

USER'S MANUAL

Model:

**InstruTECH PCI-18 and InstruTECH PCI-18V3
PCI HOST ADAPTER FOR ITC-18 AND EPC 10PLUS**



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1 General Information

1.1 Product Intended Usage

The InstruTECH *PCI-18 / PCI-18V3* is intended for research use only in a laboratory by persons trained in its use. Users are expected to be able to properly operate the InstruTECH *PCI-18 / PCI-18V3* and associated instruments.

The InstruTECH *PCI-18 / PCI-18V3* is not intended for medical use. The InstruTECH *PCI-18 / PCI-18V3* is not intended for use in life support situations, or in situations where improper operation or failure of the InstruTECH *PCI-18 / PCI-18V3* can result in personal injury.

HEKA Instruments Incorporated makes no representation that the design, implementation, testing, or manufacture of the InstruTECH *PCI-18 / PCI-18V3* meet reasonable standards for use as a medical product.

As stated in the HEKA Instruments Incorporated Limited Warranty Statement, supplied with each product, "HEKA Instruments, Inc expressly disclaims all warranties to buyer except the limited warranty set forth above, including without limitation to any and all implied warranties of merchantability and fitness for a particular purpose."

1.2 Accessories

The following items should have been packed with your InstruTECH *PCI-18 / PCI-18V3 PCI Bus Host Adapter kit* for the *EPC 10Plus* patch clamp amplifier or *ITC-18* data acquisition system:

1 InstruTECH *PCI-18 or InstruTECH PCI-18V3* PCI Bus computer plug in card

1 Cable assembly (please note that if the card was ordered as an upgrade the cable is not included!)

1 User's manual

If any of these items are missing please contact HEKA Instruments Incorporated or your dealer immediately.

1.3 Unpacking

Use caution when removing the InstruTECH *PCI-18 / PCI-18V3* computer plug-in card from the special static shielding bag that it is packed in. This board is susceptible to damage and degradation by static discharges. Do not remove the board from this static protection until you are ready to install it into the computer. Touch the computer chassis to equalize the static charge between yourself and the computer chassis before handling the computer board. *Following these steps is extremely important to prevent damage to the computer interface card.* HEKA Instruments Incorporated does not warranty the

InstruTECH *PCI-18* / *PCI-18V3* computer card from damage caused by improper handling.

1.4 Purchase Information

Take the time now, while getting started, to record some purchase information here. This will make it easier to locate this information should this become necessary in the future.

Date of purchase:

Dealer:.....

Dealer telephone number:.....

Dealer fax number:

Dealer email address:.....

Contact name at dealer:.....

Serial number:.....

Other notes:

1.5 Technical Specifications

The InstruTECH *PCI-18* / *PCI-18V3* PCI interface card is compatible with the *ITC-18* data acquisition system and the *EPC 10Plus* patch clamp amplifier.

The InstruTECH *PCI-18* card is compatible with computer systems that support 5 Volt PCI bus cards.

The InstruTECH *PCI-18V3* card is compatible with computer systems that support 3.3 Volt PCI bus cards.

Please note that these cards will only physically fit in the appropriate computer system!

All technical specifications are nominal conditions and are subject to change without notice.

1.6 Description

The InstruTECH *PCI-18* / *PCI-18V3* PCI Bus interface is a host interface card that will allow the *ITC-18* data acquisition system or Heka *EPC 10Plus* patch clamp amplifier to be used with computers featuring the PCI Bus. The InstruTECH *PCI-18* / *PCI-18V3* card is compatible with MacOS and Windows.

Simple installation brings ease in setup and helps to eliminate card compatibility problems.

2 Installation

1. Turn the computer OFF.
2. Disconnect the power cord to the computer.
3. Remove the cover from the computer to access the computer's PCI expansion slots. Please follow the instructions outlined in your computer user's manual for removing the cover of the computer. Locate an empty PCI bus slot and remove the cover over the case access opening. Use caution here to guard against static, as outlined in chapter one. Remove the InstruTECH *PCI-18 / PCI-18V3* card from the static shielding packaging. Line up the card-edge connector on the InstruTECH *PCI-18 / PCI-18V3* board with the female connector on the CPU board. Gently press the two together until fully seated. If any resistance is felt please check for any proper alignment of the connectors. Do not force the two boards together. It should take minimal pressure to mate the two connectors. If excessive force is used here, damage could result to the InstruTECH *PCI-18 / PCI-18V3* card and the computer motherboard. If your model computer uses a screw to secure the expansion cards in place, install the screw and make sure that it is fastened securely.
*Note: On some model computers the rear bracket may not line up correctly against the inside of the computer case. For these computers, loosen the two screws on the InstruTECH *PCI-18 / PCI-18V3* card that hold the rear bracket in place. Adjust the bracket for a better fit and re-tighten the screws.*
4. Re-install the cover of the computer.
5. Install the *ITC-18* or *EPC 10Plus* into the operating position. Make sure that the interface can reach the computer with the supplied cable. Do not extend this cable. Unreliable operation can result if this cable is extended.
6. Install the cable between the *ITC-18* or *EPC 10Plus* and the InstruTECH *PCI-18 / PCI-18V3* computer board. The connectors on either end of the cable are keyed and will only mate when properly inserted. Fix the connector in place with the screws attached to the connector. This is important to ensure a good electrical contact.
7. Connect the power cord to the *ITC-18* or *EPC 10Plus* and the computer. Make sure that all power cords are plugged into properly grounded AC receptacles. Improper grounding of equipment could result in an electrical shock hazard. It is advisable to plug all equipment into a common outlet strip; this will minimize power line induced noise in the system. Equipment plugged into different outlets can cause excessive sixty hertz noise to be induced into the acquired data.
8. Before powering up any of the instruments, please re-check all connections.
9. You are now ready to power up the system and install the software. Follow the installation instructions provided with the software that will be used with this InstruTECH *PCI-18 / PCI-18V3* interface.

3 Troubleshooting

Most problems arise from incorrect installation of the hardware, and/or incorrect use of the software. The first thing to check is for proper installation of the hardware interface card.

HEKA Instruments Incorporated has utilities available for testing the InstruTECH *PCI-18 / PCI-18V3* card under MacOS and Windows. This utility is available from our technical support staff. Either email support@heka.com or call us and request the PCI utility disk.

Check the cable connecting the InstruTECH *PCI-18 / PCI-18V3* card to the *ITC-18* or *EPC 10Plus*. Make sure both ends are plugged in securely and that the cable is not damaged.

Check to see that the AC line cords are plugged in correctly.

Check that the power switches are in their “On” positions.

If all of the above steps fail to resolve the problem, contact HEKA Instruments or your dealer for assistance.

4 Driver Software

4.1 Available Driver Software

HEKA Instruments Incorporated has available driver software for researchers and developers who wish to write custom applications using the *InstruTECH data acquisition systems*. These drivers and appropriate manuals are available in both MacOSX and Windows formats. They are available from HEKA Instruments Incorporated by request. By email send a message to support@heka.com and request the *ITC* drivers for the operating system of your choice.

4.2 Igor XOP's

HEKA Instruments Incorporated has available an XOP for WaveMetrics Igor Pro that will allow researchers and developers to write custom applications using the InstruTECH data acquisition systems and WaveMetrics Igor Pro software. These XOP's including the appropriate help file is available from <http://www.heka.com/>. By email send a message to support@heka.com and request the *ITC-18* XOP's for the operating system of your choice.

5 Product Upgrades

The InstruTECH *PCI-18 / PCI-18V3* card is designed to be firmware upgradeable by the user, should this ever become necessary to keep up with new developments in the specification for the PCI bus. Do not attempt to do such an upgrade without the approval of HEKA Instruments Incorporated or one of its authorized agents. **If this upgrade is performed improperly, the InstruTECH *PCI-18 / PCI-18V3* card will malfunction and become unusable.**

First you must acquire the proper upgrade software from HEKA Instruments Incorporated or one of its representatives. These upgrades will be announced on our Web site. Update software will be made available in MacOSX and Windows formats. The cover of the computer must be removed to access the InstruTECH *PCI-18 / PCI-18V3* card in order to install a program jumper. This jumper should be installed across the pins labeled “WE”. Install this shunt with the computer powered off. After this shunt is installed power on the computer and execute the software for your system. After the software is properly executed a successful completion message will be displayed. The computer should then be powered down and the jumper removed from the “WE” pins. Close the computer and turn the power back on. The update has now been completed.

If there is any difficulty in this process, please contact HEKA Instruments Incorporated or your dealer immediately.

6 Warranty and Technical Support

6.1 Limited Warranty

HEKA Instruments Incorporated warrants to the first purchaser, for a period of one year from the date of purchase (invoice date), that this HEKA Instruments Incorporated product (hereafter referred to as the “Product”) will be free from defects in workmanship and materials, and agrees that it will, at its option, either repair the defect or replace the defective Product or part thereof at no charge to the purchaser for parts and labor. The Product must be returned to HEKA Instruments Incorporated properly packaged with a written explanation of the problem, with transportation charges prepaid and the shipment fully insured. The Customer is responsible for all duties, taxes, and freight charges, if applicable. HEKA Instruments Incorporated will return the Product, postpaid and insured, in the most appropriate method as determined by HEKA Instruments Incorporated. If the Customer desires a faster shipping service, the Customer must pay any additional special delivery expenses.

This warranty does not apply to shipping damage. HEKA Instruments Incorporated fully insures all shipments. Any claims of damage upon receipt must be filed with the carrier and HEKA Instruments Incorporated immediately.

This warranty does not apply to any exterior appearance item of the Product which has been damaged or defaced, which has been subjected to misuse and abuse, abnormal service or handling, or which has been altered or modified in design or construction.

This warranty does not apply to any interconnection cables supplied with the Product.

This warranty does not apply if any unauthorized repairs, modifications or alterations have been made to the Product, without written approval from HEKA Instruments Incorporated.

This warranty applies to software products only to the extent of maintenance release software to correct improper operation of the Product. Software updates to increase the capabilities of the present Product are not to be provided under the terms of this warranty. Updates will be available for free download on <http://www.heka.com/>.

No sales organizations, other than HEKA Instruments Incorporated itself, are authorized to make any warranties other than those described above, or to extend the duration of any warranties beyond the time period described above on the behalf of HEKA Instruments Incorporated. If HEKA Instruments Incorporated agrees to such a modification of this warranty, HEKA Instruments Incorporated will furnish a modified copy of this agreement, which must be presented if a claim is being made under these modified terms.

6.2 Limitation of Liability

Title, risk of loss or damage, and other incidents of ownership shall pass to the customer upon due tender of goods.

HEKA Instruments Incorporated shall not be liable for delays in delivery or failure to perform due directly or indirectly to (i) causes beyond HEKA Instruments Incorporated reasonable control, (ii) acts of God, acts (including failure to act) of any governmental authority (de jure or de facto), wars (declared or undeclared), governmental priorities, port congestion, riots, terrorism, revolutions, fires, floods, sabotage, nuclear incidents, earthquakes, storms, epidemics, or (iii) inability, due to causes beyond HEKA Instruments Incorporated reasonable control, to obtain necessary labor, materials, components, facilities, energy, fuel, transportation, governmental authorizations or instructions, material or information required from the customer.

Notwithstanding any other provisions, the total limitations of HEKA Instruments Incorporated, including its subcontractors or suppliers, on any and all claims, whether in contract, warranty, or otherwise, arising out of, connected with, or resulting from the performance or non-performance of any agreement resulting here from or from the manufacture, sale, delivery, resale, repair, replacement or use of any equipment or the furnishing of any service, shall not exceed the price allocable to the Product or service which gives rise to the claim. Any such liability shall terminate upon the expiration of the warranty period (one year from the shipping date of invoice), except as to title.

Notwithstanding any other provisions, in no event, whether as a result of breach of contract, warranty, or otherwise, shall HEKA Instruments Incorporated, or its subcontractors or suppliers, be liable for any special consequential, incidental, indirect or exemplary damages, including, but not limited to, loss of profit or revenues, loss of use of the equipment or any associated equipment, cost of capital, cost of substitute goods, facilities, services or replacement power, downtime costs or claims of Customer's clients for such damages.

6.3 Obtaining Warranty Service

Warranty service of this Product can be obtained by returning the Product, post paid and insured, to HEKA Instruments Incorporated, or one of its sales agents. Prior authorization before shipping the product is advised for the most expedient service.

6.4 Obtaining Out-of-Warranty Service

HEKA Instruments Incorporated takes pride on its superb, long-standing repair and maintenance service of its products. In fact, support is still available for the HEKA produced EPC 7 - also known as List amplifier - which was introduced in 1982.

If a unit requires service after the warranty period has expired, please contact HEKA Instruments Incorporated service department for consultation. If return of the unit is necessary, then shipping instructions will be provided. Once the unit has been received

and diagnosed, a repair quote will be supplied for approval. Repairs are warranted for 90 days.

6.5 Technical Support

HEKA Instruments Incorporated provides exceptional pre and post sales customer support from our trained international sales representatives. Customer support is free of charge for registered users of HEKA products.

Check the HEKA website, <http://www.heka.com/>, for updated versions of driver and/or application software. There are also many tutorial documents available that may help resolve product-specific questions. If the problem is not resolved, please supply the following information when corresponding:

- Serial number of the InstruTECH *PCI-18* / *PCI-18V3* host interface
- Operating system version
- Driver software version number
- Application software version number
- Detailed information describing the problem