

7. OPTION : HD-03(RS-232C SERIAL INTERFACE)

HD-03 RS-232C Serial Interface for connection to a peripheral device such as a Printer, personal computer etc. The input / Output standards conform to EIA-RS-232C. It is DCE (Data Communication Equipment). To interface the option with a personal computer, please use an A&D cable (AX-KO445-200, sold separately) or a cable for a modem.

7 -1. FUNCTION SETTING

When option HD-03 is installed in the scale, the scale's Function Settings in F4-1 to F4-5 are displayed. Please select appropriate settings according to the connected device.

Table 7-1. Function setting for HD-03

Output mode	
*F4 - 1 - 0	Command mode
F4 - 1 - 1	Stream mode
Output data	
*F4 - 2 - 0	Display data (A type), Count (B type)
F4 - 2 - 1	Display data (A type), Weight (B type)
F4 - 2 - 2	Display data (A type), Unit weight (B type)
F4 - 2 - 3	Weight, Unit weight, Count
Data format	
*F4 - 3 - 0	A&D Standard format (AD-8121 mode 1&2)
F4 - 3 - 1	Dump format (AD-8121 mode 3)
F4 - 3 - 2	Others (AD-8119, PC etc.)
Baud rate	
F4 - 4 - 0	600 bps
F4 - 4 - 1	1200 bps
*F4 - 4 - 2	2400 bps
F4 - 4 - 3	4800 bps
F4 - 4 - 4	9600 bps
Stop bit	
*F4 - 5 - 0	1 bit
F4 - 5 - 1	2 bit

7 -2. INTERFACE

Method	Conforms to EIA-RS-232C
Transmission method	Half-duplex, asynchronous
Baud rate	600, 1200, 2400, 4800, 9600 bps
Start bits	1 or 2
Data bits	7
Parity bits	1 (even)
Stop bits	1
Code used	ASCII
Output level	1: -10 V 0: +10V
Terminator	$C_R L_F$ (Send), C_R or $C_R L_F$ (Receive)
Connector	HDB-25P male & HDB-CTF cover

Table 7-2. Pin connection

Pin No.	Signal	Description
1	FG	Frame Ground
2	RXD	Receive Data
3	TXD	Transmit Data
4	RTS	Request to Send
5	CTS	Clear to Send
6	DSR	Data Set Ready
7	SG	Signal Ground
8 to 25	Not used	

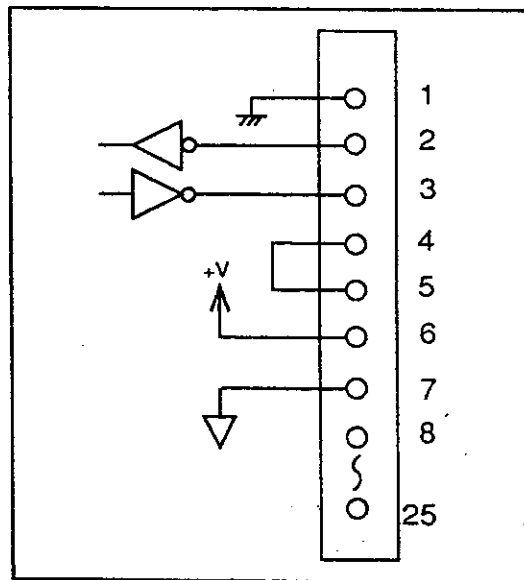


Figure 7-1. Pin connection

7 - 3. COMMAND

Note: Terminator is C_R or C_RL_F. Sp = Space

DATA SETTING COMMAND

Table 7-3. Data setting command

Command + Data to input		Description
D	, 1 . 2 3 4 5	Setting Tare value. Example <AK> (06H)
G	, 1 . 2 3 4 5	Setting Unit weight(g) Example <AK> (06H)
H	, + 1 2 3 4 5 6	Setting Upper limit (piece)
H	, + 1 . 2 3 4 5	Setting Upper limit (g)
L	, - 1 2 3 4 5 6	Setting Lower limit (piece)
L	, - 1 . 2 3 4 5	Setting Lower limit (g)

"Piece" or "g" can be selected by F32 of (FUNCTION SETTING)

DATA REQUEST COMMAND

Table 7-4 Data request command 1/2

Command	Command / Data format (from the scale side)	
S	Requests for Display, Stable data. (being sent when stable) After returning <AK>, confirmation of receipt of the command, the following data is returned.	
	Example	Q T , + 0 0 1 2 3 4 5 6 S P P C Stable PCs data
		S T , + 0 0 1 . 2 3 4 5 S P k g Stable Weight data
		U W , + 0 0 1 . 2 3 4 5 S S P g Unit Weight data
		O L , + 0 9 9 9 9 9 9 9 S P P C PCs data, "E" display
	O L , + 9 9 9 9 . 9 9 9 S P k g Weight data, "E" display	
Q	Request for display data (data is to be immediately returned even	
	Example	U S , + 0 0 1 2 3 4 5 6 S P P C Unstable PCs data Sp kg when weight data, the same as "S" command when stable.
?QT	Request for PCs data (being sent even in other display mode)	
	Example	Q T , + 0 0 1 2 3 4 5 6 S P P C Stable PCs data US, OL may be returned.
?WT	Request for Weight data (being sent even in other display mode)	
	Example	S T , + 0 0 1 . 2 3 4 5 S P k g Stable weight data US, OL may be returned.
?UW	Request for unit weight data (being sent even in other display mode)	
	Example	U W , + 0 0 1 . 2 3 4 5 S S P g Unit weight data

Table 7-5. Data request command 2/2

Command	Data format															
?AQ	Request for Total (accumulated)															
	Example	A	Q	,	+	0	0	1	2	3	4	5	6	S P	P	C
?AN	Request for Number of Additions															
	Example	A	N	,	0	0	1	2	3	4	5	6	Number of addition data			
?TR	Request for Tare value															
	Example	T	R	,	+	0	0	1	.	2	3	4	5	S P	k	g
?HI	Request for Comparator, Upper limit value															
	Example	H	I	,	+	0	0	1	2	3	4	5	6	S P	P	C
		[SP k g]instead of [SP P C] in case of the upper limit in weight.														
?LO	Request for Comparator, Lower limit value															
	Example	L	O	,	-	0	0	1	2	3	4	5	6	S P	P	C
		[SP k g]instead of [SP P C] in case of the lower limit in weight.														

CONTROL COMMAND

Table 7-6. Control command

Command	Command / Data format	
Z	Performs Zero operation (same as the [ZERO] key)	
	Example	Two <AK> to be sent (Command receipt <AK> (06H) and Action completed <AK> (06H))
T	Perform Tare operation (same as the [TARE] key)	
	Example	Two <AK> to be sent (Command receipt <AK> (06H) and Action completed <AK> (06H))
M	Perform Mode change ,Weight - PCS (same as the [MODE] key)	
	Example	One <AK> to be sent.
K	Perform Addition	
	Example	One <AK> to be sent.

In case of errors, an error code is to be returned. For detail, please refer the following error code table.

7 -4. ERROR CODE TABLE

Table 7-7. error code

Error code EC, E<n>		
E < n >	Name	Description
E0	Communications error	Parity error, Framing error etc.
E1	Undefined command	Command does not exist.
E2	Scale not ready	HD is not in a state where a command could be accepted.
E4	Characters over	Command contains too many characters.
E6	Format error	Command contained invalid characters.
E7	Out of range error	Value is out of range. Tare weight is more than capacity, etc.
EC	Comparator value error	Upper limit < Lower limit. "Err C" is displayed.
EI	Scale not ready	Function settings prohibit the command being executed.
EN	Additions over	Additions value exceeded the limit. "Err n"
ES	Time over	Unstable data when zero, tare. "Err S" is displayed.
ET	Total over	Total value exceeded the limit. "Err t" is displayed.

8. OPTION : HD-04 (COMPARATOR / RELAY OUTPUT)

The HD-04 Comparator / Relay Output provides relay-output signals of the comparison results HI, OK, LO for an external device.

8 - 1. FUNCTION SETTING

To use this option, the following function settings are required.
 Comparator (refer {3 -7.Comparator function})

Table 8-1. Function setting for HD-04

Mode	
*F3-1-0	Comparator function off
F3-1-1	On for both stable and unstable data
F3-1-2	On only for stable data
F3-1-3	On for both stable and unstable data except near 0
F3-1-4	On only for stable data except near 0
F3-1-5	On for both stable and unstable + data except near 0
F3-1-6	On only for stable + data except near 0
Data	
*F3-2-0	Comparison in count
F3-2-1	Comparison in weight
Buzzer	
*F3-3-0	No buzzer
F3-3-1	Sound when LO
F3-3-2	Sound when OK
F3-3-3	Sound when HI
F3-3-4	Sound when LO and OK
F3-3-5	Sound when LO and HI
F3-3-6	sound when OK and LO
Hi/Lo limit change disabling	
*F3-4-0	Enabled
F3-4-1	Disabled

8 -2. INTERFACE

Maximum input voltage
Maximum current
Connector

50V
100mA
TCP-0576 (One connector is supplied with
The HD-04)

Table 8-2. Pin connection

Pin No.	Signal
1	HI
2	COM
4	LO
6	OK

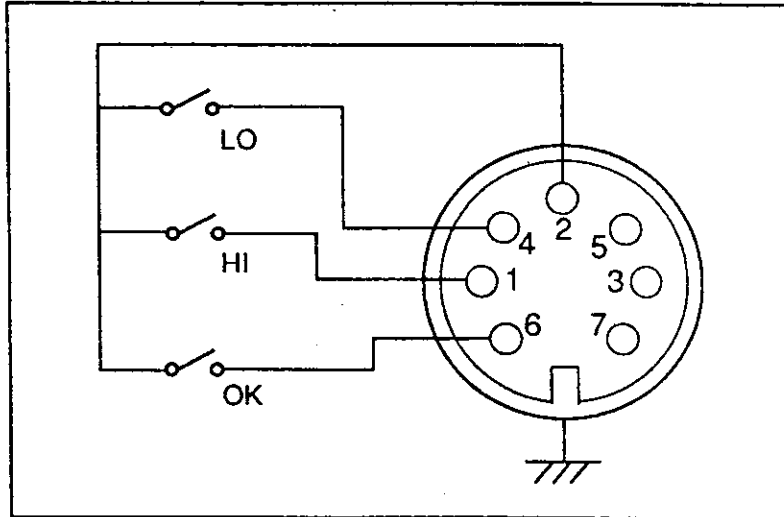


Figure 8-1. Pin connection

9. OPTION : HD-05 (PRINTER INTERFACE / CURRENT LOOP)

HD-05 allows communication similar to the HD-03 using a current loop signal. This is a passive type so an external power supply is required.

9 -1. FUNCTION SETTING

When you connect the HD scale (with HD-05) with the AD-8121 Printer, refer the following function setting.

Table 9-1. Function Setting Table

Function of scale		AD-8121 Print Mode		
		Mode 1	Mode 2	Mode 3
[ENTER/ M+. /PRT] key		F2-1-0 or 2	F2-1-0 or 2	F2-1-0 or 2
Operation Mode	Print key	F2-2-0	F2-2-0	F2-2-0
	Auto Print	F2-2-1	N/A	F2-2-1
Output mode		F4-1-0	F4-1-1	F4-1-0
Output data		F4-2-0 to 3	F4-2-0 to 2	F4-2-0 to 3
Data format		F4-3-0	F4-3-0	F4-3-1
Baud rate		F4-4-2	F4-4-2	F4-4-2
Stop bit		F4-5-0	F4-5-0	F4-5-0

9 -2. INTERFACE

Table 9-2. Pin connection

Pin No.	Signal
3	current loop
5	
Others	Not connected

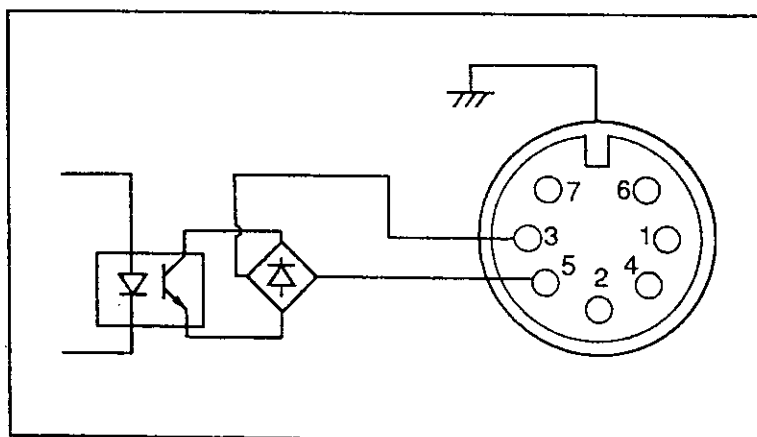


Figure 9-1. Pin connection

10. INSTALLATION OF OPTIONS

Caution

Unplug the AC Adapter and remove the batteries when you install options into the scale. Ignoring this may cause damage to the scale components.

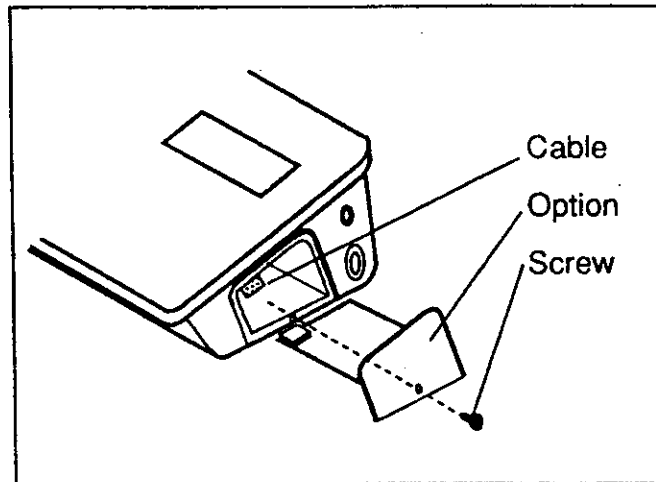


Figure 10-1. Option installation

- Step 1. Unscrew and remove the cover for option slot.
- Step 2. Connect the option's connector to the cable inside the slot.
- Step 3. Install the option using the screw from the cover.
- Step 4. Set the Function Settings according to options being installed.