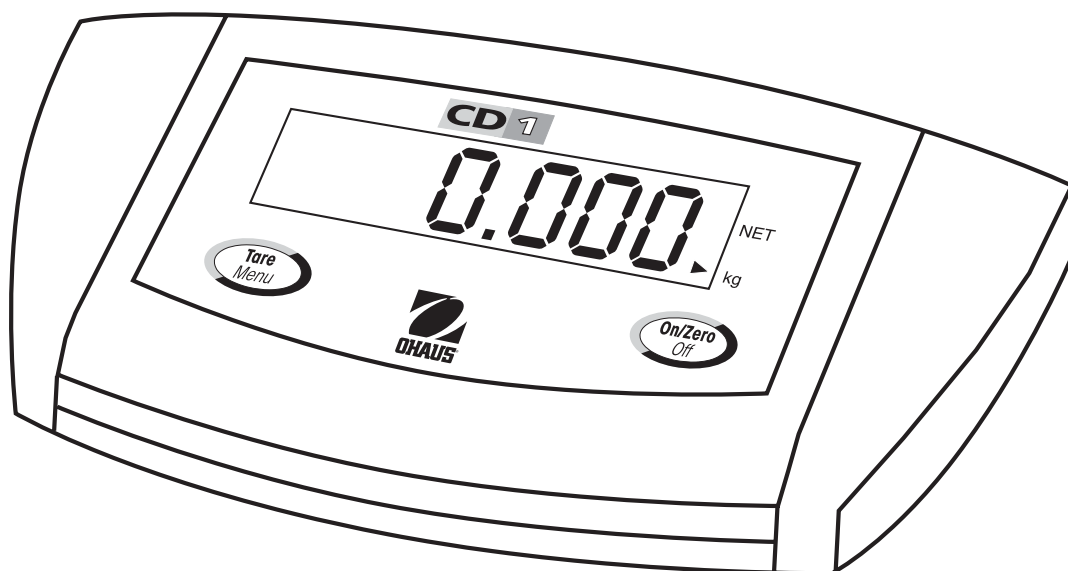




# INSTRUCTION MANUAL

## *Model CD-1 Indicator*






**Ohaus Corporation**, 19A Chapin Road, P.O. Box 2033, Pine Brook, NJ, 07058, USA

**Declaration of Conformity** We, Ohaus Corporation, declare under our sole responsibility that the indicator model listed below marked with "CE" are in conformity with the directives and standards mentioned.

Indicator model CD-1

Marked with:	EC Directive (Including applicable amendments)	Standard
	<b>73/23/EC</b> Electrical equipment for use within specified voltage limits	<b>EN60950:1992</b> Safety of Information Technology Equipment
	<b>89/336/EC</b> Electromagnetic compatibility	<b>EN61326:1997 + A1:1998</b> Electrical Equipment for Measurement, Control and Laboratory Use - EMC requirements

Last two digits of the year which the CE marking was affixed: 02

**ISO 9001 Registration for Ohaus Corporation.** Ohaus Corporation, USA, was examined and evaluated in 1994 by the Bureau Veritas Quality International (BVQI) and was awarded ISO 9001 registration. This certifies that Ohaus Corporation, USA, has a quality system that conforms with the international standards for quality management and quality assurance (ISO 9000 series). Repeat audits are carried out by BVQI at intervals to check that the quality system is operated in the proper manner.



Ted Xia  
President

Ohaus Corporation, Pine Brook, NJ USA

**FCC NOTE:** THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

THIS DIGITAL APPARATUS DOES NOT EXCEED THE CLASS A LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS AS SET OUT IN THE INTERFERENCE-CAUSING EQUIPMENT STANDARD ENTITLED "DIGITAL APPARATUS", ICES-003 OF THE DEPARTMENT OF COMMUNICATIONS CANADA.

CET APPAREIL NUMERIQUE RESPECTE LES LIMITES DE BRUITS RADIOELECTRIQUES APPLICABLES AUX APPAREILS NUMERIQUES DE CLASSE A PRESCRITES DANS LA NORME SUR LE MATERIEL BROUILLEUR: "APPAREILS NUMERIQUES", NMB-003 EDICTEE PAR LE MINISTRE DES

Unauthorized changes or modifications to this equipment are not permitted.

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## 1. GETTING TO KNOW YOUR CD-1 INDICATOR

### 1.1 Introduction

Thank you for deciding to purchase a CD-1 Indicator from Ohaus. The Ohaus CD-1 Indicator is a rugged, reliable, electronic weight indicator designed for easy operation. The CD-1 Indicator can drive one analog load cell and provide capacity selections up to 1,000kg.

The CD-1 Indicator operates from six Alkaline “AA” batteries and can also be powered externally using the supplied AC adapter. A 0.9 inch / 2.3 centimeters high LCD provides easy visibility when working at distances from the indicator. Two membrane switches are mounted on the front panel that enable simple set up procedures. A metal bracket with hardware is included that permits mounting the indicator to a wall or table.

Behind your instrument stands OHAUS, a leading manufacturer of precision Indicators, Scales and Balances. An Aftermarket Department with trained instrument technicians is dedicated to providing you with the fastest service possible in the event your instrument requires servicing. OHAUS also has a Customer Service Department to answer any inquiries regarding applications and accessories.

To ensure you make full use of the possibilities offered by your CD-1 Indicator, please read the manual completely before installation and operation.

#### 1.1.1 Features

Major features include:

- 1:10,000 maximum displayed resolution
- Durable ABS plastic housing in a compact industrial design
- Simple 2 function raised membrane buttons with Tare
- 5-digit, 7-segment, 0.9 inch / 2.3 centimeter high LCD display
- Kilogram weight unit
- AC or battery power
- Load Cell Connector
- Wall mount hardware
- Battery saving Auto Shut-off after five minutes of inactivity (when operated on batteries)

## 2. INSTALLATION

### 2.1 Unpacking and Checking

Open the package and remove the instrument and the accessories. Check the instrument for transport damage. Immediately inform your Ohaus dealer if you have complaints or if parts are missing. Your CD-1 Indicator package should contain:

- |                       |                       |                    |
|-----------------------|-----------------------|--------------------|
| • CD-1 Indicator      | • Instruction Manual  | • Mounting Bracket |
| • Mounting Screws (2) | • AC power adapter    | • Warranty card    |
| • Screw anchors (2)   | • Load Cell Connector |                    |

Store all parts of the packaging. This packaging ensures the best possible protection for the transport of your instrument.

### 2.2 Selecting the Location

The CD-1 Indicator should be used in an environment which is free from vibration, temperature or humidity extremes. These factors will affect displayed weight readings. Scale bases used with the CD-1 Indicator should be located on a stable, level surface and kept away from vibrating sources such as large machinery. Maximum accuracy will be achieved when the working area is clean and vibration free.

### 2.3 Cautionary Notes

- The CD-1 Indicator must not be operated in wet or hazardous areas.
- Before connecting the AC adapter, verify that the indicated voltage corresponds to the local mains voltage.

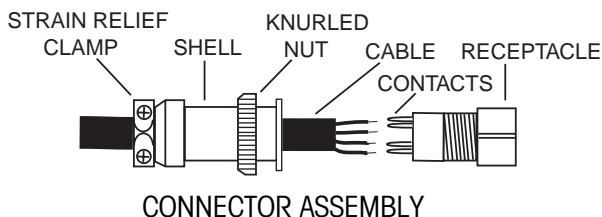
### 2.4 Connecting the CD-1 Indicator to a Scale Base

The scale base is connected to the round, 4-pin connector located on the right side of the CD-1 Indicator. The mating connector supplied in the packaging must be attached to the load cell cable. Slide the connector shell over the load cell cable. Orient as shown in the illustration. Refer to the scale base manufacturer's information to determine the proper load cell connections. Solder the load cell cable to the connector contacts according to table 2-1 and refer to the connector illustration.

**NOTE:** Any extra load cell connection wires should be isolated and insulated.

TABLE 2-1. LOAD CELL CONNECTIONS.

Connector Pin No.	Connection
1	- Excitation
2	- Signal
3	+ Signal
4	+ Excitation



After soldering the wires to the contacts, thread the shell onto the receptacle. Tighten the strain relief clamp over the load cell cable. Plug the connector into the mating connector on the Indicator and tighten the knurled nut.

### 2.5 Connecting Power

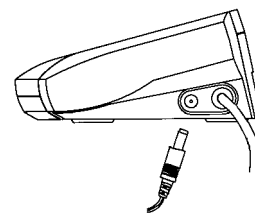
The CD-1 Indicator may be operated using the supplied AC Adapter, or with 6 Alkaline "AA" batteries (not supplied).

#### 2.5.1 AC Adapter

- Connect the AC Adapter connector to the receptacle located at the right-hand side of the CD-1 Indicator and plug the adapter into a convenient outlet.



**NOTICE:**  
The socket/outlet must be installed near the equipment and shall be easily accessible.



AC ADAPTER CORD

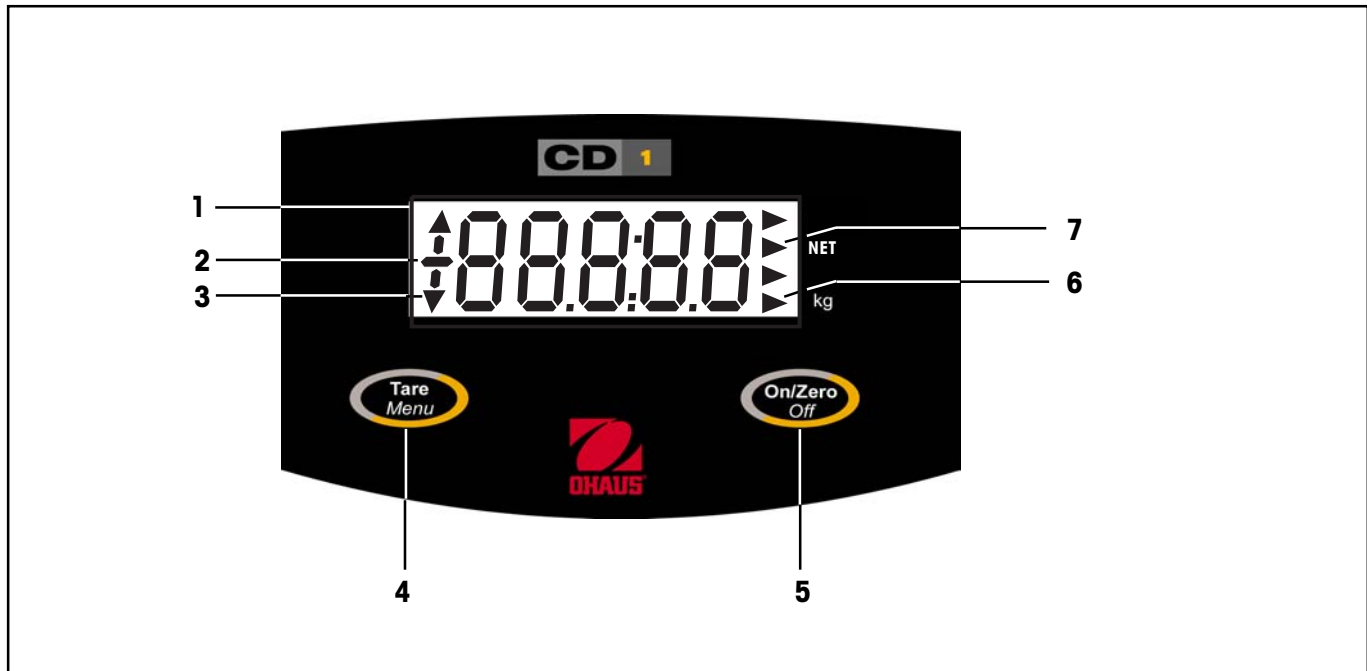
#### 2.5.2 Battery Installation

- Open the battery cover on the bottom of the housing.
- Insert 6 Alkaline "AA" batteries into position. Orient the batteries so that the positive (+) ends rest against the reeds and the negative (-) ends against the springs.

**NOTE:** When the CD-1 Indicator is operated from batteries, the Auto Shut-Off feature is automatically enabled to extend battery life. When no activity occurs within a 5 minute period, the CD-1 Indicator shuts off. This feature cannot be disabled.

### 3. SETUP

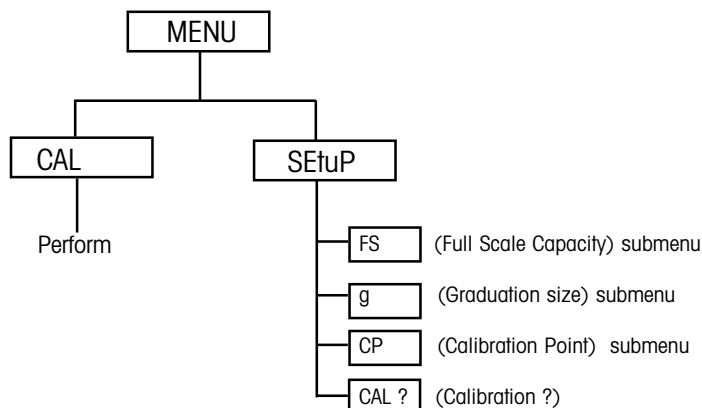
#### 3.1 Overview of Controls and Display Functions



No.	Designation	Function
1	Weight Display	Displays current weight on scale.
2	Minus sign	When displayed, indicates a negative value.
3	Down arrow	When displayed, indicates reading is stable.
4	Tare <i>Menu</i> button	A short press enters the tare weight into memory. A long press (2 seconds) enters the menu mode. When in the menu mode, a short press changes the displayed menu or setting. If a tare has been entered, a short press clears the tare when the platform is empty.
5	On/Zero <i>Off</i> button	A short press turns the Indicator on when the Indicator is off. A short press zeros the display when the Indicator is on. (If a Tare has been entered, the tare is cleared and the display is zeroed). A long press (2 seconds) turns the Indicator off. When in the menu mode, a short press selects the displayed menu or setting.
6	kg arrow	When displayed, indicates unit of measure (kilograms).
7	NET arrow	When displayed, indicates reading is net weight.

## 3.2 Menu Structure

The following table illustrates the menu structure in the CD-1 Indicator.



## 3.3 Available Settings

Table 3-1 shown below indicates the available settings that can be made in the SETuP menu.

TABLE 3-1 SETUP.

Full Scale Capacity <sup>1</sup> (FSxxxx)	Graduation Size <sup>1,2,3</sup> (gxxxx)	Calibration Point <sup>1,2</sup> (CPxxxx)
1	<b>0.001</b>	<b>1</b>
2	<u>0.001</u> , 0.002	1, 2
3	<u>0.001</u> , 0.002	1, 2, 3
5	<u>0.001</u> , 0.002, 0.005	1, 2, 3, 5
6	<u>0.001</u> , 0.002, 0.005	1, 2, 3, 5, 6
10	<u>0.001</u> , 0.002, 0.005, 0.01	1, 2, 3, 5, 6, <u>10</u>
15	<u>0.002</u> , 0.005, 0.01	1, 2, 3, 5, 6, 10, <u>15</u>
20	<u>0.002</u> , 0.005, 0.01, 0.02	1, 2, 3, 5, 6, 10, 15, <u>20</u>
25	<u>0.005</u> , 0.01, 0.02	1, 2, 3, 5, 6, 10, 15, 20, <u>25</u>
30	<u>0.005</u> , 0.01, 0.02	1, 2, 3, 5, 6, 10, 15, 20, 25, <u>30</u>
40	<u>0.005</u> , 0.01, 0.02	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, <u>40</u>
50	<u>0.005</u> , 0.01, 0.02, 0.05	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, <u>50</u>
60	<u>0.01</u> , 0.02, 0.05	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, <u>60</u>
75	<u>0.01</u> , 0.02, 0.05	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, <u>75</u>
100	<u>0.01</u> , 0.02, 0.05, 0.1	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, <u>100</u>
120	<u>0.02</u> , 0.05, 0.1	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, <u>120</u>
150	<u>0.02</u> , 0.05, 0.1	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, <u>150</u>
200	<u>0.02</u> , 0.05, 0.1, 0.2	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, <u>200</u>
250	<u>0.05</u> , 0.1, 0.2	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 250, <u>250</u>
300	<u>0.05</u> , 0.1, 0.2	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 250, 300, <u>300</u>
400	<u>0.05</u> , 0.1, 0.2	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 250, 300, 400, <u>400</u>
500	<u>0.05</u> , 0.1, 0.2, 0.5	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 250, 300, 400, 500, <u>500</u>
600	<u>0.1</u> , 0.2, 0.5	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 250, 300, 400, 500, 600, <u>600</u>
750	<u>0.1</u> , 0.2, 0.5	1, 2, 3, 5, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 250, 300, 400, 500, 600, 750, <u>750</u>
1000	<u>0.1</u> , 0.2, 0.5, 1	1, 2, 3, 5, 6, 10, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 250, 300, 400, 500, 600, 750, 1000, <u>1000</u>

### Notes:

<sup>1</sup> Full Scale Capacity, Graduation Size and Calibration Point initial factory default settings are shown in bold.

<sup>2</sup> Graduation Size and Calibration Point default settings for corresponding Full Scale Capacity are shown underlined.









<sup>3</sup> Graduation Size selections are limited to resolutions from 1:1000 to 1:10000.



### 3.4 Setup Procedure

The SEtUP menu ***must be entered the first time*** the CD-1 Indicator is used to establish the scale base parameters. **Do not calibrate the Indicator prior to establishing parameters in the SEtUP menu.**

This procedure sets up the operating parameters for the CD-1 Indicator to match the scale base.

- Press and hold the **Tare Menu** button. MENU is displayed while the button is pressed and indicates CAL when released.  
- Press the **Tare Menu** button again. SEtUP is displayed. 
- Press the **On/Zero Off** button to enter the SEtUP menu. The display shows the Full Scale sub-menu FSxxxx, where xxxx is the rated capacity of the scale base in kilograms. The last selection is shown. The initial factory default setting FS 1 is shown as an example. 
- If the displayed setting is not the desired value, press the **Tare Menu** button to change to a different setting. If the displayed setting is the desired value, press the **On/Zero Off** button to store and move to the next sub-menu.
- The display shows the Graduation Size sub-menu gxxxx, where xxxx is the readability in kilograms. The initial factory default setting is g0.001. When the Full Scale value is changed, the graduation value is automatically changed to the corresponding default value (Refer to Table 3-1). 
- If the displayed setting is not the desired value, press the **Tare Menu** button to change to a different setting. If the displayed setting is the desired value, press the **On/Zero Off** button to store and move to the next sub-menu.
- The display shows the Calibration Point sub-menu CPxxxx, where xxxx is the calibration point in kilograms. The default setting is CP 1. When the Full Scale value is changed, the calibration point value is automatically changed to match the full scale value. 
- If the displayed setting is not the desired value, press the **Tare Menu** button to change to a different setting. If the displayed setting is the desired value, press the **On/Zero Off** button to store and move to the next sub-menu. The display shows CAL ? (calibrate ?). 
- After the Indicator has been properly set up to match the scale base parameters, ***calibrate the unit before using***. To enter calibration, press the **On/Zero Off** button and start at step 3 in the Calibration Procedure.
- If the menu settings were not changed, press the **Tare Menu** button to return to the weighing mode. 

## 3.5 Calibration Procedure

The calibration procedure can be performed as often as necessary.

1. Make sure the scale base platform is empty, stable and level before starting calibration.

2. Press and hold the **Tare Menu** button. MENU is displayed while the button is pressed and indicates CAL when released.

MENU

CAL

- NOTE:** The calibration process can be terminated at any time by pressing and holding the **On/Zero Off** button until OFF is displayed.

OFF

3. Press the **On/Zero Off** button. -C- is displayed momentarily (Indicator stores the zero load signal) followed by the calibration weight value. CP 1 (1 kg) is shown as an example.

-C-

CP 1

4. Place the indicated calibration weight on the platform, then press the **On/Zero Off** button. -C- is displayed (indicator stores the Cal point load signal), followed momentarily by the indicated calibration weight on the platform.

-C-

1000

5. Remove the calibration weight from the scale base platform. The Indicator is now ready for use.

0.000

## 4. OPERATION

Before using the CD-1 Indicator, make sure it has been properly set up and calibrated. Refer to Section 3 and review settings.

### 4.1 Turning the CD-1 Indicator On/Off

- With the CD-1 Indicator off, press the **On/Zero Off** button. All segments of the display are displayed followed by the software revision Sr x.x. The CD-1 Indicator then goes into the weighing mode. The decimal point position may be different depending on the setup of the CD-1 Indicator.
- To turn the CD-1 Indicator off, press and hold the **On/Zero Off** button until OFF is displayed.



### 4.2 Weighing

- Once the CD-1 Indicator has been properly calibrated and zeroed, place the object to be weighed on the platform.

### 4.3 Zero Operation

- Press the **On/Zero Off** button to zero the CD-1 Indicator. If a tare has been entered, the tare is cleared and the display is zeroed.
- Auto-Zero Tracking** - The automatic zero setting mechanism is permanently set to capture changes of 1 d. No operator actions are required.

STABLE CURSOR



**NOTE:** The stable cursor must be lit to accept zero operation.

### 4.4 Tare Operation

When weighing objects that must be held in a container, taring stores the container weight in the CD-1 Indicator's memory. Taring is possible up to the full scale capacity where the tare value is subtracted from the available capacity. The ► symbol is lit adjacent to **NET** on the front panel. To store the container weight, proceed as follows:

- Place the container on the platform. Sample shown is 50g.
- Press the **Tare Menu** button. The scale is tared and shows Net weight.



**NOTE:** Stable cursor must be lit to accept tare operation.

STABLE CURSOR



If the tare weight is removed from the scale, the Net weight is displayed as a negative value.



## 4.5 Clear Tare Operation

To clear the tared weight stored in memory, press the **Tare Menu** button with no load on the scale base.

## 5. CARE AND MAINTENANCE

To keep the CD-1 Indicator operating properly, the housing should be kept clean and free from foreign material. If necessary, a cloth dampened with water and a mild detergent may be used. Do not allow liquids to enter inside the housing.

### 5.1 Troubleshooting

SYMPTOM	PROBABLE CAUSE(S)	REMEDY
Unit will not turn on.	Adapter not plugged in or properly connected.  Batteries dead or not properly installed.	Check power cord connections.  Make sure adapter connector is plugged all the way into the Indicator.  Check battery connector.  Check orientation of the batteries.  Replace batteries.
Will not zero when turned on.	Load on scale base exceeds allowable 20 % of scale capacity.  Scale base disturbances.	Remove excessive load on scale base to less than 20% of scale capacity.  Remove disturbances.
Cannot zero indicator	Scale base disturbances.	Remove disturbances.
Unable to calibrate unit.	Incorrect value for calibration mass.	Use correct calibration mass.

### 5.2 Error Codes List

The following list describes the various error codes and that can appear on the display.

- Err 1** Over-range error is displayed when capacity plus 9d is reached.
- Err 2** Under-range error is displayed when reading exceeds 9d below zero.
- Err 21** Calibration data checksum error, calibration required.
- CAL E** Calibration error, indicating that the weights were placed in the wrong order, or an incorrect weight was placed on the scale base platform.
- Lo** Low battery indication is displayed when approximately 20 minutes of battery operation remains.

### 5.3 Service Information

For Service assistance in the United States, please call Aftermarket, Ohaus Corporation, toll-free at (800) 526-0659. An Ohaus Product Service Specialist will be available to help you.

For Service assistance outside of the United States, call your local dealer.

### 5.4 Accessories

No accessories are available for this product.

## 6. TECHNICAL DATA

General Specifications	
Capacity	1 to 1,000 kg
Graduation	0.001 to 1 kg
Indicator Dimensions (w x d x h) (in/mm)	9.8 x 5.5 x 2.7 / 250 x 140 x 70
Shipping Dimensions (w x d x h) (in/mm)	12.5 x 9 x 5.3 / 320 x 230 x 135
Indicator Weight (lb/kg)	1.1 / 0.5
Shipping Weight (lb/kg)	2.7 / 1.2
Maximum Displayed Resolution	1:10,000
Stabilization time	Within 3 seconds
Weighing units	kg only
Over Range Capacity	Maximum Capacity +9d
Display (in/mm)	5- digit, 7-segment 0.9 / 23 digit height 1.06 / 27 High x 3.4 / 87 Wide LCD display
Keyboard	tactile raised membrane switches
Power	AC Adapter 9V dc, 100mA or 6 alkaline "AA" batteries (not included)
Typical Battery Life	Up to 40 hours
Auto Shut-Off	5 minutes with no activity (battery operation)
Span Calibration	User selectable from 1kg to 100% of capacity
Load Cell Excitation Voltage	5V dc
Load Cell Input Sensitivity	up to 3mV/V
Load Cell Drive	1 x 350 Ohm Load Cell
Auto-Zero Tracking Capture Range	1 Division (fixed)
Zeroing Range	100% of capacity
Operating Temperature	41°F to 95°F / 5°C to 35°C at 10% to 80% relative humidity
Storage temperature	-4°F to 140°F / -20°C to 60°C at 10% to 95% relative humidity, non-condensing
Construction	Gray ABS housing with black thermoplastic elastomer end caps

## **LIMITED WARRANTY**

Ohaus products are warranted against defects in materials and workmanship from the date of delivery through the duration of the warranty period. During the warranty period Ohaus will repair, or, at its option, replace any component(s) that proves to be defective at no charge, provided that the product is returned, freight prepaid, to Ohaus.

This warranty does not apply if the product has been damaged by accident or misuse, exposed to radioactive or corrosive materials, has foreign material penetrating to the inside of the product, or as a result of service or modification by other than Ohaus. In lieu of a properly returned warranty registration card, the warranty period shall begin on the date of shipment to the authorized dealer. No other express or implied warranty is given by Ohaus Corporation. Ohaus Corporation shall not be liable for any consequential damages.

As warranty legislation differs from state to state and country to country, please contact Ohaus or your local Ohaus dealer for further details.





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