

9. ORDERING INFORMATION

9.1 AM100 DC POWERED

AM100 X21	1/372/X21
AM100 V35	1/372/X22
AM100 G703	1/372/X23

9.2 AM100 AC POWERED

AM100 X21	1/372/X11
AM100 V35	1/372/X12
AM100 G703	1/372/X13

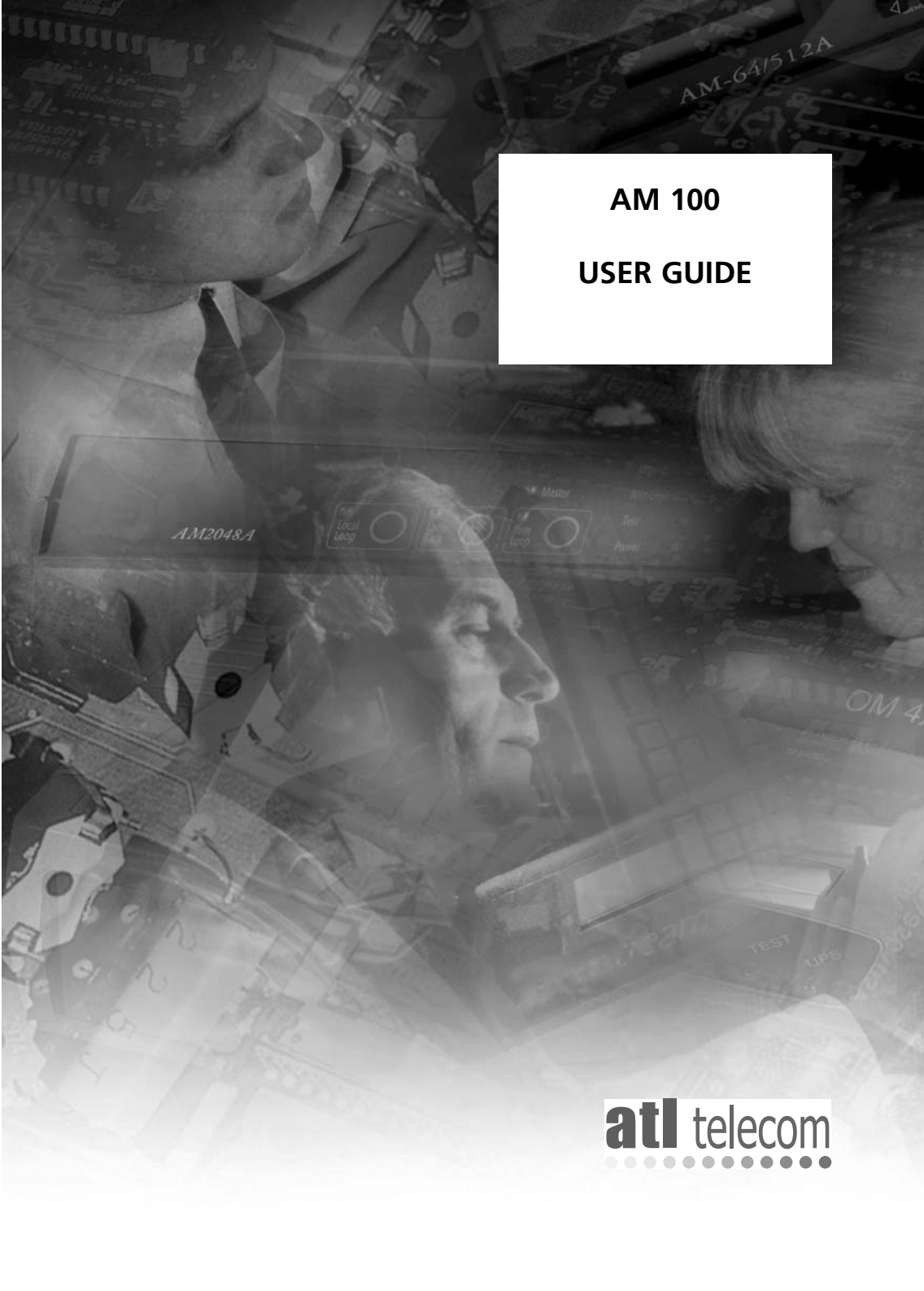
9.3 MOUNTING BRACKET

The AM100 can be supplied either with or without a wall mounting brackets. This is a factory fitted option.

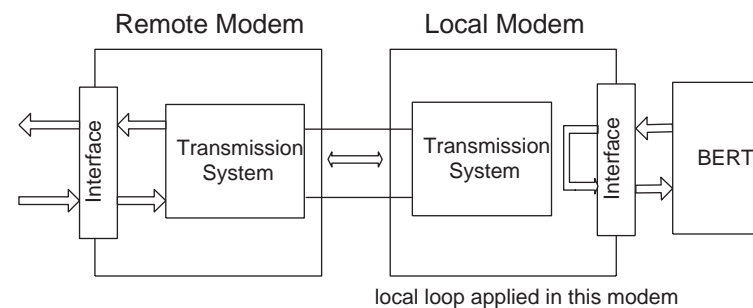
Supplied with a wall brackets	X = 1
supplied without a wall brackets	X = 0

9.3 ACCESSORIES

X21 DCE STUB CABLE	6/910/000/534
V35 DCE STUB CABLE	6/691/000/533
G703 RJ45 STUB CABLE	6/910/000/544



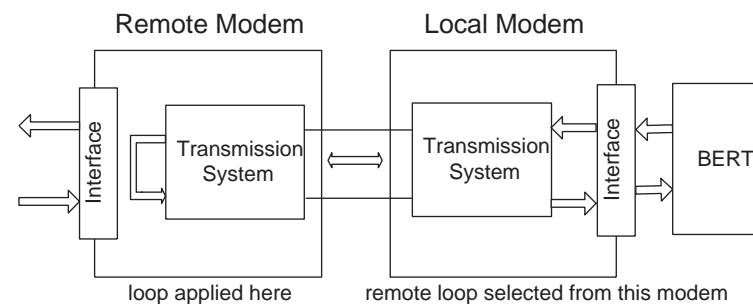
AM 100
USER GUIDE



8.2.2 REMOTE LOOP

With a BERT still connected as above, turn off the local loop and apply the remote loop. The remote loop loops data back to the user interface from the far end modem as shown below, thus this test can be used to check the integrity of the line.

There should be no errors or a very low error rate. If the error rate received is too high for your application, try a lower data rate. When you have completed this test, turn off remote loop.



8.2.3 FAR END LOCAL LOOP

If the two tests above have been performed then also perform test 8.2.1 (local loop) on the far end modem.

8.2.4 LOOPBACK

Applying a Loopback on the local modem causes the received line data to be returned to the far end modem.

ATL Part No 1/372/001/610

Issue: 01

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8. TROUBLE SHOOTING

8.1 QUICK GUIDE TO BASIC FAULT FINDING

No	Symptom	Possible Fault	Corrective Action
1	LEDs do not light	Blown fuse	Replace fuse in mains lead.
2	Modems do not synchronise	Configuration of modems incorrect	Check configuration
		Lines not correctly connected.	Check that line pair are correctly connected together.
		Line attenuation or noise too high	Select a lower data rate
		External timing signal incorrect	Check external timing signal quality and cable assembly. Check Configuration.
		Internal fault	Return unit for repair
3	Modems synchronise with high error rate	Line attenuation or noise too high	Select a lower data rate
		External timing signal incorrect	Check external timing signal frequency and quality.
4	Modems synchronise with no data transfer	Test loop active	Ensure that no tests have been activated on either modem

8.2 LINK PERFORMANCE

The AM100 modem has a number of features to aid in the testing of the data link. To check a data link the following tests can be performed. The tests outlined will require the use of a Bit Error Rate Tester (BERT).

8.2.1 LOCAL LOOP

With a BERT connected to the user interface a local loop will loop data back to the user interface as shown below. If everything is ok, no errors should be detected i.e. the user interface is correctly transporting data.

COMPLIANCE NOTES & SAFETY INSTRUCTIONS



Caution: - Hazardous voltages inside the equipment

Safety Instructions:

This apparatus must be installed and maintained by SERVICE PERSONNEL only

There are NO user serviceable parts inside the modem.

The mains plug on the equipment serves as the disconnect device, therefore a socket outlet shall be installed near the equipment and shall be easily accessible



Caution: - Electrostatic sensitive devices inside the equipment

Electrostatic discharge (ESD) Warning:

Antistatic precautions should be observed at all times.

Power Rating Information - AC unit:

Voltage Range 85V-250V

Current Range 50mA-15mA

Frequency Range 50/60Hz

Power Rating Information - DC Unit:

Voltage Range -18V to -72V

Current Range 170mA-25mA

Safety Statements classification - NON traffic ports

The AC Mains input has a safety status of PRIMARY CIRCUIT

The AM100 AC unit is defined as a class 1 equipment and must be connected to a reliable earth connection.

If the mains earth cannot be guaranteed to be PROTECTIVE EARTH, then a PROTECTIVE EARTH conductor must be connected to the M3 stud on the rear panel of the unit.

The DC input has a safety status of TNV-2

The AM100 DC unit is defined as class II equipment, an EARTH conductor must be connected to the M3 stud on the rear panel of the unit when using the G.703 interface in accordance with ITU-T G.703 requirements.

Statement Safety Statements traffic ports:

The Line Port has a safety status of TNV-1

The Interface Port has a safety status of EARTHED SELV.

The G.703 Port Connection Port has a safety status of SELV when connected to Unexposed Environments:

The G.703 Port Connection Port has a safety status of TNV-1 when connected to Exposed Environments:

Definitions:

Exposed Environment

A TELECOMMUNICATIONS NETWORK is considered to be an exposed environment if one or more conditions for an unexposed environment are not fulfilled.

Unexposed Environment

A TELECOMMUNICATIONS NETWORK is considered to be an unexposed environment if the following conditions apply to all parts of the network.

- a) The possible effect of indirect lightning has been reduced by measures described in IEC 61312-1.
- b) The possibility of having different earth potentials has been reduced by connecting all equipment within the network to the same equipotential bonding system (see HD 384).
- c) The possibility of power cross/contact has been reduced (see HD 384).
- d) The possibility of induced transients and voltages has been reduced.



Manufacturers Declaration*

ATL Telecom Limited declares that this product is in conformity with the essential requirements of the 'R&TTE directive 1999/5/EC'.

*A copy of the Declaration of Conformity is available upon request from ATL Telecom Ltd.

7. COMPLIANCE NOTES

The TTE network statements and the declaration of conformity statement to EC directive 1999/5/EC are provided inside the front cover of the AM100 User Guide together with safety information.

7.1 TELECOMMUNICATION STANDARDS

The equipment is in conformity with the following International/National Standards.

ETSI EN300386 V1.2.1	EMC Requirements for Telecommunication Network Equipment
EN60950-1: 2002	Information Technology Equipment - Safety
G.703	Physical/Electrical Characteristics of Hierarchical Digital Interfaces.
V.11	Electrical characteristics for balanced double-current interchange circuits operating at data signalling rates up to 10 Mbit/s.
V.35	Data transmission at 48 kbit/s using 60-108 kHz group band circuits

6.5 ENVIRONMENTAL

6.5.1 TRANSPORTATION

ETS 300 019-1-2 Class 2.3

Transportation using normal public transport when stored in it's normal transport packaging.

Temp range -40 to +70°C

Humidity +5 to +95% (non condensing)

6.5.2 STORAGE

ETS 300 019-1-1 Class 1.1

Storage in a totally weatherproof and partially temperature controlled environment in its standard packaging.

Temp range -5 to +45°C

Humidity 95% @ 45°C (non condensing)

6.5.3 OPERATIONAL

ETS 300 019-1-3 Class 3.2

Operation in a totally weatherproof and partially temperature controlled environment.

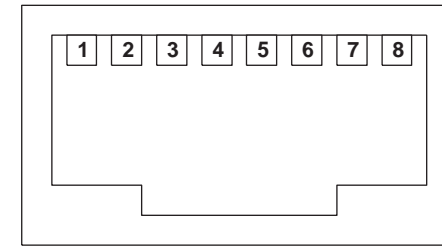
Temp range -0 to +45°C

Humidity 0 to +95% (non condensing)

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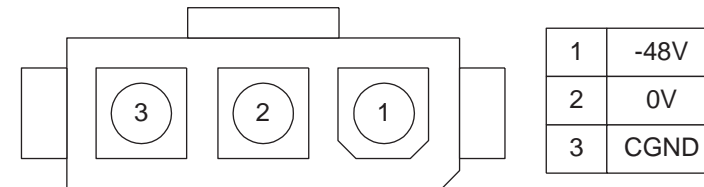
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6.3.4 TRANSMISSION LINE PIN OUT



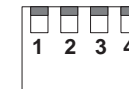
1	Line A
2	Line B
3-8	Unused

6.3.5 DC CONNECTOR PIN OUT



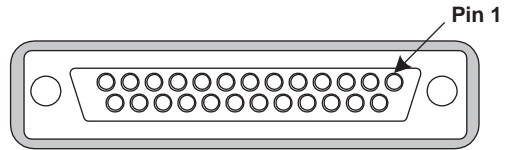
6.4 SWITCH SETTINGS

The switch is located under a removable panel on the rear of the unit.



Switch	Up (default)	Down
1	V54 loops Enabled	V54 loops Disabled
2	RXD flashing Enabled	RXD flashing Disabled
3	Rate & Mode buttons Enabled	Rate & Mode buttons Disabled
4	Loop buttons Enabled	Loop buttons Disabled

6.3.3 G703 USER INTERFACE PIN OUT



Pin Out	Name
1	
2	
3	
4	
5	TA-A
6	
7	
8	
9	TX-B
10	
11	
12	
13	

Pin Out	Name
14	
15	
16	
17	RX-A
18	
19	
20	
21	RX-B
22	
23	
24	
25	

1 SCOPE

This User Guide applies to the AM100 modem designed and manufactured by ATL Telecom Limited in the U.K. It provides guidance for installation, commissioning and operation of the modem as well as reference information covering maintenance, specification and compliance.

2 INTRODUCTION

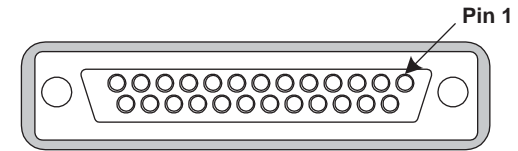
The AM100 is a DSL modem that is capable of transmitting up to 4.9 Km at 640kbps over 0.5mm² cable (9.8Km at 64kbps).

The AM100 supports transmission rates from 64kbps to 640kbps over a single pair copper line.

The AM100 provides either X.21, V.35 or G.703 interface options. All of the interfaces require the use of a special converter cable that attaches to the 25 way D-type connector on the back of the AM100.

The X.21 & V.35 variants can be set to operate in either 'master' or 'slave' mode. The G.703 is only available in 'master' mode.

6.3.2 V35 USER INTERFACE PIN OUT

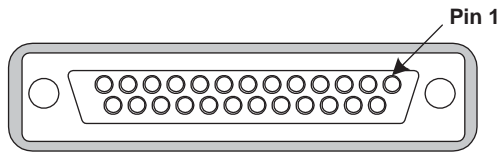


Pin Out	Name
1	CGND
2	103_A
3	104_A
4	105_A
5	106_A
6	107_A
7	GND
8	109_A
9	115_B
10	
11	113_B
12	114_B
13	CGND

Pin Out	Name
14	103_B
15	114_A
16	104_B
17	115_A
18	141_A
19	105_B
20	108_A
21	140_A
22	CGND
23	CGND
24	113_A
25	142_A

6.3 CONNECTION PIN OUT

6.3.1 X21 USER INTERFACE PIN OUT



Pin Out	Name	Pin Out	Name
1		14	T-B
2	T-A	15	
3	R-A	16	R-B
4	C-A	17	S-A
5		18	
6		19	C-B
7	GND	20	
8	I-A	21	
9	S-B	22	
10	I-B	23	
11	External Time-A	24	External Time-B
12		25	
13			

3 EXAMPLE APPLICATIONS

The diagrams below illustrate some basic applications.

3.1 DATA LINK WITH NO EXTERNAL TIMING

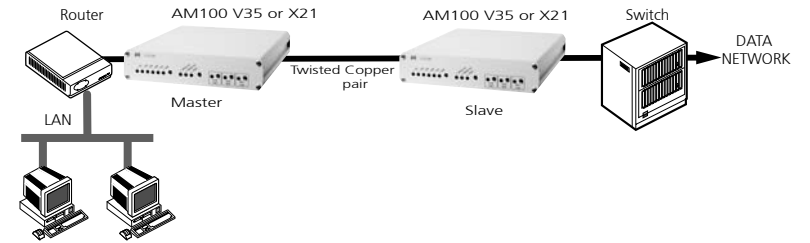


Figure 1

Either end of the link may be set to 'master', with the opposite end set to 'slave'. The timing originates from the internal clock of the master and is sent out to the customer's unit.

3.2 DATA LINK WITH EXTERNAL TIMING

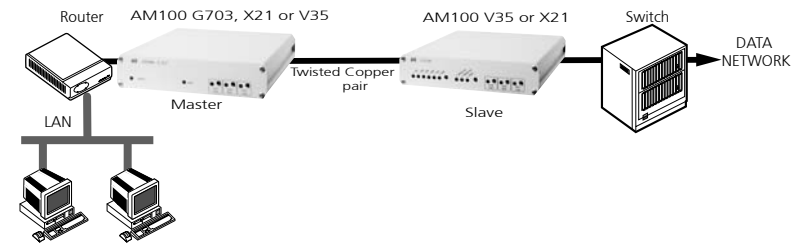


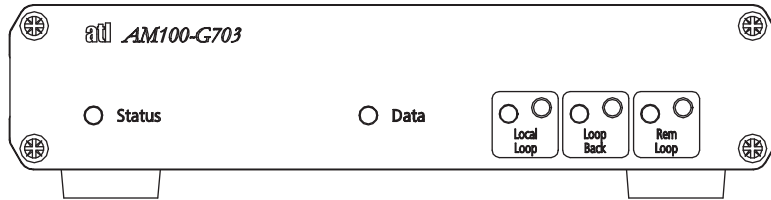
Figure 2

In this example the master modem accepts timing from the G.703, X.21 or V.35 interface and uses this to time the link.

4. CONSTRUCTION

4.1 FRONT PANEL

4.1.1 AM100 G.703 VARIANT



4.1.1.1 LEDS

LED	Function
Status	Red when not in sync, green when in sync
Data	Red when RXD data is 1, green when RXD data is 0
Local Loop	Green when local loop is on
Loop Back	Green when loop back is on
Rem Loop	Green when remote loop is on

4.1.1.2 BUTTONS

Button	Function
Local Loop	Turns Local Loop on and off
Loop Back	Turns Loop Back on and off
Rem Loop	Turns Remote Loop on and off

6. SPECIFICATION

6.2 AM100 DIMENSIONS

The overall dimensions of the unit are:

Height = 170mm

Width = 220mm

Depth = 50mm

6.2 TRANSMISSION PERFORMANCE

The transmission performance figures for 0.4mm, 0.5mm & 0.6mm wire gauges are shown below. The 0.4mm figures are actual typical values. The 0.5mm & 0.6mm are calculated values.

LINE SPEED	0.4mm WIRE GAUGE NOISE FREE RANGE Km	0.5mm WIRE GAUGE NOISE FREE RANGE Km	0.6mm WIRE GAUGE NOISE FREE RANGE Km
64kbps	7.4km	9.8km	12.5km
128kbps	5.8km	7.8km	9.9km
256kbps	5.6km	7.6km	9.5km
384kbps	4.6km	6.1km	7.8km
512kbps	4.2km	5.3km	7.1km
640kbps	3.7km	4.9km	6.2km

3.2.2 DATA LINK WITH EXTERNAL TIMING (G.703, V.35 & X.21 VARIANTS)

This type of circuit is illustrated in Figure 2. This configuration is similar to the previous configuration. The Master modem however can be set to receive an external timing source.

3.2.2.1 CONFIGURING THE SLAVE UNIT

Press the Mode button until the Slave LED is lit.

3.2.2.2 CONFIGURING THE MASTER UNIT (V.35 & X.21 VARIANTS)

Press the Mode button until the Master ext Led is lit.

Press the Rate Button until the desired rate is lit red.

3.2.2.2 CONFIGURING THE MASTER UNIT (G.703 VARIANT)

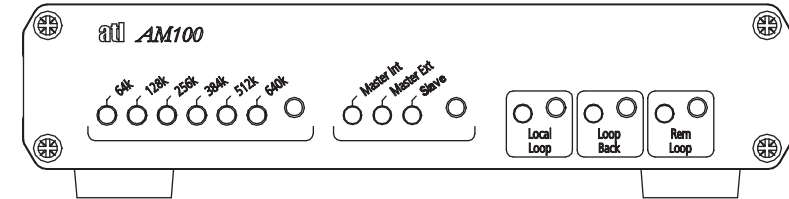
No configuration is required.

3.2.2.3 SYNCHRONISATION

If the units are correctly connected then, after a couple of minutes the Rate LED will turn Green.

The units are now synchronized and transmitting data to one another and timing is being transferred from the customer equipment to the slave user interface.

4.1.2 AM100 V.35 & X.21 VARIANTS



4.1.2.1 LEDS

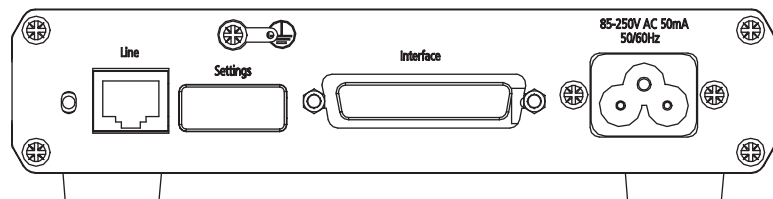
LED	Function
Rate Indication / Status	Shows the transmission rate. Red when not in sync, green when in sync
Mode Indication / Data	Indicates the selected mode. Red when RXD data is 1, green when RXD data is 0
Local Loop	Green when local loop is on
Loop Back	Green when loop back is on
Rem Loop	Green when remote loop is on

4.1.2.2 BUTTONS

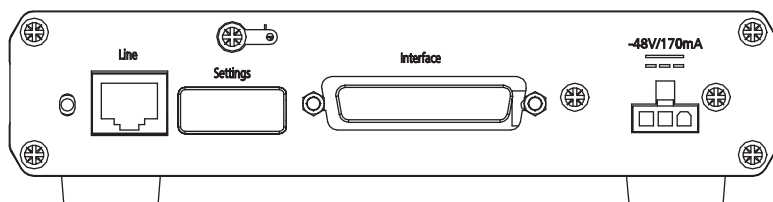
Button	Function
Rate Selection	Used to select the required rate (master mode)
Mode Selection	Used to select the required mode
Local Loop	Turns Local Loop on and off
Loop Back	Turns Loop Back on and off
Rem Loop	Turns Remote Loop on and off

4.2 REAR PANEL

4.2.1 AC VARIANTS



4.2.2 DC VARIANTS



4.2.3 CONNECTORS

RJ45 Line connector

25 way D-type Interface connector

3 pin Mini Molex connector (DC variant)

3 pin IEC mains connector (AC variant)

4.2.4 CABLES

The AM100 is supplied with either an AC mains or DC cable (ref Ordering Information). Plus a Category 5 RJ45 to RJ11 line cord.

5. CONFIGURATION

5.1 CONNECTING THE AM100

The AM100 comes packaged complete with a suitable power lead and an RJ45 to RJ11 line cord.

Connect the power lead to the rear of the unit.

Plug one end of the line cord into the RJ45 line connector on the rear of the unit. The other end connects to your copper line pair.

A suitable Stub lead is required to connect the modem user interface on the rear of the unit to your DTE equipment. Details of the interface pin out can be found in section 6.3.

5.1.1 LED POWER ON SEQUENCE - V.35 & X.21 VARIANTS

During the power on sequence the LED's will flash back and forth and when finished one Rate and one Mode LED will be lit.

5.1.2 LED POWER ON SEQUENCE - G703 VARIANT

During the power on sequence the LED's will flash and when finished the status and data LED's will be lit.

3.2 CONFIGURING THE AM100

3.2.1 DATA LINK WITH NO EXTERNAL TIMING (V.35 & X.21 VARIANTS)

This type of circuit is illustrated in Figure 1. One end of the link is configured as a MASTER and the other end is configured as a SLAVE. The rate setting set at the MASTER unit will be downloaded to the SLAVE automatically.

3.2.1.1 CONFIGURING THE SLAVE UNIT

Press the Mode button until the Slave LED is lit.

3.2.1.2 CONFIGURING THE MASTER UNIT

Press the Mode button until the Master Int Led is lit.

Press the Rate Button until the desired rate is lit red.

3.2.1.3 SYNCHRONISATION

If the units are correctly connected then, after a couple of minutes the Rate LED will turn Green.

The units are now synchronized and transmitting data to one another