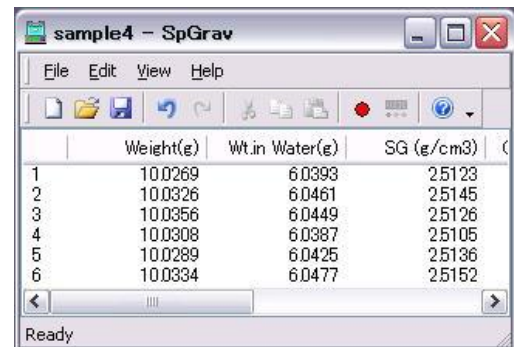


This SpGrav automatically classifies and aggregates a large amount of analytical data from Electronic Densimeter/Precious Metal Tester that is output to external interface.

The aggregated data is displayed in HTML with the minimum, maximum, average and standard deviation values.

The data can be easily copied to the clipboard making it possible to paste it to software such as Excel.



The screenshot shows a window titled "sample4 - SpGrav" with a menu bar (File, Edit, View, Help) and a toolbar. Below the toolbar is a table with the following data:

	Weight(g)	Wt.in Water(g)	SG (g/cm3)
1	10.0269	6.0393	2.5123
2	10.0326	6.0461	2.5145
3	10.0356	6.0449	2.5126
4	10.0308	6.0387	2.5105
5	10.0289	6.0425	2.5136
6	10.0334	6.0477	2.5152

The status bar at the bottom of the window says "Ready".

- [How to Connect to your Computer](#)
- [Installation and Initialization Settings](#)
- [Menu Bar Operation](#)
- [Electronic Densimeter Manipulation](#)
- [Display Items Settings](#)
- [Script Options](#)
- [Report Settings](#)
- [Script Details](#)

How to Connect to Your Computer

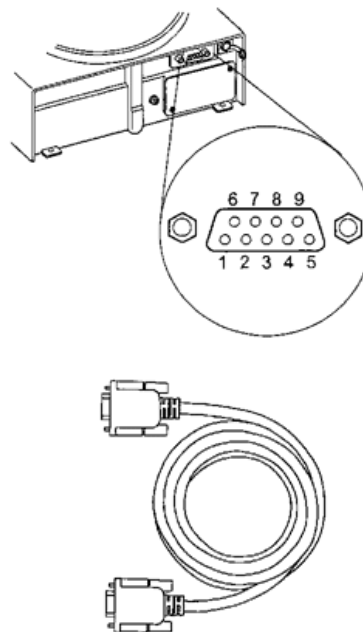
Use an RS-232C interface to connect to your computer using cables.

Preparation

- 1 Electronic Densimeter/Precious Metal Tester
- 2 RS-232C Interface
- 3 RS-232C Straight Cable
- 4 Windows XP/Vista/7 Computer

In case your computer does not have an RS-232C interface,

- 5 USB<->RS-232C Serial Conversion Adapter



[Please contact e-mai](#)

Installation and Initialization Settings

First, please open the SpGrav Installation Program (SpGravSetUp.exe) below and save it to a location such as the desktop.

[SpGrav Installation Zip File \(SpGravSetUp.zip\)](#)

[SpGrav Installation Program \(SpGravSetUp.exe\)](#)



Double click on the SpGrav Installation Program that you downloaded to start the program.

Having followed the onscreen directions and installing, SpGrav will appear on the start menu and the desktop.

When you start SpGrav after installation, you must select the initialisation settings for both the Electrical Densimeter and the Precious Metal Tester upon first connection.

You can change your settings from Menu Bar [View][Display Settings] [To Default], even after the settings are finished to display these items you selected according to each equipment.

Items you select here are default, therefore they would be initialized.

Electrical Densimeter	Precious Metal Tester
Weight(g)	Weight(g)
Weight in water(g)	Weight in water(g)
Specific gravity(g/cm3)	Gold(K)
Volume(cm3)	Platinum(Pt)
Error of Sp.Gr.	Silver(1000)
Date	White Gold(K)
Notes	Specific gravity(g/cm3)
	Date
	Notes



Next, upon executing this program for the first time, set up communication devices connected to the RS-232C interface.

You can also change the settings from Menu bar [Edit][Serial Device Settings] later.

To choose a connection device, select one from available communication devices connected to the Electrical Densimeter.

In order to confirm the connection, press the [ON/OFF] button below.

It is usually fine to select [Default]. However, if you change the settings of the Electrical Densimeter, you need to adjust the settings accordingly.

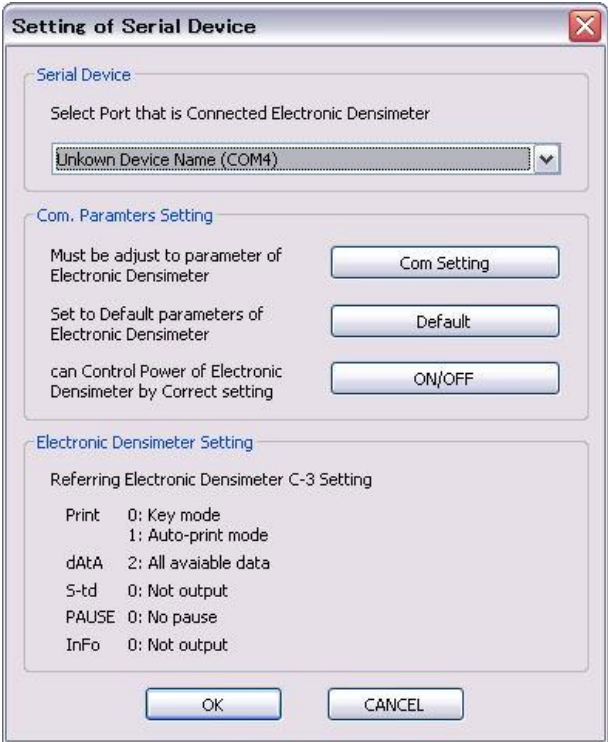
You can also test the connection settings by pressing the [ON/OFF] button.

You must set up the Electrical Densimeter settings from the Electrical Densimeter in order to select output types of the data and output timing to the external interface.

This program can not aggregate without the proper settings.

You usually need to select the Initial Setting[C-3][Print] in terms of method of usage.

C-3 Set up for output-1	Print Data outout mode	0	Key mode	Press the [B] key to capture the data.
		1	Auto- print mode	Capture the data automatically after measurement.
		2	Stream mode	It is unavailable.



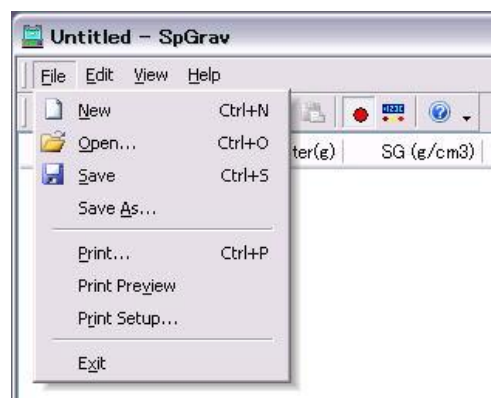
In terms of Precious Metal Tester, if you wanto to change the displayed measurement results by pressing the [A]key , it would be useful to select the [C-3][Pint][0:Key mode] to capture the data by pressing the [B]key with your own timing.

Menu Bar Operation

File

- | | |
|---------|---------------------------|
| New | Create a new document |
| Open... | Open an existing document |
| Save | Save the active document |

SaveAs...	Save the active document with a new name
Print...	Print the active document
Print Preview	Display full pages
Print Setup...	Change the printing options
Exit	Quit the application



Edit

Undo	Undo the last action
Redo	Redo the previously undone action
Cut	Cut the selection and put it on the Clipboard
Copy	Copy the selection and put it on the Clipboard
Paste	Insert Clipboard contents
New Data	New Data Entry
Delete	Erase the selection
Select All	Select the entire document
Receive Data	Receive the data from the connected Electrical Densimeter.
Device Setup	Select a device connected to the Electrical Densimeter. Installation and Initialization Settings
Device Control	Operate the connected Electrical Densimeter by monitoring it. Electronic Densimeter Manipulation

View

Toolbars and Docking Windows	Set up the toolbars, the Menu and so on.
Status Bar	Show or hide the status bar
Items Setup	Set up the display items. Display Items Settings
Script Option	Set up numerical values used for script. Script Options
Make Report	Display the aggregated data in HTML.
Report Setup	Set up user items of Reportlisted above. Report Settings

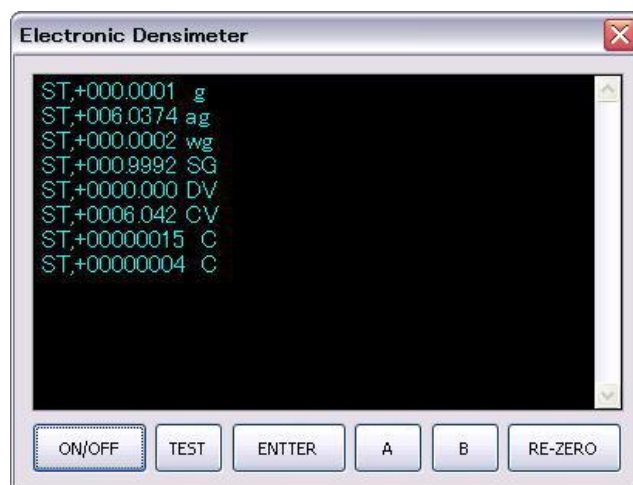
Help

Online Help	You can see this INSTRUCTION MANUAL.
About SpGrav...	Display program information, version number and copyright

Electronic Densimeter Manipulation

You can operate the connected Electrical Densimeter in this dialogbox. And also you can confirm data from Electronic Densimeter that is output to external interface directly.

ON/OFF	Turn ON/Off the power of Electrical Densimeter.
TEST	Output the displayed data of the weight results.
ENTER	Follow the Specific gravity measurement procedure
A	Change the display of Specific gravity measurement results.
B	Outout measurement results in case that you select [C-3][Print][0:Key mode] of the Electrical Densimeter.
RE-ZERO	Return the weight to zero.

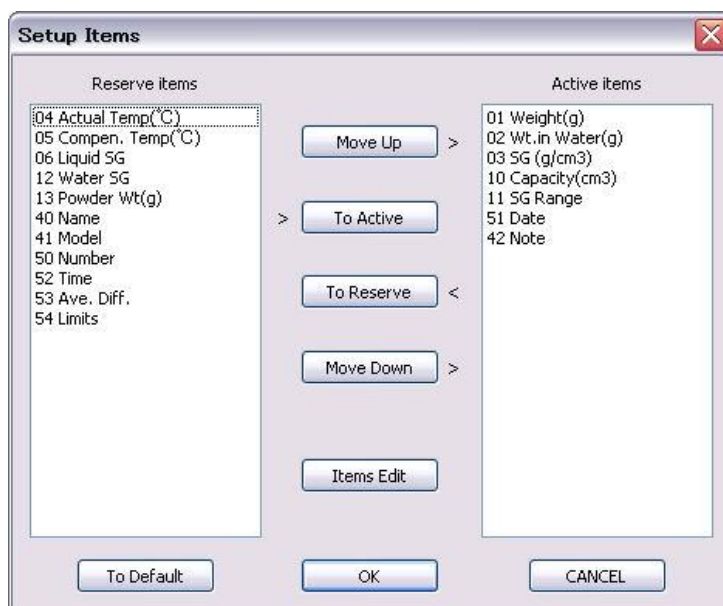


Setup the display items here. Choose items that you want to add from [Reserve items] on the left, and click on the [To Active] button to display the items you choose on [Active items] on the right.

You can arrange an order of the display items to select one item from [Active items] by clicking on the [Move up/down] button.

You can create new items and change items names to click the [Items Edit] button. Please see below for more details.

You can initialize the settings of items you selected in the [Installation and Initialization Settings] by clicking on the [To Default] button.

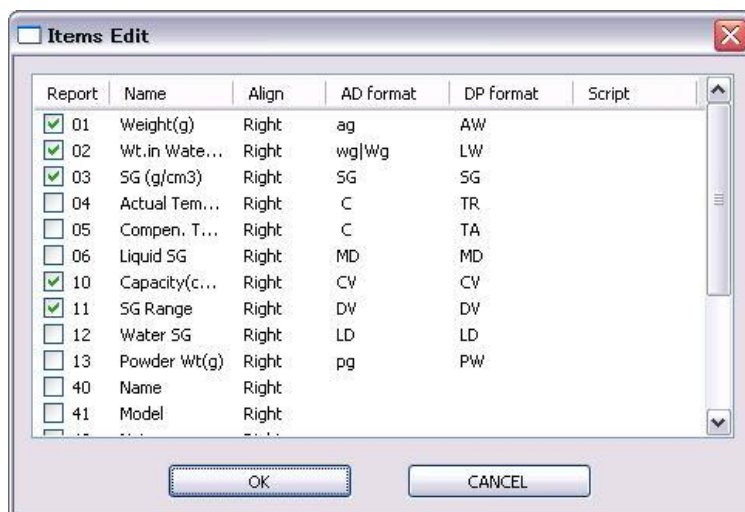


You can edit items details to click on the [Items Edit] button after the [Display items edit] dialogbox shows up accordingly.

Checks you put on the [Report] would be items aggregated in the [Make reports].

You can edit to double click on the [Name] or its character strings.

Report	Add on items list of the [Make report]. The numbers written on its right is able to be referred at Script's [\$n].
Name	It is a character string of displayed items name.
Align	Please select from Left/Right/Center.
AD Format	Choose the codes sent by Electrical Densimeter.
DP Format	Choose the codes sent by Electrical Densimeter.
Script	You can choose an easy carriculation. Script Details



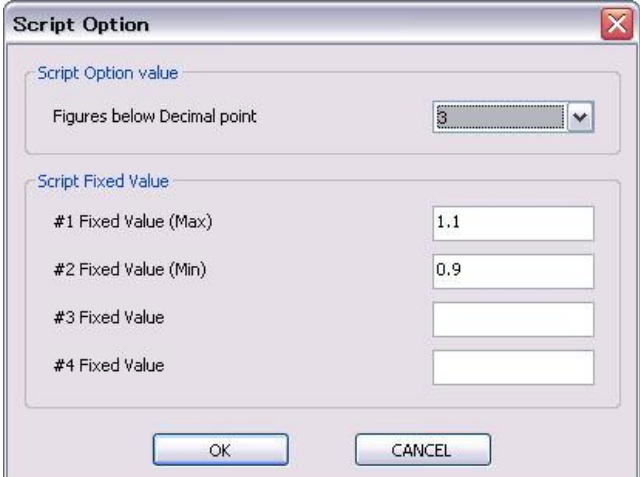
It is preferable just to change [Report]'s checks, since you do not have to change this settings usually.

Please be careful when you change the settings of AD/PD format's codes, there would be possibilities of failing to capture the data.

Script Options

Specify the number of decimal places of the script results in the [Make reports]. Set up values such as #1 referred in script.

#1 and #2 are the script [limits] set up as default. And they are referred as the maximum, minimum.



Script Option

Script Option value

Figures below Decimal point: 3

Script Fixed Value

#1 Fixed Value (Max): 1.1

#2 Fixed Value (Min): 0.9

#3 Fixed Value:

#4 Fixed Value:

OK CANCEL

Report Settings

You can edit items displayed in the [Make reports]. You can edit a character string that you want to by double clicking on.

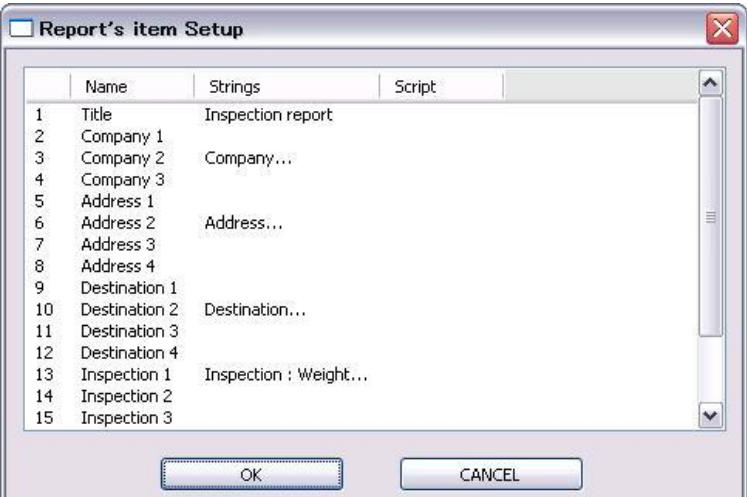
Name	Items name decided by you.
Strings	You can specify that character strings are displayed in the [Report]. And also you can use HTML tags directly.
Script	You can choose an easy carriculation. Script Details

Examples of HTML Tags's diplayed character strings.

Example 1 : Insert an image into the report.

Example 2 : Display the company's name's font size bigger.

Company Name



Report's item Setup

	Name	Strings	Script
1	Title	Inspection report	
2	Company 1		
3	Company 2	Company...	
4	Company 3		
5	Address 1		
6	Address 2	Address...	
7	Address 3		
8	Address 4		
9	Destination 1		
10	Destination 2	Destination...	
11	Destination 3		
12	Destination 4		
13	Inspection 1	Inspection : Weight...	
14	Inspection 2		
15	Inspection 3		

OK CANCEL

Script Details

You can insert the data such as an easy carriculation, the date and the time that are specified in the [Displayed items edit] and the [Report items settings].

Script items set up as default

serial number	num	Plus 1 to the former number when the new date is added.
Date	date	The time will be inserted when the new date is added.
Time	time	The time will be inserted when the new date is added.

Number	Date	Time	Note
1	12/09/11	12:55:59	
2	12/09/11	12:57:06	
3	12/09/11	12:57:27	
4	12/09/11	12:57:53	
5	12/09/11	12:58:18	
6	12/09/11	12:58:48	
7	12/09/11	12:59:12	
8	12/09/11	12:59:47	
9	12/09/11	13:00:27	
10	12/09/11	13:00:52	

mean difference	\$3-ave(3)	Every after the data is added, carriculate the mean difference of \$3(specific gravity values).
limits	#1<\$3?"Hi": (#2>\$3?"Lo":"OK")	Insert Hi/OK/Lo after comparing \$3(specific gravity values) with [Display items options]#1(MAX),#2(MIN).

The list of functions and operator symbols that can be used in the script.

Operator symbols	manual	examples
sin(), cos(), tan()	trigonometric function	sin(180 * pi/ 360)
sqrt(), log(), exp(), abs()	square root, logarithm, index, absolute value	log(1000)
max(n), min(n), ave(n)	the maximum, minimum, average of (n)	ave(3)
sum(n), std(n), count(n)	total value, standard deviation, total data quantity	sum(3) / count(3)
round(v, n)	Display the number rounded off to the (n) decimal places.	round(1000.00, 2)
num, date, ldate, time, ltime	serial number, the date, the time	date
pi, e	Napier's constant	cos(pi)
\$n	Refer to the (n) items.	\$3 + 1000
#n	Script Options	\$3 > #1 ? "Hi" : "Low"
"str"	character strings	"OK"
^	exponentiation	10 ^ 3
* / %	multiplication, division, surplus	\$3 * 2
+ -	addition, subtraction	\$3 + 100
< <= <= <	relational operator	\$3 > 10 ? "HI" : "LOW"
== !=	relational operator	\$3 == 1.0
&&	logical conjunction	\$3 > 10 && \$3 < 30 ? "OK": "BAD"
	logical disjunction	\$3 < 10 \$3 > 30 ? "ERR" : \$3
n ? a : b	Refer to the requirement.	\$3 < 2.0 ? "LOW" : \$3
,	enumeration	1 + 3, 2+ 4

Main items number refered in the [\$n]

\$1	Weight	\$6	Weight	\$20	Gold
\$2	Weight in water	\$10	Volume	\$21	Platinum
\$3	Specific gravity	\$11	Error of Sp.Gr.	\$22	Silver
\$4	Measured water temperature	\$12	Density of liquid	\$23	WG
\$5	Compensated water temperature	\$13	Powder weight	\$24	Fineness

Please refer to the [Display][Display items settings][Items edit] of the menu for more details.