

INSTRUCTION MANUAL

ADR-50DU (Ultrasonic)

UNIVERSAL CLOSURE MONITOR

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FOOD INSTRUMENT CORPORATION
POST OFFICE BOX 66
FEDERALSBURG, MARYLAND 21632 USA

1 (410)754-5714 / 1 (800) KICKOUT
FAX: 1 (410) 754-8796
E-MAIL: ficsales@foodinstrumentcorporation.com
www.foodinstrumentcorporation.com

WARRANTY

The manufacturer warrants each unit for a period of one year to be free of defects in material and workmanship under normal use and service, the obligation of the manufacturer under this warranty being limited to replacing and at the factory of manufacture any part of said unit found to be defective.

This warranty is expressly in lieu of all other warranties and representations, expressed or implied, and all other obligations, liabilities, and consequential damages which might arise out of the utilization of this equipment.

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1 INTRODUCTION

1.0 DESCRIPTION

The ADR-50DU Universal Closure Monitor is a very accurate method to measure the internal vacuum or pressure of cans, glass containers or plastic enclosures with a foil or metalized foil closure on a single file inline basis.

The ADR-50DU is a self contained unit that mounts directly to your conveyor. It consists of the Control Head which contains all of the sensors and control circuits necessary for operation, the mechanical mount and lifter mechanism and rejector. It is complete and ready for installation as supplied.

1.1 FUNCTION

The ADR-50DU consists of two measuring systems. The first is the Position Sense system to locate the container under test and the second is the Ultrasonic Sensing system to measure the lid position and hence the internal pressure.

The Position Sense system utilizes a pulsed infrared light source and tuned infrared receiver to minimize external light or noise interference.

The 50DU Sense system uses ultrasonic sound to project out of the sensor and bounces back to the sensor from an object.

The ADR-50DU is capable of measuring container vacuum or pressure well in excess to 2500 containers per minute. The limiting factor is the speed of the associated reject system. The Standard Speed Rejector or SSR-1000C is capable of rejecting containers of 600 containers per minute, and the High Speed Rejector or HSR-2000 is capable of rejecting containers at a rate in excess of 1200 c.p.m.

- 1.1.1 **FEATURES:** The ADR-50DU uses our ADR-50D processing system that has been used in plants for years. Among the special features of the ADR-50D are the following:
- A. Variable Rate Rejector is standard on the ADR-50D. The reject system will accommodate lines with modulated line speeds without a requirement for purchasing or installing rotary shaft encoders.
 - B. Storage on information production container details of 100 containers for quick changeover.
 - C. Auto-Calibration for instantaneous calibration.
 - D. Password protection at three levels for access control.
 - E. Rolling Average feature provides constant monitoring of your process to detect any changes in process parameters such as fill level, fill temperature, etc. (See 3.2.14).
 - F. Rolling Average Auto-Recalibration. If an unusually large shift in rolling average is encountered, you can program the ADR-50D to recalibrate automatically.
 - G. Counters. Three counters are included in the features of the ADR-50D. They are Total Count, Net Count and Reject Count. Either Total Count or Net Count (total count less reject count) can be displayed, as well as Reject count.
 - H. An RS-232 Communications Port is available to transmit ADR data.
 - I. Programmable Alarms/Controls. The ADR-50D provides as standard a control output when either the Rolling Average Upper Limit or Rolling Average Lower Limit is breached.

1.2 **APPLICATION**

The ADR-50DU can be used with most types of lids. Not recommended for pull tabs (EZ Open). It with metal or plastic lids and is best suited for containers with closures over 2 inch (50mm) diameter. For smaller diameter closures or for glass lines where you want to detect cocked caps, you should consider the ADR-50DB Bantam model. The ADR-50DU will accommodate any closure up to 6.25 inch (160mm) diameter. We can accommodate larger diameter closures on special order.

1.3 **OPTIONS**

1.3.1 CP-1 – Communications Port can send packages of information to a computer which provided output signal for:

1. Good Container Lid Deflection
2. All Container Lid Deflection
3. In-Limit Rolling Average
4. Out-Of-Limit Rolling Average

Note: See Menu 4 on page 3-25 for more information on the above option.

1.3.2 PC – Programmable Counter Controller Controls Package which provides an alarm/control output signal upon:

1. Excess Consecutive Rejects
2. Excess Rejects within a Given Quantity of Containers
3. Excess Rejects within a Given Time Period
4. A Repetitive Pattern of Rejects Developing
5. A Predetermined Count of containers Processed Being Achieved.

Note: See Menu 5 on page 3-29 for more information on the above option.

1.3.3 AIC-110 – Alarm/Indicator Controller Provides an interface between the ADR-50D logic level control signal output and the devices to be driven.

1.4 Thank you for selecting the ADR-50DU Universal Closure Monitor. We appreciate your confidence and will do our best to provide the support necessary to assure successful use of this equipment.

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2 INSTALLATION

2.0 INTRODUCTION

Installation of the ADR-50DU Universal closure monitor has been made as simple as possible, to reduce your installation costs and line down time. By following the procedure outlined, installation will be completed quickly and painlessly.

2.1 LOCATION

Select the position on the line where the ADR-50DU is to be installed. On lines coming from the closing machine, the ADR-50DU should be located at a point where the containers have cooled as much as possible. This will allow the containers to achieve a fairly uniform internal pressure. Variation in temperature will change the internal pressure of the container, reducing the validity of test results. Also, with greater time after closing, more leakage will occur in defective containers with a better chance of detection.

Where containers are drawn from the warehouse for labeling and shipment, the only consideration is convenience of handling. Most installations are made just before the labeler.

The location selected should be close to a leg or support on the conveyor, at a point of maximum conveyor stiffness. Since the unit is supported from a single point on the conveyor side and vibration or movement of the conveyor bed will be transmitted through the support pipe to the sensor housing. Therefore, care should be used in locating the ADR-50DU at a point of minimum movement in the conveyor. *Do not mount the ADR-50DU support pipe on an adjacent wall or building structural member, since the sensors must move with the motion of the conveyor bed. If excess motion is encountered, connect a stiffener from the conveyor to the floor or building structure.*

The ADR-50DU requires about sixteen inches (40cm) of clear line space. It will be necessary to remove the guide rail from one side of the line where the containers are being rejected to.

2.2 POWERE REQUIREMENTS

The ADR-50DU is wired to accept the power supply of the country of installation. It requires single phase power, 50 or 60 hertz at 1 amp. Standard voltages are 100-120 volts or 200-240 volts. Other voltages are available on special order. Check your unit to determine that it is wired for your required voltage before installation. A bright orange sticker at the point of power connection will show the correct power supply for your unit. If this sticker is not in place, be certain to verify power requirements.

NOTE: If the ADR-50DU is supplied with the RIT-800P Regulating Isolation Transformer, the RIT-800P input will be wired for the correct voltage and frequency and the ADR and any accessories such as Variable Rate Reject Controllers requiring external power will be wired for 100-120 volts, regardless of supply voltage. Connect to the 100-120 volt transformer output only to avoid damage to the accessories!

Power for the ADR-50DU should not be taken from a line used to power heavy motors or motor controllers where electrical “noise” is likely to be present on the line.

Compressed air at 2 c.f.m., 60 to 120 p.s.i. (4 to 8 atm.) is required to operate the reject mechanism. For line speeds in excess of 500 c.p.m. The air supply line must be on half inch i.p.s. Minimum.

A filter, regulator and lubricator must be installed in the air line supplying the rejector.

2.3 **PRELIMINARY**

Unpack and remove the Cane and Lifter from its cradle and temporarily clamp it to the conveyor line as shown in the installation drawing on page 2-5.

Unpack the ADR-50DU head and inspect for damages.

Loosen the four fasteners that hold the control panel to the housing (Head) then remove the control panel from the head and set the control panel aside.

Remove the nuts and washers on the top of the housing. Be sure that the tapered side of the lower clamping ring (1, Fig. 2.1) atop the housing mates with the half-ball (2, Fig. 2.1) on the candy cane. Feed the three studs at the top of the housing through the holes in the upper clamping ring and secure with the three lock-washers and 1/4-20 nuts provided. **DO NOT INSTALL NUTS OR WASHERS BETWEEN UPPER AND LOWER CLAMPING RINGS.** (See Fig. 2.1).

Position the housing over the line at the point where the containers are to be checked. Swing the candy can around until the cane lifter assembly is flat against the conveyor side and temporarily clamp the mounting plate to the conveyor so that the pipe is perpendicular to the conveyor bed.

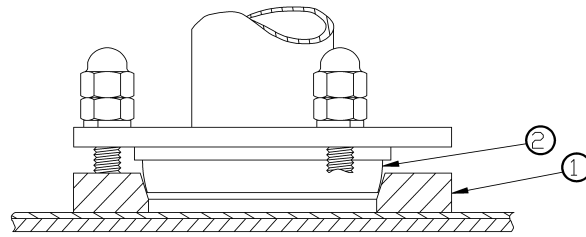


FIGURE 2.1

NOTE: The support pipe may be mounted upstream or downstream from the housing on either side of the conveyor. If the control and indicator lights fall on the wrong side of the line, loosen the ball joint and rotate the housing so that they are where you want them.

With the cane lifter mounting bracket clamped to the conveyor, make a preliminary adjustment for container height. Loosen the two nuts on the locking bar of the cane lifter. The locking bar is the small stainless steel bar located next to the cane on the cane lifter. Crank the lifter handwheel so the lifter is at its highest position. Loosen the four nuts on the top and bottom rings clamping the cane and raise the cane so that there will be about 2 inches (50.8mm) from the bottom of the sensing tube and the tallest container to be checked.

Lower the housing with the lifter handwheel until the bottom of the sensing tube is no less than 1-1/8 inch (28.575mm) and no more than 1-1/2 inch (38.1mm) from the top center of the container. (NOTE: *The closer the sensor is to the container the narrower the ADR reading spread between deflections causing some reject containers to be passed as good or the closer the upper and lower limits may have to be. The further the sensor is from the container the greater the ADR spread between deflections causing some good container to be passed as rejects or the further the upper and lower limits may have to be.*) Adjust the ADR housing so that the top of the container is centered under the sensing tube. Tighten the four nuts on the top and bottom ring clamping the cane and tighten the four acorn nuts to secure them.

Note: Factory installed ultrasonic sensor is mounted 1/4 inch inside the sensing tube and has a dead space of 0 - 1 inch (0 - 25.4mm) from the sensor, not the sensor tube. The sensor has a sensing window range of 1 inch (25.4mm) past the dead space. Therefore if the sensor is less than 1 inch (25.4mm) from the container the sensor will not detect. Also if the sensor is more than 2 inches (50.8mm) away from the container the sensor will not detect.

Remove the tallest container to be tested from the line and replace it with the shortest container to be tested. Crank the cane lifter down to see that the height adjustment will cover the full range. Position the container so that it is centered under the sensing tube. Check to see that the rejector can be mounted on one side of the line and provisions for rejected containers can be made on the other side. If everything is clear, proceed with permanent installation.

2.4 PERMANENT INSTALLATION

2.4.1 EQUIPMENT MOUNTING: Attach the cane lifter assembly to the conveyor bed permanently. If there is insufficient stiffness when the unit is attached, stiffen with bolts and spacers to the other side of the conveyor.

2.4.2 ELECTRICAL INSTALLATION: Bring a power line with ground into the conduit junction box at the lower end of the pipe. Wire as shown in figure 2.2. Connect the black wire (L-1) to the black wire, the white wire (L-2) to the white wire and the green wire (Ground) to green. Connect the wires from the rejector (violet and brown) to the corresponding wires in the conduit box.

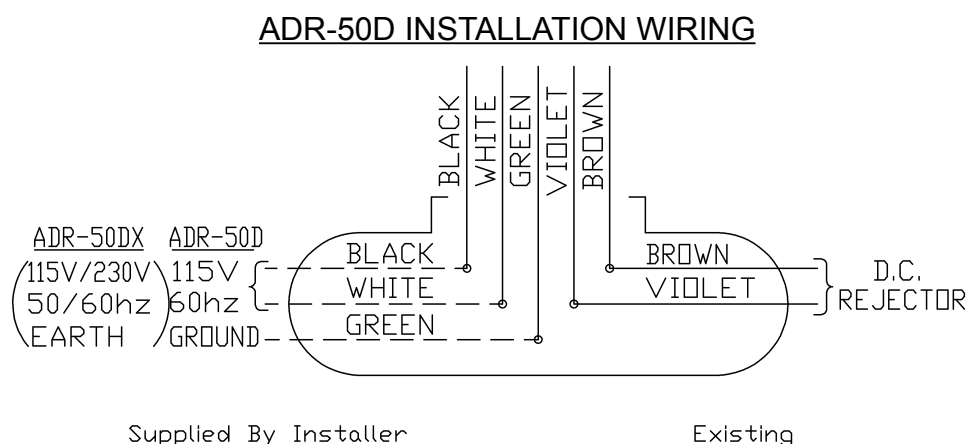


FIGURE 2.2

2.4.3 REJECTOR INSTALLATION: Mount the air cylinder rejector to the side of the conveyor at a convenient point one-half to ten container diameters but no greater than 39.3 inches (999mm) downstream from the center of the photo/light eyes. *We recommend that the rejector be installed at a point between one-half and five container diameters downstream from the photo/light eyes to minimize reject errors.* The rejector should be positioned vertically so that the rubber bumper is slightly below the center of the container to be rejected. Set the rejector so that the stroke is angled downstream about fifteen degrees, not perpendicular to the container flow. If necessary, remove a section of guide rail to clear the rejector bumper. Then slide the rejector forward until the bumper just clears the container. If there is too much space between the rejector bumper and the edge of the container, the rejector stroke may be too short after contact, and the bumper may have accelerated enough to damage the container at impact.

Remove the guide rail on the opposite side of the line for a sufficient distance to clear the containers being rejected. This is usually about one-half container diameter plus 6 inches (152.4mm) downstream from the center and one-half container diameter upstream. It may be necessary to increase this for higher line speeds. Attach a filtered air line to the rear of the rejector.

Attach a reject receiving tray or carry-off device for the rejected containers. This completes installation.

3 OPERATION

3.0 MECHANICAL ADJUSTMENTS

The initial mechanical setup of the ADR is the most critical part of the operation of the unit. Improper adjustments will cause apparent drift and instability, insensitivity or complete failure. In a large percentage of apparent electronic troubles, the cause is really improper mechanical adjustment.

Because of the nature of the ADR-50DU mount, there is some interaction between the various mechanical adjustments, so before starting the line, check carefully to see that the final mechanical settings are correct. (See pages 2-2 through 3-5.)

3.0.1 GUIDE RAILS: Before swinging the ADR-50DU Line Sensor Housing over the line, the guide rails must be set so that there is minimum clearance. Place a sample container between the guide rails at the point where the measurement will be made. Set the rails so there is no more than 1/16 inch (1.5mm) clearance between the container and guide rails. Do not set the rails tight against the container as there will be some variation in diameters.

3.0.2 CENTERING: Swing the unit over the line and lower the head unit the sense tube is center of your sample container. Now lower the head until the bottom of the sensor tube is 1-1/4" (31.75mm) from the top of your sample container. Lock the cane lifter in this position.

Lock the ball joint tightly.

Have you done everything correctly? Check again for the following:

1. Container travels along center of sense tube.
2. Container is 1-1/4 inches (31.75mm) from the sensing tube.

3.1 CALIBRATION/OPERATION

The ADR-50DU uses the same processing and menu system as the ADR-50D, therefore the rest of this manual will reflect the ADR-50D.

The ADR-50D is extremely simple and straightforward to calibrate at initial setup, and even easier to return to the setup for a product you have run before. After you have accomplished the mechanical setup described in section 3.0, you power up, and tell the ADR-50D the distance from the sensor to the rejector. You never have to enter that again, unless the distance changes, (All information you enter is stored in battery powered Random Access Memory, where it will remain until you change the information or for ten years, whichever comes first.)

To calibrate the ADR-50D for a specific container, you tell the ADR-50D that container diameter and then pass a good container under it. THAT'S IT!

You will want to nail things down even closer than that rudimentary setup, but that is the basic calibration procedure, and your ADR-50D will provide you with some protection with no further calibration from the very first container that passes through the ADR.

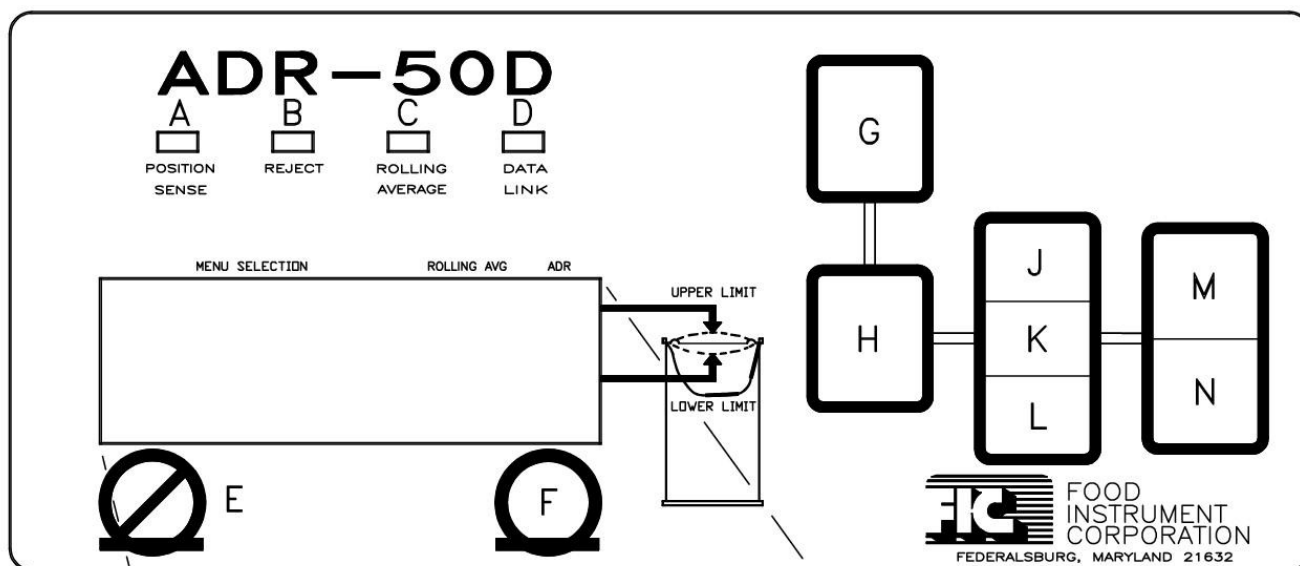
- 3.1.0.1 You communicate with your ADR-50D through the front panel controls and indicators. The ADR reports to you and coaches you through the Liquid Crystal Display (LCD) and LED Status Indicators. You enter instructions through the Keys on the front panel.

In the following text, each step in the setup will be preceded by a bracketed two-number group **[1/03]** which refers to the MENU (**1** in the example), and to the SELECTION from that menu (**03** in the example). These numbers correspond to the numbers in the lower left hand corner of the LCD display panel. To get to the menu you want, repeatedly press the MENU button until it cycles (**1-9**) to the number you want and then SELECT button until it cycles (**01-99**) to the selection you want within the selected menu.

- 3.1.0.2 THE MENUS are groups of like-oriented functions, as follows:

MENU 1 BASIC ADR-50D SETUP PARAMETERS
MENU 2 SETUP FOR CONTAINERS YOU RUN, INSTALLED IN
MEMORY FOR RECALL AS NEEDED
MENU 3 CONTAINER COUNTER CONTROLS
MENU 4 COMMUNICATIONS (Option)
MENU 5 PROGRAMMABLE COUNTERS (Option)
MENU 6 PASSWORD ACCESS
MENU 7 PASSWORD CONTROL AND ENTRY
MENU 8 NOT USED
MENU 9 TEST & INFORMATION

3.1.0.3 FRONT PENEL DISPLAY/CONTROLS



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	A	D	J	.	C	O	N	T	R	A	S	T		5	2	.	5		7	5
B										S	/	A		5	0	.	2		5	1
C		N	E	T	-	0	1	1	4	6	3	2		4	7	.	5		2	5
D	1	/	0	1				0	0	1	1	8		5	3	.	0		9	9

LCD DISPLAY FORMAT

the following list gives the location and description of each of the areas of the Liquid Crystal Display used to communicate visually with you.

<u>AREA</u>	<u>FUNCTION</u>	<u>DESCRIPTION</u>
A1-A12	MENU IDENTIFIER FIELD	Alphanumeric
B1-B7	DATA ENTRY FIELD	Alphanumeric
B10	PASSWORD SECURITY IND.	Alphanumeric
B12	PASSWORD ACCEPTED IND.	Alphanumeric
D1	MANU NUMBER	Numeric, 0-9
D3-D4	SELECTION FROM MENU	Numeric, 00-99
C2-C5	NET COUNT INDICATOR	Alphanumeric
C6-C12	TOTAL CONTAINERS	Numeric, 0-9,999,999
D8-D12	REJECT CONTAINERS	Numeric, 0-99,999
A14-A17	UPPER LIMIT, ROLLING AVG.	Numeric, 00.0-99.9
B14-B17	ROLLING AVERAGE	Numeric, 00.0-99.9
C14-C17	LOWER LIMIT, ROLLING AVG.	Numeric, 00.0-99.9
D14-D17	LAST OUT-OF LIMITS, R.A.	Numeric, 00.0-99.9
A19-A20	UPPER LIMIT, ADR	Numeric, 0-99
B19-B20	ADR READING	Numeric, 0-99
C19-C20	LOWER LIM, ADR	Numeric, 0-99
D12-D20	LAST OUT-OF LIMITS, ADR	Numeric, 0-99

LED INDICATORS

A - POSITION SENSE LED INDICATOR

<u>COLOR</u>	<u>STEADY</u>	<u>BLINKING</u>
GREEN	Photosensor Clear	Containers Running
YELLOW	ADR Not Calibrated	Low Photosensitivity
RED	Static Test	No Signal
DARK	Sensor Blocked	

B - REJECT LED INDICATOR

<u>COLOR</u>	<u>STEADY</u>	<u>BLINKING</u>
RED	Rejector Disabled	Blinks When Rejecting
YELLOW	-----	Blinks – Disabled Reject
DARK	Dark When Idle	Dark When Idle

C – ROLLING AVERAGE LED INDICATOR

<u>COLOR</u>	<u>STEADY</u>	<u>BLINKING</u>
GREEN	Within Limits	----
YELLOW	Accumulating Sample	Low Limit Excursion
RED	Turned Off	High Limit Excursion

D – DATA LINK LED INDICATOR

<u>COLOR</u>	<u>STEADY</u>	<u>BLINKING</u>
GREEN	On	Transmitting
YELLOW	Waiting Data	Bidirectional
RED	Off	Error

SWITCHES

E -	REJECT DISABLE	Prevents Rejector from firing.
F -	REJECT ENABLE	Allows Rejector To Fire.
G -	MENU KEY	Menu Key selects menu numbers 1 – 9.
H -	SELECT KEY	Selects items 1-99 on selected menu.

J/K/L- UP/NEXT/DOWN

Three switches. These switches are used to respond to queries or to enter data. “J”, the UP Key, increments numbers upward at the cursor, or causes the query “YES?” to switch between YES and NO in the display field B1-B5.

“K”, the NEXT Key, moves the cursor left to right in any area where numbers are to be entered into more than one column.

“L”, the DOWN Key, increments numbers downward at the cursor, or causes the query “YES?” to switch between YES and NO in the display field B1-B7.

M/N-CLEAR/ENTER

Two Switches. “M”, the CLEAR Key, is used to clear numbers at the cursor field, changing numbers to “0” or the minimum number for the value. Use the “CLEAR” Key to reset counters to “0” [MENU 3], **NOTE: In ALL cases, you must press the ENTER Key after CLEAR – EXCEPT when using AUTO-CAL [2/03].**

“N”, the ENTER Key. Press ENTER to store information you have generated, either numeric or Yes/No.

[1/03] ADJUST REJECTOR DISTANCE

Keystrokes: UP/DOWN Key, NEXT Key, UP/DOWN Key, NEXT Key, UP/DOWN Key, ENTER

After installation is complete, measure the distance between the Photosensor and the Rejector Bumper. (If you measure in inches, multiply the distance by 25.4 to convert inches to millimeters (mm). Round off to the nearest whole number of millimeters.) Enter the distance in millimeters into the display. Be sure that the correct distance in millimeters (inches X 25.4) is displayed. If there is an error, press **CLEAR** and re-enter the number. Then press **ENTER** to record the distance in memory.

Once this number has been entered and proven, it will never be necessary to alter it until you move the position of the rejector.

3.1.4

[1/04] PROBE SELECT

[illegible]

Keystrokes: UP/DOWN Key, ENTER

The ADR-50DB Bantam utilizes a small Sense Probe exclusively. The ADR-50D and ADR-50DR may use either the standard probe or the miniprobe. The standard probe is used for most can or glass applications. The miniprobe is recommended for use with small diameter closures and pull tab cans. You can identify your probe by inspecting the probe on the reference strip. If the probe is about 1.5 inch (38mm) diameter it is the standard probe. If it is about 1 inch (25mm) diameter, set in a 1.5 inch (38mm) base, it is a miniprobe. Select YES for the Bantam ADR-50DB or the ADR-50D or ADR-50DR equipped with the miniprobe. Select NO for the ADR-50D or ADR-50DR equipped with the standard Probe.

3.1.5

[1/05] DISPLAY UNIT SERIAL NUMBER

[illegible]

Passive screen. Displays your unit serial number and other selected values only.

This completes the line specific information. The information you have entered will not be changed until the Rejector is moved or until the unit is converted from or to Bantam operation.

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3.2. MENU 2 ENTER CONTAINER SPECIFIC INFORMATION

In MENU 2, you set u a file for each container you run. Once you have loaded the data into the file and save it, any time that you run the container, you simply recall that file and load it into the ADR. The ADR is then ready to run that container when you have adjusted the guide rails and container height.

NOTE: PASSWORD SCURITY: If Password Security is active, you cannot enter any parameters until you have entered a valid password **MENU [6/01]**. To change any parameter in Menu 2, a valid password must be entered.

The new value will remain in effect until a new container number is selected **MENU [2/01]**. To make the change permanent, you must save the change at **[2/12]**, which can only be done with the Supervisor's Password entered at **[6/01]**. If you do not save the changes at **[2/12]**, the values in Menu 2 will revert back to the values in effect before you entered the changes.

3.2.1 [2/01] LOAD CONTAINER NUMBER

[illegible]

Keystrokes: UP/DOWN, NEXT, UP/DOWN, ENTER

You can enter data for up to 100 containers. The information to be entered includes Container Diameter, Calibration Level, Accept Range limits, Rolling Average parameters and sensitivity. Once you have established this data for each container you run, to recall the data for the container you are going to run, simply call up Menu **[2/01]**, load the container number and press **ENTER**. The ADR-50D will then be electrically set up to run that container. You will have to adjust the ADR height and your guide rails to accommodate mechanical changes in the container.

3.2.2

[illegible]

Keystrokes: UP/DOWN, NEXT, UP/DOWN, NEXT, UP/DOWN, ENTER

Enter the diameter of the container at the height where it breaks the photosensor/IRLED beam, usually the body diameter for a can or plastic tub or the cap diameter for a jar. This measurement is in millimeters. If you measure in inches, multiply by 25.4 to convert to millimeters. Round off to the nearest whole number.

The range of diameters is 25mm (1 inch) to 165mm (6-1/2 inches). The accuracy of your measurement determines the ability of the Rejector to tack conveyor speed.
BE ACCURATE!

3.2.3

[illegible]

Keystrokes: UP/DOWN (Range 0-4), ENTER

Settings 0, 1 and 2 expand or reduce the value of an ADR reading. A setting of 0 provides the least change in ADR reading for a change in lid position; a setting of 2 gives the greatest change in ADR reading for a change in lid position. Setting 3 increases probe sensitivity for deep cans such as coffee cans, while setting 4 reduces probe sensitivity for containers where the lid is very close to the probe face, such as a jar lid.

3.2.4 [2/04] AUTOMATIC CALIBRATION

A	U	T	O	C	A	L	=	C	L	R							7	5
																	5	0
																	2	5
2	/	0	4															

Keystrokes: CLEAR

To recalibrate the ADR-50D at any time, select Menu **[2/04]** and press the **CLEAR** key. When the next container passes, the ADR-50D will automatically adjust it's calibration to give an ADR value of 50 on the display. This should be done when the conveyor is running, using a known good container. It can be done when there is full container flow, but you then have no knowledge of the quality of the container on which it calibrated.

3.2.5 [2/05] NOT USED

3.2.6 [2/06] NOT USED

3.2.7 [2/07] NOT USED

3.2.8 [2/08] NOT USED

3.2.9 [2/09] NOT USED

3.2.10 [2/10] ADJUST ADR-50D CALIBRATION

A	D	J	.	C	A	L	I	B	R	T	N						7	5
1	2	8															5	0
																	2	5
2	/	1	0															

Keystrokes: UP/DOWN Key repeatedly (Range 00-245), ENTER

This screen allows you to fine-tune your ADR-50D Calibration. This control, used while observing the Rolling Average **[2/16]**, allows you to achieve an extremely accurate calibration based on a large sample (256 containers) on a real-time basis. To achieve a change in the calibration as indicated by the three digit number (second row, left), you pulse the UP or DOWN button to increase or decrease the calibration level (range of 245), then press enter. When you press enter, the Rolling Average **[2/16]** will move slowly to a new value.

3.2.11

[2/11] SET UPPER LIMIT

[illegible]

Keystrokes: UP/DOWN, NEXT, UP/DOWN (Range 00-99), ENTER

The ADR UPPER LIMIT determines the level above which lids that are too high are rejected. This setting can best be determined by observation of reject containers. The Upper Limit controls the “Internal Pressure Too High” set point. (Remember, higher pressure means lower vacuum.) If containers with pressure too high are being accepted, lower the Upper Limit. If containers with acceptable pressure or vacuum are rejected, raise the Upper Limit. A setting of 99 for the upper limit will disable the Upper Limit Reject function.

CAUTION – Setting the LOWER LIMIT higher than the UPPER LIMIT will cause all containers to be rejected.

3.2.12

[2/12] SET LOWER LIMIT

[illegible]

Keystrokes: UP/DOWN, NEXT, UP/DOWN (Range 00-99), ENTER

The ADR LOWER LIMIT controls the reject level below which containers are rejected. This limit rejects low pressure (or high vacuum) containers, as well as containers with missing lids. A setting of 00 disables the Lower Limit Reject function.

CAUTION – Setting the LOWER LIMIT higher than the UPPER LIMIT will cause all containers to be rejected.

3.2.13

[2/13] E-Z OPEN CONTAINERS

EZ	OPEN	=Y?							75
NO									50
									25
2/13									

Keystrokes: UP, ENTER

This menu selection configures the ADR-50D for a Pull-Tab Container (YES or Non-Pull-Tab Container (NO). The UP Key switches the display between YES and NO. When the correct response is displayed, press **ENTER**.

This is not useful for the ADR-50DU.

3.2.14

While the ADR display reflects the instantaneous value for each container, it is very difficult to observe trends until they are well established, perhaps beyond the limits of safety. The Rolling Average will vary very little until there is a change in one or more process parameters, in which case the change will be noted almost immediately. If a change occurs, the Rolling Average will begin to move to a new level, and the new Rolling Average will settle out after 256 containers have passed. At five hundred containers per minute, this change to a new level will be complete in one half minute.

The Rolling Average Limits **[2/14]** and **[2/15]** can be set very close (depending on the uniformity of your process) to the Rolling Average value, usually within 2 or 3. In the example below, the Rolling Average Limits are set to $\pm 2\frac{1}{2}$ of the average reading at 47.5 and 52.5. Thus a relatively minor change in your process will show up as a change in the Rolling Average, and when a limit is exceeded, will cause the Rolling Average LED on the front panel to blink, Red for Upper Limit excursion and Yellow for Lower Limit excursion.

[2/14] ROLLING AVERAGE UPPER LIMIT

RA	UPR.LIMIT	52.5	75
			50
			25
2/14			

Keystrokes: UP/DOWN, NEXT, UP/DOWN, NEXT, NEXT, UP/DOWN, (Range 00.0 – 99.9), ENTER

Do not set UPPER LIMIT lower then LOWER LIMIT!

The rolling Average Upper Limit sets the limit of excursion of the Rolling Average above the nominal center line value (normally 50.0). Center line value is adjusted at [2/10] ADJUST CALIBRATION. When the Rolling Average Display [2/16] is enabled, the Rolling Average Front Panel LED will change to a blinking Red signal whenever the Upper Limit is exceeded.

3.2.15 [2/15] ROLLING AVERAGE LOWER LIMIT

RA	LWR.LIMIT		75
			50
		47.5	25
2/15			

Keystrokes: UP/DOWN, NEXT, UP/DOWN, NEXT, NEXT, UP/DOWN (Range 00.0 – 99.9), ENTER

Do not set UPPER LIMIT lower then LOWER LIMIT!

The Rolling Average Lower Limit sets the limit of excursion of the Rolling Average below the nominal center line value (normally 50.0). Center line value is adjusted at [2/10] ADJUST CALIBRATION. When the Rolling Average Display [2/16] is enabled, the Rolling Average Front Panel LED will change to a blinking Yellow signal whenever the limit is exceeded.

3.2.16 [2/16] ROLLING AVERAGE DISPLAY ENABLE

S	H	O	W		R	A	=	Y	E	S	?	5	2	.	5	7	5
Y	E	S										#	#	.	#	5	0
												4	7	.	5	2	5
2	/	1	6									5	2	.	6	9	4

Keystrokes: UP, UP, ENTER

To enable the Rolling Average function, toggle to YES and press **ENTER**. The Rolling Average will begin to accumulate container ADR values, the Rolling Average LED will turn from Red (Rolling Average off) to solid Yellow, until the full sample has been accumulated. When the 256 container samples has accumulated and averaged, the LED color will change to solid Green if within limits, blinking Yellow if below limits and blinking Red if above limits, and Rolling Average Display will change from ### to a numeric display.

When Rolling Average is active, the most recent out-of-limits maximum value is displayed below the Lower Limit setting display (52.6 in the example above), and will remain displayed until it is displaced by a later excursion.

3.2.17 [2/17] ENABLE ROLLING AVERAGE AUTO-RECALIBRATION

Rolling Average Auto-Recalibration recognizes a sudden change in ADR readings caused by an event such as a change in can ends, and recalibrate the unit to accommodate that change. This is accomplished by taking a small number of ADR readings, averaging those readings and comparing that average to the 256 can rolling average. If an event occurs (such as a new manufacturer's can ends applied) which causes a major shift in ADR readings, that will cause the short average to change to the new ADR reading quickly, while the rolling average will be much slower to change. When the difference between the short average and the rolling average exceeds the threshold amount, then the ADR-50D will automatically recalibrate to bring the rolling average back within the Upper and Lower Rolling Average Limits.

Be extremely careful when implementing this function. It can bite you. If you were to suddenly introduce cold water into your cans instead of product, the ADR-50D would recalibrate with only a few cans rejected before recalibration and proceeding as if all was normal.

To enable this function, press UP to toggle the query to YES, then press **ENTER**.

IF PASSWORD SECURITY IS INSTALLED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

RA	CAL	=YES?	52.5	75
YES			##.##	50
			47.5	25
2/17				94

Keystrokes: UP, UP, ENTER

IMPORTANT – To bring up Menus [2/18] to [2/20], you must press **ENTER** two times at menu [2/17]. These menus are necessary to implement Rolling Average Auto-Calibration. Repeat to turn these menus back off.

3.2.18 [2/18] SHORT AVERAGE SIZE

SHRT	RAV	SIZ	52.5	75
16			##.##	50
			47.5	25
2/18				94

Keystrokes: UP, UP, ENTER

Value toggles through 04, 08, 16 and 32.

This screen selects the number of containers in the short average. Normal practice suggests that a 16 container sample provides the best, most stable and fastest response.

3.2.19 [2/19] ROLLING AVERAGE THRESHOLD SET

RA	THRESHOLD	52.5	75
08		##.##	50
		47.5	25
2/19			94

Keystrokes: UP, UP, ENTER

Value Toggles through 04, 08, 16 and 32.

This screen selects the amount the Short average must diverge from the Rolling Average to trigger the Rolling Average Auto-Recalibrate process. Experience suggests that if a value of 16 is selected for Short Average size, 08 is a good Threshold selection, or 32 Short Average and 16 Threshold.

3.2.20 [2/20] SHORT AVERAGE MINIMUM DEVIATION

RA	CAL	MIN	=	52.5	75
03				##.#	50
				47.5	25
2/20					94

Keystrokes: UP, UP, ENTER

This screen has values of 1 through 8.

The Minimum deviation determines when the unit satisfies the Auto-Calibration requirement. At a setting of 3, when the Short Average is within 3 of the Rolling Average, and maintains within 3, that is judged to be within bounds. The ADR-50D resumes normal operation.

Best results seem to be achieved with a setting of 2 or 3 for the Short Average Minimum Deviation.

3.2.21 [2/21] NOT USED

3.2.22 [2/22] NOT USED

3.2.23 [2/23] NOT USED

3.2.24 [2/24] NOT USED

3.2.25 [2/25] SAVE CONTAINER DATA

SAVE	CONTNR#	52.5	75
18		##.#	50
		47.5	25
2/25		52.6	94

Keystrokes: UP/DOWN, NEXT, UP/DOWN (Range 00 – 99), ENTER

IF PASSWORD SECURITY IS INSTALLED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THEIS MENU SELECTION. SEE PARAGRAPH 3.6.1

To save the data you have entered in the menu selections above, press **ENTER**. This menu selection will default to the container number set in [2/01], so you will normally only press **ENTER**. Be absolutely certain that you have the correct container number assigned on the display, since you will cause the data to be stored in that file, regardless of whether or not another container is stored there.

If you want to create a new container number by altering an existing container's data, enter the new container number and press **ENTER**. Example: If you are running corn in a #10 size can. You have this stored as Container #22. You receive can ends from a different supplier. When running those can ends, the Calibration level **[2/10]** changes from 128 to 141. All other variables you have entered into Menu 2 remain the same. You can go to can #22, change the calibration level from 128 to 141 in menu **[2/10]** and then go to menu **[2/25]** and save container #33. This will save all of menu 2 settings for container #33. You can then run your #10 size cans of corn as either Container #22 or Container #33, depending on which supplier's end is used. This will only work if you do not have to change any mechanical settings on the ADR-50D between containers.

3.3 MENU 3 COUNTER MENU

The ADR-50D incorporates three counters. The total container count is a count of every container that enters the ADR. The Net container count is the total container count minus total rejects, and reject count is total rejects detected. Total and Net counts cannot be displayed simultaneously. Either Total or Net count will be displayed in the seven-digit display area. If the rejector is disabled, any rejects detected will be counted, even if the container was not rejected from the line. All counters accumulate count when containers are running, even if the count is not displayed.

3.3.1 [3/01] COUNTERS DISPLAY ENABLE

S	H	O	W		C	N	T		=	Y	?						7	5
Y	E	S															5	0
					0	0	0	0	0	0	0						2	5
3	/	0	1						0	0	0	0					9	4

Keystrokes: UP, ENTER

Menu **[3/01]** switches between YES and NO when the UP key is pressed. Press **ENTER** when the response you want is displayed. No count numbers are displayed when NO, Both count numbers are displayed when YES.

3.3.2 [3/02] SHOW NT COUNT

S	H	O	W		N	E	T		=	Y	?						7	5
Y	E	S															5	0
					N	E	T	-	0	0	0	0	0	0	0		2	5
3	/	0	2						0	0	0	0					9	4

Keystrokes: UP, ENTER

Menu **[3/02]** switches between YES and NO when the UP key is pressed. Press **ENTER** when the response you want is displayed. Net count is displayed at YES, gross count is displayed at NO.

3.3.3 [3/03] CLEAR ALL COUNTERS

CLR	ALL	CNTS								75
										50
	NET	-0269234								25
3/03		00018								94

Keystrokes: ENTER

This is a passive screen. To clear all three counters, select Menu **[3/03]** and press **ENTER**. This will clear all counters, even if not displayed.

3.3.4 [3/04] CLEAR TOTAL CONTAINER COUNT

CLR	TOT	CNT								75
										50
		0269252								25
3/04		00018								94

Keystrokes: ENTER

This is a passive screen. To clear Total Count, select Menu **[3/04]** and press **ENTER**. Total Count will clear, even if not displayed.

3.3.5 [3/05] CLEAR NET CONTAINER COUNT

CLR	NET	CNT								75
										50
		0269252								25
3/05		00018								94

Keystrokes: ENTER

This is a passive screen. To clear Net count, select Menu **[3/05]** and press **ENTER**. Net Count will clear, even if not displayed.

3.3.6

[3/06] CLEAR REJECTED CONTAINER COUNT

C	L	R		R	E	J		C	N	T						7	5
																5	0
				0	2	6	9	2	5	2						2	5
3	/	0	6				0	0	0	1	8					9	4

Keystrokes: ENTER

This is a passive screen. To clear Rejects count, select menu **[3/06]** and press ENTER. Reject Count will clear, even if not displayed.

**INTENTIONALLY
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3.4 MENU 4 COMMUNICATIONS PORT

Note: Menu 4 is a purchased option. To activate these menus please contact your Representative or contact us at Food Instrument Corporation.

The communications port is an RS-232 port, transmitting ADR data through J-2, labeled COMM. PORT, at the back of the waterproof enclosure. This is not a two-way communications port but a transmit only.

The communications port transmits the following data:

1. Good Container Lid Deflection
2. Bad Container Lid Deflection
(And if selected)
3. Rolling Average
4. Out-Of-Limits Rolling Average

3.4.1 [4/01] ACTIVATE COMMUNICATIONS PORT

RS232	ON=Y?							52.5	75
YES								49.6	50
				0269252				47.5	25
4/01				00018				56.1	94

Keystrokes: UP, UP, ENTER

This screen turns the RS-232 Port ON or OFF. If NO is selected, no RS-232 signal will be transmitted, and the screen 3.4.2 below is inactive.

3.4.2 [4/02] ROLLING AVERAGE TRANSMIT

SEND	RAV=Y?								75
NO									50
				0269252					25
4/02				00018					94

Keystrokes: UP, UP, ENTER

This screen enables transmission of Rolling Average information as well as ADR numbers, when Communications Function is active.

Comm. Link

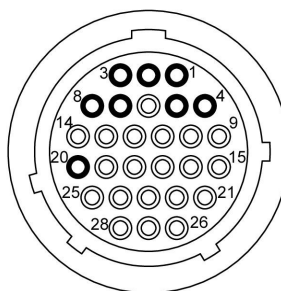
This is the large connector on the back of the waterproof enclosure. It is part of the optional programmable Counter Controller Menus **[5/07]** – **[5/30]** and the RS-232 Communication.

The RS-232 option allows your unit to be connected to a computer via RS-232 Communication (signal out only).

RS-232 Communication

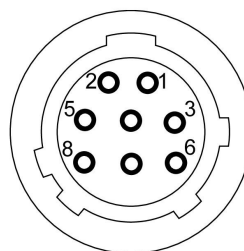
Enclosure Comm. Link Pin-out

Pin 1 – (GND) Ground
Pin 2 – (TXT) Transmit Data
Pin 3 – (RXD) Receive Data
Pin 4 – (RTS) Ready to Send
Pin 5 – (CTS) Clear to Send
Pin 7 – (GND) Ground
Pin 8 – (DCD) Data Carrier Detected
Pin 20 – (DTR) Data Terminal Ready



Tee Cover Comm. Link Pin-out

Pin 1 – (GND) Ground
Pin 2 – (TXT) Transmit Data
Pin 3 – (RXD) Receive Data
Pin 4 – (RTS) Ready to Send
Pin 5 – (CTS) Clear to Send
Pin 6 – (DTR) Data Terminal Ready
Pin 7 – (GND) Ground
Pin 8 – (DCD) Data Carrier Detected



COMMUNICATIONS DATA PACKET INFORMATION

The RS-232 communications (Level 1) consists of data packets that represent either lid deflection or rolling average information. The data packets are composed of a registration byte, a type byte and finally two or more data bytes. This structure is represented in the figure below for the four types of data packets that are supported in this release.

	Reg. Byte	Type Byte	Data Byte
Good Containers Lid Deflection	()	(!)	(5)(0)
Container Lid Deflection	()	(")	(1)(5)
In-Limits Rolling Average	()	(#)	(4)(4)(.)(1)
Out-of-Limit Rolling Average	()	(\$)	(2)(8)(.)(9)

Registration Byte is an ASCII "Space" (hexadecimal '20'). Whenever this byte is seen in the data stream it signifies that a new data packet is beginning. This may occur even if all the data from the preceding packet has not been received. Therefore, the receiving software must keep a constant check for this possibility and discard any incomplete data packet information.

Type Byte is the description of the kind of information in the packet and indirectly the length of the packet. Lid deflection information packet descriptors can be either a (!) exclamation point or a (") quote denoting either a good or bad lid deflection respectively. Good and bad determination is a 50D based decision predicated on the upper and lower lid limit settings.

Rolling Average information packet descriptors can be either a (#) pounds sign or a (\$) dollar sign denoting either an in-bounds or out-of-bounds rolling average respectively. In-Bounds and Out-of-Bounds determination is a 50D based decision predicated on the Rolling Average upper and lower boundary settings.

Data Byte portion of the data packet varies in length based on the type of information being sent by the ADR-50D. For Lid Deflection type packets, the data portion of the packet is 2 bytes (4 bytes for the entire packet). For Rolling Average type packets, the data portion of the packet is 4 bytes (6 bytes for the entire packet).

The RS-232 Transmission characteristic for setting up the users receiver are:
[9600 Baud, 8 data bits, 1 stop bit, odd parity.]

Hardware handshaking is employed using the modem control signals RTS, CTS, DCD and DSR.

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The ADR-50D PC Programmable Alarms/Controls menu presents the selection of control functions programmed for the ADR-50D.

Note that some of these functions are a purchased option, (Menus **[5/07]** – **[5/30]**).

There are seven functions currently available:

1. Rolling Average Out Of Upper Limit – When the Rolling Average Upper Limit is exceeded, an alarm condition occurs. **[5/01]**
2. Rolling Average Out Of Lower Limit – When the Rolling Average Lower Limit is exceeded, and alarm condition occurs. **[5/04]**
3. "J" Consecutive Rejects – When the maximum number of containers (J) are rejected consecutively, and alarm condition occurs. **[5/07]**
4. "X" Rejects in "Y" Containers – When the maximum number of rejects (X) occur in the last (Y) number of containers, and alarm condition occurs. **[5/11]**
5. "S" Rejects in "T" Minutes – When the maximum number of rejects (S) occur within the last (T) minutes, and alarm condition occurs. **[5/16]**
6. Every "Pth" Container, "Q" Times – When every "Pth" (6th for example) container is rejected, (Q) times in a row, and alarm condition occurs. "P" could be set to 6 if you had a six head closing machine, which would alert you to a defective seaming roll. If an alarm occurred. **[5/21]**
7. Terminal Count "N" - Set to alarm at a predetermined count. **[5/26]**

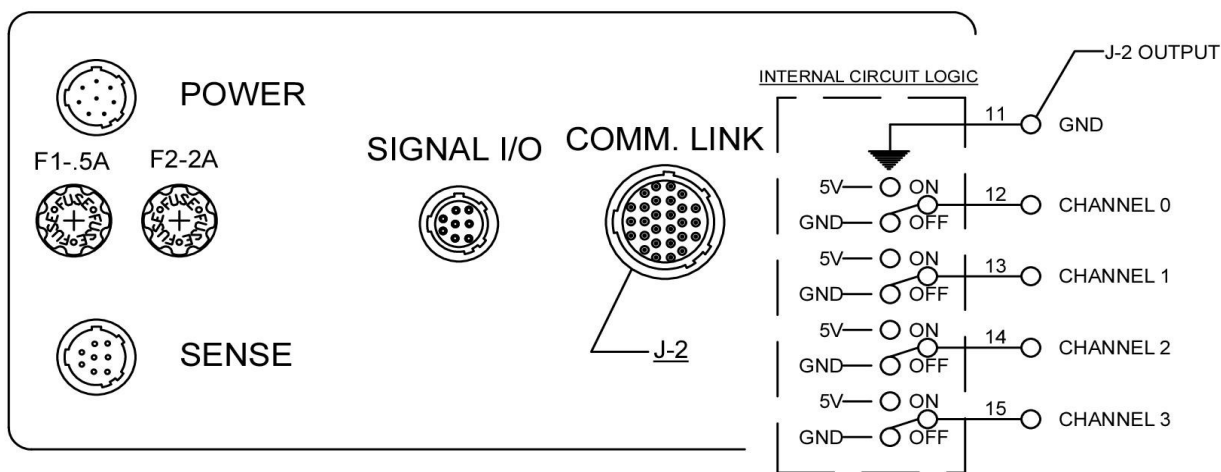
When an alarm condition occurs, a logic level signal occurs at the COMM. LINK Connector (See Figure 3-1). This signal can be fed to the Food Instrument Corporation optional accessory AIC-110 Alarm Indicator/Controller, or to an external controller. These signals can be used to operate an audible or visible alarm, or to switch a motor starter, can stop etc.

This Menu is unique, in that if any function is not made active, then the Menu selections to set other parameters of that function are not displayed.

If one of the primary selections (01, 04, 07, 11, 16, 21, 26) is chosen, it is followed by the screens required for programming that function.

The first screen following, (OFF, 1=.5 ,2=1), disables (-0), selects a 5 volt 50 millisecond output pulse (-1), or a 5 volt 100 millisecond pulse (-2). When a programmed event occurs, the selected output pulse appears at the Comm. Link Connector at the back of the waterproof enclosure (Figure 3.1). When used with the Food Instrument Corporation AIC-110 Alarm Indicator/Controller, the 50 millisecond pulse will cause a momentary contact closure at the AIC-110, while the 100 millisecond pulse will cause a latched contact closure that can only be released with the reset button.

The second screen following, (OUTPUT CAN.), selects one of four available output channels, channel 0, 1, 2 or 3. This screen directs the output pulse to the selected channel, and to the input channel of the AIC-110. More than one function can be assigned to the same output channel. For example, both Rolling Average Upper Limit Alarm and Rolling Average Lower Limit Alarm could be selected to Channel 0. Then, if either an Upper Limit or Lower Limit Alarm occurred, either condition would activate Channel 0.



COUNTERS OUTPUT

Figure 3.1

3.5.1 [5/01] ROLLING AVERAGE UPPER LIMIT ALARM

>RAU-LIM	=Y?	52.5	75
YES		49.6	50
		47.5	25
5/01		56.1	94

Keystrokes: UP, UP, ENTER

This screen turns the Rolling Average Upper Limit Alarm function On or Off. Pressing the UP key toggles the display from YES to NO. **ENTER** must be pressed to make selection.

3.5.2 [5/02] ROLLING AVERAGE UPPER LIMIT ALARM ENABLE

OFF, 1 = .5, 2 = 1	52.5	75
2	52.7	50
	47.5	25
5 / 02	52.8	94

Keystrokes: UP, UP, ENTER

This menu has three selections; 0 (OFF), 1 or 2. If 1 is selected, the logic level output signal is 50 milliseconds at +5 volts. If 2 is selected, the logic level output signal is 100 millisecond at +5 volts.

If 1 is selected, the AIC-110 will switch the selected output ON upon sensing a 50 millisecond pulse, and remain on the 50 milliseconds. Once reset, the AIC-110 output will remain off until the Rolling Average drops below the Upper Limit, and then rises above the Upper Limit again.

Upon sensing a 100 millisecond pulse, the AIC-110 will switch the output ON and latch ON until manually reset. It will not drop out if the Alarm condition ceases.

3.5.3 [5/03] ALARM OUTPUT CHANNEL SELECT

OUTPUT CHAN.	52.5	75
2	52.7	50
	47.5	25
5 / 03	52.8	94

Keystrokes: UP, UP, ENTER

This screen selects the output channel for the Alarm signal. Four channels are available, 0, 1, 2 and 3. More than one Alarm signal can be assigned to any channel. You can program both the Upper Limit and Lower Limit Rolling Average Alarm to channel 0, and if either limit is exceeded, that channel will be activated.

3.5.4 [5/04] ROLLING AVERAGE LOWER LIMIT ALARM

<	R	A	L	-	L	I	M	=	Y	?		5	2	.	5		7	5	
	N	O											5	2	.	7		5	0
													4	7	.	5		2	5
5	/	0	4										5	2	.	8		9	4

Keystrokes: UP, UP, ENTER

This screen turns the Rolling Average Lower Limit Alarm function On or Off. Pressing the UP key toggles the display from YES to NO. **ENTER** Must be pressed to make selection.

3.5.5 [5/05] ROLLING AVERAGE LOWER LIMIT ALARM ENABLE

0	F	F	,	1	=	.	5	,	2	=	1		5	2	.	5		7	5	
2														5	2	.	7		5	0
														4	7	.	5		2	5
5	/	0	5											5	2	.	8		9	4

Keystrokes: UP, UP, ENTER

Same as 3.5.2 above.

3.5.6 [5/06] ALARM OUTPUT CHANNEL SELECT

OUTPUT	CHAN.	52.5	75
2		52.7	50
		47.5	25
5/06		52.8	94

Keystrokes: UP, UP, ENTER

Same as 3.5.3 above.

NOTE: Menus **[5/07] – [5/30]** are functions that are purchased options. To activate these menus please contact your Representative or contact us at Food Instrument Corporation.

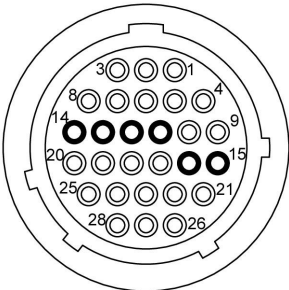
This connector is part of Menus **[5/07] – [5/30]** and are located at the back of the waterproof enclosure or on the conduit tee at the bottom of the cane. It is part of the optional Programmable Counter Controller and the RS-232 Communication menus **[4/01] - [4/02]**.

The Programmable Counter Controller is used to connect the AIC-110 or other alarms and/or turn on or off a conveyor or other systems.

Programmable Counter Controller

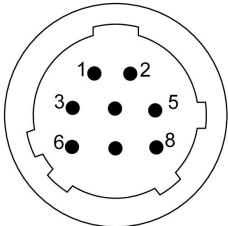
Enclosure Comm. Link Pin-Out

- Pin 11 – (GND) Ground
- Pin 12 – Channel 0
- Pin 13 – Channel 1
- Pin 14 – Channel 2
- Pin 15 – Channel 3
- Pin 16 – 5 Volt



Tee Cover Counter Controller

- Pin 1 – (GND) Ground
- Pin 2 – Channel 0
- Pin 3 – Channel 1
- Pin 4 – Channel 2
- Pin 5 – Channel 3
- Pin 6 – 5 Volt



3.5.7 **[5/07] J IN A ROW REJECTS**

J	I	N	R	O	W	=	Y	?	5	2	.	5	7	5
Y	E	S							5	2	.	7	5	0
									4	7	.	5	2	5
5	/	0	7						5	2	.	8	9	4

Keystrokes: UP, UP, ENTER

This screen selects or deselects the “J” Rejects in a row function.

3.5.8 [5/08] J IN A ROW REJECTS ALARM ENABLE

OFF, 1 = . 5, 2 = 1	52.5	75
2	52.7	50
	47.5	25
5 / 08	52.8	94

Keystrokes: UP, UP, UP, ENTER

Same as 3.5.2

3.5.9 [5/09] ALARM OUTPUT CHANNEL SELECT

OUTPUT CHAN.	52.5	75
2	52.7	50
	47.5	25
5 / 09	52.8	94

Keystrokes: UP, UP, ENTER

Same as 3.5.3

3.5.10 [5/10] SET VALUE OF J

VALUE OF J?	52.5	75
17	52.7	50
	47.5	25
5 / 10	52.8	94

Keystrokes: UP, UP, NEXT, UP, UP, ENTER

Selects a value for "J" consecutive rejects; range 2 – 32.

3.5.11 [5/11] "X" REJECTS IN "Y" CONTAINERS

X in Y = YES	52.5	75
YES	52.7	50
	47.5	25
5 / 11	52.8	94

Keystrokes: UP, UP, ENTER

This screen turns the "X" rejects in "Y" containers function On or Off. Pressing the UP key toggles the display from YES to NO. Enter must be pressed to make selection.

3.5.12 [5/12] "X" IN "Y" ALARM ENABLE

OFF, 1 = . 5, 2 = 1	52.5	75
2	52.7	50
	47.5	25
5 / 1 2	52.8	94

Keystrokes: UP, UP, UP, ENTER

Same as 3.5.2

3.5.13 [5/13] ALARM OUTPUT CHANNEL SELECT

OUTPUT CHAN.	52.5	75
2	52.7	50
	47.5	25
5 / 1 3	52.8	94

Keystrokes: UP, UP, ENTER

Same as 3.5.3

3.5.14 [5/14] SET THE VALUE OF "X" REJECTS

VALUE OF X?	52.5	75
77	52.7	50
	47.5	25
5 / 1 4	52.8	94

Keystrokes: UP, UP, NEXT, UP, UP, ENTER

This screen sets the number of rejects in a given sample size that will cause and alarm. Range 1 – 99.

3.5.15 [5/15] SET THE VALUE OF 'Y' NUMBER OF CONTAINERS

VALUE	OF	Y?								52.5	75
0100										52.7	50
										47.5	25
5/14										52.8	94

Keystrokes: UP, UP, NEXT, UP, UP, NEXT, UP, UP, NEXT, UP, UP, ENTER

This Screen sets the value of “Y”, determining the number of containers in which “X” rejects will cause an alarm. Range 10 – 9000.

3.5.16 [5/16] “S” REJECTS IN “T” MINUTES ALARM

S	IN	T	=	Y	e	s	?					52.5	75
YES												52.7	50
												47.5	25
5/16												52.8	94

Keystrokes: UP, UP, ENTER

This screen turn the “S” Rejects in “T” Minutes function On or Off. Pressing the UP key toggles the display from YES to NO. ENTER must be pressed to make selection.

3.5.17 [5/17] “S” REJECTS IN “T” MINUTES ALARM ENABLE

OFF, 1 = .5, 2 = 1												52.5	75
2												52.7	50
												47.5	25
5/17												52.8	94

Keystrokes: UP, UP, UP, ENTER

Same as 3.5.2

3.5.18 [5/18] “S” REJECTS IN “T” MINUTES ALARM OUTPUT CHANNEL SELECTOR

OUTPUT	CHAN.	52.5	75
2		52.7	50
		47.5	25
5/18		52.8	94

Keystrokes: UP, UP, ENTER

Same as 3.5.3

3.5.19 [5/19] SET VALUE OF “S” REJECTS

VALUE	OF S?	52.5	75
15		52.7	50
		47.5	25
5/19		52.8	94

Keystrokes: UP, UP, NEXT, UP, UP, ENTER

This screen sets the number of REJECTS, Range 2 – 30.

3.5.20 [5/20] SET VALUE OF “T” MINUTES

VALUE	OF T?	52.5	75
30		52.7	50
		47.5	25
5/20		52.8	94

Keystrokes: UP, UP, NEXT, UP, UP, ENTER

This screen sets the number of minutes of test period. Range 1 – 30 minutes.

3.5.21 [5/21] EVERY “Pth” CONTAINER, “Q” TIMES

1 of P/Q	=YES	52.5	75
YES		52.7	50
		47.5	25
5/21		52.8	94

Keystrokes: UP, UP, ENTER

This screen turns Every “Pth” Container function ON or Off. Pressing the UP key toggles the display from YES to NO. **ENTER** must be pressed to make selection.

3.5.22 [5/22] EVERY "Pth" CONTANER ALAM ENABLE

OFF, 1 = . 5, 2 = 1	52.5	75
2	52.7	50
	47.5	25
5 / 22	52.8	94

Keystrokes: UP, UP, ENTER

Same as 3.5.2

3.5.23 [5/23] EVERY "Pth" CONTAINER ALARM OUTPUT CHANNEL SELECTOR

OUTPUT CHAN.	52.5	75
2	52.7	50
	47.5	25
5 / 23	52.8	94

Keystrokes: UP, UP, UP, ENTER

Same as 3.5.3

3.5.24 [5/24] SET VALUE OF "P"

VALUE OF P?	52.5	75
06	52.7	50
	47.5	25
5 / 24	52.8	94

Keystrokes: UP, UP, NEXT, UP, UP, ENTER

Set the number of containers in the cycle. Range 2 – 99

3.5.25 [5/25] SET VALUE OF "Q"

VALUE OF Q?	52.5	75
30	52.7	50
	47.5	25
5 / 25	52.8	94

Keystrokes: UP, UP, NEXT, UP, UP, ENTER

This screen sets the number of repetitions to trigger an alarm. Range 2 - 30

3.5.26 [5/26] ALARM AT PREDETERMINED COUNT

TERM	CNT	=Y?	52.5	75
YES			52.7	50
			47.5	25
5/26			52.8	94

Keystrokes: UP, UP, ENTER

This screen Enables or Disables Alarm At Predetermined count. When enabled, it will alarm when the total count that you have programmed is reached.

3.5.27 [5/27] PREDETERMINED COUNT ALARM ENABLE

OFF, 1=.5, 2=1	52.5	75
2	52.7	50
	47.5	25
5/27	52.8	94

Keystrokes: UP, UP, ENTER

Same as 3.5.2

3.5.28 [5/28] PREDETERMINED COUNT CHANNEL SELECTOR

OUTPUT CHAN.	52.5	75
2	52.7	50
	47.5	25
5/28	52.8	94

Keystrokes: UP, UP, ENTER

Same as 3.5.3

3.5.29 [5/29] SET PREDETERMINED COUNT "N"

VALUE OF N?	52.5	75
0060000	52.7	50
	47.5	25
5/29	52.8	94

Keystrokes: UP, UP, NEXT, UP, NEXT, UP, UP, ENTER

This screen sets the number of containers at which the alarm triggers.

3.5.30 **[5/30]** DISPLAY CURRENT VALUE OF “N”

S	T	A	T	I	C		T	-	C	N	T		5	2	.	5		7	5
0	0	5	9	9	9	9							5	2	.	7		5	0
													4	7	.	5		2	5
5	/	1	7										5	2	.	8		9	4

Keystrokes: None

When selected, Menu **[5/30]** displays the count remaining before the alarm triggers.

Menu 6 consists of one selection only. This Menu will not be displayed if the PASSWORD system is disabled. When the PASSWORD system is active, you must enter your password in this system, except to adjust the Contrast or to Enable or Disable the Rejector from the front panel. It will be necessary to use the Supervisor's Password to alter or make a change on some Menu Selections. These Menus will be identified in the Instruction Manual with the following box:

IF PASSWORD SECURITY IS INVOIKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

3.6.1 **[6/01] ENTER PASSWORD FOR ACCESS**

P	A	S	S	W	O	R	D		?	?	?							7	5
0	0	0	0						S	/	A							5	0
																		2	5
6	/	0	1																

Keystrokes: UP/DOWN, NEXT, UP/DOWN, NEXT, UP/DOWN, NEXT, UP/DOWN, ENTER

When a correct Password has been entered, the “**A**” of the **S/A** will appear, indicating that the Password has been accepted. You will be able to alter the ADR-50D settings until the Password Time expires. When the time expires, you must re-enter your Password at Menu **[6/01]** to continue. You can cancel your Password entry at any time by recalling Menu **[6/01]** and pressing the **CLEAR** button.

To gain access to **Menu 7** when password security is invoked, after entering the supervisor's password at Menu **[6/01]** you must press the Menu key.

**INTENTIONALLY
LEFT BLANK**

IF PASSWORD SECURITY IS INVOKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

This Menu allows you to invoke the Password system, install up to three different passwords (numerical values 0001 – 9999) and to set the length of time after the Password has been accepted before the system stops accepting entries. The ADR-50D is shipped with passwords set as follows:

Supervisor's Password (#1)	1000
Password number 2	2000
Password number 3	3000

The first Menu, **[7/01]**, controls the Supervisor's Password, Password #1. This Password, in addition to allowing access to all Password protected functions, allows changing of passwords, invoking or disabling Password Protection and setting the length of time a password will allow changes before the system becomes secure again. Password 2 and 3 are available on Menus **[7/02]** and **[7/03]** respectively. Only the Supervisor's Password can gain access to any selection on Menu 7.

To the right of the Password display is a two-part message, **S/A**. The **S** indicates that the Password Security is ON. When this message is displayed, Password Security is active and no one can make any adjustment to any ADR parameters without entering a valid password. When the **S** is absent, security has not been invoked and anyone can make adjustments to the ADR-50D. **MENU 6** will not appear. The **A** indicates that the Password had been ACCEPTED and the authorized personnel can make changes to the system.

3.7.1 [7/01] SET SUPERVISOR'S PASSWORD

IF PASSWORD SECURITY IS INVOKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

S	E	T		P	A	S	S	W	R	D	1							7	5
1	0	0	0															5	0
																		2	5
7	/	0	1																

Keystrokes: UP/DOWN, NEXT, UP/DOWN, NEXT, UP/DOWN, NEXT, UP/DOWN, ENTER

To change the Supervisor's password, the current Supervisor's password must be entered at Menu **[6/01]** to gain access to this menu. Once accessed, the Password can be set to any value between 0001 and 9999. Do not select 0000 as a password. Menu **[6/01]** always starts at 0000. If you use 0000 as your password, then every time Menu 6 is selected it will recognize 0000 as a valid password and open the system to change. Unit Password Security is turned ON Menu **[7/05]**, any one can change passwords or system parameters.

3.7.2 [7/02] SET PASSWORD 2

S	E	T		P	A	S	S	W	R	D	2							7	5
2	0	0	0															5	0
																		2	5
7	/	0	2																

Keystrokes: UP/DOWN, NEXT, UP/DOWN, NEXT, UP/DOWN, NEXT, UP/DOWN, ENTER

To change Password 2, insert any value between 0001 and 9999 (see above), then **ENTER**.

3.7.3

[7/03] SET PASSWORD 3

IF PASSWORD SECURITY IS INVOKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

[illegible]

Keystrokes: UP/DOWN, NEXT, UP/DOWN, NEXT, UP/DOWN, NEXT, UP/DOWN, ENTER

To change Password 3, insert any value between 0001 and 9999 (see above), then **ENTER**.

3.7.4

[7/04] SET PASSWORD TIME ON/OFF

IF PASSWORD SECURITY IS INVOKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

PW	TIME (MIN)					75
15						50
						25
7/04						

Keystrokes: UP/DOWN, NEXT, UP/DOWN (Rang 01 – 15 minutes), ENTER

When Password Security is enabled, the Password Timer is started when a valid Password is entered. Access to secure menus is allowed until the Password times out or until the Password is CLEARED at Menu **[6/01]**. with this Menu, **[7/04]**, that time can be set between 1 minute and 15 minutes. After entering the Supervisor's Password at Menu **[6/01]**, enter the Maximum length of time you want the Password active in this menu and then press **ENTER** to store it in memory.

[7/05] ENABLE/DISABLE PASSWORD SECURITY

IF PASSWORD SECURITY IS INVOKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

[illegible]

Keystrokes: UP, UP, ENTER

This menu ENABLES or DISABLES the password security system. By pressing the UP Key you can switch between YES and NO in the highlighted block on the display. Select the proper response and press ENTER.

MENU 8

INTENTIONALLY
LEFT OUT

3.9 MENU 9 SYSTEM TESTS

This menu provides tests for the bench technician when troubleshooting the ADR-50D. Non of these Menu Selections is used during operation of the ADR-50D. These pages are provided for information purposes only.

3.9.1 [9/01] STATIC TEST

S	T	A	T	I	C		T	E	S	T							7	5
																	5	0
																	2	5
9	/	0	1														8	1

Keystrokes: NEXT

This Menu Selection tests the operation of the ADR-50D when the conveyor is not running, or the unit is being checked on the bench. When a container is placed under the probe with the conveyor NOT running, when you press NEXT the ADR reading for that container will appear when “50” shows above. By repeatedly pressing NEXT, you can observe the stability of the ADR readings.

3.9.2 [9/02] ROM (Read Only Memory) REVISION NUMBER

R	O	M	#		0	4	2	5	6	P	2						7	5
																	5	0
																	2	5
9	/	0	2															

Keystrokes: None

Menu Selection [9/02] is a passive screen. The number displayed is that of the installed version of the ROM in this unit. When a new ROM is installed, this number will change to reflect the current version installed.

3.9.3 [9/03] PROBE TEST

P	R	O	B	E		T	S	T	=	Y	?									7	5
N	O																			0	0
																				2	5
9	/	0	3																	8	1

Keystrokes: UP, UP, ENTER

This menu selection provides an active test of the SENSE Probe. To Activate the Probe Test selection, toggle to “Y”. After completion of the probe test, you MUST reset the screen to “N”.

With no container under the Sense Probe, pass your finger between the Light Source and Photosensor to break the infra-red light beam. This should produce an ADR reading of 00. any reading other than 00 indicates an out-of-balance probe. The probe set must be replaced.

When a container is passed under the probe, an ADR reading of 99 should be produced. This indicates that the probe is working and is sufficiently sensitive for the cans under test. After completion of the probe test, you MUST reset the screen to “N”.

3.9.4 [9/04] CLEAR RAM

R	A	M		C	L	R		T	E	S	T									7	5
																				5	0
																				2	5
9	/	0	4																	8	1

Keystrokes: None

This Screen is part of the Bench Test and Setup procedure at installation of the new ROM. It is not user accessible.

3.9.5 [9/05] DAS PULSE TRAIN ENABLE

P	U	L	S	E		O	N	=	Y	?										7	5
N	O																			5	0
																				2	5
9	/	0	5																	8	1

Keystrokes: UP, UP, ENTER

This Menu selection enables a test signal for a bench test. Selecting “Y” will have not effect on operation, except to possibly slow down signal processing. It should be left at “N”.

4 ADR-50D TROUBLESHOOTING GUIDE

4.0	<p style="text-align: center;">PRIMARY POWER TROUBLESHOOTING</p> <p><u>NOTE:</u> Insure that a single ground wire goes back to the electrical panel.</p> <p>Insure that the ADR-50D is not connected to any motor supply voltages.</p> <p>Insure that the ADR-50D is connected directly to the AC power source through a panel breaker.</p> <p>4.0.1 Check for a tripped breaker or bad fuse in breaker panel.</p> <p>4.0.2 Check AC power input for water in connectors, frayed wires or broken wires.</p>
4.1	<p style="text-align: center;">AC POWER SUPPLY TROUBLESHOOTING (Fuses blow when AC Power is applied)</p> <p><u>CAUTION:</u> DO NOT APPLY AC POWER AT THIS TIME.</p> <p>4.1.1 Remove 10 front panel screws using 7/64" Allen wrench in spare parts kit.</p> <p>4.1.2 Separate amplifier assembly (front panel and attached circuit boards) from waterproof enclosure.</p> <p>4.1.3 Unplug three cable connections on back of circuit board and set amplifier assembly aside.</p> <p>4.1.4 Remove Power Supply Module, DC Switch Module, and 12V Regulator Module.</p> <p>4.1.5 Ground common lead of VOM meter to waterproof enclosure and set VOM to measure 200 K OHMS.</p> <p>4.1.6 Measure Pin 3 of the Power Supply socket. If infinite resistance is not measured, remove 6 sub-chassis screws, and inspect the broken or frayed wires and repair as needed.</p> <p>4.1.7 Measure Pin 5 of 12 V Regulator socket.</p> <p>If meter measures 0 OHMS, replace 5 V Regulator Module with a good 5 V Regulator from Spare Parts Kit.</p> <p>4.1.8 Reinstall 12 V Regulator Module.</p> <p>4.1.9 Measure Pin 3 of Power Supply socket.</p> <p>If meter measures 0 OHMS, replace 12V Regulator Module with a good 12 V regulator from Spare Parts Kit.</p> <p>4.1.10 Reinstall DC Switch Module.</p>

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	<p>4.1.11 Measure Pin 3 of Power Supply socket. If meter measures 0 OHMS, replace DC Switch Module with a good DC Switch from Spare Parts Kit.</p> <p>4.1.12 Measure pin 5, J-1 of sub-chassis cable.</p> <p>4.1.13 If meter measure 0 OHMS, replace 12 V Regulator.</p> <p>4.1.14 Measure pin 7, J-1 of sub-chassis cable.</p> <p>4.1.15 If meter measure 0 OHMS, replace 5 V Regulator.</p> <p>4.1.16 Install fuses in waterproof enclosure as required.</p> <p><u>WARNING:</u> Caution should be used when power is applied.</p> <p>4.1.17 Apply AC power, watch for smoke or sparks, smell enclosure for burning wire insulation.</p> <p>4.1.18 DISCONNECT POWER, check to see if fuses are blown.</p> <p>4.1.19 If fuses did not blow, replace Power Supply module with a good Power Supply from Spare Parts Kit.</p> <p>4.1.20 If fuse(s) did blow, remove fuses, check pin 1 of P1 to pin 6 of P1 for a short. Also check pin 2 of P1 and pin 6 of P1 for a short.</p> <p>4.1.21 If there is a short, return waterproof enclosure to Food Instrument Corporation.</p> <p>4.1.22 If there are no shorts, replace transformer.</p>
4.2	<p style="text-align: center;">DC POWER SUPPLY TROUBLESHOOTING (No L.E.D.s or digits on front panel light, fuses are good.)</p> <p><u>CAUTION:</u> <u>DO NOT</u> APPLY AC POWER AT THIS TIME.</p> <p>4.2.1 Remove 10 front panel screws using 7/64" Allen wrench in Spare Parts Kit.</p> <p>4.2.2 Separate amplifier assembly (front panel and attached circuit boards) from waterproof enclosure.</p> <p>4.2.3 Unplug three cable connections from the circuit boards and set amplifier assembly aside.</p> <p><u>NOTE:</u> Make all measurements (Steps 4.2.4 – 4.2.11) and tabulate results. Then compare to conditions in Table 4-A.</p> <p><u>WARNING:</u> Caution should be used when power is applied due to shock hazard.</p> <p><u>NOTE:</u> (-) Negative meter lead should be grounded to Waterproof Enclosure.</p>

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4.2.4	Apply power and measure violet wire of sub-chassis cable for a (+) positive 5 VDC supply.
4.2.5	Measure the red wire of sub-chassis cable for a (+) positive 12 VDC supply.
4.2.6	Disconnect AC power.
4.2.7	Remove the 12 V Regulator module.
<u>WARNING:</u>	Caution should be used when power is applied due to shock hazard.
<u>NOTE:</u>	(-) Negative Meter Lead should be grounded to Waterproof Enclosure.
4.2.8	Reconnect AC power and measure pin 2 of the 12V Regulator module socket for (+) Positive 18 VDC.
<u>WARNING:</u>	Caution should be used when measuring AC voltages due to shock hazard.
<u>NOTE:</u>	Change meter to measure <u>AC</u> voltage.
4.2.9	Put meter leads on terminal 7 (purple wire), and terminal 11 (brown wire) of the transformer. Measure for 16 <u>VAC</u> .
4.2.10	DISCONNECT AC power from the white connector and AC power cable.
<u>NOTE:</u>	Change meter to measure resistance.
4.2.11	Using VOM, measure black and white wires of AC power cable for approximately 60 OHMS.
4.2.12	Check Table 4-A.

TABLE 4-A

MEASUREMENTS TAKEN	TABULATED RESULTS AND CONDITIONS FOUND					
5 VDC	0	0	0	0	0	5 VDC
12 VDC	0	0	0	0	12 VDC	12 VDC
18 VDC	0	0	0	18 VDC	18 VDC	18 VDC
16 VAC	0	0	16 VAC	16 VAC	16 VAC	16 VAC
60 OHM	infinite	60 OHM	60 OHM	60 OHM	60 OHM	60 OHM
Check or Replace	Transformer and/or input to Transformer	Transforme r and/or Wiring to P.S.	P.S. Module	12 V Regulator	5V Regulator	Amplifier Assembly

ADR-50D TROUBLESHOOTING GUID

4.3	AMPLIFIER ASSEMBLY TROUBLESHOOTING	
	<u>TROUBLE</u>	<u>POSSIBLE SOLUTIONS</u>
	4.3.1 Green Position Sense L.E.D. Does not light.	<u>Recheck</u> -Section 4.4, Pan Assembly Repair. <u>Inspect and Repair</u> -Broken or frayed wires and connections to sense board. <u>Replace (In Order)</u> -Sense Board -Led/Video Board -Processor Board <u>Check and/or Replace</u> -Section 4.4, Pan Assembly repair.
	4.3.2 Upper Limit or Lower Limit will not adjust correctly.	<u>Check and/or Replace</u> -Membrane Switch <u>Replace</u> -Processor Board -Front Panel Assembly
	4.3.3 ADR readout (3-4) does not read "00" <u>with no</u> container under ADR <u>and</u> position sense triggered.	<u>Replace (In Order)</u> -Sense Board -Processor Board -Led/Video Board <u>Recheck</u> -Section 4.4, Pan Assembly Repair.
	4.3.4 Reject L.E.D. Does not light for a reject.	<u>Replace (In Order)</u> -Sense Board -Processor Board -Led/Video Board -Pan Assembly -Wire Harness Connections

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	<u>TROUBLE</u>	<u>POSSIBLE SOLUTIONS</u>
4.3.5	Reject L.E.D. stays lit.	<p><u>Check</u></p> <ul style="list-style-type: none"> -Section 3, Operation, Light & Photocell adjustment. -Vertical Misalignment of light & photocell. -Insert holders <p><u>Inspect for Broken or Frayed Wires</u></p> <ul style="list-style-type: none"> -Pan cable (C-1A) -Amplifier Assembly wire harness. -Waterproof Enclosure to Sense Board Cable. -Connections between Sense & Processor Board. <p><u>Replace (In Order)</u></p> <ul style="list-style-type: none"> -Processor Board -Sense Board -Led/Video Board
4.3.6	Reject Cylinder does not operate.	<p><u>Check</u></p> <ul style="list-style-type: none"> -Jumper plug in the back of enclosure I/O Port. If Jumper plug is missing rejector will not fire. -Air supply -Reject/Disable Switch to Rejector. <p><u>Inspect and Repair</u></p> <ul style="list-style-type: none"> -Power Cable from Sub-chassis to Sens Board. -Amplifier assembly wire harness and connectors for broken or frayed wires.
4.3.7	Rejector misses container	<p><u>Check</u></p> <ul style="list-style-type: none"> -Cont. Dia. in Menu [2/02] -Reject Dist. in Menu [1/03] <p><u>Replace</u></p> <ul style="list-style-type: none"> -Processor Board

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4.4	PAN ASSEMBLY TROUBLESHOOTING	
	<u>TROUBLE</u>	<u>POSSIBLE SOLUTIONS</u>
	4.4.1 ADR does not read "00" when no can is present under probe.	<u>Check</u> - Check connections to sensor. <u>Replace</u> -Ultrasonic sensor
	4.4.2 No green Position Sense light on Front Panel.	
	4.4.2.1	<u>Clean Position Sense Insert Lenses with Dry Cloth</u>
	4.4.2.2	<u>Check Red Light Source Insert</u> 2.1 With a digital camera point it directly into the Red Light Source Insert. 2.2 Set OHM meter to Diode test. 2.3 Place meter leads on Pin 3 violet and Pin 4 black of pan connector, and record resistance reading. 2.4 Reverses connections and record resistance reading. 2.5 Remove one lead and connect to pan assembly, and record reading. 2.6 Compare results with Table 4-B.

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	<u>TROUBLE</u>	<u>POSSIBLE SOLUTIONS</u>
	4.4.2.3	<u>Check Yellow PhotoSensor Insert</u> 3.1 Set OHM meter to Diode test. 3.2 Place meter leads on Pin 2 Blue wire, and Pin 1 Yellow wire of pan connector. 3.3 Using sunlight, flashlight or low wattage incandescent bulb shine light directly in to yellow insert lens and record resistance reading. 3.4 Reverse connections and repeat Step 3.3. 3.5 Remove one meter lead and connect to pan assembly, and repeat Step 3.3. 3.6 Compare results with Table 4-B. 3.7 Check Pin Terminals for loose wire in pan assembly. 3.8 Check and/or replace pan cable (C-1A).

TABLE 4-B

INSERT TESTED	METER LEAD CONNECTIONS		
	LEAD TO PAN	FORWARD RESISTANCE	REVERSE RESISTANCE
RED LIGHT SOURCE INSERT	INFINITE	<3K OHMS	>20K OHMS
YELLOW PHOTO-SENSOR INSERT	INFINITE	LIGHT DARK <3K OHMS >5K OHMS	LIGHT OR DARK >20K OHMS

If measurements are different than above table, replace inserts as required.

NOTES:

THE ABRIDGE GUIDE TO ADR-50D OPERATION
ROM # 04256P2

I. Complete instrument installation and mechanical setup as covered in section 2 and 3.0.

II. **GENERAL OPERATION:**

- A. The ADR-50D contains nine main menus. Each, contains various numbers of individual sub-menu or screens items. The lower left and corner of the display identifies each screen. The main menu number is followed by a diagonal (/) and the specific item number currently being displayed.
- B. Pressing **MENU** scrolls between main menus, displaying in each main menu the first menu item. Pressing **SELECT** scrolls between the various items in each main menu.
- C. The up(↑), down(↓) arrows and **NEXT** keys are used to adjust screen values. A blinking, shaded area creates a **cursor**, which indicates the value under adjustment. The **ENTER** key must be pressed to **set** or **load** an adjusted value into the instrument.

Pressing **NEXT** moves the cursor between columns in any number. For example, pressing **NEXT** when the 2 in 250, moves the cursor to the 5.

In most screens the instrument indicates the adjustment item by an underline which changes to a blinking cursor during adjustment, and then returns to a solid underline once adjustment has been achieved.

III. **MAIN MENUS:**

#	1 st SCREEN TEXT	MENU FUNCTIONS
1	"ADJ.CONTRAST"	Basic Setup
2	"LOAD CONTNR#"	Container Specific Information
3	"SHOW CNT =Y?"	Counters
4	SEND RAV=Y? "	External Communications
5	"J IN A ROW "	Programmable Counter/Controller
6	"PASSWORD ???"	Password engage access
7	"SET Passwrd1"	Password Modification and Security
8	NOT USED	
9	"STATIC Test"	Self testing, stationary containers

NOTE: Main menus are identified by the first sub-menu screen text and number.

Main menu titles are **not** displayed, the lower left hand corner of each screen indicates menu and item number.

IV. **MAIN AND SUB-MENUS**

1: **BASIC SETUP FUNCTIONS**

Screen Text	Translation	Operation Sequence
1/01 "ADJ.CONTRAST"	Adjust screen contrast	↑ or ↓ arrows
1/02 "SSR-1000=Y?"	Select Rejector Type ¹	↑ to switch between YES & NO, ENTER
1/03 "ADJ.REJ.DST."	Adjust Rejector Distance ²	↑, ↓, NEXT as needed, press ENTER
1/04 "MINIPROBE=Y?"	Sensor Type: Standard or Mini? ³	↑ to switch between YES & NO, ENTER
1/05 "SERIAL #"	Display Unit Serial Number	Not Applicable

2: CONTAINER SPECIFIC INFORMATION

Screen Text	Translation	Operation Sequence
2/01 "LOAD CONTNR#"	Loads memory stored data ⁴	↑, ↓, NEXT as needed, press ENTER
2/02 "CONTNR.SIZE"	Adjust to closure diameter ⁵	↑, ↓, NEXT as needed, press ENTER
2/03 "ADJ.SENSTVTY"	Select sensor power level ⁶	↑ or ↓, press ENTER
2/04 "AUTOCAL=CLR"	Auto calibration	CLEAR, run a container at line speed
2/05 "ADJ.CALIBRTN"	Adjust mid-level value	↑, ↓, NEXT as needed, press ENTER
2/06 "ADJ.UPR.LIM."	Adjusts upper limit	↑, ↓, NEXT as needed, press ENTER
2/07 "ADJ.LOW.LIM."	Adjusts lower limit	↑, ↓, NEXT as needed, press ENTER
2/08 "EZ OPEN =Y"	Is the closure an EZO?	↑ to switch between YES & NO, press ENTER
2/09 "RA UPR.LIMIT"	Adjusts Rolling Average upper limit	↑, ↓, NEXT as needed, press ENTER
2/10 "RA LWR.LIMIT"	Adjusts Rolling Average lower limit	↑, ↓, NEXT as needed, press ENTER
2/11 "SHOW RA=YES?"	Show Rolling Average?	↑ to switch between YES & NO, press ENTER
2/12 "SAVE CONTNR#"	Save Container Number	↑, ↓, NEXT as needed, press ENTER

3: COUNTERS

Screen Text	Translation	Operation Sequence
3/01 "SHOW CNT =Y?"	Display Container Counts?	↑ to switch between YES & NO, press ENTER
3/02 "SHOW NET =Y?"	Show Net count? ⁷	Same as above
3/03 "CLR ALL CNTS"	Clear all counters?	Press ENTER
3/04 "CLR TOT CNT"	Clears count of Total Containers	Press ENTER
3/05 "CLR NET CNT"	Clears Net count	Press ENTER
3/06 "CLR REJ CNT"	Clears Rejects count	Press ENTER

4: COMMUNICATIONS

Screen Text	Translation	Operation Sequence
4/01 "SEND RAV=Y?"	Send Rolling Average?	↑ to switch between YES & NO, press ENTER
4/02 "RS232 ON=Y?"	Turn on RS232 port?	↑ to switch between YES & NO, press ENTER

5: PROGRAMMABLE COUNTER/CONTROLLER(OPTION)

Screen Text	Translation	Operation Sequence
5/01 "J IN A ROW"	Program group: Consecutive Rejects ⁸	Not Applicable
5/02 "OFF, 1=.5,2=1"	J in a Row Alarm Enable/Disable ⁹	↑ for 0, 1 or 2, press ENTER
5/03 "OUTPUT CHAN."	J in a Row Alarm Selector ¹⁰	↑ for 0, 1 or 2, press ENTER
5/04 "VALUE OF J?"	Adjust J, from 2 – 32	↑, ↓, NEXT as needed, press ENTER
5/05 "TRAP X IN Y"	Program Group: Rejects/Quantity	Not Applicable
5/06 "OFF,1=.5,2=1"	X in Y, Alarm Enable/Disable	↑ for 0, 1 or 2, press ENTER
5/07 "OUTPUT CHAN."	X in Y Alarm Selector	↑ for 0, 1, 2 or 3 press ENTER
5/08 "VALUE OF X?"	Adjust X, from 1 – 99	↑, ↓, NEXT as needed, press ENTER
5/09 "VALUE OF Y?"	Adjust Y, from 10 – 9000	↑, ↓, NEXT as needed, press ENTER
5/10 "TRAP S IN T"	Program Group: Rejects/Time	Not Applicable
5/11 "OFF,1=.5,2=1"	S in T minutes Alarm Enable/Disable	↑ for 0, 1 or 2, press ENTER
5/12 "OUTPUT CHAN."	S in T minutes Alarm Selector	↑ for 0, 1, 2 or 3 press ENTER

Screen Text	Translation	Operation Sequence
5/13 "VALUE OF S?"	Adjust S, from 2 – 30	↑, ↓, NEXT as needed, press ENTER
5/14 "VALUE OF T?"	Adjust T, from 1 – 30	↑, ↓, NEXT as needed, press ENTER
5/15 "TRAP 1ofP/Q"	Program Group: Repeat Patterns	Not Applicable
5/16 "OFF,1=.5,2=1"	1 of P/Q Alarm Enable/Disable	↑ for 0, 1 or 2, press ENTER
5/17 "OUTPUT CHAN."	1 of P/Q Alarm Selector	↑ for 0, 1, 2 or 3, press ENTER
5/18 "VALUE OF P?"	Adjust P from 2 – 99	↑, ↓, NEXT as needed, press ENTER
5/19 "VALUE OF Q?"	Adjust Q from 2 – 30	↑, ↓, NEXT as needed, press ENTER
5/20 ">RAU LIMIT"	Program Group: RA Upper Limit ¹¹	Not Applicable
5/21 "OFF,1=.5,2=1"	RA Up Lim Alarm Enable/Disable	↑ for 0, 1 or 2, press ENTER
5/22 "OUTPUT CHAN."	RA Up Lim Alarm Selector	↑ for 0, 1, 2 or 3, press ENTER
5/23 "<RAL LIMIT"	Program Group: RA Lower Limit ¹¹	Not Applicable
5/24 "OFF,1=.5,2=1"	RA Lwr Lim Alarm Enable/Disable	↑ for 0, 1 or 2, press ENTER
5/25 "OUTPUT CHAN."	RA Lwr Lim Alarm Selector	↑ for 0, 1, 2 or 3, press ENTER

6: PASSWORD OVERRIDE ACCESS

Screen Text	Translation	Operative Sequence
6/01 "PASSWORD ???"	Enter Password (to allow change) ¹²	↑, ↓, NEXT as needed, press ENTER(CLAR) ¹³

7: PASSWORD MODIFICATIONS AND SECURITY

Screen Text	Translation	Operative Sequence
7/01 "SET PASSWRD1"	Set Password #1 ¹⁴	↑, ↓, NEXT as needed, press ENTER
7/02 "SET PASSWRD2"	Set Password #2	↑, ↓, NEXT as needed, press ENTER
7/03 "SET PASSWRD3"	Set Password #3	↑, ↓, NEXT as needed, press ENTER
7/04 "PW TIMEOUT"	Password Timeout Duration ¹⁵	↑, ↓, NEXT as needed, press ENTER
7/05 "PW ENABLE=Y?"	Enable/Disable Security	↑ to switch between YES & NO, press ENTER

8: NOT USED

9: SELF TESTING, STATIONARY CONTAINERS

Screen Text	Translate	Operative Sequence
9/01 "STATIC TEST"	Static Test	Press NEXT
9/02 "ROM# 05082P1"	Display ROM Version #	Not Applicable
9/03 "PROBE TST =Y?"	Test Probes	↑ to switch between YES & NO, press ENTER
9/04 "RAM CLR TST"	Used in Factory Setup	Not Applicable
9/05 "PULES ON=Y?"	Used in Factory Setup	Not Applicable

V. SETTING UP YOUR FIRST CONTAINER:

- A. Complete installation as described in the Manual, Section 2 and Mechanical Set Up in Section 3.0, taking note of the accurate distance between the rejector (at bumper center line) and sense probe center line. Power up instrument.

- B. Adjust screen contrast to suit, go to menu **[1/01]**, adjust with the ↑ ↓ arrows.
- C. Enter rejector distance in millimeters (from **[1/01]**, press **SELECT** twice to arrive at **[1/03]**, enter distance with ↑, ↓ and/or **NEXT** keys, press **ENTER**).
- D. Press **MENU** once to go to the menu 2, first item, "Load container" will be displayed. Press **SELECT** to go to **[2/02]** "Contr. Dia." (Load Container does not apply until containers have been saved in item **[2/12]**) Enter container diameter in millimeters (using ↑, ↓ and/or **NEXT** keys) when correct, press **ENTER**.
- E. Press **SELECT** to go to item **[2/04]**, "Autocalibrate" and press **CLEAR**. While the conveyor is running at normal speed let a container pass under the ADR-50D.
- F. The far right side of the display will then show a 75 upper limit, a middle value of around 50, and a lower limit of 25.
- G. If the middle value does not read 50 then press **SELECT** to go to item **[2/05]**, "Adj.Calibrtn" and press the ↑, ↓ to fine tune. You must press **ENTER** before passing the container under the ADR-50D again.
- H. To modify upper limit, press **SELECT** twice to go to item **[2/06]**. Adjust the upper limit values to suit individual requirements with the ↑, ↓ and/or **NEXT** keys, press **ENTER**.
- I. To modify the lower limit, press **SELECT** once to bring up item **[2/07]**, and adjust values appropriately with ↑, ↓ and/or **NEXT**, press **ENTER**.
- J. Rolling average can be adjusted in menus **[2/09]** and **[2/10]**. However it's recommended these be set after observing the RA values automatically established by the ADR. Excursions will be noted on the display, indicating values which when loaded, will prompt the yellow and red flashing RA LED as excursions occur.
- K. Press **SELECT** until **[2/12]** "Save Contrn#" is displayed. Load a number by pressing the arrow (↑) keys and **NEXT** until the preferred number is displayed at the cursor. Press **ENTER**.

Setup and operation is now complete. Follow the same procedure for successive containers. At changeover to a previously loaded container, simply go to Main Menu **[2/01]**, "Load Contrn#", enter the container number established in K using the arrows keys (↑ ↓), **NEXT**, then press **ENTER**. All data stored specific to that container number is recalled and immediately applied.

Footnotes:

- 1) **[1/02]** The SSR-1000C is the standard rejector supplied with the ADR-50D instruments. Set to NO only if system configuration includes the optional HSR-2000 High Speed Rejector.
- 2) **[1/03]** Rejector Distance is the distance from the rejector center line to ADR positional sensors' center line in millimeters.
- 3) **[1/04]** 50D and DR instruments are standard equipped with either probe, DRB instruments with the Miniprobe. Setting is correctly set at the factory. If reset incorrectly, the instrument will be **incapacitated**.
- 4) **[2/01]** Loading a new container automatically **RESETS** all counters.
- 5) **[2/02]** Closure Diameter in millimeters is required.
- 6) **[2/03]** There are five levels of sensitivity 0 – 4. 0 being the lowest, 1 being the standard setting. Generally only being changed with extreme changes in closure diameter or configuration.
- 7) **[3/02]** Initial display shows total containers processed and rejected, NET count is displayed at YES, gross count at NO.
- 8) **[5/01]** In the Programmable/Counter Controller menus, one screen is used at announce, or identify the individual program and it's associated screens. These screens, here referred to as PROGRAM GROUP: (as appropriate) have no user selectable settings.
- 9) **[5/02]** These screens engage or disengage the alarm system, and define the type of signal: 0 turns OFF the alarm, 1 provides a non-latched signal, 2 provides a latched signal requiring operator action to disengage when used with the AIC-110, or 50 and 100 milliseconds signals respectively when used without the AIC-110.

- 10) **[5/03]** Selects between four possible output channels (0,1,2,3) for the specific programs' alarm at occurrence.
- 11) **[5/20]** Rolling Average values (Upper & Lower Limits) are set in screens **[2/09]** and **[2/10]**.
- 12) **[6/01]** Not seen unless Password Security is **ON**.
- 13) **[6/01]** In this screen, pressing **CLEAR** terminates the "PASSWORD TIME OUT" Period.
- 14) **[7/01]** Visible only when security is **OFF**. When security is **ON**, the entry of password 1 (in menu **[6/01]**) is required to view and access menu 7.
- 15) **[7/04]** Determines the length of operator instrument access once password privileges are invoked.