User's Guide

bintec R230a / R230aw / R232b / R232bw

Technical Data

Version 2.0

Purpose

This document is part of the user's guide to the installation and configuration of bintec gateways running software release 7.2.10 or later. For up-to-the-minute information and instructions concerning the latest software release, you should always read our **Release Notes**, especially when carrying out a software update to a later release level. The latest **Release Notes** can be found at www.funkwerk-ec.com.

Liability

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The information in this manual is subject to change without notice. Additional information, changes and **Release Notes** for bintec gateways can be found at www.funkwerk-ec.com.

As multiprotocol gateways, bintec gateways set up WAN connections in accordance with the system configuration. To prevent unintentional charges accumulating, the operation of the product should be carefully monitored. Funkwerk Enterprise Communications GmbH accepts no liability for loss of data, unintentional connection costs and damages resulting from unsupervised operation of the product.

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Guidelines and standards

bintec gateways comply with the following guidelines and standards:

R&TTE Directive 1999/5/EG

CE marking for all EU countries and Switzerland

You will find detailed information in the Declarations of Conformity at www.funkwerk-ec.com.

How to reach Funkwerk Enterprise Communications GmbH

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1 bintec R230a

All products of the R Series provide you with a similar set of functions and differ in terms of the supported interfaces or connection types.

1.1 Delivery size

Your gateway is supplied with the following parts:

- Cable sets/power supply:
  - Ethernet cable
  - Serial cable
  - DSL cable
  - Power supply
- Funkwerk Companion CD
- Documentation:
  - **Quick Install Guide** (printed)
  - **User's Guide** (on CD)
  - **Release Notes**, if required
  - Safety Instructions

1.2 General Product Features

The general product features cover performance features and the technical requirements for installation and operation of your gateway.

These features are outlined in the following table:

Feature	Data
Product name	**bintec R230a**

Feature	Data
Dimensions/weight (B x H x D): Dimensions without cables Weight Transport weight (incl. documentation, cabling, packaging)	 158 mm x 25,7 mm x 123.1 mm approx. 550 g approx. 1.2 kg
Memory	32 MB SDRAM, 8 MB Flash-ROM
LEDs	11 (1x Power, 1x Status, 4x2 Ethernet, 1x ADSL)
Power consumption of equipment	4.7 Watt
Voltage supply	12V DC 500mA EU PSU
Ambient requirements: Storage temperature Ambient temperature Relative humidity Room classification	 -20° to +70°C 0 to 40 °C 10 to 90% non-condensing in operation 5 to 95% non-condensing in storage Operate only in dry rooms.
Available interfaces: ADSL interface Serial interface V.24 Ethernet IEEE 802.3 LAN (4 port switch)	 Built-in ADSL modem for Annex A Built-in, supports the following baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bauds Built-in (twisted-pair only), 10/100 Mbps, auto sensing, MDIX
Plugs used: Serial interface Ethernet interface ADSL interface	 3-pole MiniUSB RJ45 RJ11

Feature	Data
SAFERNET^{TM} Security Technology	Community Passwords, PAP, CHAP, MS-CHAP, MS-CHAP v.2, PPTP, PPPoE, PPPoA, Access Control Lists, NAT, SIF, MPPE Encryption, VPN with IPSec
Software includes	**BRICKware for Windows** **BRICKtools for Unix**
Printed documentation included	**Quick Install Guide**
Documentation in PDF format	**User's Guide** **BRICKware for Windows Software Reference**

Table 1-1: General product features

1.3 LEDs

The LEDs on your R Series Gateway indicate the states and the activity of the gateway.

They are arranged as follows:

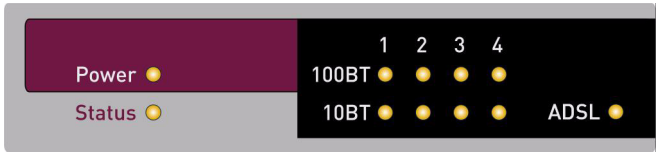


Figure 1-1: LEDs on **bintec R230a**

In operational mode the LEDs display the following status information:

LED	Status	Information
Power	on	Power supply has been connected.

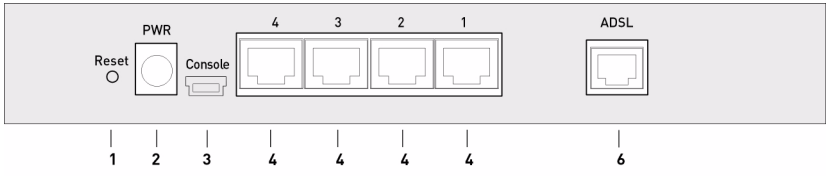
LED	Status	Information
Status	on flashing	The gateway is booting. The gateway is active.
1 to 4	on flashing	The gateway is connected to the Ethernet (100 Mbit/s or 10 Mbit/s respectively). Data traffic via the Ethernet interface (100 Mbit/s or 10 Mbit/s respectively).
ADSL	on	ADSL connection is active.

Table 1-2: LED status display

1.4 Connections

All connections are located on the rear of the gateway. bintec R230a offers a 4-port Ethernet switch, an ADSL interface as well as a serial interface.

The connections are arranged as follows:



1. Reset	Reset Button	4. 4/3/2/1	10/100 Base-T Ethernet interface
2. PWR	Socket for power supply	6. ADSL	ADSL interface
3. Console	Serial interface		

Figure 1-2: **bintec R230a** rear

1.5 Pin Assignments

1.5.1 Serial Interface

For connecting a console bintec R230a provides a serial interface. Baud rates between 1200 and 115200 Bit/s are supported.

The interface is connected through a 5-pole MiniUSB socket:

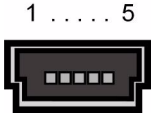


Figure 1-3: 5-pole MiniUSB socket

The pin assignment of the socket is as follows:

Pin	Function
1	not used
2	Rx
3	GND
4	not used
5	Tx

Table 1-3: Pin assignment of the serial socket

1.5.2 Ethernet Interface

bintec R230a offers an Ethernet interface with integrated 4-port switch for LAN connection. It can be used to connect single PCs as well as additional switches.

An RJ45 socket is used for connecting:

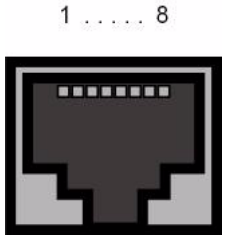


Figure 1-4: Ethernet 10/100Base-T interface (RJ45 socket)

The Ethernet sockets have the following pin assignment

Pin	Function
1	TD +
2	TD -
3	RD +
4	Not used
5	Not used
6	RD -
7	Not used
8	Not used

Table 1-4: RJ45 socket for LAN connections

The Ethernet sockets are not equipped with Auto-MDIX technology.

1.5.3 ADSL Interface

The ADSL interface is connected using a RJ11 socket. The supplied cable combines the RJ11 plug required by most ADSL splitters and the RJ11 plug required by the gateway.

Only the inner pins are used for the ADSL connection:

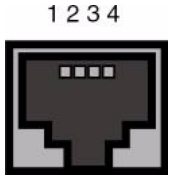


Figure 1-5: ADSL interface (RJ11)

The ADSL interface has the following pin assignment:

Pin	Function
1	Not used
2	a
3	b
4	Not used

Table 1-5: ADSL interface (RJ11 socket)

2 bintec R230aw

All products of the R Series provide you with a similar set of functions and differ in terms of the supported interfaces or connection types.

2.1 Delivery size

Your gateway is supplied with the following parts:

- Cable sets/power supply:
  - Ethernet cable
  - Serial cable
  - DSL cable
  - Power supply
- Antennas:
  - two standard antennas
- Funkwerk Companion CD
- Documentation:
  - **Quick Install Guide** (printed)
  - **User's Guide** (on CD)
  - **Release Notes**, if required
  - Safety Instructions

2.2 General Product Features

The general product features cover performance features and the technical requirements for installation and operation of your gateway.

These features are outlined in the following table:

Feature	Data
Product name	**bintec R230aw**
Dimensions/weight (B x H x D): Dimensions without cables Weight Transport weight (incl. documentation, cabling, packaging)	 158 mm x 25,7 mm x 123.1 mm approx. 550 g approx. 1.2 kg
Memory	32 MB SDRAM, 8 MB Flash-ROM
LEDs	12 (1x Power, 1x Status, 4x2 Ethernet, 1x WLAN, 1x ADSL)
Power consumption of equipment	4.7 Watt
Voltage supply	12V DC 800mA EU PSU
Ambient requirements: Storage temperature Ambient temperature Relative humidity Room classification	 -20° to +70°C 0 to 40 °C 10 to 90% non-condensing in operation 5 to 95% non-condensing in storage Operate only in dry rooms.

Feature	Data
Available interfaces:	
ADSL interface	Built-in ADSL modem for Annex A
Serial interface V.24	Built-in, supports the following baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bauds
Ethernet IEEE 802.3 LAN (4 port switch)	Built-in (twisted-pair only), 10/100 Mbps, auto sensing, MDIX
WLAN interface (antennas)	802.11b and 802.11g with Antenna Diversity Data rates of 1-, 2-, 5.5-, 6-, 9-, 11-, 12-, 18-, 24-, 36-, 48-, 54 Mbps
Plugs used:	
Serial interface	3-pole MiniUSB
Ethernet interface	RJ45
ADSL interface	RJ11
SAFERNET™ Security Technology	Community Passwords, PAP, CHAP, MS-CHAP, MS-CHAP v.2, PPTP, PPPoE, PPPoA, Access Control Lists, NAT, SIF, MPPE Encryption, VPN with IPSec
Software includes	**BRICKware for Windows** **BRICKtools for Unix**
Printed documentation included	**Quick Install Guide**
Documentation in PDF format	**User's Guide** **BRICKware for Windows Software Reference**

Table 2-1: General product features

Note

Antenna Diversity

The two antennas do not have equal funtion. The one named "Main", "Primary" or "1" (at **R Series** devices the antenna next to the power switch) is used for sending and receiving, the other one only for receiving. The AP (Access point) verifies, which of the two antennas receives the better signal, which is then used for decoding.

2.3 LEDs

The LEDs on your R Series Gateway indicate the states and the activity of the gateway.

They are arranged as follows:

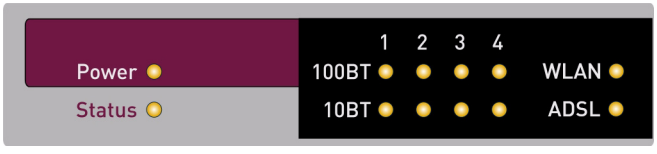


Figure 2-1: LEDs on **bintec R230aw**

In operational mode the LEDs display the following status information:

LED	Status	Information
Power	on	Power supply has been connected.
Status	on flashing	The gateway is booting. The gateway is active.
1 to 4	on flashing	The gateway is connected to the Ethernet (100 Mbit/s or 10 Mbit/s respectively). Data traffic via the Ethernet interface (100 Mbit/s or 10 Mbit/s respectively).
WLAN	on flashing	The WLAN module is active. Data traffic via the WLAN interface.

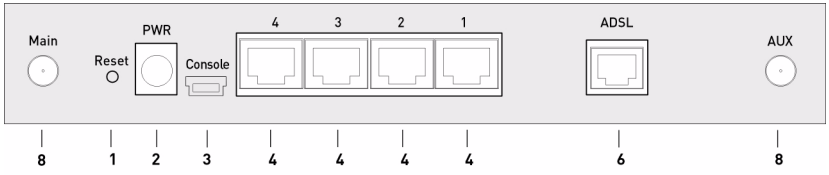
LED	Status	Information
ADSL	on	ADSL connection is active.

Table 2-2: LED status display

2.4 Connections

All connections are located on the rear of the gateway. bintec R230aw offers a 4-port Ethernet switch, an ADSL interface as well as a serial interface.

The connections are arranged as follows:



1. Reset	Reset Button		
2. POWER	Socket for power supply	6. ADSL	ADSL interface
3. CONSOLE	Serial interface	8.	RSMA connection
4. 4/3/2/1	10/100 Base-T Ethernet interface		

Figure 2-2: **bintec R230aw** rear

2.5 Pin Assignments

2.5.1 Serial Interface

For connecting a console bintec R230aw provides a serial interface. Baud rates between 1200 and 115200 Bit/s are supported.

The interface is connected through a 5-pole MiniUSB socket:

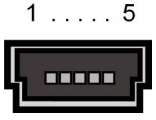


Figure 2-3: 5-pole MiniUSB socket

The pin assignment of the socket is as follows:

Pin	Function
1	not used
2	Rx
3	GND
4	not used
5	Tx

Table 2-3: Pin assignment of the serial socket

2.5.2 Ethernet Interface

bintec R230aw offers an Ethernet interface with integrated 4-port switch for LAN connection. It can be used to connect single PCs as well as additional switches.

An RJ45 socket is used for connecting:

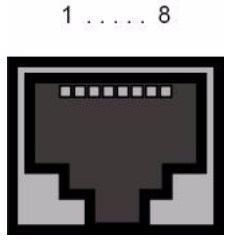


Figure 2-4: Ethernet 10/100Base-T interface (RJ45 socket)

The Ethernet sockets have the following pin assignment

Pin	Function
1	TD +
2	TD -
3	RD +
4	Not used
5	Not used
6	RD -
7	Not used
8	Not used

Table 2-4: RJ45 socket for LAN connections

The Ethernet sockets are not equipped with Auto-MDIX technology.

2.5.3 ADSL Interface

The ADSL interface is connected using a RJ11 socket. The supplied cable combines the RJ11 plug required by most ADSL splitters and the RJ11 plug required by the gateway.

Only the inner pins are used for the ADSL connection:

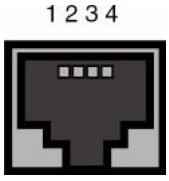


Figure 2-5: ADSL interface (RJ11)

The ADSL interface has the following pin assignment:

Pin	Function
1	Not used
2	a
3	b
4	Not used

Table 2-5: ADSL interface (RJ11 socket)

3 bintec R232b

All products of the R Series provide you with a similar set of functions and differ in terms of the supported interfaces or connection types.

3.1 Delivery size

Your gateway is supplied with the following parts:

- Cable sets/power supply:
  - Ethernet cable
  - ISDN cable
  - Serial cable
  - DSL cable
  - Power supply
- Funkwerk Companion CD
- Documentation:
  - **Quick Install Guide** (printed)
  - **User's Guide** (on CD)
  - **Release Notes**, if required
  - Safety Instructions

3.2 General Product Features

The general product features cover performance features and the technical requirements for installation and operation of your gateway.

These features are outlined in the following table:

Feature	Data
Product name	**bintec R232b**

Feature	Data
Dimensions/weight (B x H x D): Dimensions without cables Weight Transport weight (incl. documentation, cabling, packaging)	 189.2 mm x 27 mm x 123.1 mm approx. 550 g approx. 1.2 kg
Memory	32 MB SDRAM, 8 MB Flash-ROM
LEDs	13 (1x Power, 1x Status, 4x2 Ethernet, 1x ETH, 1x ADSL, 1x ISDN)
Power consumption of equipment	4.7 Watt
Voltage supply	12V DC 800mA EU PSU
Ambient requirements: Storage temperature Ambient temperature Relative humidity Room classification	 -20° to +70°C 0 to 40 °C 10 to 90% non-condensing in operation 5 to 95% non-condensing in storage Operate only in dry rooms.
Available interfaces: ADSL interface Serial interface V.24 Ethernet IEEE 802.3 LAN (4 port switch) ISDN-WAN S0 ETH	 Built-in ADSL modem for Annex B Built-in, supports the following baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bauds Built-in (twisted-pair only), 10/100 Mbps, auto sensing, MDIX Built-in Additional Ethernet switch port

Feature	Data
Plugs used: Serial interface Ethernet interface ISDN interface ADSL interface	 3-pole MiniUSB RJ45 RJ45 RJ11
SAFERNET™ Security Technology	Community Passwords, PAP, CHAP, MS-CHAP, MS-CHAP v.2, PPTP, PPPoE, PPPoA, Access Control Lists, NAT, SIF, MPPE Encryption, VPN with IPSec
Software includes	**BRICKware for Windows** **BRICKtools for Unix**
Printed documentation included	**Quick Install Guide**
Documentation in PDF format	**User's Guide** **BRICKware for Windows Software Reference**

Table 3-1: General product features

3.3 LEDs

The LEDs on your R Series Gateway indicate the states and the activity of the gateway.

They are arranged as follows:

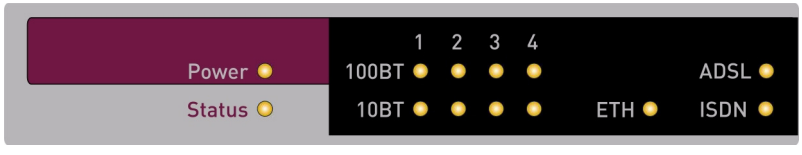


Figure 3-1: LEDs on **bintec R232b**

In operational mode the LEDs display the following status information:

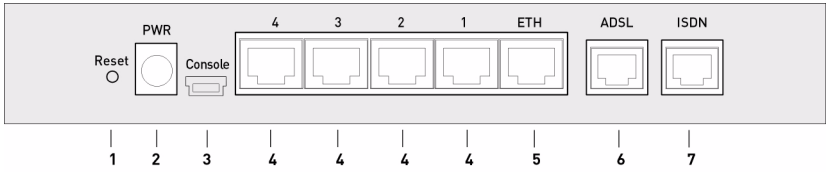
LED	Status	Information
Power	on	Power supply has been connected.
Status	on flashing	The gateway is booting. The gateway is active.
1 to 4	on flashing	The gateway is connected to the Ethernet (100 Mbit/s or 10 Mbit/s respectively). Data traffic via the Ethernet interface (100 Mbit/s or 10 Mbit/s respectively).
ETH	on flashing	The gateway is connected to the Ethernet. Data traffic via the Ethernet interface.
ADSL	on	ADSL connection is active.
ISDN	on flashing	One B-channel is used. Both B-channels are used.

Table 3-2: LED status display

3.4 Connections

All connections are located on the rear of the gateway. bintec R232b offers a 4-port Ethernet switch, an ETH interface, an ISDN interface, an ADSL interface as well as a serial interface.

The connections are arranged as follows:



1. Reset	Reset Button	5. ETH	Ethernet interface
2. PWR	Socket for power supply	6. ADSL	ADSL interface
3. Console	Serial interface	7. ISDN	ISDN interface
4. 4/3/2/1	10/100 Base-T Ethernet interface		

Figure 3-2: **bintec R232b** rear

3.5 Pin Assignments

3.5.1 Serial Interface

For connecting a console bintec R232b provides a serial interface. Baud rates between 1200 and 115200 Bit/s are supported.

The interface is connected through a 5-pole MiniUSB socket:

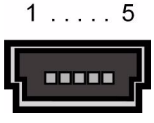


Figure 3-3: 5-pole MiniUSB socket

The pin assignment of the socket is as follows:

Pin	Function
1	not used
2	Rx
3	GND
4	not used
5	Tx

Table 3-3: Pin assignment of the serial socket

3.5.2 Ethernet Interface

bintec R232b offers an Ethernet interface with integrated 4-port switch for LAN connection. It can be used to connect single PCs as well as additional switches. Furthermore, the gateway is equipped with a fifth Ethernet interface.

An RJ45 socket is used for connecting:

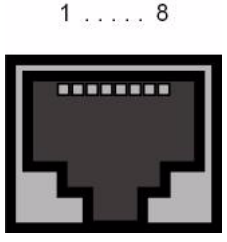


Figure 3-4: Ethernet 10/100Base-T interface (RJ45 socket)

The Ethernet sockets have the following pin assignment

Pin	Function
1	TD +

Pin	Function
2	TD -
3	RD +
4	Not used
5	Not used
6	RD -
7	Not used
8	Not used

Table 3-4: RJ45 socket for LAN connections

The Ethernet sockets are not equipped with Auto-MDIX technology.

3.5.3 ADSL Interface

The ADSL interface is connected using a RJ11 socket. The supplied cable combines the RJ45 plug required by most ADSL splitters and the RJ11 plug required by the gateway.

Only the inner pins are used for the ADSL connection:

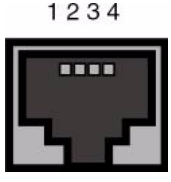


Figure 3-5: ADSL interface (RJ11)

The ADSL interface has the following pin assignment:

Pin	Function
1	Not used

Pin	Function
2	a
3	b
4	Not used

Table 3-5: ADSL interface (RJ11 socket)

3.5.4 ISDN Basic Rate Interface

bintec R232b provides an ISDN S_0 interface, which can be used, e.g., for backup purposes.

A RJ45 socket is used for connecting:

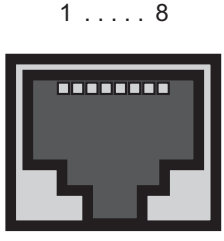


Figure 3-6: ISDN S_0 interface (RJ45 socket)

The ISDN interface (RJ45 socket) has the following pin assignment:

Pin	Function
1	Not used
2	Not used
3	Send (+)
4	Receive (+)
5	Receive (-)
6	Send (-)

Pin	Function
7	Not used
8	Not used

Table 3-6: RJ45 socket for ISDN connection

4 bintec R232bw

All products of the R Series provide you with a similar set of functions and differ in terms of the supported interfaces or connection types.

4.1 Delivery size

Your gateway is supplied with the following parts:

- Cable sets/power supply:
  - Ethernet cable
  - ISDN cable
  - Serial cable
  - DSL cable
  - Power supply
- Antennas:
  - two standard antennas
- Funkwerk Companion CD
- Documentation:
  - **Quick Install Guide** (printed)
  - **User's Guide** (on CD)
  - **Release Notes**, if required
  - Safety Instructions

4.2 General Product Features

The general product features cover performance features and the technical requirements for installation and operation of your gateway.

These features are outlined in the following table:

Feature	Data
Product name	**bintec R232bw**
Dimensions/weight (B x H x D): Dimensions without cables Weight Transport weight (incl. documentation, cabling, packaging)	 189.2 mm x 27 mm x 123.1 mm approx. 550 g approx. 1.2 kg
Memory	32 MB SDRAM, 8 MB Flash-ROM
LEDs	14 (1x Power, 1x Status, 4x2 Ethernet, 1x WLAN, 1x ETH, 1x ADSL, 1x ISDN)
Power consumption of equipment	4.7 Watt
Voltage supply	12V DC 800mA EU PSU
Ambient requirements: Storage temperature Ambient temperature Relative humidity Room classification	 -20° to +70°C 0 to 40 °C 10 to 90% non-condensing in operation 5 to 95% non-condensing in storage Operate only in dry rooms.

Feature	Data
Available interfaces:	
ADSL interface	Built-in ADSL modem for Annex B
Serial interface V.24	Built-in, supports the following baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bauds
Ethernet IEEE 802.3 LAN (4 port switch)	Built-in (twisted-pair only), 10/100 Mbps, auto sensing, MDIX
ISDN-WAN S0	Built-in
ETH	Additional Ethernet switch port
WLAN interface (antennas)	802.11b and 802.11g with Antenna Diversity Data rates of 1-, 2-, 5.5-, 6-, 9-, 11-, 12-, 18-, 24-, 36-, 48-, 54 Mbps
Plugs used:	
Serial interface	3-pole MiniUSB
Ethernet interface	RJ45
ISDN interface	RJ45
ADSL interface	RJ11
SAFERNET™ Security Technology	Community Passwords, PAP, CHAP, MS-CHAP, MS-CHAP v.2, PPTP, PPPoE, PPPoA, Access Control Lists, NAT, SIF, MPPE Encryption, VPN with IPSec
Software includes	**BRICKware for Windows** **BRICKtools for Unix**
Printed documentation included	**Quick Install Guide**
Documentation in PDF format	**User's Guide** **BRICKware for Windows Software Reference**

Table 4-1: General product features

Note

Antenna Diversity

The two antennas do not have equal funtion. The one named "Main", "Primary" or "1" (at **R Series** devices the antenna next to the power switch) is used for sending and receiving, the other one only for receiving. The AP (Access point) verifies, which of the two antennas receives the better signal, which is then used for decoding.

4.3 LEDs

The LEDs on your R Series Gateway indicate the states and the activity of the gateway.

They are arranged as follows:

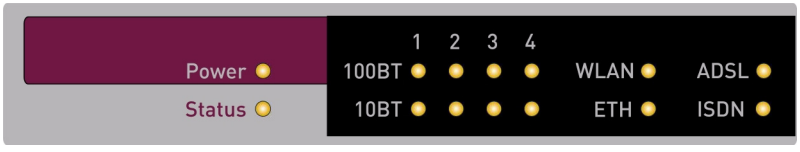


Figure 4-1: LEDs on **bintec R232bw**

In operational mode the LEDs display the following status information:

LED	Status	Information
Power	on	Power supply has been connected.
Status	on flashing	The gateway is booting. The gateway is active.
1 to 4	on flashing	The gateway is connected to the Ethernet (100 Mbit/s or 10 Mbit/s respectively). Data traffic via the Ethernet interface (100 Mbit/s or 10 Mbit/s respectively).
WLAN	on flashing	The WLAN module is active. Data traffic via the WLAN interface.

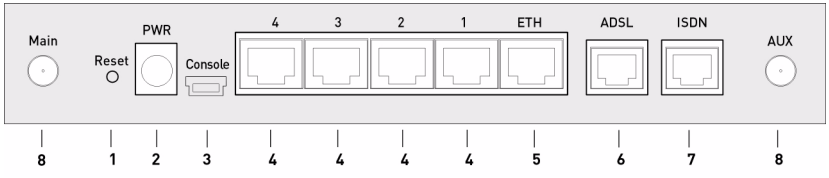
LED	Status	Information
ETH	on flashing	The gateway is connected to the Ethernet. Data traffic via the Ethernet interface.
ADSL	on	ADSL connection is active.
ISDN	on flashing	One B-channel is used. Both B-channels are used.

Table 4-2: LED status display

4.4 Connections

All connections are located on the rear of the gateway. bintec R232bw offers a 4-port Ethernet switch, an ETH interface, an ISDN interface, an ADSL interface as well as a serial interface.

The connections are arranged as follows:



1. Reset	Reset Button	5. ETH	Ethernet interface
2. PWR	Socket for power supply	6. ADSL	ADSL interface
3. Console	Serial interface	7. ISDN	ISDN interface
4. 4/3/2/1	10/100 Base-T Ethernet interface	8.	RSMA connection

Figure 4-2: **bintec R232bw** rear

4.5 Pin Assignments

4.5.1 Serial Interface

For connecting a console bintec R232bw provides a serial interface. Baud rates between 1200 and 115200 Bit/s are supported.

The interface is connected through a 5-pole MiniUSB socket:

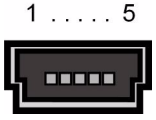


Figure 4-3: 5-pole MiniUSB socket

The pin assignment of the socket is as follows:

Pin	Function
1	not used
2	Rx
3	GND
4	not used
5	Tx

Table 4-3: Pin assignment of the serial socket

4.5.2 Ethernet Interface

bintec R232bw offers an Ethernet interface with integrated 4-port switch for LAN connection. It can be used to connect single PCs as well as additional switches. Furthermore, the gateway is equipped with a fifth Ethernet interface.

An RJ45 socket is used for connecting:

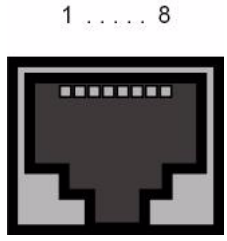


Figure 4-4: Ethernet 10/100Base-T interface (RJ45 socket)

The Ethernet sockets have the following pin assignment

Pin	Function
1	TD +
2	TD -
3	RD +
4	Not used
5	Not used
6	RD -
7	Not used
8	Not used

Table 4-4: RJ45 socket for LAN connections

The Ethernet sockets are not equipped with Auto-MDIX technology.

4.5.3 ADSL Interface

The ADSL interface is connected using a RJ11 socket. The supplied cable combines the RJ45 plug required by most ADSL splitters and the RJ11 plug required by the gateway.

Only the inner pins are used for the ADSL connection:

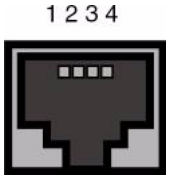


Figure 4-5: ADSL interface (RJ11)

The ADSL interface has the following pin assignment:

Pin	Function
1	Not used
2	a
3	b
4	Not used

Table 4-5: ADSL interface (RJ11 socket)

4.5.4 ISDN Basic Rate Interface

bintec R232bw provides an ISDN S_0 interface, which can be used, e.g., for backup purposes.

A RJ45 socket is used for connecting:

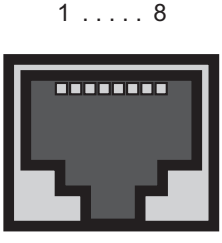


Figure 4-6: ISDN S_0 interface (RJ45 socket)

The ISDN interface (RJ45 socket) has the following pin assignment:

Pin	Function
1	Not used
2	Not used
3	Send (+)
4	Receive (+)
5	Receive (-)
6	Send (-)
7	Not used
8	Not used

Table 4-6: RJ45 socket for ISDN connection