



TELEDYNE INSTRUMENTS

Advanced Pollution Instrumentation

A Teledyne Technologies Company
9480 Carroll Park Drive, San Diego, CA 92121-5201
Phone (858) 657-9800 Fax: (858) 657-9818 Toll Free 1800 324-5190
E-mail: api-customerservice@teledyne.com <http://www.teledyne-api.com>

Service Note

95-015 Rev B
2 May, 2007

MODEL 300 PROM RETROFIT INSTRUMENTS/115 VOLT

Tools Required: #1 Cross Point Screwdriver
#2 Cross Point Screwdriver
Potentiometer Screwdriver

1. **TURN POWER OFF TO MODEL 300 AND REMOVE THE COVER.**
2. Loosen the screw to the **pcb** holding strap and move the pcb holding strap so the V-F/CPU assembly could be remove. See Figure 1.7.
3. Remove the V-F/CPU assembly by loosening the captive screw. Tilt the V-F/CPU assembly and remove the existing prom. (See attached.) Replace with new prom (Part #310B3.CO.1_1). Now re-seat the V-F/CPU assembly and re-tighten the captive screw.
4. You will have to calibrate the pressure transducer (procedure below) and re-calibrate the Model 300. (Follow Quick Cal attached.)
 - . To calibrate the Model 300s pressure transducer: (Power to Model 300 still off.)
 - 5a. Remove power to the pump **CAUTION: 115V AC present if the power is left on to the Model 300.**) by pulling off the clear connector going to pin 2 of the pump. This will stop the pump - which is very important to set the pressure correctly.
 - 5b. Turn the power on to the Model 300. Scroll through the test functions until pressure is displayed and adjust R1 on the flow sensor assembly for the barometric pressure at your facility. Be sure to adjust to the correct barometric pressure at the Model 300 site!!! NOTE: The Model 300 will function properly at any elevation, but it is extremely important that the pressure transducer is setup correctly. A drop of approximately 1" Hg absolute is typical after the pump is re-connected to 115VAC.
 - 5c. Turn the power off to the Model 300 and reconnect the clear connector to pin 2 of the pump. After reconnecting pin 2 to the pump, turn the power on to the Model 300.
6. Follow the Quick Cal procedure to re-calibrate the Model 300 (attached).
7. All operational/functions of the Model 300 will still perform per our manual.

Model 300 Quick Cal

1. Calibrate the AID and D/A's

To calibrate the ADC, do the following:

- a) Press SETUP-MISC-D/A-CAL.
- b) The M300 display will read "DAC 40: 60 mV", where 60 mV* is the target voltage which should be coming out the DAC. Put the probe of a voltmeter on recorder output on the M100 rear panel, then press the up/down buttons on the M300 front panel until the voltmeter displays the target voltage (60 mV on the 5 V range). Note that the value on the M3 00 display will not change. When the voltmeter shows the same value(+/- ') mV as the. M3 00 display, press ENTR.

* the reading will be close to 60 mV if the analyzer is setup for the 5V range, 120 mV for the 10V range, etc. DAC 90 is the recorder output, DAC 91 is the DAS output, and DAC 93 is the test output.

- c) The-M3 00 display will now show a. new voltage in the same format as above. This voltage will be 90% of the full scale DAC output range (4500 mV on the 5V range). As before, press the up/down buttons on the M300 front panel until the voltmeter displays the same(+/- ') mV reading as the M300 display, then press ENTR. The first DAC is now calibrated and will be used as a voltage reference for- calibrating the ADC.
- d) The-M300 display will now read ZR:60=60+/-3mV, where 60mV is the voltage being. output from the DAC as input to the ADC, and 60 +/-3mV is the voltage as read from the ADC. The two values should be the same (60 = 60). If they are not, adjust the zero pot (R27) on the V/F card (as indicated by ZR, on the display) until the two values are the same, then press ENTR.
- e) The M300 display will now read GN:4500=4500 +/- where 4500 is the voltage being output from the DAC as input to the ADC, and 4500+/-3 is the voltage as read from the ADC. The two values should be the same. If they are not, adjust the gain pot (R3 1) on the V/F card (as indicated by GN on the display) until the two values are the same (4500=4500 +/-3mV), then press ENTR. The ADC is now calibrated.

Next, to automatically calibrate all the DACs, press SETUP-MISC-D/A-CAL-DAC. The display will show the percent completion as the analyzer goes through the procedure. You must calibrate the ADC before calibrating the DACs because the ADC is used during the DAC calibration procedure. Once the ADC is calibrated, you may recalibrate the DACs anytime simply by pressing SETUP-MISC-D/A-CAL, ENTR, ENTR, ENTR.

2. Adjust the gain setting of the Synchronous Demodulator board

To adjust the gain of the Synchronous Demodulator board:

- a) Connect a source of zero air to the analyzer
- b) Press the TST> or TST< button on the front panel until the CO MEAS value is displayed.
- c) Adjust pot R7 on the Synchronous Demodulator board until the CO MEAS reading is 65000 counts (+/- 2000).

3. Adjust the detector dark signal

To calibrate the dark current signal press SETUP-MISC-DARK-CAL and, the analyzer will *automatically* do the following:

- a) Disconnect the detector output from the processing electronics
- b) Wait 2 minutes for electronics to stabilize at the dark value-
- c) Average CO MEAS and CO REF readings for 1 minute
- d) Reconnect the detector output to the processing electronics to the processing electronics

The average CO @S and CO REF dark readings are stored as offsets which are subtracted from all future CO detector readings.

To view the current dark offset, press SETUP-MISC-DARK--VIEW. Press EXIT when finished. No password is required to view the dark offset, only to change it-

4. Adjust the analyzer zero point.

- a. Input zero air into the sample port.
- b. Press CALM from the SAMPLE menu and enter the password (818).
- c. Press ZERO
- d. After a stable reading has been obtained press ENTR. (It usually takes about 5-10 minutes for the reading to stabilize near zero). The display should now read 0 ppm carbon monoxide.

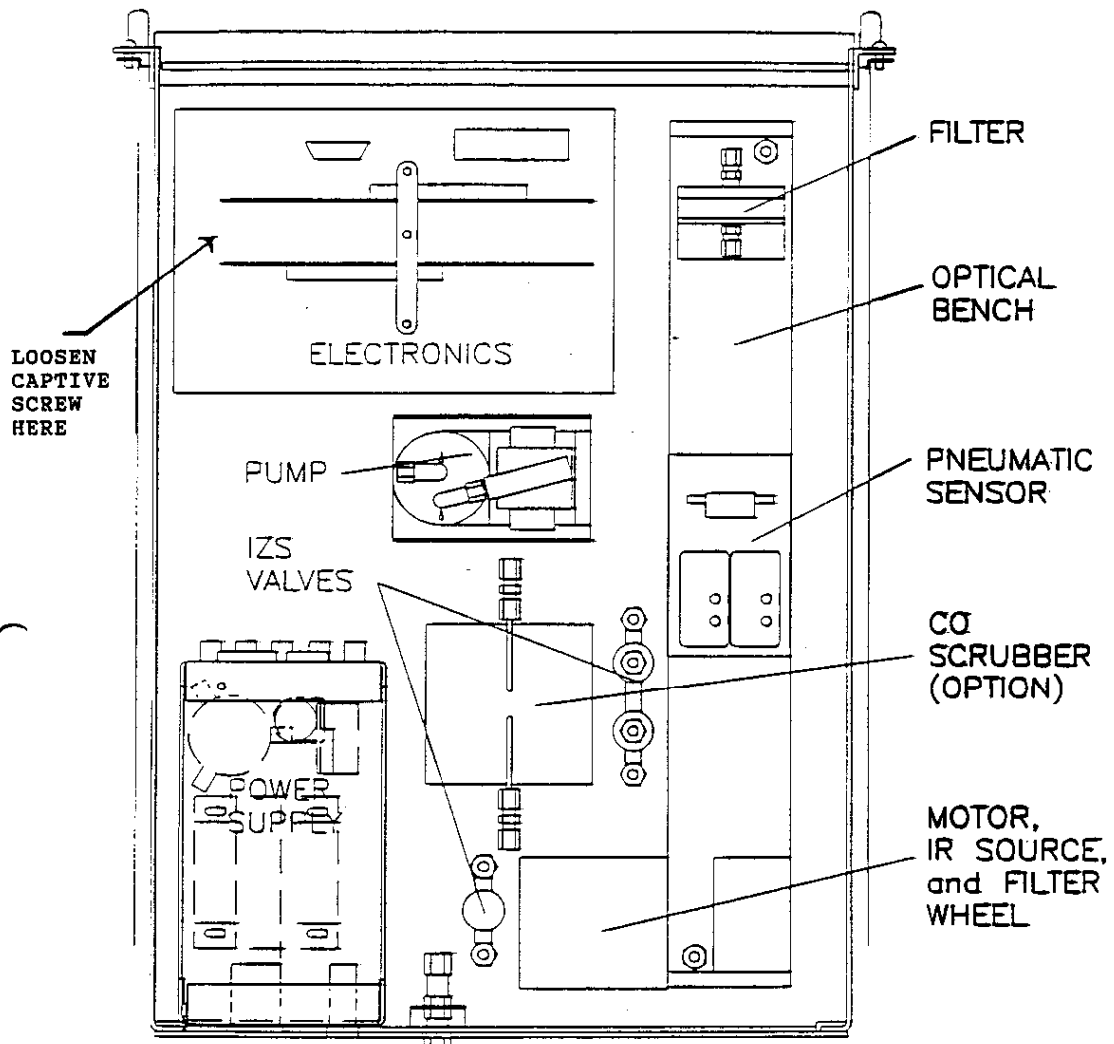
5- Adjust the analyzer span point.

- a. Input span gas of approximately 80% of the related full scale range concentration from a known source through the sample port of the analyzer.
- b. Enter the concentration of the carbon monoxide calibration gas by pressing SETUP-IZSC-SPAN and entering the value from the keyboard.
- c. Go to manual calibration by pressing the CALM button while in the sample mode. The menu should show SPAN, and EXIT selections. Wait 10 minutes for a stable reading to be attained and then press SPAN, followed by ENTR- The display should

now read the correct concentration of the calibration gas. The operator can **exit** the manual calibration procedure at any time by pressing the EXIT button.

NOTE:

If either- the ZERO or SPAN buttons are not displayed during, the procedures described above, this means that the Analyzer- is too far-out of adjustment to do a reliable calibration and thus it is not permitted (s Section 10 for troubleshooting information).

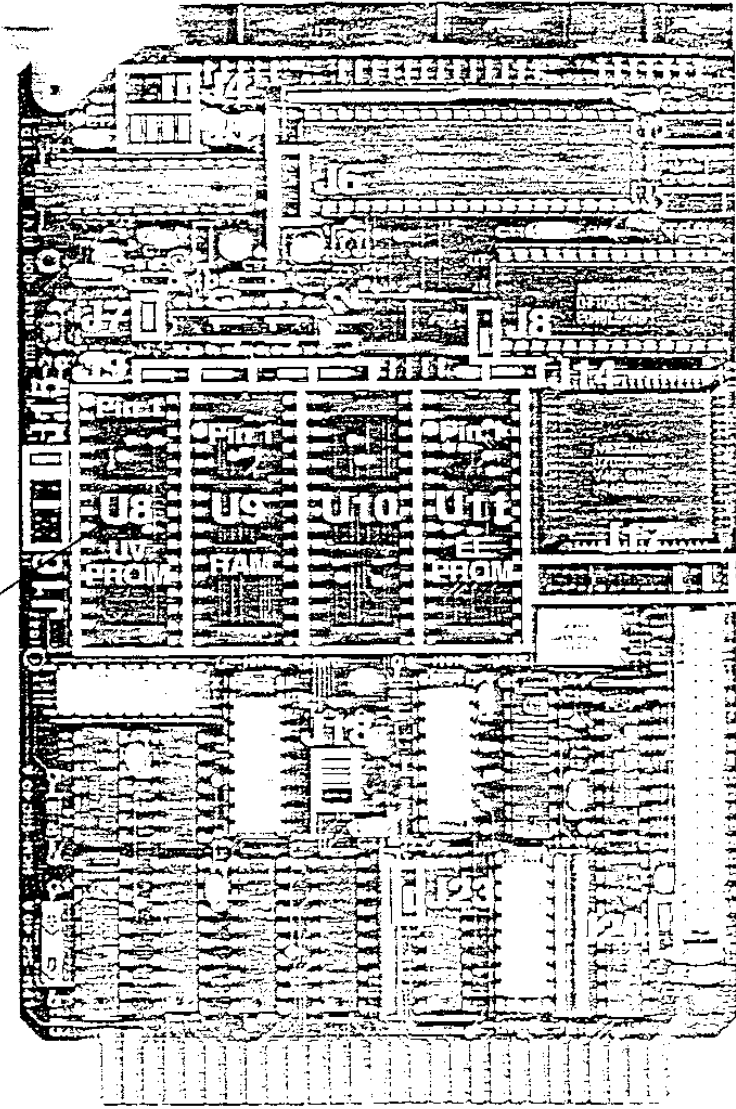


MODEL 300 ASSEMBLY LAYOUT

FIGURE 1.7

(

C



REMOVE OLD PROM
AND REPLACE WITH
NEW PROM
310B3.CO.1_1