funkwerk
enterprise communications

User's Guide

bintec R4100 / R4300

Technical Data

Version 0.9

Purpose

This document is part of the user's guide to the installation and configuration of bintec gateways running software release 7.4.5 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.

Trademarks

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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.

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1 bintec R4100

1.1 Delivery size

Your gateway is supplied with the following parts:

- Cable sets/power supply:
  - Ethernet cable
  - ISDN cable
  - Serial cable
  - Splitter serial/Ethernet
  - 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 R4100**

Feature	Data
Dimensions/weight (B x H x D):	
Dimensions without cables	295 mm x 160 mm x 41 mm
Weight	approx. 1260 g
Transport weight (incl. documentation, cabling, packaging)	approx. 2,6 kg
Memory	32 MB SDRAM, 8 MB Flash-ROM
LEDs	20 (1x Power, 1x Status, 5x2 Ethernet, 4x2 Function)
Power consumption of equipment	max. 15 Watt, typ. 10 Watt
Voltage supply	24V DC 1A EU PSU
Ambient requirements:	
Storage temperature	-20° to +70°C
Ambient temperature	0 to 40 °C
Relative humidity	10 to 90% non-condensing in operation 5 to 95% non-condensing in storage
Room classification	Operate only in dry rooms.
Available interfaces:	
Ethernet IEEE 802.3 LAN (4 port switch) one port with serial interface mode	Built-in (twisted-pair only), 10/100 Mbps, auto sensing, MDIX; supports the following baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bauds
ISDN-WAN S0 (2)	Built-in
ISDN-PRI (2)	Built-in
DMZ/ETH5	Additional Ethernet switch port

Feature	Data
Plugs used:	
Serial interface	RJ45
Ethernet interface	RJ45
ISDN interface	RJ45
ISDN-PRI interface	RJ45
SAFERNET^{TM} Security Technology	Community Passwords, PAP, CHAP, MS-CHAP, MS-CHAP v.2, PPTP, PPPoE, PPPoA, Callback, Access Control Lists, CLID, NAT, SIF, VPN mit PPTP or IPSec, MPPE Encryption, PPTP Encryption
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 bintec R4100 Gateway indicate the states and the activity of the gateway.

They are arranged as follows:

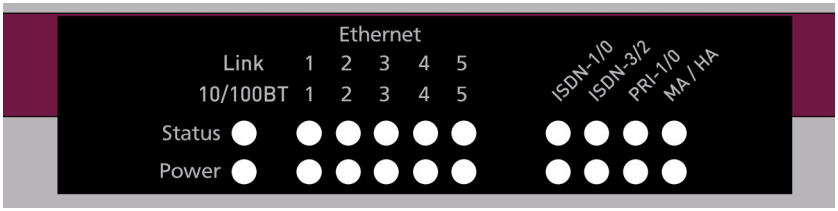


Figure 1-1: LEDs on **bintec R4100**

In operational mode the LEDs display the following status information:

LED	Status	Information
Power	off	Power is off.
	on	Power is on.
Status	perma-nently on or off	Error.
	flashing	The gateway is active.
Ethernet 1 to 5		
upper line:	on	The gateway is connected to the Ethernet.
	flashing	Data traffic via the Ethernet interface.
lower line:	on	Data traffic with 100 mbps
	off	Data traffic with 10 mbps
ISDN-1/0		
upper line:	on	ISDN-0: ISDN D channel is active.
	flashing	ISDN-0: At least one ISDN B channel is active.
lower line:	on	ISDN-1: ISDN D channel is active.
	flashing	ISDN-1: At least one ISDN B channel is active.

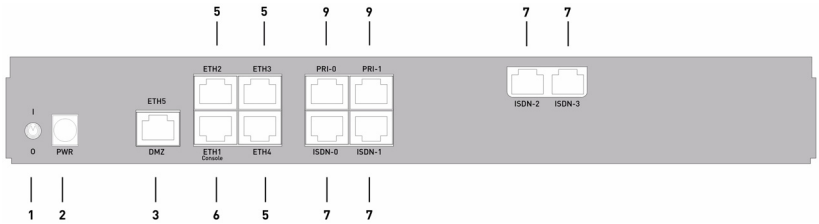
LED	Status	Information
ISDN-3/2		
upper line:	on	ISDN-2: ISDN D channel is active.
	flashing	ISDN-2: At least one ISDN B channel is active.
lower line:	on	ISDN-3: ISDN D channel is active.
	flashing	ISDN-3: At least one ISDN B channel is active.
PRI 1/0		
	on	PRI-0: ISDN D channel is active.
	flashing	PRI-0: At least one ISDN B channel is active.
	on	PRI-1: ISDN D channel is active.
	flashing	PRI-1: At least one ISDN B channel is active.
MA / HA		
upper line:	flashing	BRRP packets are received.
lower line:	on	A user is logged in to the system, e.g. via telnet.

Table 1-2: LED status display

1.4 Connections

All connections are located on the rear of the gateway. bintec R4100 offers a 4-port Ethernet switch including a port with serial interface mode, a DMZ/ETH5 interface, four ISDN interfaces as well as two ISDN-PRI interfaces.

The connections are arranged as follows:



1. I/O	Power Switch	6. ETH1/ Console	Ethernet interface with serial interface mode
2. PWR	Socket for power supply	7. ISDN-0 - ISDN-3	ISDN interface
3. DMZ/ETH5	Ethernet interface	8. PRI-0 - PRI-1	ISDN-PRI interface
5. ETH2-ETH4	Ethernet interface		

Figure 1-2: **bintec R4100** rear

1.5 Pin Assignments

1.5.1 Ethernet Interfaces

bintec R4100 offers an Ethernet interface with integrated 4-port switch (ETH1 - ETH4) and a separate Ethernet interface (DMZ/ETH5).

The 4-port switch can be used to connect single PCs as well as additional switches

The *ETH1*/*Console* interface can also be used as serial interface.

The DMZ/ETH5 interface can be used to connect an optional DSL modem or a DMZ.

An RJ45 socket is used for connecting:

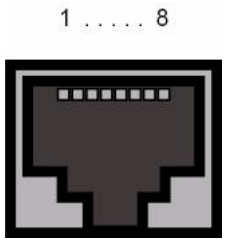


Figure 1-3: Ethernet 10/100Base-T interface (RJ45 socket)

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 1-3: RJ45 socket for Ethernet connection

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

The combined Serial-Ethernet-sockets have the following pin assignment:

Pin	Function
1	TD + (Ethernet)
2	TD - (Ethernet)
3	RD + (Ethernet)

Pin	Function
4	RX (Console)
5	GND (Console)
6	RD - (Ethernet)
7	GND (Console)
8	TX (Console)

Table 1-4: RJ45 socket for Ethernet connection resp. serial interface (Console)

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

1.5.2 ISDN Basic Rate Interfaces

bintec R4100 provides four ISDN S_0 interface, which can be used, e.g., for backup purposes.

A RJ45 socket is used for connecting:

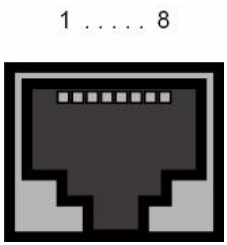


Figure 1-4: ISDN S_0 interface (RJ45 socket)

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

Pin	Function
1	Not used
2	Not used

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

Table 1-5: RJ45 socket for ISDN connection

1.5.3 ISDN-PRI Interfaces

The ISDN-PRI interfaces are connected using a RJ45 socket. The supplied cable combines the RJ45 plug required for the ISDN-PRI connection and the RJ45 plug required by the gateway.

Only the inner pins are used for the ISDN-PRI connection:

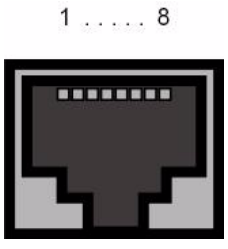


Figure 1-5: ISDN-PRI interface (RJ45 socket)

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

Pin	Function
1	T +
2	T -
3	Not used

Pin	Function
4	R +
5	R -
6	Not used
7	Not used
8	Not used

Table 1-6: RJ45 socket for ISDN-PRI connection

Note for NTs in Germany

In Germany, "Transmit" (NT-->TE) is often designated "S2Mab" (a and b) on the plug and "Receive" (TE-->NT) "S2Man" (a and b).

2 bintec R4300

2.1 Delivery size

Your gateway is supplied with the following parts:

- Cable sets/power supply:
  - Ethernet cable
  - ISDN cable
  - Serial cable
  - Power supply
  - X.21 DTE (optional)
  - X.21 DCE (optional)
  - V.35 DTE (optional)
- 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 R4300**

Feature	Data
Dimensions/weight (B x H x D): Dimensions without cables Weight Transport weight (incl. documentation, cabling, packaging)	 295 mm x 160 mm x 41 mm approx. 1260 g approx. 2.6 kg
Memory	32 MB SDRAM, 8 MB Flash-ROM
LEDs	20 (1x Power, 1x Status, 5x2 Ethernet, 4x2 Function)
Power consumption of equipment	max. 15 Watt, typ. 13 Watt
Voltage supply	15V AC 1.3A 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: Ethernet IEEE 802.3 LAN (4 port switch) one port with serial interface mode ISDN-WAN S0 (2) DMZ/ETH5 X.21 interface (2)	 Built-in (twisted-pair only), 10/100 Mbps, auto sensing, MDIX; supports the following baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bauds Built-in Additional Ethernet switch port Built-in

Feature	Data
Plugs used: Serial interface Ethernet interface ISDN interface X.21 interface	 RJ45 RJ45 RJ45 26-pole mini Delta ribbon socket
SAFERNET™ Security Technology	Community Passwords, PAP, CHAP, MS-CHAP, MS-CHAP v.2, PPTP, PPPoE, PPPoA, Callback, Access Control Lists, CLID, NAT, SIF, MPPE Encryption, PPTP Encryption, VPN with PPTP or 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

2.3 LEDs

The LEDs on your bintec R4300 Gateway indicate the states and the activity of the gateway.

They are arranged as follows:

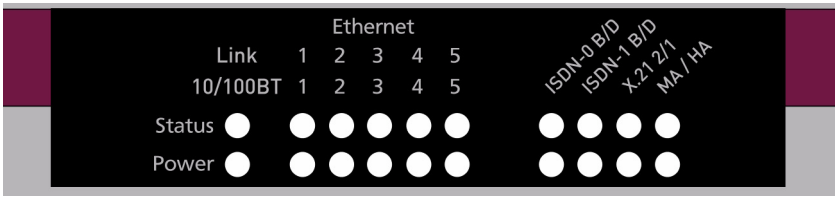


Figure 2-1: LEDs on **bintec R4300**

In operational mode the LEDs display the following status information:

LED	Status	Information
Power	off on	Power is off. Power is on.
Status	perma-nently on or off flashing	Error. The gateway is active.
Ethernet 1 to 5 upper line: lower line:	 on flashing on off	 The gateway is connected to the Ethernet. Data traffic via the Ethernet interface. Data traffic with 100 mbps Data traffic with 10 mbps
ISDN-0 B/D upper line: lower line:	 on on flashing	 ISDN D channel is active. One ISDN B channel is active. Both ISDN B channels are active.
ISDN-1 B/D upper line: lower line:	 on on flashing	 ISDN D channel is active. One ISDN B channel is active. Both ISDN B channels are active.

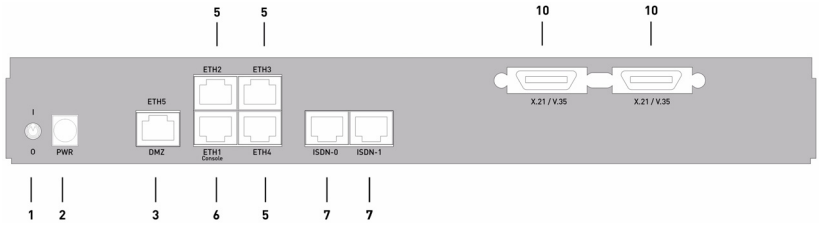
LED	Status	Information
X.21 2/1		
upper line:	on	X.21 1: Link is established.
	flashing	X.21 1: Data traffic
lower line:	on	X.21 2: Link is established.
	flashing	X.21 2: Data traffic
MA / HA		
upper line:	flashing	BRRP packets are received.
lower line:	on	A user is logged in to the system, e.g. via telnet.

Table 2-2: LED status display

2.4 Connections

All connections are located on the rear of the gateway. bintec R4300 offers a 4-port Ethernet switch including a port with serial interface mode, a DMZ/ETH5 interface, two ISDN interfaces as well as two X.21 interfaces.

The connections are arranged as follows:



1. I/O	Power Switch	6. ETH1/ Console	Ethernet interface with serial interface mode
2. PWR	Socket for power supply	7. ISDN-0 - ISDN-1	ISDN interface
3. DMZ/ETH5	Ethernet interface	10. X.21	X.21 interface
5. ETH2 - ETH4	Ethernet interface		

Figure 2-2: **bintec R4300** rear

2.5 Pin Assignments

2.5.1 Ethernet Interfaces

bintec R4300 offers an Ethernet interface with integrated 4-port switch (ETH1 - ETH4) and a separate Ethernet interface (DMZ/ETH5).

The 4-port switch can be used to connect single PCs as well as additional switches

The *ETH1*/*Console* interface can also be used as serial interface.

The DMZ/ETH5 interface can be used to connect an optional DSL modem or a DMZ.

An RJ45 socket is used for connecting:

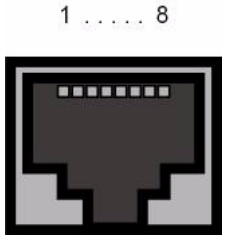


Figure 2-3: Ethernet 10/100Base-T interface (RJ45 socket)

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 2-3: RJ45 socket for Ethernet connection

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

The combined Serial-Ethernet-sockets have the following pin assignment:

Pin	Function
1	TD + (Ethernet)

Pin	Function
2	TD - (Ethernet)
3	RD + (Ethernet)
4	RX (Console)
5	GND (Console)
6	RD - (Ethernet)
7	GND (Console)
8	TX (Console)

Table 2-4: RJ45 socket for Ethernet connection resp. serial interface (Console)

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

2.5.2 ISDN Basic Rate Interfaces

bintec R4300 provides two ISDN S_0 interfaces, which can be used, e.g., for backup purposes.

A RJ45 socket is used for connecting:

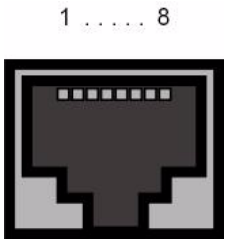


Figure 2-4: ISDN S_0 interface (RJ45 socket)

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 2-5: RJ45 socket for ISDN connection

2.5.3 X.21 Interfaces

bintec R4300 provides two X.2 interfaces.

A 26-pole mini Delta ribbon socket is used for connecting:

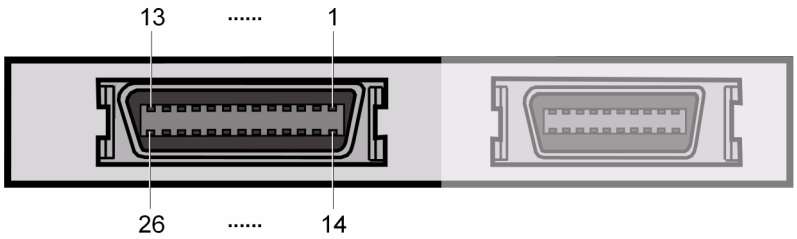


Figure 2-5: X.21 interface (26-pole mini Delta ribbon socket)

The X.21 interface (26-pole mini Delta ribbon socket) has the following pin assignment:

Signal	Pin no.	X.21 (DB-15)		V.35 (M34)		V.36 (DB-37)	
		DTE	DCE	DTE	DCE	DTE	DCE
Shield	A1 (1)	1	1	A	A	1	1
GND	A2 (2)	8	8	B	B	19	19
TxD (B)	A3 (3)	9	11	S	T	22	24
TxD (A)	A4 (4)	2	4	P	R	4	6
RxD (B)	A5 (5)	11	9	T	S	24	22
RxD (A)	A6 (6)	4	2	R	P	6	4
RTS (B)	A7 (7)	10	12			25	27
RTS (A)	A8 (8)	3	5	C	D	7	9
CTS (B)	A9 (9)	12	10			27	25
CTS (A)	A10 (10)	5	3	D	C	9	7
RxC (B)	A11 (11)	13	14	X	W	26	35
RxC (A)	A12 (12)	6	7	V	U	8	17
Mode DCE	A13 (13)		8		B		19
Mode 0	B1 (14)					19	19
DTR (B)	B2 (15)					30	29
DTR (A)	B3 (16)			H	E	12	11
DCD (B)	B4 (17)					31	31
DCD (A)	B5 (18)			F	F	13	13
DSR (B)	B6 (19)					29	30
DSR (A)	B7 (20)			E	H	11	12
TxC (B)	B8 (21)			AA	AA	23	23
TxC (A)	B9 (22)			Y	Y	5	5

Signal	Pin no.	X.21 (DB-15)		V.35 (M34)		V.36 (DB-37)	
		DTE	DCE	DTE	DCE	DTE	DCE
Mode 1	B10 (23)						
Mode 2	B11 (24)	8	8				
TxCE (B)	B12 (25)		13	W	X	35	26
TxCE (A)	B13 (26)		6	U	V	17	8

Table 2-6: DB-15 socket for X.21 connection