SIMREX Corporation

uBRIDGE

Miniature Remote
Ethernet Bridge

SIMREX P/N: MAN.UBRIDGE Rev. A
APRIL 2004

SIMREX CORPORATION
Your Trusted Wireless Solution Provider

IMPORTANT

The *u*Bridge is powered by an external power supply. To reduce the risk of electrical shock, fire and injury to persons:

Use only with a UL-listed and CSA Certified Class 2 power supply rated for 12 VDC, 400 mA or more.

Declaration of Conformity

SIMREX Corporation declares that the *u*Bridge conforms to the following standard(s) or other normative document(s):

EMC: EN 55022 (1994): Limits and methods of measurement of radio disturbance characteristics of information technology equipment.

EN 50082-1 (1992): Electromagnetic compatibility. Generic immunity standard for residential, commercial and light industry.

Supplementary Information:

This product herewith complies with the requirements of the EMC Directive 89/336/EEC. The product was tested in a typical configuration.

INSTALLATION

1. Switch Settings

Set switches according to Table 1 (factory defaults in bold)

Table 1. Switch Settings

Switch Name	Description	
FDX	**OFF:**	**Ethernet half duplex**
	ON:	Ethernet full duplex
FILTER	**ON:**	**Only frames destined for another LAN are transmitted over WAN**
	OFF:	All frames are transmitted over WAN
	Note:	*Filter should be set to OFF for LAN extender or segmenter applications*
COMPR	ON:	Compression is activated
	OFF:	**Compression is disabled**
	Note:	Use only opposite with COMPR set to ON
ASYNC	OFF:	WAN link is in synchronous mode
	ON:	**WAN link is in asynchronous mode**
	Note:	

Table 2. 4-wire Operating Ranges

Speed	Cable	Max. Range
10 Mbps	Cat. 3 UTP:	400m
10 Mbps	Screened UTP (Cat. 3)	500m
10 Mbps	Level 5 UTP	500m
10 Mbps	IBM Type 1	750m
5 Mbps	Cat. 3 UTP:	600m
5 Mbps	Screened UTP (Cat. 3)	700m
5 Mbps	Level 5 UTP	700m
5 Mbps	IBM Type 1	1300m
5 Mbps	Telephone Cable	Nominally 150m

2. Power

For 10BaseT configuration, plug in the external power adapter. The PWR LED will light up.

Note: While the *u*Bridge can operate with any regulated 12 VDC, 400mA power supply, the CE approval on fiber optic and 4-wire versions requires use of the power supply listed in *Ordering.*

3. LAN Interface

For 10BaseT configuration, either a straight or a cross-cable may be required. Use a cross-cable when connecting to a port that does not implement the crossover function internally. Otherwise, use a straight cable. Hubs, usually implement the crossover function internally, while NICs and other devices do not.

4. WAN Interface

*u*Bridge operates in DTE mode on the WAN interface and receives an internal clock.

Connect the 25-pin female connector of the unit to DCE equipment, using the supplied adapter cables (See *Table 5* for pin out details and *Figure 2* for the DB-25 port).

For **asynchronous** mode, an internal baud rate generator can be used to generate seven standard frequencies. An external clock can be connected to pins 15 and 12 for operation at other frequencies.

The internal Baud Rate Generator and ACCM are configured by tying the appropriate pins on the connector to ground (pin 7), as shown in *Table 3.* If required, an external clock (operating at 16 times the required baud rate) should be connected to pin 15 of the DB-25 connector. The default setting is 9.6k with ACCM enabled.

HDLC-like framing is used in accordance with RFC 1662. Octet stuffing is used for frame transparency. According to this procedure, a flag sequence (0x7E), control escape octet (0x7D), or any octet that appears in the Async Control Character Map (ACCM) – when enabled – is replaced by a 2-octet sequence.

This 2-octet sequence consists of the control escape octet followed by the original octet XORed with 0x20. When enabled, the ACCM comprises the first 32 characters (up to 0x20).
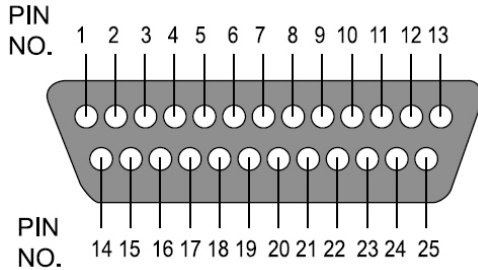

Figure 2. DB-25 Port

OPERATION

uBridge operation is automatic. *Table 4* shows how to diagnose the status of the uBridge from the LED indicators.

Compression

The dipswitch COMPR enables and disables Enhanced uGram compression. This form of compression can increase data throughput depending on the type of traffic. Valid Ethernet frames have a minimum length of 64 bytes. Frames shorter the 64 bytes are padded. With compression enabled, these padding bytes are stripped off before being transmitted over the WAN, and repadded while being received on the other side.

The example below shows the difference between a padded Ethernet frame before and after compression.

Before compression:

DA	SA	Type	DATA	PADDING

Bytes: 6   6   2   20   26

After compression:

DA	SA	Type	DATA

Bytes: 6   6   2   20

Compression should be enabled on both *u*Bridges for proper operation.

Table 3. Setting Asynchronous Parameters

BAUD RATE	BAUD2 (PIN 6)	BAUD1 (PIN 8)	BAUD0 (PIN 17)	ACCM (PIN 22)
External Clock (16X required baud rate)	ground	ground	ground	
115.2k	ground	ground		
57.6k	ground		ground	
38.4k	ground			
28.8k		ground	ground	
19.2k		ground		
14.4k			ground	
9.6k				
ACCM enabled				
ACCM disabled				ground

Table 4. LED Indicators

LED	Color	Description
WAN	Yellow	Activity on WAN
LAN	Yellow	Activity on LAN
	Green	Link integrity pass
COLL	Red	Collision on LAN
PWR	Green	Power supply ON

Table 5. DB-25 Connection V.24/RS-232

Pin	Name	Type
1	Shield	
2	TxD	Output
3	RxD	Input
4	RTS	Output
5	CTS	Input
6	BAUD2	Input
7	GND	
8	BAUD1	Input
9	NC	
10	NC	
11	NC	
12	NC	
13	NC	
14	NC	
15	TCLK/EXCLK	Input
16	NC	
17	RCLK/BAUD0	Input
18	NC	
19	NC	
20	NC	
21	NC	
22	ACCM	Input
23	NC	
24	NC	
25	NC	

SPECIFICATIONS

BRIDGE

- ? **LAN Table**
  10,000 MAC addresses with five-minute automatic aging
- ? **Filtering and Forwarding**
  15,000 frames per second
- ? **Buffer**
  256 frames
- ? **Delay**
  1 frame

LAN

- ? **Standard**
  Conforms to IEEE802.3 / Ethernet
- ? **Data Rate**
  10 Mbps (20 Mbps 10BaseT in full duplex topology)
- ? **Connectors**
  10BaseT (UTP): Shielded RJ-45

WAN

- ? **Protocol**
  HDLC
- ? **Data Rate**
  Up to 10 Mbps synchronous
  Up to 115.2kbps asynchronous
- ? **Internal Baud Rate Generator**
  Standard bit rates (in kbps):
  9.6, 14.4, 19.2, 28.8, 28.4, 57.6, 115.2
- ? **Connectors**
  V.24/RS-232 with female DB-25

GENERAL

- ? **Physical**
  Length: 69 mm / 2.7 in
  Width: 53 mm / 2.1 in
  Height: 18 mm / 0.7 in
  Weight: 30 g / 1.0 oz
- ? **Power**
  12 VDC / 0.4A regulated
- ? **Current Consumption**
  0.2A @ 12 VDC
- ? **Environment**
  Temperature: 0-50C (32-122F)
  Humidity: Up to 90%, non-condensing

IN CASE OF DIFFICULTY...

SIMREX Corporation products are designed for long life and trouble-free operation. However, this equipment, as with all electronic equipment, may have an occasional component failure. The following information will assist you in the event that servicing becomes necessary.

TECHNICAL ASSISTANCE

Technical assistance for SIMREX products is available from our Customer Support Team during business hours (8:00 A.M.–5:30 P.M. Eastern Time). When calling, please give the complete model number of the radio, along with a description of the trouble/symptom(s) that you are experiencing. In many cases, problems can be resolved over the telephone, without the need for returning the unit to the factory. Please use one of the following means for product assistance:

Phone: 716 206-0174   E-Mail: techsupport@simrex.com
FAX: 716 204-0476   Web: www.simrex.com

FACTORY SERVICE

Component level repair of radio equipment is not recommended in the field. Many components are installed using surface mount technology, which requires specialized training and equipment for proper servicing. For this reason, the equipment should be returned to the factory for any PC board repairs. The factory is best equipped to diagnose, repair and align your radio to its proper operating specifications.

If return of the equipment is necessary, you will be issued a Return Merchandise Authorization (RMA) number. The RMA number will help expedite the repair so that the equipment can be repaired and returned to you as quickly as possible. Please be sure to include the RMA number on the outside of the shipping box, and on any correspondence relating to the repair. No equipment will be accepted for repair without an RMA number.

A statement should accompany the radio describing, in detail, the trouble symptom(s), and a description of any associated equipment normally connected to the radio. It is also important to include the name and telephone number of a person in your organization who can be contacted if additional information is required.

The radio must be properly packed for return to the factory. The original shipping container and packaging materials should be used whenever possible. All factory returns should be addressed to:

> SIMREX Corporation
> Service Department
> (RMA No. XXXX)
> 5490 Broadway St.
> Lancaster, NY 14086 USA

When repairs have been completed, the equipment will be returned to you by the same shipping method used to send it to the factory. Please specify if you wish to make different shipping arrangements.