

■ Introduction

Receiving flow rate pulse signal from flow meter, batch counter and so on, it prints totalized flow quantity per batch and/or total flow rate per setting time.

■ Features

- Enabling 2 input flow rate pulse (2 Ch. type)
- Indication 8 digits count and daily total, and 10 digits monthly total and total.
- Available for choose from 7 kind of indication unit.
- Depend on the signal type, max input frequency can be set in 2 stages.
- By memorizing a flow meter factor, it can be input unscaled pulse. (option)
- The channel name can be preset. (option)
- Enabling confirmation of time by inner clock.
- Available for reprint of last print in case of mistake in printing or multiplicity print.
- Panel mounting or set on the desk.
- AC free power supply unit.

■ Specifications

Pulse input

Number of input	2 points	
No-contact input		
Frequency	200Hz or under (ON/OFF ratio 1:1)	
Signal type	Voltage or Open collector	
Signal level	H:9~24V L:3V or under	
Voltage & current	Approx. 12V	Approx. 6mA (internal 12V power source)
	Approx. 24V	Approx. 12mA (external 24V power source)
Contact input		
Frequency	20Hz or under (ON/OFF ratio 1:1)	
Voltage & current	Approx. 12V	Approx. 6mA (internal 12V power source)
	Approx. 24V	Approx. 12mA (external 24V power source)

Counter (No display indication)

Count, daily total	8 digits counter (zero suppression print)
Monthly, total	10 digits counter (zero suppression print)

Scaling (option)

When totalize by unscaled pulse, it needs flow meter factor.	
Multiplying factor	0.1000~1.000
Dividing factor	1/1, 1/10, 1/100, 1/1,000, 1/10,000

Decimal point

Chose from without /0.0 /0.00 /0.000 (setting by switch)

Naming (option)

Requested names are set to each channel before delivery.	
Standard name	Channel1: 1CH Channel2: 2CH
Letter	Alphanumeric character up to 3 letters.

Unit

Chose from volumetric unit, mass unit or without
Unit: mL, L, m³, GAL, g, kg, t, without



Clock

Indication:	Indication as print when power on or total flow rate print
Time	Up to 31 st December, 99, 23 hours 59 minutes 59 seconds
Leap year	Set with the last 2 digits of Gregorian calendar year and automatically renewed.
Time reference	Internal crystal oscillator Daily difference: Within 4sec (0~40°C) Reference value: Approx. 0.5sec (25±3°C)
Synchronization with supply frequency	Synchronize with commercial power supply frequency (50Hz / 60Hz Set by switch)

Indication

At no-paper or error: LED light button S6 turns Red
At every one second: LED light button S7 turns Green

Operation

Setting procedure by manual operation switches (S3~S7)

S3: Left side (measurement):	For measurement
S4:	Correction of time within ±30 sec
S5:	Manual print
S6:	Cut the paper
S7:	Feed the paper (1 line)
S3: Right side (time setting):	For time, flow unit, and delay time setting.
S4:	Adding volume, and change measuring unit.
S5:	Reduce volume, and change measuring unit
S7:	Print the setting, and save the setting

Manual print

Enabling to check the total value with pushing S5 button inside of the sub-panel

Print the count, daily total, monthly total, and total of both channels.

Auto print

Print the count, daily total, monthly total, and total of both channels at each set time interval with reference to 0:00 on the clock.

Interval time	1min, 5min, 30min, 1hr, 4hr, 12hr, 24hr, and no-function. (Setting by switch)	
Reset	Count:	Reset at each print
	Daily total:	Reset on 24:00 at end of day.
	Monthly total:	Reset on 24:00 at end of month.
	Total:	Not reset

Control input

- Signal type No-voltage contact, or Open collector
- Voltage & current Approx. 12V Approx. 6mA (internal 12V power source)
Approx. 24V Approx. 12mA (external 24V power source)
- Signal width 50 msec or more
- **Print signal** Count value of signal input channel is printed and reset.
Delay time of printing: Default setting is 3sec (for counting over-flow of batch operation)
Setting time: 0- 30sec
 - **Reset signal** Count, daily total, and monthly total of both channels are reset after print count, daily total, monthly total and total.
 - **Count inhibit signal**
 - 1.No totalizing is made while this signal is ON.
 - 2.Total of both channels are reset when reset signal is ON at the same time. (Count, daily total, monthly total, and total are reset after print count, daily total, monthly total, and total)

Printing contents

Reset indication R: reset N: no reset

Example of manual print

↑ Feed the paper

00.00.00	00:00:00	MAN	
1CH	CNT	000000.00L	N
	DAY	000000.00L	N
	MON	00000000.00L	N
	TOT	00000000.00L	N
2CH	CNT	000000.00L	N
	DAY	000000.00L	N
	MON	00000000.00L	N
	TOT	00000000.00L	N

Example of auto-print (example of end of month)

↑ Feed the paper

00.00.00	00:00:00	AUTO	
1CH	CNT	000000.00L	R
	DAY	000000.00L	R
	MON	00000000.00L	R
	TOT	00000000.00L	N
2CH	CNT	000000.00L	R
	DAY	000000.00L	R
	MON	00000000.00L	R
	TOT	00000000.00L	N

Example of print from print signal (example of channel 1)

↑ Feed the paper

00.00.00	00:00:00	PRINT	
1CH	CNT	000000.00L	R

Example of print from reset signal

↑ Feed the paper

00.00.00	00:00:00	RESET	
1CH	CNT	000000.00L	R
	DAY	000000.00L	R
	MON	00000000.00L	R
	TOT	00000000.00L	N
2CH	CNT	000000.00L	R
	DAY	000000.00L	R
	MON	00000000.00L	R
	TOT	00000000.00L	N

Example of total reset

↑ Feed the paper

00.00.00	00:00:00	TRES	
1CH	CNT	000000.00L	R
	DAY	000000.00L	R
	MON	00000000.00L	R
	TOT	00000000.00L	R
2CH	CNT	000000.00L	R
	DAY	000000.00L	R
	MON	00000000.00L	R
	TOT	00000000.00L	R

Reprint function

It memorizes print contents immediate before, and it can reprint in case of mistake in printing or multiplicity print. This memory is erased when turn off the power.

Operation: Press S5 button while press S7 button.
Memory update: Memory is updated when print out except for manual print.

Setting confirmation

Both channel of "Scaling", "Naming", "Unit", and "Delay time" can be printed.

Operation: Turn on the power while press S7 button.

Example of print

↑ Feed the paper

SCALE	1CH	X0.3456	±100
	2CH	X1.0000	±1
NAME	1CH	MLK	
	2CH	WTR	
UNIT	MASS		
DELAY	03	sec	

Printing mechanism

Printing system Thermal line dot printing
Character size Width 1.5mm x Height 3.0mm 27 digits
Speed 20mm/sec or low (Max. print width 48mm)
Mechanism NP-K2012R-KA0
Thermal head life: 50km (more than 1mil. Line)
Auto cutter life: 0.5mil cut
Printing paper Rolled thermal paper with Width: 58mm and Thickness: 59-75µm. (Max. OD: Φ 80mm, Shaft inner OD: Φ 12mm, Shaft outer OD: Φ 18mm) A red mark appears on the last 1m for service.

Backup battery

Lithium battery
Operates the clock and protects the totalized value while blackout. Working time: Approx. 7years (Time for replacement: 5years)

Power for transmitter

12V DC ±5%, 100mA

Insulation

500V DC 20MΩ and over (between power supply terminal and casing)

Withstand voltage

1500V AC, 1 minutes (test point is same as that of insulation resistance)

Noise resistance

Square wave noise by noise simulator 1000V (Noise width 1µs, Polarity ±, Application by synchronization with power source, Phase 0~360°)

Power

90~264V AC, 50/60Hz

Power consumption

30VA or under

Ambient temperature

5~+40°C (Without condensation)

Mass

Approx. 3kg

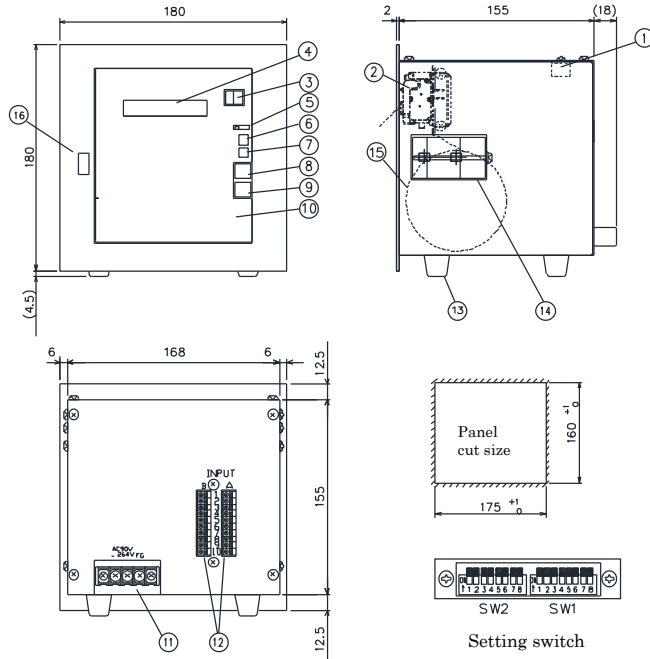
Casing

Material: Sheet metal, plated (front)
 Coating: Munsell N1.5 Semi-gloss (black)
 Sub-panel Munsell N4 Semi-gloss (gray)

Accessories

Printing paper: 2 rolls, Mounting fixture: 1set

■ External & panel cut dimensions



No.	Contents	No.	Contents
1	Setting switches SW1, SW2	9	LED light button S7
2	Print Mechanical	10	Sub-panel
3	7 segment LED	11	Terminal for power supply
4	Printed paper outlet	12	Terminal for signal
5	Select-switch S3	13	Rubber pods
6	Push-switch S4	14	Mounting fixture
7	Push-switch S5	15	Rolled paper
8	LED light button S6	16	USB port (option)

Setting switch SW1

SW1	Setting	Contents
SW1-1	ON	Synchronization of external power frequency: 50Hz
	OFF	Synchronization of external power frequency: 60Hz

SW1-2	SW1-3	Contents
ON	ON	Volumetric unit: GAL (without)
OFF	ON	Volumetric unit: m ³ (t)
ON	OFF	Volumetric unit: L (kg)
OFF	OFF	Volumetric unit: mL (g)

Unit inside of the () can be changed as mass unit.

SW1-4	SW1-5	Contents
ON	ON	Decimal points: 0.000
OFF	ON	Decimal points: 0.00
ON	OFF	Decimal points: 0.0
OFF	OFF	Decimal points: non

SW1-6	SW1-7	SW1-8	Contents
ON	ON	ON	Interval time of auto-print: non
OFF	ON	ON	Interval time of auto-print: 24Hr
ON	OFF	ON	Interval time of auto-print: 12Hr
OFF	OFF	ON	Interval time of auto-print: 4Hr
ON	ON	OFF	Interval time of auto-print: 1Hr
OFF	ON	OFF	Interval time of auto-print: 30min
ON	OFF	OFF	Interval time of auto-print: 5min
OFF	OFF	OFF	Interval time of auto-print: 1min

Setting switch SW2

SW2	Setting	Contents
SW2-1	ON	Input frequency in 1CH: Max. 20Hz
	OFF	Input frequency in 1CH: Max. 200Hz
SW2-2	ON	Count direction of 1CH: Setting Low (H→L)
	OFF	Count direction of 1CH: Setting High (L→H)
SW2-3	ON	Input frequency in 2CH: Max. 20Hz
	OFF	Input frequency in 2CH: Max. 200Hz
SW2-4	ON	Count direction of 2CH: Setting Low (H→L)
	OFF	Count direction of 2CH: Setting High (L→H)
SW2-5	ON	Printed language: Japanese
	OFF	Printed language: English
SW2-6	ON	Paper cut: Partial cut
	OFF	Paper cut: Full cut
SW2-7	ON	Automatic cut function: With
	OFF	Automatic cut function: Without
SW2-8	ON	Nos. of print: 2 print * for duplicate print, with automatic cut
	OFF	Nos. of print: 1 print

■ Action

- Turn on the main power
 - It prints time and starts flashing green light every one second when turn on the power.
 - If time is not correct, please adjust by time setting.
- Time setting and change the setting.
 - S4 push-switch can adjust a time within ±30sec.
 - Reset seconds in case of 29 seconds or less, and carry up to a minute in case of 30 seconds and more.
 - Turn select switch S3 to the time setting (right side) and adjust the time or change the setting.
 - (1) Minute adjustment: After adjust by S4 (+), S5 (-), save by S7 button.
 - (2) Hour, day, month, year adjustment: same as minute.
 - (3) Unit setting: Change by S4 (+) and save by S7 button.
 - (4) Delay time of 1st digit setting: Same procedure as minute adjustment.
 - (5) Delay time of 2nd digit setting: Same procedure as minute adjustment.
 - Turn select switch S3 to the measurement (left side) and terminate the setting.
- Counting action
 - After turn on power, count pulse signal which input to 1CH or 2CH.
 - When count inhibit signal is ON, stop counting.
- Printing action
 - There are 5 kinds of printing function as below, and kind of printing function is printed in right side of time.
 - (1) Manual print (MAN)
 - (2) Auto-print (AUTO)
 - (3) Print from print signal (PRINT)
 - (4) Print from reset signal (RESET)
 - (5) Print when total reset (TRES)
 - Manual print can check the count value of that time. No reset after print.
 - Reset after print except for manual print. In case of reset, "R" is printed on right side of the paper. In case of No reset, "N" is printed on right side of the paper.
 - In case of use only 1CH, the channel of which value is zero is not printed. In this case, it can be used as a printer for 1CH.
- Reprint action
 - While pressing S7 button, press S5 button, and it reprint contents immediate before. It can be used in case of mistake in printing or multiplicity print.
 - The memory is updated by new printing except for manual print and erased at power off.

Terminal arrangement

Signal terminal block

No.	Signal Name	No.	Signal Name
B 1	0V COMMON	A 1	SIG1 Signal Input CH.1
B 2		A 2	SIG2 Signal Input CH.2
B 3		A 3	PRINT1 Print Signal Input CH.1
B 4		A 4	PRINT2 Print Signal Input CH.2
B 5		A 5	RESET Reset Signal Input
B 6		A 6	INH Count Inhibit Signal Input
B 7		A 7	
B 8		A 8	+24V IN POWER *1
B 9		A 9	
B 1 0		+12V FOR TRANSMITTER	A 1 0

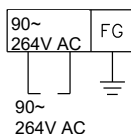
*1: In case of using 24V DC power for input circuit, please connect +24V to terminal A8.

Power source terminal block

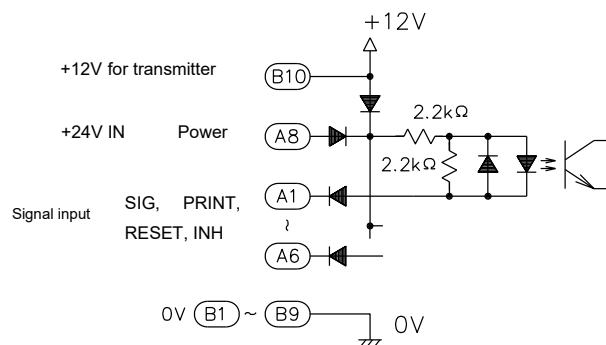
No.	Signal Name
90~ 264V AC	Power 90~264V AC
FG	GND

Wire connection

Power source connection



Pulse input circuit

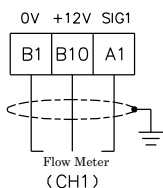


Pulse input connection (Example of CH1)

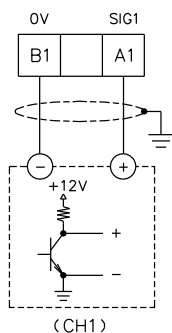
(Use the shielded cable)

voltage no-contact input

No-contact 12V pulse flow meter

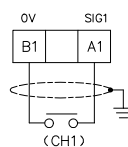


No-contact 12V pulse signal

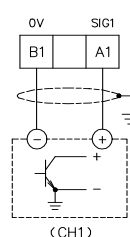


Contact input

(SW2-1, SW2-3: ON)



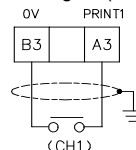
Open collector input



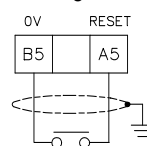
Control input connection

(Use the shielded cable)

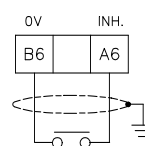
Print signal (CH1)



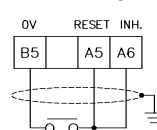
Reset signal



Count inhibit signal



Total reset signal



Model

Model	Specification code	Remark
PR	Printer
	2090A	Version symbol
Additional specification (option)	/NM Add naming option
	/SC Add scaling option
	/E English print
	/Z□ Another special software option (□ is series number)
	/CP Printing twice

◆◆◆◆Matters to be specified at placing of order◆◆◆◆

1. Model and specification code
2. Input pulse unit and indication unit.

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

NITTOSEIKO CO.,LTD.

