

BULLETIN 344G

INSTALLATION & OPERATION

SiloPatrol[®]

Inventory Monitoring System

Installation & Operation Manual Software Programming Manual

SiloTrack[™]

Inventory Management Software Version 2.01

In the event that information contained herein does not completely satisfy your requirements or answer your questions, you may contact Technical Support on our website www.monitortech.com, by telephone at 800-766-6486 (630-365-9403), or by fax at 630-365-5646. If your SMU ever requires service either in or out of warranty, please contact us and obtain an RMA number prior to shipping the unit to us.



ATTENTION:

USE OF VOLUME & WEIGHT CALCULATIONS

The HMI and **SiloTrack**[™] Inventory Management Software can perform calculations to display the volume and weight of material in each vessel. When utilizing this capability, the HMI or **SiloTrack** software will calculate the volume and weight based upon the distance measurement made by the SMU, the vessel dimensions and the material bulk density entered during setup.

The calculated volume and weight values are effected by variations in actual vessel dimensions, angle of repose, fluctuation in material bulk densities, material flow properties (ratholes, bridging, etc.), vessel inlet/discharge location(s) and location of the sensor on the vessel. The direct distance measurement made by the SMU is from the bottom of the SMU mounting flange to the point on the plumb bob.

Prior to equipment installation, please consult the factory to discuss the application details if the volume/weight calculation are of critical importance.

TABLE OF CONTENTS

1. Introduction	3	5. Server Software Program Setup	6
1.1 SiloTrack [™] Concepts	3	5.1 Creating Silos	7
1.2 Definitions	3	5.2 Properties General Tab	7
2. SiloPatrol [®] Network Configuration	4	5.3 Relay Functions	8
2.1 Network Connector Pin Assignment	4	5.4 Enable Remote Access	8
2.2 Connecting the RS-485 Communication Card(s)	4	5.5 Security	10
2.3 Ranges of Network/Configuration Addresses	4	6. Configuring Client Software	10
3. Pre-Installation Considerations	5	7. Using SiloTrack	11
3.1 Minimum PC Requirements	5	7.1 Relay Contact Indicators	11
3.2 Physical Installation Specifications	5	7.2 Alarm Indicators	11
3.3 General Setup Procedures	5	7.3 SiloTrack (SMU) Diagnostics	11
3.4 RS-485 Port Configuration	5	7.4 Adding Pages	11
3.5 Using A RS-485 Converter	6	7.5 History	12
4. Installing SiloTrack	6	8. Troubleshooting	12
		8.1 System Errors	12
		8.2 Help Functions	12

INTRODUCTION

This manual has been written to guide you toward a successful **SiloTrack™** installation. This programming manual is to be used in conjunction with Bulletins 344A (SMU Installation) and 344C (if installing Auxiliary Output Enclosures), which are the hardware installation manuals for this family of products.

The instructions contained within provide the essential steps required in program set up achieving this goal. Most screens during program setup are self-explanatory. If you have a question regarding any program step or entry during program setup, the comprehensive help files that were installed on your PC during installation will have the information you need to complete your task. If after consulting the help files you still have questions, please consult with the Technical Support staff at Monitor Technologies LLC. We have even included a direct link to real time online help. This online help function is located within the Help Tab of **SiloTrack V2.01** on the main screen. Other technical support contact information can be found on the front cover of this document.

1.1 SiloTrack Concepts

With the ever-growing Information Technology Boom, our customer base began to ask for material level measurement information to be available on their PC. We answered that request by developing **SiloTrack V1.0**. Version 1.0 was a stand-alone program that only allows material level information to be viewed on one computer screen. Shortly after the release of V1.0 software, customers began asking for multi-user software so more than one PC could share and use the data. The nature of the requests expanded to include LAN (local area network) users, WAN (wide area network) users, and Dial-Up users connecting by telephone. To accommodate these requests, we developed **SiloTrack V2.01 Server** (or Host) and **SiloTrack V2.01 Client** (remote user) software packages. The Server version resides on the PC that controls the SMUs (silo monitoring units). SMUs measure the distance between the SMU mounting location and the point on the material being measured at which the plumb bob impacts.

SiloTrack V2.01 Client version addresses the remote monitoring needs by allowing multi point access to the silo measurement database. It has the ability to initiate a remote physical measurement of material in the event that the last measurement taken data is too old to be satisfactory to the remote user. This version of software also lends itself to aiding in Vendor Managed Inventory scenarios. Remote users or Clients can not access the Server or Host unless the Server software has been configured and password protected to allow it.

No matter which communication method for Client access is chosen, secure communications are provided between the **SiloTrack Server** and any **SiloTrack Client** subscription. For networked TCP/IP connections (LAN and WAN), a 56-bit encryption technique is utilized to ensure that your data remains secure. Provisions are included to prohibit undesired IP addresses from gaining access to **SiloTrack Server** during setup and these addresses can be added, deleted, or modified at any time. Dial-up subscriptions between Server and Client are inherently secure if the telephone connection is hard wired. Additional dial-up security can be invoked by choosing the "Dial-Back" option during Client Security setup. When this option is selected, the Client calls the Server through its dial-up connection. The Server acknowledges the connection request and terminates the Dial-up connection. The Server then dials the Client back using a pre-configured telephone number thereby eliminating the possibility of someone trying to gain access to **SiloTrack** from an unapproved location.

1.2 Definitions

Network: **SiloTrack** will support up to eight networks. A network is defined as a single RS-485 communications bus. Using **SiloTrack**, up to eight networks can be supported on a single PC that is appropriately configured with the necessary amount of RS-485 ports. **SiloTrack** will support up to 16 SMUs per network. In addition, each network will support up to a total of 4 accessory devices consisting of Auxiliary Output Enclosures(AOEs) and/or Remote Display Units(RDUs) in any combination per network.

Node: Each SMU, on any given network, must have a unique sensor address. **SiloTrack** setup screens refer to this sensor address as a "node address." Specific instructions for setting the node address of each SMU may be found in Bulletin 344A. **SiloTrack** interprets the node address to be the value of the selector switch in the SMU as described in Bulletin 344A where selector switch position 1 equals node 1, switch position A equals node 10, and switch position 0 equals node 16. There are 16 positions on this switch and they must be set differently for each SMU that is connected to the same network. Table 1 shows all possible SMU addresses.

Table 1

	SMU Switch Position															
	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	0
	SiloTrack Node Address															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Network 1	1:01	1:02	1:03	1:04	1:05	1:06	1:07	1:08	1:09	1:10	1:11	1:12	1:13	1:14	1:15	1:16
Network 2	2:01	2:02	2:03	2:04	2:05	2:06	2:07	2:08	2:09	2:10	2:11	2:12	2:13	2:14	2:15	2:16
Network 3	3:01	3:02	3:03	3:04	3:05	3:06	3:07	3:08	3:09	3:10	3:11	3:12	3:13	3:14	3:15	3:16
Network 4	4:01	4:02	4:03	4:04	4:05	4:06	4:07	4:08	4:09	4:10	4:11	4:12	4:13	4:14	4:15	4:16
Network 5	5:01	5:02	5:03	5:04	5:05	5:06	5:07	5:08	5:09	5:10	5:11	5:12	5:13	5:14	5:15	5:16
Network 6	6:01	6:02	6:03	6:04	6:05	6:06	6:07	6:08	6:09	6:10	6:11	6:12	6:13	6:14	6:15	6:16
Network 7	7:01	7:02	7:03	7:04	7:05	7:06	7:07	7:08	7:09	7:10	7:11	7:12	7:13	7:14	7:15	7:16
Network 8	8:01	8:02	8:03	8:04	8:05	8:06	8:07	8:08	8:09	8:10	8:11	8:12	8:13	8:14	8:15	8:16

↑
Example: 8 is the network # and 06 represents the SMU address.

2.1 Network Connector Pin Assignments

Each RS-485 port on your PC is furnished with a DB-9P (male) connector. We have supplied one DB-9S (female) solder-type connector and data hood for each RS-485 network shipped in your order. The following chart contains the connector pin assignments for your network cable. Although **SiloTrack™** only uses three wires for communication purposes (including the shield wire), all RS-485 signal and pin assignments are identified below. Note that **SiloTrack** only uses pins one and two for communication signals in the DB-9 connector. The shield wire of the RS-485 cable is to be connected to pin 5 (ground) of the DB-9 Connector. **Also, be certain that the shield wire is grounded on all SMUs, RDUs, or AOE's to terminals provided.**

Table 2

DB-9 Pin Assignments					
	Signal	Name	Pin #	Mode	Suggested Wire Color
Connect to SHD on SMU	GND	Ground	5		Shield
	TX +	Transmit Data Positive	4	Output	
	TX-	Transmit Data Negative	3	Output	
	RTS+	Request To Send Positive	6	Output	
	RTS-	Request To Send Negative	7	Output	
Connect to D+ on SMU	RX+	Receive Data Positive	1	Input	RED
Connect to D- on SMU	RX-	Receive Data Negative	2	Input	Black
	CTS+	Clear To Send Positive	9	Input	
	CTS-	Clear To Send Negative	8	Input	

2.2 Connecting the RS-485 Communication Card(s)

Depending on how many SMUs you are configuring, you may have none, one or two RS-485 communication cards in your system. RS-485 cards can be in any combination of a two or four Network communication cards (two or four RS-485 Ports per card).

Installations utilizing our external RS-232 to RS-485 converter should consult the literature that accompanied that product for connection instructions. This shall only apply to single network installations in which the customer does not wish to use one of Monitor's original RS-485 PCI card configurations.

A two port Network card has two DB-9P connectors attached directly to the card itself and will be labeled Port A (or 1) and Port B (or 2).

A four port Network card will have a single connector that a four port splitter cable (included) plugs into. Each of the four independent cables on the splitter has a DB-9P (male) connector as previously described. The Port assignment for each connector is clearly identified on each cable. The identification will be Port A (or 1), B (or 2), C (or 3), or D (or 4). If you have a second four port RS-485 communication card attached to your system, the second card and splitter cable will be physically identical in appearance and the way they are labeled. If this configuration exists, you will need to provide a means of identifying (tagging) eight separate Networks. In other words, Port A (or 1) on the second RS-485 card will actually be Network 5.

Connect each network cable from the SMUs to the appropriate RS-485 communication connector. Be certain to secure the connection with the hardware provided with each connector without over-tightening the screws.

2.3 Ranges of Network/Configuration Addresses

Individual SMU Address Selection (See Setup Page 6 and Figure 10 of Bulletin 334A)

Address

1 to 16

(The selector switch in an SMU has 16 address positions.)

SiloTrack Addresses for SMUs (See Pages 3 & 4 of this Bulletin)

Network Number : Node

1 to 8 : 1 to 16

(**SiloTrack** can have up to 8 networks. Each Network can have up to 16 SMUs.)

Auxiliary Output Enclosure (AOE) (See Pages 4 & 5 of Bulletin 334F)

Network Number : Enclosure Number

1 to 8 : 1 to 4

(**SiloTrack** can have up to 8 networks. Each Network can have up to 4 AOE's.)

Analog Card Addresses (See Page 5, Figure 6 of Bulletin 334F)

Network Number : AOE Number : Card Position Number : Output Number

1 to 8 : 1 to 4 : 1 to 4 : 1 to 4

(**SiloTrack** can have up to 8 networks. Each Network can have up to 4 AOE's. There are either 2 or 4 card positions depending on which AOE was purchased. All Analog Cards have 4 outputs.)

Relay Card Addresses (See Page 4, Figure 4 of Bulletin 334F)

Network Number : AOE Number : Card Position Number : Output Number
1 to 8 : 1 to 4 : 1 to 4 : 1 to 8

(**SiloTrack** can have up to 8 networks. Each Network can have up to 4 AOE's. There are either 2 or 4 card positions depending on which AOE was purchased. All Relay Cards have 8 outputs.)

PRE-INSTALLATION CONSIDERATIONS

3.1 Minimum PC Requirements

Processor: Pentium® 233 MHz
Bus: PCI Slots for RS-485 Communication Card(s) (One Available Slot Required for up to 64 SMUs/Two Available Slots Required for 65 to 128 SMUs) OR Serial Port used in conjunction with an RS-485 Converter
System Memory: 96 MB
Video: SVGA with 4MB Video Memory
Hard Drive: 2GB with 650MB of Available Space
Operating System: Windows® 98, NT 4.0, 2000, ME OR XP (Consult factory for other operating systems)
Required Software: Internet Explorer® 4.0, Service Pack 4 for Windows® NT 4.0
Required Hardware: CD-ROM Drive, 56K Modem, Soundboard and Speakers (May be integrated on CPU board), Local Area Network if Multi-User on LAN or WAN, Internet connection (full time for remote multi-user)
Very Highly Recommended: UPS with AC Line Surge Suppression and Telephone Line Transient Suppression

3.2 Physical Installation Specifications

Please refer to Installation & Operation Bulletin 344A for complete details on wire specification and acceptable wiring practices. Please adhere to this document to ensure a successful installation. Not referenced in Bulletin 344A is the RS-485 interface connector schematic or "pin out" information, which can be found on page 4 of this manual. You will need this information to complete your cabling from your Silo Monitoring Units (SMUs) to the RS-485 communication port(s) on your PC. Bulletin 344C describes AOE installation.

3.3 General Setup Procedures

If you purchased your PC through Monitor, you may omit steps 3, 5 and 6. Everyone must complete step 4. **Step 3 must be completed before installing the RS-485 communication card(s) if used!** If you are using a PC Serial Port and an external RS-485 converter, you may omit the steps involving the PCI bus communications card.

1. Assemble your computer as instructed by the hardware manufacturer in the desired location. Also at this time, install the Sentinel Hardware Key that was supplied to you in a sealed envelope marked, "**Security Key Enclosed. DO NOT DISCARD!**" This key is to be installed on your computer's parallel printer port. It will only mate in one orientation. After insertion, gently tighten the jackposts (captive hardware on the security key) into the mating connector to ensure a good mechanical and electrical connection. **DO NOT OVERTIGHTEN.** If you have a printer with your system, the printer cable should now be connected to the security key. *NOTE: The security key will not affect printing function or performance in any way.*
2. Power on your system and verify its functionality. If using Windows® NT, you must login as Supervisor until all software has been installed.
3. Install the RS-485 communication software that was provided with the board(s) as instructed in the accompanying product literature. **This software must be installed prior to installing the RS-485 PCI card(s) into your PC.** Upon conclusion of the installation process, do not restart your computer if prompted to do so.
4. Detach the power cable from your PC. Following the instructions provided by the manufacturer of your PC and also those provided with the RS-485 communications card, remove the cover of your PC and install the RS-485 communication card(s) as instructed.
5. Reinstall all covers and retaining hardware that was removed during the communication card(s) installation process.
6. **Do not** connect the RS-485 Network communication cables from the SMUs to the RS-485 Ports in the PC, at this time!
7. Power on your PC.

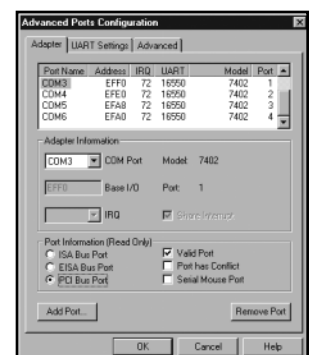
3.4 RS-485 Port Configuration

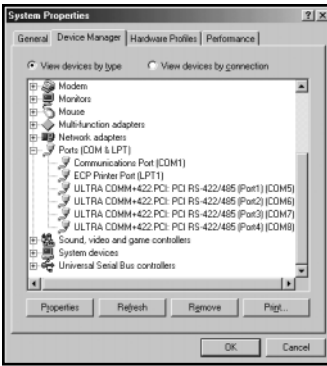
Select the appropriate section that corresponds to your particular operating system. You may omit this section if you purchased your system through Monitor.

Windows® NT Users

(My Computer – Control Panel – Advanced Ports)

From the computer's main screen, select **My Computer** and navigate until you find the icon for **Advanced Ports**. With the RS-485 card(s) installed, each individual network (individual RS-485 port) will automatically be assigned a COM Port, which will be displayed on the screen. Record these settings in Table 3 (page 6), as you will need to enter this information in the **SiloTrack** setup parameters. The picture at the right is an example of a typical Advanced Ports screen for a four port RS-485 communication card.





Windows® 98, 2000, ME, and XP Users

(My Computer, Control Panel, System, Device Manager, Ports (COM & LPT))

Navigate as directed above and record the PC system COM number and the RS-485 Port number information that was automatically assigned to each network of the RS-485 Communication card(s). The picture at the left is a screenshot from a Windows® ME installation with a four port RS-485 communication card installed.

RS-485 Com Port Assignment Worksheet

Depending on your operating system, you may not be given enough information to complete Table 3 below. Complete the table as best you can with information displayed to you.

Table 3

SiloTrack Network	Assigned Port Name	First RS-485 Board				RS-485 Port
		Address	IRQ	UART	Model	
1	COM_____					A or 1
2	COM_____					B or 2
3	COM_____					C or 3
4	COM_____					D or 4
2nd RS-485 Board						
5	COM_____					A or 1
6	COM_____					B or 2
7	COM_____					C or 3
8	COM_____					D or 4

3.5 Using a RS-485 Converter

In Control Panel, navigate to the icon for serial port settings and verify that the settings are **9600, 8,N, 1**. Complete the physical installation of the converter as described in the literature accompanying the product.

INSTALLING SiloTrack™

The following applies to both **SiloTrack™ V2.01 Server** and **SiloTrack V2.01 Client**. In the case of **SiloTrack V2.01 Server**, be certain the hardware security key has been installed on your computer's parallel port before proceeding.

Insert the appropriate **SiloTrack** CD-ROM into you CD drive. Your operating system will query the CD and The Installshield Wizard will run. If the CD does not automatically run, click on **Start, Run**, and click on **Browse**. A window will open that will allow you to identify and select the appropriate drive letter for your CD-ROM. Do so. Then, you will see a setup **icon**. Left click on the setup icon and then click on **Open**.

A window will now appear indicating that the Installshield Wizard is running. Follow the instructions on your computer screen. The installation process will pause and display the default destination path for the **SiloTrack** program to reside in. If you have more hard drive designators than Drive C:, you may want to consider installing **SiloTrack** to, for example, Drive D:. Doing so, in many cases, helps keep the operating efficiency of your PC optimized. If you are on a local area network (LAN), be certain you install **SiloTrack** to a local drive residing on your PC and not the network drive. If you wish to change the default destination drive, click on **Browse** and simply replace the letter C with the destination drive letter of your choice (for example **D**).

Next, a window will appear indicating that the Installshield Wizard has completed. Click on **Finish** to complete the installation. Remove the installation CD from the drive and store it in a safe location.

SEVER SOFTWARE PROGRAM SETUP

During the installation process, a Short Cut Icon for **SiloTrack™** was created and placed on your DeskTop. Click on this Icon to start the **SiloTrack** Program and the main screen will appear.

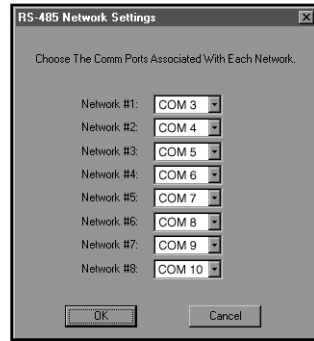
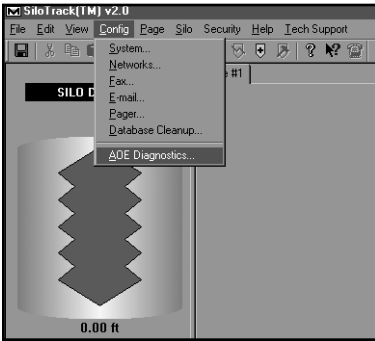
The first time you start **SiloTrack** software, the following error messages will appear. Disregard them. They will not occur again after you have completed setup procedures.



At the top of the screen, left click on Security and then click on Full Access. An Enter Password window will open. Leave the password blank and click OK.



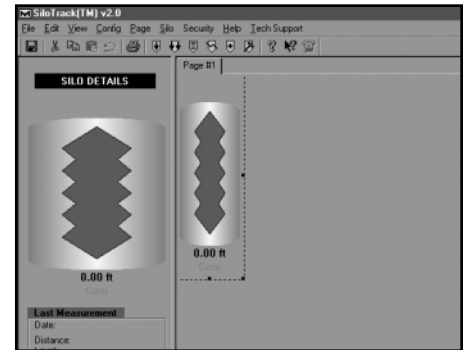
Before configuring any other feature of **SiloTrack**, on the main screen, click on **Config** and then on Networks. (See example below left.) Left clicking on Networks will cause the window shown below left to open. Enter in the COM port information as described earlier in this document depending upon your operating system. Once you have completed all applicable COM entries for Network assignments, click on OK. Again, left click on Config and the drop down window will again open. Complete system setup, Fax setup, E-mail setup, and Pager setup if you are going to use these features.



NOTE: If you are using Monitor's 6-8001 Serial RS-232 to RS-485 Converter, enter the serial Com Port you will connect to. This will most likely be COM 1 or COM 2.

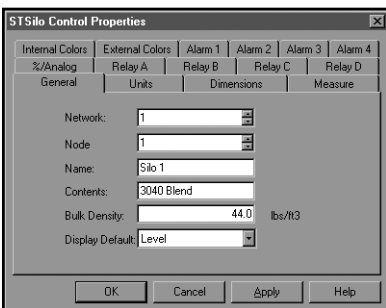
5.1 Creating Silos (Silo – Add Silo)

NOTE: All silos created will appear in the upper left-hand corner of the page as shown at the right. All silos created after the first will need to be moved from on top of the first to a different position on the screen. Do this by placing the pointer on the silo, press and hold the left button, and drag the silo icon to the desired position on the screen. At the default icon size, as shown, you will be able to fit 16 silo icons on a single page. Instructions on adding screen pages will be described in a later section of this manual.

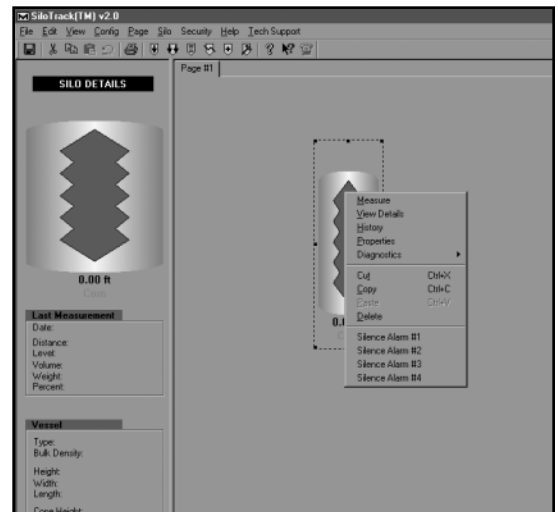


Next, right click on the **Silo image** that was just created and a drop down menu screen will appear. (See picture at right.) Click on **Properties** and the screen below will appear.

5.2 Properties General Tab (Silo – Properties – General)



Note: Whatever you choose for Display Default is what will be used to determine alarm set points. All other Tabs shown at the left are self-explanatory in terms of what information needs to be entered. If you need additional information, please consult the comprehensive help files by clicking on the Help button.



5.3 Relay Functions

Disabled: Selecting **Disabled** in the function column disables all relay function and prohibits relay contact from closing.

Fail On: Relay contact will close when a failure occurs.

Fail Off: Places the relay in a state of "Normally Energized" which means the relay contact will be closed during normal operation. This relay will then open when a failure occurs.

Threshold On: When material reaches the level set for threshold, the relay will energize and close the relay contacts.

Threshold Off: When the material reaches the level set for threshold, the relay will de-energize and the relay will open.

Window On: When selected, the relay will energize and close the contacts when the material level remains between the high and low threshold values.

Window Off: When the material level is between the high and low reference values, the relay will de-energize and the contacts will open.

Fill Pump: This feature has a high and low reference value. The relay will energize and close the contacts when material falls below the low reference value. The relay will remain energized until the material reaches the high reference value and then it will de-energize. The relay will remain de-energized until the material again reaches the low reference value and begin another pump cycle.

Discharge Pump: This feature has a high and low reference value. The relay will energize and close when material reaches the high reference value. The relay will remain energized until the material reaches the low reference value at which time the relay will de-energize and open the contacts. The relay will then remain de-energized until the material again reaches the high reference value and begin another pump cycle.

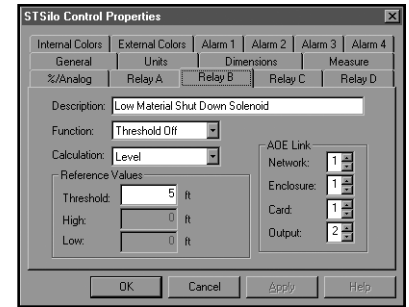
Fixed On: Selecting this feature energizes the relay and closes the contacts. The relay will remain on until one of the other functions is selected.

Fixed Off: Selecting this has the same function as disabling the relay. The relay remains de-energized and the contacts are open.

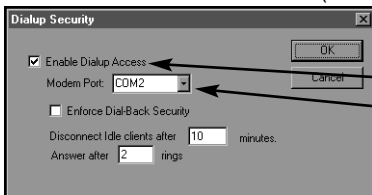
AOE Link: The AOE Link Column is where you would enter the address information for an optional Auxiliary Output Enclosure if you purchased one for your system. Please refer to Bulletin 344A for information on address configuration of the AOE.

Calculation: This selection allows you to determine on what basis you wish the measurements and the unit of measure selection to be used in determining when to open or close a relay contact. The selection here determines the unit of measure requirement for entering the reference values of the actual switch point.

Reference Values: Depending on what you chose in the Function column, enter the appropriate switch point reference values as necessary.



5.4 Enable Remote Access (If Used)



For Dialup Access

Go to Security, Client Security, Dialup Security.

Turn on the Enable Dialup Access option

Select an appropriate COM port where a modem can be found.

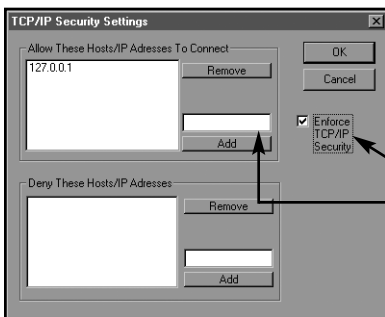
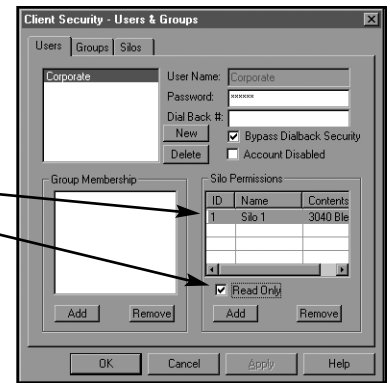
Decide if you want to use Dial-Back Security and set this option accordingly. Dial-Back security receives an access request from a remote dial-up user, hangs up the phone line, and then dials a pre-programmed phone number. This prevents remote users from gaining access from locations other than what is programmed.

Silo must be selected or highlighted to see if Read Only is selected or not.

If you choose to Enforce TCP/IP Security, Determine the Name or IP Address of the client computer.

When Configuring TCP/IP communication in conjunction with **SiloTrack** programming, it is important to know if your IP address is subject to change. If **SiloTrack** Server resides on a PC on an Internal Local Area Network (LAN), you should have an IP address for internal communication that remains at a constant value. This "fixed" value is referred to as a **Static IP Address**. If you are connecting through a Wide Area Network (WAN) via the Internet, you most likely have an Internet IP address that changes (although slightly) every time you connect. A changing IP address is called a **Dynamic IP Address**. Most Internet Service Providers have the capability, usually for an additional monthly fee, of providing you with a **Static IP Address**, if desired.

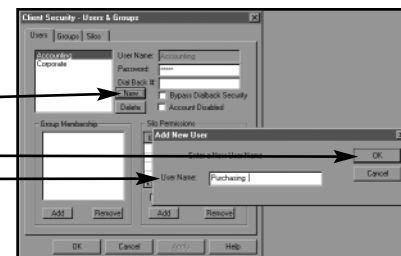
A typical IP address might look something like this: **199.125.55.69**. In the example shown, there are four different number fields separated by decimals that define the address. If you have a Dynamic IP Address, you can contact your service provider to determine the "range" of IP addresses you can expect to see. Using the above address as a reference, your ISP may inform you that the first two fields will always remain constant, but the last two will vary with each new connection. If you enter the IP address in the TCP/IP setup of Client Security of the SiloTrack Server software as **199.128**. (omitting the remaining two fields), anyone attempting to connect with an IP address beginning with the first two fields would be allowed access no matter what values are in fields three and four. (Access will only be granted if their User Name and Password match what was entered during setup of the SiloTrack Server software.)



For **TCP/IP Access** (Ethernet) go to Security Client Security TCP/IP Security and enter The IP Addresses of each Client you wish to allow access to **SiloTrack**. If you do not know the IP Address, contact your system administrator. Repeat the procedure for any IP Address or Address Range you wish to specifically Deny access to in the lower box.

It is strongly recommended that the **Enforce TCP/IP Security** Box be checked at all times. Selecting this option prohibits TCP/IP access from any IP address other than those included in the Allow list. Type the client computer Name or IP Address in the box above the Add button in the "Allow These Hosts/IP Addresses to Connect" section. Click the Add button to add the client to the allow list. Click "Ok"

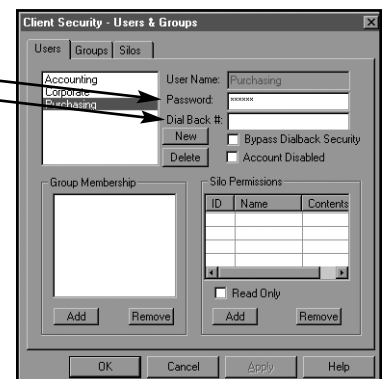
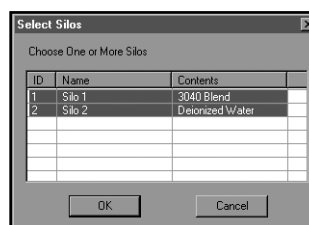
Next, create a Client User Name and Password. Beginning from the Tool Bar, Choose Security, Client Security, Users and Groups Select the Users tab if necessary Click the "New" button Type a new user name and click "Ok"



Next, type a User's password in the password field. If you are using Dial-Back Security, enter a dial-back number. Click the "Add" button under the "Silo Permissions" section

Choose one or more silos and click "Ok". If you are choosing more than one silo, click on the first silo you wish to add to select it. Multiple silos can be selected by pressing and holding the control key while clicking on the additional silos before clicking on OK. The new user will be granted read-only access to the selected silos.

If you want the client to be able to measure the silos, click one or more silos in the list and uncheck the Read-Only box. The status of the "Read Only" box is only visible when the silo in question is highlighted. Click "Ok." Click the "Save" button on the toolbar to save all configuration changes Make sure the phone line and/or network cable is connected to the **SiloTrack** V2.01 Server computer.

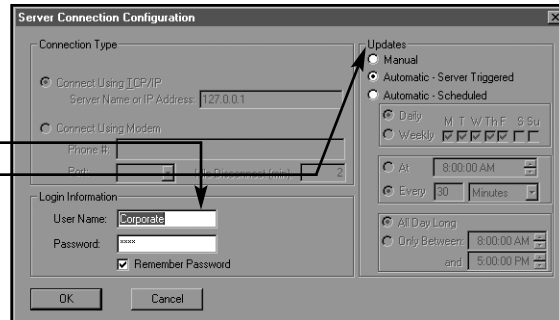


5.5 Security

WHEN ALL PROGRAMMING HAS BEEN COMPLETED, CLICK ON SECURITY. CHANGE THE SiloTrack PASSWORD TO PREVENT YOUR PARAMETERS FROM BEING INADVERTENTLY CHANGED OR DELETED. THEN SELECT RESTRICTED ACCESS. Doing so will limit the functionality of **SiloTrack** so that the operator can only take measurements and display measurement data. Be sure to record your password and store it in a safe place. Only trusted key personnel should be allowed full-unrestricted access to your **SiloTrack** programming functions.

CONFIGURING CLIENT SOFTWARE

1. Start the **SiloTrack™ V2.01** Client software
2. Change to Full Security Level. (See above)
3. Click the "New" button on the toolbar, or choose File New
4. Choose a Connection Type
5. Type in your Login Information
6. Choose an Update Type

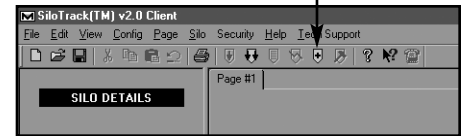


Automatic (Server Triggered): When this option is selected, each time the Server software has a new measurement or other event, the server will automatically update the Client Data screen.

Manual: Requires the user to select **UPDATE** or **UPDATE ALL** from the SILO menu in order to receive the latest silo level information.

Automatic (Scheduled): Provides scheduled silo data updates as a function of time and day.

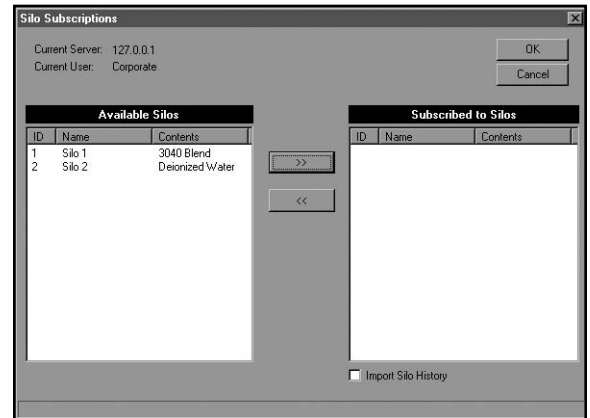
7. Click "OK"
8. Click the "Silo Subscriptions" button on the toolbar, or choose Silo Add. The "Silo Subscription" Button is the picture of a Silo with a "+" on it.
9. At this point the **SiloTrack V2.01** Client will attempt to contact the **SiloTrack V2.01** Server and login. If successful, you will be presented with a Silo Subscriptions box from which you may choose one or more silos to subscribe to. If the connection fails, check the Comm Log on both the Client and Server for information, check the **Password**, and check spelling of the **User Name**.



Choose one or more silos from the list of available silos on the left side of the screen. Silos listed here are all of the silos that have been configured in the **SiloTrack V2.01** Server and that you have been granted access to.

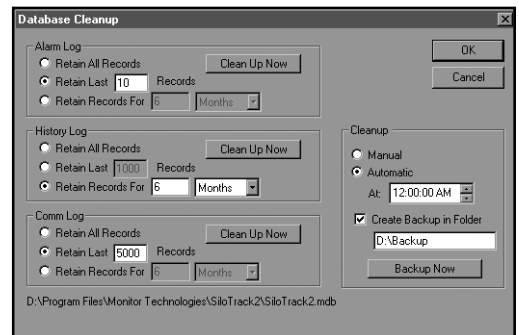
Click the >> button to move the silos to the Subscription list on the right side of the screen.

If you would like to import ALL of the historical data available on the Server, click the "Import History" box. **WARNING: This may take a long time depending on how often the silo is configured to measure and how long the silo has been in operation.** If you DO NOT select the "Import History" box, historical information will only be available from this point forward.



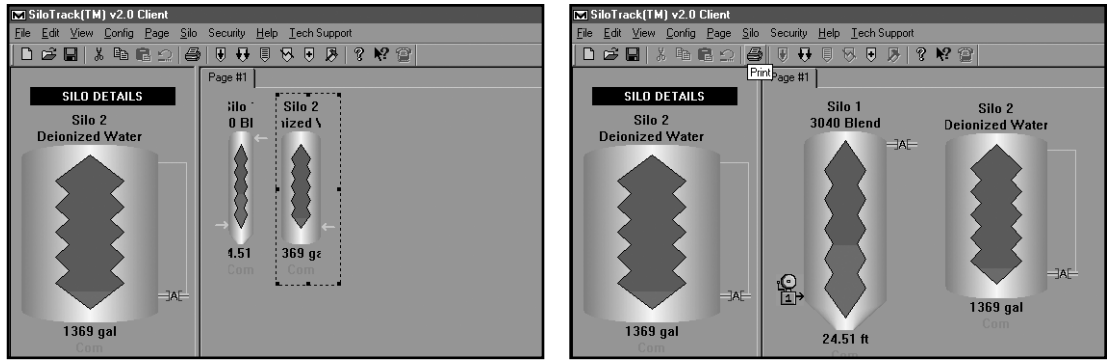
The more frequently you program automatic measurements, the more data you will accumulate and will thus impact the file transfer time when you import silo histories. By minimizing the frequency of measurement and by using the Database Cleanup utility (located under **Config** in the **Menu Bar**) you will be able to keep these files to a size suitable for Client importing said historical data.

Click "OK"



Each silo that you have chosen to subscribe to will be placed on the screen and updated from the Server.

Arrange and resize the Silos as desired. In the left example, both silos need to be moved and resized. Relay and alarm indications as well as Silo Name are not completely visible until the silo is appropriately sized. See right example.



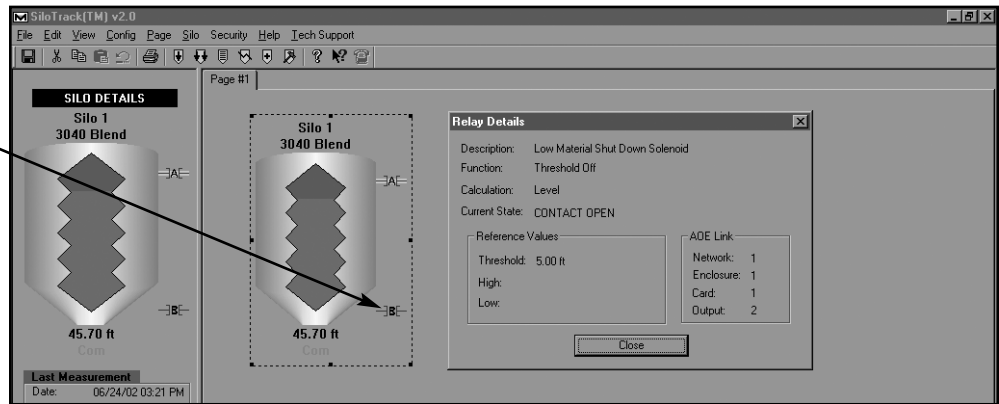
You may also use the Silo Properties option to change the colors used to display the silo and contents. Most of the **Silo Properties** are disabled in the Client version and can only be changed by the **SiloTrack V2.01 Server** software.

Click the "Save" button on the toolbar to save this Server Connection Document. You will be prompted for a name and location to save the file.

USING SiloTrack™

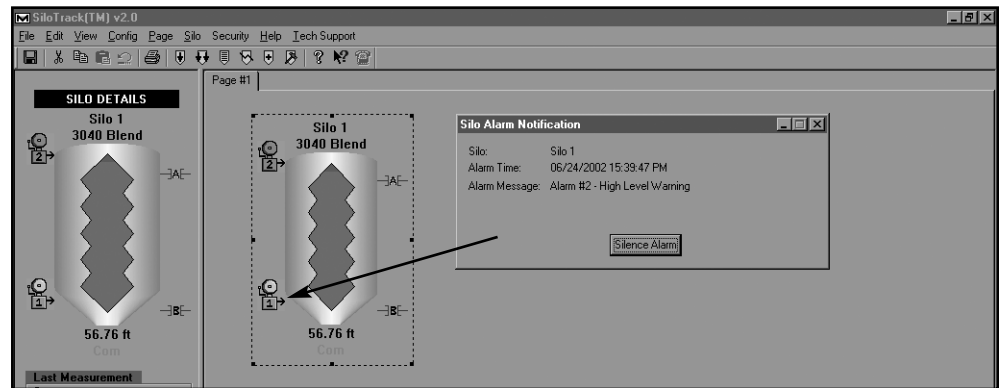
7.1 Relay Contact Indicators

Right clicking on any relay or Alarm symbol will cause an information window to open that will give all pertinent information regarding the selected symbol.



7.2 Alarm Indicators

Note: Once an alarm has been silenced, it will not become audible again until the condition causing the alarm has ceased and then a second instance of the identical alarm condition occurs again. A Red Bell indicates an active alarm. A Green Bell indicates an inactive alarm.



7.3 SiloTrack (SMU) Diagnostics (Server Version Only) (Silo – Diagnostics)

The total number of cycles an SMU performs, both good and bad, is retained in memory of each SMU. We consider a cycle to be bad if an SMU reports an error (Motion, Index or Return) related to movement of the plumb bob. Occasional examination of this information can be useful in scheduling preventative maintenance service for each individual SMU. These numbers are accumulative and are not resettable by the user. A high ratio of good to bad cycles indicates smooth functionality. An increase in the amount of Bad Cycles would indicate that the SMU cover should be removed and that a preventative maintenance inspection/service should be performed.

7.4 Adding Pages

If your system has more than 16 silos or you simply want to organize the appearance of your silo icons, you may add **Page Tabs** as desired. Any SMU on any Network may be placed on any page you create. To create a new page, simply right click on the Page Tab located towards the upper left-hand corner of the **SiloTrack** screen. A menu will appear giving you the options of **Add Page**, **Delete**

BULLETIN 344G

Page, or Rename Page. Click on **Add Page** and a new Screen Tab will be created. On this new page, you can add silos and edit their properties just as previously instructed for the first page.

To switch between pages, simply click on the tab of the page you wish to display. Right clicking on the tab for the added screen will again cause a menu to appear that gives you the option of renaming the page to a name of your choosing.

7.5 History

Clicking on **History** will produce a graphical representation of material levels in a particular silo over a user-defined period of time. Each time a silo is measured, the data is recorded for this purpose. This screen can be printed if desired.

TROUBLESHOOTING

8.1 System Errors

COM Errors: **SiloTrack™** is in practically constant communication with every SMU and Auxiliary Device on each Network attached and configured to the system. In the event communication from an SMU is interrupted, the word "Ready" on the Silo Icon of the offending SMU will be replaced with "Com." When communication is restored, the status will return to "Ready."

Index Errors: An Index Error will be reported anytime the distance measurement taken on the downward travel of the plumb bob is less than the distance back to its socketed position.

Motion Errors: If a Motion Error occurs, it will be because the SMU was commanded to take a measurement but no movement of the Plumb Bob was detected. Several conditions can cause this error including a broken cable, a buried plumb bob, or (in northern climates) the plumb bob is frozen to the flange. If the latter occurs (or is anticipated), we recommend the addition of our standpipe heater accessory to each SMU affected.

Return Errors: A Return error will be reported anytime the distance of downward travel is greater than the distance measured back to the socketed position.

Automatic Error Reset: Because any error can be a simple matter of circumstances, **SiloTrack** will attempt to self clear the error by instructing the offending SMU to take up to three additional consecutive measurements. Once a valid measurement (the distances of plumb bob travel in both directions are equal) is taken, the error status will clear and revert to "Ready."

8.2 Help Functions

Clicking on Help Topics will give onscreen access to brief definitions and descriptions of all the topics that have been previously discussed and additional topics that were not mentioned but are somewhat self-explanatory. Additionally, you will find direct access to all Installation & Operation manuals in PDF format that will enable you to view or print any necessary information not contained in this document. Links are also provided so you can have direct contact to Monitor Technologies Technical Support Staff who can guide you through any difficulty you may encounter. This level of support is available Monday through Friday from 7:00 AM until 5:00 PM except Holidays and periods of Internet inaccessibility by our server. A visit to the Monitor Technologies' website is also possible by selecting Website from the menu. There you will find literature for our full line of products. Additionally, you will find other useful information such as industry links, product news, and other valuable information. Clicking on About **SiloTrack** will display the version of SiloTrack software installed on your system.

WARRANTY

Monitor Technologies LLC warrants the licensed software media to be free from defects in workmanship and materials. For a period of ninety (90) days from the date of installation Monitor Technologies LLC will replace the software media without charge if determined to be defective. The Purchaser must give notice of any defect to Monitor Technologies LLC within the warranty period, return the software product intact and prepay transportation charges. The obligation of Monitor Technologies LLC under this warranty is limited to the replacement of the software media. This warranty shall not apply to any product that is repaired or altered outside of Monitor Technologies LLC factory, or which has been subject to misuse, negligence, accident or incorrect installation. Monitor Technologies LLC reserves the right to change the design and/or specifications without prior notice.

Windows® and Internet Explorer® are registered trademarks of the Microsoft Corporation
Pentium® is a registered trademark of the Intel Corporation



www.NIVETEC.com.br
SOLUÇÃO EM SISTEMAS DE MEDIÇÃO
Tel: (11) 5563-7698 - Fax.: (11) 5563-8375
e-mail: comercial@nivetec.com.br



Monitor Technologies LLC

44W320 Keslinger Rd. ▼ P.O. Box 8048 ▼ Elburn, IL 60119-8048 ▼ 630-365-9403 ▼ 800-766-6486 ▼ Fax: 630-365-5646 ▼ www.monitortech.com