Minebea

SPECIFICATIONS

Digital Indicator

CSD-701C

Spec. No.EN382701CA 1/11

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 Ω) are connectable.
- Input sensitivity: 0.2 μV/d or more (d=minimum scale)
- Input range: F.S. setting is available with the input range from -3.1 mV/V to 3.1 mV/V.
- Zero adjustment range: −2.5 mV/V to 2.5 mV/V
- Non−linearity: 0.02 %F.S.
- Temperature coefficient
  - Zero: ± 0.2 μV/℃ (When the calibration is made at 0.2 μV/d or more of the input sensitivity.)
  - Sensitivity: ± 0.001 5 %F.S./℃ (When the calibration is made at 0.2 μV/d or more of the input sensitivity.)
- Input noise: ± 0.2 μVp−p or less (At the default setting of all filter.)
- Anlog Lowpass filter: From 0.1 Hz to 10.0 Hz (Digital type, Adjustable in 0.1 Hz increments)
- A/D sampling: 100 times/s (Changeable to 10, 50, 100 times/s.)
- A/D internal resolution: 24 bits
- CHECK value: Approx.0.4 mV/V (Setting by each of 0.1 mV/V is available in the range from approx. 0.1 mV/V to 2.4 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. Specifications for Voltage output

- Output range: DC ± 5 V (F.S. setting is available by the Function.)
- Load resistance: 5 kΩ or more.
- Output rate: Synchronous with A/D sampling
- Output resolution: Approx.1/12 000 or more.
- Over range: Approx.DC6 V at "OL" display and approx.DC−6 V at "−OL" display
- Non−linearity: 0.04 %F.S.
- Temperature coefficient
  - Zero: ± 0.015 %F.S./℃
  - Sensitivity: ± 0.015 %F.S./℃
- Terminal block assignments

No.	Signal name	Explanation
1	SLD	Shield
2	OUT+	Analog output+
3	OUT−	Analog output−

2-3. Specification for digital section

- Load display
  - Display range —99 9999 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, 50 times/s,100 times/s changeable)
- Decimal point display No display, 10^1, 10^2, 10^3 or 10^4 changeable

2-4. 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/◀/CAL S1 set value display/Carry up the set value/Shift to Simple calibration mode with pressing Shift key together at the same time.
- 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 /Automatic Zero cancellation when condition display "◎" lights on
- RESET/◎A/Z OFF Reset of peak value During ON. /Automatic Zero cancellation clear when condition display "◎" lights on (Changeable by the Function.)
- ENTER/SHIFT Enter key/Shift key

2-5. External control function

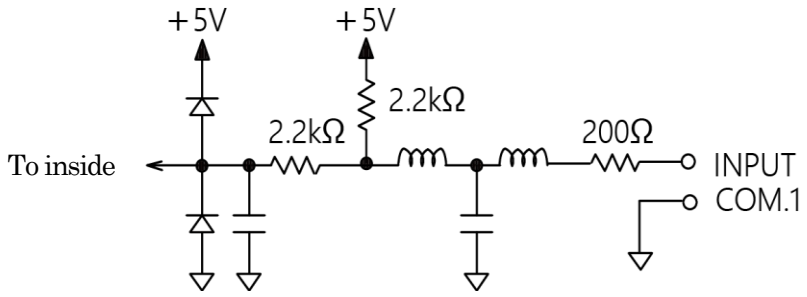
- External control Input 4 points ZERO, PEAK/TRACK/A/Z, HOLD, RESET/A/Z OFF
- Contact Output 2 points S1, S2
- Terminal block assignments

No.	Signal name	Explanation
1	SLD	Shield
2	S1	Contact Output S1
3	S2	Contact Output S2
4	COM.1	Common of Contact Output
5	ZERO	External control Input
6	HOLD	
7	PEAK/TRACK	
8	RESET	
9	COM.2	Common of External control Input
10	SLD	Shield

※COM.1and COM.2 are insulated.

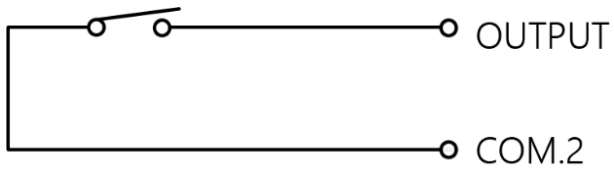
2-6. External control Input

- ZERO — Zero set
  Pulse input, and effective once when the pulse width is 50 ms or more.
  ※Pulse width is changeable to 20 ms, 10 ms, 5 ms, 2 ms by the Function.
- PEAK/TRACK/A/Z — Change of Track and Peak hold,
  Automatic Zero cancellation when condition display "◎" lights on.
  Open :Track
  Short :Peak hold
- HOLD — Hold of display, comparative output, analog output and optional output.
- RESET/A/Z OFF — Reset of peak value or Automatic Zero cancellation clear when condition display "◎" lights on.
  Peak Func. : Level input, effective during input by short at 50 ms or more.
  A/Z Func. : Pulse input, effective once with the pulse width 50 ms or more.
  ※Pulse width is changeable to 20 ms, 10 ms, 5 ms, 2 ms by the Function.
- Equivalent circuit



2-7. Contact Output

- S1, S2 — Operates when reached under or over the comparator set value.
- Contact specification — 1a contact
  AC125 V 0.1 A (Resistance load)
  DC30 V 0.5 A (Resistance load)
- Equivalent circuit



2-8. 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
  Synchronous with A/D sampling

2-9. Various kinds of functions

- Zero tracking Stabilized the zero point fluctuation in a constant condition.
- Digital low pass filter A low pass filter performed by CPU calculations.
  Reduces noise in frequency components higher than the set frequency.
- Digital filter Stabilize data by moving average processing by CPU.
- Stabilized filter The digital filter is reinforced and stabilized only when the variable width of the load is in the constant value.
- Simple calibration By pressing the CAL key at the same time as the shift key, calibration can be performed immediately.
- Change of HOLD target The target of Hold can be made by the combination with “Display”, “Comparative output”, “Analog output” and “Option output”
- Key function lock Prohibits key operation and execution of its function.
- Peak hold Hold the maximum value of load
- Changeover the analog output target
  Target of analog output can be selected from “TRACK/Total load” and “PEAK/Reading”.

2-10. USB interface (for connection with EzCTS)

- Standard Compliant with USB2.0
- Applicable connector USB2.0 Mini B type
- Connection target PC (Windows10、Windows11)
- Software Communication tool software EzCTS2 (Optional item)
- Function Reading, changing, and file output of setting parameters

※ To use USB interface,you must install the specialized driver to the PC.

3. General specifications

- Operating temperature/humidity range
  - Temperature −10 ℃ to 50 ℃
  - Humidity 85 %RH or less (Non−condensing)
- Usage altitude 2 000 m or less
- Pollution degree 2 or less
- Overvoltage category Category II
- Power supply
  - Power supply voltage AC100 V to AC240 V (Permissible variation range AC85 V to AC264 V)
  - Power supply frequency 50/60 Hz
  - Power consumption Approx.9.2 VA at max. (At AC230 V with options.)
    Approx.5.6 VA at max. (At AC100 V with options.)
- Outline dimensions 96 mm × 48 mm × 138 mm (W × H × D)
- Dustproof waterproof 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.0.35 kg (with options and Panel mounting brackets)

4. Standard specifications at the shipment

- Bridge power supply DC5 V
- Span adjustment 30 000 display at the input of 3.0 mV/V
- The minimum scale 1
- Analog output Output of 0 V to 5.000 V with 0 to 30 000 display

5. Accessories

- Start guide (Japanese) 1 piece
- Start guide (English) 1 piece
- Units sticker 1 piece
- Panel mounting brackets 2 pieces
- Panel mounting seal 1 piece

※The following are included with each option.

- BCD output connector plug 1 piece
- BCD connector case 1 piece
- RS-232C connector plug 1 piece
- RS-422/485 connector plug 1 piece
- Serial I/F connector plug 1 piece

6. Options

6-1. Current output

- P/N CSD701C-P07
- Output range DC4 mA to 20 mA (F.S. setting by function)
- Load resistance 260 Ω or less
- Output cycles Synchronous with A/D sampling
- Output resolution Approx.1/12 000
- Over range Approx.DC26 mA at the display of "OL",
  Approx.DC1 mA at the display of "−OL"
- Non−linearity 0.04 %F.S.
- Temperature coefficient Zero ±0.005 %F.S./℃
  Sensitivity ±0.01 %F.S./℃
- Terminal block assignments

Terminal No.	Signal name	Description
1	SLD	Shield
2	OUT+	Analog output ＋
3	OUT−	Analog output −

※Voltage output can't be obtained when this current output option is installed.

6-2. BCD output

- P/N CSD701C-P15
- Output Above are open collector outputs. V_{CE}=DC30 V, I_C=DC20 mA at MAX

BCD 5 digits	Parallel output with polarity (POL.)
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)	ON at overload.

- Input Above are level inputs and effective by short for 100 ms or more.

BCD−DISABLE	Compulsive OFF of BCD relative output. (High impedance)

- Connector pin assignments

No.	Signal name	Description	No.	Signal name	Description
1	COM.	Common	19	2×10^4	10^4 digit Parallel output
2	1×10^0	10^0 digit Parallel output	20	COM.	Common
3	2×10^0		21	4×10^4	10^4 digit Parallel output
4	4×10^0		22	8×10^4	
5	8×10^0		23	POL.	Polarity output
6	1×10^1	10^1 digit Parallel output	24	OVER	OL output
7	2×10^1		25	ERROR	ERROR output
8	4×10^1		26	P.C.	Print command output
9	8×10^1		27	HOLD	External control input
10	1×10^2	10^2 digit Parallel output	28	PEAK/TRACK	
11	2×10^2		29	ZERO	
12	4×10^2		30	RESET	
13	8×10^2		31	N.C.	Not connected
14	1×10^3	10^3 digit Parallel output	32	N.C.	
15	2×10^3		33	N.C.	
16	4×10^3		34	N.C.	
17	8×10^3		35	BCD-DISABLE	BCD forced stop input
18	1×10^4	10^4 digit Parallel output	36	N.C.	Not connected

※COM. terminals are common.

※Accessory plug : 10136-3000 PE (3M)

※Accessory connector plug : 10336-52A0-008 (3M)

- Function ①Reading out load
  ②External control input/output

6-3. RS–232C interface

- P/N :CSD701C-P74
- Specifications
  - Baud rate :Select 1 200, 2 400, 4 800, 9 600, 19 200 and 38 400 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
  - Communication data :ASCII code
  - Data transmission mode: Selectable from Command, Stream
- Display : Input/Output monitor with LED.
- Connector pin assignments

Pin No.	Signal name	Description
1	SLD	Shield
2	CD	Carrier detection
3	RXD	Received data
4	TXD	Transmission data
5	S.G.	Signal ground

※Accsesory plug:MC 1.5/5-ST-3.81 (PHOENIX CONTACT)

- Function
  - ①Reading out load
  - ②Reading out set value
  - ③Change of set value
  - ④Communication error code (Error code related with communications.)
  - ⑤ Communication calibration

6-4. RS–422/485 interface

- P/N :CSD701C-P76

Specifications

- Baud rate :Select from 1 200, 2 400, 4 800, 9 600, 19 200 and 38 400 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 :RS-422 10 units at maximum, RS-485 32 units at maximum
- Termination :Built-in (330 Ω connection by shorting the TRM. and RDB terminal.)
- Data transmission mode: Selectable from Command, Stream

- Display : Input/Output monitor with LED

• Connector pin assignments

Pin No.	Signal name	Description
1	SLD	Shield
2	S.G.	Signal ground
3	TRM.	Terminating resistance
4	RDB	Differential input (-)
5	RDA	Differential input (+)
6	SDB	Differential output (-)
7	SDA	Differential output (+)

※Accsesory plug:MC 1.5/7-ST-3.81 (PHOENIX CONTACT)

• Function
①Reading out the load
②Reading out the comparatives set value (S1 and S2)
③Change of comparatives set value (S1 and S2)
④Communication error code (Error code related with communication.)
⑤ Communication calibration

6-5. Serial interface

• P/N :CSD701C-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.

• Connector pin assignments

Pin No.	Signal name	Description
1	SLD	Shield
2	−	Serial output(-)
3	+	Serial output(+)

※Accsesory plug:MC 1.5/3-ST-3.81 (PHOENIX CONTACT)

• Function ①Reading out the load

6-6. DC24 V Power supply

• P/N. CSD701C-P67

• Specifications

Power supply :DC12 V to DC24 V (Permissible variation range DC10.8 V to DC30 V)
Power consumption :Approx.2.7 W at max. (with options at DC24 V)

6-7. Optional combinations

	P07	P15	P74	P76	P77	P67
P07	—	○	○	○	○	○
P15	○	—	×	×	×	○
P74	○	×	—	×	×	○
P76	○	×	×	—	×	○
P77	○	×	×	×	—	○
P67	○	○	○	○	○	—

○: Possible, ×: Impossible

P07: Current output
P15: BCD output
P74: RS−232C interface
P76: RS−422/485 interface
P77: Serial interface
P67: DC24 V Power supply

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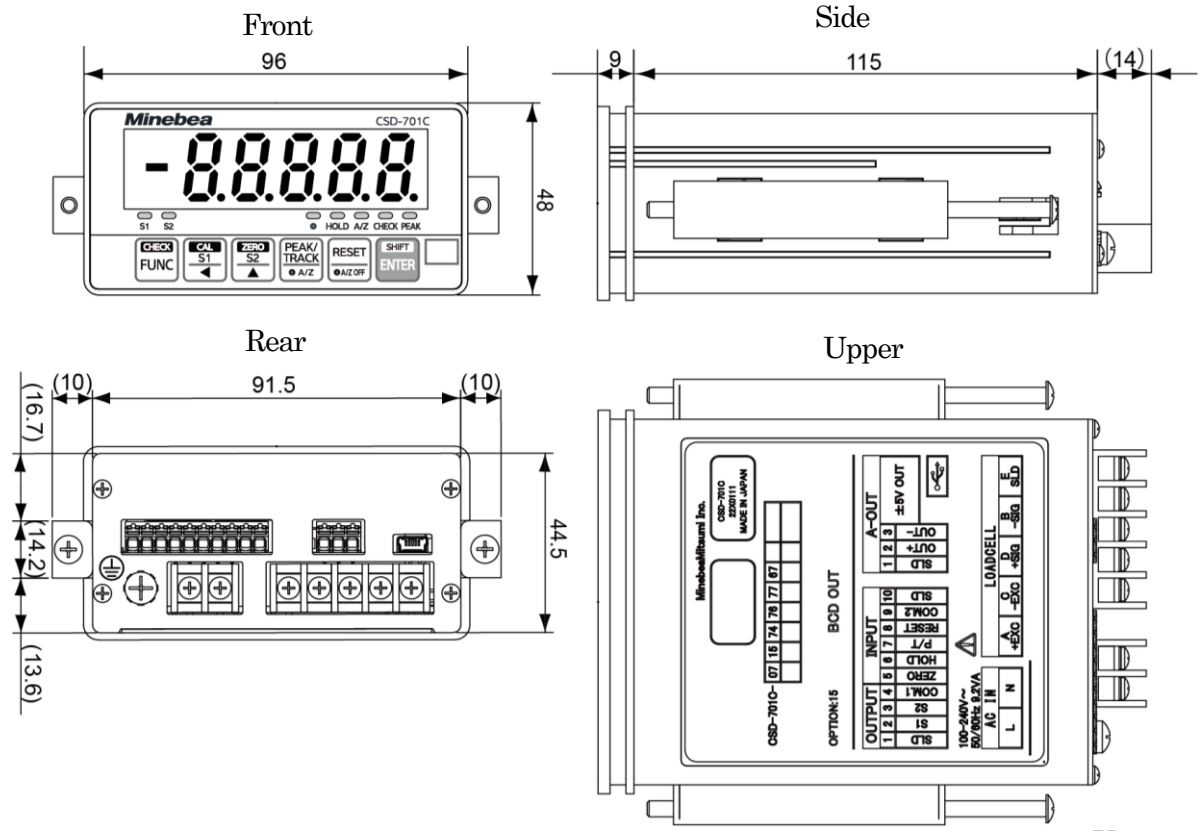
CSD-701C	
Spec. No.EN382701CA	11/11

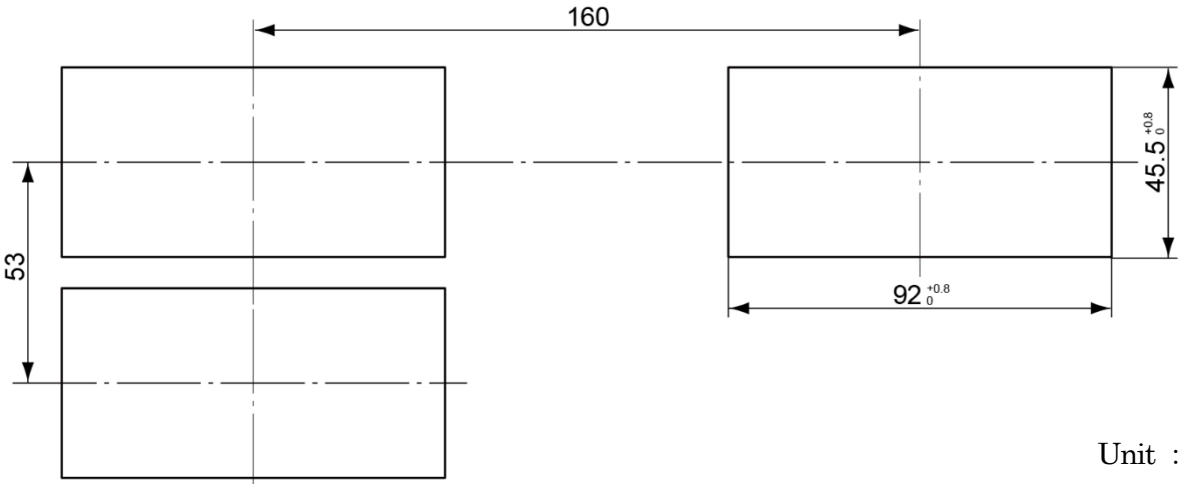
7. Outline dimensions

7-1. External dimensions



Unit : mm

7-2. Panel Cutting Dimensions



Unit : mm

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