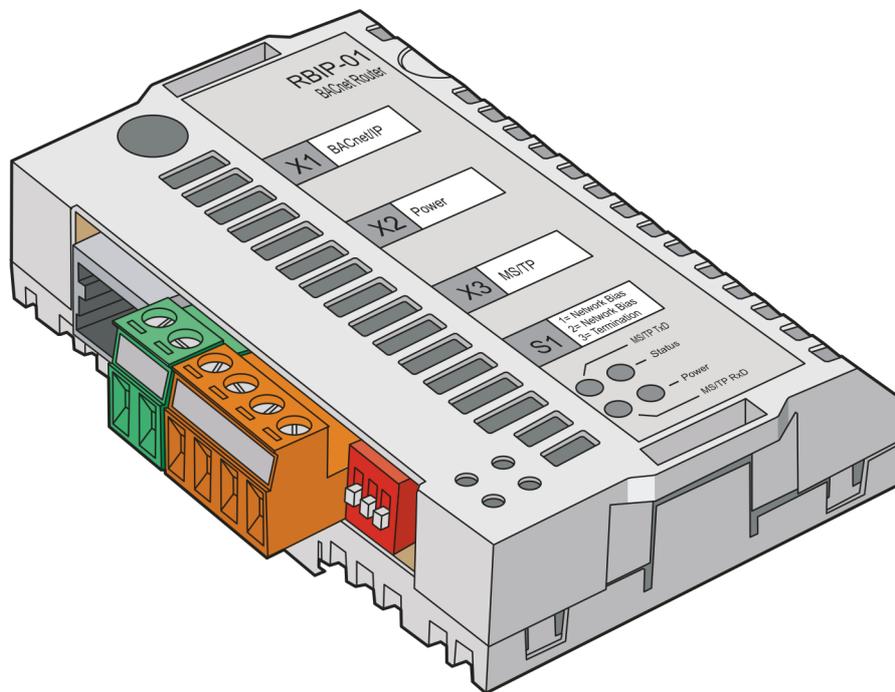


ACH550

User's Manual BACnet/IP Router Module RBIP-01



RBIP-01 Router and ACH550 Drive manuals

RBIP-01 BACnet/IP ROUTER MODULE MANUALS

RBIP-01 Installation manual

3AUA0000040168 (English)

- Safety
- Installation
- Operation and reset
- Diagnostics
- Technical data

PROTOCOL MANUALS

ACH550 BACnet User's Manual

3AUA0000004591 (English)

Embedded Fieldbus (EFB) Control

3AFE68320658 (English)

ACH550 MANUALS

ACH550-01 User's Manual

3AFE68258537 (English)

ACH550-02 User's Manual

3AFE68262674 (English)

ACH550-UH User's Manual

3AUA0000004092 (English)

- Safety
- Installation
- Start-up
- Diagnostics
- Maintenance
- Technical data

HVAC Info Guide CD

3AFE68338743 (English)

- Detailed product description
 - Technical product description including dimensional drawings
 - Cabinet mounting information including power losses
 - Software and control
 - User interfaces and control connections
 - Complete options descriptions
 - Spare parts
 - Etc.
- Practical engineering guides
 - PID & PFA engineering guides
 - Dimensioning and sizing guidelines
 - Diagnostics and maintenance information
 - Etc.

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BACnet/IP Router Module
RBIP-01

User's Manual

3AUA0000040159 Rev A
EN
EFFECTIVE: 22.10.2008

Safety instructions

Overview

This chapter states the general safety instructions that must be followed when installing and operating the RBIP-01 BACnet/IP Router Module.

The material in this chapter must be studied before attempting any work on, or with, the unit.

In addition to the safety instructions given below, read the complete safety instructions of the specific drive you are working on.

General safety instructions



WARNING! All electrical installation and maintenance work on the drive should be carried out by qualified electricians. The drive and adjoining equipment must be properly earthed.

Do not attempt any work on a powered drive. After switching off the mains, always allow the intermediate circuit capacitors to discharge for 5 minutes before working on the frequency converter, the motor or the motor cable. It is good practice to check (with a voltage indicating instrument) that the drive is in fact discharged before beginning work.

The motor cable terminals of the drive are at a dangerously high voltage when mains power is applied, regardless of motor operation.

There can be dangerous voltages inside the drive from external control circuits even when the drive mains power is shut off. Exercise appropriate care when working on the unit. Neglecting these instructions can cause physical injury or death.

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BACnet Protocol Implementation Conformance Statement (PICS)

Introduction to this manual

What this chapter contains

This chapter describes *RBIP-01 BACnet/IP Router Module User's Manual*.

Intended audience

The manual is intended for the people who are responsible for commissioning and using an RBIP-01 BACnet/IP Router Module. The reader is expected to have basic knowledge of electrical fundamentals, Building Automation and Control networks (BACnet), electrical wiring practices and operating the drive.

Before you start

It is assumed that the drive is installed and ready to operate before starting the installation of the module. Detailed installation instructions of the module are given in *RBIP-01 BACnet/IP Router Module Installation Manual* (3AUA0000040168 Rev A [English]).

In addition to conventional installation tools, have the drive manuals available during the installation and commissioning as they contain important information not included in this manual. The drive manuals are referred to at various points of this document.

What this manual contains

This manual contains information on the configuration and use of the RBIP-01 BACnet/IP Router Module.

Safety instructions are featured in the first few pages of this manual.

Introduction to this manual contains a short description of the manual.

Overview gives basic information on BACnet routing and contains a short description of the RBIP-01 BACnet/IP Router Module.

Quick start-up guide gives short instructions on configuring the RBIP-01 BACnet/IP Router Module settings.

Working with the web server describes how to connect to the router module's web server and how to login and logout, gives general setting instructions and lists the user right levels.

User interface describes the user interface menus of the router module and their use.

Fault tracing lists the LED indications and their meaning.

BACnet Protocol Implementation Conformance Statement (PICS) is attached to the end of the document.

Terms, abbreviations and acronyms used in this manual

Term or abbreviation	Description
APDU	Application Layer Protocol Data Units are used in BACnet to convey the information contained in the application service primitives and associated parameters. BACnet APDUs consist of protocol control information and, possibly, user data. The variable portion of each APDU may contain service-specific information.
BACnet	Building Automation and Control networks is a registered trademark of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). For more information, see http://www.bacnet.org/ .
BACnet device	Any device, real or virtual, that supports digital communication using the BACnet protocol
BACnet device object	The device object type defines a standardized object whose properties represent the externally visible characteristics of a BACnet device. Each BACnet device must have only one device object that in practice identifies the device in the BACnet network.
BACnet device object instance	For the description, see the Object Instance description in section <i>Device submenu</i> in chapter <i>User interface</i> .
BACnet/Ethernet	For the description, see section <i>BACnet/IP vs. BACnet/Ethernet</i> in chapter <i>Overview</i> .
BACnet/IP (B/IP)	A BACnet/IP network is a collection of one or more IP subnetworks (IP domains) that are assigned a single BACnet network number. For a comparison between BACnet/IP and BACnet/Ethernet, see section <i>BACnet/IP vs. BACnet/Ethernet</i> in chapter <i>Overview</i> .
BACnet network number	For the description, see section <i>BACnet network numbers</i> in chapter <i>Overview</i> .
BACnet router	For the description, see section <i>BACnet routers</i> in chapter <i>Overview</i> .
BBMD	BACnet/IP Broadcast Management Device Each IP subnetwork that is part of a B/IP network comprised of two or more subnets has one BBMD. Each BBMD possesses a Broadcast Distribution Table (BDT) which is the same in every BBMD in a given B/IP network. For more information, see section <i>BACnet/IP Broadcast Management Device</i> in chapter <i>Overview</i> .
BDT	Each BBMD possesses a Broadcast Distribution Table (BDT). BDT contains a list of external BBMDs to which the broadcast messages are transported. For more information, see section <i>BACnet/IP Broadcast Management Device</i> in chapter <i>Overview</i> and sections <i>Global Options</i> , <i>Two-hop forwarding</i> and <i>Broadcast Distribution Table Entry</i> in chapter <i>User interface</i> .
B/IP	See the BACnet/IP description in this table.

DCC/RD	Device Communication Control/Reinitialize Device
DHCP	Dynamic Host Configuration Protocol
Directed broadcast	See the one-hop forwarding description in this table.
Distribution mask	A distribution mask or broadcast distribution mask indicates how broadcast messages are to be distributed on the IP subnetwork served by the BBMD.
FD	A Foreign Device is a BACnet device that has an IP subnetwork address different from those comprising the BACnet/IP network that the device seeks to join. For more information, see section Foreign Devices in chapter Overview .
FW_Revision	Firmware_Revision is a property assigned by the vendor to represent the level of firmware installed in the BACnet device.
MAC address	The MAC address of the router module in the MS/TP network
MAX Info Frames	In MS/TP, the Max_Info_Frames property specifies the maximum number of information frames the node may send before it must pass the token to the next node.
MS/TP	Master-Slave/Token-Passing protocol designed specifically for building automation and control devices as part of the BACnet standard
One-hop forwarding	There are two ways that a BBMD may distribute broadcast messages to remote IP subnetworks: One-hop or two-hop distribution. For two-hop forwarding, see the description in this table. For more information on one hop forwarding or directed broadcast, see section Broadcast Distribution Table Entry in chapter User interface . The one-hop mode requires that the IP router serving the destination subnetwork is configured to support the passage of directed broadcasts.
Poll For Master frame	In MS/TP, the Poll For Master frame is transmitted by master nodes during configuration and periodically during normal network operation. It is used to discover the presence of other master nodes on the network and to determine a successor node in the token ring. Both master and slave nodes shall expect to receive the Poll For Master frames. The master nodes must respond to Poll For Master frames, and the slave nodes must ignore them.
Token	MS/TP uses a token to control access to a bus network. A master node may initiate the transmission of a data frame when it holds the token. Both master and slave nodes may transmit data frames in response to requests from master nodes. See also the description of Max_Info_Frames.

Two-hop forwarding	<p>There are two ways that a BBMD may distribute broadcast messages to remote IP subnetworks: One-hop or two-hop distribution.</p> <p>For one-hop forwarding, see the description in this table.</p> <p>All IP routers are not configured to pass directed broadcasts. Therefore BBMD may be configured to send a directed message to the BBMD on the remote subnetwork (two-hop distribution) which then transmits it using the B/IP broadcast address.</p> <p>For more information on two-hop forwarding or two-hop distribution, see section <i>Global Options, Two-hop forwarding</i> in chapter <i>User interface</i>.</p>
UDP	<p>User Datagram Protocol uses the Internet Protocol as the underlying protocol. It enables programs running on different computers on a network to communicate by sending short messages known as datagrams to each other.</p>

Overview

What this chapter contains

This chapter gives basic information on BACnet routing and describes the RBIP-01 BACnet/IP Router Module.

Introduction to BACnet routing

BACnet routers

BACnet routers are devices that interconnect BACnet networks to form a BACnet internetwork. The BACnet routers use the messages of the BACnet network layer protocol (layer 3) to maintain their routing tables and exchange their routing information.

BACnet network numbers

BACnet network numbers are assigned to the BACnet router devices. Each single router knows the BACnet network number of each of the data link layers and interfaces supported by the router.

The network number is valid in the range from 1 to 65.535.

The BACnet network numbers must be unique within the entire BACnet network.

BACnet network layer messages

BACnet supports 10 network layer messages that the router devices exchange. The two most important messages are "Who-Is-Router-To-Network" and "I-Am-Router-To-Network". They are sent as broadcast to determine other router devices and to distribute to the other router devices information about the router's own routing capabilities.

BACnet/IP vs. BACnet/Ethernet

BACnet/Ethernet (ISO 8802-2 type 1 on ISO 8802-3), the so-called layer 2 Ethernet uses only ISO/OSI layer 1 and 2 for transport. Standard IT routers transport the Internet Protocol up to layer 3, so BACnet/Ethernet would not be transported through networks based on the Internet Protocol.

BACnet/IP uses the User Datagram Protocol (UDP) based on the Internet Protocol, so BACnet/IP normally is transported through networks transporting IP messages.

The RBIP-01 BACnet/IP Router Module fully supports both BACnet/IP and BACnet/Ethernet.

BACnet/IP and BACnet/Ethernet in the same media

If you use BACnet/IP and BACnet/Ethernet in the same media (same network), always make sure that only one router from BACnet/IP to BACnet/Ethernet is used per network.

Using more than one router from BACnet/IP to BACnet/Ethernet in the same media causes a network broadcast flood, which can stop most communication on this network. Adding more than one router of this kind creates a loop of telegrams and the router starts to send broadcast messages back and forth permanently. The connected router then at least doubles the telegram.

If you notice that the network communication often fails or slows down significantly, check all routers and make sure that only one router provides routing from BACnet/IP to BACnet/Ethernet in your network.

In the RBIP-01 BACnet/IP Router Module, BACnet/Ethernet is not activated by default.

BACnet/IP Broadcast Management Device

BACnet/IP Broadcast Management Devices (BBMD) are used to transport broadcast messages through networks, where standard IP routers block the transport of broadcast messages.

BBMD transports the broadcast messages from the local network to other BBMD devices as a unicast message, so the messages pass the IP router. The external BBMD sends this broadcast message within the external local network as a forwarded broadcast. This method is like a tunnel through the entire network for transporting the messages from or to the BACnet subnetworks.

This way the broadcast messages do not appear in other subnetworks except the ones with a connected BBMD.

Each BBMD possesses a Broadcast Distribution Table (BDT). BDT contains a list of external BBMDs to which the broadcast messages are transported.

Note: Use BBMD only in the networks where IP routers block broadcast messages. If you connect two BBMDs in a subnetwork without IP routers (or in a subnetwork where IP routers do not block broadcast messages), this causes a broadcast flood (exactly the same as providing more than one BACnet/IP to BACnet/Ethernet router in the same media).

Foreign Devices

Foreign Devices (FD) connect to BBMD to retrieve the broadcast messages from the subnetwork where the BBMD resides. FDs do not provide broadcast distribution to its local subnetwork.

RBIP-01 BACnet/IP Router Module

The RBIP-01 BACnet/IP Router Module is a BACnet router. It is a snap-on module, fitted inside the drive and fully compatible with all ABB ACH550 standard drives for HVAC including older ACH550 product generations.

The router module provides an internal web server functionality. You can use the web server, for example, for the following purposes:

- Make the general IP settings of the router module
- Set the BACnet routing type (BACnet/IP, BACnet/Ethernet and MS/TP)
- Make the BACnet/IP settings
- In the BACnet/IP mode, set the router to work as BBMD or FD
- Give the broadcast mode for the BBMD and add and remove the contents of the BDT
- Make the BACnet MS/TP settings
- Make the Ethernet settings
- Give the diagnostics levels and display the log files
- Restart the router module
- Check the connection or local host with the Ping function
- Display and restore the backup file
- Restore the previous configuration
- As the **admin** user, change the passwords
- Browse, upload or remove the documentation stored in the module
- Select the language pack for the user interface of the web server
- Save and activate the settings you have made

For more information on the router, the drives, the BACnet protocol, the router placement in the MS/TP network, see section [RBIP-01 Router and ACH550 Drive manuals](#). By default, the documents are stored in electronic format in the router module. Note that the **admin** user has the right to upload or remove the documents stored in the web server.

Quick start-up guide

What this chapter contains

This chapter presents the steps to take during the start-up of the RBIP-01 BACnet/IP Router Module and is intended for experienced professionals of IT and BACnet communication. Detailed installation instructions of the module are given in *RBIP-01 BACnet/IP Router Module Installation Manual* (3AUA0000040168 Rev A [English]).

For more detailed commissioning instructions, refer to the following chapters.

Configuring RBIP-01 BACnet/IP Router Module settings



WARNING! Before installation, switch off the drive power supply. Wait five minutes to ensure that the capacitor bank of the drive is discharged. Switch off all dangerous voltages connected from external control circuits to the inputs and outputs of the drive. For more information, see chapter [Safety instructions](#).

Note: Do not connect the router module to the network before you have commissioned the device!

1. Connect the crossover cable delivered in the router module package to the module and your PC.
 2. If not done, set your PC to run as a Dynamic Host Configuration Protocol (DHCP) client or set the IP address of your PC manually to 192.168.0.2/255.255.255.0.
 - If you use DHCP, activate the DHCP server in the router module by pressing and holding the Reset switch of the router module down for more than 5 seconds, but not longer than 10 seconds. As soon as the STATUS LED flashes red and green alternating, the DHCP server is active.
 3. In your web browser, enter the IP address **http://192.168.0.1** and login to the router module using the user name/password combination **admin/admin**. For supported browsers, see *RBIP-01 BACnet/IP Router Module Installation Manual* (3AUA0000040168 Rev A [English]).
 4. Open the **Assistant** menu. Go through all its pages from left to right and apply the settings according to your BACnet project. Confirm all settings on each page by clicking the **Save** button.
 5. On the **Activate** page, activate the configuration by clicking **Activate and Restart**. Restarting the router module takes 25 seconds.
 6. If you changed the IP address of the router module, adjust the IP address settings of your PC accordingly.
-

7. Use your BACnet client software to access the connected frequency drive using BACnet/IP (or BACnet/Ethernet).

For instructions on resetting the router module, see *RBIP-01 BACnet/IP Router Module Installation Manual* (3AUA0000040168 Rev A [English]).

Working with the web server

What this chapter contains

This chapter contains instructions on connecting to the web server of the RBIP-01 BACnet/IP Router Module, login/logout instructions, general setting instructions and a list of the user right levels. For more information on the menu structure of the web server and detailed setting instructions, see chapter [User interface](#).

Connecting to the web server

The router module package contains a crossover network cable. The cable is inside the package under a lid. Use this cable only for commissioning the router module. It is not designed to be used for any other purpose after commissioning the module. You can also use a standard CAT 5 STP cable.



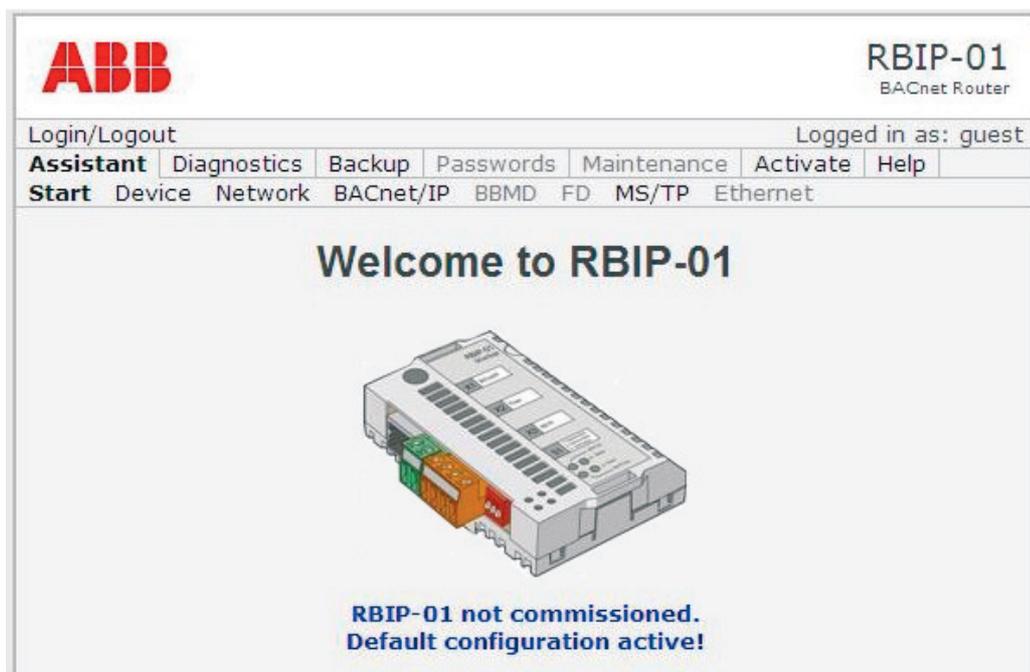
WARNING! Before installation, switch off the drive power supply. Wait five minutes to ensure that the capacitor bank of the drive is discharged. Switch off all dangerous voltages connected from external control circuits to the inputs and outputs of the drive.

Note: Do not connect the router module to the network before you have commissioned the device!

For more information, see chapter [Safety instructions](#).

1. Connect the crossover network cable to the RJ-45 connector of the router module with the network connector of your PC. Avoid parallel runs with power cables, for example, motor cables.
2. Switch the drive power on.
3. Wait till the steady orange STATUS LED of the router module is no more on. It is lit for approximately 25 seconds in the starting phase after power-up. During start-up, the router module does not respond. The flashing orange STATUS LED after start-up indicates that the module is running with factory settings and needs to be commissioned.
4. If not done, set your PC to run as a Dynamic Host Configuration Protocol (DHCP) client or set the IP address of your PC manually to 192.168.0.2/255.255.255.0.
 - If you use DHCP, activate the DHCP server in the router module by pressing and holding the Reset switch of the router module down for more than 5 seconds, but not longer than 10 seconds. As soon as the STATUS LED flashes red and green alternating, the DHCP server is active.

5. To connect to the web server of the router module, open your web browser, for example Microsoft Internet Explorer. Enter IP address **192.168.0.1** in the address field and press **Enter**. The router module displays the web server Start page. For the supported browsers, see *RBIP-01 BACnet/IP Router Module Installation Manual* (3AUA0000040168 Rev A [English]).



When you start the router module for the first time, the Start page displays "RBIP-01 not commissioned. Default configuration active!". The router module must be set up according to the settings of your BACnet project.

Logging into the web server

When you select the **Login/Logout** menu, the **Login/Logout** page opens.

1. On the **Login/Logout** page, click **Login** to start the login process.
2. Enter the user name and password. For more information on the user rights, see section [User right levels](#). For more information on the menu structure, see section [Menu structure of the router module](#) in chapter [User interface](#).

The screenshot shows the ABB RBIP-01 BACnet Router web interface. At the top left is the ABB logo. At the top right, it says 'RBIP-01 BACnet Router'. Below that, there's a header bar with 'Login/Logout' on the left and 'Logged in as: admin' on the right. The main content area has a 'Login' section with two input fields: 'User Name' and 'Password'. Below these fields are two buttons: 'Login' and 'Logout'.

User right levels

The RBIP-01 BACnet/IP Router Module has three user right levels:

User name	Default password	Rights
guest	(No password needed)	When you connect to the router module, you are already logged in as the guest user. The guest user has a right to read all settings but cannot make any modifications. The guest user needs no password.
user	user	The user level has rights to modify most settings except for changing the passwords, uploading documentation or performing backup of the configuration or restoring it.
admin	admin	The admin level has the same modification rights as the user level, but is additionally allowed to change passwords, upload or remove documents stored in the web server. The admin user has rights to perform a backup of the configuration and restore it.

Note: All passwords are case-sensitive!

Logging out from the web server

1. On the **Login/Logout** page, click **Logout** to logout from the web server. The access level returns to the **guest** mode and the Start page is displayed.

Automatic logout from the web server

After 30 minutes of inactivity, the current user is automatically logged out.

Resetting the router module

For instructions on resetting the router module, see *RBIP-01 BACnet/IP Router Module Installation Manual* (3AUA0000040168 Rev A [English]).

General setting instructions

This section instructs you to:

- Save and activate the settings you have made on each page of the web browser
- Return back to the start page.

Saving and activating the settings

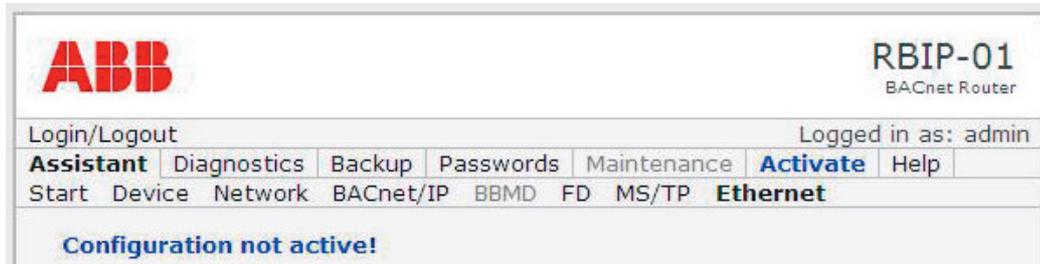
Each configuration page provides a **Save** button. When you click this button, the changes you have made to the configuration are temporarily stored.

Note: You must save your changes before switching to another configuration page. If you switch to another page without saving, the settings remain unchanged.

Note: You must activate the configuration before restarting the router module. Activating the configuration saves all settings permanently. If you restart the router module without activating the configuration, the old configuration remains active and the changes are lost.

For activating your settings, see section [Activate menu](#) in chapter [User interface](#).

After you apply the first change to the router module, the web server displays the "Configuration is not active!" warning in blue color. Additionally, the **Activate** menu tab turns into blue color.



Returning to the Start page

Click the ABB logo on the top left corner to return back to the Start page.

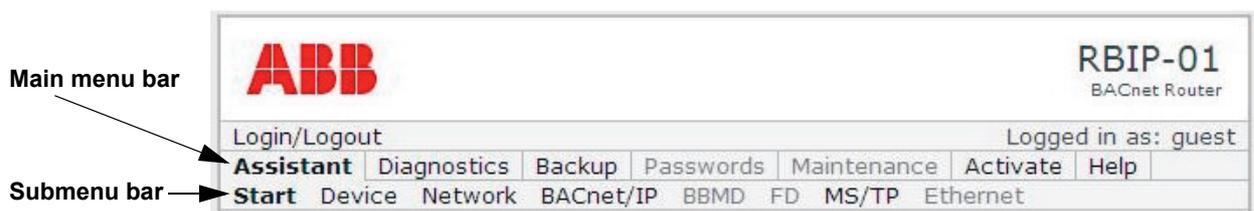
User interface

What this chapter contains

This chapter describes the user interface of the RBIP-01 BACnet/IP Router Module and gives detailed instructions on the settings you can make with the web server.

Menu structure of the router module

The user interface of the router module provides three levels.



User interface level	Description
Login/Logout menu bar	The Login/Logout menu bar provides access to the login/logout functions. The menu bar displays the user right level of the current user, for example, "Logged in as: admin". For more information on the user right levels, see section User right levels in chapter Working with the web server .
Main menu bar	The main menu bar is below the Login/Logout menu bar. It provides access to the main menu items. When you select one of the main menu items, for example, Assistant, its submenus are displayed in the submenu bar.
Submenu bar	The submenu bar is below the main menu bar. It provides submenus for the main menu items. For example, if you select the Assistant main menu, its submenus are displayed in the submenu bar and you can select one of them. If you select, for example, the Device submenu, the Device Settings page is displayed below the submenu bar.

Login/Logout menu bar

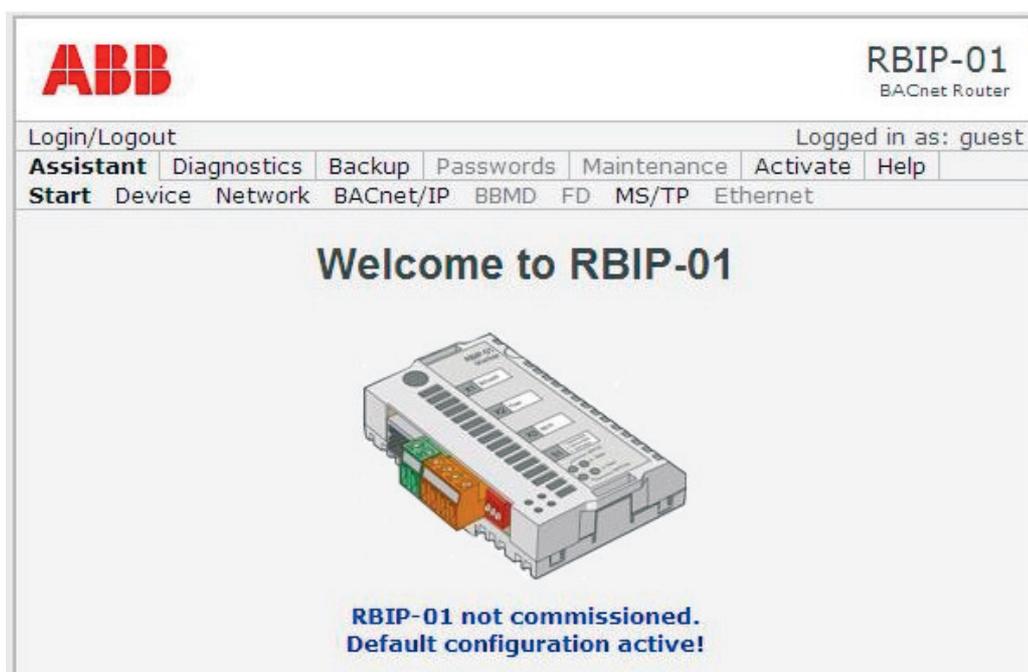
When you select the **Login/Logout** menu bar, the **Login/Logout** page is displayed. For the login function, see section [Logging into the web server](#) and for the logout function, see section [Logging out from the web server](#) in chapter [Working with the web server](#). See also the table above.

Assistant menu

The Commissioning Assistant helps you in performing the setup of the router module. The **Assistant** menu bar provides from left to right the required steps for commissioning the router.

Menu items that are unavailable in certain operating modes are disabled. For example, if you have not configured BACnet/IP as the routing type and thus not configured a BACnet/IP Broadcast Management Device (BBMD), the **BBMD** tab is not accessible.

Start submenu



The Start submenu contains the Start page. It is displayed when you start the module or logout from it.

When you start the router module for the first time, the Start page displays "RBIP-01 not commissioned. Default configuration active!". The router module must be set up according to the settings of your BACnet project.

See also section [Returning to the Start page](#) in chapter [Working with the web server](#).

Device submenu

The screenshot shows the ABB RBIP-01 BACnet Router configuration interface. The page title is "Device Settings". The interface includes a navigation bar with "Assistant", "Diagnostics", "Backup", "Passwords", "Maintenance", "Activate", and "Help". Below the navigation bar, there are tabs for "Start", "Device", "Network", "BACnet/IP", "BBMD", "FD", "MS/TP", and "Ethernet". The "Device" tab is selected. The "Device Settings" section contains the following fields:

- Routing Type: B/IP MS/TP (dropdown)
- BBMD/FD Mode: NONE (dropdown)
- Object Name: BACnet router (text input)
- Object Instance: 0 (text input)
- Description: Description (text input)
- Location: Location (text input)
- DCC/RD Password: password (text input)
- APDU Retries: 5 (text input)
- APDU Timeout: 3000 ms (text input)
- APDU Segment Timeout: 2000 ms (text input)
- Language: en (dropdown)

A "Save" button is located at the bottom left of the configuration area.

When you select the **Device** submenu, the **Device Settings** page opens. It provides general settings for the BACnet operation.

Device Settings page

Select the options required for your BACnet project or choose a free text where it is possible.

Note: You can freely choose the text written in *italics* in the Option column of the following table. The Description column gives the conventions for the text.

Device Settings	Option	Description
Routing Type	B/IP Ethernet MS/TP	Defines a router supporting all three layers: BACnet/IP, BACnet/Ethernet and MS/TP.
	B/IP Ethernet	Defines a router supporting the BACnet/IP and BACnet/Ethernet layers.
	B/IP MS/TP	Defines a router supporting the BACnet/IP and MS/TP layers. This is the default routing mode.
	Ethernet MS/TP	Defines a router supporting BACnet/Ethernet and MS/TP.

Device Settings	Option	Description
BBMD/FD Mode	NONE	BBMD and FD are not active. BBMD and FD can be active only in BACnet/IP.
	BBMD	The router module provides the BBMD functionality to the BACnet subnetwork, allowing connections from external FD. BBMD can be active only in BACnet/IP.
	FD	The router module runs in the BACnet/IP FD mode, connecting to an external BBMD. FD can be active only in BACnet/IP.
Object Name	<i>Object name</i>	The BACnet object name of the router module device object. The name must be unique for each device within the entire BACnet network. The maximum length of this string is 256 characters.
Object Instance	<i>Object instance number</i>	The BACnet object instance number of the router module device object. The object instance number must be unique for each device within the entire BACnet network. The value range of this property is 0 to 4.194.302.
Description	<i>Object description</i>	A free description text for the router module. This text appears in the router module device object and can be read by the communication partners in the BACnet network. The maximum length of this string is 256 characters.
Location	<i>Object location</i>	A free location text for the router module indicates the physical location of the BACnet device. This text appears in the device object of the router module and can be read by the communication partners in the BACnet network. The maximum length of this string is 256 characters.
DCC/RD Password	<i>Password</i>	A password for the device communication control (DCC) and reinitialize device (RD) operation
APDU Retries	<i>APDU retry number</i>	The Number_Of_APDU_Retries property indicates the maximum number of times that an APDU is retransmitted. The default value for this property is 5.

Device Settings	Option	Description
APDU Timeout	<i>APDU timeout amount</i>	The APDU_Timeout property indicates the amount of time in milliseconds between retransmissions of an APDU requiring acknowledgment for which no acknowledgment has been received. The default value for this property is 3000 milliseconds.
APDU Segment Timeout	<i>APDU segment timeout amount</i>	The APDU_Segment_Timeout property indicates the amount of time in milliseconds between retransmission of an APDU segment. The default value for this property is 2000 milliseconds.
Language	en de	The language of the router module user interface. The language is identified by the international abbreviation for the language according to ISO 639-1, for example en for the English language, de for German. The default language is English.

Save button

The **Save** button temporarily saves the changes made on this page.

Note: You must save your changes before switching to another configuration page. If you switch to another page without saving, the settings remain unchanged.

Note: You must activate the configuration before restarting the router module. Activating the configuration saves all settings permanently. If you restart the router module without activating the configuration, the old configuration remains active and the changes are lost.

For activating your settings, see section [Activate menu](#) in chapter [User interface](#).

Network submenu

The screenshot shows the ABB RBIP-01 BACnet Router interface. At the top left is the ABB logo. At the top right, it says 'RBIP-01 BACnet Router'. Below that, it says 'Login/Logout' and 'Logged in as: admin'. There is a navigation bar with buttons for 'Assistant', 'Diagnostics', 'Backup', 'Passwords', 'Maintenance', 'Activate', and 'Help'. Below the navigation bar, there is a 'Start' menu with options: 'Device', 'Network', 'BACnet/IP', 'BBMD', 'FD', 'MS/TP', and 'Ethernet'. The 'Network' option is selected. The main content area is titled 'Network Settings' and contains three rows of input fields: 'IP Address' (192, 168, 0, 1), 'Subnet Mask' (255, 255, 255, 0), and 'Default Gateway' (192, 168, 0, 1). A 'Save' button is located at the bottom left of the settings area.

When you select the **Network** submenu, the **Network Settings** page opens. It provides general IP settings of the router module. If needed, retrieve this information from your IT administrator.

Network Settings page

On the **Network Settings** page, give the following settings for the router module:

Network Settings	Description
IP Address	The IP address of the router module in the designated network
Subnet Mask	The subnet mask of the router module according to the IP address
Default Gateway	In networks where subnetworks are connected by IP routers, this address is used to define the gateway to other networks (the IP address of the router of the subnetwork where your router module is installed). If default gateways are used, broadcast messages are most likely blocked by the IP routers and you need to use a BBMD to transport the broadcast messages.

Save button

The **Save** button temporarily saves the changes made on this page.

Note: You must save your changes before switching to another configuration page. If you switch to another page without saving, the settings remain unchanged.

Note: You must activate the configuration before restarting the router module. Activating the configuration saves all settings permanently. If you restart the router module without activating the configuration, the old configuration remains active and the changes are lost.

For activating your settings, see section [Activate menu](#) in chapter [User interface](#).

BACnet/IP submenu

The screenshot shows the ABB RBIP-01 BACnet Router configuration page. At the top left is the ABB logo. At the top right, it says 'RBIP-01 BACnet Router'. Below that, there's a 'Login/Logout' section with 'Logged in as: admin'. A navigation bar includes 'Assistant', 'Diagnostics', 'Backup', 'Passwords', 'Maintenance', 'Activate', and 'Help'. Below the navigation bar, there are tabs for 'Start', 'Device', 'Network', 'BACnet/IP', 'BBMD', 'FD', 'MS/TP', and 'Ethernet'. The main content area is titled 'BACnet/IP Settings' and contains two input fields: 'Network Number' with the value '1' and 'UDP Port' with the value '47808' and a 'dec' label. A 'Save' button is located at the bottom left of the settings area.

When you select the **BACnet/IP** submenu, the **BACnet/IP Settings** page opens. It provides settings for BACnet/IP.

BACnet/IP Settings page

If your router works as a BACnet/IP router, give the following settings on the **BACnet/IP Settings** page:

BACnet/IP Settings	Description
Network Number	The network number of your local BACnet/IP network. The BACnet network number must be unique within the entire network. The network number is valid in the range from 1 to 65.535. The default value is 1.
UDP Port	The port number for BACnet/IP in your local IP network. The value is in decimal notation. The default value is 47808 dec. (0xBAC0 hex.).

Save button

The **Save** button temporarily saves the changes made on this page.

Note: You must save your changes before switching to another configuration page. If you switch to another page without saving, the settings remain unchanged.

Note: You must activate the configuration before restarting the router module. Activating the configuration saves all settings permanently. If you restart the router module without activating the configuration, the old configuration remains active and the changes are lost.

For activating your settings, see section [Activate menu](#) in chapter [User interface](#).

BBMD submenu

ABB RBIP-01
BACnet Router

Login/Logout Logged in as: admin

Assistant Diagnostics Backup Passwords Maintenance **Activate** Help

Start Device Network BACnet/IP **BBMD** FD MS/TP Ethernet

Configuration not active!

Global Options

Two-hop forwarding

Save

Broadcast Distribution Table Entry

IP Address . . .

UDP Port dec

Subnet/Distribution Mask . . .

Add

Broadcast Distribution Table

No entries defined

Remove

When you select the **BBMD** submenu, the page that provides the settings for the BACnet/IP Broadcast Management Device (BBMD) opens.

In the BBMD mode, the router module provides the BBMD functionality to the local subnetwork.

Global Options, Two-hop forwarding

In the two-hop mode, the IP routers are not involved in the broadcast transport. In this mode, the broadcast messages are transported to BBMD and BBMD sends the forwarded broadcast to the local network.

In the two-hop mode, the Broadcast Distribution Table (BDT) contains the address of the external BBMD and the Subnet/Distribution Mask specifies the distribution of the forwarded broadcast to the local network for each connected BBMD.

1. If you wish that your BACnet/IP router works in the two-hop mode, select the **Two-hop forwarding** check box.
2. For adding entries to the Broadcast Distribution table, see the following procedure.

Broadcast Distribution Table Entry

In the one-hop mode, BDT contains the addresses of the IP routers, which forward the broadcast messages to the external subnetworks. In the one-hop mode, you must set up the IP routers to support the so-called directed broadcast.

In this mode, BDT contains the addresses of the external IP routers (not the external BBMD) and the Subnet/Distribution Mask is the subnet mask of the IP router providing the broadcast forwarding.

Adding a Broadcast Distribution Table Entry

1. In the **Broadcast Distribution Table Entry** field, fill in the **IP Address**, **UDP Port** and **Subnet/Distribution Mask**. For more information, see the table below.

Broadcast Distribution Table Entry	Description
IP Address	The IP address of the external BBMD or the external IP router
UDP Port	The UDP port which is used for BACnet communication in the external BACnet - subnetwork. This value is in decimal notation and the default value is 47808 dec (0xBAC0 hex.).
Subnet/Distribution Mask	The subnet mask or distribution mask of the BDT entry. Depending on the operation mode, the entry may vary: In the one-hop mode, this mask is the subnet mask of the external IP router, for example, 255.255.0.0 in class B networks, 255.255.255.0 in class C networks or even supernetting addresses like 255.255.252.0 or subnetting addresses like 255.255.255.248. In the two-hop mode, this mask is a distribution mask. It allows to restrict the distribution of the broadcast messages to only parts of the external network. If you wish to distribute the broadcast messages to all hosts in the external network, you must set the value of the mask to 255.255.255.255.

2. Click the **Add** button.

A new BDT entry is created and displayed in the Broadcast Distribution Table list. The BDT can contain up to 30 entries.

Note: You must save your changes before switching to another configuration page. If you switch to another page without saving, the settings remain unchanged. You must also activate the configuration before restarting the router module. Activating the configuration saves all settings permanently. If you restart the router module without activating the configuration, the old configuration remains active and the changes are lost.

ABB RBIP-01
BACnet Router

Login/Logout Logged in as: admin

Assistant | Diagnostics | Backup | Passwords | Maintenance | **Activate** | Help

Start Device Network BACnet/IP **BBMD** FD MS/TP Ethernet

Configuration not active!

Global Options

Two-hop forwarding

Broadcast Distribution Table Entry

IP Address 192 . 168 . 12 . 14

UDP Port 47808 dec

Subnet/Distribution Mask 255 . 255 . 255 . 255

Broadcast Distribution Table

	IP Address	UDP Port	Subnet/Distribution Mask
<input checked="" type="checkbox"/>	192.168.12.14	47808	255.255.255.255

1 of 30 entries defined

Removing Broadcast Distribution Table Entries

1. Select the BDT entry/entries you wish to remove.
2. Click the **Remove** button.

Save button

The **Save** button temporarily saves the changes made on this page.

Note: You must save your changes before switching to another configuration page. If you switch to another page without saving, the settings remain unchanged.

Note: You must activate the configuration before restarting the router module. Activating the configuration saves all settings permanently. If you restart the router module without activating the configuration, the old configuration remains active and the changes are lost.

For activating your settings, see section [Activate menu](#) in chapter [User interface](#).

FD submenu

ABB RBIP-01 BACnet Router

Login/Logout Logged in as: admin

Assistant Diagnostics Backup Passwords Maintenance **Activate** Help

Start Device Network BACnet/IP BBMD **FD** MS/TP Ethernet

Configuration not active!

Foreign Device Settings

IP Address BBMD 192 . 168 . 0 . 1

UDP Port 47808 dec

Re-register Time 10 s

Save

When you select the **FD** submenu, the **Foreign Device Settings** page opens. It provides settings for a foreign device (FD). In this mode, the router module acts as a foreign device to retrieve broadcast messages from an external BBMD.

Foreign Device Settings page

If your BACnet/IP router works as a foreign device, fill in the following settings:

Foreign Device Settings	Description
IP Address BBMD	The IP address of the external BBMD to connect to
UDP Port	The UDP port which is used for BACnet communication in the external BACnet - subnetwork. This value is in decimal notation and the default value is 47808 dec. (0xBAC0 hex.).
Re-register Time	The interval within which the foreign device must re-register at the external BBMD. The value is in seconds and the default value is 10s.

Save button

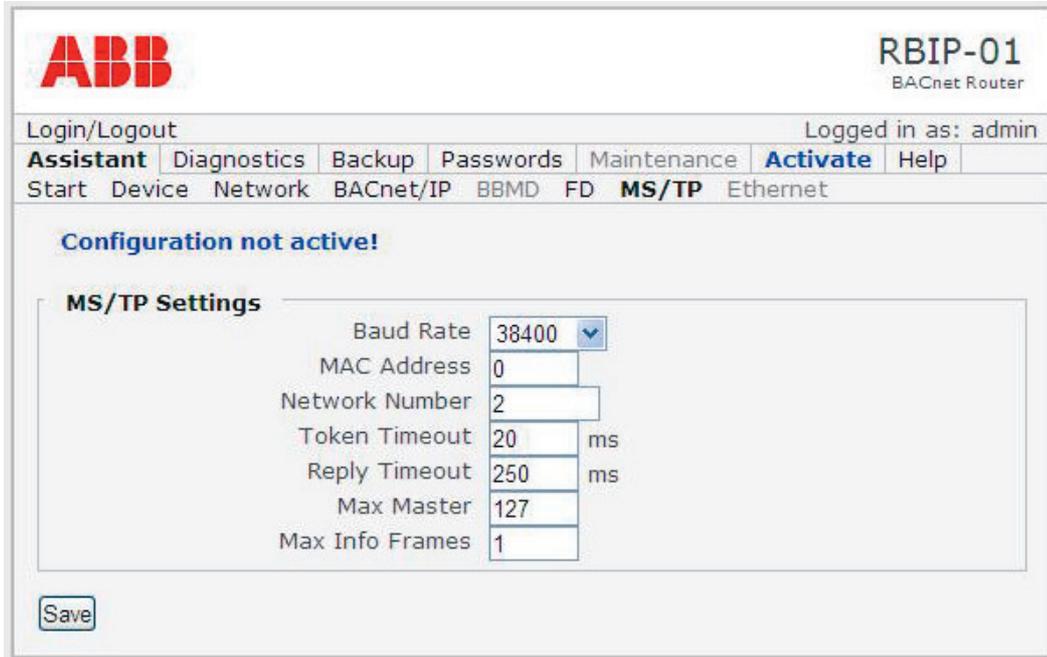
The **Save** button temporarily saves the changes made on this page.

Note: You must save your changes before switching to another configuration page. If you switch to another page without saving, the settings remain unchanged.

Note: You must activate the configuration before restarting the router module. Activating the configuration saves all settings permanently. If you restart the router module without activating the configuration, the old configuration remains active and the changes are lost.

For activating your settings, see section [Activate menu](#) in chapter [User interface](#).

MS/TP submenu



When you select the **MS/TP** submenu, the **MS/TP Settings** page opens. It provides the settings for BACnet MS/TP.

MS/TP Settings page

If your BACnet router works in MS/TP, give the following settings:

MS/TP Settings	Description
Baud Rate	The baud rate in the MS/TP network The potential values are: 9600, 19200, 38400, 57600, 76800 and 115200 bit/s. The default value is 38400. Note that the 57600 and 115200 baud rates are not BACnet standard baud rates and all MS/TP implementations may not support them.
MAC Address	The MAC address of the router module in the MS/TP network. The router module acts as an MS/TP master node. The value is valid from 0 to 127 and the default value is 0.
Network Number	The network number of your local MS/TP network. The network number must be unique within the entire network. The network number is valid in the range from 1 to 65.535. The default value is 2.

MS/TP Settings	Description
Token Timeout	<p>The Token timeout is the minimum time without a DataAvailable or ReceiveError event that a node must wait for a remote node to begin using a token or replying to a Poll For Master frame.</p> <p>The valid range is from 20 to 100 milliseconds, and the default value is 20 milliseconds.</p>
Reply Timeout	<p>The Reply timeout is the minimum time without a DataAvailable or ReceiveError event that a node must wait for a station to begin replying to a confirmed request.</p> <p>The valid range is from 200 to 300 milliseconds, and the default value is 250 milliseconds.</p>
Max Master	<p>The Max_Master property specifies the highest possible address for master nodes.</p> <p>The valid range is from 1 to 127, and the default value is 127.</p>
Max Info Frames	<p>The Max_Info_Frames property specifies the maximum number of information frames the node may send before it must pass the token to the next node.</p> <p>The valid range is from 1 to 127, and the default value is 1.</p>

Save button

The **Save** button temporarily saves the changes made on this page.

Note: You must save your changes before switching to another configuration page. If you switch to another page without saving, the settings remain unchanged.

Note: You must activate the configuration before restarting the router module. Activating the configuration saves all settings permanently. If you restart the router module without activating the configuration, the old configuration remains active and the changes are lost.

For activating your settings, see section [Activate menu](#) in chapter [User interface](#).

Ethernet submenu

The screenshot shows the ABB RBIP-01 BACnet Router configuration interface. At the top left is the ABB logo. At the top right, it says 'RBIP-01 BACnet Router'. Below this is a navigation bar with 'Login/Logout' and 'Logged in as: admin'. The main navigation menu includes 'Assistant', 'Diagnostics', 'Backup', 'Passwords', 'Maintenance', 'Activate', and 'Help'. The 'Ethernet' submenu is selected. A message 'Configuration not active!' is displayed. Under 'Ethernet Settings', there is a 'Network Number' field with the value '3' and a 'Save' button.

When you select the **Ethernet** submenu, the **Ethernet Settings** page opens. It provides settings for BACnet/Ethernet (ISO 8802-2 type 1 on ISO 8802-3).

Ethernet Settings page

If your router works as an Ethernet router, fill in the BACnet/Ethernet network number:

Ethernet Settings	Description
Network Number	The network number of your local BACnet/Ethernet network. The network number must be unique within the entire network. The network number is valid in the range from 1 to 65.535.

Save button

The **Save** button temporarily saves the changes made on this page.

Note: You must save your changes before switching to another configuration page. If you switch to another page without saving, the settings remain unchanged.

Note: You must activate the configuration before restarting the router module. Activating the configuration saves all settings permanently. If you restart the router module without activating the configuration, the old configuration remains active and the changes are lost.

For activating your settings, see section [Activate menu](#) in chapter [User interface](#).

Diagnostics menu

The **Diagnostics** menu contains the Verbose, Restart and Ping submenus.

Verbose submenu

The screenshot shows the RBIP-01 BACnet Router web interface. At the top left is the ABB logo, and at the top right is the device name 'RBIP-01 BACnet Router'. Below the header is a navigation bar with tabs: Login/Logout, Assistant, **Diagnostics**, Backup, Passwords, Maintenance, **Activate**, and Help. The 'Diagnostics' tab is active, and its sub-menu is open, showing 'Verbose', 'Restart', and 'Ping'. The 'Verbose' sub-menu is selected, displaying a 'Configuration not active!' message. Below this is a section titled 'Verbose Levels' with a list of seven options, each with an unchecked checkbox: BACnet/IP UDP datagrams, BACnet/IP BBMD configuration, Network layer routing info, Datalink layer communication, Data from application to network, Network management messages, Additional debug info, and Info about internal IPC. A 'Save' button is located below the list. At the bottom, there are two links: 'Click [here](#) to download the error logfile.' and 'Click [here](#) to download the verbose logfile.'

When you select the **Verbose** submenu, the **Verbose Levels** page opens. It provides different levels of diagnostics and is intended for experienced users. The RBIP-01 BACnet/IP Router Module provides two separate log files, the error log file and the verbose log file.

Log file	Description
Error log file	The error log file contains information about errors which occurred while operating.
Verbose log file	The verbose log file contains verbose information if one of the verbose options has been previously selected.

1. In the **Verbose Levels** field, select the information you wish to be collected in the verbose log file.
2. To display the file, click the relevant link for downloading the log file (error or verbose).
3. If you wish to save the files to your local hard disk, right-click the relevant link and select **Save as**.

Restart submenu



When you select the **Restart** submenu, the **Restart** page opens. It contains the Restart button.

Note: After clicking the Restart button, the router automatically restarts. Restarting the router takes approximately 25 seconds. The router does not respond during restart.

Note: If the IP address of the router changes in the configuration change, set the IP address of your PC accordingly. For instructions, see section [Connecting to the web server](#).

1. Click the **Restart** button to restart the router.

Ping submenu

The screenshot shows the ABB RBIP-01 BACnet Router web interface. At the top left is the ABB logo. At the top right, it says "RBIP-01 BACnet Router". Below the logo, there is a navigation bar with tabs: "Assistant", "Diagnostics" (selected), "Backup", "Passwords", "Maintenance", "Activate", and "Help". Below the navigation bar, there are links for "Login/Logout", "Verbose", "Restart", and "Ping". The main content area has a message "Configuration not active!". Below this is the "Ping Execution" section, which includes a "Host Name" input field containing "localhost" and a "Result" section displaying the following terminal output:

```
PING localhost (127.0.0.1): 100 data bytes
108 bytes from 127.0.0.1: seq=0 ttl=64 time=0.738 ms
108 bytes from 127.0.0.1: seq=1 ttl=64 time=0.536 ms
108 bytes from 127.0.0.1: seq=2 ttl=64 time=0.533 ms
108 bytes from 127.0.0.1: seq=3 ttl=64 time=0.536 ms
108 bytes from 127.0.0.1: seq=4 ttl=64 time=0.533 ms
108 bytes from 127.0.0.1: seq=5 ttl=64 time=0.535 ms
108 bytes from 127.0.0.1: seq=6 ttl=64 time=0.532 ms
108 bytes from 127.0.0.1: seq=7 ttl=64 time=0.535 ms
108 bytes from 127.0.0.1: seq=8 ttl=64 time=0.533 ms
108 bytes from 127.0.0.1: seq=9 ttl=64 time=0.543 ms

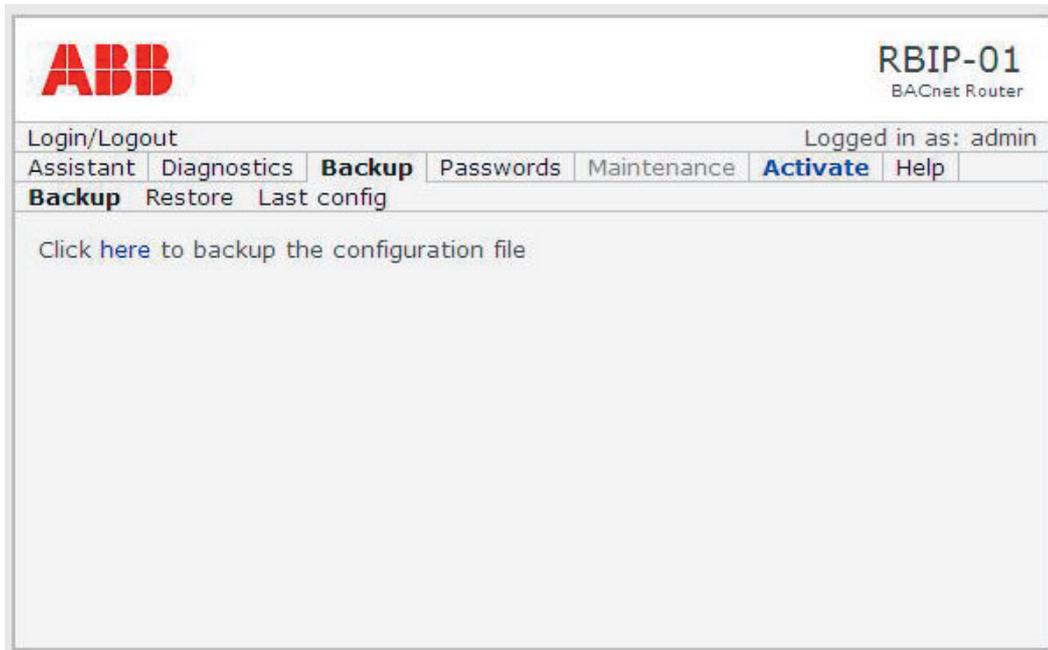
--- localhost ping statistics ---
10 packets transmitted, 10 packets received, 0% packet loss
round-trip min/avg/max = 0.532/0.555/0.738 ms
```

At the bottom of the "Ping Execution" section, there is a "Ping" button.

When you select the **Ping** submenu, the **Ping Execution** page opens.

Note: The Ping Execution page is intended for experienced users for checking the connection or displaying the information of the local host.

Backup menu



The Backup menu contains the Backup, Restore and Last config submenus.

Backup submenu

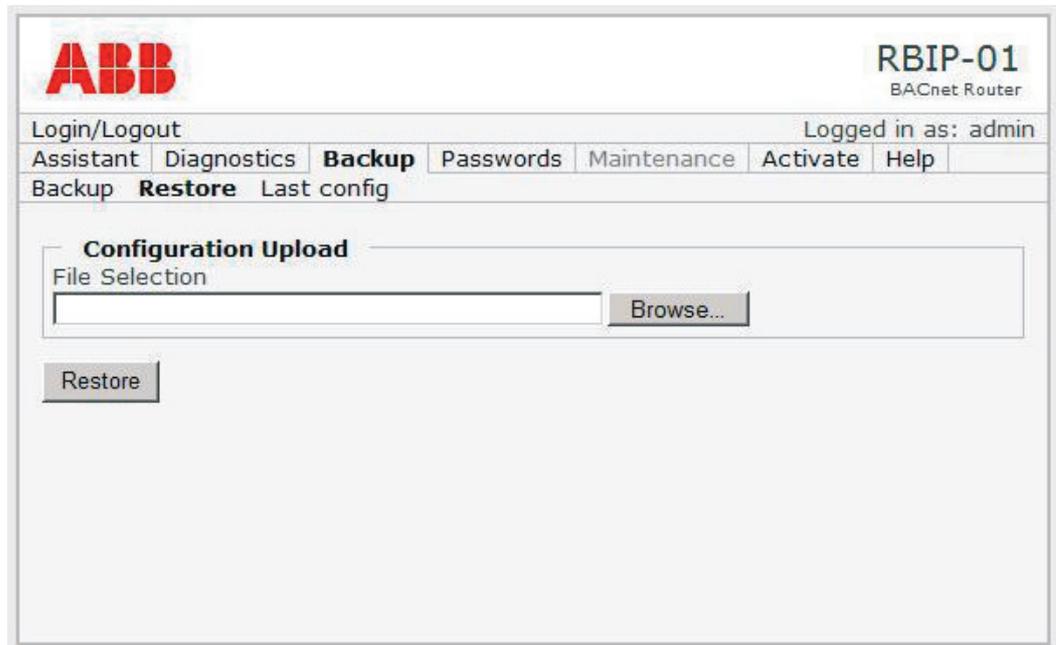
When you select the **Backup** submenu, the **Backup** page opens. The page allows you to display the contents of the configuration file backup and to save the backup file to your own hard disk.

The backup file is a simple text file which allows easy modification for experienced users.

Note: Removing tags from the backup file may cause malfunction and loss of entries.

1. On the **Backup** page, click the configuration file backup link to display the contents of the file.
2. If you wish to save the backup file to your local hard disk, right-click the relevant configuration file backup link and select **Save as**.

Restore submenu



The screenshot shows the ABB RBIP-01 BACnet Router configuration interface. At the top left is the ABB logo. At the top right, it displays 'RBIP-01 BACnet Router'. Below the logo, there is a navigation menu with 'Assistant', 'Diagnostics', 'Backup', 'Passwords', 'Maintenance', 'Activate', and 'Help'. The 'Backup' menu is expanded, showing 'Backup', 'Restore', and 'Last config'. The 'Restore' option is highlighted. Below the navigation menu, there is a section titled 'Configuration Upload' with a 'File Selection' label, a text input field, and a 'Browse...' button. Below this, there is a 'Restore' button.

When you select the **Restore** submenu, the Restore page opens. The page allows you to upload a backup file from your own hard disk and restore the configuration from it.

The backup file is a simple text file which allows easy modification for experienced users.

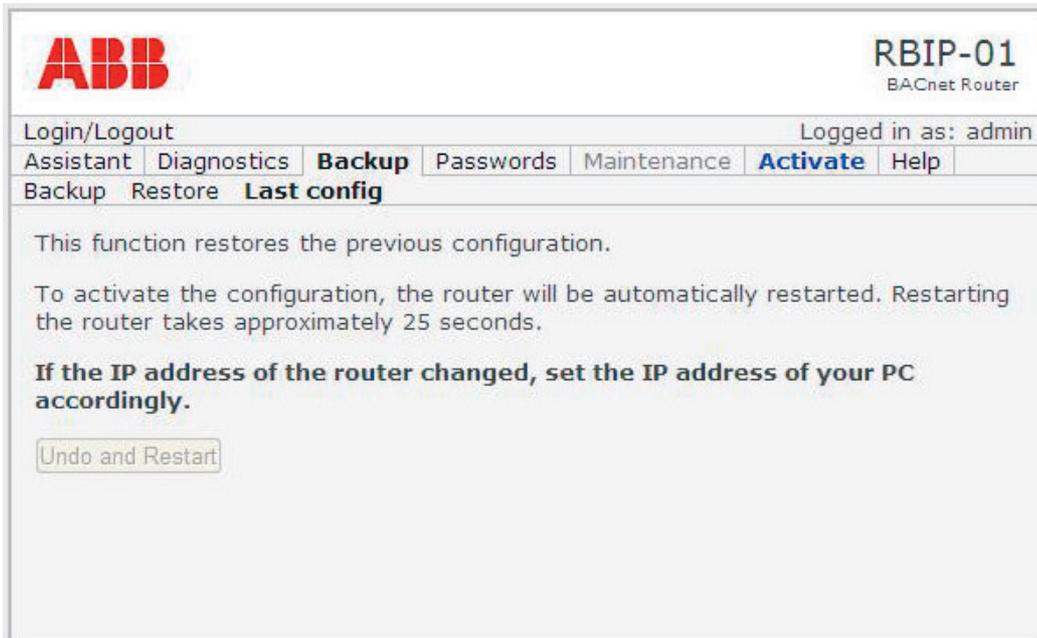
Note: Removing tags from the backup file may cause malfunction and loss of entries.

1. To upload a backup file, locate the backup file on your local hard disk.

Note: Restore only valid backup files. Restoring other text files may cause malfunction.

2. To restore the configuration, click the **Restore** button.
3. After restoring the configuration, activate it. For instructions, see section [Activate menu](#).

Last Config submenu



When you select the **Last Config** submenu, the Last Config page opens. The Last Config function restores the configuration that was used before activating the configuration changes. It is assumed to be used as the last resort before restoring the factory settings in case the configuration changes cause malfunction.

Note: After clicking the Undo and Restart button, the router automatically restarts. Restarting the router takes approximately 25 seconds. The router does not respond during restart.

Note: If the IP address of the router changes in the configuration change, set the IP address of your PC accordingly. For instructions, see section [Connecting to the web server](#).

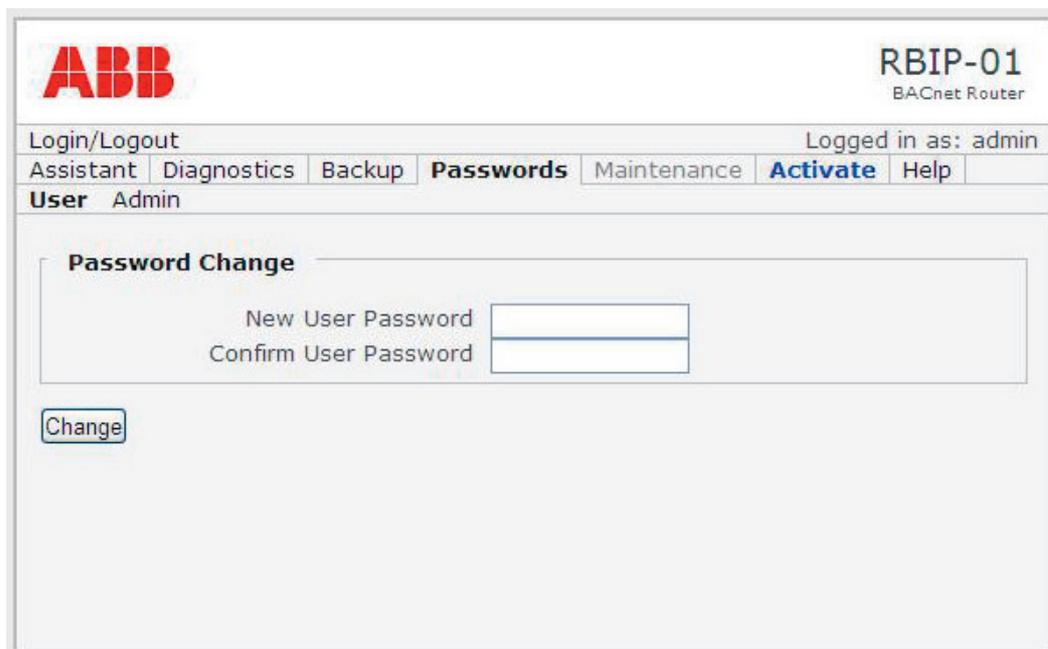
-
1. On the **Last Config** page, click the **Undo and Restart** button to restore the previous configuration.
 2. If restoring the previous configuration fails or you are unsatisfied with the result, perform the factory reset by pressing and holding down the Reset switch for at least 15 seconds. See also *RBIP-01 BACnet/IP Router Module Installation Manual* (3AUA0000040168 Rev A [English]).

Passwords menu

The Passwords menu contains the User and Admin submenus for changing the **user** and **admin** passwords. For more information on the user levels, see section [User right levels](#) in chapter [Working with the web server](#).

Note: Only the **admin** user has the right to change passwords.

User submenu



The screenshot shows the ABB RBIP-01 BACnet Router web interface. The top left corner features the ABB logo. The top right corner displays 'RBIP-01 BACnet Router'. Below the logo, there is a navigation bar with the following tabs: Login/Logout, Assistant, Diagnostics, Backup, Passwords (selected), Maintenance, Activate, and Help. The 'Logged in as: admin' status is shown in the top right. Under the 'Password Change' section, there are two input fields: 'New User Password' and 'Confirm User Password'. A 'Change' button is located below the input fields.

When you select the **User** submenu, the **Password Change** page opens. It allows you to change the user-level password.

1. Enter the new user-level password and confirm it.
2. Click **Change**.

Admin submenu

The screenshot shows the ABB RBIP-01 BACnet Router web interface. At the top left is the ABB logo. At the top right, it says 'RBIP-01 BACnet Router'. Below the logo, there is a navigation bar with 'Login/Logout' on the left and 'Logged in as: admin' on the right. The navigation bar contains several tabs: 'Assistant', 'Diagnostics', 'Backup', 'Passwords', 'Maintenance', 'Activate', and 'Help'. The 'Passwords' tab is currently selected. Below the navigation bar, it says 'User Admin'. The main content area is titled 'Password Change' and contains three input fields: 'Old Admin Password', 'New Admin Password', and 'Confirm Admin Password'. Below these fields is a 'Change' button.

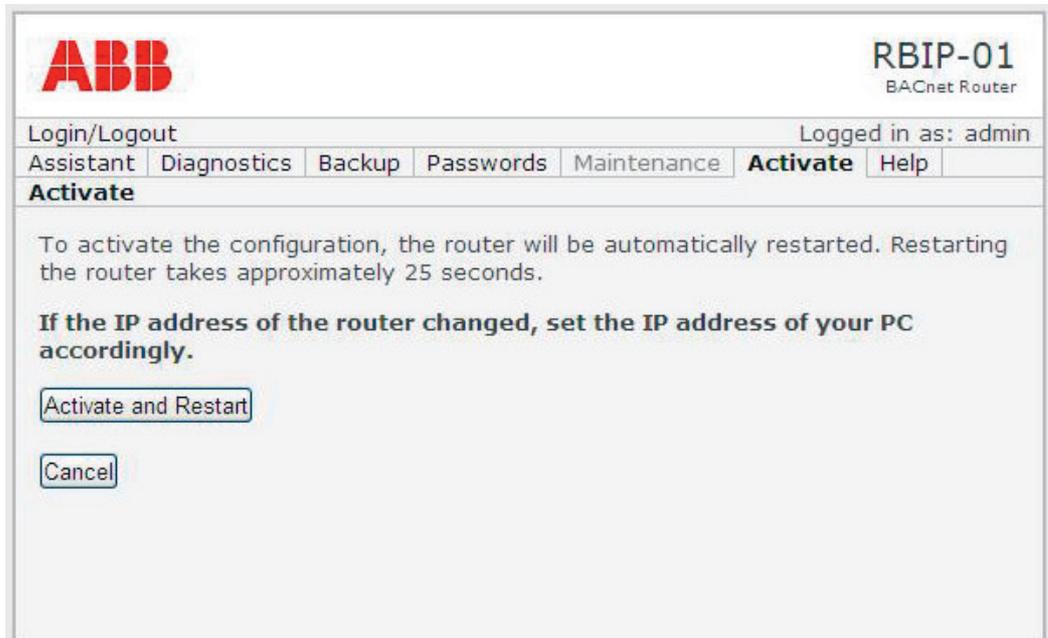
When you select the **Admin** submenu, the **Password Change** page opens. It allows you to change the Admin password.

1. Enter the old Admin password. The default password is **admin/admin**.
2. Enter the new password and confirm it.
3. Click **Change**.

Maintenance menu

The Maintenance menu is reserved for the ABB service people.

Activate menu



When you select the **Activate** menu, the **Activate** page opens.

Note: After clicking the Activate and Restart button, the router automatically restarts. Restarting the router takes approximately 25 seconds. The router does not respond during restart.

Note: If the IP address of the router changes in the configuration change, set the IP address of your PC accordingly. For instructions, see section [Connecting to the web server](#).

1. Click the **Activate and Restart** button to restart the router and to activate the configuration.
 - OR
1. Click the **Cancel** button to discard the configuration changes.

Help menu

The Help menu contains the Factory Manuals, Project Manuals, Language Pack, Support and About submenus.

Factory Manuals submenu

The screenshot shows the ABB RBIP-01 BACnet Router web interface. The top navigation bar includes 'Assistant', 'Diagnostics', 'Backup', 'Passwords', 'Maintenance', 'Activate', and 'Help'. The 'Factory Manuals' submenu is selected, showing a list of PDF files. Below the list is a 'Remove' button.

Name	Size
<input type="checkbox"/> _DE_ACH550_BACnet_UM_D.pdf	421277 Bytes
<input type="checkbox"/> _FR_ACH550_01_UM_E.pdf	7842836 Bytes
<input type="checkbox"/> _FR_ACH550_BACnet_UM_D.pdf	425507 Bytes
<input type="checkbox"/> _IT_ACH550_01_UM_E.pdf	7808732 Bytes
<input type="checkbox"/> _IT_ACH550_BACnet_UM_D.pdf	424732 Bytes
<input type="checkbox"/> _NL_ACH550_01_UM_E.pdf	7832963 Bytes
<input type="checkbox"/> _PT_ACH550_01_UM_E.pdf	7665921 Bytes
<input type="checkbox"/> _RU_ACH550_01_UM_E.pdf	9264322 Bytes
<input type="checkbox"/> _SV_ACH550_01_UM_E.pdf	7759242 Bytes

9 Files, 49445532 Bytes used, 100554468 Bytes free

When you select the **Factory Manuals** submenu, the relevant page opens. It contains a list of the manuals included in the server. The available space for factory manuals is 150 MB.

1. In the **File List**, select the manual or file that you wish to retrieve.
2. If you wish to copy the file to your local hard disk, right-click the file and select **Save as**.



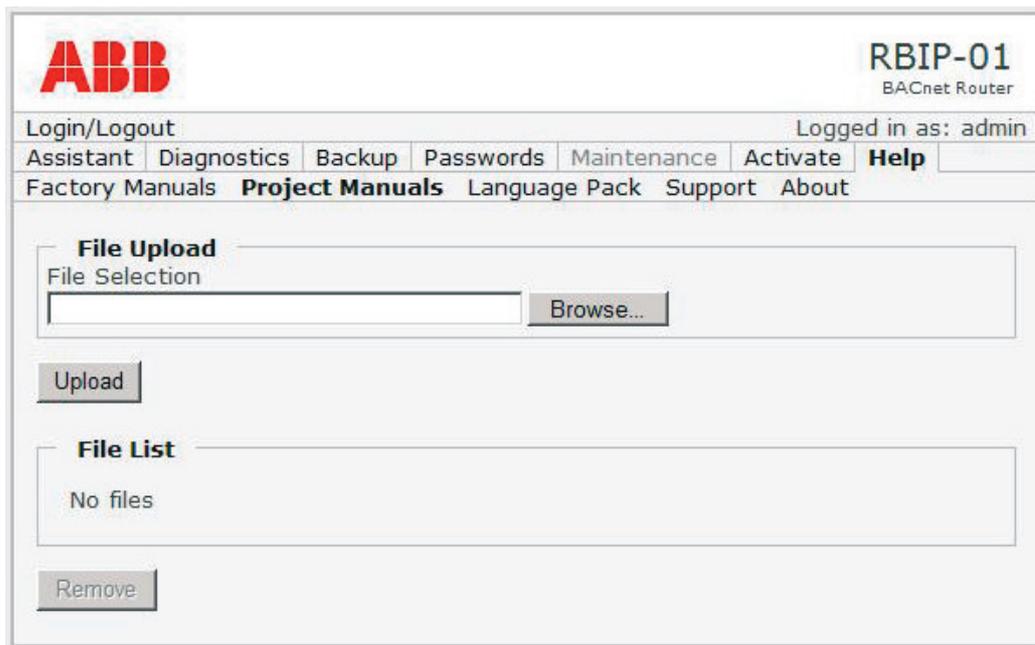
Note: If you remove manuals or files, they are permanently removed and cannot be restored with a factory reset. Only the **admin** user has the right to remove manuals.

3. If you wish to remove manuals or files from the web server, check the file(s) and click the **Remove** button.

Note: Only the **admin** user has the right to upload new manuals or files.

4. In the **File Upload** field, select the manual or file, for example, on your local hard disk.
5. Click the **Upload** button.

Project Manuals submenu



The screenshot shows the ABB RBIP-01 BACnet Router web interface. At the top left is the ABB logo. At the top right, it says 'RBIP-01 BACnet Router'. Below the logo, there is a navigation menu with the following items: Login/Logout, Assistant, Diagnostics, Backup, Passwords, Maintenance, Activate, Help, Factory Manuals, Project Manuals (highlighted), Language Pack, Support, and About. The 'Logged in as: admin' status is shown in the top right. The main content area is divided into two sections: 'File Upload' and 'File List'. The 'File Upload' section has a 'File Selection' label, a text input field, and a 'Browse...' button. Below it is an 'Upload' button. The 'File List' section has a 'File List' label and a text area containing 'No files'. Below it is a 'Remove' button.

When you select the **Project Manuals** submenu, the relevant page opens. It contains a list of the manuals and files included in the server. The purpose of the submenu is to store project documents or to leave messages in text files for other router module users. The available space for the project manuals is 50 MB.

1. In the **File List**, select the manual or file that you wish to retrieve.
2. If you wish to copy the file to your local hard disk, right-click the file and select **Save as**.



Note: If you remove manuals or files, they are permanently removed and cannot be restored with a factory reset. Only the **admin** user has the right to remove manuals.

3. If you wish to remove files from the web server, check the file(s) and click the **Remove** button.
-

Note: Only the **admin** user has the right to upload new manuals or files.

4. In the **File Upload** field, select the manual or file to be uploaded.
 5. Click the **Upload** button.
-

Language Pack submenu

The screenshot shows the ABB RBIP-01 BACnet Router web interface. At the top left is the ABB logo. At the top right, it says 'RBIP-01 BACnet Router'. Below that, there's a navigation menu with 'Login/Logout' and 'Logged in as: admin'. The main menu includes 'Assistant', 'Diagnostics', 'Backup', 'Passwords', 'Maintenance', 'Activate', 'Help', 'Factory Manuals', 'Project Manuals', 'Language Pack', 'Support', and 'About'. The 'Language Pack' submenu is active, showing a 'Language Upload' section with a 'File Selection' input field and a 'Browse...' button, an 'Upload' button, a 'Language List' section with a table, and a 'Remove' button. The table has a 'Name' column and checkboxes. It lists 'de' and 'en' with checkboxes, and a total of '2 Languages'.

The router module supports languages by adding so-called language packs. The language packs are binary files that provide translations of the user interface texts. The language packs are identified by the international abbreviation for the language according to ISO 639-1, for example **en** for the English language, **de** for German.

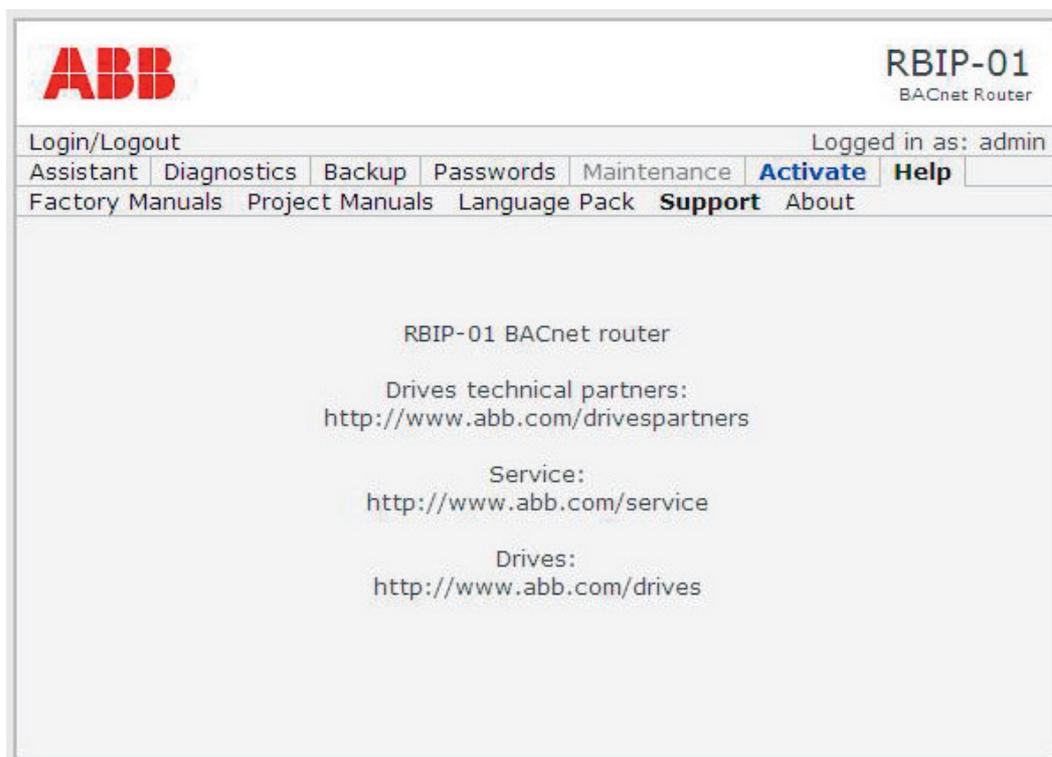
1. In the **Language Upload** field, select the language file on your local hard disk to upload a language pack.
2. Click the **Upload** button.



Note: If you remove the files by clicking the Remove button, they are permanently removed and cannot be restored with a factory reset.

3. In the **Language List**, select the languages to be removed.
4. Click to **Remove** button.
5. For selecting the user interface language, see section [Device submenu](#) in the [Assistant menu](#).

Support submenu



When you select the **Support** submenu, the Support page opens. It provides contact information for retrieving support for your RBIP-01 BACnet/IP Router Module and your BACnet project.

About submenu

**RBIP-01**
BACnet Router

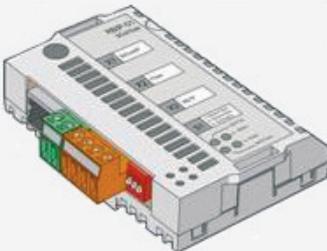
Login/Logout Logged in as: admin

Assistant Diagnostics Backup Passwords Maintenance Activate Help

Factory Manuals Project Manuals Language Pack Support **About**

RBIP-01

FW-Revision: 2.0



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The About page displays the copyright and version information of the RBIP-01 BACnet/IP Router Module. In addition, the FW-Revision (Firmware_Revision) of the BACnet device object (router module) is displayed.

Fault tracing

What this chapter contains

This chapter lists the LEDs of the RBIP-01 BACnet/IP Router Module and describes their function.

LED indications

The RBIP-01 BACnet/IP Router Module is equipped with the following LEDs:

LED name	Color	Function
POWER	Green	Off - No power Steady green - Power is connected
MS/TP TxD	Yellow	Flashing yellow - Module is transmitting data to MS/TP network
MS/TP RxD	Yellow	Flashing yellow - Module is receiving data from MS/TP network
STATUS	Green/ Red/ Orange	Steady green - Reset switch is pressed and held Flashing green - Normal operation mode or commissioning Alternating green/red - DHCP server activated Steady orange - Lit for approximately 25 seconds in starting phase after power-up. When the steady orange LED is lit, the router module is starting up and does not respond during boot. Flashing orange - Flashing after start-up phase; module is running with factory settings and needs to be commissioned Flashing red - Bus errors on MS/TP bus, for example, framing errors Steady red - Module is performing reset
Network LED	Orange	Orange network LED is located to the right of RJ-45 network connector. Off - 10 MBit/s connection On - 100 MBit/s connection
Network LED	Green	Green network LED is located to the left of RJ-45 network connector. Off - Module cannot detect a link On - Module has detected a link Flashing green - Activity on the link

BACnet Protocol Implementation Conformance Statement (PICS)

BACnet Protocol Implementation Conformance Statement

Date: October 16, 2008
Vendor Name: ABB, Inc
Product Name: BACnet Router
Product Model Number: RBIP-01
Applications Software Version: 1.1 **Firmware Revision:** 2.0 **BACnet Protocol Revision:** 4

Product Description:

The ABB RBIP-01 snap-on module is a high-performance BACnet router for ABB standard drives for HVAC, ACH550. This router supports 10/100 MBit/s BACnet/IP and BACnet over Ethernet networks, as well as BACnet MS/TP (EIA-485) network.

The RBIP-01 router supports all standardized BACnet MS/TP baud rates up to 76.8k, as well as the master mode functionality. BBMD (BACnet Broadcast Management Device) and FD (Foreign Device) functionalities are also supported. The web server functionality enables access and configuration of the router using a standard web browser.

The RBIP-01 snap-on router is fully compatible with ABB standard drives for HVAC, ACH550, including older product generations. The router fits inside the drive and does not affect the enclosure class of the drive. The router can be powered from the drive or from an external power supply.

BACnet Standardized Device Profile (Annex L):

- BACnet Operator Workstation (B-OWS)
- BACnet Building Controller (B-BC)
- BACnet Advanced Application Controller (B-AAC)
- BACnet Application Specific Controller (B-ASC)
- BACnet Smart Sensor (B-SS)
- BACnet Smart Actuator (B-SA)

List all BACnet Interoperability Building Blocks Supported (Annex K):

DS-RP-B	Data Sharing-ReadProperty-B
DS-RPM-B	Data Sharing-ReadPropertyMultiple-B
DS-WP-B	Data Sharing-WriteProperty-B
DS-WPM-B	Data Sharing-WritePropertyMultiple-B
DM-DDB-B	Device Management-DynamicDeviceBinding-B
DM-DOB-B	Device Management-DynamicObjectBinding-B
DM-DCC-B	Device Management-DeviceCommunicationControl-B
DM-RD-B	Device Management-ReinitializeDevice-B

Segmentation Capability:

- Segmented requests supported Window Size: 16
- Segmented responses supported Window Size: 16

Standard Object Types Supported:

Object instantiation is static, i.e. objects cannot be created or deleted. Refer to tables at end of this document for object details.

Data Link Layer Options:

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s) _____

- MS/TP master (Clause 9), baud rate(s): 9600, 19200, 38400, 76800
- MS/TP slave (Clause 9), baud rate(s): 9600, 19200, 38400, 76800
- Point-To-Point, EIA 232 (Clause 10), baud rate(s): _____
- Point-To-Point, modem, (Clause 10), baud rate(s): _____
- LonTalk, (Clause 11), medium: _____
- Other: _____

Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) Yes No

Networking Options:

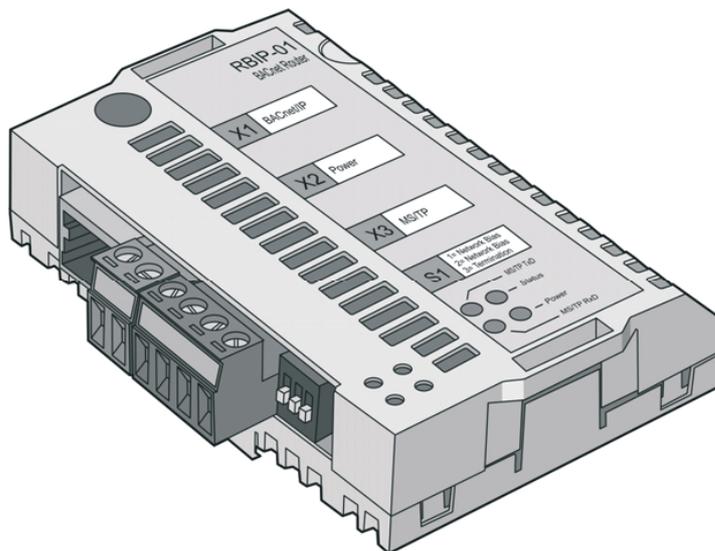
- Router, Clause 6
 - BACnet/IP to MS/TP
 - BACnet/ ISO 8802-3, Ethernet to MS/TP
 - BACnet/IP to BACnet/ ISO 8802-3, Ethernet
- Annex H, BACnet Tunneling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)
 - Does the BBMD support registrations by Foreign Devices? Yes No
 - Max BDT (Broadcast Distribution Table)-Entries: 30

Character Sets Supported:

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- ANSI X3.4
- IBM™/Microsoft™ DBCS
- ISO 8859-1
- ISO 10646 (UCS-2)
- ISO 10646 (UCS-4)
- JIS C 6226

If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:



Object/Property Support Matrix

The following table summarizes the Object Types/Properties Supported:

Property Identifier	Property Datatype	Conformance Code 135-2004	Conformance Code RBIP-01
Object_Identifier	BACnetObjectIdentifier	R	R
Object_Name	CharacterString	R	R
Object_Type	BACnetObjectType	R	R
System_Status	BACnetDeviceStatus	R	R
Vendor_Name	CharacterString	R	R
Vendor_Identifier	Unsigned16	R	R
Model_Name	CharacterString	R	R
Firmware_Revision	CharacterString	R	R
Application_Software_Version	CharacterString	R	R
Location	CharacterString	O	R
Description	CharacterString	O	R
Protocol_Version	Unsigned	R	R
Protocol_Revision	Unsigned	R	R
Protocol_Services_Supported	BACnetServicesSupported	R	R
Protocol_Object_Types_Supported	BACnetObjectTypesSupported	R	R
Object_List	BACnetARRAY[N]of BACnetObjectIdentifier	R	R
Max_APDU_Length_Accepted	Unsigned	R	R
Segmentation_Supported	BACnetSegmentation	R	R
Max_Segments_Accepted	Unsigned	O	R
VT_Classes_Supported	List of BACnetVTClass	O	-
Active_VT_Sessions	List of BACnetVTSession	O	-
Local_Time	Time	O	-
Local_Date	Date	O	-
UTC_Offset	INTEGER	O	-
Daylight_Savings_Status	BOOLEAN	O	-
APDU_Segment_Timeout	Unsigned	O	R
APDU_Timeout	Unsigned	R	R
Number_Of_APDU_Retries	Unsigned	R	R
List_Of_Session_Keys	List of BACnetSessionKey	O	-
Time_Synchronization_Recipients	List of BACnetRecipient	O	-
Max_Master	Unsigned (1...127)	O	W
Max_Info_Frames	Unsigned (1...127)	O	W
Device_Address_Binding	List of BACnetAddressBinding	R	R
Database_Revision	Unsigned	R	R
Configuration_Files	BACnetARRAY[N] of BACnetObjectIdentifier	O	-
Last_Restore_Time	BACnetTimeStamp	O	-
Backup_Failure_Timeout	Unsigned16	O	-
Active_COV_Subscriptions	List of BACnetCOVSubscription	O	-
Slave_Proxy_Enable	BACnetArray[N] of BOOLEAN	O	-
Manual_Slave_Address_Binding	List of BACnetAddressBinding	O	-
Auto_Slave_Discovery	BACnetArray[N] of BOOLEAN	O	-
Slave_Address_Binding	List of BACnetAddressBinding	O	-
Profile_Name	CharacterString	O	-



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3AJA000040159 REV A / EN
EFFECTIVE: 22.10.2008