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1. Introduction

Congratulations! You have just purchased the Sportster ISDN TA Ext.. Since 1976, U.S. Robotics has grown to become a key manufacturer and developer of information access technology. U.S. Robotics' advanced technology allows you to use your faxmodem to open up a new world of information access.

As an innovator in the data communications field, U.S. Robotics has a history of bringing the latest technology to market at an affordable price.


1.1. Product description

Sportster ISDN TA Ext. is an ISDN terminal adapter allowing ISDN access directly from your PC. It allows access to Internet and online services and is suitable for remote LAN access. The Sportster ISDN TA Ext. is like the digital equivalent of an analogue modem.

You need:

- an ISDN Basic Rate Interface (BRI)
- a PC with online software for a modem

The serial port of the PC should be capable of a data rate of up to 115.2kbps. This might require an additional high speed serial card.
1.2. **Internet Access**

There are two ways to access the Internet via ISDN:
- by synchronous PPP
- by bit rate adaptation V.120
- by using X.75

It depends on the access facilities of your Internet service provider (ISP) or Point-of-presence (POP) which one you may use.

1.3. **Remote LAN Access**

To access a LAN remotely via ISDN you have to choose the appropriate protocol that is used by the ISDN router on the LAN.

1.4. **CE Mark**

1.4.1. Approval

The Sportster ISDN TA Ext. has Pan-European approval.

The approval number is CE 0188 X.

1.4.2. Electromagnetic Compatibility

This device complies with the following standards in accordance with the European Directives 91/263/EEC and 89/336/EEC, when mounted inside a host computer with it’s bracket screwed to the computer chassis.

- Immunity EN 50082-1 06/92
- Emission EN 55022 class B 08/87

1.4.3. Safety

This device complies with the following standard in accordance with the European Directives 91/263/EEC and 73/23/EEC:

- EN 60950/A3 10/95
2. Installation

2.1. Contents

This packet contains the following items:
- Sportster ISDN Terminal Adapter External
- Power Supply Unit (PSU)
- RJ45/RJ45 ISDN cable
- V.24 DTE interface Serial cable
- User manual
- Installation software

2.2. Installation procedure

- Connect the serial port of the Sportster ISDN TA Ext. to the serial port (COM Port) of the PC.
- Connect the ISDN port of the Sportster ISDN TA Ext. to the basic rate interface (BRI) of the ISDN.
- Connect the power supply to the Sportster ISDN TA Ext. and plug it into the AC mains socket.

Refer to chapter 2.3 for the correct display during the power-up sequence.

The Sportster ISDN TA Ext. is now ready for use, please refer to the next chapter about using Applications Software on your PC.
2.3. **Displays and control elements**

At the back of the Sportster ISDN TA Ext. you will find the sockets for the external power supply and the ISDN cable.

![ISDN -TA](Image)

**Fig. 1: Back view of the Sportster ISDN TA External**

- **ISDN**: ISDN cable interface
- **PWR**: External power supply

6 LED lights on the front panel let you monitor the status of your Sportster ISDN TA Ext..

![ISDN -TA](Image)

**Fig. 2: Front view of the Sportster ISDN TA External**

The 4 LEDs on the right show the status of the lines to and from the PC:

- **T**: shows activity of transmitted data from the PC
- **R**: shows activity of receiving data from the ISDN line
- **DTR**: shows the status of the DTR line
- **DCD**: typically shows the connection to an access server.

LEDs labelled **L1** and **L2** show the overall status of the Sportster ISDN TA Ext. in coded form. The following list describes the status of L1 and L2 during an error free power-on sequence.

A complete list can be found in the appendix "LED displays".
2. Status

1. Power-On-Phase wait • • (about 2 sec)
2. Active phase ISDN OK Ω ⊗
3. Connected ISDN connection establ. ⊗ ⊗

LED Legend:
Ο On
• Continuously blinking
⊗ Off

2.4. Installing with Windows 3.x and Windows 95

2.4.1. Windows 95

1. Insert the disk labelled ‘Sportster ISDN TA ext. - Installation Windows95’
2. Click Start | Run from the main Windows 95 task bar.
3. Type A:\SETUP and click OK
3. To install follow the on-screen prompts.

2.4.2. Windows 3.x

The Sportster ISDN TA External will operate in Terminal mode without the need to load the Installation Program.

It is advised that you obtain better COM drivers to replace the standard Windows 3.x files from Microsoft. High Speed drivers can be installed with RVS-COM. During installation you will be prompted to install drivers for your operating system, select YES for Windows 3.x.
3. Using the Sportster ISDN TA Ext. with Application Software

To use the Sportster ISDN TA Ext. with different application software and access points you have to look for the following items:

- Usually you will have a contract with your ISDN service provider.
- From your provider you should have an ISDN access number to call (required when using application program)
- The Sportster ISDN TA Ext. recommended settings appropriate to your ISDN access point are described in the next few chapters.

3.1. Configuration for Internet

To access the Internet via ISDN you must have a contract with an Internet service provider (ISP) providing direct ISDN access. The following information is required, from your ISP, to configure the Sportster ISDN TA Ext.

- ISDN access number (required for the PC application software)
- Layer two protocol, usually the protocol-type PPP (to be configured in the Sportster ISDN TA Ext., AT command: “ATB3”; factory default)
- ISDN Access protocol (required for use with the PC system software or Internet access software)

To configure the Internet access software on the PC, you may need the TCP/IP address, user name, password etc. Please refer to the software manual.
3.2.  Configuration

The configuration of the Sportster ISDN TA Ext. can be dependent of the type of access the Internet provider is supporting. The following types of access are mostly used for public ISDN access.

- HDLC async to sync conversion
  This protocol has to be setup, if the service provider uses a access point where the protocol PPP is running.
- V.120
- X.75

Please get more information from your Internet provider if necessary.
4. Configuring the Sportster ISDN TA Ext.

The Sportster ISDN TA Ext. is delivered with a set of preset values. In the following section it will be shown how, by using the configuration commands, you can examine the configuration of the Sportster ISDN TA Ext. and if necessary change it. The values can be stored in non-volatile RAM; this means they'll remain unchanged even if the power supply is disconnected.

You can configure the Sportster ISDN TA Ext. in the following three ways:

- by using the AT command set, entered locally using a connected PC.
- by using Sportster ISDN TA Ext. configuration commands entered by the locally connected PC.
- by using Sportster ISDN TA Ext. configuration commands entered via the ISDN access (remote configuration).

Normally the configuration via AT commands is sufficient.

4.1. Configuration using AT commands

All parameters can be changed by using an extended AT command set described at the beginning of page 10. The factory setting is described (highlighted) in the parameter list shown in the chapter "AT command set".

If you want to change the factory default setting, please do the following steps:

- Connect the Sportster ISDN TA Ext. to the ISDN interface
- Using the Serial cable, connect the PC’s COM Port to the DTE interface of the Sportster ISDN TA Ext..
- Connect the power supply to the mains socket.
- Start a terminal emulation program (e.g. Windows - Terminal/HyperTerminal) on your PC.
• Set-up the parameter(s) of the Sportster ISDN TA Ext. from the terminal emulation program and save the parameter(s) using the AT command set.

_Example:_
To use X.75, enter the following commands:

- **ATB10</cr>** (set protocol to X.75)
- **AT&W</cr>** (save the new configuration)

• Leave your terminal emulation program and start your application program.

### 4.2. AT command set

With the exception of the command **A/** (Repeat command) all commands begin with the prefix **AT** and are terminated with </cr>. Corrections in a command line are done with </backspace>. A command line has a maximum of 80 characters, the command line is automatically cancelled by longer input. Blanks are ignored, capital/small letters are not significant.

Autobauding is carried out according to the profile configuration during the input of a "AT" sequence. The baudrate, databits and parity are recognised and adjusted automatically by the Sportster ISDN TA Ext.. The baudrate value is not adopted by the terminal profile. The commands **&Dx** and **&Kx** (see below) change the appropriate profile values.

The parameter settings of the Sportster ISDN TA Ext. obtained when using the AT commands, can be permanently stored using AT&W </enter> and are not lost by a reset, or by leaving the AT command mode.
To enter the AT command mode during an active data connection you must use the following sequence ("Escape sequence"):

- at least 1 sec pause
- `<+><+><+>`
- 1 sec pause

The time gap between all three plus signs must not exceed 1 sec. The escape sequence is transmitted transparent to the remote device.

**Supported commands:**

**A/** Repeat last command line

**ATA** Answer a call (call accept through DTE) by S0 = 0
Must be the last command in an AT command line.

**AT&A** Show all security entries for incoming call determination

**ATB x** Select B channel protocol `x` (see command port) with `x`

- `3` = HDLC asy (i.e. for Internet / RAS access)
- `10` = X.75 (i.e. for BBS access)
- `13` = V.120 (for CompuServe access)
- `22` = T.70-NL (for T-Online access)

**AT%B x** Set-up the local Baudrate to `x` bit/sec with `x`:

- `0` : automatic local baudrate detection enabled (autobauding)
- `1` : 1200 bit/s
- `2` : 2400 bit/s
- `3` : 4800 bit/s
- `4` : 9600 bit/s
- `5` : 19200 bit/s
- `6` : 38400 bit/s
- `7` : 57600 bit/s
- `8` : 115200 bit/s

*Must be the last command in an AT command line.*

**AT&C[0]** Sportster ISDN TA Ext. control line DCD is always ON

**&C1** DCD ON indicates ISDN connection is established and synchronised

**ATDnn** Dial the call number `nn` (D for Dial). The dial modifier "W", ">", "P", "T", ",", ",", "," can be freely inserted in the dial string; they have no influence on the dial procedure of the Sportster ISDN TA Ext..

*Must be the last command in AT command line.*

(Adding an “e” to the call number indicates that a
connection to the internal remote access of a Sportster ISDN TA Ext. shall be set-up.)

**ATDS=n**  Dial number *n* from stored telephone number list  
(*n* = 0..9)

**ATDL**  Recall last dialled number

**AT&D[0]**  DTE control line DTR setting is ignored  
**&D2**  DTE control line DTR is evaluated: dropping the DTR line by the DTE will disconnect an existing ISDN connection (default)

**ATE[0]**  No local echo

**E1**  Local echo on in command phase (default)

**AT&F**  Factory default will be loaded (for storing non volatile please use the command AT&W).

**ATH**  Disconnect ISDN data link.

**AT#H**  Show own MSN (multiple subscriber number) for data port

**ATI[0]**  Returns the "Modem"-type; name of the terminal adapter

**ATI1**  Returns the EPROM checksum  
**I2**  Returns "OK"  
**I3**  Returns version string: “SP5.10.00”  
**I4**  Returns product name: "Sportster ISDN TA Ext."

**I5**  Returns ISDN selected protocol: “0 - DSS1”  
**I6**  Returns copyright string: “Copyright U.S. Robotics Access Corp.”

**AT&K[0]**  No local flowcontrol between the DTE and Sportster ISDN TA Ext. is used  
**&K3**  Local flow control is set to hardware handshake RTS/CTS (default)  
**&K4**  Local flow control is set to software handshake XON/XOFF

**ATO**  Return to online data mode

**ATQ[0]**  Returns status - codes after command input (default)  
**Q1**  No status codes are returned

**AT&R[0]**  Sportster ISDN TA Ext. control line CTS is following all changes of RTS  
**&R1**  CTS is always ON (default)

**AT#R**  Reject an incoming call by issuing this command (S0 register is 0)

**AT#R0**  Disable rejecting all incoming calls automatically  
**AT#R1**  Enable rejecting all incoming calls automatically

**ATSnn?**  Shows actual values (decimal) of selected register *nn*

**ATSnn=xx**  Adjusts selected register *nn* to the decimal value *xx*.
**AT&S[0]**  Sportster ISDN TA Ext. control line DSR is always ON
  
  **&S1**  DSR ON indicates ISDN connection is established and synchronised
  
  **ATV[0]**  Messages are presented as numbers (followed by <CR>)
  
  **V1**  Messages are presented as text (verbose)
  
  **V2**  Messages are presented as text including enhanced error causes
  
  **AT&V[0]**  Displays the actual configuration of AT command setting including stored ISDN numbers
  
  **&V1**  Displays the actual configuration of extended AT command setting
  
  **ATW[0]**  Show the result code form (RING, CONNECT) without additional info
  
  **ATW1**  Show the result code form (RING, CONNECT) with address/subaddress
  
  **AT&W**  The active configuration will be stored non volatile
  
  **ATX**  Select CONNECT result message format:
  
  **X0**  “CONNECT” only
  
  **X1**  “CONNECT” with line speed, “BUSY” and “NO DIALTONE” not used
  
  **X2**  “CONNECT” with line speed, “BUSY” not used
  
  **X3**  “CONNECT” with line speed, “NO DIALTONE” not used
  
  **X4**  “CONNECT” with line speed, all messages used
  
  **ATZ**  The active configuration will be reset to the stored configuration
  
  Must be the last command in an AT command line
  
  **AT&Zx=nn[/ss]**  Store dialling number nn with subaddress ss as entry number x into the telephone list (x = 0..9)
  
  **AT#Znn**  Set own msn nn for data port
  
  nn = “*” : all incoming calls are acceptable
Setting up a special ISDN parameter:

(Only one command is allowed per AT command)

**AT** CF.ISDN=x  Select ISDN D channel protocol
0: DSS1 (Euro-ISDN)

*Note: after changing and storing the ISDN protocol the TA has to be reset by powering off and on*

**AT** CF.LLC=hh  Low layer compatibility hh for outgoing calls
An empty parameter has to be entered by ".".

**Example:**
Deleting of LLC-value:  LLC -<CR>
Entering a new LLC:  LLC 8890<CR>

*Note: LLC MUST BE "-" FOR CORRECT OPERATION IN THE UK*

**AT** BSIZE=x  Maximum length x of a data frame
**AT** DTE=x  HDLC Link-address x Layer 2
1: TA reacts as DTE (own adr = 01)
3: TA reacts as DCE (own adr = 03)

**AT** K=x  Layer-2 protocol windowsize x
**AT** DBITS=x  Number of data bits x asynchronous chars (7,8)
**AT** PRTY=x  Parity x of async chars
0: no parity; 1: even parity; 2: odd parity

**AT** cmd  Execute one configuration command,

**AT**%Q  Enter directly into the Configurator, the configuration prompt "#" will be displayed.
Leave the configurator with the command "go".

---

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Utilised S register and their meaning:

S0 0: No automatic call acceptance, acceptance of an incoming call is controlled by the data terminal (command ATA after RING)
1: (Default) Instant call acceptance by the terminal adapter
n: Call acceptance through the terminal adapter after ((n*1)*5) sec; the value n has a max. of 24 (Alert-supervision).

S1 Ring Counter
S2 Escape Character
S3 Carriage Return Character
S4 Line Feed Character
S5 Backspace Character
S7 Wait time for Carrier (sec)
S16 The last occurred CAPI/ISDN error cause is displayed
### Result codes (numerical and verbose):

<table>
<thead>
<tr>
<th>Code</th>
<th>Text</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>OK</td>
<td>Command completed</td>
</tr>
<tr>
<td>1</td>
<td>CONNECT &lt;rn&gt;</td>
<td>Connection established ((rn = ) call number of remote site)</td>
</tr>
<tr>
<td>2</td>
<td>RING &lt;rn&gt;</td>
<td>Indicates an incoming call (Set-up received)</td>
</tr>
<tr>
<td>3</td>
<td>NO CARRIER &lt;xx&gt;</td>
<td>No synchronisation ((xx = ) ISDN error cause)</td>
</tr>
<tr>
<td>4</td>
<td>ERROR</td>
<td>Illegal command or error that can not be indicated otherwise</td>
</tr>
<tr>
<td>6</td>
<td>NO DIALTONE &lt;xx&gt;</td>
<td>No access to ISDN network ((xx = ) ISDN error cause)</td>
</tr>
<tr>
<td>7</td>
<td>BUSY &lt;xx&gt;</td>
<td>Number engaged ((xx = ) ISDN error cause)</td>
</tr>
<tr>
<td>8</td>
<td>NO ANSWER &lt;xx&gt;</td>
<td>No connection; called number cannot be reached ((xx = ) ISDN error cause)</td>
</tr>
<tr>
<td>19</td>
<td>CONNECT 64000 &lt;rn&gt;</td>
<td>Connection, line speed 64 kBit/s</td>
</tr>
</tbody>
</table>

### Call number display:

\(<rn> = \) call number of remote site

In AT command mode call number display which does not belong to the AT command standard can be turned on by issuing the command ATW1. If turned on, the call number (and subaddress) of the caller is shown with the Connect- or Ring-message (in pointed brackets), depending on the signalling in D-channel.
If the Sportster ISDN TA Ext. is used on the public network then the calling number of the remote site (including area code) is displayed. 

*Example:* CONNECT 19200 <01189692200>

**Error cause display:**

<xx> = ISDN release (error) cause, hexadecimal i.e. 34F0H

In AT command mode error cause display which does not belong to the AT command standard can be turned on by issuing the command ATV2. The shown error cause uses the coding defined by the CAPI definition. ISDN error causes from the ISDN network are always coded as 34xxH, where xx represents the hexadecimal version of the ISDN error cause. An error list can be found in the section ISDN error causes.
5. ISDN TA Configuration command set

Usually the configuration can be changed by only using the AT command set. If you have more extended requirements or want to configure a Sportster ISDN TA Ext. through the ISDN line you have to use the Configuration command set.

The configurator can be entered in the following ways:
- Locally entered during power-on sequence
- Remote via ISDN (see page 20).
- By using the special AT command AT%Q<↵>

5.1. Local Configuration using ISDN TA configuration commands

To configure the Sportster ISDN TA Ext. locally by configuration commands:

- Connect the Sportster ISDN TA Ext. to ISDN interface
- Using the Serial cable, connect the PC’s COM Port to the serial interface of the Sportster ISDN TA Ext..
- Start a terminal emulation program (e.g. Windows - Terminal/HyperTerminal) with the following settings: 9600 Baud, 8 databits, No Parity (8N1), 1 Stop Bit, Hardware Flow Control.
- Connect the Sportster ISDN TA Ext. to the mains using the mains plug adapter and
  1. wait until LED 1 and 2 start blinking (after about 2 sec, see config cmd “start”) and
  2. type in quickly the sequence <ESC> <ESC>, to call up the configurator.

The configurator acknowledges by giving a welcome string followed by a “#” as the prompt character. Now you can work with the configurator by using the configuration commands.
- Set-up the parameter for the Sportster ISDN TA Ext. from your terminal program and store them. (see page 16).
Example:
To use X.75, enter the following commands:

- `prot 10<\n>` (set protocol to X.75)
- `save<\n>` (save the new configuration)
- `go<\n>` (leave the configurator and activate the new value settings)

Note: The active set of parameters can be displayed on screen by the configurator with the command "show<\n>".

- Leave the terminal program and start your application.
Now you can use the Sportster ISDN TA Ext. with the new set of parameters by running the software application.

5.2. Remote Configuration using ISDN TA

Configuration commands

The Sportster ISDN TA Ext. requiring configuration is referred to here as the *REMOTE* Sportster ISDN TA Ext..
The Sportster ISDN TA Ext. being used to configure is referred to as the *LOCAL* Sportster ISDN TA Ext..

Ensure that the *remote* Sportster ISDN TA Ext. to be configured at the other end is connected to the ISDN line and powered up.

- Connect the *local* Sportster ISDN TA Ext. to the ISDN interface
- Using the Serial cable, connect the PC’s COM Port to the serial interface of the *local* Sportster ISDN TA Ext..
- Connect the power supply to the mains socket.
- Start a terminal emulation program (i.e. Windows-Terminal/HyperTerminal)
- Configure the *local* Sportster ISDN TA Ext. with the B channel protocol X.75 and block size 2048.
- Set-up an ISDN connection to the *remote* Sportster ISDN TA Ext. to be configured by using the command: `ATD<ISDN-No>e<\n>`. The extension “e” at the end of the calling number gives a connection to the internal remote access of the *remote* Sportster ISDN TA Ext..

The called Sportster ISDN TA Ext. configurator acknowledges by giving a welcome string followed by a “#” as the prompt character. Now you can work with the configurator by using the
ISDN TA Configuration commands (see Chapter 5).

- Set-up the parameter for the remote Sportster ISDN TA Ext. from your terminal program and store them (if wanted).

**Example:**
To change the used B channel protocol to X.75 please enter the following commands:

```
prot 10
```
(set protocol to X.75)

```
bsize 2048
```
(set blocksize to 2048 Bytes)

```
save
```
(save the new configuration)

```
go
```
(leave the configurator and activate the new values)

Hint: The active set of parameters can be displayed on screen by the configurator with the command "**show**".

- Hang up the ISDN connection and leave your terminal program.

The configured remote Sportster ISDN TA Ext. with the new set of parameters can be used by running the software application.
### 5.3. Table of adjustable configuration-values and default-values

The configuration commands typed in must have the correct syntax and be complete, including all blanks. Capital/small letter use is not important. The entry is not case sensitive.

<table>
<thead>
<tr>
<th>CMD</th>
<th>Parameter</th>
<th>def.</th>
<th>sel.</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>mode</strong></td>
<td>command set</td>
<td>0</td>
<td>0</td>
<td>Command set for connection control&lt;br&gt;0: AT command set</td>
</tr>
<tr>
<td><strong>prot</strong></td>
<td>data protocol</td>
<td>3</td>
<td>3, 10, 13, 22</td>
<td>transmission protocol for data transfer&lt;br&gt;3: HDLC async to sync (PPP)&lt;br&gt;10: X.75 SLP&lt;br&gt;13: V.120&lt;br&gt;22: T.70-NL</td>
</tr>
<tr>
<td><strong>isdn</strong></td>
<td>ISDN protocol</td>
<td>0</td>
<td>0</td>
<td>select ISDN D channel protocol&lt;br&gt;0: DSS1 (Euro-ISDN)&lt;br&gt;1: 1TR6</td>
</tr>
<tr>
<td><strong>defa</strong></td>
<td>default</td>
<td>-</td>
<td>-</td>
<td>set-up factory default parameter</td>
</tr>
<tr>
<td><strong>save</strong></td>
<td>save parameters</td>
<td>-</td>
<td>-</td>
<td>save the actual set of parameters in the non-volatile memory</td>
</tr>
<tr>
<td><strong>load</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>load settings for non-volatile configuration</td>
</tr>
<tr>
<td><strong>reset</strong></td>
<td>reset Sportster ISDN TA Ext.</td>
<td>-</td>
<td>-</td>
<td>reset the whole functionality of the Sportster ISDN TA Ext.&lt;br&gt;(like Power off / on)</td>
</tr>
<tr>
<td><strong>go</strong></td>
<td>activate parameters</td>
<td>-</td>
<td>-</td>
<td>Start the Sportster ISDN TA Ext. with the stored values.</td>
</tr>
<tr>
<td><strong>Start</strong></td>
<td>start timer</td>
<td>40</td>
<td>10-199</td>
<td>Command-phase after reset decimal in 10msec.</td>
</tr>
<tr>
<td><strong>Show</strong></td>
<td>show parameters</td>
<td>-</td>
<td>-</td>
<td>Display the actual set of parameters</td>
</tr>
<tr>
<td>?[cmd]</td>
<td>Help</td>
<td>-</td>
<td>-</td>
<td>show helptext for one selected command</td>
</tr>
<tr>
<td>??</td>
<td>Help</td>
<td>-</td>
<td>-</td>
<td>shows helptext for all commands</td>
</tr>
<tr>
<td>CMD</td>
<td>Parameter</td>
<td>def.</td>
<td>sel.</td>
<td>Meaning</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------</td>
<td>------</td>
<td>------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>msn</td>
<td>Multiple Subscriber Number</td>
<td>*</td>
<td></td>
<td>Own MSN (Multiple Subscriber Number)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*: no specific MSN, all incoming calls accepted</td>
</tr>
<tr>
<td>llc</td>
<td>low layer compatibility</td>
<td>-</td>
<td>hex</td>
<td>Low layer compatibility for outgoing calls</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(#2)</td>
</tr>
<tr>
<td>bc</td>
<td>bearer capability</td>
<td>8890</td>
<td>hex</td>
<td>Bearer capability for outgoing data calls</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(#2)</td>
</tr>
<tr>
<td>sin</td>
<td>Service Indicator</td>
<td>7,0</td>
<td>hex</td>
<td>Service Indicator for outgoing data calls (1TR6 only)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(1TR6 only)</td>
</tr>
<tr>
<td>bsize</td>
<td>frame size</td>
<td>204</td>
<td>128.</td>
<td>maximum length of a data frame</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>2048</td>
<td></td>
</tr>
<tr>
<td>dte</td>
<td>DTE Address</td>
<td>0</td>
<td>0,1</td>
<td>HDLC Link-address Layer 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0: TA reacts as DCE (own adr = 01)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: TA reacts as DTE (own adr = 00)</td>
</tr>
<tr>
<td>k</td>
<td>windowsize</td>
<td>7</td>
<td>1..7</td>
<td>Layer-2 protocol: windowsize</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(#1)</td>
</tr>
<tr>
<td>br</td>
<td>baudrate async</td>
<td>0</td>
<td>0-8</td>
<td>baudrate selection for DTE interface</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0: autobauding, (automatic local bit rate adaption)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: 1200 bit/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2: 2400 bit/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3: 4800 bit/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4: 9600 bit/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5: 19200 bit/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6: 38400 bit/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7: 57600 bit/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8: 115200 bit/s</td>
</tr>
<tr>
<td>dbits</td>
<td>async databits</td>
<td>8</td>
<td>7,8</td>
<td>number of data bits asynchronous chars</td>
</tr>
<tr>
<td>prty</td>
<td>async parity</td>
<td>0</td>
<td>0-2</td>
<td>parity of async chars</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0: no parity; 1: even parity; 2: odd parity</td>
</tr>
<tr>
<td>flc</td>
<td>flowcontrol</td>
<td>3</td>
<td>0,3,4</td>
<td>flowcontrol to DTE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0: no flowcontrol</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3: hardware flowcontrol</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RTS/CTS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4: software flowcontrol</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>XON/XOFF</td>
</tr>
<tr>
<td>CMD</td>
<td>Parameter</td>
<td>def.</td>
<td>sel.</td>
<td>Meaning</td>
</tr>
<tr>
<td>-----</td>
<td>-------------</td>
<td>------</td>
<td>------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>cdtr</td>
<td>DTR control</td>
<td>2</td>
<td>0,2</td>
<td>usage of DTR to control ISDN connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0: no control</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2: DTR off disconnects</td>
</tr>
<tr>
<td>cdsr</td>
<td>DSR control</td>
<td>0</td>
<td>0,1</td>
<td>0: DSR always ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1: DSR indicates a connection</td>
</tr>
<tr>
<td>ccts</td>
<td>CTS control</td>
<td>1</td>
<td>0,2</td>
<td>0 : CTS follows RTS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 : CTS always ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 : CTS follows DTR</td>
</tr>
<tr>
<td>ccdc</td>
<td>DCD control</td>
<td>1</td>
<td>0,1</td>
<td>0 : DCD always ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 : DCD indicates a connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 : DCD follows DTR</td>
</tr>
</tbody>
</table>

Notes:

(#1) After issuing one of these parameter you have to run the "go" command to activate the new settings. Please don't forget to execute the "save" command to make the configuration non volatile.

(#2) An empty parameter has to be entered by "-".

Example:
Deleting of LLC-value: LLC -<CR>
Entering a new LLC: LLC 8890<CR>
6. Diagnostic and error messages

6.1. Error messages from AT command set

6.1.1. ISDN- and internal Error messages

When the extended result messages are selected using the command ATV2 ISDN error codes are displayed in addition to the standard AT result messages.

ISDN error causes from the ISDN network are always coded as $34xxH$, where the last two digits $xx$ represent the ISDN cause in hexadecimal coding. The meaning can be taken from the following tables ISDN causes.
### 6.1.2. Table of ISDN causes and their explanation (EURO ISDN)

<table>
<thead>
<tr>
<th>Cause decimal / hexadecimal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 / 0x81</td>
<td>unassigned number</td>
</tr>
<tr>
<td>3 / 0x83</td>
<td>no route to destination</td>
</tr>
<tr>
<td>6 / 0x86</td>
<td>channel unacceptable</td>
</tr>
<tr>
<td>16 / 0x90</td>
<td>normal clearing</td>
</tr>
<tr>
<td>17 / 0x91</td>
<td>user busy</td>
</tr>
<tr>
<td>18 / 0x92 19 / 0x93</td>
<td>no user responding (i.e. DTR not ON)</td>
</tr>
<tr>
<td>21 / 0x95</td>
<td>call rejected</td>
</tr>
<tr>
<td>22 / 0x96</td>
<td>number changed</td>
</tr>
<tr>
<td>26 / 0x9A</td>
<td>non selected user clearing</td>
</tr>
<tr>
<td>27 / 0x9B</td>
<td>destination out of service</td>
</tr>
<tr>
<td>29 / 0x9D</td>
<td>facility rejected</td>
</tr>
<tr>
<td>31 / 0x9F</td>
<td>normal disconnect, unspecified</td>
</tr>
<tr>
<td>34 / 0xA2</td>
<td>no B channel available</td>
</tr>
<tr>
<td>38 / 0xA6</td>
<td>ISDN network out of order</td>
</tr>
<tr>
<td>41 / 0xA9</td>
<td>temporarily failure of the ISDN network</td>
</tr>
<tr>
<td>42 / 0xAA</td>
<td>ISDN network congestion</td>
</tr>
<tr>
<td>47 / 0xAF</td>
<td>ISDN network congestion</td>
</tr>
<tr>
<td>50 / 0xB2</td>
<td>requested facility not subscribed</td>
</tr>
<tr>
<td>57 / 0xB9</td>
<td>bearer capability not authorised</td>
</tr>
<tr>
<td>Cause decimal / hexadecimal</td>
<td>Meaning</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>58 / 0xBA</td>
<td>bearer capability not available</td>
</tr>
<tr>
<td>63 / 0xBF</td>
<td>service/option not available</td>
</tr>
<tr>
<td>65 / 0xC1</td>
<td>bearer capability not implemented</td>
</tr>
<tr>
<td>70 / 0xC6</td>
<td>only restricted digital bearer capability (BC) available</td>
</tr>
<tr>
<td>79 / 0xCF</td>
<td>service/option not implemented</td>
</tr>
<tr>
<td>88 / 0xD8</td>
<td>incompatible destination</td>
</tr>
<tr>
<td>111 / 0xEF</td>
<td>protocol error, unspecified</td>
</tr>
<tr>
<td>127 / 0xFF</td>
<td>network interworking error, unspecified</td>
</tr>
</tbody>
</table>
### 6.1.3. Table of ISDN causes and their explanation (1TR6)

<table>
<thead>
<tr>
<th>Cause decimal / hexadecimal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 / 0x83</td>
<td>unknown service indicator or service not applied for</td>
</tr>
<tr>
<td>10 / 0x8A</td>
<td>no free user channel available</td>
</tr>
<tr>
<td>17 / 0x91</td>
<td>requesting service is rejected, because the initiative party has no authorisation</td>
</tr>
<tr>
<td>32 / 0xA0</td>
<td>outgoing connection not possible</td>
</tr>
<tr>
<td>33 / 0xA1</td>
<td>locally busy; is the total sum of the free B-channels, the busy B-channels, the attached B-channels and number of call procedures without B-channel specification equal four, so are incoming calls from the network not accepted. The calling party receives a DISC with cause &quot;user access busy&quot; and the Busy tone.</td>
</tr>
<tr>
<td>34 / 0xA2</td>
<td>connection not possible due to membership of a closed user group</td>
</tr>
<tr>
<td>37 / 0xA5</td>
<td>&quot;vorbestellte Dauerwahlverbindung&quot; (SPV) not installed at PTT side</td>
</tr>
<tr>
<td>51 / 0xB3</td>
<td>B party is incompatible</td>
</tr>
<tr>
<td>53 / 0xB5</td>
<td>connection in network not able to be set up due to wrong destination address, service or service attribute</td>
</tr>
<tr>
<td>56 / 0xBB</td>
<td>call number of B party has changed</td>
</tr>
<tr>
<td>57 / 0xBB9</td>
<td>Remote terminal is not ready</td>
</tr>
<tr>
<td>58 / 0xBA</td>
<td>no terminal has responded to the incoming SETUP-message, or ringing broken off, absence assumed (expiration of call time-out T3AA).</td>
</tr>
<tr>
<td>59 / 0xBB</td>
<td>B party busy</td>
</tr>
<tr>
<td>Cause decimal / hexadecimal</td>
<td>Meaning</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>61 / 0xBD</td>
<td>B party has a lock of incoming connections (for instance &quot;do not disturb&quot; service feature), or the requested service is not applied for by B party.</td>
</tr>
<tr>
<td>62 / 0xBE</td>
<td>By A party: the wished for connection is actively rejected by B party (through sending a DISC as response to an incoming SETUP-message. On a terminal during the set-up phase of an incoming call: the connection is already taken up by another terminal at the bus.</td>
</tr>
<tr>
<td>80 / 0xD0</td>
<td>ISDN transit network out of order</td>
</tr>
<tr>
<td>88 / 0xD8</td>
<td>B party incompatible</td>
</tr>
<tr>
<td>89 / 0xD9</td>
<td>network congestion</td>
</tr>
<tr>
<td>90 / 0xDA</td>
<td>rejected or disconnected by remote side (party or exchange)</td>
</tr>
<tr>
<td>112 / 0xF0</td>
<td>sent in a REL-message: disconnected due to local error</td>
</tr>
<tr>
<td>113 / 0xF1</td>
<td>disconnected due to error in remote end</td>
</tr>
<tr>
<td>114 / 0xF2</td>
<td>at the remote side the connection is in &quot;Hold&quot; or &quot;Suspend&quot; state.</td>
</tr>
<tr>
<td>115 / 0xF3</td>
<td>at the remote side the connection is no longer in &quot;Hold&quot;, &quot;Suspend&quot;- or conference state.</td>
</tr>
</tbody>
</table>
6.2. Error analysis under Windows NT

To set-up a protocol log of the connection in the B channel using PPP protocol can be done in the following way:

- enable logging information in the registry:
  ```
  HKEY_LOCAL_MACHINE\SYSTEM
  CurrentControlSet\Services
  RASMAN\Parameters
  logging = 1

  PPP
  logging = 1
  ```

- you can find the log files in the following directory:
  ```
  %SystemRoot%\System32\RAS\PPP.LOG
  and %SystemRoot%\System32\RAS\Device.log
  ```

To get a detailed error analysis please contact your supplier of the Sportster ISDN TA Ext.
7. Are you still having problems?

- FOR THE UNITED KINGDOM

Should you encounter any difficulties with your Sportster ISDN TA Ext., refer to the manual first.

Call or visit your dealer, if they are unable to assist you, contact the U.S. Robotics Technical Support Department from Monday through to Friday, between 9:30am - 5:00pm on;

- E-mail address: uksupport@usr.com
- CompuServe: GO UKVENA
- BBS: 0118 969 2200
- FOD*: 0118 922 8299
- Fax: 0118 969 4222
- Tel: 0118 944 1000
- Web page: http://www.usr.co.uk

*FOD = Fax on Demand

Upon contacting U.S. Robotics you will be issued with a Call Reference Number (CRN). This should be quoted when contacting the Technical Support Department in relation to your query.

Should you be advised to return your product, U.S. Robotics will repair and return the unit to you.

Please note that products can not be returned without prior approval by the U.S. Robotics Technical Support Department.

If you would like further information or the name of your nearest U.S. Robotics dealer, call us FREE on: 0 8 0 0 2 2 5 2 5 2

or look at,
http://www.usr.co.uk.
• FOR ITALY

Should you encounter any difficulties with your Sportster ISDN TA Ext., refer to the manual first.

Call or visit your dealer, if they are unable to assist you, contact the U.S. Robotics Customer Support. When you call, specify your modem Sportster ISDN TA Ext. serial number (found on the modem Sportster ISDN TA Ext. and on the outside of the box), the software being used, and, if possible, the contents of your ATI7 screen.

Hotline: 02 26.296.250
Fax : 02 26 268 334
USR BBS: +33 (0) 3 20 91 03 08
CompuServe: GO USROBOTICS
Internet: eurosupport@usr.com

Should you be advised to return your product, U.S. Robotics will repair and return the unit to you. Contact U.S. Robotics European Center Department to obtain a Return Materials Authorisation (RMA) number. YOU MUST HAVE AN RMA NUMBER BEFORE RETURNING THE MODEM TO US.

Phone : +33 (0) 3 20 91 04 97
Fax : +33 (0) 3 20 19 06 94

Ship the unit, postage paid, in a strong box made of corrugated cardboard with plenty of packing material (preferably the original container).

Include your RMA number, name, and address on the shipping label as well as inside the package.

Ship to the following address :

U.S. Robotics Logistics sarl
European Center Department
RMA#
Rue Jules Verne
Centre de Gros N°2
F-59818 Lesquin Cedex
France
• **For the other European countries**

Should you encounter any difficulties with your Sportster ISDN TA Ext., refer to the manual first.

Call or visit your dealer, if they are unable to assist you, contact the U.S. Robotics Customer Support. When you call, specify your modem Sportster ISDN TA Ext. serial number (found on the modem Sportster ISDN TA Ext. and on the outside of the box), the software being used, and, if possible, the contents of your ATI7 screen.

- Hotline: +33 (0) 3 20 19 24 24
- Fax: +33 (0) 3 20 19 24 34
- USR BBS: +33 (0) 3 20 91 03 08
- CompuServe: GO USROBOTICS
- Internet: eurosupport@usr.com

Should you be advised to return your product, U.S. Robotics will repair and return the unit to you. Contact U.S. Robotics European Center Department to obtain a Return Materials Authorisation (RMA) number. YOU MUST HAVE AN RMA NUMBER BEFORE RETURNING THE MODEM TO US.

- Phone: +33 (0) 3 20 91 04 97
- Fax: +33 (0) 3 20 19 06 94

Ship the unit, postage paid, in a strong box made of corrugated cardboard with plenty of packing material (preferably the original container).

Include your RMA number, name, and address on the shipping label as well as inside the package.

Ship to the following address:

- U.S. Robotics Logistics sarl
- European Center Department
- RMA#
- Rue Jules Verne
- Centre de Gros N°2
- F-59818 Lesquin Cedex
- France
Appendix

A1: Technical data:

One V.24 channel:

functional: V.24
electrical: V.28
mechanical: 9 pin -Type connector (female)

Transmission speeds:

DTE: 1200 - 115200 bit/s (asynchronous)
B channel: 64.000 bit/s (synchronous)

Character representation: 8Bit no Parity, 1 stop bit
7Bit even/odd Parity, 1 stop bit

Character synchronisation: asynchronous

Operating mode: half duplex or full duplex

ISDN interface: S₀-interface according to CCITT I.430 (1TR3)

Physical dimensions: desk top house: 71 x  22 x 123 mm (WxHxD)
A2: LED displays

Active states:

<table>
<thead>
<tr>
<th>L1</th>
<th>L2</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td>•</td>
<td>Power-On-Phase ; wait</td>
</tr>
<tr>
<td>•</td>
<td>(2sec)</td>
<td></td>
</tr>
<tr>
<td>•</td>
<td>(1x1s)</td>
<td>ISDN not OK ; Check ISDN interface/ - connector</td>
</tr>
<tr>
<td>⊗</td>
<td></td>
<td>Active phase ; ISDN OK, no ISDN connection established</td>
</tr>
<tr>
<td>⊗</td>
<td>•</td>
<td>call active ; ISDN Connection will be established</td>
</tr>
<tr>
<td>⊗</td>
<td>⊗</td>
<td>synch active ; B channel synchronisation will be established</td>
</tr>
<tr>
<td>⊗</td>
<td>⊗</td>
<td>Connected ; Data connection is established</td>
</tr>
</tbody>
</table>

Error states:

<table>
<thead>
<tr>
<th>L1</th>
<th>L2</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>O</td>
<td>Sportster ISDN TA not OK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hardware error, Sportster ISDN TA repair necessary</td>
</tr>
<tr>
<td>•</td>
<td>O</td>
<td>ISDN not OK ; Check ISDN interface/ - connector</td>
</tr>
<tr>
<td>O</td>
<td>•</td>
<td>(nx1s) Sportster ISDN TA not OK ;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hardware error, Sportster ISDN TA Ext. repair necessary</td>
</tr>
</tbody>
</table>

LED Legend:

⊗ On
• occ short on, long off Cycle 1 sec
⊗ fl long an, short off Cycle 1 sec
• (nxms) continuous blinking: n times every m seconds
O Off
## A3: Pin-out of the ISDN connector

Pin-out of the 8 pin ISDN S-interface connector (RJ45) (CCITT I.430/ISO 8877)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal ($S_0$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>not connected</td>
</tr>
<tr>
<td>2</td>
<td>not connected</td>
</tr>
<tr>
<td>3</td>
<td>STA (Transmit A)</td>
</tr>
<tr>
<td>4</td>
<td>SRA (Receive A)</td>
</tr>
<tr>
<td>5</td>
<td>SRB (Receive B)</td>
</tr>
<tr>
<td>6</td>
<td>STB (Transmit B)</td>
</tr>
<tr>
<td>7</td>
<td>not connected</td>
</tr>
<tr>
<td>8</td>
<td>not connected</td>
</tr>
</tbody>
</table>
## A4: Pin assignment of the V.24/V.28 interface
**Sportster ISDN TA Ext. (D-TYPE, 9 WAY)**

<table>
<thead>
<tr>
<th>Pin</th>
<th>V.24/V.28</th>
<th>I/O</th>
<th>TEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CCITT</td>
<td>DIN</td>
<td>EIA</td>
</tr>
<tr>
<td>1</td>
<td>109</td>
<td>M5</td>
<td>DCD</td>
</tr>
<tr>
<td>2</td>
<td>104</td>
<td>D2</td>
<td>R D</td>
</tr>
<tr>
<td>3</td>
<td>103</td>
<td>D1</td>
<td>T D</td>
</tr>
<tr>
<td>4</td>
<td>108/1</td>
<td>S1.1</td>
<td>DTR</td>
</tr>
<tr>
<td></td>
<td>108/2</td>
<td>S1.2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>102</td>
<td>E2</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>107</td>
<td>M1</td>
<td>DSR</td>
</tr>
<tr>
<td>7</td>
<td>105</td>
<td>S2</td>
<td>RTS</td>
</tr>
<tr>
<td>8</td>
<td>106</td>
<td>M2</td>
<td>CTS</td>
</tr>
<tr>
<td>9</td>
<td>125</td>
<td>M3</td>
<td>RI</td>
</tr>
</tbody>
</table>
**A5: Cable layout for connection of terminals with 25 pin connectors (male or female) to a Sportster ISDN TA Ext.**

Only the cable with a male plug at the terminal side is shown. The pin configuration for the female plug is the same.

### V.24 device

<table>
<thead>
<tr>
<th>V.24 device</th>
<th>Sportster ISDN TA Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>shield *</td>
</tr>
<tr>
<td>2</td>
<td>TD 103</td>
</tr>
<tr>
<td>3</td>
<td>RD 104</td>
</tr>
<tr>
<td>4</td>
<td>RTS 105</td>
</tr>
<tr>
<td>5</td>
<td>CTS 106</td>
</tr>
<tr>
<td>6</td>
<td>DSR 107</td>
</tr>
<tr>
<td>20</td>
<td>DTR 108</td>
</tr>
<tr>
<td>8</td>
<td>DCD 109</td>
</tr>
<tr>
<td>22</td>
<td>RI 125</td>
</tr>
</tbody>
</table>

### 25 pin jack

<table>
<thead>
<tr>
<th>25 pin jack</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

### 9 pin jack

<table>
<thead>
<tr>
<th>9 pin jack</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Attention:**
- allowed cable length < 15m.
- for transmission speeds > 19.200 bit/s < 2m.
- * necessary for cable length > 2m
- female connector on cable
- male connector on cable
A6: Cable layout to connect a PC with 9-pin male plug through a serial COM Port to a Sportster ISDN TA Ext.

<table>
<thead>
<tr>
<th>PC</th>
<th>9 pin jack</th>
<th>Sportster ISDN TA Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>shield *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SGND</td>
<td>102</td>
</tr>
<tr>
<td>3</td>
<td>TD</td>
<td>103</td>
</tr>
<tr>
<td>2</td>
<td>RD</td>
<td>104</td>
</tr>
<tr>
<td>7</td>
<td>RTS</td>
<td>105</td>
</tr>
<tr>
<td>8</td>
<td>CTS</td>
<td>106</td>
</tr>
<tr>
<td>6</td>
<td>DSR</td>
<td>107</td>
</tr>
<tr>
<td>4</td>
<td>DTR</td>
<td>108</td>
</tr>
<tr>
<td>1</td>
<td>DCD</td>
<td>109</td>
</tr>
<tr>
<td>9</td>
<td>RI</td>
<td>125</td>
</tr>
</tbody>
</table>

9 pin jack

Attention: allowed cable length < 15m.
for transmission speeds > 19.200 bit/s < 2m.
* necessary for cable length > 2m

---

female connector on cable
male connector on cable
8. Limited Warranty

U.S. Robotics Limited warrants to the original consumer or other end user that this product is free from defects in materials or workmanship for a period of five years from the date of purchase. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with the same or similar model) at our option, without charge for either parts or labour. This warranty shall not apply if the product is modified, tampered with, misused or subjected to abnormal working conditions.

To obtain service under this limited warranty, contact the U.S. Robotics Support (see Chapter 7).
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Fax: 03.20.19.24.34