
INSTALLATION, OPERATION AND SERVICE INSTRUCTIONS

FOR CIRCULAR CHART RECORDERS

CoBEX RECORDERS, INC.

CAUTION: IT IS IMPORTANT THAT THESE INSTRUCTIONS BE READ BEFORE INSTALLING THE INSTRUMENT. KEEP THESE INSTRUCTIONS ON FILE FOR FUTURE REFERENCE.

RECEIVING INSPECTION

As soon as the recorder is received, visually inspect the shipping container for signs of damage. If there is evidence of rough handling, inspect the recorder immediately to make certain that it is intact and has not been damaged in shipment.

TRANSIT LOSS

All COBEX instruments are insured against transit loss by breakage. To make this insurance effective, all claims must be filed with the carrier at the destination within one week of receipt of merchandise. No claims, regardless of the nature of same, will be accepted beyond this period.

UNPACKING

Each recorder is shipped with the standard accessory items listed below. When unpacking the recorder make certain that all of the items are accounted for.

1. Charts: One box (where applicable).
2. Battery (for optional battery backed-up units).
3. Installation manual.

CoBEX RECORDERS, INC.

6601 LYONS ROAD, F-7
COCONUT CREEK, FL 33073
TEL. (954) 425-0003
FAX. (954) 425-0509
www.cobexrecorders.com

INTENDED USE OF RECORDER

The recorders manufactured by CoBex Recorders are available in single and dual pen versions. The dual pen version allows monitoring and recording of up to two independent processes with one recorder. The variety of input signal types, coupled with ease of use make these recorders ideal monitoring devices. Inherent reliability and precision assure accurate results. These recorders are well suited for the measurement of temperature, humidity, pressure, force, level, time of operation, carbon dioxide, PH and multiple voltage/current signals. Microprocessor based electronic sensing and pen actuation assure an accurate and robust unit.

Note: Using this recorder in a manner not specified by this document can impair the protection provided by the recorder.

SYMBOLS

The following symbols appear throughout this manual and on the recorder:



CAUTION: This symbol on the equipment refers the user to this product manual for additional information.



PROTECTIVE EARTH GROUND: Grounding of this recorder shall be in accordance with national and local electrical codes. Wires connected to this terminal will be color coded GREEN or GREEN with a YELLOW stripe.

RECORDER CASE LOCATION

Upon unpacking, find a suitable location to mount the unit before plugging it in. Do not lift or carry the recorder by the attached probes, power cord or AC adaptor. Carrying the recorder in this manner could cause damage.

Select a location that is well lighted, free from dust, dirt and corrosive fumes. The instrument should not be located near any sources of heat or be subjected to sudden or extreme temperature changes. It should be mounted on a rigid support that is not subject to vibration. It should also be mounted in a position so that it is not difficult to operate the disconnecting device for the recorder. Refer to Figures 8 and 9 for recorder case dimensions and flush mounted panel cut-out dimensions.

If the recorder does become dusty, provide a positive "clean air purge" to minimize the accumulation of dust particles on the chart plate, paper and pen. Always keep the door closed while recording. No ventilation is required for the recorder.

The safety of any system incorporating this unit is the responsibility of the assembler of the system.

POWER WIRING PROCEDURES

The recorder uses AC power when the unit is operating normally. Most recorders will have either an AC power cord or a plug-in AC adaptor for connection to the main AC power supply. After the recorder has been connected to AC line power, connect the 9 volt battery to the battery strap and place the battery in its holder (if your unit is equipped with an optional battery back-up).

It is the responsibility of the installer to provide either a circuit breaker or a disconnect switch and non-time delay, quick-acting, high breaking capacity, Type F, 250V (0.5AMP) fuse. The circuit breaker or switch must be located in close proximity to the recorder, within easy reach of the operator and shall be marked as the disconnecting device for the recorder.

The following instructions apply to recorders that will be hard wired to AC power.



CAUTION! All wiring and access to the internal components of the recording unit is only to be performed by trained personnel.

All wiring must conform to appropriate standards of good practice and local codes and regulations. Wiring must be suitable for maximum voltage, current and temperature rating of the system. Unused control terminals should not be used as jumper points, as they may be internally connected, causing damage to the recording unit.

The recorder can operate on either 115 or 230VAC (50-60Hz) when the internal step-down transformer is installed in the recorder. Before connecting the main AC power wires to the recorder, make sure that the line voltage is OFF. Failure to observe this precaution can result in serious injury or death.

If a permanent connection to the main AC power supply is to be accomplished in the field, then refer to Figures 7A and 7B for diagrams showing the connection of a 115VAC (50-60Hz) or a 230VAC (50-60Hz) main power supply to the internally mounted step down transformer.

Note: All wires used to connect the recorder to the main AC power and PROTECTIVE EARTH GROUND must be 16-14AWG.



The recorder must be wired to PROTECTIVE EARTH GROUND to reduce the risk of shock or serious injury.

A ground stud, nut and locking washer have been provided on the back of the recorder's chart plate for this connection. Refer to the following diagram:

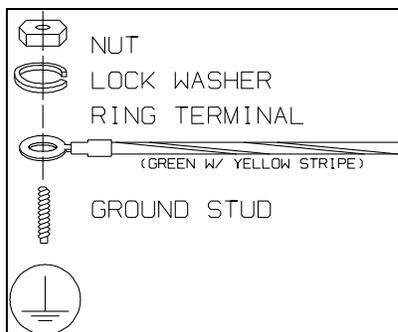


Figure 1: Connection to Protective Earth Ground.

CONNECTING A PROBE

Most of the recording units will already have a temperature sensing probe installed or external wires provided that are connected to the probe input terminals of the main microprocessor PC board of the recording unit.

If you will be supplying your own probe input device, then this next section will contain some important information concerning the connection of the probe sensor to the recorder. Refer to the **Sensor Input** information in the **Recorder Specifications** section of this manual for the specifications of the probes that can be used with this recording unit.

This recording unit is capable of accepting input from either a CURRENT source (4-20mA), a VOLTAGE source (0-1VDC, 0-5VDC, 1-5VDC or 0-10VDC) or a 100 ohm RTD probe. **Note:** The recorder is programmed (at the factory) to accept a specific probe input range. Connecting a probe that supplies the recorder with a current or voltage that is not within the specified range will give unpredictable results and may damage the recorder. If you are not sure of the probe type or input range for your recorder, please contact COBEX Recorders before continuing.

In order to connect the probe input device to the recorder, you may need to gain access to the main microprocessor PC board that is mounted to the back of the chart plate.



CAUTION! DO NOT TOUCH the terminals of the transformer while the unit is connected to the main AC power supply. To avoid the risk of possible electric shock, unplug or disconnect the recording unit from the main power supply before attempting to open the recorder. If the recorder is installed with the battery back-up option, disconnect the 9 Volt battery to avoid damaging the recorder and draining the battery.

On 6" inch recording units mounted in a metal enclosure, the chart plate on the recorder case is held by four (4) screws. Unscrew and gently remove the

chart plate to expose the main microprocessor PC board of the recording unit. Otherwise, your recording unit will have a hinged chart plate held in place by two (2) screws located in the upper and lower right hand corners of the chart plate. Remove these two screws and open the hinged chart plate. On 8" enclosures, there is a single screw along the right hand edge that secures the chart plate inside of the enclosure. Loosen this screw and open the hinged chart plate.

If you are not sure how to access the back of the chart plate, please contact COBEX Recorders before continuing.

Next, you will need to determine the *type* of microprocessor controller PC board that is installed in your recorder. Refer to Figures 2A and 2B and compare these figures to the microprocessor controller PC board that is installed in your recorder.

TYPE "B" CONTROLLER PC BOARD

If your recorder has a **Type B** microprocessor controller PC board installed, then locate screw terminal block locations J3 and J4 on the microprocessor PC board. These screw terminal blocks are used to provide a signal input to the recorder for up to two pens. **Note:** Not all positions shown will have a terminal block installed (only the inputs being used). Refer to Figure 2A for the location of J3 and J4 on the micro-controller PC board. Position "VIN" (located on screw terminal block J4) is used to provide a linear voltage signal input to the recorder, position "+5V" can be used to power an external probe.

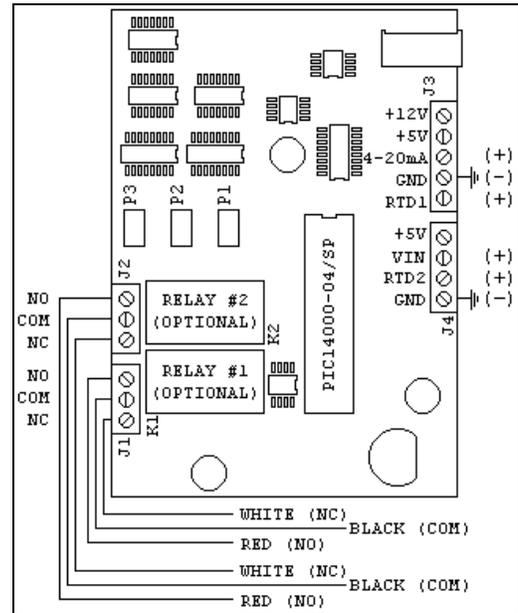


Figure 2A: Micro-Controller PC Board (Type B).

TYPE "C" CONTROLLER PC BOARD

If your recorder has a **Type C** microprocessor controller PC board installed, then locate screw terminal block location J3 on the microprocessor PC board. This screw terminal block is used to provide a signal input to the recorder for one pen. **Note:** Not all positions shown will have a terminal block installed (only the inputs being used). Refer to Figure 2B for the location of J3 on the micro-controller PC board.

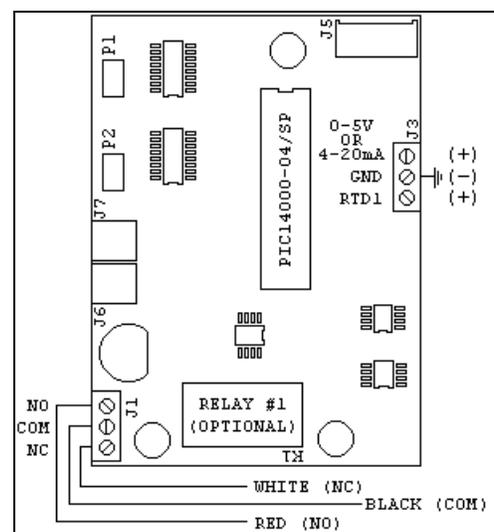


Figure 2B: Micro-Controller PC Board (Type C).

NORMAL RECORDER OPERATION

When the recorder is initially powered-on, the pen(s) will reset by moving to the left to the "home" position. On a single pen recorder, the pen moves onto the pen lift ramp (if available) or near the edge of the chart paper. On a two-pen recorder, the pens will move one-at-a-time to the edge of the chart paper.

Once the pen(s) has reset, it will move towards the graduations on the chart and should pause briefly on the outermost graduation of the chart. If it does not pause at this position, a mechanical pen adjustment can be made (refer to the section **PEN ARM CALIBRATION**). If the recorder has the optional alarm relay contacts installed, the pen will travel to each alarm set-point and pause to allow for adjustment. Finally, the pen will travel to show the value being measured and recorded.

GREEN LED STATUS INDICATOR

The green LED light is used to indicate the status of the power to the recorder.

The LED will be on steady when both the main AC and battery power to the recorder is normal or the pen(s) is resting off-scale during a **CHANGE CHART** operation.

The LED will flash when either the main AC power fails or the battery becomes weak and needs to be replaced.

The LED is also used to indicate the current input "range" that is selected for operation. For information on selecting the input range, refer to the section **CHART "RANGE" SELECTION**.

CHANGING THE CHART PAPER

Warning: Do not lift the pen arm(s) in order to slide a new chart under the pens. This will remove the bend in the arm and will no longer provide enough downward pressure for the pen(s) to draw a legible mark.

Press and hold the "change chart" button (#3) for approximately one (1) second until the pen begins to move to the left and then release the button (refer to Figure 4). Wait until the pen has moved onto the pen lift ramp (if available) or near the edge of the chart paper and stops. To remove the chart paper, unscrew (counter-clockwise) the chart "hub" knob at the center of the chart. Remove the old chart paper and position the new one so that the correct time line coincides with the time line groove on the chart plate. Refer to Figure 6 for the location of the time line groove.

Re-attach the chart "hub" knob and screw securely (by hand) against the chart. **Note:** Over tightening the chart "hub" knob can damage the gears in the chart motor gearbox assembly. Press and hold the "change chart" button (#3) again for approximately one (1) second until the pen begins to move back onto the chart and then release the button. Check to make sure that the pen is marking on the chart paper. If it is not, then carefully adjust the pen arm to establish contact with the paper.

MARKING SYSTEMS:

MARK-A-MATIC II INKING SYSTEM

This type of pen consists of a self contained ink reservoir with a porous plastic stylus which is snapped around the outer edge of the metal pen arm.

A pen cap is provided to extend the life of the ink pen during shipping or when the recording unit is not in service. The pen cap must be removed before the recording unit is powered-on. To remove the pen cap, gently lift the pen arm away from the chart paper. Remove the black plastic pen cap to expose the fiber tip of the ink pen and gently place the pen back onto the chart paper. Do not let the pen arm "snap" back onto the chart paper. This will flatten the fiber tip of the pen and will no longer give you a fine line marking on the chart paper. Place the pen cap in a safe place for future use.

If the stylus does not touch the chart, adjustment can be made by slightly bending the metal pen arm in the center towards the chart paper. Do not use more

pressure than is necessary to create a fine line marking on the chart paper. **Note:** As the pen ink supply runs out, the pen color will become lighter. This indicates that the pen should be replaced.

REPLACEMENT OF PEN

Note: In non-inking units, (that is, when using pressure sensitive recording chart paper) replacement of the pen is not necessary.

Recorders that are equipped with fiber tipped cartridge pens will have a cartridge that is color coded "red" to designate pen number one (1) and an optional cartridge that is color coded "blue" to designate pen number two (2). The pen cartridge is securely fastened to the metal pen arm using a special "U" clip tab.

For ease of replacement, it is suggested that the two (2) screws that hold the pen arm be loosened and the pen cartridge and metal pen arm be removed as an assembly. Refer to Figure 6 for the location of the pen arm screws. Unsnap the plastic "U" clip tab of the pen cartridge from the metal pen arm, remove and discard the old pen cartridge. Replace the new cartridge by opening the hinge and snapping it securely around the metal pen arm. Refer to the following figure.

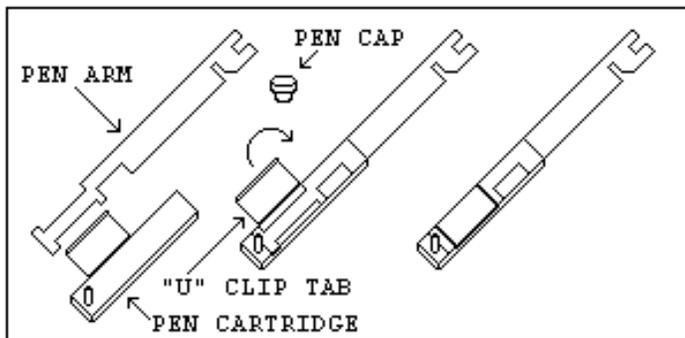


Figure 3: Pen Arm Assembly.

PEN ARM CALIBRATION

To ensure the accuracy of the recording unit, a mechanical pen adjustment can be conducted.

While the recorder is operating normally (recording temperature or some other variable), press and hold the "change chart" button (#3) for approximately one

(1) second until the pen begins to move to the left and then release the button (refer to Figure 4). Wait until the pen has moved onto the pen lift ramp (if available) or near the edge of the chart paper and stops. Press and hold the "change chart" button (#3) once more until the pen begins to move back onto the chart. The pen should briefly pause at the outer most graduation of the chart before continuing onto the chart to begin recording. If the pen does not stop exactly at this location on the chart, it can be adjusted by using the left (#1) or right (#2) arrow buttons (refer to Figure 4).

When the pen moves back onto the chart and briefly stops, you will have approximately three (3) seconds in which to adjust the pen's position using the left and right arrow buttons of Figure 4. If the time expires before you have a chance to make this adjustment, you can simply repeat this procedure.

On multiple pen recorders, each pen will move (one-at-a-time) onto the chart briefly stopping at the outer most graduation of the chart at which time the pen's position can be adjusted by using the left (#1) or right (#2) arrow buttons. When the time to adjust the position of the first pen has expired, the second pen will move onto the chart briefly stopping at the outer most graduation of the chart at which time the second pen's position may be adjusted.

Each time the chart paper or fiber tip pen cartridge is changed, you should make sure that each pen stops at the outer most graduation of the chart paper. Otherwise, this pen *offset* will cause the unit to record an incorrect value on the chart.

TEMPERATURE RECORDER CALIBRATION CHECK

This recorder has been accurately calibrated at the factory. Before making any adjustments, this instrument should be in service for 24 hours. Thereafter, if any adjustment is required, perform the following procedure. An annual verification of the calibration is recommended.

Important: DO NOT immerse a probe that is used to monitor humidity in any solution. This will damage the humidity sensor.

1. Place a Certified Test Thermometer(s) in a solution bottle(s) alongside the recorder's sensor probe(s).
2. Once the temperature has leveled out, compare the position of the pen on the recorder to the test thermometer's reading.
 - 2a. For two (2) pen recorders, also compare the second thermometer's reading to the second pen of the recorder.
3. If an adjustment is required, use the left (#1) and right (#2) arrow push buttons on the recorder to calibrate (or move) the pen's position on the chart to correspond to the temperature of the solution. The arrow buttons must be held for approximately five (5) seconds before the pen will begin to move.
 - 3a. For two (2) pen recorders, you must first select the pen that you wish to calibrate. This is done by pressing the left (#1) arrow button to select the red pen or the right (#2) arrow button to select the blue pen. The arrow button must be held down until the green LED light goes out. After the green LED light goes out, follow the instructions in step #3 above. (Refer to the following figure for a diagram of the push buttons).

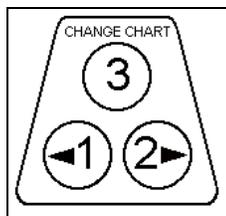


Figure 4: Push buttons.

OPTIONAL FEATURES

BATTERY BACK-UP

The green LED light remains a constant green color indicating that both the battery and the main AC power to the recording unit are good. Refer to Figure 6 for the location of the green LED indicating light.

When the main AC power fails or the battery becomes weak, the green LED light begins "flashing" indicating that either you have lost the main AC power to the recording unit or it is time to replace the battery.

The 9 Volt DC battery back-up allows the recorder to continue to function normally for a minimum of 24 hours in the event of a power failure.

BATTERY LOCATION AND REPLACEMENT

4", 6" AND 10" RECORDERS

To replace the battery, first open the recorder door. The battery will be located in the upper right hand corner of the unit. Refer to Figure 6 for the location of the battery. **Note:** Use only NEW 9 Volt alkaline replacement batteries.

8" RECORDERS



CAUTION! DO NOT TOUCH the terminals of the transformer while the unit is connected to the main AC power supply. To avoid the risk of possible electric shock, unplug or disconnect the recording unit from the main power supply before changing the battery.

To replace the battery on an 8" recorder, first open the recorder case door. Next, loosen the single screw located on the right hand side of the chart plate and open the hinged chart plate. The battery strap and battery holder are located on the back of the chart

plate. **Note:** Use only NEW 9 Volt alkaline replacement batteries.

OPTIONAL ALARM/CONTROL RELAY (CONNECTION TO THE RELAY)



CAUTION! DO NOT TOUCH the terminals of the transformer while the unit is connected to the main AC power supply. To avoid the risk of possible electric shock, unplug or disconnect the recording unit from the main power supply before attempting to access the terminals of the relay. If the recorder is installed with the battery back-up option, disconnect the 9 Volt battery to avoid damaging the recorder and draining the battery.

On 6" inch recording units mounted in a metal enclosure, the chart plate on the recorder case is held by four (4) screws. Unscrew and gently remove the chart plate to expose the relay that is mounted to the back of the chart plate. Otherwise, your recording unit will have a hinged chart plate held in place by two (2) screws located in the upper and lower right hand corners of the chart plate. Remove these two screws and open the hinged chart plate. On 8" recording units, there is a single screw along the right hand edge that secures the chart plate inside of the enclosure. Loosen this screw and open the hinged chart plate to expose the relay terminals. If you are not sure how to access the relay terminals of your recording unit, please contact COBEX Recorders before continuing.

The relays that are used in this recording unit are *latching* type relays. That is, the contacts of the relay will remain either closed or open (even when there is no power applied to the recorder) until the relay is pulsed with a signal from the recorder to change the position of the contacts.

Refer to Figures 2A and 2B for the location of the screw terminal connections for the relays. **Note:** A RED, BLACK and WHITE set of wires may already be provided as an external connection to the relay's terminal block.

For recorders that are programmed with a single relay set-point, the terminal position NC will be *closed* when the pen is positioned to the right of the control set-point and will be *open* when the pen is positioned to the left of the control set-point.

For recorders that are programmed with HI/LOW (or "band" alarm) relay set-points, the terminal position NC will be *closed* when the pen is positioned in between the control set-points and will be *open* when the pen is positioned outside of the control set-points.

Refer to the Relay information in the Recorder Specifications section of this manual for the electrical ratings of the relays. **Warning:** Serious injury or damage to the recording unit may result if the ratings for the relays are exceeded.

SETTING THE ALARM/CONTROL SET-POINT FOR THE RELAY

While the recorder is operating normally (recording temperature or some other variable), press and hold the "change chart" button (#3) for approximately one (1) second until the pen begins to move to the left and then release the button (refer to Figure 5). Wait until the pen has moved onto the pen lift ramp (if available) or near the edge of the chart paper and stops. When the "change chart" button (#3) is pressed again, the pen will begin to move back onto the chart briefly stopping at the outermost graduation of the chart.

The pen arm will then move to the first control set-point position and the green LED light will turn off. The pen will remain at this position for a period of approximately five (5) seconds during which time the control set-point can be adjusted using the left arrow (#1) or the right arrow (#2) push buttons. Refer to the following figure for a diagram of the push buttons. When the time has expired for adjusting the control set-point, the green LED light will turn back on and the unit will begin recording.

When the pen has two control set-points, the pen then moves to the second control set-point at which time the second control set-point may be adjusted. Having

two control set-points (per pen) allows you to define HIGH and LOW process values that will open or close the relay contacts. Approximately five (5) seconds after you have finished adjusting the control set-point(s), the LED light will turn solid green and the pen arm will move to indicate the probe's value and the unit will begin recording.

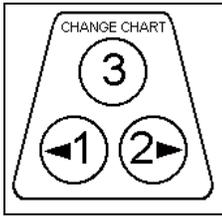


Figure 5: Push buttons.

CHART "RANGE" SELECTION

If the recorder that you are using has a *range sticker* (that lists several temperature ranges) mounted on the front of the chart plate, then the following section will apply to you.

This recording unit has the option for the user to select from several temperature or linear input "ranges" that are pre-programmed into the recorder at the factory.

Note: The chart paper that is used on the recording unit must match the *range* that is selected for the recorder. Otherwise, the pen's position on the chart paper will not correspond to the process value that is measured.

Also, if the pen moves to the center or outer graduation of the chart and remains there while the unit is powered on, then this maybe an indication that the current range that is selected for the unit is not correct. The recorder has a built-in safety mechanism that will always move the pen to the highest value on the chart when the process value that is measured is not within the selected range.

The recording unit can have up to eight (8) user selectable ranges programmed into the unit. To select from one of the available ranges, follow these instructions:

After the recording unit has been powered-on and is operating normally (recording temperature or some other variable), press and hold the "change chart" button (#3) for approximately one (1) second until the pen begins to move to the left and then release the button (refer to Figure 5). Wait until the pen has moved onto the pen lift ramp (if available) or near the edge of the chart paper and stops. Press and hold the left arrow (#1) or right arrow (#2) button for approximately eight (8) seconds and then release the button. Refer to Figure 5 for a diagram of the buttons.

The green LED light will begin flashing one (1) time if Range #1 is selected or will flash two (2) times if Range #2 is selected and so on. Press the left arrow button (#1) to increase the range number or press the right arrow button (#2) to decrease the range number that is selected for the recorder. When you have finished selecting the range, press and hold the "change chart" button (#3) until the pen begins to move back onto the chart and the selected range will be saved into the recorder's permanent memory.

MAINTENANCE AND SERVICE

There are no components of the recorder that require a scheduled maintenance. It is recommended returning non-functioning recording units in need of service to CoBex Recorders in order to repair unit back to factory specifications.

RECORDER SPECIFICATIONS

POWER INPUT

Input Voltage: Single Phase 115 or 230VAC.
Maximum Input Current: 40mA @ 115VAC,
20mA @ 230VAC
Input Frequency: 50 to 60 Hz.

BATTERY BACK-UP (OPTIONAL)

Battery Type: 9 Volt Alkaline
Low Battery Signaling: Flashing LED

OPERATING ENVIRONMENT

0°C-40°C (32°F-104°F); 0-95% RH, Non-condensing
Pollution Degree: 2
Installation Category: II

PHYSICAL

4" Recorders

Dimensions: 5-3/4"(H) x 6-3/8"(W) x 2-1/4"(D)
Moldings: Polycarbonate Door (Optional)
Weight: 1.5 pounds maximum

6" Skeleton Recorders

Dimensions: 7-15/32"(H) x 6-3/8"(W) x 1-3/4"(D)
Moldings: None
Weight: 3 pounds maximum

6" Skeleton with a Door Recorders

Dimensions: 9-5/32"(H) x 7-15/16"(W) x 2-1/4"(D)
Moldings: Polycarbonate Door
Weight: 3 pounds maximum

6" Fully Cased Recorders

Dimensions: 8-43/64"(H) x 7-11/32"(W) x 4-1/4"(D)
Moldings: Fire retardant ABS Plastic with glass window
Weight: 5 pounds maximum

10" Recorders

Dimensions: 14"(H) x 14"(W) x 4-1/16"(D)
Moldings: Fire retardant Noryl w/ acrylic window
Weight: 7 pounds maximum

SENSOR INPUT OPTIONS (Factory Set)

RTD (100 OHM, Class B, 0.00385 OHMS/OHM/°C).
Probe accuracy (+/- 0.12 OHMS @ 0°C)
Probe Length (3, 6 or 8 inches)
Probe diameter (0.25 inches)
Probe housing (stainless steel)
†Achievable accuracy (+/- 0.25°C)

HUMIDITY (0.8VDC to 3.9VDC, Ratiometric)

Operating temperature of sensor (-40°C to +85°C)
Probe Length (2.5 inches)
Probe diameter (0.5 inches)
Probe housing: ABS plastic
†Achievable accuracy (+/- 3%, 0-100% RH)

LINEAR (0-1VDC, 0-5VDC, 1-5VDC, 0-10VDC)

(user supplied transducer)
Recorder input impedance (100K OHM minimum)
†Achievable accuracy (+/- 0.25% of Span)

LINEAR (4-20mA)

(user supplied transducer)
Recorder input impedance (250 OHM)
†Achievable accuracy (+/- 0.25% of Span)

RECORDING OPTIONS

No. Recording Pens/Inputs: 1 or 2
Chart Size: 4", 6" and 10" (nominal)
Pen Tip: Ink or Inkless (Pressure Sensitive)
Chart Speed: 24 and 168 Hour
Chart Rotation Direction: Counter-Clockwise

RELAY (OPTIONAL)

Relays: SPDT, 0.6 AMP @ 120 VAC (resistive)
Relay program: HI, LOW or BAND alarm (factory set)
Number of Relays: 1 or 2

†Depends on probe type and/or standard used for calibration.

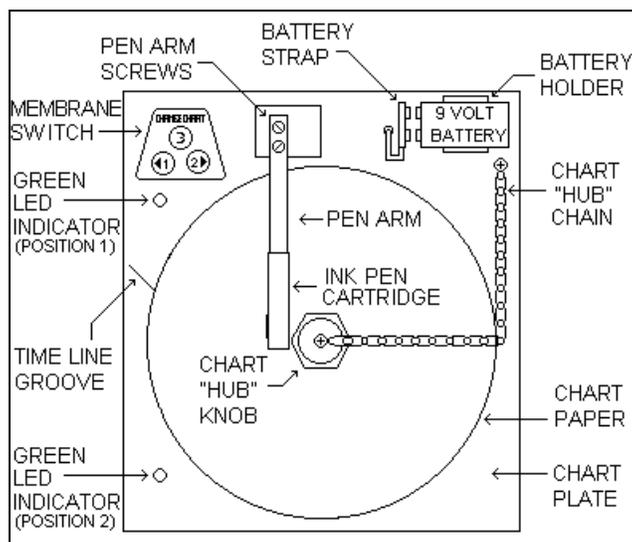


Figure 6: Recorder Assembly (Front View).

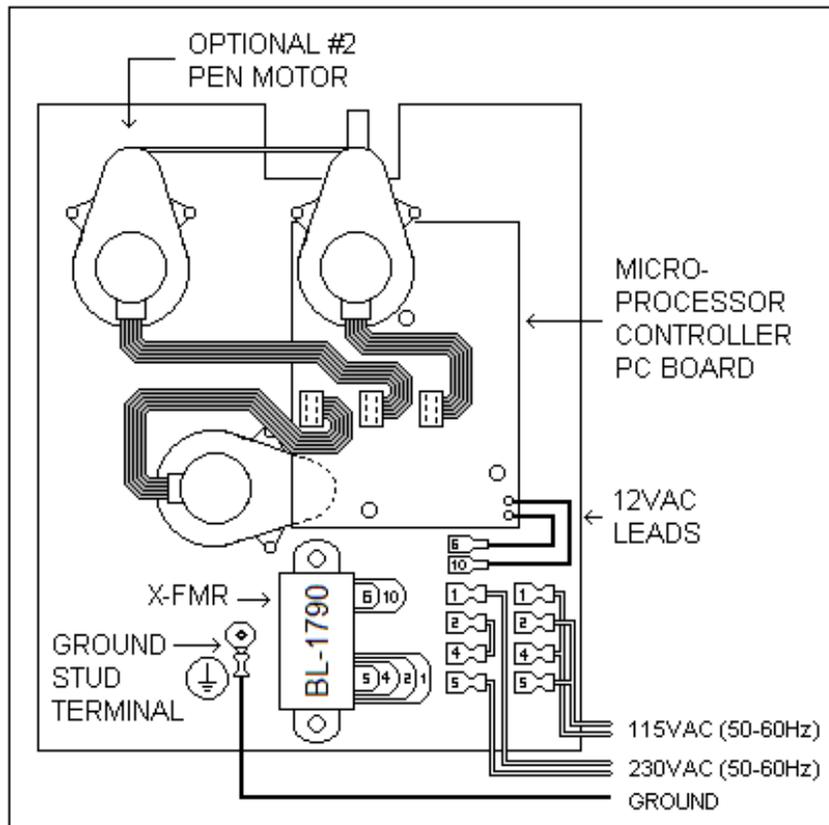


Figure 7A: Recorder Assembly Type “B” (Rear View).

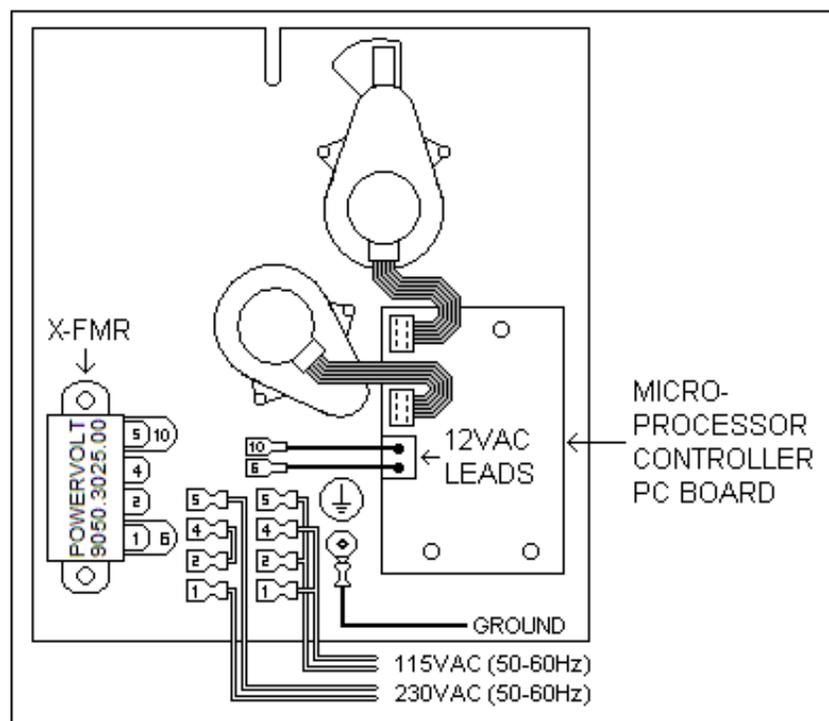


Figure 7B: Recorder Assembly Type “C” (Rear View).

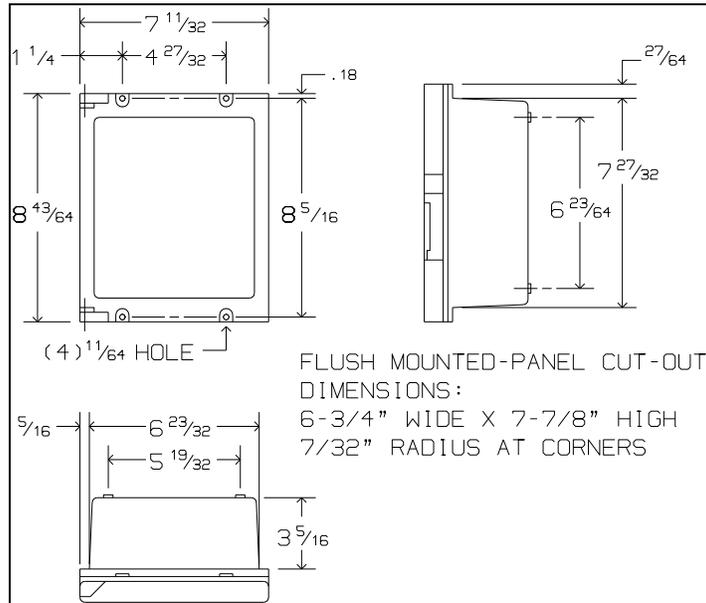


Figure 8: 6" Recorder Case Dimensions.

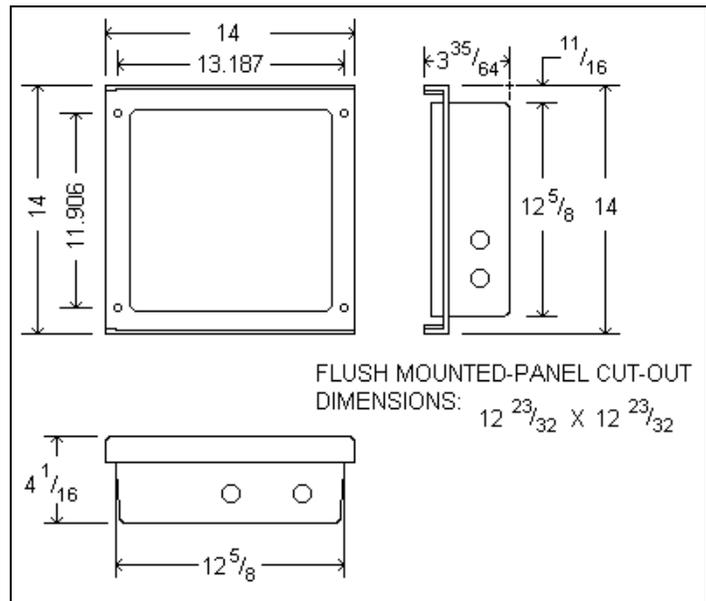


Figure 9: 10" Recorder Case Dimensions.

For all physical dimensions and panel cut-out dimensions for *skeleton* and *skeleton with door* recorders, please contact COBEX Recorders, Inc.

GUARANTEE: COBEX products are warranted to be of good workmanship and quality and free from defects under normal use and service. This warranty is limited to repairing such defects, provided return is made prepaid to COBEX Recorders, Inc., Coconut Creek, Florida within one (1) year after delivery to the original purchaser. COBEX shall not be liable for consequential damages. This warranty is in lieu of all other warranties, guarantees, liabilities or obligations, statutory, expressed or implied to the original purchaser or to any other person. No agent is authorized to assume for COBEX Recorders, Inc., any liability, except as set forth above.

Orders submitted on customer's own purchase order forms, which forms may contain statements, clauses, or conditions modifying, adding to, repugnant to or inconsistent with the terms and provisions of the Seller herein contained will be accepted by the Seller only upon condition and with the express understanding that notwithstanding any such statements, clauses, or conditions contained in any order forms of the customer the liabilities of the Seller shall be determined solely by its own terms and conditions of sale, and in accepting and consummating any such order the Seller shall be deemed not to have in anyway changed, enlarged or modified its liabilities or obligations as fixed by such terms and conditions of sale as stated by the Seller herein.