USER INSTRUCTIONS FOR

VIP-345 "REVERSE PIPE"™ CONVERTERS

FEDERAL COMMUNICATIONS COMMISSION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense.

CE

This equipment has been tested and found to conform to the directives and standards for a Class A Information Technology Equipment type and for the Commercial and Light Industrial equipment class.

INTRODUCTION

The VIP-345 "Reverse Pipe"™ converters change the output of a standard PC keyboard to RS-232 format. The VIP-345 also has a second output, which is standard PC keyboard data. This second output can be connected to a PC's standard keyboard port. In that case, the keyboard's output is routed simultaneously to the connected PC and to the RS-232 output. It is not necessary that the VIP-345 be connected to a PC for it to operate, but a separate +5Vdc source must be provided for the VIP-345 to operate. The following power supplies may be ordered from Vetra, the VIP-210 (+5vdc @ 1 A 100 – 120 Vac 50/60 Hz) FCC only, or the VIP-211 (+5Vdc @ 2 A 100 – 240 Vac 50/60 Hz) FCC & CE, both units are wall mount power supplies and may be purchased separately from Vetra.

NOTE: If a Power Supply other then the ones mentioned above is used, all claims to FCC and or CE regulations cease to exist.

PREPARE FOR OPERATION

There are five steps to prepare the Converters for operation.

ALL CONNECTIONS SHOULD BE MADE WITH THE POWER SOURCE OFF !

1. **Selection of baud rate:** Set the baud rate using configuration DIP switch "SW1", which is located at one end of the converter, next to the DB-9 pin connector. A selection of four different baud rates is available - 9600 (factory setting), 4800, 2400, and 1200. To change factory setting of 9600 baud, use switches 1 and 2 of SW1 as shown in the Baud Rate Selection diagram to set a new baud rate. For a new baud rate to take effect, the converter must be powered off and then powered on again.

2. **Set data translation mode:** The converter can be set to data translation mode or no data translation mode, using the configuration DIP switch "SW1" (factory setting is **no translation** switch 4 of SW1 **DOWN**). To change the factory setting, set switch 4 of SW1 **UP** to select data translation. More information on this subject is given later.

3. **Connect the PC:** Use the male-male 6 pin Mini-DIN PC keyboard extension cable supplied with the Converter to connect the Converter to the PC's keyboard connector. This cable should be connected from the connector marked "TO PC KBD PORT" on the converter to the PC. The Converter is powered from the PC via this cable. An adapter the VIP-301-5M6F (may be purchased separately) is needed for connection to an AT style PC. If the converter is being used as a stand alone unit, then plug either the VIP-210 or the VIP-211 power supply into the connector marked "+5VDC IN" on the converter. The Converter should be connected to the PC or the power supply only while they are powered down.

4. **Connect the Keyboard:** Use the keyboard's cable to connect the keyboard to the female 6 pin DIN connector of the Converter marked "KEYBOARD IN". The keyboard will be powered from the PC or power supply via the Converter and via the keyboard cable. An adapter the VIP-301-5F6M (may be purchased separately) will be needed if an AT style keyboard is used.

5. **Connect the RS-232 device:** Use an appropriate cable to make this connection. A female DB-9 connector on the cable is needed to connect to the Converter. The Converter transmits RS-232 data on pin 3. Pin 5 of the converter is ground. The data format accepted by the Converters is one start bit, eight (8) data bits, least significant bit first, one stop bit, no parity.

OPERATION

Translation of Keyboard Scan Codes to ASCII Codes

Codes generated by PC compatible keyboards do not correspond to standard ASCII codes that are common with RS-232 devices. The VIP-345 "Reverse Pipe" converter has two operating modes: (a) **Data Translation**, and (b) **No Data Translation (Clear)**. The operating mode is selected with SW1 switch 4.

Data Translation Mode

With SW1 switch 4 **UP** the Converters translate keyboard scan codes to ASCII codes, as shown in the PC KEYBOARD TO ASCII CONVERSION TABLE. Please note that the use of the PC keyboard **Shift** or **Caps Lock** keys is necessary to generate upper case characters; and the **Shift** key is necessary for certain other codes (i.e. those normally generated by use of the Shift key on the PC keyboard, for example the @ symbol is generated by Shift 2). The Left Control key together with the alphabetic keys and the (and) keys generates ASCII Control Codes.

No Data Translation (Clear) Mode

With SW1 switch 4 **DOWN** (factory setting) the Converter only changes PC scan codes from the bit-synchronous protocol and +5 volt level generated by standard PC keyboard to the asynchronous RS-232 protocol and RS-232 voltage levels. Since no data translation takes place, the RS-232 data represent scan codes generated by the PC keyboard.

BAUD RATE SELECTION DIAGRAM - SW1 SETTINGS

BAUD RATE	UP	DOWN
9600		1,2,3
4800	2	1,3
2400	1	2,3
1200	1,2	3

NOTE: SW1-4 controls Data Translation Mode - see text above

No Translation is made for blank Table entries. 2. M - Make code only. 3. LALT/RALT - left/right Alt keys; NUM LK - Num Lock key; CAP LK - Caps Lock key; SCROLL LK - Scroll Lock key. 4. LFTWIN, RTWIN, WINAPP are the Windows 95 keys. 5. Keys are specified by US English keyboard keycap legends. 6. ASCII codes C0 through CF for numeric keypad are only sent when Num Lock is off. When Num Lock is on, ASCII codes for numbers, operands, dot, and enter are sent instead. Holding either shift key while Num Lock is on will cause the numbers and dot only (but not the operands or enter) to revert back to the codes shown in the table.

PC KEYBOARD KEY TO ASCII CONVERSION TABLE

MOST SIGNIFICANT HEX DIGIT

	0	1	2	3	4	5	6	7
0			Space	0	@	P	`	p
1			!	1	A	Q	a	q
2			"	2	B	R	b	r
3			#	3	C	S	c	s
4			$	4	D	T	d	t
5			%	5	E	U	e	u
6			&	6	F	V	f	v
7			'	7	G	W	g	w
8	BS		(	8	H	X	h	x
9	Tab		)	9	I	Y	i	y
A	Alt SysRq		*	:	J	Z	j	z
B		Esc	+	;	K	[	k	{
C			,	<	L	\	l	|
D	Enter		-	=	M	]	m	}
E			.	>	N	^	n	~
F			/	?	O	_	o	

MOST SIGNIFICANT HEX DIGIT

	8	9	A	B	C	D	E	F
0			F1	Num Lock	Num Enter	Insert	LFTWIN	
1			F2	Caps Lock	Num /	Home	RTWIN	
2			F3	Scroll Lock	Num *	End	WINAPP	
3	M LALT		F4		Num 9	Page Up		
4			F5		Num 8	Page Down		
5			F6		Num 7	Up Arrow		
6	M RALT		F7		Num 6	Dn Arrow		
7			F8		Num 5	LF Arrow		
8			F9		Num 4	RT Arrow		
9			F10		Num 3	Prt Scr		
A			F11		Num 2	Pause or Ctl-Break		
B			F12		Num 1	Delete		
C					Num 0			
D					Num -			
E					Num +			
F					Num .			