INSTRUCTION MANUAL

AD-8512

Digital Comparator

A&D *Mercury*
PTY.LTD.

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Contents

1. Introduction

1-1 Features

The AD-8512 is a digital comparator which used in combination with an A&D Weighing Indicator or Electronic Balance, determines the high and low limits of the measured values.

The comparator's major features are as follows:

- Serial data can be directly sent to the comparator from A&D's Weighing Indicators or Electronic Balances (RS-232C, or Current Loop).

- Panel display annunciators and relay output of the comparison results (HI, GO, LO colored LEDs and rear panel terminals) are available.

- Parallel BCD output of converted input data is available.

- The high and low limit setpoints can be input via the keyboard and are displayed on the fluorescent display tube. Input data can also be displayed.

- Various comparator functions can be set via the keyboard. The settings will be stored in random access memory. The RAM stored data, including the high and low setpoint limits, will be retained in the memory for approx. 30 days, until the internal rechargeable backup battery discharges.
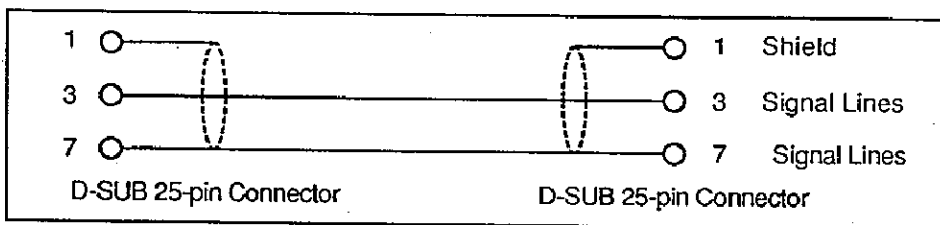
1-2 List of Accessories

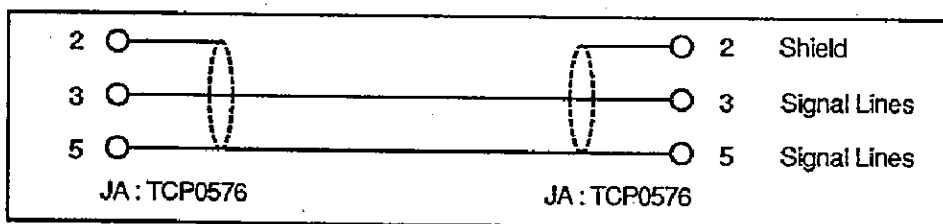| Item	Qty
Power Cable	1
Fuse (0.2A, time-lag)	1
7-pin DIN Connector (JA : TCP 0576)	1

2. Preparation

See 4-1, Names and Functions of the various parts.

1) Grounding/Earthing
Connect a ground/earth wire via the power cable and plug or to the GND terminal on the rear panel.

2) Setting up a comparator system
Set the serial output of the weighing instrument, an electronic balance for example, so that the output matches the input of AD-8512. (7 data bits, 1 stop, 1 Even Parity, ASCII at 600 or 2400 baud).

3) Connecting the Weighing Instrument (See Note below)
Connect the data output cable of the Weighing Instrument to the RS-232C or Current Loop input port on the rear panel of AD-8512.

4) Setting the input selector on AD-8512
Set the input selector on the rear panel of AD-8512 to accept data via the RS-232C or Current Loop interface.

5) Connecting the control output (See Note below)
Connect the control cable to the relay output terminals (COM, HI, LO, GO) on the rear panel or AD-8512.

6) Connecting the data output
Connect the data output cable to BCD OUT on the rear panel of AD-8512.

NOTE: KO:445-200 (optional) is available for the RS-232C using a D-SUB connector. If you use a cable sold on the open market, or make up a cable on your own - it must be wired as follows:

```
1  O----------┐          ┌----------O  1   Shield
3  O----------┼──────────┼----------O  3   Signal Lines
7  O----------┘          └----------O  7   Signal Lines
   D-SUB 25-pin Connector      D-SUB 25-pin Connector
```

D-SUB 25-pin Connector, Pins 2, 4-6, and 8-25 are not connected.

For Current Loop 7-pin DIN, use the optional KO:359-200 cable or wire the accessory DIN connector as follows:

```
2  O----------┐          ┌----------O  2   Shield
3  O----------┼──────────┼----------O  3   Signal Lines
5  O----------┘          └----------O  5   Signal Lines
   JA:TCP0576                  JA:TCP0576
```

(Other pins are not connected)

3. How to Operate

3-1   Power On/Off

(1) Power On:

a) Press the power switch on the front panel of AD-8512.

Comparison results display ---------- HI, GO, LO LED's should come on.
Comparison results relay output ---- HI, GO, LO terminals should be open (not linked).
Data display ----------------------------- The display should be blank.

b) Turn the devices connected to AD-8512 on.
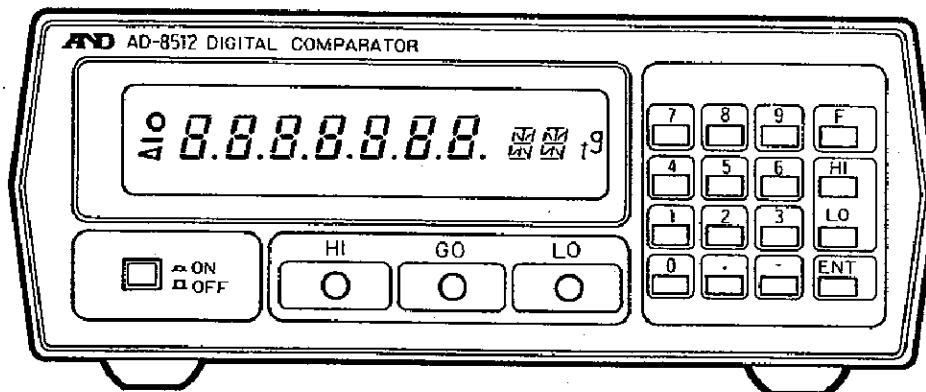c) Input the appropriate setpoint conditions.
As soon as the AD-8512 receives data from an external device, the comparator will start to compare the data with the setpoint limits. See section 3-2 to learn how to input the setpoint limits.

(2) Power Off:

a) Turn the external communication devices off first.
b) Press the POWER switch of AD-8512 to turn the power off.

NOTE: The setpoint values will be kept in the memory after turning the power off. There is no need to input the parameters before every operation. However, if the comparator is left disconnected from the AC power supply for 30 days or more, the values will be lost.

(1) Setting the high and low limits:

a) Press HI to set the high limit,

100.00HI

95.00LO

LO to set the low limit.

The comparator will display the high and/or low limits previously stored in memory.

b) Set the setpoint values required with keys 0 - 9. During this operation, the display will flash. Negative values can also be set.

c) Press the "ENT" (Enter) key to store the set values in the memory.

NOTE:
- If you only want to check the high and/or low, do only (a) and (c) above.
- If you press any of F, HI, and LO keys while making a setting, the setting is canceled and the comparator accepts the setting that corresponds to the pressed key.
- Press - key first to set a negative value.
- Pressing - key while setting a value deletes the least significant digit.an example of operation :

To set 123.45 as the high limit and 123.25 as the low,

| HI | 1 | 2 | 3 | . | 4 | 5 | ENT |

| LO | 1 | 2 | 3 | . | 2 | 5 | ENT |

- The high and low limit values have nothing to do with the measurement unit. The comparator automatically sets the position of the decimal point.
- At the time of shipment, the high limit is set to "999999.9", and the low limit to "-999999.9".

(2) Setting The Comparator Functions and The Baud Rate

- Pressing F key enables you to set the various comparator functions and the baud rate. The functions have corresponding numbers, F0 to F9, as shown below:

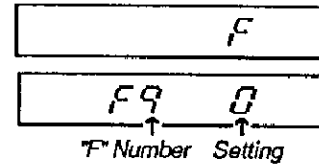| F	FUNCTION	Setting	
		0	1
F0	Double comparison results relay output	Enable output	Disable output
F1	Decimal point character	.	,
F2	Low limit inequation sign	<	≦
F3	High limit inequation sign	<	≦
F4	Comparison time	always Comparator	always ST, OL
F9	Data input baud rate	2400	600

NOTE:
- All the functions above are set to "0" at the time of shipment.
- If the setting of F4 is "1", then the header of the input data must be ST (including WT and QT) or OL. When the header is not ST (OL), the output is off.
- Setting F5 to F8 does not mean a thing.
- Make the above settings as follows.

    (The display blanks.)

1) Press the F key.

2) Press the number key that corresponds to the function you want. The F—number and the current setting appears on the display.
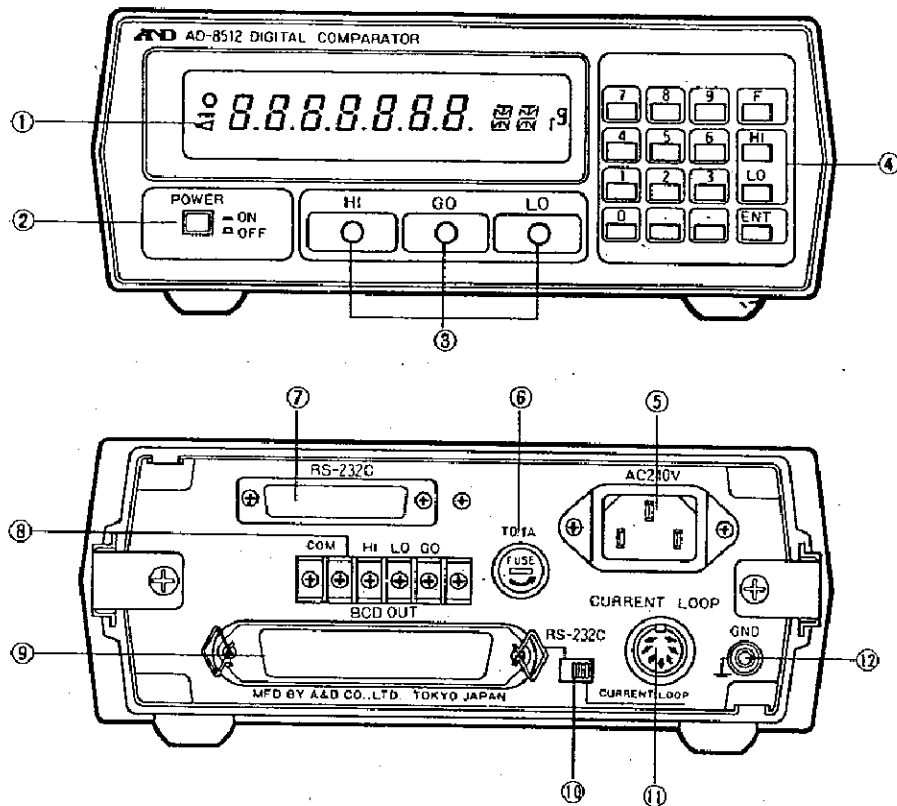
1) Press either 0 or 1.

3) Press ENT key to conclude. The comparator return to its normal operating state.

NOTE: Pressing any one of F, HI, LO, keys while making a setting disables update of the setting.

4. Names and Functions of various parts

## 4-1 Names and Functions of various parts

1) Display ---- display the input data, set values, etc.
2) POWER Switch
3) Display of Comparison Results (HI=red, LO=yellow, GO=green LED)
4) Setting Section --- Used to set the high and low limits, functions etc.
5) Power Connector ---- Connect the power cable here.
6) Fuse Holder ---- Contains a time-lag fuse: 0.1A (AC220-240V)/0.2A (100-120V)
7) RS-232C Data Input ---- D-SUB 25-pin connector
8) Comparison Results Relay Output ---- Connection should be made between COM and HI or LO for a relay (Input rating: DC50V 200mA)
9) Parallel BCD Output ----a 50-pin Amphenol connector
10) Input Selector Switch ---- to select RS-232C/Current Loop input
11) Current Loop Data Input ---- 7-pin DIN connector JA : TCP0576
12) GND Terminal ---- For grounding/earthing the equipment

(1) Display of input data
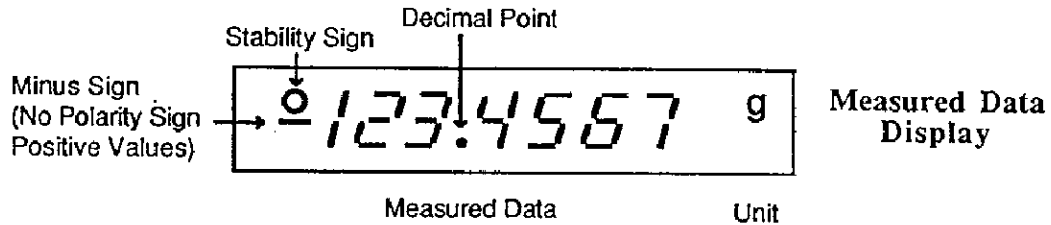
NOTE:

 • The last data block received remains on the display until the comparator receives the next weight data block.

 • When switching back to a measured data display from a setting display, the display turns off until the comparator receives the next weight data.

 • The display shows nothing (or previous data) when: a weighing instrument is <u>not</u> connected to the data input section; the baud rates are mismatched; or the weighing machine's power is off, etc.

(2) Display of upper and lower limits:
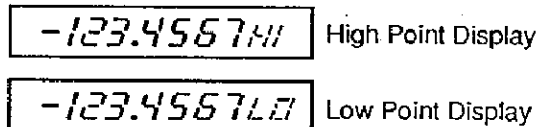
To check the high/low limits stored in the memory:
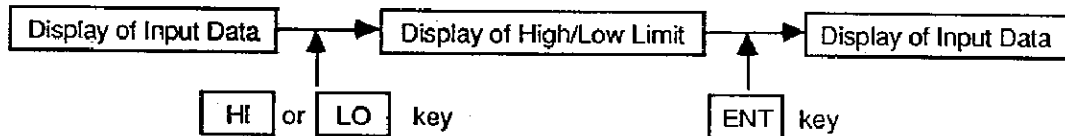
(3) Unit Display

If the received data contains a weight/counting/percentage unit, the appropriate unit will be displayed. The display panel used in AD-8512 is the same as that used in FX/Y balances so any weight unit could, in theory, be displayed. In practice AD-8512 software limits the display and BCD output data to the following units: g, Kg, t, Pct, mm, ct, dwt, OZ, Lb, TL, OZt, PC, GN. Other characters received by AD-8512 as units will not be understood and the display (and BCD out) will be blank for unit data.

NOTE: Counting is displayed as "cnt" on FX/Y balances but the output data is "PC" so it is displayed as "PC" on AD-8512. EK balances display counting as "pcs" but this is abbreviated to "PC" by AD-8512. Percentage is displayed as "Pct" on AD-8512 even though the output data FX/Y is "%", and it is displayed as "%" on EK balances. This is because "%" cannot be displayed on AD-8512. "lb/oz" will be received and displayed as "OZ" only.

- If the received data contains no unit (eg: ER-A series):

    "g" displayed----------When the display is stable (stability symbol is on)

    No unit displayed----When the display is unstable

4-3 Data Input Section

(1) Specifications of the data input section

- Input Method : EIA RS-232C and 20mA Current Loop (active)
- Receive data only (data terminal equipment)
- Signal format : baud rate 600 or 2400, switchable
- Data length in bits : 7 bits
- Stop bit: 1
- Parity bit: 1 EVEN
- Code: ASCII
- Data format matches A&D's Weighing Indicators and Electronic Balances.

(2) Connection Table

Input Method	Pin No.	Signal	Input/Output	Connector
RS-232C	1	Frame grounding	Input	HDB-25S
	3	Receiving data		
	7	Signal grounding		
	8 - 25	Idle		
Current loop	2	Frame grounding	Output	DIN (7pin) Equivalent of TCS0270
	3	Loop (+)		
	5	Loop (-)	Input	
	1,4,6,7	Idle		

RS-232C

Current Loop

BCD Output
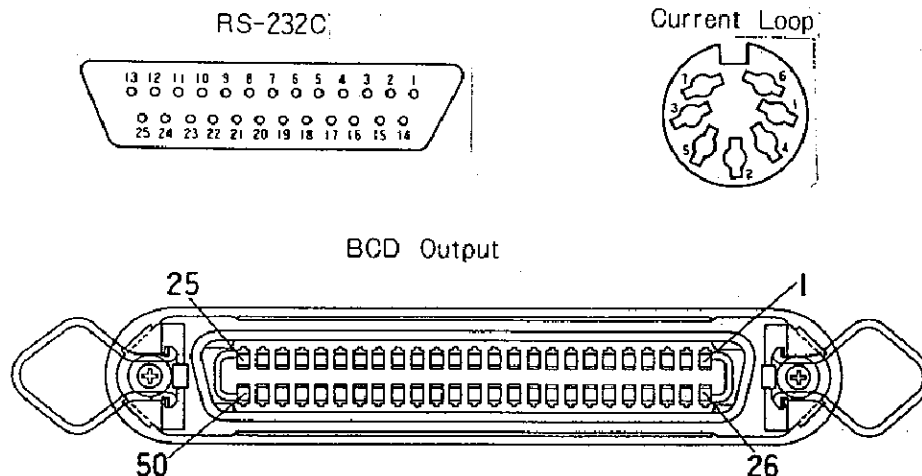
(1) Comparison Results

Contact output Rating :	DC50V 200mA max.	
Input data < low limit:	LO + COM linked.	
Low limit ≤ Input data ≤ high limit:	GO + COM linked.	
High limit < Input data:	HI + COM linked.	

NOTE: The inequalities above are valid only when F2 and F3 are set to zero. (At the time of shipment, both are set to zero.)

(2) BCD Output

a) Output method Parallel BCD TTL level positive logic (fan out 5)

b) Connections: Amphenol Connector : 57-40500 (mating connector : 57-30500)

c) Tables of output data codes:

Pin No.	Signal	Pin No.	Signal
1	Signal Grounding	26	1
2	1	27	2 10^6
3	2 10^0	28	4
4	4	29	8
5	8	30	10^5
6	1	31	10^6 Decimal
7	2 10^1	32	10^7 Point
8	4	33	MD
9	8	34	1
10	1	35	2 Unit A
11	2 10^2	36	4
12	4	37	8
13	8	38	1
14	1	39	2 Unit B
15	2 10^3	40	4
16	4	41	8
17	8	42	Polarity
18	1	43	10^1
19	2 10^4	44	10^2 Decimal
20	4	45	10^3 Point
21	8	46	10^4
22	1	47	Over
23	2 10^5	48	Usually HI
24	4	49	Print command
25	8	50	N.C.

Data

Print Command

approx. 10m sec. positive → ← pulse
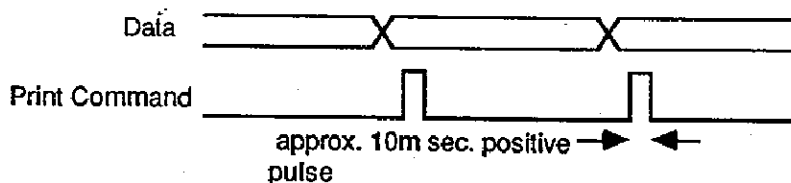
Data	Code			
	8	4	2	1
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
Space	1	1	1	1

Decimal Point	Code						
	10^7	10^6	10^5	10^4	10^3	10^2	10^1
No	1	1	1	1	1	1	1
10^1	1	1	1	1	1	1	0
10^2	1	1	1	1	1	0	1
10^3	1	1	1	1	0	1	1
10^4	1	1	1	0	1	1	1
10^5	1	1	0	1	1	1	1
10^6	1	0	1	1	1	1	1
10^7	0	1	1	1	1	1	1

Display	Unit							
	B				A			
	8	4	2	1	8	4	2	1
g	1	1	1	1	1	0	0	0
kg	0	0	1	0	1	0	0	0
t	1	0	1	1	1	1	1	1
pct	1	1	1	1	0	0	0	0
mm	0	0	1	1	1	1	1	1
ct	1	1	0	1	1	1	0	1
dwt	1	1	0	1	1	1	1	0
oz	1	1	0	1	1	1	1	1
Lb	1	1	1	0	1	1	0	1
TL	1	1	1	0	1	1	1	0
Ozt	1	1	1	0	1	1	1	1
PC	1	1	1	1	1	1	0	1
GN	1	1	1	1	1	1	1	0
Blank	1	1	1	1	1	1	1	1

"pct" stands for %

Polarity	Code
-	0
+	1
No	1

Over	Code
Error Display	0
Usual	1

MO	Code
Display Stable	1
Display Fluctuate	0

5. General Specifications

1) Power supplies: AC 100V, 120V, 220V, or 240V ±10% 50/60Hz
   approx. 8VA. Input voltage is set at the factory and is not changeable.
2) Working Temperature range 0°C-40°C at 85% relative humidity
3) Weight (approx.) 1.6kg/3.52 lb.
4) Configuration and Dimensions

FRONT VIEW

SIDE VIEW

Remove feet for
panel mounting.

REAR VIEW

PANEL CUTOUT

UNIT=mm