



PSSPC Pro. User Guide
Version 2.5.2

May 2003 Edition

<http://practical-software.com>

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Features

Practical Software Statistical Process Control (PSSPC) Pro version is a SHAREWARE and provides the most necessary functions as following:

- Plot both control charts XBar/Range and Individual/Moving Range
- Selectable sample size for X-Bar/Moving Range chart plot between 2 to 25
- Plot Histogram chart
- Plot Scatter chart
- Plot Pareto chart
- Chart picture printing and export
- View the raw data
- Rich of statistical calculated parameters such Standard Distribution, UCL, LCL, CL, Est. Sigma, CpU, CpL, Cp and Cpk
- Chart zoom and scroll
- Mapping fields name for use with exiting user's database
- Support Microsoft® Access database formats since 97, 2000 and 2002
- Support accessing data from Microsoft® Excel Workbook file
- Support direct access to Microsoft® SQL Server
- Support ODBC
- Much more of statistical calculated parameters...

In addition, at first time installation, PSSPC Pro will allow you evaluate software for 45 days, after that time, You will need purchase it in order to continue use. Please visit our web site for how to upgrade at <http://practical-software.com>.

Hardware Requirement

- PC Pentium III 400 MHz or faster
- Memory 128 MB or more
- XGA (1024x768) Display card with 16 bits color quality or higher
- XGA (1024x768) Monitor CRT 15" (CRT 17" or LCD 15" is preferable)
- HDD 10GB or greater
- Keyboard and PS/2 mouse

Software Requirement

- Microsoft® Windows® 98, ME, NT4 with SP6, 2000 Prof., XP Home or XP Prof.
- Microsoft® Data Access Components (MDAC) Version 2.7 or later

Software Installation

Assuming your system is already installed either Windows OS as above. In addition, you may need to update the MDAC to latest version (this software is available and free download from Microsoft web site at URL <http://www.microsoft.com/data>)

Unzip file PSSPC.ZIP then run the SETUP.EXE program so you will see the screen like Figure 1 then follow the setup instruction.

After finished software installation then copy the sample database and supporting files that enclosed in ZIP file \Sample*. * into C:\ drive.

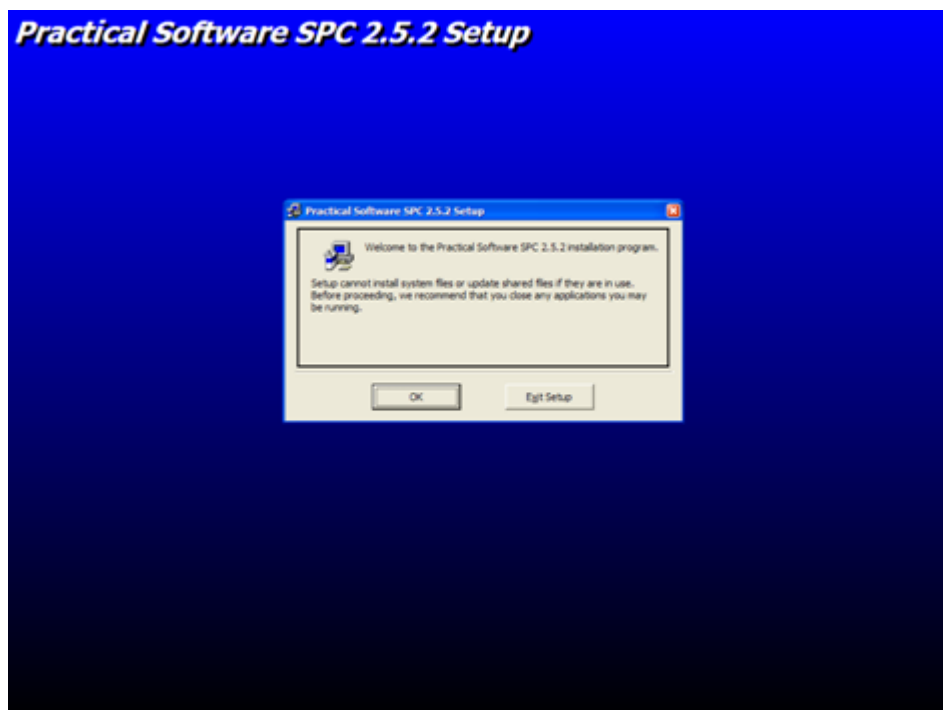


Figure 1 PSSPC Setup Screen

Uninstall Software

Click **Start**→**Control Panel**→**Add or Remove Programs** and select **Practical Software SPC** then click button Change/Remove.

Getting Start

Prepare your Database

The data to be generate SPC charts may come from many sources. There are whether on-line or off-line direct entry from another computer, machine, tester and so on. However, the data (parameters) type must be variable (number) not attribute or text.

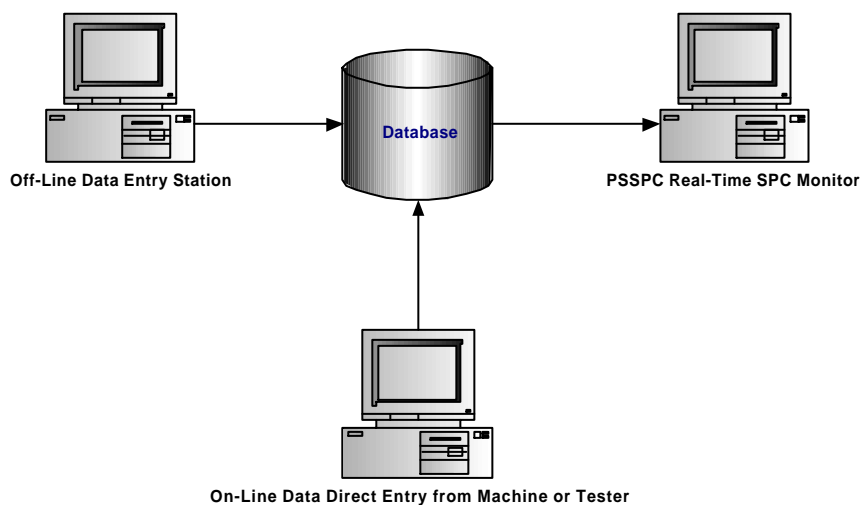


Figure 2 SPC Source Data

The following sample is used Access database for explanation. In case of use the others database engine such as SQL Server. They will be similar works. However, if you are end user, you might need help from relevant people in your company.

A table in database must contain the required fields as Figure 3 (TestID, SerialNumber, ATEID, TestStartTime, PassFail) except parameter fields name, you can assign any name you like (below sample is assigned name Defects, BentPins, Misaligned, Broken, Misc and Missing) also these parameter fields should define the default value as 999 or -999 so that if any error occur such as data missing or incompletes during insert new data record then PSSPC will automatically ignore these numbers.

There is a recommendation; your table should have at least one unique field (Access call primary key). The sample is shown **ID** field name as primary key but you can give any name you like.

In addition to work with Microsoft® Excel Workbook, PSSPC will treat the work sheet as database table by the first row of each sheet will be data field name.

However, you may use PSSPC with your current database without modification. Please see details in section **Work with your current database**.

PSSPC 5 required fields

Field Name	Data Type
ID	AutoNumber
TestID	Text
SerialNumber	Text
ATEID	Text
TestStartTime	Date/Time
PassFail	Text
Defects	Number
BentPins	Number
Misaligned	Number
Broken	Number
Misc	Number
Missing	Number

General	
Field Size	Double
Format	
Decimal Places	Auto
Input Mask	
Caption	
Default Value	-999
Validation Rule	
Validation Text	
Required	No
Indexed	No

Figure 3 Database Structure

For improve speed of data query, you may need to set the index to each key fields as Figure 4.

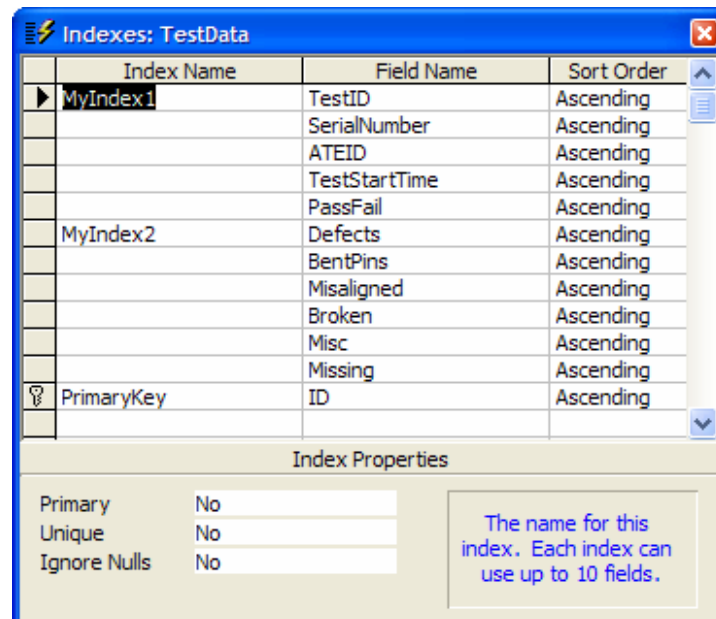


Figure 4 Define Index

Work with your current database

PSSPC have a feature call mapping fields that very helpful for works with your existing database. As earlier explained, PSSPC need 5 data fields so that to create the menu as Figure 3 as below.

- TestID keep type of testing or sampling (see TestID in ATE.INI)
- SerialNumber serial number of each unit
- ATEID Testing or sampling station
- TestStartTime Date/Time of testing or sampling
- PassFail Results of testing or sampling
- *PassIdentical* To identify the unit is that PASS or FAIL

The last one is not field name but it is a value for identical the test or sampling results. It not specified the default value is 'PASS'.

Suppose you have table with data as Figure 5 so you need to put the following text into file PRODUCTS.INI so the mapping data will be following:

```
[Sample Product]
;It is a table name if use Access database but will be a sheet name if use _
;Excel workbook
TableName=TestData
;start mapping fields name here!
ATEID=StationID
SerialNumber=SN
TestID=Type
TestStartTime=Time
PassFail=Pass
PassIdentical=-1
```

```
[Sample Product Spec]
;#DBFieldName, <Min>, <Max>, <Target>, <Unit>, <TestGroupName>, TestParameterName
1=X_Data, 47.5, 48.5, , , My X Data
```

```

2=Y1_Data, 47. 5, 48. 5, , , , My Y1 Data
3=Y2_Data, 47. 5, 48. 5, , , , My Y2 Data
4=<EOT>

```

More details of how to create PRODUCTS.INI please see the below section Create supporting files.

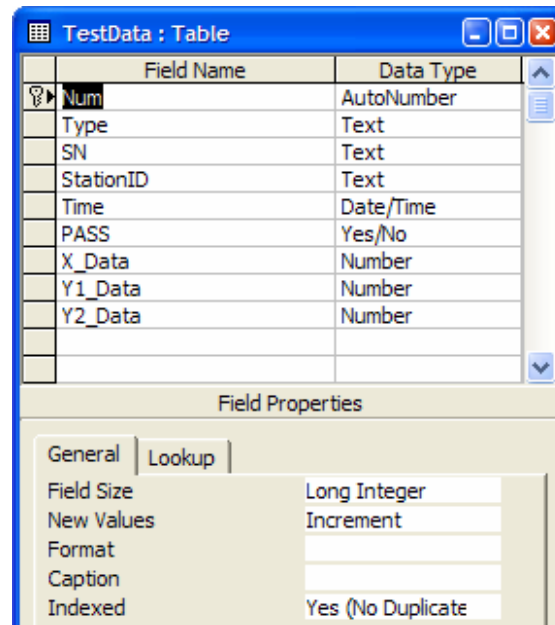


Figure 5 Sample user data table

Create supporting files

There are two INI files, which required for PSSPC program, ATE.INI and PRODUCTS.INI, which may place into any location in your hard drive. Both files are simple text file that mean you can create them from many editor program such Notepad, also the sample INI files are enclosed in ZIP file as well.

Sample ATE.INI

[ATE Configuration]

TestID=Production, Reference, Retest, Rework, Evaluation, Repair

Alternatively, you can define any TestID that appropriate in your works.

TestID=MySamplingType1, MySamplingType2, MySamplingType3, MySamplingType4
TestProduct=Sample Product

[Database]

DatabaseName=c: _TestSPC_Access_Pareto\TestData. mdb

And for accessing the Excel Worksheet file just change the file extension like below as well as above TableName, It will be a sheet name of this work book.

[Database]

DatabaseName=c: _TestSPC_Access_Pareto\TestData. xls

TestID that available for selection (see Figure 6), each item will separate by comma. This is a filter key, for instance, if you choose **Production** PSSPC will select only records that present the word **Production** in field TestID (or other filed name if you used the field mapping feature) of database. Leave it blank if you not prefer to filter them.

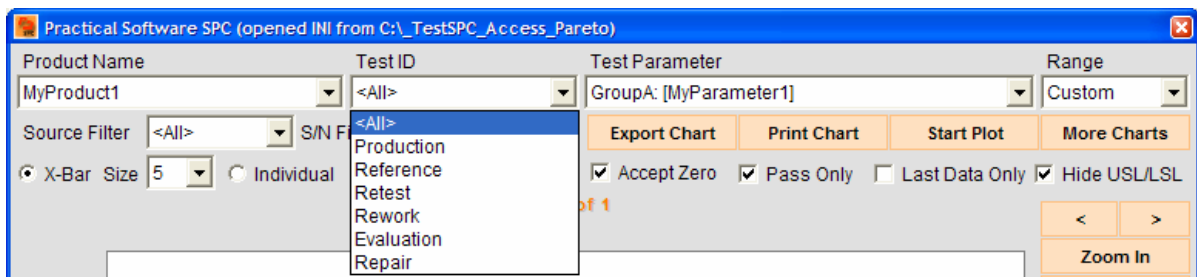


Figure 6 Test ID List Box

TestProduct that available for selection (see Figure 7), each item will separate by comma. You can define any your preferable name. However, the product name in ATE.INI must conform to product name in PRODUCTS.INI.

For instance, if you prefer to define product name as **MyProduct1** and **MyProduct2** then ATE.INI and PRODUCTS.INI will be following:

```
; For ATE. INI
[ATE Configuration]
TestID=Production, Reference, Retest, Rework, Evaluation, Repair
TestProduct=MyProduct 1, MyProduct 2
```

```
; For PRODUCTS. INI
[MyProduct 1]
Table Name=MyTable 1
```

```
[MyProduct 2]
Table Name=MyTable 2
```

```
[MyProduct 1 Spec]
1=Parameter1, 0, 1, , VDC, GroupA, MyParameter1
2=Parameter2, 1, 10, , mADC, GroupA, MyParameter2
3=Parameter3, 1, 100, , dB, GroupA, MyParameter3
4=<EOT>
```

```
[MyProduct 2 Spec]
1=Parameter1, -1, 0, , , GroupA, MyParameter1
2=Parameter2, -10, 1, , Ohms, GroupA, MyParameter2
3=Parameter3, -100, 1, , dBm, GroupA, MyParameter3
4=<EOT>
```

In addition, if you wish to open another INI, select <Open INI> then the open file (INI) dialog box will show as Figure 8.

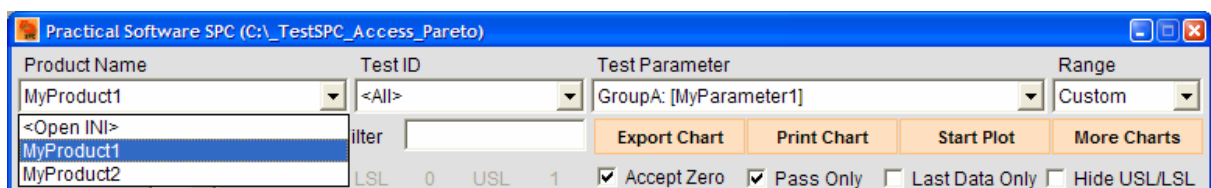


Figure 7 Product Name List Box

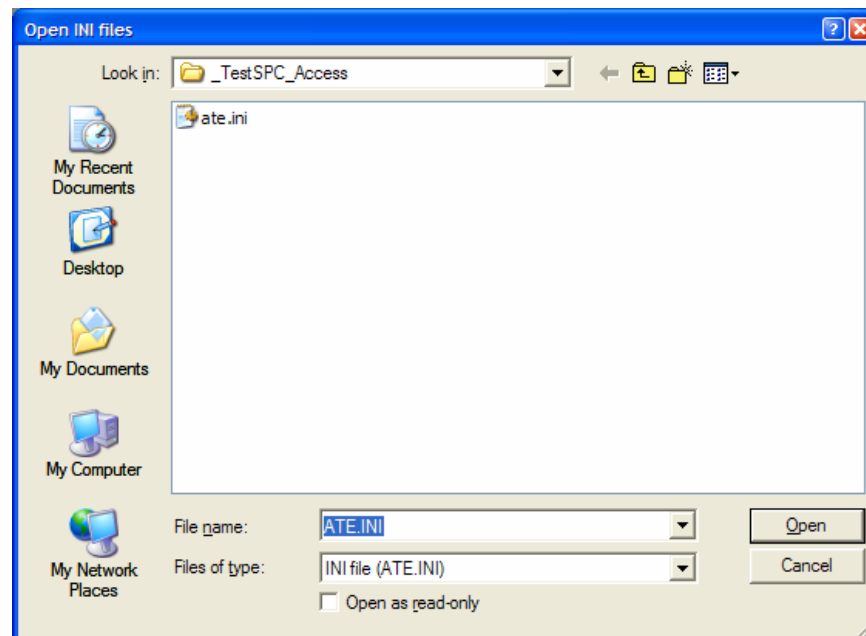


Figure 8 Open INI Dialog Box

TestParameter vary by when you select the Product Name, PSSPC will get the test parameters from PRODUCTS.INI. For instance, if you select product name **Sample Product** PSSPC will look at PRODUCTS.INI in section name [**Sample Product** Spec] then extract and put the available test parameter into list box.

Furthermore, PSSPC will keep the Min, Max values so that become to LSL, USL for calculation the relevant statistical parameters also the table name will pick from section [**Sample Product**]/TableName as well.

[Database] section, keep the information how PSSPC communicate to database.

For using Microsoft® Access Database and Excel Workbook

; sample use Access database

[Database]

DatabaseName=c: _TestSPC_Access_Pareto\MySPCData. mdb

Or

DatabaseName=c: _TestSPC_Access_Pareto\MySPCData. xls

Alternatively, if not specified full path PSSPC will try to get it from same directory that kept INI files.

DatabaseName=MySPCData. mdb

Or

DatabaseName=MySPCData. xls

For using Microsoft® SQL Server without Data Source Name (DSN-Less)

[Database]

UserName=MyLogi nName

Password=MyPassword

ServerName= MySQLServer

DatabaseName=MyDatabaseName

For using ODBC with DSN

[Database]

UserName=MyLogi nName

Password=MyPassword

DataSourceName=MyDSN

Create a Data Source Name (DSN)

This section will help you to create a System Data Source Name (DSN) for Microsoft SQL Server on your local machine.

Open **Start→Settings→Control Panel** and double click on icon ODBC Data Source (32bit).

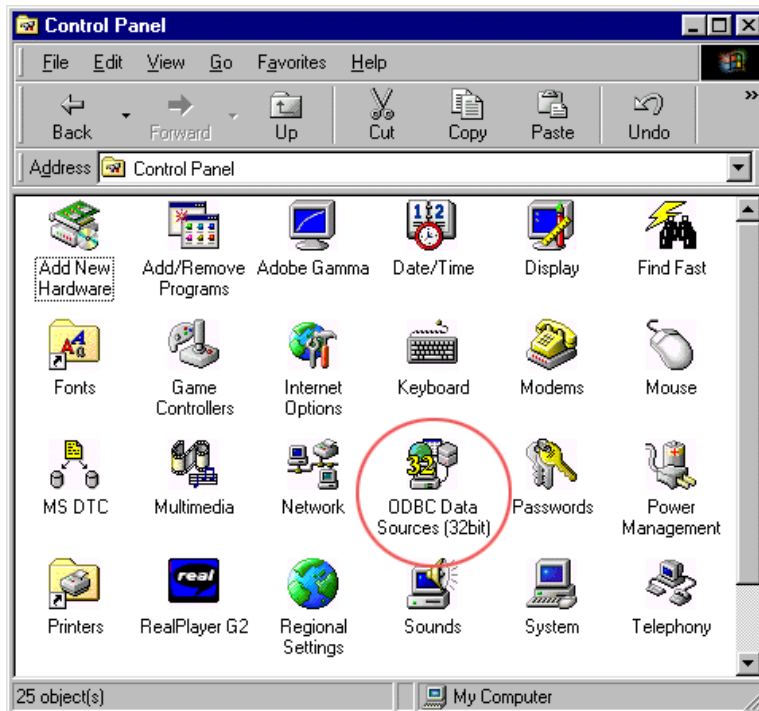


Figure 9 Control Panel

Now you will see ODBC Data Source Administrator window as shown Figure 10 Then select System DSN tab, and click Add.

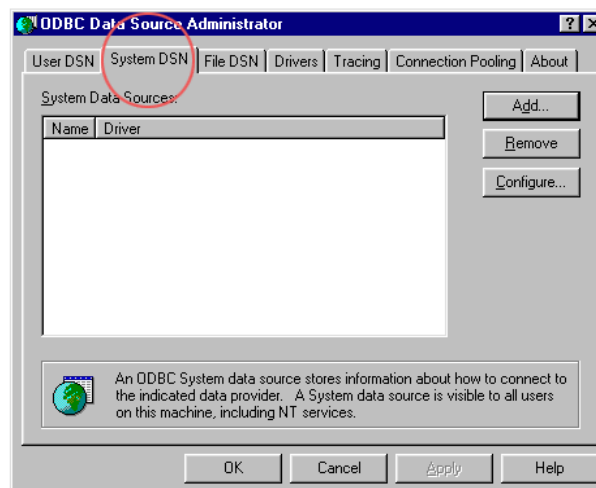


Figure 10 ODBC Data Source Administrator

To create a new DSN for a Microsoft SQL Server, Select SQL Server driver (in case of another database engine, select appropriate driver instead) and click Finish.

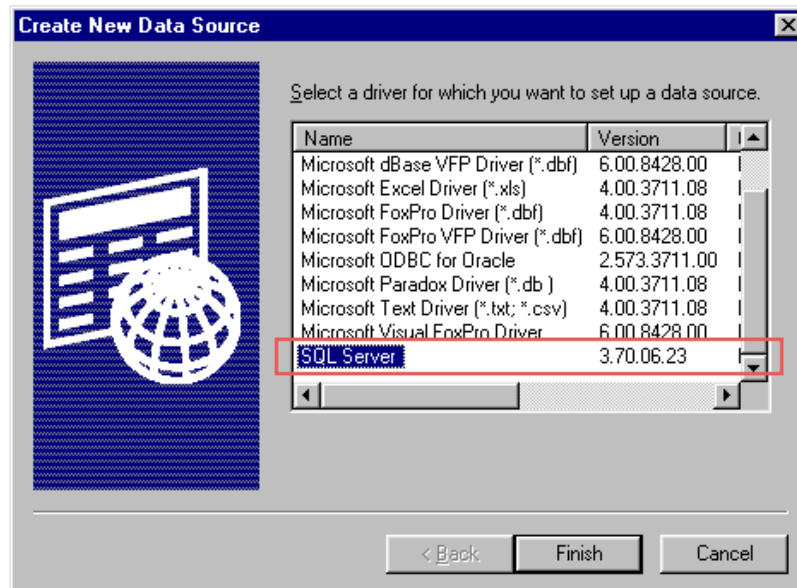


Figure 11 Select ODBC Drivers

Enter the name you like to use for DSN (this sample is used MyDSN) and then choose SQL Server to which you want to connect. If server is located on the same machine, you can choose Local. If Server is not located on the same machine then you need to enter either the IP Address or computer name to connect to that Server. This step you may get help from your network administrator.

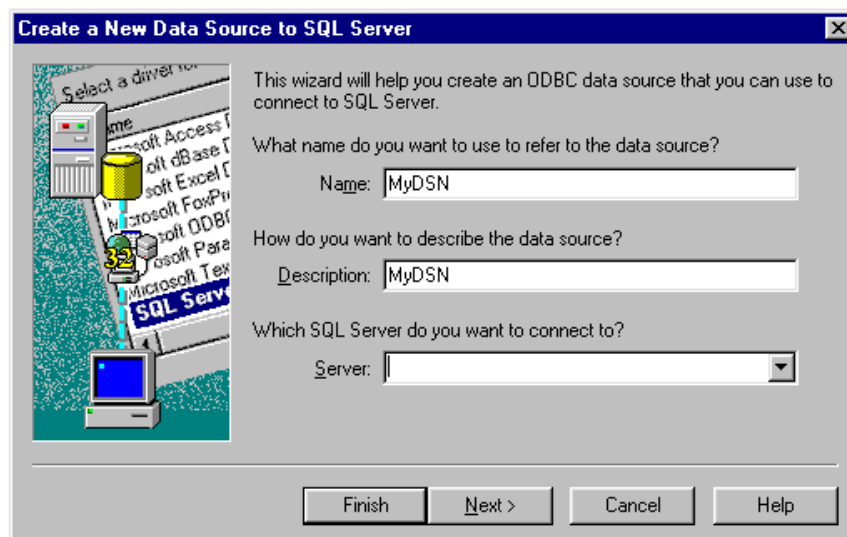


Figure 12 Enter Data Source and Server name

Choose authentication method. Enter your Login ID and Password to connect to SQL Server. Again, this step you may get help from your network administrator. Click Next two time to skip next Screen, then Click Finish.

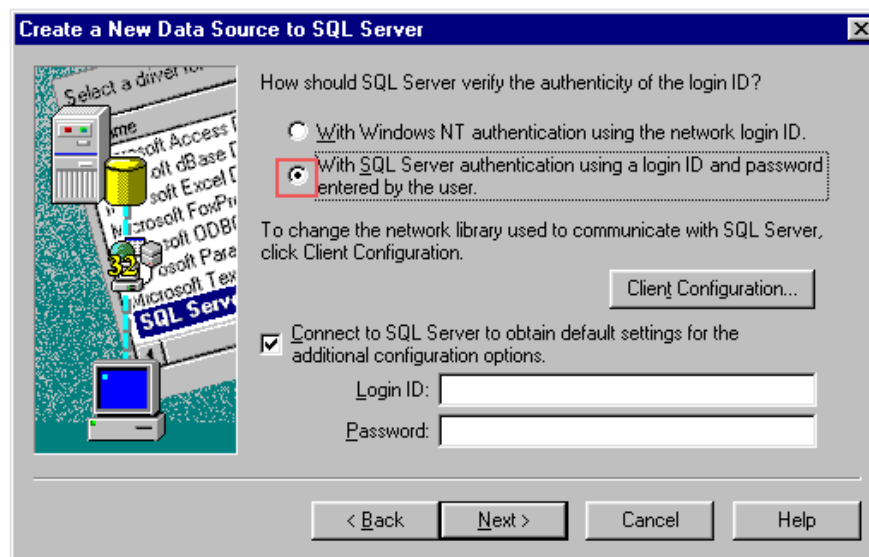


Figure 13 Verify authenticity

Sample PRODUCTS.INI

The following information will create Test Parameter list as Figure 14

```
[Sample Product]
;It is a table name if use Access database but will be a sheet name if use
;Excel workbook instead
TableName=TestData
ParetoTitleX=Failure Symptoms
```

```
[Sample Product Spec]
;Num=[DBFieldName], [Min], [Max], [Target], [Unit], [GroupName], ParameterName
1=Parameter1, 0, 1, , VDC, GroupA, MyParameter1
2=Parameter2, 1, 10, , mADC, GroupA, MyParameter2
3=Parameter3, 1, 100, , dB, GroupB, MyParameter3
4=<EOT>
```

Where the format for specification will be:

```
Num=DBField dName, [MinSpec], [MaxSpec], [Target], [Unit], [GroupName], ParameterName
```

Note: [is an optional]

And must finish by;

```
Num=<EOT>
```

- **Num** is sequence number 1, 2, 3, 4, 5 and so on
- **DBFieldName** is a unique field name that defined in table of database
- **MinSpec** is lowest value for acceptance
- **MaxSpec** is highest value for acceptance
- **Target** is expect value for result
- **Unit** such Amps, Volts, Ohms, Hz, dB etc.
- **GroupName** is group name
- **ParaName** is parameter name
- **<EOT>** is End Of Test flag (must be in last Num)

Note: If you not specify MinSpec and MaxSpec values, then some statistical parameter such CpK will be unavailable.

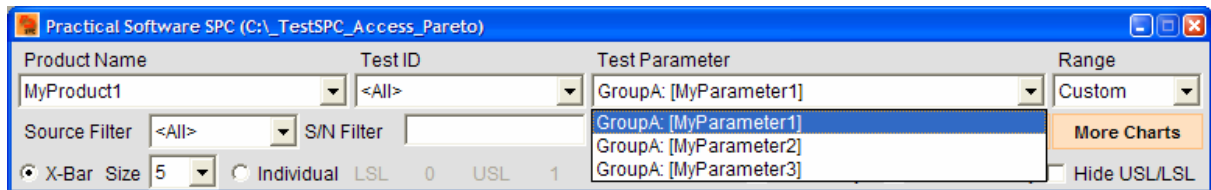


Figure 14 Test Parameter List Box

Using PSSPC X-Bar/Range and Individual/MR Chart

Run PSSPC program by click at **Start→ Programs→ Practical Software→ PSSPC**. If the first time runs, PSSPC will looking for location of INI files by show dialog box as Figure 8. Select the any location that you keep INI files. For instance, select INI from C:_TestSPC_Access_X-Bar then PSSPC Main Form will show as Figure 15.

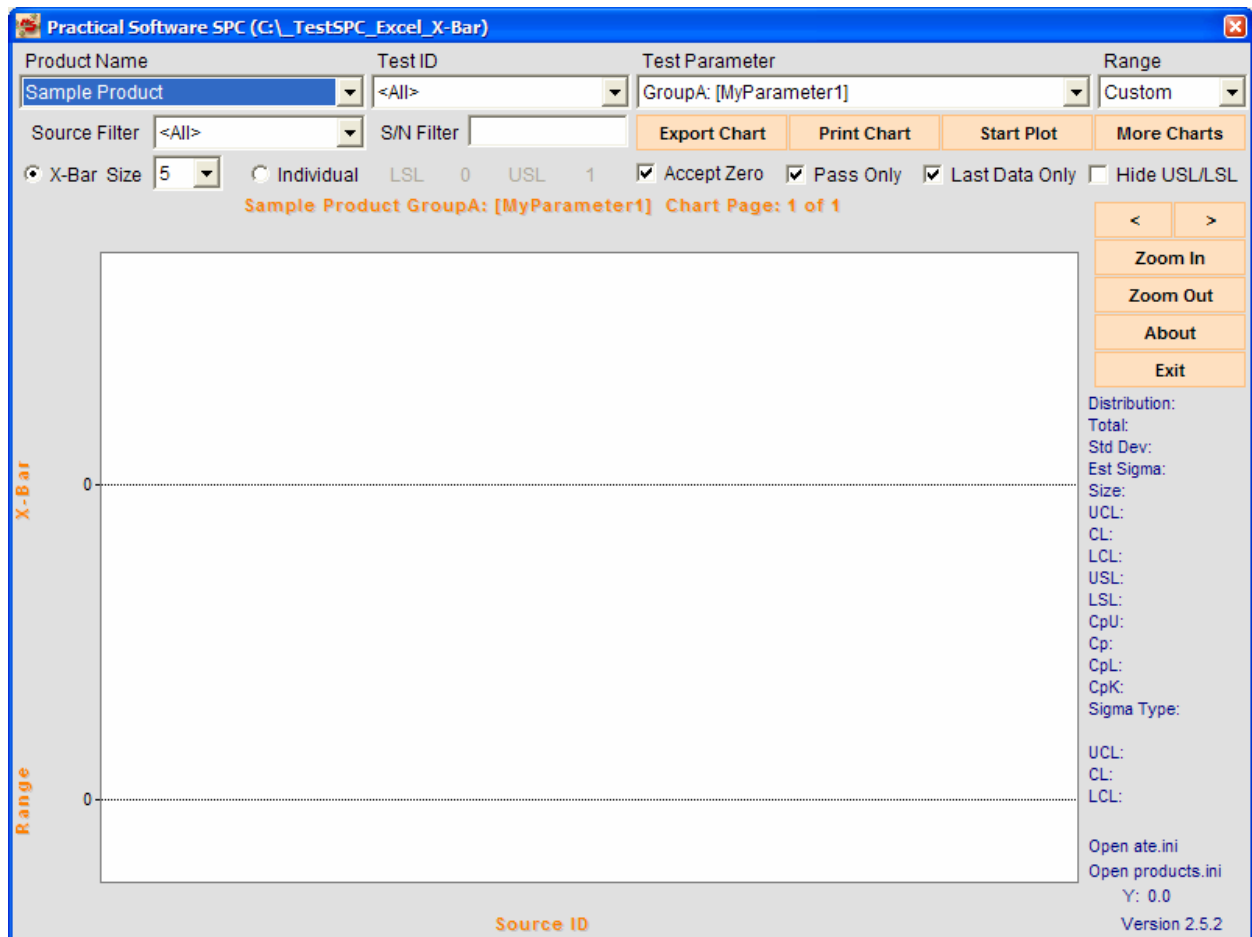


Figure 15 PSSPC Main Form

Next, however, the sample data is available on **July 1, 2002** so please select **Custom** in **Range** list box then select plot range as Figure 16.

Other options for Main form

- **Source Filter List Box**

PSSPC will grouping the data in field ATEID of database then put into Source Filter list box for selection so that to filter (select) only records that data in field ATEID is match with Source Filter. To select all sources, select '<All>'.

- **S/N Filter**

Select records only any part of data in field SerialNumber match with S/N Filter. To ignore this filter, just leave it blank.

- **Export Chart Button**

Export chart to PNG format.

- **More Charts**

Plot another charts such histogram, scatter or pareto.

- **Accept Zero**

Select when accept zero value from database record. Deselected will ignore it.

- **X-Bar/ Individual**

Select either chart type to XBar/Range or Individual/Moving Range. For X-Bar selected, you can choose a sample Size between 2 to 25.

- **Pass Only**

Select records only data in field PassFail is **PASS** or specified in *PassIdentical* from Products.INI file.

- **Last Data Only**

Select record only last data in same day and same serial number.

- **Hide USL/LSL**

Enable/Disable plot USL/LSL lines .

- **< >**

Move chart to previous page '<' and next page '>' also you can scroll chart by click the right button and drag left or right side over the chart.

- **Zoom In**

Enlarge chart also, you can zoom by drawing a rectangle around the chart area that want to see in detail.

Note: Dragging should be done from left to right while click and hold a left mouse button. Dragging in the opposite direction will be initial position (reset chart).

- **Zoom Out**

Compress chart.

- **Print Chart**

Print existing chart.

- **About**

Show Practical Software About form.

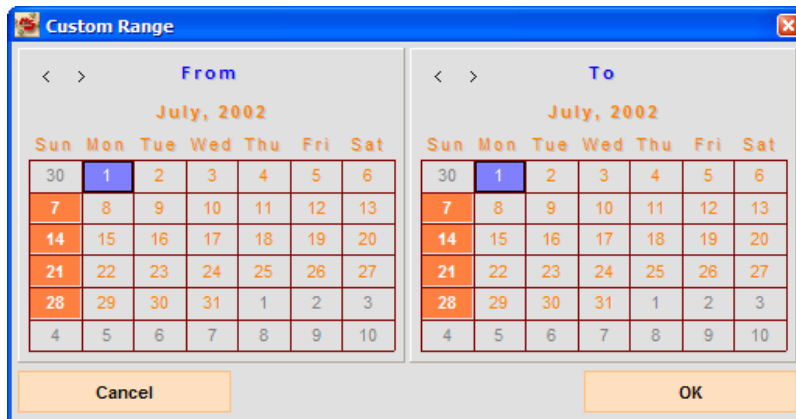


Figure 16 Custom Plot Range

Click Start Plot Button then you should see the SPC chart plot as Figure 17.



Figure 17 SPC X-Bar/Range Plot

To zoom chart by using mouse, click and hold left button over chart for start point and drag to right until reach to end point then release button.

To reset chart, click and hold left button over chart and drag to left side then release button.

To scroll chart by using mouse, click and hold right button over chart and drag to left or right side.

To see raw data for each point, click at Green Diamond over chart then you will see screen like Figure 18

Raw Data Viewer			
Reference	Value	Source	Date/Time
<input type="checkbox"/> 40063	0.961	ATE-907	07/01/2002 10:14 AM
<input type="checkbox"/> 24093	0.698	ATE-907	07/01/2002 10:14 AM
<input type="checkbox"/> 15110	0.478	ATE-907	07/01/2002 10:14 AM
<input type="checkbox"/> 19131	0.505	ATE-907	07/01/2002 10:14 AM
<input type="checkbox"/> 65933	0.667	ATE-907	07/01/2002 10:14 AM
<input type="checkbox"/> 16310	0.691	ATE-907	07/01/2002 10:14 AM
<input type="checkbox"/> 72700	0.352	ATE-907	07/01/2002 10:14 AM
<input type="checkbox"/> 81239	0.942	ATE-907	07/01/2002 10:14 AM
<input checked="" type="checkbox"/> 10249	0.028	ATE-907	07/01/2002 10:14 AM
<input checked="" type="checkbox"/> 69024	0.227	ATE-907	07/01/2002 10:14 AM
<input checked="" type="checkbox"/> 37302	0.614	ATE-907	07/01/2002 10:14 AM
<input checked="" type="checkbox"/> 31067	0.422	ATE-907	07/01/2002 10:14 AM
<input checked="" type="checkbox"/> 37054	0.571	ATE-907	07/01/2002 10:14 AM

Close

Figure 18 Raw Data Viewer

Using PSSPC Histogram Chart

Re-open INI from C:_TestSPC_Access_Scatter and click at *More Charts* button from Figure 19 then you will see form as Figure 20 and click Histogram button then Histogram chart will show as Figure 27.

Practical Software SPC (C:_TestSPC_Access_Scatter)

Product Name	Test ID	Test Parameter	Range
Sample Product	<All>	My X Data	Custom
Source Filter	S/N Filter	Export Chart	Print Chart
<All>		Start Plot	More Charts
<input checked="" type="radio"/> X-Bar Size 5 <input type="radio"/> Individual LSL 47.5 USL 48.5 <input checked="" type="checkbox"/> Accept Zero <input type="checkbox"/> Pass Only <input type="checkbox"/> Last Data Only <input type="checkbox"/> Hide USL/LSL			

Figure 19 More Charts

More Charts

Histogram	Pareto
Scatter	Close

☒ Separate Source

X-Axis: My X Data
 X-Source: ATE-900

Y-Axis: My Y1 Data
 Y-Source: ATE-909

Figure 20 Select Histogram Chart

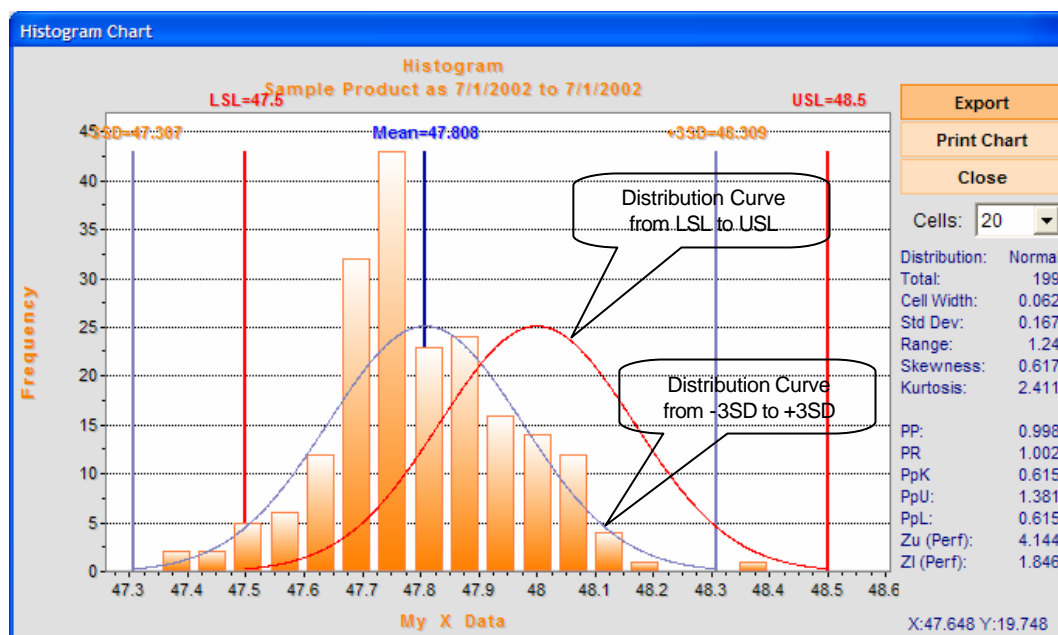


Figure 21 Sample Histogram Chart

Other options for Histogram form

- **Cells**
Set number of cells.
- **Print Chart**
Print existing chart.
- **Export Chart**
Export chart to PNG format.

To zoom chart by using mouse, click and hold left button over chart for start point and drag to right until reach to end point then release button.

To scroll chart by using mouse, click and hold right button over chart and drag to left or right side.

To reset chart, click and hold left button over chart and drag to left side then release button.

Using PSSPC Scatter Chart

For scatter chart, more features help you analyze the correlation between data parameter in same source or tester and opposite between sources or testers in same data parameter.

For instance, the correlation of 2 or more sources or testers. First, you should have a reference unit and test it with 2 testers. Suppose your reference serial number is 'GOLD'. Next, enter 'GOLD' in field S/N Filter as Figure 22 and click More Charts button.

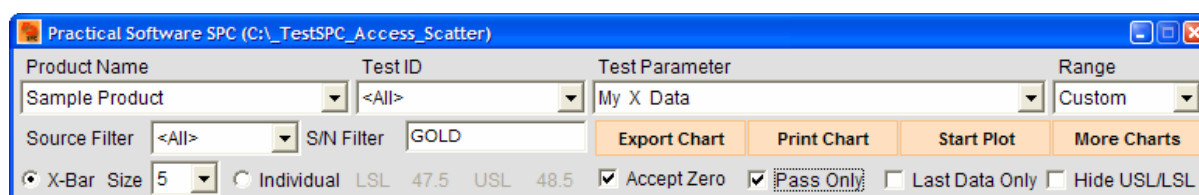


Figure 22 Select Scatter Chart

Check box **Separate Source** then select difference source with same data parameter as Figure 23. Click **Scatter** button the result will show as Figure 24.

In case of check box **Separate Source** is checked, PSSPC will ignore the source filter that present in Main form and use X-Source, Y-Source instead.

More Charts

Histogram Pareto

Scatter Close

☒ Separate Source

X-Axis: My Y1 Data
X-Source: ATE-909

Y-Axis: My Y1 Data
Y-Source: ATE-900

Figure 23 Select 2 Sources and same Data Parameter

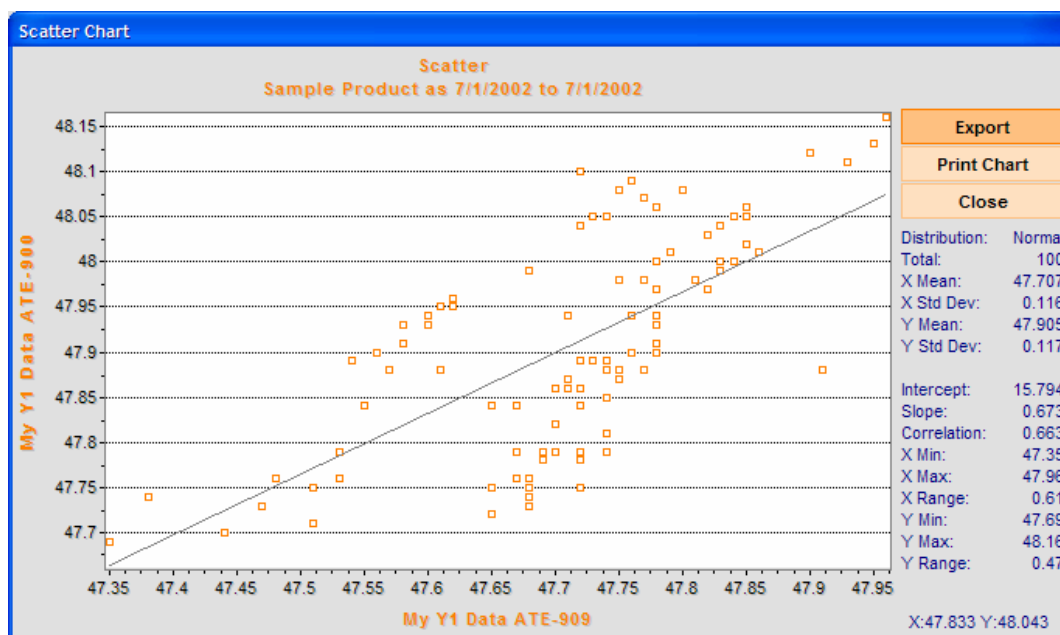


Figure 24 Sample Scatter Chart

To select difference test parameters with same source or tester (this may no need to filter the serial number). The new selection should be as Figure 25.

To zoom chart by using mouse, click and hold left button over chart for start point and drag to right until reach to end point then release button.

To scroll chart by using mouse, click and hold right button over chart and drag to left or right side.

To reset chart, click and hold left button over chart and drag to left side then release button.

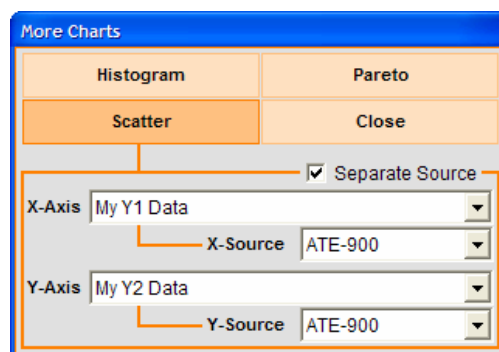


Figure 25 Select two Data Parameters with Same Source

Using PSSPC Pareto Chart

Similar with Histogram and Scatter, re-open INI from C:_TestSPC_Access_Pareto then click at More Charts button click Pareto button. However, PSSPC is required data type for plot Pareto chart that must be attribute or Go/No-Go (1 or 0) only.

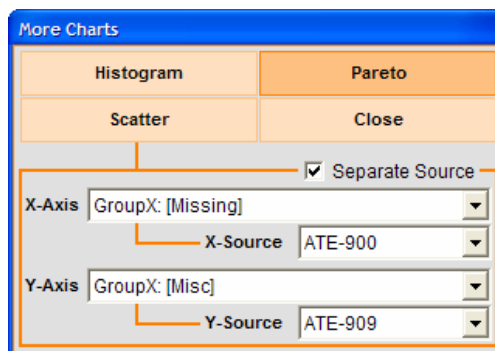


Figure 26 Select Pareto

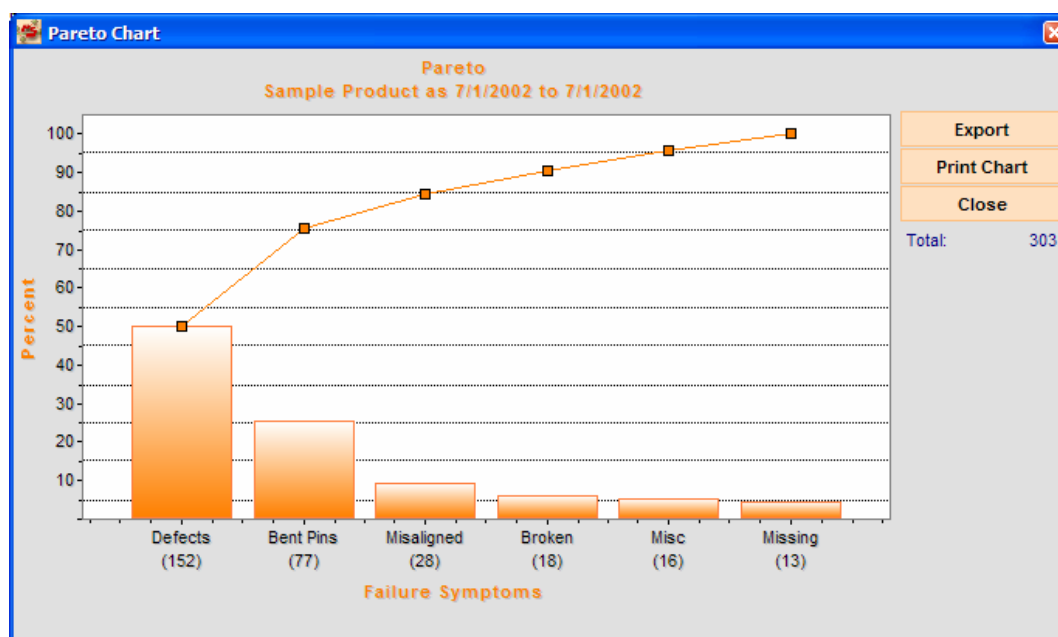


Figure 27 Sample Pareto Chart

The axis-X title is picking from Products.ini as below. If not specified the default value is 'Nonconformities'

```
; Products. ini  
[Sample Product]  
TableName=TestData  
ParetoTitleX=Failure Symptoms
```

Register PSSPC Pro.

As earlier mention, first time your installation program . PSSPC Pro allow use for evaluation for 45 days. Thus, if you interest to continue use our software, please e-mail to support@practical-software.com or visit our web site <http://practical-software.com> for buy a license.

To register software, you need to enter the License Code and Unlocked Code by click About button at Main form then you will see About form as Figure 28.

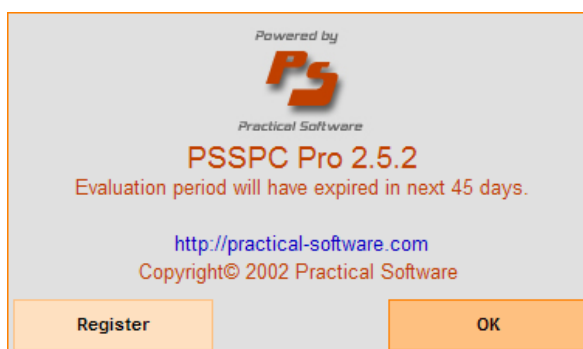


Figure 28 PSSPC About Form

Click at Register button and License and Unlocked code form entry will show as Figure 29.

Figure 29 PSSPC License and Unlocked code Entry

Enter both code and click OK and now on PSSPC Pro will be use permanently.

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