HP-04

INSTRUCTION MANUAL

Comparator Output

A&D

This is hazard alert mark.

This is notice mark that inform to you on the operation of balance.

This is information mark that inform to you about the operation of balance.

◨ Contents

![i] Introduction

Thank You For Your ![AND] *Purchase*

The Comparator Interface for HP series is easy to use, yet they are rather complex in that they are high technology products. This manual will tell you in simple language how this Option works.

Overview

- This option is able to output the result (compared the weighing value with limits) to contact output.
- This option has three contact outputs.
- You may select to use a buzzer when a contact output is short.
- The weighing data outputs from current loop.

![!] Caution

- The HP not complies with IP65 of the IEC 529 rules, if you connect the HP-04 to the balance.
- The upper limit value and lower limit value are stored in the balance until the next change even without power applied.
- The current loop needs an external power supplier of 20mA.

Definition of words on this manual

HI ---------------------------- The contact output terminal HI.
The status that a weighing value is larger than HI limit value.
(weighing value) > (limit HI value)

GO ---------------------------- The contact output terminal GO.
The status that a weighing value is larger than limit LO value and smaller than limit HI value.
(limit HI value) ≥ (weighing value) ≥ (limit LO value)

LO ---------------------------- The contact output terminal LO.
The status that a weighing value is smaller than limit LO value.
(limit LO value) > (weighing value)

COM -------------------------- The common ground terminal for contact output terminal HI, GO and LO.

Short ------------------------ The status that connect contact output terminal and terminal COM using internal MOS switch.

Comparator -------------- The meaning of contact output HI, GO, LO and buzzer.

Serial interface ---------- The meaning of current loop.

▐▌ Installation

❶ Turn off the balance and remove the AC adapter.

❷ Remove four screws securing the side cover on the side of the balance.

gasket

metal plate

side cover

Knurling head screw

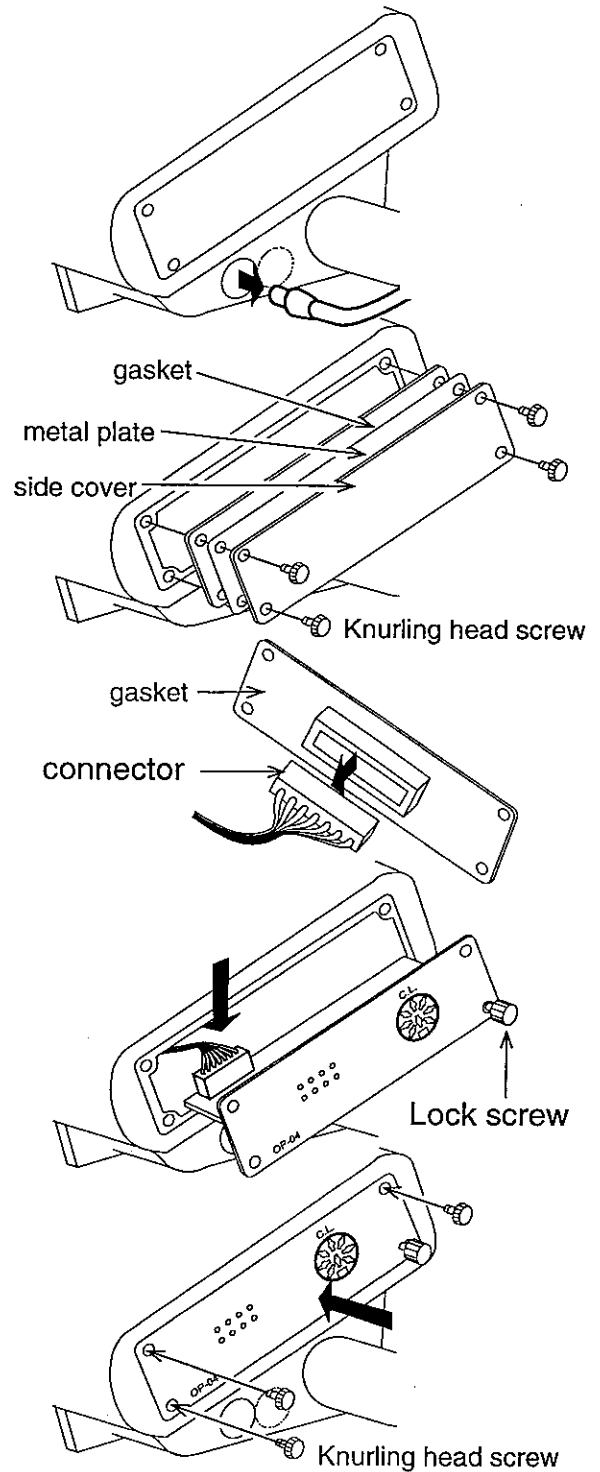**❸** Remove the cable attached to this panel.

gasket

connector

❹ Connect it to the socket on the option board as shown.

Lock screw

❺ Install the option board. Tie the Lock screw.

❻ Tie three screws removed in step 2.

Knurling head screw

Remove knurling head screw first when you take off the option.

▣ Specification

Comparator

Maximum open voltage of switch DC100V
Maximum current of switch DC100mA
Maximum ON resistance of switch 20Ω
Method of setting the limit value Digital input to the balance
Method of setting the buzzer C-parameter C-6

Comparison Result	Contactoutput (Pins 1 to 2)	Contactoutput (Pins 6 to 2)	Contactoutput (Pins 4 to 2)
HI	Short circuit	Open	Open
GO	Open	Short circuit	Open
LO	Open	Open	Short circuit

Serial Interface

Transmission system 20mA current loop (passive)
Transmission form Asynchronous
Data format Buad rate 600, 1200, 2400, 4800, 9600 bps
  Data 7 or 8 bits
  Parity Even, Odd (7bit)
    None (8 bit)
  Stop bit 2 bits (The equipment connected to this option can use stop bit that is 2 bits or less)
  Code ASCII
Maximum voltage 25V
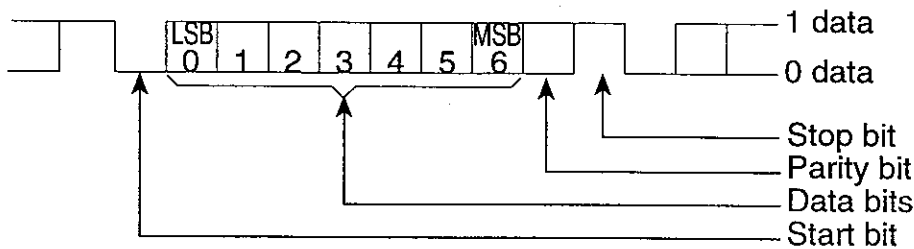
Pin connections

Pin No.	Signal name
1	HI
2	COM
3	Current loop
4	LO
5	Current loop
6	GO
7	N.C.
Connector shell	Case

Data	Current loop
1	20mA
0	0mA
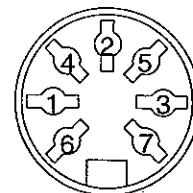
Interface circuit

- Max. voltage of comparator contact outputs is DC100V.
- Max. current of comparator contact outputs is DC100mA.
- Max. resistance of comparator contact outputs is 20Ω.
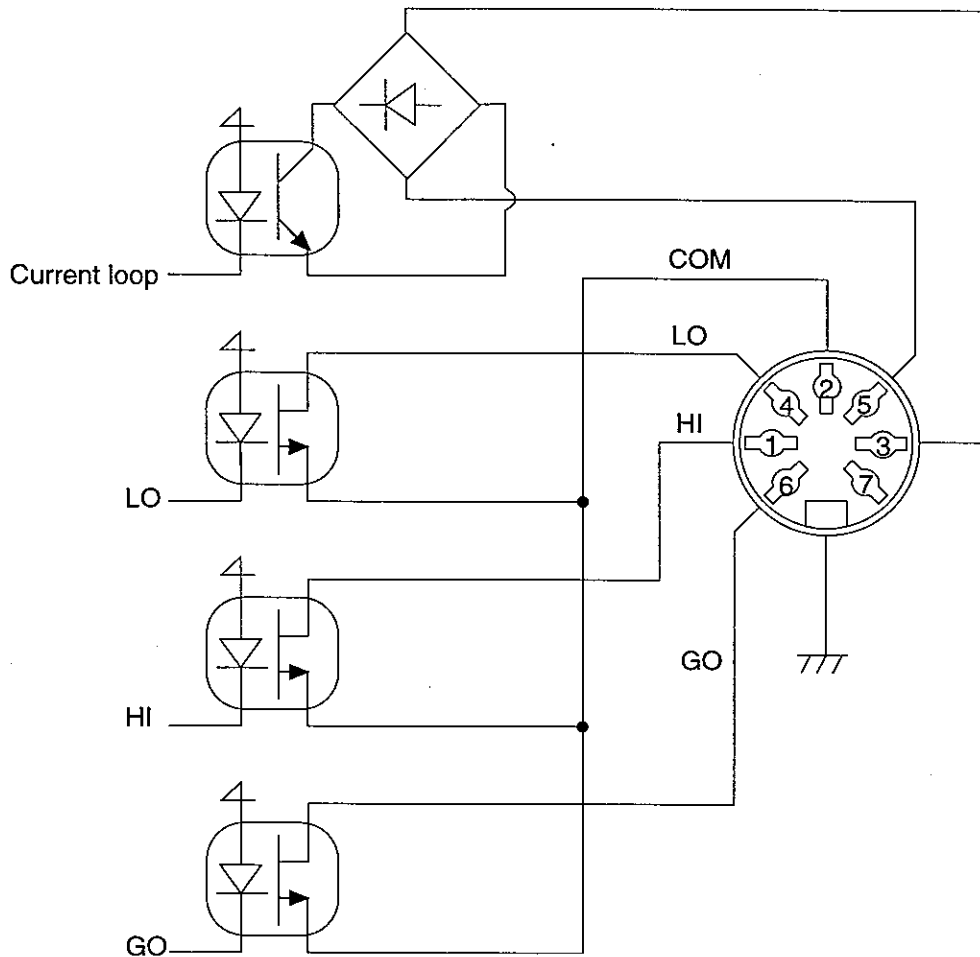- The current loop needs an external power supplier (20mA).
- Max. voltage of current loop is 25V.

Comparator interface

The balance compares a weighing value with upper and lower limit value, the contact output outputs this result. The buzzer is able to vibrate when the contact output is "short".

How to use the comparator

1 Connect the equipment to the balance.

2 Set the C-parameter C-6. (Refer to "Internal parameter setting")

3 Set the upper limit and lower limit value. (Refer to next "Upper and Lower limit setting")

4 If you weigh something, the balance will output the result.

C - 6
Comarator output

		Comparator mode.
CP Mode	* 0	No use.
	1	Countinuous comparison.
	2	Comparison at stable weighing and overload. (No comarison at unstable display)
CP - 0 near zero		Compason fo near zero (±10 digits). Condition You may compare at CP 1 or CP 2.
	* 0	No use.
	1	Comparison at near zero.
bEEP_ LO buzzer		LO buzzer Condition You may compare at CP 1 or CP 2.
	* 0	No use.
	1	Vibrating buzzer at LO.
bEEP - GO buzzer		GO buzzer Condition You may compare at CP 1 or CP 2.
	* 0	No use.
	1	Vibrating buzzer at GO
bEEP ‾ HI buzzer		HI buzzer Condition You may compare at CP 1 or CP 2.
	* 0	No use.
	1	Vibrating buzzer at HI

*Factory setting

Upper and Lower limit setting

weighing mode

1 Press and hold the SAMPLE key.

SAMPLE — Press and hold

P ヒ

2 Press the SAMPLE key several times until the balance displays H ι (or L ο).

SAMPLE

H ι

3 Press the RE-ZERO key. The balance displays the upper limit value(lower limit value). The factory setting is . . . .

RE-ZERO

| . . . . g | or | ◄ $\angle$ ΟΟ ΙΟΟΟΟ g |

4 Press MODE key.

MODE

5 Set your upper limit value (lower limit value) using following keys.

　MODE key ------The key to shift the number that is displayed.

　RE-ZERO key -- The key to change the number that is displayed.

　SAMPLE key --- The key to change the polarity.

SAMPLE MODE RE-ZERO

◄ ΟΟ ΙΖΞЧ5 g

6 Press PRINT key. The balance stores a new upper limit value (new lower limit value) and returns the weighing mode.

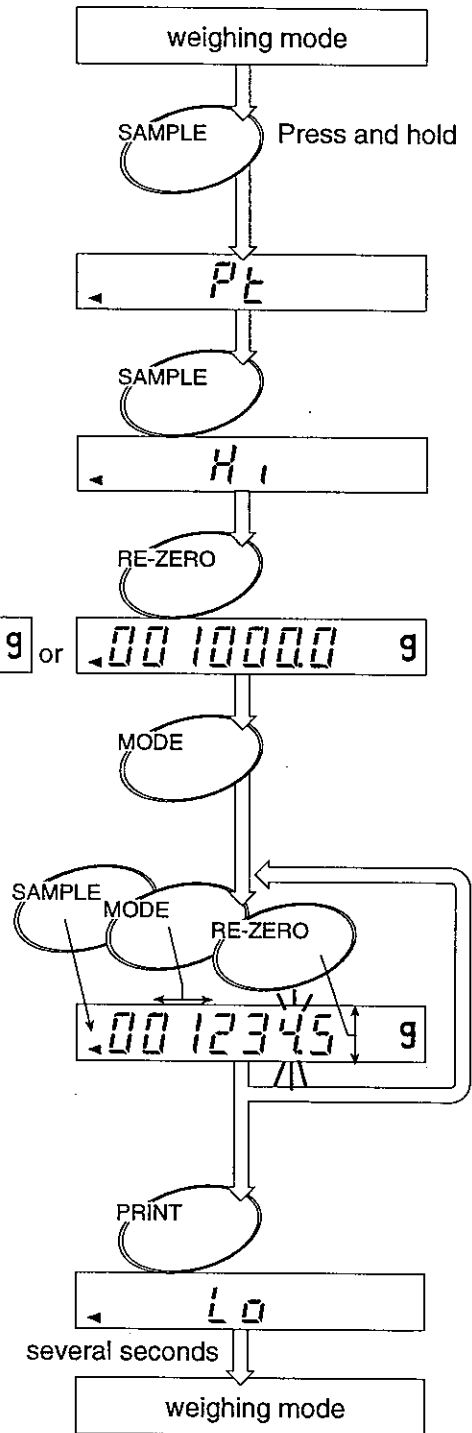If you want to set other limit value, continue to operate from **3** to **6** .

PRINT

◄ L ο

several seconds

weighing mode

Illustration is HP-12K

Cancelling the limit value

1 Press and hold the SAMPLE key.

2 Press the SAMPLE key several times until the balance display H_i (L_o).

3 Press the RE-ZERO key. The balance displays the upper limit value(lower limit value).

4 Press SAMPLE key. The balance cancels the limit value and displays . . . .

5 Press PRINT key. The balance stores a new limit value and returns the weighing mode.

If you want to cancel other limit value, continue to operate from **3** to **5** .

weighing mode

SAMPLE   Press and hold

Pt

SAMPLE   several times

H_i

RE-ZERO

$00 10000$ g

SAMPLE

. . . .   g

PRINT

L_o

several seconds

weighing mode

Illustration is HP-12K

Start
00 g
SAMPLE   Press and hold

Start (% mode)
000 Pct
SAMPLE   Press and hold

Start(counting mode)
0 cnt
SAMPLE   Press and hold

Other mode

% mode
Pu
SAMPLE

Counting mode
Uu
SAMPLE

Pt
SAMPLE

H_i RE-ZERO
SAMPLE   Upper limit setting
PRINT

L_o RE-ZERO
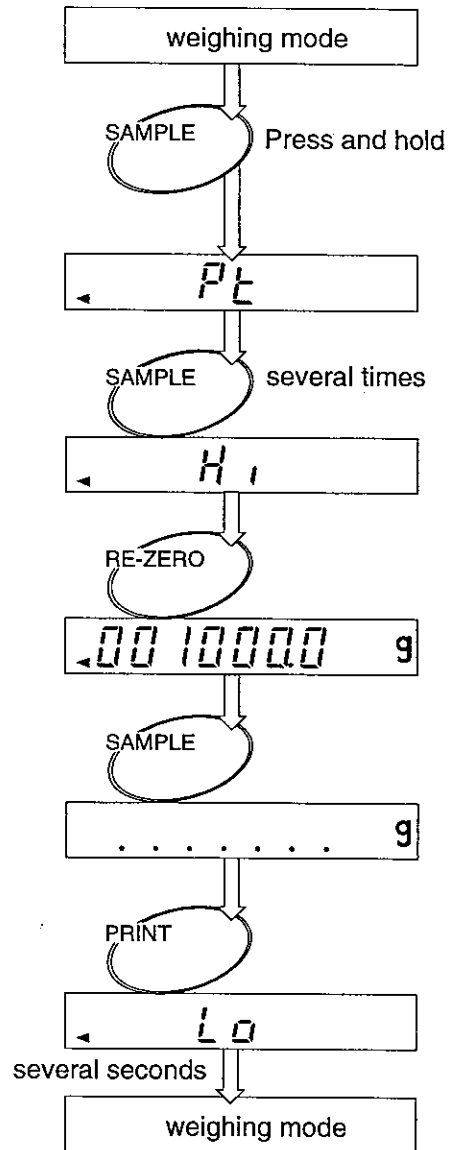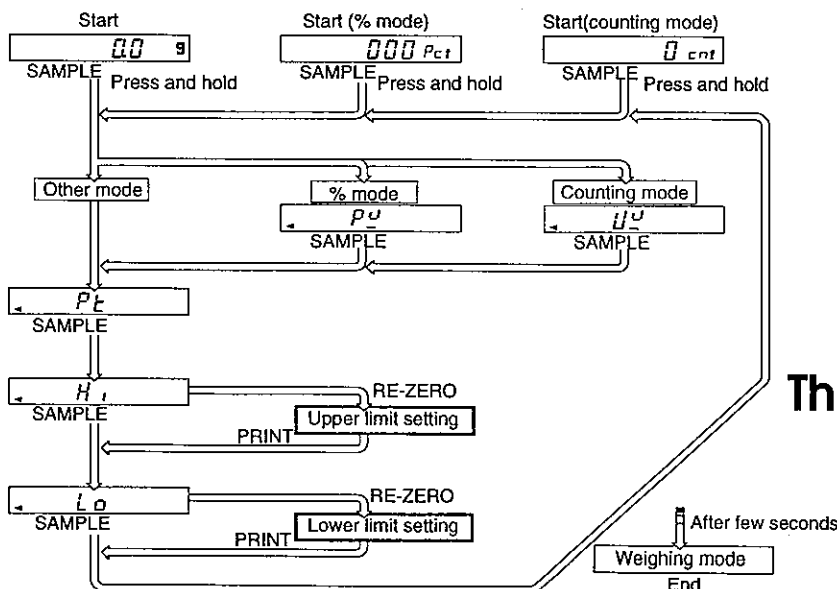SAMPLE   Lower limit setting
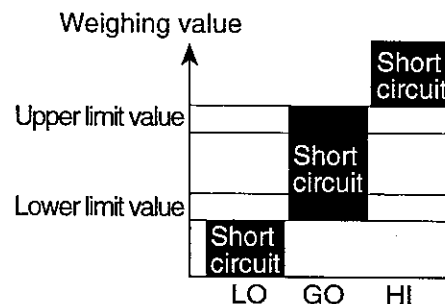PRINT

After few seconds
Weighing mode
End

This is Setting flow.

⚒ Combination of comparator output

⚠ Do not set lower limit value more than upper limit value.

This is principal combination of comparator output. The buzzer can select to vibrate by internal setting C-6 when the contact output is " short circuit ".

(1) The case of setting the upper limit and lower limit.

	LO	GO	HI
(upper limit value) < (weighing value)	Open		Short circuit
(lower limit value) ≤ (weighing value) ≤ (upper limit value)		Short circuit	
(weighing value) < (lower limit value)	Short circuit		Open

(2) The case of setting either upper limit or lower limit. (Other limit value cancels) The "GO" outputs when weighing value equals the limit value.
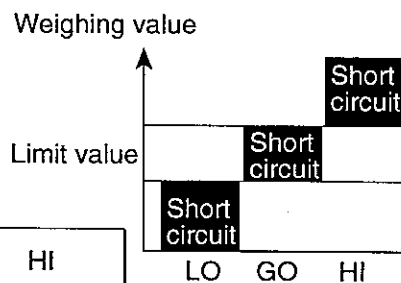
	LO	GO	HI
(limit value) < (weighing value)	Open		Short circuit
(limit value) = (weighing value)		Short circuit	
(weighing value) < (limit value)	Short circuit		Open

(3) The case of canceling both limit value. All contact output is always open and the buzzer do not vibrate.
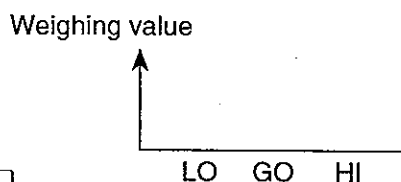
	LO	GO	HI
all weighing value		Open	

■ Example of using comparator output

This is a sample using AD-8951 (comparator light). The result compared weighing value is displayed at the light (Red, Green, Orange).

Red	HI
Green	GO
Orange	LO

1 Connect AD-8951 and the balance by a cable (AX-KO-507-W200).

HP-04

AX-KO507-W200

AD-8951
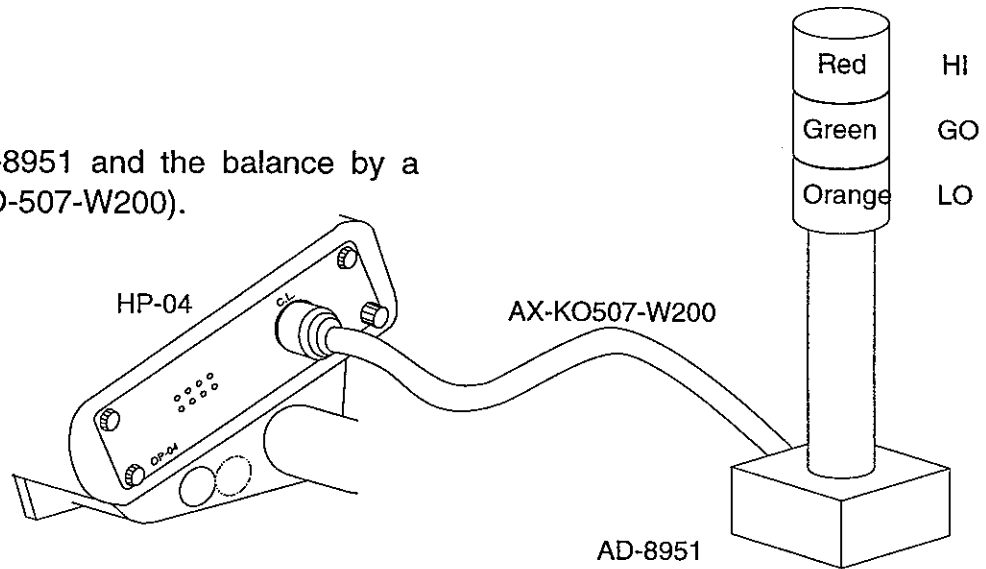
2 Set up $\digamma$ - $\digamma$ of C-parameter as follows :

$\digamma P$ 1 Continuously comparison
$\digamma P$-0 0 No use comparison of near zero.
$b\digamma\digamma P$_1 Vibrating buzzer at LO.
$b\digamma\digamma P$-0 No Vibrating buzzer at GO.
$b\digamma\digamma P$⁻1 Vibrating buzzer at HI.

3 Set up limit value as follows :
Upper limit value   10100.0 g
Lower limit value   9900.0 g

4 (1)   When weighing value is 9000.0 g,   the balance is light Orang light and is vibrated the buzzer.

(2)   When weighing value is 10000.0 g, the balance is light Green light.

(3)   When weighing value is 11000.0 g, the balance is light Red light and is vibrated the buzzer.

![icon] Current loop interface

This option is passive and requires an external current source to operate. It is a transmit only device and as such is best used with external displays or printers. Many such devices supply the current required by this interface.

![icon] Connection to other equipment

- The current loop is of the passive type. It requires an external source of 20mA DC.

- When connecting to another piece of equipment, consult the manual for that equipment for proper settings and connections.

![icon] Connection to an AD-8121

The following balance functions must be set to use the AD-8121 printer.

"C" function	Settings
C-4 Print 0, 1, 2, 3	Select a print mode
C-4 AP-P 0, 1, 2	Select the polarity for the auto-print mode
C-4 AP-b 0, 1, 2	Set the auto-print band
C-5 bPS 2	Select "2400bps"
C-5 bt-Pr 0	Select "7 bits, Even parity check"
C-5 Cr-LF 0	Select "CR, LF"
C-5 tYPE 0, 1	Select "A&D Standard format" or "Dump print format"
C-5 t-UP 1	Set the receive timing to 1 second
C-5 t-Cod 0	Select "Error codes are not output"
C-5 CtS 0	Select "Not using CTS and RTS"

![icon] **If you use AD-8121 printer, you need option cable AD-8121-01.**

◼ Data output

There are four modes to control the transmission of the weighing data.

Key Mode

When you press the [PRINT] key or the "PRT" command is input using the RS-232C option, the balance transmits the weighing data when the display is stable (the stability indicator is on). When the data is transmitted the display will blink one time.

C-4 Pr int 0 ....   Print key mode

Auto-print Mode A

The balance transmits the weighing data when the display is stable (the stability indicator is on), meets the conditions of "Auto-print polarity" and "Auto-print band". The reference for the auto-print band is the zero point. When the data is transmitted the display will blink one time.

C-4 Pr int 1 ....   Auto-print mode A

C-4 $AP-P$ X ....   Auto-print polarity $X = 0, 1, 2$

C-4 $AP-b$ X ....   Auto-print band $X = 0, 1, 2$

Auto-print Mode B

The balance transmits the weighing data when the display is stable (the stability indicator is on), meets the conditions of "Auto-print polarity" and "Auto-print band". The reference for the auto-print band is the last weighing data printed. When the data is transmitted the display will blink one time.

C-4 Pr int 2 ....   Auto-print mode B

C-4 $AP-P$ X ....   Auto-print polarity $X = 0, 1, 2$

C-4 $AP-b$ X ....   Auto-print band $X = 0, 1, 2$

Stream Mode

The balance transmits the weighing data continuously.

C-1 $SPEEd$ X ....   Display update rate. $X = 0, 1, 2$

C-5 bPS X ....   Baud rate. $X = 0, 1, 2, 3, 4$

CAUTION:

When the baud rate is set to 600 or 1200bps and the refresh rate of the display is set to high speed, the balance is unable to transmit the data completely.

⬛ Data format

There are four formats for transmission of the weighing data. The setting of $\mathcal{L}$ - 5 $\mathcal{L}$ $\mathcal{Y}$ P $\mathcal{L}$ selects the data format.

A&D Standard Format $\mathcal{L}$ $\mathcal{Y}$ P $\mathcal{L}$ $\mathcal{O}$

This format is used when the peripheral equipment is capable of receiving A&D format. If an AD-8121 is to be used and you are sending a 15 character data string (no including the terminator), set the printer to mode 1 or 2.

| S | T | , | + | 0 | 0 | 1 | 2 | 3 | 4 | . | 5 | ␣ | ␣ | g | C_R | L_F |

- Terminator
- Unit
- Data
- Polarity
- Header
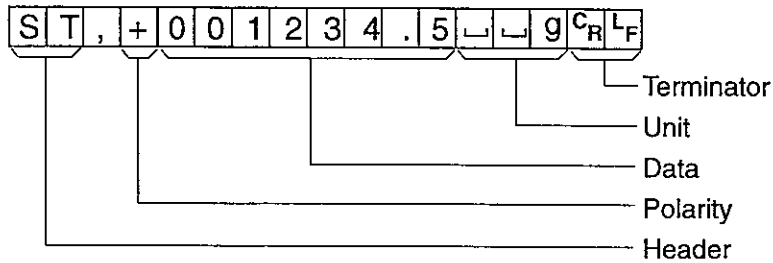
- A two character header indicates the status of the stability.
- The weighing data (with leading zeros) plus sign and decimal point, followed by a three character "unit of weight" make up the body of the data.
- A terminator consisting of C_R, L_F to indicate to the peripheral equipment that all of the data has been sent.
- Header: Stable header is |S|T| , Stable header for counting mode is |Q|T|
  Unstable header is |U|S|
  Overload header is |O|L|

Dump Print Format $\mathcal{L}$ $\mathcal{Y}$ P $\mathcal{L}$ $\mathcal{I}$
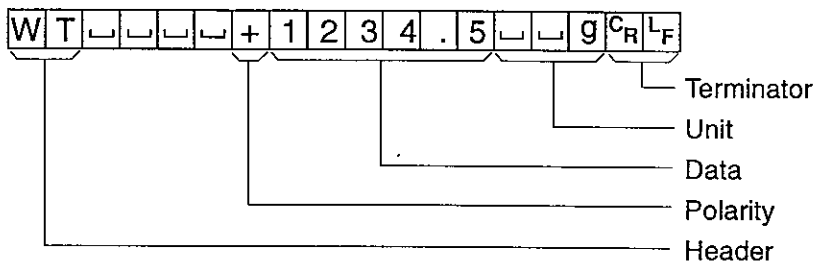
This format is used when the peripheral equipment is not capable of receiving A&D format. If an AD-8121 is to be used and you are sending a 16 character data string (no including the terminator), set the printer to mode 3.

| W | T | ␣ | ␣ | ␣ | ␣ | + | 1 | 2 | 3 | 4 | . | 5 | ␣ | ␣ | g | C_R | L_F |

- Terminator
- Unit
- Data
- Polarity
- Header

- A two character header indicates the status of the stability if not overloaded or the display is zero.
- The weighing data (with leading zeros replaced by spaces) plus sign and decimal point, followed by a three character "unit of weight" make up the body of the data.
- A terminator consisting of C_R, L_F to indicate to the peripheral equipment that all of the data has been sent.
- Header: Stable header is |W|T| , Stable header for counting mode is |Q|T|
  Unstable header is |U|S|

KF Format $\mathit{type\ 2}$

This is the Karl-Fischer moisture meter format and is used when the peripheral equipment can not communicate using A&D format.


```
+|␣|␣|␣|1|2|3|4|.|5|␣|9|␣|␣|CR|LF
```
- Terminator
- Unit
- Data
- Polarity
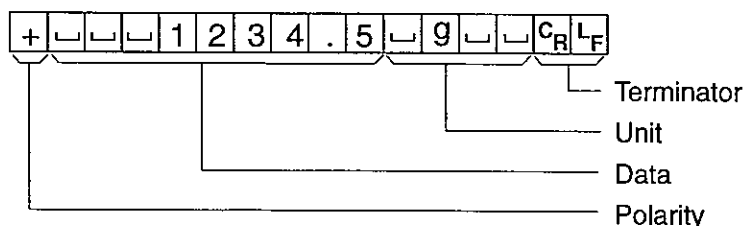
- The data consists of 14 characters (no including the terminator).
- The sign of the weighing data is first if the balance is not in overload. The sign is omitted if the balance is at zero.
- The sign is followed by the weighing data (with leading zeros replaced by spaces) and decimal point. The weight data is followed by the unit if the balance is stable.
- A terminator consisting of C_R, L_F to indicate to the peripheral equipment that all of the data has been sent.
- The unit is output if stable.

  No unit is output if unstable.

MT Format $\mathit{type\ 3}$

- The data length will be changed by the unit or overload.

Version 1.0
```
S|␣|␣|␣|␣|␣|-|1|2|3|4|.|5|␣|9|CR|LF
```
- Terminator
- Unit
- Data
- Polarity
- Header

Version 1.1
```
S|␣|␣|␣|␣|-|1|2|3|4|.|5|␣|9|CR|LF
```
- Terminator
- Unit
- Data
- Polarity
- Header
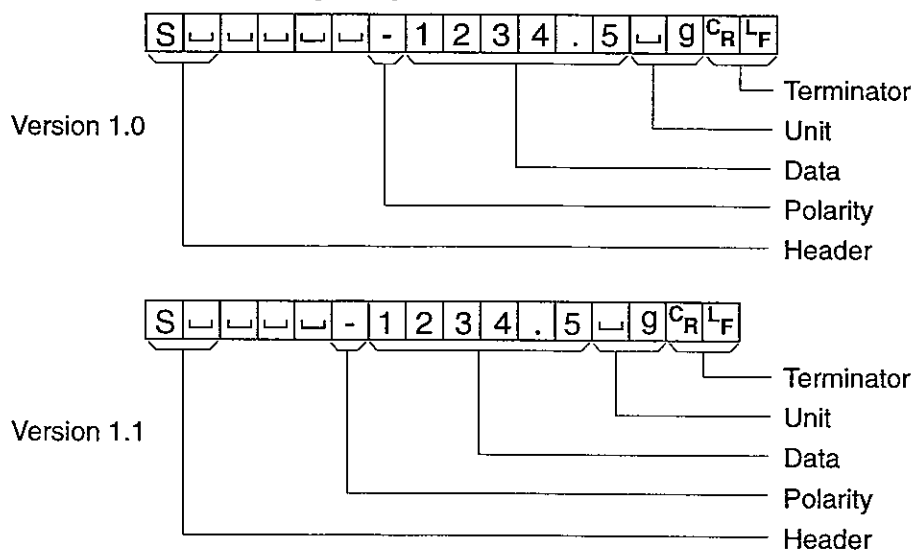
- The weighing data is proceeded by a header of two characters. If stable, one character and a space are transmitted.
- The minus sign will be next if the weighing data is negative. The sign is omitted if the weighing data is positive or at zero. Leading zeros are replaced by spaces.
- If the balance is in overload, the weighing data is omitted.
- Header: Stable header is ⟨S⟩⟨␣⟩,

  Unstable header is ⟨S⟩⟨D⟩

Satble

Display: `0.0 g`

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A&D	S	T	,	+	0	0	0	0	0	0	.	0	␣	␣	g	CR	LF			
D.P.	W	T	␣	␣	␣	␣	␣	␣	␣	␣	0	.	0	␣	␣	␣	g	CR	LF	
KF	␣	␣	␣	␣	␣	␣	␣	0	.	0	␣	g	␣	␣	␣	CR	LF			
MT Version 1.0	S	␣	␣	␣	␣	␣	␣	␣	␣	␣	0	.	0	␣	g	CR	LF			
MT Version 1.1	S	␣	␣	␣	␣	␣	␣	␣	␣	␣	0	.	0	␣	g	CR	LF			

Un-stable

Display: `-9832.1 g`

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A&D	U	S	,	–	0	0	9	8	3	2	.	1	␣	␣	g	CR	LF			
D.P.	U	S	␣	␣	␣	␣	–	9	8	3	2	.	1	␣	␣	g	CR	LF		
KF	–	␣	␣	␣	9	8	3	2	.	1	␣	␣	␣	␣	␣	CR	LF			
MT Version 1.0	S	D	␣	␣	␣	␣	–	9	8	3	2	.	1	␣	g	CR	LF			
MT Version 1.1	S	D	␣	␣	␣	–	9	8	3	2	.	1	␣	g	CR	LF				

Overload

Display: `E` — Positive error

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A&D	O	L	,	+	9	9	9	9	9	9	9	E	+	1	9	CR	LF			
D.P.	␣	␣	␣	␣	␣	␣	␣	␣	E	␣	␣	␣	␣	␣	␣	␣	CR	LF		
KF	␣	␣	␣	␣	␣	␣	H	␣	␣	␣	␣	␣	␣	␣	␣	CR	LF			
MT	S	I	+	CR	LF															

Display: `-E` — Negative error

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A&D	O	L	,	–	9	9	9	9	9	9	9	E	+	1	9	CR	LF			
D.P.	␣	␣	␣	␣	␣	␣	␣	–	E	␣	␣	␣	␣	␣	␣	␣	CR	LF		
KF	␣	␣	␣	␣	␣	␣	L	␣	␣	␣	␣	␣	␣	␣	␣	CR	LF			
MT	S	I	–	CR	LF															

Unit and display sign		A&D	D.P.	KF	MT
g	g	⌴ ⌴ g	⌴ ⌴ g	⌴ g ⌴ ⌴	⌴ g
Counting mode	cnt	⌴ P C	⌴ P C	⌴ p c s	⌴ P C S
Precent mode	Pct	⌴ ⌴ %	⌴ ⌴ %	⌴ % ⌴ ⌴	⌴ %
Ounce (Avoir)	OZ	⌴ o z	⌴ o z	⌴ o z ⌴	⌴ o z
Pound	Lb	⌴ 1 b	⌴ 1 b	⌴ 1 b ⌴	⌴ 1 b
Pound Ounce	OZ	⌴ o z	⌴ o z	⌴ o z ⌴	⌴ o z
Troy Ounce	OZt	o z t	o z t	⌴ o z t	⌴ o z t
Metric Carat	ct	⌴ c t	⌴ c t	⌴ c t ⌴	⌴ c t
Momme	mm	m o m	m o m	⌴ m o m	⌴ m o
Pennyweight	dwt	d w t	d w t	⌴ d w t	⌴ d w t
Tael (HK general,Sing.)	TL	⌴ t 1	⌴ t 1	⌴ t 1 s	⌴ t 1
Tael (HK, jewelry)	TL	⌴ t 1	⌴ t 1	⌴ t 1 h	⌴ t 1
Tael (China)	TL	⌴ t 1	⌴ t 1	⌴ t 1 t	⌴ t 1
Tael (Taiwan)	TL	⌴ t 1	⌴ t 1	⌴ t 1 c	⌴ t 1
Tola (India)	t	⌴ ⌴ t	⌴ ⌴ t	⌴ t o 1	⌴ t
Messghal	m	m e s	m e s	⌴ M S ⌴	⌴ m
Animal mode	A-g	⌴ ⌴ g	⌴ ⌴ g	⌴ g ⌴ ⌴	⌴ g

⌴ Space, ASCII 20H
C_R Carriage Return, ASCII 0DH
L_F Line Feed, ASCII 0AH

HP-04

Your balance has a number of internal software parameters that enable you to select the best weighing features for your needs regarding this option. This parameters table is shown below.

All of the parameters have initial settings from the factory, or possibly from your dealer. You may easily change these settings as you need them, or conditions vary.

These settings are stored in the balance until the next change even without power applied. The section, C-parameters keys and displays, explains how to change the parameter. The individual settings for each group are detailed in C-parameters settings.

Group Number	Item						
Group	0	1	2	3	4	5	6
4 $C-4$ Data out	$Print$ Data out mode	$AP-P$ Auto print polarity	$AP-b$ Auto print band	$PAUSE$ Data pause	$At-F$ Auto feed	$Ar-d$ Zero after data out	$info$ Cal verification
5 $C-5$ Serial Interface	bPS Baud rate	$bt-Pr$ Length, Parity bit	$Cr-LF$ Terminator	$tYPE$ Data format	$t-UP$ Receive time	$E-Cod$ Error code	CtS CTS control
6 $C-6$ Comparator	CP Comparator Use	$CP-0$ Compare near zero	$bEEP\_$ Buzzer for under	$bEEP-$ Buzzer for target	$bEEP^-$ Buzzer for over		

C-Parameter keys and displays

o

This mark appears in the display when the parameter shown has been placed in memory.

MODE — The MODE key is used to select the group of C-parameters.

SAMPLE — The SAMPLE is used to select the item from the group selected by the MODE key.

RE-ZERO — The RE-ZERO key is used to select a parameter for the item selected by the MODE key and SAMPLE.

PRINT — The PRINT key is used to save the new C-parameter settings and to exit to the weighing mode.
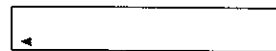
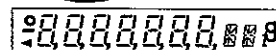**ON:OFF** — The ON:OFF key cancels the new C-parameter settings and turns the display off.
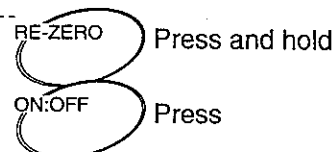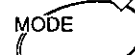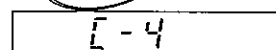
Internal parameter setting

1 Turn the display off.

```
◄_____
```

2 Press and hold the RE-ZERO key and press the ON:OFF key. Release both keys.

RE-ZERO) Press and hold

ON:OFF) Press

```
⌐ᗺᗺᗺᗺᗺᗺᗺ▦▦9
```

3 Press the MODE key .The balance displays "⌐ - ⌐".

MODE)

```
⌐ - ⌐
```
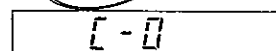
4 Press the MODE key (several times), to select the parameter group.
ex. The balance will display the parameter " ⌐ - 닉".

MODE)

```
⌐ - 닉
```

5 Press the The SAMPLE key several times, to select the item of the selected parameter .
ex. The balance will display the parameter "Pᵣ ₁ₙᵗ".

SAMPLE)

```
Pᵣ ₁ₙᵗ   ⌐
```
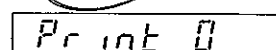
6 Press the RE-ZERO key several times, to select the parameter of the selected item.
ex. The balance will display the parameter
" Pᵣ ₁ₙᵗ 3 " .

RE-ZERO)

```
Pᵣ ₁ₙᵗ   3
```
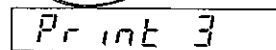
7 Store the C-parameter set using the PRINT key. Then the balance will return to the normal weighing mode.

PRINT)

```
o        ⌐⌐    g
```

$\digamma - \Box$ Data out

	parameter	It is necessary to select the method and condition when data is transmitted. If you use auto print mode, please set both "Auto print polarity" and "Auto print band".	
$Pr \cdot nE$ Data out mode	*$\Box$	PRINT key mode	PRINT key command is accepted only if the display is stable. The display will blink when data is transmitted.
	1	Auto print mode A	Data is transmitted when the display is stable and meets the conditions of "Auto print polarity" and "Auto print band". This standard value is the zero-point. Refer to the figure at the bottom of the page.
	2	Auto print mode B	Data is transmitted when display is stable and meets the condition of "Auto print polarity" and "Auto print band". This standard value is the last weighing data. Refer to the figure at the bottom of the page.
	3	Streem mode	Data is transmitted continuously.
$RP - P$ Auto print polarity	parameter	This parameter sets the polarity condition from the standard value that weighing data is able to transmit.	
	*$\Box$	Data is able to be transmitted when the weighing data is more than the standard value. (It is called "Positive pole")	
	1	Data is able to be transmitted when the weighing data is less than standard value. (It is called "Negative pole")	
	2	Data is able to be transmitted when the absolute value of weighing data is more than a absolute value of standard value. (It is called "Bipolarity")	
$RP - b$ Auto print band	parameter	This parameter sets the band width condition from the standard value that weighing data is able to transmit.	
	*$\Box$	Data is able to be transmitted when the weighing data deviates from the standard value more than 10 digits.	
	1	Data is able to be transmitted when the weighing data deviates from the standard value more than 100 digits.	
	2	Data is able to be transmitted when the weighing data deviates from the standard value more than 1000 digits.	

* Factory setting.

AUTO PRINT MODE:

Case of Positive ploe   Case of Nagative ploe   Case of Bipolarity
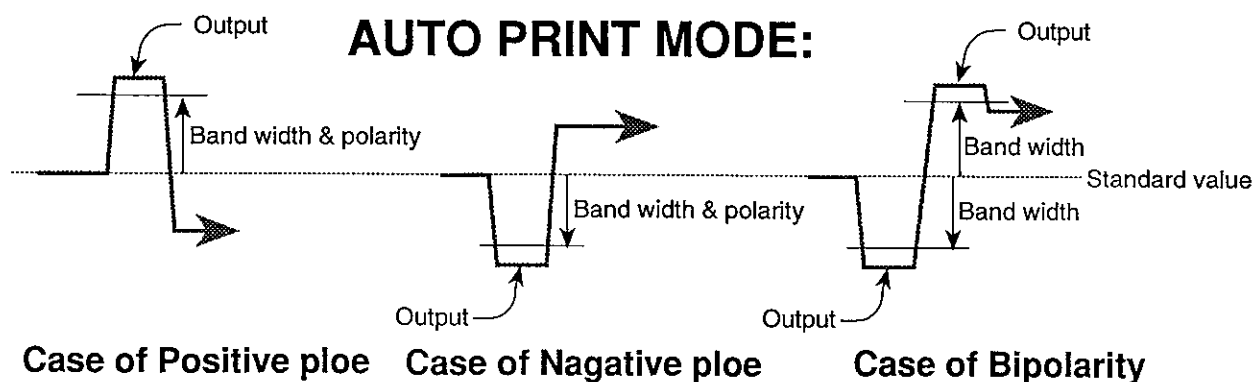
C - $\mathit{4}$ *Continued*

$P\mathit{RU5E}$		Selects the use of a pause. If your printer requires a pause, set this to 1.
Data pause	$*\mathit{0}$	No pause.
	$\mathit{1}$	Using a pause.
Rt - F		Selects whether or not to use Auto feed after printing. (AD-8121A)
Auto feed	$*\mathit{0}$	Not using auto feed
	$\mathit{1}$	Using auto feed
Rr - d		Selects whether to use auto re-zero after transmitting.
Automatically re-zero after data out	$*\mathit{0}$	Not using re-zero
	$\mathit{1}$	Using re-zero
inFo		Selects whether you verify the calibration using printer, a computer or no verification after calibration.
Verifying the calibration	$*\mathit{0}$	No verification of the calibration
	$\mathit{1}$	Verifying the calibration using the AD-8121 printer.
	$\mathit{2}$	Verifying the calibration using a computer.

* Factory setting.

$\mathit{C - S}$ Serial Interface   Settings for options 03 and 05.

		Parameter definition and use.
bPS Baud rate	$\mathit{0}$	600 baud
	$\mathit{1}$	1200 baud
	* $\mathit{2}$	2400 baud
	$\mathit{3}$	4800 baud
	$\mathit{4}$	9600 baud
$\mathit{bt - Pr}$ Parity bit		Parameter definition and use.
	* $\mathit{0}$	7 bits, Even parity check
	$\mathit{1}$	7 bits, Odd parity check
	$\mathit{2}$	8 bits, no parity check
$\mathit{Cr - LF}$ Terminator		Parameter definition and use. (Common setting to both transmitting and receiving.)
	* $\mathit{0}$	C_R , L_F
	$\mathit{1}$	C_R
tYPE Data format		Selects a weighing data format. Refer to the book for the option used.
	* $\mathit{0}$	A&D standard
	$\mathit{1}$	Dump print format
	$\mathit{2}$	KF format
	$\mathit{3}$	MT format
$\mathit{t - UP}$ Receive time		Selects the maximum waiting time between receiving command characters.
	$\mathit{0}$	NO limit
	* $\mathit{1}$	One second. If the time is over, the balance canceles receiving the command.
$\mathit{E - Cod}$ Error code	* $\mathit{0}$	Error codes or <AK> signal are not output.
	$\mathit{1}$	Error codes or <AK> signal are output.
CtS CTS control		Selects the use of the control lines CTS and RTS. Set to "No use" for Current loop interface.
	* $\mathit{0}$	Not using CTS or RTS.
	$\mathit{1}$	Using CTS and RTS. Keep the RTS line (active) high while the computer receive data. The balance will set CTS low if it is busy.

* Factory setting.