

# ***GSI Lumonics***

## ScribeSmart<sup>TM</sup> Software Manual



COMPONENTS PRODUCTS GROUP

GMAX<sup>TM</sup> SYSTEMS  
MULTI-AXIS BEAM HANDLING

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Billerica, Massachusetts 01821

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### North America

39 Manning Rd.  
Billerica, MA 01821  
U.S.A.  
TEL: (978) 439-5511  
FAX: (978) 663-0131  
marketing@gsilumonics.com

### Europe

Einsteinstrasse 2  
D-85716 Unterschleissheim  
Germany  
TEL: (089) 31707 0  
FAX: (089) 31707 250  
sales.components@gsilumonics.com

### Asia

Technoport Kamata, 16-1  
Minami-Kamata 2-Chome  
Ohta-Ku Tokyo 144-0035  
Japan  
TEL: (81) 3 5714 0380  
FAX: (81) 3 5714 0335  
Japan\_Sales@gsilumonics.com

Website: <http://www.gsilumonics.com/components/>

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# ScribeSmart Introduction

## What is ScribeSmart?

The ScribeSmart solution consists of a Graphical User Interface (GUI) application component (running in Windows environment), and a ScribeSmart Controller hardware component.

This full marking solution allows you to:

- Create a marking job by defining and importing different objects (graphical images)
- Position, move, and scale objects in a graphical working area
- Define and apply scanner and laser operating parameters
- Save the above objects and definitions in a file, as a specific job, for later use.
- Communicate with the hardware controller for job downloading, monitoring and management.
- Run your jobs in a stand-alone mode (without connection to a PC).

The ScribeSmart controller (consisting of the SC2000 scan controller and the Laser Interface board) is an embedded controller that provides all necessary functionality to control a two-axis scanning head and one laser. The ScribeSmart controller supports different types of lasers such as YAG, CO2, HeNe, and UV.

The ScribeSmart controller has a real-time clock for date and time coding, quadrature encoder input for mark on the fly, and it supports serialization and binning. The laser and external equipment interfaces are opto-isolated.

The ScribeSmart controller has both Random Access Memory (RAM) and Flash Memory. RAM is used for setup and testing procedures, and Flash memory is used to save your jobs in permanent storage.

After you setup and save your jobs in memory, you can use the ScribeSmart controller in stand-alone mode, in which you do not need a PC connected to it.

The ScribeSmart controller is available both as part of a scanning head (HB series of scanning heads), and as a stand-alone controller.

The ScribeSmart graphical application allows you to take advantage of the benefits of the ScribeSmart controller functionality. ScribeSmart GUI helps you to create jobs consisting of different types of objects, and then to download these jobs into the controller's memory.

## ScribeSmart Features

The ScribeSmart solution provides the following features:

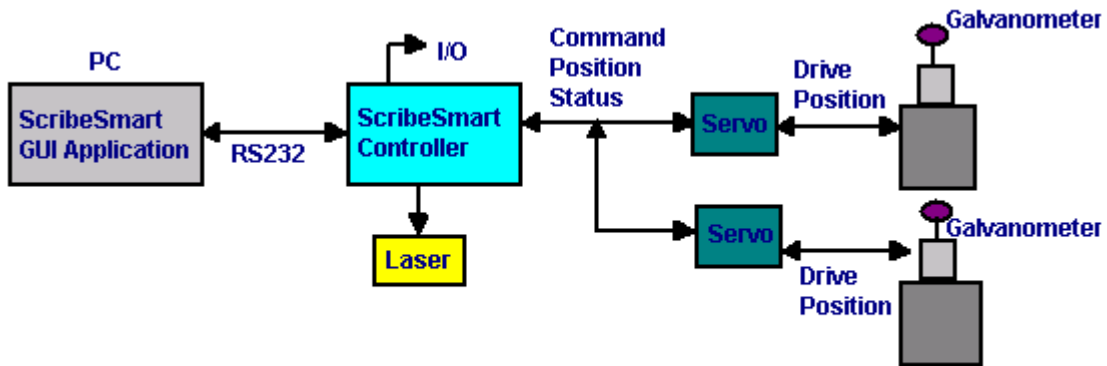
- Real-time beam positioning and laser control independent of a PC
- Mark on the Fly Capability
- On-board memory (Flash and RAM) with 254 program capability (64 program binning)
- Interactive Program Binning (see "What is Binning" section for more details)
- Real-time clock for time and date coding
- Automatic date marking
- Automatic time marking
- Automatic serial number marking
- Handshaking with external equipment
- Opto-isolated Laser interface

## How does it work?

Creation of a new marking job starts in the Work Area of the ScribeSmart application component, by defining or importing the various items (called “objects”) to be marked. The work area is made of two frames – a Graphic View, where the marking job’s objects can be seen, moved and resized, and a Tree View, where the objects can be assigned to marking groups and the properties of job, groups and objects can be set.

Once the job is ready, the Control Panel of the ScribeSmart application component is used to save the job into the ScribeSmart controller’s memory using the RS232 serial communication port of the PC. The Control Panel can also be used to check the controller’s status at any time, and to manage the memory content of the controller.

The ScribeSmart hardware component - a programmable motion controller - uses an embedded DSP architecture to provide dual axis commands to the galvanometer servos and operates independently from the PC. The ScribeSmart controller executes the programs saved in its memory and sends analog command signals through a 16-bit D/A to the galvanometer servo controllers. It can also read back galvanometer positions using the on-board 14-bit A/D. The I/O port of the controller can be used to control peripherals or to synchronize the ScribeSmart controller’s operation with external equipment.



This manual focus on the ScribeSmart application component, and the hardware is mentioned only in relation to parameters and functions of the application.

For more information on the ScribeSmart controller, refer to:

*GSI Lumonics Scan Controller User Manual (P/N 70M-015)*

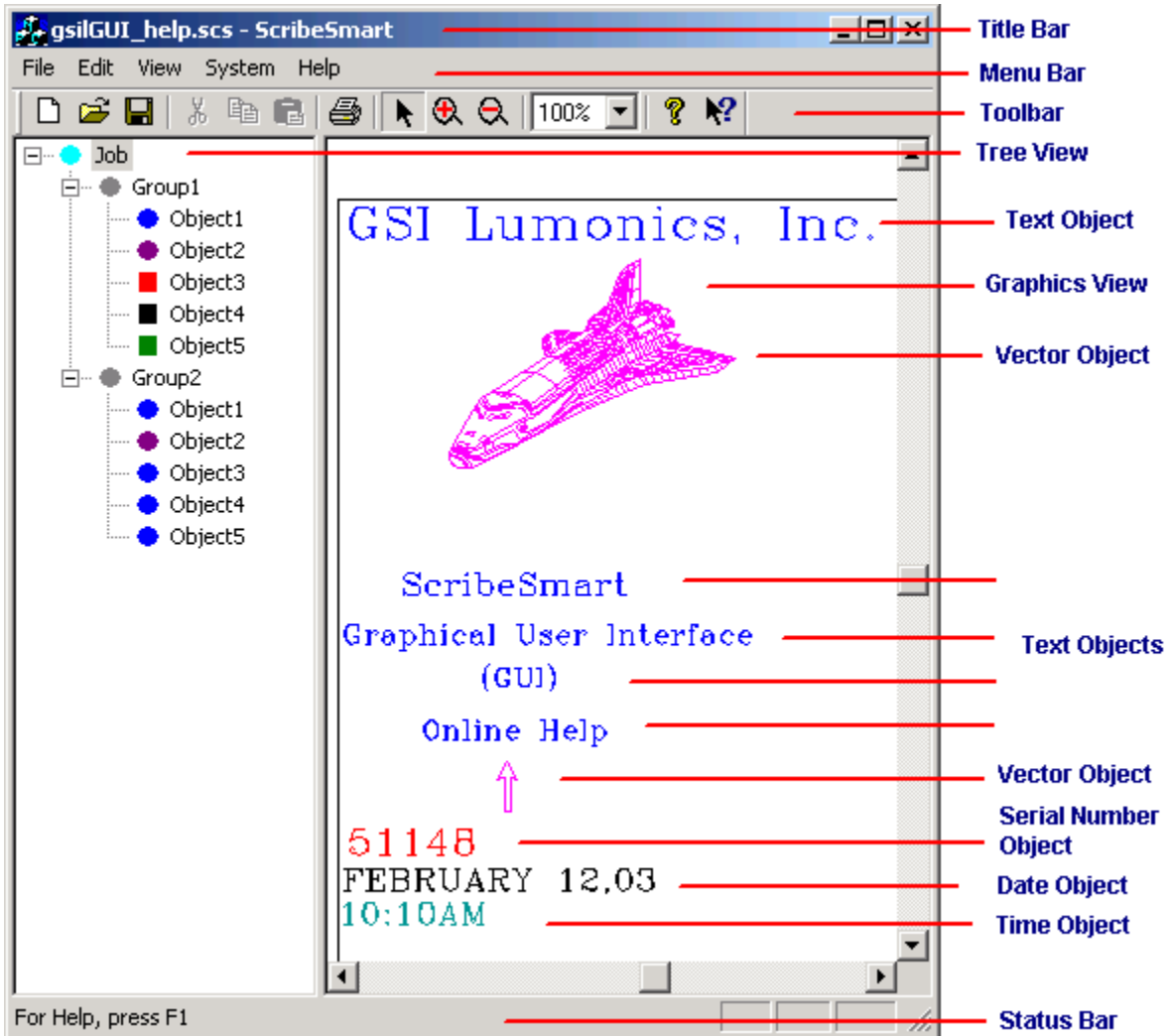
*GSI Lumonics Li1 Laser Interface User Manual (P/N 70M-1017)*

The ScribeSmart Graphical User Interface (GUI) consists of three types of items that will be discussed in the following sections:

- ScribeSmart Work Area - Graphics View, Tree View and Properties Tab pages
- ScribeSmart Control Panel - Main panel and Tab pages
- Standard Windows items - Menu bar, Toolbar and Dialog boxes

# ScribeSmart Work Area

## General Description



When you first open a file in ScribeSmart, the two frames in the above image will appear.

The left frame includes the Tree View structure - a text display containing the job, groups, and objects - that allows you to organize your marking process into a job-specific project. Each job, group, and object in the tree contains its own property sheet with tab pages of parameters that you can set for specific job marking.

The right frame includes the Graphics View, which displays an image of how the marking job looks.

## Graphic View

The Graphic View is used to display the complete marking job as it will look when executed, and also allow you to manipulate objects by moving and resizing them, or change their properties.

You will first need to select an object by mouse left-clicking on it in either the Tree View or the Graphics View (A rectangle appears in the Graphic View around the selected object).



To change the properties of an object, mouse right-click on the selected object to display its context menu (discussed later in the manual).

To move an object (change its location in the Graphics View), check that the mouse cursor changes to a navigation pointer (four-headed arrow), then left-click, hold, and drag the object to its new location.

To resize an object, move the mouse pointer over an edge until it changes to a double-headed arrow, then left-click and drag the selected edge to resize the object.

You can change the entire view field of objects within the Graphics View from a minimum magnification of 50% to a maximum magnification of 1000%.

To change magnification use the:






- Zoom In button  on the toolbar (full view of a user-defined rectangle)
- Zoom Out button  on the toolbar (decrement magnification by a factor of two)
- Zoom drop-down menu from the toolbar (Select magnification between 50% and 1000%).

## Tree View

### Object

The first – basic - level of the ScribeSmart hierarchy.

A marking job is created by defining or importing a variety of basic objects from five different types:

| <u>Object Type</u>    | <u>Icon</u>   |
|-----------------------|---|
| <b>Text</b>           |  (Blue Circle)   |
| <b>Vector (image)</b> |  (Purple Circle) |
| <b>Serial Number</b>  |  (Red Square)    |
| <b>Date</b>           |  (Black Square)  |
| <b>Time</b>           |  (Green Square)  |

There is no limitation on the number of text and vector objects that can be used, but only one date object, one time object and one serial number object are allowed in a job.

Each object type has its own specific settings (e.g. font type and size, initial value etc.) that will be discussed later in the manual.

### Group

The second level of the ScribeSmart hierarchy.

A group contains any number of objects requiring a specific and separate marking scheme in a job.

Each group has its own specific settings that will be discussed later in the manual.

Any one group in a job can be defined as a Binning Group, meaning that only one of the objects it contains will be used in any given marking set, based on external command. See “What is Binning” section for more details.

## Job

The top-level of the ScribeSmart hierarchy.

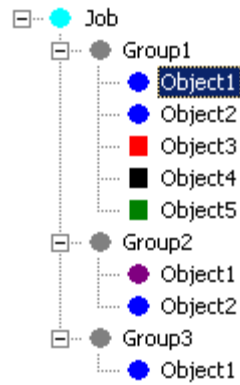
The job contains all the basic objects organized in a group or a collection of groups for a marking job.

The job has its own specific settings that will be discussed later in the manual.

A job is saved as a ScribeSmart file (with a file name extension “**scs**”).

When you open a new file, you are creating a new job. To save the job, you must save the file.

The following is an example of a job hierarchy, as it will appear in the Tree View frame of the Work Area:



# ScribeSmart Control Panel

## General Description

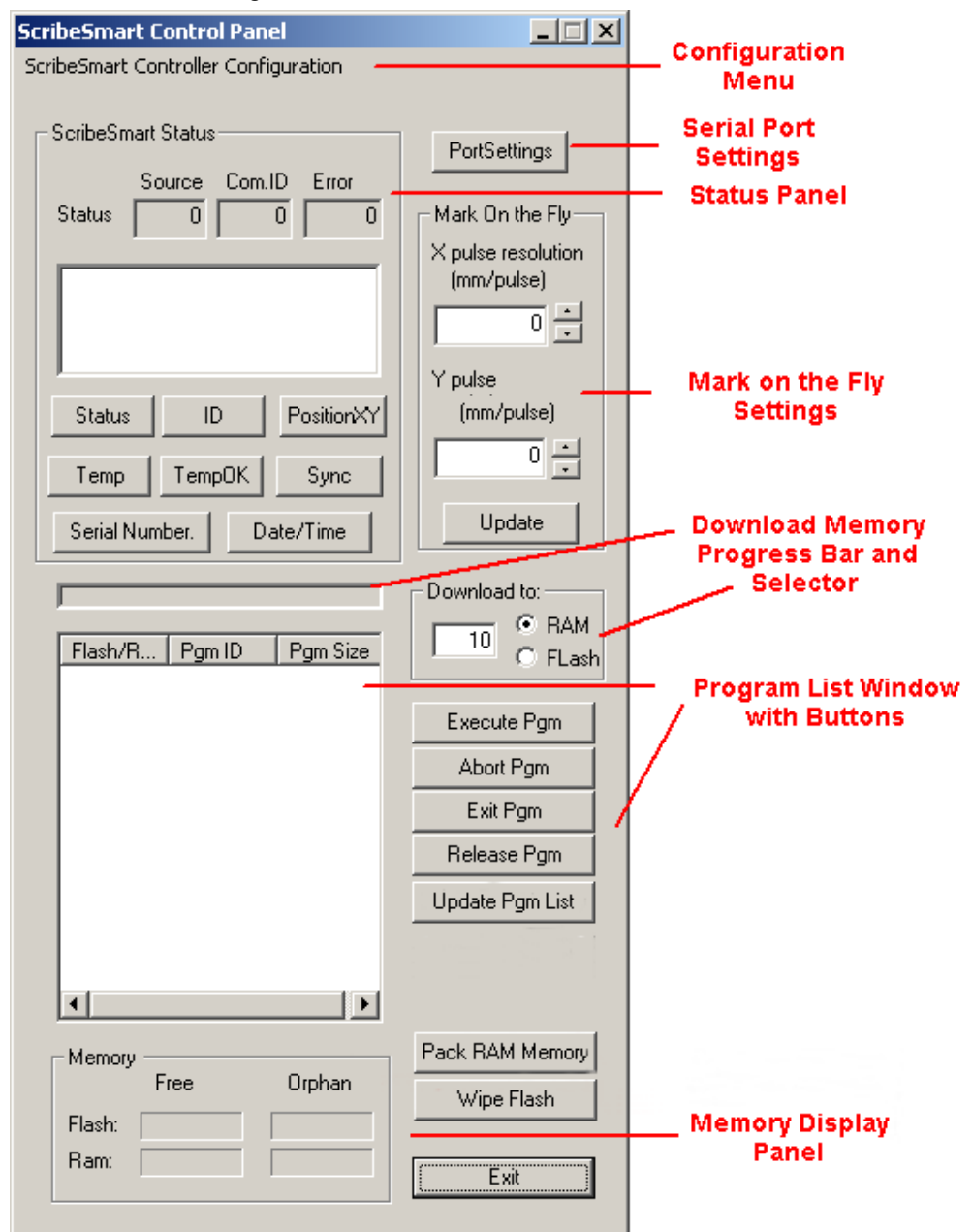
The ScribeSmart Control Panel allows you to communicate between the graphical user interface (GUI) and the ScribeSmart Controller.

The Control Panel is also used for selecting and configuring a communication port, setting Mark-On-the-Fly gains, monitoring the controller's status and managing the controller's memory.

The Control Panel is displayed once you access it through the System menu, and remains visible until you press the **Exit** button.

You can move between the Control Panel and the Work Area by setting the focus on the one that you want to use at any particular time.

The control panel consists of the following elements:



## Accessing ScribeSmart Control Panel

To access the ScribeSmart Control Panel:

1. Select **System** menu.
2. Select **ScribeSmart Controller**
3. Select **ScribeSmart Control Panel**.
4. ScribeSmart Control Panel appears.

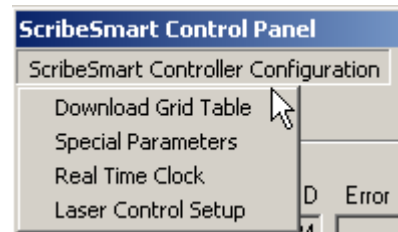


## ScribeSmart Controller Configuration Menu

The ScribeSmart Controller Configuration menu provides access to the ScribeSmart Controller’s environment configuration, discussed in detail later in this manual.

Use the ScribeSmart Controller Configuration menu to:

- **Download Grid Table**
- **Set Special Parameters**
- **Set Real Time Clock**
- **Set Laser Control Setup**



## COM Port Settings Tab Page

Communication between the ScribeSmart application (PC) and the ScribeSmart controller is established through selecting a COM port. The COM Port Settings tab page allows you to configure that communication.

The ScribeSmart Controller’s power-up default settings are:

**Bits per second** = 115, 200

**Data Bits** = 8

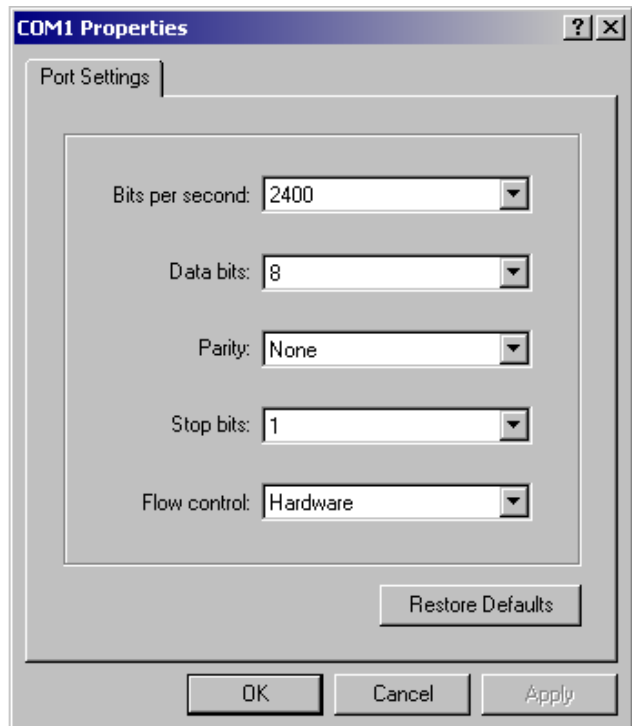
**Parity** = None

**Stop Bits** = 1

**Flow control** = Hardware

To establish initial communication with the controller, you need to set the ScribeSmart application settings to be the same.

A successful communication confirmation message can be received in the Status Display window by pressing the **Status** command button located on the Control Panel.

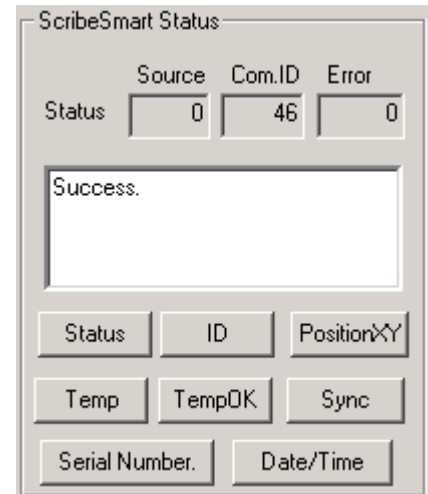


## ScribeSmart Status Panel

The ScribeSmart Status Panel provides real time status information from the ScribeSmart controller through the use of eight status command buttons. (For example, to check the current date and time within the ScribeSmart controller, click “Date/Time” button).

The various status results after a command is initiated from pressing a button are displayed in the Status View. (See “Checking Status Conditions” section for more details).

The response to a **Status** command also includes three status information fields – Source, Com. ID (Command ID) and Error.



## Mark On The Fly Settings

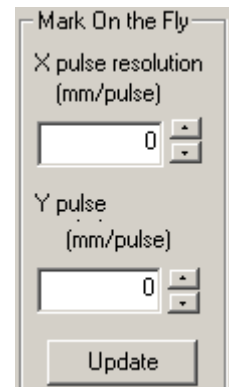
Mark on the Fly allows marking on a moving object. The ScribeSmart Controller has special input pins for encoder readout it uses to adjust the marking process to follow the object’s movement.

The Mark On The Fly Pulse Indicator allows compensation for different speed and orientation of the conveyor, through the use of two parameters:

- X pulse resolution represents X movement in millimeters per encoder pulse
- Y pulse resolution represents Y movement in millimeters per encoder pulse

### Note

The default value for the Mark on the Fly values for X and Y Pulse resolutions are normally set to 0. This default setting prevents the occurrence of unintended offsets, which can cause inaccurate marking. If you do not use Mark on the Fly, or no encoder is connected to the ScribeSmart Controller, do not change these default values!



## Adjusting Mark on the Fly Gains

To adjust the Mark on the Fly Gains:

1. Click **Update** to view the most current values from the ScribeSmart Controller.
2. In the **X Pulse Resolution** box, click the up arrow to increase the value, or click the down arrow to decrease the value to represent the X gain (horizontal movement).
3. In the **Y Pulse Resolution** box, click the up arrow to increase the value, or click the down arrow to decrease the value to represent the Y gain (vertical movement).

Modified values are sent to the ScribeSmart Controller when the X or Y boxes lose focus, or when the up and down arrows are clicked to adjust the gains.

## Program List Window

The Program List Area includes:

### Memory Download Progress Bar

A progress indicator for the download process of a job, group, or object.

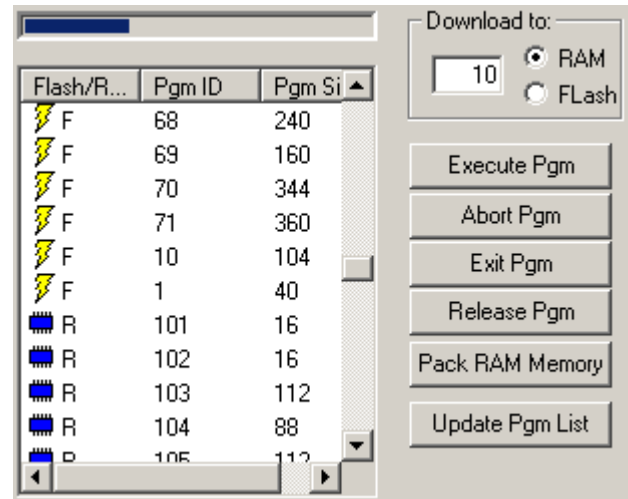
### Download to Memory Selector

Allow you to assign a program ID number (1-254) to your download, and to locate it in either RAM or Flash memory.

### Program List View

Displays all the current programs in the ScribeSmart Controller's memory (Flash and RAM). This view also contains the program ID numbers and sizes.

To get an updated list of all programs in the memory, click **Update Pgm List** button.



## Program and Memory command buttons

The following table describes the available program management buttons:

| <u>Program Button</u>  | <u>Function</u>  |
|------------------------|--|
| <b>Execute Pgm</b>     | Executes the selected program in the <b>Program List Area</b> from the controller's memory.  |
| <b>Abort Pgm</b>       | A fast method to terminate the currently executing program abruptly in emergency conditions.   |
| <b>Exit Pgm</b>        | A slower method to terminate the currently executing program gracefully in normal conditions.  |
| <b>Release Pgm</b>     | Marks the selected program for deletion, to free memory space for new programs.  |
| <b>Pack RAM Memory</b> | Reclaims fragmented space from deleted programs in RAM memory, and then compacts the available memory.<br>Removes all orphans in RAM memory (see <b>Memory Display Panel</b> below). |
| <b>Update Pgm List</b> | Updates the current list of programs in the <b>Program List View</b> , and the Flash and RAM information in the <b>Memory Display Panel</b> .  |
| <b>Wipe Flash</b>      | Removes all programs from flash memory. You must cycle power to the ScribeSmart controller for the change to take effect   |

## Managing Programs in Memory

To view the most current program listing in ScribeSmart Controller memory:

1. Click **Update Pgm List**.

To execute a program:

1. Select the Flash or RAM program in the Program List Window.
2. Click **Execute Pgm**.

To stop a program from executing:

1. Click **Exit Pgm** to stop the program gracefully (slow, cautious stop).
2. Click **Abort Pgm** to stop the program abruptly (fast, emergency stop).

To release a program from memory:

1. Select the program(s) in the Program List Window. (Use <Shift> + mouse Left-click to select consecutive group of programs, or <Ctrl> + mouse Left-click to add programs individually).
2. Click **Release Pgm**.

To remove orphans from memory:

1. For RAM, click **Pack RAM Memory**.
2. For Flash memory, power cycle the ScribeSmart Controller.
3. View the **Memory Display Panel** to verify that the **Orphan** fields are emptied.

To remove all programs from flash memory

1. Click **Wipe Flash**.
2. Answer OK to the message box that appears. You will need to cycle the power to the ScribeSmart Controller before the change becomes effective.

## Memory Display Panel

The ScribeSmart Controller has two types of memory –

- RAM memory - used for setup and testing procedures. (Maximum available size is 126976 bytes).
- Flash memory - used for permanent storage. (Maximum available size is 393216 bytes).

For example, you might test several different job-marking programs in RAM, and when you decide on the program that you want to use, you save it permanently in Flash memory.

The Memory Display panel shows the current amount of designated free and orphan space available in RAM and Flash memory.

Orphan memory is the result of programs previously released (“deleted”), or new downloaded programs that are assigned the same program ID as an existing program in memory. The memory taken by those previously existing or released programs is added to Orphan memory, and remain so until you remove them to free up memory space.

Orphan RAM memory is freed by clicking the **Pack RAM Memory** button, while orphan Flash memory is freed by power cycling the ScribeSmart Controller.

| Memory |        |        |
|--------|--------|--------|
|        | Free   | Orphan |
| Flash: | 375568 | 0      |
| Ram:   | 99408  | 13784  |

# ScribeSmart Environment

## ScribeSmart Files

### Files Types

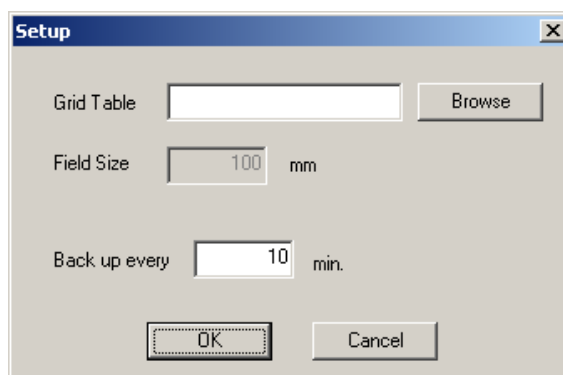
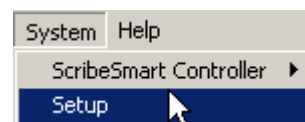
The ScribeSmart application uses five types of files:

- ScribeSmart Job source file - file name extension “**scs**”  
Every job, group, and object that you create in the ScribeSmart work area, including the job, group and object properties that you configure to run a job marking process for the ScribeSmart Controller, are saved in this file.
- ScribeSmart Vector objects - file name extension “**plt**”.  
These HPGL graphic files are normally created previously in a Computer-Aided Design (CAD) program, and stored in a Windows directory called HPGL. When you use ScribeSmart, you import these vector files into your job as vector objects, and then download them into your ScribeSmart Controller to use in your job marking.
- ScribeSmart Grid Calibration Table - file name extension “**asc**”, and
- ScribeSmart configuration file - file name extension “**inf**”  
These two files calibrate the scanning field view for the ScribeSmart Controller. They are loaded into the ScribeSmart GUI application by you, and then (if necessary), downloaded to the ScribeSmart Controller memory to be used during program execution.
- ScribeSmart Job backup file - file name extension “**bak**”  
ScribeSmart automatically backs up your job periodically to protect against losing important information due to system failures. The automatic backup function is set by default to backup your job file every ten minutes (can be set differently as described below).

### File Backup Settings

To set automatic backup interval for the current file in the work area:

1. Select **System** menu.
2. Click **Setup** to display the Setup dialog box.
3. Type the desired time interval (in minutes) between automatic backups of the file in the **Back up every** input field (e.g.10 minutes).
4. Click **OK** when completed.

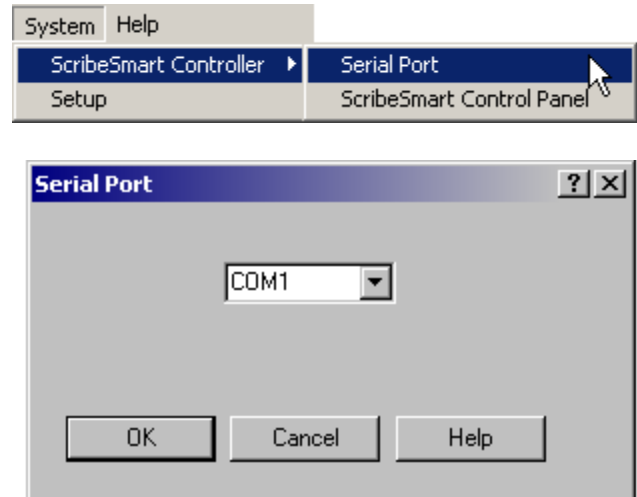


# Communication Port

## Selecting a Serial Port

To select a serial port:

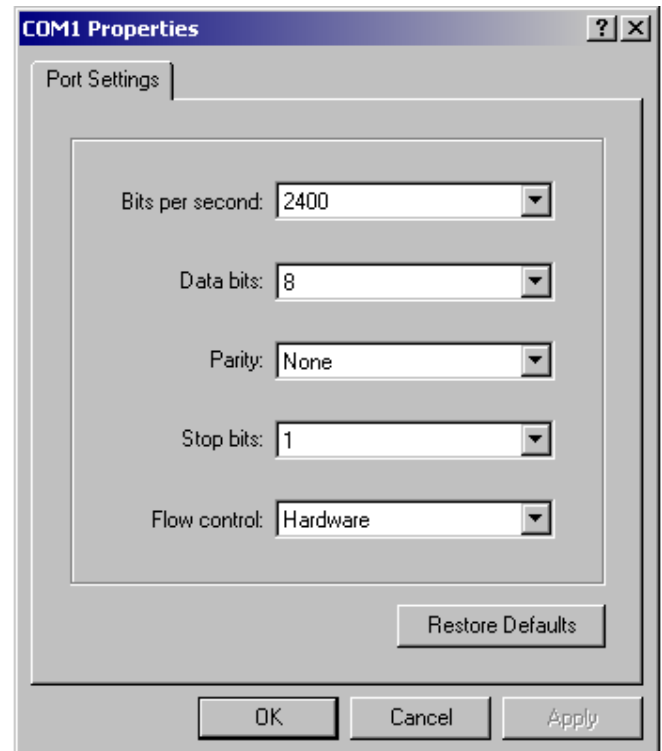
1. Select **System** menu.
2. Select **ScribeSmart Controller**
3. Click **Serial Port**.
4. A Serial Port dialog box will appear:
5. Click the drop-down arrow and select a COM (communication) port (COM1-COM8).
6. Click **OK** when completed.



## Configuring COM port settings

To configure communication serial port settings for the ScribeSmart Controller:

1. Select **System** menu.
2. Select **ScribeSmart Controller**
3. Click **ScribeSmart Control Panel**
4. Click the **PortSettings** button to configure the COM port settings.
5. The COM Properties dialog box will appear, displaying current port settings. Use the drop-down arrows to select:
  - a) **Bits per second** (bps) – The speed rate you want to use to communicate with the ScribeSmart Controller. Available range is 2400 – 115200 (ScribeSmart Controller default is 115,200). In most cases, we recommend 115,200 as a fast reliable setting.
  - b) **Data bits** – The number of data bits for transfer (ScribeSmart Controller default is 8).
  - c) **Parity** – The type of parity check to use. (ScribeSmart Controller default is None).
  - d) **Stop bits** – The number of stop bits. (ScribeSmart Controller default is 1).
  - e) **Flow control** - The type of flow control (ScribeSmart Controller uses hardware flow control only).
6. Click the **Restore Defaults** button, if you wish to reset your serial port to use the PC default settings.
7. Click **OK** when completed.



## Checking Status Conditions

The Status Panel area of the ScribeSmart Control Panel contains eight status command buttons that you can use to monitor the ScribeSmart Controller during operation.

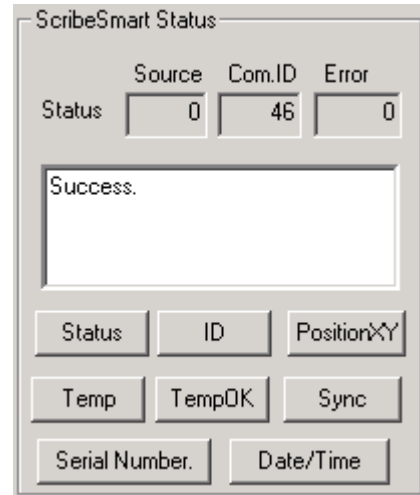
When a command button is pressed, ScribeSmart is requesting current status from the ScribeSmart Controller. Each one of the eight status requests generates specific status information depending on the command button that is pressed.

For example, to check for the current communication status of the ScribeSmart Controller:

1. Select **System** menu.
2. Select **ScribeSmart Controller**
3. Click **ScribeSmart Control Panel**
4. Click **Status**
5. View the message in the Status Display View –
  - a) **Success** indicates that there is standard communication between the ScribeSmart application and the ScribeSmart controller.
  - b) **Port Timeout** indicates that there is some communication problem between the ScribeSmart application and the ScribeSmart controller.

Follow the same procedure to receive status information from the controller about any of the other status commands.

The following table shows samples of the Status View messages that are generated from each of the commands:



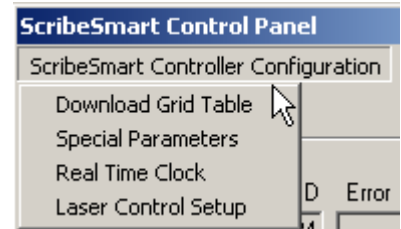
| <u>Command Button</u> | <u>Sample Status Message</u>   |
|-----------------------|--|
| <b>Status</b>         | Success.   |
| <b>ID</b>             | Boot Segment Revision: 1.0<br>Firmware Revision: 2.10<br>Hardware: 2<br>Device ID: 3   |
| <b>PositionXY</b>     | -18688, 21111  |
| <b>Temp</b>           | X axis servo temperature 4088,<br>X axis alt. servo temperature 16,<br>Y axis servo temperature 4084<br>Y axis alt. servo temperature 4091 |
| <b>TempOK</b>         | True, True   |
| <b>Sync</b>           | 0x0000   |
| <b>Serial Number*</b> | 51148<br>Number Digits: 5  |
| <b>Date/Time*</b>     | Tue, 02/11/03 16:23:02   |

\*“Serial Number” and “Date/Time” commands are valid only when the ScribeSmart Controller is in Idle Mode

# ScribeSmart Controller Configuration Menu

The ScribeSmart Controller Configuration menu in the ScribeSmart Control Panel provides access to ScribeSmart Controller environment configuration.

Use the ScribeSmart Controller Configuration menu to set or download the following ScribeSmart Controller-related settings (for more details see the following sections) –



| <u>Menu Command</u>        | <u>Command Explanation</u>  |
|----------------------------|---|
| <b>Download Grid Table</b> | Download the Grid Calibration Table from the ScribeSmart GUI application to the ScribeSmart Controller.   |
| <b>Special Parameters</b>  | Display and modify parameters for <b>Position Read Back Setup, Sync Delays, Position Sample, Encoder Setup, and Flip Exchange Axis</b> functions.   |
| <b>Real Time Clock</b>     | Display and modify the ScribeSmart controller real time clock to support accurate date and time object marking by the ScribeSmart controller when not connected to a PC. The ScribeSmart controller uses the PC clock for default values and also supports day light savings. |
| <b>Laser Control Setup</b> | Display and modify Laser Control Setup parameters (including FPS) to adjust the ScribeSmart controller output for a particular laser (such as YAG, CO2, HeNe, and UV). Also used to set a specific program to automatically run at power up.                                  |

## Download Grid Table

### What is a Grid Calibration Table?

A grid calibration table is a specification file that corrects the scanning field (from distortions in the rectangular field caused by mirror and lens effects) to a perfectly squared field.

The ScribeSmart Controller grid correction is based upon the GMAX “N-Point grid correction” interpolating algorithm. The calibration file (file name extension “**asc**”) is initially created by an N-Point Calibration program (NPC.exe), and then imported into ScribeSmart.

Another file (file name extension “**inf**”), that provides configuration information used with the Grid Calibration Table, contains coefficients that describe the projective geometry of the system.

The Grid Calibration Table is factory installed in the ScribeSmart Controller during shipment (default field size is a 100 millimeters square).

The NPC.exe program allows fine adjustment of pre-existing grid correction tables that were generated at GSI Lumonics, based upon the geometry of GMAX scan head products or, for general applications with the ScribeSmart Controller (away from the optical geometry of GMAX heads), the fine adjustment procedure of NPC.exe can be employed as a full grid correction scheme.

This is achieved by using the zero correction table as a basis, then entering fix-up data, in either relative or absolute ScribeSmart Controller coordinates, on a node-by-node basis. This procedure is available in the CLI.EXE program as an interactive utility.

For technical information about Grid Calibration Table and the above-mentioned programs, refer to:

*GSI Lumonics SC2000 Support Programs Manual (P/N 7OM-030)*

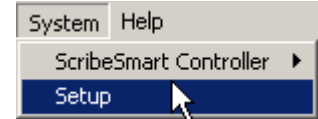
*GSI Lumonics Scan Controller User Manual (P/N 7OM-015)*

### Loading a Grid Calibration Table

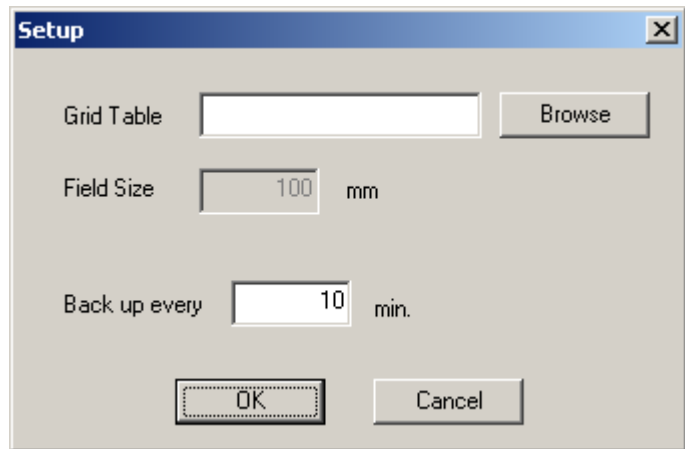
To include a Grid Calibration Table file as part of the ScribeSmart Graphical User Interface and define your marking field of view, you need to load it into ScribeSmart.

To load a Grid Calibration Table into the application:

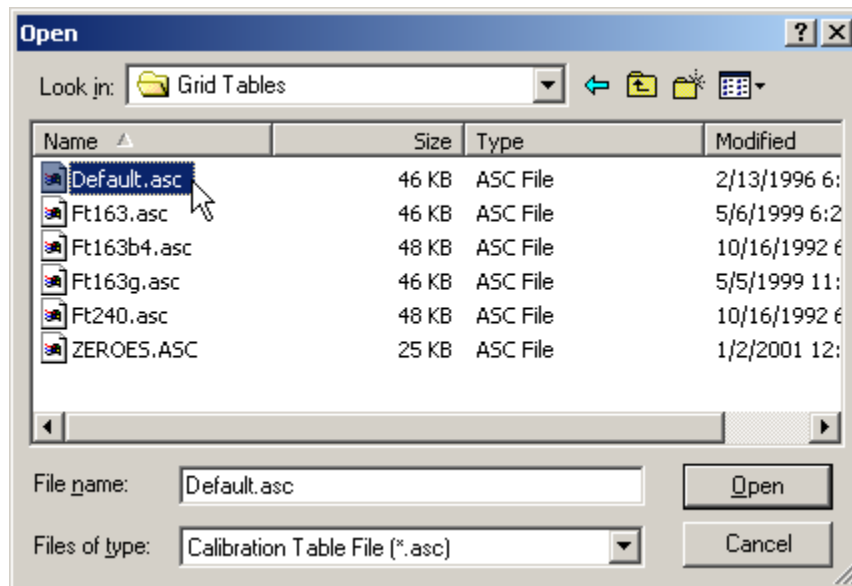
1. Select **System** menu.
2. Click **Setup**.



3. The **Setup** dialog box will appear:



4. Type the grid table file name in the **Grid Table** input field, or click **Browse** to open a browse window where you locate the desired Grid Table Calibration file (.asc), and click **Open**.



5. Click **OK**.

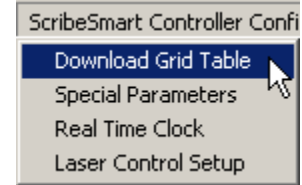
Note: The new grid calibration table automatically adjusts the Field View value in ScribeSmart.

### Downloading a Grid Calibration Table

To define your marking field of view based on the Grid Calibration Table file, you need to download it from the ScribeSmart Graphical User Interface into the ScribeSmart Controller.

To download a grid table to the ScribeSmart Controller, in the Control Panel:

1. Select **ScribeSmart Controller Configuration** menu.
2. Click **Download Grid Table**.
3. The Grid Calibration Table that is currently loaded into the ScribeSmart application is downloaded into the ScribeSmart Controller memory.
4. Confirm the download by viewing the download activity in the **Download Progress Bar**.
5. Click **OK**.



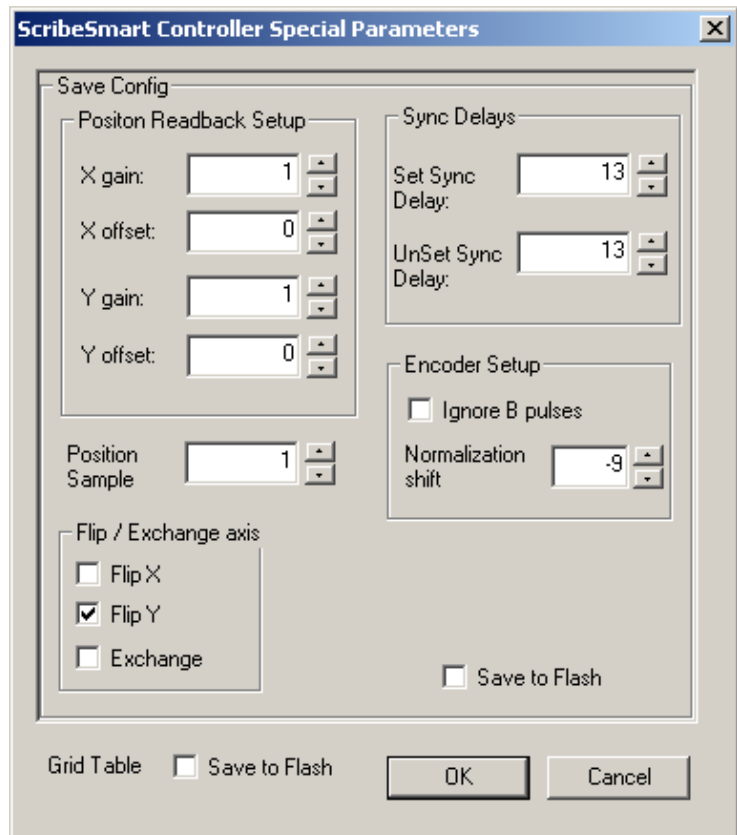
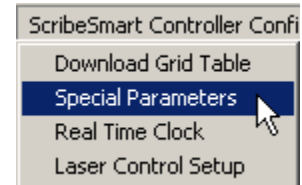
**Notes:**

- To save the Grid Calibration Table in the ScribeSmart Controller’s Flash memory, select **Special Parameters** and check the Grid Table “Save in Flash” check box.
- When you save the Grid Calibration Table in Flash memory, it is saved as Program ID 255.
- To remove the Grid Calibration Table from Flash memory, select Grid Table (Program ID 255) from the **Programs List window**, click **Release Pgm**, and power cycle the ScribeSmart Controller.

### Setting Special Parameters

To set special parameters, in the Control Panel:

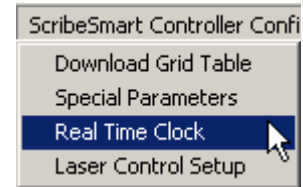
1. Select **ScribeSmart Controller Configuration** menu.
2. Click **Special Parameters**.
3. ScribeSmart Controller Special Parameters dialog box displays the current values in the ScribeSmart Controller.
4. Make the necessary changes In the **Position Readback Setup**, **Position Sample**, **Flip/Exchange Axis**, **Sync Delays**, and **Encoder Setup** fields. For technical information about these special parameters and how to use them, please refer to: *GSI Lumonics Scan Controller User Manual (P/N 70M-015)*
5. To save the updated configuration to the ScribeSmart Controller’s Flash memory, check the “Save to Flash” box.
6. Click **OK** to download the current values to the ScribeSmart Controller.



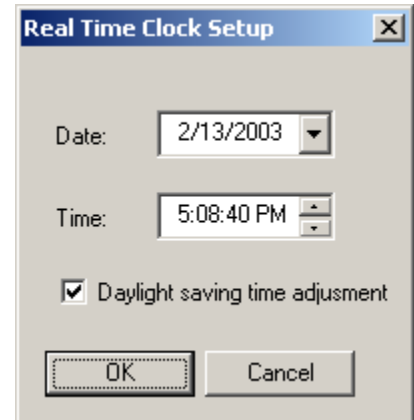
## Setting the Real Time Clock

To set the real time clock, in the Control Panel:

1. Select **ScribeSmart Controller Configuration** menu.
2. Click **Real Time Clock**.
3. The Real Time Clock Setup dialog box will appear.



4. Type new values, or click the drop-down arrow to select the date and time settings.
5. Check the box if you require daylight savings for your environment.
6. Click **OK** when completed.



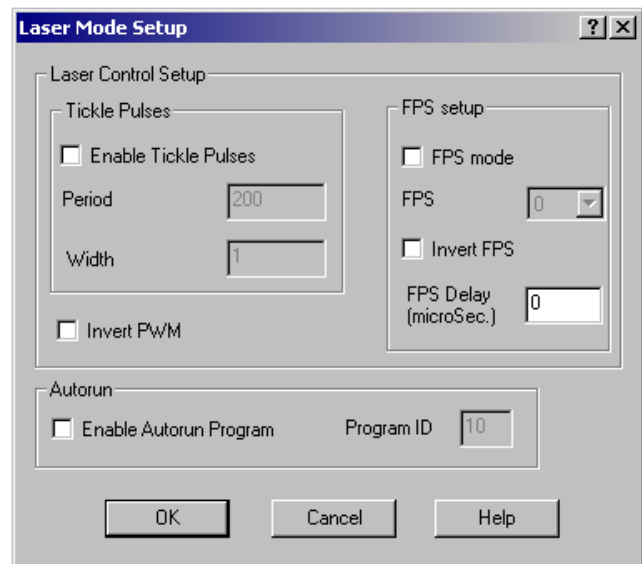
## Setting Laser Control Setup

To set the laser control setup parameters, in the Control Panel:

1. Select **ScribeSmart Controller Configuration** menu.
2. Click **Laser Control Setup**.
3. The Laser Mode Setup dialog box will appear.



4. In the **Laser Control Setup** and **FPS Setup** fields, make the necessary settings for your laser type.
5. Check the **Enable Autorun Program** box, if you want to start the ScribeSmart Controller with a specific program. Type the program's ID number in the **Program ID** field.  
**Note** - do not use Program ID 1 as it is reserved for system program execution.
6. Click **OK** when completed.



# ScribeSmart Operation

## General

Editing marking jobs in ScribeSmart utilizes two main tools – Context Menus and Property Tab Pages.

### Context Menus

A Context Menu will pop-up whenever you select an item (job, group or object) in the Tree View frame by clicking the left mouse button, and then click the right mouse button. The same Context Menu will pop-up when you select an object in the Graphic View frame and click the right mouse button.

The following table summarizes the various Context Menu options available at the different hierarchy levels of the job –

| <u>Menu Option Type</u>           | <u>Job Level</u> | <u>Group Level</u>      | <u>Object Level</u> |
|-----------------------------------|------------------|-------------------------|---------------------|
| ▪ Add sub-level                   | Add Group        | Add Object <sup>1</sup> | N/A                 |
| ▪ Remove same-level               | N/A              | Remove Group            | Remove Object       |
| ▪ Open Property Pages             | Properties       | Properties              | Properties          |
| ▪ Download to memory <sup>2</sup> | Download         | Download                | Download            |
| ▪ Specific Options                | N/A              | Binning Group           | Parameter Set       |

1. A sub-menu with the five object types will show.
2. While download is available at all levels, it is recommended to use the Group and Object level download for setup and testing only. This is due to the fact that during the download operation, the application will automatically convert the downloaded program into sub-programs based on complexity and property settings. Consequently, the user can set the top-level program ID only, while other sub-program IDs are set by the application!

### Property Tab Pages

Each one of the items in the job hierarchy has its own property setup, yet many of the properties are similar for all items.

The following table summarizes the various Property Tabs available for the different items in a job –

| <u>Item</u>          | <u>Special Parameters<sup>1</sup></u> | <u>Text Parameters<sup>2</sup></u> | <u>Dimensions<sup>3</sup></u> | <u>Specific Tab</u>      |
|----------------------|---------------------------------------|------------------------------------|-------------------------------|--------------------------|
| Job                  | Yes                                   | N/A                                | N/A                           | I/O Handshaking          |
| Group                | Yes                                   | N/A                                | N/A                           | N/A                      |
| Text Object          | Yes                                   | Yes                                | Yes                           | N/A                      |
| Vector Object        | Yes                                   | N/A                                | Yes                           | N/A                      |
| Serial Number Object | Yes                                   | Yes                                | Yes                           | Serial Number Parameters |
| Date Object          | Yes                                   | Yes                                | Yes                           | Date Parameters          |
| Time Object          | Yes                                   | Yes                                | Yes                           | Time Parameters          |

1. Used to define number of repetitions for the item. Options are Single (once), NRepeat (N+1 times) and Repeat (infinite number of repetitions).
2. Active field for Text Object type only. For other relevant types used for display only.
3. These parameters can be set also through object manipulation in the Graphic View frame.

## Create a Job

A new job is created once you open a new file in the ScribeSmart Work Area.

## Modify a Job

Job modifications are accessed through the job Context Menu –



### Adding a group

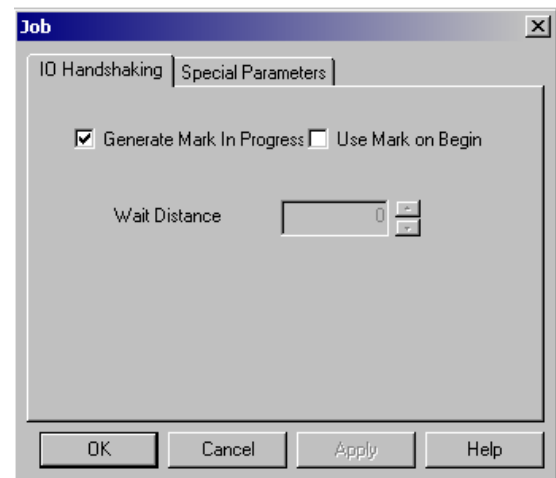
To add a group, in the Tree View:

1. Click **Job** to select it.
2. Right-click **Job** to display the Job Context Menu.
3. Click **Add Group**.
4. New **Group** is added sequentially after the last **Group** of objects in the Tree View. If this is your first group, it appears directly under **Job**.

### Modifying Job Properties

#### Adding IO Handshaking

1. Click **Job** to select it.
2. Right-click **Job** to display the Job Context Menu.
3. Click **Properties**.
4. Click the **IO Handshaking** tab.
5. Check the box to select **Generate Mark In Progress**.
6. Check the box to select **Use Mark on Begin**.
7. Type a wait distance between 0 and 1000 millimeters in the **Wait Distance** box.
8. Click **Apply** to continue modifying other tab properties.
9. Click **OK** when completed.

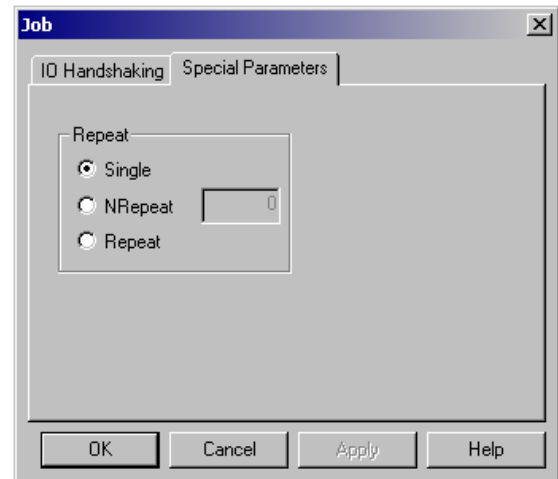


## Setting Special Parameters

1. Click **Job** to select it.
2. Right-click **Job** to display the Job Context Menu.
3. Click **Properties**.
4. Click the **Special Parameters** tab.
5. In the **Repeat** box, click –
  - a. **Single** to mark the job once
  - b. **NRepeat** to mark the job multiple times
  - c. **Repeat** to mark the job continuously.

Note that when you select, NRepeat, you define the number of repetitions that the job is marked in addition to the first mark. For example, if you enter 5 as the NRepeat parameter, the calculated input is 6 (1 + the number).

6. Click **Apply** to continue modifying other tab properties.
7. Click **OK** when completed.



## Downloading a job

When you download a job, you download the complete collection of groups and objects that are available within the job file. When you download a job, you use two views in ScribeSmart:

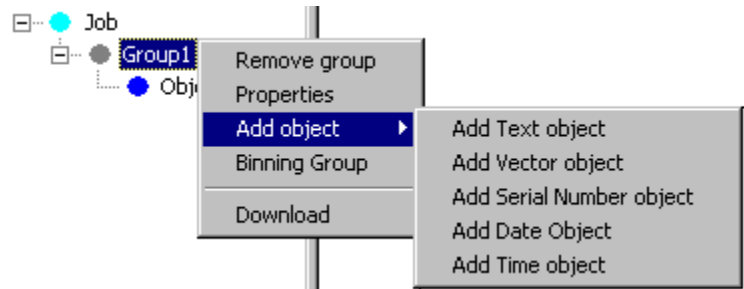
- Tree View to select the job and initiate the download process
- Control Panel to monitor download progress

To download the job:

1. Select **System** menu.
2. Select **ScribeSmart Controller**, and click **ScribeSmart Control Panel** to display the control panel.
3. Type the Program ID number (1-254) in the **Download to** input window. Note, that Program ID 1 is unique and reserved for Laser Parameter setup function, and used during the ScribeSmart Controller power up phase.
4. Select if to load the program to either RAM or Flash memory.
5. Select **Job** in the Tree View.
6. Right-click **Job** to display the Job Context Menu
7. Click **Download**
8. The job starts to download as displayed in the **Download Progress Bar** in the Control Panel.
9. Click **Update Pgm List**, and view the Program List Window to confirm that your job's program has downloaded to memory.

# Modify Group

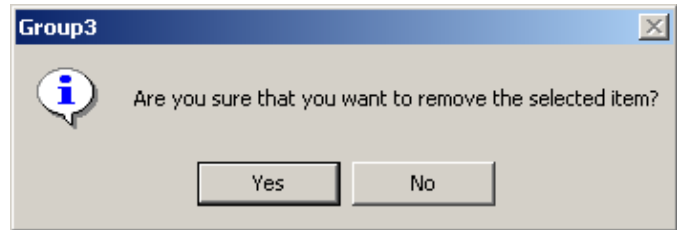
Group modifications are accessed through the group Context Menu –



## Removing a group

To remove a group, in the Tree View:

1. Click a **Group** to select it.
2. Right-click the selected **Group** to display the Group Context Menu.
3. Click **Remove Group**. A confirmation box is displayed.
4. Click **“Yes”** and the selected group and its objects are removed from the Job in both the Tree View and the Graphics View.



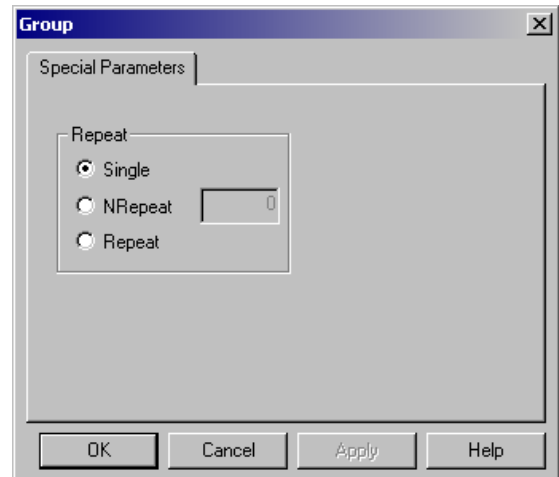
## Modifying Group Properties

### Setting Special Parameters

To set special Parameters, in the Tree View:

1. Click a **Group** to select it.
2. Right-click the selected **Group** to display the Group Context Menu.
3. Click the **Properties**.
4. In the **Repeat** box, click –
  - a) **Single** to mark the group once
  - b) **NRepeat** to mark the group multiple times
  - c) **Repeat** to mark the group continuously.

Note that when you select, NRepeat, you define the number of repetitions that the group is marked in addition to the first mark. For example, if you enter 5 as the NRepeat parameter, the calculated input is 6 (1 + the number).
5. Click **Apply** to continue modifying other tab properties.
6. Click **OK** when completed.

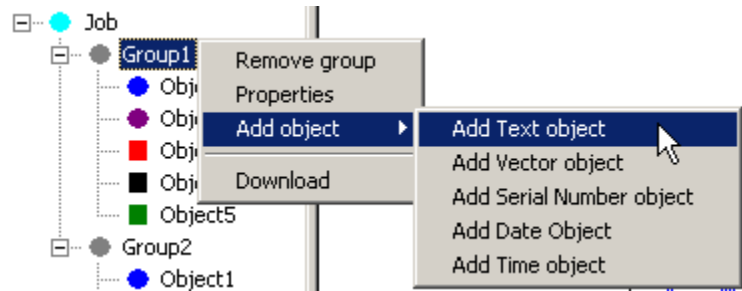


## Adding Objects to a Group

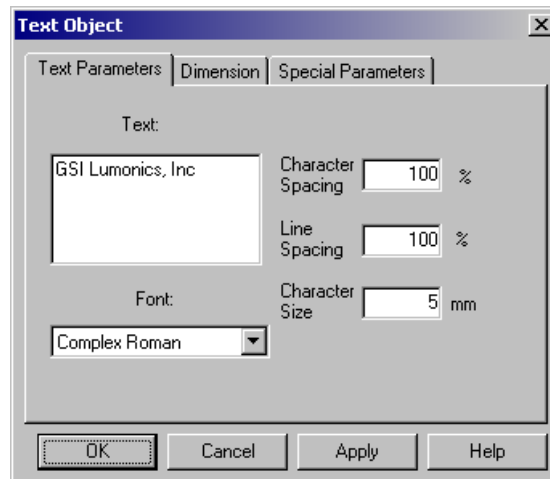
### Adding a Text Object

To add a text object, in the Tree View:

1. Click a **Group** to select it.
2. Right-click the selected **Group** to display the Group Context Menu.
3. Click **Add object**.
4. Click **Add Text Object**.



5. The **Text Parameters**, **Dimension**, and **Special Parameters** properties tabs for the Text Object will be displayed.



6. Set the properties and click **OK** when completed. (See “Modifying Object Properties” for more details).

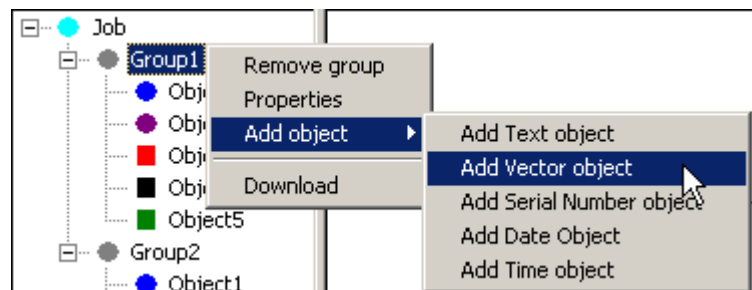
### Adding a Vector Object

To add a vector object you will need to import a graphics file into the ScribeSmart application by:

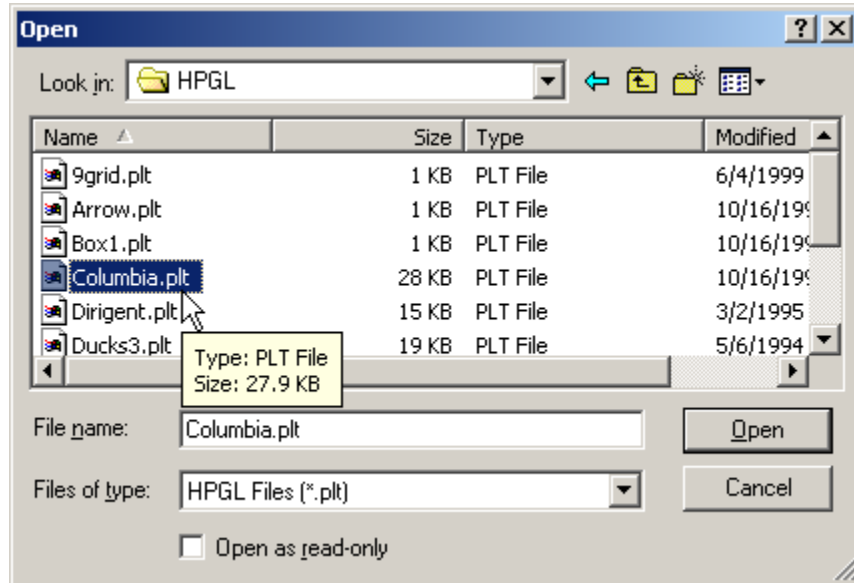
- Locating and adding the vector object (graphics file).
- Modifying the vector object’s properties.

To add a vector object, in the Tree View:

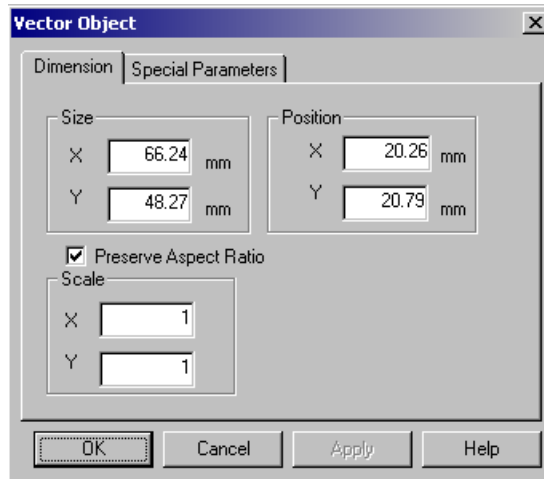
1. Select a **Group**.
2. Right-click the selected **Group** to display the Group Context Menu.
3. Click **Add object**.
4. Click **Add Vector object**.



- The file **Open** dialog box will be displayed.



- In the **Open** dialog box, browse and select the graphics file, then click **Open**.
- The newly created vector object icon is displayed under the **Group** object, and the **Dimension** and **Special Parameters** properties tabs for the Vector Object will be displayed.



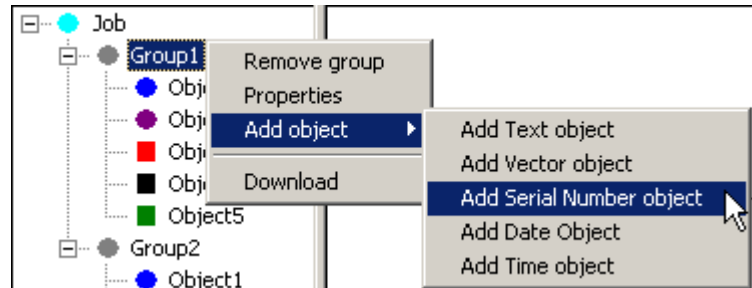
- Set the properties and click **OK** when completed. (See “Modifying Object Properties” for more details).

### Adding a Serial Number Object

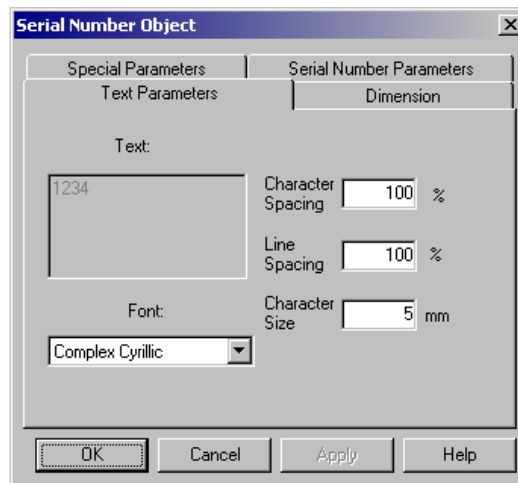
When modifying serial number object parameters, click **Apply** after you make a change to see the updated object immediately.

To add a serial number object, in the Tree View:

1. Select a **Group**.
2. Right-click the selected **Group** to display the Group Context Menu.
3. Click **Add object**.
4. Click **Add Serial Number object**.



5. The **Text Parameters**, **Dimension**, **Special Parameters**, and **Serial Number Parameters** properties tabs for the Serial Number Object will be displayed.



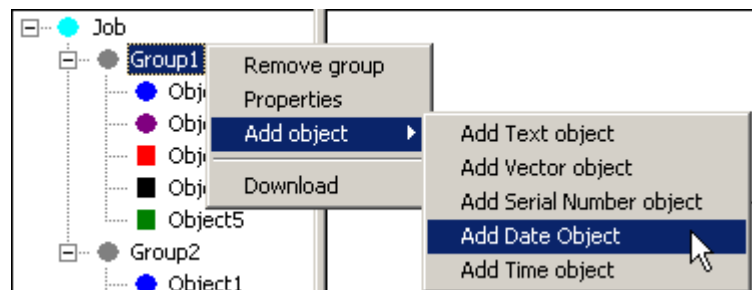
6. Set the properties and click **OK** when completed. (See “Modifying Object Properties” for more details).

### Adding a Date Object

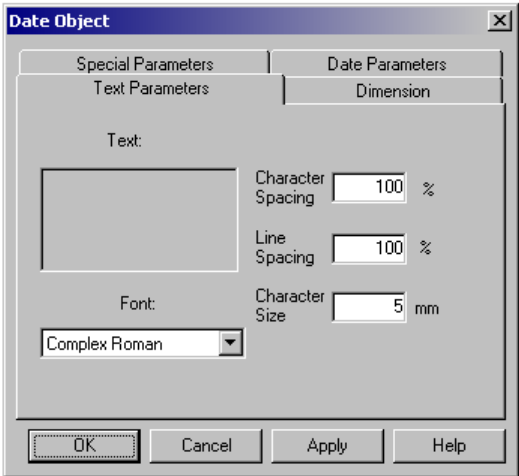
When modifying date object parameters, click **Apply** after you make a change to see the updated object immediately.

To add a date object, in the Tree View:

1. Select a **Group**.
2. Right-click the selected **Group** to display the Group Context Menu.
3. Click **Add object**.
4. Click **Add Date object**.



- The **Text Parameters**, **Dimension**, and **Special Parameters**, and **Date Parameters** properties tabs for the Date Object will be displayed.



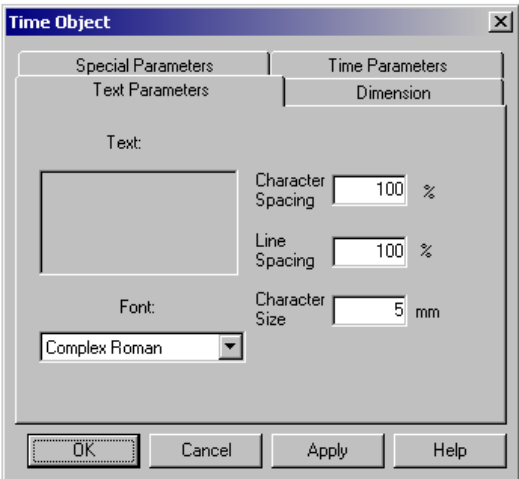
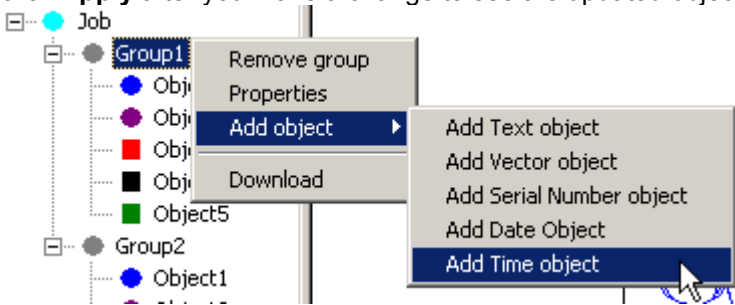
- Set the properties and click **OK** when completed. (See “Modifying Object Properties” for more details).

**Adding a Time Object**

When modifying time object parameters, click **Apply** after you make a change to see the updated object immediately.

To add a time object, in the Tree View:

- Select a **Group**.
- Right-click the selected **Group** to display the Group Context Menu.
- Click **Add object**.
- Click **Add Time object**.
- The **Text Parameters**, **Dimension**, **Special Parameters**, and **Time Parameters** properties tabs for the Time Object will be displayed.

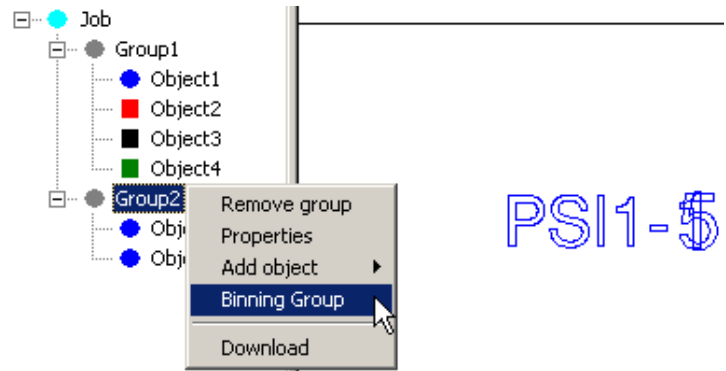


- Set the properties and click **OK** when completed. (See “Modifying Object Properties” for more details).

## Binning a group

To select a group for binning, in the Tree View:

1. Click a **Group** to select it.
2. Right-click the selected **Group** to display the Group Context Menu.
3. Click **Binning Group**.
4. A check mark is placed next to the Binning Group option to indicate a group was selected for binning. All objects in the binning group disappear from the Graphic View except for the first one.



Note in the Graphic View that the numbers 1 and 5 overwrite each other before the group is selected for binning. After binning is selected, these numbers appear individually. Binning allows you to select from the Tree View one object at a time from the group to display it individually in the graphics view.

In the example, click Object 1 in the Tree View to display the number 1 in the Graphics View. Click Object 2 in the Tree View to display the number 5.

## What is Binning

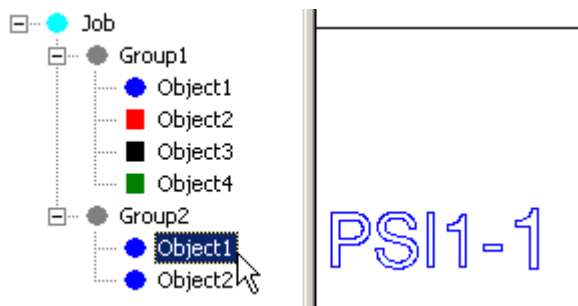
The term, binning, originates from the **bins** located at the end of a production line, so that parts that test within a narrow tolerance band are placed in the “in-spec” **bin**, while parts that test outside the tolerance band are placed in the “out-of-spec” **bin**. In relation to ScribeSmart, binning is the ability to select the marking of one object out of several objects based on external hardware input received by the ScribeSmart Controller.

The following case demonstrates the use of the ScribeSmart Binning feature as it relates to the ScribeSmart solution –

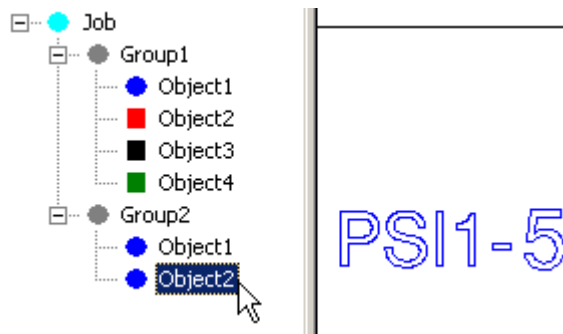
Extending the previous example, industrial sensor parts that come down the production line need to be marked with the part number **PSI1-1** if their accuracy is **+/- 1%**, and with the part number **PSI1-5** if their accuracy is **+/- 5%**. For these two objects - **1** and **5** - the first two bits of I/O input can be used to indicate **00** for **1**, and **01** for **5**. Binning in ScribeSmart marks the appropriate part number extension (**1** for 1% and **5** for 5%) on each item based on the signals present on the I/O connector – the object **1** is marked if the I/O input is **00**, and the object **5** is marked if the I/O input is **01**.

Binning is used at the group level, and only one group can be selected as a binning group. For example, if you select **Group 2**, in the Tree View area as the binning group, only one object within that group is displayed in the Graphics View. To view a different object within the binning group, select another object from the Tree View. Only one of the objects in the binning group is marked for each run of the marking job.

When you select Group 2 Object 1, the number **1** is selected.



When you select Group 2 Object 2, the number **5** is selected.



To see the original binning group when first created, refer to “Binning a group” procedure.

### Note

Binning input pins should remain in one state while “Mark in Progress” is active, as the state of the binning input pins is not latched until the moment before the binning group is marked. If the binning group is in a repeat loop and the I/O pins change state, the selected object in the binning group is specified by the state of the pins at the moment before the group is marked. If the input pins change within a repeat loop, a different binning object could be marked in separate passes through the loop.

## Downloading a group

When you download a group, you download the complete collection of objects that are available within the group. When you download a group, you use two views in ScribeSmart:

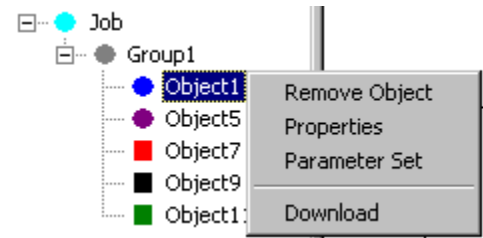
- Tree View to select the group and initiate the download process
- Control Panel to monitor the download progress

To download a group:

1. Select **System** menu.
2. Select **ScribeSmart Controller**, and click **ScribeSmart Control Panel** to display the control panel.
3. Type the Program ID number (1-254) in the **Download to** input window. Note, that Program ID 1 is unique and reserved for Laser Parameter setup function, and used during the ScribeSmart Controller power up phase.
4. Select if to load the program to either RAM or Flash memory.
5. Select a **Group** in the Tree View.
6. Right-click the selected **Group** to display the Group Context Menu
7. Click **Download**
8. The group starts to download as displayed in the Download Progress Bar.
9. Click **Update Pgm List**, and view the **Programs List Window** to confirm that your group’s program has downloaded to memory.

## Modify Object

Most object modifications are accessed through the object Context Menu –



In addition, objects can be manipulated in the Graphic View frame, and their magnification can be changed.


### Zooming the field of view

You can change the entire field of view of objects within the Graphics View. You can zoom in percentage increments from a minimum magnification of 50% to a maximum magnification of 1000%.


To zoom the field of view using the **Zoom** drop-down menu, from the toolbar:

1. Click the down arrow.
2. Select the zoom magnification (50% – 1000%).
3. New field of view zoom is displayed.

To zoom in on an object, from the toolbar:

1. Click **Zoom In**  button.
2. Click and hold the mouse to draw a rectangle around the required object.
3. Release the mouse button to complete your selection.
4. Object magnification is increased to fit the Graphic View area.

To zoom out on an object, from the toolbar:

1. Click **Zoom Out**  button.
2. Click anywhere in the Graphics View area.
3. Object magnification is decreased by a factor of two.

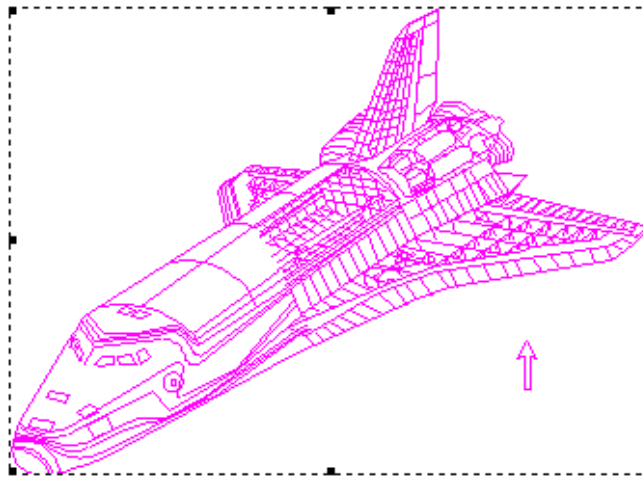
## Manipulating an Object

### Selecting an object

Before you perform an action on an object, you must first select it. You can select objects from either the Tree View or the Graphics View of the Work Area by mouse left-clicking on it.

To select an object in the Graphics View:

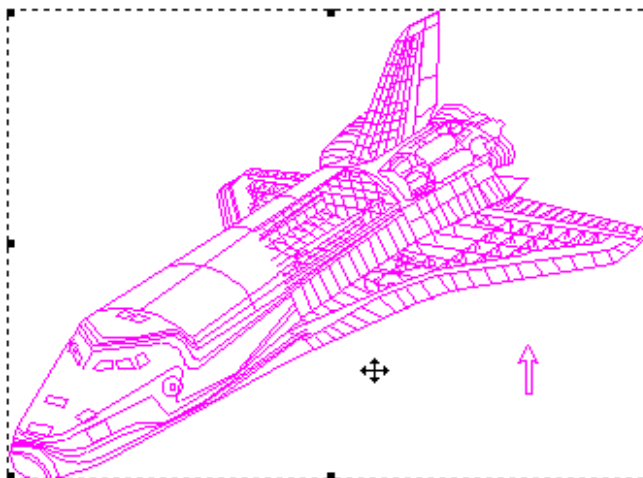
1. Click an object.
2. A rectangle appears around the selected object.
3. To select multiple objects, hold down the **Ctrl** key, and click each object.



### Moving an object

To move an object, in the Graphics View:

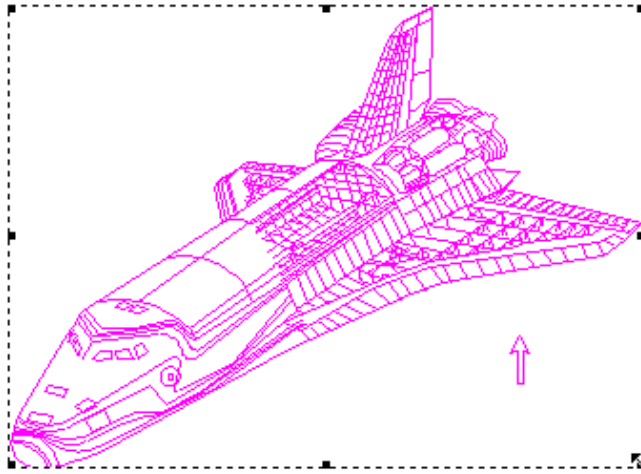
1. Click an object.
2. A rectangle appears around the selected object, and the mouse cursor changes to a navigation pointer.
3. Click, hold, and drag the object to its new location.



## Resizing an object

To resize an object, in the Graphics View:

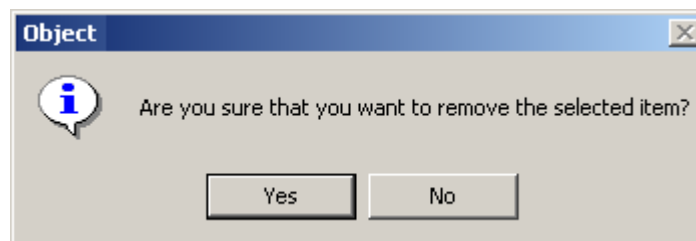
1. Click an object.
2. A rectangle appears around the selected object.
3. Move the mouse pointer over an edge until it changes to a double-headed arrow, and then drag the selected edge to resize the object.



## Removing an object

To remove an object, in the Tree View:

1. Select the **object** and right-click to display the Object Context Menu.
2. Click **Remove Object**.
3. A confirmation box is displayed.



4. Click **Yes** and the selected object is removed from the **Group** in both the Tree View and the Graphics View.

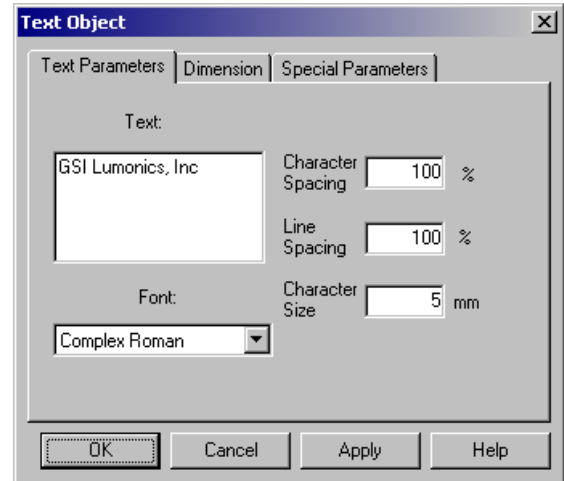
## Modifying Object Properties

### Modifying Text Object Properties

#### Modifying Text Parameters

To modify text parameters, in the Tree View:

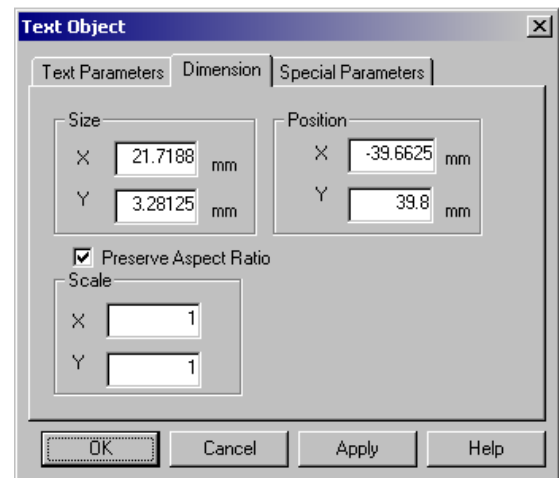
1. Select a Text **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Text Parameters** tab.
5. In the **Text** box, type the string for the text object.
6. In the **Font** drop-down field, click the down arrow and select the appropriate font.
7. In the **Character Spacing** box, type the desired distance between characters as a percentage of the font size (Range is 10 – 200, default is 100%).
8. In the **Line Spacing**, type the desired distance between lines as a percentage of the font size (Range is 10 – 200, default is 100%).
9. In the **Character Size** box, type the desired size of the characters in millimeters (mm).
10. Click **Apply** to continue modifying other tab properties.
11. Click **OK** when completed.



#### Modifying Dimension

To modify dimension, in the Tree View:

1. Select a Text **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Dimension** tab.
5. In the **Size** box, type the numeric **X** and / or **Y** values in millimeters (mm) for the size of the text object. You can also resize the object in the Graphic View. Another way is to type the numeric value (coefficient) for the **X** and / or **Y** scale in the **Scale** box, to determine the ratio between vertical and horizontal axes (default is 1 to 1). The **Size** fields will be updated accordingly.
6. In the **Position** box, type the numeric value for the location of the object represented by the **X** and **Y** coordinates. You can also move the object in the Graphic View.
7. Check the **Preserve Aspect Ratio** box if you wish to maintain the proportions of an object when making changes.
8. Click **Apply** to continue modifying other tab properties.



9. Click **OK** when completed.

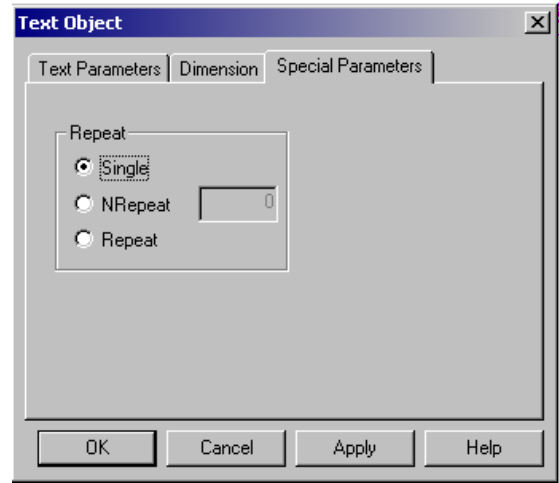
### Setting Special Parameters

To set special parameters, in the Tree View:

1. Select a **Text Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Special Parameters** tab.
5. In the **Repeat** box, click –
  - a) **Single** to mark the object once
  - b) **NRepeat** to mark the object multiple times
  - c) **Repeat** to mark the object continuously.

Note that when you select NRepeat, you define the number of repetitions that the object is marked in addition to the first mark. For example, if you enter 5 as the NRepeat parameter, the calculated input is 6 (1 + the number).

6. Click **Apply** to continue modifying other tab properties.
7. Click **OK** when completed.

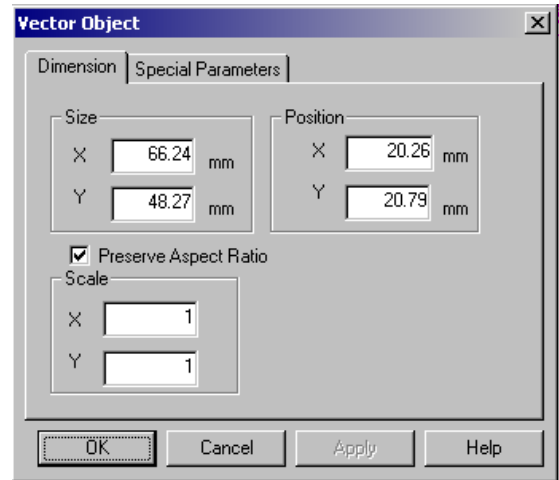


### Modifying Vector Object Properties

#### Modifying Dimension

To modify vector dimension, in the Tree View:

1. Select a vector **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Dimension** tab.
5. In the **Size** box, type the numeric **X** and / or **Y** values in millimeters (mm) for the size of the vector object. You can also resize the object in the Graphic View. Another way is to type the numeric value (coefficient) for the **X** and / or **Y** scale in the **Scale** box, to determine the ratio between vertical and horizontal axes (default is 1 to 1). The **Size** fields will be updated accordingly.
6. In the **Position** box, type the numeric value for the location of the object represented by the **X** and **Y** coordinates. You can also move the object in the Graphic View.
7. Check the **Preserve Aspect Ratio** box if you wish to maintain the proportions of an object when making changes.
8. Click **Apply** to continue modifying other tab properties.
9. Click **OK** when completed.



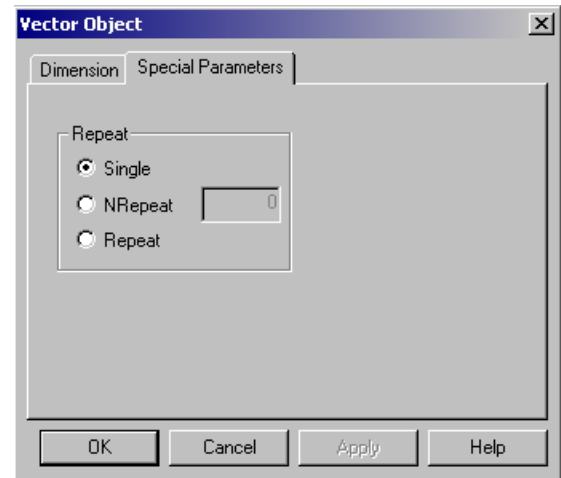
## Setting Special Parameters

To set vector special parameters, in the Tree View:

1. Select a vector **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Special Parameters** tab.
5. In the **Repeat** box, click –
  - a) **Single** to mark the object once
  - b) **NRepeat** to mark the object multiple times
  - c) **Repeat** to mark the object continuously.

Note that when you select NRepeat, you define the number of repetitions that the object is marked in addition to the first mark. For example, if you enter 5 as the NRepeat parameter, the calculated input is 6 (1 + the number).

6. Click **Apply** to continue modifying other tab properties.
7. Click **OK** when completed.

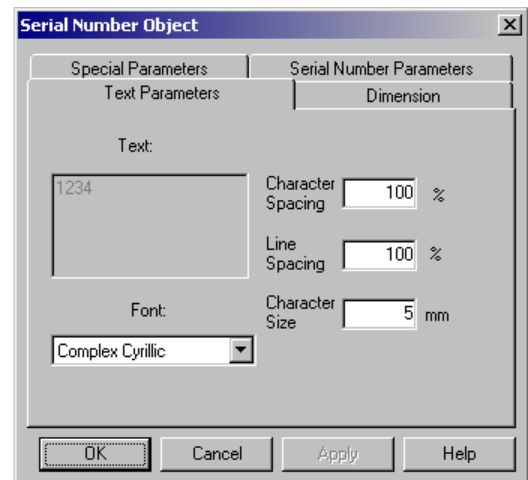


## Modifying Serial Number Object Properties

### Modifying Text Parameters

To modify serial number text parameters, in the Tree View:

1. Select the Serial Number **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Text Parameters** tab.
5. The current information for the serial number object is displayed in the **Text** display window. This information is entered in the **Serial Number Parameters** tab.
6. In the **Font** drop-down field, click the down arrow and select the appropriate font.
7. In the **Character Spacing** box, type the desired distance between characters as a percentage of the font size (default is 100%).
8. In the **Line Spacing**, type the desired distance between lines percentage as a percentage of the font size (default is 100%).
9. In the **Character Size** box, type the desired size of the characters in millimeters (mm).
10. Click **Apply** to continue modifying other tab parameters.
11. Click **OK** when completed.



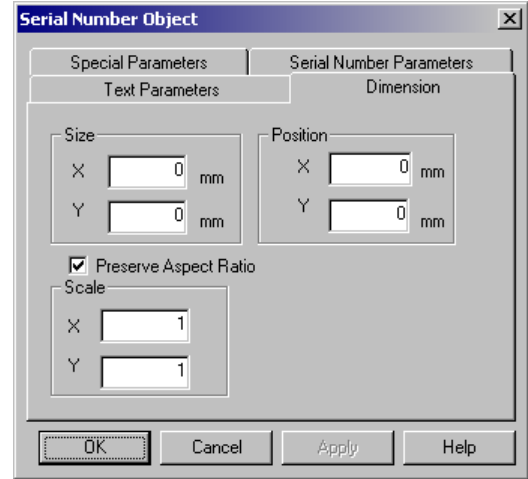
### Modifying Dimension

To modify serial number dimension, in the Tree View:

1. Select the Serial Number **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Dimension** tab.
5. In the **Size** box, type the numeric **X** and / or **Y** values in millimeters (mm) for the size of the serial number object.

You can also resize the object in the Graphic View. Another way is to type the numeric value (coefficient) for the **X** and / or **Y** scale in the **Scale** box, to determine the ratio between vertical and horizontal axes (default is 1 to 1). The **Size** fields will be updated accordingly.

6. In the **Position** box, type the numeric value for the location of the object represented by the **X** and **Y** coordinates. You can also move the object in the Graphic View.
7. Check the **Preserve Aspect Ratio** box if you wish to maintain the proportions of an object when making changes.
8. Click **Apply** to continue modifying other tab parameters.
9. Click **OK** when completed.



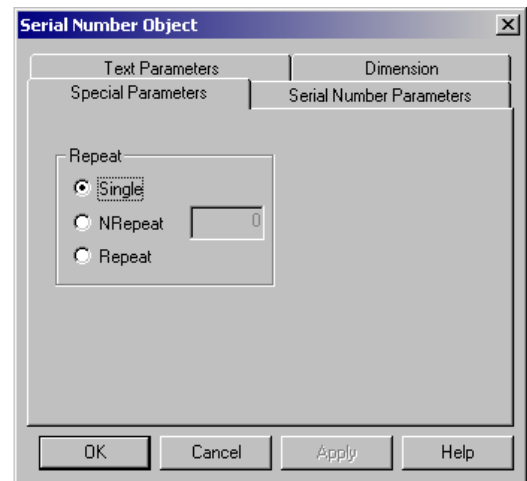
### Setting Special Parameters

To set serial number special parameters, in the Tree View:

1. Select the Serial Number **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Special Parameters** tab.
5. In the **Repeat** box, click –
  - a) **Single** to mark the object once
  - b) **NRepeat** to mark the object multiple times
  - c) **Repeat** to mark the object continuously.

Note that when you select NRepeat, you define the number of repetitions that the object is marked in addition to the first mark. For example, if you enter 5 as the NRepeat parameter, the calculated input is 6 (1 + the number).

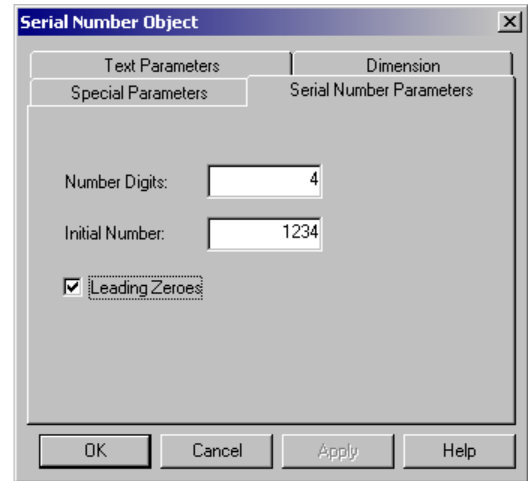
6. Click **Apply** to continue modifying other tab parameters.
7. Click **OK** when completed.



## Modifying Serial Number Parameters

To modify serial number parameters, in the Tree View:

1. Select the Serial Number **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Serial Number Parameters** tab.
5. In the **Number Digits** field, type the number of digits for the serial number. The range is from 1-11.
6. In the **Initial Number** field, type the beginning serial number. ScribeSmart automatically increments the serial number from this entry.
7. Check the **Leading Zeroes** box to add zeroes before the serial number if the number of significant digits is smaller than the number of digits specified.
8. To view your changes in the **Text** display field, click **Apply** and click the **Text Parameters** tab. The **Text** display field shows how the serial number will appear in the job.
9. Click **Apply** to continue modifying other tab parameters.
10. Click **OK** when completed.

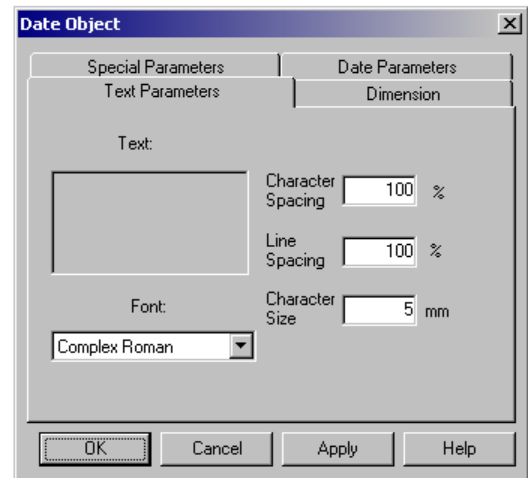


## Modifying Date Object Properties

### Modifying Text Parameters

To modify date text parameters, in the Tree View:

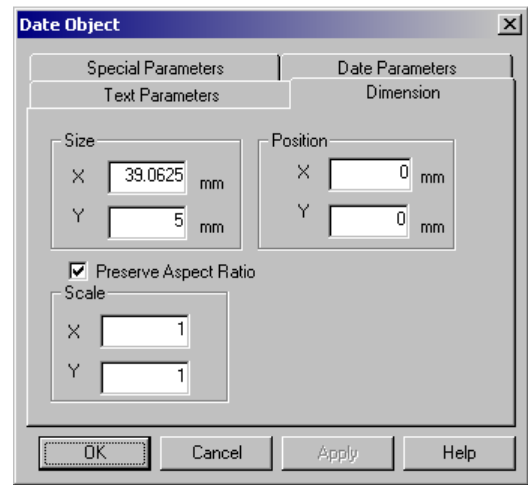
1. Select the date **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Text Parameters** tab.
5. The current information for the date object is displayed in the **Text** display window. This information is controlled in the **Date Parameters** tab, and is based on the computer's internal clock.
6. In the **Font** drop-down field, click the down arrow and select the appropriate font.
7. In the **Character Spacing** box, type the desired distance between characters as a percentage of the font size (default is 100%).
8. In the **Line Spacing**, type the desired distance between lines percentage as a percentage of the font size (default is 100%).
9. In the **Character Size** box, type the desired size of the characters in millimeters (mm).
10. Click **Apply** to continue modifying other tab parameters.
11. Click **OK** when completed.



### Modifying Dimension

To modify date dimension, in the Tree View:

1. Select the date **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Dimension** tab.
5. In the **Size** box, type the numeric **X** and / or **Y** values in millimeters (mm) for the size of the date object. You can also resize the object in the Graphic View. Another way is to type the numeric value (coefficient) for the **X** and / or **Y** scale in the **Scale** box, to determine the ratio between vertical and horizontal axes (default is 1 to 1). The **Size** fields will be updated accordingly.
6. In the **Position** box, type the numeric value for the location of the object represented by the **X** and **Y** coordinates. You can also move the object in the Graphic View.
7. Check the **Preserve Aspect Ratio** box if you wish to maintain the proportions of an object when making changes.
8. Click **Apply** to continue modifying other tab parameters.
9. Click **OK** when completed.

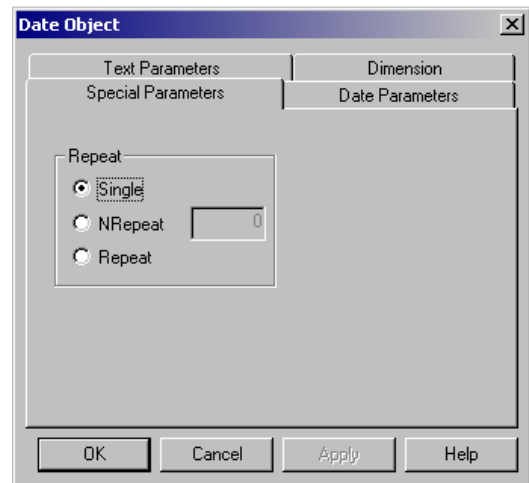


### Setting Special Parameters

To set date special parameters, in the Tree View:

1. Select the date **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Special Parameters** tab.
5. In the Repeat box, click –
  - a) **Single** to mark the object once
  - b) **NRepeat** to mark the object multiple times
  - c) **Repeat** to mark the object continuously.

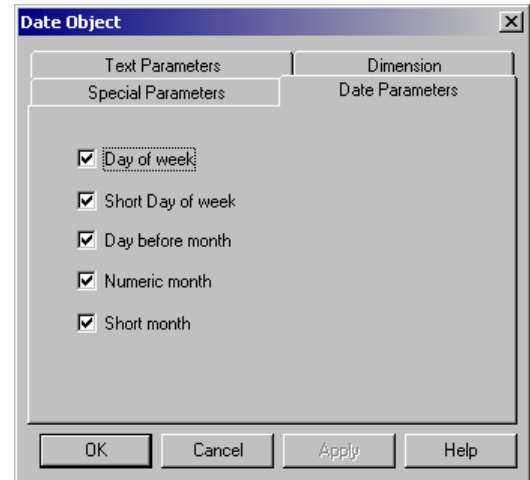
Note that when you select NRepeat, you define the number of repetitions that the object is marked in addition to the first mark. For example, if you enter 5 as the NRepeat parameter, the calculated input is 6 (1 + the number).
6. Click **Apply** to continue modifying other tab parameters.
7. Click **OK** when completed.



## Setting Date Parameters

To set date parameters, in the Tree View:

1. Select the date **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Date Parameters** tab.
5. Check the box beside each date settings you wish to display in the job.
6. To view your changes in the **Text** display field, click **Apply** and click the **Text Parameters** tab. The **Text** display field shows how the date will appear in the job.
7. Click **Apply** to continue modifying other tab parameters.
8. Click **OK** when completed.

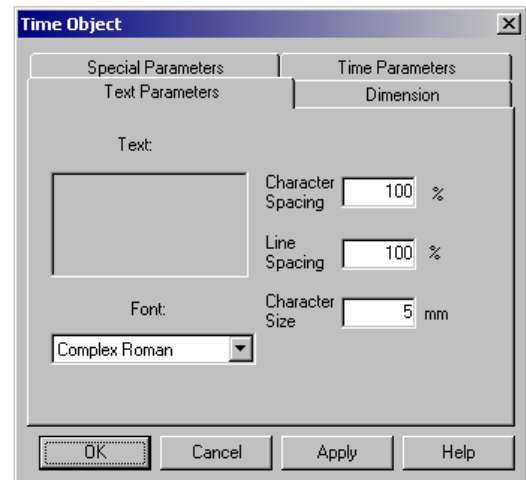


## Modifying Time Object Properties

### Modifying Text Parameters

To modify time text parameters, in the Tree View:

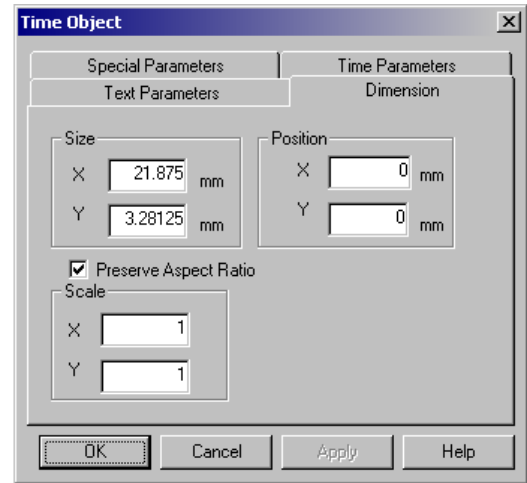
1. Select the time **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Text Parameters** tab.
5. The current information for the time object is displayed in the **Text** display window. This information is controlled in the **Time Parameters** tab, and is based on the computer's internal clock.
6. In the **Font** drop-down field, click the down arrow and select the appropriate font.
7. In the **Character Spacing** box, type the desired distance between characters as a percentage of the font size (default is 100%).
8. In the **Line Spacing**, type the desired distance between lines percentage as a percentage of the font size (default is 100%).
9. In the **Character Size** box, type the desired size of the characters in millimeters (mm).
10. Click **Apply** to continue modifying other tab parameters.
11. Click **OK** when completed.



### Modifying Dimension

To modify time dimension, in the Tree View:

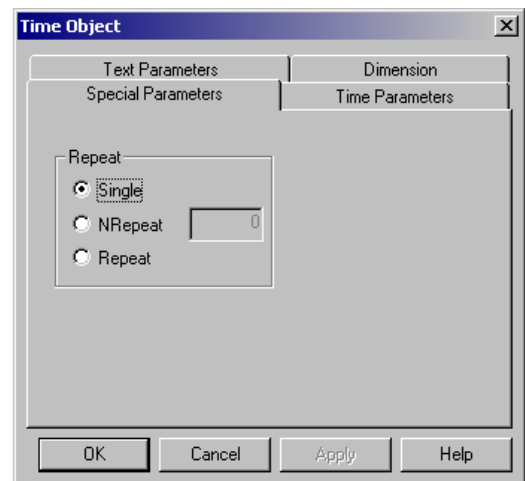
1. Select the time **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Dimension** tab.
5. In the **Size** box, type the numeric **X** and / or **Y** values in millimeters (mm) for the size of the time object. You can also resize the object in the Graphic View. Another way is to type the numeric value (coefficient) for the **X** and / or **Y** scale in the **Scale** box, to determine the ratio between vertical and horizontal axes (default is 1 to 1). The **Size** fields will be updated accordingly.
6. In the **Position** box, type the numeric value for the location of the object represented by the **X** and **Y** coordinates. You can also move the object in the Graphic View.
7. Check the **Preserve Aspect Ratio** box if you wish to maintain the proportions of an object when making changes.
8. Click **Apply** to continue modifying other tab parameters.
9. Click **OK** when completed.



### Setting Special Parameters

To set time special parameters, in the Tree View:

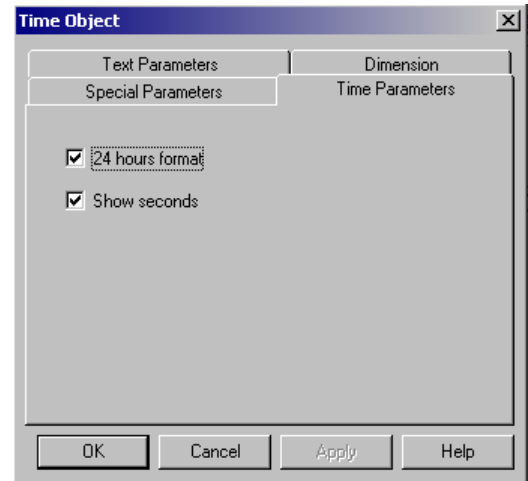
1. Select the time **Object**.
  2. Right-click the selected **Object** to display the Object Context Menu.
  3. Click **Properties**.
  4. Click the **Special Parameters** tab.
  5. In the Repeat box, click –
    - d) **Single** to mark the object once
    - e) **NRepeat** to mark the object multiple times
    - f) **Repeat** to mark the object continuously.
- Note that when you select NRepeat, you define the number of repetitions that the object is marked in addition to the first mark. For example, if you enter 5 as the NRepeat parameter, the calculated input is 6 (1 + the number).
6. Click **Apply** to continue modifying other tab parameters.
  7. Click **OK** when completed.



### Setting Time Parameters

To set time parameters, in the Tree View:

1. Select the time **Object**.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Properties**.
4. Click the **Time Parameters** tab.
5. Check the box beside each time field that you wish to display in the job.
6. To view your changes in the **Text** display field, click **Apply** and click the **Text Parameters** tab. The **Text** display field shows how the time will appear in the job.
7. Click **Apply** to continue modifying other tab parameters.
8. Click **OK** when completed.

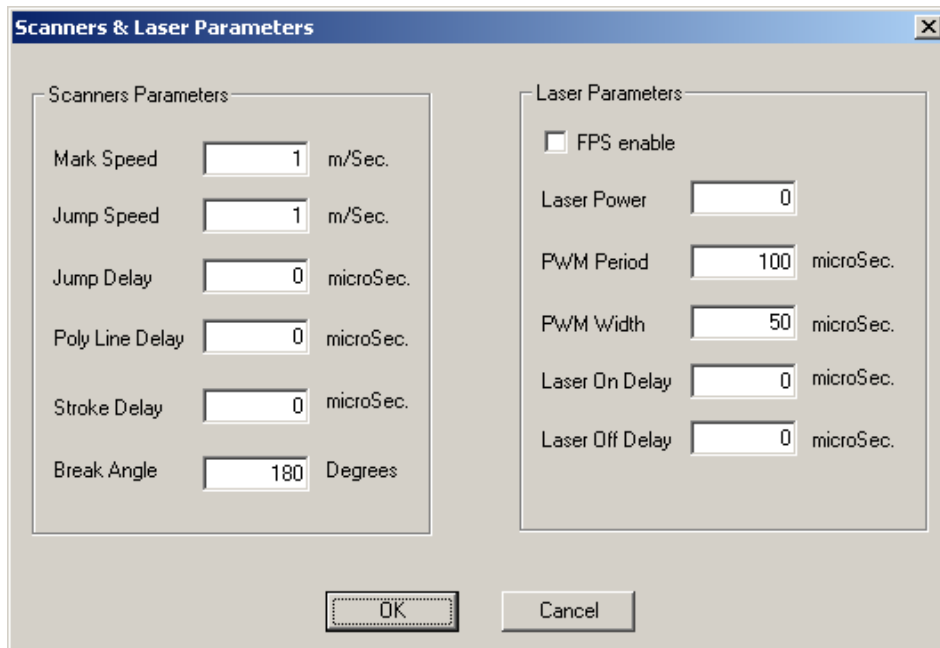
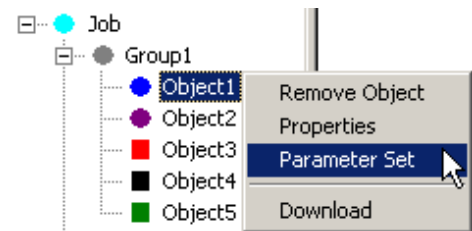


### Setting Scanners and Laser Parameters

You can configure scanners and laser parameters for any object within a group

To set scanner and laser parameters, in the Tree View:

1. Click an **Object** to select it.
2. Right-click the selected **Object** to display the Object Context Menu.
3. Click **Parameter Set** to display the **Scanners and Laser Parameters** dialog box:



**Scanners and Laser Parameters**

The following information explains the Scanners and Laser Parameter settings:

**Scanners Parameters**

| <u>Parameter</u>       | <u>Description</u>  |
|------------------------|---|
| <b>Mark Speed</b>      | Defines maximum speed for mark vectors. Units are in meter per second.  |
| <b>Jump Speed</b>      | Defines maximum speed for jump vectors. Units are in meter per second.  |
| <b>Jump Delay</b>      | Defines the interval of time where the mirror can settle down after an abrupt motion, enhancing marking clarity. The Jump Delay is added after each jump vector in the mark. The default value is 0 $\mu$ s.  |
| <b>Poly Line Delay</b> | Used to program a pacing delay that is executed at the end of each internal vector in a stroke. The default value is 0 $\mu$ s.   |
| <b>Stroke Delay</b>    | Defines the length of the pause at the end of a stroke, which is composed of any number of consecutive mark vectors. The default value is 0 $\mu$ s.  |
| <b>Break Angle</b>     | <p>Allows a maximum angle value to be specified, so that if the angle between two consecutive mark vectors is more than the break angle, the stroke is broken into two separate strokes. The Jump Delay, Stroke Delay, and Laser On Delay are then applied to each of the stroke.</p> <p>This break improves image quality, as the laser beam might not be able to track accurately acute changes in direction between two consecutive mark vectors in a stroke due to galvo/mirror inertia. This will result in a curved path where “sharp corners” are expected. Default value is 180°.</p> |

**Laser Parameters**

| <u>Parameter</u>       | <u>Function</u>  |
|------------------------|--|
| <b>FPS Enable</b>      | Enables the use of the First Pulse Suppression signal during laser control. FPS is useful in the control of lasers that build up charge when not lasing, such as lamp or diode pumped YAG lasers.                      |
| <b>Laser Power</b>     | Used to set the laser power. The range is 0 – 255. Default value is 0.   |
| <b>PWM Period</b>      | Used to set the PWM Period of the laser modulation signal.<br>The range is from 1 – 15728 $\mu$ s. The default value is 100 $\mu$ s.   |
| <b>PWM Width</b>       | Used to set the duty cycle of the laser modulation signal. Duty cycles are computed based upon the PWM Period of the laser modulation signal.<br>The range is from 0 – 15728 $\mu$ s. The default value is 50 $\mu$ s. |
| <b>Laser On Delay</b>  | Specifies the length of the pause when the laser is turned on.<br>The range is from 0 – 2,147,483,648 $\mu$ s. The default value is 0 $\mu$ s.   |
| <b>Laser Off Delay</b> | Specifies the length of the pause when the laser is turned off.<br>The range is from 0 – 2,147,483,648 $\mu$ s. The default value is 0 $\mu$ s.  |

## Downloading an object

When you download an object, you download one object that is selected within a group. When you download an object, you use two views in ScribeSmart:

- Tree View to select the object and initiate the download process
- Control Panel to monitor the download progress

To download an object, in Tree View:

1. Select **System** menu.
2. Select **ScribeSmart Controller**, and click **ScribeSmart Control Panel** to display the control panel.
3. Type the **Program ID** number (1-254) in the **Download to** input window. Note, Program ID 1 is unique and reserved for the Laser Parameter setup function, and used during the ScribeSmart Controller power up phase.
4. Select if to load the program to either RAM or Flash memory.
5. Select an **Object** in the Tree View.
6. Right-click the selected **Object** to display the Object Context Menu
7. Click **Download**
8. The Object starts to download as displayed in the **Download Progress Bar**.
9. Click **Update Pgm List**, and view the **Programs List Window** to confirm that your object's program has downloaded to memory.

# ScribeSmart Reference

## Menus

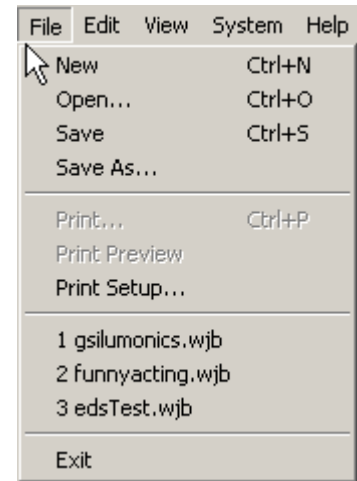
### Menu Bar

The menus in ScribeSmart are similar to those found in other windows applications, except for the **System** menu.

#### File Menu

Use the File menu to access the following commands:

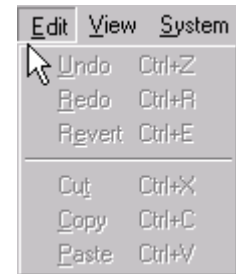
| <b>Menu Command</b>  | <b>Command Explanation</b>   |
|----------------------|--|
| <b>New</b>           | Creates a new file.  |
| <b>Open</b>          | Opens an existing file.  |
| <b>Save</b>          | Saves the current file using the same file name.   |
| <b>Save As</b>       | Saves the current file to a specified file name.   |
| <b>List Previous</b> | Lists the names of the last four opened files. Click on a file name in this list to open it. |
| <b>Exit</b>          | Terminates the ScribeSmart application.  |



#### Edit Menu

Use the Edit menu to access the following commands:

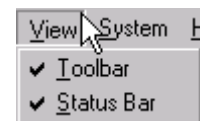
| <b>Menu Command</b> | <b>Command Explanation</b>                                   |
|---------------------|--|
| <b>Undo</b>         | Reverses previous action.                                    |
| <b>Redo</b>         | Reverses the previous Undo action.                           |
| <b>Revert</b>       | Returns to the last saved job file.                          |
| <b>Cut</b>          | Deletes an item from the file and moves it to the clipboard. |
| <b>Copy</b>         | Copies an item from the file to the clipboard.               |
| <b>Paste</b>        | Pastes the content of the clipboard into the file.           |



#### View Menu

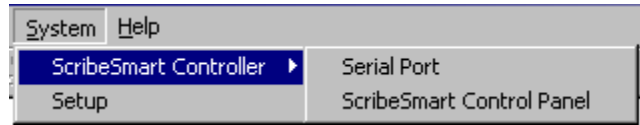
Use the View menu to access the following commands.

| <b>Menu Command</b> | <b>Command Explanation</b>     |
|---------------------|--------------------------------|
| <b>Toolbar</b>      | Shows or hides the toolbar.    |
| <b>Status bar</b>   | Shows or hides the status bar. |



### System Menu

Use the System menu to access the following commands:

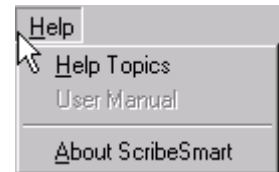


| <u>Menu Command</u>           | <u>Command Explanation</u>   |
|-------------------------------|--|
| <b>ScribeSmart Controller</b> | Access to ScribeSmart Controller functions –   |
| Serial Port                   | Selection of communication port (in the range 1-8) to connect the PC to the ScribeSmart Controller.  |
| ScribeSmart Control Panel     | Controller and laser parameters configuration, status checking, Mark on the Fly settings, RAM or Flash memory program downloading, job, group or object program execution, and memory display. |
| <b>Setup</b>                  | Grid Calibration Table loading into ScribeSmart, and automatic backup interval setting.  |

### Help Menu

Use the Help menu to quickly access step-by-step procedures on how to do specific ScribeSmart tasks. You can also use the help system as a stand-alone online document for understanding general information, reference information, glossary, task-based information, and index terms.

Use the Help menu to access the following commands:



| <u>Menu Command</u>      | <u>Command Explanation</u>   |
|--------------------------|--|
| <b>Help Topics</b>       | Displays the online help system for ScribeSmart. The online help includes step-by-step procedures of how to do a specific ScribeSmart task. This Help Menu option also provides you with overview and reference information. |
| <b>User Manual</b>       | Access to the online user guide for ScribeSmart in Adobe Portable Document Format (PDF). You can read this guide online, or print it as a hard copy manual.  |
| <b>About ScribeSmart</b> | Displays the version number and the copyright notice of your copy of ScribeSmart.  |

### Context Menu

A context menu is a standalone, pop-up menu that is independent of the ScribeSmart menu bar. The context menu provides a specific set of configuration and modification functions for the selected **Job**, **Group**, or **Object**.

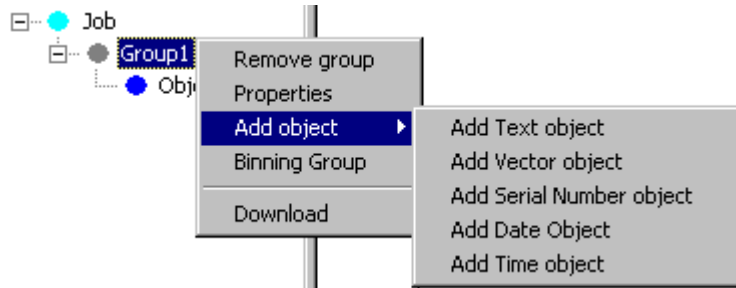
For example, when you display the context menu for a **Group** (see “Group Context Menu” below), you get the options to remove the group with all its objects, modify the special parameter properties of the group, add an object such as a text or vector to the group, establish a binning group, and download the whole group of objects to ScribeSmart controller memory.

To access a context menu, first select the **Job**, **Group**, or **Object** item in the left Tree View frame, and then right-click on the selected item.

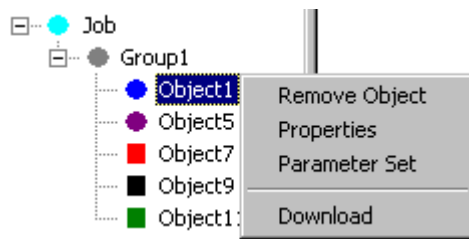
#### Job Context Menu



#### Group Context Menu












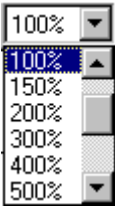


#### Object Context Menu



# Toolbar

The ScribeSmart toolbar options are similar to the toolbar options in other Windows applications

Use the toolbar  to access the following commands:

| <u>Toolbar Button</u>   | <u>Command</u>         | <u>Command Explanation</u>  |
|---|------------------------|---|
|    | New File               | Create a new file.  |
|    | Open File              | Open an existing file.  |
|    | Save File              | Save the current file using the same file name.   |
|    | Cut                    | Delete data from the job and move it to the clipboard.  |
|    | Copy                   | Copy data from the job into the clipboard.  |
|    | Paste                  | Paste data from the clipboard into the job.   |
|    | Print                  | Print the current file to the printer.  |
|    | Zoom In*               | Increase the magnification of an object in the Graphic View frame. Maximum magnification is 1000%.  |
|   | Zoom Out*              | Decrease the magnification of an object in the Graphic View frame. Minimum magnification is 50%.  |
|  | Zoom Select*           | Zoom in or zoom out of the complete field view. The magnification range is 50% (min.) to 1000% (max.).  |
|  | Help Topics            | Display all the topics in the ScribeSmart online help system. The online help includes step-by-step procedures of how to do specific ScribeSmart tasks. |
|  | Context-Sensitive Help | Display help information about a single control   |

\* NOTE: The original image is unchanged. Zoom operates on the view of the file and does not change the actual size.

## Tips and Tricks

### Shortcut Keys

The following table summarizes the shortcut-key combinations used with the ScribeSmart menus (most of which are similar to other Windows applications).

| <u>Shortcut Keys</u>          | <u>Function</u>   |
|-------------------------------|---|
| <b>Ctrl+N</b>                 | Opens a new job.  |
| <b>Ctrl+O</b>                 | Opens an existing job.  |
| <b>Ctrl+S</b>                 | Saves the current job.  |
| <b>Ctrl+P</b>                 | Prints the current job.   |
| <b>Ctrl+Z</b>                 | Undo the last action.   |
| <b>Ctrl+R</b>                 | Reverses the previous Undo action.                                |
| <b>Ctrl+E</b>                 | Returns to the last saved job file.                               |
| <b>Ctrl+X</b>                 | Cuts the selected information, and places it on the clipboard.    |
| <b>Ctrl+C</b>                 | Copies the selected information, and places it on the clipboard.  |
| <b>Ctrl+V</b>                 | Pastes the content of the clipboard.                              |
| <b>Right-Mouse Click</b>      | Activates the context menu of the selected object, group, or job. |
| <b>Left-Mouse Click</b>       | Selects the information or the item.                              |
| <b>Shift+Left-Mouse Click</b> | Multiple selections in a sequential order.                        |
| <b>Ctrl+ Left-Mouse Click</b> | Multiple selections in a non-sequential order.                    |

For example, to open a new document, hold down the **Ctrl** key and press the **N** key.

### Getting Online Help


You can find online help on general information, how to do task-oriented procedures, reference information, and glossary descriptions about ScribeSmart by any one of the following methods:

- Clicking the **Help** button within the application screen, dialog box, property, or tab page.
- Selecting the **Help** menu and clicking **Help Topics**.
- Pressing the **F1** button to display the complete ScribeSmart Online Help System.

To learn more about how to use Windows Help, click the **Using Help** button located near the top of the ScribeSmart Help System.

### Getting Context-Sensitive Help

You can find context-sensitive help information on controls, fields, and tab pages within ScribeSmart by any one of the following methods:

- Click the Help icon  at the top of a dialog box, a tab page, or inside a title bar, and then click the item.
- Click the item, and then press F1.
- Press Shift+F1, and then click the item.

# Glossary

This section provides a list of important terms, keywords, and acronyms that are used in ScribeSmart.

## Backup

While working with a file, you can automatically backup your work every pre-defined interval of time to provide a copy in case of a system failure. For example, if you set the interval to 10 minutes, your current file is saved - with your file name and the file extension of "bak" - every ten minutes. When you try to reopen a file that was opened during a system failure, ScribeSmart alerts you that there is a backup version, and prompts which version to open.

If the system does not fail, the backup file is deleted when you exit ScribeSmart.

## Binning

Binning allows for marking one object out of several objects in a group, based on external hardware input received by the ScribeSmart Controller. Only one group in a job can be defined as a binning group.

## Bits Per Second - bps

The number of bits transmitted every second. Used as a measure of the speed at which a device, such as a computer, can transfer data. Normally, a character is coded using 8 bits. In asynchronous communication, each character may be preceded by a start bit and may be terminated by a stop bit, so that for each character, 10 bits are transmitted. For such situation, if a computer communicates at 2,400 bits per second (bps), 240 characters are sent every second.

## Context Menu

Use the Context Menu (right-click) on the ScribeSmart objects to add, remove, set properties, and set laser and scanner parameters.

## Date Object

One of five types of objects used in ScribeSmart. You are allowed to create only one date object in a job.

## Date Parameters

- Default (all boxes are checked) Fri, 31/01/03
- Day of week - Long form (Sunday, Monday etc.) Friday, January 31, 03
- Short day of week - Three characters abbreviated form ("Day of week" checked) Fri, January 31, 03
- Day before month - Places day before the month 31 January 03
- Numeric month - Month is represented as a number 31/01/03
- Short month - Abbreviated form in three characters ("Numeric month" not checked) 31 Jan 03
- No check marks - month, day number, year January 31, 03

## Dialog Box

Dialog box prompts you for information. For example, an Open File dialog box prompts you to enter the ScribeSmart file that you want to open.

## Downloading a Job

Download the complete collection of groups and objects that are available within the job file.

## Flash Memory

Flash memory is used to save your jobs in permanent storage. All Flash programs remain in memory after you power cycle the controller.

### **Generate Mark in Progress**

An output signal that is generated by the ScribeSmart Controller to notify the external equipment source that a marking job is in progress. This signal remains active as long as the marking job continues. When the marking job is completed, the signal becomes inactive.

### **Graphics View**

The Graphics View allows you to see the actual object image, manipulate, and modify your objects, such as resizing to a smaller size or moving to a new location within the area. The Graphics View shows the image representation of the object located in the Tree View text representation. For example, a Vector object entry that is created in the Tree View in the left frame is represented graphically in the Graphics View in the right frame.

### **Grid Table**

A grid calibration table is a specification file that corrects the scanning field (from distortions in the rectangular field caused by mirror and lens effects) to a perfectly squared field.

### **Group**

A group is part of a job hierarchy. The purpose of a group is to organize different types of objects under one control for similar processing. A group can contain five types of objects: text, vector, serial number, date, and time. A group can contain multiple text and vector objects, each with its own settings, but can only contain one serial number object, one date object, and one time object. You can download a group with all its objects to the ScribeSmart Controller's memory for processing. You can change the properties of each group independently.

### **Idle Mode**

When the ScribeSmart Controller is not running any program, it is in idle mode. If you run a program from memory, and try to execute a Serial Number or Date/Time status command, you receive an error message.

### **Job**

A job organizes all the groups and objects of a marking job under a file name to save. A job can include several groups, each containing combinations of objects. When you create a new file, you create a new job. You can download a job with all its groups and all its objects to the ScribeSmart Controller's memory for processing. You can change the properties of a job - add IO handshaking, and set special parameters.

### **Mark on the Fly**

Provides the capability to accurately mark an object while it is in motion. For example, marking a product placed on a conveyor belt while the belt is moving.

### **Menu bar**






Provides users with a menu system that includes all the basic functions of ScribeSmart. Use the **System** menu, to access the ScribeSmart Controller and ScribeSmart Control Panel functions, which provides an additional Configuration Menu for special settings. To get immediate help, use the Help menu or click the Help icon.

### **Moving or Resizing an object**

Use the Graphic View to roughly move or resize an object. To position an object or resize it with precise accuracy, use the **Dimension** tab, which is located within the object property sheet. The Dimension tab allows you to indicate specific and accurate object size and position in millimeters using X and Y coordinates. The Dimension tab also provides a scale ratio for X and Y coordinates, and allows you to maintain aspect ratio for resizing objects.

## Object

Object is the basic “building-block” of a marking job. There are five types of objects - text string, vector image, serial number, date, and time display. Each ScribeSmart object type is color-coded in both the Tree View and the Graphics View to as follows:

| <u>Object Type</u>    | <u>Icon</u>   |
|-----------------------|---|
| <b>Text</b>           |  (Blue Circle)   |
| <b>Vector (image)</b> |  (Purple Circle) |
| <b>Serial Number</b>  |  (Red Square)    |
| <b>Date</b>           |  (Black Square)  |
| <b>Time</b>           |  (Green Square)  |

You can download an object to the ScribeSmart Controller’s memory for processing. You can change the properties of an object, change scanners and laser settings for an object, and remove an object from a group.

While ScribeSmart supports automatic serial number marking, automatic date marking, and automatic time marking, you can only define one serial number object, one date object, and one time object for a job.

## Orphan Memory

Orphan memory is fragmented segments of space in memory caused by program deletions. Orphan memory need to be removed, and memory space compacted and reclaimed to make memory available for new programs.

## Parity bit

In asynchronous communications, an extra bit used in checking for errors in groups of data bits transferred within or between computer systems. In modem-to-modem communications, a parity bit is often used to check the accuracy with which each character is transmitted.

## Property Sheets

Property sheets provide information about the job, a group, or an object. The information is organized into tab pages, which allows you to set parameters to be used in job marking. Each property sheet contains tab pages of parameters that are specific to a job, a group, or an object.

To access a Property Sheet, select the job, group, or object, right-click on it to display the object Context Menu, and click **Properties**.

## RAM - Random Access Memory

Random Access Memory (RAM) is used for setup and testing procedures located in the ScribeSmart Controller. All RAM programs are lost when you power cycle the controller.

## Remove Group, Remove Object

Removal of the Group or Object is immediate. Make sure that you select the correct Group or Object to remove BEFORE you make this selection.

**ScribeSmart Solution**

ScribeSmart is a solution that provides a graphical Windows™ application, and the ScribeSmart Controller. The ScribeSmart solution provides the following features:

- Real-time beam positioning and laser control independent of a PC
- Mark on the Fly Capability
- On-board memory (Flash and RAM) with 254 program capability (64 program binning)
- Interactive Program Binning (see “What is Binning” section for more details)
- Real-time clock for time and date coding
- Automatic date marking
- Automatic time marking
- Automatic serial number marking
- Handshaking with external equipment
- Opto-isolated Laser interface

**Serial Number Object**

One of five types of objects used in ScribeSmart. You are allowed to create only one serial number object in a job.

**Status Bar**

Provides a short description at the bottom of each menu option when selected.

**Tab Pages**

Tab pages organize the parameters of a job, group, or object into related functions. For example, Tab Pages organize a Text Object, into Text Parameters, Dimension Parameters, and Special Parameters.

To see a Tab Page, select a job, group, or object. Right-click on the selection, click Properties, and click a Tab Page to access the functionally related parameters.

**Text Object**

One of five types of objects used in ScribeSmart. You are allowed to create unlimited number of text objects in a job.

**Time Object**

One of five types of objects used in ScribeSmart. You are allowed to create only one time object in a job.

**Time Parameters**


The controller’s time is set in the ScribeSmart Configuration menu, which is located in the Control Panel. The **Time Parameters** tab allows you to control the properties of the time object such as the time format:

- |   |            |
|---|------------|
| ▪ Default – Both boxes are checked                                | 13:10:55   |
| ▪ 24 hours format - Displays hours as 1-24 digits in hh:mm format | 13:10      |
| ▪ Show seconds - Displays seconds as two digits                   | 01:10:55PM |
| ▪ No boxes checked  | 01:10PM    |

**Title bar**

Displays the name of the current program file that you are using in ScribeSmart.

**Toolbar**

Provides quick access to the most basic menu options in ScribeSmart. For example, to create a new document, click the new icon  .

**Tree View**

The Tree View list contains the ScribeSmart Job, Group, and Object hierarchy. The Tree View includes one job, one or more groups, and one or more objects in each group.

**Use Mark on Begin**

When **Use Mark on Begin** is selected, the ScribeSmart Controller is in a wait state until it receives the input signal (Begin Mark) from the external equipment source to start marking.



**Vector Object**

One of five types of objects used in ScribeSmart. You are allowed to create unlimited number of vector objects in a job.

**Wait Distance**

The distance that is used to delay the job marking after the **Begin Mark** signal is received. The ScribeSmart Controller waits until the conveyor moves the defined distance and then starts to mark.

**Zoom Buttons**

Use the Zoom In  and Zoom Out  buttons located on the toolbar when you need to zoom the entire field view.