

SPECIFICATIONS

Digital Indicator

CSD-815C

Spec. No. EN382815C-A

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1. General

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

2. Specifications

2-1. Specifications for common analog section

- Bridge power supply 5 V DC ± 0.25 V within 60 mA (Changeable to 2.5 V DC)
- Applicable transducers
Up to 4 pieces of strain gage applied transducers (350 Ω) are connectable.
- Input range ± 3.1 mV/V
- Input sensitivity 0.2 μV/d or more (d= minimum scale)
- Zero adjustment range
± 2.5 mV/V
- Non-linearity 0.01 %F.S.
- A/D sampling 100 times/s (Changeable to 10 times/s, 20 times/s, 50 times/s, 200 times/s.)
- A/D internal resolution
24 bit
- CHECK value Approx. 0.3 mV/V
(Setting by each of 0.1 mV/V is available in the range from approx. 0 mV/V to 2.4 mV/V)
- Terminal block assignments

No.	Signal name	Explanation
A	+EXC	Load cell power supply +
C	-EXC	Load cell power supply -
D	+SIG	Load cell input +
B	-SIG	Load cell input -
E	SLD	Shield

*Plug provided : 15EDGKM-3.81-05P-14-00Z(H) (DEGSON)

2-2. Specifications for Analog section (Tracking measurements)

- Temperature coefficient
Zero point ± 0.2 μV/°C
(When calibrating at input sensitivity 0.2 μV/d or higher.)
Sensitivity ± 0.0015 %F.S./°C
(When calibrating at input sensitivity 0.2 μV/d or higher.)
- Input noise ± 0.2 μV_{p-p} or less
(When various filters are set to default settings.)
- Digital low-pass filter
0.1 Hz to 20.0 Hz (Adjustable in 0.1Hz increments. For tracking only.)

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2-3. Specifications for Analog section (Analog peak hold measurements)

- Method Capacitor charge type
 - Temperature coefficient
 Zero point $\pm 0.5 \mu\text{V}/^\circ\text{C}$
 (When calibrating at input sensitivity $0.2 \mu\text{V/d}$ or higher.)
 - Sensitivity $\pm 0.01 \text{ \%F.S.}/^\circ\text{C}$
 (When calibrating at input sensitivity $0.2 \mu\text{V/d}$ or higher.)
 - Input noise $\pm 0.6 \mu\text{Vp-p}$ or less
 (When various filters are set to default settings.)
 - Analog low-pass filter
 2 Hz (Changeable to 10 Hz, 100 Hz, 2 kHz. For analog peak hold only.)
 - Analog peak hold Response speed: Due to the Analog low-pass filter characteristics.
 Accuracy: 0.1 \%F.S. or less.
- * Tracking measurement and analog peak hold measurement are switched by function.

2-4. Specifications for Voltage output (Standard equipment)

- Output range $\pm 10 \text{ V DC}$ (F.S. setting is available by the Function.)
- Load resistance 5 k Ω or more.
- Output rate Synchronous with A/D sampling
- Output resolution Approx. 1/12 000 or more.
- Over range Approx. 11.5 V DC at "OL" display.
 Approx. -11.5 V DC at "-OL" display.
- Non-linearity 0.04 %F.S.
- Temperature coefficient
 Zero $\pm 0.015 \text{ \%F.S.}/^\circ\text{C}$
 Sensitivity $\pm 0.015 \text{ \%F.S.}/^\circ\text{C}$
- Terminal block assignments

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

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2-5. Specification for digital section

- Load display
 - Display range — 99 999 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.
- Judgement display S0, S1, S2
- Condition display SEL.1, SEL.2, ◎, HOLD, A/Z, CHECK, PEAK, BOTTOM
- Display rate 4 times/s (20 times/s, 50 times/s, 100 times/s changeable)
- Decimal point display No display, 10¹, 10², 10³ or 10⁴ changeable

2-6. Key function

- FUNC/CAL·F* Switches to function mode./Easy calibration setting mode
- ZERO/S0* Resets the display to zero./S0 set value display
- S1/◀/CAL·Z* S1 set value display/Carry up the set value/Easy calibration zero mode.
- S2/▲/CAL·S* S2 set value display/Increment of the set value/Easy calibration span mode.
- PEAK/TRACK/◎A/Z
Switches between peak hold mode (Peak, Bottom, Peak bottom) and tracking mode. / Automatic Zero cancellation when condition display “◎” lights on (Changeable by the Function.)
- RESET/◎A/Z OFF Reset of peak value.(Fixing 0 display during ON.) / Automatic Zero cancellation clear when condition display “◎” lights on (Changeable by the Function.)
- CHECK/CAL·L* On and Off of check value / Easy calibration locking and unlocking.
- ENTER/SHIFT Enter key / Shift key
*These are enabled by pressing the shift key at the same time.

2-7. External control input

- ZERO Zero set
- HOLD Hold of display, comparative output, analog output and optional output.
Open : HOLD ON Short : HOLD OFF
- PEAK/TRACK/A/Z
Change of Track and Peak hold,
Automatic Zero cancellation when condition display “◎” lights on.
Open : Track Short : Peak hold
- RESET/A/Z OFF Reset of peak value or Automatic Zero cancellation clear when condition display “◎” lights on.
Open : Normal Short : Reset

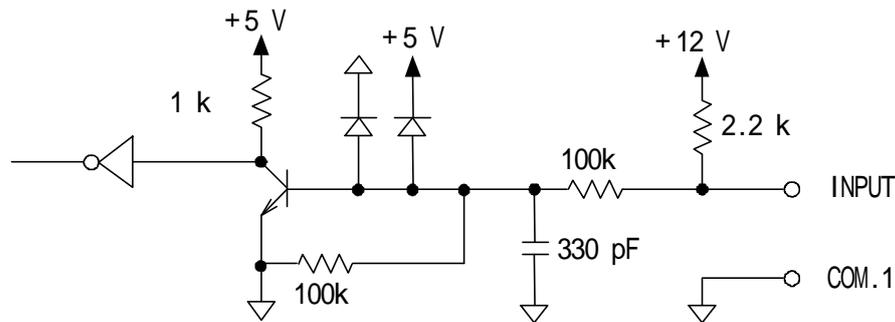
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- SEL.1 4 kinds of "Calibration data" is changed by the combination of SEL.2.
- SEL.2. 4 kinds of "Calibration data" is changed by the combination of SEL.1.
 - *The open/short logic are functionally switchable.
 - *HOLD, PEAK/TRACK, RESET, SEL.1 and 2 are level inputs, effective during input with a short circuit of 50 ms or more.
 - *The function of ZERO, A/Z and A/Z OFF is a pulse input. These are effective once by a pulse width of 50 ms or more. (Pulse width is changeable to 5 ms, 10 ms or 20 ms.)
- Input Circuits Non-voltage contact input type
Signal input by short circuit and opening between the input terminal and the COM terminal.
- Internal power supply voltage 12 V DC, short-circuit current: approx. 5 mA
- Equivalent circuit



- Terminal block assignments

No.	Signal name	Explanation
1	ZERO	External control input
2	HOLD	
3	COM.1	Common
4	PEAK/TRACK/A/Z	External control input
5	RESET/A/Z OFF	
6	COM.1	Common
7	SEL.1	External control input
8	SEL.2	
9	COM.1	Common
10	SLD	Shield

*The external control input COM.1 and the contact output COM.2 are isolated.

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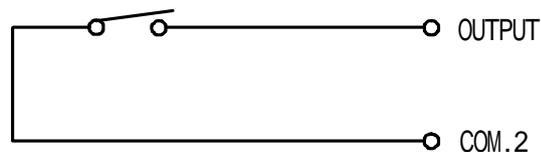
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2-8. Contact Output

- S0 The contact output is ON with either condition in below by function setting.
 - More than 100 percent of the maximum display value.
 - When the selecting pairs of S1 or S2 are OFF condition.
 - Operates when reached under/over the S0 set value. (Same as the comparative operation of S1 and S2.)
 - PEAK or A/Z ON
 - HOLD ON
- S1, S2 The contact operates when the comparator setting value is less than or equal to, or more than the measurement value.
- Contact specifications
 - 1 a contact
 - 240 V AC 0.5 A (Resistance load)
 - 30 V DC 0.5 A (Resistance load)
 - S0, S1, and S2 cannot be used at different voltages.
- Equivalent circuit



- Terminal block assignments

No.	Signal name	Explanation
1	S0	Contact output for S0
2	COM.2	Common
3	S1	Contact output for S1
4	COM.2	Common
5	S2	Contact output for S2
6	COM.2	Common
7	SLD	Shield

* The external control input COM.1 and the contact output COM.2 are isolated.

2-9. Comparator function

- Set value -99 999 to 99 999
- Number of sets 3 (S0, S1, S2) * "S0" is depends on function setting.
- Comparator operation target Net weight / PEAK or Gross weight / TRACK can be set independently.
- Direction of comparator "Or more" and "or less" can be switched
- Direction of hysteresis Selectable whichever "ON delay" or "OFF delay".
- Hysteresis data set value 0 to 99 digits
- Hysteresis time width setting 0 to 9.99 s
- Conversion times of comparator Synchronous with A/D sampling.

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3. General specifications

- Operating temperature/humidity range
 - Temperature −10 °C to 50 °C
 - 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 100 V AC to 240 V AC
(Permissible variation range 85 V AC to 264 V AC)
 - Power supply frequency 50/60 Hz
 - Power consumption Approx.13.5 VA at max. (At 230 V AC with options.)
Approx.9.0 VA at max. (At 100 V AC with options.)
- Inrush Current 5 A, 0.5 ms : 100 V AC average load condition
(Ordinary temperature and cold start)
10 A, 0.5 ms : 200 V AC average load condition
(Ordinary temperature and cold start)
- Outline dimensions 96 mm × 96 mm × 129.5 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.500 g (without options)

4. Standard specifications at the shipment

- Bridge power supply 5 V DC
- Span adjustment ± 30 000 display at the input of ± 3.0 mV/V.
- The minimum scale 1
- Analog output 0 V DC to ± 10 V with 0 to ± 30 000 display.

5. Accessories

- Start guide (Japanese / English) 1 piece each
- Units sticker 1 piece
- Panel mounting brackets 2 pieces
- Panel mounting seal 1 piece
- Load cell plug 1 piece

*The following are included with each option.

- BCD output connector plug and hood 1 piece each
- CC-Link connector plug 1 piece
- RS-422/485 connector plug 1 piece

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6. Options

6-1. Current output

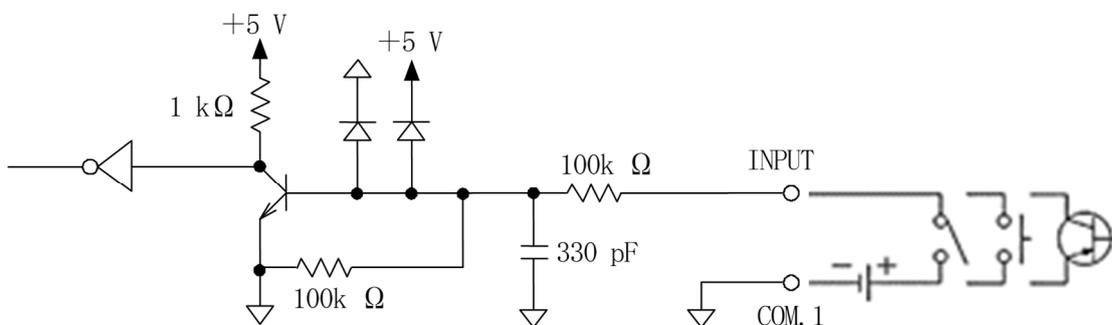
- P/N CSD815C-P07
- Output range 4 mA to 20 mA DC
- Load resistance 260 Ω or less
- Output cycles Synchronous with A/D sampling
- Output resolution Approx. 1/12 000
- Over range Approx. 25 mA DC at the display of “OL”,
Approx. 1.5 mA DC at the display of “-OL”
- Non-linearity 0.04 %F.S.
- Temperature coefficient
 - Zero ±0.005 %F.S./°C
 - Sensitivity ±0.01 %F.S./°C
- 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. External control input : Voltage input type

- P/N CSD815C-P44
- Voltage input Input by applying a voltage between the input terminal and the COM terminal (minus common).
- ON condition 9 V DC or more
(load current approx. 10 mA for external power supply voltage 24 V DC)
- OFF condition 1 V DC or less
- Input rated voltage 27.6 Vmax DC
 - * Input by relays, switches, and transistors with external supply voltages.
 - *When connecting a transistor, connect the source type.
- Equivalent circuit



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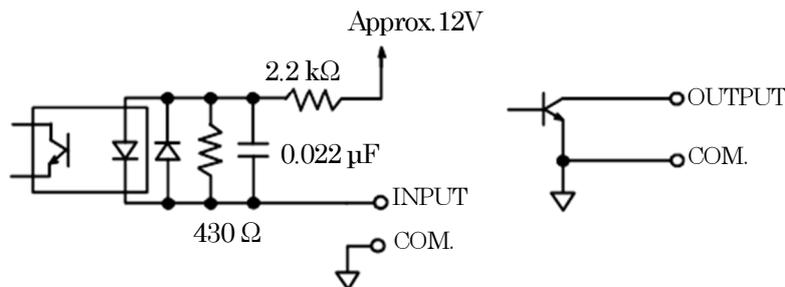
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6-3. BCD output (Sink output type)

- P/N CSD815C-P15
- Output Above are open collector outputs
VCE=DC30 V, IC=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.
- Output times 4 times/s
(Changeable to 10 times/s, 20 times/s, 50 times/s, 100 times/s or 200 times/s)
- Input HOLD, ZERO, PEAK/TRACK/A/Z, RESET/A/Z OFF, SEL.1, 2.
Same as external control input
BCD-DISABLE Compulsive OFF of BCD relative output.
(High impedance)
*Above are level inputs, and effective by shortening 50 ms or more during inputting. Beside, only the functions of A/Z and A/Z OFF are pulse input and effective once after the input with pulse width at 50 ms or more.
(2 ms, 5 ms, 10 ms or 20 ms changeable.)
- Function Reading out the load
External control inputs
- Equivalent circuit



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- BCD connector pin assignments

	Signal	Description		Signal	Description	
1	COM.	Common	19	COM.	Common	
2	1×10^0	10 ⁰ digit Parallel output	20	2×10^4	10 ⁴ digit Parallel output	
3	2×10^0		21	4×10^4		
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	N.C.	Not connected	
11	2×10^2		29	SEL.1	External control input	
12	4×10^2		30	SEL.2		
13	8×10^2		31	ZERO		
14	1×10^3	32	PEAK/TRACK			
15	2×10^3	10 ³ digit Parallel output	33	RESET	Not connected	
16	4×10^3		34	N.C.		
17	8×10^3		35	BCD-DISABLE		BCD forced stop input
18	1×10^4		36	N.C.		Not connected

*All of the COM terminals are common.

*Insulated by photocoupler from internal circuit.

*Plug provided :10136-3000 PE (3M)

*Connector hood provided :10336-52A0-008 (3M)

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6-4. CC-Link interface

- P/N CSD815C-P74
- CC-Link version Ver. 1.10
- Occupied stations No. 1, 2 or 4 stations.
- Baud rate 156 kbps, 625 kbps, 2.5 Mbps, 5 Mbps, 10 Mbps
- Communication method Polling method
- Synchronous method Bit synchronization method
- Transmission path form RS-485 bus
- Transmission format HDLC conforming
- Remote station number
In the case of 1 station occupied, No.'s 01 to 64 can be selectable.
In the case of 2 stations occupied, No.'s 01 to 63 can be selectable.
In the case of 4 stations occupied, No.'s 01 to 61 can be selectable.
- Number of connection
In the case of 1 station occupied, 64 units at maximum.
In the case of 2 stations occupied, 32 units at maximum.
In the case of 4 stations occupied, 16 units at maximum.
- Connected cable Use the exclusive use of "CC-LINK" with the shield addition twisted-pair cable.
- Termination External resistance
- Display Status LED, RUN, SD, RD, ERR
- Function
 - Reading out the load
 - Reading out the condition
 - Change the condition
 - Reading out the comparator set value
 - Change the comparator set value
 - Reading out the comparator judgement
 - Reading out the function set value
 - Change the function set value
 - Load calibration
 - Reading out the transmission error code
- Connector pin assignments Compatible plug: DE-9S-NR (JAE) or equivalent

Pin No.	Signal	Description
1	DA	Signal conductor DA side
2	DB	Signal conductor DB side
3	DG	Signal conductor ground
4	SLD	Shield
5	FG	Frame ground

* Insulated by photo coupler from internal circuit.

* "SLD" and "FG" are connected in this instrument.

* Plug provided: XW4B-05C1-H1 (OMRON)

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6-5. RS-232C interface

- P/N CSD815C-P74
- Baud rate Select 1.2 k, 2.4 k, 4.8 k, 9.6 k, 19.2 k, 38.4 k, 57.6 k and 115.2 kbps.
- Data 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
- Transmission data ASCII code
- Data transmission mode Selectable from Command, Stream and Modbus
- Cable length Up to 15 m
- Display Input/Output monitor with LED TXD, RXD.
- Function
 - Reading out the load.
 - Reading out the condition.
 - Changing the condition.
 - Reading out the comparator.
 - Change of the comparator.
 - Reading out the comparator judgement.
 - Change of the calibration data and comparator brand.
 - Transmission error code
 - Reading out set value of the various function
 - Change the set value of the various function
 - Load calibration
- Connector pin assignments Compatible plug: DE-9S-NR (JAE) or equivalent

Pin No.	Signal	Description
1	CD	Carrier detection
2	TXD	Transmission data
3	RXD	Received data
4	N.C.	Not connected
5	S.G.	Signal ground
6	N.C.	Not connected
7	RTS	Request to send
8	CTS	Clear to send
9	N.C.	Not connected

* Plug provided: DE-9S-NR (JAE) or equivalent

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

* Connector plugs are not included.

* Insulated by photocoupler from internal circuit.

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6-6. RS-422/485 interface

- P/N CSD815C-P76
- Baud rate Select 1.2 k, 2.4 k, 4.8 k, 9.6 k, 19.2 k, 38.4 k, 57.6 k and 115.2 kbps.
- 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
- Transmission data ASCII code
- Cable length Approx. 1 km
- Numbers of connection RS-422 10 units at maximum, RS-485 32 units at maximum
- Termination Internal (330 Ω connection with TRM. and RDB pin shorts)
- Data transmission mode Selectable from Command, Stream and Modbus
- Display Input/Output monitor with LED TXD, RXD
- RS422/485 switching Set by function
 - Reading out the load.
 - Reading out the condition.
 - Changing the condition.
 - Reading out the comparator.
 - Change of the comparator.
 - Reading out the comparator judgement.
 - Change of the calibration data and comparator brand.
 - Transmission error code(Error code about transmission)
 - Reading out set value of the various function
 - Change the set value of the various function
 - Load calibration
- 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 (+)

* Plug provided : XW4B-07B1-H1 (OMRON)

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6-7. Optional combinations

P07: Current output

P44: External control input : Voltage input type

P15: BCD output (Sink output)

P73: CC-Link interface

P74: RS-232C interface

P76: RS-422/485 interface

Code when ordering

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1 Analog output
None : Voltage output
07 : Current output

2 External control input
None : No-voltage input type
44 : Voltage input type

4 Interface
None : No optional interfaces
15 : BCD output (sink type)
73 : CC-Link
74 : RS-232C
76 : RS-422/485
(Only one of the above can be mounted)

Example: When ordering current output + voltage input + RS-232C version: CSD-815C-07-44-74

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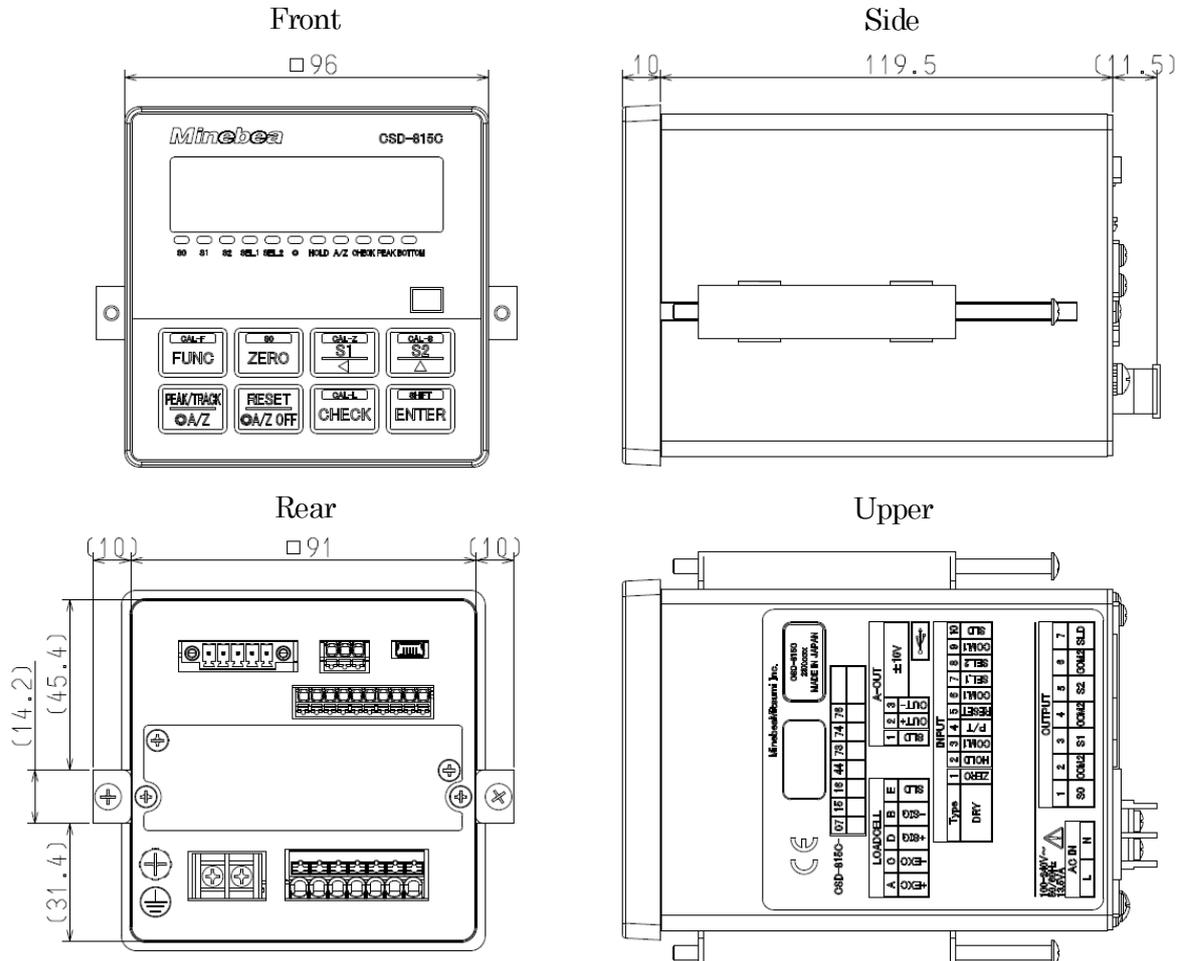
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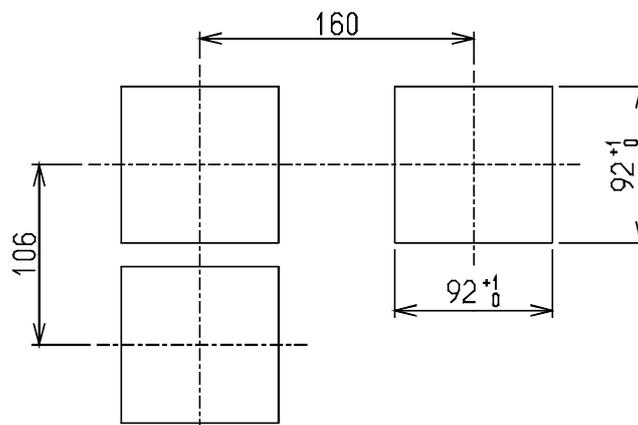
7. Outline dimensions

7-1. External dimensions



Unit : mm

7-2. Panel cutting dimensions



Unit : mm

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8. CE conformity standard

This equipment conforms to the following standards:

- EN IEC 61326-1:2021
“Electrical equipment for measurement, control, and laboratory - EMC requirement matter”
“Immunity test requirements for equipment intended for use in industrial locations”
- EN61010-1:2010+A1:2019
“Safety requirement for electrical equipment for measurement, control and laboratory use-
Part1 : General requirement”
- RoHS compliant

*CE conformity standard is not effective in case of using USB interface.

The using condition to suit this standard is as follows.

8-1. Wiring

①Shield processing

- Always use shielded cables, except for power cables.
- Connect the shield wire of the strain gauge based transducer cable to the SLD terminal on the connector.
- Connect the shield wire of the analog output cable to the SLD terminal on the analog output connector board.
- Connect the shield wire of the external control input/output cable to the SLD terminal on the external control input/output connector board.
- Connect the shield wire of the contact output cable to the SLD terminal on the contact output connector board.
- Connect the shield wire of the BCD cable to the plug inside the connector hood.
- Connect the shield wire of the RS-232C cable to the plug inside the connector hood.
- Connect the shield wire of the RS-422/485 cable to the connector SLD terminal on the connector.
- Connect the shield wire of the CC-Link cable to the connector SLD terminal on the connector.

②Grounding

- Ground the equipment based on single grounding using the protective ground terminal on the rear panel.

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