# BONGSHIN

BS-300A



# BS-300A INDICATOR

INSTRUCTION MANUAL

# CONTENTS

13392863941  0755- 26738591

## 1. GENERAL

The BS-300A is a micro-processor based general purpose digital indicator/controller for use with most types of strain gauge based transducers. All calibration and operational features are accessed via the 12 front panel push button key switches. This manual provides a comprehensive guide to intialising and operating the BS-300A.

## 2. FEATURES

2.0   Front panel calibration and operation
2.1   Simulative or live load calibration
2.2   4 digit high brightness (10mm high) LED display
2.3   Non-Evaporating RAM (NOV RAM)
      -battery backup not required
2.4   Low noise pre-amp for excellent stability
2.5   +/− 1/20000 Internal resolution
2.6   Front panel LEDs indicate zero tracking, peak hold, high and low trip relay operation
2.7   Display update rate 15Hz
2.8   Hold mode-peak or instant-front panel or remote operation
2.9   High/low limit relay outputs
2.10  Proportional analogue voltage re-transmission
2.11  User selectable variable zero tracking
2.12  Tare facility (digital zero with front panel and remote operation
.13   Averaging function (digital filtering)
2.14  Transducer excitation for up to four 350 ohm transducers in parallel
2.15  Automatic internal circuitry check
2.16  Options—BCD data output (option 1)
      —Analogue voltage output 0—10VDC (Option 2)
      —Analogue current output 4—20mA (Option 3)
      —RS422 Output (Option 4)
      —High Speed peak hold. Approx. 10KHZ (Option 5)

## 3. SAFETY MEASURES

3.1   Ensure earth conductor is connected at the ac voltage supply terminal
3.2   Do not attempt to operate the BS-300A in areas where flammable gas or vapour may be present
3.3   Operational temperature range is—10 degrees C to + 40 degrees C whilst storage temperature is—40 degrees C to + 80 degrees C. Do not use the equipment other than within these limits.
3.4   The BS-300A will operate from 100V ac or 240V ac 50/60Hz. Ensure power supply is compatible before connection to mains.
3.5   Keep the area around the indicator clear to provide adequate air circulation.

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## 4. FRONT PANEL FUNCTIONS

### 4.1. FRONT PANEL LED DISPLAY

The front panel LED's indicate the current operating status when the BS-300A is in normal operation.

The following describes LED indication under normal operating conditions.
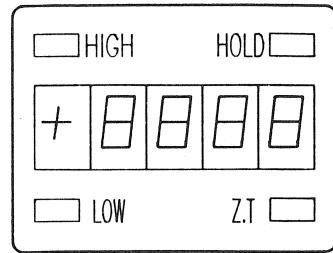
HI — on when indicated value is higher than the upper limit preset value

LO — on when indicated value is lower than the lower limit preset value

HOLD— on when the peak hold function is operational or instant hold is commanded by pressing the hold button (front panel or remote).

ZT — on when zero tracking is in operation.

### 4.2 DIGITAL DISPLAY

Displays calibrated values in normal mode or preset values in set up mode.

The following will be displayed during abnormal operation:

OFL1 - Signal input below 0.5mV/V
OFL2 - Signal input above 3.2mV/V
OFL4 - Indicated value exceeds the display capacity

### 4.3 FRONT PANEL PUSH BUTTON FUNCTIONS

*(Items shown in {        } are those equivalent symbols shown in handbook text)*

[0]  { I 0 I}  Minus or figure zero
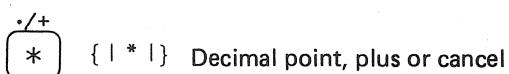
[*]  { I * I}  Decimal point, plus or cancel

**ENTER**
[ # ]  { | # | }  Command to start and end set up display digits

**CALB**
[ 1 ]  { | 1 | }  Simulative calibration or number 1

**SPAN**
[ 2 ]  { | 2 | }  Live calibration or number 2

**ZERO**
[ 3 ]  { | 3 | }  Tare (digital zero) or number 3

**ZT**
[ 4 ]  { | 4 | }  Zero tracking and averaging or number 4

[ 5 ]  { | 5 | }  Number 5

**GRAD**
[ 6 ]  { | 6 | }  Dispaly increments or number 6

**H**
[ 7 ]  { | 7 | }  Upper limit relay setting or number 7

**L**
[ 8 ]  { | 8 | }  Lower limit relay setting or number 8

**HOLD**
[ 9 ]  { | 9 | }  Hold mode selection, hold command or number 9

## 4.4   PUSH BUTTON OPERATION

Each push button has two different operational functions, instigation of the parameter being set and figure input.  They are operated in first priority order.

### 4.4.1   SET-UP PARAMETER SELECTION

Set-up parameters can be selected or re-selected as many times as necessary. Once the | # |   key is pressed the selection is finalised and the parameter is entered.

### 4-4-2   SET-UP DATA DISPLAY

When a set-up parameter is selected, the data to be updated is displayed.  The current operating state is indicated by the LED.

### 4.4.3   INITIALISATION AND DATA REGISTRATION BUTTON

ENTER
| # |

After selecting the particular parameter to be set up press the  | # | button to instigate data entry.  On completion of data entry press the | # | button again to register the displayed value into the memory. Registration will operate regardless of which particular digit is flashing.  If a data entry error is made reselect the set up parameter before pressing | # | to initialise.

### 4.4.4   NUMERICAL PUSH BUTTON ENTRY

After selection of the set-up parameter and button | # | is pressed the push buttons allow entry of numerical data.  The flashing digit indicates the number to be updated. When the flashing digit has been set, the next least significant digit will flash awaiting numerical update.  Data is always entered from the most to the least significant digit. When all digits have been updated the most significant digit returns to flashing.  Further amendments can be entered at any time prior to pressing the | # | key to register the data to memory.  If incorrect data is entered, refer to section 4.4.3.

NOTE:

* The set-up sequence is in first priority order and only allows'+', '—' and decimal point to be metered when requested.

* Only during setting of the upper and lower limit relays does the | O | button register '—' and the | * | button register '+'.

* During simulative or live load calibration only the | * | key may be used to move the decimal point.   During other display functions the decimal point is automatically determined.

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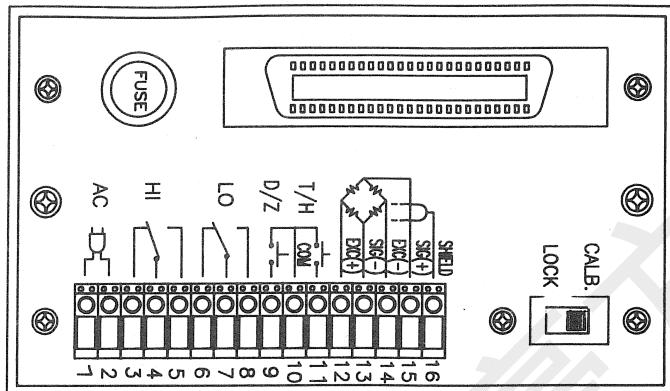
## 5. REAR PANEL



## 5-1 REAR PANEL CONNECTIONS

| Terminal Number | Function |
|---|---|
| 1,2 | AC input |
| 3,4,5 | High relay contact |
| 6,7,8 | Low relay contact |
| 9,10 | External tare control input |
| 10, 11 | External hold/track control input |
| 12 | Transducer excitation positive |
| 13 | Transducer signal input negative |
| 14 | Transducer excitation negative |
| 15 | Transducer signal input positive |
| 16 | Transducer screen |

## 5.2 FUSE

Supply fuse (0.5A). Disconnect supply voltage before replacing fuse.

## 5.3 OPTIONS

Option 1 BCD data output
Option 2 Analogue voltage output 0~10V DC
Option 3 Analogue current output 4~20mA
Option 4 RS 422 output
Option 5 High speed peak hold (Appr. 10KHz)

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## 6. SET UP AND CALIBRATION

Before commencing set up and calibration ensure the transducer is connected and that the polarity is correct. When transducers with sense leads are used, connect the positive sense lead to terminal 12 and the negative sense lead to terminal 14.

### 6.1 SELF CHECK PROCEDURE

Connect the AC supply and instigate the self check procedure as follows :

Press ⎓[0] ⟶ ENTER[#] ⟶ ENTER[#]
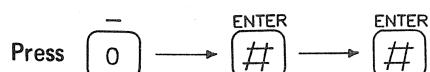
The BS-300A will automatically carry out a full functional check of it's internal circuity and programme. During this procedure the following will be displayed:

| CHECK SEQUENCE | DISPLAY | CHECK DESC. | MEANS | REQUIRED TIME |
|---|---|---|---|---|
| 1 | FFFF | Start | Display | 1 sec |
| 2 | c 1 | Condition | Visual | 2 sec |
| 3 | Figure | Figure LED | Visual | 4 sec |
| 4 | c2 | Interrupt cct | Auto | 0.1 sec |
| 5 | c3 | A/D converting | Auto | 0.1 sec |
| 6 | c4 | RAM | Auto | 0.3 sec |
| 7 | c5 | ROM | Auto | 6 sec |
| 8 | l.10 | Software version | Display | 1 sec |
| 9 | PASS | End of check | Display | 2 sec |

## 6.2  LIVE LOAD CALIBRATION SEQUENCE

### 6.2.1  CALIBRATION PROTECTION LOCK SWITCH.

Pressing lock switch prevents inadvertent corruption of calibration data and must be disconnected before calibration can proceed.

### 6.2.2  DISPLAY INCREMENTS

Set the display increments to any required value (1, 2, 5, 10, 20, 50, 100) as follows:

```
 GRAD         ENTER                   ENTER
( 6 ) ----> ( # ) ----> [ 0 0 0 ] ----> ( # )
```
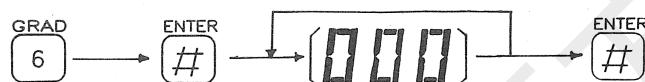
### 6.2.3  ZERO

Set zero with no live load applied:

```
 ZERO         ENTER
( 3 ) ----> ( # )
```

### 6.2.4  SPAN

Load the system with a known calibration reference between 50% and 100% of full scale and enter the calibration data in the engineering units required.

```
 SPAN         ENTER                       ENTER
( 2 ) ----> ( # ) ----> [ 0 0 0 0 ] ----> ( # )
                        Enter calibration data including
                           decimal point position.
```

For example:  if 100.0kg were required press:

```
 CALB        ‾        •/+       ‾        ‾
( 1 ) ---> ( 0 ) ---> ( * ) ---> ( 0 ) ---> ( 0 )
```

if 10.00kg were required press:

```
 CALB       •/+        ‾        ‾        ‾
( 1 ) ---> ( * ) ---> ( 0 ) ---> ( 0 ) ---> ( 0 )
```
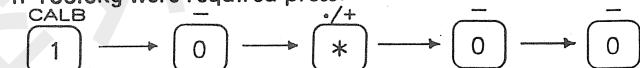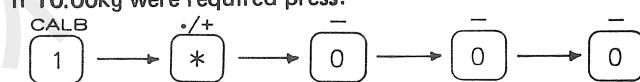
### 6.2.5  CALIBRATION PROTECTION LOCK SWITCH

Press (reconnect lock switch on the rear pane! to protect entered calibration data from corruption and  to facilitate use of the push button tare function.

Calibration zero and span data is now held in the non-evaporating RAM and will be retained even in the event of power failure.

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## 6.3  SIMULATIVE CALIBRATION

In circumstances when live load calibration is not possible the BS-300A can be calibrated by direct entry of the transducer sensitivity in mV/V from the manufacturer's calibration certificate.  The transducer must be connected to BS-300A rear panel for simulative calibration.

For example:-

  Load cell capacity 100kgf
  Calibration certificate sensitivity 2.015 mV/V at 100kgf
  Maximum display value required 100kgf
  In this case during simulative calibration the number 2015 would be entered for sensitivity and 100 or 100.0 for displayed value.

When the maximum display value required is less than the transducers full scale the sensitivity figure to be entered should be calculated as follows:

  Load cell capacity l00kgf
  Calibration certificate sensitivity 2.015 mV/V at 100kgf
  Maximum display value required 60kgf
  By calculation sensitivity at 60kgf from the calibration certificate will be:

$$\frac{60 \ \times \ 2.015}{100} = 1.209 mV/V$$

In this example 1.209 is the figure to be entered during simulative calibration.

(See section 4.2 for acceptable max and min sensitivity levels)

### 6.3.1  CALIBRATION PROTECTION LOCK SWITCH

Lock switch on   (calibration  protected)
Lock switch off  (calibration  possible)

(See  section  6.2.1)

### 6.3.2  DISPLAY INCREMENTS

Set the display increments to any required value (1, 2, 5, 10, 20, 50, 100) as follows:

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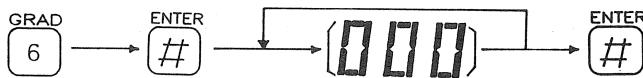
### 6.3.3 ZERO

Set zero with no live load applied:



### 6.3.4 SPAN

Set simulative calibration as shown:
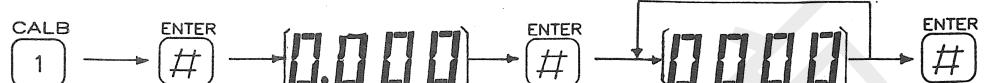


### 6.3.5 CALIBRATION PROTECTION LOCK SWITCH

Press (reconnect) LOCK SWITCH on the rear panel to protect entered calibration data from corruption and to facilitate use of the push button tare function.

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## 7. AVERAGING AND ZERO TRACKING

The BS-300A has the facility to change the averaging rate using an internal averaging filter. By selection the display reading can be stabilised to eliminate fluctuations of the transducer input signal. Zero tracking automatically adjusts the display to accommodate minor changes to the original system zero position. The zero position is tracked with respect to display counts and time which are user selectable as shown in the following set up procedure.

### 7.1 AVERAGING AND ZERO TRACKING

To select the required averaging and zero tracking proceed as follows:



| Averaging rate selection | |
|---|---|
| 0 | : Without Averaging |
| 1 | : WEAK    (Average 4 times) |
| 2 | :              (Average 8 times) |
| 3 | :              (Average 16 times) |
| 4 | :              (Average 32 times) |
| 5 | : STRONG (Average 64 times) |

| Zero tracking selection | |
|---|---|
| 0 | : Without zero tracking |
| 1 | : In 5 secs    0 +/−1   count = zero |
| 2 | : In 3 secs    0 +/−1   count = zero |
| 3 | : In 2 secs    0 +/−1   count = zero |
| 4 | : In 5 secs    0 +/−2   counts = zero |
| 5 | : In 3 secs    0 +/−2   counts = zero |
| 6 | : In 3 secs    0 +/−2   counts = zero |
| 7 | : In 5 secs    0 +/−5   counts = zero |
| 8 | : In 3 secs    0 +/−5   counts = zero |
| 9 | : In 2 secs    0 +/−5   counts = zero |

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## 8.   TARE FACILITY

The BS-300A has a tare facility which when operated will force the display to zero at any point in the measurement cycle up to the calibrated full scale. Tare can be operated from the front panel or remotely via a switch connected to terminals 9 and 10 on the rear panel.

### 8.1   FRONT PANEL TARE OPERATION

Ensure lock switch is on.

ZERO ────→ ENTER
[ 3 ]       [ # ]

### 8.2   REMOTE TARE OPERATION

Remote tare is operated by momentarily shorting terminals 9 and 10 using a suitable switch, relay or logic circuit. External circuitry should withstand a minimum of 2V at 10mA, maximum current leakage 100uA.

NOTE:

*  The tare function will not operate in the calibrate mode when Lock switch is Off.

*  Tare is released when the power supply is interrupted.

### 8.3   RELATIONSHIP BETWEEN TARE AND ZERO TRACKING

Zero tracking starts operating from the position at which the tare is set. For example if the display reads 0025 and zero tracking number 5 (+/-2count/3sec) is selected then +/-1 count drift in 3 seconds will not cause zero tracking to operate. However if the display reading of 0025 was forced to zero by using the tare facility then a zero shift of +/- 2 counts in 3 seconds would cause the zero tracking to operate and maintain the display at 0000.

## 10. HOLD MODE OPERATION

The BS-300A is supplied with two hold mode functions, peak hold and instant hold. They can both be set up via the front panel and operated either from the front panel or remotely using terminals 10 and 11 on the rear panel.

In peak hold mode the display will freeze at the maximum indicated value corresponding to the transducer input signal. The display will retain this reading until reset.

Instant hold will freeze the display at any point in the measurement cycle when commanded by the user.

### 10.1 PEAK HOLD SET-UP

HOLD [9] ⟶ ENTER [#] ⟶ SPAN [2] ⟶ ENTER [#] ⟶ HOLD [9]
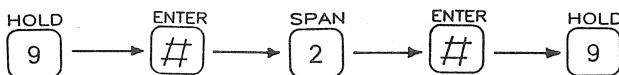
#### — PEAK HOLD OPERATION —

Operation of button | 9 | will now switch from peak hold to track as required.

Peak hold/track can also be operated remotely by connecting a suitable latching switch, relay or logic circuit to terminals 10 and 11 on the rear panel.

### 10.2 INSTANT HOLD SET-UP

HOLD [9] ⟶ ENTER [#] ⟶ CALB [1] ⟶ ENTER [#]

#### — INSTANT HOLD OPERATION —

The instant display value can now be held by pressing button | 9 | at the appropriate moment.

This can also be achieved remotely by using a latching switch, relay or logic circuit connected to terminals 10 and 11 on the rear panel.

NOTE: Do NOT operate button [HOLD 9] when terminals 10 and 11 are connected.


Hold values are lost under power supply interruption or failure. If the external hold facility is in use when this occurs it must be reset or unstable values will be held when power is restored.

External circuits must withstand a minimum of 2V at 10mA, maximum leakage current 100uA.

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## 11.  OPTIONS

### 11.1   OPTION 1 — PARALLEL BCD

The parallel BCD option is an interface to supply BCD coded data proportional to the displayed values of the BS-300A to peripheral monitoring and control equipment.

Input/output circuits are electrically isolated from the internal circuitry of the BS-300A by Photo-Isolators.

Connection is via a rear panel mounted 50 way shielded connector (mating item supplied) with the following pin number designations:

### Output  Connector  Pin  Assignment

| | | | |
|---|---|---|---|
| 1. | Data Output COM | 26 | NC |
| 2 | Data Output 1 | 27 | NC |
| 3 | Data Output 2 | 28 | NC |
| 4 | Data Output 4 | 29 | NC |
| 5 | Data Output 8 | 30 | NC |
| 6 | Data Output 10 | 31 | NC |
| 7 | Data Output 20 | 32 | NC |
| 8 | Data Output 40 | 33 | NC |
| 9 | Data Output 80 | 34 | NC |
| 10 | Data Output 100 | 35 | NC |
| 11 | Data Output 200 | 36 | NC |
| 12 | Data Output 400 | 37 | NC |
| 13 | Data Output 800 | 38. | NC |
| 14 | Data Output 1000 | 39 | NC |
| 15 | Data Output 2000 | 40 | NC |
| 16 | Data Output 4000 | 41 | NC |
| 17 | Data Output 8000 | 42 | NC |
| 18 | —VE Polarity | 43 | NC |
| 19 | Stabilised Output | 44 | NC |
| 20 | Over Output | 45 | NC |
| 21 | NC | 46 | NC |
| 22 | NC | 47 | NC |
| 23 | NC | 48 | NC |
| 24 | Print Command Output | 49 | NC |
| 25 | BCD Hold Input | 50 | NC |

### 11.1.1   BCD  SIGNAL  LOGIC

BCD Data Output ............................. Negative Logic
Polarity Output ............................... Negative Logic (When Minus, "L")
Overoutput ..................................... Negative Logic (When Over, "L")
Print Command Output .................... Negative Logic
BCD Hold Input .............................. Negative Logic (at "L", BCD Data Hold)

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## 11.1.2   INTERFACE

### BCD Data Output

+12V

Maximum voltage 30V
Maximum IC 20mA

Output

### BCD Data output

+12V

10mA

Input

### Signal Timing

BCD Data output

Print command output

30ms

66.6ms

No print command
is output when
input is low

10ms delay before
Hold is established

BCD Data Hold Input

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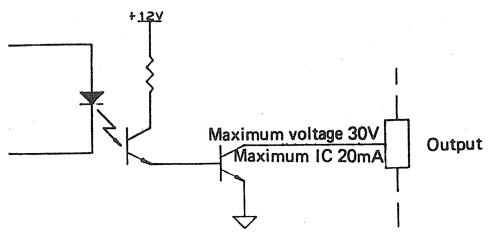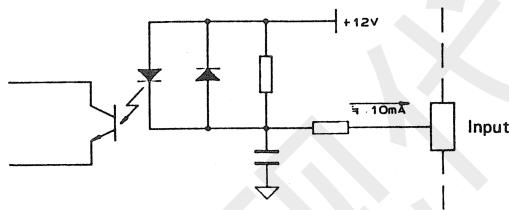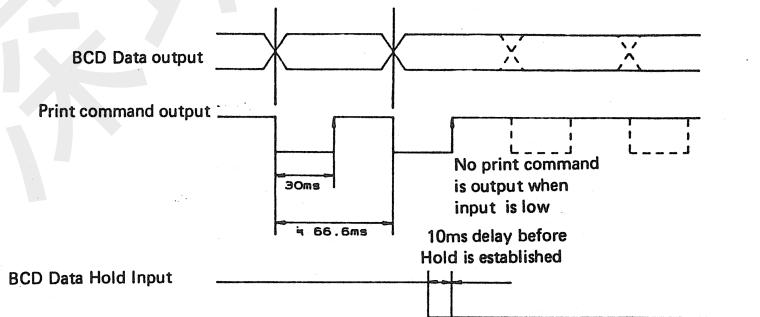
# D/A CONVERTER ( DC 0 ~ 10V, 4 ~ 20mA ) SETTING PROCEDURE

## 1. Terminal of D/A converter

```
                    Ⓑ          Ⓒ
                  VOL  G   CUR  G
    Ⓐ            ⊖    ⊖    ⊖    ⊖        Ⓓ        Ⓔ
   CALB                              ZERO      GA IN
    ◎                                  ⊖          ⊖
    ▶
  Push this button
```
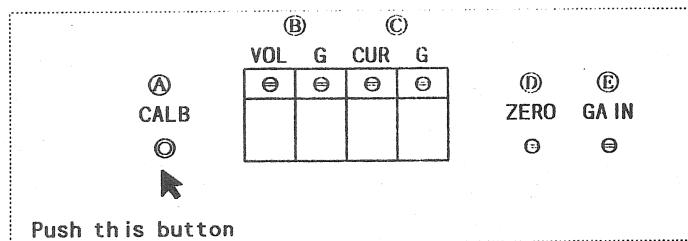
Ⓐ CALB : Push the button, for the save analog SPAN value.

Ⓑ VOL  : Voltage ( 0 ~ 10V ) terminal.

Ⓒ CUR  : Cerrent ( 4 ~ 20mA) terminal.

Ⓓ ZERO : Zero trimming VR.

Ⓔ GAIN  : Analog output of SPAN trimming VR.

## 2. Setting procedure

| Analog output ZERO setting | ⇨ | Analog output SPAN setting | ⇨ | Analog output ZERO VR adjusting | ⇨ | Analog output SPAN VR adjusting |

Analog output is limited proportional display value.

If display values are "0" then analog outputing "0" volt or 4mA automatically fixed.

### Analog output SPAN setting

If user are obtain DC10V to 300.0kg and BS-300A setting ranges are from 0kg to 500,0kg.

Set the DC10V from D/A converter as followed;

① Use the front Key, display values make 300.0

```
 -          ENTER
┌───┐      ┌───┐
│ 0 │  ⇨   │ # │
└───┘      └───┘
```

```
┌─────────────────────────┐
│ O HIGH    HOLD O         │
│                          │
│ + 0  0  0  0             │
│                          │
│ O LOW      Z.T O         │
└─────────────────────────┘
```

Most significant digits are firicked,

Next ;

ZERO

| 3 | ⇨ | 0 | ⇨ | 0 | ⇨ | 0 |

```
┌─────────────────────────────┐
│ ○ HIGH      HOLD ○          │
│   ┌───────────────────┐     │
│   │  ʊʊ ʯ             │     │
│   │ + 3 0 0 0         │     │
│   │  ʯ ʊʊ             │     │
│   └───────────────────┘     │
│ ○ LOW        Z.T ○          │
└─────────────────────────────┘
```
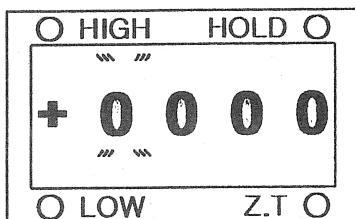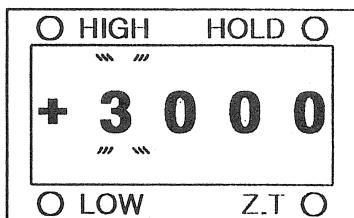
Displays are maintain 3000 Display during about 10Sec.

② On the 3000 Display, push the rear cover CALB Button.
   This means that the 300.0 in memoryed in microprocessor to DC 10V.
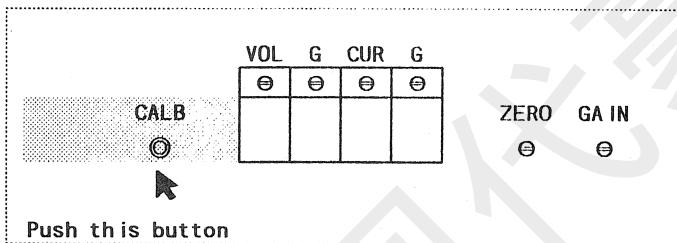
```
┌──────────────────────────────────────────────────┐
│                  VOL  G  CUR  G                    │
│                 ┌───┬───┬───┬───┐                  │
│                 │ ⊖ │ ⊖ │ ⊖ │ ⊖ │                  │
│         CALB    │   │   │   │   │  ZERO  GA IN      │
│          ◎      │   │   │   │   │   ⊖      ⊖        │
│          ▲      └───┴───┴───┴───┘                  │
│ Push this button                                   │
└──────────────────────────────────────────────────┘
```

③ Now Setting in Complete, but verify the Analog output DC 0 Volt from Zero display.
   If DC 0 volts are not monitoring the Multimeter then adjusting the Zero Trimming VR.

```
┌──────────────────────────────────────────────────┐
│                  VOL  G  CUR  G                    │
│                 ┌───┬───┬───┬───┐                  │
│                 │ ⊖ │ ⊖ │ ⊖ │ ⊖ │                  │
│         CALB    │   │   │   │   │  ZERO  GA IN      │
│          ◎      │   │   │   │   │   ⊖      ⊖        │
│                 └───┴───┴───┴───┘   ⌣              │
└──────────────────────────────────────────────────┘
```
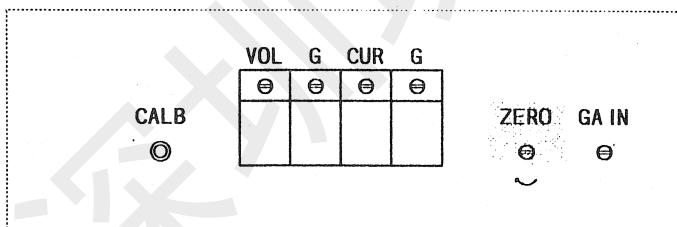
④ After finishing Zero setting, put the weight 300.0kg to the object place.
   Confirm the Display values are appeared 300.0.
   Now D/A converter Analog Terminal pins are outputed DC10V.
   If DC10 Volts are not correct more or less then adjusting the SPAN ( DC10V ) by the GAIN
   trimming VR.

```
┌──────────────────────────────────────────────────┐
│                  VOL  G  CUR  G                    │
│                 ┌───┬───┬───┬───┐                  │
│                 │ ⊖ │ ⊖ │ ⊖ │ ⊖ │                  │
│         CALB    │   │   │   │   │  ZERO  GA IN      │
│          ◎      │   │   │   │   │   ⊖      ⊖        │
│                 └───┴───┴───┴───┘           ⌣      │
└──────────────────────────────────────────────────┘
```

- 18 -
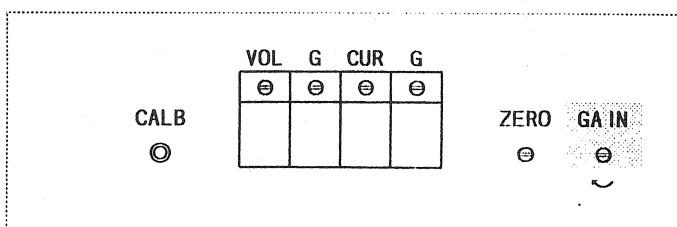
▒  RS232C SERIAL DATA

DATA FRAME CONFIGURATION
① BAUD RATE : 9600BPS
② PARITY BIT : NONE
③ STOP BIT : 1BIT

PIN ASSIGNMENTS

[ DETAIL A ]

Tx

GND

D/A SET SWITCH

FUSE

RS-232C

CALB.

VOL G CUR G

DETAIL "A"

ZERO

SPAN

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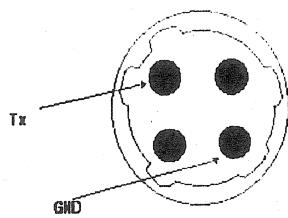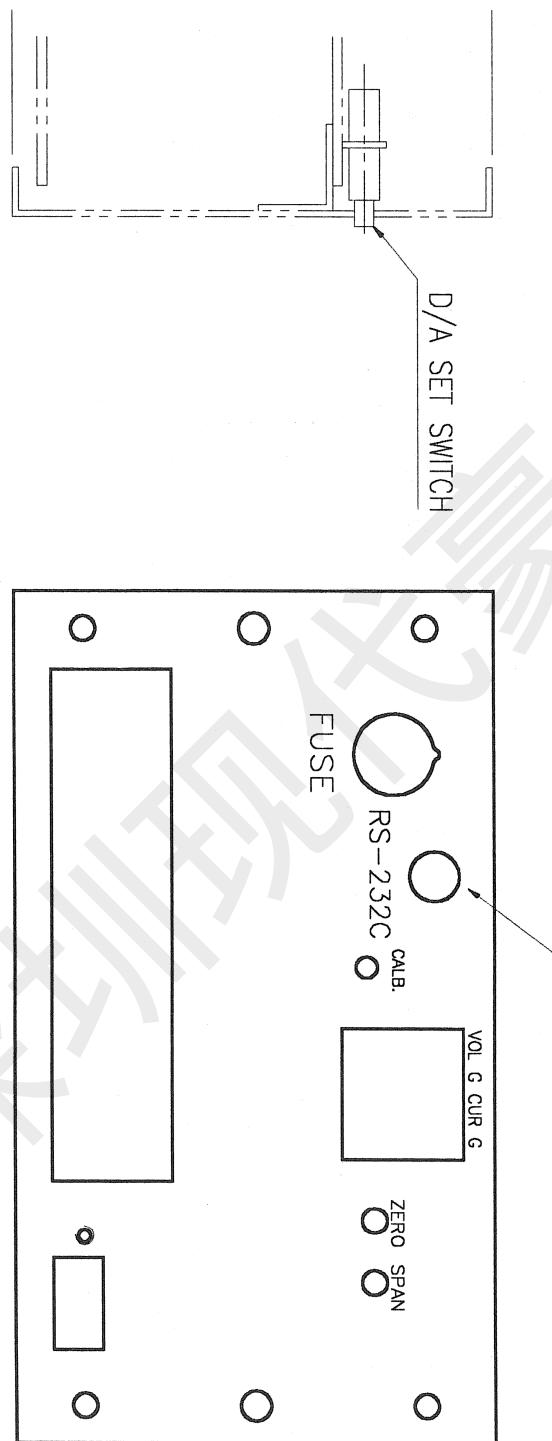
# BS-300A  RS232

**Baud Rate** : 600bps

**1Byte Data Format** ( ASC II )
Start   : 1bit
Data   : 7bit
Parity   : None
Stop   : 1bit

**Data Length** : 11byte

**Auto Mode**
repeat   : msec

## BS-300A(RS232) to Computer  Wiring Diagram

DB9 Male — P?

TxD

GND

BS-300A
INDICATOR
RS232
PORT

GND

RxD

DB9 Female — P?
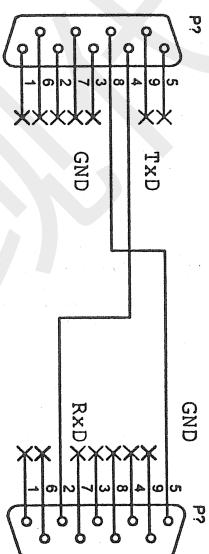
| | Computer |
|---|---|
| 1 | RLSE |
| 2 | RxD |
| 3 | TxD |
| 4 | DTR |
| 5 | GND |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |
| 9 | RI |

Computer
Serial
Port (DB9)

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# Protocol Format

| Output | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ASC II Cod | F | A | (+/-) | Sp | 0 | 1 | 2 | 3 | 4 | CR | LF |
| HEX Code | 46 | 41 | 2B | 20 | 30 | 31 | 32 | 33 | 34 | 0D | 0A |

MSByte ... LSByte

2D

↑ weight      ↑ (+),(-)

**ex 1)   1000**

MSByte ... LSByte

| Output | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ASC II Cod | F | A | (+) | Sp | 0 | 1 | 0 | 0 | 0 | CR | LF |
| HEX Code | 46 | 41 | 2B | 20 | 30 | 31 | 30 | 30 | 30 | 0D | 0A |

**ex 2)   −0.001**

MSByte ... LSByte

| Output | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ASC II Cod | F | A | (-) | Sp | 0 | . | 0 | 0 | 1 | CR | LF |
| HEX Code | 46 | 41 | 2D | 20 | 30 | 2E | 30 | 30 | 21 | 0D | 0A |

STATE

MSByte ... LSByte

| Output | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ASC II Cod | F | B | SP | 1 | 0 | 0 | 0 | 0 | 0 | CR | LF |
| HEX Code | 46 | 41 | 20 | 31 | 30 | 30 | 30 | 30 | 30 | 0D | 0A |

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# Protocol Format

ex 1)   0

|  | MSByte |  |  |  |  |  |  | LSByte |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Output | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |  |
| ASC II Code |  | D | Sp | 0 | 0 | 0 | 0 | CR | LF |  |  |
| HEX Code | 0 | 44 | 20 | 30 | 30 | 30 | 30 | 0D | 0A |  |  |

▲
weight

ex 2)   -1500

|  | MSByte |  |  |  |  |  |  | LSByte |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Output | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |  |
| ASC II Code |  | D | Sp | 1 | 5 | 0 | 0 | CR | LF |  |  |
| HEX Code | 0 | 44 | 20 | 31 | 35 | 30 | 30 | 0D | 0A |  |  |

ex 3)   200

|  | MSByte |  |  |  |  |  |  | LSByte |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Output | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |  |
| ASC II Code |  | D | Sp | 0 | 2 | 0 | 0 | CR | LF |  |  |
| HEX Code | 0 | 44 | 20 | 30 | 32 | 30 | 30 | 0D | 0A |  |  |

ex 4)   23.1

|  | MSByte |  |  |  |  |  |  | LSByte |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Output | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |  |
| ASC II Code |  | D | Sp | 0 | 2 | 3 | 1 | CR | LF |  |  |
| HEX Code | 0 | 44 | 20 | 32 | 32 | 33 | 31 | 0D | 0A |  |  |

Baud Rate   : 9600bps

1Byte Data Form ( ASC II )
    Start    : 1bit
    Data    : 8bit
    Parity  : None
    Stop    : 1bit

Data Length : 9byte

INDICATOR BS300A
RS-232 Port

| GND | 1 |
|---|---|
| N.C | 2 |
| TXD | 3 |
| N.C | 4 |

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