

Manual Workshops (Excerpt)

ISDN Workshops

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Aim and purpose

This document is part of the user manual for the installation and configuration of funkwerk devices. For the latest information and notes on the current software release, please also read our release notes, particularly if you are updating your software to a higher release version. You will find the latest release notes under www.funkwerk-ec.com .

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How to reach Funkwerk Enterprise Communications GmbH

Funkwerk Enterprise Communications GmbH, Südwestpark 94, D-90449 Nuremberg, Germany,
Phone: +49 911 9673 0, Fax: +49 911 688 07 25

Funkwerk Enterprise Communications France S.A.S., 6/8 Avenue de la Grande Lande, F-33174
Gradignan, France, Phone: +33 5 57 35 63 00, Fax: +33 5 56 89 14 05

Internet: www.funkwerk-ec.com

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Chapter 1 ISDN Itemised Call Details

1.1 Introduction

The configuration of various ISDN dialin connections is described in the following chapters.

In the first scenario (*Windows Client Dialin* on page 2) you dial into the corporate network from a Windows PC over ISDN and receive an IP address from the IP subnet.

In the second scenario (*Connection of Field Office* on page 7) you configure a LAN connection over ISDN to a field office to access the remote network.

Configuration in this scenario is carried out using the **Funkwerk Configuration Interface**.

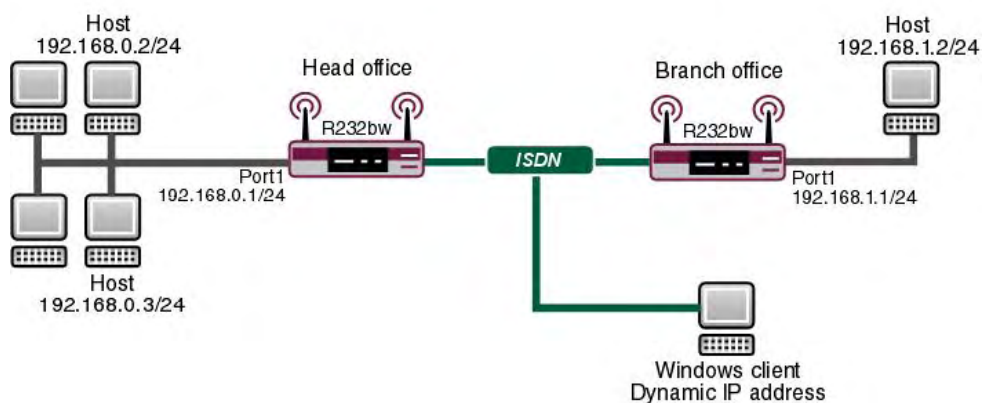


Fig. 2: Example scenario ISDN dialin connections

Requirements

The following are required for the configuration:

- An IP address on your LAN interface.
- Boot image from version 7.8.2
- Your device must be connected to an ISDN line
- You need at least one MSN (Multiple Subscriber Number)

1.2 Configuration

1.2.1 Windows Client Dialin

Entering own subscriber numbers

Once you have connected your device to the ISDN, configure your own subscriber numbers (MSN) for the ISDN interface.

Go to the following menu for this:

- (1) Go to **Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**.

The screenshot shows the web interface for a bintec R232bw device. The top navigation bar includes 'Language English', 'Online Help', 'Express Setup Wizard', 'Logout', and the 'funkwerk' logo. A left sidebar menu lists various system management options, with 'Physical Interfaces' expanded to show 'ISDN Ports' selected. The main content area is titled 'MSN Configuration' and contains a 'Basic Parameters' form with the following fields:

ISDN Port	bri4-0
Service	PPP (Routing)
MSN	200
MSN Recognition	<input checked="" type="radio"/> Right to Left <input type="radio"/> Left to Right (DDI)
Bearer Service	<input checked="" type="radio"/> Data + Voice <input type="radio"/> Data <input type="radio"/> Voice

At the bottom of the form are 'OK' and 'Cancel' buttons.

Fig. 3: **Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**

Relevant fields in the MSN Configuration menu

Field	Meaning
ISDN Port	Select the ISDN port for which the MSN is to be configured.
Service	For selecting the service that is to react to your own number. Select <i>PPP (Routing)</i> . Contains automatic detection of the PPP connections stated below except PPP DOVB.
MSN	Enter your own subscriber number in this field.
MSN Recognition	Select the mode your device is to use for the number comparison for MSN with the called party number of the incoming call.
Service attribute	Select the type of incoming call (service detection).

Configure the entry as follows:

- (1) Set **Service** to *PPP (Routing)* for data connections.
- (2) Enter your subscriber number under **MSN**, e.g. *200*.
- (3) Leave the **Bearer Service** set to *Data + Voice*.
- (4) Leave the remaining settings unchanged and confirm them with **OK**.



Note

If you only have one number available on the connection, which you also need for telephoning, you can set the **Bearer Service** to *Data*.

Defining the IP Address Pool

When dialling in to a Windows client your device assigns an IP address from your network.

To create a pool of IP addresses, select the following menu options:

- (1) Go to **WAN -> Internet + Dialup -> IP Pools -> Add**.

The screenshot shows the web interface for a bintec R232bw device. The left sidebar contains a navigation menu with categories like System Management, Physical Interfaces, LAN, Wireless LAN, Routing, WAN, and others. The 'WAN' category is expanded, showing 'Internet + Dialup' as the selected option. Within 'Internet + Dialup', the 'IP Pools' sub-menu is active. The main content area displays a table for IP Pools with columns for 'IP Pool Name' and 'IP Pool Range'. The 'Clients' pool is listed with a range of '192.168.0.10 - 192.168.0.20'. Below the table are 'Add', 'OK', and 'Cancel' buttons.

Fig. 4: **WAN -> Internet + Dialup ->IP Pools -> Add**

Relevant fields in the IP Pools menu

Field	Meaning
IP pool name	This is the name of the pool that you can subsequently select in the dialin connection.
IP pool range	Enter the IP addresses the client receives on dialin.

Configure the entry as follows:

- (1) Enter *Clients* for example under **IP Pool Name**.
- (2) Under **IP Pool Range** enter *192.168.0.10* and *192.168.0.20* for example.
- (3) Confirm with **OK**.

Creating an ISDN dialin connection

Select the following menu options to create an ISDN connection:

- (1) Go to **WAN -> Internet + Dialup -> ISDN -> New**.

The screenshot shows the configuration interface for a bintec R232bw device. The left sidebar contains a navigation menu with the following items: Save configuration, System Management, Physical Interfaces, LAN, Wireless LAN, Routing, WAN (expanded), Internet + Dialup (selected), ATM, Real Time Jitter Control, VPN, Firewall, VoIP, Local Services, Maintenance, External Reporting, and Monitoring. The main configuration area has tabs for PPPoE, PPTP, PPPoA, ISDN, and IP Pools. The ISDN tab is selected, displaying the following configuration fields:

Basic Parameters

- Description: Dialin
- Connection Type: ISDN 64 kbps
- User Name:
- Remote User (for Dialin only): Dialin
- Password:
- Always on: Enabled
- Connection Idle Timeout: 120 Seconds
- IP Mode and Routes:
 - IP Address Mode: Static Provide IP Address Get IP Address
 - IP Assignment Pool: Clients

Advanced Settings

- Block after connection failure for: 300 Seconds
- Maximum Number of Dialup Retries: 5
- Usage Type: Standard Dialin only Multi-User (Dialin only)
- Authentication: PAP/CHAP/MS-CHAP
- Callback Mode: None Active Passive
- Bandwidth on Demand Options:
 - Channel Bundling: None
- Dial Numbers:
 - Entries: Mode Call Number Add
- IP Options:
 - OSPF Mode: Passive Active Inactive
 - Proxy ARP Mode: Inactive Up or Dormant Up only
 - DNS Negotiation: Enabled

At the bottom of the configuration area are buttons for OK and Cancel.

Fig. 5: WAN -> Internet + Dialup -> ISDN -> New

Relevant fields in the ISDN menu

Field	Meaning
Description	Enter a unique name for the connection partner.
Remote User (for Dialin only)	Enter the code of the remote terminal (remote PPP user name).
Password	Enter the password for the connection.
Connection Idle Timeout	Specifies the duration of the connection without user data.
IP address mode	Enter the assignment method used for IP addresses.
IP Assignment Pool	Only if IP Address Mode = <i>Provide IP Address</i> . Select IP pools configured in the IP Pools menu.

Configure the entry as follows:

- (1) For example, under **Description** enter *Dialin*.
- (2) In **Remote User (for Dialin only)** enter *dial-in number an*.
- (3) For example, under **Password** enter *Secret*.
- (4) Set the **Connection Idle Timeout** to *120* for example.
- (5) Under **IP Address Mode** select *Provide IP Address*.
- (6) Under **IP Assignment Pool** select *Clients*.



Note

The user name you enter here is not a Windows log-in account, but only intended for the connection to your device.

Now you must make a few advanced changes for this connection.

To do this, remain in the Configuration menu for this dialin connection and go to the menu **Advanced Settings**

Relevant fields in the menu Advanced Settings

Field	Meaning
Usage Type	Here you can limit the connection to dialin only.
Proxy ARP Mode	Your device answers ARP requests with its MAC address on behalf of the dialled-in client if this is located in the same IP sub-net.

Configure the entry as follows:

- (1) Set **Usage Type** to *Dialin only*.


- (2) Switch **Proxy ARP Mode** to *Active Only*.
- (3) Leave the remaining settings unchanged and confirm them with **OK**.

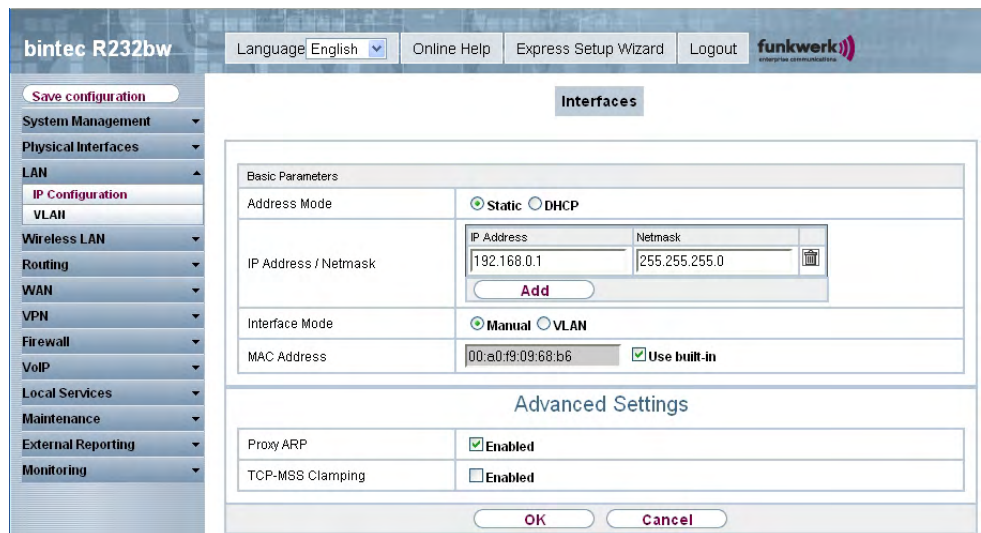
Activating Proxy ARP

You must activate Proxy ARP, as the Windows client that is dialling in receives an IP address from the same subnet it is accessing.

To use Proxy ARP you must activate this function for all of the interfaces involved, in this example for the dialin connection and for the LAN interface.

Go to the configuration menu in the LAN interface to activate Proxy ARP:

- (1) Go to **LAN -> IP Configuration -> <en1-0> ->  -> Advanced Settings**.



The screenshot shows the configuration interface for a bintec R232bw device. The left sidebar contains a navigation menu with options like System Management, Physical Interfaces, LAN, Wireless LAN, Routing, WAN, VPN, Firewall, VoIP, Local Services, Maintenance, External Reporting, and Monitoring. The main area is titled 'Interfaces' and shows the configuration for interface 'en1-0'. Under 'Basic Parameters', 'Address Mode' is set to 'Static' (selected) and 'DHCP' is unselected. The 'IP Address / Netmask' field shows '192.168.0.1' and '255.255.255.0'. Under 'Interface Mode', 'Manual' (selected) and 'VLAN' is unselected. The 'MAC Address' is '00:a0:f9:09:68:b6' and 'Use built-in' is checked. The 'Advanced Settings' section shows 'Proxy ARP' checked (Enabled) and 'TCP-MSS Clamping' unchecked (Disabled). 'OK' and 'Cancel' buttons are at the bottom.

Fig. 6: **LAN -> IP Configuration -> <en1-0> ->  -> Advanced Settings**.

Relevant fields in the menu Advanced Settings

Field	Meaning
Proxy ARP	The gateway answers ARP requests on behalf of the dialled-in client.

Configure the entry as follows:

- (1) Under **Proxy ARP** select *Enabled*.
- (2) Confirm with **OK**.

1.2.2 Connection of Field Office


Entering own subscriber numbers

Proceed as described in the section **Entering own subscriber numbers** in chapter *Windows Client Dialin* on page 2.

Creating a dialin connection

Select the following menu options to create an ISDN connection:

- (1) Go to **WAN -> Internet + Dialup -> ISDN -> New**.

bintec R232bw Language English Online Help Express Setup Wizard Logout 

[Save configuration](#)

System Management

Physical Interfaces

LAN

Wireless LAN

Routing

WAN

Internet + Dialup

ATM

Real Time Jitter Control

VPN

Firewall

VoIP

Local Services

Maintenance

External Reporting

Monitoring

PPPoE **PPTP** **PPPoA** **ISDN** **IP Pools**

Basic Parameters

Description: Branch1

Connection Type: ISDN 64 kbps

User Name: Head Office

Remote User (for Dialin only): Field Office

Password: ●●●●●●

Always on: Enabled

Connection Idle Timeout: 120 Seconds

IP Mode and Routes

IP Address Mode: Static Provide IP Address Get IP Address

Default Route: Enabled

Create NAT Policy: Enabled

Local IP Address: _____

Route Entries

Remote IP Address	Netmask	Metric
192.168.1.0	255.255.255.255	1

[Add](#)

Advanced Settings

Block after connection failure for: 300 Seconds

Maximum Number of Dialup Retries: 5

Usage Type: Standard Dialin only Multi-User (Dialin only)

Authentication: PAP/CHAP/MS-CHAP

Callback Mode: None Active Passive

Bandwith on Demand Options

Channel Bundling: None

Dial Numbers

Entries:

Mode	Call Number
Outgoing	210

[Add](#)

IP Options

OSPF Mode: Passive Active Inactive

Proxy ARP Mode: Inactive Up or Dormant Up only

DNS Negotiation: Enabled

[OK](#) [Cancel](#)

Fig. 7: WAN -> Internet + Dialup -> ISDN -> New

Relevant fields in the ISDN menu

Field	Meaning
Description	Enter a unique name for the connection partner.
User Name	Enter your user name.

Field	Meaning
Remote User (for Dialin only)	Enter the code of the remote terminal (remote PPP user name).
Password	Enter the password for the connection.
Connection Idle Timeout	Specifies the duration of the connection without user data.
IP address mode	Enter the assignment method used for IP addresses.
Local IP Address	Shows the IP address for your Ethernet interface to the LAN.
Route Entries	Enter the IP address of the remote network and the corresponding netmask here.

Configure the entry as follows:

- (1) For example, under **Description** enter *Branch1*.
- (2) Under **User Name** enter *Head Office* for example.
- (3) In **Remote User (for Dialin only)** enter *Field Office* for example.
- (4) For example, under **Password** enter *Secret*.
- (5) Set the **Connection Idle Timeout** to *120* for example.
- (6) Under **IP Address Mode** select *Static*.
- (7) Under **Local IP Address** enter the IP address, for example *192.168.0.1*.
- (8) Click the **Add** button under **Route Entries**.
- (9) In the fields **Remote IP Address** and **Netmask** enter, for example, *192.168.1.0* and *255.255.255.0*.

Now you must make a few advanced changes for this connection. To do this, remain in the Configuration menu for this dialin connection and go to the menu **Advanced Settings**

Relevant fields in the menu **Advanced Settings**

Field	Meaning
Entries	Configure the outgoing subscriber number for the partner.

Configure the entry as follows:

- (1) Under **Entries** click **Add** to generate a new entry.
- (2) Under **Mode** select *Outgoing*, and in **Call Number (MSN)** enter the number, e.g. *210*.
- (3) Confirm with **OK**.



Note

Bear in mind that this is an example configuration for the head office. The configuration in the field office follows the same steps based on the values used.

1.3 Result

You have now configured a remote dialin for a Windows client on your device. The Windows client receives an IP address from the same subnet on dialling in.

You have connected your field office to the head office over ISDN.

1.4 Checking the connection

To check the connections, activate the command prompt on a PC in the field office or on the dialin PC and send a ping to the head office network:

e.g. `ping 192.168.0.2`

You should then receive the following messages:

1.5 Overview of configuration steps

Windows Client Dialin

Field	Menu	Value
Service	Physical Interfaces -> ISDN Ports -> MSN Configuration -> New	<i>PPP (routing)</i>
MSN	Physical Interfaces -> ISDN Ports -> MSN Configuration -> New	e.g. <i>200</i>
Service attribute	Physical Interfaces -> ISDN Ports -> MSN Configuration -> New	<i>Data + Voice</i>
IP pool name	WAN -> Internet + Dialup ->IP Pools -> New	e.g. <i>Clients</i>
IP pool range	WAN -> Internet + Dialup ->IP Pools -> New	e.g. <i>192.168.0.10</i> and <i>192.168.0.20</i>
Description	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>Dialin</i>
Remote User (for Dialin only)	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>Dialin</i>
Password	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>secret</i>
Connection Idle Timeout	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>120</i>
IP address mode	WAN -> Internet + Dialup -> ISDN -> New	<i>Provide IP Address</i>
IP Assignment Pool	WAN -> Internet + Dialup -> ISDN -> New	<i>Clients</i>
Usage Type	WAN -> Internet + Dialup -> ISDN -> Advanced Settings	<i>Dialin only :</i>
Proxy ARP Mode	WAN -> Internet + Dialup -> ISDN -> Advanced Settings	<i>Active Only</i>
Proxy ARP	LAN -> IP Configuration -> <en1-0> ->  -> Advanced Settings	<i>Aktiviert</i>

Connection of Field Office

Field	Menu	Value
Service	Physical Interfaces -> ISDN Ports -> MSN Configuration -> New	<i>PPP (routing)</i>

Field	Menu	Value
MSN	Physical Interfaces -> ISDN Ports -> MSN Configuration -> New	e.g. <i>200</i>
Service attribute	Physical Interfaces -> ISDN Ports -> MSN Configuration -> New	<i>Data + Voice</i>
Description	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>Branch1</i>
User Name	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>Head Office</i>
Remote User (for Dialin only)	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>Field Office</i>
Password	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>secret</i>
Connection Idle Timeout	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>120</i>
IP address mode	WAN -> Internet + Dialup -> ISDN -> New	<i>Static</i>
Local IP Address	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>192.168.0.1</i>
Route Entries	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>192.168.1.0</i> and <i>255.255.255.0</i>
Entries	WAN -> Internet + Dialup -> ISDN -> Advanced Settings	e.g. Mode <i>Outgoing</i> and Call Number <i>210</i>

Chapter 2 ISDN DSL backup

2.1 Introduction

The following section describes how to configure an ISDN backup connection for a xDSL connection with a **bintec R232bw**. Configuration is performed with the **Funkwerk Configuration Interface**.

The Internet traffic normally runs over xDSL access. If xDSL access fails, an ISDN connection should be set up. The *Metric* variable should be used to control the setup of the backup connection.

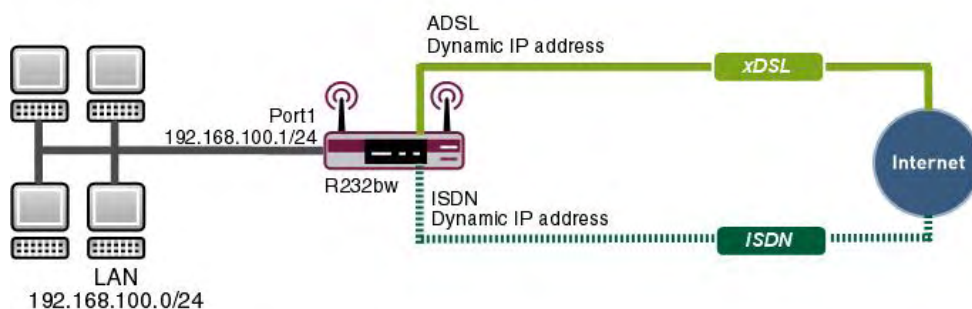


Fig. 8: Example scenario ISDN backup

Requirements

The following are required for the configuration:

- A **bintec R232bw** gateway
- Boot image from version 7.8.2
- xDSL Internet access
- ISDN Internet access
- Your LAN must be connected to one of ports **1** to **4** on the gateway.

2.2 Configuring Internet connections

An entry is created for both Internet connections over xDSL and ISDN.

xDSL Internet access

PPP over Ethernet (PPPoE) is the use of the Point-to-Point Protocol (PPP) network protocol over an Ethernet connection. Today, PPPoE is used for ADSL connections in Germany. In Austria, the Point To Point Tunneling Protocol (PPTP) was originally used for ADSL access. However, PPPoE is now offered here too by some providers.

Go to the following menu to set up an Internet access over xDSL with PPPoE:

- (1) Go to **WAN -> Internet + Dialup -> PPPoE -> New**.

The screenshot shows the configuration interface for a bintec R232bw device. The left sidebar contains a navigation menu with categories like System Management, Physical Interfaces, LAN, Wireless LAN, Routing, WAN, ATM, VPN, Firewall, VoIP, Local Services, Maintenance, External Reporting, and Monitoring. The WAN section is expanded, showing 'Internet + Dialup' as the selected option. The main configuration area has tabs for 'PPPoE', 'PPTP', 'PPPoA', 'ISDN', and 'IP Pools'. The 'PPPoE' tab is active, displaying a form with the following fields:

- Description:** T-Online
- PPPoE Mode:** Standard (selected), Multilink
- PPPoE Ethernet Interface:** ethoa50-0
- User Name:** t-online.de
- Password:** [masked]
- Always on:** [unchecked] Enabled
- Connection Idle Timeout:** 300 Seconds
- IP Mode and Routes:**
 - IP Address Mode:** Static, Get IP Address (selected)
 - Default Route:** [checked] Enabled
 - Create NAT Policy:** [checked] Enabled

At the bottom of the form, there are 'Advanced Settings' and 'OK' / 'Cancel' buttons.

Fig. 9: WAN -> Internet + Dialup -> PPPoE -> New

Relevant fields in the PPPoE menu

Field	Meaning
Description	Give the connection a name. The first character in this field must not be a number and no special characters or umlauts must be used.
PPPoE ethernet interface	Specify the interface for your gateway over which the xDSL connection is to be established.
User Name	Enter the user name you received from the provider.
Password	Enter the password you received from the provider.
Always on (flat-rate)	This indicates that the gateway does not automatically clear the

Field	Meaning
mode)	connection.
Connection Idle Timeout	Define the time in seconds after which the gateway clears the connection in the absence of data traffic.
IP address mode	Defines the mode following which the gateway receives the IP address.
Standard Route	For this connection, a standard route is automatically created.
Create NAT entry	NAT is enabled for this connection.

To set up Internet access over xDSL, proceed as follows:


- (1) Under **Description** enter the name for the connection, e.g. *T-Online*.
- (2) For **PPPoE Ethernet Interface**, select *ethoa50-0*.
- (3) Under **User Name** enter your user name defined in the access data for your provider.
- (4) Under **Password** enter the password for your Internet access.
- (5) Leave the default setting *Not activated* for **Always on (flat-rate mode)** if you do not have a DSL connection with flatrate.
 - If you have an Internet access without flatrate enter the time in seconds after which the gateway should clear the Internet connection when there is no further data exchange under **Connection Idle Timeout**, for example *300*.
 - If you have an Internet access with flatrate, select **Always on (Flatrate Mode)**. If selected the gateway will never clear the Internet connection automatically.
- (6) Under **IP Address Mode** select *Get IP Address*.
- (7) Keep **Default Route** selected.
- (8) Select **Create NAT Policy**.
- (9) Leave the remaining settings unchanged and confirm them with **OK**.

ISDN Internet access

Go to the following menu to set up an Internet access over ISDN:

- (1) Go to **WAN -> Internet + Dialup -> ISDN-> New**.

bintec R232bw

Language English Online Help Express Setup Wizard Logout 

Save configuration

System Management
Physical Interfaces
LAN
Wireless LAN
Routing
WAN
Internet + Dialup
ATM
Real Time Jitter Control
VPN
Firewall
VoIP
Local Services
Maintenance
External Reporting
Monitoring

PPPoE PPTP PPPoA ISDN IP Pools

Basic Parameters

Description	Freenet
Connection Type	ISDN 64 kbps
User Name	freenet
Remote User (for Dialin only)	
Password	••••••••
Always on	<input type="checkbox"/> Enabled
Connection Idle Timeout	120 Seconds

IP Mode and Routes

IP Address Mode	<input type="radio"/> Static <input type="radio"/> Provide IP Address <input checked="" type="radio"/> Get IP Address
Default Route	<input checked="" type="checkbox"/> Enabled
Create NAT Policy	<input checked="" type="checkbox"/> Enabled

Advanced Settings

Block after connection failure for	30 Seconds
Maximum Number of Dialup Retries	5
Usage Type	<input checked="" type="radio"/> Standard <input type="radio"/> Dialin only <input type="radio"/> Multi-User (Dialin only)
Authentication	PAP/CHAP/MS-CHAP
Callback Mode	<input checked="" type="radio"/> None <input type="radio"/> Active <input type="radio"/> Passive

Bandwith on Demand Options

Channel Bundling	None
------------------	------

Dial Numbers

Entries	<table border="1"> <tr><td>Mode</td><td>Outgoing</td><td>Call Number</td><td>0101901929</td></tr> <tr><td colspan="4" style="text-align: center;"><input type="button" value="Add"/></td></tr> </table>	Mode	Outgoing	Call Number	0101901929	<input type="button" value="Add"/>			
Mode	Outgoing	Call Number	0101901929						
<input type="button" value="Add"/>									

IP Options

OSPF Mode	<input checked="" type="radio"/> Passive <input type="radio"/> Active <input type="radio"/> Inactive
Proxy ARP Mode	<input checked="" type="radio"/> Inactive <input type="radio"/> Up or Dormant <input type="radio"/> Up only
DNS Negotiation	<input checked="" type="checkbox"/> Enabled

Fig. 10: WAN -> Internet + Dialup ->ISDN -> New

Relevant fields in the ISDN menu

Field	Meaning
Description	Define a name for the ISDN Internet connection.
Connector Type	Specify the connection type.
User Name	Enter the user name you received from the provider.
Password	Enter the password you received from the provider.
Connection Idle Timeout	Define the time in seconds after which the gateway clears the

Field	Meaning
	connection in the absence of data traffic.
IP address mode	Defines the mode following which the gateway receives the IP address.
Standard Route	For this connection, a standard route is automatically created.
Create NAT entry	NAT is enabled for this connection.
Block after connection failure for	Define the time for which the connection should be <i>Blocked</i> if no connection can be established.
Entries	Enter the subscriber numbers that should be dialled to reach the provider.

Proceed as follows to set up Internet access over ISDN:

- (1) Under **Description** enter the name for the connection, e.g. *Freenet*.
- (2) Leave the **Connection Type** set to *ISDN 64kbps*.
- (3) Under **User Name** enter your user name defined in the access data for your provider.
- (4) Under **Password** enter the password for your Internet access.
- (5) Enter the time in seconds after which the gateway should clear the Internet connection when there is no further data exchange under **Connection Idle Timeout**, for example *300*.
- (6) Under **IP Address Mode** select *Get IP Address*.
- (7) Keep **Default Route** selected.
- (8) Select **Create NAT Policy**.
- (9) Click **Advanced Settings** and under **Block after Connection Failure for** enter a time in seconds for which the connection should be blocked if the Internet connection cannot be established, e.g. *30*.
- (10) Under **Entries** click **Add**.
- (11) Select *Outgoing* under **Mode**.
- (12) Enter the subscriber number of the provider under **Number**, e.g. *0101901929*.
- (13) Leave the remaining settings unchanged and confirm them with **OK**.



Note

The **Connection Idle Timeout** for the ISDN connection should be kept relatively short to prevent any unnecessary costs.

2.3 Adjusting the metric

The route metric must be set higher than the ISDN connection so that the ISDN connection is only established if the xDSL connection has failed.

Go to the following menu to set the metric for the route higher than the ISDN connection:

- (1) Go to **Routing -> Routes ->IP Routes**.

The screenshot shows the 'bintec R232bw' web interface. The top navigation bar includes 'Language English', 'Online Help', 'Express Setup Wizard', 'Logout', and the 'funkwerk' logo. The left sidebar contains a menu with categories like System Management, Physical Interfaces, LAN, Wireless LAN, Routing, WAN, VPN, Firewall, VoIP, Local Services, Maintenance, External Reporting, and Monitoring. The 'Routing' menu is expanded to show 'Routes', 'RIP', and 'Load Balancing'. The 'Routes' sub-menu is selected, showing 'IP Routes' and 'Options' tabs. The main content area displays a table of IP routes with the following data:

Destination IP Address	Netmask	Gateway	Interface	Metric	Extended Route	Route Type
172.16.96.0	255.255.248.0	172.16.98.183	LAN_EN1-0	0	<input type="checkbox"/>	Network Route
0.0.0.0	0.0.0.0	0.0.0.0	WAN_T-ONLINE	1	<input type="checkbox"/>	Default Route
0.0.0.0	0.0.0.0	0.0.0.0	WAN_FREENET	2	<input type="checkbox"/>	Default Route



Page: 1, Items: 1 - 3

Fig. 11: Routing -> Routes ->IP Routes

Relevant fields in the IP Routing menu

Field	Meaning
Metric	Determines the priority of the route.

Proceed as follows to set the metric for the route higher than the ISDN connection:

- (1) Under **Interface** <WAN_T-ONLINE> click the  icon.
- (2) Under **Metric** select a value, e. g. 1.
- (3) Confirm with **OK**.
- (4) Under **Interface** <WAN_FREENET> click the  icon.
- (5) Under **Metric** select a higher value than the value for your route over xDSL, e. g. 2.
- (6) Confirm with **OK**.

Click **Save Configuration** and confirm with **OK** to save the configuration permanently.

2.4 Result

You have now created a back-up connection over ISDN that is enabled automatically when required.

2.5 Checking the configuration

If you enter the command `debug all` in the command line for the gateway you can track how the connections are set up and cleared in the event of a failure. To simulate a failure, remove the cable for the respective connection from the port.

Enter the following in the command line of the gateway and confirm with **Return**:

```
r232bw:> debug all
```

Connection setup over xDSL

```
r232bw:> debug all
01:11:48 INFO/INET: dialup if 10001 prot 1 192.168.100.2:2048->62.146.2.103:19036
01:11:48 DEBUG/PPP: T-Online: event: 3, status: 0 (5) -> 1 (5)
01:11:48 DEBUG/PPP: T-Online: send PPPoE Active Discovery Initiation (PADI,interface: 50000
01:11:48 DEBUG/PPP: T-Online 1/0/2/1: PPPoE call identified
01:11:55 DEBUG/PPP: T-Online: send PPPoE Active Discovery Initiation (PADI,interface: 50000
01:11:55 DEBUG/PPP: T-Online 2/0/2/1: PPPoE call identified
01:11:55 DEBUG/PPP: T-Online 2/2542/2/5: PPPoE session established
01:11:55 DEBUG/PPP: layer 1 type pppoe
01:11:55 DEBUG/PPP: T-Online: event: 16, status: 1 (5) -> 8 (1)
01:11:55 DEBUG/PPP: T-Online: outgoing connection established
01:11:55 DEBUG/PPP: T-Online 2/2542/2/5: PPPoE call identified
01:11:56 INFO/PPP: T-Online: local IP address is 84.146.232.180,remote is 217.0.116.91
01:11:56 DEBUG/INET: NAT: new outgoing session on ifc 10001 prot 1
| | | | | 192.168.100.2:512/84.146.232.180:32769 -> 62.146.2.103:0
```

xDSL link fails

```

01:12:09 DEBUG/ATM: DSP_ATM_TC_NOSYNC
01:12:12 DEBUG/ATM: adsl3-0:ATM delimitation lost: initiating DSL retrain
01:12:12 DEBUG/ATM: adsl3-0:link down
01:12:12 DEBUG/PPP: T-Online 2/2542/2/6: PPPoE session terminated
01:12:12 DEBUG/PPP: T-Online: event: 18, status: 8 (1) -> 0 (5)
01:12:12 INFO/PPP: T-Online: outgoing connection closed, duration 17 sec,555 bytes received, 871 bytes sent,
0 charging units, 0 charging amounts
01:12:15 INFO/INET: dialup if 10001 prot 1 192.168.100.2:2048->62.146.2.103:16220
01:12:15 DEBUG/PPP: T-Online: event: 3, status: 0 (5) -> 1 (5)
01:12:15 DEBUG/PPP: T-Online: send PPPoE Active Discovery Initiation (PADI,interface: 50000
01:12:15 DEBUG/PPP: T-Online 3/0/2/1: PPPoE call identified
01:12:16 DEBUG/ATM: ADSL TRAINING STATE: SHOWTIME
01:12:16 DEBUG/ATM: ADSL TRAINING STATE: FAIL_
01:12:16 DEBUG/ATM: ADSL TRAINING STATE: IDLE_
01:12:16 DEBUG/ATM: ADSL TRAINING STATE: IDLE
01:12:16 DEBUG/ATM: DSP_IDLE
01:12:16 DEBUG/ATM: ADSL TRAINING STATE: IDLE
01:12:16 DEBUG/ATM: DSP_OVERLAY_START: 1
01:12:16 DEBUG/ATM: DSP_OVERLAY_END: 1
01:12:16 DEBUG/ATM: adsl3-0: RSTATE IDLE
01:12:40 DEBUG/INET: NAT: delete session on ifc 10001 prot 1192.168.100.2:512/84.146.232.180:32769 &lt;-&gt;
62.146.2.103:0
01:12:46 ERR/PPP: T-Online: no response to setup, dialout failed
01:12:46 DEBUG/PPP: T-Online: event: 11, status: 1 (5) -> 7 (8)
01:12:46 INFO/PPP: T-Online: interface is blocked for 60 seconds

```

ISDN connection

```

01:12:46 INFO/INET: dialup if 10002 prot 1 192.168.100.2:2048->62.146.2.103:15708
01:12:46 DEBUG/PPP: Freenet: event: 3, status: 0 (5) -> 1 (5)
01:12:46 DEBUG/PPP: Freenet: dial number &lt;lt;00101901929&gt;
01:12:50 DEBUG/PPP: layer 1 type hdlc, 64000 bit/sec
01:12:50 DEBUG/PPP: Freenet: event: 16, status: 1 (5) -> 8 (1)
01:12:50 DEBUG/PPP: Freenet: outgoing connection established
01:12:50 INFO/PPP: Freenet: local IP address is 89.51.245.19,remote is 62.104.219.38
01:12:50 DEBUG/INET: NAT: new outgoing session on ifc 10002 prot 1 192.168.100.2:512/89.51.245.19:32770 -> 62.146.2.103:0

```

xDSL link is available again, ISDN is cleared

2.6 Overview of configuration steps

xDSL Internet access



Field	Menu	Value
Description	WAN -> Internet + Dialup -> PPPoE -> New	e.g. <i>T-Online</i>
PPPoE ethernet interface	WAN -> Internet + Dialup -> PPPoE -> New	<i>ethoa50-0</i>
User Name	WAN -> Internet + Dialup -> PPPoE -> New	e. g. <i>t-online.de</i>
Password	WAN -> Internet + Dialup -> PPPoE -> New	Your password
Always on (flat-rate mode)	WAN -> Internet + Dialup -> PPPoE -> New	Enabled for flatrate
Connection Idle Timeout	WAN -> Internet + Dialup -> PPPoE -> New	Only for connections without flatrate, e.g. <i>300</i>
IP address mode	WAN -> Internet + Dialup -> PPPoE -> New	<i>Get IP Address</i>
Standard Route	WAN -> Internet + Dialup -> PPPoE -> New	<i>Aktiviert</i>
Create NAT entry	WAN -> Internet + Dialup -> PPPoE -> New	<i>Aktiviert</i>

ISDN Internet access

Field	Menu	Value
Description	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>Freenet</i>
Connector Type	WAN -> Internet + Dialup -> ISDN -> New	<i>ISDN 64kbps</i>
User Name	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>freenet</i>
Password	WAN -> Internet + Dialup -> ISDN -> New	Your password
Connection Idle Timeout	WAN -> Internet + Dialup -> ISDN -> New	e.g. <i>120</i>
IP address mode	WAN -> Internet + Dialup -> ISDN -> New	<i>Get IP Address</i>

Field	Menu	Value
Standard Route	WAN -> Internet + Dialup -> ISDN -> New	Aktiviert
Create NAT entry	WAN -> Internet + Dialup -> ISDN -> New	Aktiviert
Block after connection failure for	WAN -> Internet + Dialup -> ISDN -> New-> Advanced Settings	e.g. 30
Entries	WAN -> Internet + Dialup -> ISDN -> New-> Advanced Settings	Mode <i>Outgoing</i> with Call Number e.g. 0101901929

Adjusting the metric

Field	Menu	Value
Metric	Routing -> Routes -> IP Routes-> <WAN_T-ONLINE> -> 	e.g. 1
Metric	Routing -> Routes -> IP Routes-> <WAN_FREENET> -> 	e.g. 2