NITTOSEIKO
Taking new steps forward together

Electronic Flow Meter for Small Flow Rate

Nico Eye®

SPECIFICATIONS

SSV14851 19.06

1. Outline

Nico Eye is a flow meter loading an electronic indicating & counting unit on the rotary piston type flow meter, especially designed for small flow rate. This meter is equipped with a “user setting function” which enables the user to make setting easily in the field, and can be used for a wide variety of applications. This meter is available for measurement control of small flow rates such as process control of additives, control of mixed flow rate in chemical industry, measurement of mixed water, etc.

2. Features

- Simple construction with only measuring unit as mechanical structure
- Setting mode in the field is possible by button operation on the counting unit.
- Easy maintenance in the field by simulation output
- No need of any external power supply in the case of field indication only.

3. Specification

Measuring unit

Volume symbol			010LO	010LM	010LL	010LG
Measured liquid			Chemical liquid, Edible liquid, Petroleum, Water, etc.			
Nominal size			1/4B, 15A	1/2B, 15A		1/2B, 20A
Liquid viscosity			0.4 ～ 100 mPa･s (100mPa･s and over is available)			
Liquid temperature			-5 ～ 80 ℃			
Liquid pressure			1.0 MPa or less (Up to 6.3MPa is available for the screw connection type)			
Measuring accuracy			Within ±0.75%			
Connection	Screw		Rc1/4	Rc1/2		
	Flange		15A JIS10K RF			20A JIS10K RF
Material	STD material symbol		LS			
	Material symbol	LS	Body, pressure cover: SCS14, Rotor: Carbon or Aluminum alloy			
		S2(1.0MPa and over)	Body, pressure cover: SUS316, Rotor: Carbon or Aluminum alloy			
	SCS14: Stainless steel casting, SUS316: Stainless steel					

Material and permissible pressure	Connection	Material symbol	Permissible pressure (Liquid temp. 80℃ or less) MPa
	Screw	LS	1.0
		S2	9.7
	JIS10K Flange	LS/S2	1.0

Counting unit

Volume symbol			010LO	010LM	010LL	010LG
Kind of type			Field indication type, Pulse & alarm output type, and Analog output type			
Indication	Display unit		Numeric indication: 7 segment LCD 5W x 10H 8 digits, mode and alarm indication: LCD 2H			
	Article	Total value	Total value: 8 digits “MODE 1” , Resettable total value: 8digits “MODE4”			
		Min. unit	1mL～1m³		0.01L～1m³	
		Flow rate	Flow rate (/h): 4 1/2 digits “MODE2”, Flow rate (/min): 4 1/2 digits “MODE3”, Flow rate (%): 4 digits “MODE5”,			
		Min. unit /h	0.01L/h～1L/h		0.1L/h～0.01m³/h	
		Min. unit /min	0.1mL/min～0.01L/min	1mL/min～0.1L/min		
		Note 1: Either one of “/h” or “/min” can be indicated by setting				
		Alarm	Upper limit alarm “HIGH”, Lower limit alarm “LOW”, Battery alarm “BATT” ※1			
	Note 2: Both total value and flow rate cannot be indicated simultaneously. Note 3: Article can be changed by pressing the [MODE] button located on the front of the counting unit.					
Output	Field indication type	Output	Without			
	Pulse & alarm output type	No. of output	2			
		Output assignment	To each of SIG1 and SIG2, one is selected and assigned from among the respective output of Unit pulse, Unitless pulse, Upper limit alarm, Lower limit alarm, Upper and lower limit alarm and Battery alarm ※1			
		Kind of signal	Voltage no-contact output or open collector output Voltage no-contact: Signal level H: Approx. equal to voltage of external power (at no load) L: 0.5V or less (at no load) Open collector: Voltage & current: 27V DC 30mA Voltage ON: 0.5V or less Output resistance: Approx. 2.3kΩ (short circuit protection resistance: Approx. 100Ω)			
		Electronic logic	Positive or negative logic Positive logic: Logic 1 at H (Transistor: OFF) Negative logic: Logic 1 at L (Transistor: ON)			
		Unit pulse	1mL/P ～ 1 m³/P		0.01L/P ～ 1m³/P	
		Unitless pulse	0.5mL	0.9mL	2.1mL	6.6mL
		Pulse signal width	0.5 ～ 20ms or 5 ～ 200ms (STD: 5ms)			

※1: “Battery alarm” is only for the flow meter with battery

Volume symbol			010LO	010LM	010LL	010LG
Output	Analog output type	No. of output	1			
		Output assignment	Flow rate			
		Kind of signal	4～20mADC			
		Conversion accuracy	±0.5% (Full scale)			
		Resolution	1/1,000			
		Allowable load resistance	500Ω or less			
	Note 4: Either one of “Pulse & alarm output” or “Analog output” is available. Please select when placing order. Note 5: Output type requires external power supply.					
Power	Field indication type (Without output signal)		Built-in lithium battery (3.6V DC: service life 5 years) Vary from use condition			
	Pulse & alarm output type		External power supply is required. Voltage 12～24V DC±10% Current consumption Approx. 25mA (at 12V DC) Approx. 38mA (at 24V DC)			
	Analog output type		External power supply is required. Voltage 24V DC±10% Current consumption Approx. 22mA			
Ambient temperature			-10～60 ℃			
Explosion proof			Non-explosion proof			
Water proof			JIS C 0920 water proof			
Material			Aluminum die casting			

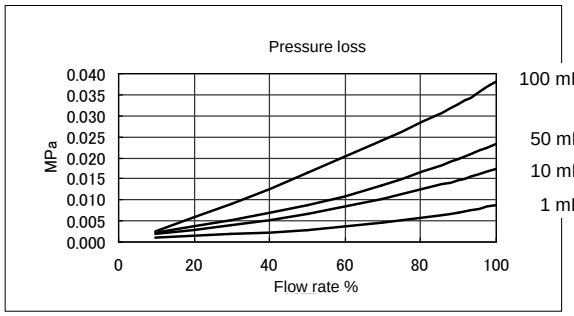
4. Flow range (Unit: L/h)

Material code: LS, S2 (Measuring accuracy ±0.75%)

Volume symbol	0.4mPa·s～ Gasoline	0.8mPa·s～ Water	1mPa·s～ Kerosene	3mPa·s～ Light oil	10mPa·s～ Heavy oil A	50～100mPa· Heavy oil B/C
010L0	7～ 50	7～ 50	7～ 50	5～ 50	2.5～ 50	1～ 50
010LM	12～100	12～100	8～100	6.5～100	5～100	2～100
010LL	15～200	15～200	10～200	9～200	8～200	4～200
010LG	40～600	30～600	20～600	17.5～600	15～600	10～600

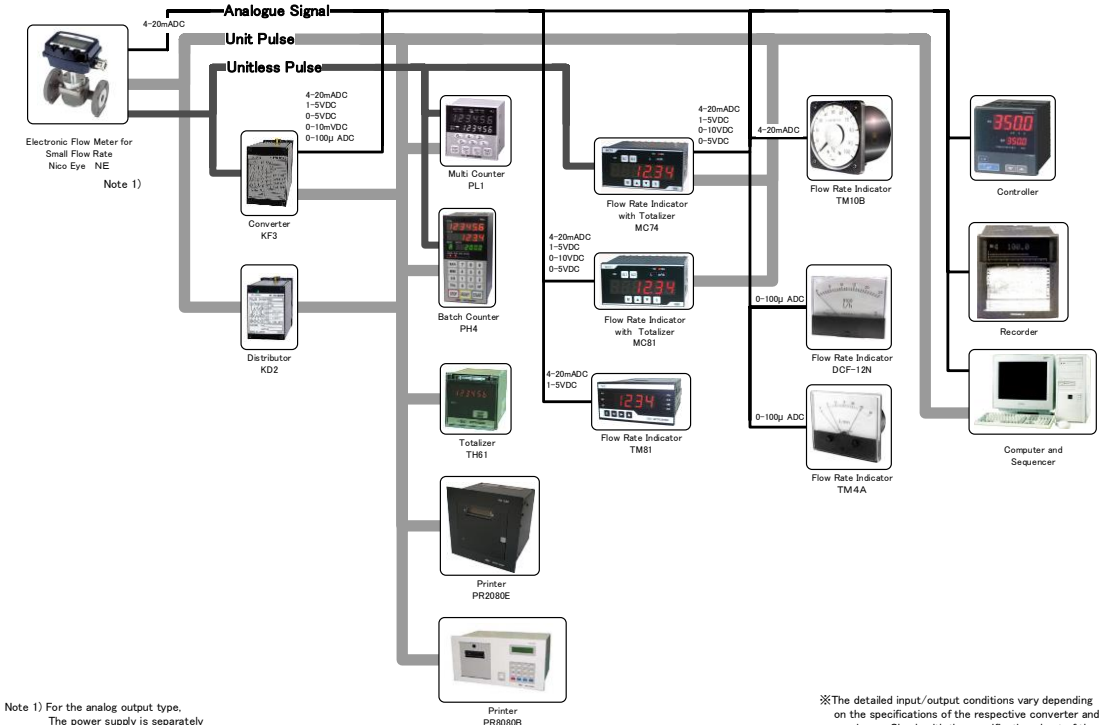
Note: When selecting a model of flow meter, please select it so that nominal flow range is 40～60% of its Max. flow.

5. Pressure loss



Volume symbol	100% Flow
010L0	50L/h
010LM	100L/h
010LL	200L/h
010LG	600L/h

6. Remote measurement system



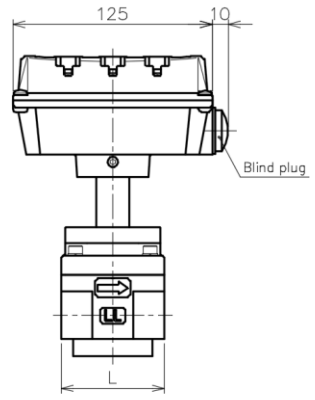
Note 1) For the analog output type, The power supply is separately necessary excluding MC81.

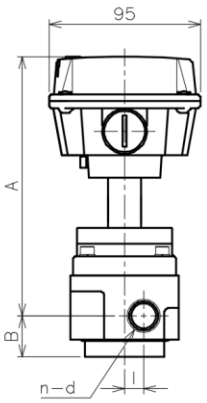
※The detailed input/output conditions vary depending on the specifications of the respective converter and receivers. Check with the specification sheet of the respective instruments.

7. External dimensions (Unit: mm)

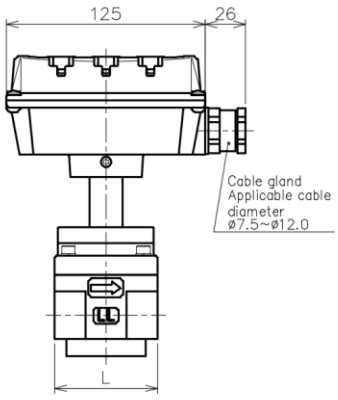
Screw type (Standard)

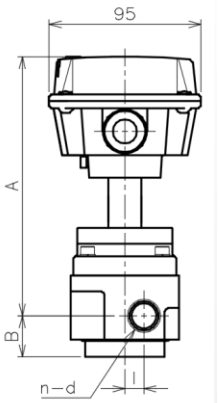
Field indication type





Pulse & alarm output type



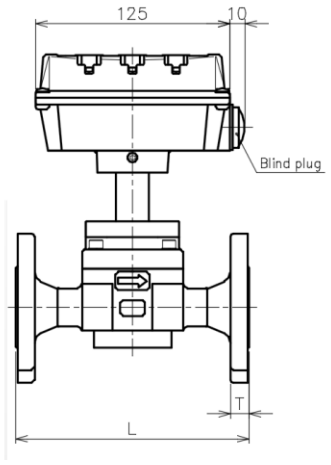


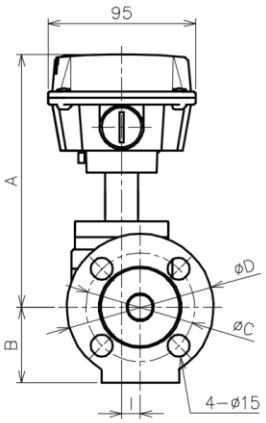
Volume symbol	L	A	B	I	N	D	Weight (kg)
010LO	60	156	24	7	2	Rc1/4	2.0
010LM	65	163	26	12	2	Rc1/2	2.5
010LL	65	163	26	12	2	Rc1/2	2.5
010LG	80	170	26	19	2	Rc1/2	3.3

Above table is for material code LS.
External dimension is different in case of material code S2

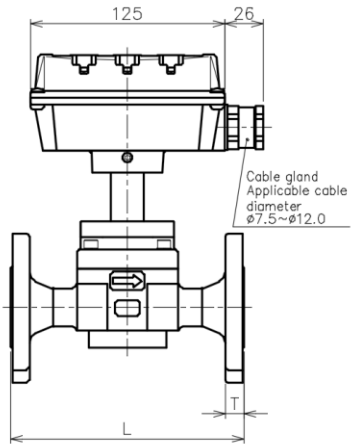
Flange type (Standard)

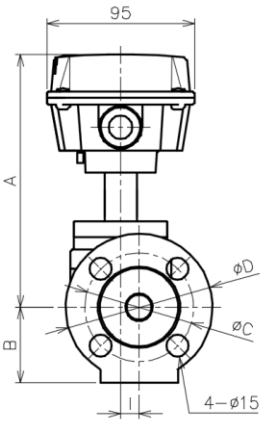
Field indication type





Pulse & alarm output type





Volume symbol	Nominal size	Flange standard	L	A	B	I	D	T	C	Weight (Kg)
010LO	15A	JIS10K	150	156	48.5	7	95	12	70	3.5
010LM			150	163	48.5	12	95	12	70	3.9
010LL			150	163	48.5	12	95	12	70	3.8
010LG	20A	JIS10K	180	170	51	19	100	14	75	5.2

Above table is for material code LS.
External dimension is different in case of material code S2

8. Operation

8.1 Common operation

●Flow rate

Measure the time required for one turn of the rotor of the flow meter, calculates the flow rate and indicate the momentary flow rate.

●Total value

Integrally indicates the pulse signals from measuring unit in specified unit.

●Alarm

HIGH Indicated when flow exceed upper limit. ※2

LOW Indicated when flow is less than lower limit. ※2

BATT Indicated when battery capacity is low. Battery should be changed to new battery.
Activate only in case of flow meter with battery.

※2：Limit of alarm is canged by data setting.

8.2. Field indication type

●Operation

It indicates flow rate, total value and alarm operating by battery. It does not output pulse, alarm or analog signal.

8.3. Pulse & alarm output type

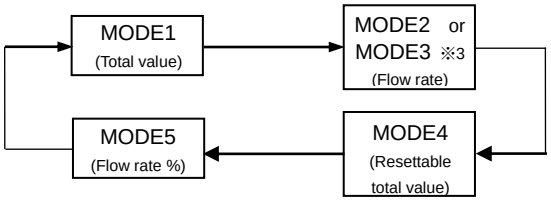
●Battery, external power supply

・Flow meter without battery type does not indicate flow rate, total value, or alarm without external power supply.

・Flow meter with battery type indicate flow rate, total value, and alarm without external power supply. However, It cannot output pulse or alarm signal without external power supply.
Battery power is not consumed while supply external power. It makes the battery life lengthen.

●Button operation

・The mode change as shown in figure below with pressing of the [MODE] button.



※3：Depending on the setting, “MODE2 (/h)” or ”MODE3 (/min)” is indicated.

●Reset operation

While indicating “MODE4” (Resettable total value), pressing [RESET] button makes total value reset to zero.

●Pulse output ※4

Unitless pulse output：Output pulse signal from measuring unit without any calculation.

Unit pulse output：Output specified unit of pulse signal.

●Alarm output ※4

Signal is output when reaching respective alarm point.

●Simulation output

Unit pulse or alarm output (except for battery alarm) is experimentally output.

※4：Output signal can be changed by data setting.

8.4 Analog output type

●Battery, external power supply

・Flow meter without battery type does not indicate flow rate, total value, or alarm without external power supply.

・Flow meter with battery type indicate flow rate, total value, and alarm without external power supply.
However, It cannot output analog signal without external power supply.
Battery power is not consumed while supply external power. It makes the battery life lengthen.

●Button operation

Refer to article of Pulse & alarm output type

●Reset operation

Refer to article of Pulse & alarm output type

●Analog signal output

Output flow rate as 4-20mA DC

●Simulation output

Analog signal is experimentally output.

9. Terminal arrangement and wiring diagram

9.1 Terminal arrangement for pulse & alarm output

TB1

No.	Signal name
1	SIG1 Pulse output or alarm output
2	SIG2 Pulse output or alarm output
3	+12～24V
4	0V

TB2

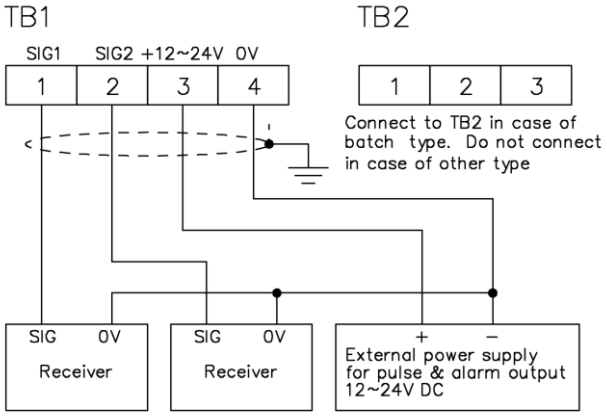
No.	Signal name
1	Do not connect to this terminal
2	
3	

9.2 Terminal arrangement for analog output

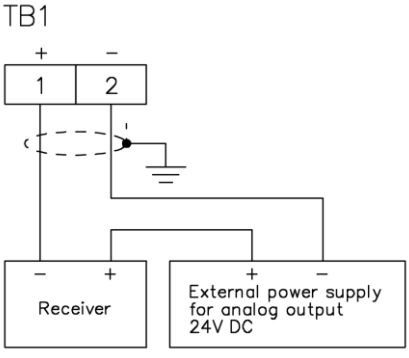
TB1

No.	Signal name
1	＋ Analog output 4～20mA
2	－

9.3 Wiring diagram for pulse & alarm output type

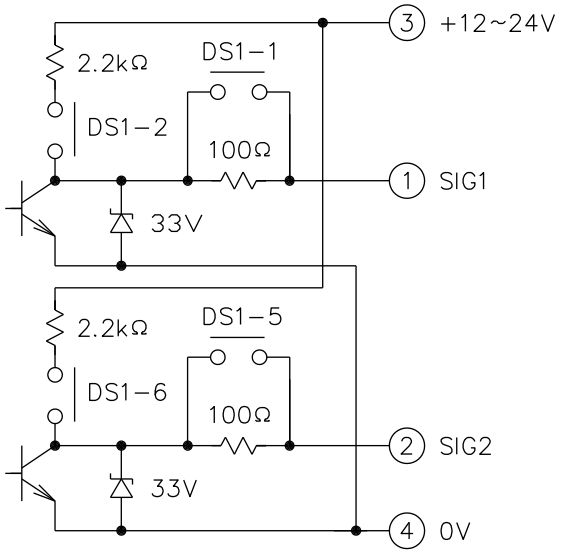


9.4 Wiring diagram for analog output type

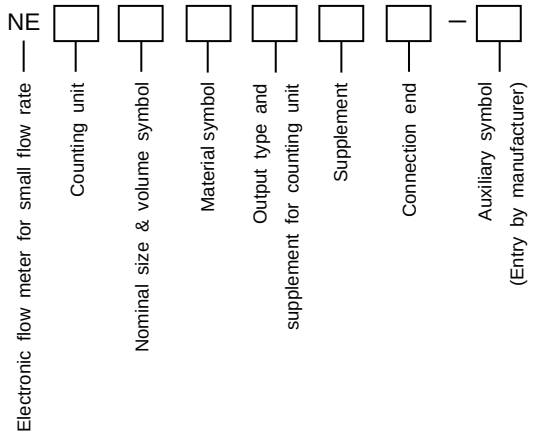


9.5 Circuit for pulse output and alarm output

Output signal / Switch / Kind of output signal	Pulse & alarm output SIG1		Pulse & alarm output SIG2	
	DS1-1	DS1-2	DS1-5	DS1-6
Voltage no-contact	OFF	ON	OFF	ON
Open collector	ON	OFF	ON	OFF



10. Product code and specification code



●: Standard; ○: Manufacturable; ×: Unavailable

Type	Specification code	Specification	010L0	010LM	010LL	010LG
NE		Electronic flow meter for small flow rate	●	●	●	●
Counting unit	3E	Electronic indication	●	●	●	●
Nominal size & volume symbol	010L0	Max. flow rate: 50L/h	●			
	010LM	Max. flow rate: 100L/h		●		
	010LL	Max. flow rate: 200L/h			●	
	010LG	Max. flow rate: 600L/h				●
Material symbol	LS	Body, Pressure cover: SCS14	●	●	●	●
	S2	Body, Pressure cover: SUS316	○	○	○	○
Output type and supplement for counting unit	12345	Field indication type (without output signal) / Non-explosion proof / With battery	●	●	●	●
	P0345	Pulse & alarm output ※5 / Non-explosion proof / No battery	●	●	●	●
	P00B0	Pulse & alarm output ※5 / Non-explosion proof / With battery	○	○	○	○
	A0345	Analog output / Non-explosion proof / No battery	●	●	●	●
	A00B0	Analog output / Non-explosion proof / With battery	○	○	○	○
Supplement	0	No supplement	●	●	●	●
Connection end	010S	Screw type: Liquid press. 1.0MPa	●	●	●	●
	020T	Screw type: Liquid press. 2.0MPa Material symbol “S2” only	○	○	○	○
	030U	Screw type: Liquid press. 3.0MPa Material symbol “S2” only	○	○	○	○
	063W	Screw type: Liquid press. 6.3MPa Material symbol “S2” only	○	○	○	○
	010F	JIS10K FF Flange: Liquid press. 1.0MPa. Material symbol “S2” only	○	○	○	○
	010R	JIS10K RF Flange: Liquid press. 1.0MPa.	○	○	○	○

※5 : SIG1 and SIG2 output of standard article are delivered with the following setting.

SIG1 output : Kind of signal — Voltage no-contact
Electronic logic — Positive logic
Pulse output — Unitless pulse output

SIG2 output : Kind of signal — Voltage no-contact
Electronic logic — Positive logic
Pulse output — Unit pulse output

11. Strainer

To prevent foreign matters mixed in the liquid from penetrating into the flow meter to cause trouble, it is necessary to install a strainer immediately before the flow meter or at a point as close as possible to the inflow side. (STD 60 mesh)

◆◆◆◆◆◆◆ Matters to be specified at the time of ordering ◆◆◆◆◆◆◆

1. Type and specification code.
2. Name of measured liquid, viscosity, temperature.
3. Flow direction of fluid, mounting position.

▼The contents given here are subject to change without notice.

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