Installing a Single-Channel Analog Input Board on a 6850 GC

Agilent 6850 Series II Network GC System

Accessory G3375A

This section reviews the procedure for installing a single-channel analog input board (AIB) on an Agilent 6850 Gas Chromatograph (hereafter called the GC.) With the analog board installed, you can connect nonAgilent detectors with 1 V of analog output to the GC.

This kit contains:

Description	Quantity	Part number
Grommet	1	0400-0914
Screw, M3 × 0.5, 12-mm long, pan head	1	0515-1084
Torx™ screw, M4 × 18-mm long	2	0515-3034
Screw, M4 × 0.7, 12-mm long	2	0515-2496
Analog signal cable, general purpose, 6 pins	1	G1530-60560
Analog input board	1	G1556-60015
Detector PCB bracket	1	G2397-00020
Insulation detector blank	1	G1530-00660
MS detector plate	1	G2630-20980

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Required tools

- Electrostatic protection such as grounded wrist strap (part no. 9300-0969 [large] or part no. 9300-0970 [small])
- T-20 Torx screwdriver
- Small, flat-bladed screwdriver
- 1/8-inch drill bit and drill

Overview

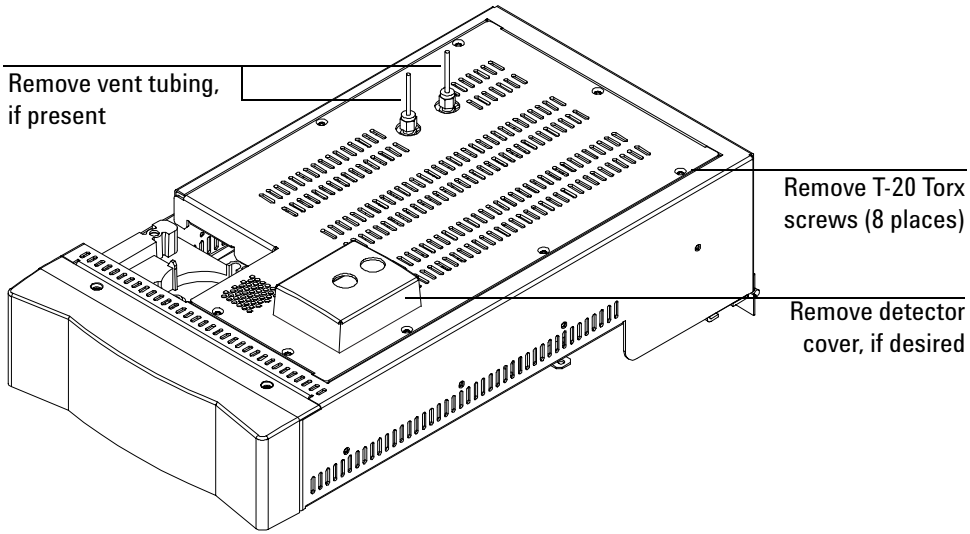
Caution Before starting, review the safety information listed at the end of this document.

1. Prepare the GC.
2. Remove the lid top cover.
3. Remove the existing detector and flow manifold.
4. Raise the lid to the service position.
5. Remove existing detector PC board.
6. Position the analog cable.
7. Install the AIB.
8. Install the insulation detector blank and detector plate.
9. Connect the analog signal cable to your nonAgilent detector.
10. Restore the GC to operating condition.

Prepare the GC

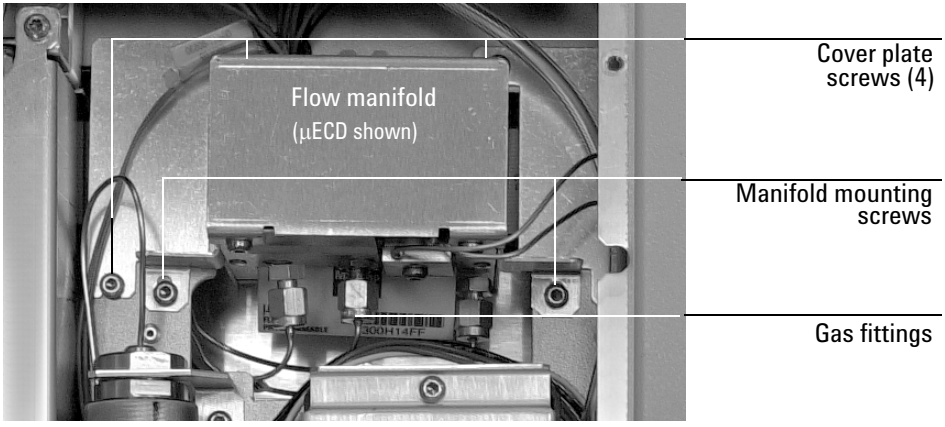
1. Load the service method or set all GC temperatures to ambient/35 °C.
2. Allow time for all heated zones to cool.
3. Turn off the GC and unplug the power cord.
4. If you have an injector installed, set it aside.

Remove the lid top cover



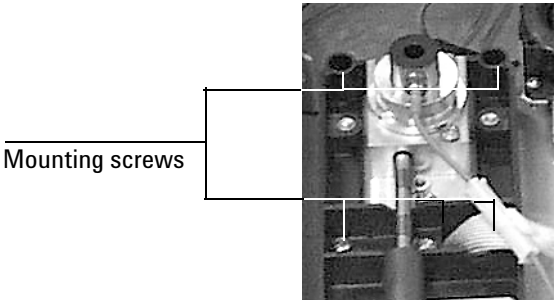
Remove the existing detector and flow manifold

1. On the top of the lid, loosen the connector cover plate screws and remove the plate.

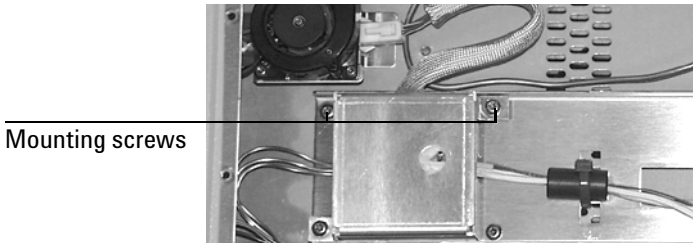


2. Disconnect the gas fittings. The figure shows the μECD manifold; the other manifolds are similar but vary in the number of gas connections.
3. Trace the ribbon cable from the flow manifold and disconnect it from the harness.
4. Remove the three manifold mounting screws.
5. Remove the screws holding the detector assembly in place. You will need a new top cover.

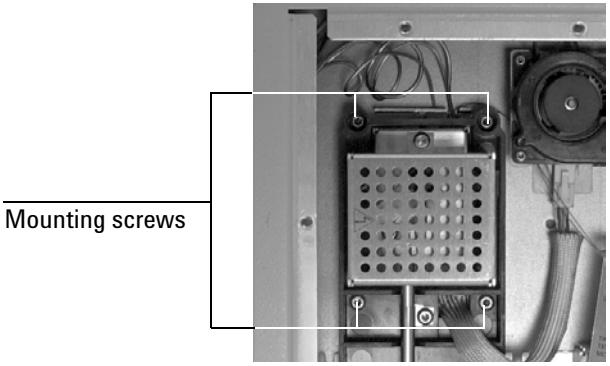
FID (flame ionization detector) – Remove four mounting screws.



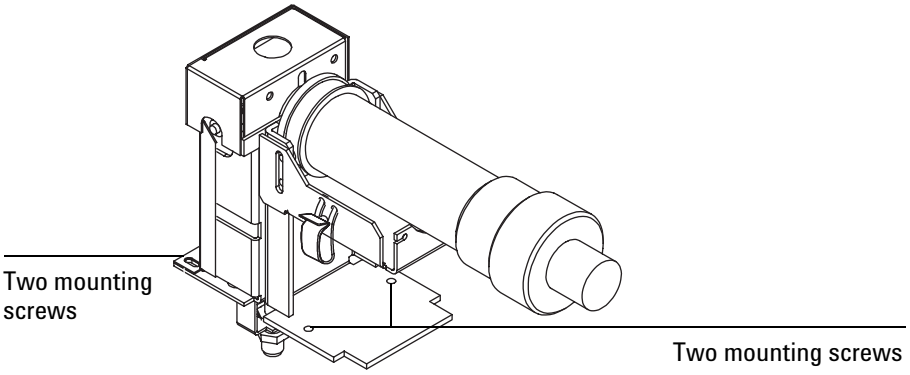
TCD (thermal conductivity detector) – Remove two mounting screws.



μECD (micro cell electron capture detector) - Remove four mounting screws.



FPD (flame photometric detector) - Remove four mounting screws. You will need a new top cover.



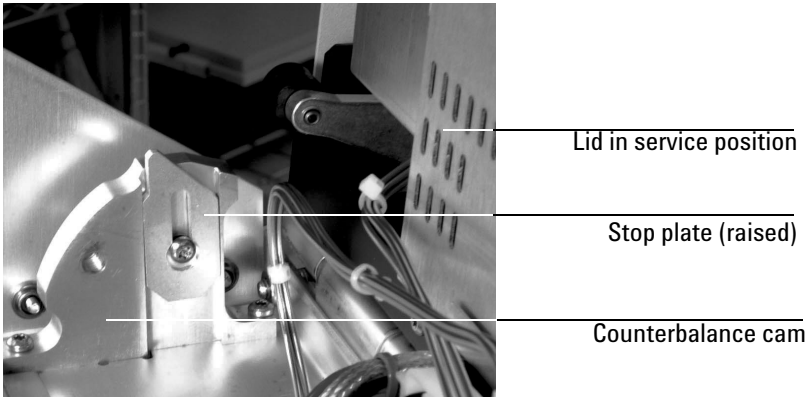
6. Lift the detector and flow manifold out of the lid as a unit.

WARNING The fibrous insulation material can cause irritation to the skin, eyes, and mucous membranes. Always wear gloves when working with the insulation. If the insulation is flaky/crumbly, wear protective eye wear and a respirator.

7. Remove any insulation that may be in the hole under the detector.

Raise the lid to the service position

1. Open the lid. Locate the counterbalance cam in the left rear corner under the lid. Loosen the screw on the right side of the cam. This allows the stop plate to drop down.



2. Raise the lid until it is stopped by the safety cable.
3. Raise the stop plate and tighten the screw to lock the lid in the upright service position.

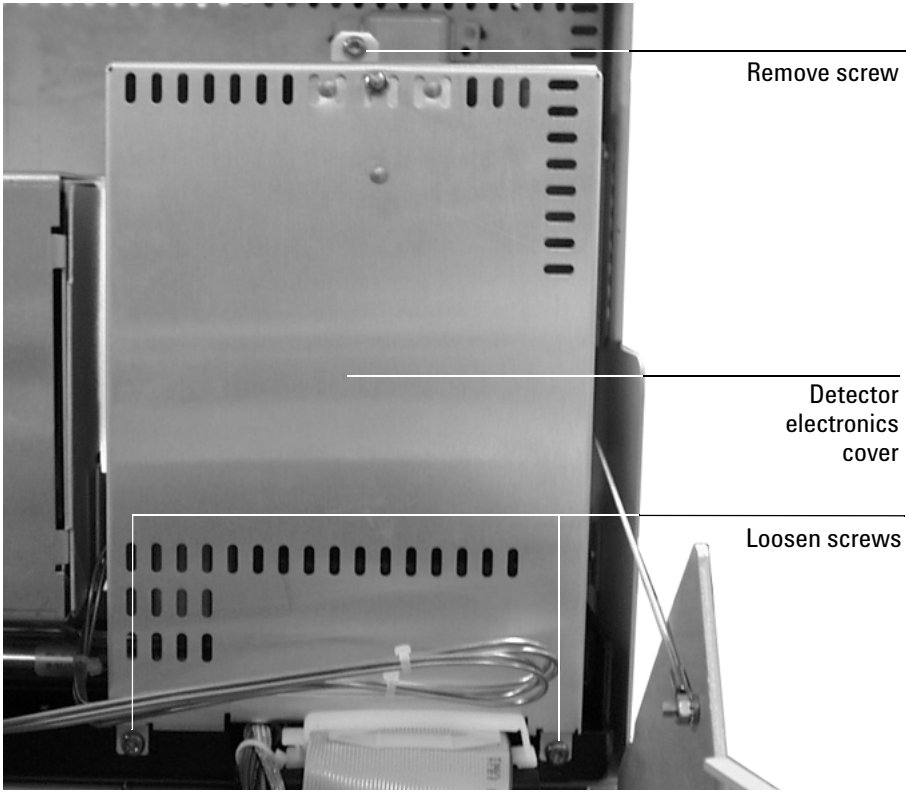
WARNING The lid is heavy. Always lock the lid when it is in the service position.

Remove existing detector PC board

Since there is room for only one detector on the 6850 GC, you must remove any existing detector PC board before installing the AIB.

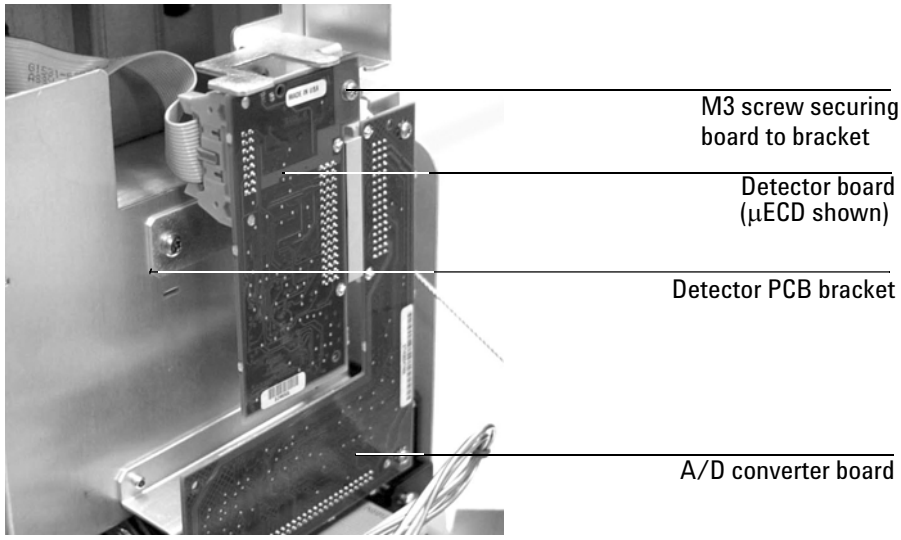
1. Loosen the two bottom screws on the detector electronics cover.

Caution Board components can be damaged by static electricity; use a properly grounded static control wrist strap before gaining access to the detector electronics area and when handling the boards and any of the cables connecting to the boards.

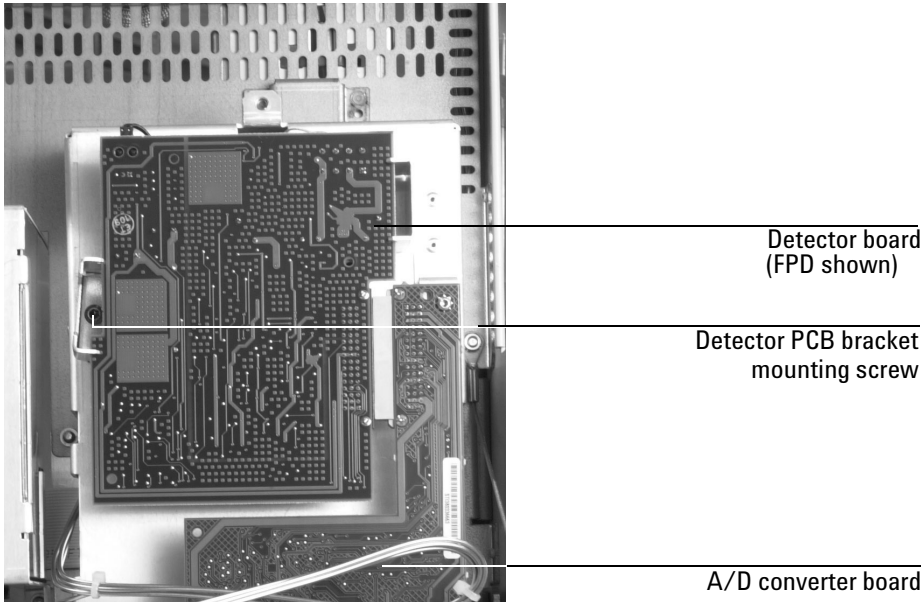


2. Remove the top screw on the cover.
3. Lift and remove the detector electronics cover.

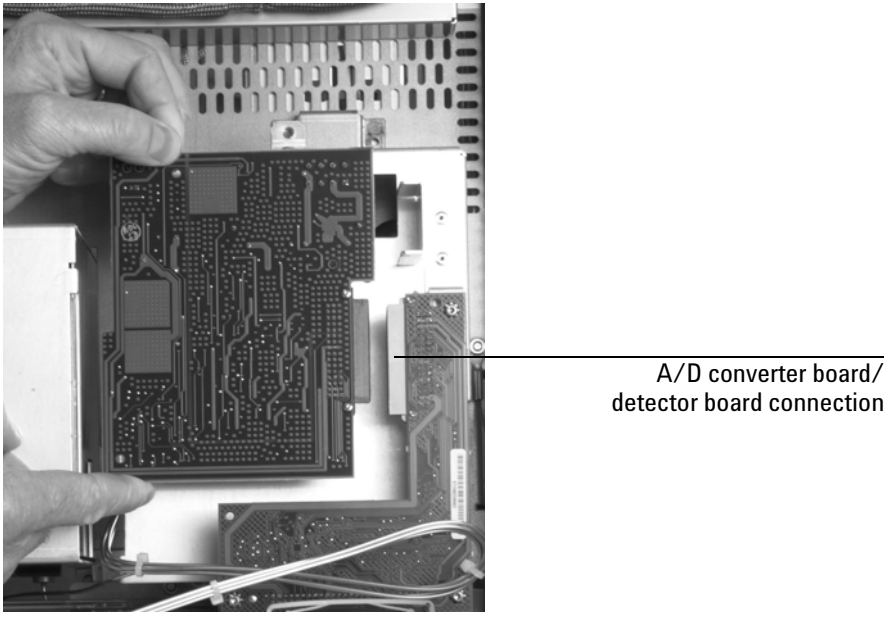
4. Prepare the detector board for removal.
   a. For small boards, such as the μECD shown below, remove the M3 screw that secures the detector board to the printed circuit board (PCB) bracket.



b. For large boards, such as the FPD board shown below, remove the detector PCB bracket holding the detector board in place.



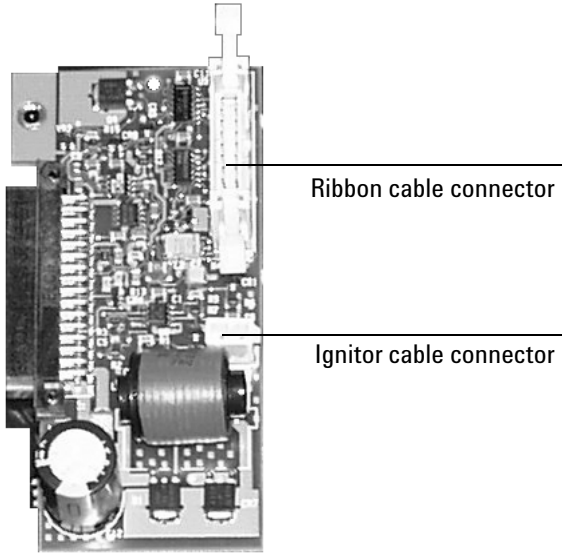
5. Unplug and remove the existing detector board from the A/D converter board. An FPD board is shown below. Other detector boards connect similarly.



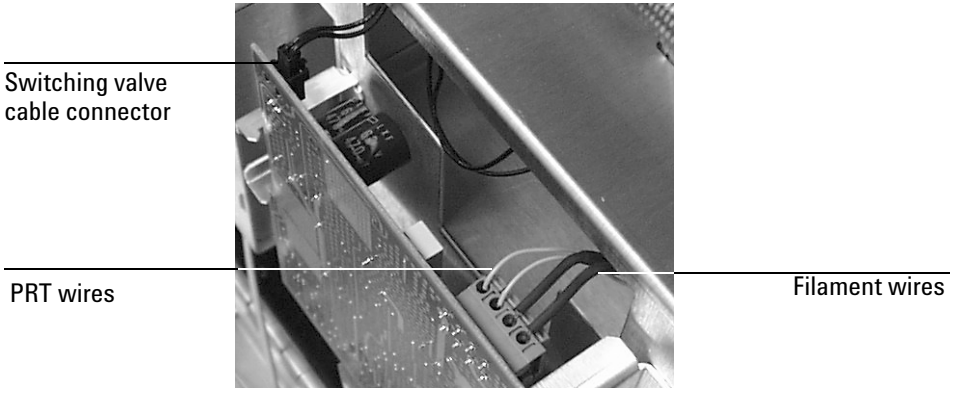
6. Disconnect and remove all cables from the old detector board.

   All detectors – Disconnect the ribbon cable. The ribbon cable connector will not pass through the rubber grommet in the hole. Use a small screwdriver to push the grommet to the top of the lid; the cables will now fit through the hole. Reinstall the grommet in the lid for later use after you have removed the ribbon cable.

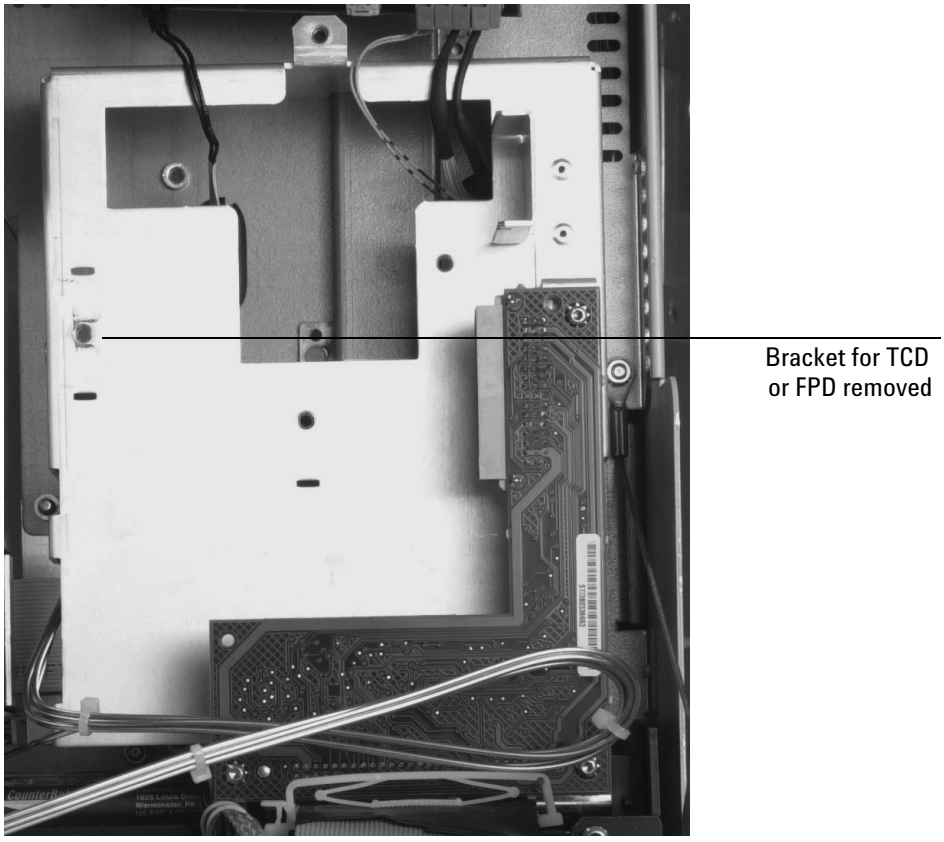
FPD, FID – Unplug the ignitor cable. Pass all cables through the hole to the top side of the lid. The FID PC board is shown below.



TCD – Unplug the two-wire switching valve cable at the connector. To release the PRT and filament wires, press down on the orange tabs. Pass the disconnected wires through the hole to the top side of the lid.



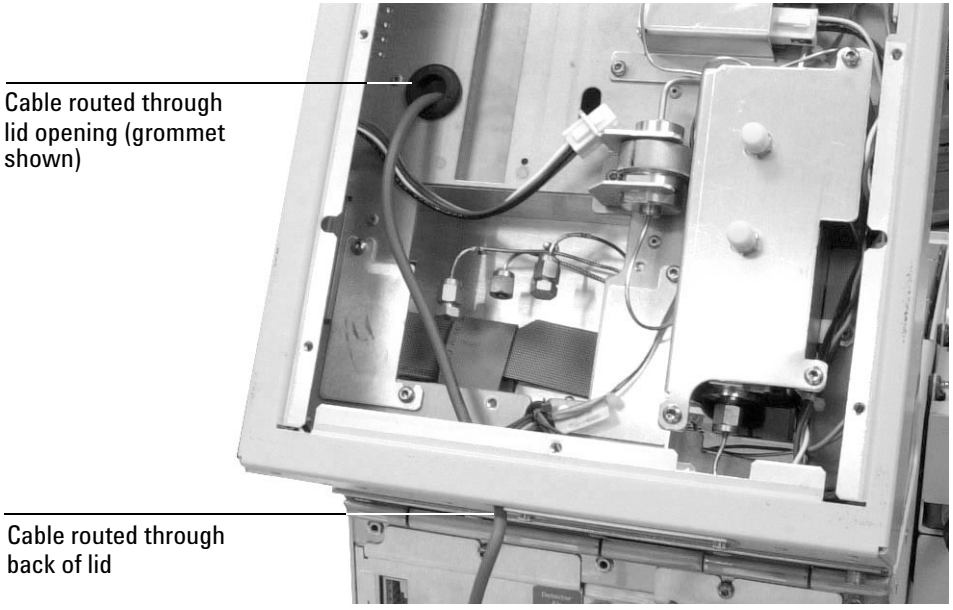
7. If you have a TCD or FPD detector PCB bracket installed, remove the existing detector PCB bracket.



Position the analog cable

1. Using a small screwdriver, install the grommet into the circular opening in the top of the lid.
2. Route the spade lug end of the analog cable from the circular hole (with grommet installed) underneath the lid thru the top of the lid. Pass the analog cable through the opening at the back of the lid. See the figure below.

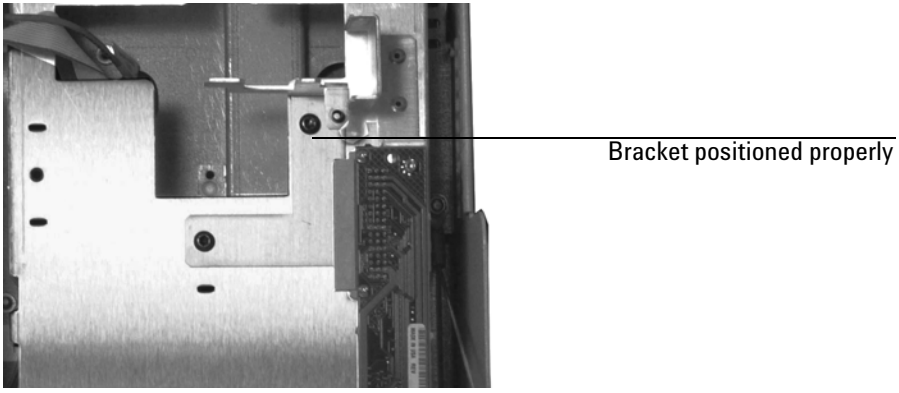
Caution Take caution when routing the spade lug ends of the analog cable through the openings in the lid of the GC. To avoid possible damage to the cable, make sure to pass the spade lug ends through each opening before pulling the rest of the cable through.



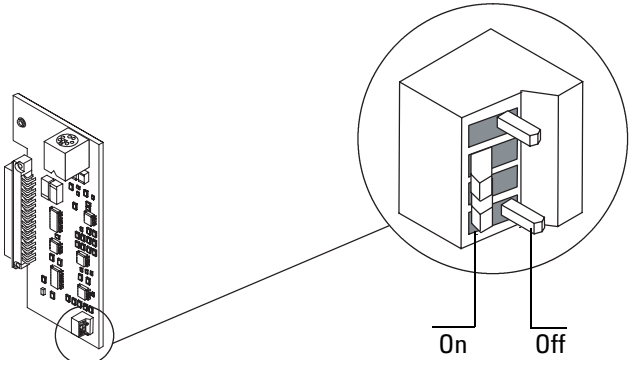
Install the AIB

Caution Board components can be damaged by static electricity; use a properly grounded static control wrist strap when handling the board.

1. Install the new detector PCB bracket using the two 12-mm long M4 screws. Position the PCB bracket according to the figure below.



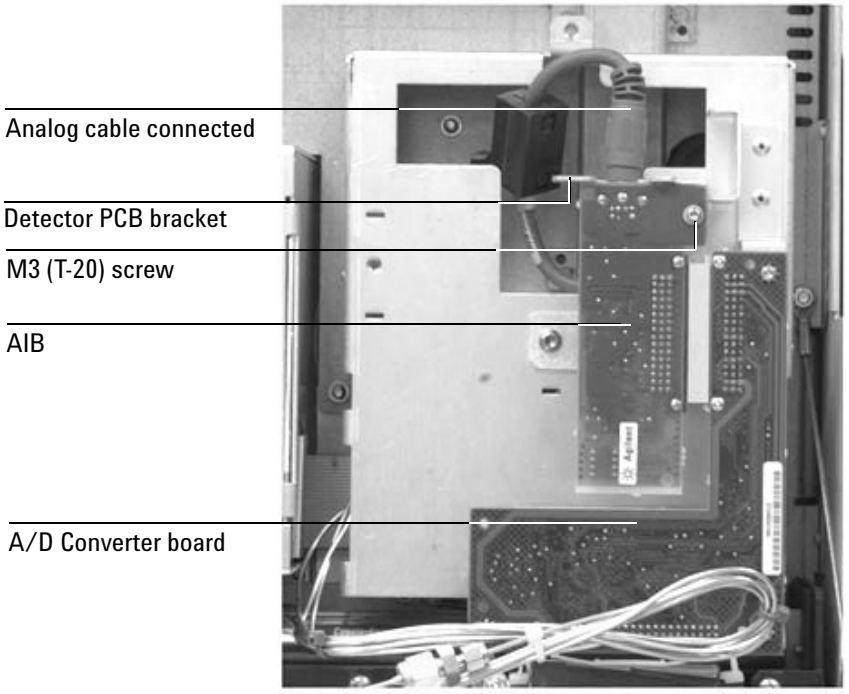
2. Remove the AIB from its static control bag.
3. Make certain switches 1 and 2 are in the ON position. See the figure below.



Switches 0 and 3 are in OFF position; switches 1 and 2 are in ON position.

4. Plug the AIB into the A/D converter board and secure it to the detector PCB bracket using the M3 screw.

5. Connect the analog signal cable to the top of the AIB.

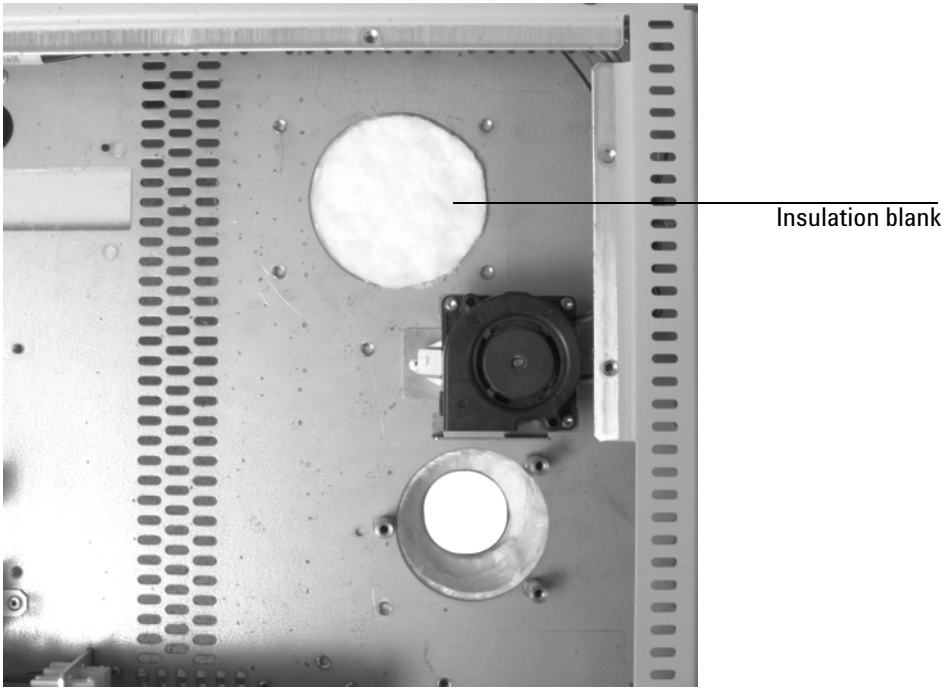


Note The AIB cable may be shipped with the black ferrite core positioned right at the end of the cable, secured there with a tie wrap. If necessary, remove the tie wrap and adjust the ferrite core position to allow the bending of the AIB cable, as shown in the figure above.

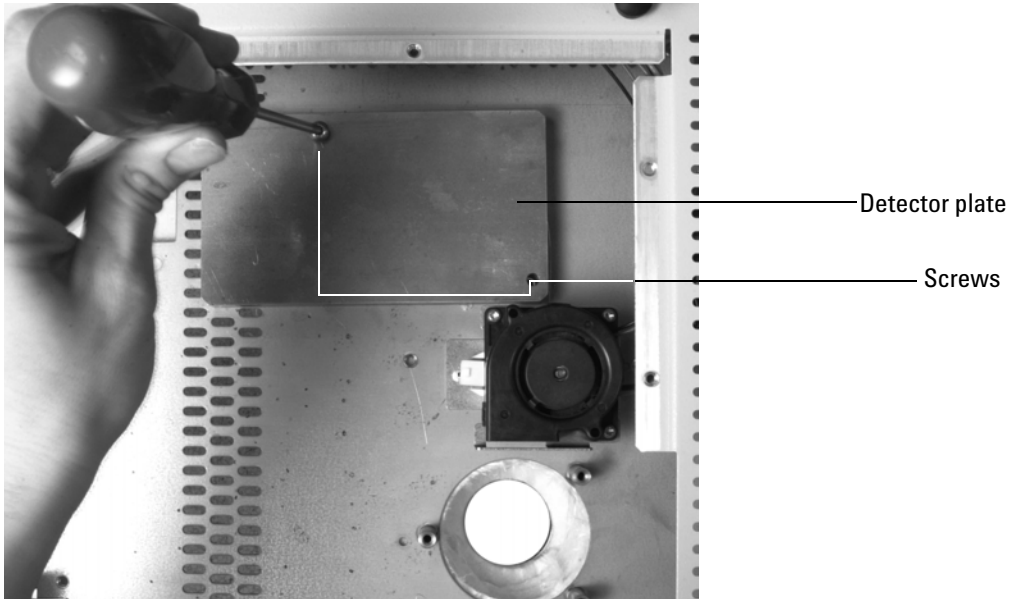
Install the insulation blank and detector plate

The 6850 lid is counterbalanced for the weight of installed components, namely GC detectors. Without a detector installed, the lid will open too quickly, posing a hazard to the user and potential damage to the GC. To compensate for the counterbalanced lid and to protect exposed wiring, install the detector plate and insulation blank as described below.

1. Install the circular insulation blank in place of the detector that you just removed. See the figure below.

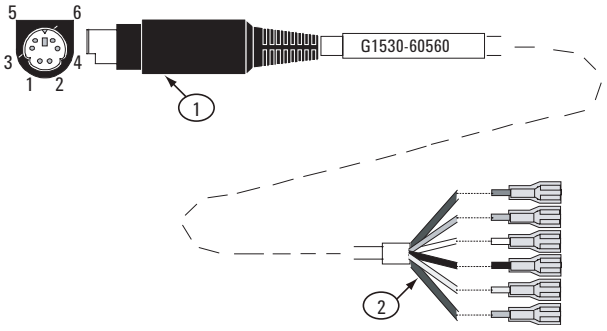


2. Use two 18-mm long M4 screws to install the detector plate over the insulation blank, as shown in the figure below.



Connect the analog signal cable to your nonAgilent detector

Connect the cable to your nonAgilent detector. The table below displays the cable pinouts. The red, brown, and blue leads are not used and can be cut off, if desired.



Connector 1	Signal name	Connector 2 Quick Disconnects
1	No connection	Brown
2	1 V (–)	White
3	No connection	Red
4	1 V (+)	Black
6	No connection	Blue
Shell	Ground	Orange

Restore the GC to operating condition

1. Install the detector electronics cover and tighten all three screws.
2. Lower the stop plate on the lid cam. Pull the lid forward until the cam follower rests on the curved surface of the cam. Raise the stop plate behind the cam follower and tighten the screw.
3. Close the lid. Be sure that the folded gas lines do not interfere with it.
4. Install the lid top cover.
5. Restore power.

Agilent Technologies

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Safety Symbols

Warnings in the manual or on the instrument must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions violates safety standards of design and the intended use of the instrument. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

Acknowledgements

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In the manual

A warning calls attention to a condition or possible situation that could cause injury to the user.

A caution calls attention to a condition or possible situation that could damage or destroy the product or the user's work.

On the instrument


See accompanying instructions for more information.


Indicates a hot surface.


Indicates hazardous voltages.


Indicates earth (ground) terminal.


Indicates explosion hazard.


Indicates radioactivity hazard.


Indicates electrostatic discharge hazard.


Pinch hazard.