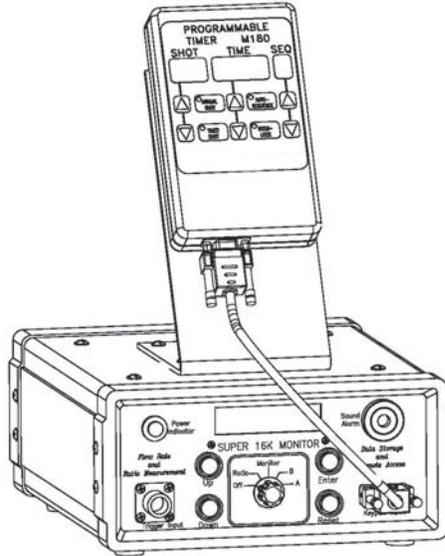


SUPER 16K RATIO MONITOR



USER MANUAL

fi **foam supplies, inc.**

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*Equipment and Service Provider for your
Polyurethane Foam dispensing needs.*

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General notes on Safety and Warranty:



The equipment described herein must only be operated or serviced by properly trained individuals. Operators should fully understand and follow instruction, safety guide lines, and be familiar with the limitations of the equipment.

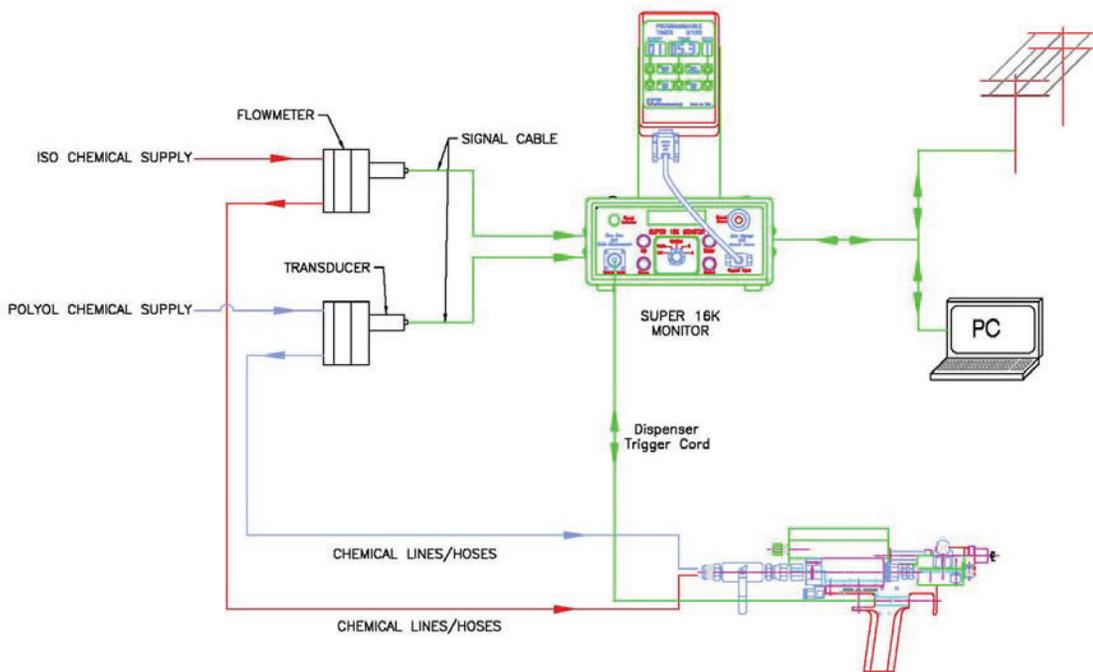
DISCLAIMER NOTICE: ALL INFORMATION, STATEMENTS, DRAWINGS AND DATA GIVEN HEREIN ARE BELIEVED TO BE ACCURATE AND RELIABLE BUT SUCH INFORMATION, STATEMENTS, DRAWINGS AND DATA DO NOT PRESENT ANY GUARANTY, WARRANTY OR RESPONSIBILITY OF ANY KIND EXPRESSED OR IMPLIED.

THE USER SHOULD NOT ASSUME THAT ALL SAFETY MEASURES ARE INDICATED HERIN OR THAT OTHER SAFETY MEASURES MAY NOT BE REQUIRED.

Warranty: Foam Supplies, Inc provides a limited warranty to the original purchaser of this equipment against any defects in material or workmanship for a period of 60 days from the date of shipment. In the event equipment is suspected to be defective in material or workmanship, it must be returned, freight prepaid. If product is found to be defective, full credit for freight charges incurred will be issued, and either credit or replacement parts will be forwarded no charge, freight prepaid to purchaser.

1. INTRODUCTION:

The Super 16K Monitoring system is a valuable asset to your foam in place operation and manufacturing process. It is designed to work with 2 component Polyurethane foam chemicals, supplied in pressure tanks and driven by constant Nitrogen pressure (typically @ 240-250 psi). The monitor provides the user with data and information which allows optimization of the chemical dispensing process. The data stored by the monitor can be accessed locally or remotely for process analysis such as Quality, Inventory, Chemical usage and Cost. The monitor has means to capture chemical flow rates and flow ratio on dispensed foam shots with time and date stamp. It will also capture system shut down and errors when they take place. The information is downloaded on a PC thru a user friendly software application. The Monitor connects to high precision flow meters that are equipped with transducers. The transducers provide the Monitor with input signals. The Monitor's computer processes the signals and displays the information on its LCD window as a mean of communication with the user.

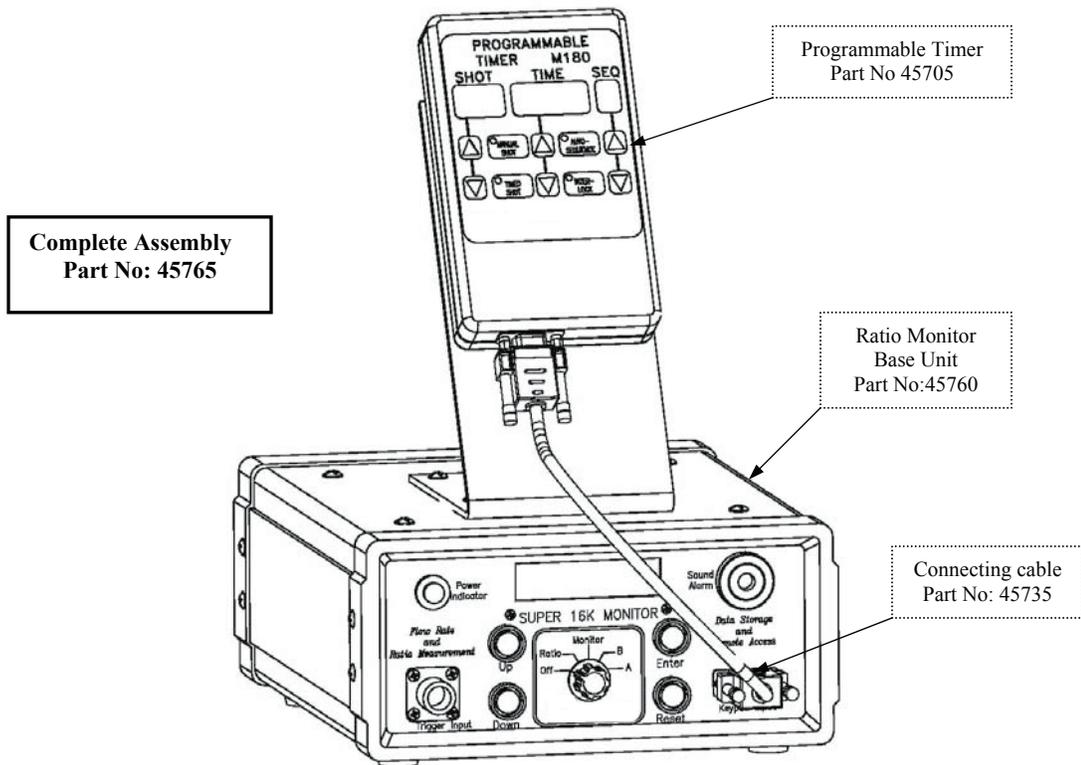


General system schematic

The main function of the Super 16K Monitor is to notify the user if and when foam dispensing goes outside its allowable chemical mix ratio limits. It can also shut the system down if desired, when an off Ratio condition takes place.

2. MONITOR DESCRIPTION:

The Super 16K Monitor consists of 2 modular units: A Monitor base unit and a Programmable Timer unit. The two units are connected via an RS232 – 9 pin shielded computer cable. The Timer unit, can be mounted on top of the Base unit (as shown below), on the dispensing head itself, or at a remote location in the foaming area. The Timer function is primarily to control the shot time and the desired number of shots or shot sequence, while the Monitor is to capture data, alert the user, and/or shut the system down when an off-ratio condition takes place during dispense.

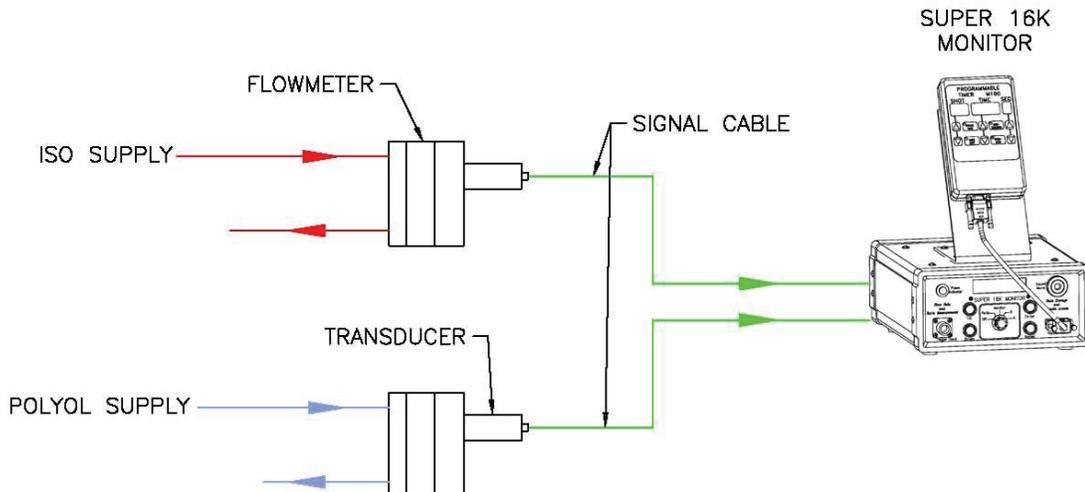


The Super 16K Monitor is a user friendly design. Subsequent sections of this manual will describe

- *Timer programming*
 - *Monitor Calibration*
 - *Data access*
 - *Other features*

3. ASSOCIATED METERING EQUIPMENT:

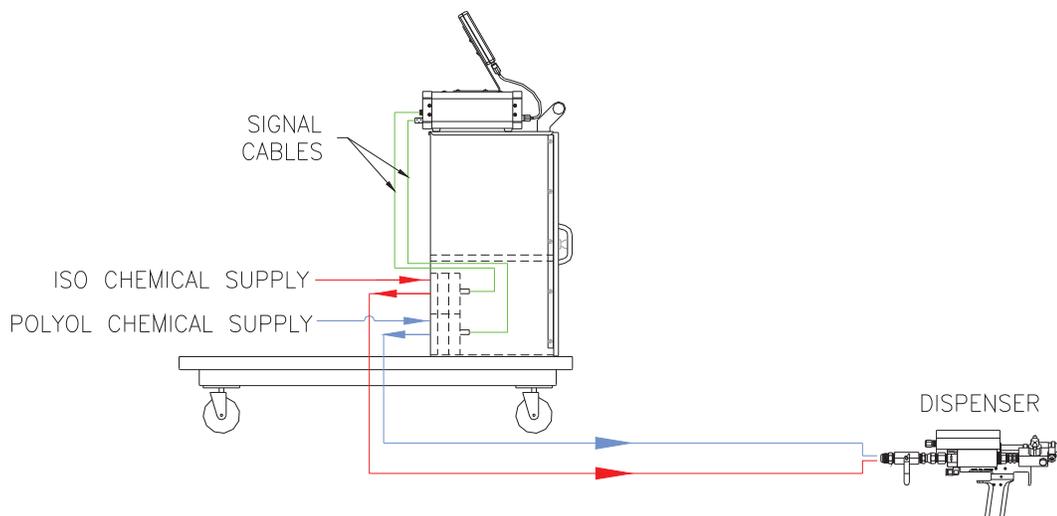
The Super 16K Monitor requires input signal from the foam process equipment. This involves one set of Flow meters, transducers and signal cables as shown in the diagram below. The table shows the appropriate flow meter part number to use according to the dispensing output rate in Lbs/Min.



Part No's are shown according to Nominal foam output in Lbs/Min

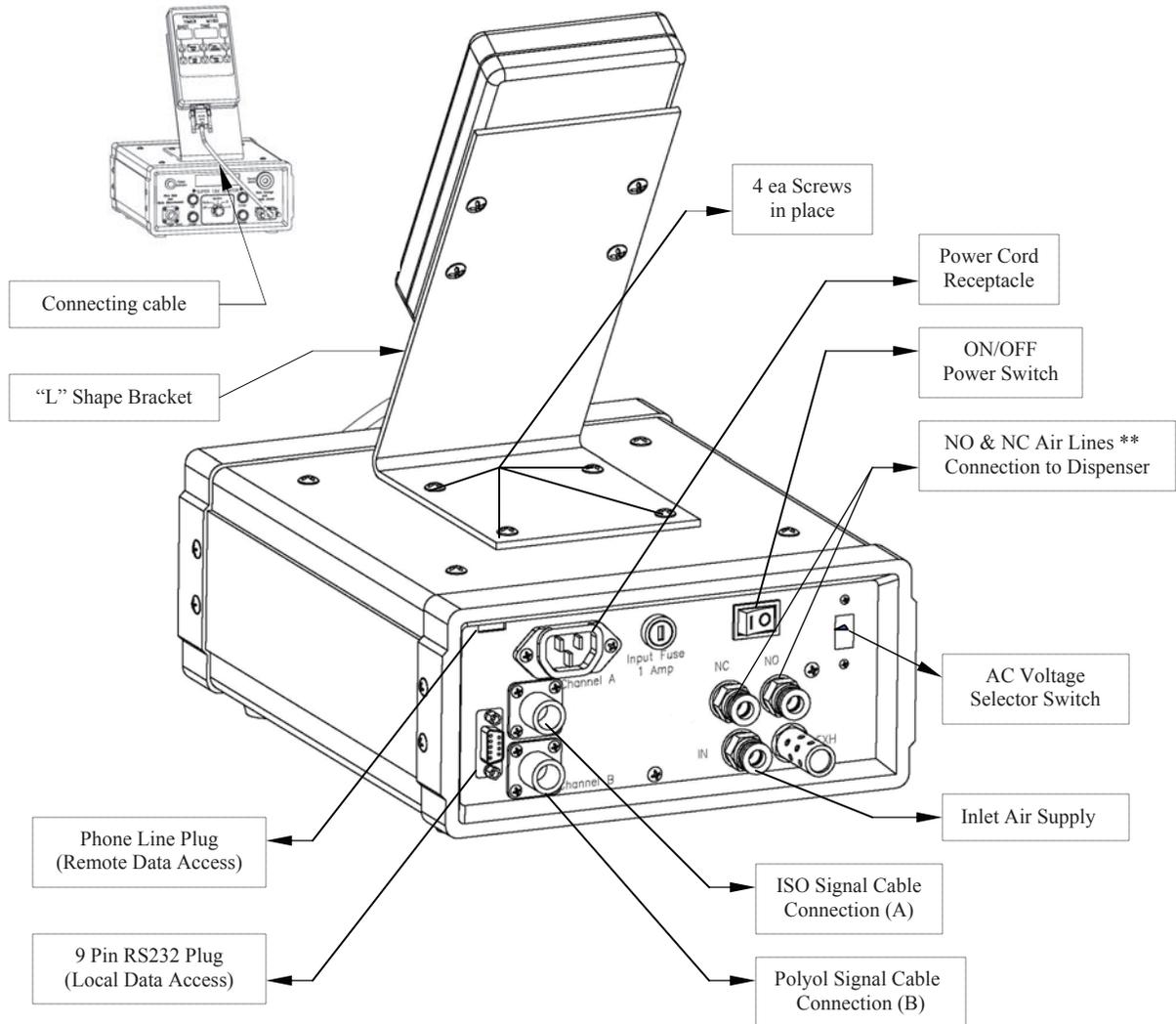
Part Description	6 Lbs	15 Lbs	30 Lbs	40 Lbs	50 Lbs	80 Lbs
Flow Meter Size 221	40530	40530	40530	N/A	N/A	N/A
Flow Meter Size 222	N/A	N/A	N/A	40535	40535	40535
Transducer/Tachometer	40540	40540	40540	40540	40540	40540
Signal Cable, 15 Ft Lg	40908	40908	40908	40908	40908	40908

The installation of the flow meters varies with each application. The ISO & Polyol supplies can be plumbed directly from a set of pressure tanks, or from a piping system drop under pressure. The meters can also be mounted on a roll away type cart as shown below.



4. SET UP and CONNECTIONS:

A typical set up is shown below where the Timer Module is mounted on top of the monitor on the "L" bracket, and where the connection between the Timer and the Monitor is made via the 9 pin connecting cable. Select a location for the set up where you can have access to the back panel, in order to make the appropriate connections as labeled below.



** NO stands for Normally Open port. This airline connects to the dispenser air cylinder port that would make the dispenser CLOSED at rest. This air line would be pressurized when the air supply is connected the Monitor.

** NC stands for Normally Closed port. This airline connects to the dispenser air cylinder port that would make the dispenser OPEN during a shot.

Mounting Instructions:

1. Mount the TIMER Module onto the “L” Shape Bracket as shown above using the 4 screws (# 4-40) provided on the backside of the TIMER Module.
2. Mount the “L” bracket on top of the Monitor. Remove the 4 screws (#10-32) already in place, line up the bracket holes and screw back in place.
3. Connect the TIMER Module to the Monitor unit using the 12“ long connecting cable.
4. Connect the Normally Open “NO” and Normally Closed” NC” Air lines to your Dispenser. The “NO” port makes the air cylinder shut off the dispenser at rest.
5. Connect your air supply to the inlet port.
6. Connect the A side signal cable coming from the A side flow meter transmitter.
7. Connect the B side signal cable coming from the B side flow meter transmitter.
8. Check the AC Voltage selector switch. It should match your power supply voltage.
9. Plug the Power cord (supplied with unit) into the back of the unit. Plug the other end into an appropriate power supply.
10. Connect the dispenser trigger cord into the “Trigger input” receptacle.

General system preparation:

It is presumed at this point that all chemical connections have been properly completed:

- a. Chemical supply is available to the inlet ports of the flow meters.
- b. Dispenser hose train (both A&B Chemical hoses) is installed.
- c. Dispenser is ready for use.

For a first time use, new dispensing system with empty hoses:

- Turn the Unit ON, and Open all chemical supply valves.
- Open all dispenser valves
- Set Timer to “Manual Shot” (Push the Manual Shot key on the Timer)
- Dispense manually until you prime all lines, and you get a solid foam stream.

For a wet system , used dispensing system with filled hoses:

- Turn the Unit ON, and Open all chemical supply valves.
- Open all dispenser valves
- Dispense 2 ea 5 sec foam shots into a waste bag.

For a wet system , used dispensing system with chemical system change:

- Turn the Unit ON
- Open all chemical supply valves.
- Open all dispenser valves
- Dispense old chemicals out of the lines until new chemical system is dispensed.



Whether you are working with a new system set up or a chemical formula change, the dispensing system must be in proper operation and producing on ratio foam, before calibrating the Monitor.

5. TIMER OPERATION & PROGRAMMING:

The operation & key function of the M180 Timer has been simplified by limiting the number of keystrokes the user must perform or remember. What you see on the M180 Timer Display is what the dispenser will perform.

General Dispenser Trigger operation:

- a. The dispenser trigger acts as a Start/Stop button.
- b. To dispense a timed shot, just depress the dispenser trigger.
- c. To stop dispensing, or interrupt a timed shot, just depress the trigger again.
- d. Only press and hold the dispenser trigger when dispensing in Manual Shot mode

Dispenser Shot Interruption:

In normal operation such as a “Timed Shot” dispense, the user presses and releases the dispenser trigger switch to initiate the shot. The on-board computer begins to count down the shot. If the user depresses the trigger during a shot, the on-board computer closes the dispenser and displays the remaining time of that shot. At this point, the user can again depress the trigger to finish the remainder of the interrupted shot, or press another key on the Timer Module to dispense something else.



“**TIMED SHOT**” key: When Energized, the user can dispense the same shot number and its corresponding time over and over again. In this mode, the on board computer never advances the shot number to a different shot. This is useful when a single shot time must be repeated several times.



“**MANUAL SHOT**” key: When energized, this mode gives the user complete control over the operation of the dispenser. When the dispenser trigger switch is pressed, the air solenoid valve is activated and the display counts up from zero in 1/10th of a second increment until the trigger is released. The dispense time will show on the display. The user can resume the manual dispense and the display will show the accumulated time. The user can reset the accumulated time to zero by pressing the MANUAL SHOT key again.



“**AUTO SEQUENCE**” key: When energized the M180 Timer goes into an automatic sequential dispense mode. The on-board computer looks at the SEQ number on the display and dispenses the series of shots programmed under that sequence. A sequence is a series of programmed shots.

The M180 can hold up to 9 different series of programmed shots. Each series is assigned a Sequence Number i.e 1, 2, 3, 4, etc. One sequence can be programmed up to 20 different shots. Each time a shot is completed the on board computer automatically advances to the next available shot time. If the sequence reaches the end of the programmed shots, the computer loops back to the first shot.



“**TIME Up/Down**” ▲▼ keys: They are used to increase or decrease the displayed shot time. When pressed, the shot time changes by 1/10th of a second. If the key is continuously pressed, the timer will scroll at a faster rate. The shot time can range from 00.1 to 99.9 seconds. When a shot time is changed, the new time automatically replaces the old shot time in memory.



“**SHOT Up/Down**” ▲▼ keys: They are used to advance or to reverse the shot number in a particular programmed shot sequence. When the Up/Down key is pressed, the shot number scrolls at one per half second. The M180 has a capacity of storing 20 different shot times in particular sequence. When the computer reaches the end of the programmed shot sequence, it displays and “E” for end, then loops back to the first shot time.



“**SEQ Up/Down**” ▲▼ Key: This key is used to advance or to reverse the Sequence Number, under which a series of programmed shots is stored.



“**INTER-LOCK**” key: When energized, the on-board computer monitors input signals from the flow meters transducers. If the programmed foam ratio goes outside the allowable tolerances, the computer shuts the dispenser down. The user must deactivate the Interlock mode, by pressing the key again, and correct the ratio flow condition of the system.

***How to Program a new Shot number:** Press the SHOT Up key until the letter “E” is displayed. Immediately press & hold the TIME Up key. This will add a new shot to the sequence. Continue pressing the TIME Up key until the desired shot time is reached.

***How to Delete a Shot number:** Scroll to the shot number you want to delete and Press the TIME Down key until the TIME reads 00.0 sec. A programmed shot is deleted when its time reaches 00.0 second. A short beep from the alarm will sound acknowledging the command. Release the TIME Down key and the computer automatically arranges the remainder shots in that sequence. Example, if you are in Sequence No 1, and you have 4 different shots programmed in it:

Example shot # 2 = 3.5 sec, shot # 3 = 20.3 sec, shot # 4 = 5.6 sec

By deleting shot # 3 of 20.3 sec, shot # 4 becomes the new shot # 3 = 5.6 seconds.

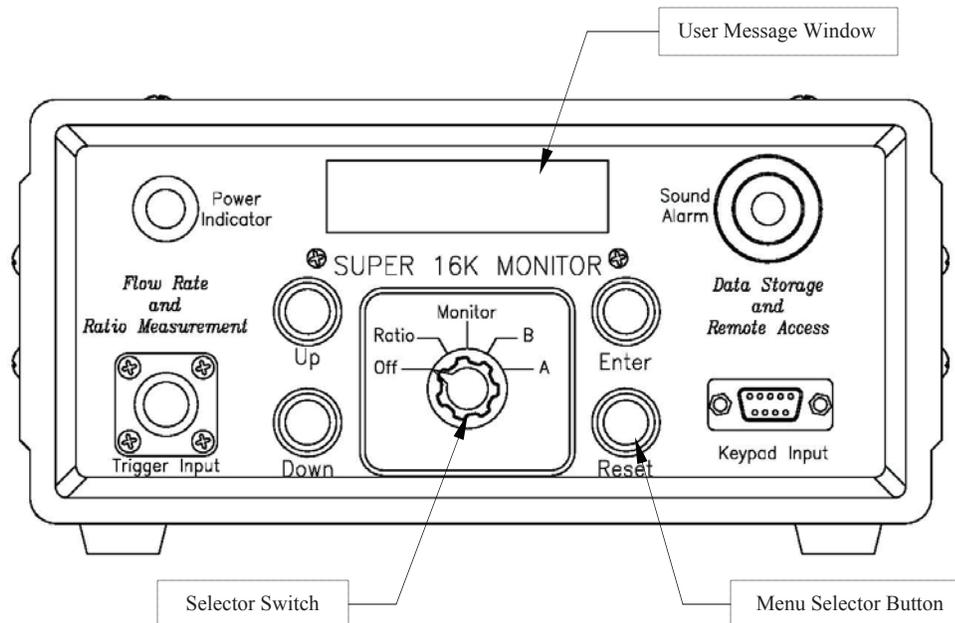
***How to Change a Shot Time.** Press either the TIME Up or TIME Down key to change the TIME on any programmed shot.

***How to dispense the same Shot repeatedly:** Scroll Up or Down to the desired shot, and then Press the TIMED SHOT Key on the keypad. The light indicator will be on. The computer will not advance the shot number.

***How to dispense a series of programmed Shots:** Scroll Up or Down to the desired Sequence number, and then Press the AUTO SEQUENCE Key on the Key Pad. The light indicator will be on. The computer will now sequence through all the programmed shot times automatically.

***How to Manually Dispense foam:** Press the MANUAL SHOT Key on the key Pad. The light indicator will be on. The display will reset to “00.0”. The user can dispense foam for as long as the dispenser trigger is pressed. When the trigger is released, the dispense stops and elapsed time will be displayed. If the trigger is pressed again, the display continues counting up from where it left off. To reset the display to 00.0, press the MANUAL SHOT key again.

6. MONITOR CALIBRATION:



Calibrating the Monitor involves 3 main steps listed below:

References used below:
"A" Component = ISO
"B" Component = Polyol

- I. Verify your equipment is dispensing on Ratio Chemicals first.**
- II. Calibrate the Monitor to the Actual Equipment Ratio.**
- III. Decide whether or not to use the "Inter-Lock" key function.**

I. Verify your equipment is dispensing on Ratio Chemicals first.

With the Monitor switch in the **OFF** position, do one routine 10 sec ratio check on "A" and "B" components, weigh and record the **Net weights in Lbs/min**. Example using a Nominal 15 Lbs/Min dispenser output:

10 sec "A" = 1.18 Lbs which is = 7.08 Lbs/min

10 sec "B" = 1.10 Lbs which is = 6.60 Lbs/min

Ratio = 100/93. If this is a good ratio for your chemical formula, proceed to Calibrating the Monitor. If not, adjust your dispensing equipment to achieve a good chemical mix ratio and then proceed to Calibrating the Monitor.

II. Calibrate the Monitor to the Actual Equipment Ratio.

1. Turn the selection switch to the "Monitor" position. The display will read "OPERATION NORMAL". Press the **RESET** button **twice**. The display will read "RESET MEMORY?" Press the **ENTER** key to start the calibration routine.
2. Dispense 10 sec foam shot in a waste bag. At the end of the shot the display will show the "A" Component flow rate in Lbs/min. Say A=6.75 Lbs/min.

3. Use the **UP** key (or **DOWN** key if necessary) to change the flow rate displayed to match the actual component flow rate, and then press **ENTER**. (In our example, change 6.75 to read 7.08 then press **ENTER**). A ½ sec pulse from the alarm signifies the value has been stored.
4. Dispense another 10 sec bag shot. The Monitor will read the “B” channel this time. The display will show the “B” component flow rate at the end of the shot. Say B=5.76 Lbs/Min
5. Use the **UP** key (or **DOWN** key if necessary) to change the flow rate displayed to match the actual component flow rate, and then press **ENTER**. (In our example, change 5.76 to read 6.60 then press **ENTER**). A ½ sec pulse from the alarm signifies the value has been stored.
6. After calibrating the “A” & “B” readings, the display will show: “RS= + % - %”. This allows the user to set the **Ratio Span** from the ideal ratio value. Use the **UP** key to set the upper limit, and the **DOWN** key to set the lower limit. For example: “RS= +5% -5%” which is common practice. When the desired limits are set, press the **ENTER** key to store the values. The alarm will sound for ½ sec; the display will show “COMPLETE” for a few seconds and then “OPERATION NORMAL”.
7. The calibration routine is now complete.

Notes during calibration:

- a. Pressing and Holding the **UP** or **DOWN** key will scroll the display values.
- b. Pressing & releasing the **UP** key will increase the flow rate reading by 0.01 Lbs./Min. Likewise, using the **DOWN** key will decrease it by 0.01 Lbs/Min. (Fine tuning)
- c. The max ratio span allowed is “RS= +9% -9%”. Each time the user presses the **UP** key the upper limit is increased by one. If a mistake is made, continue pressing until the RS value loops back to zero. Likewise for the **DOWN** key.

III. Decide whether or not to use the “Inter-Lock” key function.



By pressing and energizing the Interlock Key on the Timer key pad, the on-board computer will shut down the dispenser, if during a shot; the chemical ratio goes outside the Programmed Ratio Limits. The word “HELP” will show for few seconds. The user must deactivate the Interlock mode, by pressing the key again, and correct the ratio flow condition of the system.

If the user does not energize the Interlock Key, the computer will sound the alarm when detecting an off-ratio condition, but will not shut down the dispenser.

NOTE: Ratio Monitoring is ignored on small short shots such as 3.0 sec and under.

7. MONITOR LCD MENUS & SPECIAL FUNCTIONS:

Upon power up, the on-Board computer does a self routine check, and check for the presence of Modem and Phone line. Once done, it will display the default menu:

“OPERATION NORMAL”

If the selector switch is in the OFF position, the Monitor will display:

“MONITORING OFF”

In this selection, the computer deactivates all monitoring and data collection functions, and will not signal the user of any out ratio condition.

The **Reset** button acts as a Menu selector key. Pressing the **Reset** button, will display the next menu. There are 4 main menus the user can access to reprogrammed or change values.

- a. NEW RATIO SPAN?
- b. RESET MEMORY?
- c. SET A&B AMOUNTS?
- d. SET TIME/DATE?

The **Enter** Button acts as an “Accept Value” key. The **Up & Down** buttons are used to change a parameter value within a menu.

a. NEW RATIO SPAN?

This menu allows the user to program the upper and lower limits of the chemical system ratio in question. Typically the ratio limits are set at +/- 5% from the ideal value. The user can alter the ratio limits without resetting or recalibrating the system. To change the ratio limits (i.e ratio operating window)

- a. Press “**Enter**”. The display will show RS = + 5 % , - 5 %
- b. Use the **Up** Key to change the positive limit (upper limit).
- c. Use the **Down** key to change to negative limit (lower limit).
- d. Press “**Enter**” to accept the values. The alarm will sound and display will show “COMPLETE” indicating that new ratio limits have been entered.

Note: If you make a mistake, continue pressing either the Up or Down key to scroll back to the desired number. In this function, the Up key will scroll the upper limit between 0 and 9. Similarly, for the Down key and lower limit. The max allowable ratio span is +/- 9%.

b. RESET MEMORY?

The user accesses this menu, to initially calibrate or re-calibrate the 16K Monitor readings to the actual dispenser output. The user must know before calibrating the monitor, what the actual “A” amount and “B” amount are, in Lbs/Min, of the dispensing system in question. At this menu, if the “ENTER” key is pressed, the program goes into a “Calibration Routine” which requires the user to dispense a 10 sec shot of “A” side, plus another 10 sec of “B” side, then to enter a low limit and high limit for the chemical ratio span or window. Refer to section 6 of this manual on *Monitor Calibration*.

To **Exit** the “Reset Memory” menu, press either the **UP** or **Down** Key.

c. SET A & B AMOUNTS?

The user can store the Net weights of the **A & B** Chemical amounts as received from the chemical supplier. The monitor uses these stored weights to calculate the available chemical amounts left at any time, as well as alarm the user when either **A** or **B** chemical level reaches a low level such as 7% or lower from the initial stored amount. In case a low material level is reached, the alarm will sound for 3 short beeps at the end of the shot and the display will indicate which chemical component has reached a low level.

At that point, it is necessary to reset the **A & B** chemical amounts. The user must do that to clear the 3 short beep alarm at the end of each shot.

From the “OPERATION NORMAL” menu, Press the **RESET** key (3 times) until the display shows “**SET A & B AMOUNTS?**”. Press **ENTER**. Using the **UP** or **DOWN** key, set the “**A**” chemical **QTY** and press **ENTER** to store the new value. Do the same for the “**B**” **QTY** and press **ENTER**.

VIEW AVAILABLE CHEMICAL AMOUNT: Turn selector switch to the A position and press the DOWN key. The display will show you the Available Amount of the A side. Turn the selector switch to B and press the DOWN key to see the Available amount of “B” side.

VIEW USED UP CHEMICAL AMOUNT: Turn selector switch to the A position and press the UP key. The display will show the used up amount of “A” since the last reset amount. Turn the selector switch to B and press the UP key to see how much you’ve used up of the “B” chemical.

d. SET TIME/DATE?

Scroll to this menu using the “RESET” key, then Press ENTER. The TIME will flash. Use the UP/Down key to set the Flashing digits (Hours), then press “ENTER”. Do the same for flashing digits of Minutes and Seconds.

The DATE will flash next. Use the UP/DOWN key to adjust the Month, and then Press “ENTER” to accept. Repeat the process for DAY and YEAR. Once done, the Menu will display “OPEARTION NORMAL”.

8. DATA ACCESS

The 16K Monitor captures data on each shot dispensed. The data is compiled and stored by the on-board computer (up to 16,000 Shots). The data is downloaded using a custom interface software program. The data is automatically formatted to an excel sheet when downloaded into a PC for further analysis. An example of captured data is shown below:

Date	Time	Shot time	A amount	B amount	Shot amount	Ratio	Alarms
10/26/05	13:41:53	4.1	0.51	0.47	0.98	0.92	
10/26/05	13:42:00	4.2	0.53	0.49	1.02	0.92	
10/26/05	13:42:08	4.5	0.56	0.52	1.08	0.93	

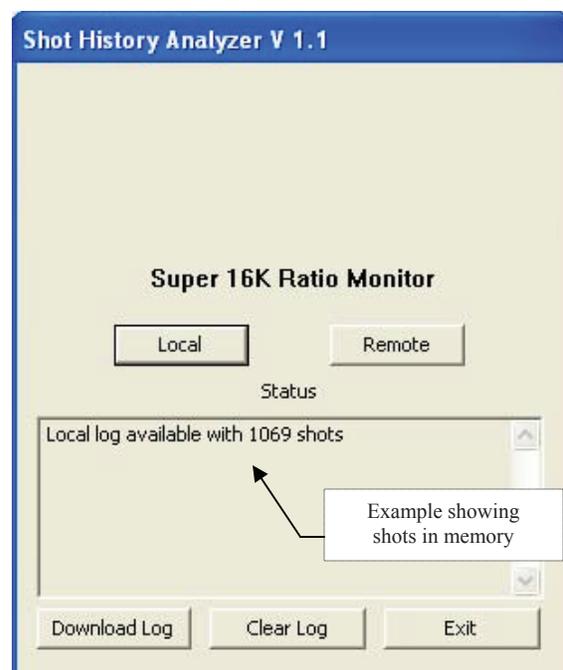
You can download the data locally or remotely. After you have installed, the interface Software, called “Shot History Analyzer”, a “Shot History” icon will be automatically loaded on your desktop.

LOCAL CONNECTION:

1. Connect your PC to the RS232, 9 Pin Connector on the Back of the Monitor, using a 9 pin serial cable.
2. Double click on the “Shot History” Icon on your desktop. The following window will open.



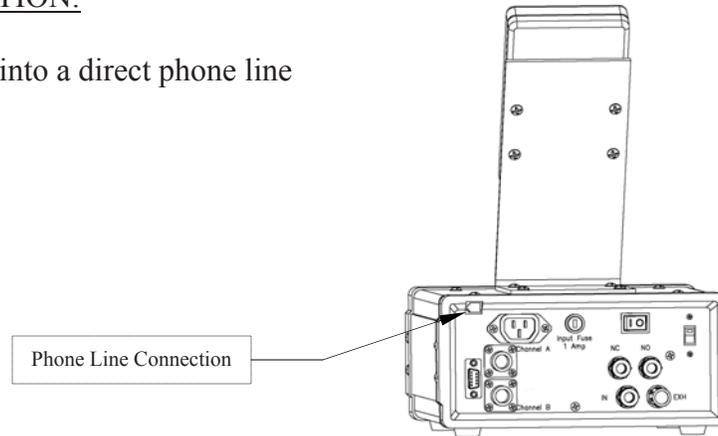
3. Click on the “Local” Button
4. Select “Com Port”.



5. Click “Download Log”
6. Save File on your PC.

REMOTE CONNECTION:

1. Plug the Monitor into a direct phone line



2. Turn the Monitor "ON". The Monitor will automatically detect the Phone line, sets up the Modem, displays "Modem Ready" in the process, and then goes back to the default menu displaying "Operation Normal".
3. From a remote location, plug your PC modem into a remote phone line.
4. Double Click the "Shot History" Icon on your PC.
5. Click on "Remote" button.
6. Follow the Instruction on window screen and click "Connect". Type in the Phone number starting with area code first. No need for spaces, commas, etc. Example is shown below:



7. Once Connected, Click the "Download Log" Button.
8. Save the File on your PC.

9. OTHER FEATURES

1. When the selector switch is in the **MONITOR** position, the computer monitors the “A” & “B” flow rates and calculates the ratio. If the flows are within the pre-programmed ratio limits, the LCD display will read: “**OPERATION NORMAL**”
2. When the selector switch is in the A or B position, the user can see the flow rates during the shot in Lbs/Min. Example: “**A= . . LBS/Min**” or “**B= . . Lbs/Min**”.

At the end of the shot, the monitor calculates the amount of **A** and **B** chemicals dispensed for that shot and displays: “**A= . . . Lbs**” or “**B= . . . Lbs**” The computer still monitors the ratio values and alerts the user if the ratio limits are exceeded.

3. When the mode selector switch is in the **RATIO** position, the ratio value will be displayed at the end of the shot.
4. Since there are different flow meter sizes for different gun outputs, the monitor will detect if a mismatch between the gun output and the flow meter size occurs. The display will read: “**GUN/METER SIZE?**” The user must either change the gun or flow meter so the sizes match to one another.
5. When the mode selector switch is in the **OFF** position, the computer deactivates all ratio and monitoring functions and will not signal the user. The display will read: “**MONITORING OFF**”.

10. SPECIFICATIONS

Shot time Resolution.....1/10th of a second
Flow Resolution.....0.01 Lbs/Min
Shot Time Range.....00.1 to 99.9 seconds
Shot time Capacity..... 1 to 180 shot times
Power Requirements.....115v 60HZ/220v 50Hz
Input Power.....Less than 20 watts
Operating Temperature.....0-50°C/ 32’ – 125°F
Connecting Cable (Control/Base).....RS232 computer cable
Connective Cable Length (With trigger).....40 feet
Tachometer Connections.....Amphenol #MS3106A106A10SL-3P
Data Download Port.....9 pin female, RS 232 connector

11. TROUBLESHOOTING

A. Timer Related:

1. Upon Power Up, the Timer LEDs do not come on.

Possible cause: Auxiliary cable disconnected, loose or bad.
RS 232 Connector on Hand Held unit is damaged inside.

2. Upon Power Up, ALL the LEDs of the Hand Held Timer come on, and they STAY ON.

Possible Cause: Stuck gun trigger switch button in the closed position
Short in the gun trigger switch.
Short inside the auxiliary cable or RS232 Connectors.

3. Upon Power Up or during operation, an Error # is displayed:

Possible cause: Internal program error. Replace Processor or Hand Held Module.

4. If a certain key of the Membrane switch (Key Pad), is cut, damaged or punctured, this may render such Key inoperable. The Membrane switch is a replaceable item (pt # 45742).

5. The timer counts down when I depress the gun trigger, but the gun does not open:

Possible causes:

- a. No air supply going to the Minotor base unit (i.e gun solenoid)
- b. Cartridge stuck in closed position. (valving rod is stuck)
- c. Solenoid Valve inside the Base unit is stuck. (This can happen over time with contaminated plant air to the Base unit).
- d. Air line to the Gun air cylinder pinched or Cut.

6. The gun would be dispensing a preprogrammed shot, but somehow it stops in the middle of the shot, and sometimes, it starts by itself:

Possible cause: Short in the gun trigger switch.

B. Monitor Base unit Related:

1. “Error out of ratio”: If the system was calibrated and running normal, and this message shows up, this would be normal and the monitor is doing its job.

Possible Cause/Solution: Using the selector switch, see which side went out of “Norm” by selecting A or B reading at the end of the shot. Normally, the flow rate goes down on a particular channel causing an Out of ratio condition:

- a. Check for a restriction in the gun cartridge.
- b. Higher viscosity Chemical due to lower temperatures than normal.
- c. Change in chemical system with different viscosities of material.
- d. Loss of tank pressure.

2. “Error Reading Channel”: This means either the “A Channel” or the “B Channel” did not receive a signal reading when the gun was dispensing.

Possible Cause:

- a. Bad Signal Cable (Tachometer Cable), or bad cable connection.
- b. Bad Transducer/Tachometer.
- c. Bad Flow Meter.

3. “Low level” A side or B side displayed at the end of the shot.

Cause/Solution: The initial chemical amount programmed in the Monitor (Available amount), has dropped below 10% level. Reset the A&B amounts as describe is section 7c.

4. “Gun/Meter Size?”: If this message appears, it’s an indication that a mismatch between the gun output and the flow meter size occurred. The user must either change the gun output or flow meter so the sizes match to one another. Refer to Section 3 of this manual for gun outputs and respective Flow meter sizes.

5. “Error # 1”: If upon power up, this message shows up, Turn the Monitor OFF then turn it back ON. If problem persist, replace main board

6. “Error #11”: If this message shows up, the monitor has damaged components, and it needs replacement.