

Agilent TS-5400 Functional Test System Series IIB

Automotive Serial Protocol Installation Instructions



Manual Part Number E8770-90036

Notices

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Caution

A **Caution** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **Caution** notice until the indicated conditions are fully understood and met.

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

Safety Summary

The following general safety precautions must be observed during all phases of operation of this system. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the system. Agilent Technologies, Inc. assumes no liability for the customer's failure to comply with these requirements.

General

This product is provided with a protective earth terminal. The protective features of this product may be impaired if it is used in a manner not specified in the operation instructions.

WARNING: DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE
Do not operate the system in the presence of flammable gases or flames.

If the equipment in this system is used in a manner not specified by Agilent Technologies, the protection provided by the equipment may be impaired.

Cleaning Instructions

Clean the system cabinet using a soft cloth dampened in water.

WARNING: DO NOT REMOVE ANY SYSTEM COVER

Operating personnel must not remove system covers. Component replacement and internal adjustments must be made only by qualified service personnel. Equipment that appears damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel.

Environmental Conditions

Unless otherwise noted in the specifications, this system is intended for indoor use in an installation category II, pollution degree 2 environment. It is designed to operate at a maximum relative humidity of 80% and at altitudes of up to 2000 meters. Refer to the specifications tables for the ac mains voltage requirements and ambient operating temperature range.

Before applying power

Verify that all safety precautions are taken. Note the external markings described in [“Safety Symbols and Regulatory Markings”](#) on page 4.

Ground the System

To minimize shock hazard, the system chassis must have a hard-wired connection to an electrical protective earth ground. The system must also be connected to the ac power mains through a power cable that includes a protective earth conductor. The power cable ground wire must be connected to an electrical ground (safety ground) at the power outlet. Any interruption of the protective grounding will cause a potential shock hazard that could result in personal injury.

Fuses

Use only fuses with the required rated current, voltage, and specified type (normal blow, time delay). Do not use repaired fuses or short-circuited fuse holders. To do so could cause a shock or fire hazard.

Operator Safety Information

MODULE CONNECTORS AND TEST SIGNAL CABLES CONNECTED TO THEM CANNOT BE OPERATOR ACCESSIBLE:

Cables and connectors are considered inaccessible if a tool (e.g., screwdriver, wrench, socket, etc.) or a key (equipment in a locked cabinet) is required to gain access to them.

Additionally, the operator cannot have access to a conductive surface connected to any cable conductor (High, Low or Guard).














ASSURE THE EQUIPMENT UNDER TEST HAS ADEQUATE INSULATION BETWEEN THE CABLE CONNECTIONS AND ANY OPERATOR-ACCESSIBLE PARTS (DOORS, COVERS, PANELS, SHIELDS, CASES, CABINETS, ETC.): Verify there are multiple and sufficient protective means (rated for the voltages you are applying) to assure the operator will NOT come into contact with any energized conductor even if one of the protective means fails to work as intended. For example, the inner side of a case, cabinet, door, cover or panel can be covered with an insulating material as well as routing the test cables to the module's front panel connectors through non-conductive, flexible conduit such as that used in electrical power distribution.

Safety Symbols and Regulatory Markings

Symbols and markings on the system, in manuals and on instruments alert you to potential risks, provide information about conditions, and comply with international regulations. [Table 1](#) defines the symbols and markings you may encounter.



Table 1 Safety Symbols and Markings

Safety symbols	
	Warning: risk of electric shock.
	Caution: refer to accompanying documents.
	Alternating current.
	Both direct and alternating current.
	Earth (ground) terminal
	Protective earth (ground) terminal
	Frame or chassis terminal
	Terminal is at earth potential. Used for measurement and control circuits designed to be operated with one terminal at earth potential.
	Switch setting indicator. ○ = Off, = On.
	Standby (supply); units with this symbol are not completely disconnected from ac mains when this switch is off. To completely disconnect the unit from ac mains, either disconnect the power cord, or have a qualified electrician install an external switch.
Regulatory Markings	
	The CE mark is a registered trademark of the European Community.
	The CSA mark is a registered trademark of the Canadian Standards Association.
 N10149	The C-tick mark is a registered trademark of the Spectrum Management Agency of Australia. This signifies compliance with the Australian EMC Framework regulations under the terms of the Radio Communications Act of 1992.
ISM 1-A	This text indicates that the product is an Industrial Scientific and Medical Group 1 Class A product (CISPR 11, Clause 4).

Service and Support

Any adjustment, maintenance, or repair of this product must be performed by qualified personnel. Contact your customer engineer through your local Agilent Technologies Service Center.

Agilent on the Web

You can find information about technical and professional services, product support, and equipment repair and service on the Web:

<http://www.agilent.com>

Click the link to **Test & Measurement**. Select your country from the drop-down menus. The Web page that appears next has contact information specific for your country.

Agilent by Phone

If you do not have access to the Internet, call one of the numbers in [Table 2](#).

Table 2 Agilent Call Centers and Regional Headquarters

United States and Canada:	Test and Measurement Call Center (800) 452 4844 (toll-free in US)
Europe:	(41 22) 780 8111
Japan:	Measurement Assistance Center (81) 0426 56 7832
Latin America:	305 269 7548
Asia-Pacific:	(85 22) 599 7777



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Automotive Serial Protocol Installation Instructions

This manual shows how to install the *EnGenius MultiCom III/s Interface Adapter* into the TS-5400 System, how to install the Physical Interface Modules (PIMs) into the adapter, and shows the cable connections in the adapter. This manual is separated as follows:

- Selecting the Installation Procedure page 9
- Removing the Interface Adapter Module from the System page 11
- Installing the PIMs into an Interface Adapter Module. page 13
- Installing a Previously Installed Interface Adapter Module. page 23
- Installing an Interface Adapter Module into an Old TS-5400 System. page 25
- Pim Locations and Interface Adapter Connections page 28
- Installing the Interface Adapter Software. page 33

Note For ALL default switch settings and descriptions NOT documented in this manual, refer to the *EnGenius MultiCom III/s Interface Adapter* manuals.

Selecting the Installation Procedure

Select the appropriate procedure, as shown in Figure 1. For example, if you wish to install or change a PIM of an Interface Adapter Module in a system that contains an adapter module, use the following procedures:

- “Removing the Interface Adapter Module from the System” on page 11
- “Installing the PIMs into an Interface Adapter Module” on page 13
- “Installing a Previously Installed Interface Adapter Module” on page 23

If the PIM is to be installed in an adapter that has not previously installed in a system, then use the following procedures:

- “Installing the PIMs into an Interface Adapter Module” on page 13
- “Installing an Interface Adapter Module into an Old TS-5400 System” on page 25

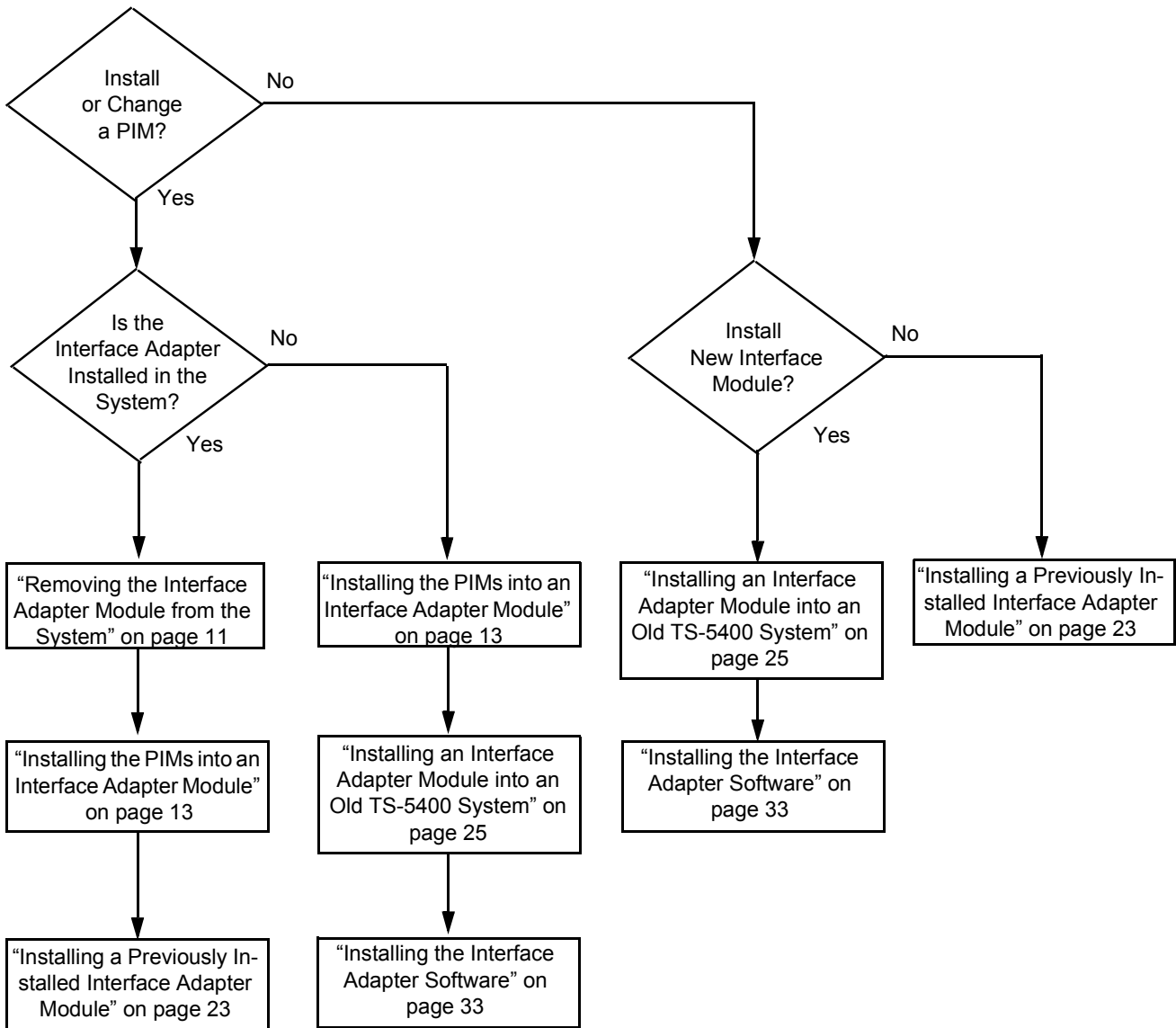
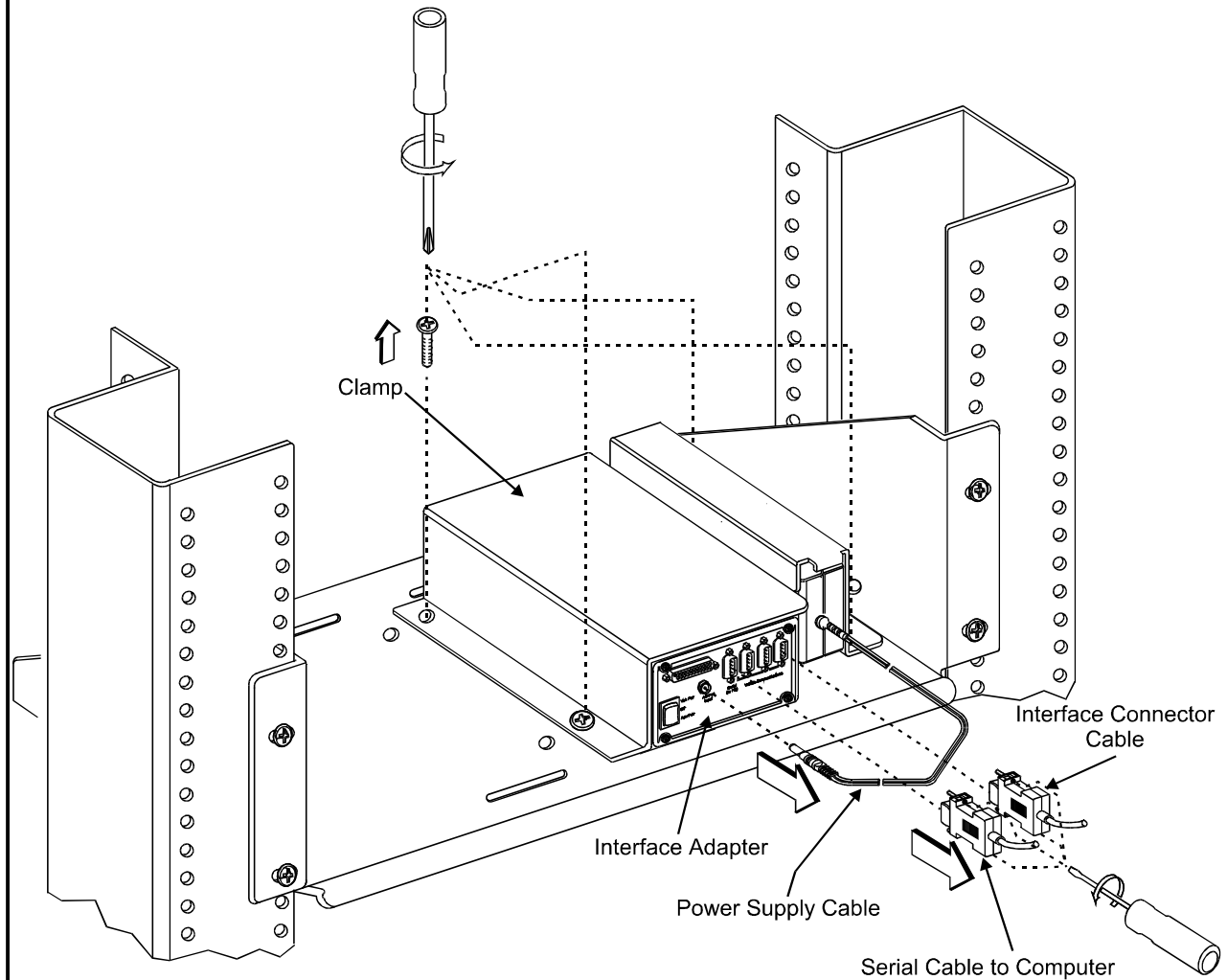


Figure 1. Selecting the Installation Procedures

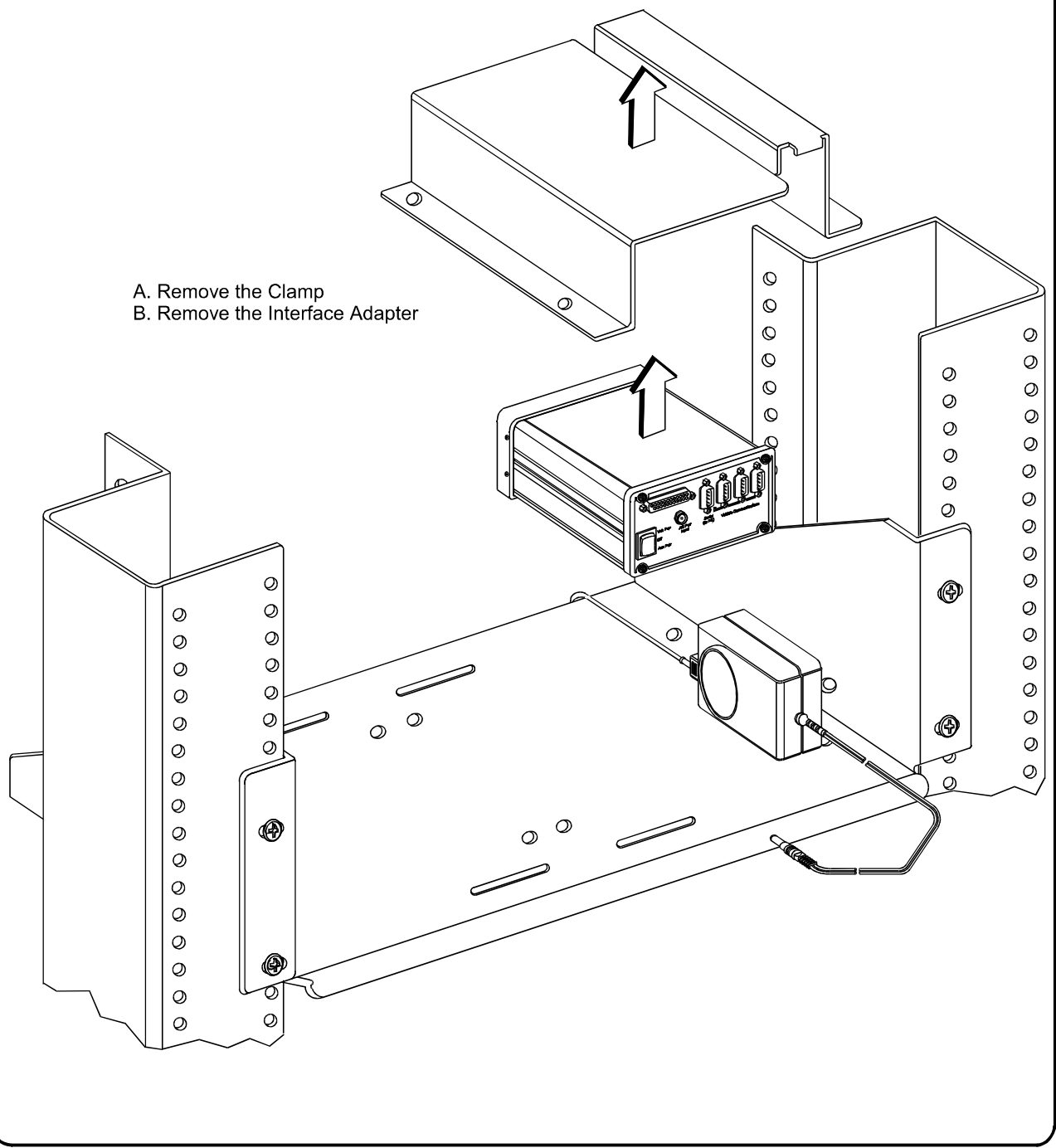
Removing the Interface Adapter Module from the System

Use this procedure to remove the Interface Module from the Agilent TS-5400 System to add/change a Physical Interface Module in the Interface Adapter.

- 1 Remove cables from Interface Adapter and screws from clamp.



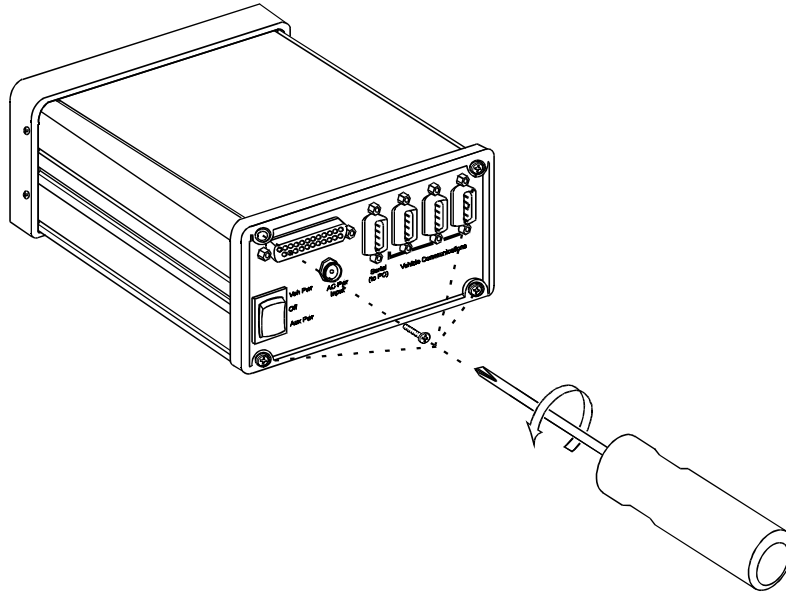
2 Remove Interface Adapter.



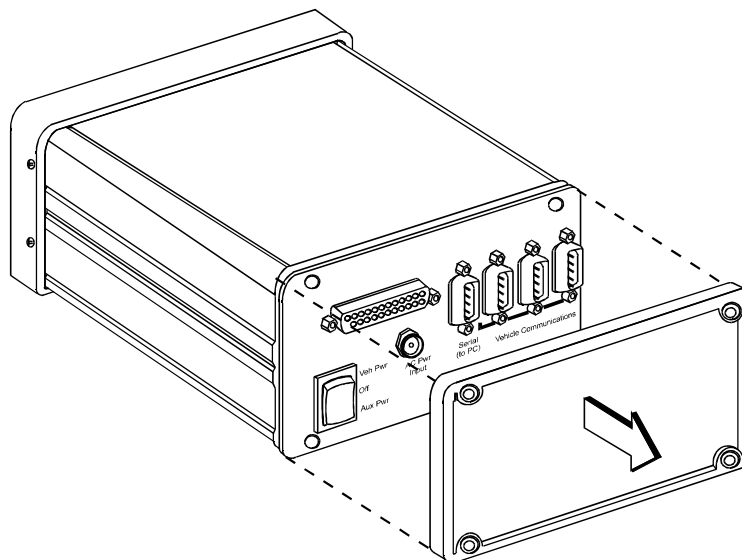
Installing the PIMs into an Interface Adapter Module

Use this procedure to add/change a Physical Interface Module in the Interface Adapter. If the Interface Adapter is currently installed in a system, be sure to use the procedure “Removing the Interface Adapter Module from the System” on page 11 to remove the Interface Adapter from the system .

- 1 Remove rear bracket screws.

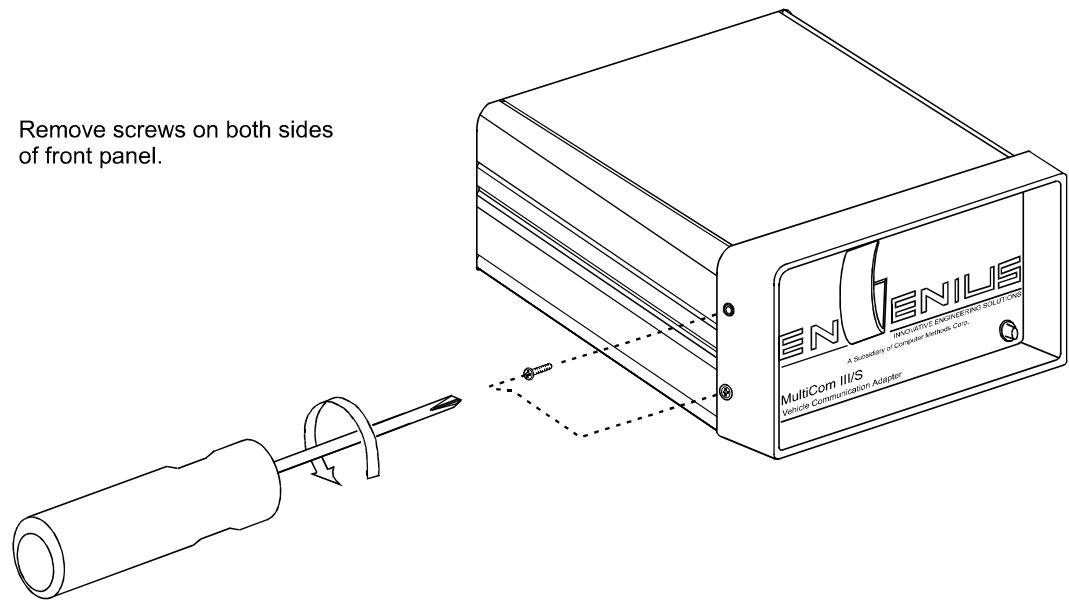


- 2 Remove rear bracket.

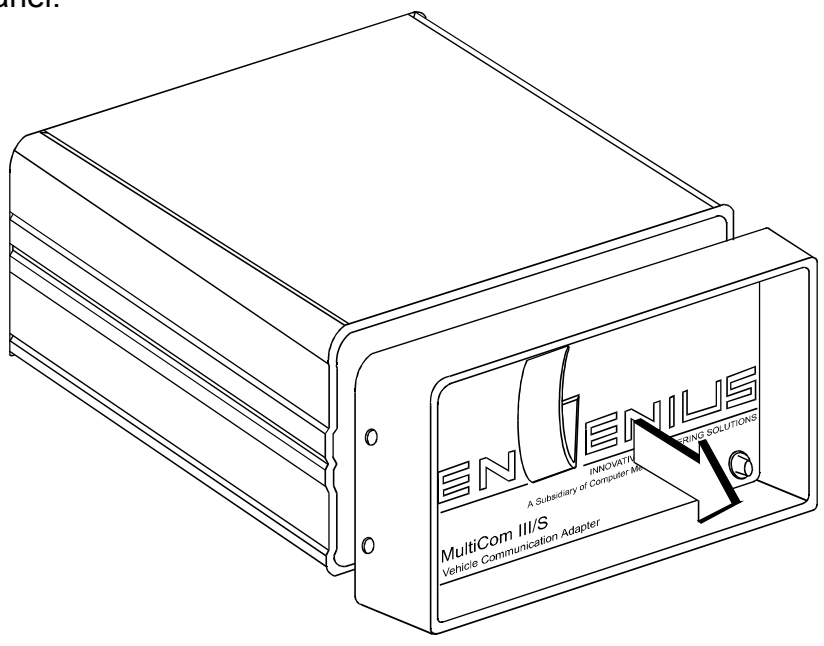


3 Remove front panel screws.

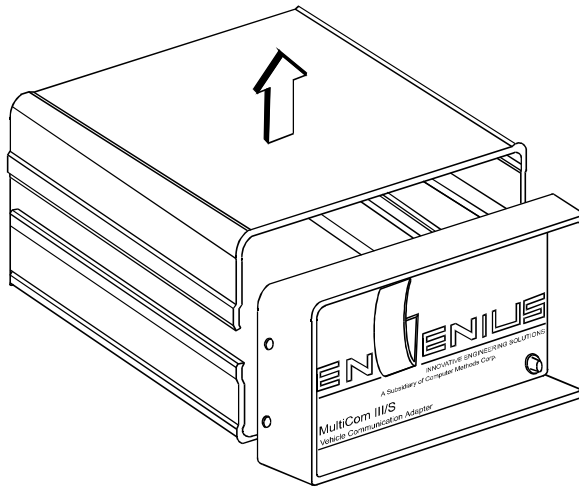
Remove screws on both sides of front panel.



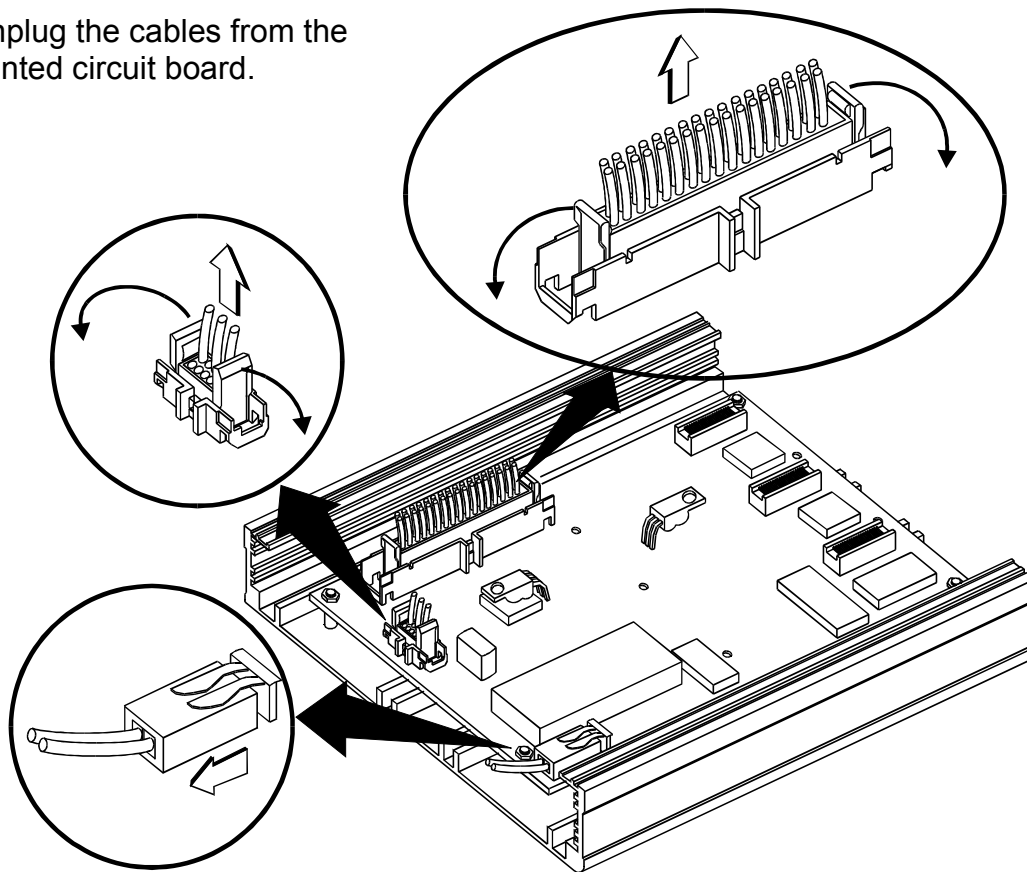
4 Remove front panel.



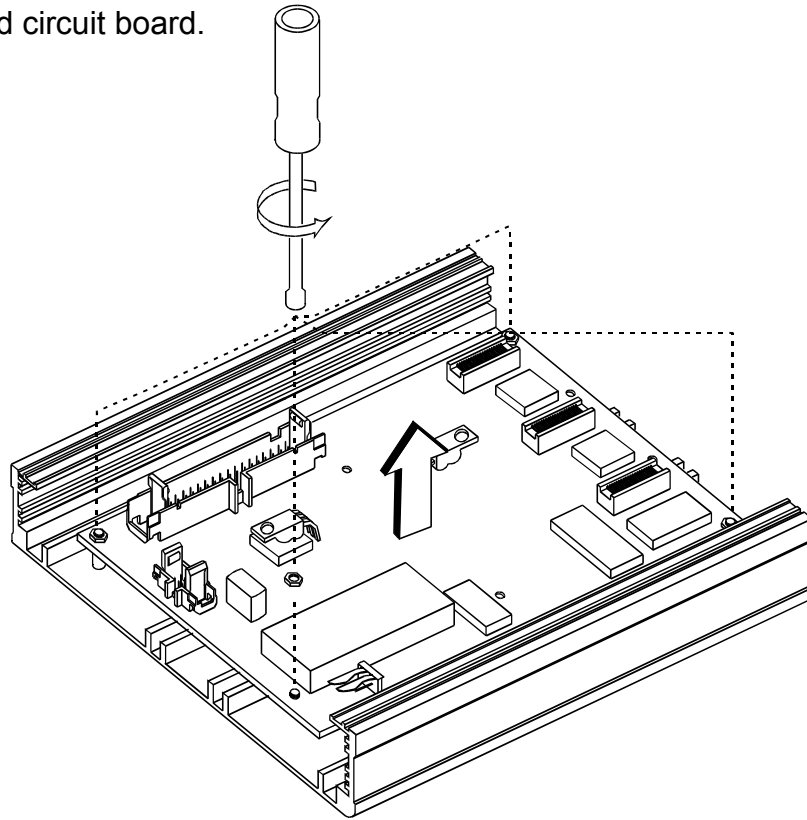
5 Remove top cover.



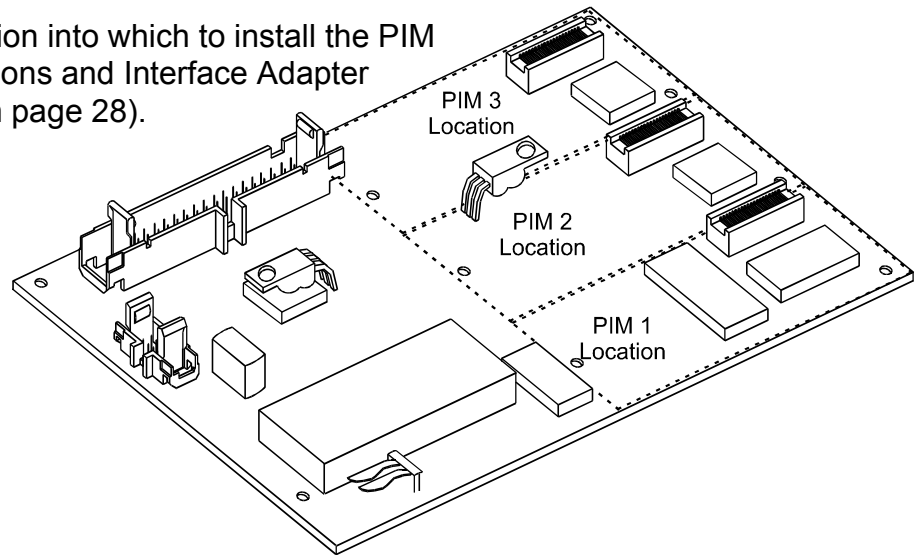
6 Unplug the cables from the printed circuit board.



7 Remove the printed circuit board.



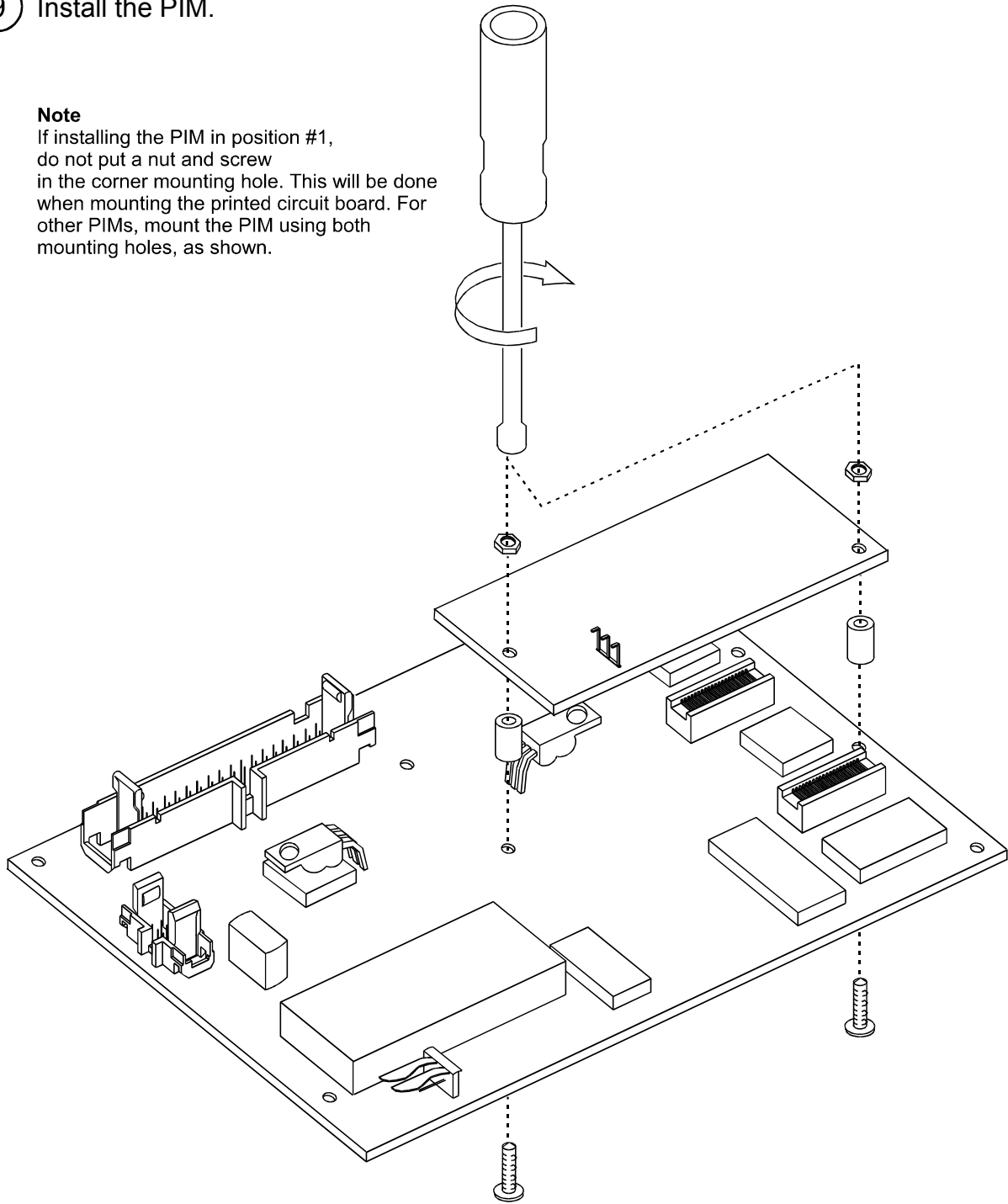
8 Locate the location into which to install the PIM (see "Pim Locations and Interface Adapter Connections" on page 28).



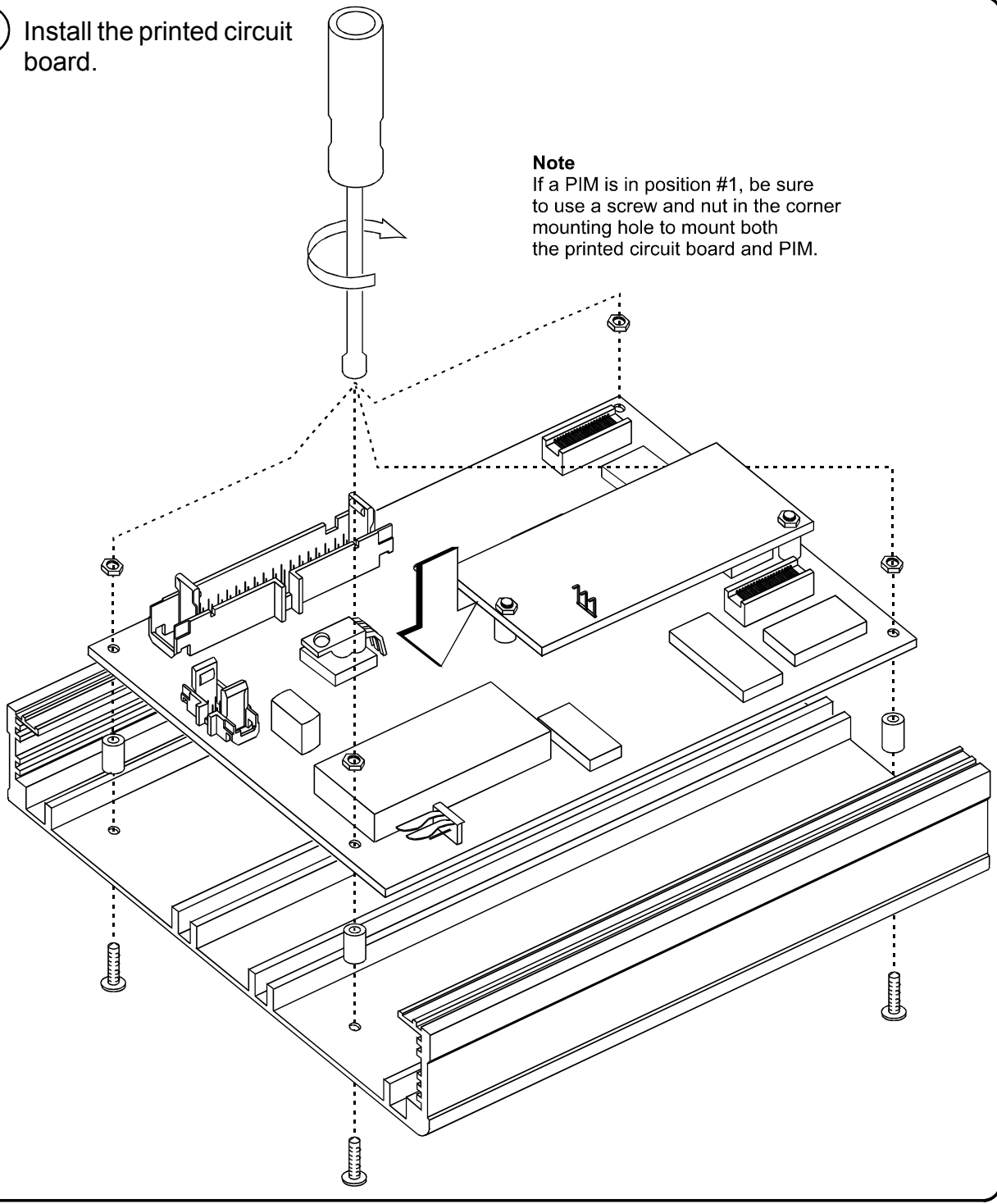
9 Install the PIM.

Note

If installing the PIM in position #1, do not put a nut and screw in the corner mounting hole. This will be done when mounting the printed circuit board. For other PIMs, mount the PIM using both mounting holes, as shown.



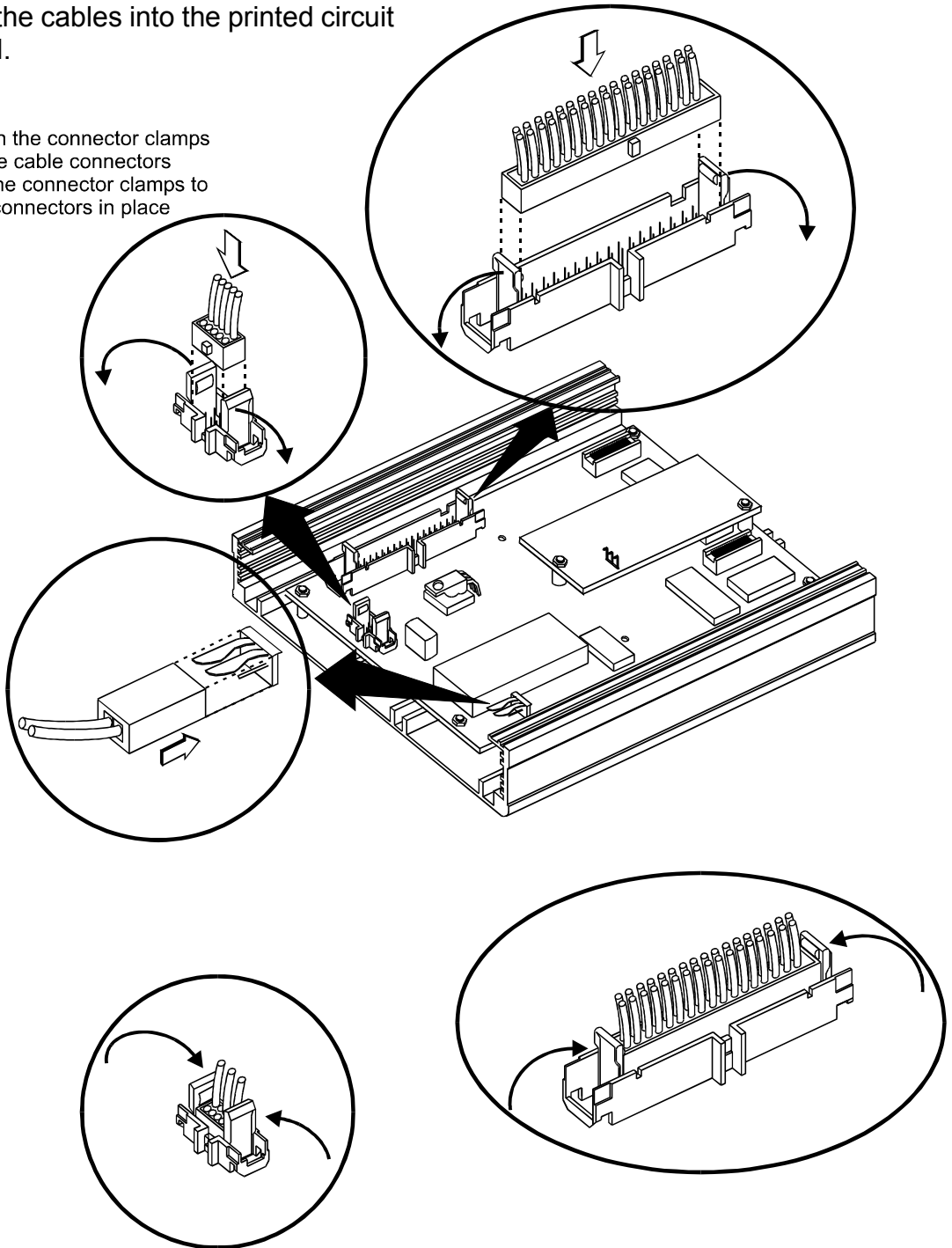
10 Install the printed circuit board.



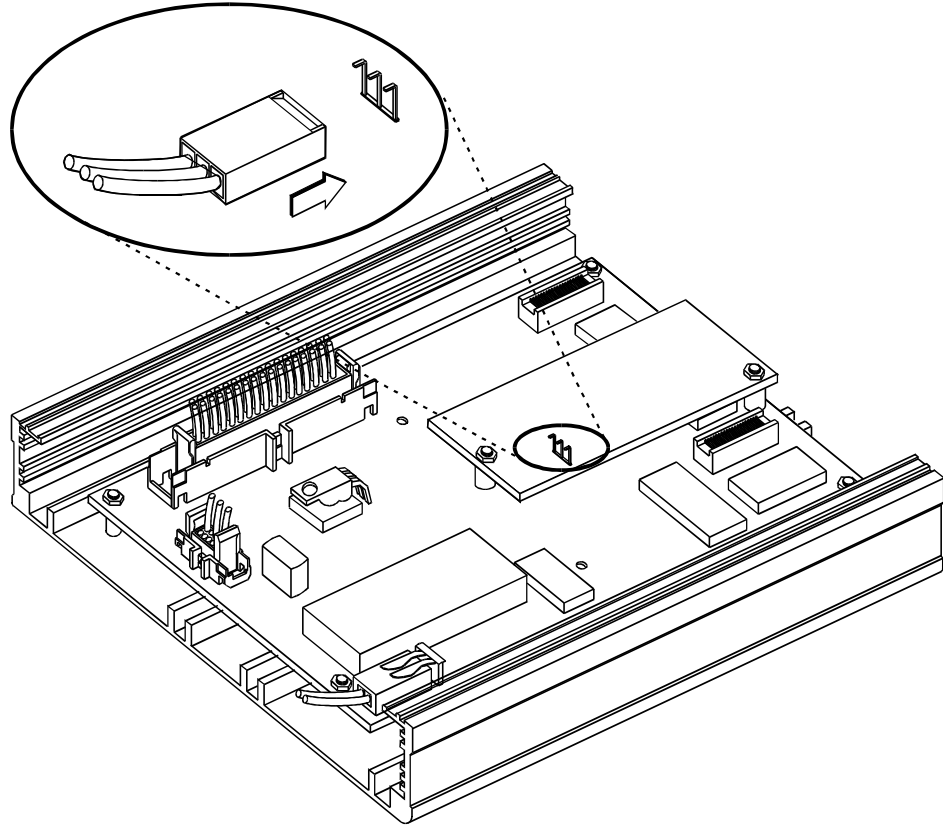
Note
If a PIM is in position #1, be sure to use a screw and nut in the corner mounting hole to mount both the printed circuit board and PIM.

11 Plug the cables into the printed circuit board.

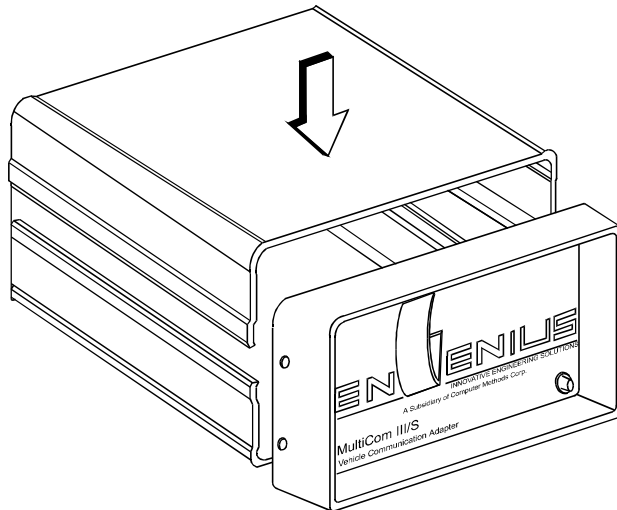
- A. Turn down the connector clamps
- B. Plug in the cable connectors
- C. Turn up the connector clamps to lock the connectors in place



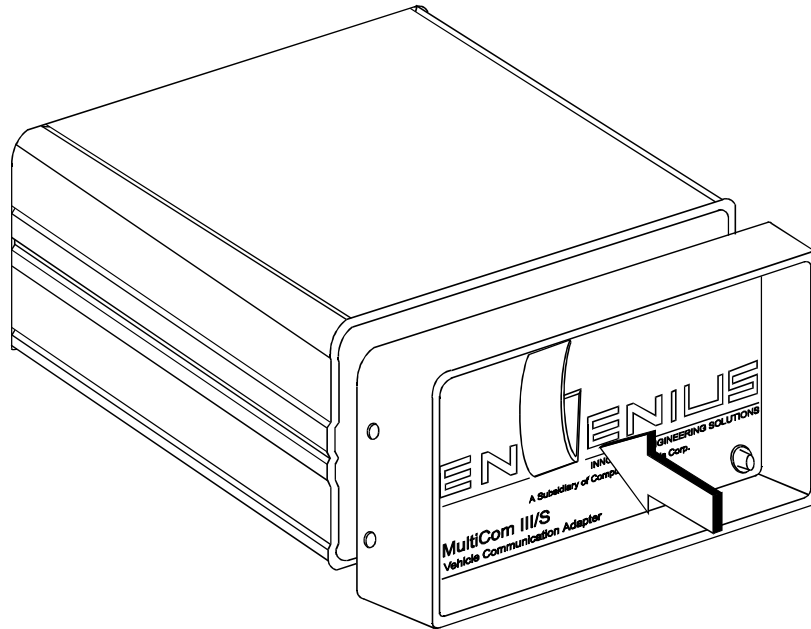
- 12 Connect cable to the PIM (see “Pim Locations and Interface Adapter Connections” on page 28 for information on where to connect the PIM cables).



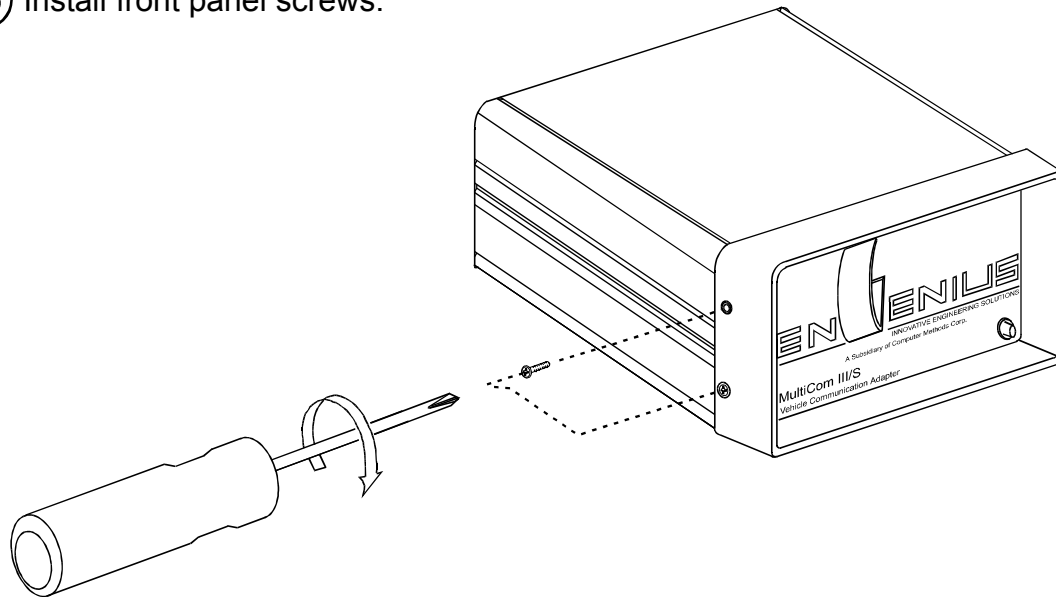
- 13 Install top cover.



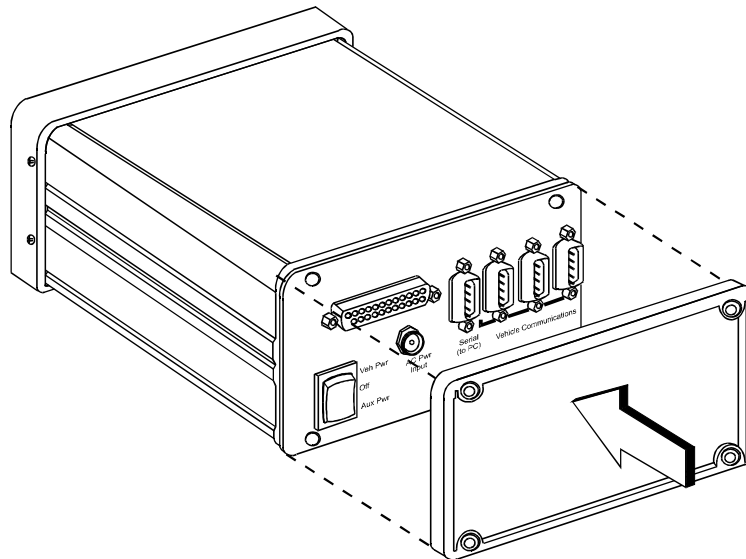
14 Install front panel.



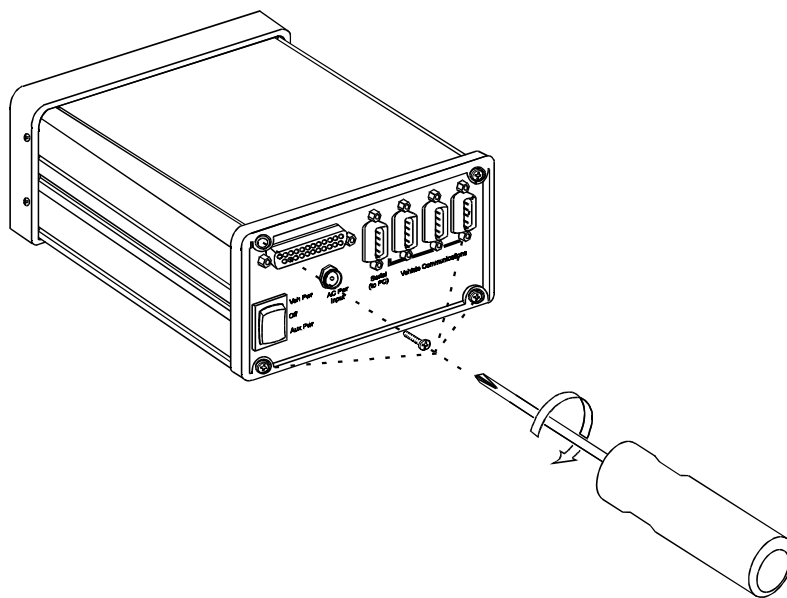
15 Install front panel screws.



16 Install rear bracket.

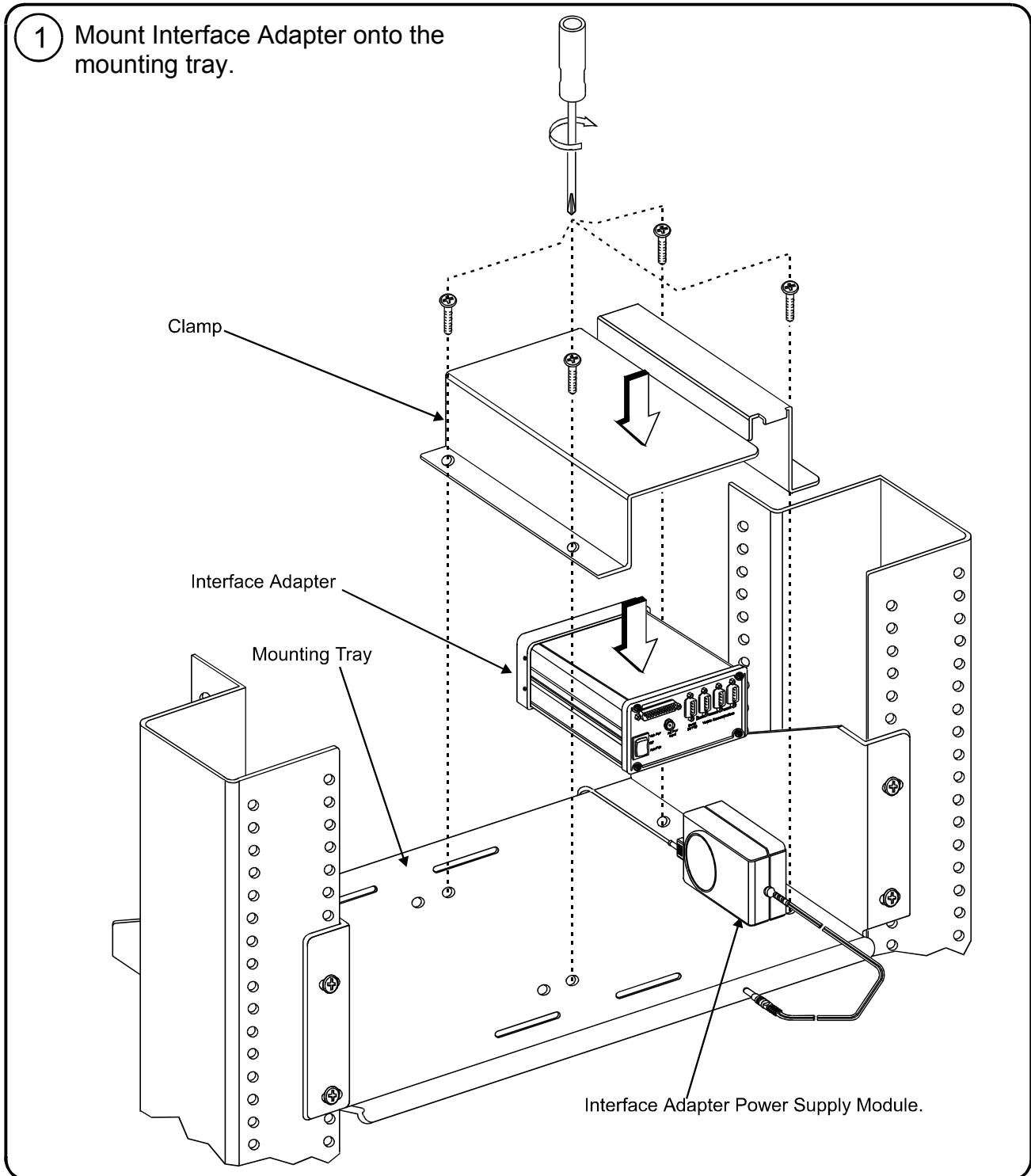


17 Install rear bracket screws.

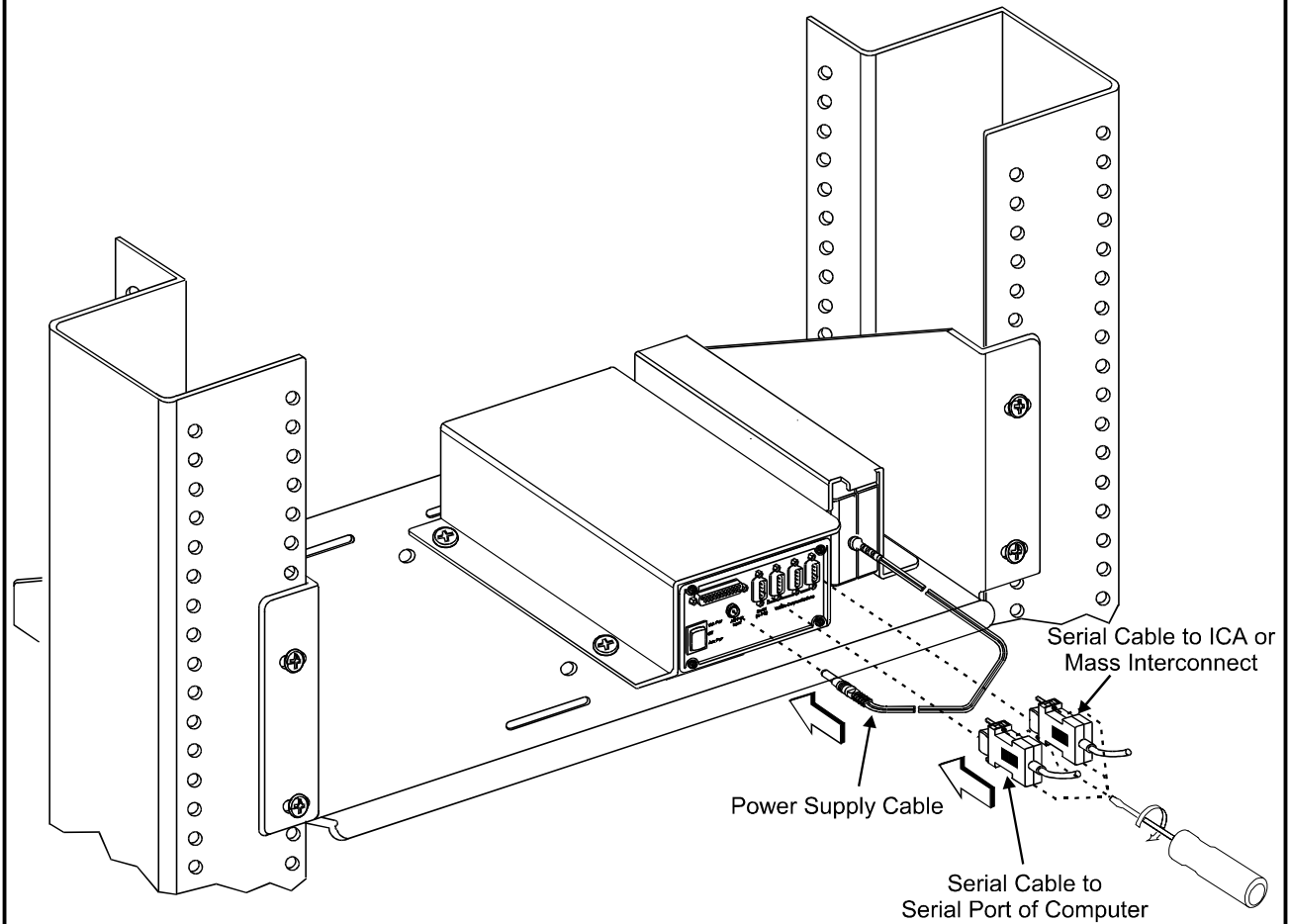


Installing a Previously Installed Interface Adapter Module

Use this procedure to re-install an Interface Adapter Module, usually after installing a PIM (see “Installing the PIMs into an Interface Adapter Module” on page 13). If the system has not had an Adapter Module previously installed, use the procedure “Installing an Interface Adapter Module into an Old TS-5400 System” on page 25 to install a new module into a system that did not have a module previously installed.



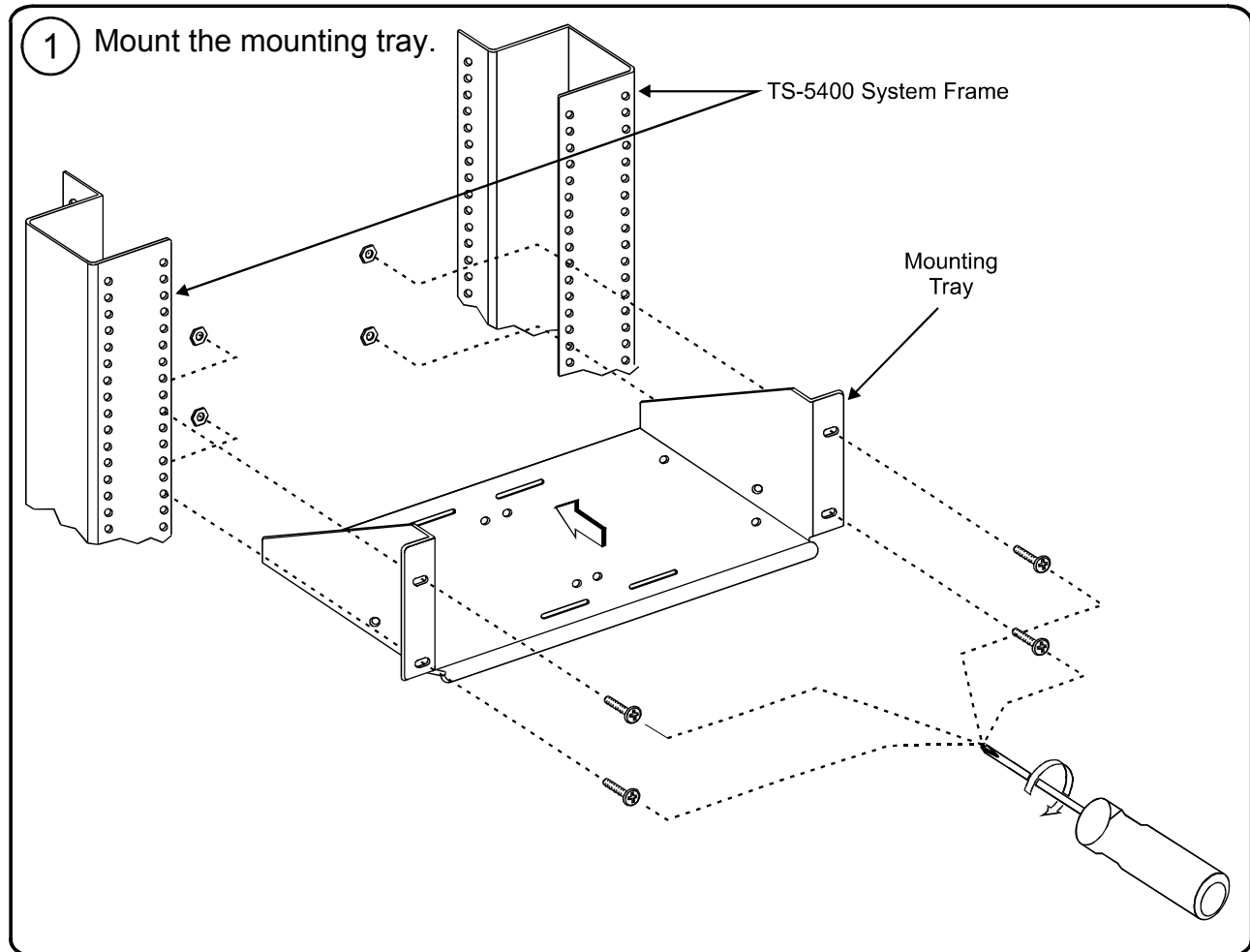
- 2 Connect cables to the Interface Adapter
(see “Pim Locations and Interface Adapter
Connections” on page 28).



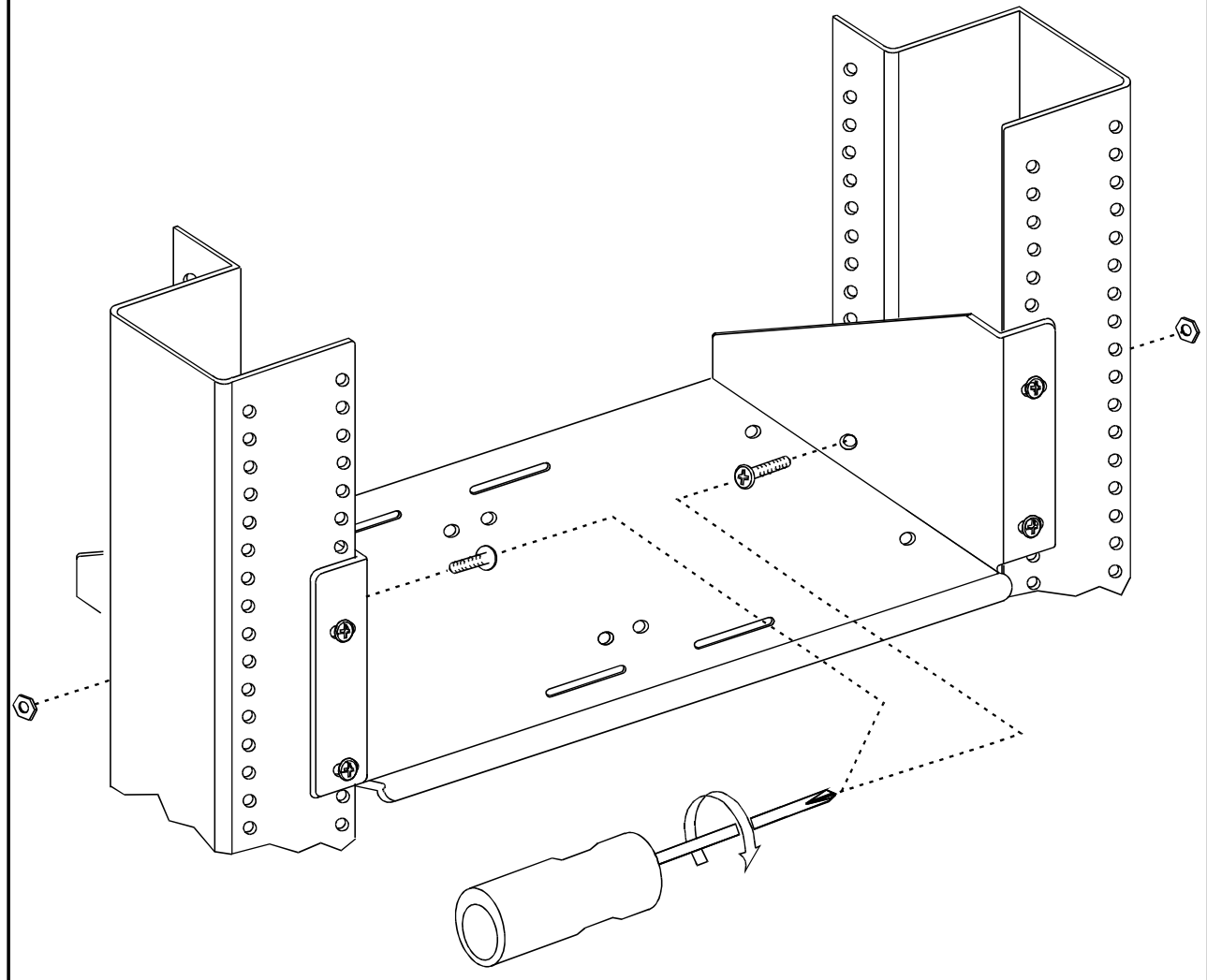
Installing an Interface Adapter Module into an Old TS-5400 System

Use this procedure to install an Interface Adapter into a TS-5400 System that did not have an adapter previously installed.

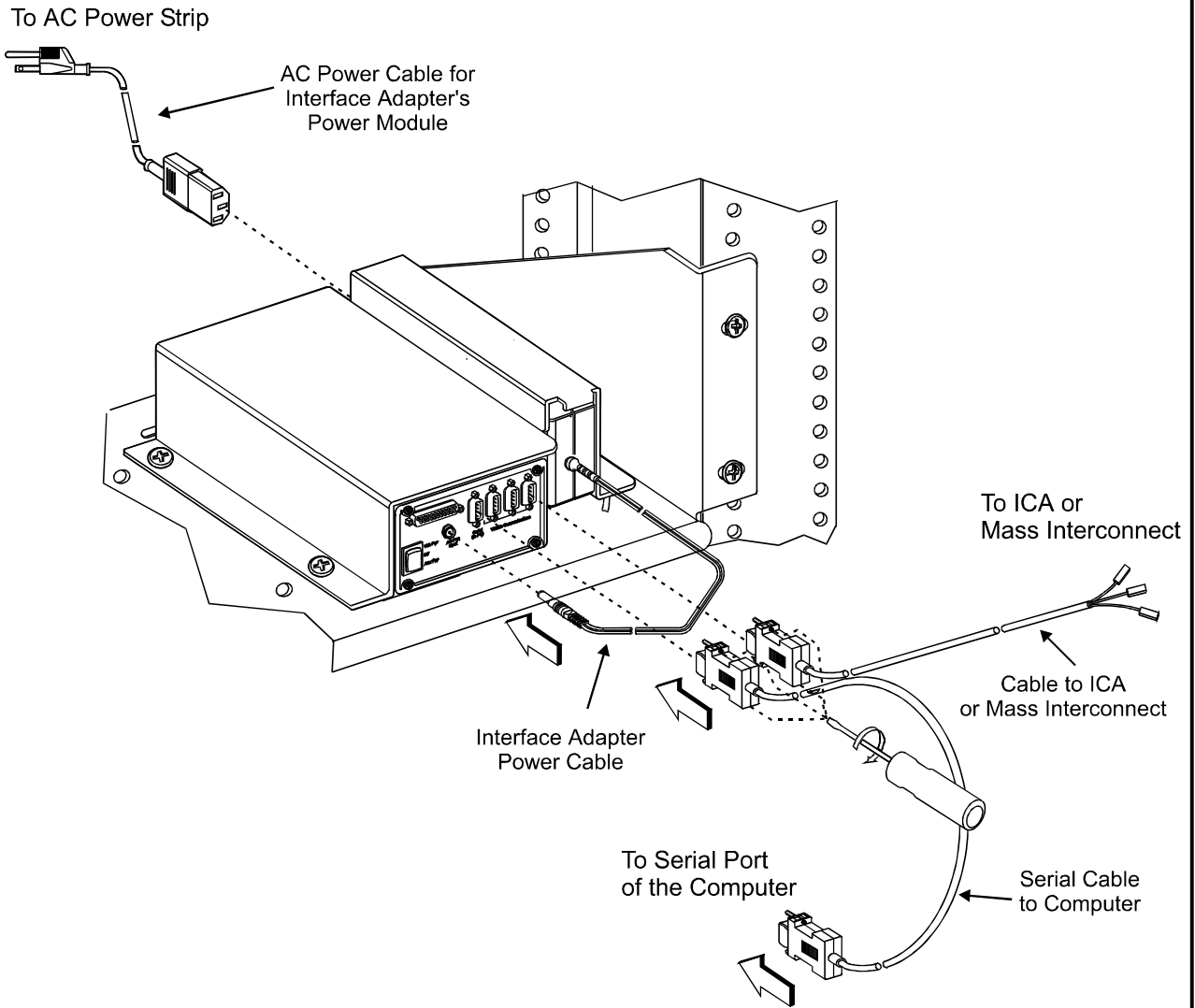
The Interface Adapter is mounted on a Mounting Tray which in turns is mounted in the system. Mount the tray in a covinient place in the system, like behind the computer display. Make sure that the tray is mounted in such a way that the appropriate cable connections can be made to the computer, the Interface Connector Adapter (ICA) or Mass Interconnect, and the ac power strip in the system.



2 Install the side screws and nuts.



3 Connect the cables see “Pim Locations and Interface Adapter Connections” on page 28 for information to connect to the ICA or Mass Interconnect).



Pim Locations and Interface Adapter Connections

The following explains the PIM locations, and connections between the *EnGenius MultiCom III/s Interface Adapter* and the Interface Connector Adapter (ICA), for the Agilent TS-5450 System, or Mass Interconnect, for the Agilent TS-5430 System.

PIM Locations and Priorities

The PIM must be installed in a certain order with the highest priority PIM going into location 2, the next priority into position 3, and the next priority into position 1. The Pim Locations are shown in Figure 2. The following shows the PIM types and priorities:

PIM Type	Placement Priority
CAN	1
ISO-9141	2
J1850 GM Class II	3
J1850 Ford SCP	4

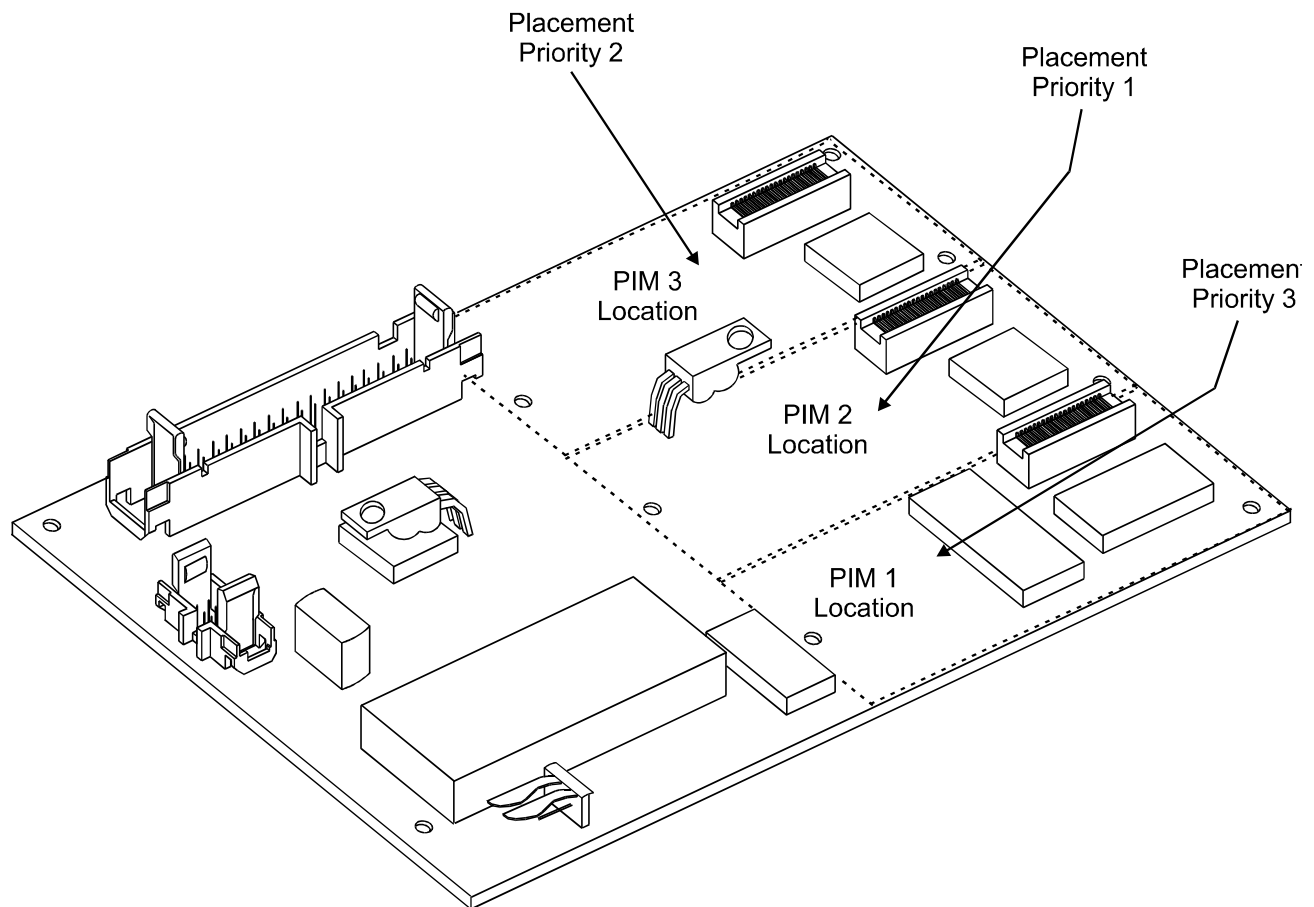
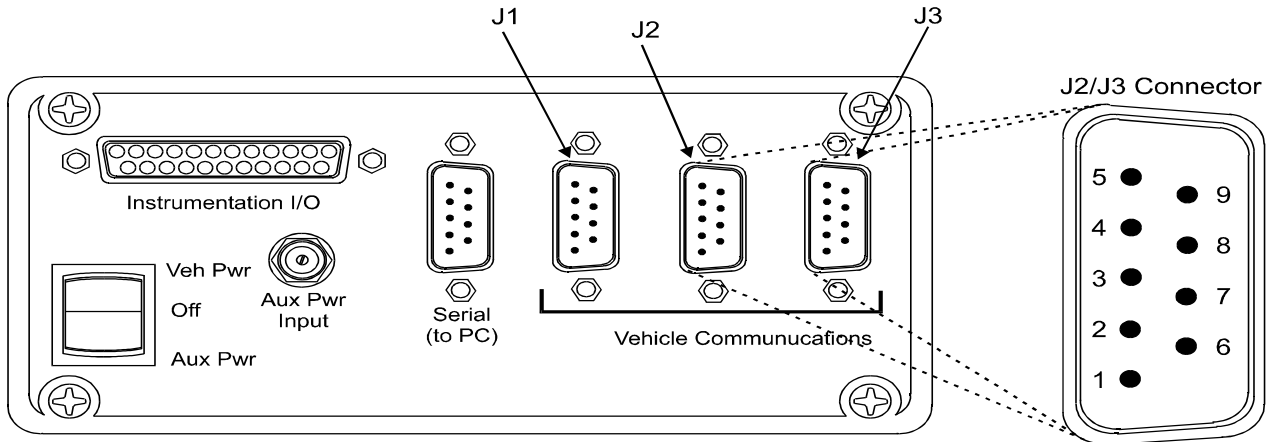


Figure 2. PIM Location and Priority

Interface Adapter Connections

Only the J3 connector on the Interface Adapter is used for PIM connections and J2 is used for the standard on-board protocol (i.e., ISO-9141). The pins used on J3 depend on the type of PIM installed. Figure 3 shows the different PIMs and the connections to J3 and J2. Figure 4 and Figure 5 show the connections from J3 to the Test System Interface and the Mass Interconnect, respectively, for Agilent TS-5400 Series IIB Systems. Figure 6 shows the connections from J3 to the Mass Interconnect of older Agilent TS-5430 Systems.



Connector and Pin Number	PIM Number
J2-2	ISO-9141 L Line
J2-3	ISO-9141 K Line
J2-4	J1850 PWM (+)
J2-5	ISO-9141 Common
J2-6	J1850 PWM (-)
J3-1	PIM #2 Shield/Common
J3-2	PIM #1 (-)
J3-3	PIM #1 (+)
J3-4	PIM #2 (-)
J3-5	PIM #1 Shield/Common
J3-6	PIM #2 (+)
J3-7	PIM #3 Shield/Common
J3-8	PIM #3 (-)
J3-9	PIM #3 (+)

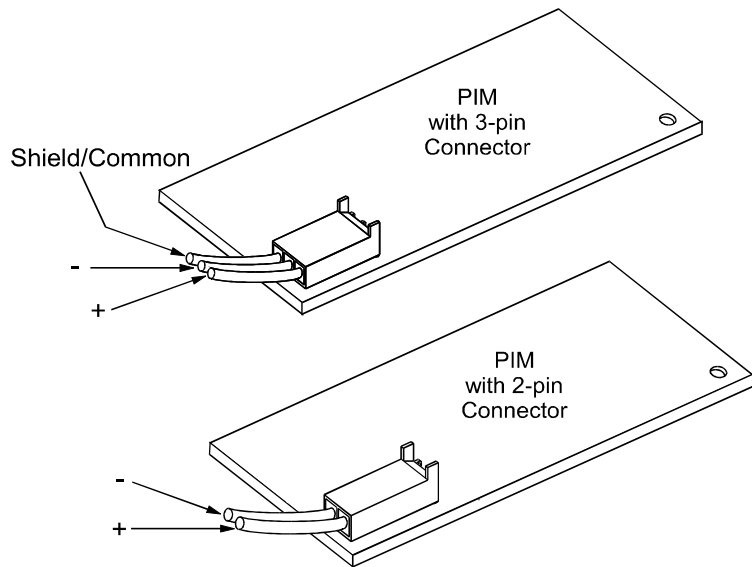


Figure 3. J2/J3 Connections

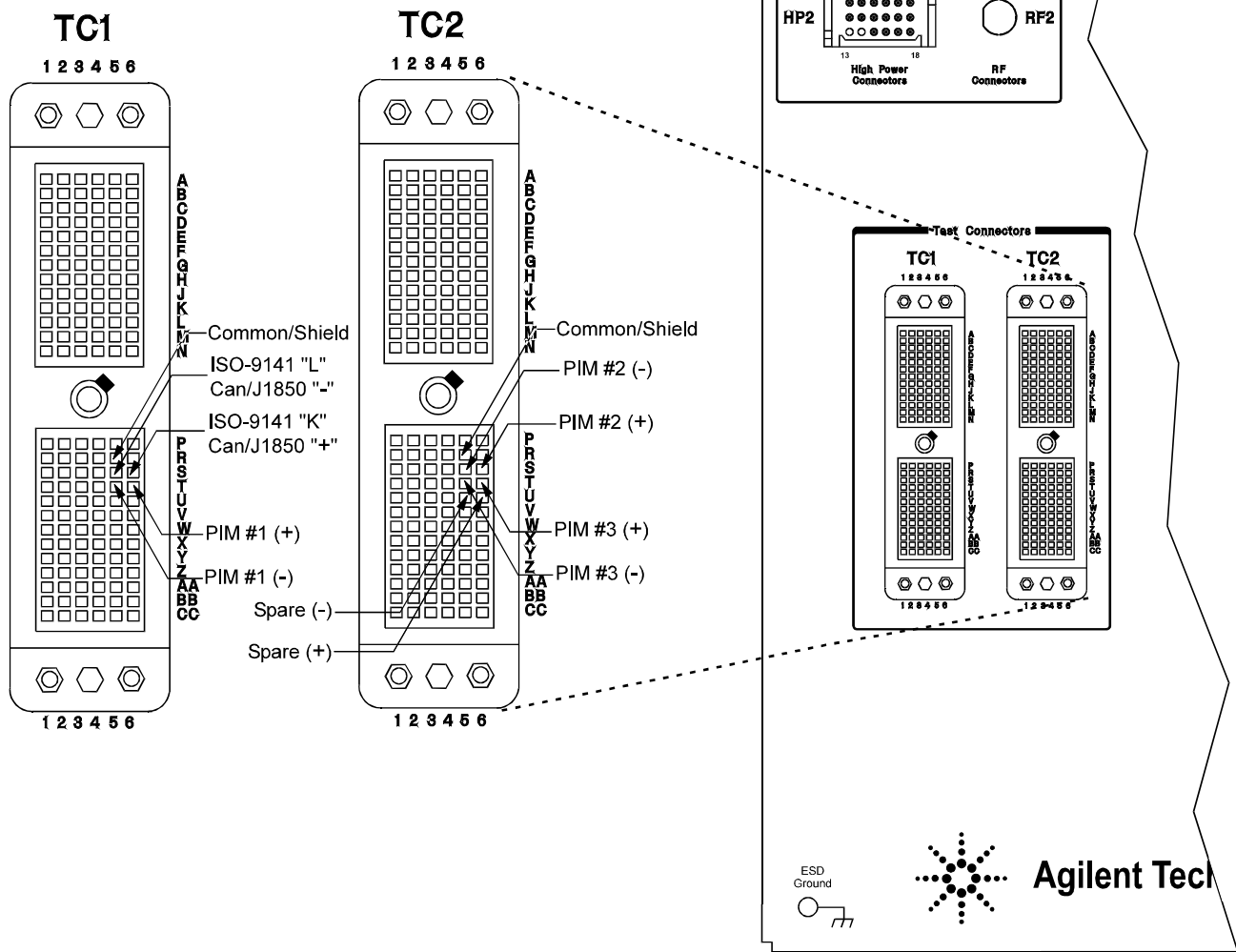


Figure 4. Connection to the Test System Interface (TS-5400 Series II)

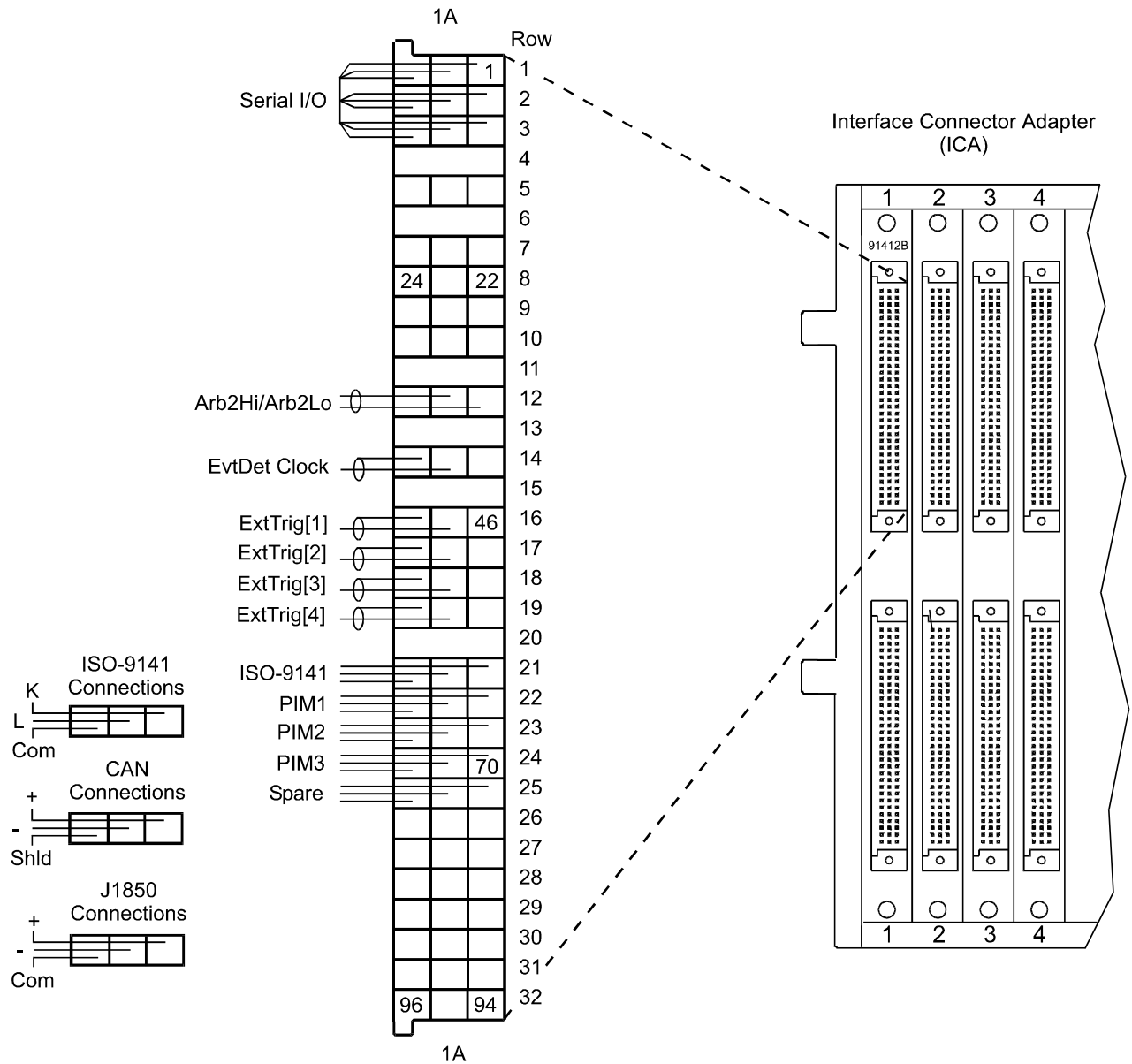


Figure 5. Connections to the Mass Interconnect (TS-5400 Series IIB)

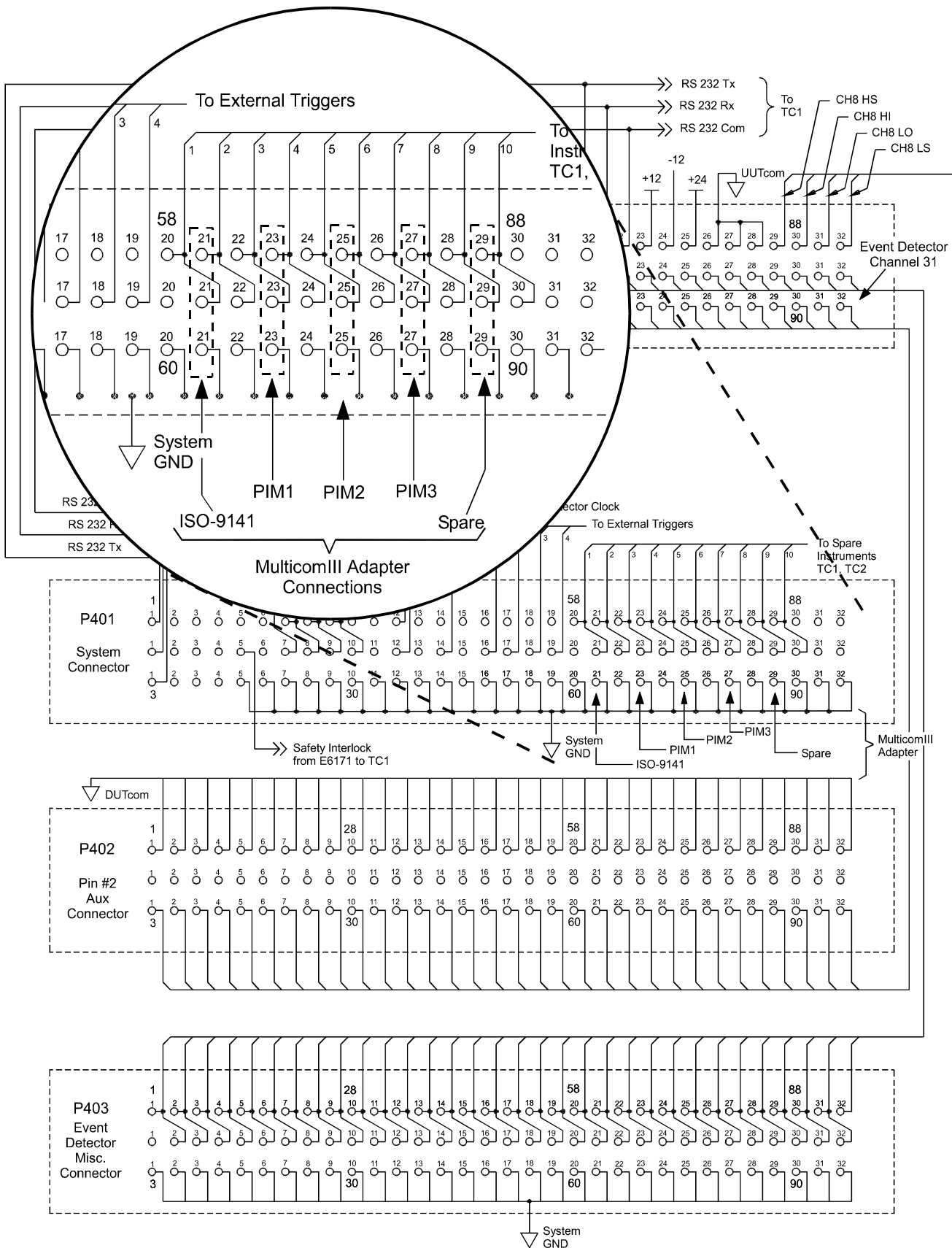


Figure 6. Connections to the Mass Interconnect (TS-5430 System)

Installing the Interface Adapter Software

The necessary software to operate the *EnGenius MultiCom III/s Interface Adapter* is normally installed at the factory. However, if adding the Interface Adapter to an older system that does not have the necessary software, use the new Installation CD-ROM and add the software. The CD-ROM is shipped with the option.

Note Use only the software already stored on the computer or from the TS-5400 Install CD-ROM (if upgrading the system with the Automotive Serial Protocol). DO NOT use the software shipped with the *EnGenius MultiCom III/s Interface Adapter*.

Note Be sure the software is at revision A211 or above. Lower revision number software does not contain the necessary software to operate the Interface Adapter.
