



Quick Install Guide

All serial devices MDS92xAE-xxx
E1, G.703, X.21, V.35, V.36

Hyper Terminal or equal: 9600/8/N/1

Use a straight serial cable DB9.

On table top units just hit ENTER, on Rack Cards either <%SN> (SlotNumber) e.g. to select the LTU in slot 01, type %01.

To see which units in a rack are available, you can use the <ECHO> command. Each present unit will respond with its associated slot number (%SN). The response could be:
%01 %03 %08 %10 %11 %12

Each command must be terminated by a carriage return.

Go to Menu 3

Type <H> to get a list of all available commands

Use <M> to go back to main menu

```

HT_1 - HyperTerminal
Datei Bearbeiten Ansicht Anrufen Übertragung 2
BLACKBOX Tabletop Single E1/Nx64/FXx 120 Ohm
HW Rev. C2
SW Rev. 1.7.5.13
FW Rev. R1.7
Copyright (C) 2003 by BLACKBOX

----- Main Menu -----
1. Performance management (PM)
2. Fault and maintenance management (FMM)
3. Configuration management (CM)
5. Exit
-----

CO_MM>Select [1..5]: _
  
```

```

HT_1 - HyperTerminal
Datei Bearbeiten Ansicht Anrufen Übertragung 2
CO_CM>H

Type 'H <command>' to get additional help on <command>
CONFIG          Display local configuration
G704 [ON/OFF]   Set framed/transparent mode
CRC4DET [ON/OFF] Set CRC4 detection mode on/off
CRC4GEN [ON/OFF] Set CRC4 regeneration mode on/off
EBIT [ON/OFF]   Set automatic E-bit insertion on/off
AISGEN [ON/OFF] Set AIS generation on/off
AISDET [ON/OFF] Set AIS detection on/off
EXTCLK [ON/OFF] Set external clock mode on/off
PCM [30/31]     Set timeslot 16 processing enable/disable
SERVICE [E/N/M] Set interface service - E=E1 N=Nx64 M=multiservice

BITRATE [1..32] Set Nx64 payload data rate to Nx64 kbps
CLOCKMODE [0..1] Set Nx64 Rx clock mode - 0=external, 1=internal
CLOCKDIR [0..1] Set Nx64 clock direction - 0=codir, 1=contradir
CLOCKEDGE [0..1] Set Nx64 TX clock polarity - 0=normal, 1=inverted
AUTOLOOP [ON/OFF] Set automatic V.54 loop control on/off
SLOTUSAGE [ON/OFF] Set usage of timeslot 0 for Nx64 payload on/off
MASTER [ON/OFF] Set CO/CPE mode
PLL [ON/OFF]    Set PLL of channel A on/off
-- more --
AUTORESTART [ON/OFF] Set xDSL autorestart on/off
BASERATE [3..32] Set base data rate to (Nx64 + 8) kbps
ADAPTIVE [ON/OFF] Set rate adaption on/off
SETADDR [00..C7] Set virtual address of unit
SCALE [-16.0..2.0] Set output TX power offset from ITU-T value in dBm
ANNEX [A/B/AB] Set ITU-T G.991.2 Annex type [A, B or automatic]
DEFAULT [0..5] Set default configuration
ID [Text]      Input ID string (8 characters) of Main Menu
CONNECT [N]    Connect virtual terminal to remote unit N=[R/1..14]
DISCONNECT     Disconnect virtual terminal
M              Return to Main Menu
H              Show available commands
-----
CO_CM>_
  
```

Help is available for each command, just type the letter "H" and the command.

For example:
<H MASTER>

<H ANNEX>

<H DEFAULT>

```

HT_1 - HyperTerminal
Datei Bearbeiten Ansicht Anrufen Übertragung 2
Configuration management activated
Enter <M> to return to MAIN, or <H> for HELP information

CP_CM>H MASTER
This command selects the xDSL master/slave mode.
One unit must be configured as master, the other as slave.

CP_CM>H ANNEX
This command sets ITU-T G.991.2 Annex type.
Parameter:
A - ITU-T G.991.2 Annex A
B - ITU-T G.991.2 Annex B
AB - Autodetection of Annex type

CP_CM>H DEFAULT
This command sets one available default configuration.
There are two default configurations for multipoint mode,
and six for all other modes.

CP_CM>

```

Verbunden 00:37:22 Auto-Erkenn. 9600 8-N-1 RF GROSS NUM Aufzeichnen Druckerecho

There are different default configurations pre saved in the EEPROM.

Use <DEFAULT 0>
To get E1/G.703 in transparent mode as MASTER

```

HT_1 - HyperTerminal
Datei Bearbeiten Ansicht Anrufen Übertragung 2
CO_CM>DEFAULT 0
-----
Local Configuration
-----
Service      : E1 only
2 Mbit/s
Framing      : Transparent      E-Bit Insertion : --
CRC4 Detection : --                AIS Detection   : on
CRC4 Generation : --                AIS Generation  : on
External Clock : off

Nx64
Interface Type : --                Clock Mode      : --
Bitrate       : --                Clock Direction : --
Use Timeslot 0 : --                Clock Edge      : --
V.54 Loops    : --

xDSL
Mode         : Normal                Rate Adaption   : off
Master/Slave : Master                    Autorestart     : on
Base Rate    : 32                    Annex           : B
Power Scale  : Offset = +00.00 dB    PLL             : off
-----
CO_CM>

```

Verbunden 00:29:29 Auto-Erkenn. 9600 8-N-1 RF GROSS NUM Aufzeichnen Druckerecho

<DEFAULT 1>

To get E1/G.704 in framed mode as MASTER

```

HT_1 - HyperTerminal
Datei Bearbeiten Ansicht Anrufen Übertragung 2
CO_CM>DEFAULT 1
-----
Local Configuration
-----
Service      : E1 only
2 Mbit/s
Framing      : ITU-T G.704      E-Bit Insertion : --
-----
CRC4 Detection : on           AIS Detection  : on
CRC4 Generation : off        AIS Generation : on
External Clock : off          PCM Mode      : PCM31
Nx64
Interface Type : --           Clock Mode     : --
Bitrate       : --           Clock Direction : --
Use Timeslot 0 : --           Clock Edge    : --
V.54 Loops    : --
xDSL
Mode          : Normal       Rate Adaption  : off
Master/Slave  : Master      Autorestart    : on
Base Rate     : 32          Annex         : B
Power Scale   : Offset = +00.00 dB  PLL           : off
-----
-- more --
Voice
Voice Channels : 0
TS Configuration
-----
| TS0 | E1 |
| 0   | 01 .. 31 |
-----
CO_CM>_

```

<DEFAULT 2>

To get E1/G.704 in framed mode as MASTER with CRC4 generation

```

HT_1 - HyperTerminal
Datei Bearbeiten Ansicht Anrufen Übertragung 2
CO_CM>DEFAULT 2
-----
Local Configuration
-----
Service      : E1 only
2 Mbit/s
Framing      : ITU-T G.704      E-Bit Insertion : on
-----
CRC4 Detection : on           AIS Detection  : on
CRC4 Generation : on        AIS Generation : on
External Clock : off          PCM Mode      : PCM31
Nx64
Interface Type : --           Clock Mode     : --
Bitrate       : --           Clock Direction : --
Use Timeslot 0 : --           Clock Edge    : --
V.54 Loops    : --
xDSL
Mode          : Normal       Rate Adaption  : off
Master/Slave  : Master      Autorestart    : on
Base Rate     : 32          Annex         : B
Power Scale   : Offset = +00.00 dB  PLL           : off
-----
-- more --
Voice
Voice Channels : 0
TS Configuration
-----
| TS0 | E1 |
| 0   | 01 .. 31 |
-----
CO_CM>_

```

Use <DEFAULT 3>
To get E1/G.703 in
transparent mode as SLAVE

```

HT_1 - HyperTerminal
Datei Bearbeiten Ansicht Anrufen Übertragung 2
CP_CM>DEFAULT 3
-----
Local Configuration
-----
Service      : E1 only
2 Mbit/s
Framing      : Transparent      E-Bit Insertion : --
CRC4 Detection : --              AIS Detection  : on
CRC4 Generation : --              AIS Generation  : on
External Clock : off

Nx64
Interface Type : --              Clock Mode      : --
Bitrate        : --              Clock Direction : --
Use Timeslot 0 : --              Clock Edge      : --
V.54 Loops     : --

xDSL
Mode          : Normal          Rate Adaption   : on
Master/Slave  : Slave          Autorestart     : on
Base Rate     : 03-32          Annex          : B
Power Scale   : Offset = +00.00 dB

CP_CM>
-----
Verbunden 00:37:44      Auto-Erkenn.  9600 8-N-1  RF  GROSS  NUM  Aufzeichnen  Druckerecho

```

<DEFAULT 4>
To get E1/G.704 in framed
mode as SLAVE

```

HT_1 - HyperTerminal
Datei Bearbeiten Ansicht Anrufen Übertragung 2
CP_CM>DEFAULT 4
-----
Local Configuration
-----
Service      : E1 only
2 Mbit/s
Framing      : ITU-T G.704      E-Bit Insertion : --
CRC4 Detection : on              AIS Detection   : on
CRC4 Generation : off             AIS Generation  : on
External Clock : off              PCM Mode       : PCM31

Nx64
Interface Type : --              Clock Mode      : --
Bitrate        : --              Clock Direction : --
Use Timeslot 0 : --              Clock Edge      : --
V.54 Loops     : --

xDSL
Mode          : Normal          Rate Adaption   : on
Master/Slave  : Slave          Autorestart     : on
Base Rate     : 03-32          Annex          : B
Power Scale   : Offset = +00.00 dB

-- more --
Voice
Voice Channels : 0

CP_CM>
-----
Verbunden 00:00:28      Auto-Erkenn.  9600 8-N-1  RF  GROSS  NUM  Aufzeichnen  Druckerecho

```

<DEFAULT 5>

To get E1/G.704 in framed mode as SLAVE with CRC4 generation

```

HT_1 - HyperTerminal
Datei Bearbeiten Ansicht Anrufen Übertragung 2
CP_CM>DEFAULT 5

Local Configuration
-----
Service           : E1 only
2 Mbit/s
Framing           : ITU-T G.704
CRC4 Detection    : on
CRC4 Generation   : on
External Clock    : off
Nx64
Interface Type    : --
Bitrate           : --
Use Timeslot 0    : --
V.54 Loops       : --
xDSL
Mode              : Normal
Master/Slave      : Slave
Base Rate         : 03-32
Power Scale       : Offset = +00.00 dB
E-Bit Insertion   : on
AIS Detection     : on
AIS Generation    : on
PCM Mode          : PCM31
Clock Mode        : --
Clock Direction   : --
Clock Edge        : --
Rate Adaption     : on
Autorestart       : on
Annex             : B
-----
-- more --
Voice
Voice Channels    : 0
CP_CM>_

```

Verbunden 00:02:07 Auto-Erkenn. 9600 8-N-1 RF GROSS NUM Aufzeichnen Druckerrecht

For a typical configuration set one unit to "MASTER" (CO) the other to "SLAVE" (CPE).

Command: "MASTER ON" or "MASTER OFF"

For Europe use "ANNEX B" for USA "ANNEX A".

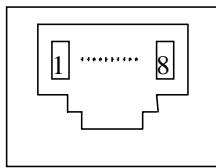
For a remote restart use in FMM (2) menu the command RESET

To connect to the remote (SLAVE) device use in menu Configuration Management (3) the command "CONNECT R" and you will get displayed the Slave

To connect to a repeater, if there is one available, use the numbers "1 to 8" instead of "R"

Connectors Description

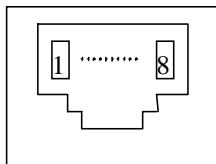
xDSL Connector (MDS923C-V35X21 and MDS920C-2E1)



Front View
RJ45-8

Pin	Signal	Description
1	TXB.a	4-wire Tx Loop B, Tip
2	TXB.b	4-wire Tx Loop B, Ring
3	TXA.a	4-wire Tx Loop A, Tip
4	LA.a	Loop A, Tip / 4-wire Rx Loop A, Tip
5	LA.b	Loop A, Ring / 4-wire Rx Loop A, Ring
6	TXA.b	4-wire Tx Loop A, Ring
7	LB.a	Loop B, Tip / 4-wire Rx Loop B, Tip
8	LB.b	Loop B, Ring / 4-wire Rx Loop B, Ring

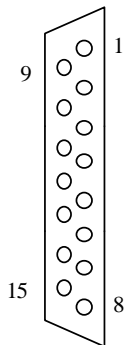
xDSL Connector (MDS92xAE-xxx)



Front View
RJ45-8

Pin	Signal	Description
1	NC	Not used
2	Shield	DSL cable shield
3	TXA.a	Loop B, Tip (C-side)
4	LA.a	Loop A, Tip (N-side)
5	LA.b	Loop A, Ring (N-side)
6	TXA.b	Loop B, Ring (C-side)
7	Shield	DSL cable shield
8	NC	Not used

E1 120 Ohm Connector



Pin	Signal	Description
1	RX1a	E1 120Ω Output 1 (wire A)
2	FPE	Functional Protective Earth (cable shield RX1)
3	TX1a	E1 120Ω Input 1 (wire A)
4	FPE	Functional Protective Earth (cable shield TX1)
5	FPE	Functional Protective Earth (cable shield TX2)
6	TX2a	E1 120Ω Output 2 (wire A)
7	FPE	Functional Protective Earth (cable shield RX2)
8	RX2a	E1 120Ω Input 2 (wire A)
9	RX1b	E1 120Ω Output 1 (wire B)
10	NC	-
11	TX1b	E1 120Ω Input 1 (wire B)
12	NC	-
13	TX2b	E1 120Ω Output 2 (wire B)
14	NC	-
15	RX2b	E1 120Ω Input 2 (wire B)

E1 75 Ohm In / Out Connectors

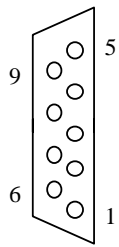
Type: BNC 75 Ω

Optionally equipped for E1 interface with 75 Ω

V.35 DCE Connector

Pin	V.24 (V.35/V.36)			X.21		Direction
	ITU-T #	Description	Name	Description	Name	
1	-			Shield		
7	102	Signal Gnd	SG	Signal Gnd	G	
2	103a	Transmit Data (A)	TD(A)	Transmit (A)	Ta	To DCE
14	103b	Transmit Data (B)	TD(B)	Transmit (B)	Tb	To DCE
3	104a	Receive Data (A)	RD(A)	Receive (A)	Ra	To DTE
16	104b	Receive Data (B)	RD(B)	Receive (B)	Rb	To DTE
4	105a	Request To Send (A)	RTS(A)	Control (A)	Ca	To DCE
19	105b	Request To Send (B)	RTS(B)	Control (B)	Cb	To DCE
5	106a	Clear To Send (A)	CTS(A)	Indication (A)	Ia	To DTE
13	106b	Clear To Send (B)	CTS(B)	Indication (B)	Ib	To DTE
6	107a	Data Set Ready (A)	DSR(A)			To DTE
22	107b	Data Set Ready (B)	DSR(B)			To DTE
20	108a	Data Terminal Ready (A)	DTR(A)			To DCE
23	108b	Data Terminal Ready (B)	DTR(B)			To DCE
8	109a	Data Carrier Detect (A)	DCD(A)			To DTE
10	109b	Data Carrier Detect (B)	DCD(B)			To DTE
24	113a	Terminal Transmit Clock (A)	TTC(A)	DTE Signal Element Timing (A)	Xa	To DCE
11	113b	Terminal Transmit Clock (B)	TTC(B)	DTE Signal Element Timing (B)	Xb	To DCE
15	114a	Transmit Clock (A)	TC(A)			To DTE
12	114b	Transmit Clock (B)	TC(B)			To DTE
17	115a	Receive Clock (A)	RC(A)	Signal Element Timing (A)	Sa	To DTE
9	115b	Receive Clock (B)	RC(B)	Signal Element Timing (B)	Sb	To DTE
21	140	Remote Loopback	RLB			To DCE
18	141	Local Loopback	LLB			To DCE
25	142	Test Mode	TM			To DTE

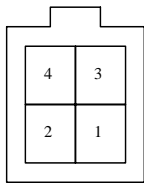
Monitor Interface



- on NTU only

Pin	Signal	Description
1	FPE	Functional Protective Earth
2	TXD	EIA-232 Transmit Data
3	RXD	EIA-232 Receive Data
4	ALACOM	Common Contact*
5	SGND	EIA-232 Signal Ground
6	ALMAJ_NC	Major Alarm Contact, normally closed*
7	ALMAJ_NO	Major Alarm Contact, normally open*
8	ALMIN_NC	Minor Alarm Contact, normally closed*
9	ALMIN_NO	Minor Alarm Contact, normally open*

Power Interface (MDS921AE-E1 and MDS923AE-V35X21)



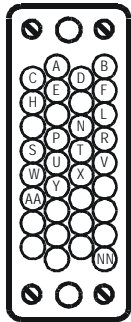
Pin	Signal	Description
1	-MainsPWR	Negative power supply terminal for mains adapter
2	NC	-
3	-BatPWR	Negative terminal for battery power supply (fused)
4	+PWR	Positive power supply terminal

Molex Mini-Fit, 4-pin

Nx64 Cable (optional equipment)

V.35 DCE (DCE35-0005)

Connect to a DTE device



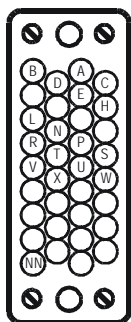
female

V.35/ISO 2593
34 Pin Connector

#	MRAC-34, female (a/b)	DB25, male (a/b)
FGND	A	1
SGND	B	7
103	P/S	2/14
104	R/T	3/16
105	C	4
106	D	5
107	E	6
108	H	20
109	F	8
113	U/W	24/11
114	Y/AA	15/12
115	V/X	17/9
140	N	21
141	L	18
142	NN	25

V.35 DTE (DCE35-0005)

Connect to a DCE device



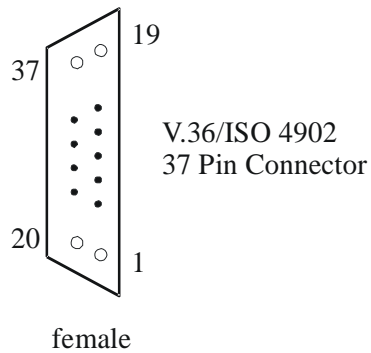
male

V.35/ISO 2593
34 Pin Connector

#	MRAC-34, male (a/b)	DB25, male (a/b)
FGND	A	1
SGND	B	7
103	P/S	3/16
104	R/T	2/14
105	C	5
106	D	4
107	E	20
108	H	6
109	-	-
113	U/W	17/9
114	-	-
115	V/X	24/11

V.36/RS449 DCE (DCE36-0005)

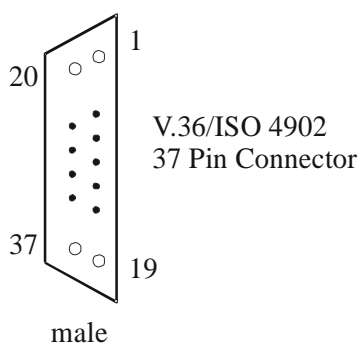
Connect to a DTE device



#	DB37, female (a/b)	DB25, male (a/b)
FGND	1	1
SGND	19	7
SGND(a)	37	7
SGND(b)	20	7
103	4/22	2/14
104	6/24	3/16
105	7/25	4/19
106	9/27	5/13
107	11/29	6/22
108	12/30	20/23
109	13/31	8/10
113	17/35	24/11
114	5/23	15/12
115	8/26	17/9
140	14	21
141	10	18
142	18	25

V.36/RS449 DTE (DTE36-0005)

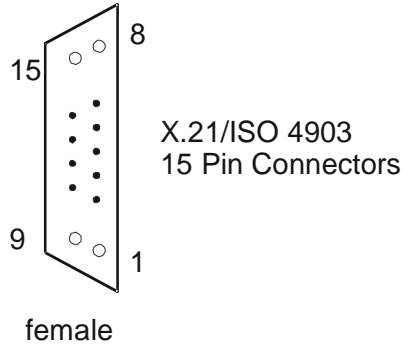
Connect to a DCE device



#	DB37, male (a/b)	DB25, male (a/b)
FGND	1	1
SGND	19	7
SGND(a)	37	7
SGND(b)	20	7
103	4/22	3/16
104	6/24	2/14
105	7/25	5/13
106	9/27	4/19
107	11/29	20/23
108	12/30	6/22
113	17/35	17/9
115	8/26	24/11

X.21 DCE (DCE21-0005)

Connect to a DTE device

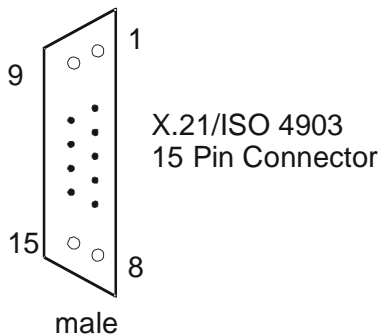


#	DB15, female (a/b)	DB25, male (a/b)
FGND	1	1
G	8	7
S	6/13	17/9
R	4/11	3/16
T	2/9	2/14
C	3/10	4/19
I	5/12	5/13
X	7/14	24/11

Note: join together pins 22&23 and 6&20 at DB-25 side

X.21 DTE (DTE21-0005)

Connect to a DCE device



#	DB15, male (a/b)	DB25, male (a/b)
FGND	1	1
G	8	7
S	6/13	24/11
R	4/11	2/14
T	2/9	3/16
C	3/10	5/13
I	5/12	4/19
X	7/14	17/9

Note: join together pins 22&23 and 6&20 at DB-25 side