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## 1. SAFETY WARNINGS AND PRECAUTIONS

### NOTE

*This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take measures to reduce interference.*

### 1.1. UPON RECEIVING

#### 1.1.1. Unpacking

The packing slip identifies the type and number of units included. Verify contents upon receipt and visually check for shipping damage. If damage is evident or shipping container condition indicates possible damage, report this immediately to your purchasing or other appropriate department and, if possible, take photographs of the damage.

### NOTE

*Contact IVEK Corporation Technical Support if equipment arrives damaged or for any other technical support issues. IVEK Technical Support can be reached by phone at 802-886-4835, by fax at 802-886-8274 or by e-mail at [techservice@ivek.com](mailto:techservice@ivek.com).*

#### 1.1.2. Read Manual Completely

The precision components and systems manufactured by IVEK Corporation are designed for long term, continuous use in many different high technology manufacturing applications. The detailed procedures and specifications included in this manual will insure the proper function and expected longevity of the equipment. It is of the utmost importance that all responsible operating, maintenance and engineering personnel receive the necessary operational and safety training required to correctly operate and maintain the components and/or system. This training must include the reading and understanding of this manual in its entirety.

#### 1.1.3. Packaging

IVEK Corporation will not be responsible for damage due to improper unpacking upon receipt or any subsequent packaging of equipment returned for repair.

## 1.2. ENVIRONMENTAL CONDITIONS

Location: Indoor Use Only

Altitude: Up to 2000 meters

Temperature: 5°C to 40°C

Maximum Relative Humidity: 80% for temperatures up to 31°C, decreasing linearly to 50% relative humidity at 40°C

Voltage Fluctuations Limit: Not to exceed  $\pm 10\%$  of the nominal voltage.

Overvoltage Category: II

Pollution Degree: 2

## 1.3. ELECTRICAL

### NOTE FOR U.S. MARKET ONLY

*This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.*

**WARNING**

*Hazardous voltages exist inside the Controller Module enclosure. Under no circumstances should any Controller Module be opened.*

There are no user serviceable parts inside the Controller Module enclosure. Any unauthorized access to the inside of the Controller Module will void the warranty. Please contact IVEK Corporation's Technical Service Department for assistance.

All Controller Modules and applicable peripheral devices are equipped with a power connection point. This equipment must be connected to a properly wired and grounded (earthed) source and be supplied with the correct voltage and frequency. The required source must be capable of providing sufficient current. Correct polarity of the source must be observed (line, neutral, earth ground). Improper use of the grounding plug may result in electrical shock and may result in system malfunction.

**WARNING**

*UNDER NO CIRCUMSTANCES SHOULD THE MAIN FUSE BE TAMPERED WITH OR REPLACED BY ONE THAT EXCEEDS THE RATING FOR ANY SYSTEM COMPONENT. EXTENSIVE DAMAGE MAY RESULT.*

Do not immerse any Controller Module, Motor/Base Module, or Actuator Module in water or other liquids.

On some Controller Modules it is possible to initiate the dispense cycle via a "contact closure" wired through the rear panel terminal strip. Do not apply power to these terminals.

**1.4. MATCHED COMPONENTS**

Controller Modules are adjusted at the factory for a specific style of Motor/Base Module. Before using a Motor/Base Module which was not matched and shipped with the Controller Module, or is not known to be identical, consult IVEK Corporation's Technical Service Department with the serial #'s of the Controller and Motor/Base or Actuator Modules. This Controller Module adjustment is independent of changes in pump size.

**CAUTION**

*USING A STEPPER CONTROLLER MODULE ON A BRUSHLESS DC MOTOR/BASE MODULE WILL CAUSE DAMAGE.*

*USING A BRUSHLESS DC CONTROLLER MODULE ON A STEPPER MOTOR/BASE MODULE WILL CAUSE DAMAGE.*

**1.5. MECHANICAL**

All mechanical assemblies with moving parts are designed with closure covers and lockout mechanisms, where applicable, to protect operating personnel and the equipment. Never operate the equipment without the appropriate covers in place and lockout mechanisms activated.

Be aware of "Pinch Points" and use extreme caution when operating systems which include peripheral, motion control subcomponents.

Maximum pump operating pressures are application specific. Contact IVEK Corporation for pressure specifications. Permanent damage to internal components may occur. Be sure to inspect the liquid circuit before applying power to the system and before external pressurization of the liquid circuit.

Use extreme caution when handling the ceramic components of the Pump Module. Never forcefully insert or remove a piston from the cylinder.

### 1.6. BIOLOGICAL

Specific biological hazards to personnel may exist due to the process application. The end user is completely responsible for the training of personnel for possible biological hazards. For more information contact the local office of the Occupational Safety and Health Administration (OSHA) or appropriate agency for your country.

### 1.7. CHEMICAL

Specific chemical hazards to personnel may exist due to the process application. The end user is completely responsible for the training of personnel for possible chemical hazards. For more information contact the local OSHA office or appropriate agency for your country.

A thorough application analysis must be performed to eliminate the possibility of chemical incompatibility between application liquids (process and cleaning) and the Pump Module ceramics or liquid circuit components.

### 1.8. WARRANTY

**IVEK** warrants that its equipment will be free from defects in materials and workmanship at the time of shipment and that our products, if installed properly, will perform in accordance with our published specifications. For a period of one year from the date of shipment, **IVEK** will correct any defects in material and workmanship by repairing or replacing any defective part or parts that are returned, freight prepaid, to us. **IVEK's** liability will not, in any case, exceed the cost of correcting the defect in our manufactured equipment. **IVEK's** warranty obligations will terminate one year from the date of shipment. The foregoing constitutes our only warranty, your sole remedy and **IVEK's** sole liability. **IVEK** will not be liable for special or consequential damages under any circumstances.

#### NOTE

*All biologicals and chemicals **must** be removed from equipment being returned to IVEK Corporation for repair. (Refer to Chapter 2)*

### 1.9. REPAIR

Equipment returned for repair must be accompanied by a Return Material Authorization (RMA) number. The RMA number will be supplied by IVEK and is used to track incoming shipments through the repair or upgrade process.

Equipment under warranty will be repaired at no charge. Equipment not under warranty will be repaired on a materials and labor basis. A Purchase Order number is due upon completion of the repairs which may be subject to a minimum charge (contact IVEK for the minimum charge). Equipment must be sent to IVEK prepaid. Return transportation will be billed as part of the repair.

IVEK will not be responsible for damage due to improper packaging of equipment returned for repair.

### 1.10. RETURNS

All equipment returned for any reason must be accompanied by a Return Material Authorization (RMA) number. Please call or Fax IVEK Technical Service for an RMA number, include the serial #'s of the Controller and Motor/Base or Actuator Modules. The RMA number is used to track incoming shipments. IVEK will not be responsible for damage due to improper packaging of equipment returned for repair.

## 1.11. SYMBOLS

The following symbols may appear in this manual.

**NOTE** statements identify hints and instructions.

**CAUTION** statements identify conditions or practices that could result in damage to the equipment or other property.

**WARNING** statements identify conditions or practices that could result in personal injury or loss of life.



Indicates an electrostatic sensitive component.



Identifies a pinch point for hands and fingers.



Identifies moving parts that are a pinch point for fingers.



Indicates the equipment has been CE certified.



Identifies a caution area.



Identifies an electrical hazard.



Indicates damage to the equipment may occur.



Identifies a safety cover which should not be removed or indicates the equipment should not be operated with the guard removed.



Identifies a hot surface.



Identifies an object requiring the proper lifting procedures based on indicated weight.



Identifies an electrostatic sensitive device.



Indicates the Operating and Maintenance manual must be read before operating the equipment.



Indicates the Technical manual must be referenced for proper service procedure.



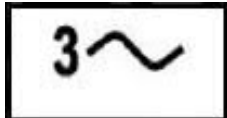
Indicates direct current



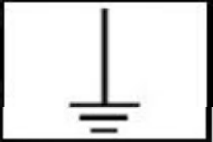

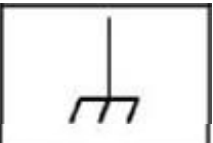
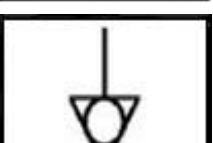
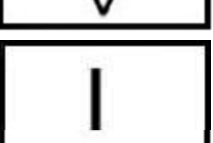
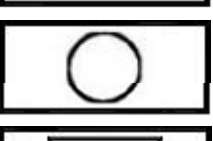

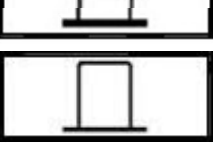

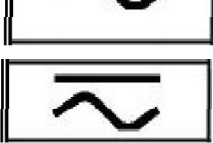
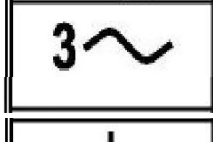
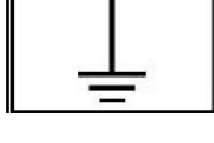

Indicates alternating current

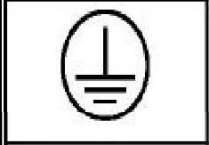
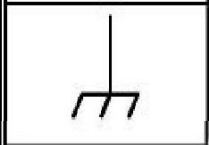
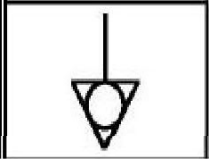

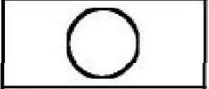
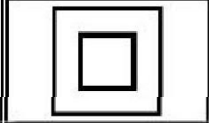

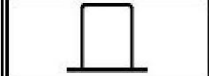


Indicates both direct and alternating current



Indicates three-phase alternating current

|   |  |
|---|--|
|    | Indicates Earth (ground) terminal  |
|    | Indicates protective conductor terminal  |
|    | Indicates frame or chassis terminal  |
|    | Indicates equipotentiality   |
|    | Indicates On (supply)  |
|   | Indicates Off (supply)   |
|  | Indicates equipment protected throughout by Double Insulation or reinforced insulation |
|  | Indicates In-position of a bistable push control                                       |
|  | Indicates Out-position of a bistable push control                                      |
|  | Indicates direct current   |
|  | Indicates alternating current  |
|  | Indicates both direct and alternating current  |
|  | Indicates three-phase alternating current  |
|  | Indicates Earth (ground) terminal  |

|   |  |
|---|--|
|    | Indicates protective conductor terminal  |
|    | Indicates frame or chassis terminal  |
|    | Indicates equipotentiality   |
|    | Indicates On (supply)  |
|    | Indicates Off (supply)   |
|   | Indicates equipment protected throughout by Double Insulation or reinforced insulation |
|  | Indicates In-position of a bistable push control                                       |
|  | Indicates Out-position of a bistable push control                                      |

### 1.12. TRADEMARKS

IVEK is a registered trademark of IVEK Corporation. All other trademarks not owned by IVEK that appear in this publication are the property of their respective owners.



**CHAPTER REVISIONS**

J 11/06/24 Per DCR/N 22451 and 22223 updated Electrical section and added 682218 to symbols.

I 10/30/19 Per DCR/N 19498 updated Section 1.2 Environmental Conditions

H 07/07/15 Per DCR/N 16606 added detailed information to section 1.3

G 08/29/13 Per DCR/N added section 1.2 Environmental Conditions, renumbered remaining sections

F 11/08/11 Per DCR/N changed section 1.11 wording

E 2/4/02 Added symbols DCR/N # 8626

D 8/18/00 Changed Warranty statement.

C 1/28/99 Added machine labels and Class A Product statement.

B 3/27/97 Made minor corrections and reformatted for PageMaker.

A 6/3/96 Add reference to RMA number in 1.8 Repair.

- 1/18/96 Original release.