TELEDYNE
INSTRUMENTS
Advanced Pollution Instrumentation
A Teledyne Technologies Company

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Service Note

10-015
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CPU AND MOTHERBOARD REPLACEMENT W/EXISTING MULTI-DROP

I. PURPOSE:

To give instructions on how to install an ICOP CPU and a new main board in to an instrument that has an existing Mult-drop.

II. TOOLS:

Phillips Screwdriver

III. PARTS:

KIT000321 KIT, RETROFIT, ICOP CPU, MB, W/MULTIDROP

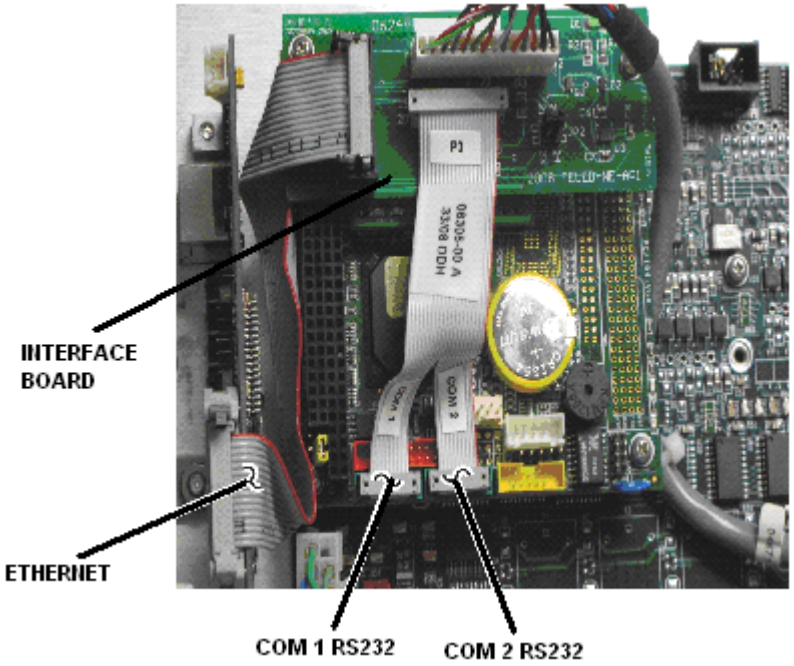
The electronics used in T-API analyzers are sensitive to Electrostatic Discharge (ESD). When working on any T-API device, please ensure that you are properly grounded prior to handling or touching any electronic circuitry in the analyzers! For more information on how to protect sensitive components from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

IV. INSTALLATION PROCEDURE

1. Prior to turning off the instrument record all of your multi-drop settings in the COM menu and also your FACTORY OPTION bit located in the VARS menu using the 929 password. You will need to input this after the installation of the new CPU board.

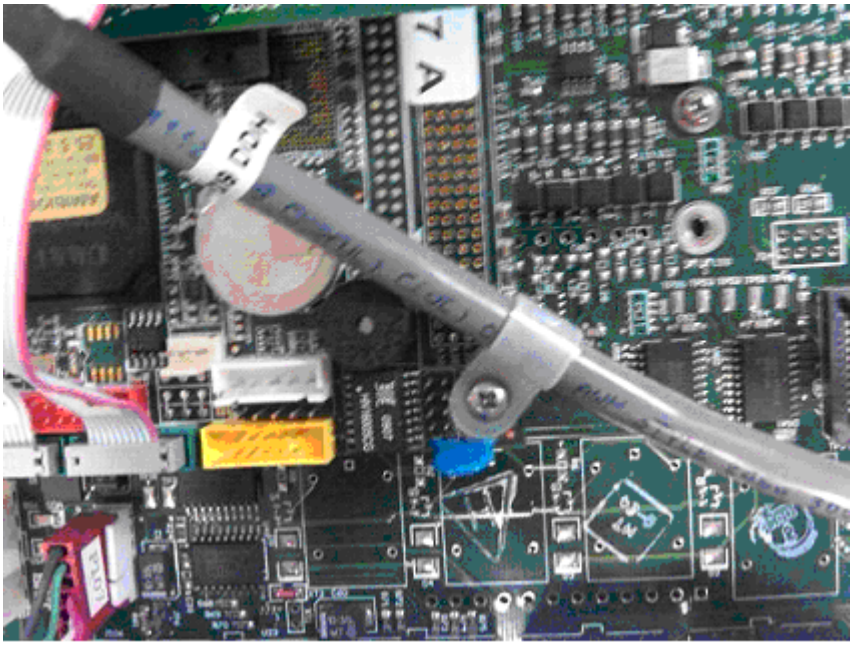
2. Turn the instrument off and unplug the power cord.
3. Remove the cover of the instrument.
4. On the rear panel remove all of the connectors attached to the motherboard and CPU. Remove the cable attached to J12 of the motherboard and CN3, 4 and 5 of the CPU from the instrument. This cable will not be used.
5. Remove the 4 screws on the motherboard and the 4 screws on the CPU board and remove the CPU and motherboard from the instrument.
6. Remove new CPU and Multi-drop interface board from the KIT and attach the new CPU to the main board if not already attached.
7. Attach the Multi-drop card so that the standoffs align with the screw holes on the CPU, if not already attached.
8. Connect the Multi-drop board to the CPU using the two screws SN-240 included in the kit.
9. Connect the remaining screws removed in step 5 and reconnect the motherboard to the rear panel.
10. Connect the cable included in your kit labeled 06305 to the CPU and the Multi-drop interface board as shown in figure 1.

Figure 1



11. Connect the cable included in your kit labeled 04671 to the main board at P12 and Multi-drop interface board at P2.
12. Remove the bottom right screw from your CPU and install the cable clamp onto your cable labeled 04671 and re-secure the screw to the CPU as shown in figure 2.

Figure 2



13. Reconnect the cables to the main board.
14. Once all of the connections have been made, close the rear panel and tighten the two screws (one on each side).
15. The analyzer is now setup with the new ICOP CPU.
16. Turn the instrument ON.
17. You must now enable the Multi-drop via the front panel of the instrument and use the settings recorded in step 1 above. (See ENABLING THE MULTIDROP BOARD) on the last page.
18. As this is a new CPU you will need to redo all of your calibrations (flow, pressure, analog output and Zero/Span).

ENABLING THE MULTIDROP BOARD:

1. From the main menu press SETUP-MORE-COM select COM1.
2. Below is a table that explains each of the channels.

Mode	ID	Description
Quiet mode	1	Quiet mode suppresses any feedback from the analyzer (iDAS reports, and warning messages) to the remote device and is typically used when the port is communicating with a computer program such as APICOM. Such feedback is still available but a command must be issued to receive them.
Computer mode	2	Computer mode inhibits echoing of typed characters and is used when the port is communicating with a computer program, such as APICOM.
Security mode	4	When enabled, the serial port requires a password before it will respond. The only command that is active is the help screen (? CR).
Enable Internet	8	Enables the use and configuration of the Ethernet interface. When enabled, a new menu item INET will appear in the respective COM port menu.
Hessen protocol	16	The Hessen communications protocol is used in some European countries. T-API part number 02252 contains more information on this protocol.
Multidrop Protocol	32	Multidrop protocol allows a multi-instrument configuration on a single communications channel. Multidrop requires the use of instrument IDs.
Enable modem	64	Enables to send a modem initialization string at power-up. Asserts certain lines in the RS-232 port to enable the modem to communicate.
Ignore Errors	128	Fixes certain types of parity errors at certain Hessen protocol installations.
Disable XON/XOFF	256	Disables XON/XOFF data flow control.
	512	Unused
RS-485 mode	1024	Configures the COM2 Port for RS-485 communication. RS-485 mode has precedence over multidrop mode if both are enabled.
E, 7, 1	2048	This setting selects even parity, 7 data bits, and 1 stop bit for this com port; the default setting is always no parity, 8 data bits, and 1 stop bit. Used in conjunction with the Hessen protocol, hence, it is listed after ID 16
Command Prompt	4096	Enables a command prompt when in terminal mode.

3. Set Multidrop to on and press enter.
4. On the Multidrop board there are two jumper pins. If you have several instruments linked together, install a jumper connecting pins 21-22 of JP2 on the Multidrop board of the last instrument in the chain and remove the jumpers on pins 21-22 of JP2 on the other instruments.
5. If you are communicating with the instruments via RS-232, you must also have a jumper between pins 23-24 of JP2 on the Multidrop board of each instrument.
6. Reboot the analyzer.

If you have any questions regarding this service note please contact a Teledyne API customer service representative at api-customerservice@teledyne.com or call 858.657.9800