

SPECIFICATIONS

CSD-701B

1/10

Digital Indicator

SPEC.No.EN382701B-H

1. General

The instrument is a digital indicator for strain gage applied transducer, and its panel sizes 96 mm × 48 mm.

2. Specifications

2-1. Specifications for analog section

- Bridge power supply DC5 V ± 0.25 V within 60 mA (Changeable to DC2.5 V)
- Applicable transducers Up to 4 pieces of strain gage applied transducers(350) are connectable.
- Input range F.S. setting is available with the input range from 0.4 mV/V to 3.1 mV/V.
(When the bridge power supply is DC5 V)
- Output range DC5 V, Load resistance is 5 k or more.(F.S. setting is available by function)
- Output rate 4 times/s or 20 times/s changeable (Synchronous with display rate)
- Output resolution Approx.1/10 000
- Zero adjustment range - 0.3 mV/V to 2.4 mV/V
- Non-linearity
 - Display 0.05 %F.S.
 - Output 0.05 %F.S.
- Temperature coefficient
 - Zero ± 1 μ V/
(Input conversion, During F.S. setting at the input from 0.5 mV/V to 3.1 mV/V)
 - Sensitivity ± 0.02 %F.S./
(Input conversion, During F.S. setting at the input from 0.5 mV/V to 3.1 mV/V)
- Input noise ± 1 μ Vp-p or less
(At the default setting of the digital filter and the stabilized filter)
- Input filter 1 Hz
(At the "0" setting of the digital filter and the stabilized filter)
- A/D sampling 20 times/s
- CHECK Approx.0.4 mV/V
(Setting by each of approx.0.2 mV/V is available in the range from approx.0.2 mV/V to 1.4 mV/V)
Applicable extension cable is CAB-502(4 cores) within 30 m made by Minebea.)
Except when zener barrier is in use.

2-2. Specification for digital section

- Load display
 - Display range - 9 999 to 99 999
 - Display increment 1 (changeable to 2, 5 or 10)
 - Display Red 7 segments LED, with 17 mm character's height
 - Over display " - OL" display when minus over and "OL" display when plus over.
- Condition display , HOLD, A/Z, CHECK and PEAK,
- Judgement display S1, S2
- Display rate 4 times/s (20 times/s changeable)
- Decimal point display No display, 10¹, 10², 10³ or 10⁴ changeable

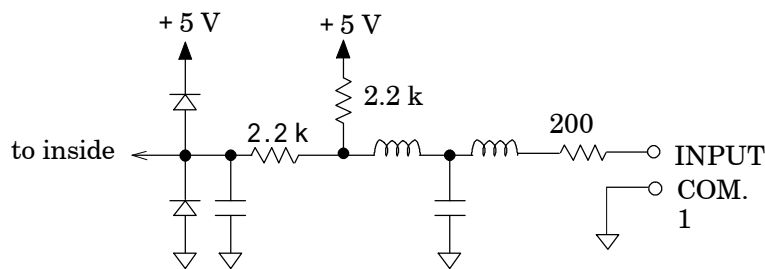
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2-3. Front panel sheet key function

FUNC . /CHECK	Change of function mode/ON/OFF of check value with pressing shift key together at the same time.
S1/◀	S1 set value display/Carry up the set value
S2/ /ZERO	S2 set value display/Increment of the set value/Zero set with pressing shift key together at the same time.
PEAK/TRACK/ A/Z	Change of Track and Peak hold /Tare weight cancellation when condition display “ ” lights on (Changeable by the function)
RESET/ A/Z OFF	Reset of peak value During ON, display is fixed as 0. /Tare weight cancellation clear when condition display “ ” lights on (Changeable by the function.)
ENTER/SHIFT	Enter key/Shift key

2-4. External control function

- ZERO Same as the S2/ /ZERO key
Above is pulse input, and effective once when the pulse width is 100 ms or more.
- PEAK/TRACK/A/Z Change of Track and Peak hold,
Tare weight cancellation when condition display “ ” lights on.
(Changeable by the function)
Open : Track
Short : Peak hold
- HOLD Hold of display, comparative output, analog output and BCD output
- RESET/A/Z OFF Same as the RESET key, reset condition is made by short,
or Tare weight cancellation clear when condition display “ ” lights on.
(Changeable by the function.)
Above are level input, effective during inputting by short at 100 ms or more.
Only for the functions of A/Z and A/Z OFF are pulse input, and effective once with the pulse width is 100 ms or more.



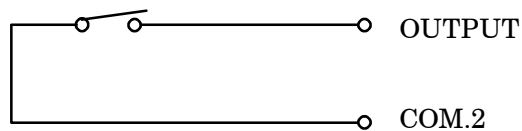
2-5. Comparator function

- Set value - 99 999 to 99 999
- Number of sets 2 points of S1 and S2
- Hysteresis data set value 0 to 99 digits
- Hysteresis time width setting 0 to 9.9 s
- Direction of hysteresis Selectable whichever “ON delay” or “OFF delay”.
- Conversion times of comparator 4 times/s or 20 times/s changeable (Synchronous with display rate)
During the display of set value, the measurement process and comparator process is interrupted.

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2-6. Contact output signal

- S1 and S2 Operates when reached under or over the comparator set value
 - Specifications for contact
 - 1a contact
 - AC125 V 0.1 A (Resistance load)
 - DC30 V 0.5 A (Resistance load)
- Equivalent circuit at contact output section



2-7. Various kinds of functions

- Zero tracking Stabilized the zero point fluctuation in a constant condition.
- Digital filter The data is stabilized through software in CPU.
- Stabilized filter The digital filter is reinforced and stabilized only when the variable width of the load is in the constant value.
- Change of HOLD target The target of Hold can be made by the combination with “Display”, “Comparative output”, “Analog output” and “BCD output(Option)”
- Sheet key lock Prohibits operation of optional key
- Peak hold Hold the maximum value of load
- Changeover the analog output target Changeable the analog output target whichever “TRACK value/Gross weight” or “PEAK value/Net weight”

SPECIFICATIONS**3. Overall specifications**

- Operating temperature/humidity range
 - Temperature - 10 to 50
 - Humidity 85 %RH or less (Non-condensing)
- Power supply
 - Power supply voltage AC100 V to AC240 V
(Permissible variable range AC85 V to AC264 V)
 - Power supply frequency 50/60 Hz
 - Power consumption Approx.11 VA (At AC100 V without options.)
Approx.14 VA at max. (At AC100 V to 240 V with options.)
- Outline dimensions(W × H × D) 96 mm × 48 mm × 120 mm (Excluding protrusion.)
- Dustproof waterproof specification
 - During the panel mount is installed, the front panel section becomes IP 65 or equivalent. (When the attached panel mounting gasket is installed.)
- Weight Approx.0.3 kg (without options)

4. Standard specifications at the shipment

- Bridge power supply DC5 V
- Span adjustment 2 000 display at the input of 0.5 mV/V
- The minimum scale 1
- Analog output Output of 0 V to 5.000 V with 0 to 2 000 display

5. Accessories

- Instruction manual 1 piece
- Midget fuse 1 piece (2 A)
- Unit seal 1 piece
- Panel mounting attachment 2 pieces
- Panel mounting gasket 1 piece
- Plug for BCD output 1 piece (Attached only when optional BCD output is installed.)

6. Options**6-1. Current output**

- P/N : CSD701B-P07
- Specifications
 - Output DC4 mA to 20 mA (Load resistance 260 or less)
 - Non-linearity 0.05 %F.S.
 - Resolution Approx.1/10 000
 - Over range Approx.DC0 mA at the display of “ - OL”,
Approx.DC24 mA at the display of “OL”
Voltage output can't be obtained when this option is installed.

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6-2. BCD output

- P/N : CSD701B-P15
- Specifications

Output

- BCD 5 digits, parallel output with polarity(POL.)
(output ON at minus and output OFF at plus.)
- P.C.(Print command)
ON for a constant time after conversion of BCD output is completed.
- ERROR ON at the occurrence of various kinds of errors.
- OVR(over)

Above are open collector outputs. $V_{CE} = DC30 V, I_C = DC20 mA$ at MAX

Except for the measurement mode, the output is not updated.

Input

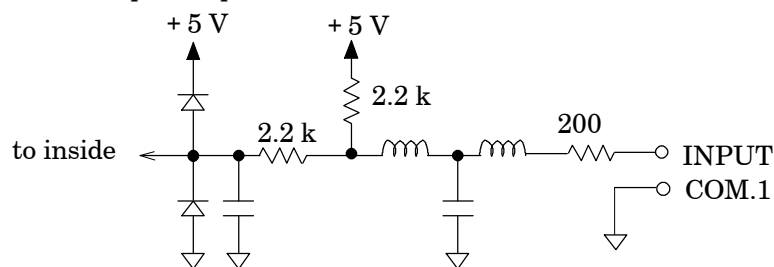
- BCD-ENABLE Compulsive OFF of BCD relative output(High impedance)
Above are level inputs and effective by short for 100 ms or more.

- BCD output connector pin configuration Suitable plug : D-37P-NR made by JAE, or equivalent.

1	COM.	14	1×10^3	27	N.C.
2	1×10^0	15	2×10^3	28	N.C.
3	2×10^0	16	4×10^3	29	N.C.
4	4×10^0	17	8×10^3	30	N.C.
5	8×10^0	18	1×10^4	31	N.C.
6	1×10^1	19	2×10^4	32	N.C.
7	2×10^1	20	COM.	33	N.C.
8	4×10^1	21	4×10^4	34	N.C.
9	8×10^1	22	8×10^4	35	BCD-ENABLE
10	1×10^2	23	POL.	36	N.C.
11	2×10^2	24	OVR.	37	N.C.
12	4×10^2	25	ERROR		
13	8×10^2	26	P.C.		

Don't connect with the N.C. pin.

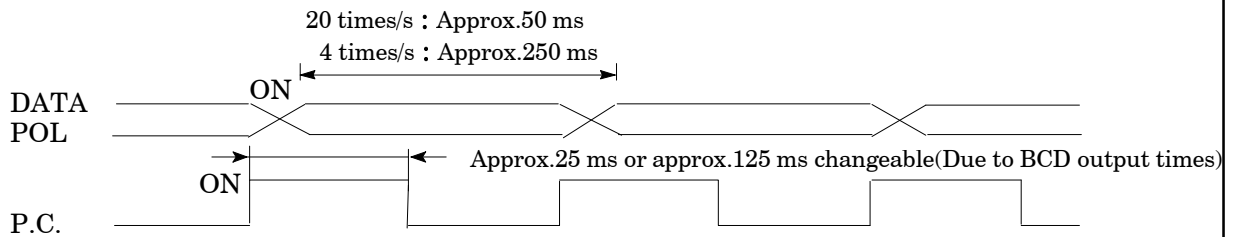
- Equivalent circuit at input/output section



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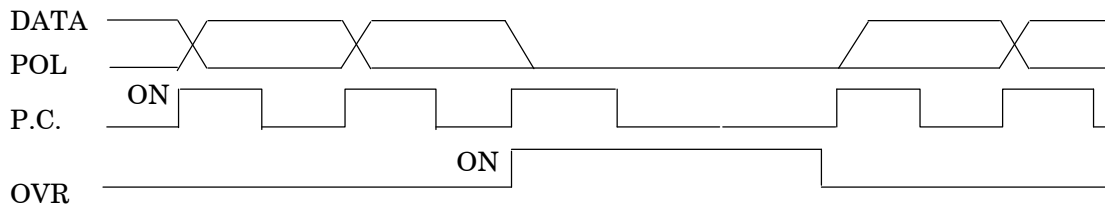
• Timing chart

① Normal



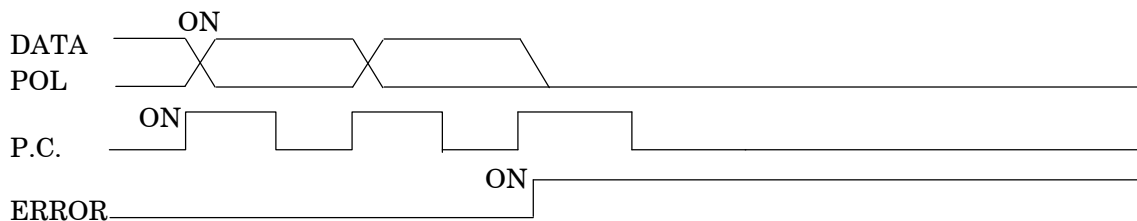
At the time of data output of all of PC., DATA and POL., output transistor will be ON (Negative logic electrically).

② When data is over



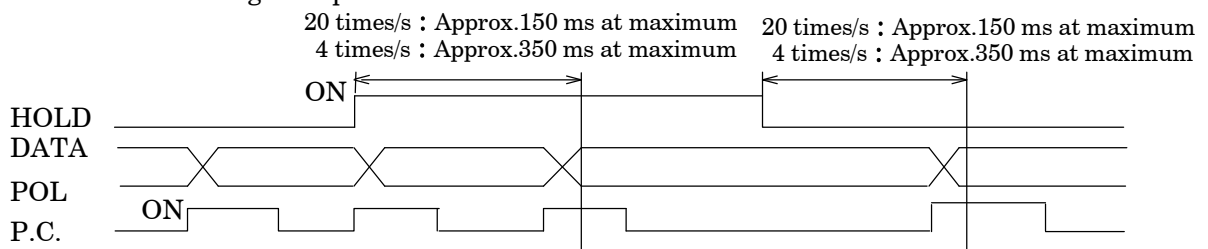
At the time of OVR output, output transistor of OVR signal will become ON (Negative logic electrically). Moreover, all of the output transistor of PC., DATA and POL. will become OFF condition (Positive logic electrically) at the time of OVR output.

③ When error is occurred



At the time of ERROR output, output transistor of ERROR signal will become ON (Negative logic electrically). Moreover, at the time of ERROR output, all of the output transistor of PC., DATA and POL. will become OFF condition (Positive logic electrically). (As for PC., it will be OFF after one shot of operation.)

④ At the time of HOLD signal input



PC. output transistor will be OFF condition (Positive logic electrically) at the time of HOLD signal input.

However, as for PC., it will be OFF condition after one shot of operation is over.

After inputting the HOLD signal, the following response time will be required until holding the DATA and POL, or canceling them.

In case of 20 times/s : Approx. 150 ms at maximum

In case of 4 times/s : Approx. 350 ms at maximum

SPECIFICATIONS**6-3. RS-232C interface**

- P/N : CSD701B-P74
- Specifications

Baud rate	: Select 1 200, 2 400, 4 800, 9 600 or 19 200 bps.
Data bit length	: Select from 7 bit or 8 bit.
Parity · bit	: Select from Non, Even or Odd.
Stop · bit	: Select from 1 bit or 2 bit.
Terminator	: CR + LF
Communication method	: Half-duplex
Synchronous method	: Start-stop synchronous method
Communication data	: ASCII code

Except for the measurement mode, the communication stops.

- RS-232C connector pin configuration Suitable plug : DE-9S-NR(Made 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.

The connector plug is not attached.

The screw for the engaging fixation base is inch type screw.

Never connect with the N.C. pin.

- Function
 - Reading out load
 - Reading out set value
 - Change of set value
 - Communication error code (Error code related with communications.)

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6-4. RS-422 interface

- P/N CSD701B-P76
- Specifications
 - Baud rate : Select from 1 200, 2 400, 4 800, 9 600 or 19 200 bps.
 - Data bit length : Select from 7 bit or 8 bit.
 - Parity · bit : Select from Non, Even or Odd.
 - Stop · bit : Select from 1 bit or 2 bit.
 - Terminator : Select from CR + LF or CR.
 - Communication method : Half-duplex
 - Synchronous method : Start-stop synchronous method
 - Address : Select one from 0 to 31
 - Communication data : ASCII code
 - Cable length : Approx.1 km
 - Numbers of connection : 10 units at maximum
 - Termination : Built-in
(Selects the existence by the connection with terminal board.)
- Input/Output monitor with LED
- Layout of terminal board for RS422

SDA	Differential output
SDB	Differential output
RDA	Differential input
RDB	Differential input
TRM	Termination
S.G.	Signal ground

- Function
 - Reading out the load
 - Reading out the comparatives set value(S1 and S2)
 - Change of comparatives set value(S1 and S2)
 - Communication error code(Error code related with communication.)

6-5. Serial interface

- P/N : CSD701B-P77
- Specifications
 - 2-wires method serial interface
 - Baud rate : 600 bps
 - Data bit length : 8 bit
 - Parity bit : Odd
 - Stop bit : 1 bit
 - Transmission data : Binary code, BCD
 - Except for the measurement mode, the communication stops.

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6-6. Power supply voltage

- P/N. : CSD701B-P66 Power supply DC12 V(DC10 V to DC15 V)
Power consumption Approx.3.6 W (at DC12 V)
- P/N. : CSD701B-P67 Power supply DC24 V(DC20 V to DC30 V)
Power consumption Approx.3.6 W (at DC24 V)

6-7. Optional combinations

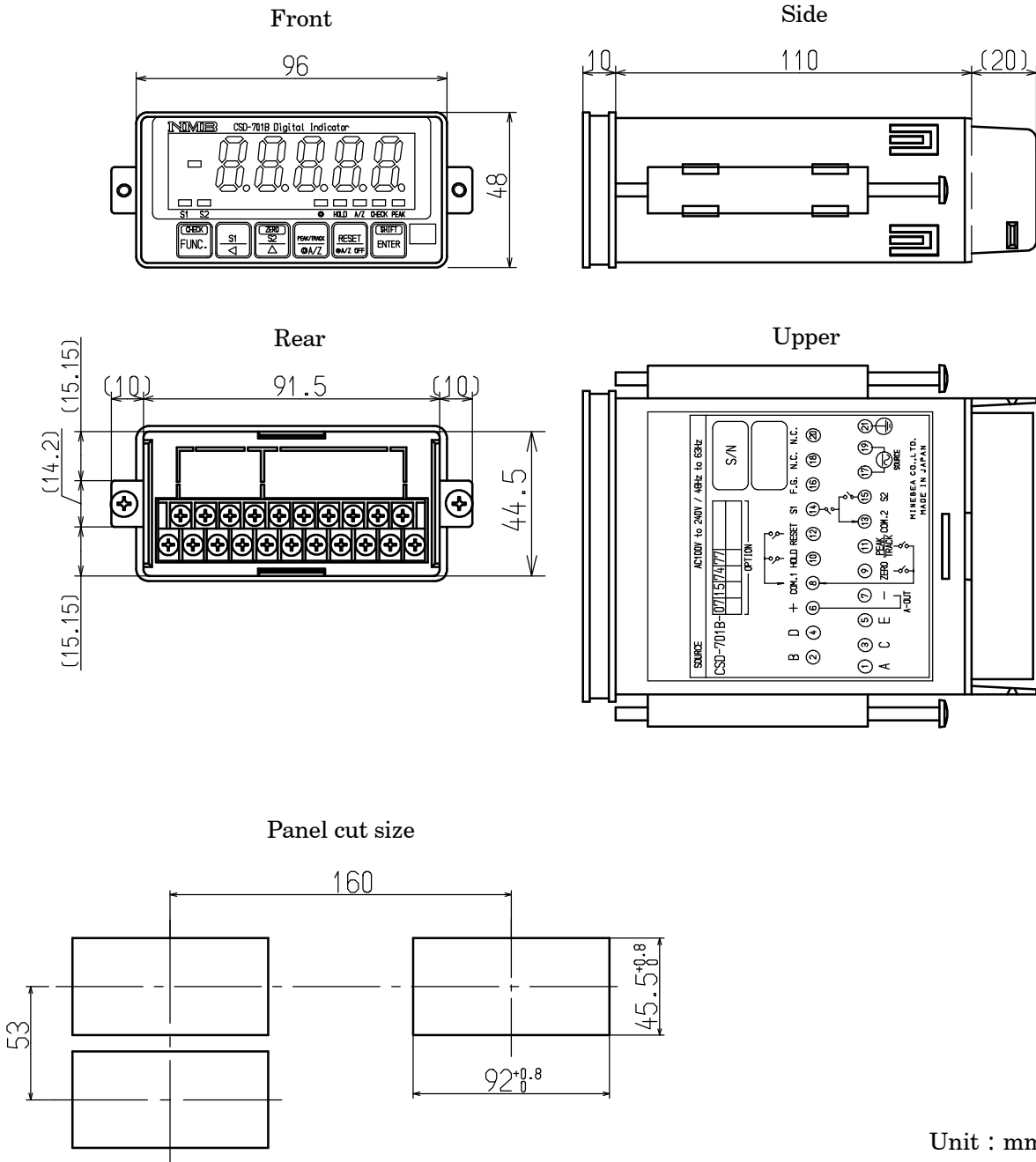
	P07	P15	P74	P76	P77
P07					
P15			×	×	×
P74		×		×	×
P76		×	×		×
P77		×	×	×	

: Possible, × : Impossible

P07 : Current output
 P15 : BCD output
 P74 : RS-232C interface
 P76 : RS-422 interface
 P77 : Serial interface

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7. Outline dimensions



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