TELEDYNE
ADVANCED POLLUTION INSTRUMENTATION
Everywhereyoulook™

9480 Carroll Park Dr., San Diego, CA 92121-5201
Phone (858) 657-9800 Fax: (858) 657-9818 Toll Free 1800 324-5190
E-mail: sda_techsupport@teledyne.com Website: http://www.teledyne-api.com

Service Note

09-009C
January 6, 2016

ADDING A CO_2 SENSOR OPTION TO AN M300E-EM

I. PURPOSE:

This service note is to provide instructions on how to add the CO_2 option (67A) OPTION, CO_2 SENSOR (20%) to your M300E-EM. This retrofit is also compatible with the T300-T300M

II. TOOLS:

Philips screwdriver
¼ inch, 9/16, 7/16 box/open end wrenches

III. PARTS:

KIT000301 (054250000 OPTION, CO_2 SENSOR (20%))

The electronics used in T-API analyzers are sensitive to Electrostatic Discharge (ESD). When working on any T-API device, please ensure that you are properly grounded prior to handling or touching any electronic circuitry in the analyzers! For more information on how to protect sensitive components from ESD during handling, please contact T-API customer service and ask for the ESD Service note number 03-022A.

IV. PROCEDURE:

1. Comparing figures 1 through 6 will help to familiarize you with the components, their arrangement, and pneumatic path.

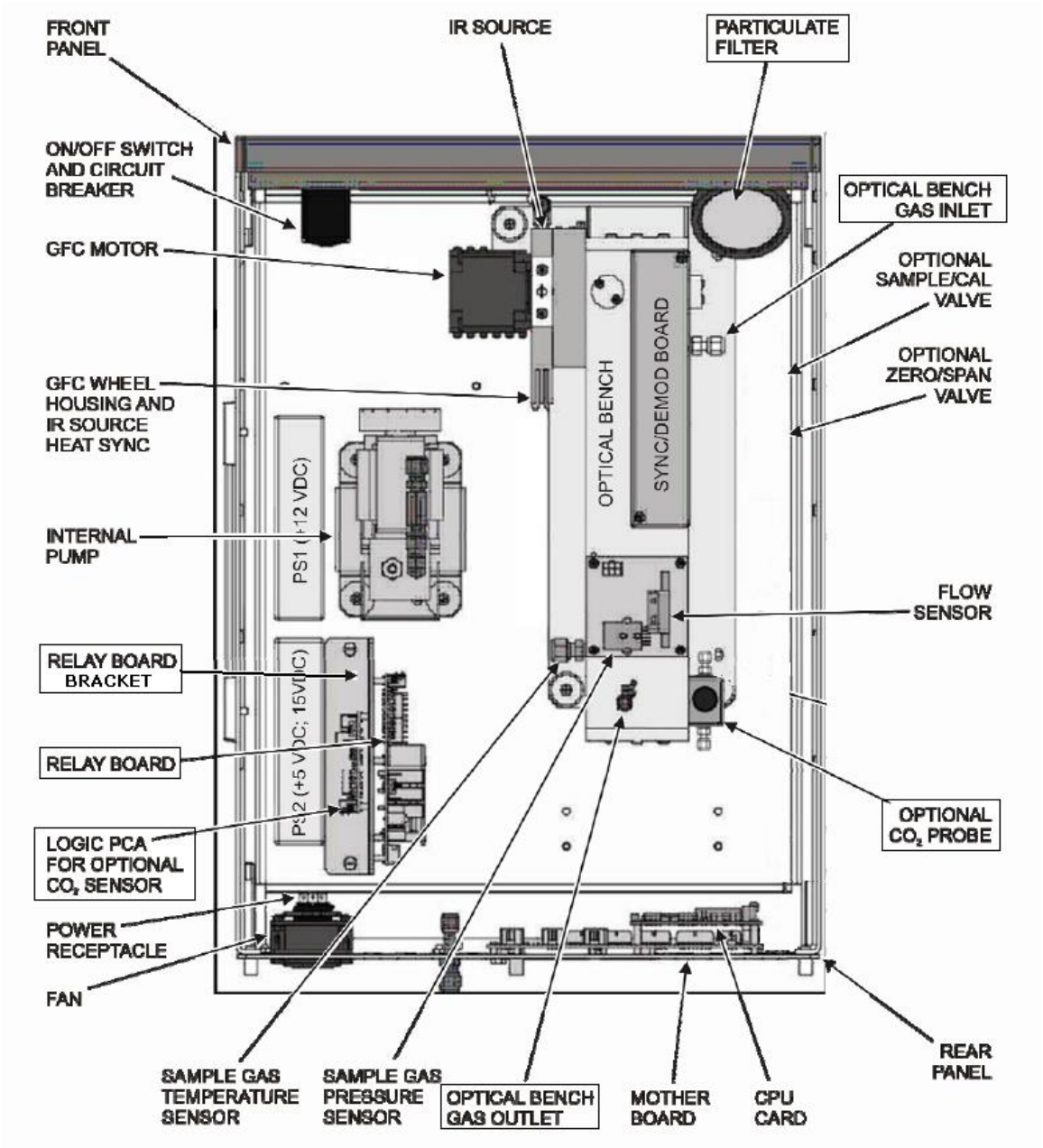


FIGURE #1

2. The installation procedure is the same for all compatible models.
3. Locate the relay board and its bracket. Loosen the brackets retaining screws that hold the assembly to the chassis. Tilt the whole assembly towards the center of the instrument.

4. Attach the CO_2 sensor's control PCA that came with your kit to the empty side of the relay boards bracket, using the four screws and standoffs that also came with your kit, see figure #1.
5. Re-secure the relay board bracket to the chassis.
6. Locate the optical bench. Locate the four threaded holes in the optical bench for mounting the CO_2 sensor. These holes are located on the left side of the optical bench at the backend; see figure #1 and #2.

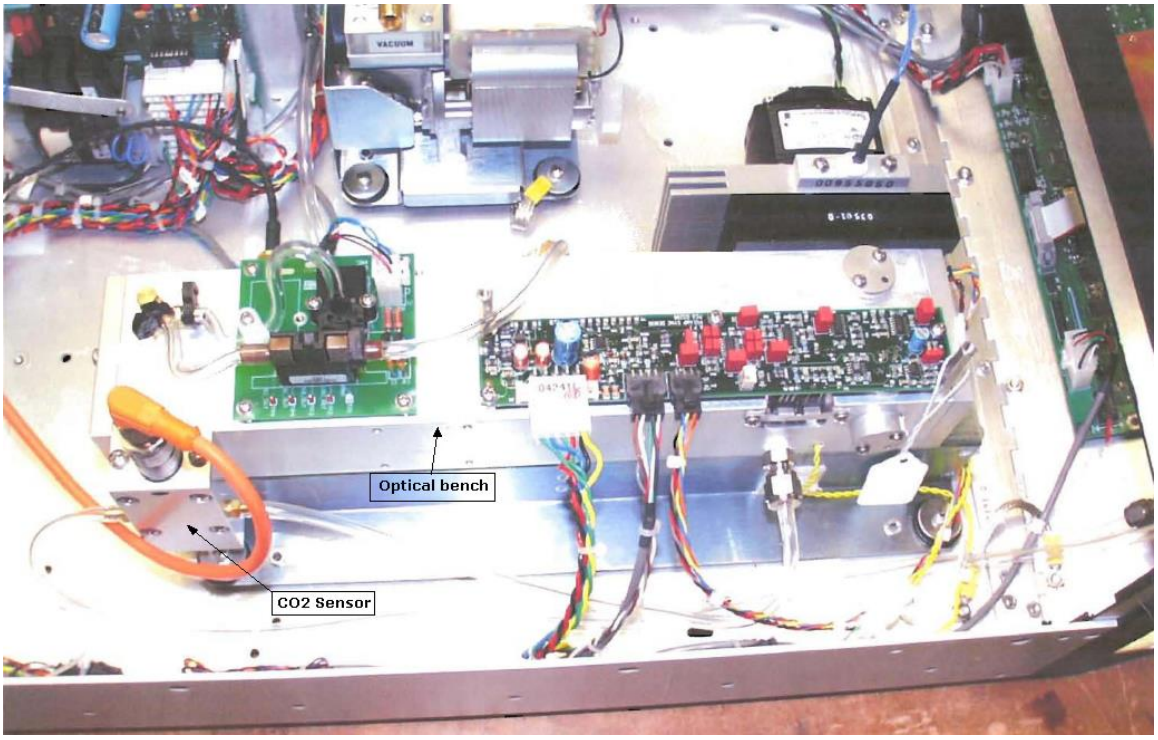
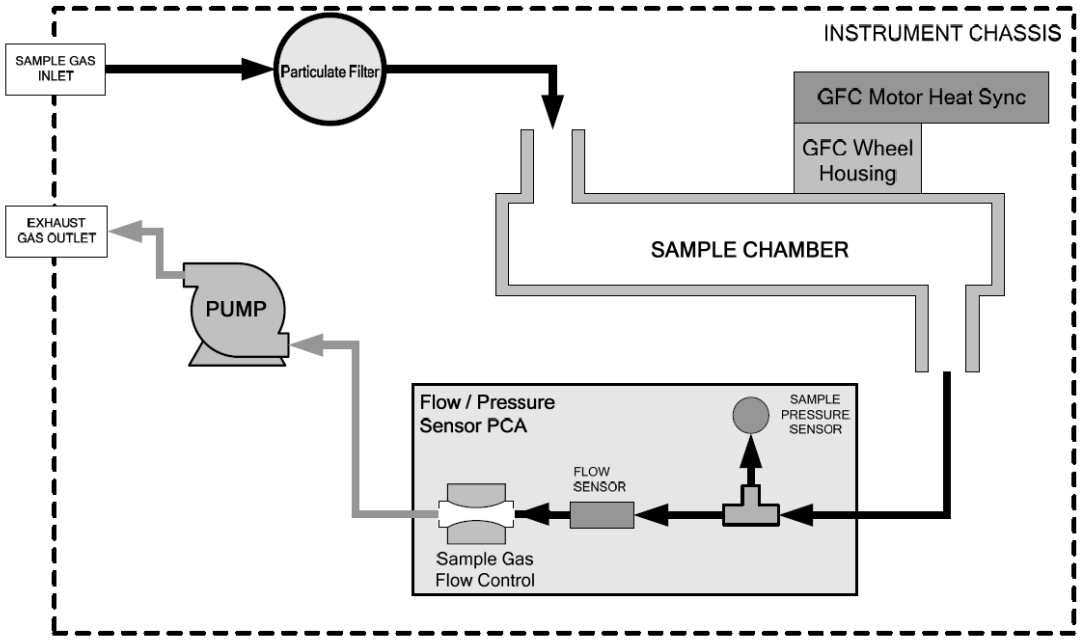
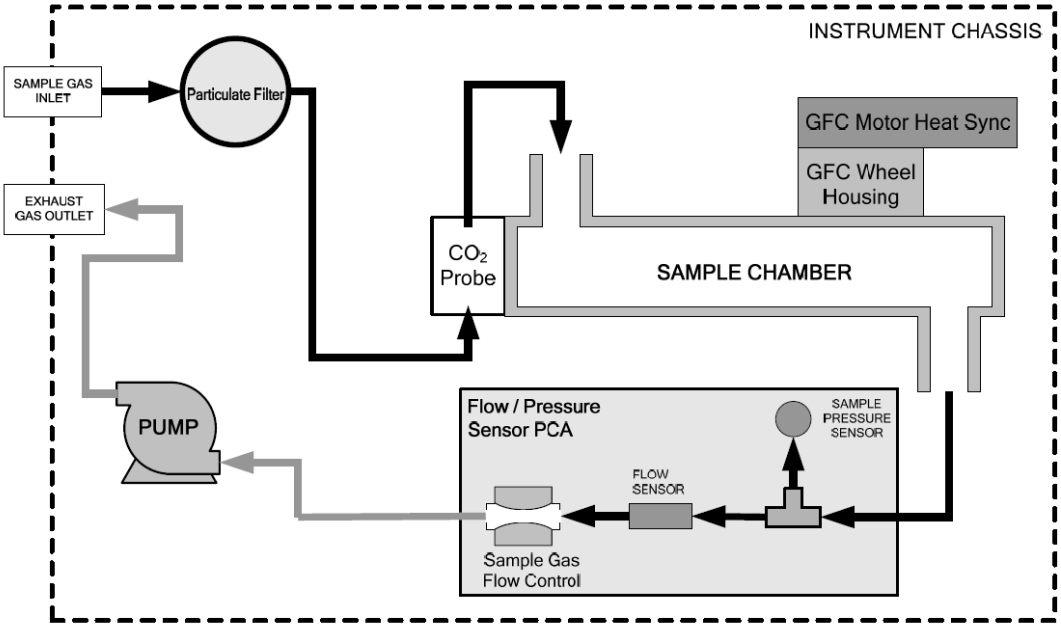


FIGURE #2

7. Comparing figure #3 to your instrument will help to familiarize you with the components, their arrangement, and pneumatic path.



M300E/EM Internal Gas Flow (Basic Configuration)



M300E/EM – Internal Pneumatics with CO_2 Sensor

Figure #3

8. Disconnect the black 1/8th inch Teflon tube from the inlet of the optical bench and from the particulate filter.
9. Remove the now empty 1/8th inch stainless steel fitting from the bottom center of the particulate filter. Prepare one of the ¼ inch stainless steel fittings (FT0000012) that came with your kit by applying 1 to 2 turns of Teflon tape to the machine threaded end only. Install the new fitting (FT0000012) into the now empty center hole of the particulate filter.
10. Prepare another of the ¼ inch stainless steel fittings (FT0000012) that came with your kit by applying 1 to 2 turns of Teflon tape to the machine threaded end only. Install the new fitting (FT0000012) into the now empty hole in the optical bench.
11. Connect the longer of the two-¼ inch pneumatic tubes that came with your kit to the new ¼ inch fitting on the particulate filter. Connect the free end (with no fitting) of the pneumatic tube to the INLET fitting of the CO_2 sensor; see figures #2, #3 and #4.

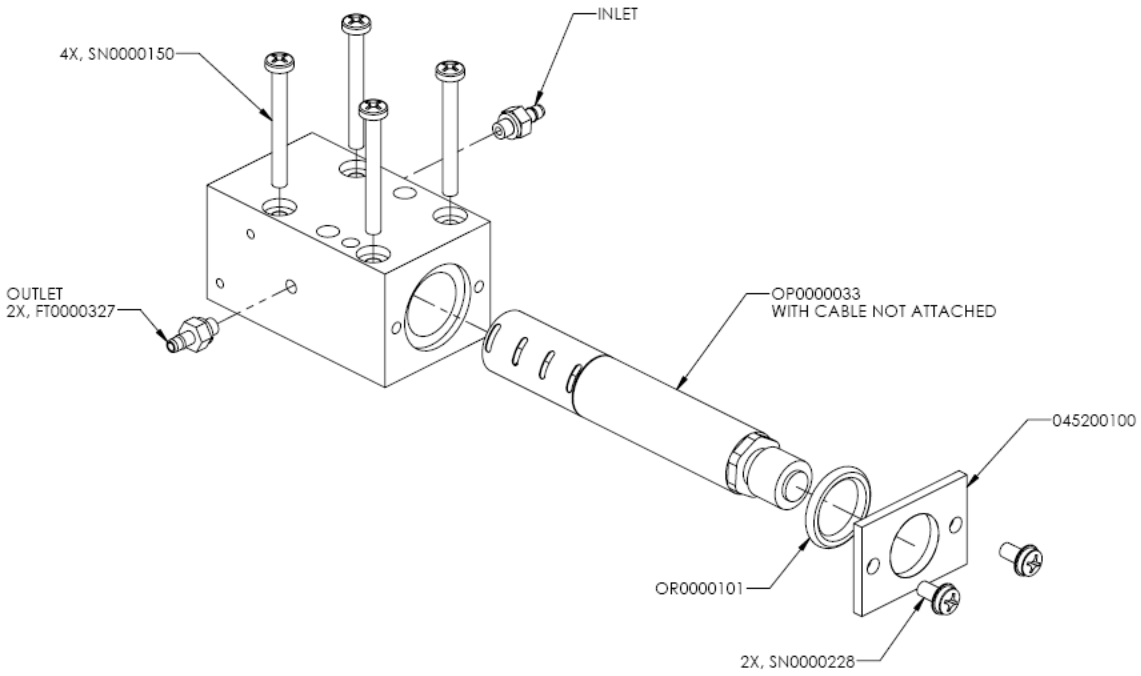


FIGURE #4

12. Connect the shorter of the two-1/4 inch pneumatic tubes that came with your kit to the new ¼ inch fitting (FT0000012) installed in the optical bench in step 10. Connect the free end (with no fitting) of the pneumatic tube to the OUTLET fitting of the CO2 sensor, see figures #2, #3 and #4.
13. Comparing figure #5 to your instrument will help to familiarize you with the electrical components, their arrangement, and connections.

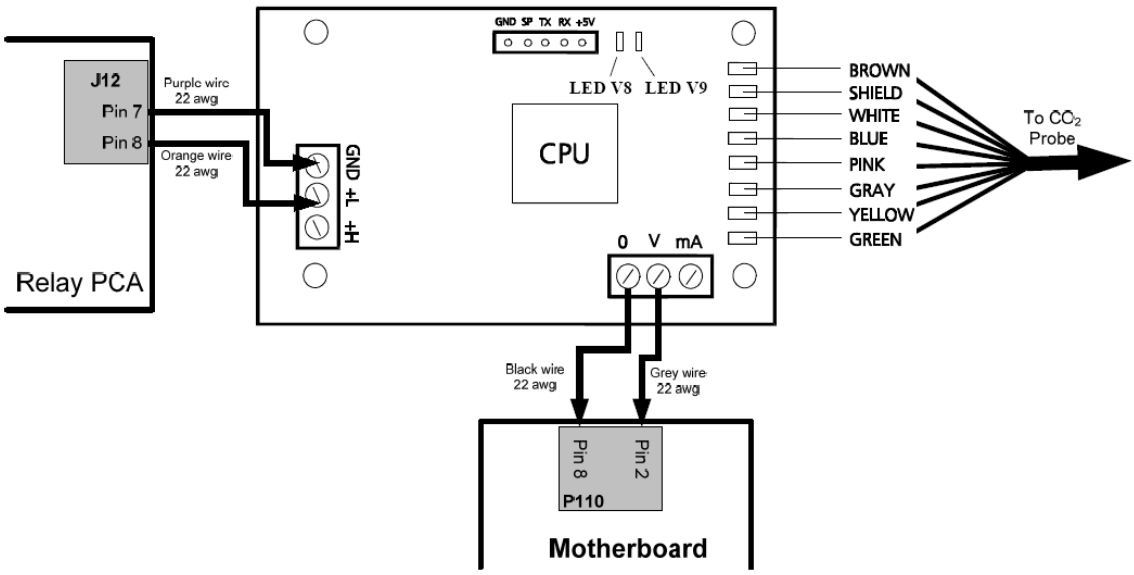


FIGURE #5

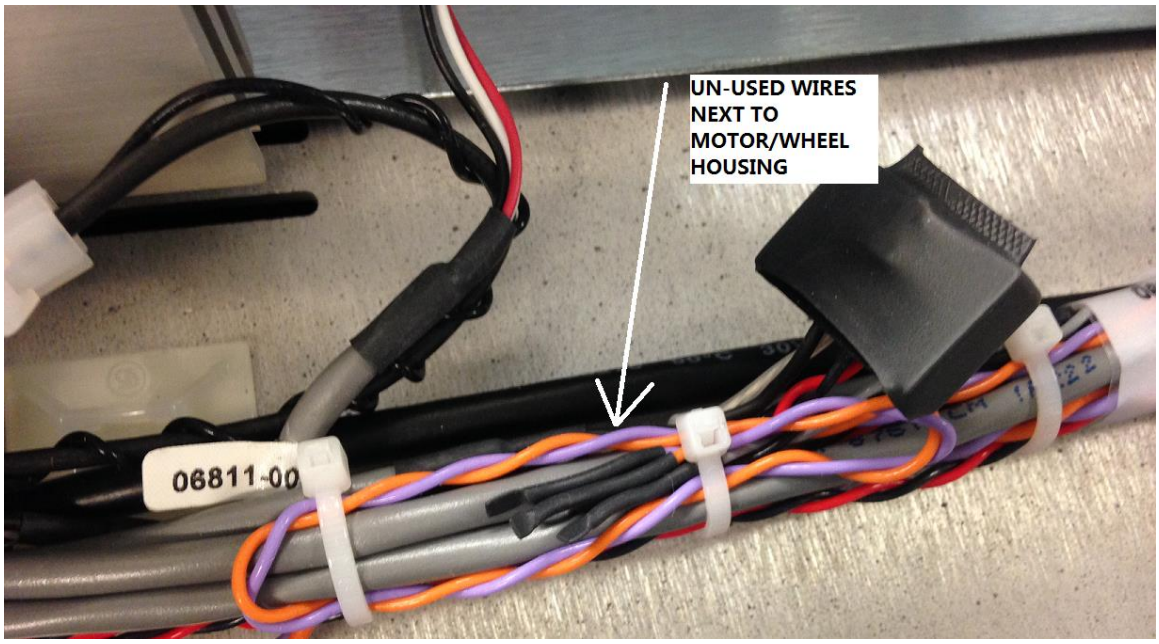


FIGURE #6

14. Locate the 4 un-used wires covered in shrink wrap which are black, grey, orange and purple. See figure #1, #5 and #6. Carefully remove the zip ties holding the wires down, and remove the shrink wrap. Connect the free end of the cable to the tie-down posts T, and GND on the CO_2 sensor PCA, see figure #5. The orange wire should connect to the tie-down post marked T, of the CO_2 sensor PCA. The purple wire should connect to the tie-down post, marked GND of the CO_2 sensor PCA.
15. Connect the free end of the cable to the tie-down posts V, and O on the CO_2 sensor PCA, see figure #5. The black wire should connect to the tie-down post marked O, of the CO_2 sensor PCA, see figure #5. The gray wire should connect to the tie-down post marked V, of the CO_2 sensor PCA, see figure #5.
16. Connect the Orange sensor cable to the top of the CO_2 sensor and secure the locking ring.
17. Contact SDA_techsupport@teledyne.com including the model and serial number of the instrument to receive the appropriate software and software update instructions.
18. See the cover letter included in your kit for calibration instructions.