

Operator Manual

INTOXILYZER®

8000

Breath Alcohol
Testing Instrument



P/N 650818

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Lev B



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INTOXILYZER®

8000

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INTOXILYZER® ...so you can breathe easier



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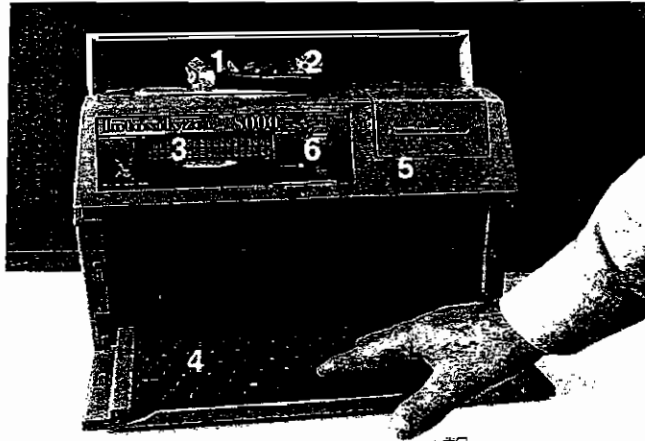
Introduction

The purpose of this manual is to ensure that the user of the CMI, Inc. INTOXILYZER® 8000 achieves the necessary depth of understanding prior to using the device for evidential breath testing. The manual covers all aspects from description of the principles of analysis to running a breath test.

Instrument Description

Overview

The CMI, Inc. INTOXILYZER® 8000 is an infrared-based device, as is shown in the diagram below, has been designed for both mobile and stationary evidential breath alcohol testing. It has a revolutionary design with several features and software configurations.



1. Mouthpiece storage area [heated to minimize likelihood of condensation during breath test].
2. Breath Hose coiled in the top recess of the instrument to allow easy access. Thirty-six inches in length, the hose is flexible but non-kinking, non-collapsible and is heated to ensure that no condensation forms when a breath sample is supplied. The temperature of the breath hose is under digital temperature control. Despite this, it is advised that at all ambient temperatures, when not in use, the hose be positioned correctly within the housing. The hose accepts standard mouthpieces.
3. Instrument display, [vacuum fluorescence].
4. Drop-down standard PS/2 keyboard – may be detached from main unit to enable data entry to be performed remotely from where the test is taking place.
5. Printer unit, [either of the 'impact' or 'thermal' type] has a paper roll that when it is almost "out", a thin red line appears along the edge of the roll. When this occurs, it will be possible to perform no more than five custom test printouts until the end of the paper is reached.

6. Start button. This button is used to run an evidential breath test.

The CMI, Inc. INTOXILYZER® 8000 has a nominal power requirement of 60W. The device may be powered by each of the following:

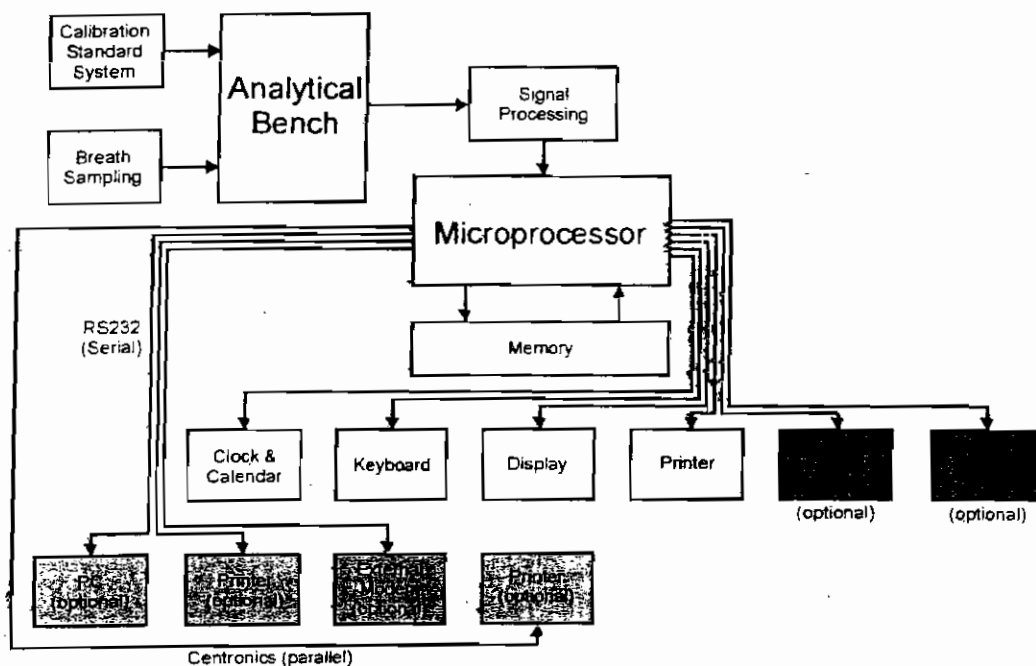
- 115VAC (47-63 Hz)
- 220VAC (47-63 Hz)
- 12VDC nominal (10 to 16VDC)

The power supply feeds into a recess at the rear of the device (not shown in the diagram) and has been designed in such a way that ensures that the overall footprint of the device remains unchanged when power supply cables are connected. This means that the device is ideal for use in confined areas such as police vehicles.

A note should be made also of the fact that when the calibration of the device is verified during periodic checks, security tabs can be attached to the device in such a way that prevents any unauthorized opening of the casing. Provided they remain unbroken, the tabs (not shown) confirm that the device has remained in a fully operational condition between the periodic verification checks.

CMI, Inc. INTOXILYZER® 8000 "Operational Guide"

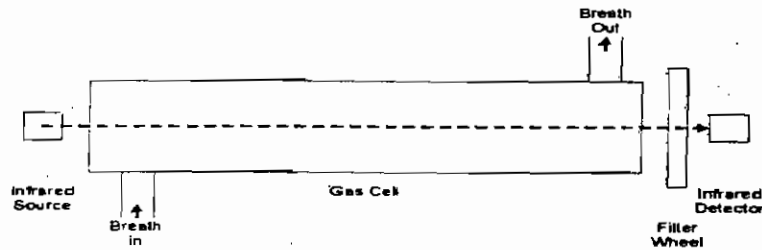
Having outlined the main external features of the CMI, Inc. INTOXILYZER® 8000 it is vital that the user of the device is aware of the relationship of each of the internal component parts. The block diagram below clearly demonstrates this.



Principle of Analysis

As indicated above, the fundamental principle of analysis is non-dispersive infrared absorption. That is, the greater the concentration of alcohol in a subject's breath specimen, the greater the amount of infrared light that is absorbed by that specimen. An infrared detector detects the absorption of the infrared light.

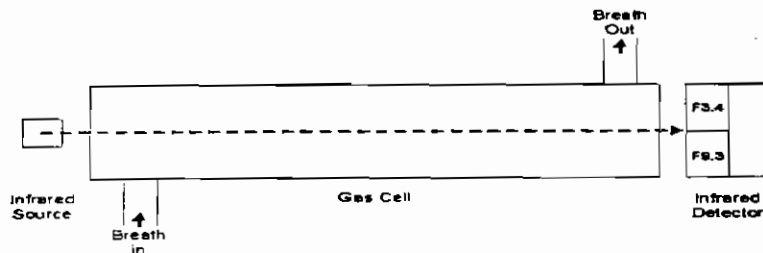
The above situation is summarized in the following diagram:



Applying this fundamental and scientifically accepted principle, in its design the CMI, Inc. INTOXILYZER® 8000 overcomes the only downfall of this method of quantifying a subject's breath alcohol concentration. That is, when using infrared light at a single wavelength it is possible that interferences present within the breath also absorb at the selected wavelength. The effect of this of course being that artificially high breath alcohol readings may be reported by the device.

In order to eliminate this possibility the CMI, Inc. INTOXILYZER® 8000 operates using infrared light selected at two wavelengths, 3 and 9 microns. The absorption ratio that is generated when alcohol alone is supplied in the path of the infrared light creates what may be termed as a fingerprint and that allows the device to discriminate between those samples, which are contaminated by breath interferences, and those that are not.

This is schematically shown in the diagram below.



What differentiates the CMI, Inc. INTOXILYZER® 8000 from other infrared-based breath testing devices is the fact that it has been designed in such a way that it will allow for prolonged use without the requirement for recalibration. The reason for this is that there are no moving parts within the device. The infrared light is pulsed in order that the dual pyroelectric detectors may accurately quantify as well as qualify the alcohol concentration present within the analytical cell.

Other Instrumental Features

The Keyboard

The Keyboard Options Menu

Diagnostic and set up functions can be accomplished through the Keyboard Options Menu, commonly known as the Escape Escape Sequence.

To enter the Keyboard Options Menu, press the ESC key twice in rapid succession while the instrument is in the IDLE MODE. It may take a few attempts to get the instrument to recognize the ESC ESC command. The timing is critical for this keystroke. This was done deliberately to help prevent an unauthorized operator from inadvertently activating the menu.

When the instrument recognizes the ESC ESC command, it may respond by asking for a password. This is an added measure of security requested by some customers. The screen should display "PASSWORD=". Type in the password given by the supervisor of your program and press ENTER. Each letter of the password will show up on the display as an 'X' for added security. The instrument will return to the IDLE MODE if an improper password is entered or if the START TEST button is pressed. If the proper password is entered, the instrument will display a list of letters. The exact Keyboard Option Menu items will vary by customer and hardware options.

The Customized Keyboard Options Menu

Press the ESC button twice very quickly to view the keyboard options menu. To make a selection from the menu, press the associated letter followed by the ENTER key.

Display: Menu #1: 1 A, C, T, D, E, S, I, P, M, V
Menu #2: 2 D, M, S, T

On First Menu:

- Continuous Air Blank (A)
- Custom Cal check (C)
- Proficiency Testing (T)
- Diagnostic (D)
- Prelim Data Entry (E)
- Standard Change (S)
- Instrument Mode (I)
- Printer Test (P)
- Monitor (M)
- Software Version (V)

On Second Menu:

- Diag Monitor (D)
- Maintenance (M)
- Setup (S)
- Control Testing (T)

A Continuous Air Blank

The pump is turned on and stays on until the START TEST button is pressed. This is a maintenance feature.

C Custom cal Check

Choosing this option will activate a sequence in which the instrument will be tested with the external simulator solution. The 8000 will prompt you for the values it is looking for to complete the sequence. You will need three simulators with the following solution values: 0.000 G/210L, 0.080 G/210L, and 0.160 G/210L. Be sure the simulator is connected properly before you begin this procedure.

Questions	Max Num. of Characters	Format
Operator last name?	20	Alpha, numeric, separator
Operator first name?	20	Alpha, numeric, separator
Certification num?	10	Alpha, numeric, separator
Agency Code?	5	##A##
Review data Y/N?	1	Y or N

T Proficiency Testing

Choosing this option will activate a sequence in which the instrument will be tested with the external simulator solution. The instrument will prompt you to "Attach standard and press key to proceed", at this time the instrument will run a series of nine cal check test.

Questions	Max Num. of Characters	Format
Operator last name?	20	Alpha, numeric, separator
Operator first name?	20	Alpha, numeric, separator
Certification num?	10	Alpha, numeric, separator
Agency Code?	5	##A##
Solution #	5	##-##.1
Review data Y/N?	1	Y or N

D Diagnostics

Enables user to run a self-diagnostics on the operation of the Intoxilyzer. This will print out the results.

E Preliminary Data Entry

There are non-standard requested functions under the preliminary data entry for this instrument. As each prompt appears there are two courses of action. Either type in the new data or press ENTER to review the existing data. In either case, press ENTER when the proper data is on the display to store it in memory.

"Date: "MM/DD/YYYY" (set date)

"Time: "HH:MM:SS" (set time)

"Enter Location: (set location)

S Standard Change

P Printer Test

This is a more complete diagnostic test for the printer.

For instruments with an internal printer. This test will print rows of characters to determine if there are any problems with the paper alignment or the individual print solenoids. A trained technician will be able to use the print out to check or trouble shoot the print device.

For instruments with an external printer, the entire active font set is printed. This will help a trained technician tell at a glance if there is any problem with the data lines from the instrument to the external printer.

M Monitor

This option will reprint results of last test.

V Software Version

Menu 2I D, M, S, T

The following options are available to the Technician:

- Diag Monitor.... (D);
- Maintenance... (M);
- Setup.... (S);
- Control Testing.... (T);

Diag Monitor 2: DI D, B, F, T, P, G

The following options are available to users:

- DVM Monitor (D);
- Barometric Monitor (B)
- Flow Monitor (F);
- Temperature Monitor (T);
- Printer Test (P);
- Tank Monitor (G);

Each of the above options are described:

D DVM Monitor

This routine enables a user to monitor the voltage output from the 3 and 9 micron infrared detectors. Typically, this would be performed as part of the diagnosis of an instrumental problem. In DVM mode, the cell and breath hose temperatures should be:

- Within .15°C of the set point 47°C for the cell
- Within 2°C for the set point of 45°C for the breath hose.

The span numbers for each channel should be below ten counts and DVM readings should be between the ranges of 9000 to 16000.

B Barometric Monitor

This test may be performed when the device is being used in conjunction with the dry gas calibration checking system.

F Flow Monitor

This routine enables a user to perform a simple check to confirm whether or not the output from the flow sensor is satisfactory.

T Temperature Monitor

This routine enables a user to check the temperature of the sample chamber and breath hose.

P Printer Test

This routine enables a user to perform a simple check to confirm whether or not the printer is printing characters correctly.

G Tank Monitor

This option will display the pressure of the dry gas cylinder.

P: ### psi

Maintenance ... 2: Ml D, C

- Diagnostics..... (D);
- Calibration..... (C);

D Diagnostics

Enables user to run a self-diagnostics on the operation of the Intoxilyzer. This will print out the results.

C Calibration *The following option is available to users, but caution should be used*

The instrument calibration routine is divided into four entirely independent sections.

Having selected the Maintenance category within the system menu the following indication will be displayed on the screen:

2: M: C1 G, F, O, I, B

When prompted by this message the user must press "G" "F" "O" or "I" to select the offset of regulator, or calibrate the flow sensor or optical bench and/or calibrate the internal test procedure respectively.

G Tank Sensor Cal

Cal Tank Sen (Y/N) ?

When option "G" is selected the offset of regulator is set by following instructions on display.

F Flow Sensor Cal

Cal Flow Sen (Y/N) ?

When option "F" is selected from the Calibration menu the user is automatically entered into the flow sensor calibration routine. The calibration routine must be performed in relation to an air supply with the appropriate control on output flow rate.

O Optical Bench Cal

Cal Opt Bench (Y/N) ?

When option "O" is selected from the Calibration menu the user is automatically allowed access into the optical bench calibration routine.

Cal ITP (Y/N) ?

I Internal Control Test

When option "I" is selected from the Calibration menu the user is automatically allowed access into the internal test procedure calibration routine.

B Battery Calibration

Setup ... 2: S I E, L, P, G, T, V, Z

The following options are available to users:

- Set Time/ Date (E);
- Set Location (L);
- Printer Setup (P);
- General Setup (G)
- Configure Start Test (T);
- Ser Num/ Version Info (V);
- Change Password (Z);

Each of the above options are described:

E Set Time and Date

Enables the user to change the instrument time and date. The PageUp key or PageDown key will allow you to Select the **Time Mode:** and **Date Mode:** formats provided. Press Enter to accept changes.

L Set Location

Enables user to enter location of the unit.

SCREEN	MAX. NUM. of CHARACTERS	FORMAT
Enter Location:	20	Alpha, Numeric

P Printer Setup

The display from the 8000 will display:

Inhibit Printer Y/N?
Print Copy Count: 1-3

G General Setup

Enables user to select the instrument to display the volume.

The display from the 8000 will display:

Display Volume? Y/N
Display Third Digit? Y/N
Save Records? Y/N
Enable Data Stream? Y/N

T Configure Start Test

Enables user to select the test sequence the instrument will run from the start test button.

The display from the 8000 will display:

Data Entry Mode: (PageUp Key or PageDown Key to move through the selections, and press enter to accept)
ENABLED
DISABLED

Start test sequence: (PageUp Key or PageDown Key to move through the selections, and press enter to accept)

ABA
ACABA
ABABA
ABACA
ADABACABA no .02 agreement (ABA)

A- AIR BLANK

- B- BREATH TEST
- C- CONTROL TEST
- D- DIAGNOSTICS

Select Cal (D/W/I):

Dry gas Cal Check (D);
Wet Bath Cal Check (W);
Internal Cal Check (I)

Enter Target Value: .000 (NOTE: if .000 is inputted instrument will not look for a tolerance)

V Ser Num/ Version Info

When user selects this, the instruments serial number and version number of the operating firmware is displayed. PageUp or PageDown keys will show the DSP Version and CPLD Version of the operating firmware.

Z Change Password

When user selects this, the instrument will display "PASSWORD" prompting user to change the password for the menus. It will allow up to 15 alpha or numeric characters.

T Control Testing... 2:Tl: D, W, I, S

- Dry Control Test (D);
- Wet Control Test (W);
- Internal Control Test (I);
- Stability Test (S);

D Dry Control Test

When the routine is selected the device automatically enters a single dry gas calibration checking cycle.

W Wet Control Test

When the routine is selected the device automatically enters a single wet bath calibration checking cycle.

I Internal Control Test

When the routine is selected the device automatically run an internal test procedure that tests the components associated with the optical bench.

S Stability Test

The function automatically runs through a series of calibration checks – the number of which must be specified by the user.

Questions asked

Format

Select Cal (D/W/I)
#Checks to Run:

D, W, I
2 - 20

Customized Data Entry Questions

When the Intoxilyzer 8000 completes the warm up period depress the START TEST button. Next, enter the appropriate answers to the customized data entry sequence below before beginning a subject test.

Questions	Max Num. of Characters	Format (see below)
Operator last name?	20	Alpha/Numeric/Separator
Operator first name?	20	Alpha/Numeric/Separator
Certification num?	10	Alpha/Numeric/Separator
Agency code?	5	##A##
Review Data? Y/N	1	Y/N
	Please swipe/scan	
Sub last name ?	20	Alpha/Numeric/Separator
Sub first name?	20	Alpha/Numeric/Separator
Sub middle name?	20	Alpha/Numeric/Separator
Sub DOB?	8	MM/DD/YYYY (valid date)
Sub sex?	1	M/F
Sub SSN?	9	Numeric
Sub DL number?	20	Alpha/Numeric/Separator
Sub DL state?	2	Alpha
Citation number?	7	Alpha/Numeric/Separator
Crash Y/N?	1	Y/N
Sim temp 34 +/- .2?	1	Y/N
Review Data? Y/N	1	Y/N

-Alpha is any letter from A to Z

-Numeric is any digit from 0 to 9

-Separator is any other symbol character including slash, dash, comma, period, and space.

Printed Output

The following illustrations are possible printed output for your Intoxilyzer 8000 instrument. They show the custom mode sequence and custom data entry described in the previous sections. Printout of custom mode from an external printer:

State of New Mexico – DOH
NEW MEXICO
Intoxilyzer - Alcohol Analyzer
NM Model 8000
SN 80-000248
Date of test 03/19/2003

Sub Name= Smith, John, J
Operators Name= Green, Judy
Cert No= 12345
Agency Code= 12A34

Copy No 01 of 01

Test	BrAC	Time
Air Blank	0.000 g/210L	08:27AM CST
Diagnostics Test	Pass	08:28AM CST
Air Blank	0.000 g/210L	08:28AM CST
Subject Test	0.000 g/210L	08:29AM CST
Air Blank	0.000 g/210L	08:31AM CST
Cal Check	0.100 g/210L	08:34AM CST
Air Blank	0.000 g/210L	08:32AM CST
Subject Test	0.000 g/210L	08:32AM CST
Air Blank	0.000 g/210L	08:33AM CST

Operator's Signature

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The following illustrations are possible printed output for your Intoxilyzer 8000 instrument. They show the custom mode sequence and custom data entry described in the previous sections. Printout of custom mode from an internal printer:

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Diagnostics Test	Pass	08:28AM CST
Air Blank	0.000 g/210L	08:28AM CST
Subject Test	0.000 g/210L	08:29AM CST
Air Blank	0.000 g/210L	08:31AM CST
Cal Check	0.100 g/210L	08:34AM CST
Air Blank	0.000 g/210L	08:32AM CST
Subject Test	0.000 g/210L	08:32AM CST
Air Blank	0.000 g/210L	08:33AM CST

Operator's Signature

Appendix I: Contacts Information

Mail

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