


Ekip Connect

Instructions for use for
communication software EKIP Connect
compatible with low voltage circuit breakers by ABB SACE



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1. Introduction

Ekip Connect is a software application for personal computers using Microsoft Windows® operating systems which allows data to be exchanged with one or more ABB low voltage appliances.


In particular, Ekip Connect supports the connection of ABB automatic low voltage circuit breakers fitted with an electronic trip unit in order to:

- Set up
- Monitor status
- Read information (alarms, measurements, parameters)
- Modify configuration parameters, above all for trip units which do not feature a display
- Carry out commands
- Find faults in the communication network
- Carry out tests

Ekip Connect proves useful in a variety of phases during the life cycle of the trip unit:

1. Set up
2. Configuration
3. Monitoring
4. Maintenance and testing

Thanks to the possibility of carrying out a scan of the communications network and the possibility of saving parameters and test reports, the software also assists the process of operative testing of a switchboard.

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1.1 Connection configuration

To use the functions of Ekip Connect, it is necessary to provide a communication interface, a connection between the PC and the electronic trip unit.

There are four possible connection architectures, which differ according to the interface employed:

1. Ekip Connect with serial line.

This configuration, which provides for communication with electronic trip units fitted with a system communication module, allows management of communications with one or more units simultaneously connected in a serial bus. The communication interface used in this case is, typically, a serial line converter which allows the PC to connect to a RS485 bus.

2. Ekip Connect with Bluetooth module.

This configuration allows connection with one trip unit using Bluetooth technology. This system uses a Bluetooth communication module within the trip unit, or the BT030, BT030 USB unit external to the trip unit. The PC must also be fitted with a compatible Bluetooth antenna.


3. Ekip Connect with USB module.

This configuration allows the connection of a trip unit to a USB port of the PC. This uses unit BT030 USB.

4. Ekip Connect with Ekip T&P.

This configuration uses the Ekip T&P unit (connected to a USB port of the PC) to add trip unit test function to the functionality normally available with Ekip Connect.

Each of the four connection architectures requires a specific hardware configuration. For further details see Paragraph 2.3.

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2. Getting started

2.1 Obtain the software

Ekip Connect is distributed on CD, or is available to download from the internet at the address <http://bol.it.abb.com> in the section “Strumenti di Lavoro - Software per interruttori scatolati e aperti”.

2.2 Install the software

In order to use the application, the following must be installed:

- Ekip Connect

Follow the instructions which appear when the CD is loaded, or run the setup.exe file and follow the instructions shown to proceed with the guided installation of the program. The USB device drivers will also be installed (BT030 USB and Ekip T&P), to allow Ekip Connect to be used with architectures 3 and 4.

- Adobe® Reader®

Allows reports and documentation to be viewed.

A copy of this program is distributed on the CD, or can be downloaded from www.adobe.com.



WARNING Before connecting the devices BT030-USB and Ekip T&P, ensure that the drivers have been installed correctly.

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2.3 Connect the hardware

Ekip Connect allows interface with the trip units through four different architectures. Each of these architectures requires a specific hardware connection.

2.3.1. Ekip Connect with serial line



This architecture is available for electronic trip units fitted with a system communication module, which can be modular (e.g. PR122/P with module PR120/D-M) or integrated (e.g. PR223EF).

A serial line converter is required, which allows the conversion of the physical level RS485 (trip unit side) to the desired level for connection to a PC (e.g. RS232, USB, Ethernet). The communication protocol used is Modbus RTU.

On the electrical diagram of the trip unit, the system bus connection is shown as W1 or WS.

Further information regarding the correct configuration of the communication network with Architecture 1 is included in the document “1SDC007108G0901 - La comunicazione via Bus con gli interruttori ABB”, available from <http://bol.it.abb.com>, in the section “Strumenti di Lavoro - Guide Tecniche”.

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2.3.2. Ekip Connect with Bluetooth module



This architecture is available for trip units connected to an external Bluetooth communication module (BT030, as shown in the diagram, or BT030 USB) or an internal module (PR120/D-BT, available with breakers Emax PR122/P and PR123/P).

It is also necessary to use a radio Bluetooth device compatible with the Broadcom driver (integrated within the PC or an external adaptor).



WARNING With the BT030 USB unit connected to a PC with a USB cable, Bluetooth communication is temporary deactivated.
To restore Bluetooth communication, disconnect the cable from the PC and the unit.



WARNING Do not use PR120/D-BT and BT030/BT030 USB simultaneously on the same trip unit.



WARNING: Check the BT driver corresponds to the last version available by the operating system, or provided by PC builder.

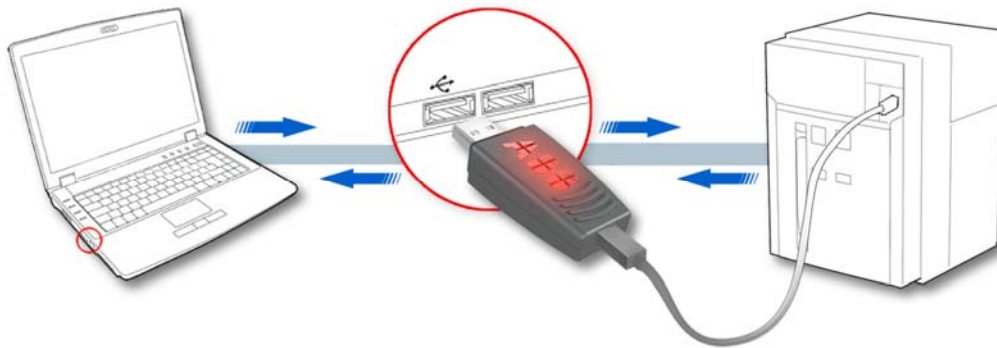
2.3.3. Ekip Connect with USB module:



This architecture is available through the use of the BT030 USB, connected to a USB port of the PC on one side, and to the front of the electronic trip unit on the other.

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2.3.4. Ekip Connect with Ekip T&P



This architecture is available through the use of Ekip T&P connected to a USB port of a PC on one side, and the dedicated socket on the electronic trip unit on the other.

Connection to the various test connectors of various trip units is possible thanks to a series of cables supplied with the Ekip T&P. All connections are detailed in chapters 9 and 9.1.



WARNING For this architecture it is necessary to use only the cables supplied with the Ekip T&P module. Do not use cables other than those supplied.

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2.4 Using Ekip Connect

To start Ekip Connect, use the shortcut on the desktop or select Start → Programs → ABB → Ekip Connect v1.0 (or higher).



WARNING If Ekip Connect is open, and the user starts another execution, a warning window is displayed, and just the first instance remains active.

The main operations which can be carried out with Ekip Connect are 2.


- Search of connected devices, manageable in 2 ways:
 - Monitoring and configuration
 - Test with Ekip T&P
- Menu Bar consultation, which allows different options:
 - Management and save of the connected device data;
 - Management of the software settings (language, PW, automatic updates);
 - Consultation of documentation and versions (devices list, user manuals, SW version)
 - Activation of complementing functions (demo demonstration, SD-DataViewer, Error windows).

2.5 Research of connected devices

Ekip Connect is able to automatically recognise ABB devices which are connected, through a network scanning mechanism, the type of which depends upon the connection architecture used.


To start a scan, use the “Action” button on the menu bar, or the first buttons on the toolbar.

The possible scans are:


- Bus scan  (Architecture 1 and Architecture 3)

The user should select the parameters to be used for the scan (port, address, parity bit, baud rate). These parameters depend upon how the connected devices are configured. Accurate selection of parameters speeds up the scan process.

If the values to be used are unknown, it is possible to select all possible values.

For further details, see Paragraph 4.1.1.
- Bluetooth Scan  (Architecture 2)

A scan for Bluetooth devices present in the immediate vicinity of the PC is carried out. Once the relevant device is identified, double click to start communication.

For further details, see Paragraph 4.1.2.
- Ekip T&P test  (Architecture 4)

As well as the normal window dedicated to monitoring and configuration, this selection opens a second dedicated test window.

A password must be entered to carry out this scan.

For further details, see Paragraphs 2.5.2 and 5.

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2.5.1. Monitoring and configuration

Following a scan, the navigation tree on the left shows the nodes to navigate the information available from the detected devices. By clicking on one of these nodes, the main area shows the information read, read and write, and command buttons.

If the information is in read and write, it is possible to select a new value and send this to the device by clicking "Submit". This operation corresponds with the configuration of the device and requires a password to be entered.

For further details, see Paragraphs **Error! Reference source not found.** and 5.

2.5.2. Test with Ekip T&P (Architecture 4 only)

In the case of connection architecture number 4, following the scan a second window opens, dedicated to trip unit testing.

Testing is taken to be simulating a signal of current or voltage, send it to the trip unit, and then analyse how the device behaves, based upon the configuration parameters which have been used. This signal may be a current or a high intensity fault voltage which is difficult to reproduce in reality.

Four different sections are available:


1. manual test: allows custom current and voltage signals to be created, controlling parameters such as amplitude, phase shift, the harmonic component, frequency, etc.
2. automatic test: allows a series of predefined tests for every type of trip unit to be carried out, specifically designed to cover the largest possible range of situations.
3. trip test: allows the functioning of the release solenoid to be tested.
4. report: contains traces for all tests carried out, allowing reports to be viewed, saved and printed.

For further details, see Paragraph 8.

2.6 Consultation of the Menu Bar

For a correct use of the software main functions, the Menu Bar is always accessible and allows the user to select settings and functions.

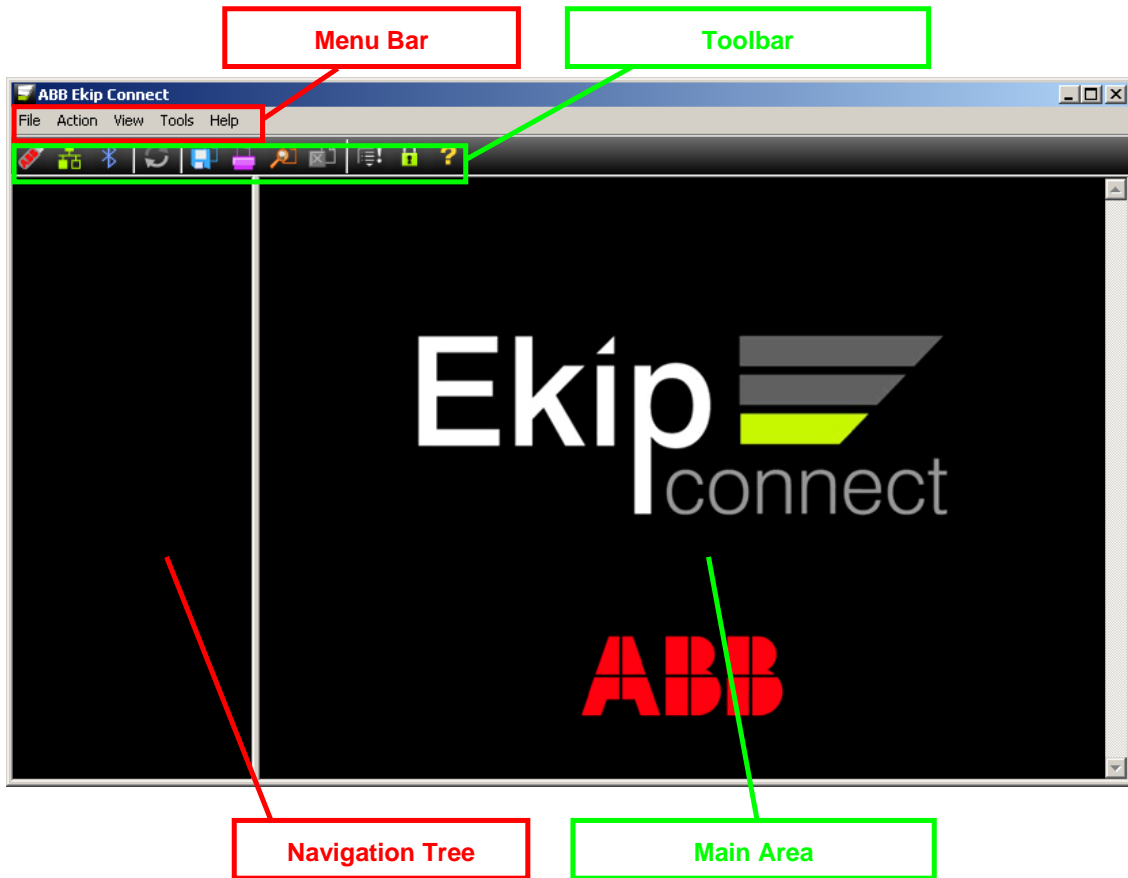
All details regarding the menus are reported from Paragraph 3.1.

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3. User interface

The user interface is divided into four main areas:

- Menu Bar
- Toolbar
- Navigation area
- Main (viewing) area



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3.1 Menu Bar

The Menu Bar offers to the user different options, regarding the management of both the connected device data, and the software functions and options.

3.1.1. File

The File menu allows the management of the connected devices data.

- **Save report to file**
Allows the information displayed in the main area to be saved in PDF or HTML format. For further details, see Paragraph 6.
- **Print report**
Allows the information displayed in the main area to be printed.
For further details, see Paragraph 6.
- **Report preview**
Creates a preview of a report.
For further details, see Paragraph 6.
- **Import/Export of Device settings and Import/Export of Page settings**
Allows the complete group of settings or a limited group (page) with which the device is configured to be exported in a file, and the configuration of a device or a particular page relating to a device by importing a file.
For further details, see Paragraph 4.5.2.
- **Import/Export of Device list**
Allows the list of devices found during a scan to be saved in a file and later opened.
For further details, see Paragraph 4.5.1.
- **Create LEAP file**
Create a file containing information which is useful for maintenance using LEAP (Life Expectancy Analysis Program).
For further details, see Paragraph 4.5.3.
- **Exit**
Exit the program.

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3.1.2. Action

The Acton menu allows the management of the network scan, searching devices with which communicate.

- **Ekip T&P test**

Carries out a scan to find devices connected using architecture 4.

A new window opens (Ekip T&P Interface), dedicated to trip unit testing.

- **Bus scan**

Carries out a scan to find devices connected using architectures 1 and 3.

The user is required to enter the communication parameters. For further details, see Paragraph 4.1.1.

- **Bluetooth scan**

The Bluetooth antenna is activated for the automatic search for ABB devices fitted with wireless communication modules within a radius of 10m. For further details, see Paragraph 4.1.2.

3.1.3. View

The View menu allows the management of the main information displayed in the window.

- **Navigation tree**

Allows the navigation area to be viewed or hidden.

- **Refresh**

Refreshes the information contained in the main area.

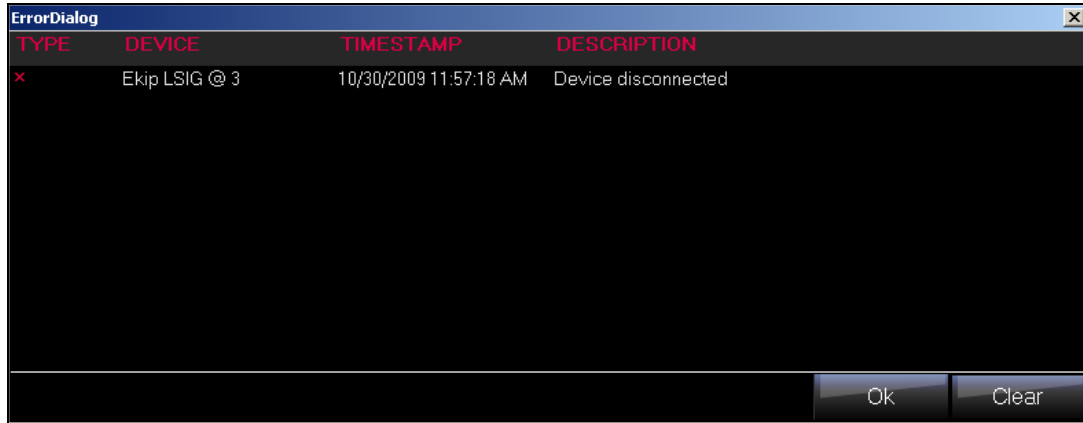
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3.1.4. Tools

The Tools menu allows the management of some additional functions with respect to the communication with the devices, and some options for the software use.

- **Error window**

Allows access to the errors window, which shows all communication errors found.



For every error, the device involved, the time of the event and a brief description are displayed. The “Ok” button closes the window. The “Clear” button empties the window.

- **SD-DataViewer**

Opens the SD-DataViewer program.
For further details, see Paragraph 7.

- **Ekip T&P Demo**

Starts a demo session for the test interface for a virtual device such as Tmax XT or Emax.
For further details, see Paragraph 8.9.

- **Language**

Allows the language used to be changed.
If the language is changed, the scan must be repeated.

- **Password**

Allows a password to be entered, this is required to carry out commands.
It is possible to modify the password and enter a new password.
For further details, see Paragraph 5.

- **Automatic check for updates**

Allows the management of Ekip Connect’s automatic updates.
For further details, see Paragraph 5.3.

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3.1.5. Help

The Help menu allows the consultation of the data regarding the versions of Ekip Connect and the Devices Descriptors. It includes the access to the User Manuals section.

- **Devices' descriptors**
Shows the list of the supported devices and the installed versions in use.
- **Check for descriptors updates**
Checks the network for possible updates of the Devices Descriptors. For further details, see Paragraph 5.3.
- **Ekip Connect user manual**
Accesses the user manual.
- **Device user manuals**
Accesses the user manuals list of all the trip units supported by Ekip Connect.
- **Check for software updates**
Checks the network for possible updates of Ekip Connect. For further details, see Paragraph 5.3.
- **About Ekip Connect**
Opens a window which contains information regarding the version of Ekip Connect.

3.2 Toolbar




Many operations carried out using the menu bar can be done by clicking on the icons present on the toolbar.

	Ekip T&P test
	Bus scan
	Bluetooth scan
	Refresh page
	Save report to file
	Print report
	Report preview
	Close preview
	Show error window (if unviewed errors are present the icon blinks)
	Insert password
	View user manual









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3.3 Navigation tree


Following a scan, this area includes a tree of nodes which represent the list of devices found. The main node represents the type of scan carried out:

-  Ekip T&P test (Architecture 4)
-  Bus scan (Architecture 1 and Architecture 3)
-  Bluetooth scan (Architecture 2)

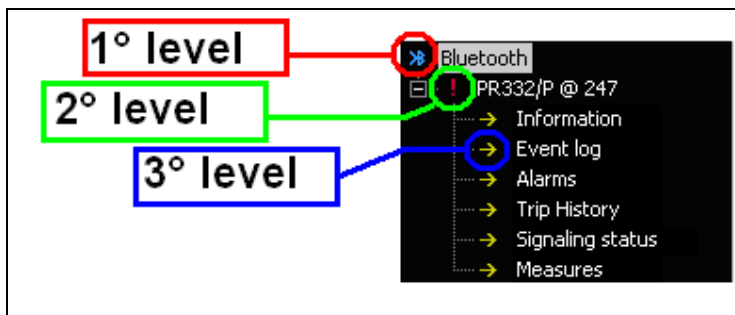
The second level node represents the device found, and the icon indicates the state:

-  Indicates that the trip unit is connected through the system bus
-  Indicates that the trip unit is connected through the device system bus, and that the device is in local mode (some parameters are available in read only mode)
-  Indicates that the trip unit is connected through the front test and programming connector
-  Indicates that an unknown device is connected
-  Indicates that the device is disconnected
-  Indicates that the device is in an alarm state
-  Indicates that the device is flashing following a wink command. For further details, see Paragraph 4.4.
-  Indicates that the device is connected, correctly identified, not in an alarm state and without wink.

The next level nodes represent the pages available for device in question:

-  Indicates the device pages

The following is an example of a tree created following a scan.



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3.4 Main area

This area is used to display detailed information:

- By selecting a first level node a summary of all devices found is displayed, and their communication parameters.
- By selecting the second level nodes (representing the individual devices) a summary of the state of the device and any problems identified during the scan are shown.
- By selecting nodes starting from the third level, the device pages are accessed, where it is possible to read and modify writeable information and send commands.

The number of nodes/pages present from the third level depends upon the information available on the trip unit, therefore the number and contents may vary.

4. Monitoring and configuration

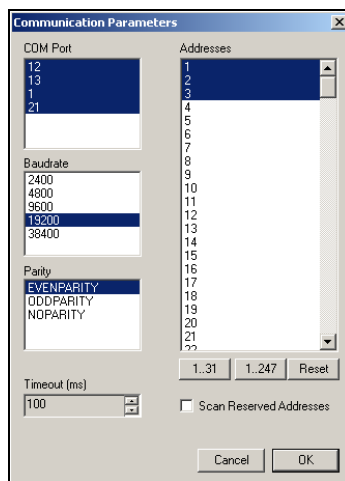
4.1 Automatic recognition of connected devices

The start automatic recognition of the connected devices is the first operation to be carried out when using Ekip Connect.

For each recognised device, a series of nodes are added to the navigation area, these correspond to pages (and information) which can be viewed in the main area.

4.1.1. Bus scan

In the case of serial or USB communication (architecture 1 or architecture 3), selecting “bus scan” opens a window for the selection of the communication parameters with which to carry out the scan.



The selection of communication parameters must be carried out by the operator, and depends upon the characteristics of the device and/or of the network of connected devices.

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- **COM Port**

Allows the selection/deselection of one or more communications ports.

The term 'communications port' refers to the PC hardware resource associated with the Modbus bus (architecture 1) or to BT030 USB (architecture 3).

The ports listed in the box are those that Ekip Connect has identified as available during its start up. Whenever a new communications port must be added or freed with Ekip Connect running, the program must be restarted.



WARNING If another application is using one or more communications port, these will not be available for Ekip Connect.

- **Baud rate**

Allows the selection of one or more speed values (baud rate) for communications between the device and Ekip Connect. The default value used by ABB devices is 19200 bit/second.

- **Parity**

Allows the selection of the type of error control which is carried out on every character transmitted. The default value used by ABB devices is EVEN PARITY.

- **Addresses**

Allows the selection of one or more addresses on which to carry out the scan. The term address refers to the individual unique name which every Modbus device should have when connected to a network. The default values used by ABB devices are '3' and '247'.

Buttons "1..31" and "1..247" allows selection of the addresses within the range.

The "reset" button cancels the selection.

Check the "Scan Reserved Addresses" box to carry out the scan using addresses in the range 248..255.

- **Timeout**

Indicates the maximum time, expressed in ms, which the application uses to wait for a reply from the device which is scanned for. If this value is too short there is a serious risk of the presence of devices on the bus not being detected, if it is too long, the time required to complete the scan increases.

The value of 100ms is a good compromise between scan speed and waiting time.

For items Com Port, Baud rate, Parity and Addresses, it is possible to select more than one value by holding down the CTRL key. The more values selected, the greater the number of combinations to be tested, but as a consequence, the time required to complete the scan will be greater.

To confirm, click "Ok", to exit click "Cancel" or the button used to close the window.

During the scan a window shows the percentage completed. It is possible to interrupt the scan by clicking "Stop scan".

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At the end of the scan, the devices found are listed in the navigation area, in a tree structure. In the main area, the information regarding the main communication parameters and any problems encountered is displayed.

Ekip Connect also shows the presence of any non ABB devices, supplying their communication data.



From this point onwards Ekip Connect checks that the devices found are still connected approximately every 5 seconds.

4.1.2. Bluetooth scan

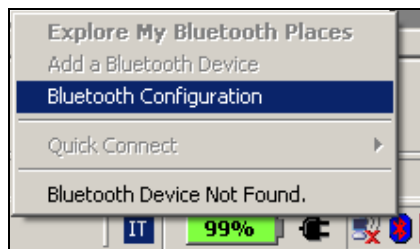
Bluetooth scan allows the identification of the ABB devices fitted with an external Bluetooth wireless communication module (BT030 or BT030 USB), or internal module (PR120/D-BT).

In order to carry out this type of scan, the PC must be fitted with a Bluetooth radio device with Broadcom driver (integrated within the PC or via an external adapter).

The following is a list of compatible external Bluetooth adapters:

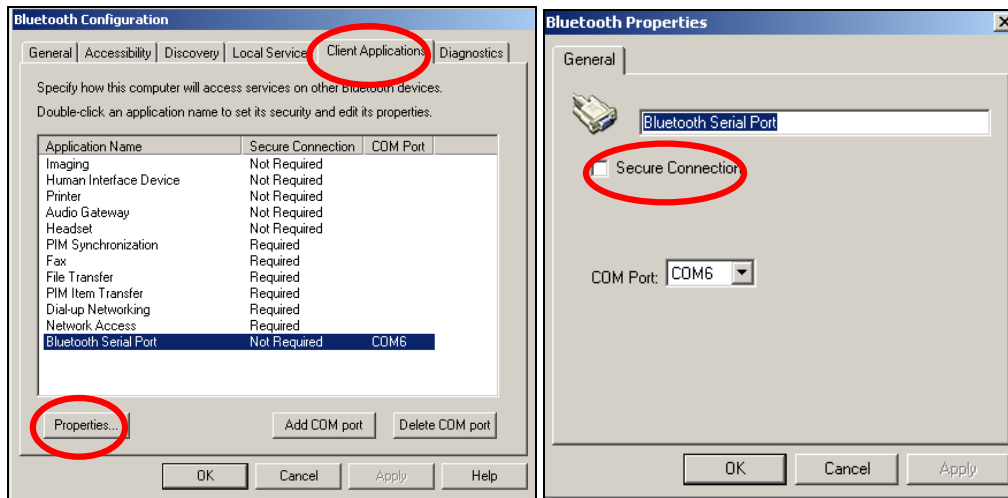
- D-Link Bluetooth USB 2.0 Adapter DBT-122 (WidComm stack)
- Mitsumi Bluetooth 1.1 Dongle (WidComm stack)
- Racewood Bluetooth Dongle (Extended Systems stack)
- TDK Bluetooth USB 1.1 (WidComm stack)
- SCM Bluetooth ZIO USB (WidComm stack)
- Cambridge Silicon Radio Ltd. (WidComm stack)
- 3COM Bluetooth USB Adapter 3CREB96-EU (3Com stack)
- Acer Bluetooth USB Adapter (WidComm stack)
- Trust Bluetooth 2.0 EDR USB Adapter (WidComm stack)

It is then necessary to configure the Bluetooth radio device so that a secure connection is not required. To do this, use the Bluetooth configuration menu (if the Bluetooth icon is available in the Windows system tray, select “Bluetooth Configuration”)



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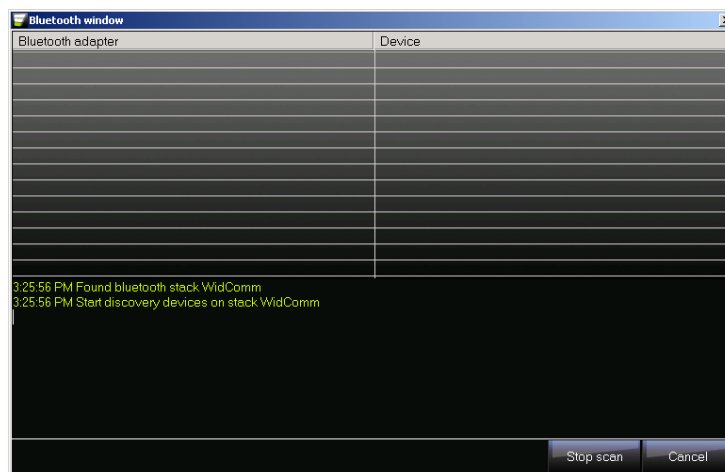
Open the “Client Applications” tab, select “Bluetooth Serial Port” and click on “Properties”.
 Uncheck the “Secure connection” box. Click “OK” on all the successive windows to save the modifications.



Configured in this manner, the PC is ready for Bluetooth scan management.

After Ekip Connect start, selecting “Bluetooth scan”, a window is opened and the search of Bluetooth devices is automatically started in the PC immediate vicinity.

The window is structured in 3 sections: the list of the devices found, the history of the search and connection actions, the bar of the scan commands.



The **devices list**, initially empty, is automatically updated presenting the devices detected during the scan. Devices are shown with the denomination of the Bluetooth adapter detected, and the main data regarding the trip unit (model and s/n).
 By means of a double click on the wanted device: the search window is automatically closed, the communication is started, and the main window is updated.



WARNING If more devices are detected, the communication can be started only with one device at a time.

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The **device history** presents the operations performed and in action, carried out by Ekip Connect for the Bluetooth devices search.

The **scan commands** are 3: “Stop Scan” interrupts temporarily the scan, “Start Scan” restarts the scan, “Cancel” interrupts the scan and closes the search window.

Of the 3 commands, only 2 are displayed in the window: “Cancel” is always present, “Stop Scan” and “Start Scan” are alternatively displayed depending on the scan status (“Stop Scan” is present if the scan is in action, “Start Scan” is present if the scan has been stopped).

4.2 Page view

The page view in the main area is activated by selecting a node in the navigation area. Each device has one or more pages which contain information in read or read/write mode:

- General information regarding the circuit breaker and trip unit.
- Current state of the device.
- The presence of alarms and their type.
- Real time measurements: current, voltage, energy, power, etc.
- Protection parameters and other trip unit configurations.
- History of recent trip unit interventions, with information regarding the type of protection involved and the time and date of the intervention.
- Historical data relating to events and measurements, as well as statistics.
- Management of accessory functionality, such as external modules (PR120/K or AD030DO), or additional tools (Data logger).

The pages and their content may vary in number and type depending upon the device type.

The icon in the navigation tree associated with the device gives information relating to the state; the presence or otherwise of alarms (due to the activation of the timing of a protection, anomalies caused by sensors and/or connections etc.).

4.3 Protection parameters and configuration

Some of the pages present are dedicated to the reading and modification of the parameters of protection and configuration of the trip unit.

For some devices, in the pages dedicated to protection, there is also a graphical representation available of the current-time curve, according to the protection settings of the unit. For further details, see Paragraph **Error! Reference source not found.**

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4.3.1. Parameter writing

To modify one or more parameters, select the value required from the drop-down menu, and click on “submit” in the lower part of the main area. The “Reset” button cancels the changes made.

These operations can only be carried out by “authorised” users, following entry of a password. For further details, see Paragraph 5.

If parameter writing does not function, an error message is displayed.

The following are some reasons for parameter writing failure:

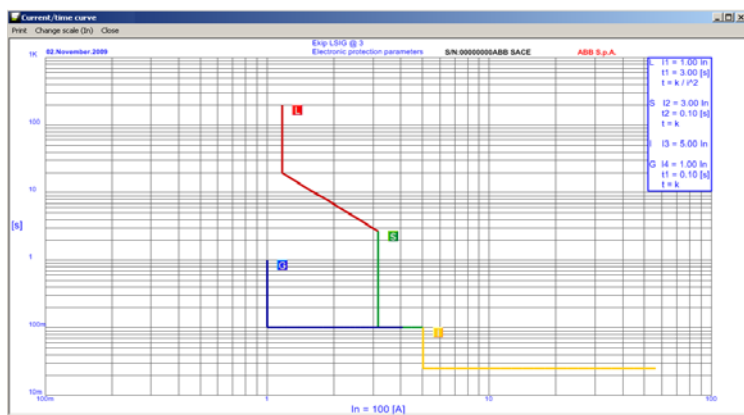
- The parameters sent are not compatible with each other (for example: value of protection threshold S less than the value of protection threshold L).
- The trip unit is not correctly configured (for example: trip unit in local mode).

As described in Paragraph 4.5.2, it is also possible to export/import parameters to/from a file.

4.3.2. Current-time curve display

For some devices it is also possible to have a graphical view of protection parameters L, S, I and G, through the generation of a current-time curve.

Using this curve it is possible to associate a protection and an action time to a fault current. To view the curve, click on the “Curve” button in the lower part of the main area of the pages dedicated to protection parameters.



WARNING If the curve window is open and modifications are made to the protection parameters, the current-time graph is automatically updated.

Other functions are available from the window menu:

- **Print**
Prints the displayed graph.
- **Change scale**
Allows the scale on the x-axis to be changed (expressed in absolute –A- or relative –In- terms).

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- **Close**
Closes the window.

According to the standard to which the trip unit refers (IEC or UL) the I1 current threshold is designated to be 117% of the nominal value (IEC) and 105% of the nominal value (UL). This is in compliance with that required by the relevant norms.

4.4 Commands

The lower part of a page can feature buttons used to send commands to the device. The sending of commands can only be carried out by “authorised” users, following entry of a password For further details, see Paragraph 5.

4.4.1. Main commands

The main commands present for most devices are as follows:

- **Submit and Reset**
Used for the management of configuration and protection parameters (see Paragraph 4.3.1).
- **Current/Time Curve**
used to view the current-time curve (see Paragraph **Error! Reference source not found.**).
- **CB Open, CB Close**
Used to command by remote control the circuit breaker position (usable only with circuit breakers provided with open/close motorized command).
- **Reset CB**
Used for closed case trip units with motorised command, changes the state of the trip unit from ‘tripped’ to ‘open’.
- **Trip Unit Reset**
Resets the trip signal from the trip unit.
- **Wink**
This command flashes the display or one of the LEDs of the trip unit, to allow identification. Clicking the Wink command a second time deactivates the function.
- **Reset Measure History**

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4.4.2. Datalogger commands

Datalogger is a function which allows the recording of instantaneous values of various analogue measurements (current, voltage, etc.) and digital readings. It is possible to associate the start of this recording to events selected by the user (triggers) such as alarms, trips, etc.

For further details consult the user manual of the trip unit.

The commands available for the use of the Datalogger function are as follows:

- **Trigger Restart**
Puts the trip unit in the standby state for the event configured for the start of recording (trigger).
- **Datalogger Stop**
Interrupts the recording of the signals.
- **Download**
Transfers the data recorded to a file ready for viewing with SD-DataViewer (see Paragraph 7).

4.4.3. Zone selection commands

the commands available for the trip units which feature zone selectivity (ZS) are as follows:


- **Force ZS Sout**
Activates the selection signal in exit for protection S.
- **Force ZS Gout**
Activates the selection signal in exit for protection G.
- **Release ZS**
Releases the selection signal in exit.

4.4.4. Commands for signalling accessories

In the presence of signalling modules (PR120/K, AD030 DO, S51/P1 etc.), the following command is available:

- **Reset:**
Reset the signalling. If the command is not sent successfully, an error message is displayed.
Some possible reasons for parameter writing not being successful are as follows:
 - the trip unit is in local mode
 - the trip unit is not supplied by an auxiliary supply.

Please refer to the manual of the trip unit for further details.

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4.5 Importing and exporting

4.5.1. Importing / exporting device list

When the main node of the navigation tree is selected, it is possible to export in a file, and later import, the list of devices found during the scan:

- To export, select “File → Export → Device List” and choose the name and location of the file in which the device list is to be saved.
- To import, select “File → Import → Device List”, open the file from which the information is to be imported, and select the COM port to be associated with the list.

If the devices are actually present on the COM port selected, communication between Ekip Connect and the devices will be started, refreshing the page information. Otherwise, the devices will be shown as disconnected.



Within the directory in which Ekip Connect was installed an example file is available, ScanList.xml, which contains a list of devices.

4.5.2. Importing / exporting device and page parameters

If a device contains one or more pages in which it is possible to configure parameters, these parameters these parameters can be exported in a file. This file can be used to reconfigure the device (in the case of wishing to reset some configuration data) or configure another device of the same type (in the case of wishing to configure several devices in the same way) using saved parameters.

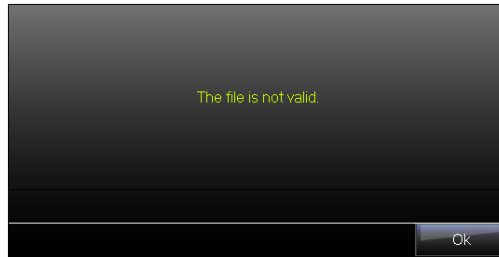
The parameters which can be exported / imported in a file are those which relate to a specific page or the whole device.

- Export:
 1. Select a device or a page containing parameters
 2. Select “File → Export → Device Settings”
“File → Export → Page Settings”
 3. Select the name and the location of the file in which to save the parameters
- Import:
 1. Select a device or a page containing parameters
 2. Select “File → Import → Device Settings”
“File → Import → Page Settings”
 3. Select the file from which the parameters are to be imported

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The process of writing the new parameters to the device starts immediately.

The file to import must contain parameters compatible with the type of node (device or page) selected, if this is not the case, an error message will be displayed and the operation will not be carried out.



WARNING Loading of files and substitution of the current pages occurs immediately without any message being shown.
It is not necessary to click on "Submit".



WARNING This type of export/import can only be carried out if communications with the device exist.

4.5.3. Creation of a LEAP file

It is possible to create a file containing the information required for maintenance of the device. This file can then be imported using the LEAP application from ABB.

To create a LEAP file, select: "File → Create LEAP file" and then choose the name and location of the file.

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5. Users settings

Ekip Connect allows to personalize some parameters and system settings.

5.1 Language


It's possible to select the display language of the menu bars and of the main commands (Italian or English).

If the language change is carried out with Ekip Connect not connected to any device, the update is automatic; if one or more device connections are present, to complete the language change is necessary a new scan.

5.2 Password

Ekip connect allows all operations which do not require the modification of the state of a parameter of the device without any authentication process.

Conversely, operations which could potentially change the characteristics and the functionality of the device, such as the writing of parameters and the sending of commands, require an authentication procedure which involves the entry of a password (protection level: user).

To enter a password, select "Tools → Password → Insert" in the menu bar, or click on  on the tool bar.

To modify the password, select Tools → Password → Change], and enter the old password, the new password, and confirm the latter.



WARNING Upon first installation, the user password is set as 0001.

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5.3 Updates check

Ekip Connect allows the setting of the automatic check for new versions of the software and of the descriptor files (files containing the list of the devices data/commands, available to the user) at start-up.

If the automatic check is disabled, it's however possible to carry out manually the updates check by means of the "Help" menu commands.

At installation, the updates automatic check is selected by default: at start-up Ekip Connect verifies automatically the version of the software and of the descriptor files installed, and the existence of new versions in the network.



The search results are displayed in a window, together with the possible actions that can be carried out:

- "Cancel": interrupts the search and update process.
- "Ekip": displayed if a new software version is found, allows the user to proceed with download.
- "Descriptors": displayed if new descriptor files versions are found, allows the user to proceed with download.

If the above-mentioned actions are cancelled, Ekip Connect returns to function normally with the installed version.

If both the "Ekip" and "Descriptors" download options are present, one option choice excludes the possibility of the other automatic download in the open session. To proceed with download it's necessary to select the manual download (available in the "Help" menu), or close and restart Ekip Connect for a new automatic scan.

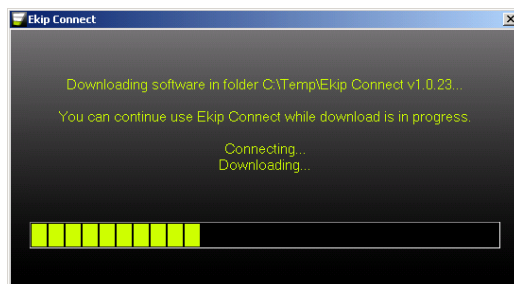


WARNING When Ekip Connect is started with the updates automatic search selected, the manual searches of new versions are disabled. The manual searches function return available at the end of the automatic search.

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5.3.1. Download

If the download of the new version (or of the new descriptor files) is confirmed, different information are displayed (the version being downloaded, the saving folder), the operations in action are progressively reported (Connecting, Downloading, Saving Data), and the progress bar is displayed.



5.3.2. Installation

When the download is complete, it's required to confirm the installation:

- “Cancel” interrupts the installation: Ekip Connect returns to function normally.
- “Ok” starts the installation: Ekip Connect closes automatically, the old version is removed, and the new one installed.

5.3.3. Manual updates

By means of the “Help” button in the Menu Bar, it's possible to check manually the existence of updated versions of the software or of the descriptor files:

- If later versions with respect to the ones installed are found, a window is displayed which requires to confirm the download.
- If the versions found are the same of the ones installed, a window is displayed where it's signaled that the versions installed are already the updated ones, but which allows anyway the download.

The software installation can then be started manually from the download destination folder, after having closed Ekip Connect.



WARNING The manual installation is possible only if the software is not used, and if the software version being installed is equal or newer than the installed one. The manual installation of a software version older than the one installed is signaled by a warning window and blocked.

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6. Report

Ekip Connect allows to save and print what displayed in the main area.

It is also possible to display a preview of what will be saved or printed.

These functions can be accessed via the Menu Bar, under “Action”, or via the Toolbar. For further details, see Paragraph 3.2.

The file types supported are HTML and PDF.

Depending upon the level of view which is active (depending upon the node which is in use), it is possible to save / print or preview a variety of information:


- **First level node**
This is the list of devices with information regarding communication parameters.
- **Second level node**
This is the information on all pages available for the device.
- **Third level node**
This is the information on the page which is selected.

7. SD-DataViewer

The data recorded with the Datalogger function can be saved to file (extension .abb), by using the “Download” command, which is available on the dedicated page (see Paragraph 4.4.2).

To open a recorded file and analyse the data within, the specific SD-DataViewer function must be used. To open this function, select “Tools. → SD-Data-Viewer” from the menu bar.

SD-DataViewer opens in a different window from that normally used by Ekip Connect, and provides for two commands from the menu bar: By selecting “Help → User Guide”, it is possible to access the User Manual, which contains all the information required for the correct use of the function.

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8. Test with Ekip T&P

Ekip Connect. Ekip T&P is a tool which, as well as allowing connection with a device in accordance with the methods described in Architecture 4 (see Paragraph 0), enables the Ekip Connect test function.

8.1 Ekip T&P Interface start-up

The test functions are exclusively available when connection architecture 4 is used, i.e. the Ekip T&P communication module is employed.

To access these functions it is necessary to carry out the Ekip T&P Test scan, which can be selected via: “File →

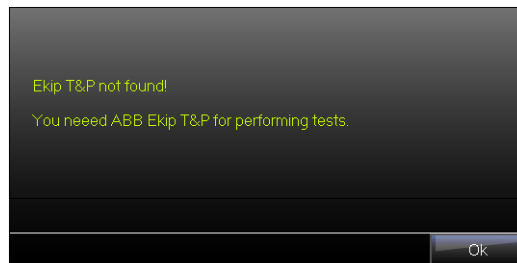
Action → EkipT&P” on the menu bar, or by clicking on the icon  on the toolbar, and entering a password.


For further details, see Paragraph 5.

Once the scan has been completed, as well as the normal window dedicated to monitoring and configuration, a second window, dedicated to testing, appears (Ekip T&P Interface).



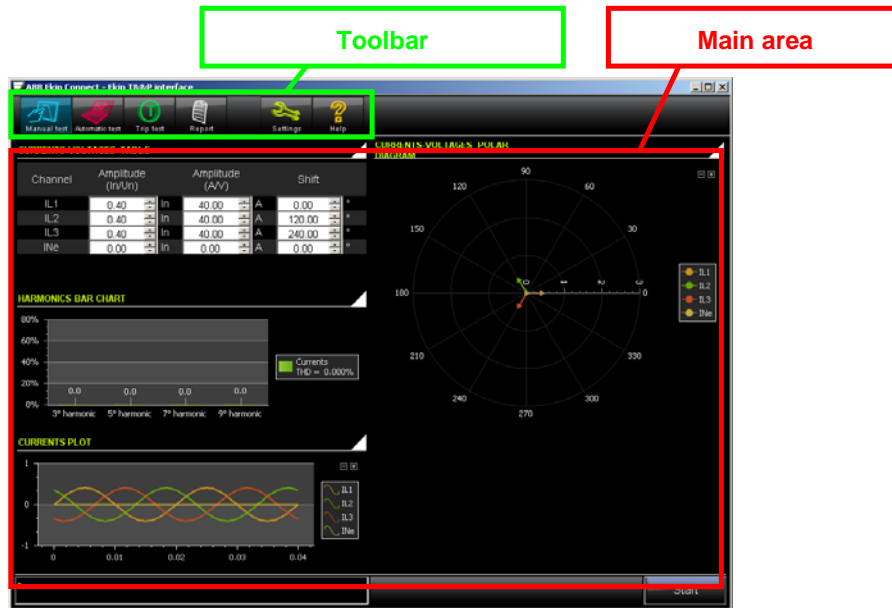
WARNING In the case of no connection with the Ekip T&P unit, an error window appears following the scan.



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8.2 User interface

The Ekip T&P interface is divided into two main areas.

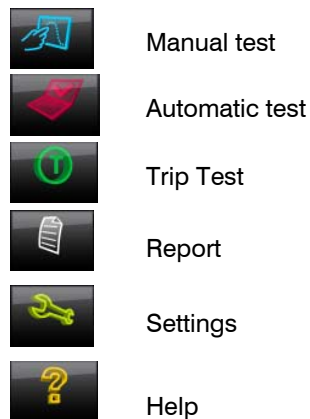


8.2.1. Toolbar

The toolbar allows:

- Selection of the test method and type
- Opening of manual test main settings window
- Consultation of the Report section

It is possible to change from one option to another using the icons present.



8.2.2. Main Area

The parameters and commands shown in the working area change according to the type of option selected from the toolbar.

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8.3 Test Description

The tests which can be carried out with Ekip Connect allow the user to create a current / voltage signal which is difficult to reproduce in reality (for example, a high intensity fault signal), and observe how the electronic trip unit behaves with said signal: if it intervenes or otherwise, with which type of protection, and the time in which this occurs.

In this way it is possible to check:

- the equipment selection (type of breaker, type of trip unit, etc.)
- the set of parameters with which the trip unit has been configured

There are three types of test:

1. Manual
2. Automatic
3. Trip test

8.4 Manual Test

The manual test allows the user to create custom current and / or voltage signals through the intuitive graphical interface.

For each signal, it is possible to select the following parameters:

- the amplitude and phase shift of the fundamental component
- the amplitude of the 3°, 5°, 7° and 9° harmonic component
- the frequency

The parameters are available in the window in several sections.


These sections represent different methods of viewing and modifying the signals; every change made to a signal in a section is transferred to the others automatically.

The sections which may be present in the work area are as follows:

- Current-voltage tables
- Current-voltage polar diagram
- Harmonic Bar Chart
- Current graph
- Voltage graph (if available for the trip unit)

If a DC trip unit is present, the sections present are as follows:

- Current-voltage table
- Current-Voltage Bar Chart

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8.4.1. Manual test sections

- **Current-voltage table**

This allows display and modification of the numerical value for amplitude and phase shift of the fundamental component of the signals.

Amplitude is expressed both in relative (nominal current/voltage) as well as absolute terms (Amps/Volts).

It is also possible to check the visibility of a signal in the working area.

- **Current-voltage polar diagram**

Allows viewing and modification of the phasor associated to the signal.

Modifications are made by using the mouse to drag the end of the phasor.

- **Current-Voltage Bar Chart**

Allows viewing and modification of the amplitude of a DC signal by dragging with the mouse.

- **Harmonic Bar Chart**

Allows viewing and modification of the amplitude of the 3,5,7 and 9 harmonic component of the AC signal.

- **Current Graph and Voltage graph**

Displays the wave form of the signals.

8.4.2. Manual test start

Once the required parameter settings have been made, the test can be started by clicking “Start”.

The signals which are created are sent to the trip unit, which acts as if they were genuine signals from current / voltage sensors.

Depending upon the signals used and the protection parameters with which the trip unit has been set up, the test may or may not result in a trip.

Once the test is started, a window opens, showing the state, time elapsed and any result.

In the case of a trip, the window shows the detail of the protection which intervened and the intervention time.

The test can be stopped at any point by clicking on the “Stop” button.

During the test it is possible to view the Ekip Connect window dedicated to the monitoring and configuration, in order to check if the trip unit is in an alarm state or otherwise, the values of the measured current/voltage, the value of protection parameters, etc.



WARNING During the test it is not possible to modify any parameter.

Every test carried out is recorded in the Test Report. For further details, see Paragraph 8.7.

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8.4.3. Settings

By clicking on Settings on the toolbar, a menu is accessed from which some advanced settings can be selected.

- **Frequency**

Allows selection of the signal frequency.

- **Amplitude**

Two options are available:

- Amplitude fixed for all currents: if selected, the modification of the amplitude value of one current is transferred to the other currents.
- Amplitude fixed for all voltages: if selected, the modification of the amplitude of one voltage is transferred to the other voltages.

- **Phase**

Allows the method with which the signal phase is modified to be selected:

- Free: every phase shift is modified independently to the others.
- Balanced at 120° The phase shift angle is maintained at 120°.
- Locked: the phase shift cannot be modified.

- **Current-Voltage Table**

- Show amplitude (In/Un) column: allows the amplitude of the signals to be expressed in relative terms.
- Show amplitude (A/V) column: allows the amplitude of the signals to be expressed in absolute terms.
- Show Shift column: allows the shift column to be shown/hidden.
Allow expansion: allows the table to expand whenever other sections are closed.

- **Currents-Voltages Polar Diagram, Current Plot, Voltage Plot, Harmonics bar chart**


These can be viewed or hidden, and the level of zoom can be adjusted.

8.5 Automatic test

The automatic test allows the user to carry out a series of pre-defined tests, designed to cover the widest possible range of possible situations.

The working area is divided into two parts:

- test list: lists the test signals pre-defined for the trip unit in use.
- polar diagrams: represents the test signal phasors for current and voltage.

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8.5.1. Automatic test start

Click on “Start” to start the test.

The pre-defined signals are sent to the trip unit, which acts as if they were genuine signals from current / voltage sensors.

Depending upon the signals sent and the protection parameters with which the trip unit has been set up, the test may or may not result in a trip

Once the test is started, a window opens, showing the state, time elapsed and any result.

In the case of a trip, the window shows the detail of the protection which intervened and the intervention time. This information will also be given in the Table.

The pre-defined tests are carried out in sequence.

The test can be stopped at any point by clicking on the “Stop” button.

During the test it is possible to view the Ekip Connect window dedicated to the monitoring and configuration, in order to check if the trip unit is in an alarm state or otherwise, the values of the measured current/voltage, the value of protection parameters, etc.



WARNING During the test it is not possible to modify any parameter.

Every test carried out is recorded in the Test Report. For further details, see Paragraph 8.7.

8.6 Trip test

This test allows the user to test the functionality of the release solenoid, a fundamental element for the correct function of the trip unit.

The aim of the test is to send a release command to the release solenoid and observe whether the trip unit changes state from closed to open.



WARNING It is essential to ensure that the trip unit is both in a closed state and not in service before the test is started.

8.6.1. Trip Test Start

Click on “Start” to start the test.

Upon completion of the test, notification of the test result is requested.

Also for this test a record is saved and available in the Report section. For further details, see Paragraph 8.7.

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8.7 Test Report

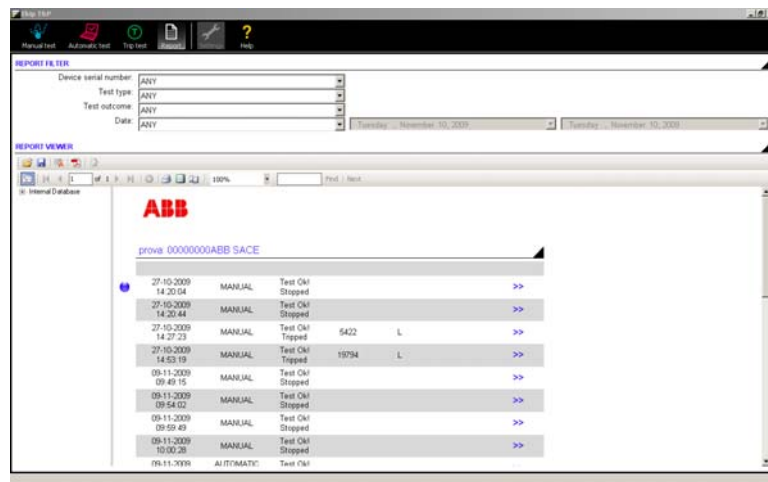
For every test carried out (manual, automatic, or trip test), a record is created and recorded, containing all the information relating to the test. These records form the data base stored on the PC, which can be accessed by clicking on “Report”.

Through the Report page, it is possible to access the data base, and therefore the record, in whole or in subgroups which are called reports.

Reports are a collection of records, collected in pages, which are generated following filtering of the data base as defined by the user.

The working area of the “Report” section is divided into two sections.

- report filter
- Report Viewer



In the Report Filter area the user can define the criteria with which to filter the test data base. The search fields available are as follows:

- serial number
- type of test
- test result
- date

All records which match the requirements are collected within a report.

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The Report Viewer area is used to view and manage test records.

Within this area a document is visible which contains all records from the data base resulting from the filter parameters.

The document can be consulted by browsing through the pages (using the arrow buttons on the toolbar in the Report Viewer area) or by using the lateral navigation tree, where the serial numbers of the trip units involved are used as bookmarks.

Every test record is a line within the document, containing a large amount of the information regarding the test. It is possible to access further detailed information for every record by clicking on **>>** , and to return from this view to the main view by clicking on “back to parent” (in this case the line for which the details have just been viewed is marked with a blue dot.

Two views are present:

- main view, relating to a collection of test records.
- detailed view, relating to a particular test record.

Both of these views features a navigation tree.

The root node of the navigation tree of the main view represents the source of the test record, and may be an internal data base or an external data base (a file).

Operations which can be carried out from the Report Viewer area are available through the two toolbars and are as follows:

First toolbar:

- Open test Data: allows selection of the source to be viewed (internal data base or file).
- Save test Data: allows the export of a collection of records to a file.
- Clear all test Data: cancels all records from the internal data base.
- Export report to PDF: creates a PDF document from the collection of records viewed.
- Update Note (available only in the detailed view): allows addition of a note to the selected test record. The note will also be visible from the main view.

Second toolbar:

- Show or Hide document Map.
- Arrow button: allows browsing of record pages shown.
- Print: prints the record collection viewed, and allows print settings to be checked.
- Print Layout: print preview.
- Page setup: allows the page setup to be modified.
- Zoom: allows the zoom to be adjusted.
- Find, Next: allows test searches to be carried out within the collection of records shown.

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8.8 Help

This document opens automatically.

8.9 Ekip T&P Demo

Using any connection architecture, it is possible to start the test interface in demonstration mode. Connection with a trip unit PR123/P or EkipLSIG is simulated, and the Ekip T&P Interface window is displayed.

To use this function, select “Tools → Ekip T&P Demo” and select the virtual device required (PR123/P or EkipLSIG). The test interface for the selected device is opened.



WARNING It is possible to interact with the user interface, even if it is not possible to carry out any tests.

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9. Electronic Trip Unit Compatibility

Circuit Breaker	Trip unit	Architecture			
		1	2	3	4
ISOMAX	PR212/P	V ⁽¹⁾			
Tmax XT	Ekip I				V ⁽⁶⁾
Tmax XT	Ekip LS/I				V ⁽⁶⁾
Tmax XT	Ekip LSI	V ⁽²⁾			V ⁽⁶⁾
Tmax XT	Ekip LSI G	V ⁽²⁾			V ⁽⁶⁾
Tmax XT	Ekip M-I				V ⁽⁶⁾
Tmax XT	Ekip M-LIU				V ⁽⁶⁾
Tmax XT	Ekip M-LRIU	V ⁽²⁾			V ⁽⁶⁾
Tmax XT	Ekip G-LS/I				V ⁽⁶⁾
Tmax XT	Ekip N-LS/I				V ⁽⁶⁾
TMAX	PR222DS		V	V	V ⁽⁷⁾
TMAX	PR222DS-PD	V	V	V	V ⁽⁷⁾
TMAX	PR223DS	V	V	V	V ⁽⁷⁾
TMAX	PR223EF	V	V	V	V ⁽⁷⁾
T7/T8	PR232/P		V	V	V ⁽⁸⁾
T7/T8/X1	PR331/P		V	V	V ⁽⁸⁾
T7/T8/X1	PR332/P	V ⁽³⁾	V	V	V ⁽⁸⁾
X1	PR333/P	V ⁽³⁾	V	V	V ⁽⁸⁾
NEW MEGAMAX HF1	PR331/P-HF		V	V	V ⁽⁸⁾
NEW MEGAMAX HF1	PR332/P-HF		V	V	V ⁽⁸⁾
NEW MEGAMAX HF2-3-4	P121/P-HF		V	V	V ⁽⁸⁾
NEW MEGAMAX HF2-3-4	P122/P-HF		V	V	V ⁽⁸⁾
EMAX	PR112/PD	V			
EMAX	PR113/PD	V			
NEW EMAX	PR121/P			V	V ⁽⁸⁾
NEW EMAX	PR122/P	V ⁽⁴⁾	V ⁽⁵⁾	V	V ⁽⁸⁾
NEW EMAX	PR123/P	V ⁽⁴⁾	V ⁽⁵⁾	V	V ⁽⁸⁾
EMAX DC	PR122/DC	V ⁽⁴⁾	V ⁽⁵⁾	V	V ⁽⁸⁾
EMAX DC	PR123/DC	V ⁽⁴⁾	V ⁽⁵⁾	V	V ⁽⁸⁾
NEW EMAX VF	PR122/VF	V ⁽⁴⁾	V	V	V ⁽⁸⁾
All	SD030xx	V			
All	RCQ020				V ⁽⁶⁾

KEY:

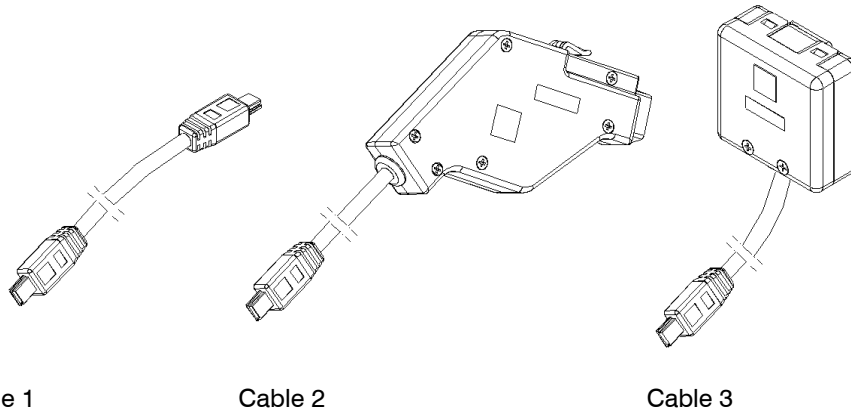
- (1) Available with unit PR212/D-M connected to the trip unit
- (2) Available with unit Ekip/COM connected to the trip unit
- (3) Available with unit PR330/D-M connected to the trip unit
- (4) Available with unit PR120/D-M connected to the trip unit
- (5) Also available with unit PR120/D-BT connected to the trip unit
- (6) Configuration for these trip units: PC - Ekip T&P - Cable 1- electronic trip unit.
- (7) Configuration for these trip units: PC - Ekip T&P - Cable 2- electronic trip unit.
- (8) Configuration for these trip units: PC - Ekip T&P - Cable 3 - electronic trip unit.

All trip units not listed in the table do not connect with Ekip Connect in any configuration.

For details, look to the devices User Manual, at disposal starting from the manù bar.

Model	L5046			Apparatus	Ekip Connect	Scale
	L5383					
ABB				Doc.No	1SDH000891R0002	Page NO. 40/42

9.1 Ekip T&P cables



Ekip T&P is supplied with 3 cables, specially created for the connection of the unit and the test connector of the trip unit.

With cable 3, for the connection of T7/T8/X1 and NEW MEGAMAX HF1 series trip units, it is necessary to use the mechanical adapter supplied.



WARNING Do not use cables other than those supplied.

Model	L5046			Apparatus	Ekip Connect	Scale
	L5383					
ABB				Doc.No	1SDH000891R0002	Page NO. 41/42

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1SDH000891R0002 L5383

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