FLUKE®

TruTest™

Data Management Software

Users Manual

October 2020 (English) Rev. 3, 1/23

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Table of Contents

Introduction

TruTest™ Data Management Software (the Product or Software) is software to manage electrical system test data. The Software supports data from Fluke DMS software or from Beha-Amprobe ES Control software and automatically converts these databases. You can also use the Software for instrument management.

Features:

- Collect data from instruments or from files transferred from instruments.
- Manually add data.
- View data that is automatically assigned to hierarchical tree topology.
- Select a region to view data in accordance with specific regional standards.
- Print certificates and reports.
- Send data to instruments (when supported by the instrument).

Module support:

- PAT module – management of test data for portable appliances
- INST module – management of test data for electrical installations
- Solar module – management of test data for solar panel installations

Note

Your region selection customizes the software settings for certificates and reports that are specific to the requirements of the region. See Select Language and Region *for more information.*

The Software supports these instruments:

PAT Module

- Fluke 6500
- Fluke 6500-2
- Beha-Amprobe GT-600
- Beha-Amprobe GT-650
- Beha-Amprobe GT-800
- Beha-Amprobe GT-900

INST Module

- Fluke 1653
- Fluke 1654
- Fluke 1662
- Fluke 1663/1663+
- Fluke 1664 FC/1664 FC+
- Telaris ProInstall-100
- Telaris ProInstall-200

Solar Module

- SMFT-1000

The on-screen, intuitive dashboard interface allows you to see the status of all clients instantly and navigate to further levels of detail.

Hierarchical tree topology (directory structure) is used to represent clients, sites, locations and appliances. This structure is useful in larger networks and allows you to maintain testing and reporting flexibility. Each element is presented as a single tree node and the properties of each node are presented after selection. Tree topology can be maintained by adding nodes, deleting nodes, duplicating nodes, duplicating subtrees, and node editing.

All screenshots in this manual are for reference only. The screens may differ from the latest version of the software or depend on the language selection and setup.

Note

Software is subject to change without notice. Newer software versions might differ from the information in this manual.

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Safety Information

This Software does not contain any safety related content.

⚠ Caution

Observe all operating instructions.

The operating instructions contain information and notes that are necessary for correct operation and use of the Software. Read the operating instructions attentively and follow them in all points before the installation and use.

Licensing

The complete license agreement is provided in the front of this manual. Licensing is provided to the user during installation procedure.

Software Installation

This section provides information on system requirements, software installation procedure, update procedure, and software removal.

System Requirements

Operating System:	• Microsoft Windows 10/11, 64-bit and 32-bit (recommended) • Microsoft Windows 8/8.1, 64-bit and 32-bit • Microsoft Windows 7 with Service Pack 1, 64-bit and 32 bit
System Memory:	Minimum 4 GB RAM (64-bit) or 2 GB RAM (32-bit)
Hard Disk Space:	Minimum 2 GB available hard disk space
Display Resolution:	Minimum screen resolution 1366 x 768
Communication Interfaces:	USB

The Software requires .NET Framework. You may use .NET Framework 4.6.1 or newer: https://dotnet.microsoft.com/download/dotnet-framework/net461

Microsoft Access 2016 Runtime is required for the database conversion: https://www.microsoft.com/en-us/download/details.aspx?id=50040

Install the Software

To install the Software:

1. Choose an installation file to download:

   https://www.fluke.com/en-us/support/software-downloads/trutest-software-downloads

   https://www.beha-amprobe.com/en/support-service/software

   Note

   Close all programs that are running before you start the installation.

2. Browse to the downloaded file location and double-click the **.exe** file.

   The installation program starts and guides you through the installation process.

3. Select the language and click **OK**.
4. On the Welcome screen, click **Next** to continue the installation.
5. On the License Agreement screen, read the information and click **I Agree** to start the installation.

   For a printed copy of the license agreement, click **Print** and manage through your operating system.

6. When the Installation Complete screen shows, review the information, and click **Next**.
7. To start the Software after the installation completes, select the **Run** option.
8. Click **Finish** to complete the installation.

Update or Reinstall the Software

You can re-install the Software for updates. When the software is reinstalled, all data remains on the PC.

To reinstall or update the software:

1. Choose an installation file to download:

   https://www.fluke.com/en-us/support/software-downloads/trutest-software-downloads

   https://www.beha-amprobe.com/en/support-service/software

   Note

   Close all programs that are running before you start the installation.

2. Browse to the file location and double-click the **.exe** file.

3. On the Welcome screen click **Next** to continue the installation.

   A new screen indicates the software is already installed.

4. Select an option:

   - **Add/Reinstall components** – to reinstall the existing installation. Continue as for a new installation.
   - **Uninstall before installing** – to remove the current installation.

5. If you selected **Uninstall before installing**, the system prompts you to continue. Select:

   - **Yes** – to continue the uninstall.
   - **No** – to back out of the uninstall.

6. If you select **Yes**, the system indicates the file location. Click **Uninstall** to continue.
7. When the uninstall is complete, the system prompts with the completion screen, click **Finish**.
8. Click **OK** to close the confirmation message.
9. Continue as for a new installation.

Remove the Software

To remove the Software:

1. Navigate to the Windows Start Menu or use the Control Panel to **Uninstall or change a program**.
2. Choose **Uninstall TruTest™**.
3. Select **Yes** in the confirmation message.

Getting Started

The first time you start the Software, you must activate the license. Then you will create or convert an existing database to set up the system.

Activate the License

The license wizard starts automatically the first time the Software runs.

To activate your license:

1. Click **Activate your license**.
2. Choose how to activate the license:
   - **Activate Online** (standard activation) – activate the license with a license key.
   - **Activate Offline** (for users without Internet connection) – activate the license with a license key and a computer key.
3. Read the privacy policy and click **I consent**, then click **Next**.

If you select **Activate Online, t**he system prompts you to enter the license key:

1. Enter the license key.
2. Click **Activate**.

Note

Information about the status of the online activation shows when the process is complete.

If you select **Activate Offline**, the system prompts you to enter the license key and computer identifier:

1. Enter the license key.
2. Enter the computer identifier.

   For more information on the computer identifier, contact Fluke Technical Support.
3. Click **Activate**.

Create the Database

When the software is activated, you can begin to create the database. The options are:

- **New database** – start with a new database. Use this for a first-time installation.
- **Restore database** – restore a backup of an existing database. Use this option if a backup database exists.
- **Convert database** – convert a Fluke DMS or ES Control database. This option requires that Microsoft Access Runtime is installed. These databases require Microsoft Access Runtime.

Create a New Database

To create a new database:

1. From the Database Creation screen, select **New database** and click **Next**.

   When the database creation is complete, a login screen shows.

2. To access the Software, click **Login**.

   Note

   No users are created yet, so no need to enter credentials.

Restore a Database

To restore a database:

1. From the Database Creation screen, select **Restore database** and click **Next**.

   The Software prompts for a database.

2. Browse to a database backup file and click **Restore**.
3. Click **OK** on the notification.
4. Click **Login** to proceed. Currently there are no created users.

   Note

   For first use, no users are created.

Convert a Database

These software versions and later support database conversion:

- Fluke DMS (v1.5 and later)
- Beha-Amprobe ES Control (v2.4 and later)

Client, Site, Location, and Appliance data are converted to the TruTest database, without measurement results. Auto-Test Codes on appliances are transferred.

During conversion, Auto-Test Codes that are not in a list of defined Auto-Test Codes are converted with these rules:

- If Auto-Test Code is ≥500, the value stays the same.
- If Auto-Test Code is <500, the value is converted to first free value that is ≥500.
- In the panel that displays information about various codes on different instrument types, Auto-Test Code values on the instrument stay the same as in DMS and ES Control software if the instrument type supports that Auto-Test Code. Otherwise, the Auto-Test Code specified on instrument type is *Undefined*.

To convert a database:

1. From the Database Creation screen, select **Convert database** and click **Next**.

   The Software shows the Database Conversion Tool screen.

2. Review the information and click **Next**.

   The conversion tool opens.

3. Browse to the source database file.
4. Browse to the destination folder for the converted database.
5. Click **Start conversion**.
6. When the conversion completes, click **Finish**.
7. Click **Login** to proceed.

Note

For first use, no users are created.

Initial Setup Wizard

Use the **Initial Setup Wizard** to enter initial information to use the software. This window shows on the display the first time that you start the software.

To complete the wizard:

1. Fill-in the overview of information and click **Next** to start the wizard.
2. Add new user, fill-in mandatory fields marked with asterisk (*), and click **Next** to save data and continue.
3. Add Company information: *Name, Address, Description*.
4. Choose company logo and certificate logo.
5. Click **Next** to save data and continue.

6. Add information about new engineer, fill-in mandatory fields marked with asterisk (*), and click **Next** to save data and continue.

   This step displays a list of engineers if at least one engineer already exists in database.

7. Add information about new PAT instrument, fill-in mandatory fields marked with asterisk (*), and click **Next** to save data and continue.

   This step displays a list of PAT instruments if at least one instrument already exists in database.

8. Add information about new INST instrument, fill-in mandatory fields marked with asterisk (*), and click **Finish** to start work with the software.

   This step displays a list of INST instruments if at least one instrument already exists in database.

If you skip any steps during the initial setup, a notification appears on the right side of the Menu bar. Click on the notification, to complete the wizard.

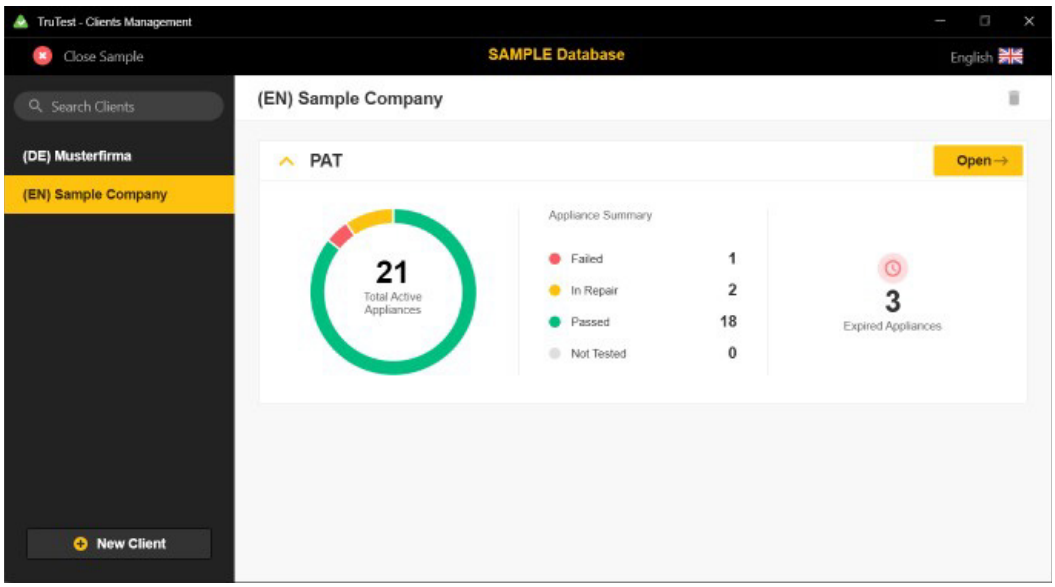
Note

If the Ignore option is checked for any of the wizard steps, you are not notified that this information is missing during software usage.

Dashboard

When you start the software, the Dashboard opens to show an overview of the Clients set up in the software and a summary of the status by module type (PAT, Installation, or Solar). See Figure 1. You can select, create, edit, and delete Clients from the Dashboard. The Sample Clients with data selected are only available according to the language selection. See *Select Language and Region*. For additional information, see the *Central Panel* section for each module type.

Figure 1. Sample Database: Client Form



Default Settings

The first installation of the software is configured with this default configuration:

- Selected region is Germany
- Selected language is English
- Selected report language is English

Select Language and Region

Select the region (country) in the application to set reports and certificate formats. This sets the standard used in the respective region. You can also select the language for the user interface of the software.

To change the region:

1. Click ⚙ to open the Settings menu and view the available regions.
2. Click to select the region.

To change the language:

1. Click on the flag to open a menu and view the available languages.
2. Click to select the language.

Select the Client and Module

The Software collects data from instruments and provides a view of the collected data. Measurement data shows in a tree view. This is the main module view and provides menus for various operations.

Select the client and the active module to view:

- PAT (see *PAT Module User Interface Principles*)
- INST (see *INST Module User Interface Principles*)
- SOLAR (see *Solar Module*)

You can create the tree structure to see a detailed overview of the selected client organization including the properties that are tested by the instruments.

Sample Database

The Software has a Sample Database (demo database) that contains a predefined set of clients, including their sites, locations, and appliances. Use the Sample database for software evaluation, training, and demonstration.

To use the sample database:

1. On the initial client form, click **Sample Database.**

   The sample client shows.

2. To open the module measurement dashboard, click **Open**.

   The sample module shows.

3. To exit the sample database, click **Close Sample**.

Add the First Client

After the initial installation, there are no clients. You must create clients to add the module used by a client. To see client modules, select the client first. Only active client modules are shown.

To add a client:

1. On the empty client form, click **New client**.
2. Enter the client name.
3. Click **Save** to finish adding the client.

   An empty module is created.
4. Click **Open** to open the module measurement data main window.

   The module section shows statistical data about measurement data stored for the module.

Close Modules and Clients

To close the module view, select and then select **Close Client**.

To close the Client module, select and then select **Exit Program**.

User Administration

This section describes user access to the Software, authentication, and user roles that provide various privileges.

User Authentication

Software Access

User credentials are in the form of a username and a matching password.

To identify if a user is authorized, the Software checks the combination of username/password, and if a correct combination is entered, the user can access the Software and use the program.

If the user did not enter a username or if a password is incorrect, the Software indicates the error.

Password Policy and Changing Password

A user can only review their own information. A user can change their own password. For more information see *Account Info*.

User Authorization – User Roles

A role is a set of allowed functions that are assigned to this security level. In the administrative part of the Software, various user roles are defined.

A user can access options dependent on their privileges. The menu functions that are not available for the user are shaded in gray.

When no user exists, the default user is logged as the ADMIN role.

USER_REPORT Role

Users with this role can create reports, print reports, and access their user information.

USER_DOWNLOAD Role

Besides privileges in role USER_REPORT, this user can transfer data between instrument and PC and transfer measurement data from file to software.

USER_MODIFY Role

Besides privileges in role USER_DOWNLOAD, this user can create new items for testing, define test procedures, can modify tree structure, manage engineers, test instruments, clients and company information, resolve conflicts and delete or move measurement data.

USER_AUTOTESTCODE Role

Besides privileges in role USER_MODIFY, this user can create new Auto-Test Codes, edit and transfer them from a PC to an instrument and vice versa.

ADMIN Role

The user with this role has full access to all system options. Besides privileges in role USER_AUTOTESTCODE, this user can also change passwords for all users, perform backup and restoration of data, and access event viewer.

When starting the software, a user can access all menu functions in the menu bar. The user with the ADMIN role can see information about all users. When the Admin accesses **Administration – Users** in the menu bar, the admin can edit all the fields of a user entry. See Table 1.

Table 1. User Table Field Descriptions

Field	Description
Username	Unique Username
Role	One of the 4 roles, select box with 4 roles
Name/Surname	Name and Surname
Address	Address
Telephone	Telephone Number
Fax	Fax Number
Active	Is User active, Yes or No?
Email	There is validation for this field. This field is checked to confirm an email address is standardized.
Creation Date	Creation date for the User.

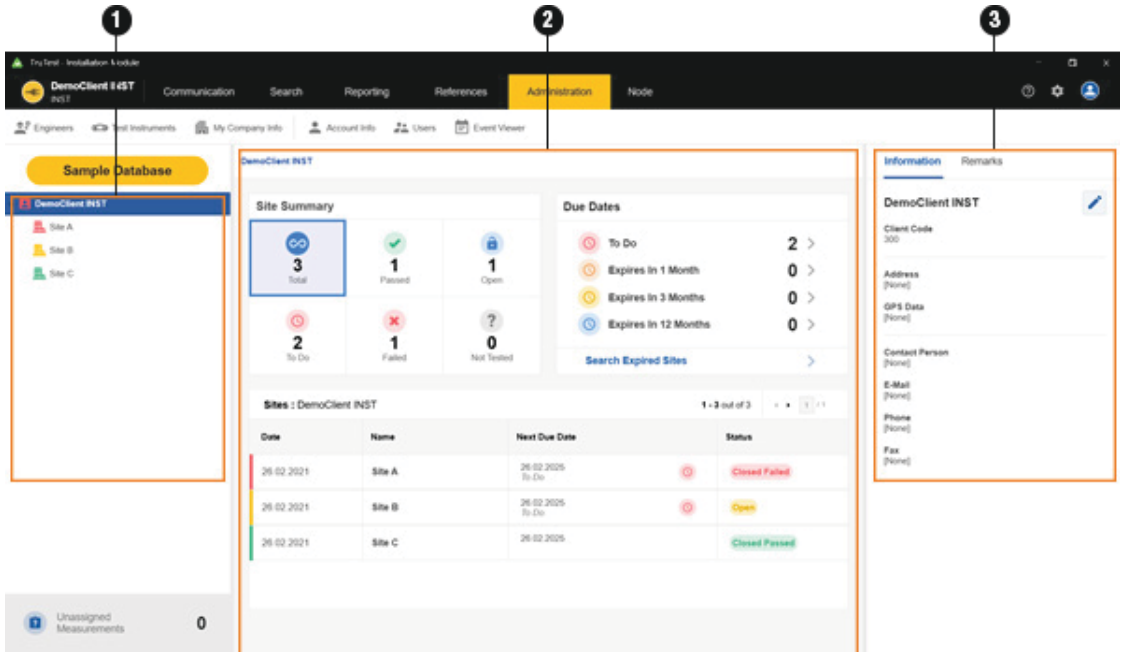
PAT Module User Interface Principles

The client data in the software includes:

- Data provided by manual entry
- Measurement data transferred from instruments

Table 2 shows how the data is organized in the PAT Module Dashboard.

Table 2. PAT Module Dashboard



Item	Description
❶	Client tree – Shows overall client information in a hierarchical way. In addition, there is detailed information of the node's status types.
❷	Central panel – Information shows based on the selected node type and represents dashboard and appliance summary or test results.
❸	These are the detailed properties of the selected node. The tabs are: • *Information* – table of properties of the selected node • *Remarks* – attachment list for the selected node

Client Tree

The Software presents the data in a tree view. In the tree, you can expand or close parent nodes to open or close child nodes on the next hierarchical level.

When a node is selected, information for that node shows along with the properties, a summary, and, in case of appliance node type, the test list.

Types of Nodes

Table 3 is a list of the node types and testing modules.

Table 3. Node Types and Software Modules

Icon	Node Type	Module
		PAT
	Client	●
	Site	●
	Location	●
	Appliance	●

Hierarchical Rules

The tree structure is a hierarchical organization. Each parent can have an arbitrary number of child nodes. The tree hierarchy is made from rules that create parent-child relationships between various node types.

These are the hierarchy principles:

- One CLIENT node (root) is on the top of the tree structure. Different tree structures can exist in various testing modules (for example PAT) for the same client.
- The next level is SITE. One CLIENT can have multiple child SITE nodes.
- Down one more level, is a LOCATION node. Fluke recommends to use the LOCATION node for better client structure, company parts, or building floors/rooms.
- Nodes on the next level are dependent on module type. In the PAT module, the APPLIANCE node type is required.

Node Status

A parent node shows the status that is a summary of the child nodes. For example, the LOCATION node type status summarizes the status of all child APPLIANCE nodes.

An APPLIANCE node has one of the statuses shown in Table 4.

Table 4. Appliance Node Status Summary

Node Status	Node Icon Color	Description	Severity	Icon
PASSED	Green	All test steps of the last measurement are successfully executed (the status of all test steps of the last measurement are *Passed*). *Appliance Status* property of the APPLIANCE node is set to *in use*.	Third	
FAILED (NOT PASSED)	Red	At least one test step in the last measurement failed (status of at least one test step of the last Auto-Test is *Failed*). *Appliance Status* property of the APPLIANCE node is set to *in use*.	First	
IN REPAIR	Yellow	*Appliance Status* property of the APPLIANCE node is set to *in repair*.	Second	
NOT TESTED	Gray	The node does not have any tests performed. *Appliance Status* property of the APPLIANCE node is set to *in use*.	Least	
NOT IN USE	Light Gray	*Appliance Status* property of the APPLIANCE node is set to *not in use* to exclude this Appliance node from the test results summary.	Least	

Expired Appliances

An appliance is a candidate for test if it is *expired*. Appliances are expired if any of these are true:

- Next Due Date property is expired (older than today's date)
- Status is NOT TESTED
- Status is IN REPAIR
- Status is FAILED

Choose a method to open the list of due dates:

- Click any of the shortcuts in the *Expired* subpanel of the dashboard for location type nodes (CLIENT/SITE/LOCATION). This shows the list of all tests that have a due test time older than selected expiration date.
- Click **Search > Expired Appliances**. A search window opens. Set a time frame between *From* and *To,* for displaying Appliances that have Next Due Test date within the time frame. Or use the search buttons on the screen, see *Search Menu.* You can change the list of selected nodes.

Node Menus

Use the context menu on the selected node for more node actions. Table 5 is a list of the Node menu options.

Table 5. Context Menus

Client	Site	Location	Appliance
Add Site	Add Location	Add Appliance	Add Test
Delete	Delete	Delete	Delete
Duplicate	Duplicate	Duplicate	Duplicate
Expand Node	Expand Node	Expand Node	Expand Node
Collapse Node	Collapse Node	Collapse Node	Collapse Node
Report	Report	Report	Report
Certificate	Certificate	Certificate	Certificate

Note

*Node menu options **Expand Node**, **Collapse Node**, and **Rename** are only on node context menus. Node menu options **Expand All**, **Collapse Node,** and **Rename** are only on the node menu.*

Naming Rules

Every node has a visible caption on the right side of the graphical symbol. For all the node types, when a new node is created, the default name is the node type preceded with the prefix *New* (for example: *New Site*). A duplicated node has suffix *(1)* added to the name (for example: the next *New Site* becomes *New Site (1)*). A second next duplicate will have suffix *(2)* (for example: *New Site (2)*). Appliance nodes additionally have a *Code* parameter value at the end of the name (for example *New Appliance_5*).

Central Panel

The Central panel is structured differently for location type nodes (CLIENT/SITE/LOCATION) and APPLIANCE nodes.

CLIENT/SITE/LOCATION node:

- Elements of the dashboard are Appliance Summary and Due Test panels.
- Appliance Summary shows the list of associated appliances under this geographical node.

APPLIANCE node:

- Elements of the dashboard for Appliance node are the selected node properties.
- Measurements List for appliance node shows the list of associated measurements.

Test Results Presentation

The CLIENT/SITE/LOCATION node has a Dashboard with the Appliance Summary subpanel that shows these counters:

- TOTAL – total number of appliances
- FAILED – number of appliances with failed last tests
- IN REPAIR – number of appliances with in repair status
- EXPIRED – number of appliances with expired test interval
- PASSED – number of appliances with passed last tests
- NOT TESTED – the number of appliances without measurement data

The Dashboard also has a Due Test subpanel that shows these search shortcuts:

- EXPIRED – the list of appliances with expired test interval
- EXPIRED in 2 Weeks – the list of appliances with expired test interval in 2 weeks
- EXPIRED in 1 Month – the list of appliances with expired test interval in 1 month
- EXPIRED in 2 Month – the list of appliances with expired test interval in 2 months
- Search Expired Appliances – shortcut to Search Expired Appliances window

The Appliance Summary subpanel shows list of appliances associated to the selected CLIENT/SITE/LOCATION node or appliance data to the associated appliance node. The color of the right border is determined by the current status.

Appliance Node

Appliance summary dashboard shows this appliance data: Name, Code, Status and Next Due Date. The color of the right border is determined by the current status.

Measurement List shows the list of executed tests sorted by time (the newest is on top of the table). Right border of the measurement row is colored by the final measurement status.

Measurement Detailed Presentation

Click **+** for the selected measurement to show a detailed view. The detailed view has these tabs:

- Test Steps – shows a list of test steps (Title), measured value (Result), Limit value, Parameter, and result information (Passed).
- Information – shows a list of various information related to the Appliance under test.
- Remarks – shows a list of saved remarks entered by the software user associated with the measurement.

Node Properties

This part of the Software user interface presents properties for selected node.

All nodes have these property groups:

- Information – all specific information for selected node type (such as identification, contact, and production data).
- Remarks – includes remark text and attachments (pictures, documents, audio, and video). Remarks are optional but can provide useful explanatory information.

Some fields in the Information group are mandatory. When node is selected, the Information group shows. Remarks are optional.

Information Properties

Every node type has a set of predefined Information properties.

Required fields for CLIENT, SITE, and LOCATION are:

- Name – the name of the node.
- Code – the unique string within the group of nodes of the same type within the tree structure.

The software generates the *Name* and *Code* automatically.

Required fields for APPLIANCE are:

- Name – the name of the node.
- Test Interval – the frequency of the test.
- Next Due Date – the date the next test is due.
- Auto-Test Code – code as a unique designation for defined test sequences.
- Protection Class – relates to the construction of the appliance (Protection Class I, II, or III).
- Appliance Status – the status of the application (In Use, Not in Use, or In Repair).

To change the information properties:

1. Click ✎ next to the field.
2. Change the information.
3. Click ☑ to save or ☒ to cancel.

Note

If the region selection is for the UK, the CLIENT node has an additional Visual Inspection section with an On/Off switch control. When the control is turned on, the Visual Inspection Details section is added for each client appliance with these fields: Test Interval [Months], Next Due Date, and Last Test Date. This allows the use of Visual Inspection only intervals outside of the standard visual inspections as part of a Visual inspection & Test.

Remarks

Remarks include the description text field and attachment list (pictures, documents, audio, and video). Remarks are optional but can provide useful explanatory information.

To add or edit remarks:

1. Click **Add Remark** to create the first remark:
   - To add an attachment, click 📎.
   - To save a remark, click ☑.
   - To cancel a change, click ☒.
   - To edit an existing remark, click ✎.
   - To delete a remark, click 🗑.

PAT Menu Functions

The options in the menu bar for the PAT module are:

- Communication
- Search
- Reporting
- Administration
- Node

Table 6 is a list of the additional icons on the menu bar.

Table 6. Menu Bar Icons

Icon	Title	Description
	Setup Wizard	This icon is presented when at least one step of Initial setup wizard was not completed. Click to open and finish the wizard.
	Auto-Test Code Notification	Shows when the Auto-Test Code (ATC) is defined but not assigned to any instrument. This icon is usually presented after a database conversion when customized ATC are converted. Click to open a notification message. If no undefined ATC were found, this symbol is not visible.
	Help	Information on software usage and software version: • **Manual** – Opens the User Manual. • **About** – Shows Software version and copyright information. Use **Manage License** to access the License status and activate or deactivate your software license. If you deactivate your license the Software closes.
	Settings	Settings sub-menu: • **Barcode** – Select the barcode format to use for printed documents. • **Country** – Select the country of the application to set reports and certificate formats • **Reports Language** – Select the language to use in reports and certificates. • **Restore Default** – Reset some of the software system settings (Backup Location, Selected Barcode) to default values. • **Current Settings** – Shows the current settings.
	Account Info	This icon shows the initials of the logged-on user. In case of the first installation, without any users created, this icon is empty. Click to show an account menu: • **Log out** – to log out the current user. • **Close Client** – close the current client module window. • **Exit Program** – close the Software. You can also see this information from the directory structure, select **Administration** > **Account Info**.

Communication Menu

The options in the Communication menu are:

- Get Measurements – Get data from the test instrument.
- Set Appliances – Transfer appliance information to the test instrument.
- Get Auto-Test Codes – Synchronize Auto-Test Codes between the Software and the test instrument.
- Read Data – Read data from a file.

Note

If the region selection is for the UK, the options for Set Appliances *and* Get Auto-Test Codes *are disabled.*

Get Measurements

Use **Get Measurements** to transfer collected measurement data from an instrument to a PC. Data is automatically saved to a file for future use and the data can be used in the Software.

Note

If the region selection is for the UK, the Software supports the Fluke 6500 and 6500-2 Appliance Testers.

All instrument types use serial communication via COM port, except the Fluke 6500-2, which uses USB communication.

Note

When at least one of the GT800/GT600 or Fluke 6500 instruments is connected, the  *symbol shows for both instrument types in the Select Instrument list.*

To transfer data:

1. Connect the instruments to the PC.
2. Select **Communications** > **Get Measurements**.

   The Transfer data screen shows. Instruments that are already connected to the PC, show a  symbol next to the instrument type. Select the connected instrument to see a brief description
3. To refresh the list of connected devices, click  .

   If multiple instruments are connected, use the COM Port menu to select the instrument.
4. To transfer data from GT900/GT650, GT800/GT600: select the instrument and click **Next**.

The Software initiates communication with the instrument and transfers the data from the instrument to the PC. After completion of the transfer, the path and the file name of the transferred measurements file show in the Transfer tab.

5. To transfer data from Fluke 6500:
   a. Select the instrument and click **Next**.

      The Transfer tab shows the instructions page to connect the instrument.

   b. On the instrument, push **PC/Print**.

      The Software initiates the transfer of the measurement data. When the transfer is complete, the path and the file name of the transferred measurements file show in the Transfer tab.

6. To transfer data from Fluke 6500-2:
   a. Select the instrument and click **Next**.

      The Transfer tab shows the instructions page to connect the instrument.

   b. Follow the instructions to connect the cable and, push **PC/Print**.

      The USB connection is initiated. The content of the instrument shows in a File Explorer window.

   c. Click **Automatically find file** to start the transfer process.

      When the transfer is complete, the path and the file name of the transferred measurements file show in the Transfer tab.

7. After the transfer is finished, click **Next**.

The Transfer tab opens the Measurements Data table with the content of the saved file.

8. Click **+** for the selected measurement to see an expanded view with the measurement details divided into several tabs.
9. For each test step detail to edit, click ✎.

   The Information tab contains all information data regarding appliance tree position, engineer who executed it, execution date, Auto-Test Code used, instrument used, and more.

   The Tree Position tab shows information about the appliance tree position saved on the instrument. Check if the position here is correct before importing the measurement into the database.

The Remarks tab shows if any of the remarks are saved for that measurement. Usually, this is the place for collected photos or external files related to the appliance under test with some text log as well.

10. To discard the tree position, select **Unassigned**.

    Those measurements are imported into the unassigned test list in the database. Resolve any conflicts with the data, see *Resolve Conflicts*.

    To automatically create non-existent tree structure from the tree position given in the instrument data, select **Automatic.**

    To manually assign a measurement to the tree structure in the client tree, select **Manually** and choose the tree position.

11. Click **Create Tests**.

    After successful transfer, a message box shows with the number of measurements transferred to the tree and measurements transferred to the unassigned list.

Resolve Conflicts

On the Tree Position tab, when an Unassigned checkbox is unchecked, the Software automatically generates a list of conflicts. The Conflicts tab shows if any conflicts between measurement data details and software database exist. Resolve conflicts before importing the measurement into the database.

When there is no received client code from the instrument, the option to uncheck *Unassigned* is disabled and measurements can only transfer to the list of unassigned measurements. There is a blue flag in the Conflict column and the Software indicates that the Client code is not defined.

When the client code received from the instrument does not match the client code of selected client, the option to uncheck *Unassigned* is disabled and measurements can only be transferred to the list of unassigned measurements. There is a blue flag in the conflict column and the Software indicates that the Client code does not exist.

In the case where a conflict exists (for example, Auto-Test Code on Measurement and on Appliance in the database are different), the Conflicts column shows a red flag.

The Resolve Conflict menu has these choices:

- **Use ATC once** – imports the measurement with its Auto-Test Code without changing the Appliance Auto-Test Code parameter in the database.
- **Use ATC on Appliance** – imports the measurement with its Auto-Test Code and at the same time will change the Appliance Auto-Test Code parameter in the database to the code read from the measurement.

Table 7 is a list of the conflict messages.

Table 7. Data Import Conflict Messages

Message	Explanation
Client code does not exist in database. You can only send this measurement to unassigned measurements.	Data does not have a client code assigned on the instrument. The measurement must transfer as *Unassigned*.
Client code is not defined on instrument. You can only send this measurement to unassigned measurements.	Client code received from the instrument does not match the client code of the selected client. The measurement must transfer as *Unassigned*.
Instrument information on Client, Site, Location, and Appliance does not exist in database.	Client, Site, and Appliance nodes conflict when there is a difference between *codes* in selected nodes on Tree Position tab and in transferred measurement (from file or from instrument). Location node conflict occurs when there is a difference between *names* in selected nodes on Tree Position tab and in transferred measurement (from file or from instrument).
Instrument information on Location does not exist in database.	Name parameter differs for the Location node.
Auto-Test Code xxx does not exist in database.	Auto-Test Code from measurement is not already defined inside software.
Auto-Test Code in database = xxx, Auto-Test Code on instrument = xxx	Auto-Test Code from measurement is different than Auto-Test Code on appliance that is selected on Tree Position tab (when Auto-Test is not already defined, this message is not shown).
Different test steps in referent ATC and received ATC (Informational)	Auto-Test Code from measurement is the same as Auto-Test Code on the appliance that is selected on *Tree Position* tab, but test steps are different.
Test is already transferred	Measurement already exists in software (determined by timestamp, instrument type, and instrument serial number).

Set Appliances

Use **Set Appliances** to transfer a list of appliances from the PC to instrument or create a file with appliance list that you can transfer to the instrument through USB connection.

You can also use the Print menu options: **Selected** and **Barcode**.

Instruments do not recognize appliances without codes. Appliances with *Unknown* or *Single* Auto-Test Codes cannot be transferred.

On the initial window, several controls are available. A search control is used to filter Appliances by either Name, Appliance Code, Auto-Test Code, Status, Manufacturer, Manufacturing year, or Appliance type.

To export a file:

1. Select **Communication** > **Set Appliances**.

   The Initial Set Appliances window opens.

2. Click **Export** to open File Explorer.
3. Browse to the folder and create a file name.

   The created file is a CSE File (.cse) and should have less than 8 characters.

To upload a file:

1. Select **Communication** > **Set Appliances**.

   The Initial Set Appliances window opens.

2. Click **Upload** to open the instrument list.
3. Select the instrument where the selected appliances will be transferred.
4. Click **Next**.
5. When the transfer is complete, click **Close** on the confirmation message.

Get/Set Auto-Test Codes

Use **Get/Set Auto-Test Codes** to import and export Auto-Test Codes to and from an Instrument.

To import and export Auto-Test Codes:

1. Connect the instrument to the PC.
2. Select **Communication** > **Get/Set Auto-Test Codes**.

   The Transfer data screen shows.  shows next to the instrument type if already connected to the PC. Select the connected instrument to see a brief description.

3. To refresh the list of connected devices, click .
4. Select the instrument type and click **Next**.

   A table of Auto-Test Codes shows.

   On the Customized tab, all customized Auto-Test Codes with test step details show along with the information whether the Auto-Test Code with the same code exist on testing instrument and in the database.

   When a difference between Auto-Test Codes in the instrument and in the database exists, a red flag shows in the Conflicts column. Conflicts can also occur in Test Steps, the Favorites tab, and the Renames tab list.
5. For each conflict, choose an action to resolve:

   - **Ignore**: take no action.
   - **Instrument->PC**: copy the customized Auto-Test Code definition from the Software on the PC to the instrument.
   - **PC->Instrument**: copy the customized Auto-Test Code definition from instrument to the Software on the PC.

   The selected option shows in the Resolve conflict column. All selected options and corresponding codes show on the right side of the window in the Resolve conflict column.
6. Click **Send** to start the transfer of customized Auto-Test Codes, favorites, and code names based on selected conflict resolution options.

   After completion of the transfer, the small report message shows.
7. Click **OK** to dismiss the message.

Read Data

Use Read Data to read data that was transferred from instrument to PC with the Get Measurements menu option.

1. Select **Communication > Read Data**.
2. Browse to the file and click **Open**.

   After the file is loaded, a table view of the measurement data shows.

   For more information see *Get Measurements*.

Search Menu

The Search menu has these pre-defined searches:

- Node
- Expired Appliances
- Site
- Location
- Appliance
- Not in use

Use the Search menu to find data in the Software and use the results for report generation. You can print out the reports.

When the search is returned you can set properties:

1. In the search results, click to select the site nodes.

   ☑ indicates the selected fields.

2. Click **Manage**.
3. Enter the properties and click **Save**.

There is a more complex tool for the report generation available on the Print menu to generate standard and detailed appliance Reports and Certificates located on listed site nodes. The option **Other** > **Selected** prints the list of site nodes.

- Report:
  - Standard report – generates a standard report for the selected node showing its subtree and containing the list of all appliances with theirs last measurement status.
  - Detailed report – generates a detailed report with test step details for all the appliances' last measurements under the selected node showing its whole subtree structure as well.
- Certificate:
  - Standard Certificate – generates standard types of certificates for all the appliances under selected node in the client tree.
  - Detailed Certificate – generates detailed types of certificates for all the appliances under selected node in the client tree. Detailed certificates contain all the test steps details executed during the last appliance test.
- Other: Print
  - Selected – generates a list of all selected appliances.
  - Barcode – generates a list of all selected appliances including barcodes.

Node

Search results include a list of nodes with names that includes the searched term presented with full path to node. Field used for search: name parameter of all node types.

The detailed report of this search result shows.

Search – Expired Appliances

Search for expired appliances in desired time interval. This form has the predefined search filters:

- Expired – appliances with status Failed, Not Tested, In Repair and appliances that are In Use and have *Next Due Date* property older than today's date
- Expires in 2 weeks
- Expires in 1 Month
- Expires in 3 Months
- An additional option is to display the expired appliance by selected site and location or based on manually chosen time interval

The field used for search based on *Expires in 2 weeks*, *Expires in 1 Month*, and *Expires in 3 Months* options or manually chosen date is only *Next Due Date* property of appliance node with status *In Use*.

You can also print a list of appliance barcodes.

Site

Filter the list of sites by typing a part of its name in search box. Fields of site node used for search include *Name, Code, City, Street*, and *Person*.

Location

Filter the list of locations by typing at least partial name in search box. Filtered data is represented in the table. Fields of location node used for search include *Name*, *Person,* and *Path*.

Appliance

This form filters the list of appliances by typing at least part of the term in search box. Filtered data is represented in the table. Fields of appliance node used for search include *Name*, *Code*, *Status*, *Manufacturer*, *Manufacturing Year*, *Appliance Type*, and *Path*.

Not In Use

This form filters the list of appliances whose status is *Not In Use*. Filtered data is represented in the table. Fields of appliance node used for search include *Name*, *Code*, *Status*, *Manufacturer*, *Manufacturing Year*, *Appliance Type*, and *Path*.

PAT Reporting Menu

Use the Reporting menu to create these reports:

- Client Report
- Client Certificate

Client Report

This function provides a generation of the complete client list of appliances in the form of standard and detailed reports. Standard reports contain general appliance data. Detailed reports also contain last measurements details.

Client Certificate

This function generates certificates for the complete client list of appliances in the form of standard and detailed certificates. The detailed certificate also contains, besides the standard certificate information, detailed results of the last measurements for each appliance of that client.

Note

If the region selection is for the UK, for example, when PAT Header Report Settings is set to Country: United Kingdom- IET Code of practice 4th ed., the certificate also shows the detailed results of the last measurements for each appliance of that client.

Report Viewer

Each of the reports and certificates are generated with the Report Viewer form. This form has several controls available in the toolbar. See Table 8.

Table 8. Report Viewer Controls

Icon	Description
	Navigate back in history
	Navigate forward in history
	Stop
	Refresh
	First Page
	Previous Page
	Next Page
	Last Page
	Page Setup dialogue (Windows-based dialogue)
	Switch to Print Preview or Interactive View

Table 8. Report Viewer Controls (cont.)

Icon	Description
	Print Report dialogue (Windows-based dialogue)
	Save As option for file type: ● Acrobat (PDF) file ● CSV (comma delimited) ● Excel 97-2003 ● Excel Worksheet ● PowerPoint Presentation ● Rich Text Format (rtf) ● TIFF file ● Web Archive ● Word document (docs) ● XPS document
	Search option for text searching in the Report

Note

Zoom control is at the bottom of the window.

Administration Menu

Use the Administration menu to manage this data:

- Engineers
- Test Instruments
- My Company Info
- Auto-Test Codes
- Backup
- Restore
- Account Information
- Users
- Event Viewer

Engineers

This form displays the records of the engineers.

To add engineers:

1. Click **Add**.
2. To modify data, change the data fields on the right part of the form for the selected engineer. See Table 9.
3. Use **Report** to generate this data as a report.

Table 9. Engineers Form Fields

Field	Description
Name	Engineer name
Position	Job position
Engineer code	Unique engineer code
Qualification type	Description of the engineer qualification
Training date	Date of the last training
Signature for the single test certificate	Signature file of engineer used for the test certificate
Remarks	Various notes by engineer
Active	Determine if engineer is actively testing

Test Instruments

All registered test instruments are listed here:

1. To add data records click **Add**.
2. To modify data, change the instrument data on the right part of the form. See Table 10.

Table 10. Test Instruments Form Fields

Field	Description
Serial Number	Serial number or the factory number of the test instrument
Inventory Number	Testing company identification number of the test instrument
Calibration Date	Date of last calibration of the test instrument
Instrument Type	Type of test instrument
Description	Additional information about the test instrument

My Company Info

Use this form to insert company details and logos. The logo picture is intended for use in Reports. The certification logo can be used in addition to the company logo. See Table 11.

Table 11. Company Info Form Fields

Field	Description
Name	Company name
Address	Company address
Description	Additional details about the company
Logo	Select the image file of your company logo. The default setting is the YOUR LOGO HERE image.
Description	If available, you can integrate your Certificate logo. For this, click **Change** and select the image file for your Certificate logo. The default setting is the YOUR LOGO HERE image.

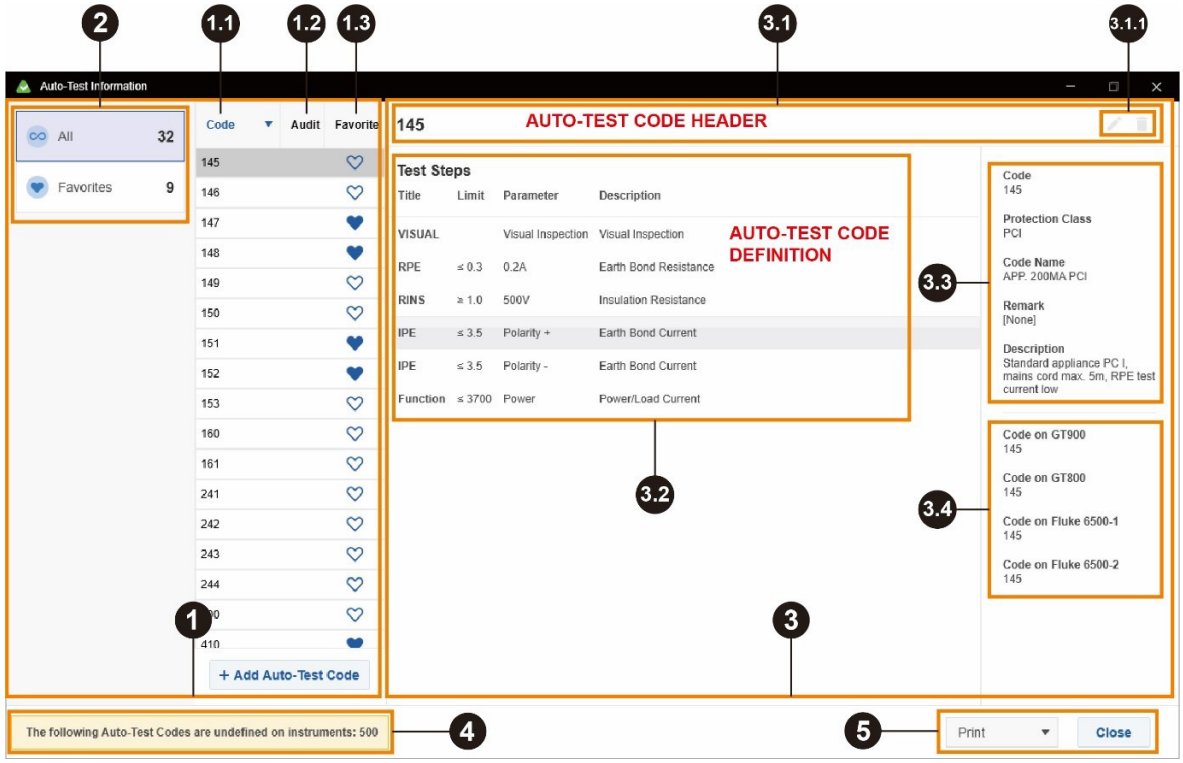
Auto-Test Codes

Use this option to manage Auto-Test Codes. Auto-Test Codes are test procedures with different test steps specific to the type of measurement. They can be predefined or custom.

Predefined Auto-Test Codes have code numbers in the range 1-499. These cannot be changed. The list of predefined codes reside in the Software and instruments and cannot be changed.

Custom Auto-Test Codes (code numbers of 500+) can be made both in the Software and on instruments. These can be transferred between the two instances. Table 12 is a list of the Auto-Test Codes.

Table 12. Auto-Test Codes



Item	Description
❶	List of all the Auto-Test Codes (his list can be sorted by any of the columns). Select a code to see the details in ❸. Use **+ Add Auto-Test Code** to add a new custom code. See *Add Auto-Test*.
❶.❶	Code column contains individual Auto Test codes.
❶.❷	Audit column contains a flag to indicate if this code definition has been changed.
❶.❸	Favorite column contains a heart icon that indicates whether this code is marked as a favorite or not.
❷	Far left panel has these controls: • show all Auto-Test Codes • show favorite Auto-Test Codes

Table 12. Auto-Test Codes (cont.)

Item	Description
3	Details of the selected Auto-Test.
3.1	Single Auto-Test header contains Auto-Test Code and a symbol that indicates if that Auto-Test has been changed recently. Click on the symbol to open the Audit window, showing the list of changes made for that Auto-Test Code.
3.1.1	Single Auto-Test menu options are available only for custom Auto-Test Codes (available controls have bold borderlines and unavailable are dimmed): • open Audit changes window • edit Auto-Test Code • deletes Auto-Test Code
3.2	All Test Steps of the Auto-Test.
3.3	Auto-Test basic information.
3.4	Information about various codes given on different instrument types for the same Auto-Test Code displayed in the Software. When an instrument type does not support that Auto-Test Code, then *Undefined* is shown.
4	Information about existing conflicts when some of the custom Auto-Test Code is not assigned to any of the instrument types.
5	Print controls with various options. **Close** will close the Auto-Test Information window.

Add Auto-Test

To add a custom Auto-Test:

1. Select **Administration** > **Auto-Test Codes**.
2. On the Auto-Test Information window, click **+ Add Auto-Test Code**.
3. On the Add Auto-Test window, drag existing codes from the list to the left panel.

4. Once steps are added you can edit the test steps.

   Individual test steps can be deleted from the list or edited.

   On the Manage Test Step window, all the parameters of the test step can be changed by selecting one of the available values for the specific parameter, except for the Limit parameter of the RPE test step.

   For editing the Limit parameter of the RPE test step use these buttons:

   – Calculate limit opens a dialog to define the wire diameter and length. After selection of the valid values, a calculated limit will be displayed in the Limit field.

   – Show default values extends this form with a drop down list of default values for the Limit parameter.

5. After editing test steps, enter data into the Auto-Test Information panel fields and select the equivalent codes on instrument types in the Auto-Test Code value on instruments panel.
6. Click **Save** to save the definition of the new the Auto-Test Code in the database.

Backup

A user with the ADMIN role can create a backup of the database.

To backup the database:

1. Select **Administration** > **Backup**.
2. Click on the Folder icon to open File Explorer.
3. Select the backup file location and click **Select Folder**.
4. On the Create Backup screen, click **Backup** to create the backup.

   The backup may require some time to complete.

   Database backup generates these files:

   - data_YYYY_MM_DD_hh_mm_ss.bkp (a backup of measurement data)
   - admin_YYYY_MM_DD_hh_mm_ss.bkp (a backup of administrative data for user information)
5. When the backup is complete, click **OK** to confirm.

Restore

A user with the ADMIN role can restore the database.

To restore the database:

1. Select **Administration** > **Restore**.
2. Click on the Folder icon to open File Explorer.
3. Browse to the backup file and click **Open**.
4. On the Restore Backup screen, click **Restore** to restore database or administrative data.
5. When the restore is complete, click **OK** to confirm.

Account Info

The menu option Account Info is intended to display data of the currently logged-in user. Each user can change their password.

To change a password:

1. Select **Administration** > **Account info** > **Change Password**.
2. Enter the old password.
3. Enter the new password.
4. Enter the new password again to confirm.
5. Click **Save**.

Users

The user with the ADMIN role has access to *Administration – Users* function in the menu bar. This shows the User Information table. The admin can sort and filter the Users Information table on any of the columns.

An ADMIN user role can change configuration data of the current users, add new user, delete a user, and change the password of the current user. Also, they can generate a printed report of the configured users. For more information see *ADMIN Role*.

The User Information form has these buttons:

- *Add User:* creates a new user.
- *Delete User:* deletes the user that is selected.
- *Change password:* changes the password for the selected user.
- *Report:* creates a report of all the users. The admin can print reports and every report can be exported to a CSV file.
- *Close:* closes the window.

To add a user:

1. Select **Administration** > **Users** and select **Add User**.
2. Enter the information.

   These fields are required:

   - Username
   - Role – Each user can have only one assigned role. For more information on Roles see *User Authorization – User Roles*.
   - Password
3. Click **Save**.

For the existing users, currently logged in ADMIN user can change the password:

1. Select **Administration** > **Users**.
2. Select the User.
3. Click **Change Password**.
4. Enter the new password and click **OK**.

Administration – Event Viewer

Use Event Viewer to show all the database changes made from all users of the Software.

Node – Menu

Use the Node menu to create and change the tree hierarchy of the client tree view. This hierarchical tree structure, with a root node and subtrees of children with a parent node, is represented as a set of linked nodes. This menu is also accessible through right click on node in tree view.

Table 13 shows the simple actions of the Node menu.

Table 13. Node Action Details

Node Action	Description	Node Types
Add	Add a child node. The type of the node depends on the selected node that is treated as the parent node.	All
Delete	Delete the selected node and all the child nodes.	All except CLIENT node
Duplicate	Create a copy of the selected node at the bottom of the list under the same parent node. Name of the copy has the suffix *(n)*, where n is an ordinal number of the copy. All info property data are copied from selected node. Required data have the suffix *"(n)"*. Nodes types that can be duplicated are *Site* and *Location*	All except CLIENT node
Expand All	Expands the whole client tree.	All

Table 13. Node Action Details (cont.)

Node Action	Description	Node Types
Collapse All	Collapses the whole client tree.	All
Report	Standard report – generates a standard report for the selected node showing the subtree and containing the list of all appliances with the last measurement status. Detailed report – generates a detailed report with test step details for last measurements of all the appliances under the selected node and shows the whole subtree structure as well. See *PAT Reporting Menu* for additional information.	Reports are created for all node types.
Certificate	The certificate is a legal document that certifies the status of the appliance according to the last executed measurement: • Standard Certificate – generates standard types of certificates for all the appliances under selected node in the client tree. • Detailed Certificate – generates detailed types of certificates for all the appliances under selected node in the client tree. Detailed certificates contain all the test steps details executed during the last appliance test. See *PAT Reporting Menu* for additional information.	Certificate shows status of all appliance/ panel nodes in subtree according to standards.

Node – Unassigned Tests

Opens the Unassigned Measurements window showing all imported measurements that are not positioned in the client tree:

To insert one or more of these measurements:

1. Select the check box and open the measurement details.
2. Open the Tree Position tab.
3. Set the desired Appliance location.
4. Click **Move Tests** to initiate the transfer.

INST Module User Interface Principles

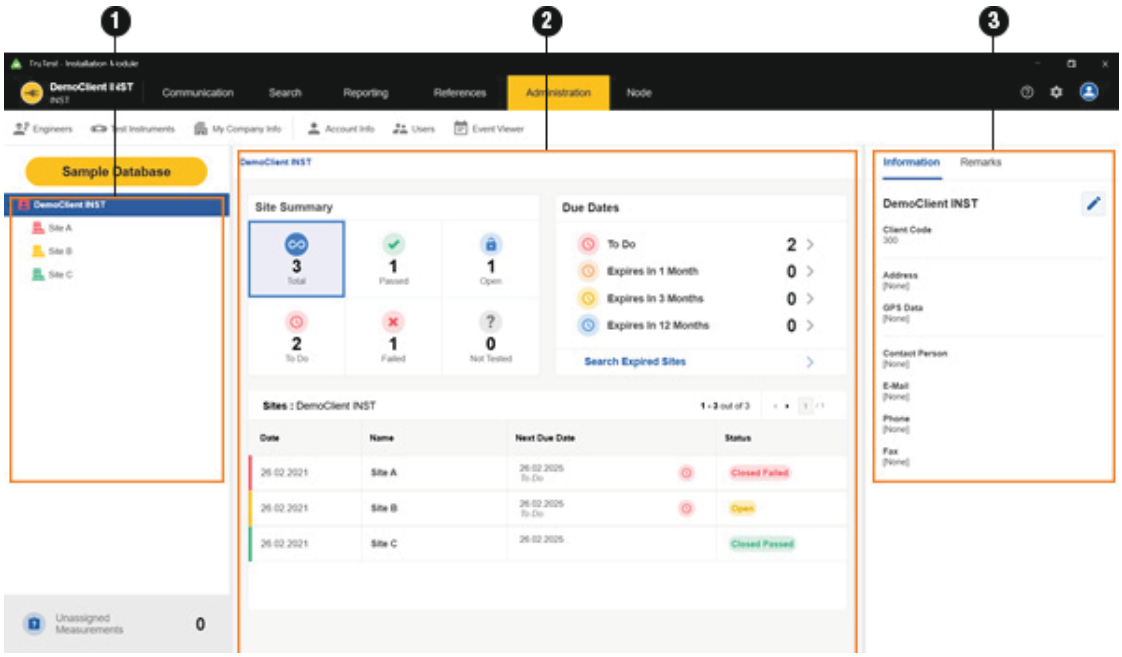
The client data in the Software includes:

- Data input by manual entry
- Measurement data transferred from instruments

Client-Site and Certificate View

Table 14 shows how the data is organized in client-site view of the INST Module Dashboard.

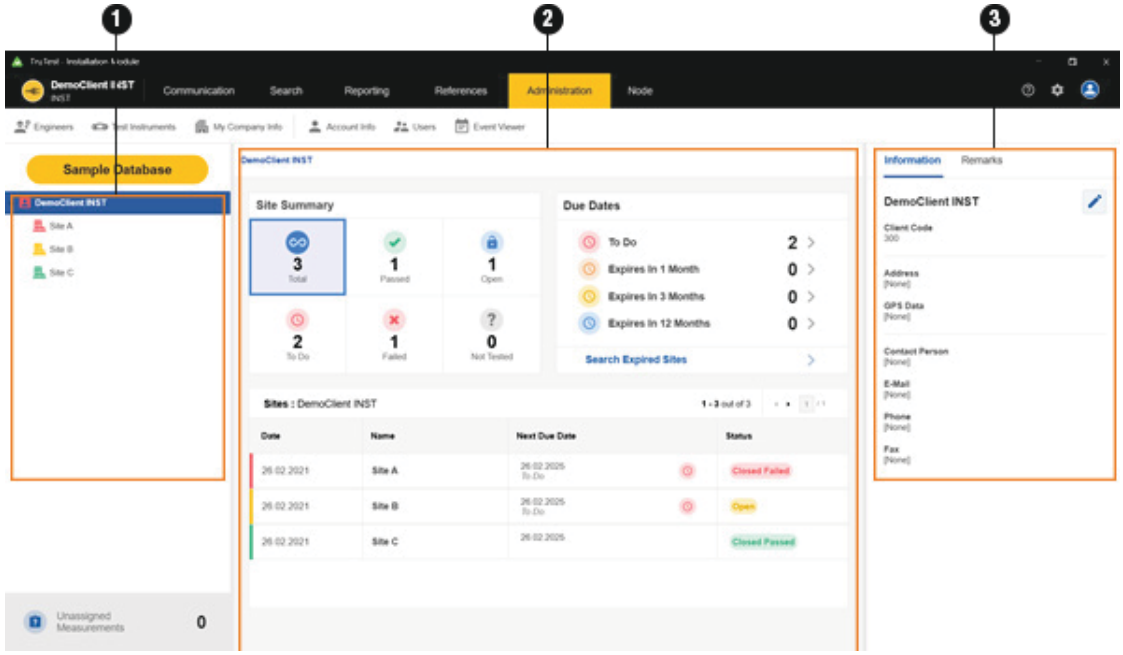
Table 14. INST Module Dashboard - Client-Site View



Item	Description
❶	Client tree – shows overall client information in a hierarchical way
❷	Central panel – shows information based on the selected node type: • Client node: dashboard and list of sites with its statuses • Site node: list of certificates
❸	Node properties – shows detailed properties of the selected node: • Information: table of properties of the selected node • Remarks: attachment list for the selected node

Table 15 shows how the data is organized in the Certificate View of the INST Module.

Table 15. INST Module Dashboard - Certificate View



Item	Description
❶	Client tree – shows overall installation information in a hierarchical way
❷	Central panel – shows information based on the selected node type: • Certificate node: represents the dashboard, list of certificate question fields, and list of circuits with status and basic information • Distribution board node: represents dashboard and list of circuits with status and basic information • Circuit node: represents circuit dashboard with the list of measurements that have been executed
❸	Node properties – shows detailed properties of the selected node: • Information: table of properties of the selected node • Remarks: attachment list for the selected node

Client-site and Certificate Tree

The Software presents the data in a two tree views. In the tree, you can expand or close parent nodes to open or close child nodes on the next hierarchical level.

When a node is selected, information for that node shows along with the properties, a summary and, in case of appliance node type, the test list.

Types of Nodes

Table 16 shows the node types and testing modules.

Table 16. Node Types and Software Modules

Icon	Node Type	Module	
		INST	UK
	Client (Client-site tree)	●	●
	Site (Client-site tree)	●	●
	Certificate node (Certificate tree)	●	●
	Distribution board node (Certificate tree)	●	●

Hierarchical Rules

The tree structure is created as a hierarchical organization. Client node can have an arbitrary number of child site nodes.

These are the hierarchy principles for module:

- One CLIENT node (root) is on the top of the tree structure. Different tree structures can exist in various testing modules for the same client.
- The next level is SITE. One CLIENT can have multiple child SITE nodes.
- Nodes on the next level is dependent on module type. In the INST module:
  - SITE node needs to have at least one of the Certificates. Certificate is a collection of tests that need to be fulfilled in order to produce SITE status.
    - Only last created certificate determines the status of the site, for example is valid.
    - Only one certificate can have status *open* in the INST module.
  - Click the certificate for the selected SITE node to open a Certificate View of that Site. One SITE can have multiple certificates, but unique distribution board/circuit tree organization. This tree organization can be changed only in valid certificate.
  - Click ← at the top of Certificate tree to return to the client topological view.

Certification Types

If UK is the selected region, you can create three certification types for each site. Any combination of certificates is possible for the selected site, but only one can have status *open*.

List of certification types:

- IET (2018) Installation – This Electrical Installation Certificate is used only for the initial certification of a new installation or for an addition or alteration to an existing installation where new circuits have been introduced, or the replacement of a consumer unit/ distribution board.
- IET (2018) Installation Conditional Report - This Certificate should only be used for reports on the condition of an existing electrical installation, and not for the replacement of a consumer unit/distribution board. An installation which was designed to an earlier edition of the Regulations and which does not fully comply with the current edition is not necessarily unsafe for continued use, or requires upgrading. Only damage, deterioration, defects, dangerous conditions and non-compliance with the requirements of the Regulations, which may give rise to danger, should be recorded.
- IET (2018) Minor Works - This Electrical Installation Works Certificate is intended to be used for additions and alterations to an installation that do not extend to the provision of a new circuit.

Node Status

A parent node shows the status that is a summary of the child nodes. For example, the CLIENT node type status summarizes the statuses of the child SITE nodes.

Client/Site/Certificate node has one of the statuses shown in Table 17.

Table 17. Client/Site/Certificate Node Status Summary

Node Status	Node Icon Color	Description	Severity	Icon
CLOSED PASSED	Green	All tests of the valid certificate were successfully executed (the status of all tests is *Passed*).	Third	
CLOSED FAILED	Red	At least one test in the valid certificate is failed (status of at least one test is *Failed*).	First	
OPEN	Orange	*Status* property of the CERTIFICATE node is set to *Open*. It is shown only on Client and Site nodes.	Second	
NOT TESTED	Gray	The node does not have any tests executed.	Least	

Distribution board/Circuit node has one of the statuses shown in Table 18.

Table 18. Distribution Board/Circuit Node Status Summary

Node Status	Node Icon Color	Description	Severity	Icon	
				INST	UK-INST
PASSED	Green	All tests of the selected node were successfully executed (all tests are *Passed*).	Second		
FAILED	Red	At least one test in the selected node is failed (at least one test is *Failed*).	First		
NOT TESTED	Gray	Selected node does not have any tests executed.	Third		
NOT APPLICABLE	Light Gray	Status of selected circuit node is manually set to *Not Applicable*.	Least		NA
NO CIRCUIT	Gray	Selected node does not have any circuit configured.	Fourth	NA	

Expired Sites

The Site is a candidate for testing if it is expired. Site is expired if any of these are true:

- Next Due Date property is expired (older than today's date).
- Status is NOT TESTED.
- Status of the valid certificate is OPEN.
- Status of the valid certificate is CLOSED FAILED (at least one of the certificates has closed and failed status).

Choose a method to open the list of expired sites:

- Click any of the shortcuts in the *DueDate* subpanel of the dashboard for CLIENT type node.
  This shows the list of all site nodes which have a due test time older than selected expiration date.
- Click on **Search** > **Expired Sites** button.
  A search window opens. Set a time frame between *From* and *To* to show Sites that have Next Due Test date within the time frame.

Node Menus

Use the context menu on the selected node for more node actions. Table 19 and Table 20 is a list of Node menu options that depends on your region selection.

Table 19. Context Menus

Client	Site	Certificate	Distribution Board	Circuit
Add Site	Add Certificate	Add Distribution Board	Add Circuit	Add Test
Expand Node	Delete	Expand Node	Delete	Delete
Collapse Node	Expand Node	Collapse Node	Duplicate	Duplicate
Rename	Collapse Node		Expand Node	Expand Node
	Rename		Collapse Node	Collapse Node
			Rename	Set as Not Applicable
				Rename

Note

Node menu options **Expand Node**, **Collapse Node**, *and* **Rename** *are only on node context menus. Node menu options* **Expand All**, **Collapse Node**, *and* **Rename** *are only on the node menu.*

Table 20. Context Menus-UK Region Only

Client	Site	Certificate	Distribution Board
Add Site	Add Certificate	Add Distribution Board	Add Circuit
Rename	Delete	Expand Node	Delete
	Rename	Collapse Node	Expand Node
		Certificate	Collapse Node
			Single Certificate
			Rename

Note

Node menu options **Expand Node** *and* **Collapse Node** *are only on certificate and distribution node context menu. Node menu options* **Expand All** *and* **Collapse All** *are only on the node menu when certificate view is opened.*

Naming Rules

Every node has a visible caption on the right side of the icon. For all the node types, when you create a new node, the default name is the node type preceded with the prefix New, for example, **New Site**.

A duplicated node has suffix (1) added to the name. For example, the next New Site is **New Site (1)**.

A second duplicate will have suffix (2), for example, **New Site (2)**.

The Certificate node name is formed as sum of contents of its Date, Reason for Test, and Number parameters. For example:

27.02.2021. Initial verification/ 0100 00000001

If UK is the selected region, the Certificate node name will be formed as sum of contents of its Date, Certification Type, and Number parameters. For example:

17.3.2022. IET Installation2018 00000001).

Central Panel

The Central panel is structured differently for client tree nodes (CLIENT/SITE) and certificate tree type nodes.

CLIENT node:

- Elements of the dashboard are *Site Summary* and *Due Test* panels.
- *Sites* shows the list of associated sites with its basic parameters.

SITE node:

- *Certificates* shows the list of associated site certificates with its basic parameters.

CERTIFICATE node:

- Elements of the dashboard is *Circuit Summary*.
- *Fields*: list of certificate question fields
- *List of* Circuits: list of circuits with status and basic parameters.
- If UK is the selected region, only a list shows of the certificate question fields grouped in pages

DISTRIBUTION BOARD node:

- Elements of the dashboard is *Circuit Summary*.
- *List of* Circuits: list of circuits with it's statuses and basic parameters.
- If UK is the selected region, only a list of circuits with detailed properties (Circuit Details) or test detailed values (test results) shows.

CIRCUIT node (not available for UK region):

- Elements of the dashboard for Circuit node are the selected node properties.
- *Test List* for Circuit node shows the list of associated measurements.

Dashboards

CLIENT node:

- Dashboard – Site Summary subpanel shows these counters:
  - *TOTAL* – total number of sites
  - *PASSED* – number of sites with CLOSED PASSED valid certificates
  - *OPEN* – number of sites with OPEN valid certificates
  - *TO DO* – number of sites with expired status
  - *FAILED* – number of sites with CLOSED FAILED valid certificates
  - *NOT TESTED* – the number of sites without measurement data
- Dashboard – Due Test subpanel shows these search shortcuts:
  - *TO DO* – the list of sites with expired test interval
  - *EXPIRES in 1 Month* – the list of sites with expired test interval in 1 month
  - *EXPIRES in 3 Month* – the list of sites with expired test interval in 3 months
  - *EXPIRES in 12 Months* – the list of sites with expired test interval in 12 months
  - *Search Expired Sites* – shortcut to Search Expired Sites window

CERTIFICATE/DISTRIBUTION BOARD node (not applicable for UK-region selection):

- Dashboard – Circuit Summary subpanel shows these counters:
  - *FAILED* – number of circuits with FAILED status
  - *PASSED* – number of circuits with PASSED status
  - *NOT TESTED* – the number of circuits without measurement data i.e. with NOT TESTED status
  - *N/A* – the number of circuits with NOT APLICABLE status

CIRCUIT node (not applicable for UK-region selection):

- *Dashboard* – Circuit subpanel shows these parameters:
- *Status* – Circuit measurement status
- *Parent* – Circuit node parent distribution board node

CIRCUIT List: Measurement Detailed Presentation

If UK is the selected region, click on the circuit in **Test Results** tab of Distribution node (central panel) to show a detailed view. The detailed view has these tabs:

- *Test Steps* – shows a list of measurement executed for the selected Circuit.
- *Remarks* – shows a list of saved remarks entered by the software user associated with the circuit.

Then click ⊕ for the selected measurement to show a detailed measurement view. The details view has these tabs:

- *Information* – shows a list of various information related to the selected circuit and test data.
- *Remarks* – shows a list of saved remarks entered by the software user associated with the measurement.

Note

If you do more than one test of the same type on a single circuit, it is possible to change the **Is Main** *field. For those tests, choose a different result value to present in* **Test results** *table for the selected Distribution board. For example, if there are multiple measurements for one measurement point, that is the value that counts and is used.*

CIRCUIT Node: Measurement Detailed Presentation

Click ⊕ for the selected measurement to show a detailed view. The detailed view has these tabs:

- *Information* – shows a list of various information related to the selected Circuit under test.
- *Remarks* – shows a list of saved remarks entered by the software user associated with the measurement.

Note

Not applicable for UK-region selection.

Node Properties

This part of the Software presents properties for the selected node.

All nodes have these property groups:

- *Information* – all specific information for selected node type (node code, address, contact person, production data, next due date, and test interval). Some fields in the Information group are mandatory. When node is selected, the Information group shows.
- *Remarks* – includes remark text and attachments (pictures, documents, audio, and video). Remarks are optional but can provide useful explanatory information.

Information Properties

Every node type has its own set of predefined Information properties.

Required fields for CLIENT, SITE, DISTRIBUTION BOARD, CIRCUIT are:

- *Name* – the name of the node.
- *Code* – the unique string within the group of nodes of the same type within the tree structure.

The software generates the *Name* and *Code* automatically.

Note

When some DISTRIBUTION BOARD node is connected to parent DISTRIBUTION BOARD node, set the Parent parameter to the name of the parent distribution board node.

Table 21 is a list of the required fields for CERTIFICATE.

Table 21. Certificate Required fields

Required Field	Description	Module	
		INST	UK
Reason of Test	Predefined list of certificate types is given	●	
Status	Predefined list of statuses is given	●	
	Certificate status (Open or Closed)	●	●
Number	Unique string within the group of nodes of the same type within the tree structure	●	
Certificate Number	Certificate number	●	●
Date	Certificate creation date	●	●

To change the information properties:

1. Click next to the field.
2. Change the information.
3. Click to save or to cancel.

If UK is the selected region, to change the information properties for Client, Site, Certificate and Distribution board node:

1. Click next to the field.
2. Change the information.
3. Click to save or to cancel.

Remarks

Remarks include the remark description text field and attachment list (pictures, documents, audio, and video). Remarks are optional but can provide useful explanatory information.

To add or edit remarks:

1. Click **Add Remark** to create the first remark:
   - To add an attachment, click .
   - To save a remark, click .
   - To cancel a change, click .
   - To edit an existing remark, click .
   - To delete a remark, click .

INST Menu Functions

The options in the menu bar for the INST module are:

- Communication
- Search
- Reporting
- References
- Administration
- Node

Table 22 is a list of the additional icons on the menu bar.

Table 22. Menu Bar Icons

Icon	Title	Description
	Setup Wizard	This icon is presented when at least one step of Initial setup wizard was not completed. Click to open and finish the wizard.
	Help	Opens a small help menu that provides information on software usage and about software version. **Manual** – Opens the User Manual. **About** – Shows Software version and copyright information. Use **Manage License** to access the License status and activate or deactivate your software license. If you deactivate your license the Software closes.
	Settings	Opens the Settings sub-menu: • **Barcode** – Select the barcode format to use for printed documents. • **Country** – Select the country of the application to set reports and certificate formats. This sets the standard used in the respective region. • **Reports Language** – Select the language to use in reports and certificates. • **Restore Default** – Reset some of the software system settings (Backup Location, Selected Barcode) to default values. • **Current Settings** – Shows the current settings.
	Account Info	This Icon shows the initials of the logged-on user. In case of the first installation, without any users created, this icon is empty. Click to show an account menu: • **Log out** – to log out the current user. • **Close Client** – close the current client module window. • **Exit Program** – close the Software. After you create the User, you can also see this information from the directory structure, select **Administration** > **Account Info**.

Note

For more details about Menu functions that are common for PAT and INST module, see PAT Menu Functions.

Communication Menu

The options in the Communication menu are:

- Get Measurements – Get data from the test instrument.
- Read Data – Read data from a file.
- Date Synchronization – Synchronize date and time between PC and test instrument.

Get Measurements

Use **Get Measurements** to transfer collected measurement data from instrument to a PC. Data is automatically saved to a file for future use and the data can be used in the Software.

All instrument types use serial communication via COM port.

To transfer data:

1. Connect the instruments to the PC.
2. Select **Communications** > **Get Measurements**.

   The Transfer data screen shows. An instrument that is already connected to the PC shows a symbol next to the instrument type. Select the connected instrument to see a brief description.
3. To refresh the list of connected devices, click .

   If multiple instruments are connected use the COM Port menu to select the instrument.
4. Once the instrument is selected, click **Next**.

   The Software initiates communication with the instrument and transfers the data from the instrument to the PC. After completion of the transfer, the path and the file name of the transferred measurements file show in the Transfer tab.
5. After the transfer is finished, click **Next**.

   The Transfer tab opens the Measurements Data table with the content of the saved file.
6. Click ⊕ for the selected measurement, to see an expanded view with some additional details divided into several tabs: Information, Tree Position, and Remarks.

   The Information tab contains all information data about the circuit tree position, engineer who executed it, execution date, instrument used, and more.

   The Tree Position tab shows information about the circuit tree position saved on the instrument. Check if the position here is correct before you import the measurement into the database.

The Remarks tab shows if any of the remarks are saved for that measurement. This is the place for collected photos or external files related to the circuit under test with a text log as well.

7. For each test step detail to edit, double-click on available fields.
8. To change tree position selection, expand each measurement and go to Tree Position tab or use the filter at the bottom left of the window.

   By using this filter, measurements *From* and *To* entered number are assigned to the selection (Automatic/Unassigned):

   - Automatic – transfers measurements to the corresponding tree position. If tree position does not exist in database, it is generated automatically based on received information.
   - Unassigned – transfers measurements to the Unassigned Measurements List if received site code does not exist in database or received site code is not the same as currently selected site. User can also discard tree position of selected measurements by manually choosing this option.
9. Click **Create Tests**.

   After successful transfer, a message box with number of measurements transferred to the tree and measurements transferred to the unassigned list shows.

Table 23. Menu Options

Menu Option	PAT	INST
Resolve Conflicts	●	
Communication - Set Appliances	●	
Communication - Get/Set Auto-Test Codes	●	
Communication - Read Data	●	●

Date Synchronization

If the test instrument is without batteries for a long period of time, the date property resets to factory setting (01.01.1970). Use Date Synchronization to set correct date and time on the testing instrument.

To synchronize date:

1. Connect the instruments to the PC.

2. Select **Communications** > **Date Synchronization**.

   The Date Synchronization screen shows. Instruments that are already connected to the PC show  next to the instrument type. Select the connected instrument to see Date and Time information.

3. To refresh the list of connected devices, click  .

   If multiple instruments are connected use the COM Port menu to select the instrument.

4. If date synchronization between PC and instrument is necessary, select the instrument and click **Start**.

   The Software initiates communication with the instrument and synchronizes the date on the instrument to the PC. After completion of the synchronization, a confirmation message shows on the display.

Search Menu

The Search menu has these predefined searches:

- Site
- Expired Sites
- Distribution Board
- Circuit (not applicable for UK region selection)

Table 24 is a list of the menu options.

Table 24. Menu Options

Menu Option	PAT	INST
Search - Node	●	
Search - Expired Appliances	●	
Search - Site[1]	●	●
Search - Location	●	
Search - Appliance	●	
Search - Not in Use	●	
Search - Expired Sites[2]		●
Search - Distribution Board[3]		●
Search - Circuit[4]		●

[1] Filter the list of sites by typing a part of its name in search box. Fields of site node used for search include Name, Code, Status, Person, City and Street.
[2] Set a time-frame between From and To, to show Sites that have Next Due Test date within the time frame.
[3] Enter a string in the search box to filter the list of distribution boards. Fields of distribution board node used for search include Name, Code and Path.
[4] Enter a string in the search box to filter by the circuits. Fields of distribution board node used for search include Name, Code, Status and Path (not applicable for UK region selection).

Reporting Menu

Use the Reporting menu to create these reports:

- Client Certificate
- E-Check Report (not applicable for UK region selection)
- Location Tag

Table 25 is a list of the menu options.

Table 25. Menu Options

Menu Option	PAT	INST
Client Certificate	●	●
E-Check Report[1]		●
Location Tag[2]		●
Site Certificate[3]	●	●

[1] This function is accessible in Certificate view and provides generation of report based on information in certificate field option E-check Report (not applicable for UK region selection).
[2] This function is accessible in Certificate view and provides generation of reports in form of:
- Installation on Locations is a list of Distribution boards with location tags of the circuits.
- List of nodes by location tag is a list of all circuit nodes by the location tags.
[3] For UK region selection, the software will generate certificate according to the type of the Open certificate.

References Menu

Use the References menu to manage data. Table 26 is a list of the menu options and module selection.

Table 26. References Menu Options

Menu Option	Fields	Description	Module	
			INST	INST-UK
Line/Cable	Name	Line/Cable name	●	
	Type	Line/Cable name	●	
	Number of Wires	Number of wires in the cable	●	
	Section	Cable cross-section	●	
	Remarks	User remarks	●	

Table 26. References Menu Options (cont.)

Menu Option	Fields	Description	Module	
			INST	INST-UK
Fuse	Name	Fuse name	●	
	Description	Fuse description	●	
	Characteristics	Fuse characteristics type	●	
	Nominal Current	Fuse nominal current	●	
	Loop Resistance Limit	Fuse resistance limit value	●	
	Remarks	User remarks	●	
RCD	Name	RCD name	●	
	Type	RCD description	●	●
	Nominal Current	RCD nominal current	●	
	Nominal Trip Current	RCD nominal trip current	●	
	Remarks	User remarks	●	
	RCD Operation Current			●
Location	Name	Location name	●	
	Description	Location description	●	
Test Point	Name	Test point name	●	
	Description	Test point description	●	
Circuit Information	Circuit Description			●
	Reference Method			●
	Conductor Size			●
	Wiring Type			●
Overcurrent Protection Device	Overcurrent Protection Device			●
	Current Rating			●
Other	Earth Electrode Type			●
	Maximum Disconnection Time			●
	Examination Intervals			●
	Location			●
	Test Point			●
	Organizations			●

Line/Cable

This form shows the records of the line/cable types in INST module database.

To add new Line/Cable:

1. Enter new parameter values of the new line/cable.
2. Click **New**.

To modify data:

1. Change the data fields.
2. Click **Enter** or click on next field.

To delete:

1. Select unwanted Line/Cable.
2. Click **Delete**.

Fuse

This form shows the records of the fuse types in the INST module database.

To add new Fuse type:

1. Enter new parameter values of the new Fuse.
2. Click **New**.

To modify data:

1. Change the data fields.
2. Click **Enter** or click on next field.

To delete:

1. Select unwanted Fuse.
2. Click **Delete**.

RCD

This form shows the records of the existing RCD types in INST module database.

If UK is the selected region, this group of references shows the RCD records in the INST-UK module database.

To add new RCD type:

1. Click **Add**.
2. Enter new parameter values of the new RCD.
3. Click **New**.

To modify data:

1. Change the data fields.
2. Click **Enter** or click on next field.

To delete:

1. Select unwanted RCD.
2. Click **Delete**.

Location

This form shows the records of the Location types in the INST module database.

To add new Location type:

1. Enter new parameter values of the new Location.
2. Click **New**.

To modify data:

1. Change the data fields.
2. Click **Enter** or click on next field.

To delete:

1. Select unwanted Location.
2. Click **Delete**.

Test Point

This form shows the records of the outlet types in INST module database.

To add new Test point type:

1. Enter new parameter values of the new Test point.
2. Click **New**.

To modify data:

1. Change the data fields.
2. Click **Enter** or click on next field.

To delete:

1. Select unwanted Test point.
2. Click **Delete**.

Circuit Information

If UK is the selected region, this group of references shows the circuit information records in the INST module database.

To add new reference:

1. Click **Add**.
2. Edit available data fields.

To modify data:

1. Change the data fields.

To delete:

1. Select unwanted Circuit information.
2. Click **Delete.**

Overcurrent Protection Device

If UK is the selected region, this group of references shows the overcurrent protection device records in the INST module database.

To add new reference:

1. Click **Add**.
2. Edit available data fields.

To modify data:

1. Change the data fields.

To delete:

1. Select unwanted Overcurrent protection device.
2. Click **Delete**.

Administration Menu

Use the Administration menu to manage this data:

- Engineers
- Test Instruments
- My Company Info
- Backup
- Restore
- Account Information
- Users
- Event Viewer

Table 27 is a list of the menu options.

Table 27. Administration Menu Options

Menu Option	PAT	INST	Solar
Engineers	●	●	●
Test Instruments	●	●	●
Firmware Update			●
My Company Info	●	●	●
Certificate Settings			●
Auto-Test Codes	●		
Backup	●	●	●
Restore	●	●	●
Account Info	●	●	●
Users	●	●	●
Event Viewer	●	●	●
PV Module Database			●
Inverter Database			●

Node Menu

Use the Node menu to create and change the tree hierarchy of the client tree/certificate tree view. See Table 28. This hierarchical tree structure, with a root node and subtrees of children with a parent node, is represented as a set of linked nodes.

This menu is also accessible through right-click on node in tree view.

Table 28. Node Menu Options

Menu Option	PAT	INST
Node - Unassigned Measurements	●	●
Node - Add	●	●
Node - Delete	●	●
Node - Duplicate	●	●
Node - Expand All	●	●
Node - Collapse All	●	●
Node - Report	●	
Node - Certificate	●	
Node - Limits		●

Use the Limits option to assign the site Environment table and set the test step limits. This menu option is available in Client-Site view when Site node is selected. The Limits window shows every time a new Certificate node is created.

The Environment table and the properties of the selected site shows on the left side of the window. A list of test functions is in the middle of the window. The right section of the window is reserved for limit fields and some additional information about the selected test function. When the environment table properties and limits are set, the values are used for the PASS/FAILED status during data transfer from the instrument.

Solar Module

When you select the Solar Module you can collect, organize, and display the test data from PV Analyzer instruments. The selected module is shown in the top right-hand corner of the software window.

User Interface

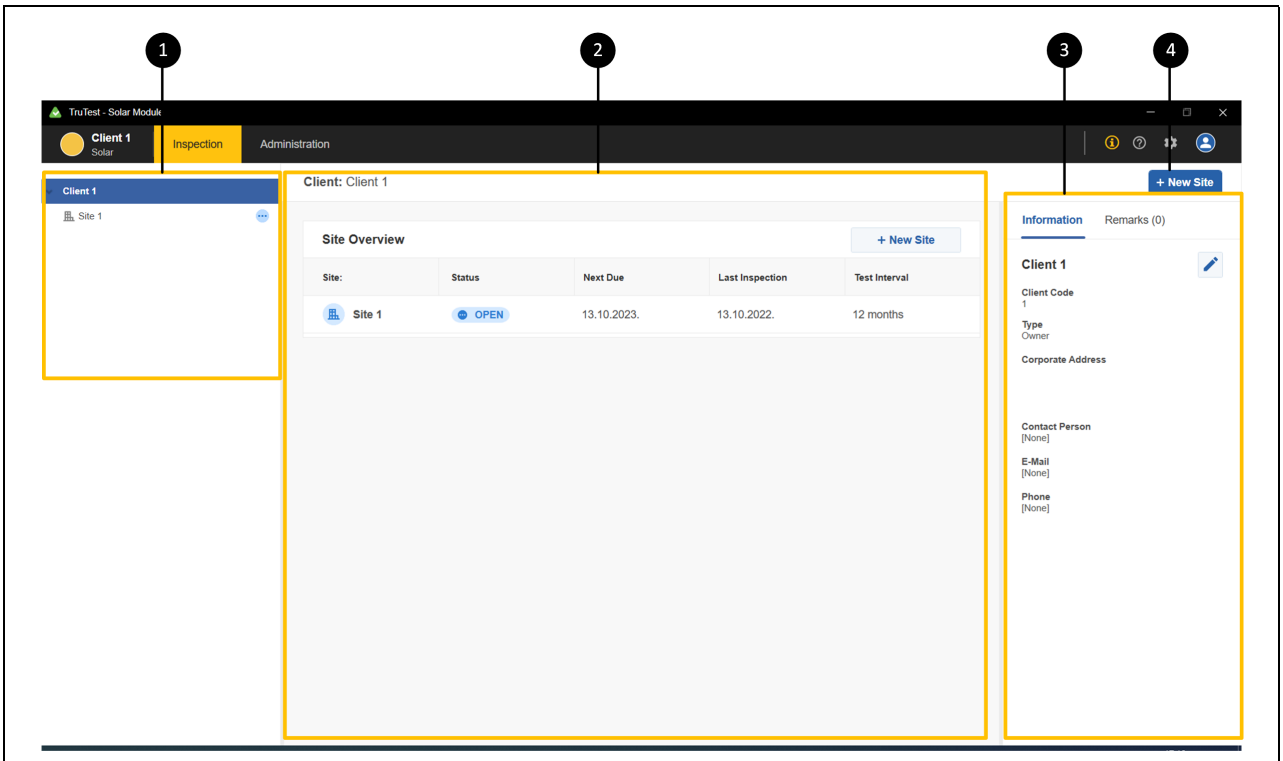
The client data in this module includes:

- Data provided by manual entry
- Measurement data transferred from PV Analyzer instruments

Client-site and Inspection View

Table 29 shows how the data is organized in the Solar Module Dashboard.

Table 29. Solar Module Dashboard



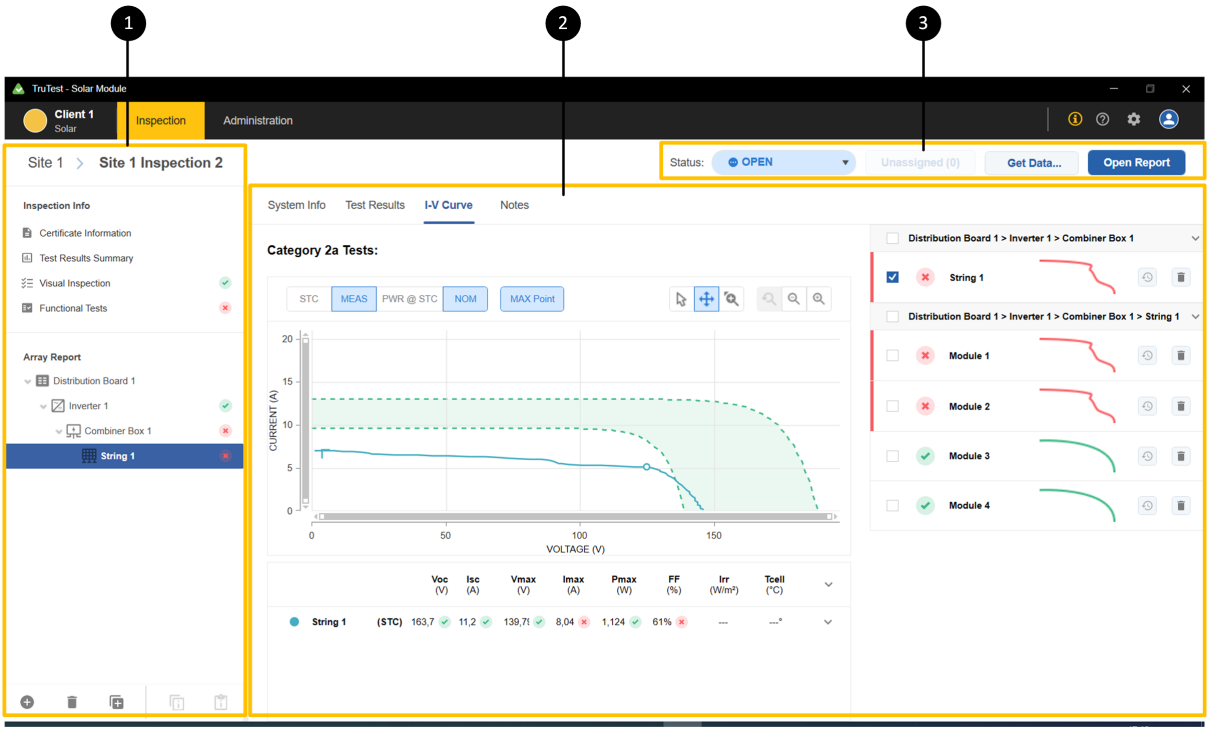
Item	Description
❶	Client tree – shows overall client information in a hierarchical tree topology (directory structure).
❷	Central panel – information based on the selected node type: • Client node: Site overview with **+ New Site** button and a list of sites, status, and basic data. • Site node: Inspections dashboard with the list of inspections, status, and basic data.

Table 29. Solar Module Dashboard (cont.)

Item	Description
❸	Node properties – detailed properties of the selected node. The tabs are: • Information – table of properties for the selected node. • Remarks – list of notes and attachments for the selected node.
❹	Client / Site view buttons: • **+ New Site** – shown when Client node is selected. • **+ New Inspection** – shown when Site node is selected.

Table 30 shows how the data is organized in the Inspection view of the Solar Module.

Table 30. Solar Module Dashboard: Inspection View



Item	Description	Details
❶	Inspection Panel	• Inspection Info with inspection headers. • Array Report – solar panel array hierarchical view for this inspection. At the bottom are controls for the array tree configuration.

Table 30. Solar Module Dashboard: Inspection View (cont.)

Item	Description	Details
❷	Central Panel (shows information based on the selected Inspection Panel item)	Inspection Info: • Certificate Information – list of basic certificate question fields. • Test Results Summary – dashboard with a list of basic test question fields. • Visual Inspection – list of visual test question fields based on selected Visual inspection standards. Available standards: IEC-62446-1 and Safety Check (E-check). A printed blank page of the Visual Inspection questions is available. • Functional Tests – displays list of basic functional test question fields. A printed blank page of the Functional Tests question is available. Array Report: • Distribution Board node displays tabbed view of selected distribution board measurement data. • Inverter node displays tabbed view of selected inverter measurement data. • Combiner Box node displays tabbed view of selected combiner box measurement data. • String node displays tabbed view of selected solar panel string measurement data along with measurement data of each individual module inside that particular string. Array report nodes detailed description of measurement data is given in separate manual chapter. See *Inspection Array Report*.

❸	Inspection Control Dashboard	• Status – drop-down list for manual definition of Inspection with status for: Open, Closed/Failed, and Closed/Passed.
		• Unassigned – button that opens window with the list of unassigned measurements.
		• Get Data - drop-down menu with option to import measurement data:
		  • directly from connected SMFT-1000 or from measurement file.
		  • PV module data from connected SMFT-1000.

Client-Site Tree and Inspection Panel

The Software shows the data in tree views. In the tree views, you can expand or close parent nodes to open or close child nodes on lower hierarchical levels.

When you select a client/site tree node, information about that node shows together with the properties and a summary.

When you select Inspection Info in the Inspection panel, question fields for that item show in the window.

When you select Inspection array node in the Inspection panel is, tabbed measurement data for that node shows.

Types of Nodes

Table 31 is a list of the node types used in the Solar Module.

Table 31. Node Types in Solar Module

Icon	Node Type
no icon	Client (C-Node)
	Site (S-Node)
	Distribution Board
	Inverter
	Combiner Box
	String

Hierarchical Rules

The tree structure (directory structure) is a hierarchical organization for the inspection information. The Client node (root) can have a multiple number of Site nodes (child).

These are the hierarchy principles for module:

- Client node is at the top of the tree structure. Different tree structures can exist in various test modules for the same client.
- Next level is the Site node. A Client node can have multiple Site nodes.
- Nodes below the Site node are dependent on Solar module selection:
  - Site node requires at least one Inspection node. Inspection is a collection of tests to fulfill and create the Site status. The last created Inspection determines the status of the site.
  - Click the Inspection for the selected Site node to open the Inspection View. One Site can have multiple Inspections, each inspection can have unique Array Report tree organization.
  - Click on the Site name at the top left corner of Inspection view to return to the Client view.

Node Status

Table 32 is a list of the status descriptions for the Client/Site dashboard.

Table 32. Site Node Status Summary

Node Status	Node Icon Color	Description	Severity	Icon
CLOSED PASSED	Green	All tests of the valid inspection are successfully executed (the status of all tests is *Passed*).	Third	
CLOSED FAILED	Red	At least one test in the valid certificate is failed (status of at least one test is *Failed*).	First	
OPEN	no color	*Status* property of the Inspection node is set to *Open*.	Second	
NOT TESTED	Gray	Node does not have any inspections.	Least	no icon

Expired Sites

Site is a candidate for testing if it is expired. Sites are expired if any of these statements are true:

- Next Due Date property is expired (older than today's date)
- Status is NOT TESTED
- Status of valid certificate is OPEN
- Status of valid certificate is CLOSED FAILED

Node Menus

Use the context menu on the selected node for more node actions. Table 33 is a list of menu options for each node.

Table 33. Menu Options

Client	Site	Distribution Board	Inverter	Combiner Box	String
Add Site	Add Inspection	Add Distribution Board	Add Combiner Box	Add String	Add Module
Rename	Delete	Add Inverter	Delete	Delete	Add # of Modules
	Duplicate	Delete	Duplicate	Duplicate	Delete
	Rename	Duplicate	Copy System Information	Copy System Information	Duplicate
		Copy System Information	Paste System Information	Paste System Information	Copy System Information
		Paste System Information			Paste System Information

Naming Rules

Every node has a visible caption on the right side of the icon. For all the node types, when you create a new node, the default name is the node type preceded with the prefix New, for example, **New Site**.

A duplicated node has suffix (1) added to the name. For example, the next New Site is **New Site (1)**.

A second duplicate will have suffix (2), for example, **New Site (2)**.

The Inspection name is a combination of the Site name and Test Certificate number. For example, New Site Inspection 1.

Central Panel

The Central panel is structured differently for the Client (Client/Site) and Inspections nodes.

The Client node is a site overview that shows a list of associated sites with basic parameters. The Site node is a dashboard that shows basic site data.

The Inspections node shows the list of associated site inspections with the basic parameters. Inspection Info has question fields for certificate-based data:

- Certificate information
- Test Results Summary
- Visual Inspection
- Functional tests

The Inspection Array Report contains the tree to show the hierarchical structure of the solar installation. Root nodes are the number of Distribution Board nodes. Each Distribution Board node is followed by one or more Inverter nodes. Each Inverter node is followed by one Combiner Box node. Each Combiner Box node is followed by one or more solar panel String nodes.

Dashboards

The Client node is a Site Overview table that shows data for each site:

- Site – status icon and name of the Site
- Status – current status of the Site
- Next Due – date of the next Inspection
- Last Inspection – date of the last Inspection
- Test Interval – configured test interval

The Site node is dashboard that shows the Site Summary subpanel with these counters:

- Site Status - current status of the Site
- Next Inspection Due – date of the next Inspection
- Last Periodic Inspection – date of the last Inspection
- Test Interval – configured test interval

The Inspections table shows data for each site:

- Date – inspection creation date
- Report ID # – Test Certificate Order Number
- Reason Of Test – Certificate type for Reason of Test
- Status – Inspection status

Inspection Info

Certificate information is grouped into panels for the certificate information, contact information, description of installation, and utility details. The Test Results Summary has panels for the test results summary and information, test details information, and signatures.

The Visual Inspection has fields for Pass/Failed/Not Applicable to meet the standards:

- IEC-62446-1
- Safety Check (E-check)

You can save data in the SMFT-1000 PV Analyzer with the VISUAL function or print a blank Visual Inspection form. Each question field has the option to manually enter comments and attach files (text documents and photo files). Each field also includes the status symbol on the right side for pass or fail.

The Functional Tests information has fields for Pass/Failed/Not Applicable. The data is saved in SMFT-1000 PV Analyzer with the FUNC/$P_{AC/DC}$ function. Or you can print a blank Functional Tests form. Each question field has the option to manually enter comments and attach files (text documents and photo files). Each field also includes the status symbol on the right side for pass or fail.

Inspection Array Report

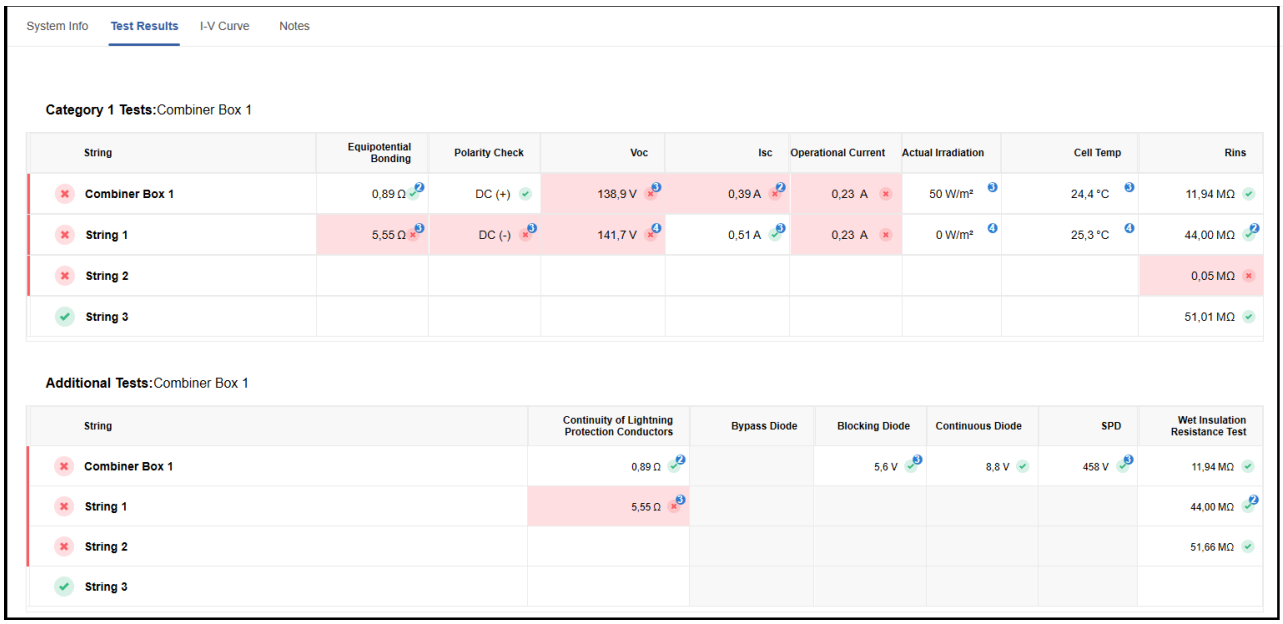
Each array node divides the measurement data into common tabs: System Info, Test Results, I-V Curve, and Notes. For each array node you can enter one or more remarks along with the attachment files inside the Notes tab.

Table 34. Inspection View of System Information and Test Results

Type	System Data	Test Results Data
Distribution Board	Voltage	Use the INST module for tests on the AC side on the installation
	Current	
	Frequency	
	System Type	
Inverter	Manufacturer	• Category 1 Tests • Other tests • SPD Tests To view the Test details, click on **Result**. The panel shows the data for each measurement.
	Model	
	Nominal Power DC	
	Nominal Power AC	
	Efficiency Factor Limit	
	Serial Number	
Combiner Box	Inverter Info	• Category 1 Tests with data for Combiner Box and Strings • Additional Tests with data for Combiner Box and Strings *Note* *Each cell can contain the last measurement value, number of measurements executed for that parameter and Pass/Failed icon.* To view the Test details, click on the cell. The panel shows the data for each measurement.
	Manufacturer	
	Model	
	PV Array table with data for Combiner Box and Strings	
	String Overcurrent Protective Device table with data for Combiner Box and Strings	
	String Wiring table with data for Combiner Box and Strings	
	Lightning Protection Conductor Wiring table with data for Combiner Box and Strings	
	Array Isolator/DC Switch Disconnector table with data for Combiner Box and Strings	
	Surge Protection Device Specification table with data for Combiner Box and Strings	
	Blocking Diodes Specification table with data for Combiner Box and Strings	

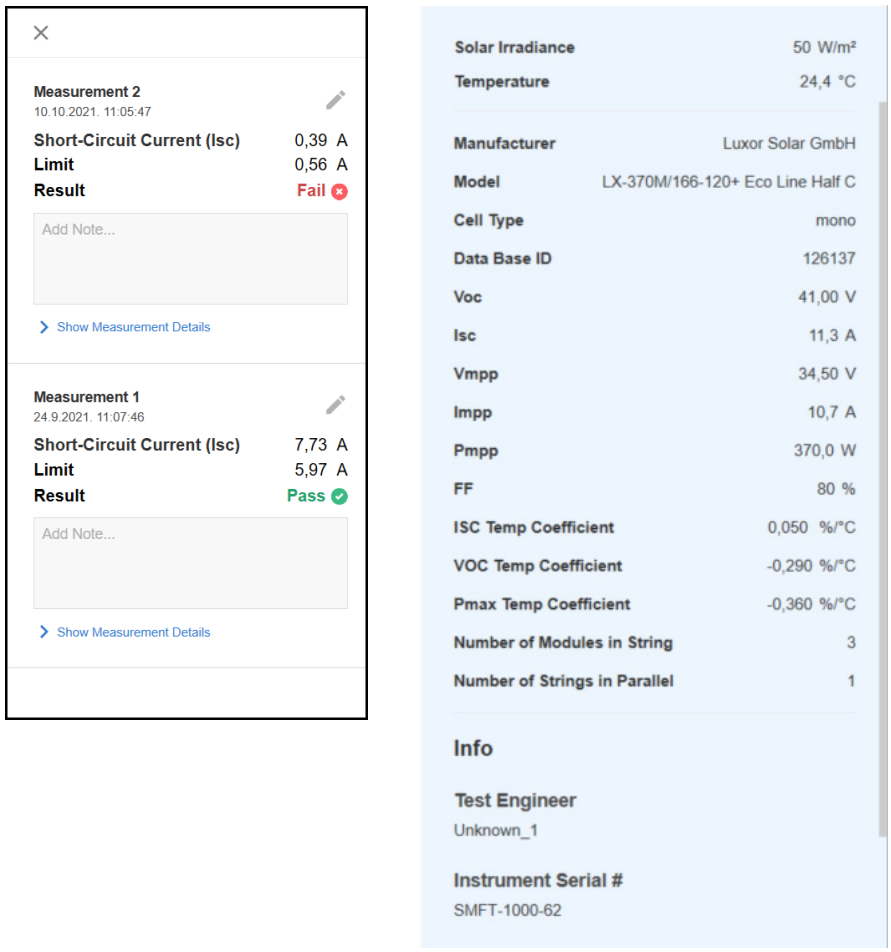
Test Results. On the Test Results tab for Combiner Box and String nodes there are tables with a number of essential measurements to execute. Click on any of the filled cells to open the Test Details panel with details of that specific measurement. See Figure 2.

Figure 2. Test Results: Measurement Details



Test Details. To open the Test Details panel, click on **Result** in Test Results for the Inverter or click any saved measurement data cell in Test Results for Combiner Box and String nodes. See Figure 3. Click on the cell to open Test Details panel with measurement data of each executed measurement. Measurement Details of each measurement are editable and one remark can be added. If more than one measurement is presented in this panel, click on **Show Measurement Details** to open detailed data of the measurement.

Figure 3. Test Details



These tools are available to edit the measurement:

move the measurement into unassigned measurement

delete the measurement

cancel the measurement edit

save the measurement edit

I-V Curve. I-V Curve is a graphical representation of the relationship between the voltage applied across an electrical device and the current flowing through it. In the solar arrays, I-V Curve provides a quick and effective means to access the true performance of solar PV modules, strings, or combiner boxes. In a correctly performing PV system, the shape of the curve follows the normal profile and the measured values of V_{OC}, I_{SC}, V_{MAX}, I_{MAX}, P_{MAX}, and FF (Fill Factor) are as expected for the environmental conditions at the time of measurement.

During manufacture, modules are tested under standard test conditions (STC) at an irradiance of 1000 W/m2, a temperature of 25 ºC, and air mass of 1.5. Measurements of irradiance and temperature captured at the same time as the I-V curve data are used to convert field I-V Curve measurements to STC. Corrected measurements are then used for a direct comparison with the manufacturer module datasheet.

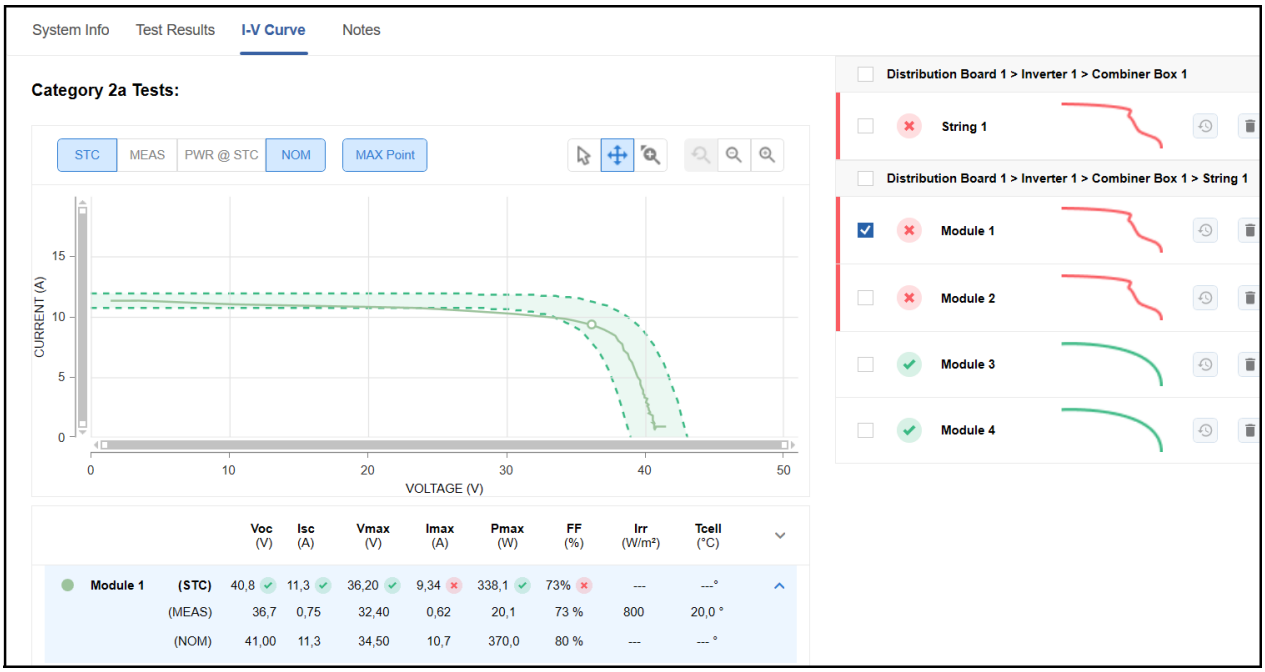
At the factory, the testing identifies any manufacturing problems and also verifies the power rating of a particular module for the product datasheet and specifications.

In the field, I-V Curve tracing is used to create an operational I-V Curve to confirm that the actual power output is close to the predicted value. If there is a discrepancy of the STC and nominal curves, analysis of the I-V Curve shape helps to identify the root cause for the under-performance and the correction measures to implement.

The display (see Figure 4) has these sections:

- I-V Curve diagram and controls.
- Table with measured values for all types of diagrams: MEAS (measured), STC (standard), and NOM (nominal). The values are V_{OC}, I_{SC}, V_{MAX}, I_{MAX}, P_{MAX}, FF, Irradiance, and Temperature of either the combiner box, string, or module.
- On the right is a graphical representation of the summary test results for the measurement object (either combiner box, string, or modules). For each object there is a Pass/Fail indicator of the measured data, name of the object, icon for Pass/Fail, I-V Curve diagram, and buttons to refresh and delete this measurement data.

Figure 4. I-V Curve Display



The I-V Curve diagram has controls for the data selection to present:

- STC — the STC data I-V Curve diagram.
- MEAS — the measured data I-V Curve diagram.
- PWR @ STC — the STC data-based Power Curve diagram.
- NOM — the diagram of nominal zone (zone of correct values).
- MAX Point — marks the maximum power point of the curve diagrams.

Note

The set of enabled controls show which diagrams can be presented at the same time.

To the right of the data selection controls are the controls for the plot view:

- cursor — to show the measured values of the specific data point
- zoom in/zoom out with click and hold left mouse button
- zoom in to the selected area of the diagram
- show the default view
- zoom out with left mouse button click
- zoom in with left mouse button click

Notes. Notes include the Remark description field and attachment list (photos, documents, audio, and video). Remarks are optional but can provide useful additional information.

To add or edit remarks:

1. Click **Add Remark** to create the first remark.
2. To add an attachment, click .
3. To save a remark, click .
4. To cancel a change, click .
5. To edit a remark, click .
6. To delete a remark, click .

Inspection Get Data

This drop-down menu has different options to communicate with the Solar MFT:

- Get Measurements as:
  - Download from Solar MFT
  - Import from file
- Get PV Module data as a download from Solar MFT

Download Measurements

Use **Download from Solar MFT** to transfer collected measurement data from instrument to a PC. The Software automatically saves data to a file on the PC and the data can be used in the Software. All instrument types use serial communication through the COM port.

To transfer data:

1. Connect the instruments to the PC.
2. Select **Get Data – Download from Solar MFT**.

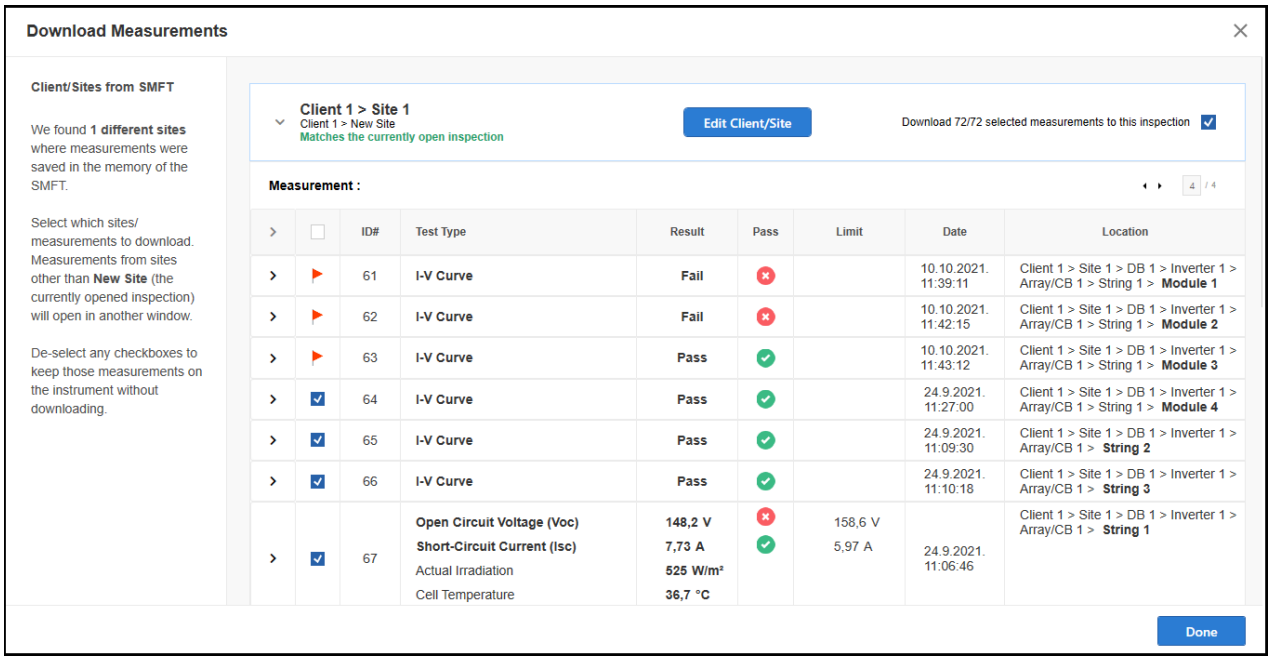
   The Download Measurements screen shows with instructions on how to connect the instrument. Once instrument is connected to the PC, a green checkmark appears with information that instrument is connected.
3. Click **Download** to continue.

   The Software initiates communication with the instrument and transfers the data from the instrument to the PC. After completion of the transfer, the path and the file name of the transferred measurements file show in the Transfer tab.
4. After the transfer is finished, click **Next**.

The Transfer tab opens the Measurements Data table with the content of the transferred data. See Figure 5. Measurements are grouped by Client code and Site code received from the instrument. If Client code or Site code were not entered on the instrument, all measurements are Unassigned.

Each group has the option to Add Client/Site if client or site code is not in the database or to Edit Client/Site and transfer that group of measurements to another location.

Figure 5. Transferred Measurement View

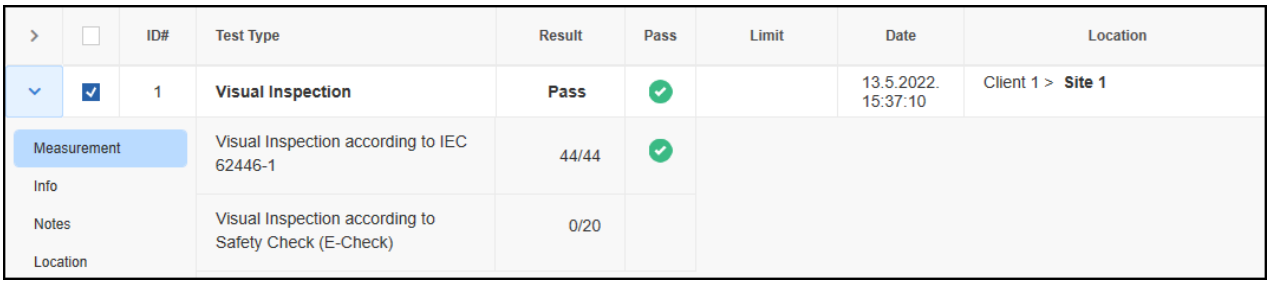


5. Click **>** in the selected group to see all measurements.

   A red flag in the second column indicates that measurement is in the TruTest database and cannot be transferred.

6. Click **>** for the selected measurement, to see an expanded view with additional details grouped into sections: Measurement, Info, Notes, and Location. See Figure 6.

Figure 6. Expanded Measurements View



The *Measurement* tab has the measurement description with the result data, status column, and possible limit data.

The *Info* tab has the name of the test engineer and instrument serial number.

The *Notes* tab shows any remarks that are saved for the measurement. Usually, this is the place for collected photos or external files related to the circuit under test with a text log.

The *Location* tab shows information about the circuit tree position saved on the instrument.

Note

Make sure that the position is correct before you import the measurement into the database.

7. To change tree position selection, expand each measurement and go to the Location tab. Toggle buttons up or down for each tree level to change code.

   Location column updates automatically. If tree level does not support current test type, code selection for that tree level show as disabled.

8. Click **Done**.

Import Measurements from File

Use **Import from file** to transfer collected measurement data from file. After you choose the file to read, the Measurements Data table with the content of the imported data opens. For more information about this window, see *Download Measurements*.

Download PV Module Data from SMFT-1000

Use **Download from Solar MFT** to transfer PV modules between the instrument and software.

1. Connect the instrument to PC.

2. Click on **Download from Solar MFT** to open the Download Measurements window.

   The Download Measurements screen shows instructions on how to connect the instrument. When the instrument is connected to the PC, a green checkmark shows to verify that the instrument is connected.

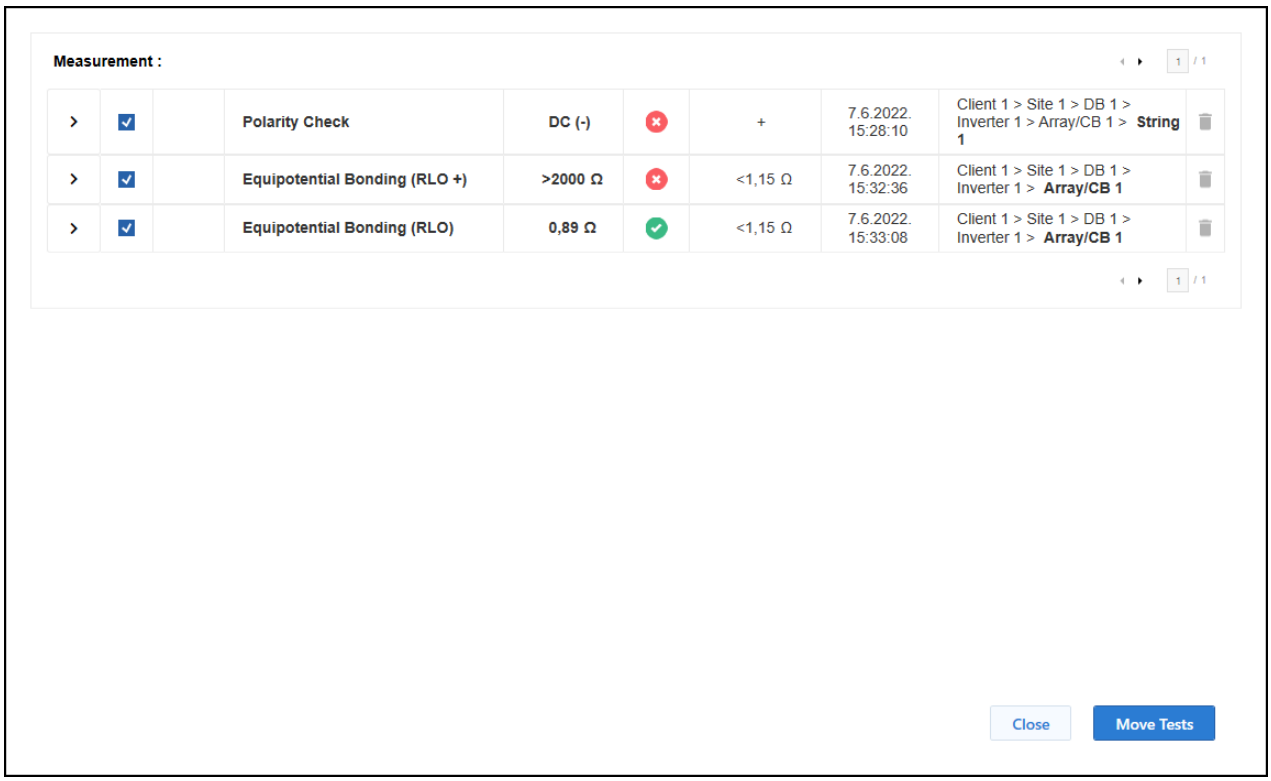
3. Click **Download** to start the transfer.

4. If transfer is successful, the window for PV Module management opens. See Figure 7.

   This window is a list of PV Modules received from the instrument. Maximum number of items that instrument can store is 20.

5. Click ✎ to add new PV Model, change Manufacturer, Model, or delete selected item.

Figure 7. PV Modules



6. When the list of PV Modules is complete, click **Send to SFT** to transfer the list to the instrument.

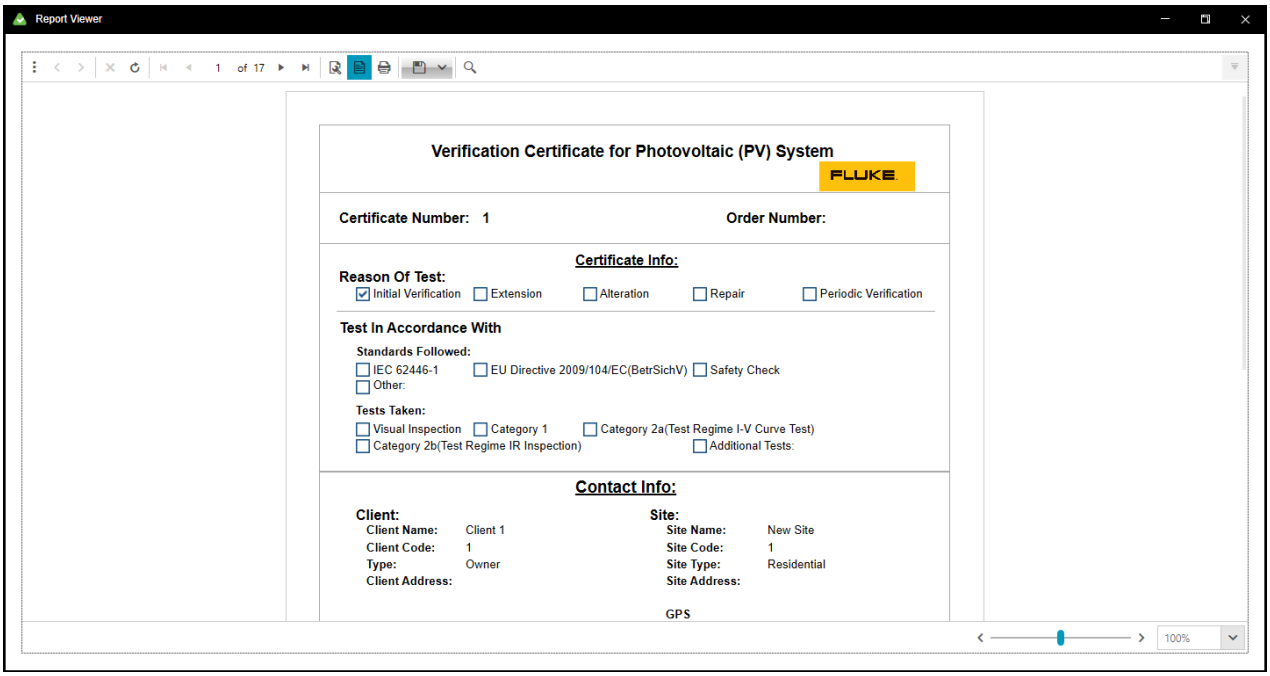
Inspection Unassigned

Click on ***Unassigned (x)*** button (if enabled, for example, not empty) to open unassigned measurement table. Check the measurement to move and set the destination location (go to Location tab in the measurement Details). Move measurements to Unassigned table during measurement transfer or from saved measurement inside Inspection.

Inspection Open Report

Click on ***Open Report*** to start report generation. When done, the report opens in the *Report Viewer* window. See Figure 8.

Figure 8. Report Viewer



Node Properties

This part of the Software shows properties for the selected node.

All nodes have these property groups:

- *Information* – all specific information for selected node type (node code, address, contact person, production data, and test interval).
- *Remarks* – includes remark text and attachments (pictures, documents, audio, and video). Remarks are optional but can provide useful explanatory information.

Some fields in the Information group are mandatory. When node is selected, the Information group shows. Remarks are optional.

Information Properties

Every node type has a set of predefined Information properties.

Required fields for CLIENT, SITE are:

- *Name* – the name of the node.
- *Code* – the unique string within the group of nodes of the same type and within the tree structure.

The Software generates the *Name* and *Code* automatically. Any changes you make about Client and Site on Certificate Information will only be visible on the certificate and client data does not be change.

To change the information properties:

1. Click ✎ next to the field.
2. Change the information.
3. Click ☑ to save or ☒ to cancel.

Remarks

Remarks include the remark description text field and attachment list (pictures, documents, audio, and video). Remarks are optional but can provide useful explanatory information.

To add or edit remarks:

1. Click **Add Remark** to create the first remark.
2. To add an attachment, click 📎.
3. To save a remark, click ☑.
4. To cancel a change, click ☒.
5. To edit an existing remark, click ✎.
6. To delete a remark, click 🗑.

Solar Module Menu Functions

The options in the menu bar (see Figure 9) for the Solar module are:

- Inspection
- Administration

Figure 9. Solar Menu Bar

Table 35 is a list of the menu bar icons.

Table 35. Menu Bar Icons

Icon	Description	Details
	Setup Wizard	Icon shows when at least one step of Initial setup wizard is not completed. Click to open and finish the wizard.
	Help	Opens a Help menu that provides information on software usage and about software version: • **Manual** – Opens the User Manual. • **About** – Shows Software version and copyright information. Use **Manage License** to access the License status and activate or deactivate your software license. If you deactivate your license the Software closes.
	Settings	Opens the Settings sub-menu: • **Reports Language** – Select the language to use in reports and certificates. • **Restore Default** – Reset some of the software system settings (Backup Location, Selected Barcode) to default values. • **Current Settings** – Shows the current settings.
	Account Info	Icon shows the initials of the logged-on user. In case of the first installation, without any users created, this icon is empty. Click to show an account menu: • **Log out** – to log out the current user • **Close Client** – close the current client module window • **Exit Program** – close the Software You can also see this information from the directory structure (after you create a user), select **Administration** > **Account Info**.

Note

For more information about Menu functions that are common for both the PAT and SOLAR module, see PAT Menu Functions.

Administration Menu

The Administration tab has a menu bar with the options to manage data with the Solar module. See Table 27 for a list of the available options.

These menu options are only available in the Solar module:

- Firmware Updates
- PV Module Database
- Inverter Database

Firmware Updates

To update the firmware on the PV Analyzer:

1. Connect the PV Analyzer to the PC.
2. Go to Administration menu and select **Update Firmware** to start the update wizard.

   The software auto-detects the PV Analyzer instrument is connected.
3. Click **Next.**
4. Click **Select.ZIP** to select the .zip file that contains firmware update.
5. Click **Next** to proceed.

   A progress screen opens to show the update status with two progress bars. The first is overall and divided into six parts. The second progress bar shows update process for each file. If you select **STOP** the update is canceled.

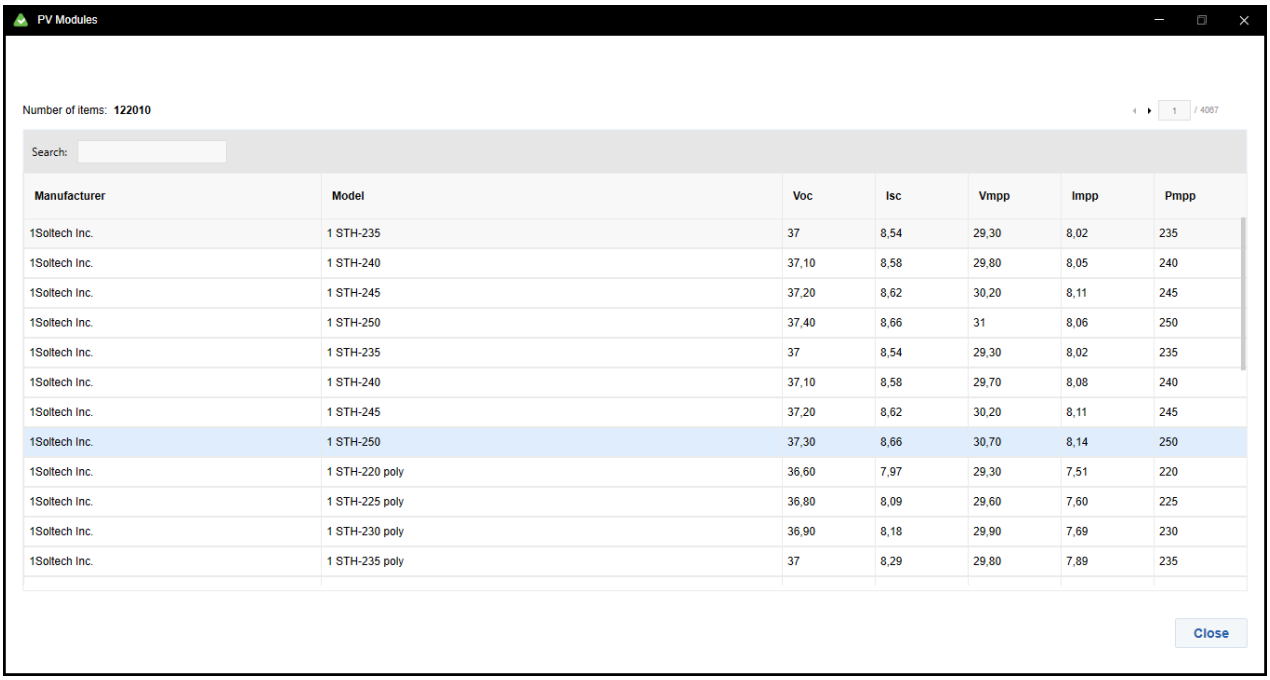
   The update takes about 15 minutes.

   When update is done, a message screen shows that update is successful or failed.
6. Click **Finish** to complete the firmware update.

PV Module Database

This form displays the records of the saved PV modules. See Figure 10.

Figure 10. PV Module Database



To view PV Modules:

1. Go to Administration menu and select **PV Module Database**.

   A window shows the PV Modules with manufacturer, model, and declared value for the specific measurements.

2. To add a new PV Module, click **+New PV Module Type**.
3. Information about number of PV Modules (Number of items).
4. To search PV Manufacturer or Model by name, type number, letter or word in search box at the top of the table.
5. Click **Close** to close the window and return to the main window.

Inverter Database

This form displays the records of the already saved inverter models.

To add a new inverter model:

1. Go to Administration menu and select **Inverter Database**.

   A window shows the Inverter models with manufacturer, model, nominal power dc, nominal poser ac, and efficiency factor limit.

2. To add a new Inverter, click **+New Inverter**.
3. Fill-in fields with for new model.
4. Click **Save**.

To modify the inverter model record:

1. Click .
2. To delete record, click .
3. Click **Save**.