



Special TMO2D Software for Storing Three Gas Mixtures

Introduction

Your Model TMO2D Digital Display has been configured with a special software version (**LBL.004.F**) that permits the instrument to store calibration curves for three different gas mixtures. This allows you to quickly display any one of three different gas mixtures using a single analyzer/transmitter. The full *User's Manual* for the TMO2D (910-084B) will be referenced in this addendum as required.

IMPORTANT: *If your special software is version LBL.004.E or earlier, do not use this document. You should have User's Manual 910-084A and you should be using addendum number 913-218A instead.*

Before proceeding, be sure that your TMO2D has been installed and set up in accordance with the instructions in your *User's Manual*. A complete set of standard *menu maps* may be found in Appendix B of that manual to assist in programming the unit.

Topics Covered

Refer to the pages indicated for instructions on the following topics:

Note: *Each of the three different gas mixtures is referred to as a "Channel" in the TMO2D software. The calibration data and channel label for each channel must be entered before accurate data displays can be obtained (see next page).*

- Programming the Channel Data (page 2)
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Programming the Channel Data

In order to display accurate data for each of the three channels, the correct information must be entered into the TMO2D. To enter programming mode from the normal data mode, proceed as follows:

| | | |
|--------------|-----------------|---|
| CHx | HH:MM:SS | This is the normal data mode screen with channel x displayed. Press [NO]. |
| X.XX% | Alm: | |

| | |
|--------------------------|---|
| Enter Code: * * * | Press [1], [2], and [3] in sequence with no more than a 10 second pause between keystrokes. |
| X.XX% Alm: | |

| | |
|------------------|--|
| MAIN MENU | You are now in programming mode at the <i>Main Menu</i> level. |
| Setup? | |

Only those programming steps that differ from the standard software will be described in detail in this addendum. Refer to Chapter 3, *Operation*, in your *User's Manual* for instructions on using the TMO2D keypad and/or a connected PC for programming the unit.

IMPORTANT: *You should always be sure that the “Select Channel” menu in the following section has been completed before using any of the other menus.*

The *Select Channel* Menu

The *Select Channel* menu must be completed before programming any of the other menus. At the *Main Menu*, press [NO] until the following screen appears:

| | |
|------------------------|--------------|
| MAIN MENU | Press [YES]. |
| Select Channel? | |

| | |
|--------------------------------|--|
| Select Channel to Edit: | Use the arrow keys to place the brackets around the desired channel number. Press [YES]. |
| [1ST] 2nd 3rd | |

| | |
|------------------------|--|
| MAIN MENU | You are now back at the Main Menu level. |
| Select Channel? | |

Any data that you program into any of the other menus will now apply only to the channel that was selected above.

At this point, you may either select another menu for programming or exit programming mode and return to the normal data display.

The Setup Menu

The *Setup* menu includes the following submenus:

IMPORTANT: *The data entered in this menu applies only to the currently selected channel (i.e. gas mixture).*

- Set Time? (unchanged - see *User's Manual* for instructions)
- Set Date? (unchanged - see *User's Manual* for instructions)
- Set Backlight? (unchanged - see *User's Manual* for instructions)
- Set Contrast? (unchanged - see *User's Manual* for instructions)
- **Set Display?** (see instructions below)
- Set Communications? (unchanged - see *User's Manual* for instructions)
- Set Error Handling? (unchanged - see *User's Manual* for instructions)

Note: *The “Set Gas/Units/Scaling” submenu that appears in the standard software is not present in this special software.*

Setting the Display Decimal Places

At the *Main Menu*, press [NO] until the following screen appears:

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|--|
| SETUP MENU Set Display? |
|--|

Press [YES].

| |
|---|
| Select Decimal Place: 0.0 [0.00] |
|---|

Use the arrow keys to place the brackets around the option with the desired number of decimal places for the data display. Press [YES].

| |
|--|
| SETUP MENU Set Display? |
|--|

Press [NO] three times.

| |
|-----------------------------------|
| SETUP MENU Done? |
|-----------------------------------|

Press [YES].

You will now find yourself back in the *Main Menu* at the *Setup* submenu. Either select another menu for programming or exit programming mode and return to the normal data display.

The *Outputs* Menu

To program the *Outputs* menu, at the *Main Menu*, press [NO] until the following screen appears:

IMPORTANT: *The data entered in this menu applies only to the currently selected channel (i.e. gas mixture).*

Note: *For this example, we will program Output A of Channel 1, with an output range of 4-20 mA. Other outputs, channels, and ranges are programmed in a similar manner.*

MAIN MENU
Outputs?

Press [YES].

Select output to set:
[A] B done

Use the arrow keys to place the brackets around the desired output and press [YES].

A Output Range (mA):
0-20 [4-20]

Use the arrow keys to place the brackets around the desired output range and press [YES].

Output A 4 mA Value:
%CH1 [x.xx]: y.yy

Enter the % gas that should generate a 4 mA signal for Output A in Channel 1. Press [YES] twice to enter and confirm the new value.

Output A 20 mA Value:
%CH1 [x.xx]: z.zz

Enter the % gas that should generate a 20 mA signal for Output A in Channel 1. Press [YES] twice to enter and confirm the new value.

Select output to set:
A B [DONE]

Use the arrow keys to place the brackets around *DONE* and press [YES].

MAIN MENU
Outputs?

You are now back at the main menu level.

At this point, you may either select another menu for programming or exit programming mode and return to the normal data display.

The *Relays* Menu

To program the *Relays* menu, at the *Main Menu*, press [NO] until the following screen appears:

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|------------------------------------|
| MAIN MENU Relays? |
|------------------------------------|

Press [YES].

As the programming of the *Relays* menu is identical to the standard software, the details will not be repeated here. The only difference is that the currently selected channel is identified in the *Alarm Low Setpoint* and *Alarm High Setpoint* prompts. See your *User's Manual* for complete instructions.

| |
|------------------------------------|
| MAIN MENU Relays? |
|------------------------------------|

You are now back at the main menu level.

At this point, you may either select another menu for programming or exit programming mode and return to the normal data display.

The *Tests* Menu

To program the *Tests* menu, at the *Main Menu*, press [NO] until the following screen appears:

| |
|-----------------------------------|
| MAIN MENU Tests? |
|-----------------------------------|

Press [YES].

As the programming of the *Tests* menu is identical to the standard software, the details will not be repeated here. The only difference is that the currently selected channel is identified in the *Output* and *Gas DVM Input* test display screens. See your *User's Manual* for complete instructions.

| |
|-----------------------------------|
| MAIN MENU Tests? |
|-----------------------------------|

You are now back at the main menu level.

At this point, you may either select another menu for programming or exit programming mode and return to the normal data display.

The *Calibration* Menu

To program the *Calibration* menu, press [NO] at the *Main Menu* until the following screen appears:

Note: *Be sure to enter the calibration data for all three channels. Refer to the Calibration Data Sheet supplied with your O2X1 for the correct calibration data.*

MAIN MENU
Calibration?

Press [YES].

CALIBRATION MENU
Select Channel?

Press [YES].

Select Channel to Edit:
[1ST] 2nd 3rd

Use the arrow keys to place the brackets around the desired channel number. Press [YES].

CALIBRATION MENU
Select Channel?

Press [NO].

CALIBRATION MENU
Edit Channel Label?

Press [YES].

Note: *The label entered at the next prompt will appear at the upper left corner of the data display screen to identify the channel.*

Channel X: [YYYYYYYYY]
<@ABCDEFGHIJKLMNO>

Enter a channel label of up to 8 characters (see your *User's Manual* for entry instructions). When done, press [.]

CALIBRATION MENU
Edit Channel Label?

Press [NO].

Proceed to the next page to enter the calibration curve data for the channel selected above.

*The Calibration Data
Menu*

CALIBRATION MENU
Edit Calibration Data?

Press [YES].

CHx
of Points [Y]: Z

Enter the number of available data points on the calibration curve for the selected channel. Press [YES] twice to enter and confirm the new value.

Point # 1
%CHx [a.aa]: b.bb

Enter the gas percentage for the first data point. Press [YES] twice to enter and confirm the new value.

Point # 1
mA [c.cc]: d.dd

Enter the corresponding mA output for the first data point. Press [YES] twice to enter and confirm the new value.

The above two prompts repeat until the total number of data points specified have been entered. Then, the following screen appears:

Working . . .

This screen appears while the calibration is being performed.

CALIBRATION MENU
Edit Calibration Data?

Press [NO].

Proceed to the next page to enter the AutoCal parameters for the currently selected channel.

The AutoCAL Menu

Note: See Chapter 4 of your User's Manual for a complete description of the TMO2D AutoCAL procedures and options.

CALIBRATION MENU
Auto Cal Parameters?

Press [YES].

Enable AutoCal:
[YES] no

Use the arrow keys to place the brackets around the desired option and press [YES].

After enabling AutoCal at the above prompt, the following submenus become available:

- Set Auto Verification? (unchanged - see *User's Manual*)
- Set Time Interval? (unchanged - see *User's Manual*)
- **Select AutoCal Curve?** (see below for instructions)
- Set Cal Gas Data? (unchanged except for identification of currently selected channel on display - see *User's Manual*)
- Set Settling Time? (unchanged - see *User's Manual*)
- Set Error Handling? (unchanged - see *User's Manual*)
- Perform AutoCal? (unchanged - see *User's Manual*)
- Reset Drift? (unchanged - see *User's Manual*)
- View Drift? (unchanged except for identification of currently selected channel on display - see *User's Manual*)

In the special software, the standard *SetAutoCal Mode* submenu is replaced with the following menu:

CALIBRATION MENU
Select AutoCal Curve?

Press [YES].

Select Calibration Curve:
[1ST] 2nd 3rd

Use the arrow keys to place the brackets around the desired channel number. Press [YES].

CALIBRATION MENU
Select AutoCal Curve?

Press [NO].

You may now proceed to any of the other submenus to continue programming the AutoCal parameters.

The *System Log* Menu

To program the *System Log* menu, at the *Main Menu*, press [NO] until the following screen appears:

| |
|--|
| MAIN MENU System Log? |
|--|

Press [YES].

The programming of this menu is identical to the standard software and the details will not be repeated here. For complete instructions, see your *User's Manual*.

| |
|--|
| MAIN MENU System Log? |
|--|

You are now back at the main menu level.

At this point, you may either select another menu for programming or exit programming mode and return to the normal data display.

The *Resume* Menu

To use the *Resume* menu, at the *Main Menu*, press [NO] until the following screen appears:

| |
|------------------------------------|
| MAIN MENU Resume? |
|------------------------------------|

Press [YES].

Note: *If you wish to continue programming the TMO2D, press [NO] at the above prompt instead.*

| | |
|----------------------------|--------------------------------|
| CHx X.XX% | HH:MM:SS Alm: |
|----------------------------|--------------------------------|

You are now back at the normal data mode screen with channel x displayed.

You have now completed the programming of the channel data for your meter.

Selecting the Channel to Display

While your TMO2D is in normal data mode, you can easily select any one of the three programmed channels for display. To do so, proceed as follows:

IMPORTANT: *When you select a new channel for display, the analog output and alarm relay parameters change to the currently programmed settings for the new channel.*

| | |
|--------------|-----------------|
| CHx | HH:MM:SS |
| X.XX% | Alm: |

This is the normal data mode screen with channel x displayed. Press [YES].

| | |
|--------------------------------|-------------|
| Select Channel (1/2/3): | |
| X.XX% | Alm: |

Press [1], [2], or [3] to select the channel (i.e. gas mixture) you wish to display.

Note: *If a valid key is not pressed within 10 seconds, you are returned to the previous data mode screen without changing the displayed channel.*

| | |
|--------------|-----------------|
| CHy | HH:MM:SS |
| Y.YY% | Alm: |

You are returned to normal data mode with the channel selected above now displayed.

Note: *The generic channel labels shown in the above data screens may be replaced by labels of your choosing. For instructions on doing so, see page 6.*