

Specifications

Digital Indicator

CSD-904-EX

Spec. No. EN382904-EX-J

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1. General

This instrument is the digital indicator suitable for the platform scale system.

2. Specifications

2-1. Specifications for analog

- Bridge power supply DC5 V \pm 0.25 V within 120 mA with sensing function
- Applicable transducers Up to 8 pieces of strain gage applied transducers (350 ohm) can be connectable.
- Input sensitivity 0.2 μ V/d or more (d=minimum scale)
- Input range -3.1 mV/V to 3.1 mV/V
- Zero adjustment range ± 2.5 mV/V
- Non-Linearity 0.01 %F.S.
- Temperature coefficient
Zero point ± 0.2 μ V/ $^{\circ}$ C
(When the calibration is made at 0.2 μ /d or more of the input sensitivity.)
Sensitivity ± 0.0015 %F.S./ $^{\circ}$ C
(When the calibration is made at 0.2 μ /d or more of the input sensitivity.)
- Input noise ± 0.4 μ Vp-p or less
(At the default setting of digital filter and stabilization filter)
- Input filter Approx. 1 Hz (At the default setting of digital filter and stabilization filter)
- A/D sampling 15 times/s

2-2. Specification for digital

- Load display
Display range $-999\ 999$ to 999 999
(Accumulation total display : $-1\ 999\ 999$ to 9 999 999,
Accumulation times : 0 to 999 999)
- Display increment 1 (2, 5, 10, 20 or 50 changeable)
- Display unit 7-segment green colored fluorescent display tube with 22 mm character height
- Over display “-OL” display at minus over, “OL” display at plus over
- AD value over display “-OVF” display at minus over, “OVF” display at plus over
- Condition display ACCUM., MD, PT, TARE, GROSS, NET, ZERO
- Judgement display HI, OK and LO (OK : Green colored fluorescent display tube,
HI and LO : orange colored fluorescent display tube)
- Display rate 5 times/s (15 times/s changeable)
- Decimal point display No display, 10^1 , 10^2 or 10^3 changeable
- Unit display g, kg, t or lb changeable (Green colored fluorescent display tube)

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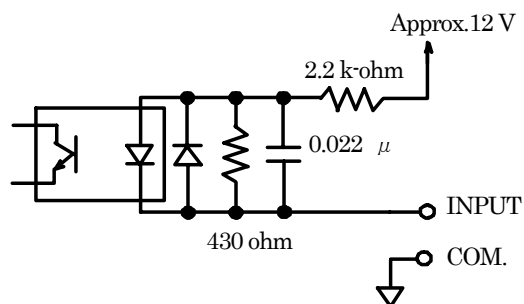
2-3. Function of front panel sheet key switch

ON/OFF	Execute the light on(ON) or the light off(OFF) of display
SET	Move to the accumulation display mode.
ACCUM./ ◀	Execute the accumulation/carry up the setting value
PRESET TARE/ ▶	Used in setting the fixed value of the tare weight cancellation /Carry down the set value
TARE/▲	Execute or clear the tare weight cancellation/set value increment
NET/GROSS/▼	Changeover the display for net weight or gross weight/Decrement of set value
ZERO	Zero compensation of gross weight
PRINT/ ↵	Output the load data from the serial interface./Registration of set value

2-4. External control function

Seven in the followings can be selected optional.

- Operation of ON/OFF key
 - Operation of SET key
 - Operation of ACCUM. key
 - Operation of PRESET TARE key for the tare weight cancellation
 - Operation of TARE key for tare weight cancellation
 - Operation of NET/GROSS key for changeover of the tare weight or the gross weight
 - Operation of ZERO key
 - Operation of PRINT key for printing
- ※Above is pulse input, and it is effective once at the pulse width of 100 ms or more.
- Display of the net weight
 - Display of the accumulation value
- ※Above is level input, and it is effective during the input of short for 100 ms or more.
- Equivalent circuit of the external control input section



- ※An internal circuit and photocoupler are insulated.
- ※The common and serial interface are common.

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4. Specifications at the time of shipment

- Bridge power supply DC5 V
- Span adjustment 10 000 display at the input of 0.5 mV/V
- The minimum scale 1

5. Accessories

- Instruction manual 1 piece
- Midget fuse (0.5 A) 1 piece
- Plug for external control input 1 piece
- Plug for connecting load cell 1 piece
- AC power cable(for AC125 V) 1 piece
- Earth adaptor 1 piece
- Plug for BCD output 1 piece (Only when optional BCD output is installed.)
- Panel mounting attachment 2 pieces
- Panel mounting gasket 1 piece

6. Options

6 - 1 .Current output

- Parts No. CSD904-P07
 - Specifications
 - Output DC4 mA to 20 mA
 - Load resistance 510 ohm or less
 - Non-linearity 0.05 %F.S.
 - Over range Approx.DC2.4 mA at “-OL” display and approx.DC21.6 mA at “OL” display
- ※An internal circuit and photocoupler are insulated.

6 - 2 .Voltage output

- Parts No. CSD904-P25
 - Specifications
 - Output DC0 V to 10 V
 - Load resistance 5 k-ohm or more
 - Non-linearity 0.05 %F.S.
 - Over range Approx.DC-1 V at “-OL” display and approx.DC11 V at “OL” display
- ※An internal circuit and photocoupler are insulated.

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6-3 .BCD output

• Parts No. CSD904-P15

• Specifications

Output BCD 7 digits, parallel output
with polarity(POL) applied (Output ON with minus, and output OFF with plus.),
P.C.(Print command) Turning on during fixed time after conversion of BCD output is
completed

ERROR ON when the various error occurs.

OVER

STABLE

GROSS WEIGHT ON when the BCD output is gross weight

※Above are open collector outputs. $V_{CE}=DC30\text{ V}$, $I_C=DC20\text{ mA}$ at maximum

※The output is not updated, except for the measurement mode.

Input HOLD Holding the BCD output

BCD-ENABLE Compulsorily turned off of the output related with BCD. (Hi-impedance)

※Above are level input, and effective during the input of short more than 100 ms.

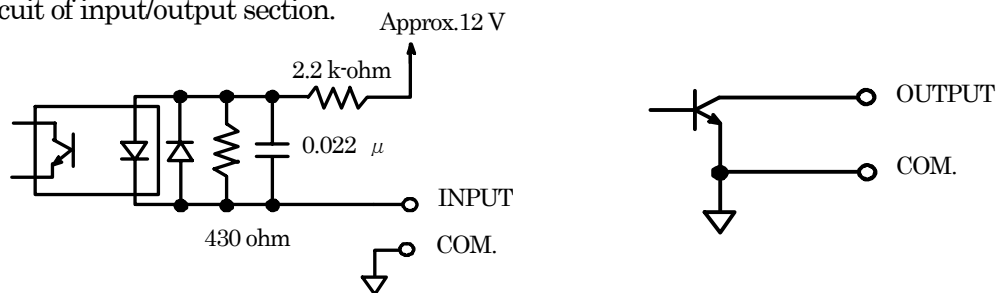
Connector pin configuration of BCD output

Suitable plug : 57-30500

1	1×10^0	18	2×10^4	35	N.C.
2	2×10^0	19	4×10^4	36	N.C.
3	4×10^0	20	8×10^4	37	N.C.
4	8×10^0	21	N.C.	38	Decimal point 10^1
5	1×10^1	22	N.C.	39	Decimal point 10^2
6	2×10^1	23	POL.	40	Decimal point 10^3
7	4×10^1	24	COM.	41	N.C.
8	8×10^1	25	ERROR	42	Stability
9	1×10^2	26	1×10^5	43	N.C.
10	2×10^2	27	2×10^5	44	Gross weight
11	4×10^2	28	4×10^5	45	BCD-ENABLE
12	8×10^2	29	8×10^5	46	OVR.
13	1×10^3	30	1×10^6	47	P.C.
14	2×10^3	31	2×10^6	48	P.C.
15	4×10^3	32	4×10^6	49	HOLD
16	8×10^3	33	8×10^6	50	COM.
17	1×10^4	34	N.C.		

※Don't connect with N.C. pin.

• Equivalent circuit of input/output section.



※An internal circuit and photocoupler are insulated.

※The external control input and common are common.

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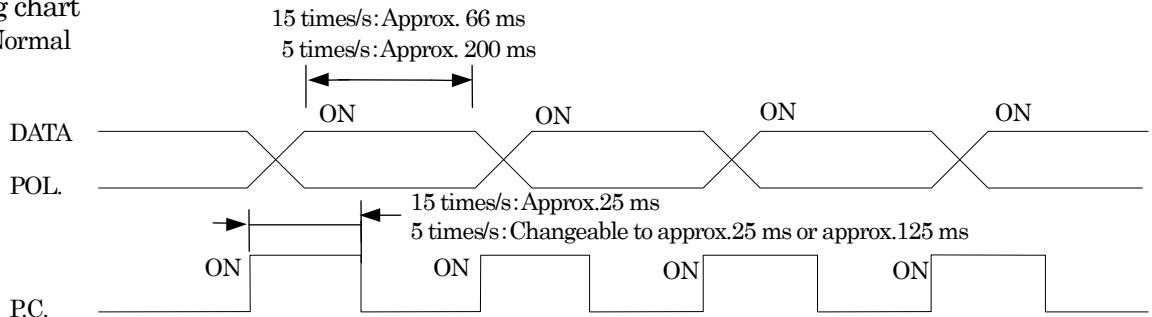
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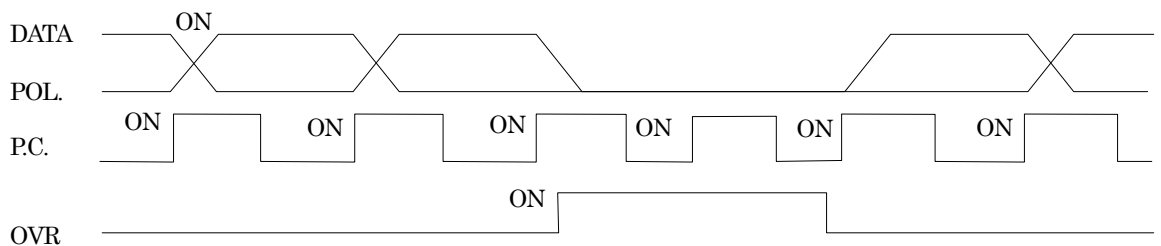
• Timing chart

① Normal



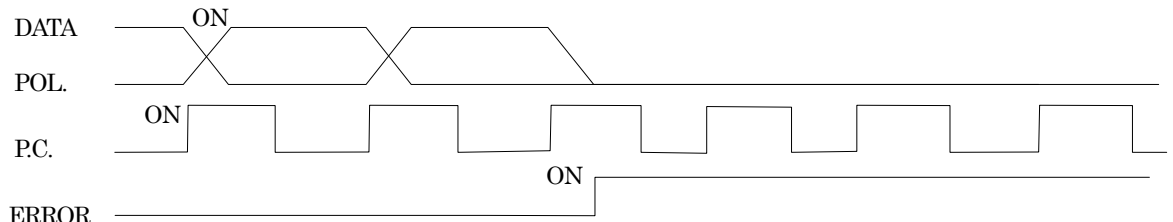
※Output transistor will be ON (Negative logic in electrical theory) when all of the P.C., DATA and POL output the data.

② When data is over.



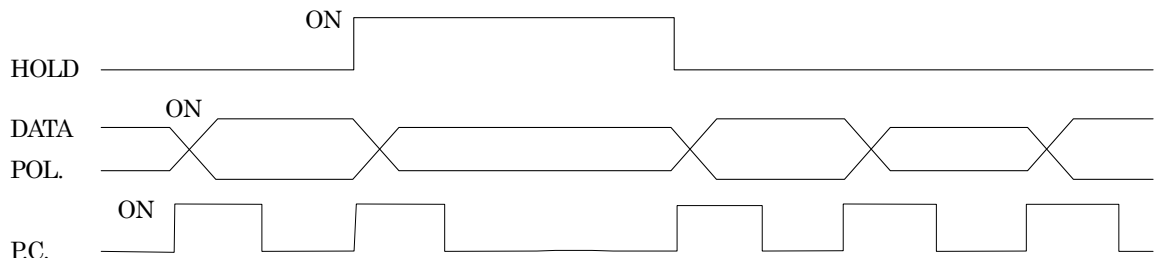
※Output transistor of OVR signal will become ON (Negative logic in electrical theory) during the output of OVR. Moreover, output transistor of all of the DATA will become OFF (Positive logic in electrical theory) during the output of OVR. POL will become OFF during plus over, and become ON during minus over

③ When the error is occurred.



※Output transistor of ERROR signal will become ON (Negative logic in electrical theory) during the output of ERROR. Moreover, output transistor of all the P.C., DATA and POL will become OFF (Positive logic in electrical theory) during the output of ERROR.

④ When the HOLD signal is input.



※Output transistor of P.C. becomes OFF (Positive logic in electrical theory) during input of HOLD signal.

※However, P.C. will become OFF after the one shot operation.

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6 - 4 .RS-232C interface

- Parts No. CSD904-P74
- Specifications
 - Baud rate : Selectable from 1 200, 2 400, 4 800 or 9 600 bps.
 - Data bit length : Selectable from 7 bit or 8 bit
 - Parity bit : Selectable from None, Even or Odd.
 - Stop bit : Selectable from 1 bit or 2 bit
 - Terminator : Selectable from CR+LF or CR
 - Communication method : Half duplex
 - Synchronous method : Start-stop synchronous method
 - Communication data : ASCII code
 - Cable length : within 15 m

- Connector pin configuration of RS-232C Suitable plug : DE-9S-NR by JAE or equivalent.

Pin No.	Signal name
1	CD
2	TXD
3	RXD
4	N.C.
5	S.G.
6	N.C.
7	RTS
8	CTS
9	N.C.

※Connector plug is not attached.

※The engagement fixation stand screw is inch screw.

※Don't connect with N.C. pin.

※An internal circuit is insulated by photocoupler.

※The external control input and common are common.

- Function
 - ①Reading out the load.
 - ②Reading out the accumulated total value
 - ③Reading out the accumulated frequency value
 - ④Reading out the condition
(Accumulation, Stable, Fixed tare weight cancellation, Gross weight, Net weight, Zero, Unit)
 - ⑤Changing the condition
(Zero set, Tare weight cancellation, Tare weight cancellation clear, Accumulation, Accumulation clear, Gross weight display, Net weightdisplay)
 - ⑥Reading out the comparator set value
 - ⑦Changing the comparator set value.
 - ⑧Reading out the comparator judgement.
 - ⑨Communication error code(error code as to the communication)

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6 - 5 .RS-422/485 interface

- Parts No. CSD904-P76
- Specifications
 - Baud rate : Selectable from 1 200, 2 400, 4 800 or 9 600 bps.
 - Data bit length : Selectable from 7 bit or 8 bit
 - Parity bit : Selectable from None, Even or Odd.
 - Stop bit : Selectable from 1 bit or 2 bit
 - Terminator : Selectable from CR+LF or CR
 - Communication method : Half duplex
 - Synchronous method : Start-stop synchronous method
 - Address : Selectable one from 0 to 31
 - Transmission data : ASCII code
 - Cabel length : Approx. 1 km
 - Connectable unit : 32 units at the maximum(RS-422 : 10 units)
 - Termination : Internal
(Selects the presence by terminal block connection)
 - Input/output monitor with LED
 - Changeover the RS-422/485 : Set by function.

- Terminal configuration of RS-422/485

Terminal Name	Signal name
SDA	Differential output(+)
SDB	Differential output(-)
RDA	Differential input(+)
RDB	Differential input(-)
TRM	Termination
S.G.	Signal ground

※An internal circuit is insulated by photocoupler.

※The external control input and common are common.

- Function

- ①Reading out the load.
- ②Reading out the accumulated total value
- ③Reading out the accumulated frequency value
- ④Reading out the condition
(Accumulation, Stable, Fixed tare weight cancellation, Tare weight cancellation, Gross weight, Net weight, Zero, Unit)
- ⑤Changing the condition
(Zero set, Tare weight cancellation, Tare weight cancellation clear, Accumulation, Accumulation clear, Gross weight display, Net weight display)
- ⑥Reading out the comparator set value
- ⑦Changing the comparator set value.
- ⑧Reading out the comparator judgement.
- ⑨Communication error code(error code as to the communication)

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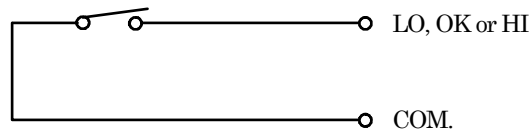
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6 - 6 .Contact type output

Contact type output of the judgement result of the comparator.

- P/No. CSD904-P43
- Contact type output 3 points
- Specification of contact 1a contact
AC250 V 3 A (Resistance load)
DC30 V 3 A (Resistance load)
- Equivalent circuit of the contact output section.



6 - 7 .Power supply voltage

- P/No. CSD904-P62 (AC120 V)
Power supply AC120 V (AC102 V to AC132 V) 50/60 Hz
Power consumption Approx.10 VA at maximum (with options)
- P/No. CSD904-P63 (AC200 V)
Power supply AC200 V (AC170 V to AC220 V) 50/60 Hz
Power consumption Approx.10 VA at maximum (with options)
※Cable for 250 V power supply is not attached.
- P/No. CSD904-P65 (AC240 V)
Power supply AC240 V (AC204 V to AC264 V) 50/60 Hz
Power consumption Approx.10 VA at maximum (with options)
※Cable for 250 V power supply is not attached.

※When this is used in Japan domestic, the voltage that exceeds AC125 V cannot be supplied by the limitation of “Electrical Appliance and Material Safety Law”.

6 - 8 .Combination of optional products

	P07	P25	P15	P74	P76	P43
P07	—	×	×	×	×	○
P25	×	—	×	×	×	○
P15	×	×	—	×	×	○
P74	×	×	×	—	×	○
P76	×	×	×	×	—	○
P43	○	○	○	○	○	—

P07 : Current output(4 mA to 20 mA)

P25 : Voltage output(DC0 V to 10 V)

P15 : BCD output

P74 : RS-232C interface

P76 : RS-422/485 interface

P43 : Contact type output

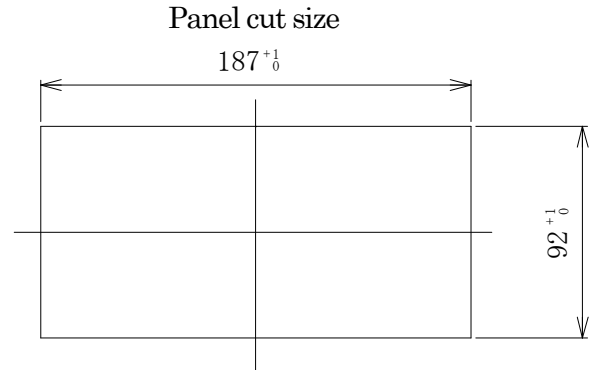
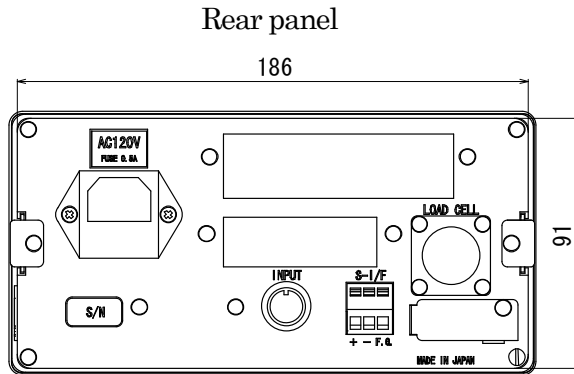
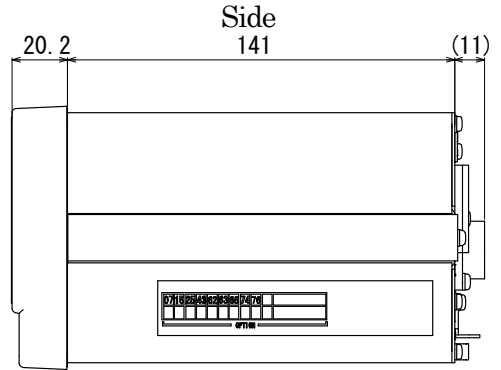
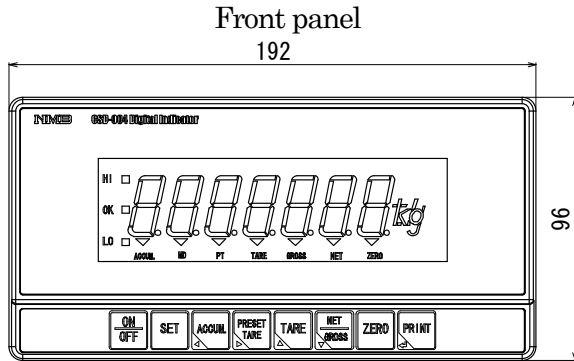
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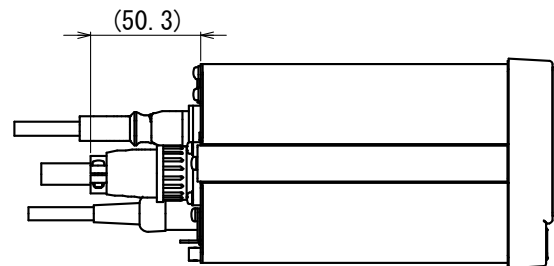
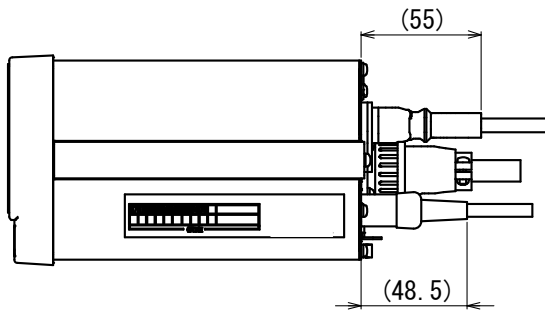
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7. Outline dimensions

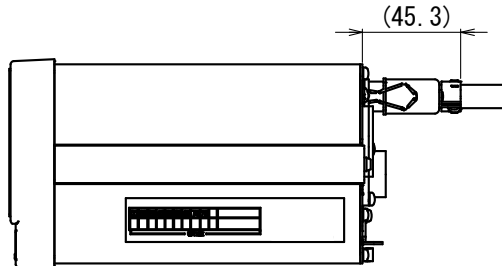


Unit: mm

Side shape when AC cable, input plug for external control or plug for connecting load cell are applied.



Side shape when BCD plug is applied



Unit: mm

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8. Conformity standard

- The instrument has suited the following standard.

Annex C (Performance test level H) of JIS B 7611-2 : 2015

“Non-automatic weighing instruments –

Metrological and technical requirements and tests –

Part 2 : Measuring instruments used in transaction or certification”

It conforms to the above standard from the production in May,2010.

(The logo print of its front panel appears as “Minebea” not as “NMB”.)

The using condition to suit this standard is as follows.

① Shield processing

Use the shielded cable for all connections except a power supply cable.

The shield of the cable for current output, voltage output, RS-422/485 interface and contact output shall be connected with the F.G. terminal.

After using the connector with a metallic shell, in the connection with BCD output and RS-232C interface, the shield must come in contact directly with a metallic shell of the connector.

② Setting Functions

As for the details of the function of the value of C Function and Function, please refer the paragraph 5-2 and 7-2.

CF-03 “Condition of over display” shall be applied with the value of 2.

CF-11 “Effective range of zero set” shall be applied with the value of 0.

CF-13 “Data width of zero tracking” shall be applied with less than 4% of maximum weighing capacity.

F-01 “Digital filter setting” shall be applied with more than the value of 3.

F-05 “Stabilized filter setting” shall be applied with more than the value of 4.

F-06 “Stabilized filter data width” shall be applied with less than the set value of 005.

F-07 “Stabilized filter time width” shall be applied with the set value of more than 01.

F-10 “Detection of stability data range” shall be applied with less than the set value of 4.

F-11 “Detection of stability time range” shall be applied with more than the set value of 2.

※Specifications and Outline dimensions and so on which have printed may subject to change for the purpose of improvement without notice.