AS-330D Series
Intelligent Scale Base
Installation and Setup Manual

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FCC COMPLIANCE STATEMENT

WARNING! This equipment generates uses and can radiate radio frequency and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference in which case the user will be responsible to take whatever measures necessary to correct the interference.

You may find the booklet "How to Identify and Resolve Radio TV Interference Problems" prepared by the Federal Communications Commission helpful. It is available from the U.S. Government Printing Office, Washington, D.C. 20402. The stock no. is 001-000-00315-4.

TRADEMARKS

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Serial Number _____

Date of Purchase_____

Purchased From _____

_____

_____

RETAIN THIS INFORMATION FOR FUTURE USE

PRECAUTIONS

Before using this instrument, read this manual and pay special attention to all "WARNING" symbols:

⚠ IMPORTANT   ⚡ ELECTRICAL WARNING

INTRODUCTION

Thank you for your purchase of our Detecto AS-330D Series Intelligent Scale Base. It was built with Detecto quality and reliability at our factory in Webb City, Missouri. The AS-330D Series is equipped with a bi-directional RS-232C compatible port for communication with a computer. The display is removable and may be mounted on the scale, wall, or counter.

SPECIFICATIONS

Platform Size:

      AS-330D - - - - - - - - - - - - - - - - - 12" x 14", Stainless steel

      AS-333D - - - - - - - - - - - - - - - - - 6" x 10", Stainless steel

      AS-334D - - - - - - - - - - - - - - - - - 6" x 10", Stainless steel

Scale Capacity:

      AS-330D - - - - - - - - - - - - - - - - - 150 lb x 0.05 lb
                                     70 kg x 0.02 kg
                                     150 lb Multi-Interval
                                     0 to 100 lb x 0.5 oz & 100 to 150 lb x 1 oz

      AS-333D - - - - - - - - - - - - - - - - - 17.5 lb x 0.005 lb
                                     7 kg x 0.002 kg

      AS-334D - - - - - - - - - - - - - - - - - 35 lb x 0.01 lb
                                     17.5 kg x 0.005 kg

Load Cell:

      AS-330D - - - - - - - - - - - - - - - - - Cardinal TSP-100kg

      AS-333D - - - - - - - - - - - - - - - - - Cardinal TSP-10kg

      AS-334D - - - - - - - - - - - - - - - - - Cardinal TSP-30kg

Display - 6 digit, 7 segment, red LED, 5/8" high

Annunciators - - - - - - - - - - - - - - - - - - - ZERO, NET, lb, lb-oz, kg

External Controls - - - - - - - - - - - - - - - - ZERO and TARE keys

Power Requirements - - - - - - - - - - - - - - AC Power adapter - 110/120 VAC to 12 VDC

Operating Temperature - - - - - - - - - - - 14 to 104 ºF (-10 to +40 ºC)

The AS 330D Series scales are shipped from the factory in the following configuration:

     9600 Baud   **8 Data Bits**   **No Parity**   **1 Stop Bit**

INSTALLATION & SETUP

Remove the scale from the box. You should have the following components:

- ➢ Scale Base and Stainless Steel Platform
- ➢ Display & Display Bracket (already mounted on the AS-333D/AS-334D)
- ➢ (2) 10-32 x 1/2" Screws (installed in AS-330D base)
- ➢ AC Power Adapter
- ➢ 12 ft. Serial I/O Cable, CPN# 8527-B285-0A (included with the AS-330D Only)
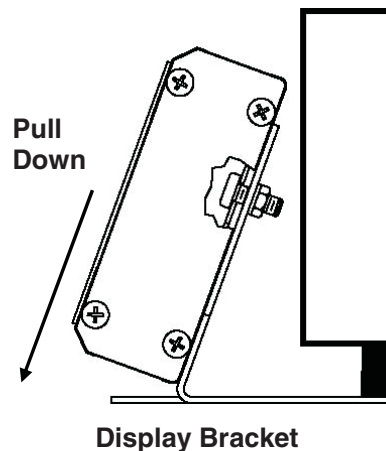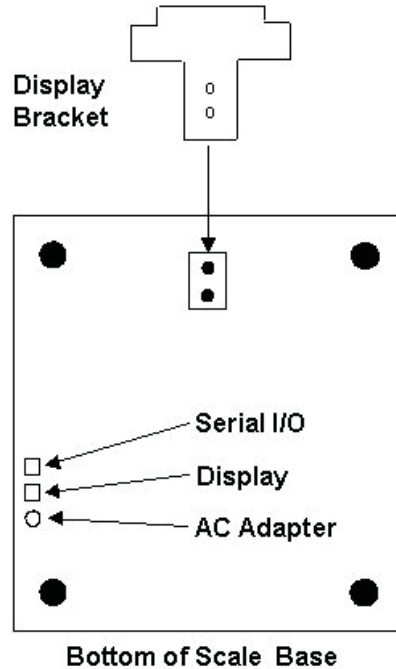
Install AS-330D Display Bracket

1. Set the scale upside down on a flat level surface, such as a table or bench.
2. Remove two 10-32 x 1/2" screws from the block on bottom of scale base.
3. Attach display bracket to scale base by aligning two holes in bracket with two threaded holes in block.
4. Insert screws (removed in step 2) through holes in bracket and after checking for clearance between bracket and side of scale base, tighten securely.

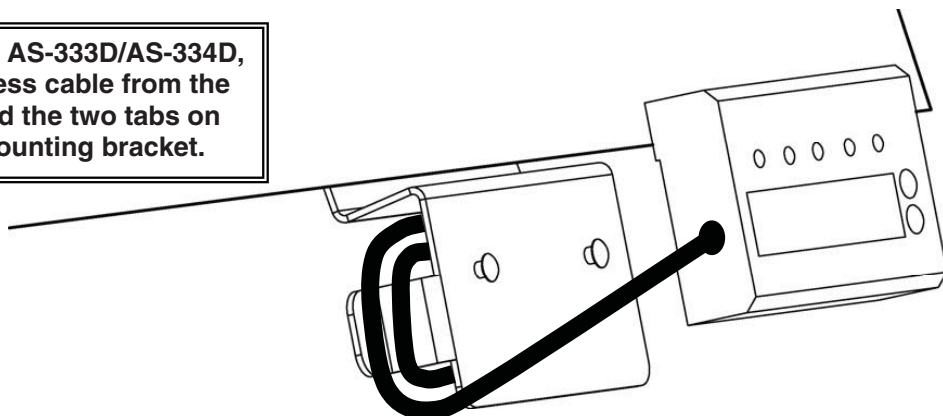## Connect I/O Cables and Level Scale

1. With the scale upside down, connect the display, serial I/O, and AC power adapter cables to their respective receptacles on bottom of scale base.
2. Return scale to upright position and adjust feet to level scale. **NOTE!** On the AS-330D, the level bubble is on top of scale base and on the AS-333D/AS-334D, it is on the base plate.
3. Place stainless steel platform on top of scale base.

Install Display and Complete Installation

1. Align the two slotted holes in display with the two screws in display bracket. Slide display over screws in bracket and gently pull down to secure display.
2. Connect the serial I/O cable to serial port (COM 1 or COM 2) of computer.
3. Plug AC power adapter into a properly ground 110 to 120 volt outlet.
4. The scale should now come on. With nothing on scale platform, press **ZERO** key. The scale should display zero weight.

NOTE! On the AS-333D/AS-334D, wrap any excess cable from the display around the two tabs on the display mounting bracket.
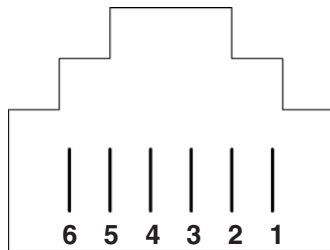

Display Bracket

Bottom of Scale Base

Pull Down

Display Bracket

DIP SWITCH SETTINGS

FUNCTION	SETTINGS	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5
Baud Rate	19,200	OFF	ON			
	9,600[1,2]	ON	ON			
	4,800	ON	OFF			
	2,400	OFF	OFF			
Weight Mode	Pounds & Ounces			ON	ON	
	Pounds only			OFF	ON	
	Kilograms			ON	OFF	
	UPS Pounds Mode[2]			OFF	OFF	
Auto Zero on	YES[1,2]					ON
Power Up	NO					OFF

[1] *Factory setting*   [2] *For UPS WorldShip Users*

SERIAL INTERFACE SPECIFICATIONS

Your AS-330D Series scale has a RS-232 serial port that may be connected to a computer for transmission of weight data. The weight data may be transmitted on demand (on receipt of a command from the computer) or continuously. The figure below shows the Serial Interface connector along with the identity of the pins used.

PIN NO.	FUNCTION
1	DATA INPUT (RXD)
4	SIGNAL GROUND (GND)
6	DATA OUTPUT (TXD)

Serial data from the AS-330D Series scale is transmitted and received using 8 data bits, no parity and one stop bit (8, N, 1). The baud rate may be set using dip switches 1 and 2. The Weight mode is set using dip switches 3 and 4.

The host computer sends request to the scale in the form of ASCII or HEX characters. The following is a list of commands that can be sent by the computer and the scale response:

COMMAND	SCALE RESPONSE
^N (control N, hex 0E)	Scale sends weight data continuously
^O (control O, hex 0F)	Stop continuous weight data
~ (tilde, hex 7E)	Weight data sent once in pounds/ounces mode
W (uppercase W)	Weight data sent once in pounds only mode
K (uppercase K)	Weight data sent once in kilograms mode
^X (control X, hex 18)	Zero the scale from the PC
ESCAPE (ESC, hex 1B)	Reset the scale from the PC
^D (control D, hex 04)	Request the scale software revision

SCALE WEIGHT DATA STRINGS

AS-330D Pounds/Ounces Mode: SspppbLBbww.wbOZbxccE

Where:	S	=	ASCII STX (HEX 02)
	s	=	weight sign (space or -)
	ppp	=	weight lb, leading zero suppressed
	b	=	space
	LB	=	the text "LB"
	ww.w	=	weigh ounces, leading zero suppressed
	OZ	=	the text "OZ"
	x	=	status: M = motion on scale
			C = scale over capacity
	cc	=	checksum - these two characters are the ASCII representation of the computed checksum
	E	=	ASCII ETX (HEX 03)

Pounds Only Mode:

   AS-330D / AS-334D: swwwww.wwxccE
   AS-333D: swwwww.wwwxccE

Where:	s	=	weight sign (space or -)
	wwwww.ww	=	weight - AS-330D / AS-334D (pounds and 2 position decimal weight including the decimal point)
	wwwww.www	=	weight - AS-333D (pounds and 3 position decimal weight including the decimal point)
	x	=	status: M = motion on scale
			C = scale over capacity
	cc	=	checksum - these two characters are the ASCII representation of the computed checksum
	E	=	ASCII ETX (HEX 03)

Kilograms Mode:

   AS-330D: swwwww.wwxccE
   AS-333D / AS-334D: swwwww.wwwxccE

Where:	s	=	weight sign (space or -)
	wwwww.ww	=	weight - AS-330D (kilograms and 2 position decimal weight including the decimal point)
	wwwww.www	=	weight - AS-330D and AS-334D (kilograms and 3 position decimal weight including the decimal point)
	x	=	status: M = motion on scale
			C = scale over capacity
	cc	=	checksum - these two characters are the ASCII representation of the computed checksum
	E	=	ASCII ETX (HEX 03)

If an internal error occurs, the scale will respond with an error string, SEnccE

Where:	S	=	ASCII STX (HEX 02)
	E	=	the Capital letter "E"
	n	=	error code number:
			1 = invalid calibration
			2 = analog failure
			4 = attempt to zero outside zero range
			5 = non-volatile ram write error
			9 = conversion factor error
	cc	=	checksum - these two characters are the ASCII representation of the computed checksum
	E	=	ASCII ETX (HEX 03)

UPS WORLDSHIP OPERATION

Serial Interface

Serial data is transmitted and received using 7 data bits; Odd parity and 2 stop bits (7, O, 2). The baud rate may be set using dip switches 1 and 2. The Weight mode is set using dip switches 3 and 4.

The host computer sends request to the scale in the form of ASCII or HEX characters. The following is a list of commands that can be sent by the computer and the scale response:

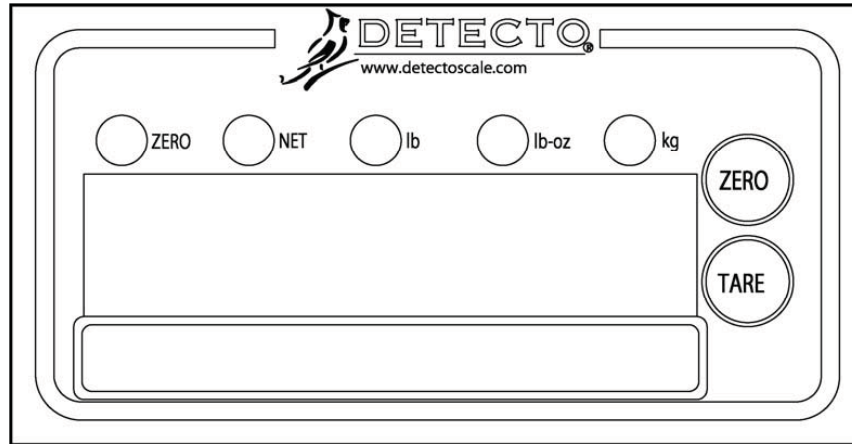| COMMAND	SCALE RESPONSE
^N (control N, hex 0E)	Scale sends weight data continuously
^O (control O, hex 0F)	Stop continuous weight data
W (uppercase W)	Weight data sent once in pounds only mode

Weight Data String

Pounds Only Mode: NXXXXDXXSUUSMMSSCLE

Where:

N	=	Negative sign
XXXXDXX	=	weight (pounds and .05 pound including decimal point)
S	=	Space (SP)
UU	=	Unit of measure (the text "LB")
S	=	Space (SP)
MM	=	Motion indicator: "GR" = weight stable, "gr" = weight in motion
SS	=	Space (SP), Space (SP)
C	=	Carriage return (CR)
L	=	Last field (LF)
E	=	End of transmission (EOT)

KEYPAD FUNCTIONS

ZERO KEY
The **ZERO** key is used to reset the display to zero up to the selected limit of either 4% or 100% of scale capacity. Note that the zero limit is set during setup and calibration of the scale. This key is also be used to clear the Net weight and return to Gross zero.

TARE KEY
Pressing the **TARE** key will cause the current gross weight to be stored as the new tare weight. The display will change to the net weight mode (Net annunciator will turn on).

Tare Operation
1. With the scale display showing *0.00* and the ZERO annunciator on, place item (basket, box, container, etc…) to be tared on scale.
2. Press the **TARE** key.
3. The display will change to *0.00* and the NET annunciator will turn on to show that Net weight is being displayed. The item's weight has been stored as the "Tare weight".
4. Proceed with the weighing operation.
5. When the commodity and container are removed from the scale, the display will return to Gross zero

ANNUNCIATORS

The annunciators are turned on to indicate that the scale display is in the mode corresponding to the annunciator label or that the status indicated by the label is active.

ZERO
This annunciator is turned on to indicate that the weight displayed is within +/- 1/4 division of the center of zero.

NET
This annunciator is turned on to show that the displayed weight is net weight (Gross weight less Tare weight. Note that the NET annunciator is only active when a Tare weight is stored.

lb
This annunciator is turned on to indicate that the displayed weight is in pounds.

lb-oz
This annunciator is turned on to indicate that the displayed weight is in pounds and ounces.

kg
This annunciator is turned on to indicate that the displayed weight is in kilograms.

CALIBRATION

Your AS-330D Series scale was calibrated at the factory during final inspection and should not require adjustment. In the event the scale should need re-calibration, the following calibration procedure should be performed. To maintain the scale's high degree of accuracy, it is recommended that a qualified technician with certified test weights re-calibrate the scale.

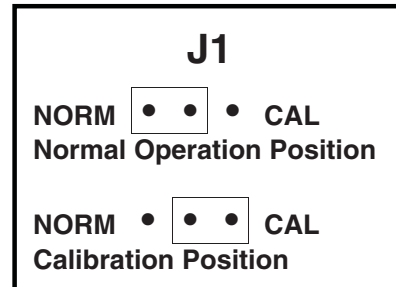Before beginning calibration, the following equipment is required:

- Calibrated test weight   (150 lbs or 70 kg for AS-330D)
  (15 lbs or 5 kg for AS-333D)
  (35 lbs or 15 kg for AS-334D)

- 1/4" slotted screwdriver

To Calibrate The Scale:

1. Disconnect power from the scale and remove the stainless steel platform.

2. Remove the 3 screws securing the circuit board enclosure cover and remove the cover.

3. Locate the Calibration Jumper; J1 and install it on the center and right pins CAL position (refer to the diagram).

> ⚠️ **DO NOT change the J2 jumper setting! The J2 jumper is for factory use only.**

4. Place the stainless steel platform on the scale.

5. Apply power to the scale. The scale display will show [$L0$].

6. Place the appropriate calibrated test weight for your scale and weight mode on the platform and press the **ZERO** key (on the remote display).

7. Starting at the left and advancing right, a series of dashes will appear on the display. The dashes will stay on the display briefly, then the display will change to [$L1$].

8. Remove the test weight from scale platform.

9. Press the **ZERO** key on the remote display.

10. Starting at the left and advancing right, a series of dashes will appear on the display. The dashes will stay on the display briefly, then the display will change to [$P0$], the Zero-Limit prompt.

> **Zero-Limit Feature**
> [$P0$] is the prompt to select whether a 4% limit is placed on the zero operation (the **ZERO** key or a command from a computer). By default the Zero-Limit feature is disabled and the scale can be zeroed up to 100% of the scale capacity. **NOTE!** With the zero-limit enabled, any attempt to zero a weight that is more than 4% of the scale capacity will display the error message [$E4$].
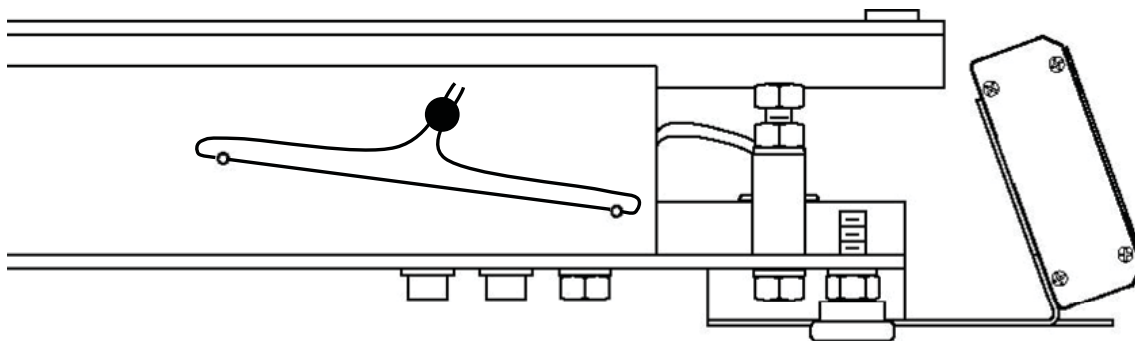
11. If the 100% of scale capacity zero operation is acceptable, press the **ZERO** key and <u>hold it</u> for approximately 3 seconds to save it.

12. If the 4% limit placed on the zero operation is desired, press the **ZERO** key.

13. The display will change to [$P1$].

14. To enable the 4% limit zero operation, press the **ZERO** key and <u>hold it</u> for approximately 3 seconds to save the new setting.

CALIBRATION, Cont.

15. When the setting is saved, the scale will reset, display the software revision and then display weight.

16. Disconnect power from the scale and remove the stainless steel platform from scale.

17. Remove the Calibration Jumper, J1 from the CAL position and install it on the center and left pins NORM position (refer to the diagram above).

18. Replace PC board enclosure cover, securing with the 3 screws removed in step 3.

19. Place the stainless steel platform on scale.

20. Check for proper weighing.

21. The calibration of the scale is now complete and the scale is ready for use.

CALIBRATION SEAL INSTALLATION

If your AS-330D Series scale is used in a commercial application it must be tested and sealed by your local weights and measurements official. The AS-330D Series is designed to accept a lead and wire security seal to prevent unauthorized access to the calibration adjustments. Refer to the figure below for details on the installation of the seal.

ERROR MESSAGES

The AS-330D Series scales are equipped with a diagnostic software program that tests various portions of the scale's circuitry and verifies proper operation. Should a problem be detected, an error message will be displayed alerting the operator to that condition. The following lists the error display and their meaning:

DISPLAY	MEANING
E1	Indicates improper stored calibration data, calibration is necessary. Consult your scale service provider.
E2	The analog to digital circuit has failed. Consult your scale service provider.
E4	Indicates an attempt to zero a weight outside the scale zero range. Refer to the Zero-Limit Feature description, following Calibration Step 10.
E5	Error writing to NOVRAM. Consult your scale service provider.
E9	The working conversion factor does not match the value stored in NOVRAM. Consult your scale service provider.

CARE AND MAINTENANCE

- DO NOT subject the scale platform to sudden shocks or impact.
- DO NOT expose to direct sunlight, temperature extremes or any rapidly moving air source.
- DO NOT use acetone or other volatile solvents for cleaning the scale.
- DO NOT submerge the scale in water, pour or spray water directly on it.
- DO clean the scale with a soft cloth dampened with a mild detergent.
- DO provide good, safe ground and clean AC power.
- DO keep the area around the scale clear to provide adequate air circulation.

STATEMENT OF LIMITED WARRANTY

Detecto Scale warrants its equipment to be free from defects in material and workmanship as follows: Detecto warrants to the original purchaser only that it will repair or replace any part of equipment which is defective in material or workmanship for a period of one **(1) year** from date of shipment. Detecto shall be the sole judge of what constitutes a defect.

During the **first ninety (90) days** Detecto may choose to supply all necessary replacement parts and service during normal weekday working hours at no charge to the buyer.

After the first ninety (90) days Detecto will supply parts and service at the job site provided the owner agrees to pay the Dealer for all travel time, including mileage and test equipment, as well as any expenses incurred over the direct labor of the technician at the job site. This limited warranty honors only labor performed by Detecto authorized dealers.

This warranty does not apply to peripheral equipment not manufactured by Detecto; this equipment will be covered by certain manufacturer's warranty only.

This warranty does not include replacement of expendable or consumable parts. This does not apply to any item which has deteriorated or damaged due to wear, accident, misuse, abuse, improper line voltage, overloading, theft, lightning, fire, water or acts of God, or due to extended storage or exposure while in purchaser's possession. This warranty does not apply to maintenance service. Purchased parts will have a ninety (90) day repair or replacement warranty only.

Detecto may require components be returned to the factory; they must be properly packed and shipping charges prepaid. A return authorization number must be obtained for all returns and marked on the outside of all returned packages. Detecto accepts no responsibility for loss or damage in transit.

STATEMENT OF LIMITED WARRANTY

Conditions Which Void Limited Warranty

This warranty shall not apply to equipment which:
A.) Has been tampered with, defaced, mishandled or have had repairs and modifications not authorized by Detecto.
B.) Has had serial number altered, defaced, or removed.
C.) Has not been grounded according to Detecto's recommended procedure.

Freight Carrier Damage

Claims for equipment damaged in transit must be referred to the freight carrier in accordance with freight carrier regulations.

This warranty sets forth the extent of our liability for breach of any warranty or deficiency in connection with the sale or use of the product. Detecto will not be liable for consequential damages of any nature, including but not limited to, loss of profit, delays or expenses, whether based on tort or contract. Detecto reserves the right to incorporate improvements in material and design without notice and is not obligated to incorporate improvements in equipment previously manufactured.

The foregoing is in lieu of all other warranties, express or implied including any warranty that extends beyond the description of the product including any warranty of merchantability or fitness for a particular purpose. This warranty covers only those Detecto products installed in the forty-eight (48) contiguous continental United States.

DESIGNED & MANUFACTURED IN U.S.A.