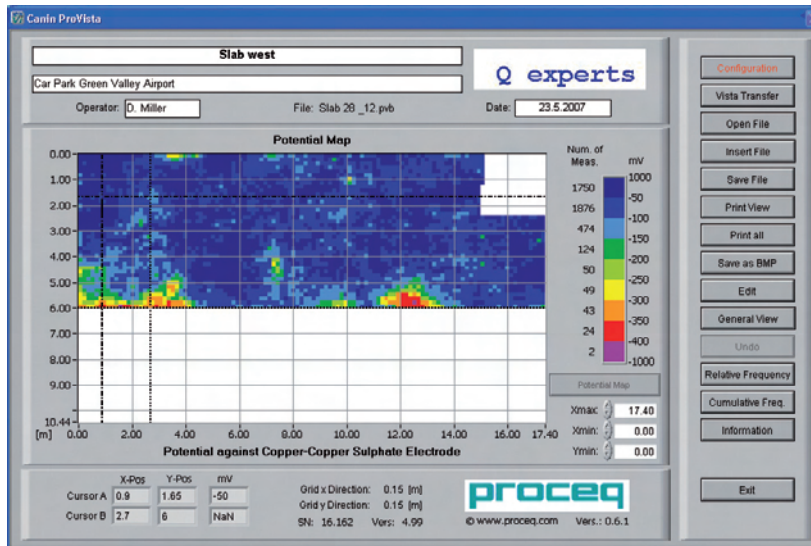# canin

Korrosions-Potential-Messgerät
Corrosion Analysing Instrument

Bedienungsanleitung

Operating Instructions

ProVista Software

ISO 9001

proceq

Subject to change without notice

Contents

1   Overview

The Windows application CANIN ProVista and the utility programme VistaTransfer make it possible to download, present and edit data measured and stored by the CANIN half-cell instrument using an IBM-compatible PC.

1.1   Functions and Conditions

In a first step a selected number of objects will be downloaded by VistaTransfer from the CANIN indicating device to the PC.

Afterwards the files can be opened and edited by CANIN ProVista. The programme generates graphs and diagrams in order to allow an efficient interpretation by the corrosion engineer.

The potential map as the main graph appears always first on the screen. Thereof the program generates the relative frequency and the cumulative frequency diagram. In a final step the program plots a concrete chipping graph that shows in which portions of the whole area the contaminated concrete should be removed.

1.2   System Requirements

ProVista and VistaTransfer can be installed on any IBM-compatible PC using the following operating systems: Windows 2000, Windows XP, Windows Vista.

A screen with a resolution of 1024x768 or 1152x864 and 256 colours is recommended and a minimum of 100 MB hard disk capacity must be available on the PC for these applications. Virtual Memory should be enabled and set to

at least 1GB. Please check if the program Microsoft .NET Framework 3.0 or greater is installed. If not, it is available on the memory stick and can be installed from there.

The software version of the CANIN Indicating device must be Vers. 4.99 or higher. Display device and PC can be connected by the transfer cable Article No. 330 00 269 or 330 00 456, plus the RS232 – USB adaptor Article No. 390 00 540 if required.

1.3   Installation of the Programme CANIN ProVista

- Copy or download from the memory stick or the Internet the file **CaninInstaller .zip** to a temporary folder.
- Unzip the file to within the temporary directory
- A folder called **Volume** will be created
- Open the folder **Volume** and execute the **setup.exe** file that it contains
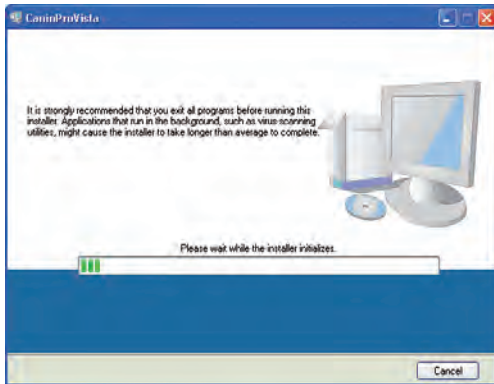- The window in Fig.1 will appear. Wait

Fig. 1 Setup Initializing

- When the window in Fig. 2 appears, select the appropriate directories.

  The field Directory for **CaninProVista** specifies the location where the application and configuration files will be installed, as well as, future application related files will be saved. The default suggestion may be changed.

  The field **Directory for National Instruments products** specifies the location where the LabView 8.2 runtime engines are installed. Ensure the correctness of this location.
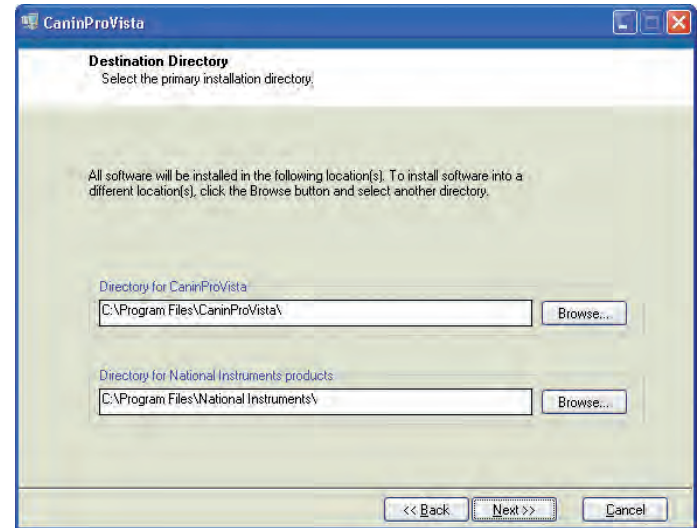

Fig. 2 Setup: Destination Directory

- Press Next and follow the remaining on-screen instructions.
- After having completed the installation, restart the PC.
- The installation creates a folder on the desktop called CaninProVista, which contains a shortcut to start the program.

1.4 User Logo

The user can insert his own company logo. A bitmap file with the name **Logo.bmp** which contains the desired logo has to be placed in the **Configuration** folder in the CaninProVista installation directory. The size of the bitmap has to be 210 x 50 pixels. From there it will automatically be copied into the graphs. The Proceq logo is unchangeable.

2 Operating Instructions

Start the programme by double-clicking on the shortcut icon on your desktop or on "CaninProVista.exe" in the respective directory. The window in Fig. 3 will appear.
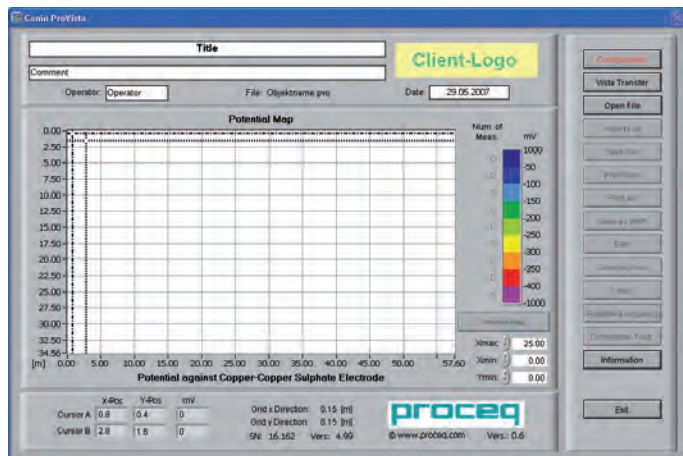

Fig. 3 CaninProVista Main Window

This view is the main screen. It can be divided into four sections. The top contains labeling information in regards to the measurement, the middle is the graphical representation of the measurement, the bottom contains additional numerical information in regards to the measurement and the graph, and the right hand side contains the navigation pane.

2.1 Downloading Files from the CANIN Indicating device

2.1.1 Preparing Downloading of Data

Connect the display unit to a RS-232 interface (COM1-4) of your PC using the transfer cable (Art. No. 330 00 269 or 330 00 456). If the PC has only a USB port a RS-232 - USB adaptor must be used additionally. Such adaptors are commercially available, e.g. from Maxxtro (Proceq can supply it under Art. No. 390 00 540).

Select Menu "Data Output" in the CANIN indicating device and press START. Note: The Data Output submenu must be visible on the LCD.

Click on **VistaTransfer** button to start the download programme. A dialog box appears (see Fig. 4). Select the respective COM port. All the objects stored in the display unit are listed in the field on the left. By default, all objects are selected for downloading, i.e. all the check boxes contain a cross.

If the object list is empty, please check the following:

• Whether the correct COM port is selected.
• Whether the cable is properly connected.
• Whether the Data Output submenu is visible on the display unit.

You can now click the check boxes to select and de-select the individual list entries. Clicking the check box of the measuring instrument selects or de-selects all objects.

The dialog box below that shows the list of objects, proposes the folder in which data is to be stored. This setting can be changed. The easiest way to do this is to click the Browse button. A dialog box, with the title Look for file, opens in which you can select another folder.

2.1.2 Downloading and Saving Data

Click the Save selected button to start the downloading procedure. The PC downloads all the selected objects and stores them as files in the selected folder. The file names are identical to the object numbers and the file type is PVC.

The data record currently requested by the PC is selected in the list. When data is being downloaded, a moving bar symbol indicates the interface activity. As soon as a file has been completely downloaded and stored, the icon next to the file name is highlighted in colour. This makes it easy to follow the downloading process.

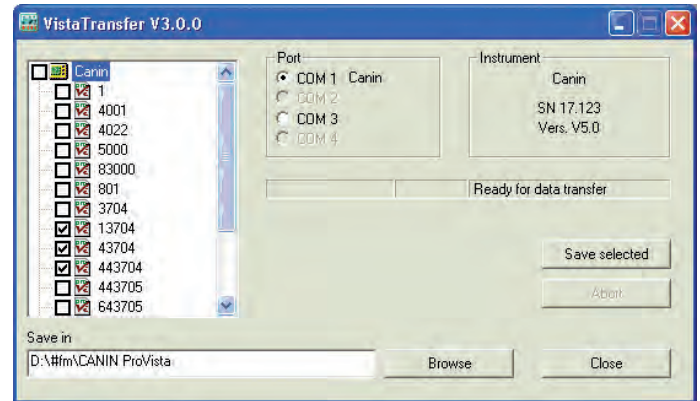Click the Abort button to interrupt the downloading process, at any time.

Fig. 4 Vista Transfer window

2.1.3 Renaming Files

You can use Windows Explorer to rename stored files. Any file names can be used. The file type must always be PVC.

2.2   Opening and Editing Files

2.2.1   Opening a file

If ProVista is not already in use start the programme by double-clicking on the shortcut icon on your desktop or on "Canin ProVista.exe" in the respective directory.

Click on the button **Open File** in the navigation pane and select the desired file in the Window that appears (see Fig. 5).

Files of type pvc or pvo are the only files that CaninPro-Vista recognizes. Select the desired measurement file and click **OK**.
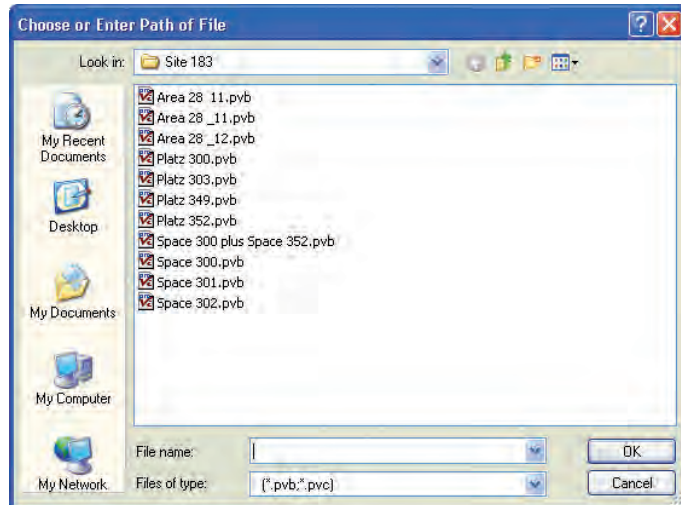

Fig. 5 Open File Window

If the file is valid, the window in Fig. 6 appears asking you for the desired rotation/mirroring. Select it and press **OK** again to have the measurement file be displayed in its potential map representation in the main window (see Fig. 9).
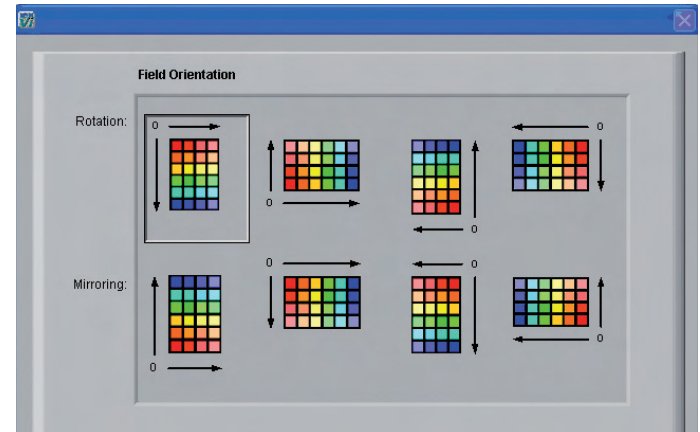

Fig. 6: Orientation selection window

If the selected file was invalid for some reason, the appropriate dialog box such as Fig. 7 will pop up.

Another reason for an invalid file is that the ratio of the measurement resolution in the x direction to that in the y direction or its inverse is not a whole number.
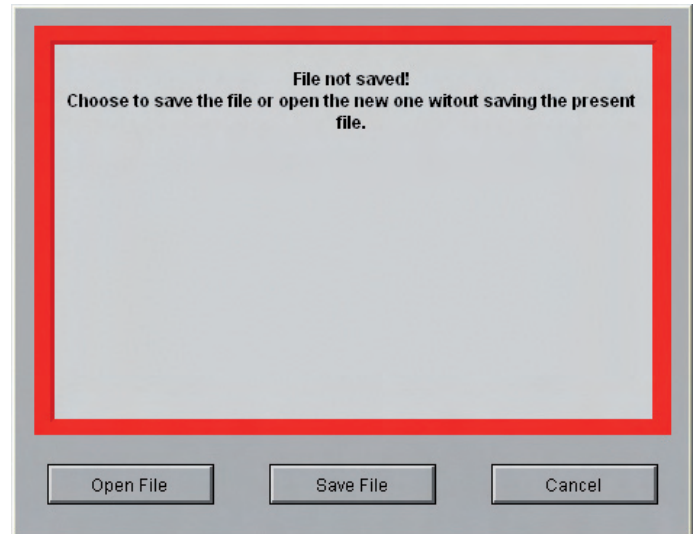
Fig. 7 Invalid file format warning

Fig. 8 File not saved warning

If a file is already open with unsaved changes when se-
lecting **Open File**, the window in Fig. 8 will appear asking
if the currently open file should be saved first.

After clicking o.k. the file is opened. The data are directly
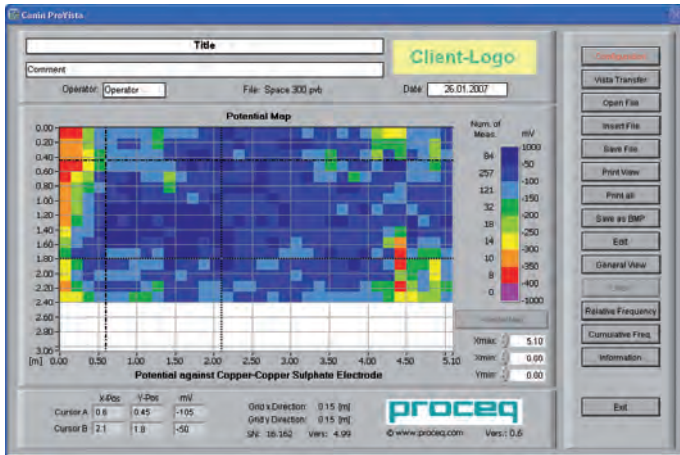presented as potential map

Fig. 9 Potential Map

In the top of the screen, the operator can enter a title for the measurement that is analyzed, a short comment, the operators name and the date. Also visible is the filename of the measurement.

The center section contains the actual potential map of the measurement which is a two dimensional color representation of the measurement area. The scale of the graph represents the dimensions in either meters or feet (see section Configuration). To the right, there is a color legend. The legend shows the range of the measurement values (in millivolts) represented by each color and the number of measurement points in that range. The color includes the bottom value of each range but is only up to (and not including) the top value. For example, in Fig. 9

red represents all the values from -400 mV up to but not including -350 mV. The only exception is the top color (in Fig. 9 this is dark blue) which always includes +1000mv. The grayed out **Potential Map** button when active, permits switching between the potential map (default view) and chipping graph view; more to this in the sections Cumulative Frequency and Chipping Graph. The three fields **Xmax, Xmin, Ymin** allow the user to zoom in on an area in the graph, or in other words, change the dimensions of the window. To remember is that the graph will always maintain the correct proportions.

The bottom section of the window shows the positions for cursors A and B (see Fig. 3) and the value of their current position. The grid direction values indicate the resolution of the measurement, i.e. the distance between the measurement points.

2.2.2   Configuration

Once a file is opened, its appearance in the potential map and the language can be changed in the **configuration** menu. By clicking on the **configuration** menu, Fig. 10 will appear.

The number range to which the colors are assigned can be changed through varying the base value und delta. The base value may not be any smaller than -999 and the combination of the base value delta may not lead to any color representing anything above 1000 mV. By pressing **default**, the base value and delta are changed to -400mV and 50mV respectively.
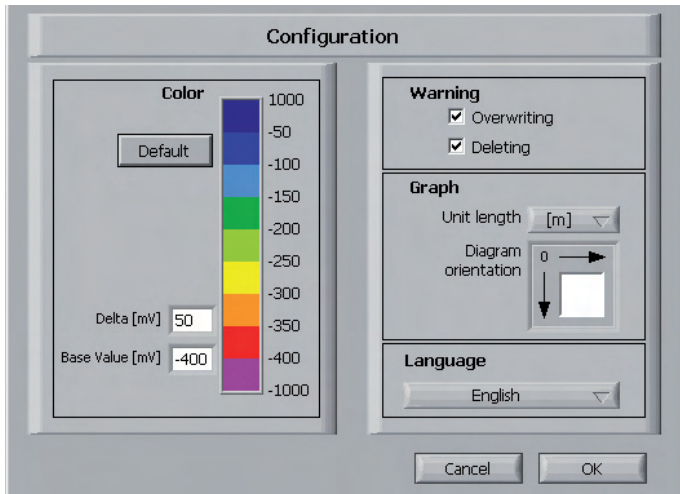

Fig. 10   Configuration Window

By left clicking on a color, the color can be changed for the desired number range (see Fig. 11).
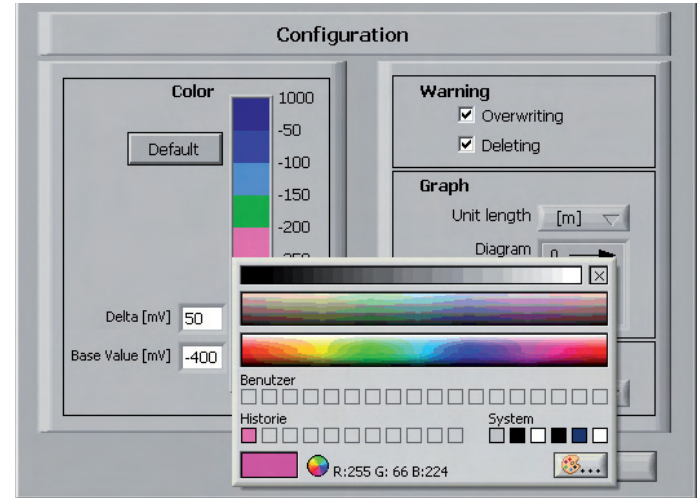
Fig. 11   Individual Adjustment of Colours

The **Warning** for overwriting and deleting values in a graph can also be chosen. Currently, these settings are saved with the current file and will overwrite any setting made by a previously opened file.

The units in which the measurement is displayed can be changed from meter to feet using the drop down menu **Unit length**.

With **Diagram Orientation**, the origin of the graph can be changed (see Fig. 12).
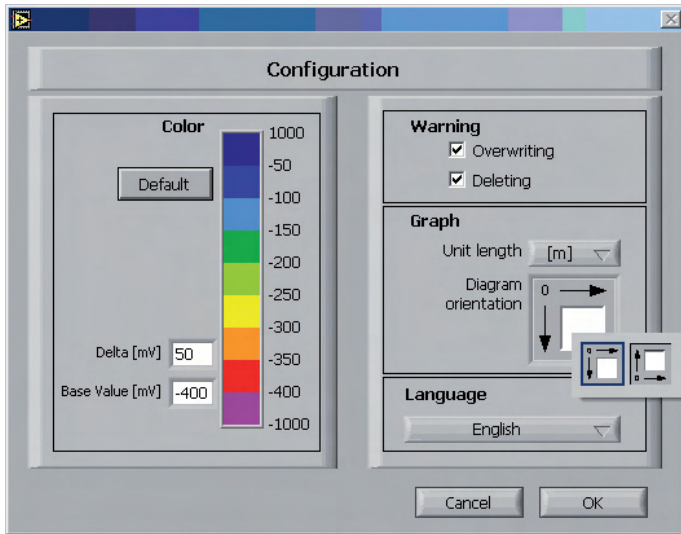
Fig. 12 Diagram Orientation

2.2.3 Insert file

Separately measured objects can be merged to a complete potential map.

Additional measurement files with the same grid resolution as the currently open file can be inserted by use of the **Insert File** functionality. Before doing so however, it is essential to place one of the two cursors at the position at which the additional file is to have one of its corners placed. After pressing the **Insert File** button, the window similar to Fig. 5 will appear again, in which the file to be inserted is to be chosen. If the file is valid, the next screen (see Fig. 13) will allow the file to be rotated or mirrored as desired, as well as the insertion point (either cursor A or B) and insertion direction to be chosen.

Note
After having added annotations (see section Annotations) to a graph, changing the units length will cause the annotations to be misplaced. Therefore, before adding annotations, ensure that the graph has the desired units.

The **Language** setting of the program can be changed by selecting the desired language in the drop down menu.
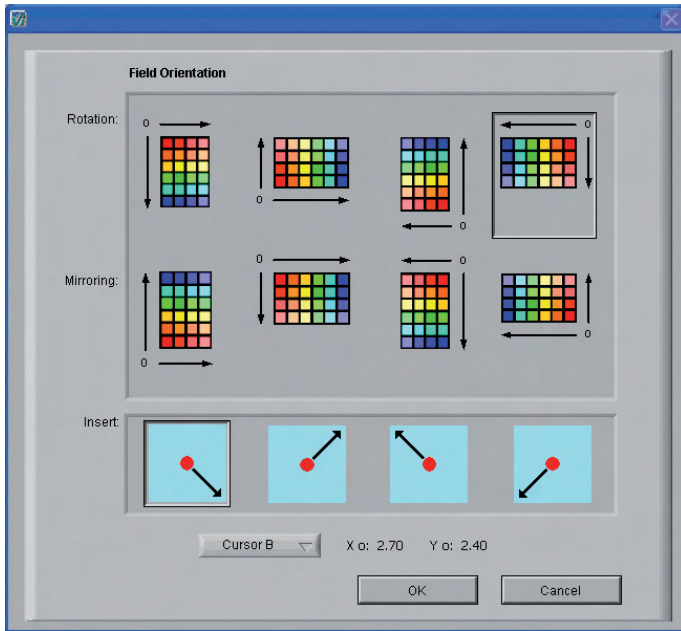
Fig. 13 Insert Window

Pressing **OK** will return the updated potential map (see Fig. 14).
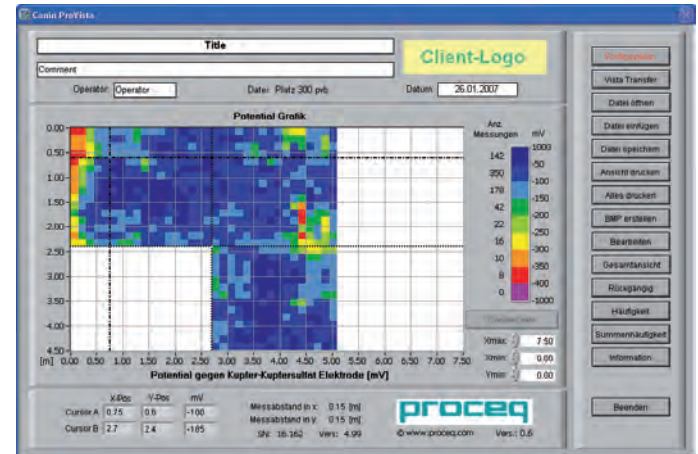

Fig. 14 Potential Map after Insertion

2.2.4 Save file

Any changes made to a measurement file can be saved by pressing the **Save File** button. A window will appear asking for the desired file name and directory. The type of a file opened and processed by Canin ProVista is pvb. The type of a file that was transferred to the PC but has not been opened by ProVista yet is pvc.

2.2.5 Print View

The **Print View** functionality prints the currently visible section of the potential map respectively chipping graph. After clicking on **Print View** the Print Window appears , in which the printer and other settings can be selected.

2.2.6 Print all

The **Print File** functionality will print the entire measure-ment file, even areas that are not visible in the current view of the potential map/chipping graph, using as many pages as necessary. This is the case when the view-ing area was changed by means of the controls **Xmax, Xmin, Ymin**. The zoom factor is maintained over all pages. The desired settings can also be selected in the Print window.

2.2.7 Save as BMP

This function creates a BMP image file of the current view of the potential map or chipping graph. The window in Fig. 15   shows a preview of the BMP. The color legend, the scale and the grid can be removed from the graphic. **Save as BMP** permits the image to be saved.

BMPs can be copied in CAD files as well as in Word or Excel files.

Fig. 15 Save as BMP window
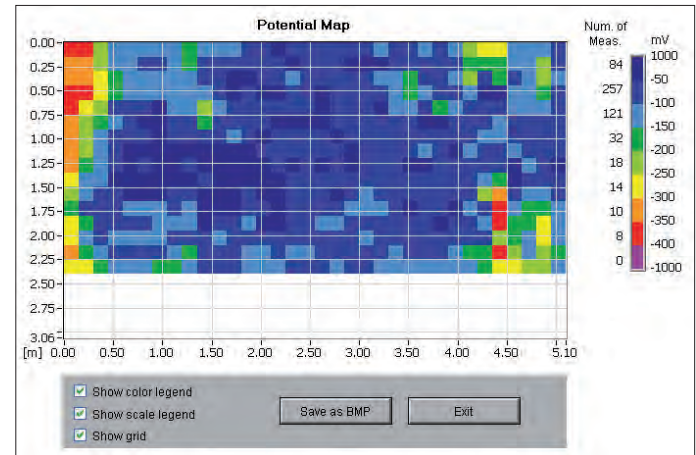
2.2.8 Edit

Individual values can be deleted or changed. The position of the values is determined by the two cursors.

With the edit option, four different functions are available (see Fig. 16).

- Delete the values lying in the area between cursors A and B
- Set the values lying in the area between A and B to specific values
- Delete the value to the bottom right of cursor A

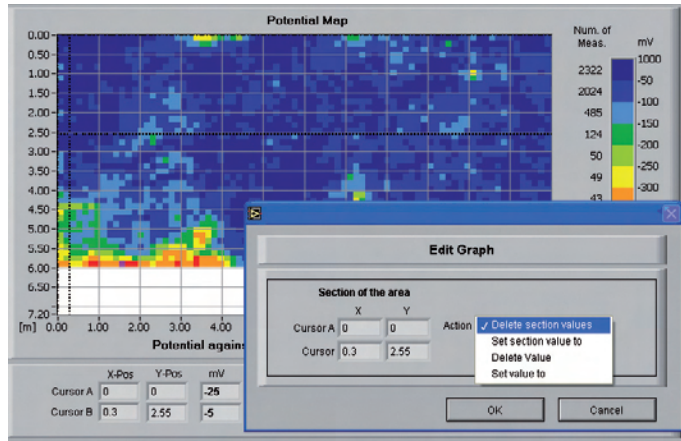- Set the value to the bottom right of cursor A to a specific value.

Fig 16 Select point or area to be edited

2.2.9 General View

General view resets the range of the potential map and chipping graph so that the entire graph, i.e. measurement, is visible again.

2.2.10 Undo

Allows the last 10 edits and insertions to be undone.

2.3 Relative frequency

With the relative frequency function, a bar graph, as show in Fig. 17 of the measurement data is created. The width of the bars represents the measurement range while the height of the bar represents the relative frequency of measurements points within that range. The range of the graph can be changed by entering the desired minimum and maximum values in the respective fields on the x-axis. The limits are -1000 to +1000 mV. The class width can also be changed.

To save an image of the graph, select **Save as BMP** or to print, select **Print**.
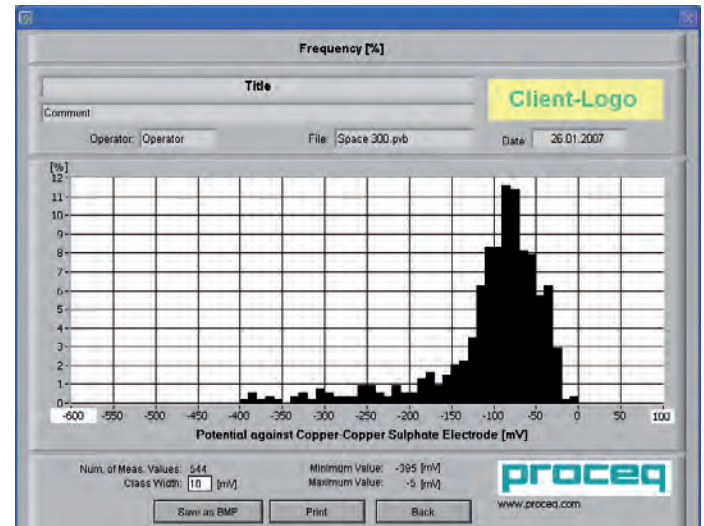
Fig. 17 Relative frequency diagram

2.4   Cumulative frequency

The cumulative frequency is another representation of the measurement data as shown in Fig. 18.

This graph is important for the interpretation of the measured values. The corrosion engineer can take a classification and place the 3 cursors in such a way that they represent areas of different corrosion degrees.

The position of the three cursors can be moved. They determine the color distribution in the chipping graph.

It is possible to overlay two or even all three cursors and thereby decrease the number of divisions.

The cumulative frequency needs to be activated at least once for a newly opened file in order to be able to view the chipping graph.

The range of the cumulative frequency graph can be changed by entering the desired minimum and maximum values in the respective fields on the x-axis. The limits are -1000 to +1000 mV. The class width can also be changed.

To save an image of the graph, select **Save as BMP** or to print, select **Print.**

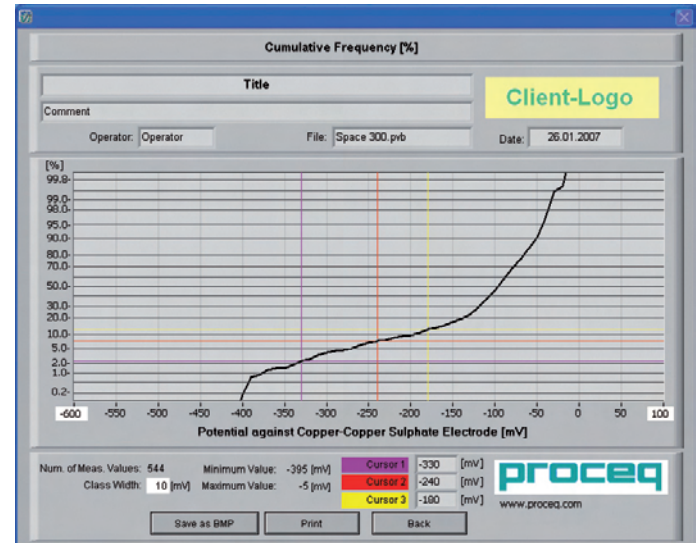Fig. 18 Cumulative frequency diagram

2.5   Chipping graph

The position values represent potential limits identified by the engineer as areas of equal condition in one or several of these areas the concrete has to be chipped to a certain depth for repair purposes.

Up to three different limits can be selected for separating different degrees of deterioration and thus different chipping depths.

The chipping graph can be accessed once the cumulative frequency graph has been opened (see section Cumulative Frequency). After having accessed the cumulative frequency graph, the **Potential Map** button becomes active. By clicking on it, the visualization switches to the chipping graph (see Fig. 19).

The four color regions of the chipping graph are based upon the three cursor positions in the cumulative frequency graph (see section Cumulative Frequency).

The available functions are the same as in the potential map representation. To switch back to the potential map, click on the button now labelled **Chipping Graph**.
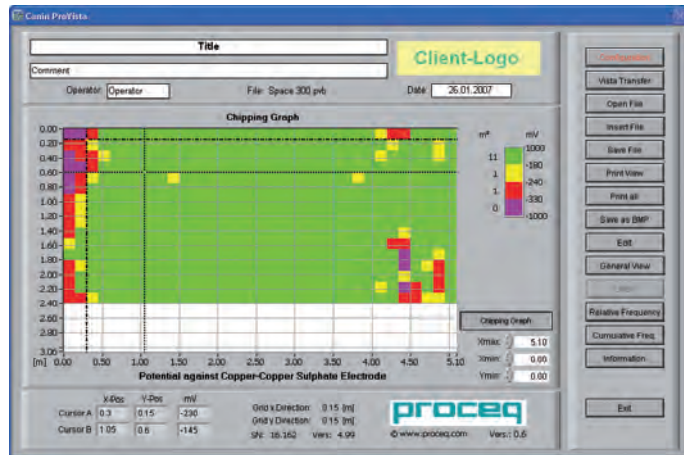

Fig. 19 Chipping graph

2.6   Information

The information button delivers some essential need to know information about the program and its functionality.

2.7   Annotations

Information on certain points on the concrete structure like measured chloride content, cracks or other defects can be placed directly in the potential map or the chipping graph. The information will be printed and shown in bitmaps.

By default they are created with an arrow that can be moved to point at a specific spot in the graph. Annotations can be added by right clicking on the potential map or chipping graph and selecting **Create Annotation**. The window in Fig. 20 will appear. Write information directly into the name label for the annotation and select the desired options under Lock Style.

- Free - The annotation is floating an can be moved freely.
- Snap to All Plots - The annotation snaps to measurement points, i.e. it can be moved from one measurement point to the next, but cannot be placed in between.
- Snap to One Plot - Same as Snap to All Plots.

When done, press OK and the annotation will appear in the graphic window (see Fig. 22). The annotations added in the potential map are also visible in the chipping graph and vice versa.
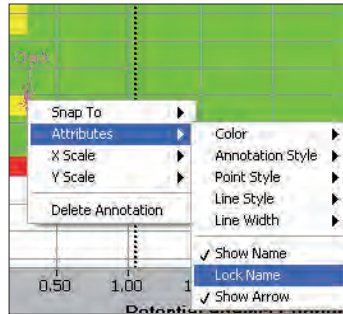
Fig. 20 Annotation window

Fig. 21 Annotation Attributes

If the **Lock Name** attribute is not selected, the entire annotation (point, label and arrow) can be moved by left clicking on the annotation and dragging it around. If the **Lock Name** attribute is selected, the name will stay fixed and only the annotation point with the arrow can be moved.

The attribute Lock Name can be selected or deselected by right clicking on the annotation point and selecting **Attributes -> Lock Name**.

Note
*Always deselect the **Lock Name** attribute once an attribute is placed at the proper position and before any print, BMP, or display change functions are used (see Fig. 21).*

Additionally after having placed an attribute, the other options from Fig. 21 as well as additional options such as annotation **color** and line **style** can be changed by right clicking on the annotation and selecting the desired option. The options **X Scale** and **Y Scale** can be ignored.

The language for annotation option is dependent on the language of the windows operating system on which CaninProVista is running. Changing the language in the configuration menu does not affect the annotation functionality.

Note
Also, refrain from entering any annotations until the measurement representation is complete. This means that no more additional files will be inserted, no more sections going to be edited and the unit length is as desired.

After having added annotations, it is recommended that the file be saved. The dimensions of the graph or the color scale can then be changed. When changes to the dimensions of the graph are relatively large, it can occur that label location of the annotation will move. To restore the annotations correctly, the file can be re-opened.

It is also not recommended that annotations within one file be added at different dimension levels, i.e. zoom levels.
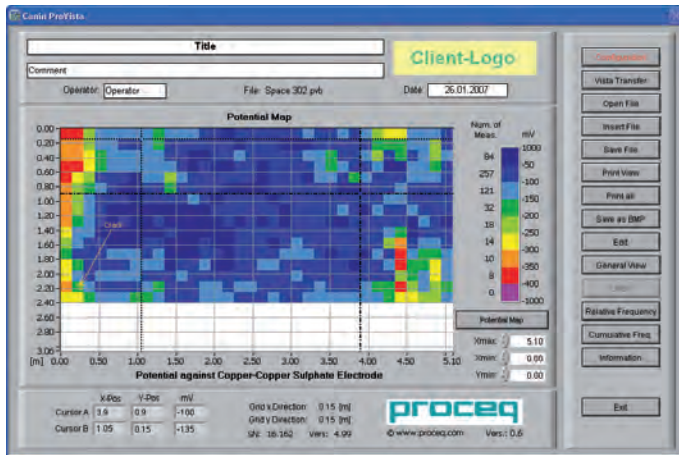
Fig.22 Annotation added

3 Technical Data

File size - when downloaded	up to 240'000 measured values
Measuring grid, scale of length and unit length	The grid that is set in the CANIN indicating device must be equal in x-and y-direction, e.g. 150x150mm or 305x305mm (1x1ft). The CANIN indicating device accepts the unit length [mm] only. CANIN Pro-Vista will convert and display the scale of length in ft.
Number of languages	7
Compatibility with PC operating systems	Win NT, Win 2000, Win XP, Windows Vista
The programme generates the following graphs and diagrams	Potential map, Relative frequency diagram, Cumulative frequency diagram, Chipping graph
Editing of data of the potential map	Individual values and rectangular sections can be deleted or changed
Insert graphs into a potential map	Separately measured objects can be merged to a complete object (potential map). If required, objects can be rotated and mirrored.
Undo	Undo can be used for editing steps: delete, change, insert. Ten undo steps are possible at a time.

Annotations	Information to certain points on the concrete structure can be placed directly in the potential map.
File types and further use of the data	Type pvc: Format in which the file is downloaded from the CANIN indicating device. The files can be opened in CANIN ProVista and also in MS Excel. Type pvb: Format in which the files are stored after opening and editing in CANIN ProVista. Type bmp: CANIN ProVista generates bmp files from potential maps, chipping graphs, frequency and cumulative frequency diagrams. These files can be copied in e.g. Word, Excel or Powerpoint and also CAD programmes.
Graphs can be printed	If a certain scale, e.g. 1:50 is required for a printout the true scale has to be adjusted by the user
User-Logo	The user can insert his own company logo into the programme. The logo will appear in all graphs on the screen and in all printouts. Size of the logo: max. 210x50 pixels

4   Disclaimer

Based on the measured potential values the CANIN ProVista software generates a two-dimensional graph, a relative frequency, a cumulative frequency diagram and a concrete chipping graph. These graphs can be inserted in an assessment report and serve the corrosion engineer together with results of non-destructive and destructive tests like concrete cover depth, carbonation depth, chloride profile etc. as basis for interpretation of his results.

The programme does not state the condition of the concrete structure, e.g. severity of corrosion of the rebars and it cannot propose the remedial actions. The engineer must be able to interpret all measured values in order to propose the necessary actions.