

MONITORING AND DEBUGGING

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bintec User's Guide - R Series
Version 1.0

Purpose This document is part of the user's guide to the installation and configuration of bintec gateways running software release 7.2.4 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.

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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 Monitoring and Debugging Menu

The fields of the **MONITORING AND DEBUGGING** menu are described below.

R232bw Setup Tool	Funkwerk Enterprise Communications GmbH
[MONITOR]: Monitoring and Debugging	MyGateway
ISDN Monitor	ATM/OAM
ISDN Credits	ADSL
xDSL Credits	
Interfaces	
Messages	
TCP/IP	IP QoS
IPSec	SSHD
EXIT	

The **MONITORING AND DEBUGGING** menu contains submenus that enable you to locate problems in your network and monitor activities, e.g. at your gateway's WAN interface.

Menu	Meaning
ISDN Monitor	Logs incoming and outgoing ISDN calls.
ISDN Credits	Statistics of the ISDN subsystems ppp and isdnlogin.
xDSL Credits	Statistics of the xDSL subsystem PPPoE.
Interfaces	For monitoring the traffic of the individual interfaces. The interface status can also be changed via this menu (<i>up, down, reset</i>).
Messages	Shows system messages generated by the gateway's logging and accounting mechanism.

Menu	Meaning
TCP/IP	This menu is for monitoring the IP traffic of the individual protocols.
IPSec	This menu shows global IPSec statistics and lists the <i>IKE SECURITY ASSOCIATIONS</i> and <i>IPSEC SA BUNDLES</i> of all active IPSec tunnels.
ATM/OAM	This menu displays the current values and activities of the ATM interface.
ADSL	This menu is for monitoring an ADSL connection.
IP QoS	This menu contains QoS-specific statistics.
SSHD	In this menu you can view existing SSH connections.

Table 1-1: Submenus in ***MONITORING AND DEBUGGING*** menu

2 ISDN Monitor Submenu

The *ISDN MONITOR* submenu is described below.

A list of the existing ISDN connections (incoming and outgoing calls) is displayed:

Dir	Remote Name/Number	charge	Duration	Stack	Channel	State
out	isdnlogind/1111		101	0	B1	active
in	isdnlogind/9999		65	0	B2	active
EXIT						
(c)alls	(h)istory	(d)etails	(s)tatistics	(r)elease		

Select **c** if you have used other options and wish to return to the list of existing ISDN calls.

This menu also offers you other options:

- Select **h** to show a list of the last 20 ISDN calls (incoming and outgoing) completed since the last system start.

```

R232bw Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR][ISDN HISTORY]: ISDN Monitor - History                MyGateway

  Dir Remote Number  Charge Starttime Duration Cause
in isdnlogind/111  06:50:11  41    (0x90) normal call clearing
out isdnlogin/112  06:50:57  4    (0x90) normal call clearing
in isdnlogind/113  06:52:04  110  (0x90) normal call clearing
in isdnlogind/114  06:56:05  4    (0x90) normal call clearing
in isdnlogind/115  06:56:11  0    (0x90) normal call clearing
in isdnlogind/115  06:56:17  1    (0x90) normal call clearing
in isdnlogind/115  06:56:23  1    (0x90) normal call clearing
in isdnlogind/114  06:56:28  2    (0x90) normal call clearing
in isdnlogind/114  06:56:32  1    (0x90) normal call clearing
in isdnlogind/112  06:56:37  2    (0x90) normal call clearing
in isdnlogind/111  06:56:51  4    (0x90) normal call clearing
in isdnlogind/113  06:57:00  2    (0x90) normal call clearing
in isdnlogind/111  06:57:06  1    (0x90) normal call clearing

EXIT

(c)alls      (h)istory      (d)etails      (s)tatistics      (r)elease

```

- Place the cursor on an existing or completed ISDN call and select **d** to display detailed information about this call.

```

R232bw Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR][ISDN DETAILS]: ISDN Monitor - Details                MyGateway

Remote Number: 111                Direction: in      State:

Cause          (0x90) normal call clearing
Local Cause    (0xb) chan busy
Info           isdnlogind

Local Number    999
Dispatch Item  ISDN Login

Stack          0
Channel        B2
Charging Info

SIN            telephony

EXIT

(c)alls      (h)istory      (d)etails      (s)tatistics      (r)elease

```

- Select **s** to display statistics on the activity of the existing incoming and outgoing ISDN calls.

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [ISDN STATS]: ISDN Monitor - Statistics		MyGateway	
Remote Number: 999	Direction: out	State: active	
Duration 25			
Send:	Receive:		
Packets 107	Packets 107	Bytes 567	Bytes 5478
Errors 0	Errors 0	Packets/s 1	Bytes/s 218
Packets/s 1	Bytes/s 5	Load (%) 0	Load (%) 2
EXIT			
(c)alls	(h)istory	(d)etails	(s)tatistics (r)elease

- Select `r` to clear the tagged existing ISDN call.

The display for the `c`, `h` and `s` options is updated at 1-second intervals.

3 ISDN Credits Submenu

The *ISDN CREDITS* submenu is described below.

The *MONITORING AND DEBUGGING* → *ISDN CREDITS* menu shows the subsystem *PPP* and subsystem *ISDNLOGIN* and the respective *SURVEILLANCE* status.

Select a subsystem and confirm with **Return**.

The current status of the Credits Based Accounting System for the selected subsystem is displayed:

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH		
[MONITOR] [ISDN CREDITS] [STAT]: Monitor ppp Credits		MyGateway		
	Total	Maximum	% reached	
Time till end of measure interval (sec)	82000	86400	5	
Number of Incoming Connections	1			
Number of Outgoing Connections	10	100	10	
Time of Incoming Connections	720	28800	3	
Time of Outgoing Connections	1360	28800	5	
Charge	0			
Number of Current Incoming Connections	0			
Number of Current Outgoing Connections	0			
Number of Current Connections	0			
EXIT				

The display is updated automatically every two seconds.

The menu consists of the following fields:

Field	Description
Time till end of measure interval (sec)	Time in seconds until the end of the measuring interval.
Number of Incoming Connections	The number of incoming connections until now during <i>MEASURE TIME (SEC)</i> (see menu <i>CREDITS</i> → <i>ISDN CREDITS</i>).

Field	Description
Number of Outgoing Connections	The number of outgoing connections until now during MEASURE TIME (SEC) .
Time of Incoming Connections	Total time in seconds for incoming connections until now during MEASURE TIME (SEC) .
Time of Outgoing Connections	Total time in seconds for outgoing connections until now during MEASURE TIME (SEC) . (SEC) .
Charge	Current charges until now (amount, units) during MEASURE TIME (SEC) .
Number of Current Incoming Connections	The number of current incoming connections.
Number of Current Outgoing Connections	The number of current outgoing connections.
Number of Current Connections	The total number of all current connections.

Table 3-1: Fields in the **MONITORING AND DEBUGGING → ISDN CREDITS → PPP/ISDNLOGIN → EDIT** menu



Hinweis

Please note that this menu is only a display of the configured values and values achieved.

Use the **CREDITS → ISDN CREDITS** menu to configure the limits.

4 xDSL Credits Submenu

The *xDSL CREDITS* submenu is described below.

The **MONITORING AND DEBUGGING** → *xDSL CREDITS* menu provides access to the **PPPoE CREDITS** submenu.

The current status of the Credits Based Accounting System for the PPPoE subsystem is displayed:

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH		
[MONITOR] [XDSL CREDITS]: Monitor PPPoE Credits		MyGateway		
	Total	Maximum	% reached	
Time till end of measure interval (sec)	82000	86400	5	
Number of Outgoing Connections	10	1000	1	
Time of Outgoing Connections	7260	28800	26	
EXIT				

The menu consists of the following fields:

Field	Description
Time till end of measure interval (sec)	Time in seconds until the end of the measuring interval.
Number of Outgoing Connections	Current number of outgoing connections until now during MEASURE TIME (SEC) (see CREDITS → <i>xDSL CREDITS</i> → PPPoE CREDITS).
Time of Outgoing Connections	Current total time in seconds for outgoing connections until now during MEASURE TIME (SEC) .

Table 4-1: Fields in the **MONITORING AND DEBUGGING** → *xDSL CREDITS* → **PPPoE CREDITS** menu

**Hinweis**

Please note that this menu is only a display of the configured values and values achieved.

Use the **CREDITS** → **xDSL CREDITS** → **PPPoE CREDITS** menu to configure the limits.

5 Interfaces Submenu

The **INTERFACES** submenu is described below.

The **MONITORING AND DEBUGGING** → **INTERFACES** menu shows the current values and activities of the **R Series** gateway interfaces.

The values for two interfaces are displayed side by side:

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH			
[MONITOR] [INTERFACE]: Interface Monitoring		MyGateway			
Interface Name	en0-1			PROVIDER	
Operational Status	up			up	
	total	per second	total	per second	
Received Packets	785	2	199	1	
Received Octets	130353	128	13429	86	
Received Errors	0		0		
Transmit Packets	295	2	89	1	
Transmit Octets	22358	169	7401	84	
Transmit Errors	0		0		
Active Connections	N/A		2		
Duration	N/A		734		
EXIT	EXTENDED			EXTENDED	

The display is updated at 1-second intervals.

Select the interface to be displayed under **INTERFACE NAME**.

The menu contains the following fields:

Field	Description
Interface Name	For selecting the interface whose data are to be displayed.
Operational Status	Shows the operational status of the selected interface.
Received Packets	Shows the total number of packets received and the number per second.

Field	Description
Received Octets	Shows the total number of octets received and the number per second.
Received Errors	Shows the total number of errors received.
Transmit Packets	Shows the total number of packets sent and the number per second.
Transmit Octets	Shows the total number of octets sent and the number per second.
Transmit Errors	Shows the total number of errors sent.
Active Connections	Shows the number of currently active connections over the selected interface. <ul style="list-style-type: none"> ■ ISDN: Total number of active B-channels. ■ DSL: <i>N/A</i> or <i>1</i> <i>N/A</i> is only shown for IPSec and Ethernet interfaces.
Duration	Shows the total duration of the logical connections over the selected interface.

Table 5-1: **INTERFACES** menu fields

Select **EXTENDED** to display additional information. You can then change the status of the interface under **OPERATION** (possible values: *set interface down*, *set interface up*, *reset*) and confirm your input with **START OPERATION**.


```
R232bw Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR] [INTERFACE] [EXTENDED]: Extended Interface                MyGateway
                               Monitoring (en1-0)
```

```
OperSt InPkts    InOctets    OutPkts    OutOctets    ActCalls    IP-Address
up      1158        90041       851         70922        2           213.6.255.218
```

Calls:

```
Stk Ch  Dir Remote Number  Local DspItem  RPckts  TPckts  Charge  Duration
0   B1  out 00101901929 4210  PPP    21     15     53
0   B2  out 00101901929 4210  PPP    8       3     50
```

IP Sessions:

```
Sourceaddress Dest-Address Prot SrcPrt DstPrt SrcIf DstIf InPkt OutPkt
```

```
EXIT      Operation >reset                START OPERATION
```


6 Messages Submenu

The **MESSAGES** submenu is described below.

The **MONITORING AND DEBUGGING** → **MESSAGES** menu lists all the syslog messages (recorded as per the configuration in the **SYSTEM** menu) with their subsystem (**SUBJ**) and priority (**LEV**).

```

R232bw Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR] [MESSAGE]: Syslog Messages                MyGateway

Subj  Lev Message

INET  INF NAT: denied incoming session in ifc 10001 prot 6 213.6.125.
PPP   DEB Layer 1 protocol hdlc, 64000 bit/sec
PPP   DEB ISP-ISDN: set ifSpeed, number of active connections 1/1/1
PPP   DEB ISP-ISDN: set ifSpeed, number of active connections 2/2/2
INET  INF NAT: denied incoming session on ifc 10001 prot 6 213.6.125.
INET  INF NAT: denied incoming session on ifc 10001 prot 6 213.6.125.
INET  INF refuse from if 100 prot 17 192.168.0.5:137->192.168.0.255.
INET  INF refuse from if 100 prot 17 192.168.0.37:138->192.168.0.255.
ISDN  DEB stack 0: deactivate
ISDN  ERR stack 0: MDL_ERROR I
ACCT  INF ISDN: 01.01.1970,03:26:38,03:27:23,42,334,247,11,9,,0,4711,
ACCT  INF ISDN: 01.01.1970,03:26:42,03:27:23,83,143,93,4,3,,0,4711,
ISDN  ERR stack 0: MDL_ERROR G

EXIT      RESET

```

Pressing the **RESET** button deletes all the existing entries.

Additional information for a certain message can be obtained by selecting an entry in the list and pressing **Return**.

A view opens with details of the selected list entry.

```
R232bw Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR][MESSAGE]: Syslog Messages (full view)                MyGateway

Subject      INET
Level        INFO
Timestamp    Thu Jan 15  6:18:20

Message
  refuse from if 100 prot 17 192.168.0.8:137->192.168.0.255:137 (RI 1
  FI 1)

EXIT
```

This shows the complete text of the syslog message (**MESSAGE**), its subsystem (**SUBJECT**) and priority (**LEVEL**). The date and time (**TIMESTAMP**) the message was created are also shown.

7 TCP/IP Submenu

The *TCP/IP* submenu is described below.

The **MONITORING AND DEBUGGING** → **TCP/IP** menu shows the statistics for connections with the >> ICMP, >> IP, UDP and TCP protocols.

IP STATISTICS is shown when the menu is opened:

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [IP]: IP Statistics		MyGateway	
InReceives	3912	OutNoRoutes	0
InHdrErrors	0	ReasmTimeout	500
InAddrErrors	0	ReasmReqds	0
ForwDatagrams	0	ReasmOKs	0
InUnknownProtos	0	ReasmFails	0
InDiscards	0	FragOKs	0
InDelivers	3321	FragFails	0
OutRequests	9	FragCreates	0
OutDiscards	0	RoutingDiscards	0
ICMP Statistics	TCP Statistics	UDP Statistics	
EXIT			
I (C)MP	(I)P	(U)DP	(T)CP

The display is updated at 1-second intervals.

The meaning of the MIB variables can be found in the **MIB Reference** in the IP group of the ip, icpm, tcp and udp tables. (These are located in the download section of bintec products at www.funkwerk-ec.com.)

You can obtain the respective list either by selecting the **ICMP STATISTICS**, **IP STATISTICS**, **UDP STATISTICS** and **TCP STATISTICS** menus, or by pressing the buttons indicated in the help line at the bottom edge of the window:

- Select **C** to display statistical data for ICMP.
- Select **I** to display statistical data for IP.
- Select **U** to display statistical data for UDP.
- Select **T** to display statistical data for TCP.

8 Submenu IPsec

The **MONITORING AND DEBUGGING → IPSEC** submenu provides access to the following submenus:

- **GLOBAL STATISTICS**
- **IKE SECURITY ASSOCIATIONS**
- **IPSEC SA BUNDLES**

Here you can show the global IPsec statistics, IKE Security Associations and IPsec Security Associations Bundles. The menu accordingly has three submenus, which are described in the following chapters.

8.1 Submenu Global Statistics

All the fields in the **MONITORING AND DEBUGGING → IPSEC → GLOBAL STATISTICS** menu are read only, i.e. you can show the statistics here, but cannot make any changes to the configuration.

The menu has the following structure (the values shown are only examples):

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [IPSEC] [STATS]: IPsec Monitoring -		MyGateway	
Global Statistics			
Peers	Up : 10 /16	Dormant: 6	Blocked: 0
SAs	Phase 1: 10 /30	Phase 2: 10 /30	
Packets	In	Out	
	Total : 850	600	
	Passed : 50	50	
	Dropped: 30	40	
	Protect: 770	510	
	Errors : 0	0	
EXIT			

The display is updated every 1 second.

The meaning of the fields and their values is given below:

Field	Description
Peers Up	Shows the number of active peers (OPERSTATUS = <i>up</i>) from the number of configured peers.
Peers Dormant	Shows the number of inactive peers (OPERSTATUS = <i>dormant</i>).
Peers Blocked	Shows the number of blocked peers (OPERSTATUS = <i>blocked</i>).
SAs Phase 1	Shows the number of active phase 1 SAs (STATE = <i>established</i>) from the total number of phase 1 SAs. (See “Submenu IKE Security Associations” on page 24.)

Field	Description
SAs Phase 2	Shows the number of active phase 2 SAs (STATE = established) from the total number of phase 2 SAs. (See “Submenu IPSec SA Bundles” on page 26.)
Packets In/Out	Shows the number of packets that have been processed in a certain way: <ul style="list-style-type: none"> ■ <i>Total</i>: The total number of processed packets. ■ <i>Passed</i>: The number of packets forwarded in plain language. ■ <i>Dropped</i>: The number of packets discarded. ■ <i>Protect</i>: The number of packets protected by IPSec. ■ <i>Errors</i>: The number of packets in which errors occurred during processing.

Table 8-1: **MONITORING AND DEBUGGING → IPSEC → GLOBAL STATISTICS**

8.2 Submenu IKE Security Associations

The next monitoring submenu (**MONITORING AND DEBUGGING → IPSEC → IKE SECURITY ASSOCIATIONS**) shows statistics for the IKE SAs. The menu has the following structure (the values shown are only examples):

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [IPSEC] [IKE SAS]: IPsec Monitoring -		MyGateway	
IKE SAs			
T: xch.-Type: B=Base I=Id-prot. O=auth-Only A=Aggressive			
A: Auth-Meth: P=P-S-Key D=DSA-sign. S=RSA-sign. E=RSA-encryption			
R: Role : I=Initiator R=Responder			
S: State : N=Negotiate E=Establ. D=Delete W=Waiting-for-remove			
E: Enc.-Alg : d=DES D=3ES B=Blowfish C=Cast R=Rijndael T=Twofish			
H: Hash-Alg : M=MD5 S=SHA1 T=Tiger R=Ripemd160			
type 'h' to toggle this help			
Remote ID	Remote IP	Local ID	TARSEH
C=DE,O=TC TrustCenter AG,OU=TC	10.1.1.2	C=DE,O=TC Trust	ISREBM
DELETE	EXIT		

The meaning of the characters in the **TARSEH** column (last column on the right below the help section of the menu window) is explained at the top of the menu window; the example shown above therefore has the following meaning:

Field	Description
Remote ID	Shows the ID of the remote peer. Authentication in the example uses certificates; the remote ID thus consists of quotes from the peer's certificate.
Remote IP	Shows the official IP address of the remote peer.

Field	Description
Local ID	Shows the local ID. This ID also consists of quotes from the certificate used for authentication.
TARSEH	Shows the combination of the parameters explained in the help section of the menu window. The example ISREBM thus means: <ul style="list-style-type: none">■ Exchange type: id_protect (<i>I</i>)■ Authentication method: RSA signatures (<i>S</i>)■ Role: Responder (<i>R</i>)■ Status: Established (<i>E</i>)■ Encryption algorithm: Blowfish (<i>B</i>)■ Hash algorithm: MD5 (<i>M</i>)

Table 8-2: **MONITORING AND DEBUGGING → IPSEC → IKE SECURITY ASSOCIATIONS**

You can toggle the help sector by pressing the **h** button.

8.3 Submenu IPsec SA Bundles

The next submenu (**MONITORING AND DEBUGGING** → **IPSEC** → **IPSEC SA BUNDLES**) shows the IPsec Security Associations negotiated in IPsec phase 2. The menu has the following structure:

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH						
[MONITOR] [IPSEC] [IPSEC BUNDLES]:		IPsec Monitoring -					MyGateway	
IPsec SA Bundles								
Local	LPort	Pto	Remote	RPort	CEA	In	Out	
192.168.1.9/24	0	all	192.168.2.0/24	0	-E-	888	1232	
DELETE		EXIT						

The fields have the following meaning:

Field	Description
Local	Shows the local ►► IP address , the address range or the network protected by this SA.
LPort	Shows the local ►► port number or port number range protected by this SA.
Pto	Shows the layer 4 protocol of the data traffic protected by this SA (0 = any).
Remote	Shows the remote IP address, the address range or the network protected by this SA.
RPort	Shows the remote port number or port number range protected by this SA.

Field	Description
CEA	Shows which IPsec protocols are used for the SA. <ul style="list-style-type: none">■ C = IPComp■ E = ESP■ A = AH.
In	Shows the number of bytes received via this SA.
Out	Shows the number of bytes sent via this SA.

Table 8-3: **MONITORING AND DEBUGGING** → **IPSEC** → **IPSEC SA BUNDLES**

Note that the display of the tagged entry is not updated.

9 ATM/OAM Submenu

The *ATM/OAM* submenu is described below.

The **MONITORING AND DEBUGGING** → *ATM/OAM* menu shows statistics values for the ATM interface.

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [ATM]: ATM Interface Monitoring		MyGateway	
ATM Interface	ar7sar-3		
Operational Status	up		
RX Rate (b/s)	1184000	TX Rate (b/s)	160000
Received Octets	0	Transmit Octets	0
Received Errors	0	Transmit Errors	0
		Transmit Discards	0
OAM F4 (Virtual path level) >			
OAM F5 (Virtual channel level) >			
EXIT			

The display is updated at 1-second intervals.

The menu contains the following fields:

Field	Description
ATM Interface	Name of ATM interface.
Operational Status	Shows the operational status of the ATM interface. Possible values: <i>up</i> , <i>down</i> .
RX Rate (b/s)	Shows the data rate in the receive direction in bits per second.
Received Octets	Shows the total number of octets received.

Field	Description
Received Errors	Shows the total number of errors in the receive direction.
TX Rate (b/s)	Shows the data rate in the transmit direction in bits per second.
Transmit Octets	Shows the total number of octets sent.
Transmit Errors	Shows the total number of errors in the transmit direction.
Transmit Discards	Shows the number of packets discarded in the transmit direction.

Table 9-1: **ATM/OAM** menu fields

9.1 OAM F4 (Virtual path level) Submenu

The **OAM F4 (VIRTUAL PATH LEVEL)** submenu is described below.

The **MONITORING AND DEBUGGING → ATM/OAM → OAM F4 (VIRTUAL PATH LEVEL)** menu shows the OAM statistics for a virtual path (OAM level F4; OAM:

Operation, Administration and Maintenance; for more information see **ATM User Network Interface Specification** and **ITU I.160**).

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH		
[MONITOR] [ATM] [OAM F4]: OAM Interface Monitoring		MyGateway		
Virtual path connection (VPC)		Vpi:1		
Operational Status		end to end up		
F4 OAM flows	End to end		Segment	
	RX	TX	RX	TX
AIS	0	0	0	0
RDI	0	0	0	0
CC	0	0	0	0
Loopback	0	0	0	0
EXIT				

The menu contains the following fields:

Field	Description
Virtual path connection (VPC)	Selection of the VPI value of the connection over the virtual path.

Field	Description
Operational Status	<p>Shows the operational status of the VPC.</p> <p>Possible values:</p> <ul style="list-style-type: none">■ <i>end to end up</i>: The connection between the endpoints of the VPC is active.■ <i>end to end down</i>: The connection between the endpoints of the VPC is inactive.■ <i>local up end to end unknown</i>: The local endpoint is active. The status of the remote endpoint is unknown.■ <i>local down</i>: The local endpoint is inactive. The status of the remote endpoint is unknown.

Field	Description
End to end or Segment	<p>Indicates the number of received (RX) and transmitted (TX) monitoring and error alarm signals at the endpoints of the VPC (END TO END) or for the segment connection (segment = connection of the local endpoint to the next connection point) (SEGMENT):</p> <ul style="list-style-type: none"> ■ AIS: Number of AIS cells (Alarm Indication Signal) since the last change of the router's internal AIS status. Is sent as soon as a transmission error is detected or an error message is received from another unit in the transmission path. ■ RDI: Number of RDI cells (Remote Defect Indication) since the last change of the router's internal RDI status. Error alarm signal that is passed to all stations in the direction of data flow. ■ CC: Number of CC cells (Continuity Check) during the current CC activation sequence. ■ Loopback: Number of loopback cells within this sequence.

Table 9-2: **OAM F4 (VIRTUAL PATH LEVEL)** menu fields

9.2 OAM F5 (Virtual channel level) Submenu

The **OAM F5 (VIRTUAL CHANNEL LEVEL)** submenu is described below.

The **MONITORING AND DEBUGGING → AMT/OAM → OAM F5 (VIRTUAL CHANNEL LEVEL)** menu shows the OAM statistics for a virtual channel (OAM level F5; for

more information see **ATM User Network Interface Specification** and **ITU I.160**).

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH		
[MONITOR] [ATM] [OAM F5]: OAM Interface Monitoring		MyGateway		
Virtual channel connection (VCC) Vpi:1 Vci:32				
Operational Status end to end up				
F5 OAM flows	End to end		Segment	
	RX	TX	RX	TX
AIS	0	0	0	0
RDI	0	0	0	0
CC	0	0	0	0
Loopback	0	0	0	0
EXIT				

The menu contains the following fields:

Field	Description
Virtual channel connection (VCC)	Selection of the VPI/VCI combination for the connection over the virtual channel.

Field	Description
Operational Status	<p>Shows the operational status of the VCC.</p> <p>Possible values:</p> <ul style="list-style-type: none"><li>■ <i>end to end up</i>: The connection between the endpoints of the VCC is active.<li>■ <i>end to end down</i>:The connection between the endpoints of the VCC is inactive.<li>■ <i>local up end to end unknown</i>: The local endpoint is active. The status of the remote endpoint is unknown.<li>■ <i>local down</i>: The local endpoint is inactive. The status of the remote endpoint is unknown.

Field	Description
End to end or Segment	<p>Indicates the number of received (RX) and transmitted (TX) monitoring and error alarm signals at the endpoints of the VCC (END TO END) or for the segment connection (segment = connection of the local endpoint to the next connection point) (SEGMENT):</p> <ul style="list-style-type: none"> ■ AIS: Number of AIS cells (Alarm Indication Signal) since the last change of the router's internal AIS status. Is sent as soon as a transmission error is detected or an error message is received from another unit in the transmission path. ■ RDI: Number of RDI cells (Remote Defect Indication) since the last change of the router's internal RDI status. Error alarm signal that is passed to all stations in the direction of data flow. ■ CC: Number of CC cells (Continuity Check) during the current CC activation sequence. ■ Loopback: Number of loopback cells within this sequence.

Table 9-3: **OAM F5 (VIRTUAL CHANNEL LEVEL)** menu fields

10 ADSL Submenu

The **ADSL** submenu is described below.

The **MONITORING AND DEBUGGING** → **ADSL** menu shows connection parameters and information about the hardware used (**ATU-R**: ADSL Transceiver Unit Remote Terminal End, i.e. the local ADSL unit; **ATU-C**: ADSL Transceiver Unit Central Office End, i.e. the ADSL unit at the local exchange).

R232bw Setup Tool	Funkwerk Enterprise Communications GmbH		
[MONITOR] [ADSL]: ADSL monitoring	MyGateway		
Physical parameters	ATU-R	ATU-C	
Vendor ID		0x43545354	
Version number		0x01	
Current status			
Current output power	13	18	
Current noise margin	24	-	
Current attenuation	33	-	
Channel parameters			
Tx rate (kb/s)	160	1184	
ATU-R Performance parameters			
Framing (LOF)	0	Received blocks	0
Signal (LOS)	0	Transmitted blocks	0
Power (LPR)	0	Corrected blocks	0
Errored seconds (ES)	0	Uncorrect blocks	0
EXIT			

The menu contains the following fields:

Field	Description
Vendor ID	The ID of the equipment manufacturer.
Version Number	The manufacturer's version number, which is sent by the ATU as part of the initialization message.

Field	Description
Current status	<p>Current status of ATU-R or ATU-C.</p> <p>Possible values:</p> <ul style="list-style-type: none"> ■ <i>no defect</i>: The line is working correctly. ■ <i>loss of framing</i>: Error, as no valid frame has been received. ■ <i>loss of signal</i>: Error, as no signal is received. ■ <i>loss of power</i>: Error due to loss of power.
Current output power	The total output power sent by this ATU and measured during the last activation phase.
Current noise margin	The noise margin of the received signal measured by this ATU in dB.
Current attenuation	Line attenuation, i.e. measured difference between transmit and receive power.
Tx rate (kb/s)	Current data transmission rate in the transmit direction in kbits per second.
Framing (LOF)	Number of Loss of Framing errors since router reset.
Signal (LOS)	Number of Loss of Signal errors since router reset.
Power (LRP)	Number of Loss of Power errors since router reset.
Errored seconds (ES)	Number of 1-second intervals with 1 or more CRC, LOS or SEF (Severely Errored Frame) errors (Errored Seconds) since router reset.
Received blocks	Number of all received coded blocks since router reset.
Transmitted blocks	Number of all transmitted coded blocks since router reset.

Field	Description
Corrected blocks	Number of all blocks with corrected errors since router reset.
Uncorrect blocks	Number of all blocks with uncorrected errors since router reset.

Table 10-1: **ADSL** menu fields

11 IP QoS Submenu

The *IP QoS* submenu is described below.

The **MONITORING AND DEBUGGING** → **IP QoS** menu shows QoS-specific statistics information for interfaces which have been configured for Quality of Service. These values cannot be changed.

R232bw Setup Tool	Funkwerk Enterprise Communications GmbH
[MONITOR] [IP QoS]: IP QoS Interface Monitoring	MyGateway
Interface	ethoa50-0
Operational Status	up
Nominal Transmit Rate	2048000
Maximum Transmit Rate	192000
Received Packets	1075
Received Octets	66650
Transmit Packets	2334382
Transmit Octets	144731684
QoS Policy Statistics >	
EXIT	

The following values are shown:

Field	Description
Interface	Selection of the interface for which QoS has been configured and whose QoS statistics are to be displayed.
Operational Status	Shows the operational status of the selected interface.
Nominal Transmit Rate	The maximum overall data transmission rate in bits per second.

Field	Description
Maximum Transmit Rate	The maximum data rate specified for this interface in bits per second in the transmit direction (see User's Guide chapter QoS in the INTERFACES AND POLICIES → <Interface> → QoS SCHEDULING AND SHAPING submenu).
Received Packets	The number of packets received over the selected interface since the last change to the <i>up</i> status.
Received Octets	The number of octets received over the selected interface since the last change to the <i>up</i> status.
Transmit Packets	The number of packets sent over the selected interface since the last change to the <i>up</i> status.
Transmit Octets	The number of octets sent over the selected interface since the last change to the <i>up</i> status.

Table 11-1: **IP QoS** menu fields

11.1 QoS Policy Statistics Submenu

The **QoS POLICY STATISTICS** submenu is described below.

Opening the **MONITORING AND DEBUGGING** → **QoS POLICY STATISTICS** menu normally shows a view of the distribution of the whole bandwidth in the form of a bar graph.

The **RESET STATISTICS** button resets all values in the respective window to 0.

CLASSES

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH						
[MONITOR] [IP QoS] [STATISTICS]: QoS Class		MyGateway						
		Statistics (ethoa50-0)						
Class	Pkts	Send	Dropped	Queued	Octs	Send	Dropped	Queued
DEF	0	0	0	0	0	0	0	0
N 1	0	0	0	0	0	0	0	0
N 2	167550	355049	22	6702000	19172646	880		
N 3	292021	735122	405	11680840	39696588	16200		
HP	1969580	0	13	78783200	0	520		
EXIT		RESET STATISTICS						
(d)istribution		(c)lasses		(t)os		(i)nterface statistics		

The following values are shown:

Field	Description
Class	<p>The ID of the configured QoS packet class.</p> <p>The abbreviations in front of the entries have the following meaning:</p> <ul style="list-style-type: none"> ■ N = Normal ■ HP = High Priority ■ DEF = Default
Pkts	<p>Number of packets of this QoS packet class:</p> <ul style="list-style-type: none"> ■ <i>Send</i>: Packets sent ■ <i>Dropped</i>: Packets dropped ■ <i>Queued</i>: Packets in the queue

Field	Description
Octs	Number of octets of this QoS packet class: <ul style="list-style-type: none"> ■ <i>Send</i>: Octets sent ■ <i>Dropped</i>: Octets dropped ■ <i>Queued</i>: Octets in the queue

Table 11-2: **QoS POLICY STATISTICS** → **CLASSES** menu fields**TOS**

```

R232bw Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR] [IP QOS] [STATISTICS]: TOS Statistics                MyGateway
                               (ethoa50-0)

TOS OutPkts OutOctets InPkts InOctets PktsDropped OctetsDropped
00  0      0      0      0      0      0
01  0      0      1135  68100  0      0

EXIT                                RESET STATISTICS

(d)istribution  (c)lasses  (t)os  (i)nterface statistics

```

The following values are shown:

Field	Description
TOS	The value in the TOS field of the IP packet.
OutPkts	Number of packets sent with the value entered under TOS.
OutOctets	Number of octets sent with the value entered under TOS.

Field	Description
InPkts	Number of packets received with the value entered under TOS.
InOctets	Number of octets received with the value entered under TOS.
PktsDropped	Number of packets dropped with the value entered under TOS.
OctetsDropped	Number of octets dropped with the value entered under TOS.

Table 11-3: **QoS POLICY STATISTICS** → **TOS** menu fields**INTERFACE STATISTICS**

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [IP QoS] [STATISTICS]:		QoS Interface MyGateway	
Statistics (ethoa50-0)			
Transmit Packets	2469015		
Transmit Octets	98760600		
Queued Packets	417		
Queued Octets	16680		
Dropped Packets	1090901		
Dropped Octets	43636040		
EXIT		RESET STATISTICS	
(d)istribution	(c)lasses	(t)os	(i)nterface statistics

The following values are shown:

Field	Description
Transmit Packets	Number of packets sent over the selected interface.
Transmit Octets	Number of octets sent over the selected interface.

Field	Description
Queued Packets	Number of packets in the queue of the selected interface.
Queued Octets	Number of octets in the queue of the selected interface.
Dropped Packets	Number of packets dropped at this interface.
Dropped Octets	Number of octets dropped at this interface.

Table 11-4: **QoS POLICY STATISTICS** → **INTERFACE STATISTICS** menu fields

12 SSHD Submenu

The fields of the *SSH DAEMON* menu are described below.

In the **SECURITY → SSH DAEMON → MONITORING** menu you can view the SSH client connection that is set up.

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [SSHD]: SSH Daemon active Sessions		MyGateway	
User	IP-Address	State	Connect-Time
admin	192.168.1.1:2013	active	Thu Jan 1 4:51:07 2005
EXIT			

If you select the connection by pressing **Return**, the following details are shown:

R232bw Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [SSHD] [SESSIONS] [] [DETAILS]: SSH Daemon		MyGateway	
Session Details			
Account	admin		
Connection State	active		
Remote IP-Address	192.168.1.1:2013		
Negotiated Cipher	aes128-cbc		
Negotiated MAC	hmac-sha1		
Negotiated Compression	none		
Established Time	00:06:02		
Total Bytes IN	26616		
Total Bytes OUT	31180		
EXIT			

These details inform about the following values:

Field	Value
Account	The account used for the client's successful login.
Connection State	The connection state of this client.
Remote IP-Address	The IP address and port of this client.
Negotiated Cipher	The cipher negotiated with this client.
Negotiated MAC	The MAC (message authentication code) negotiated with this client.
Negotiated Compression	The compression algorithm negotiated with this client.
Established Time	Duration of the SSH connection.
Total Bytes IN	The number of bytes received from this client.
Total Bytes OUT	The number of bytes received from this client.

Table 12-1: Fields of the **MONITORING AND DEBUGGING** → **SSH DAEMON** → **EDIT** menu

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X xDSL Credits

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