features

HIGH RELIABILITY
THREE LEVELS OF CODE
MOS ENCODING
CHARACTER ASSIGNMENT CONFORMS TO THE AMERICAN STANDARD FOR ALPHANUMERIC KEYBOARDS X4.14/1971
LOW COST. . . AND AVAILABLE FROM STOCK

USASCII CODE ASSIGNMENT
SOLID STATE KEYS
ERROR SIGNAL
ONE CHARACTER STORAGE
KEYBOARD DISABLE
SYSTEM SHIFT
TWO-KEY ROLLOVER

MOS encoding, coupled to solid state keys, provides the most reliable and versatile keyboard available today. MOS has greatly increased the number of functions that the keyboard can perform, while at the same time allowing significant cost reduction.

Every aspect of the keyboard is designed for maximum operator throughput. This includes key operating force, key spacing, button shapes, and legending. In addition, a two-key rollover feature is built into the keyboard circuit. It allows the operator to roll keys during "burst" speed typing of familiar words without entering an erroneous code. When a second key is depressed, before the first key is released, the code for the first key remains at the output until the first key is released. When the first key is released, the output of the second key is presented to the system.

The one-character storage feature holds the data bits at the output for the last valid key depression. This allows the system ample time to "read" the keyboard output.

The keyboard is encoded with the seven bit ASCII code plus odd parity. There are three modes of operation: MODE 1, lower case Alpha and numbers. MODE 2, upper case Alpha and symbols (selected by the shift key). MODE 3, control characters (selected by the CTRL key).

An error signal, that may be used to notify the operator that a key has been operated in the third mode which does not have a control character, is provided.

This is accomplished with a ninth bit that is presented to the system as a logic "1" for those characters that do not generate control characters in the third or control mode.

The keyboard disable feature blocks strobe output and the nine encoded data bit outputs, when a signal is provided from the system. This feature permits data entry from only one keyboard at a time. It may also be used, in conjunction with the error signal, to block keyboard output when a key in the control mode is depressed that has a logic "1" error bit. To accomplish this, a flip-flop will be required within the system that can be set by the error signal output. The flip-flop output can then be used to drive the keyboard inhibit line and error indication. The function output from the error reset key can be used to reset the flip-flop. This technique may be used to simulate the keyboard lockout feature found in some mechanical keyboards.

MICRO SWITCH

specifications
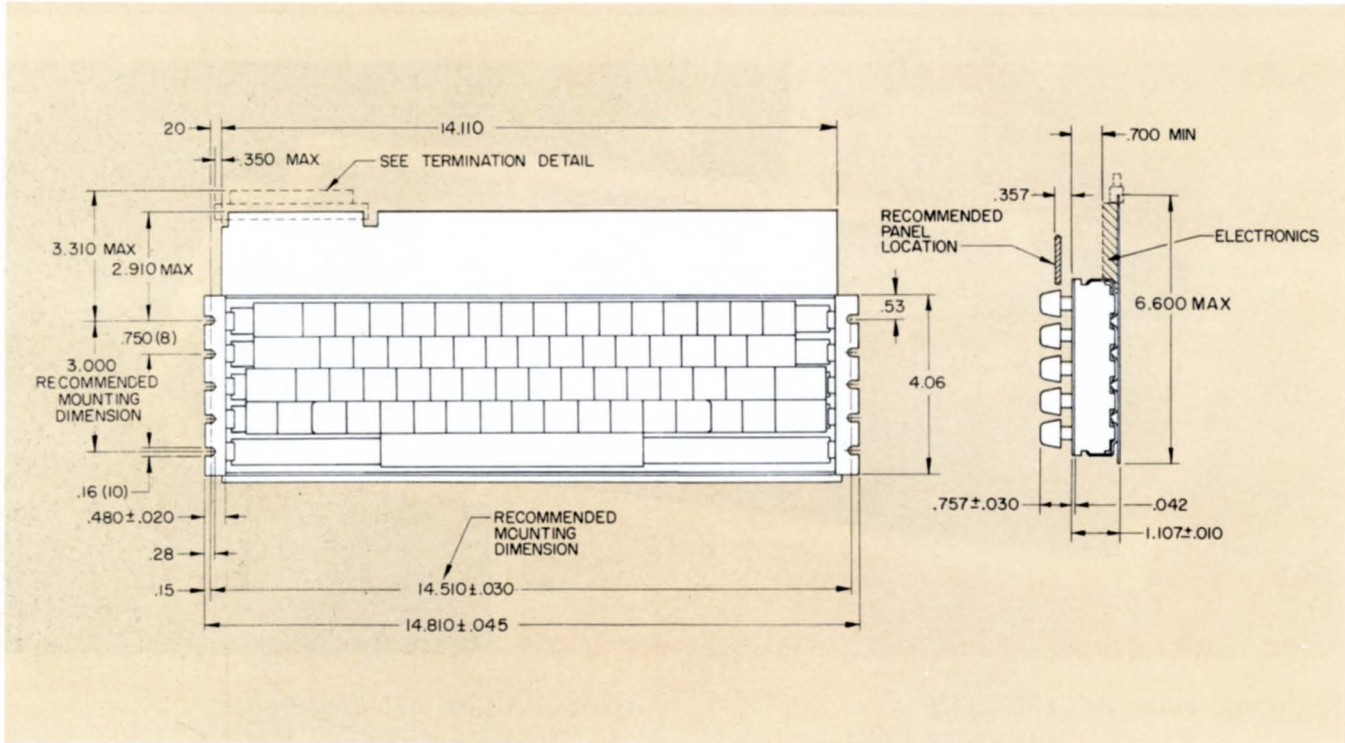
ELECTRICAL DATA

Power Requirements	+5 volts DC ±5% @ 1.0 Ampere max. −12 volts DC ±20% @ 5 milliamps max. Keyboard Ground @ 0 volts Note: Tolerances include ripple
Data Key Outputs (Positive logic)	Logic "0": +0.6 volts DC max. @ 1.6 milliamps (sinking) Logic "1": +2.55 volts DC min. @ 0.12 milliamps max. (sourcing)
Function Key Outputs	Key Unoperated: +0.25 Volts DC max. with load resistance of 2500 ohms or less. Key Operated: +2.8 volts DC min. 1 to 10 milliamp current source
Strobe Outputs	All keys in unoperated state: +0.6 volts DC max. @ 1.6 milliamps (Sinking) One Key Operated: +2.55 Volts DC min. @ 0.12 milliamps max (Sourcing) Two Key Rollover condition: +0.6 volts DC max. @ 1.6 milliamps (Sinking)
Error Bit Signal	Output same as Data key outputs (See termination detail)

TIMING

Strobe is true 500 nanoseconds minimum after bits are true. Strobe falls when key is released. If a second key is depressed prior to release of first key, strobe will fall. Upon release of the first key, strobe will come true 500 nanoseconds minimum after new data comes true.

KEYBOARD DISABLE

Signal From System	Keyboard Output
0.70 Volt DC Max. @ 2.0 MA Max (Sinking)	All data bits and strobe blocked
(Keyboard V_{CC}-1.7) Min @ 0.12 MA Max (Sourcing) or open circuit	Data bits and strobe signal presented to system.

NOTE: When the system "resets" the keyboard, the data from the last key depressed will be present at the output. This is true regardless of whether the key was operated before or after the output was blocked.

TERMINATION

Card-edge output with gold plated terminals accept standard connectors such as: Cinch Jones #251-15-30-160 with between contact key or equivalent. (Connector is optional.)

KEYROW OFFSET

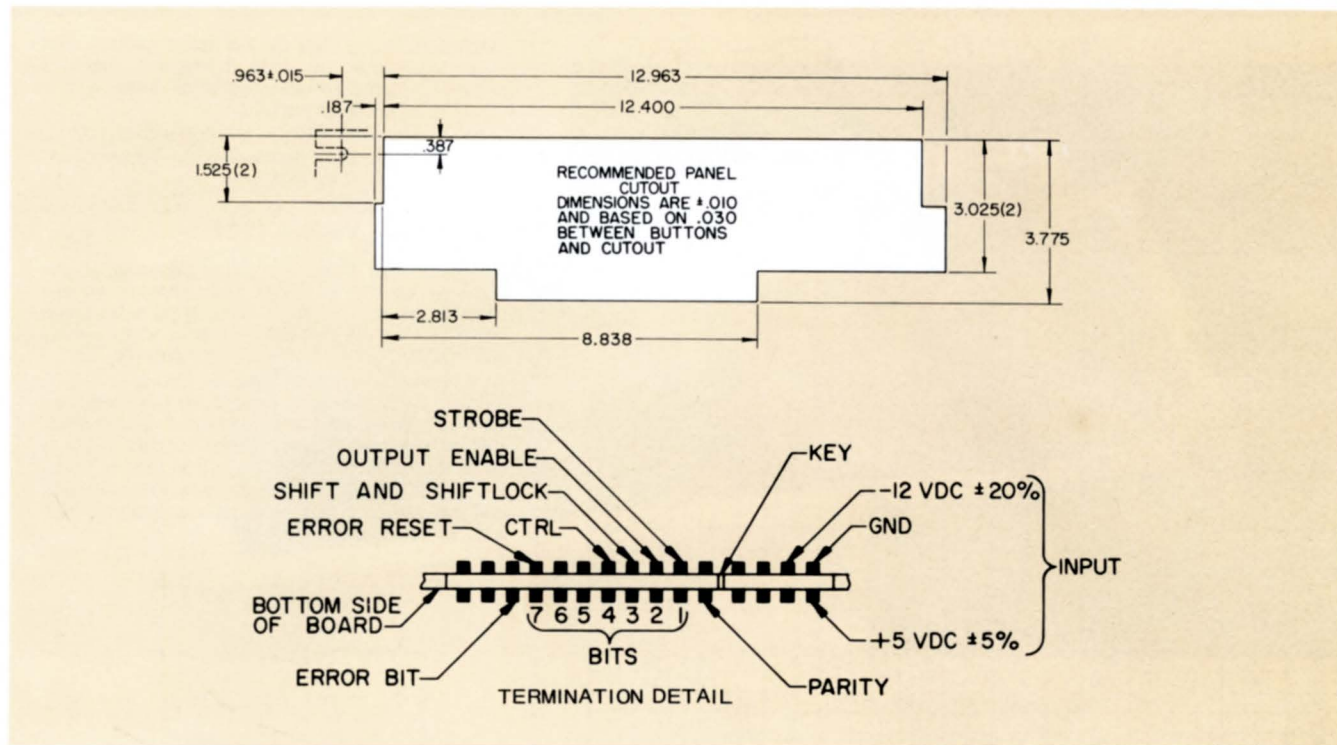3/8-3/16-3/8 inch

KEY SPACING

Keys spaced 3/4 inch center-to-center.

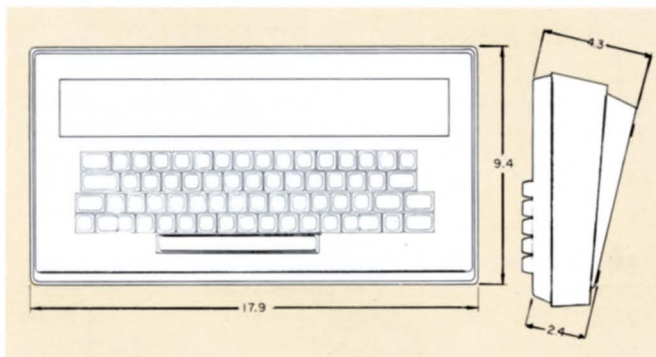### BUTTON ORIENTATION

Sloped (Stepped orientation optional)

WEIGHT

With Enclosure: 8.75 lbs. approx.
Without Enclosure: 2.5 lbs. approx.

Recommended panel cutout dimensions, termination detail

ENCLOSURE (OPTIONAL)

The enclosure cover is dark gray high strength ABS and the base is light gray cast aluminum alloy.

SYSTEM SHIFT

Shift lines are provided to permit programming of your system to initiate keyboard shifts. (See termination detail).

1. System Shift: Inputs to the shift lines will require a diode isolated current source capable of sourcing 1.5 Milliamp Max. @(Keyboard V_{CC}-1.7)

2. Mode Indication: The shift lines may also be used for mode indication. Each shift line is loaded in the keyboard by a 4.5K ±30% resistor to ground. Thus external current load must be adjusted accordingly.

NOTE: The system SHIFT must not be clamped to ground.

BUTTONS

MICRO SWITCH two-shot and tri-shot molded buttons.

Touch Typing Keys: Button shell off-white, control mode legends blue-gray, other legends dark-gray.

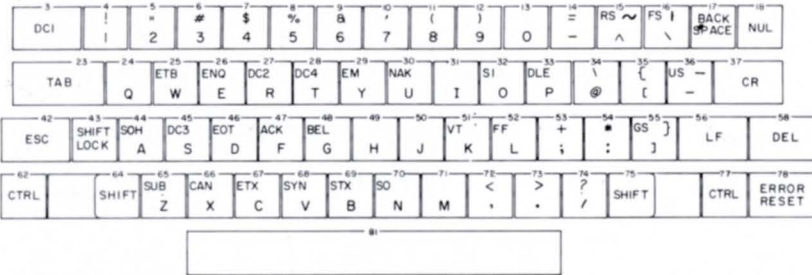Station 62 and 77: Button shells off-white, legends blue-gray.

Control Keys: Button shells dark-gray, legends off-white.

Space Bar: Dark-gray

You may also specify legends, colors and button shapes, including sculptured buttons, from our wide selection.

LISTING	INSTOCK	ENCLOSURE AND CONNECTOR INCLUDED
63SW5-3	✓	✓
63SW5-4	✓	

code and character assignment

NOTE: 1. Keys that do not have control character in Mode 3, have a logic "1" error bit which may be used to drive an error signal.

2. If the shift lock key and CTRL key are held depressed the keyboard will be in Mode 3.

STANDARD VARIATIONS

If the codes, array, and other features of the 63SW5-4 do not fit your requirements, we are ready to work with you in specifying a keyboard that fits your exact needs. Consult your nearest MICRO SWITCH branch office for details.

An example is the array shown (listing 67SW5-1) below, which has special keys for CRT applications. This listing features the full 128 characters of the ASCII code. It has MICRO SWITCH two-shot molded buttons: the buttons in the touch typing portion are medium gray with white legends and the outboard control keys are charcoal gray with white legends.

67SW5-1 ASCII Code

ASCII code odd parity

KEY NO.	MODE 1					MODE 2					MODE 3				
	CHAR	Error Bit	765	4321	P	CHAR	Error Bit	765	4321	P	CHAR	Error Bit	765	4321	P
3	DC1	0	001	0001	1	DC1	0	001	0001	1	DC1	0	001	0001	1
4	1	0	011	0001	0	!	0	010	0001	1	1	1	011	0001	0
5	2	0	011	0010	0	''	0	010	0010	1	2	1	011	0010	0
6	3	0	011	0011	1	#	0	010	0011	0	3	1	011	0011	1
7	4	0	011	0100	0	$	0	010	0100	1	4	1	011	0100	0
8	5	0	011	0101	1	%	0	010	0101	0	5	1	011	0101	1
9	6	0	011	0110	1	&	0	010	0110	0	6	1	011	0110	1
10	7	0	011	0111	0	'	0	010	0111	1	7	1	011	0111	0
11	8	0	011	1000	0	(	0	010	1000	1	8	1	011	1000	0
12	9	0	011	1001	1	)	0	010	1001	0	9	1	011	1001	1
13	0	0	011	0000	1	0	0	011	0000	1	0	1	011	0000	1
14	−	0	010	1101	0	=	0	011	1101	0	−	1	010	1101	1
15	^	0	101	1110	0	~	0	111	1110	1	RS	0	001	1110	0
16	\	0	101	1100	1	l	0	111	1100	0	FS	0	001	1100	0
17	BS	0	000	1000	0	BS	0	000	1000	0	BS	0	000	1000	0
18	NUL	0	000	0000	1	NUL	0	000	0000	1	NUL	0	000	0000	1
23	TAB	0	000	1001	1	TAB	0	000	1001	1	TAB	0	000	1001	1
24	q	0	111	0001	1	Q	0	101	0001	0	DC1	0	001	0001	1
25	w	0	111	0111	1	W	0	101	0111	0	ETB	0	001	0111	1
26	e	0	110	0101	1	E	0	100	0101	0	ENQ	0	000	0101	1
27	r	0	111	0010	1	R	0	101	0010	0	DC2	0	001	0010	1
28	t	0	111	0100	1	T	0	101	0100	0	DC4	0	001	0100	1
29	y	0	111	1001	1	Y	0	101	1001	1	EM	0	001	1001	0
30	u	0	111	0101	0	U	0	101	0101	1	NAK	0	001	0101	0
31	i	0	110	1001	1	I	0	100	1001	1	HT	1	000	1001	1
32	o	0	110	1111	1	O	0	100	1111	0	SI	0	000	1111	1
33	p	0	111	0000	1	P	0	101	0000	1	DLE	0	001	0000	0
34	@	0	100	0000	1	\	0	110	0000	0	NUL	1	000	0000	1
35	[	0	101	1011	0	{	0	111	1011	0	ESC	1	001	1011	1
36	−	0	101	1111	1	−	0	101	1111	1	US	0	001	1111	0
37	CR	0	000	1101	0	CR	0	000	1101	0	CR	0	000	1101	0
42	ESC	0	001	1011	1	ESC	0	001	1011	1	ESC	0	001	1011	1
43	SHIFT LOCK (MODE SELECTION KEY)														
44	a	0	110	0001	0	A	0	100	0001	1	SOH	0	000	0001	0
45	s	0	111	0011	0	S	0	101	0011	1	DC3	0	001	0011	0
46	d	0	110	0100	0	D	0	100	0100	1	EOT	0	000	0100	0
47	f	0	110	0110	1	F	0	100	0110	0	ACK	0	000	0110	1
48	g	0	110	0111	0	G	0	100	0111	1	BEL	0	000	0111	0
49	h	0	110	1000	0	H	0	100	1000	1	BS	1	000	1000	0
50	j	0	110	1010	1	J	0	100	1010	0	LF	1	000	1010	1
51	k	0	110	1011	0	K	0	100	1011	1	VT	0	000	1011	0
52	l	0	110	1100	0	L	0	100	1100	1	FF	0	000	1100	0
53	;	0	011	1011	0	+	0	010	1011	1	;	1	011	1011	0
54	:	0	011	1010	1	*	0	010	1010	0	:	1	011	1010	1
55	]	0	101	1101	0	}	0	111	1101	1	GS	0	001	1101	1
56	LF	0	000	1010	1	LF	0	000	1010	1	LF	0	000	1010	1
58	DEL	0	111	1111	0	DEL	0	111	1111	0	DEL	0	111	1111	0
62	CTRL (MODE SELECTION KEY)														
64	SHIFT (MODE SELECTION KEY)														
65	z	0	111	1010	0	Z	0	101	1010	1	SUB	0	001	1010	0
66	x	0	111	1000	1	X	0	101	1000	0	CAN	0	001	1000	1
67	c	0	110	0011	0	C	0	100	0011	1	ETX	0	000	0011	1
68	v	0	111	0110	0	V	0	101	0110	1	SYN	0	001	0110	0
69	b	0	110	0010	0	B	0	100	0010	1	STX	0	000	0010	0
70	n	0	110	1110	0	N	0	100	1110	1	SO	0	000	1110	0
71	m	0	110	1101	0	M	0	100	1101	1	CR	1	000	1101	0
72	,	0	010	1100	0	<	0	011	1100	1	,	1	010	1100	0
73	.	0	010	1110	1	>	0	011	1110	0	.	1	010	1110	1
74	/	0	010	1111	0	?	0	011	1111	1	/	1	010	1111	0
75	SHIFT (MODE SELECTION KEY)														
77	CTRL (MODE SELECTION KEY)														
78	ERROR RESET (FUNCTION KEY)														
81	SP	0	010	0000	0	SP	0	010	0000	0	SP	0	010	0000	0

ordering information

Contact your nearest MICRO SWITCH Branch Office and a Field Engineer will be glad to work with you in satisfying your keyboard requirements: proper selection, pricing, and delivery scheduling. These experienced keyboard experts will provide sound and practical answers to your needs.