

Installation Instructions

Interface Part Number 14-2993-000

Interfacing a Tekmar™ 2000/7000/3000/6000/Velocity XPT to a Hewlett-Packard GC/MS with RTE Software

This interface allows the Tekmar unit to operate automatically with your Hewlett-Packard instruments. It allows the GC to send a READY signal to the Tekmar unit. Also, it enables the Tekmar unit to start the GC upon sample injection or transfer.

Accessory Requirements

To use this interface, you must have the *accessory control card* (P/N HP 05990-60111) installed in the electronics area of the GC/MS. Also, you need the *remote start cable* (P/N HP 59870-60001). Both the card and the cable is shipped with RTE systems.

Note: If you have the standard HP 5985/87/95/96 GC/MS system, you may not have these accessories.

Choosing the Correct Mode of Operation

The Tekmar unit can be operated in one of two modes: *master mode* or *slave mode*. In master mode, the Tekmar unit "commands" or signals the GC/MS or data system to start processing a sample. In slave mode, the GC/MS or data system "commands" or signals the Tekmar unit to start processing a sample.

This interface has two "arms" or cables called *master control* and *slave control*. If you install the master control cable, the unit will operate in master mode. If you install the slave control cable, your system will operate in slave mode. **Install both cables if your HP software is Revision F or greater.** Otherwise, you must choose the mode to use and install the appropriate cable. To choose, follow these guidelines:

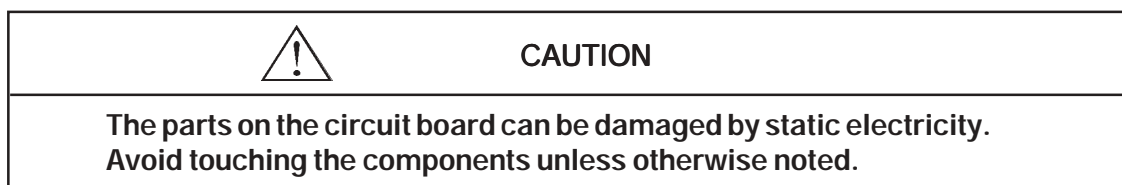
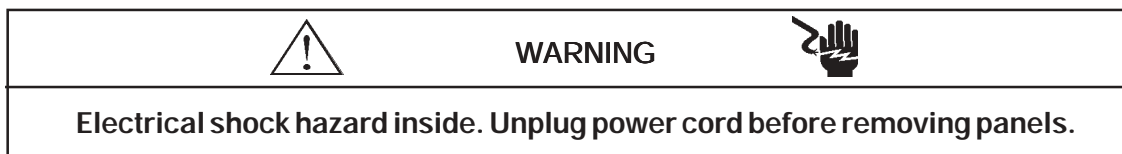
- If your software is **not** Revision F or greater and you have a cryofocusing module (capillary I/O) installed in your system, install the master control cable. Do **not** install the slave control cable.
- If your software is **not** Revision F or greater and you do **not** have a cryofocusing module installed in your system, decide which mode better suits your needs, then install the appropriate cable. When making your decision, follow these guidelines:
 1. Determine the Tekmar unit's cycle time. This is the time it takes to process one sample. Include Purge, Desorb, Trap Bake and Trap Cooldown Time. (Trap Cooldown Time depends on the temperature of the surrounding air.) Also include the time it takes for accessory items such as the MCM (moisture control module) or cryofocusing module to complete their modes of operation. Add the appropriate safety margin.
 2. Determine the GC/MS cycle time. It should include ramping, oven cooldown and equilibration time. Oven and equilibration time depends on the temperature of the surrounding air. Add the appropriate safety margin.

If the Tekmar unit's cycle time is shorter than the GC/MS cycle time, install the slave cable. When operating in slave mode, make sure that the Tekmar unit is ready when the GC/MS gives the start signal.

If the GC cycle time is shorter than the Tekmar unit's cycle time, install the master cable. When operating in master mode, make sure that the GC/MS is ready when the Tekmar unit gives the start signal.

Adjustments

For the interface to work properly, the switches on the 2000 or 7000 input/output (I/O) board need to be set as shown in the diagram included with these instructions. You do not need to set switches on the 3000/6000/Velocity XPT; you set up the interface through software. See the following instructions for your particular unit.



Connecting the Interface to the 2000

1. To access and set the switches:
 - a. Locate the I/O board. It has two connectors extending out of its bracket, which can be accessed at the rear of the LSC 2000. (See the photograph in Section 12 of your Purge and Trap Concentrator User Manual.)
 - b. Loosen the two screws that hold the I/O board and slide it out until you see the switches labeled "U012" and "U013".
 - c. Referring to the diagram included with these instructions, set the switches.

Note: If you are using a cryofocusing module, the switches on U012 need to be set so that the GC start signal can occur at the end of Desorb Mode. Set switch number 3 to the CLOSED position and switch number 4 to the OPEN position.

- d. Return the I/O board to its original place, being careful to properly seat it into its connector.
2. Plug the 25-pin connector into the I/O board.

Connecting the Interface to the 7000

1. To access and set the switches:
 - a. Loosen the two 1/4-turn fasteners on the lower left side panel.
 - b. To remove the panel, pull it **away** from the unit to release the retaining clips from the posts in the chassis, then toward the **front** of the unit to release it from the locating pins (on the rear of the unit).
 - c. Locate the three sets of four DIP switches on the edge of the I/O board. They are labeled BIAS, OUTPUT and INPUT.
 - d. Referring to the diagram included with these instructions, set the switches.
 - e. Reinstall the left side panel by pressing it back onto the locating pins and inserting the retaining clips into the posts in the chassis.
 - f. Secure the panel with the two 1/4-turn fasteners.
2. The I/O board has two connectors extending out of its bracket, which can be accessed at the rear of the 7000. Plug the 25-pin connector into the I/O board.

Connecting the Interface to the 3000 , 6000. Velocity XPT

1. Turn off the Tekmar unit.
2. Locate the Tekmar unit's interface board. The board has two connectors extending out of its bracket. These connectors can be accessed at the rear of the Tekmar unit.
3. Plug the 25-pin connector from the Tekmar cable into the matching connector on the interface board.

Specifying the GC Port (3000 ,6000, Velocity XPT only)

1. Turn on the Tekmar unit.
2. At the System Error/System Reset Screen, press the ENTER key.
3. Allow the system to run through the automatic self-test.
4. At the Standby Screen, press the CONF key. The Configuration Screen appears on the display.
5. At the Configuration Screen, press **A** (GC I/O Port). The GC Port Screen appears on the display.
6. Choose the GC Port. You have two choices: *Standard* or *User*.

If you are operating in slave mode (using the slave control cable alone) or if your HP software is revision F or greater...

Choose **Standard**. Press any numeric key to cause the display to toggle from one choice to another. Press ENTER to save your selection.

If you are operating in master mode (using the master control cable alone) ...

- a. Choose **User**. Press any numeric key to cause the display to toggle from one choice to another. Press ENTER to save your selection.
 - b. Since you have chosen User, you must specify a *GC Type Number*. Press the NEXT PAGE key. The *Special GC Type Screen* will appear on the display. Specify **31** for the User GC Type Number by pressing the appropriate numeric keys. Press ENTER to save the entry.
7. Turn off the Tekmar unit.

Connecting the Master Control Cable to the GC/MS

1. Locate the remote start button on the GC/MS.
2. Locate the master control cable. Refer to the illustration included with these instructions.
3. Connect the master control cable to the receptacle on the rear of the remote start button.

Connecting the Slave Control Cable to the GC/MS

1. Locate the Molex plug labeled "accessory connection" on the rear of the GC/MS.
2. Remove the Molex plug from the remote start button.

Connecting the Slave Control Cable to the GC/MS (continued)

3. Locate the slave control cable. Refer to the illustrations included with these instructions.
4. *If your HP software is Revision F or greater...*
Attach the two pins from the slave control cable to position numbers **27** and **28** on the Molex plug. It does not matter to which position each pin attaches.
*If your HP software is **not** Revision F or greater,...*
Attach the two pins from the slave control cable to position numbers **25** and **26** on the Molex plug. It does not matter to which position each pin attaches.
5. Connect the Molex plug to the accessory connection on the GC/MS.

GC/MS Programming Considerations

1. The HP-1000 RTE GC/MS software allows control of the Tekmar unit and other non-HP sampling devices through an electronic circuit board called *Accessory Control Card* (HP P/N 05990-60111). The card uses electronic parts called *relays* and *triacs* to control devices. The relays and triacs act like switches. The times to flip these "switches" are entered in the Run Time Events form in DATAAC. Refer to your HP software manual for more information.
2. *If your HP software is Revision F or greater...*
Select MANUAL under INJECTOR CONTROL.
3. *If you are using DATAAC in slave mode...*
Select the following:
 - a. Relay number 1: ON 0.1 minutes (if you have Revision D software)
OFF 0.2 minutes
4. *If you are using BATCH SEQUENCE in master mode..*
Select the following:
 - a. Bottle number-1 (Use the remote start button.)
 - b. ALS stroke 1 (required)
5. *If you are using BATCH SEQUENCE in slave mode...*
Select the following:
 - a. Bottle number0 (non-HP autosampler)
 - b. ALS stroke 1 (required)
 - c. Relay number 1 ON 0.01 minutes
OFF 0.2 minutes

