

RTU8182 Users Manual

Polybus International, Inc.

1258-H Quarry Lane

Pleasanton, CA 94566

Tel: 925-426-4815

Fax: 925-484-5469

Web: <http://www.rtu.com>

Polybus International, Inc.

Factory Warranty

Out Of Warranty Repair

Upon receipt of the product, Polybus International will repair or replace the product with new or equivalent to new product that has been subjected to appropriate burn-in tests. Repair, labor and/or parts replacement made at your request will be billed to you at the then current rates and conditions for Polybus International. Repairs will be processed in the order received from customers with typical turnaround of four weeks. Polybus International will send a replacement product upon receipt of a purchase order. You will be billed for the replacement and a credit will be issued upon receipt of the product for repair, minus cost of repairs. Express replacement is available. Factory repair is restricted to correcting or replacing the defective parts. Cosmetic refurbishment will not be performed. All products returned to Polybus International for repair must be properly packed, marked and shipped prepaid. Polybus International will ship repaired products prepaid.

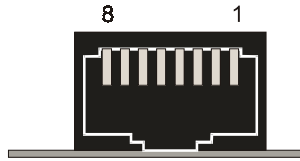
Standard Warranty

The Seller warrants to the Buyer that the original equipment furnished hereunder will be free from defects material and workmanship, and will be of the kind and quality designated or described on the invoice. The foregoing warranty is exclusive and in lieu of all other warranties whether written, oral, or implied (including any warranty of merchantability or fitness for purpose). If within 12 months from the date of shipment this equipment does not meet the warranty specified above, and the Buyer notifies the Seller promptly, and the defective unit is received by Seller no later than 2 weeks from date of notification, the Seller shall thereupon correct any such defect, either (at the Seller's option) by repairing any defective part or parts which are returned to the Seller freight prepaid, or by making available at the Buyer's plant (via lowest freight rate) a repaired or replacement part. The Seller will take this corrective action only after the Seller's examination of such unit shall disclose, to its satisfaction, that such defects or failures have not been caused by misuse, neglect, improper installation, repair, alteration or accident. The Seller's liability to the Buyer arising out of the supplying of this equipment, or its use, whether on warranty, contract, or negligence, shall not in any case exceed the cost of the correcting defects in the equipment as herein provided, and upon the expiration of the applicable warranty period as aforesaid, all such liability shall terminate. This warranty shall not apply to defects in or failures of sub-unit or sub-assembly items manufactured by other companies, which are connected to the ETI Micro products. Such sub-units and sub-assemblies shall carry only those warranties provided by the original manufacturer. The foregoing shall constitute the Buyer's sole remedy and the Seller's sole liability. In no event shall the Seller be liable for special or consequential damages.

*Polybus International is not responsible for any errors or omissions in this documentation.
Polybus International reserves the right to change prices and/or specifications without notice.
Polybus International does not assume any responsibility for use of any circuitry described within this manual. No circuit patent licenses are implied*

Copyright 1994 Polybus International.

TB1 (RJ Model)- RJ45 8 pin modular TELCO.



<u>Pin No.</u>	<u>Description</u>
1	Earth
2	PTT+
3	RxA+
4	TxA+
5	TxA-
6	RxA-
7	PTT-
8	Common

** Note - Conforms to MODEM standards.*

JP1- External Power Header

<u>Pin No.</u>	<u>Description</u>
1	+ 12 Voltage
2	Not used
3	Ground
4	Not use
5	- 12 Voltage

** Note - On RTU8182-24 Pin 1 becomes 24 Vdc.*

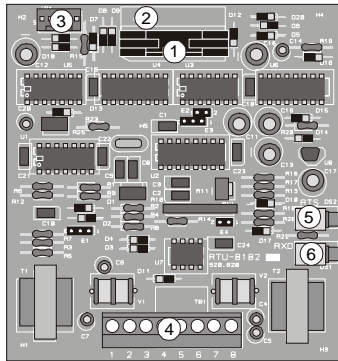
Table of Contents

Overview of Hardware	1
Features	1
Installation	2
Mounting	2
Operating the RTU8182	4
RTU8182 Adjustments	4
Jumper Locations	5
Appendix A Controls and Indicators	6
Appendix B Specifications	7
Appendix C connectors	9

Overview of Hardware

Features

The RTU8182 Modem interfaces any RS232D serial channels to multi-drop or point to point analog voice quality audio networks.



1. P1- 10 pin IDC, RTU or other equipment.
2. P2- 10 pin IDC, IBM-PC 9 pin compatible. (optional)
3. JP1- External power header.
4. TB1- terminal strip (RJ45 optional)
5. DS2- RTS LED.
6. DS1- RxD LED.

The 8182 uses CMOS IC Frequency Shift Keying voice-band MODEM technology. The switched capacitor circuitry contains a group delay equalizer, automatic gain control, carrier detect level adjustment and bias distortion adjustment. The 8182 includes all the features of the integrated MODEMs.

Other features of the RTU8182 include:

- Adjustable RTS-CTS Transmit handshaking.
- Bell202 1200 Baud Full Duplex Operation or CCITT v.23.
- Isolated Two or Four Wire Network Connection.
- LED Indicators for RTS and RxD.
- " Push to Talk" and "Anti-jabber".
- Line Powered through IDC Header.

The following are available options of the RTU-8182.

- DIN rail or 100mm channel mounting
- IBM-PC 9-pin compatible header
- RJ45 field termination (replaces terminal block)
- 24 Vdc power input.

Appendix C Connectors

P1 - IDC 10 pin bump polarized, strain relief locking latch.

Pin No.	P1-RTU	P2-IBM-PC
1	+ 12Vdc*	CD
2	n/c	RxD
3	RxD	TxD
4	n/c	DTR
5	CTS	SG
6	RTS	DSR
7	SG	RTS
8	TxD	CTS
9	CD	RI
10	- 12Vdc*	

* Note - current limited to 20mA.

TB1 (TB model) - Fixed screw cage clamp terminal strip.



Pin No.	Description
1	PTT+
2	PTT-
3	Common
4	Earth
5	RxA-
6	RxA+
7	TxA-
8	TxA+

* Note - conforms to physical RTU-8188 pinout, but is numerically opposite.

Bias Adjustment- Continuously adjustable for optimal symmetry from + 15%.
 Sensitivity- -40 db @ 600 minimum.
 Jitter- 200uS.

Indicators

RxD Active- DS1 red LED.
 RTS Active- DS2 red LED.

Transmitter

Anti-Jabber- 150mS minimum key-up, 10S maximum key-down.
 RTS Delay- 25mS minimum with key-down continuously adjustable to 1S.

Key Generation- Optocoupler open collector TTL compatible.
 Constant Carrier- Continuous carrier in four wire mode.

Modulator- Phase coherent FSK.
 Frequencies- Bell202 1200 CCITT 600
 Mark 1200 1300
 Space 2200 1700
 Crystal controlled + 1 Hz.

Output Level- Continuously adjustable from 0 to -40db.
 Filter- Low pass Fc=3300 Hz.
 Impedance- 600.
 Protection- 5 Vpp diode limited.
 Operation Modes- 2 wire or 4 wire.

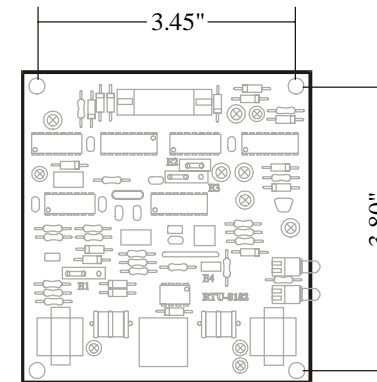
Transformer

Bandpass- Audio BW= .3-3.0 kHz 600.
 Circuitry- DC isolated, capacitor coupled, Gas tube protected

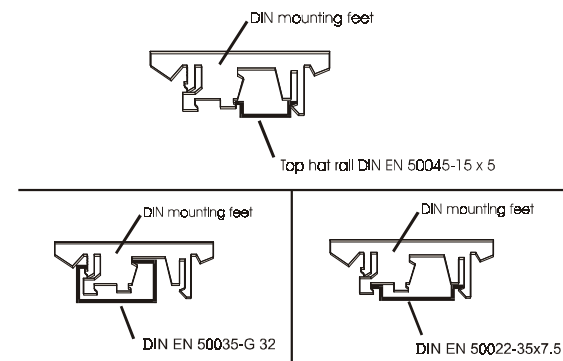
Installing the RTU-8182

Mounting

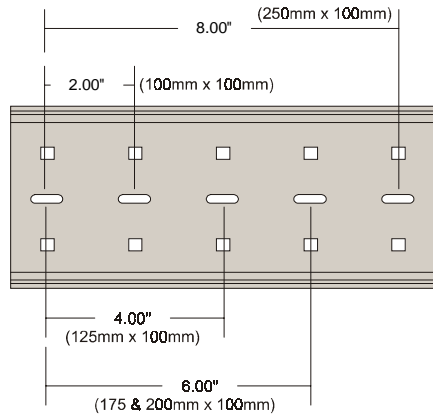
Following drawing gives mounting dimensions of the RTU8182.



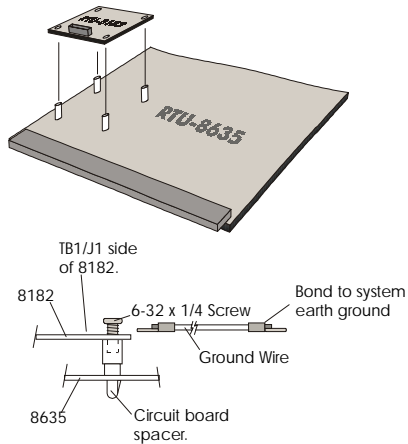
The following drawing provides the different DIN rail mounting types.



The following illustration provides mounting dimensions of the 100mm mounting channel. The RTU8182 modem dimensions are 100 x 100mm.



The following drawings give mounting and grounding information for the RTU-8635.



* Note - Earth ground kit (GND-KIT) provides further I/O protection against lightning-induced electrical surges.

Appendix B Specifications

RS232 Interface

Modes-	Half Duplex in Two wire, Full Duplex in Four wire, Asynchronous NRZ or NRZI.	
Inputs-	Full RS232D Electrical	
	Transmit Data	TxD
	Request To Send	RTS
	Data Terminal Ready	+12V
Outputs-		
	Receive Data	RxD
	Clear To Send	CTS
	Carrier Detect	CD
	External Powered	>+8V
	Line Powered	Input Range less 2V

Power

Line Power-	Acquired from TxD and RTS
External Power-	+12Vdc @ 10mA Rx/20mA Tx, -12Vdc @ 5mA +24Vdc @ 5mA Rx/10mA Tx, -24Vdc @ 5mA

Environmental

Temperature-	0 to 70 C
Relative Humidity-	20 to 90% non-condensing

Receiver

Network Circuitry-	DC isolated, capacitor coupled, Gas tube protected.
Impedance- Input Buffer-	600. Diode limited, AC capacitor coupled, constant gain, out of band re-ejection.
Demodulator-	Automatic Gain Control, Low Pass Filter, Group Delay Equalization
Carrier Detection-	On/Off/On Delay 25mS maximum, 2.5db Hysteresis, CD signal.

Appendix A Controls and Indicators

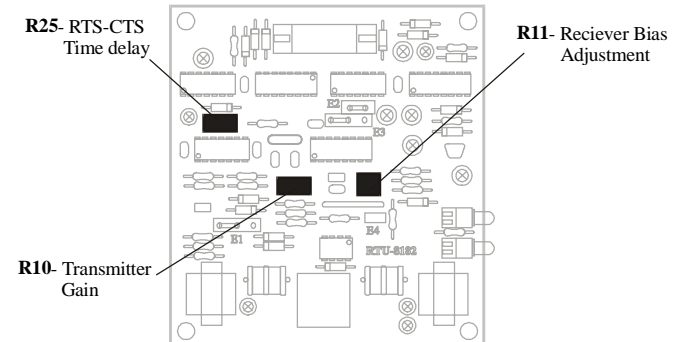
Indicator	Signal Name	Description
TxD	Transmit Data	Serial data from DTE (terminal) to input of modem transmitter.
RxD	Receive Data	Demodulated serial data from output of modem receiver to DTE.
CTS	Clear to Send	Control signal from modem to DTE. Indicates modem is ready to send.
DSR	Not Used	
DTR	Not Used	
RI	Not Used	
CxR	Carrier Detect	Control signal from modem to DTE. Indicates modem receiver is unsquelched and receiving a valid carrier.

Operating the RTU8182

RTU8182 Adjustments

Potentiometer Locations

The following drawing provides the location of the user adjustable Potentiometers.



Adjustment parameters

R10: -20 dB to -3 dB +/-5%

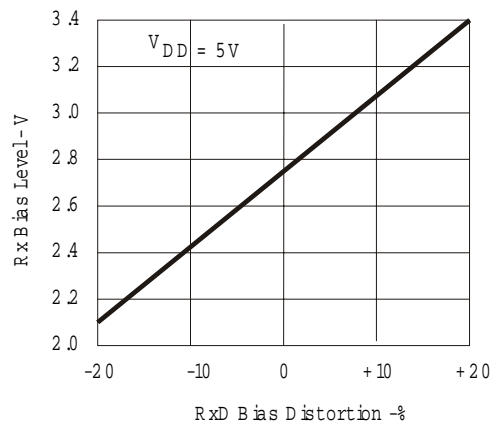
R11: Factory set do not adjust!

R25: 25 mS to 2000 mS +/-10%

R11- Receiver Bias Adjustment

An adjustment of the bias voltage at the RxB pin is required to minimize the bias distortion of the demodulated receive signal at the RxD pin. The bias voltage applied to the RxB pin is used by the slicer to set an internal threshold. A plot of the bias distortion of the RxD signal versus the bias level at the RxB pin shown in the figure on the following page..

1. Apply the desired signal to pins TxR1, TxR2 and TRS to set the modem in the 1200 baud transmit/1200 baud receive half-duplex mode (for either CCITT v.23 or Bell202 standards).
2. Set the modem in the loop back mode . The attenuator ensures that the signal from the TxA pin to the RxB pin is less than 0.78 V peak to peak.
3. Apply a 600 Hz square wave to the TxD pin.
4. Monitor the RxD pin with an oscilloscope and adjust the voltage at the RxB pin until the output signal at the RxD pin has a 50% duty cycle.



R10- Transmitter Gain

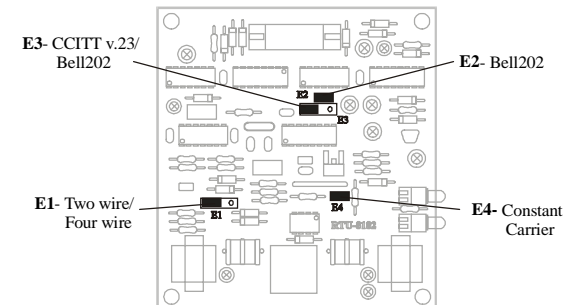
1. Place a 600 load across the output.
2. Measure at output.
3. Adjust output.(factory setting is at -9db)

R25- RTS-CTS Time Delay

R25 is factory set at minimum.

Jumper Locations

The following drawing provides jumper locations on the RTU8182.



Jumper Settings

The table below shows the function of each jumper located on the RTU8182. Jumper settings in **bold-face** type are factory settings.

Jumper	Setting	Function
E1	1-2	Two wire modem communication
	2-3	Four wire modem communication
E2	1-2	Bell202
	Parked	CCITT v.23
E3	1-2	Modem in CCITT v.23 mode
	2-3	Modem in Bell202 mode
E4	1-2	Key Carrier
	Parked	No Key Carrier