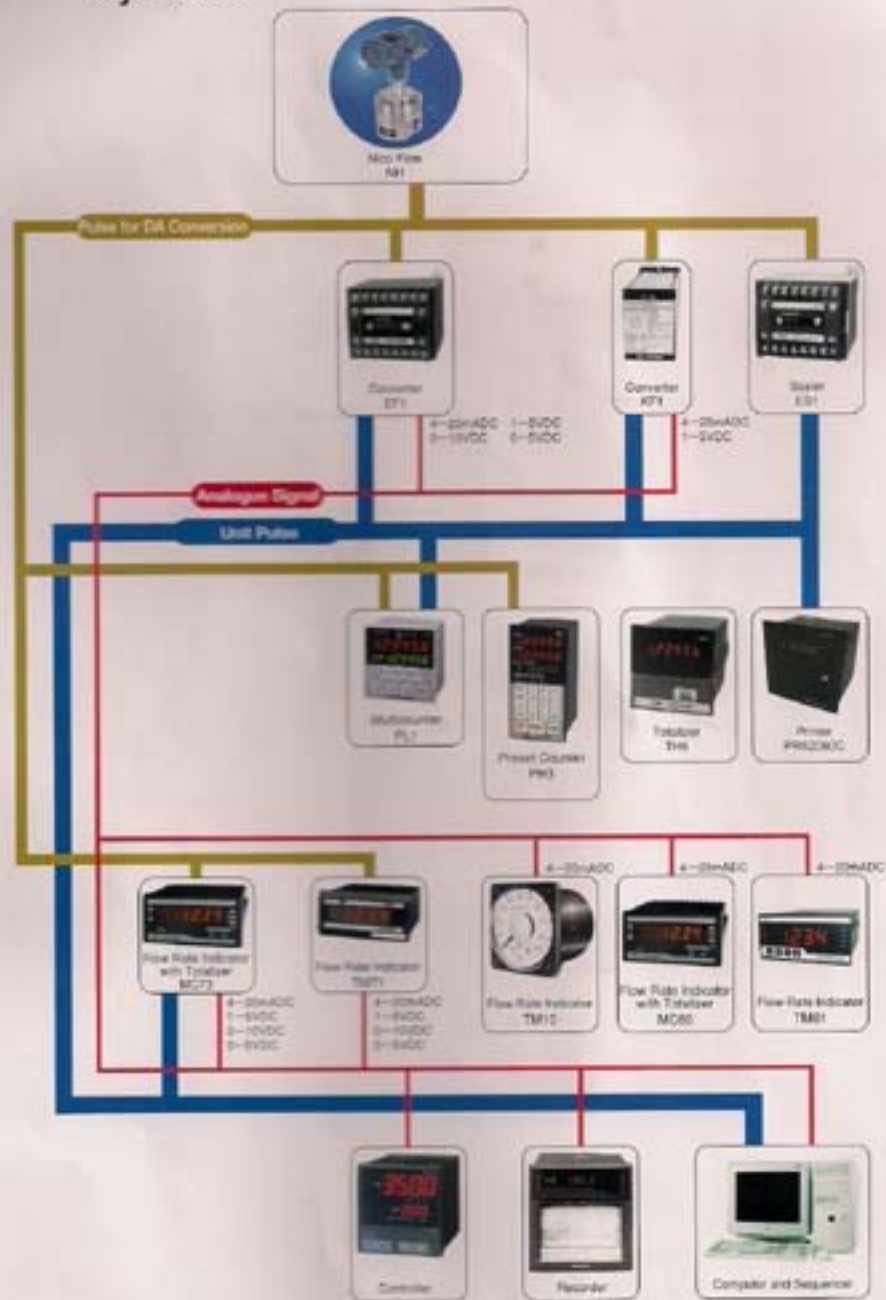
#### Flow range (L/min)

| Capacity symbol | Flow range |
|-----------------|------------|
| 05              | 0.5~5      |
| 10              | 4~25       |
| 15              | 6~50       |
| 20              | 12~60      |
| 25              | 20~130     |
| 40              | 60~350     |

Analogical signal output type (4~20mADC) is also available.



## System 2



Note 1. Converter and instruments need power supply of AC100V or 200V.  
 2. As for the details of converter and instruments, please refer to the special catalog or specification sheet.



Design and specification are subject to change without notice.

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HO150804