

## User Instructions for the USB-341 "ReversePipe"<sup>™</sup> USB Keyboard to Serial RS-232 Converter

Congratulations on your purchase of a VETRA USB Keyboard to Serial ASCII! This quality product is designed and built in the USA and is backed by a VETRA Three-year Warranty and unlimited free technical support. You are welcome to comment, please email us at sales@vetra.com or call us at the numbers given at the end.

### INTRODUCTION

The USB-341 "ReversePipe"<sup>™</sup> protocol converter changes the output of a standard USB keyboard to RS-232 format, generating ASCII codes.

### PREPARE FOR OPERATION

There are four steps to prepare the Converter for operation. Step 1 needed only to change the baud rate.

**1. Baud Rate Selection:** The Converter is factory pre-set to 9600 baud. Two other baud rates are available, 19,200 and 4,800 baud. To change the baud rate, open the converter, find connector P4 (located on opposite side from the USB connector). Connect the jumper to pins 1-2 for 4,800, pins 2-3 for 9,600 (default) or 3-4 for 19,200. Baud rate selection must be done with power-off.

**2. Power the Converter:** The USB-341 USB keyboard to serial ASCII Converter is powered from a +5V DC power supply. We recommend the VIP-211 (+5Vdc @ 2 A 100 – 240 VAC 50/60 Hz) FCC & CE, which is a wall mount power supply and may be purchased separately from Vetra; or you may provide your own supply.

**3. Connect the USB Keyboard:** Use the USB keyboard to connect to the USB input connector on the Converter. NOTE: The USB keyboard may be connected to the Converter at any time. It may be disconnected and reconnected at any time.

**4. Connect the RS-232 device:** A Female/Female DB-9 cable is supplied with the unit to make this connection. The supplied cable is six feet long. The Converter sends (transmits) RS-232 data on pin 3. Pin 5 of the converter is ground. The data format output by the Converter is one stop bit, eight (8) data bits, least significant bit first, one stop bit, and no parity.

### OPERATION

**Translation of Keyboard Codes to ASCII Codes:** Codes generated by standard USB keyboards do not correspond to standard ASCII codes that are common with RS-232 devices. The USB-341 Converter translates keyboard codes to ASCII codes, as shown in the TABLE below. Please note that the use of the PC keyboard **Shift** key is necessary to generate upper case characters and the Shift key is necessary for certain other codes (i.e. those normally generated by using the Shift key on the PC keyboard, for example the @ symbol is generated by Shift 2).

TOP ROW HAS MOST SIGNIFICANT HEX DIGIT – LEAST SIGNIFICANT DIGIT IS IN LEFT COLUMN

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			Space	0	@	P	`	P			F1	Num LK	Num Enter	Insert		
1			!	1	A	Q	a	q	M LCNT	B LCNT	F2	Caps LK	Num /	Home		
2			"	2	B	R	b	r			F3	Scr LK	Num *	End	WINAPP	
3			#	3	C	S	c	s	M LALT	B LALT	F4		Num 9	Page Up		
4			\$	4	D	T	d	t	M RCNT	B RCNT	F5		Num 8	Page Down		
5			%	5	E	U	e	u			F6		Num 7	Up Arrow		
6			&	6	F	V	f	v	M RALT	B RALT	F7		Num 6	Down Arrow		
7			'	7	G	W	g	w			F8		Num 5	LFT Arrow		
8	BS		(	8	H	X	h	x	M LWIN	B LWIN	F9		Num 4	RT Arrow		
9	Tab		)	9	I	Y	i	y	M RWIN	B RWIN	F10		Num 3	Print Screen		
A			*	:	J	Z	j	z			F11		Num 2	Pause Break		
B		Esc	+	;	K	[	k	{			F12		Num 1	Delete		
C			,	<	L	\	l						Num 0			
D	Enter		-	=	M	]	m	}					Num -			
E			.	>	N	^	n	~					Num +			
F			/	?	O	_	o						Num .			

**NOTES:** 1. Blank Table entries indicate no output. 2. M - make code only (simulates "stuck" key); B - break code only (releases "stuck" key) 3. LCNT/RCNT - left/right control keys; LALT/RALT - left/right Alt keys; LFTWIN/RTWIN - left/right Windows keys. 4. NUM prefix denotes keys from NUM pad. 5. PRT SCR is Print Screen key. 6. WINAPP is Windows key. 7. Keys are specified by US English keyboard keycap legends.

## **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 his own 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.

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