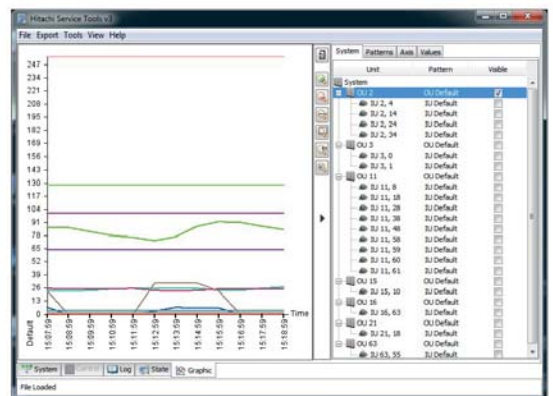


SERVICE TOOLS V.3

Technical Catalogue

H-LINK Data Logger



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1. General information

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1.1 General information

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HITACHI does not assume any responsibility for possible damage caused by the use of this software. The damage caused to persons or material damage related directly to the use of this software is specifically excluded.

1.2 Applied symbols

During normal air conditioning system design work or unit installation, greater attention must be paid in certain situations requiring particular care in order to avoid damage to the unit, the installation or the building or property.

Situations that jeopardise the safety of those in the surrounding area or that put the unit itself at risk will be clearly indicated in this manual.

To indicate these situations, a series of special symbols will be used to clearly identify these situations.

Pay close attention to these symbols and to the messages following them, as your safety and that of others depends on it.



DANGER

- *The text following this symbol contains information and instructions relating directly to your safety and physical wellbeing.*
- *Not taking these instructions into account could lead to serious, very serious or even fatal injuries to you and others.*

In the texts following the danger symbol you can also find information on safe procedures during unit installation.



CAUTION

- *The text following this symbol contains information and instructions relating directly to your safety and physical wellbeing.*
- *Not taking these instructions into account could lead to minor injuries to you and others.*
- *Not taking these instructions into account could lead to unit damage.*

In the texts following the caution symbol you can also find information on safe procedures during unit installation.



NOTE

- *The text following this symbol contains information or instructions that may be of use or that require a more thorough explanation.*
- *Instructions regarding inspections to be made on unit parts or systems may also be included.*

2. Features and benefits

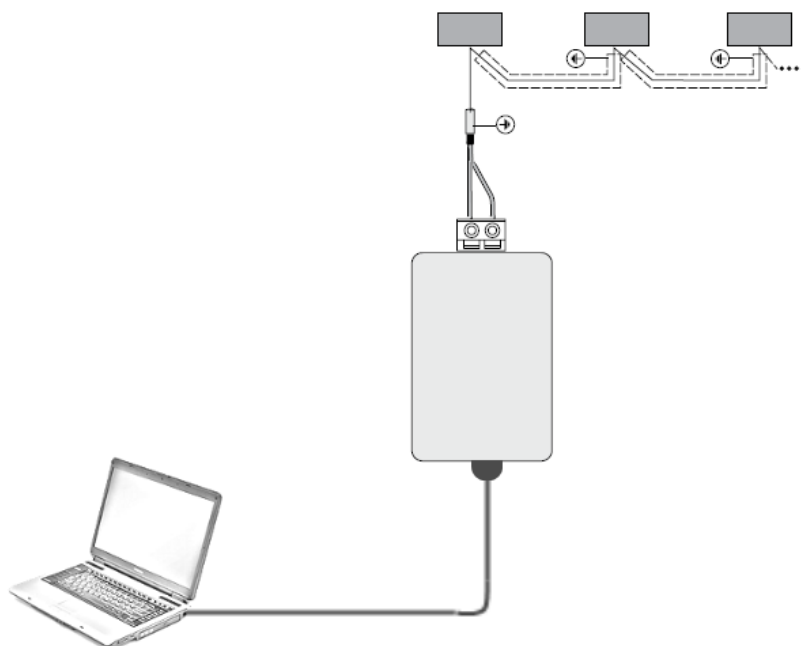
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2.1 H-LINK data logger

Service Tools v3 is an online H-LINK data logger that is connected directly to the H-LINK communication of the building.



Storing the H-LINK data allows a direct analysis of the communication, helping to find problems using the most detailed information about the units.

2.2 HC-A160USB

The HC-A160USB hardware is the gateway supplied with Service Tools v3 for connection to the H-LINK line.

This hardware works as software key, which means that the software cannot be started when this device is not connected to the computer.

2.3 Connection to CSNET WEB & Service Tools v2

Service Tools v3 software can gather information from a CSNET WEB or Service Tools v2.

By doing so, the software can collect data without being connected online.

2.4 Use of Java Technology

Service Tools uses Java technology to control and monitor remote operation of the installation.

In order to run the Service Tools application on a PC, it is necessary to have Java J2SE Runtime Environment installed.

Service Tools is supplied with a CD-ROM to ensure simple installation.

2.5 Direct H-LINK Communication

Getting the information directly from the H-LINK gives extra information about the communication, which can help to identify installation problems.

2.6 Compatibility with Chiller, Package & Yutaki

Service Tools v3 improves the compatibility with package systems of Service Tools v2.

Service Tools v3 is compatible with all package system units. It is also compatible with:

- KPI Active
- KPI Passive
- Dx-Kit
- PC-A1IO

Service Tools v3 is compatible with all heating units:

- Yutaki-S
- Yutaki-M
- Yutaki-S80
- Yutaki-S Combi

Service Tools v3 is compatible with the entire chiller range, including AH and AH1 chillers.

2.7 Compatibility with CSNET WEB / Service Tools v2

In case of that CSNET WEB or Service Tools v2 devices are already present on the installation, Service Tools v3 can connect to them through an Ethernet connection in order to obtain data.

In that case, testing can continue without the need for Service Tools v3 to be running, and the data can be loaded upon the next connection.

It can be helpful in the case of long tests where the user does not want to leave a computer on the field.



NOTE

If there is a CSNET WEB connected to the H-LINK, HC-A160USB must be connected in monitoring mode to allow mutual H-LINK compatibility.

2.8 CSNET WEB / Service Tools v2 Auto configuration function

The auto configuration function checks all the H-LINK addresses to find the connected units.

On the previous version this function was called from the CSNET WEB Software, and now it can be performed from Service Tools v3.

2.9 Remote control of the units

Service Tools v3 adds the option to control the units remotely, helping the user to evolve its test without moving away of his computer.

2.10 Optional functions configuration

In case of connection to a packaged system via H-LINK through the HC-A160USB, it is possible to configure its optional functions from Service Tools v3, without the need to perform further setup on each unit.

2.11 H-LINK analyser

H-LINK analyzer is an integrated tool that checks the H-LINK messages in order to give information about how it is working.

It helps marking possible errors on that communication.

2.12 H-LINK quality analyzer

The H-LINK quality analyzer shows the quality of H-LINK connection to the HC-A160USB by means of an icon.

This analysis is not based on H-LINK messages, but on an analogue measurement of the communication; it indicates whether there are low measurements that could be caused by noise on the line, or the presence of messages without enough power, which could result in longer H-LINK communication than the allowed length.

2.13 Report

Service Tools v3 allows reporting of the logged data, exporting each of its screens in different ways.

H-LINK analyser information can be exported, too.

2.14 Multiple Screen Option

Service Tools v3 allows to split the information in two screens; this feature is useful for labs which require to display graphics in one screen and the table of values in another.

2.15 Automatic updates

Service Tools can be updated online using an internet connection. If properly configured and registered, Service Tools will check for new updates and advise the user to download them.

3 . Installation

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3

3.1 Security summary



CAUTION

Read this manual carefully before performing installation work.

Read the Operation Manual in order to configure the air conditioning units.

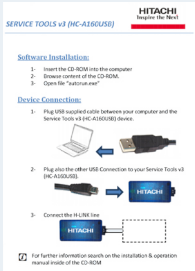
Install SERVICE TOOLS away from possible sources of electromagnetic waves.

Do not install SERVICE TOOLS in places... :

- with vapour, oil or dispersed liquids.
- with heat sources nearby (sulphuric environments).
- where accumulation, generation or leakage of inflammable gases has been detected.
- that are near the sea, in saline, acid or alkaline environments.

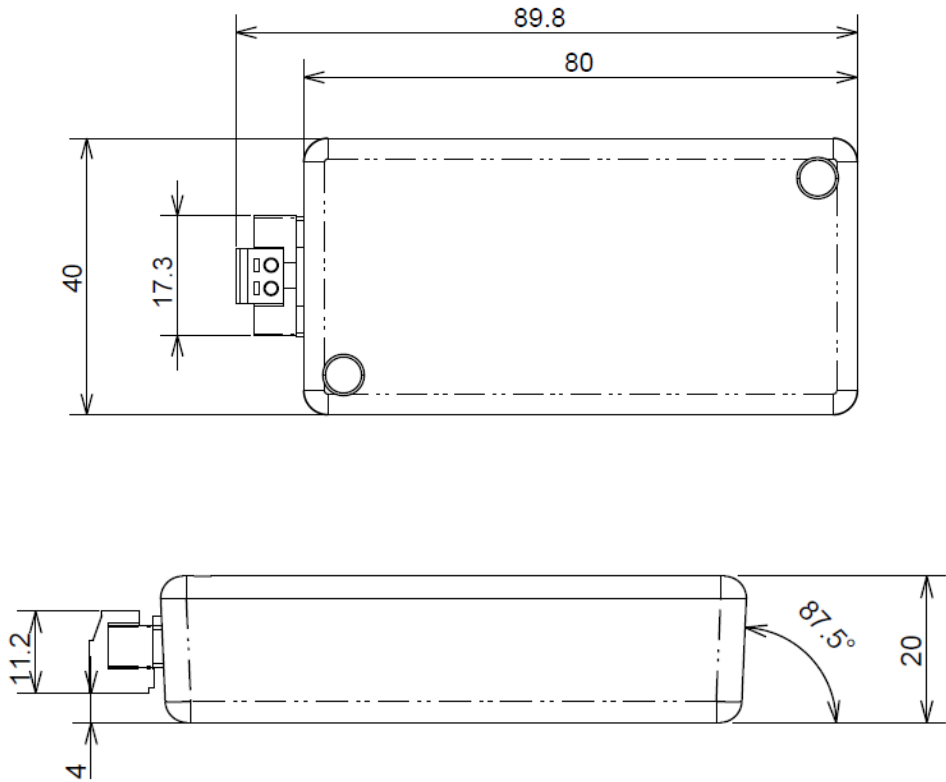
3.2 Identification of elements

Check that the following items are in the box prior to installation.

Figure	Quantity	Description
	1	HC-A160USB is the H-LINK interface that connects to the USB port of a computer. NOTE • HC-A160USB works also as a key for the program. The usage of Service Tools v3 requires an HC A160USB to be always plugged in. • This is required even to open files or to read H-LINK data from CSNET WEB.
	1	USB Cable for connection of HC-A160USB to the computer.
	1	Installation Document with instructions on getting started.
	1	CD-ROM with the supplied software and the Technical Catalogue.

3.3 Dimensional data

The dimensional data values are in millimeters.



3.4 Description of the parts



Nr.	Connector	Specifications
1	H-LINK Connector	Direct connection to the H-LINK of the installation.
2	USB connector	Connection through USB cable between the device and the computer.

3.5 Specifications

Hardware Specifications

Components	Specifications
Power supply	5V DC Supplied from USB connection
Consumption	0,5W
Outer dimensions	90 x 40 x 20 mm (Height x Width x Depth)
USB Connection	Standard 2.0
Weight	40g
Ambient temperature	0~40 °C
Humidity	40~70%

Specifications for communication with the units

Elements	Specifications
Communication with	H-LINK (H-LINK II Compatible)
Communication cable	Twin wire, without polarity
Communication system	Half-duplex
Communication method	Asynchronous
Speed of transmission	9600 Bauds
Length of wiring	1000 m maximum (total length)
Number of units	Up to 64 outdoor units and 160 indoor units, 1 Yutaki or up to 8 water chillers (1)

Specifications for computer that runs the software

Elements	Specifications
Computer	Processor at 1000 MHz, 256 MB RAM, 200 MB free hard disc space. Windows 2000 or higher. Java Runtime Environment Version 6 Update 6 (2) or higher installed (included in the CD-ROM) (3) (4)

(1) Either compact units, Yutaki or water chillers only can be connected to a H-LINK communication line exclusively. Mixed connection of these model types is not permitted. Yutaki-M is not allowed.

(2) Java(R) is a registered trademark of Sun Microsystems.

(3) The HC-A160USB drivers are unsigned. In case of using Windows 8.0 or higher, ask the IT staff of your company for help with the installation of unsigned drivers.

(4) Installation shall be performed by a user with administrator privileges.

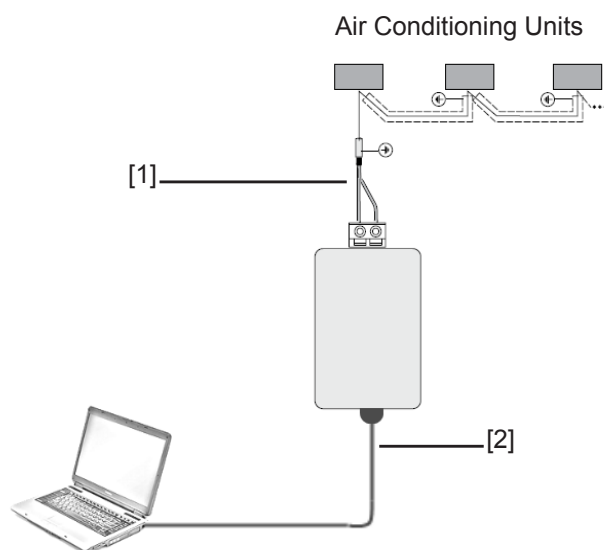
3.6 Installation

When unpacking the device, check that it has not suffered damage during transport.

3.6.1 Electrical connections

In order to run, HC-A160USB needs to be connected to the computer (USB) and to the transmission line with the air conditioners (H-LINK).

Nr.	Connection	Cable Specifications
1	Transmission cable for the units (H-Link)	Twin core twisted pair cable 1P-0.75 mm ² . Non-polarized. Shielded, earthed at one end. In order to choose the type of cable, refer to the Outdoor Unit Installation and Operation Manual.
2	USB	Standard mini USB 2.0 cable.



i NOTE

- In case of reading data from a CSNET WEB, the computer must be connected to the same Ethernet (LAN) as the CSNET WEB, and the H-LINK must be connected to the CSNET WEB instead of to the HC-A160USB.
- Check the CSNET WEB installation and operation manual for information on connections.

3.6.2 Installation procedure

The HC-A160USB features a simple, straightforward installation procedure:

- 1 Plug the USB cable between the computer and the HC-A160USB. The small connector is plugged into the HC-A160USB and the larger one to a USB port in the computer.
- 2 Connect the H-LINK line to the H-LINK connector on the HC-A160USB.

3.7 Hardware setup

There is no particular hardware setup required. The drivers for it are automatically configured during the software installation process.

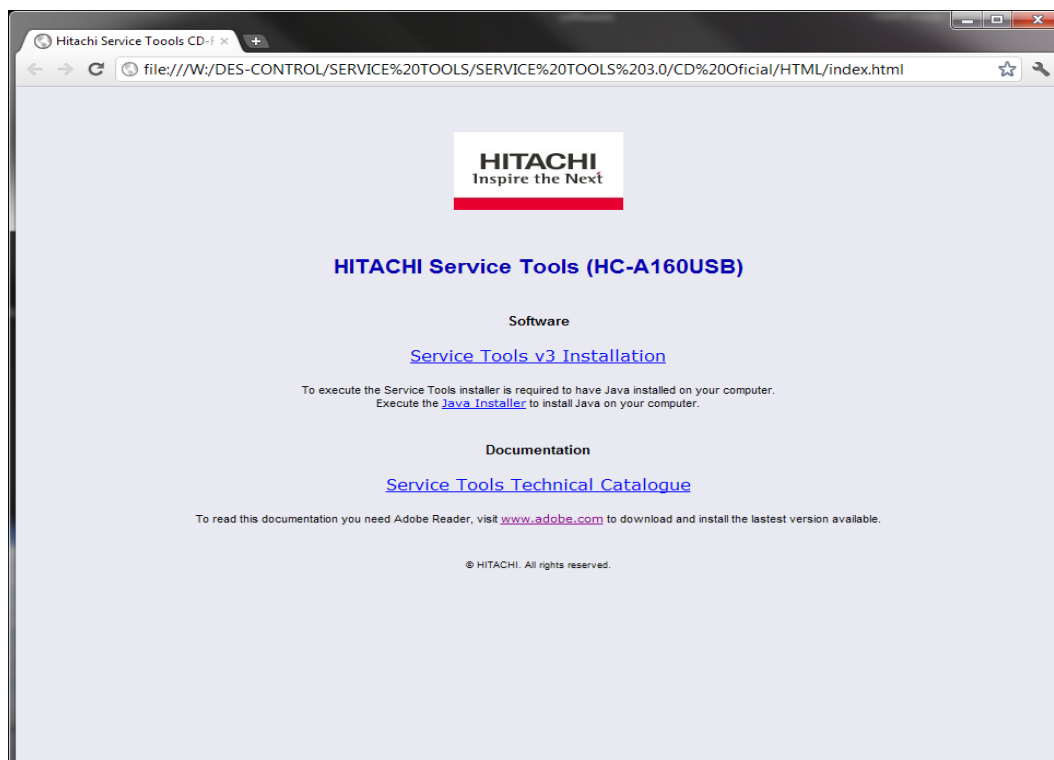
3.8 Software setup

The following steps explain how to install and setup the software to run in a computer.

3.8.1 Java installation

It is not necessary to follow these steps if a Java Runtime Environment (JRE) with a version equal or higher than version 6 Update 6 is already installed in the computer.

- 1 Run the Service Tools CD-ROM.
- 2 Select the “Java Installer” link.



- 3 This process takes a few minutes. When the Java installer opens, it is necessary to read the licence agreement and accept it.

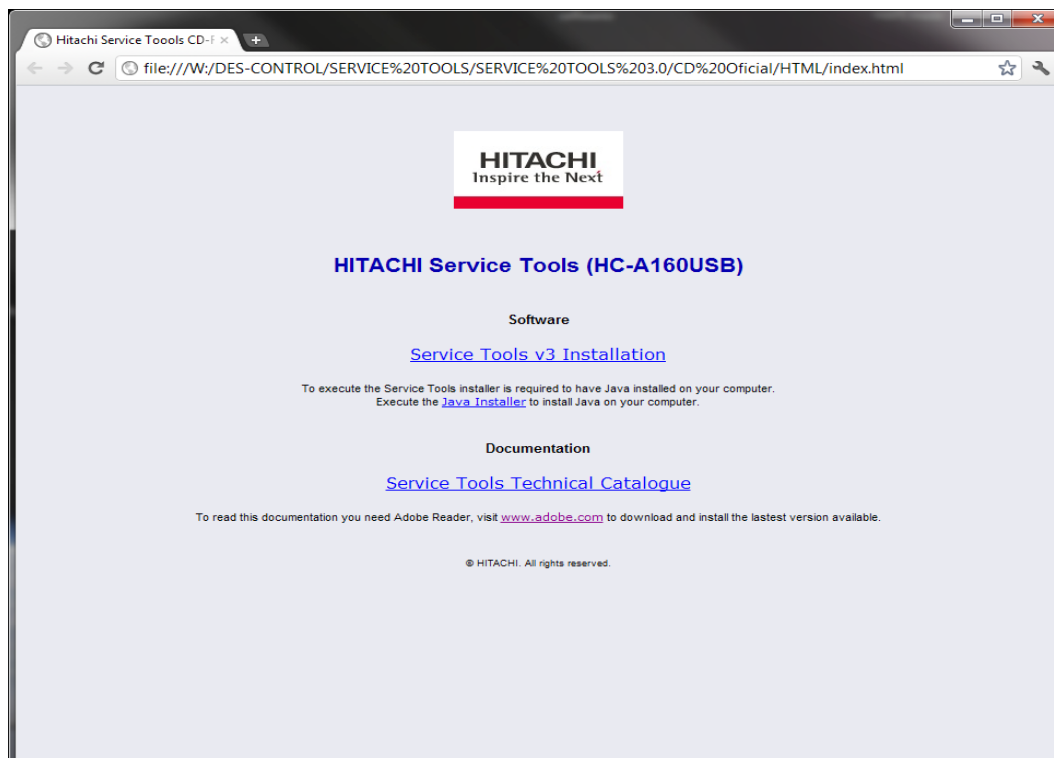
It is not possible to continue with the installation unless accepting the licence agreement. After that, Java installation proceeds automatically.

NOTE

If unsure whether Java is installed on the computer, run this file so the program can check the existence of a JRE. If it is installed, the program will ask you to reinstall it, to which it is possible to select “no” or continue to reinstall Java. If it is not installed, select “yes” to proceed with the installation.

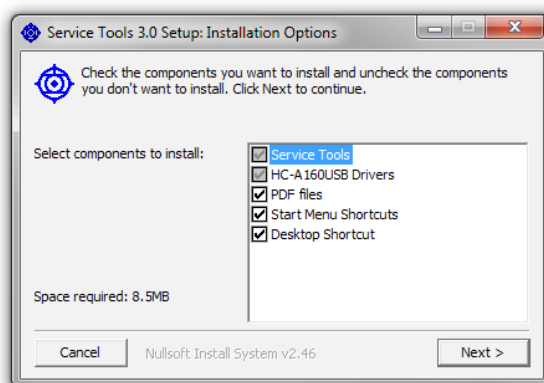
3.8.2 Software installation

- 1 Run the Service Tools CD-ROM.
- 2 Select the "Service Tools v3 Installation" link.

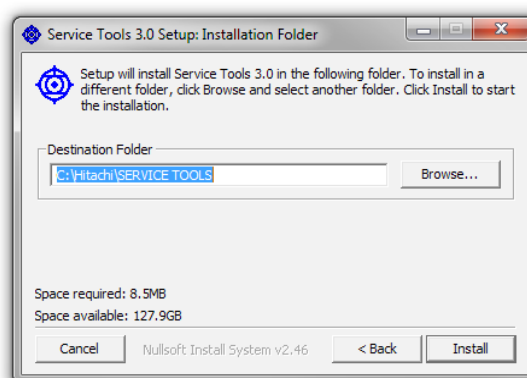


3

- 3 If the HC-A160 is connected, please remove it.
- 4 The Service Tools installer starts. This installer offers some configuration options, as the creation of shortcuts or copying the technical catalogue.



Press the "Next" button to select a destination folder.



The installation begins when pressing the "Install" button.



CAUTION

Administrator rights are required for a correct installation of Service Tools and its drivers.

- 5 Depending on the configuration of user access control of Windows, an alert message may appear to inform that it is not possible to check the editor of the controller.
- 6 Ignore the warning and allow the installation of that controller; otherwise it will not be correctly installed.
- 7 Connect the HC-A160USB.



NOTE

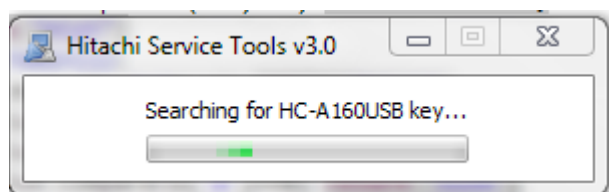
In case of having problems with the installation, please check the Installation help on the Troubleshooting chapter.

3.8.3 Usage of HC-A180USB as a licence key

HC-A160USB works as a licence key, which means that Service Tools v3 can never start if the HC-A160USB is not plugged in.

With one HC-A160USB connected, it is allowed to open more than one Service Tools software to open multiple files, but reading from two H-LINK to one HC-A160USB will not work; in this case, the second software will find the device busy.

Upon startup of the Service Tools software, the following window appears while it is detecting the HC-A160USB.



3.8.4 Software registration

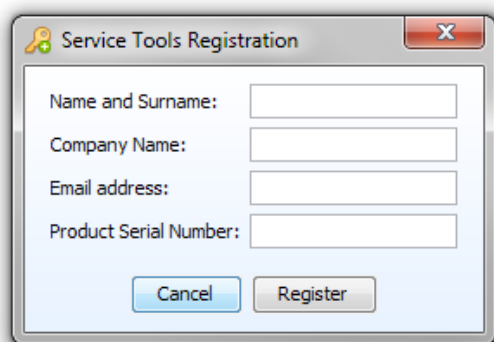
When Service Tools is opened, it checks if the software is registered.

In case that the software is unregistered, Service Tools alerts the user with an alert message from which it is possible to proceed with the registration.

The registration process requires an internet connection.

The registration asks for:

- **Name and Surname:** name of the user registering the software
- **Company Name:** name of the company for which the registered user works
- **Email address:** email address of the user. It will not be used for spam. It is going to be used only as a means of contact with the user whenever required, and exclusively for matters related with the Service Tools software.
- **Product Serial Number:** number that identifies the HC-A160USB; it can be found on the HC-A160USB or on the carton box.



CAUTION

Service Tools requires registration to allow the automatic updates. The data required is used to identify the user trying to download the updates.



NOTE

In case of connecting from behind a proxy, cancel the registration dialogue, and configure the proxy setup on the automatic updates dialogue before registration.

4 . Operation

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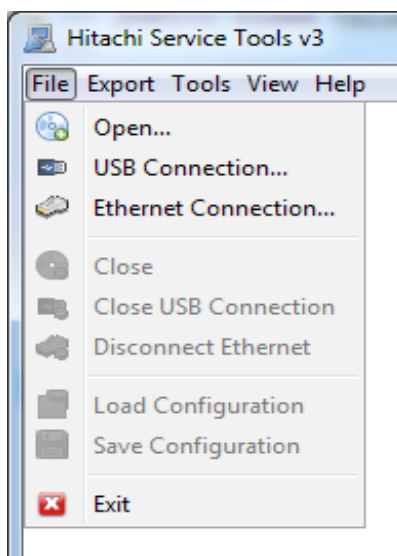
4.1 Getting the data

After starting the program, it is necessary to choose the source of system data.

There are 3 ways of obtaining data:

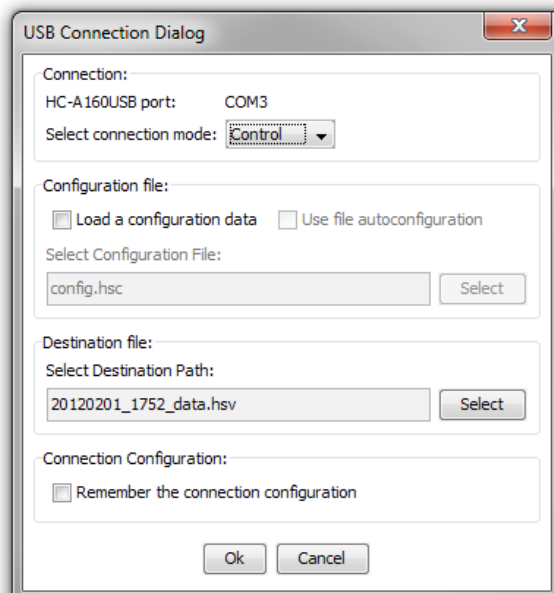
- **USB Connection:** H-LINK data obtained directly from the HC-A160USB.
- **Ethernet connection:** Ethernet connection to a CSNET WEB.
- **Open:** opens an existing Service Tools file.

Select the desired one on the file menu:



4.1.1 Connecting through USB/H-LINK

After selecting this option, the following dialog appears:



This dialog shows the COM port that is being used for the USB/H-LINK connection.

The connection mode specifies whether HC-A160USB is allowed to send H-LINK messages. This setting is important because incompatibilities may arise in case that there are other central controls such as CSNET WEB. To avoid these incompatibilities with central controls, set the connection mode to "Monitoring". "Control" model allows HC-A160USB to send

information through the H-LINK bus including setting orders to the units.

A configuration file can be loaded to allow per-user configurations.

By selecting “Use file autoconfiguration”, detected unit data is read from the configuration file. This solution lets the user skip the autoconfiguration step.

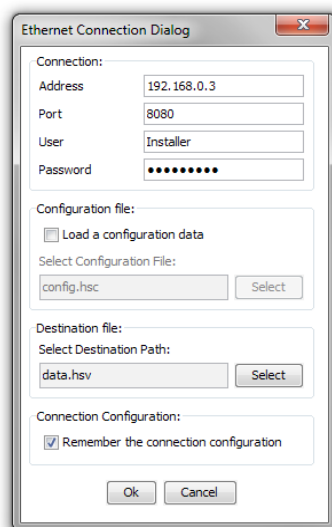
The destination file for the storage of all recorded data can also be specified by the user.

To remember the setup on this dialog, it is necessary to leave the “Remember the connection configuration” combo box ticked.

After pressing “Ok”, an auto configuration dialog appears in order to search the connected units. Refer to the auto configuration chapter for further information.

4.1.2 Connecting to a CSNET WEB

After selecting this option, the following dialogue window appears:



On that dialogue, the user must fill in the CSNET WEB IP Address, Port, Username and Password fields.

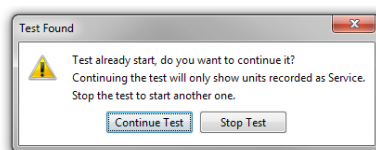
The destination path is the place where the Service Tools v3 file is going to be stored together with the recorded data.

A configuration file can be loaded to allow per-user configurations.

To remember the setup on this dialog, it is necessary to leave the “Remember the connection configuration” combo box ticked.

After pressing the Ok button, the software tries to connect to the CSNET WEB.

In case that there is a test going on, the following dialogue window appears to select whether to resume it or to stop it.

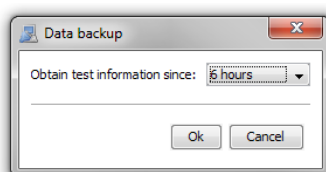


NOTE

In the case of Yutaki and Chillers, it is not possible to keep the tests running if Service tools v3 is not working. Use Service tools v2 or CSNET WEB to see the data stored as Historical Data.

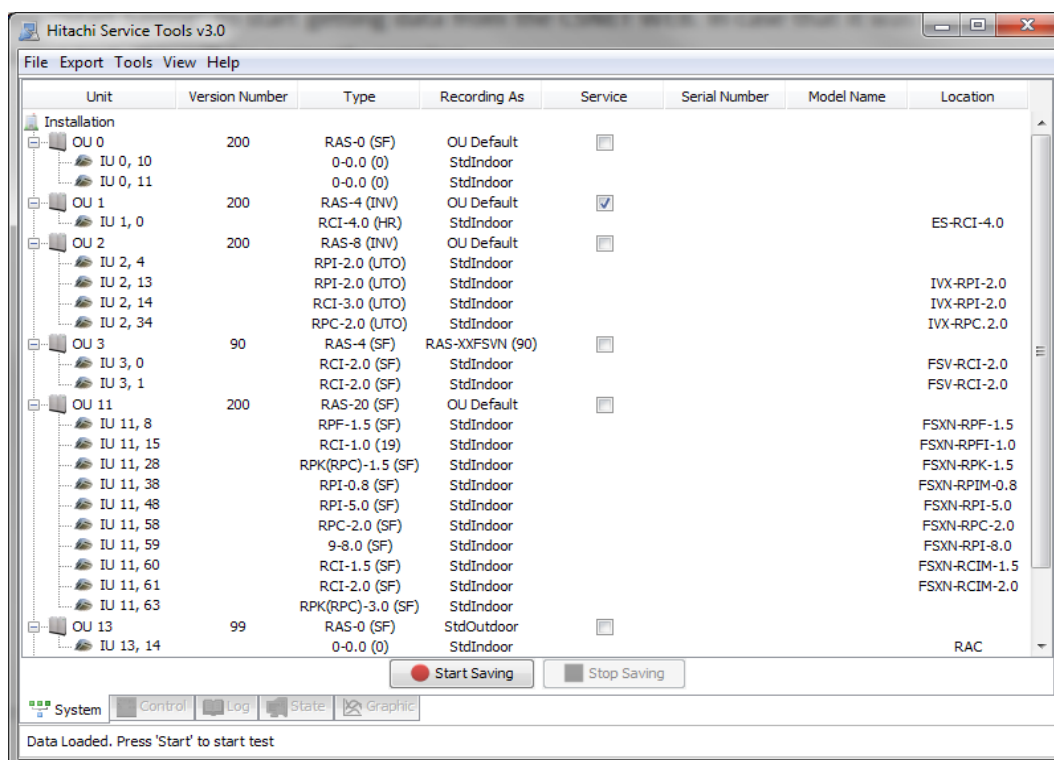
Stopping the test stops the ongoing one before continuing.

In case of continuing the test, a dialogue window appears to ask the user which period of time is it necessary to read.



After connecting to the CSNET WEB, all the available units appear in the System tab.

Press “Start Saving” to start getting data from the CSNET WEB. In case of loading an existing test, it appears as currently running.



To stop the test, press “Stop Saving”.

4.1.3 Opening a file

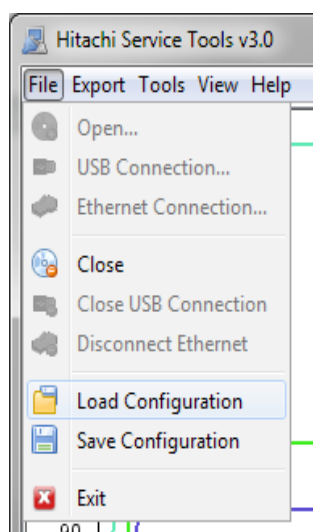
Service Tools is compatible with the following filetypes:

- Service Tools v3 File (.hsv)
- Service Tools v2 File (.st2)

Once the data is read, operation works as explained in the following chapters. The only difference in comparison with the other options for data acquisition lies in the control tab. This is because data is being read from a file, and not from connected units in operation, so it is not possible to control the units.

4.2 Saving/Restoring configuration

The “Load Configuration” and “Save Configuration” options on the file menu are used to save and load the configuration files storing customized patterns and configurations of the view menu.



A confirmation to save this file is also requested when closing Service Tools.

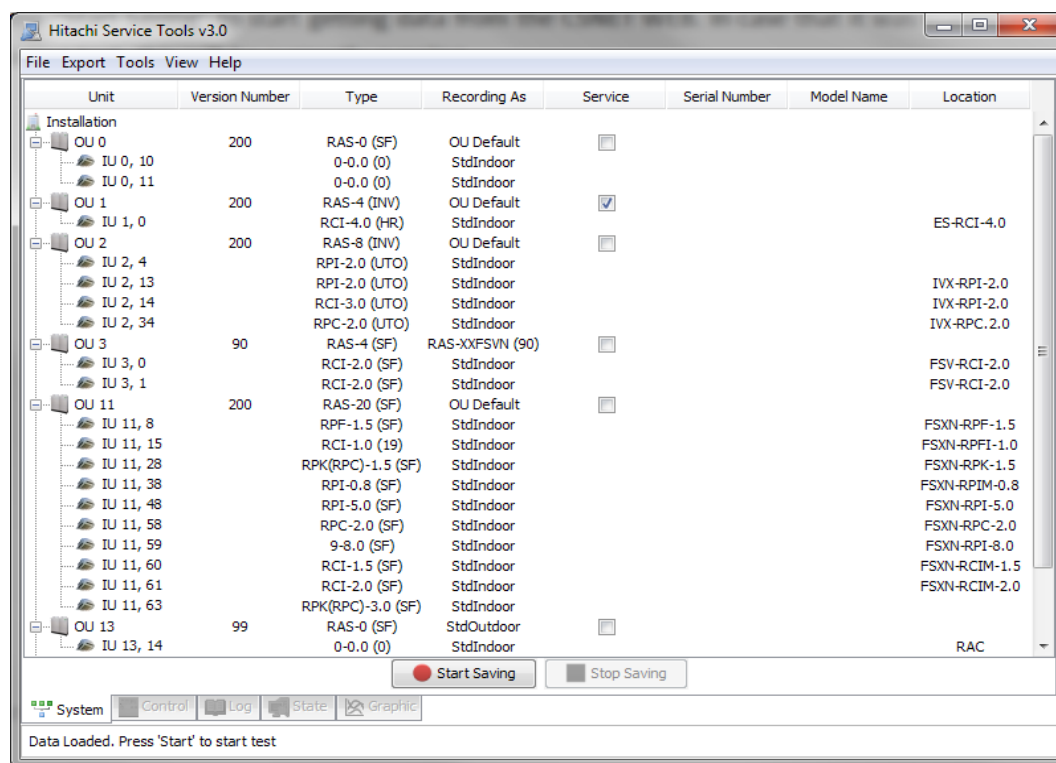
These files can be loaded automatically when selecting the options for connection via USB and Ethernet.

NOTE

The file includes the current units detected; this information can be used to skip the autoconfiguration process when connecting through USB.

4.3 Defining the test

Once the user is connected using HC-A160USB or CSNET WEB, it is possible to select the units to read service information from right on the system panel.



4

The “Recording As” column is used to specify how each unit is being recorded, in order to facilitate the thorough analysis of H-LINK data. Service Tools suggests the most appropriated values.

The “Service” column is important because units are simply stored as standard indoor, outdoor, chiller or Yutaki when left unmarked. When it is marked, extra service data is requested, providing complete information of the units.

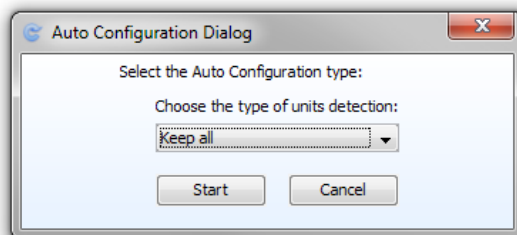
NOTE

If a given test is performed without “Service” check marked, the standard pattern will be assigned by force when opening the resulting file.

In case of reading the data through CSNET WEB, the “Service” tick box is used to specify the units that will be running the test while the user is not connected. That means that only the selected units are going to appear when reading an existing test.

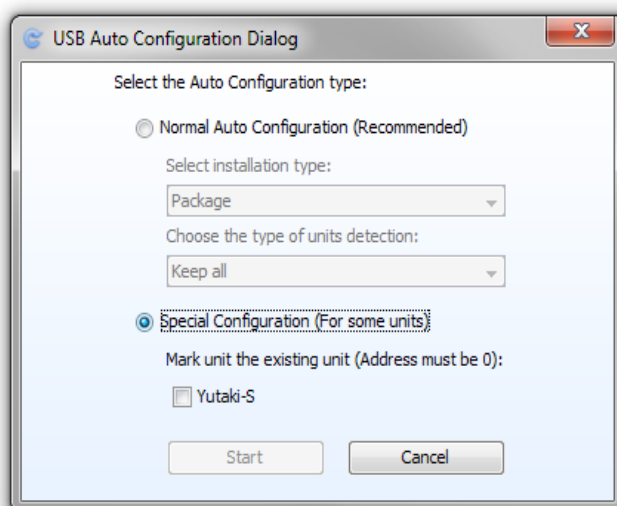
4.3.1 Auto configuration

In case of using a CSNET WEB to obtain the data, it might happen that some units are not detected if they have been connected after gathering system data. To reload system data, CSNET WEB has a special action called Auto Configuration.



In case of recording through HC-A160USB, the auto configuration dialogue appears at the beginning as soon as it detects the connected units, but it can also be executed with the test being stopped.

After pressing Auto Configuration option on the tools menu, the following dialogue appears:

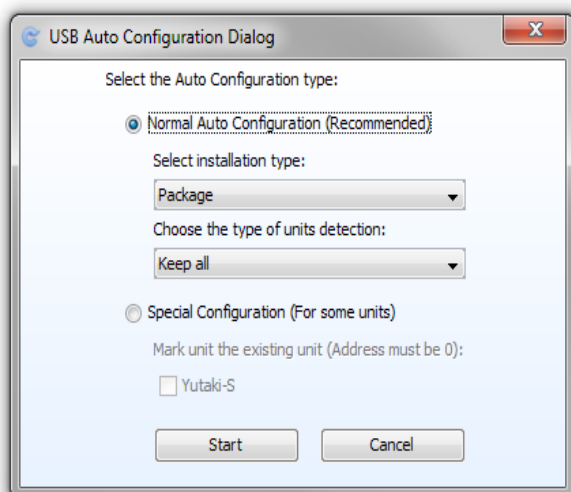


Select Normal Auto Configuration in order to reload the information of a compact unit or a chiller unit.

In case of using the HC-A160USB, it is also necessary to specify whether the installation type is Chiller or Package.

The combo box allows to choose out from deleting all the units, deleting not found units only or keeping all the current units.

If there is a Yutaki-S connected, it is mandatory to select the special configuration, and to tick the Yutaki-S checkbox.



This option creates a configuration assuming the address of the Yutaki-S unit as 0. Please make sure that this is the address set up in the unit.

After pressing start, Auto configuration is launched, and it can take a few minutes to complete. A progress bar shows the current state of auto configuration. Do not close the dialog.

4.4 Viewing the data

There are 3 ways to see the data, as a log, as unit state instant information and as a graphic.

4.4.1 Log panel

The Log panel allows the visualization of data across different time frames.

The Log view displays information about an outdoor unit and an indoor unit using tables.

Each column provides information on a different register in the unit log, and each row shows the value of these registers at a specific point in time.

Time	Code	Ta	Te	CC	Td	Pd	Ps	Hz	Current
15:18:51	2	27 °C	25 °C	0	84 °C	12.8MPa	1.28 MPa	0	0
15:17:51	2	26 °C	25 °C	0	87 °C	12.8MPa	1.28 MPa	0	0
15:16:51	2	24 °C	25 °C	0	91 °C	12.8MPa	1.28 MPa	0	0
15:15:51	2	24 °C	25 °C	0	92 °C	12.8MPa	1.28 MPa	23	6
15:14:51	2	26 °C	24 °C	0	87 °C	12.8MPa	1.28 MPa	31	6
15:13:51	2	26 °C	23 °C	0	77 °C	12.8MPa	1.28 MPa	31	7
15:12:51	2	26 °C	24 °C	0	73 °C	12.8MPa	1.28 MPa	31	3
15:11:50	2	26 °C	26 °C	0	76 °C	12.8MPa	1.28 MPa	0	0

Time	On/Off	Mode	Tset	Fan	L.Auto	Louver	Central	On/Off (Unit)	Mode (Unit)	Fan
15:18:51	1	2	23 °C	8	0	0	0	1	2	
15:17:51	1	2	23 °C	8	0	0	0	1	2	
15:16:51	1	2	23 °C	8	0	0	0	1	2	
15:15:51	1	2	23 °C	8	0	0	0	1	2	
15:14:51	1	2	23 °C	8	0	0	0	1	2	
15:13:51	1	2	23 °C	8	0	0	0	1	2	
15:12:51	1	2	23 °C	8	0	0	0	1	2	
15:11:50	1	2	23 °C	8	0	0	0	1	2	

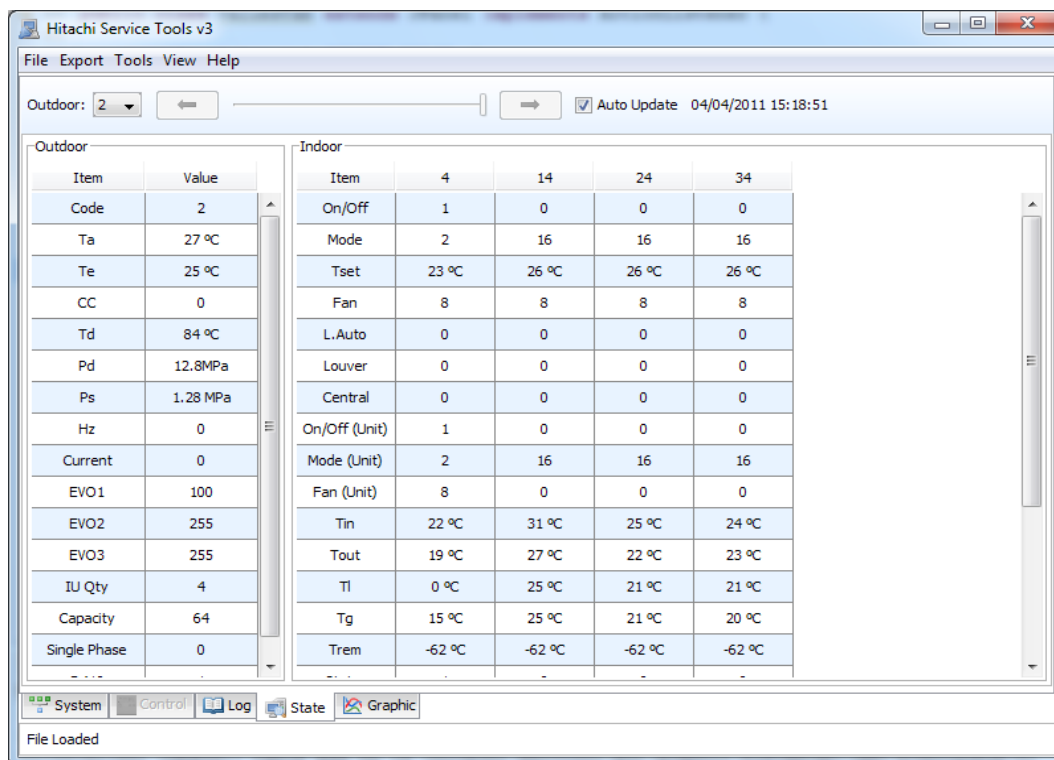
The selection of the outdoor unit or indoor unit to display is carried out with the dropdown button at the top of each log.

It is possible to browse the records using the arrow buttons. In case that recording is ongoing, leaving the Auto Update box checked keeps updating the tables during visualization.

4.4.2 State panel

The State panel allows the visualization of information on an outdoor unit and all the indoor units connected to it.

The rows provide information about the different variables, with each column on the indoor panel referring to each indoor unit.

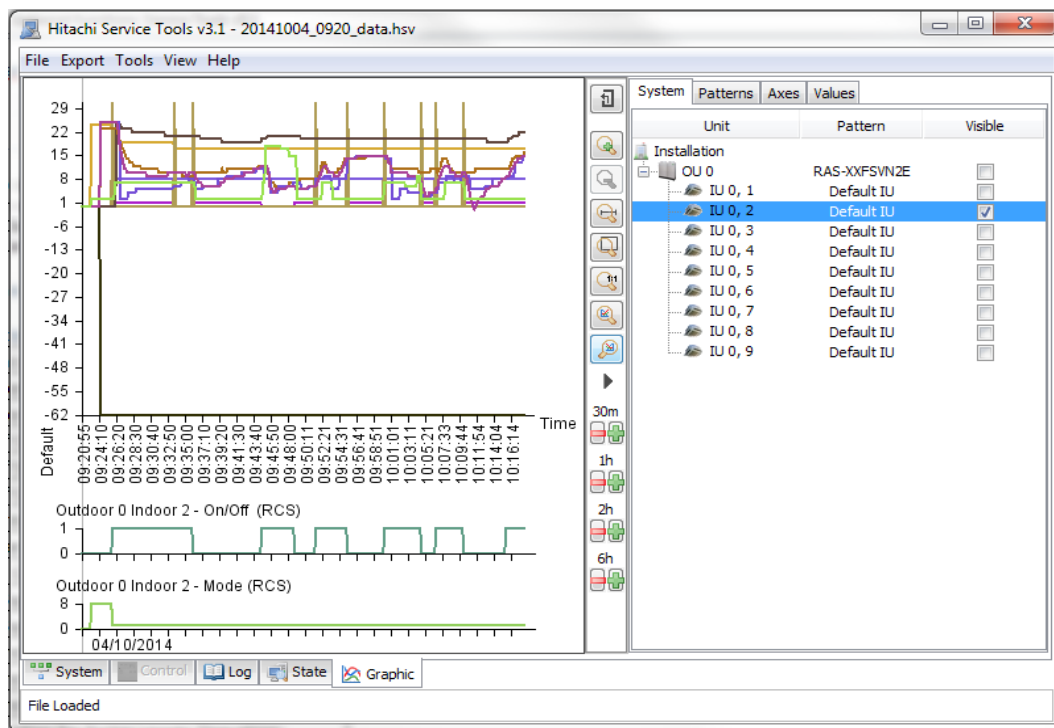


The selection of the outdoor unit to display is carried out with the dropdown button at the top of the table.

It is possible to browse the records using the arrow buttons. In case that recording is ongoing, leaving the Auto Update box checked keeps updating the tables during visualization.

4.4.3 Graphic panel

Graphic panel is the place where data is shown as a current line chart.



This panel has zoom buttons which allow a more detailed view of the part of the graphic that is being displayed, as well as several panels offering different patterns for data visualization.

The panels can be minimised by pressing the following button:

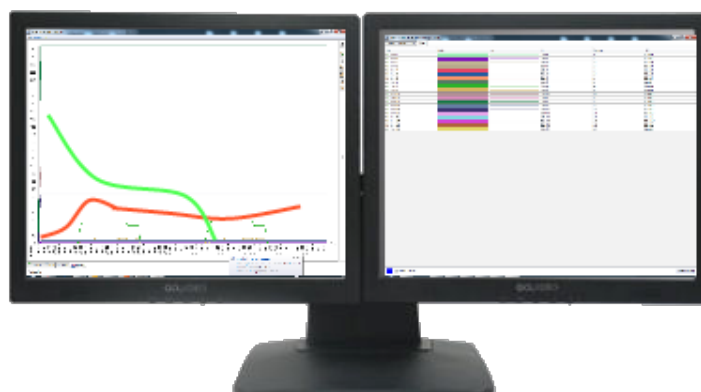


They can be also minimised when clicking anywhere on the zoom vertical tab, but not on the zoom buttons.

By pressing on the popup button:



The panels open up as independent dialogue windows, which can be either hidden completely or being arranged as shown below on a computer system with 2 screens:



◆ Zooms

There are different zoom options, as explained on the following table:

Icon	Explanation
	Increase the zoom around the clicked area.
	Decrease the zoom.
	Zoom related to the X axis (time). Only the time scale changes.
	Display the selected zone.
	Reset the scale to 1 pixel for each data register.
	Reset the scale to 1 and align the axes to the beginning of the record.
	Reset the scale to 1 and align the axes to the end of the record.

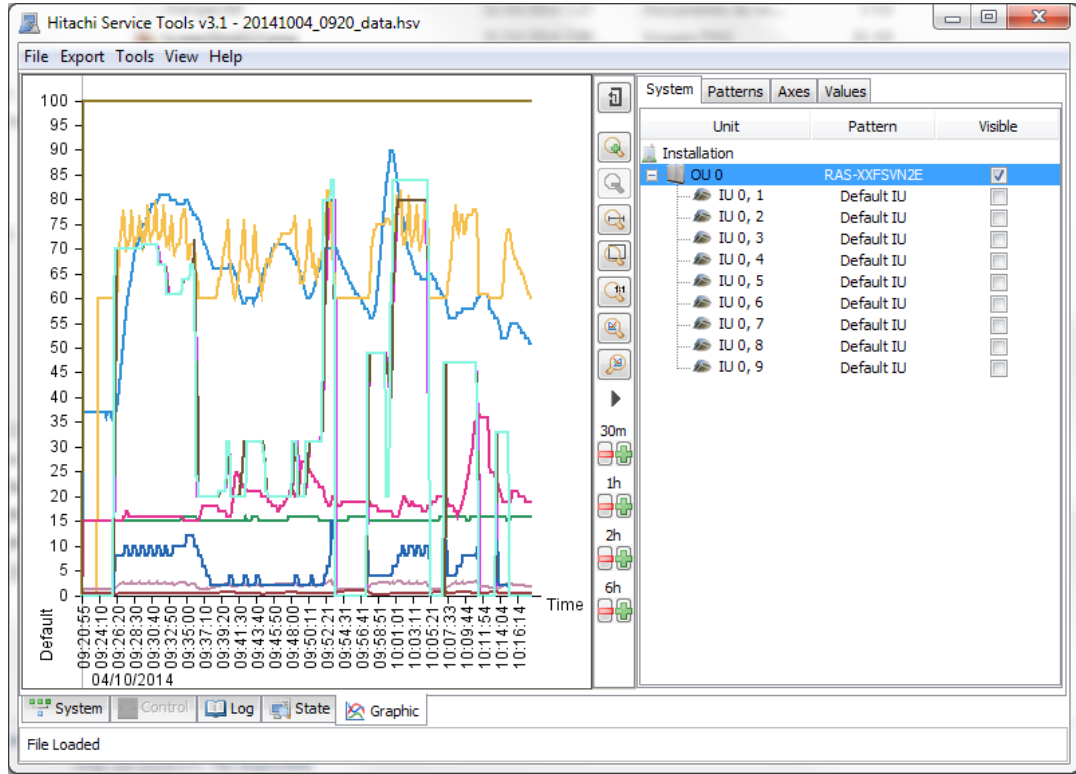
◆ Time scrolling

The buttons allow to scroll the timeline back and forth, in different time steps (30 minutes, 1 hour, 2 hours or 6 hours at a time)

Icon	Explanation
30m 	Scroll 30 minutes back
30m 	Scroll 30 minutes forth
1h 	Scroll 1 hour back
1h 	Scroll 1 hour forth
2h 	Scroll 2 hours back
2h 	Scroll 2 hours forth
6h 	Scroll 6 hours back
6h 	Scroll 6 hours forth

◆ **Unit selection**

The unit selection tab allows to select the units to be drawn in the graphic and their corresponding pattern.

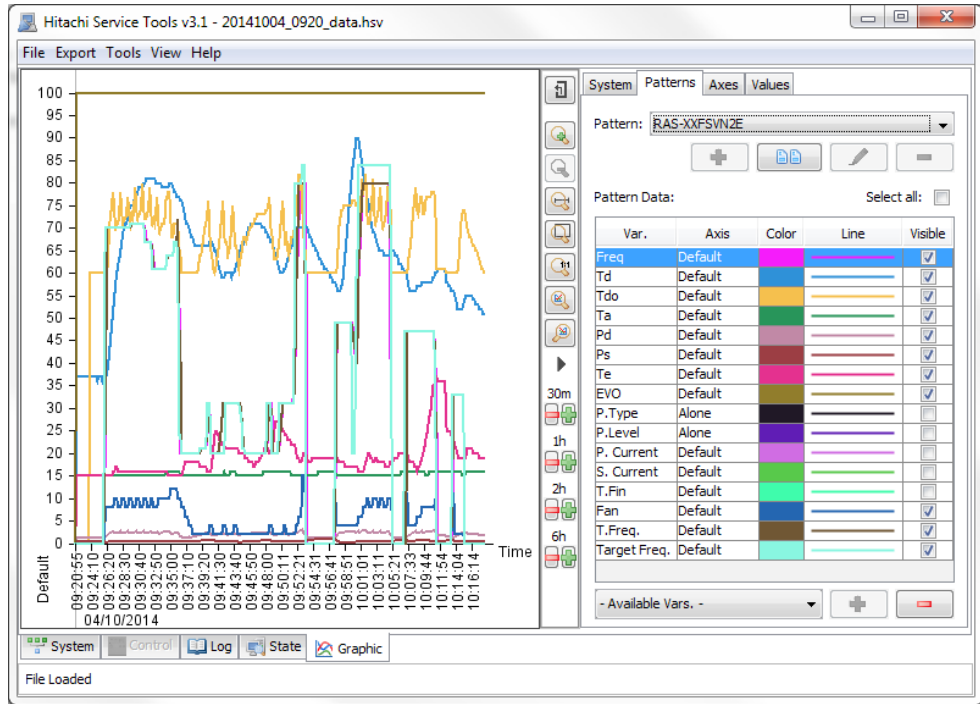


4

◆ **Patterns selection**

Patterns Selection allows the creation of different customized patterns.

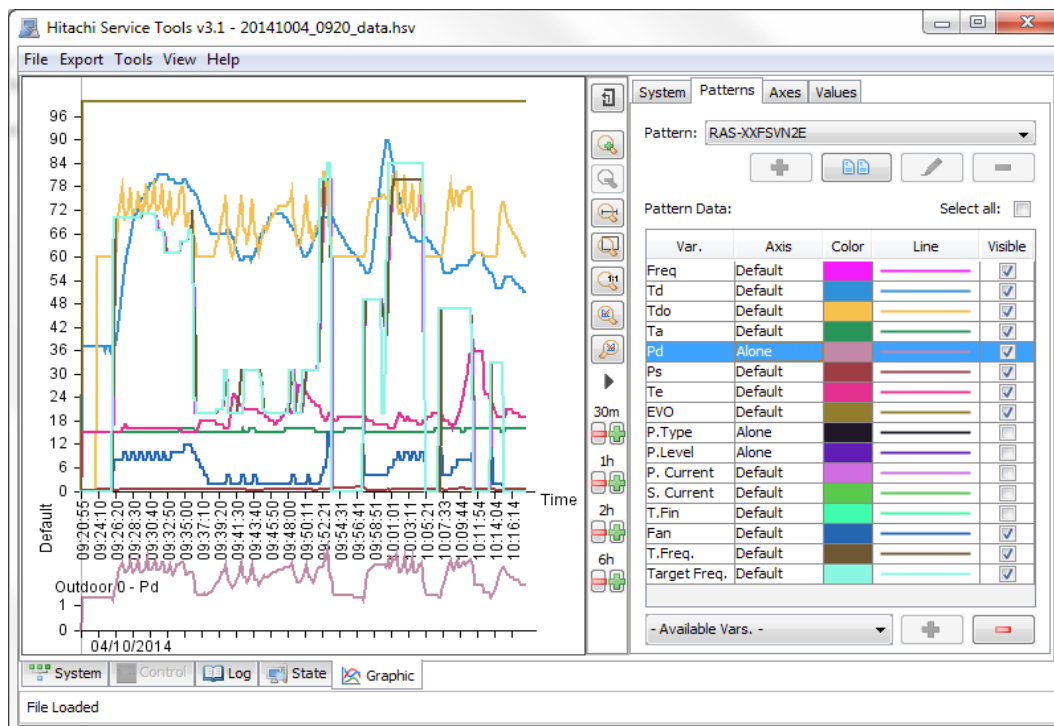
User patterns can be added, copied, edited or removed; however, the patterns that come by default cannot be removed.



For each pattern it is possible to select which variables are visible, the colour and stroke used to plot each line, and the reference axis in order to scale it.

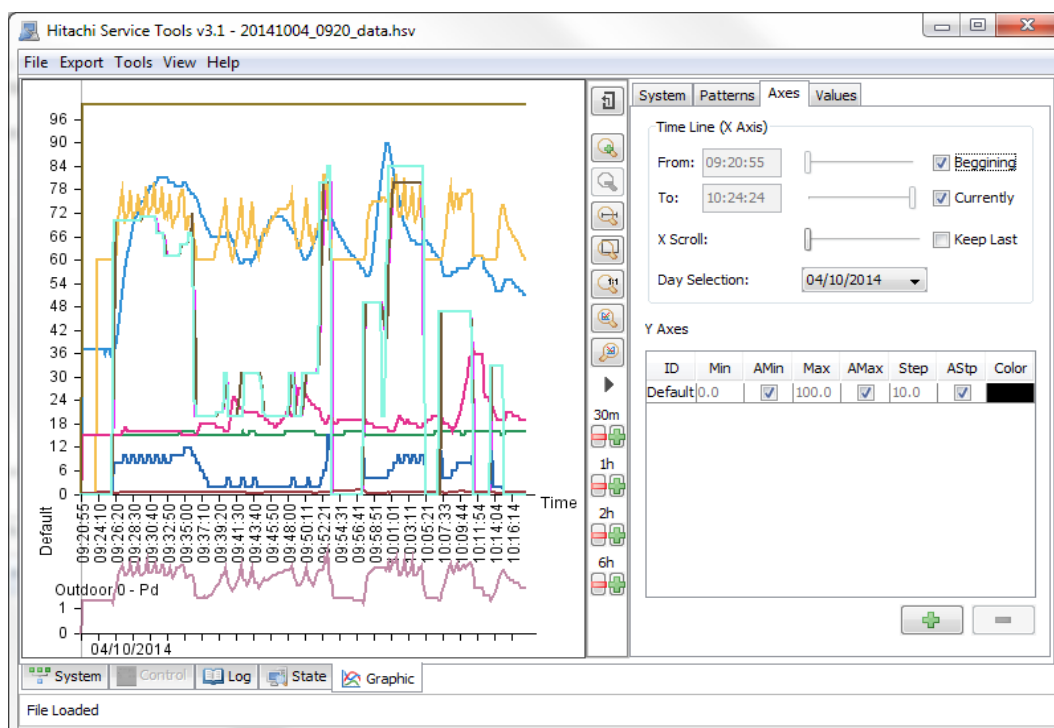
More variables can be added from the dropdown box at the bottom of the panel.

Setting the axis as “Alone” displays the current variable on an independent and reduced graphic, as showed on the following example.



◆ Axis selection

The Axes tab allows to manage different parameters about the coordinates in use.



Regarding the X axis, it is possible to select the beginning of the recorded time being displayed as well as the maximum display time. In case that this results in a longer graph than the available resolution allows to fit in the screen width, the X scroll is activated in order to browse the timeline.

The Day Selection dropdown box lets moving the viewport quickly to the starting point of a given day.

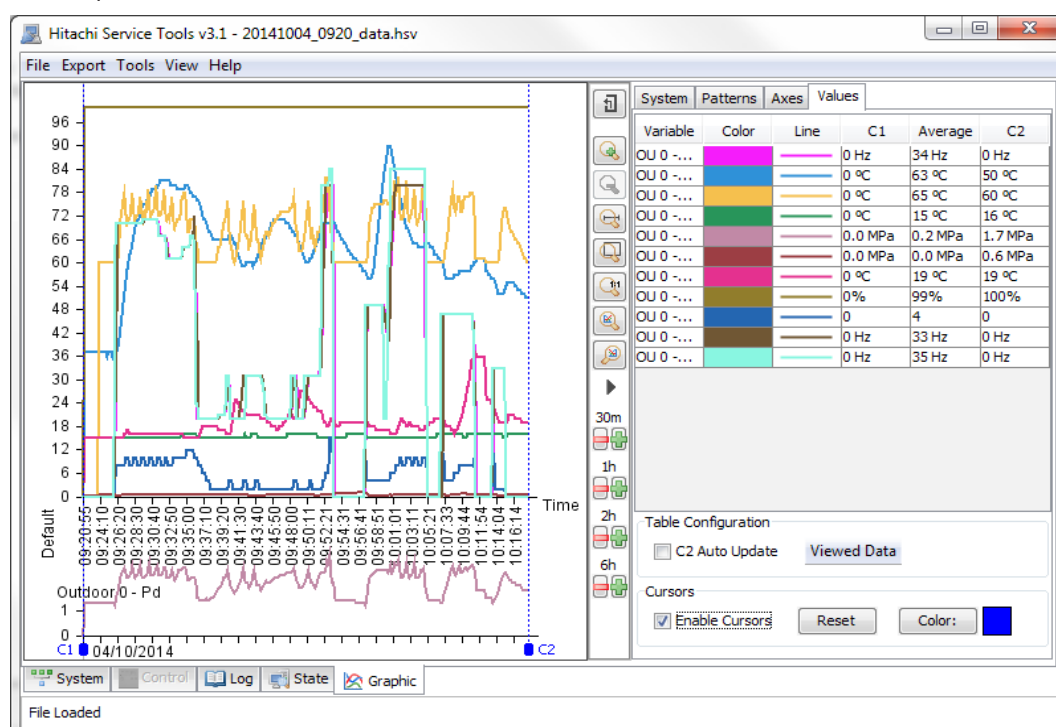
With respect to the Y axes, up to 6 Y axes with different scales can be shown in this graph. These must be added on the Y axes table, and for each one it is possible to specify an ID name to be displayed, its colour and the following parameters related with the scale:

- Min. and Max.: minimum and maximum points for the plotting of the graph
- AMin. and AMax.: minimum and maximum points for the plotting of the graph automatically calculated by the graph
- Step: steps of increase for each tick of the Y axis
- AStp.: steps of increase automatically calculated by the software

◆ Values viewer

The Values tab shows a table where the different variables are listed, with a description of their name, their colour and the stroke used to draw them.

The variation of the values of each variable in a given period of time can also be shown in the table. To do so, the “Enable Cursors” checkbox must be selected first, and then the cursors under the graph must be dragged to the beginning and the end of the desired period for calculation.



The values at the position of the left cursor are labelled as C1, while the values at the position on the right cursor appear as C2.

The data to be displayed on the table can be selected with the Viewed Data button, out from:

- Line & Colour
- Minimum value
- Maximum value
- Average
- Difference

4.4.4 View menu

The menu bar of the application has a “View” menu, which allows user customization of data display.

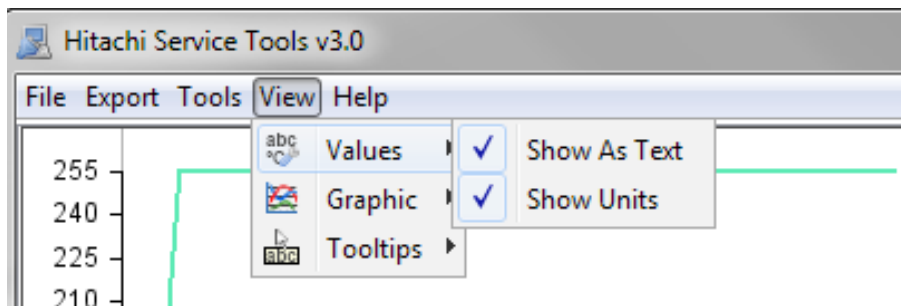
This menu is divided in the following 3 submenus, for the configuration of different settings:

- **Values:** Configuration about how data is displayed
- **Graphic:** Configuration about graphic display
- **Tooltips:** Enabling or disabling of the information tooltips of variables

◆ Values menu

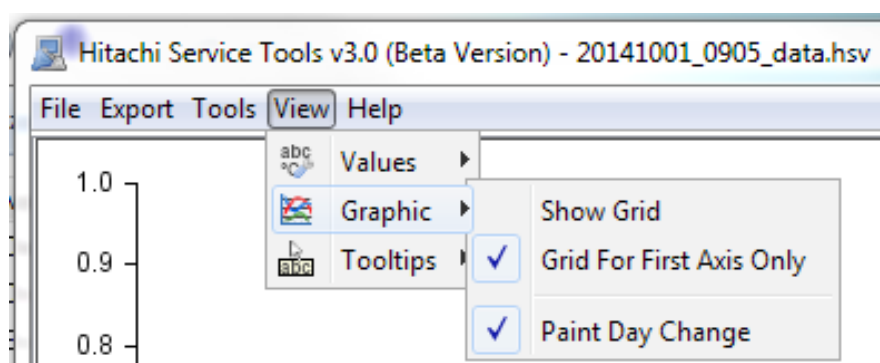
The Values menu allows the configuration of the following two options:

- **Show units:** to show the unit of the values. For example, to switch the display of the °C symbol together with temperature values.
- **Show as text:** to show the meaning of the values. For example, the mode value heat can be shown in the tables as “1” or as “Heat”.



◆ Graphic menu

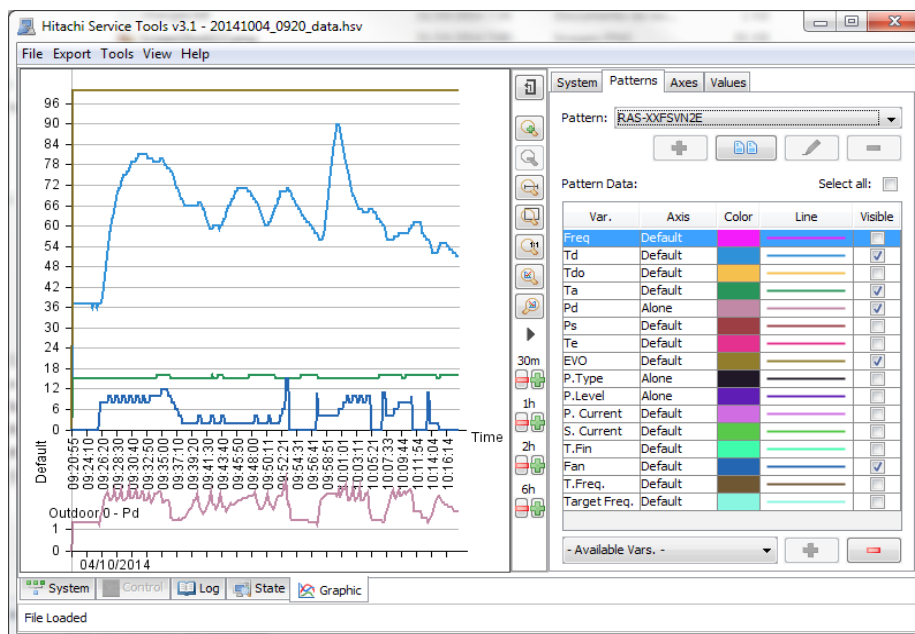
The Graphic menu allows to establish different settings for the display of the graph.



The Graphic menu lets configure the following options:

- **Show grid:** it overlays a grid on top of the Y axes.
- **Grid for first axis only:** the grid is overlaid on the first axis only.
- **Paint day change:** a grey line is drawn in the graph to indicate the change of date.

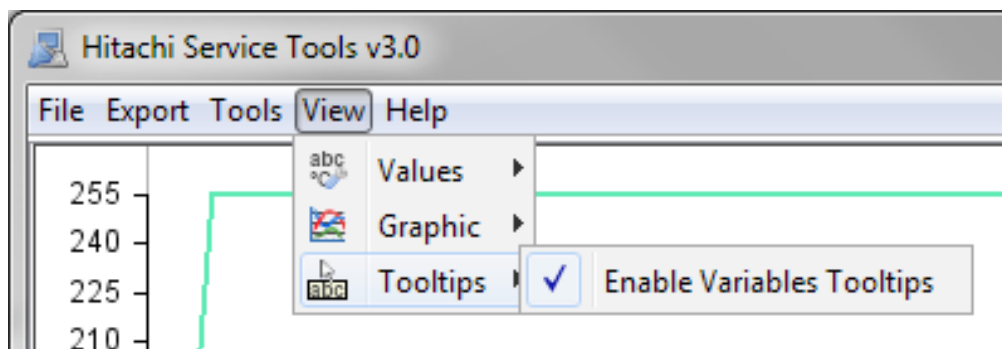
Example of a graph with a grid on the first axis:



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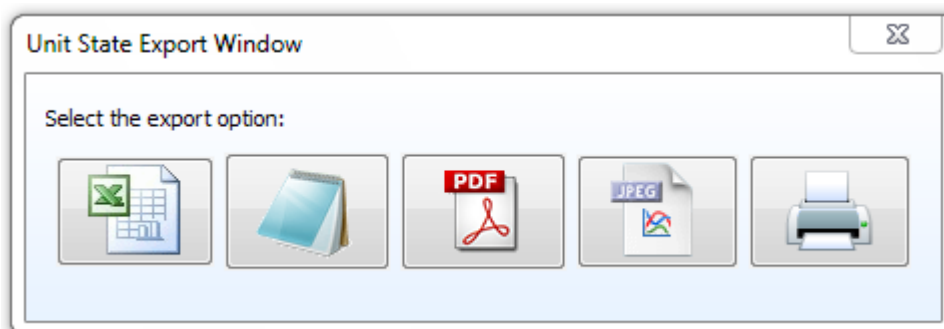
◆ Tooltips menu

Tooltips menu allows to enable or disable the tooltips that appear over the names of variables, providing an extended name which better describes the meaning of the variable.



4.5 Exporting the data

The menu bar of the application includes an option to export, which allows the selection of concrete data to be exported. Once the data is selected, the following dialogue window appears in order to select the type of exportation file.



i NOTE

Not all the types of destination file are available for each of the panels that can be exported.

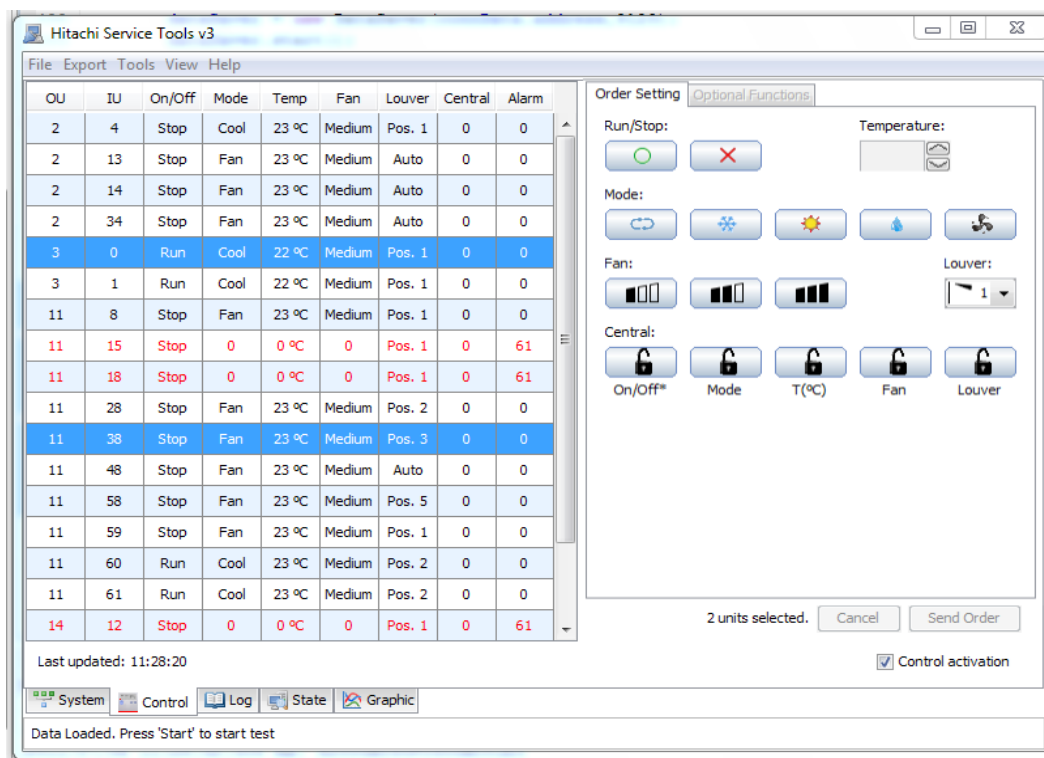
4.6 Control of the units

The Unit Control tab is only enabled when Service Tools v3 is connected through HC-A160USB or CSNET WEB, because only these interfaces allow controlling the units.

The Control activation checkbox is not selected by default. It is necessary to check it in order to manage the units from Service Tools v3 and to update the unit data on this table.

Once the control is activated, the table appears filled with data including basic control information.

If there are errors in any unit, these are highlighted in red.



The table can be used to select the destination units when sending orders to the units.

Multiple selection is allowed using the control key or dragging the mouse. Once the units are selected, the number of selected units appears to the left of the Cancel button.

After that, the units on the right side panel can be used to change the state of the selected units. The content of unchanged items is not modified on the units.

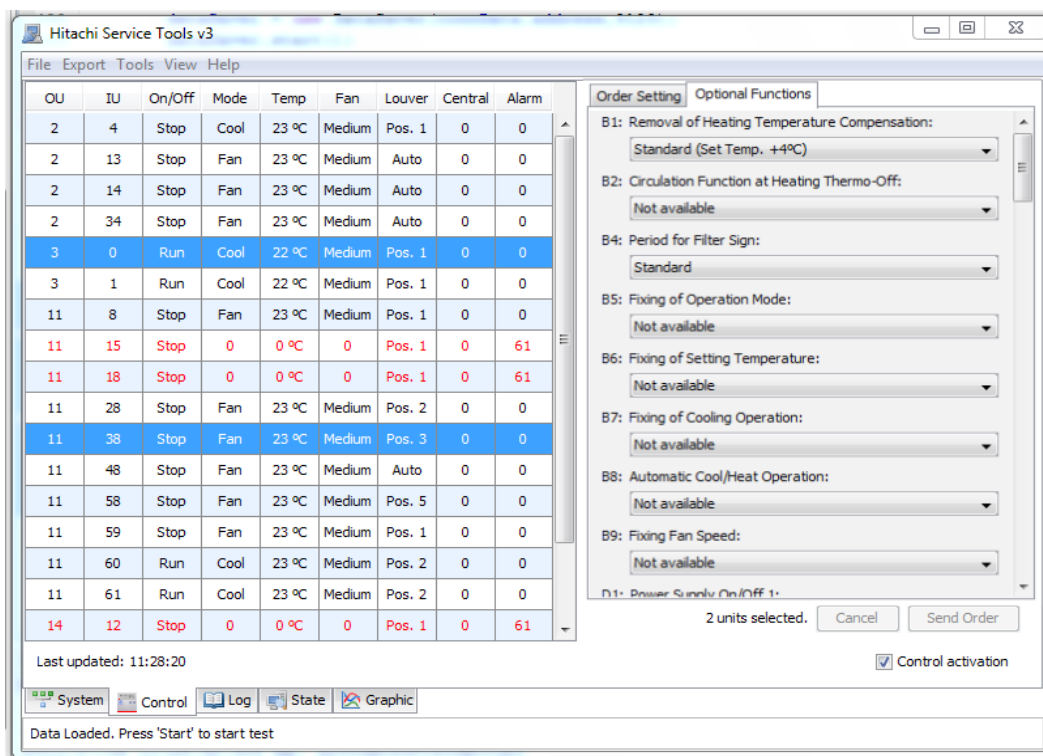
NOTE

- Chiller units can only be controlled by means of a CSNET WEB connection
- Remote control of Yutaki units is not possible

The Control icon changes to red in order to notify that some alarm is currently active:



In case of using a HC-A160USB to read the data, if user is connected to package units, it will be available the option to configure the optional functions.



NOTE

Configuration of optional functions works only with H-LINK2 units

4

4.7 H-LINK Analyser

The H-LINK Analyser is a powerful tool that helps to understand what is happening in the communication line and to identify possible errors.

It is made up of the following two elements:

- H-LINK Quality Icon
- H-LINK Analyser dialog.

When connection is established through a HC-A160USB, an icon providing information about the quality of the H-LINK signal appears on. It measures if it has registered information under the H-LINK voltage allowed values.



It is useful because when it is not green, it may indicate that:

- H-LINK is busy.
- H-LINK line is over 1000 meters long.
- H-LINK suffers from noise interference.

The H-LINK Analyser can be found in the Tools menu, and analyses the H-LINK messages to generate information.

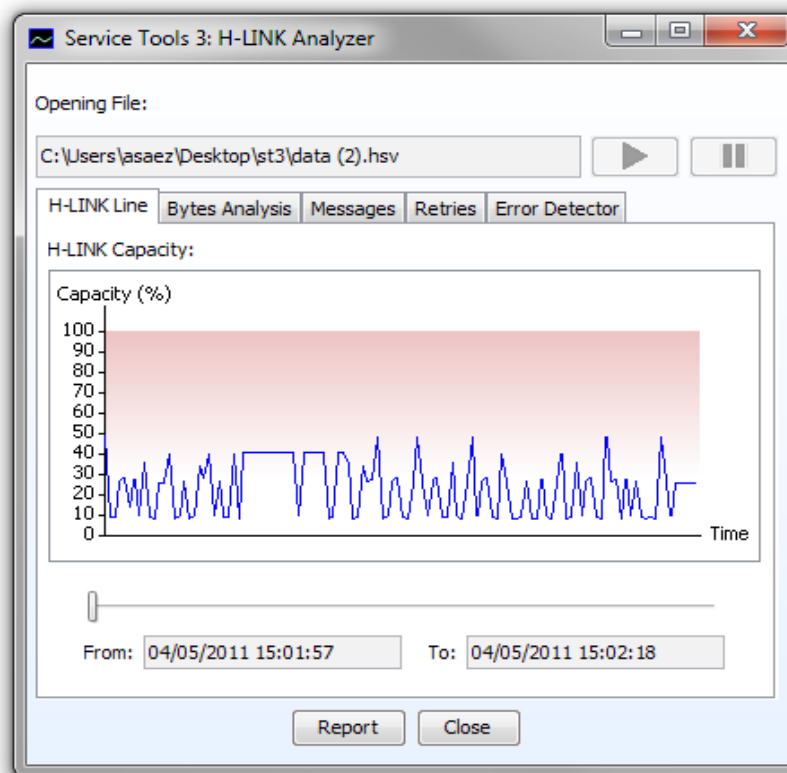
The Report button allows to export the data shown.



H-LINK Analyser is only available when reading data through a HC-A160USB or from a Service Tools v3 file.

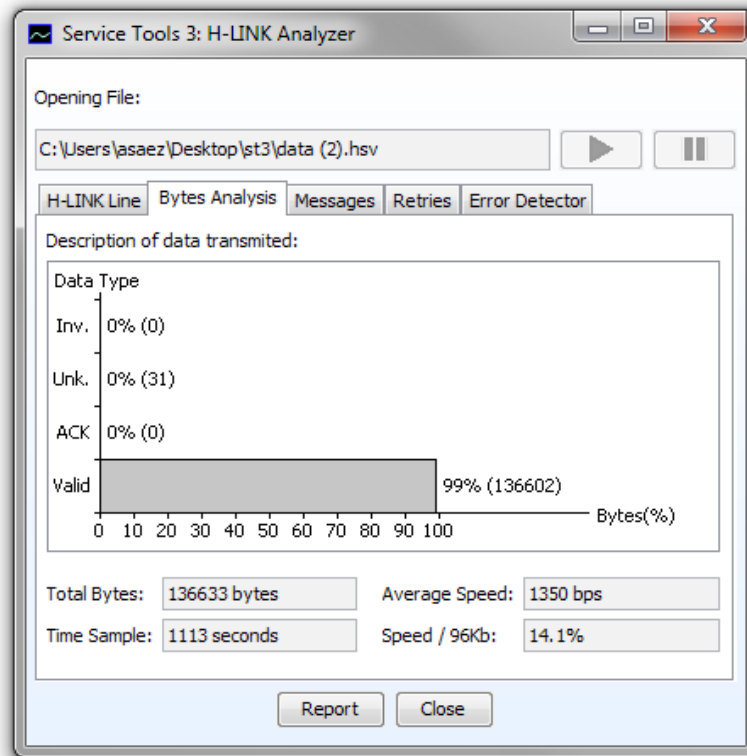
4.7.1 H-LINK line tab

The first tab provides information about the capacity of the H-LINK line, expressed as a graph for a determined period.



4.7.2 Byte analysis tab

The second tab displays a breakdown of the types of bytes being transmitted.



The different types of bytes are:

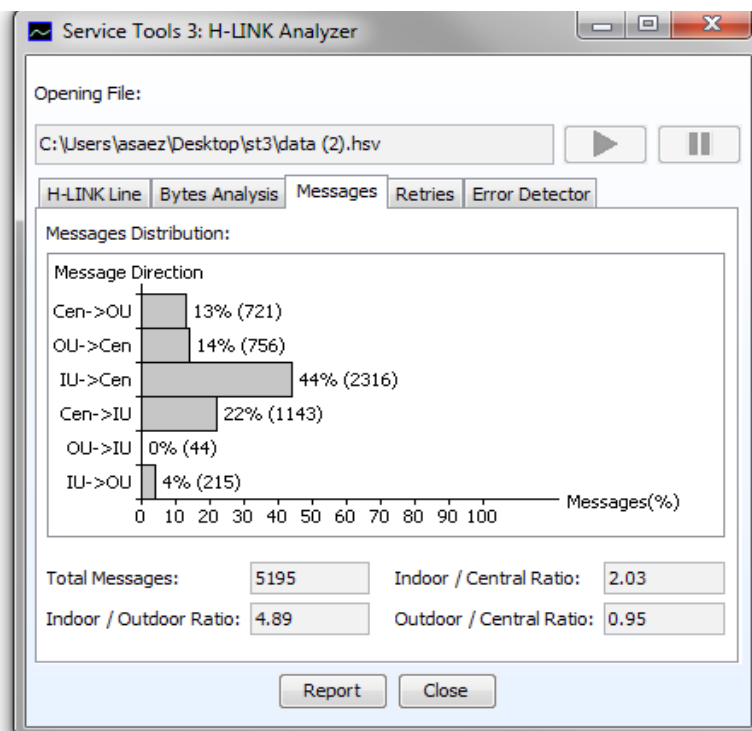
- Inv.: Invalid bytes. These do not have the correct format.
- Unk.: Unknown bytes. These may belong to a message with an incorrect format or be generated by noise on the line.
- ACK: Acknowledge bytes. These belong to a type of message which is transmitted when units ask for information again. A large percentage may indicate problems in the line, since units have to request information so often.
- Valid: These are normal messages. In a normal H-LINK they must have the higher percentage, far from the other types.

This tab also offers the following information:

- Total bytes: number of bytes of that test
- Time sample: length of the test
- Average speed: communication speed of the line
- Speed / 96kb: percentage that gives a relation of usage compared to the H-LINK maximum communication speed of 96kbit/s.

4.7.3 Messages tab

Messages tab displays a breakdown of the direction of the messages between Central Control (Cen), Outdoor unit (OU) and Indoor Unit (IU).



It also calculates the ratio between those types of messages, and gives the total number of messages. For Chiller and Yutaki the information is the same, but it is adapted.

4.7.4 Units usage tab

This tab shows a description for each unit, and the percentage of retries in the messages sent in each direction to the Central control (Cen), Outdoor unit (OU) and Indoor unit (IU).

The screenshot shows the 'Units usage' tab in the 'Service Tools 3: H-LINK Analyzer' window. The 'Opening File' is 'C:\Users\asaaz\Desktop\st3\data (2).hsv'. The table below shows the usage statistics for each unit:

OU	IU	OU->IU	IU->OU	IU->Cen	Cen->IU
2	4	0,00%	1,80%	8,90%	0,00%
2	14	0,00%	0,00%	7,20%	0,00%
2	24	0,00%	0,00%	9,38%	0,00%
2	34	0,00%	0,00%	5,83%	0,00%
3	0	0,00%	0,00%	11,81%	0,00%
3	1	0,00%	0,00%	8,13%	0,00%
11	8	0,00%	0,00%	2,59%	1,75%
11	18	0,00%	0,00%	2,54%	0,00%
11	28	0,00%	0,00%	1,72%	0,00%
11	28	0,00%	0,00%	2,26%	1,75%

Buttons for 'Report' and 'Close' are at the bottom.

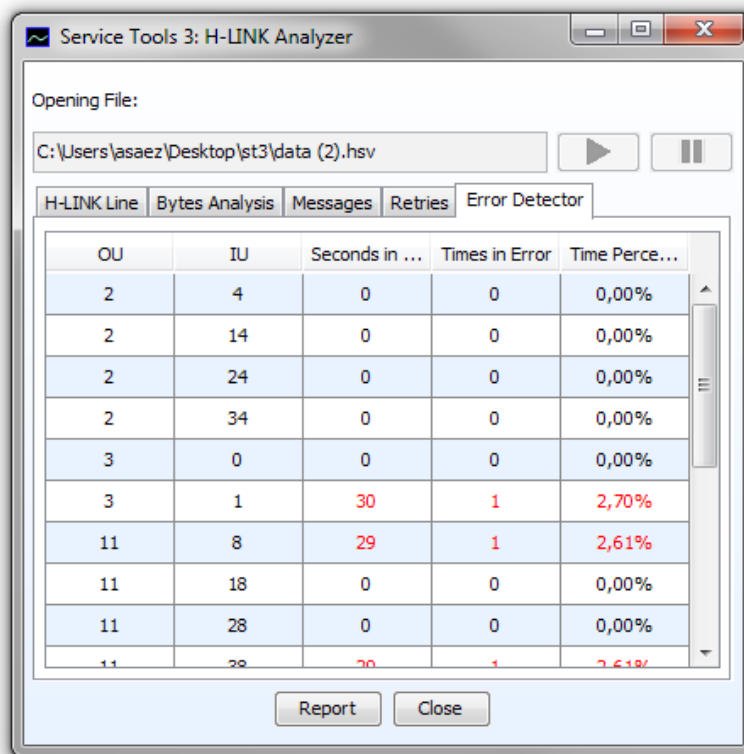
The higher the percentage is, the redder is the value on the cell displayed. The units showing the highest value may be affected by problems with communication.

This value is only a reference, because it is related to the size of the installation.

4.7.5 Error detector tab

This tab lists the number of times that each unit has suffered from a communication error, the length of the error in seconds, and the percentage of time that the unit has been in communication error state.

Errors are highlighted in red in order to allow an easier identification.



NOTE

Communication errors may happen in normal operation; this tab only helps to visualise these errors, in order to provide the evidence required for an evaluation of their importance.

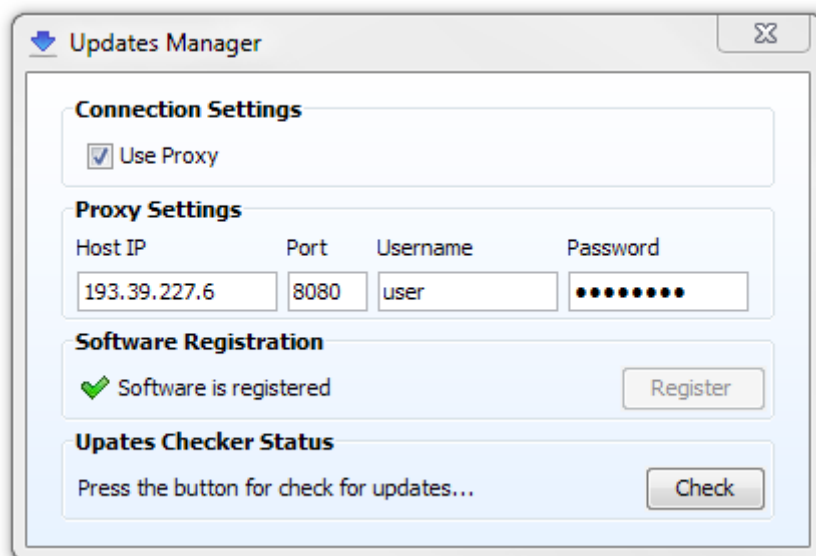
4.8 Automatic Software Updates

In case of having internet connection, Service Tools checks at starts if there are updates available online.

If there exists, it will appear the following icon on the right-bottom square



Otherwise, Service Tools can check for updates available from the help menu. There exists the option “Search for updates”. That option opens the Updates manager



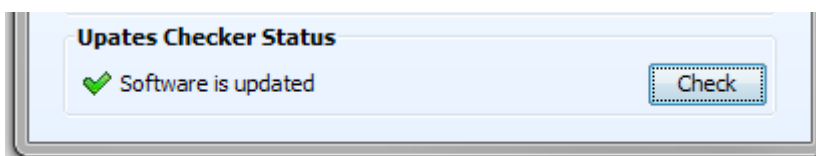
On the update manager, user can specify if the connection is done through a proxy and configure it to succeed contacting with the updates server.

This proxy is used also to complete the register of the software.

On the software registration section, is shown if software is registered, and if not, register button will be available to call the register dialog.

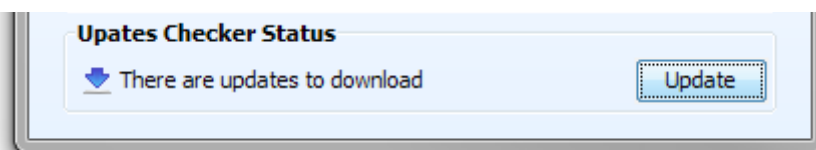
On the updates checker status is shown if there are updates available, press the “Check” button and it will show if there are updates available of not.

If after check some updates are available, it will appear the update button to proceed with the installation.



After download, the installation will be done on Service Tools closing.

If software is properly updated it will be showed as follows.



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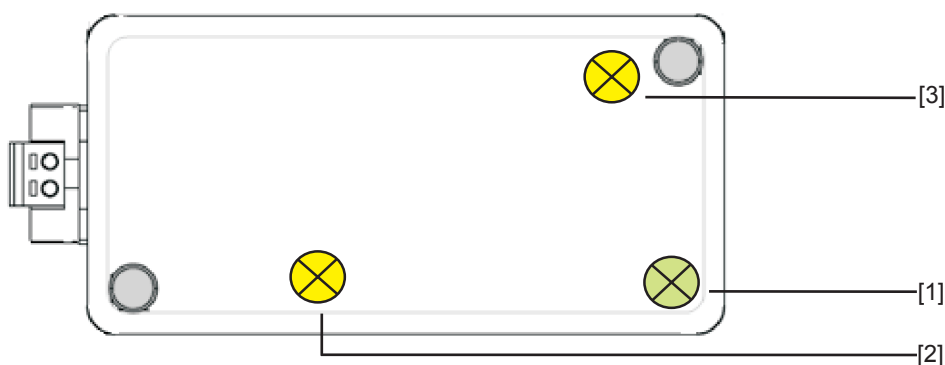


5.1 LEDs

HC-A160USB has 3 LEDs that provide visual feedback of the operation state of the hardware.

This 3 LEDs are:

No.	Name	Colour
1	Power	Green
2	H-LINK Communication	Yellow
3	USB Communication	Yellow



5.2 Unit alarms

5.2.1 Unit alarm codes

Refer to the unit installation and operation manual of each unit for the meaning of the alarm codes being shown.

5.2.2 Alarm notification if connected to the installation

If the control of the units has been enabled by the user and an alarm occurs in any of the units, it appears highlighted in red in the list. However, if the control panel is not connected, the control tab which changes, adding a red line to notify the occurrence of alarms:



5.3 Manual installation of HC-A160USB

The following instructions explain how to install the HC-A160USB manually, for cases in which some trouble occurs during automatic installation:

- 1) Cancel the automatic installation, in order to install the driver manually.
- 2) Open the Device Manager Window, right click on "Hitachi HC-A160USB" and select the option "Update the controller".
- 3) Select Manual Installation.
- 4) Select the option "Select a device controller from a list".
- 5) Specify the "Ports (COM & LPT)" in the list with all the device types.
- 6) After that, press "Use disk" to find the path where the driver is.
- 7) Select the file found on the following path of the CD-ROM: \Files\Driver \usbhape.inf
- 8) Accept the process.
- 9) If the operative system warns about this driver being not known or not compatible, ignore the warning and select yes at the dialogue asking to continue with the installation.



CAUTION

Depending on the Operative System, it could ask for install the drivers again, try with the automatic option and if it does not work, repeat the step by step instructions.

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ISO 14001 of JACO, Japan for its Environmental Management accordance with the standard.