

SPECIFICATIONS

CSD-891B

1/12

Digital Indicator

SPEC.No.EN382891B-G

1.. General

The instrument is a built-in control panel type digital indicator for strain gage applied transducers.

2.. Specifications

2.-1. Specifications for analog section

- Bridge power supply DC10 V \pm 0.25 V within 120 mA (changeable to DC5 V or 2.5 V) with remote sensing applied
- Applicable transducers Up to 4 pieces of strain gage applied transducers(350) are connectable
- Input range F.S. setting is available at the input of 0.2 mV/V to 3.1 mV/V (when bridge power supply is DC10 V.)
- Zero point adjustment range - 2.5 mV/V to 2.5 mV/V
- Non-linearity 0.01 %F.S.
- Temperature efficient
 - Zero point \pm 0.2 μ V/ (Input conversion, in F.S. setting at the input of \pm 0.3 mV/V to 3.1 mV/V)
 - Sensitivity \pm 0.001 5 %F.S./ (Input conversion, in F.S. setting at the input of \pm 0.3 mV/V to 3.1 mV/V)
- Input noise \pm 0.3 μ Vp-p or less (at the default setting of input filter digital filter and stabilization filter)
- Input filter 4 Hz (Changeable to 2 Hz, 6 Hz, 8 Hz, 10 Hz)
- A/D sampling 200 times/s (changeable to 100 times/s, 50 times/s, 20 times/s or 10 times/s)
- CHECK Approx.0.3 mV/V (Setting with the interval of about 0.1 mV/V is available in the range from Approx.0.1 mV/V to 2.4 mV/V)
The extension cable is applied within 100 m of the Minebea's standard cable CAB-501(6 wires)
It is not applied when zener barrier is in use.

2.-2. Specifications for digital section

- Load display
 - Display range - 9 999 to 99 999
 - Display increment 1 (changeable to 2, 5 or 10)
 - Display unit 7 segment red LED with 8 mm character height
 - Over display " - OL" display at the time of minus(-) over, and "OL" display at the time of plus(+) over
- Condition display RUN, A/Z, LOCK, HOLD and CHECK
- Judgement display S0, S1, S2, S3 or S4
- Display rate 20 times/s (changeable to 4 times/s, 50 times/s or 100 times/s)
- Decimal display Changeable to no display, 10^1 , 10^2 , 10^3 or 10^4 .

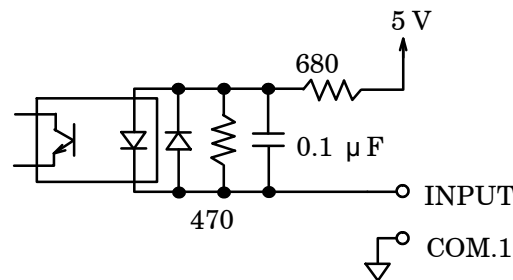
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2.-3. Function of front panel sheet key switch

FUNC . / CHECK	Changeover of function mode, or ON/OFF of CHECK value by pressing this key and shift key at the same time.
S / ◀	Display S setting value, or carry on the set value
ZERO /	ZERO set, and increment the set value
A/Z	Tare weight cancellation
A/Z OFF	Tare weight cancellation clear
ENTER / SHIFT	Enter key or Shift key

2.-4. External control function

- ZERO Same as the ZERO key
- A/Z Tare weight cancellation
- A/Z OFF Tare weight cancellation clear
Above is pulse input, effective once at the pulse width 50 ms or more
(The pulse width is changeable to 2 ms, 5 ms, 10 ms or 20 ms.)
- HOLD Holding the display, the comparative output, the analog output and the BCD output.
- LOCK Prohibiting the key operation
Above is level input, and effective during short of 50 ms or more.
(The level is changeable to 2 ms, 5 ms, 10 ms or 20 ms.)
- Equivalent circuit of external control input section



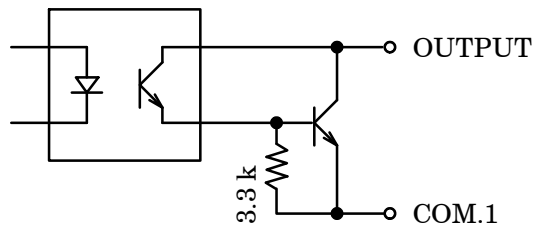
2.-5. Comparator function

- Set value - 99 999 to 99 999
- Numbers of setting S0, S1, S2, S3 and S4 5 points
"S0" is set by function.
- Setting hysteresis data width 0 to 99 digits
- Setting hysteresis time width 0 to 9.99 s
- Direction of hysteresis Can be selected whichever "On delay" or "Off delay".
- Comparator conversion rate Changeable to 10 times/s, 20 times/s, 50 times/s, 100 times/s or 200 times/s (Synchronous with A/D sampling rate.)

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2.-6. Open collector output signal

- S1, S2, S3 and S4 The open collector is ON when reached under/over the comparator set value.
- S0 The open collector is ON with either condition in below by function setting.
 - FULL condition (100 % of rated load).
 - When the selecting pairs of S1, S2, S3 or S4 are OFF condition.
 - Operates when reached under/over the S0 set value.
(Same as the comparative operation of S1, S2, S3 and S4.)
 - Turned ON for synchronous with HOLD LED of condition display.
 - Turned ON for synchronous with PEAK LED of condition display.
 - Turned ON for synchronous with MEAS. LED of condition display.
 - Turned ON for synchronous with Stability detection.
- RUN ON during the measurement mode.
- ERROR ON when the various kinds of errors are occurred.
- Specification of open collector $V_{CE}=DC30$ V , $I_C=30$ mA MAX
- Equivalent circuit of open collector output



2.-7. Various functions

- Zero tracking Stabilizes the zero point fluctuation in a constant condition
- Digital filter Stabilizes the data by the computing process through CPU.
- Stabilization filter Reinforces and stabilizes the digital filter only when the change width of the load is constant.
- Change of target of HOLD With the combination of “Display”, “Comparative output”, “Analog output”, “BCD output(Option)”, target of HOLD can be made.
- Sheet key lock Prohibition of operation of optional key.
- Change target of analog output The target of analog output can be changed either “Gross weight” or “Net weight”.
- Stability detection Can be detected at the load is stable only when the change width of the load is constant.

SPECIFICATIONS**3.. General 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(Allowable variable range AC85 V to AC264 V)
 - Power supply frequency 50/60 Hz
 - Power consumption Approx.16 VA(without options at AC100 V)
Approx.19 VA at maximum (with options at AC100 V to AC240 V)
- Outline dimensions(W × H × D) 67 mm × 208 mm × 140.7 mm (excluding protrusion.)
- Weight Approx.1.2 kg(without any option)

4.. Standard specifications at the shipment

- Bridge power supply DC10 V
- Span adjustment 2000 display at the input of 0.3 mV/V
- Minimum scale 1

5.. Accessory

- Instruction manual 1 piece
- Midget fuse 1 piece (5 A)
- Short bar for A-F and C-G 2 pieces
- BCD output plug 1 piece (Attached when optional BCD output is installed.)

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

- Parts No. CSD891B-P07
- Specifications
 - Output DC4 mA to 20 mA Load resistance 510 or less
 - Non-linearity 0.05 %FS.
 - Resolution Approx.1/12 000
 - Over range Approx.DC2.4 mA at “ - OL” display, and approx.DC21.6 mA at “OL” display.
 - Output times 10 times/s, 20 times/s, 50 times/s, 100 times/s or 200 times/s
(Synchronous with A/D sampling rate.)

6.-1-2. Voltage output

- Parts No. CSD891B-P25
- Specifications
 - Output DC0 V to 10 V Load resistance 5 k or less
 - Non-linearity 0.05 %FS.
 - Resolution Approx.1/12 000
 - Over range Approx.DC - 1 V at “ - OL” display, and approx.DC11 V at “OL” display.
 - Output times 10 times/s, 20 times/s, 50 times/s, 100 times/s or 200 times/s
(Synchronous with A/D sampling rate.)

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6.-2. BCD output

- Parts No. CSD891B-P15
- Specifications
 - Output BCD 5 digits, parallel output with polarity 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.
 - OVR(Over)
Above are open collector outputs. $V_{CE}=30\text{ V}$, $I_C=30\text{ mA}$
 - Input
 - ZERO same as ZERO key
 - A/Z same as A/Z key
 - A/Z OFF same as A/Z OFF key
 - Above is pulse input, effective once with the pulse width 50 ms or more.
(Pulse width is changeable to 2 ms, 5 ms, 10 ms or 20 ms.)
 - HOLD Holding of display and BCD output
 - LOCK Prohibiting the key operation
 - SEL.1,SEL.2 The output target of the BCD output is switched as follows
by the combination of two input status.
Both SEL.1 and SEL.2 are open : Gross weight
Only SEL.1 is short : part of A/Z cancel
Only SEL.2 is short : Display interlock
Both SEL.1 and SEL.2 are short : Gross weight
 - BCD-ENABLE Compulsion OFF of BCD relation output (High-impedance)
Above is level input, effective during the input with short more than 50 ms.
(Level width is changeable to 2 ms, 5 ms, 10 ms or 20 ms.)
- Connector pin configuration of BCD output Suitable plug : 57-30360 by DDK

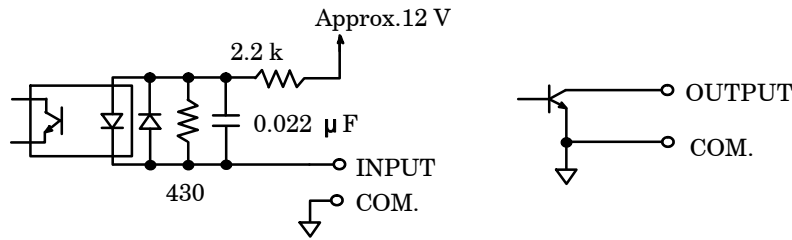
1	COM.	13	8×10^2	25	ERROR
2	1×10^0	14	1×10^3	26	P.C.
3	2×10^0	15	2×10^3	27	HOLD
4	4×10^0	16	4×10^3	28	LOCK
5	8×10^0	17	8×10^3	29	SEL.1
6	1×10^1	18	1×10^4	30	SEL.2
7	2×10^1	19	COM.	31	ZERO
8	4×10^1	20	2×10^4	32	A/Z
9	8×10^1	21	4×10^4	33	A/Z OFF
10	1×10^2	22	8×10^4	34	N.C.
11	2×10^2	23	POL.	35	BCD-ENABLE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

Don't connect with N.C. pin.

An internal circuit and photocoupler are insulated.

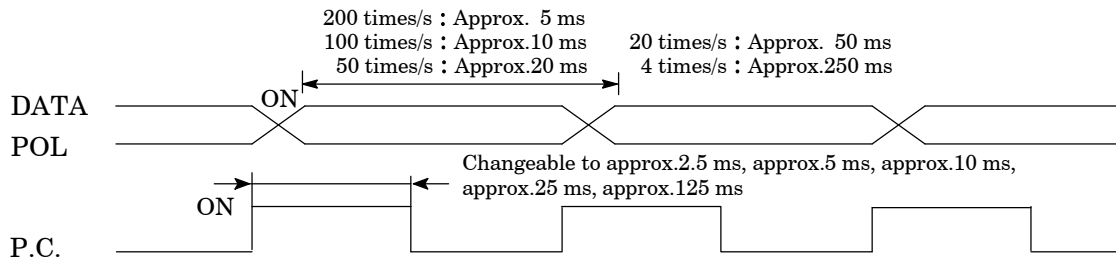
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- Equivalent circuit of input/output section.



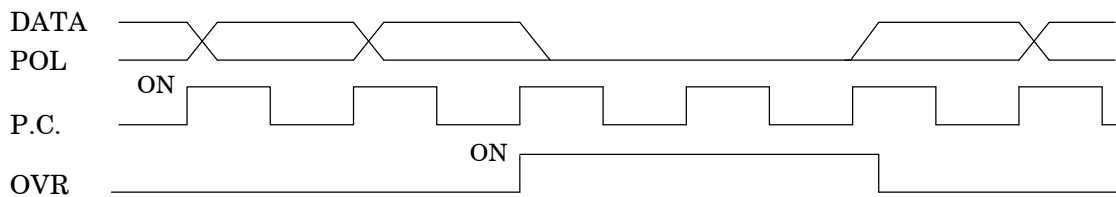
- Timing chart

① Normal



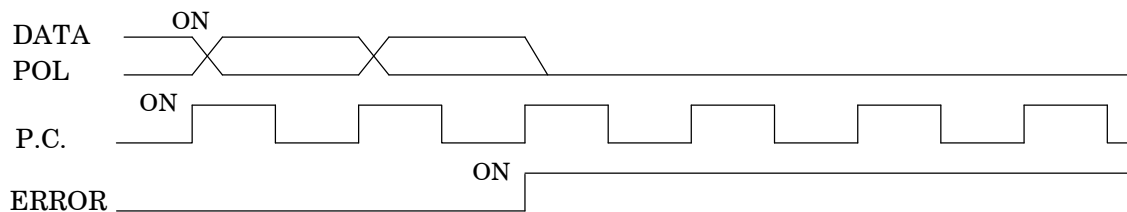
Output transistor will be ON (Negative logic in electrical theory) when all of the P.C., DATA and POL output the data.

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, P.C. and POL will become OFF (Positive logic in electrical theory) during the output of OVR.

③ When the error is occurred.



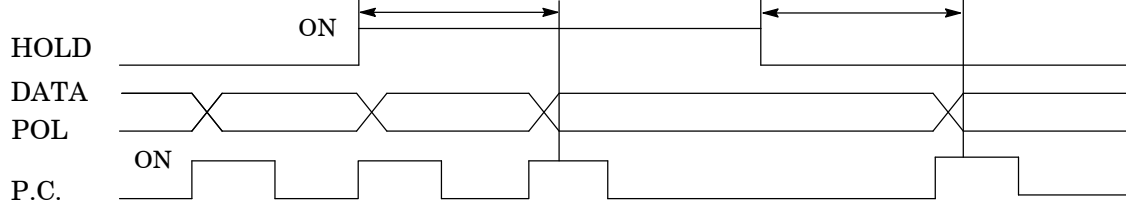
Output transistor of ERROR signal will become ON (Negative logic in electrical theory) during the output of ERROR. Moreover, output transistor of all the P.C., DATA and POL will become OFF (Positive logic in electrical theory) during the output of ERROR.

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④ When the HOLD signal is input.

200 times/s : Approx.5 ms + Input response time at Max.
 100 times/s : Approx.10 ms + Input response time at Max.
 50 times/s : Approx.20 ms + Input response time at Max.
 20 times/s : Approx.50 ms + Input response time at Max.
 4 times/s : Approx.250 ms + Input response time at Max.

200 times/s : Approx.5 ms + Input response time at Max.
 100 times/s : Approx.10 ms + Input response time at Max.
 50 times/s : Approx.20 ms + Input response time at Max.
 20 times/s : Approx.50 ms + Input response time at Max.
 4 times/s : Approx.250 ms + Input response time at Max.



Output transistor of P.C. becomes OFF (Positive logic in electrical theory) during input of HOLD signal. It will take as follows response time by the time of HOLD or release of DATA and POL after the HOLD signal is input. (When the input response time for 2.5 ms is selected.)

200 times/s : Approx.5 ms + Input response time at Max.
 100 times/s : Approx.15 ms + Input response time at Max.
 50 times/s : Approx.25 ms + Input response time at Max.
 20 times/s : Approx.55 ms + Input response time at Max.
 4 times/s : Approx.255 ms + Input response time at Max.

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6.-3. CC-LINK interface

- Parts No. CSD891B-P73
- Version of CC-LINK Ver.1.10
- Specifications
 - Occupied stations No. : Selectable from 1,2 or 4 stations.
 - Baud rate : Selectable from 156 kbps, 625 kbps, 2.5 Mbps, 5 Mbps or 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.

Cable length

Baud rate(bps)	156 k	625 k	2.5 M	5 M	10 M
Total extension distance(m)	1 200	600	200	150	100

- Numbers 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 cabel : Use the exclusive use of "CC-LINK" with the shield addition twisted-pair cable.
- Termination : Resistance externally attached
- Status LED : The status of communication is expressed with four LED. RUN, SD, RD or ERR

- Connector pin configuration for CC-LINK Suitable plug : 721-105/037-000 made by WAGO

DA	Signal conductor DA side
DB	Signal conductor DB side
DG	Signal conductor ground
SLD	Shield
FG	Frame ground

"SLD" and "FG" are connected in this unit.

- Function
 - Reading out the load
 - Reading out the condition (every ON/OFF of HOLD and A/Z)
 - Changing the condition (ON/OFF of A/Z and ZERO)
 - Reading out the comparator set value (S0, S1, S2, S3 and S4)
 - Changing the comparator set value (S0, S1, S2, S3 and S4)
 - Reading out the comparator judgement
 - Error code

* CC-LINK is abbreviation of Control & Communication Link.

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6.-4. RS-232C Interface

- Parts No. CSD891B-P74
- Specifications
 - Baud rate : Selectable from 1 200, 2 400, 4 800, 9 600, 19 200 or 38 400 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
 - Input/output monitor with LED
- 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.

- Function
 - Reading out the load.
 - Change of load calibration.
 - Reading out the condition(every ON/OFF of HOLD, CHECK and A/Z)
 - Changing the condition(input of CHECK, ON/OFF of A/Z, ZERO)
 - Reading out the comparator set value(S0, S1, S2, S3 and S4)
 - Changing the comparator set value(S0, S1, S2, S3 and S4)
 - Reading out the comparator judgement.
 - Reading out the function data
 - Changing the function data
 - Communication error code(error code as to the communication)

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6.-5. RS-422/485 interface

- Parts No. CSD891B-P76
- Specifications
 - Baud rate : Selectable from 1 200, 2 400, 4 800, 9 600, 19 200 or 38 400 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 : Select one from 0 to 31
 - Communication data : ASCII code
 - Cable length : Approx.1 km
 - Connectable unit : 32 units at maximum(RS-422 : 10 units)
 - Termination : Internal
(Selects the presence by the 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.

- Function
 - Reading out the load.
 - Change of load calibration.
 - Reading out the condition(every ON/OFF of HOLD, CHECK and A/Z)
 - Changing the condition(input of CHECK, ON/OFF of A/Z, ZERO)
 - Reading out the comparator set value(S0, S1, S2, S3 and S4)
 - Changing the comparator set value(S0, S1, S2, S3 and S4)
 - Reading out the comparator judgement.
 - Reading out the function data
 - Changing the function data
 - Communication error code(error code as to the communication)

SPECIFICATIONS**6.-6. Optional combinations**

	P07	P15	P25	P73	P74	P76
P07			×			
P15				×	×	×
P25	×					
P73		×			×	×
P74		×		×		×
P76		×		×	×	

: Possible, × : Impossible

P07 : Current output

P15 : BCD output

P25 : Voltage output

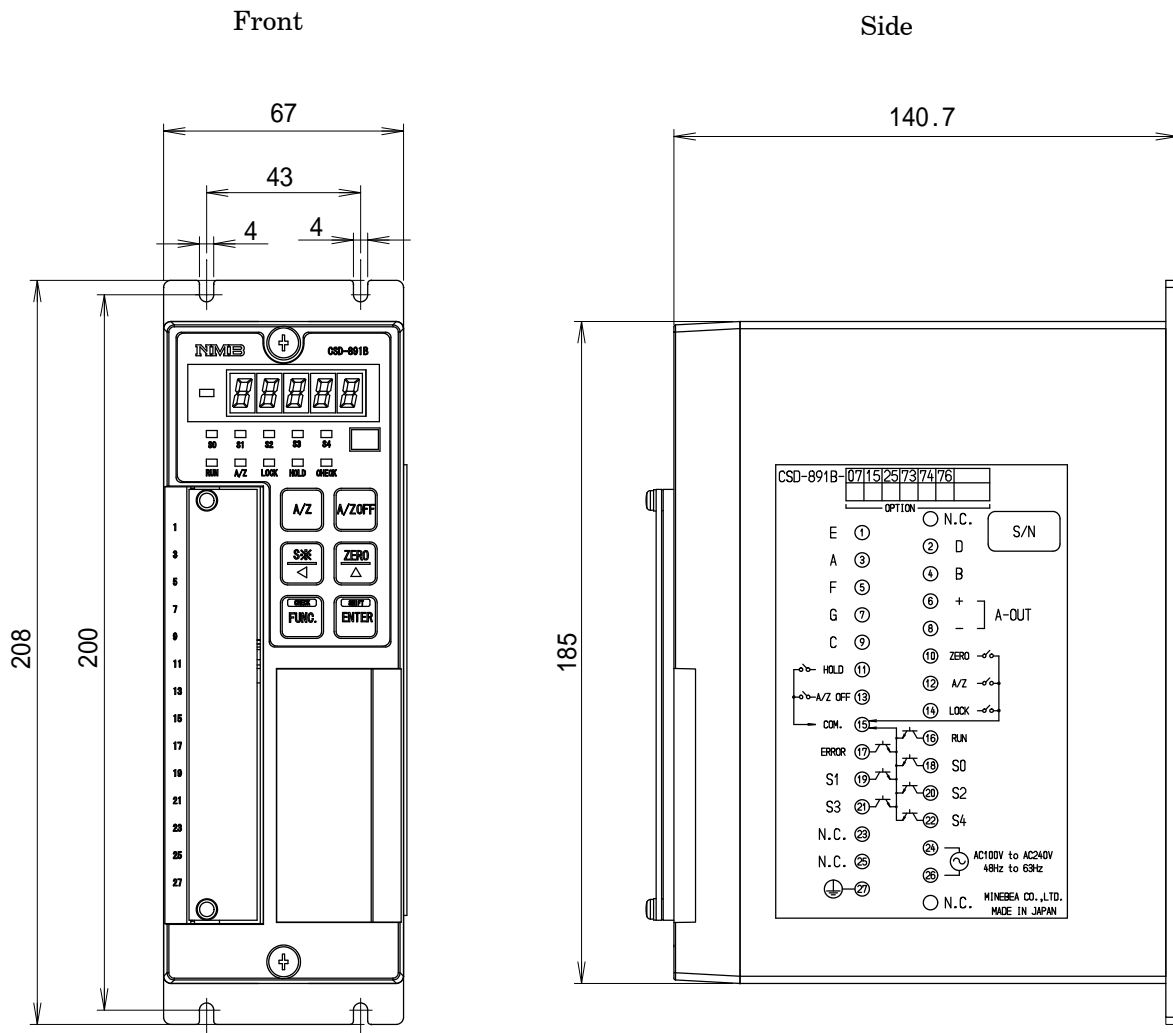
P73 : CC-LINK interface

P74 : RS-232C interface

P76 : RS-422/485 interface

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7.. Outline dimensions



Unit : mm

Specifications and outline dimensions and so on which have printed may subject to change for the purpose of improvement.