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User Instructions for the VIP-312 "SmartWye"™ PC Keyboard Encoder

DESCRIPTION

The "SmartWye"™ PC Keyboard Encoders make it easy to use the PC's keyboard port for operator input in embedded and dedicated PC's. The encoder and custom switch panel replace the standard keyboard by converting switch closures to standard PC keyboard scan codes. The encoder also generates all PC power-up responses, and provides all the required handshaking with the PC's keyboard interface, giving error free boot up. The Model VIP-312-128 also has NUM Lock, Caps Lock, and Scroll Lock LED support.

OPERATION

The encoder detects and debounces switch closures, generates appropriate key "make" codes, and sends them to the PC. When the switch is opened, the encoder sends the corresponding "break" code. Only the "make" code is sent for each switch closure, regardless of the time the switch is held closed. When several switches are closed simultaneously, "make" codes are sent once for each switch. "Break" codes are sent when the switches are again opened.

GENERATED CODES

The keyboard code generated for a given switch closure is shown in two tables (maps) below in terms of US keyboard keys. J3 is the switch input connector to the encoder.

The first table, Table 1, shows three standard maps for encoder models which accept up to 24 switches to ground. The given key code is generated when the J3 pin in the table is closed to the GND pin. "Map Type" is one of three standard maps. The "A" (ALPHA) map generates alphabetic keys, the "F" (FUNCTION) map generates functions keys, and the "N" (NUMERIC) map generates numeric keys.

Table 2 applies to matrix connected switches, such as membrane keypads. Model VIP-128 contains the complete Windows 95 104 key map of the standard PC keyboard for switches connected in an 8 by 13 matrix.

PREPARE FOR OPERATION

In order to assure proper operation of the "SmartWye", certain conditions should be observed in its application. The following is a list of these conditions:

ALL CONNECTIONS SHOULD BE MADE WITH THE PC POWER OFF!!

(1) Do not connect or disconnect either the keyboard to/from the "SmartWye" or the "SmartWye" to the host when the host is powered up.

(2) Communications from the standard keyboard is bidirectional. Therefore, all keys send the proper codes and the status LED's for CAPS LOCK, NUM LOCK and SCROLL LOCK on the keyboard are fully functional.

(3) The "SmartWye" may be operated with:
(a) only the keypad (no keyboard) or
(b) with only the keyboard,
(c) or with both.

(4) The host is connected to the "SmartWye" at the J1 connector location using a Vetra VIP-310-M Male Interface Cable or one provided by customer. The keyboard, if used, is connected to the "Smart-Wye" at the J2 connector location using a Vetra VIP-310-F Female Interface Cable or one provided by customer. The VIP-310-M and VIP-310-F do not come with the "SmartWye", they must be ordered separately. If the customer is furnishing the interface cables to the "SmartWye", please observe the pin outs as listed on the opposite page. Discrete switches or matrix keypads connect to the "SmartWye" at the J3 connector location.

Map for VIP-312-24 Models

Model:	-24A	-24F	-24N
J3 PIN	ALPHA	FUNCTION	NUMERIC

1	a	ESC	NUM /
2	b	F1	NUM *
3	c	F2	NUM -
4	d	F3	NUM +
5	e	F4	NUM ENTER
6	f	F5	NUM 0
7	g	F6	NUM 1
8	h	F7	NUM 2
9	i	F8	NUM 3
10	j	F9	NUM 4
11	k	F10	NUM 5
12	l	F11	NUM 6
13	m	F12	NUM 7
14	n	LF SHIFT	NUM 8
15	o	SPACE	NUM 9
16	p	ENTER	NUM .
17	q	PG UP	UP ARROW
18	r	PG DN	DN ARROW
19	s	UP ARROW	LF ARROW
20	t	DN ARROW	RT ARROW
21	u	LF ARROW	LF SHIFT
22	SPACE	RT ARROW	LF ALT
23	LF SHIFT	z	LF CNTL
24	ENTER	y	ESC
25	COMMON	COMMON	COMMON

TABLE 1

Encoding Table for VIP-312-128 Model PC Keyboard Encoder

J3 PINS	8	7	6	5	4	3	2	1
9	NUM 0	NUM 1	NUM 2	NUM 3	UP ARROW	DN ARROW	LF ARROW	RT ARROW
10	NUM 4	NUM 5	NUM 6	NUM 7	ESC	L SHIFT	LF ALT	LF CTL
11	NUM 8	NUM 9	NUM ENT	NUM .	F1	F2	F3	F4
12	NUM +	NUM -	NUM *	NUM /	F5	F6	F7	F8
13	a	b	c	d	k	l	m	n
14	e	f	g	h	o	p	q	r
15	i	j	INS	DEL	s	t	u	v
16	HOME	END	PAGE UP	PAGE DOWN	w	x	y	z
17	F9	F10	F11	F12	,	.	/	[
18	1	2	3	4	]	`	TAB	NUM LK
19	5	6	7	8	SCR LK	CAPS LK	-	=
20	9	0	ENTER	BK SP	\	;	`	SPACE

21	WINAPP	RTWIN	LFTWIN	PRT SCR	PSE	RT SHIFT	RT CNTL	RT ALT
22								
23								
24								
25								

TABLE 2

The Model VIP-312-128 also supports Num Lock, Caps Lock, and Scroll Lock LEDs. By adding the J4 header and resistors R2-R4 (not to exceed 20 ma current per LED) the VIP-312-128 can be configured to support LEDs. The encoder will provide an active low on the following pins:

J4-1 Scroll Lock
J4-2 Caps Lock
J4-3 Num Lock

Pins J4-4, -5, and -6 provide a pull up to +5 Vdc. This pull up is not to exceed 20 ma for each LED

Pin Out Information for All Models of the VIP-312

J1-1 Vcc	J2-1 Vcc
J1-2 Host Clock	J2-2 Keyboard Clock
J1-3 Host Data	J2-3 Keyboard Data
J1-4 Not Used	J2-4 Not Used
J1-5 Shield	J2-5 Shield
J1-6 Gnd	J2-6 Gnd

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