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MethaSpense™ DISPENSING SYSTEM

OPERATING AND MAINTENANCE MANUAL

SPECIFICATIONS

Product: MethaSpense Dispenser Module

Line Power:
- 100V – 50/60Hz - 1Ø ☐
- 120V – 50/60Hz - 1Ø ☐
- 220V – 50/60Hz - 1Ø ☐
- 240V – 50/60Hz - 1Ø ☐

Fuse : (1/4" x 1 1/4")
- 2A • 250VAC • Slow Acting (Line Power 100V/120V)
- 1A • 250VAC • Slow Acting (Line Power 220V/240V)

Motor Speed: 1800 RPM (Max is 3000 RPM)

Baud Rate: 9600 BPS

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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. Please SAVE the IVEK MethaSpense Shipping Box and packing materials for future shipments, such as repairs, upgrades, or standard routine maintenance.

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 at802-886-2238, by fax at 802-886-8274 or by e-mail at 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. For more information regarding additional training and availability, please contact IVEK's Technical Service Department.

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:	5oC to 40oC
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 ± 10% of the nominal voltage.
Pollution Degree:	Category 2

1.3 ELECTRICAL

WARNING

Hazardous voltages exist inside the MethaSpense System enclosure. Under no circumstances should any MethaSpense System be opened.

There are no user serviceable parts inside the MethaSpense System enclosure. Please note that any unauthorized access to the inside of the MethaSpense System will void the warranty. Please contact IVEK Corporation's Technical Service Department for assistance.

All MethaSpense Systems and applicable peripheral devices are equipped with a power connection point. This equipment must be grounded. Connect only to a properly grounded power source. Improper use of the grounding plug may result in electrical shock and will result in system malfunction.

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 the MethaSpense System in water or other liquids.

1.4 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.

Use extreme caution when handling the ceramic components of the Pump Module. Never forcefully insert or remove a piston from the cylinder. Proper training is required prior to removal of any component. For information on training and availability, please contact IVEK's Technical Service Department.

1.5 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.

1.6 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.

1.7 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. Fora 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. Please note that any shipping cost to IVEK is the customer's responsibility but the warranty will cover all shipping cost returning to the customer's company facility. 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 only our 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 all equipment being returned to IVEK Corporation for repair. *****

1.8 REPAIR

Equipment being returned for repair must be assigned and accompanied by a **Return Material Authorization (RMA)** number. Please call, fax or e-mail techservice@ivek.com for the RMA number with the MethaSpense system's serial number located on the IVEK Manufacturer Label. The RMA number will be issued by IVEK and is used to track incoming shipments through the repair or upgrade process. Please contact IVEK's Technical Service Department for the RMA number prior to shipment of any materials.

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, check or credit card is due upon completion of the repairs which may be subject to a minimum charge (contact IVEK for the minimum charge). Please note that the customer is responsible for all shipments to IVEK and all non-warranty return transportation will be invoiced as a freight charge unless the customer provides IVEK with a shipping account.

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

1.9 SYMBOLS

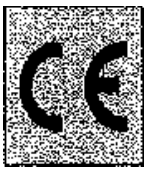
The following symbols may appear in this manual.

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.

The following symbols may appear on the equipment.



Indicates the equipment has been CE certified.

Identifies a caution area.

Identifies an electrical hazard.

Identifies an electrostatic sensitive device.

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

Indicates Earth (ground) terminal

2. METHASPENSE DISPENSING SYSTEM

2.1 DESCRIPTION

The MethaSpense Dispensing System, hereafter referred to as the system, contains all the monitoring and interface components for the dispensing operations. The system measures 381 mm (15.00") wide, 255.5mm (10.06") deep, 362mm (14.25") high (feet included) and weighs approximately 11.8kilograms (26 pounds) without the bottle. The operator indicators are located on the front panel and the interface connections are located on the rear panel.

2.1.1 Front Panel Indicators (Refer to figure 2.1)

The front panel contains the indicators for monitoring the operation of the system. The following indicators are located on the front panel.

2.1.1.1 READY Indicator

This green indicator illuminates while the unit is enabled and ready for operation.

2.1.1.2 WAIT Indicator

This red indicator illuminates when the unit is **not** enabled for operation.

2.1.1.3 DISPENSE Indicator

This yellow indicator illuminates while the unit is in the Dispense mode.

2.1.1.4 PRIME Indicator

This yellow indicator illuminates while the unit is in the Prime mode.

NOTE

Dispensing volume will be inconsistent while operating in this mode.

2.1.1.5 FORWARD Indicator

This yellow indicator illuminates while the unit is operating in the forward direction. The forward direction is counter clockwise rotation when the Pump Module is viewed from the end.

2.1.1.6 REVERSE Indicator

This yellow indicator illuminates while the unit is operating in the reverse direction.

2.1.1.7 FAULT Indicator

This red indicator blinks when there is a malfunction.

2.1.1.8 DOOR Indicator

Normally this red indicator illuminates when the door to the system is not properly closed.

2.1.1.9 LIQUID EYE Indicator

Normally this red indicator illuminates when air is present in the tubing.

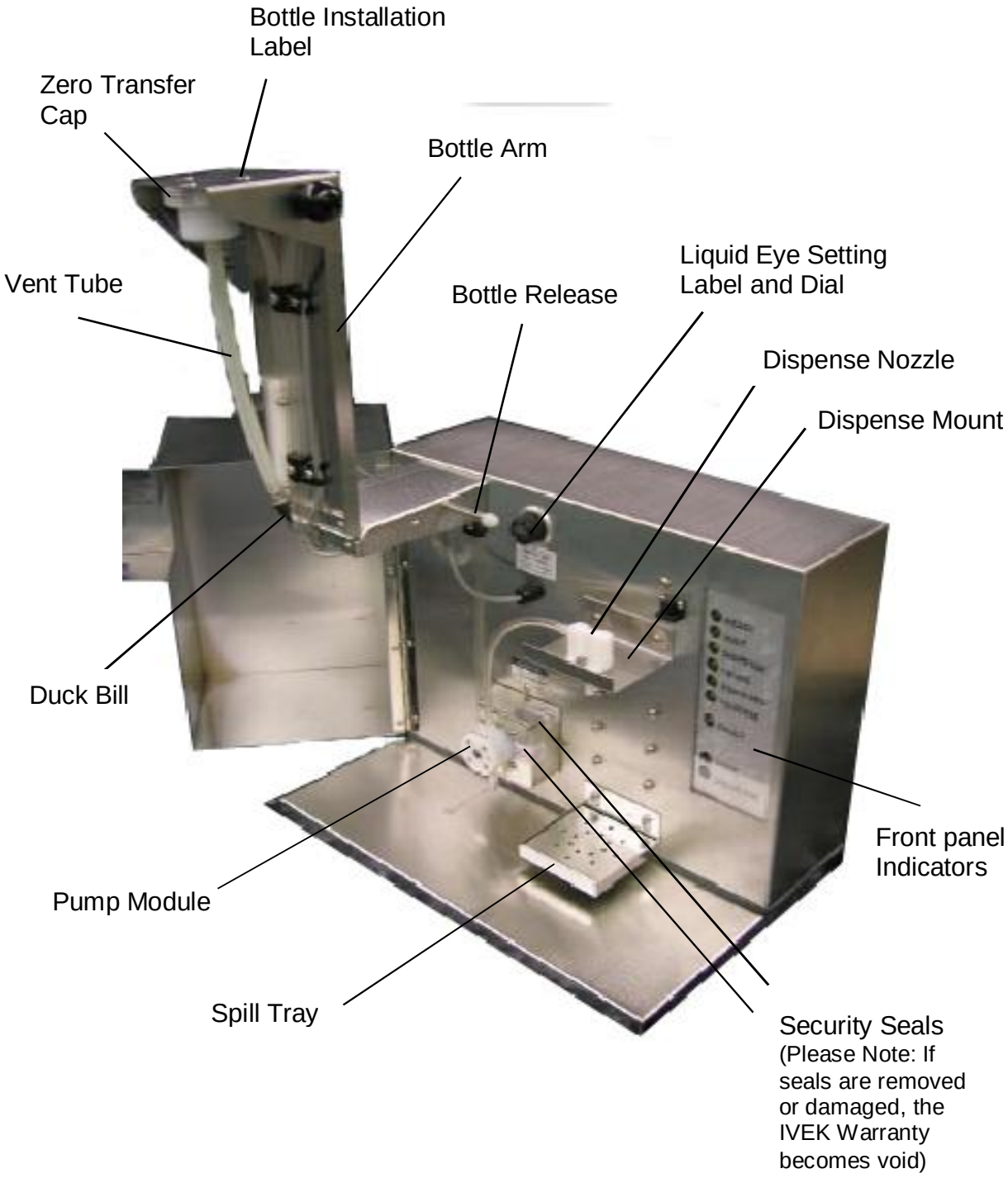


Figure 2.1 Front View

2.1.2 Rear Panel Detail (Refer to Figure 2.2)

The rear panel contains the interface connections for the system. The following components are located on the rear panel and discussed in detail in the following sections.

ON/OFF Switch
Power Entry Module
Motor Fuse
RS-232 Interface Connector
Audible Alarm

2.1.2.1 ON/OFF Switch

This 2-position, illuminated, rocker switch turns system main power (AC input) “ON”(1) or “OFF”(0).

A green indicator light in the switch illuminates when system power is “ON”.

2.1.2.2 Power Entry Module

The power entry module contains a receptacle for a standard IEC power cord, a voltage selector switch and main fuse holder.

CAUTION

Before plugging in the system, insure the line voltage setting appearing in the window agrees with the available line voltage. Damage to the equipment could result if the two voltages do not match.

Refer to section 2.3.1.2 for the fuse specifications.

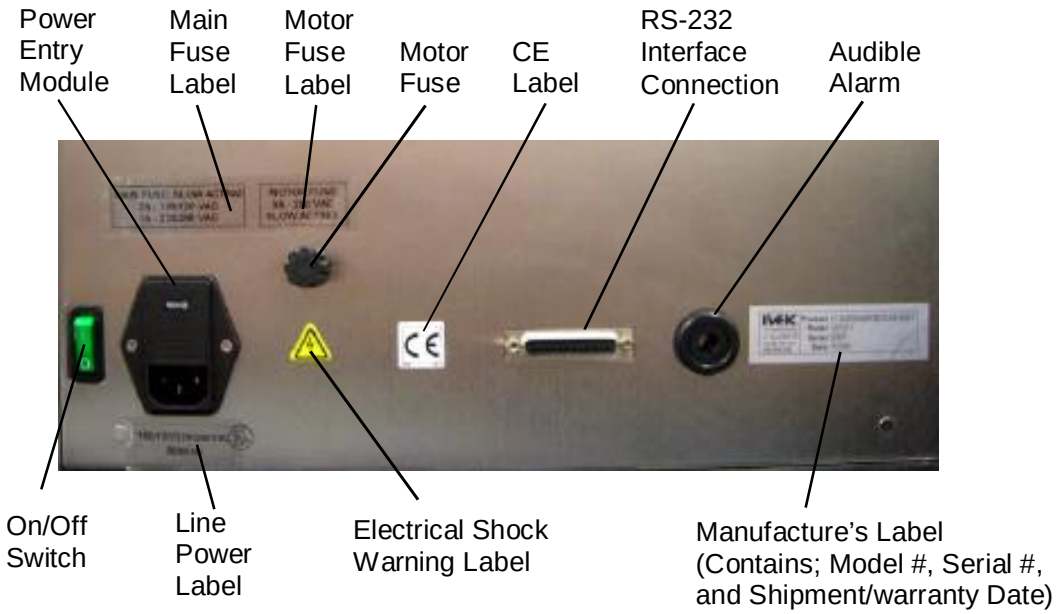


Figure 2.2 Rear Panel Connections and Labels

2.1.2.3 Motor Fuse

The motor fuse prevents damage to the motor due to an overcurrent condition. Refer to section 2.3.1.2 for the fuse specifications.

2.1.2.4 RS-232 Interface Connector

The RS-232 interface connector is the communication interface to the system and must be connected to the computer with a RS-232 Cable. (Please note this cable is not included with the MethaSpense system and must be purchased separately).

2.1.2.5 Audible Alarm

The audible alarm may sound when a system fault occurs.

2.2 OPERATION

The MethaSpense Dispensing System is a calibrated system for dispensing precise amounts of methadone. The system comes pre-calibrated from IVEK Corporation.
When no faults are present, the computer controller system dispenses methadone each time the system is triggered. The operation of the controller is divided into two sections; Normal Operation and Bottle Changing.

2.2.1 Normal Operation

NOTE

The system may not operate with the door open.

At start-up the READY, DISPENSE and FORWARD indicators are illuminated. When a dispense is started, the READY indicator will go out and the WAIT indicator will illuminate.
During normal operation, the computer will initiate the dispense cycle. The READY indicator will go out and the WAIT indicator will illuminate.

2.2.2 Bottle Changing

When the bottle is empty a message should appear on the computer to change the bottle. (Note: The system can utilize different bottle sizes dependent on preference.) The following instructions describe the procedure for changing a bottle:

1. Insert the key in the key lock and turn 1/4 turn counterclockwise.
2. Open the door, pull out on prop rod and swing up and lock holder into place.
3. Turn the bottle clockwise and remove slowly allowing for drippage.

NOTE

If the bottle is left off for longer than a ten-minute period of time, clean the duckbill with a damp clean cloth.

4. With the new bottle right side up, remove the bottle cap and seal and insert the vent tube into the bottle.
5. Screw the bottle to the Zero Transfer cap by turning the bottle counter-clockwise until the Fluid Level Viewing Window lines up with the yellow Bottle Installation Label (this may not apply to all bottles), which indicates "DO NOT OVERTIGHTEN". Overtightening will damage the Cap Liner inside the Cap allowing for bottle leaking and dispensing inconsistency, (refer to the following picture)

NOTE

Do *Not adjust the Liquid Eye Dial on the front of the MethaSpense System. The Dial should always be set to only the number indicated on the label just underneath the Dial.*

6. Release prop rod, slowly swing bottle holder down until it clicks into place.
7. Check for any leaking.
8. Close the door and lock by turning the key 1/4 turn clockwise. (IVEK does not have a master or spare key)

2.3 MAINTENANCE

2.3.1 Daily Cleaning

(Empty the System of all liquids prior to performing any Maintenance.)

1. Flush the system with **warm** (approx. 100°F) **clean distilled water.**
2. Run a Calibration verification test with a dry volumetric 10 ml glass flask (provided by IVEK) to make sure the dispense settings are accurate. If the dispense settings are off, contact IVEK Technical Service Department.

3. Run separate **clean distilled** water through tubing and leave water in tubing and pump overnight.
4. Wipe the Cabinet with a **warm clean damp** towel (water only)
(Taking special attention to the area around Dispensing Nozzle & Mount)

5. Check the External Components (including tubing) of the System for wear or damage.
6. For those customers interested in preventing the staining of the tubing caused by the Methadone syrup, Alconox® (www.alconox.com) is a cleaning solution available in individual packets that are mixed with water and used as an additional step to the daily cleaning process explained above.

2.3.2 Assemblv/Disassemblv Procedures

The system contains the following replaceable parts.

Main Power Fuse
Motor Fuse

2.3.2.1 Main Power Fuse

The main power fuse, located in the power entry module on the rear panel, is replaceable.

The proper fuse value is 1/4" x 1 1/4" - 2A • 250VAC • Slow Acting for 100/120 VAC or 1A • 250VAC • Slow Acting for 220/240 VAC. Available for purchase through IVEK, 1A part # 650054-0100 and 2A Part# 650054-0200. (Refer to Figure 2.3)

Procedure for Removing Main Power Fuse

1. Remove the power cord.
2. Using a small flat blade screwdriver, open the power entry module's cover.
3. Slide the fuse tray out and remove the fuse.

Procedure for Installing Main Power Fuse

1. Install the new fuse into the fuse tray and slide the tray in. The arrow on the fuse tray should point to the right.
2. Close the power entry module's cover.
3. Connect the power cord.

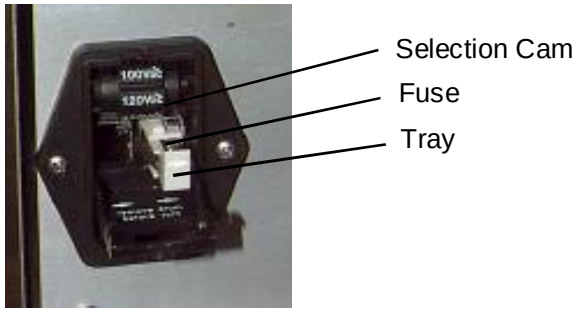


Figure 2.3 Power Entry Module

2.3.2.2 Motor Fuse

If the motor fuse has blown, it can be replaced. The motor fuse is 1/4" x 1 1/4" - 3A • 250VAC • Slow Acting. Available for purchase through IVEK, Part # 650054-0300.

Disassembly

1. Disconnect the power from the system.
2. Push in the fuse holder and turn counter clockwise and remove.
3.

Assembly

1. Install the new fuse into the fuse holder.
2. Place the fuse holder into the system and push in and turn clockwise to tighten.
3. Connect the power cord.

2.4 PROBLEM GUIDE

Table 2.1 contains a list of possible problems, causes and solutions for the system.

WARNING

Hazardous voltages exist inside the system. Under no circumstances should the system be opened. There are no user serviceable parts inside. Any unauthorized access to the inside of the system will void the warranty.

2.4.1 Windows Terminal Emulator Programs

2.4.1.1 Description

This bulletin describes setting up and using the hyper terminal emulator in Windows XP, 2000, 98 and 95 to communicate with an IVEK MethaSpense system. The Terminal Emulator is for Troubleshooting purposes ONLY and should NEVER be used in the process of dispensing Methadone prescriptions to patients.

2.4.1.2 Windows Terminal Emulator Setup

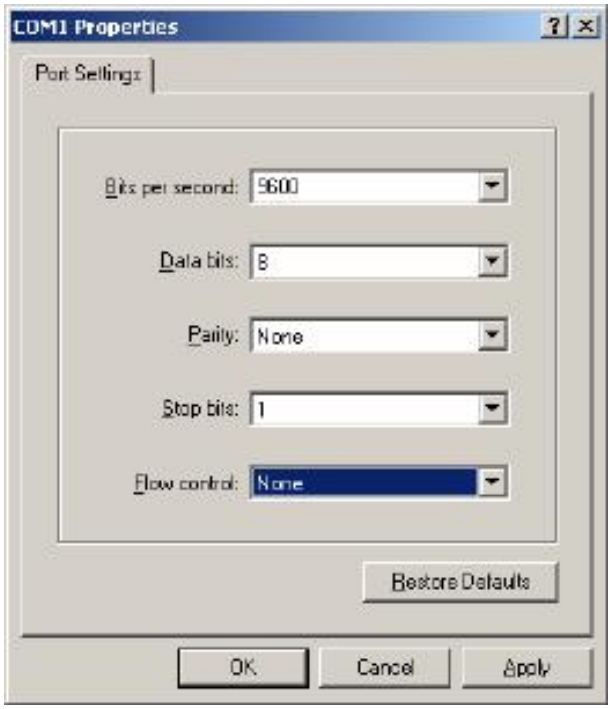
(Windows XP, 2000, 98, & 95)

(1) Click on ***Start*** in the Task bar at the Bottom left hand of your Screen.
(2) Scroll up to ***Programs*** to ***Accessories*** to ***Communication*** and select the ***Hyper Terminal*** file.
(3) Double click on the **Hvpertrm.exe** program icon.
(4) In the **Connection Description** window, enter a "Name" for this Connection (example: IVEK, Methadone, etc. - Note: hereafter referred to as *Connection Name)* and select an Icon picture of your choice. The Name will allow you to identify it in the window, which

appeared in the previous step, when you need it later. Click on the "OK" Button.

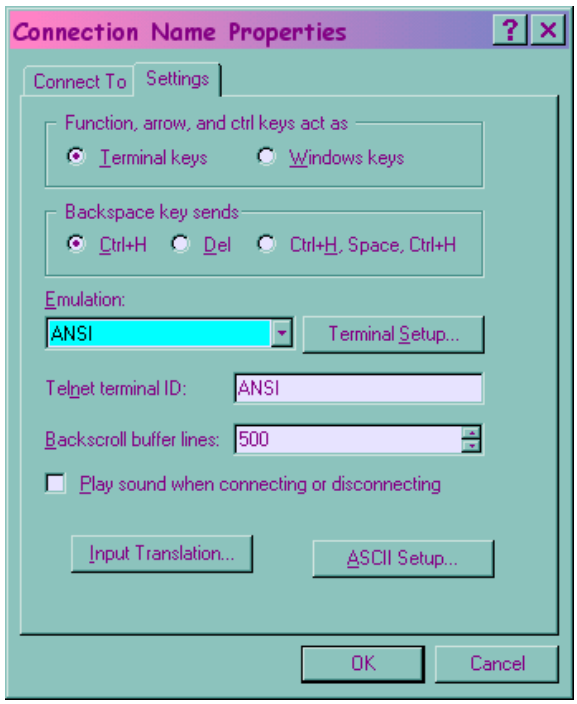
(5) In the ***Connect To*** window, *skip* ***Phone#*** *and* go down to the last entry box, ***Connect Using:.*** Click on the small arrow V to the right end of the selection box, and select the communication port (example: Direct COM 1) that is connected to the MethaSpense. (*Note: the *Country Code, Area Code,* and *Phone Number* entry boxes will become shadowed, indicating no entry is needed.) Click on the "OK" Button.

(6) In the ***COM# Properties*** window, use the following Port Settings:

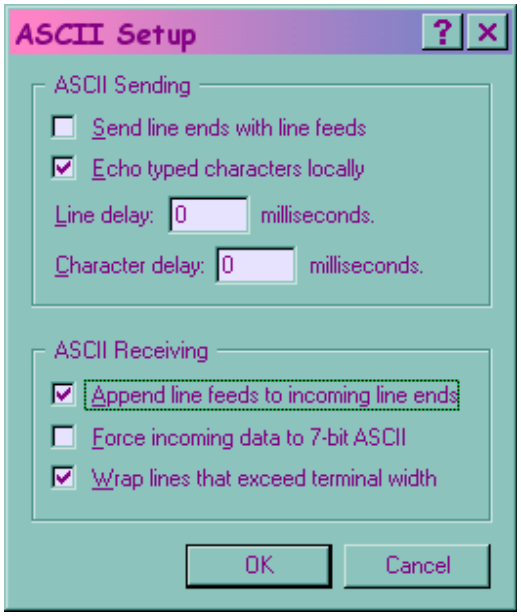


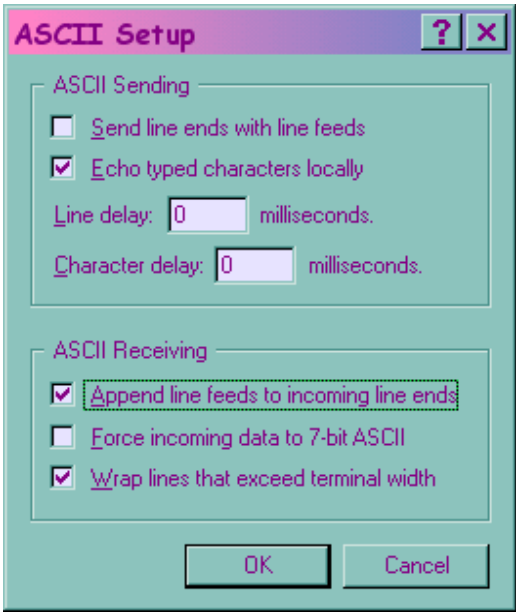
(7) In the ***"Connection Name"- HvperTerminal*** window. Click on ***File*** and select ***Properties*** menu item.

(8) In the ***"Connection Name"*** **Properties** window. Click on the ***Settings*** tab. Click on the arrow at the right end of the ***Emulation:*** box and select ***ANSI*** from the drop-down menu.



(9) Click on the ***ASCII Setup*** Button (bottom right of the window).
(10) In the ***ASCII Setup*** window, adjust to the following settings:

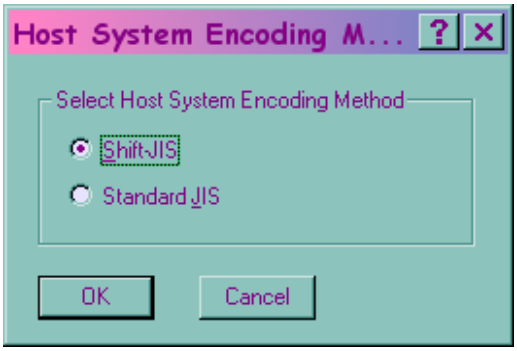




Click on the "OK" Button

*** FOR WINDOWS XP & 2000 *ONLY*****

(11) Click on the ***Input Translation*** Button and verify that setting is selected to be ***Shift-JIS.*** Change if necessary and Click "OK".



(12) Click the "OK" Button to complete the ***"Connection Name" Properties window.***

(13) I n the ***"Connection Name"-HvperTerminal*** window, Click on ***File*** and select ***Save*** menu item to save all the latest changes.

(14) Make sure the RS-232 Cable is properly connected to the Computer and to the back of the MethaSpense system.

(15) The Terminal Emulator is ready for troubleshooting tests.

(16) Test the Communications by entering a few commands from the list provided in this Manual.

2.4.1.3 Windows Terminal Emulator Commands

< Note: Make sure your Caps Lock is OFF, all commands are lower case >			
Fill an *Empty Clean* Bottle with *ONLY Distilled Water.* Insert Air Vent Screw the bottle counterclockwise into Transfer Cap until the Fluid level viewing window lines up with the Label. Release prop rod, swing bottle holder down until it clicks into place. Use a cup or a large flask to place on the Spill Tray for capturing the water during the testing process.			
MAKE SURE POWER CORD AND OOMPUTER CABLE ARE PLUGGED IN AND TURN POWER ON			
STEP	**COMMAND**	**ACTION**	**REASON**
1	**s102 (enter)**	**DOOR ALARM DISABLED**	**Allows Door to Remain Open**
2	**ml (enter)**	**PRIME**	**To Introduce Water into the Tubing**
3	**b (enter)**	**BEGIN**	**Begin Command**
4	**m2 (enter)**	**DISPENSE**	**Dispense Mode for Testing**
5	**v500 (enter)**	**Volume/500 Strokes**	**Initial Dispense (Not Measured)**
6	**b (enter)**	**BEGIN**	**Begin Command**
< (Note: 0.1mL per stroke, meaning 500 strokes = 50 mL or 100 strokes = 10mL) >			
Remove the Cup or large Flask and hold the 10mL Volumetric Flask (provided by IVEK) under the Dispense Nozzle at a slight angle in order to prevent any splashing of water and being careful not to spill until the dispense is complete.			
7	**v100 (enter)**	**Volume/100 Strokes**	**10mL Flask Calibration Test**
8	**b (enter)**	**BEGIN**	**Begin Command**
Note: The water level of the dispense in the flask is called the *meniscus* and will be shaped like a bowl. The *line on the glass flask should go through* somewhere between the *top and the bottom of the bowl*. (Picture shown Pg. 13) Verify that the meniscus is where is should be and then *empty the flask of all water and dry inside and out* completely. Repeat Step 8 to do a second, third, fourth and fifth dispense test, remembering to *empty* and *dry* the flask after EVERY 10mL test dispense.			
(If the Calibration test shows to be *inaccurate,* Contact IVEK Tech Service Dept.)			
9	**d0 (enter)**	**REVERSE**	**Water will Pump Backwards**
10	**s100 (enter)**	**UQUD EVE DISABLED**	**Tubing can Empty without Alarm**
11	**v200 (enter)**	**Volume/200 Strokes**	**To Empty the Tubing of Water**
12	**b (enter)**	**BEGIN**	**Begin Command**
TURN POWER OFF FIRST AND THEN UNPLUG THE POWER CORD AND COMPUTER CABLE			

Table 2.1 Common Operational Problems And Solutions

PROBLEM CAUSE	PROBABLE	POSSIBLE SOLUTION
No power, nothing works.	AC power may be absent or inad-equate. Unit not plugged in.	Turn Power switch OFF. Ensure AC power cord is plugged into a properly grounded three-prong outlet capable of supplying 100/120/220/240 volts, 50/60HZ, rated at 3.0 amps minimum. Turn Power switch ON.
	Fuse is blown.	Turn Power switch OFF. Unplug main power cord from outlet. Remove fuse from rear panel fuse holder. Test fuse conductivity. Install good fuse in rear panel fuse holder. Turn Power switch ON.
	Supply Breaker is tripped.	Turn Power switch OFF. Check or reset breaker at panel. Turn Power switch ON.
Liquid leaks are present.	Connections are loose.	Check connections, replace tubing if worn.
	Tubing may be cracked or damaged.	Replace tubing.
Loud grinding, squealing sound. (Pump is not moving.)	Pump is bound.	Call IVEK Technical Service Department **(802) 886-2238**