TASA's Solid State Micro Proximity Keyboards

Full 128 position 8-bit ASCII output plus continuous strobe, parity select.

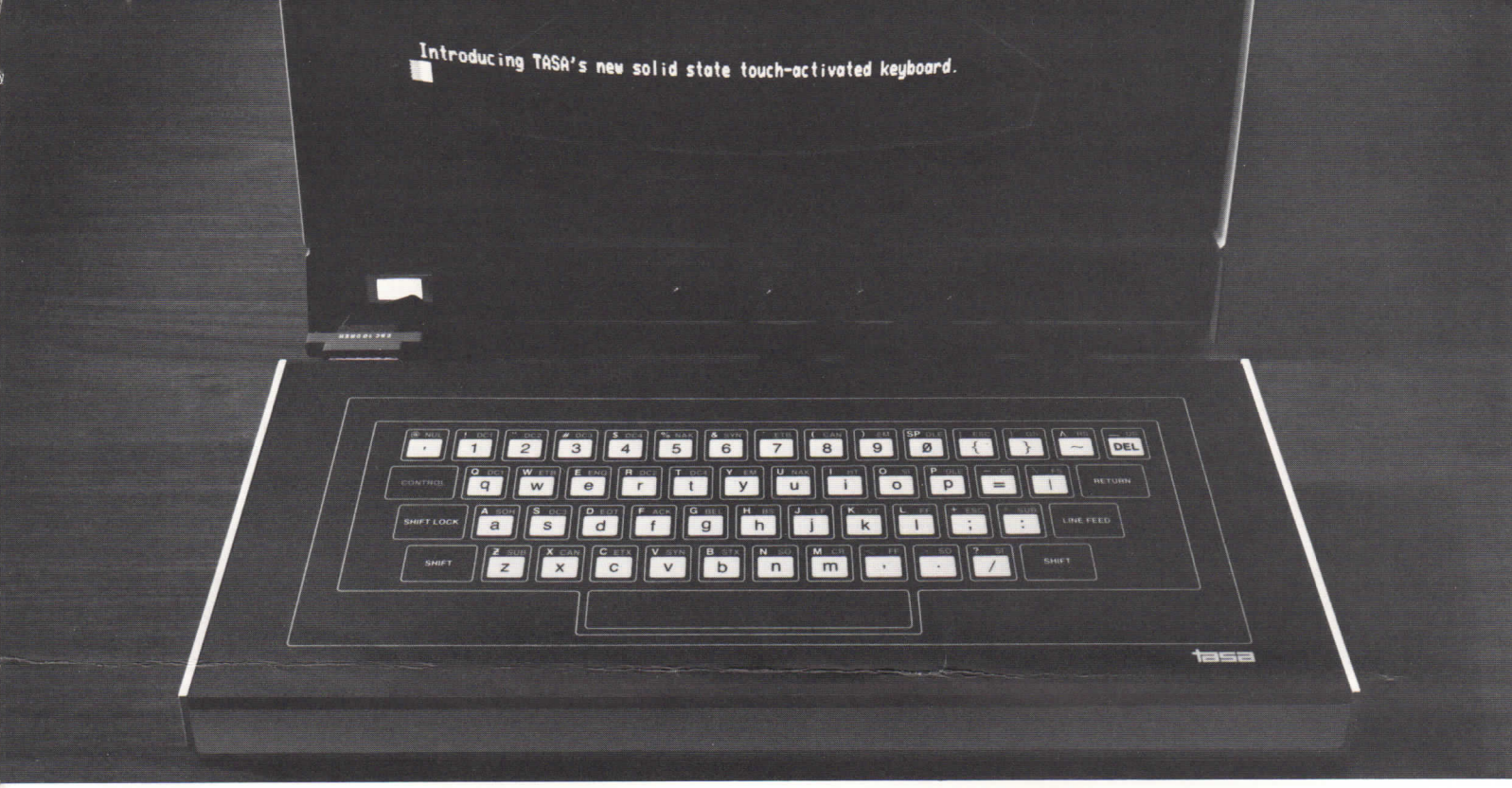
Completely solid state, washable, sealed construction.

55 micro proximity sensor positions, three-color coded to function.

Immune to static charge or external noise.

Low power requirement; 18V DC, 35mA (0.65 watt), built-in regulator.

M55's - redesigned - new literature available soon 7-82



Additional TASA Model 55 Keyboard Features

- ☐ Tough polycarbonate surface, sealed from environment, fully insulated.
- ☐ Built-in electronic shift lock and two-key rollover.
- ☐ Electronic hysteresis for firm "feel".
- ☐ Signal activation time approximately 1 millisecond, no "bounce".
- ☐ Parallel output: Active pull-down, direct TTL compatible (one load), open collector type.
- ☐ CMOS compatible with pull-up resistor.
- ☐ Continuous strobe and latched data signals for easy timing or triggering.
- ☐ Standard 0.156 inch center (3.96mm.) 6-position dual readout male card edge connector.

The Company

Since its formation in 1975, TASA has been dedicated to a single important goal; to find a better way to command electronic devices such as computers, terminals, instrumentation, etc. The objective was based on our conviction that mechanical control technology has not kept pace with the advances in electronic technology, and that many advantages brought to sophisticated electronic systems by solid state developments are needlessly lost at the mechanical control interface.

The Engineering task became obvious: to design a completely solid state control sensing system which could effectively translate the analog motion of a human finger into an intelligent, coded, digital command. Though the task was obvious, the solutions to the problem were not; problems involving the major human engineering determinations which must be made when specifying a "universal" body as a component to be integrated into an extremely sensitive electronic system.

The TASA Model 55 Micro-Proximity keyboard is our invitation to you to test this unique and exciting technology in a very practical way. We think you will come to the same conclusion as many OEM engineers already have: that your sophisticated equipment, instrumentation or system should reflect its state-of-the-art design all the way through the operator control panel today, with the technology of tomorrow—TASA's micro proximity keyboards.

General Description

The TASA Model 55 and all other TASA keyboards are truly solid state, touch-activated systems, combining the cost advantage of absolute simplicity of construction with fully integrated, single-chip circuitry. Not a "dumb" matrix keypad, the built-in sealed electronics of the Model 55 ASCII keyboard provides full-function capability in an encoded 8-bit (plus strobe) parallel output that is completely verified, processed and debounced, ready to connect directly to a system's data bus.

The Model 55 and other TASA keyboards are designed for high volume production, further enhancing OEM cost savings in medium and high volume applications. Low labor content and elimination of expensive materials, such as gold plating, special glass, etc. reflect TASA's long term objective of continued favorable OEM price trends in spite of the likelihood of continued inflation.

Operational Characteristics

It is inherent in the principle of the TASA micro proximity technology that touching the designated sensor area results immediately in a coded, conditioned output signal. This signal and its accompanying strobe are continuous while the finger is on the key. The continuous strobe is convenient for timing (as in "Repeat" operation on any key), and for triggering external audible or visual feedback mechanisms if desired.

When two or more keys are touched simultaneously no output code exists, a form of two-key rollover, which minimizes error during high-speed data entry. "Control" and "Shift" keys however are valid two-key operations.

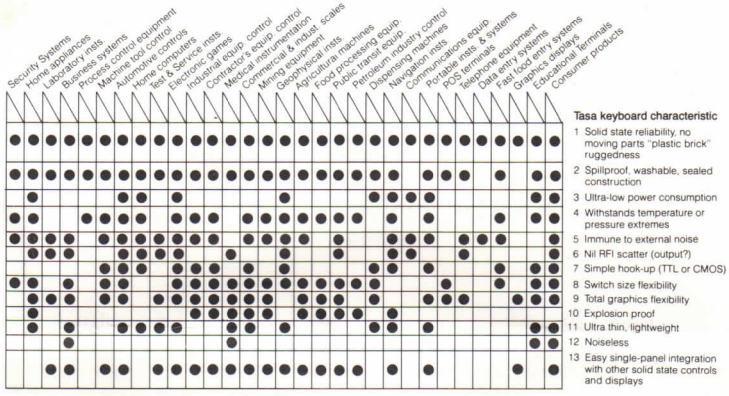
Despite the keyboard's high speed operation, a built-in hysteresis circuit enhances the sensation of "flip" action and diminishes "teasing" of keys, even though the finger is as close as one-thousandth of an inch. All other operations on the TASA Model 55 keyboard are similar to those on a conventional typewriter, e.g. "Shift Lock" locks the board in the upper case mode, and momentarily touching either "Shift" key releases the lock.

Applications

The TASA solid state micro proximity keyboard's physical characteristics alone are sufficient to make it the overwhelming choice in a wide variety of applications where environmental considerations are critical and protection of mechanical keyboards or soft, plastic "flex pads" would be required; applications requiring highest reliability in the areas of probable heavy abuse and minimal maintenance, such as security systems, or controls on heavy equipment, automotive, marine or military systems; applications where contamination is a problem and the keyboard must be constantly sanitized, e.g. medical instrumentation; applications where hazardous materials or conditions exist, and many more, as shown in the application table below.

If one additionally considers the economic justifications, few applications remain which are not better served by the TASA keyboard than other types. An honest, detailed comparison of the true costs of hardware and software engineering a mechanical or matrix-type keyboard into an OEM system, vs. a plug-in TASA keyboard will strongly favor the latter. In most cases the choice can be made by answering the question "Is our valuable engineering time best spent designing our equipment or keyboards?"

Application Requirements Matrix



Serviceability

TASA has reduced the complexity of a keyboard to the level of a single plug-in component. Since no contact closures occur and there are no other moving parts, life expectancy cannot be rated by conventional means, but rather on the life expectancy of a silicon chip.

Field servicing a defective keyboard vs. replacing it with a locally available plug-in keyboard is a decision of economics, both for the customer (in terms of down-time costs) and the manufacturer (in terms of field service force costs). Considering the present upward spiral of these respective costs and the downward trend of component cost the replacement philosophy behind TASA keyboards will prove the best economic decision for the manufacturer and his customer.

Custom and Semi-Custom Designs

TASA's solid state switch technology was engineered for the OEM market today and as it will be in the years ahead. That means flexibility for change. Today's OEM engineers want unique features, design flexibility, reliability and ruggedness in their products, particularly in that portion of their equipment which receives the greatest use, the operator control panel. The OEM's marketing people want the products to have all these things plus uniqueness and class, particularly at the operator control panel where customer pre-sale attention is critically focused. TASA micro proximity control panels combine the best of both engineering and marketing requirements to give the OEM a product which spells S-A-L-E-S.

Semi-custom control panel designs provide complete flexibility in the control panel's format, applied to an off-the-shelf key pattern. This includes selection of key size and number, nomenclature, product and corporate identity, complete color graphics, executed by one of the top graphics and industrial design firms in the entire U.S.

Full custom engineered control panel designs extend the customer's options across every parameter of keyboard design, including type, location, function, size, spacing and number of keys, output codes, complete graphics, panel shape, size and orientation, connector type and location, integral mounting of displays, key locks and other control devices, backlighting and many more.

Normally designed with a smooth, flat surface, TASA keyboards can be fabricated with formed key areas and "home row" locators. Gloved-hand operation of a keyboard can also be accommodated.

But perhaps the two most important features of TASA custom panels, not available from any other manufacturer are these:

- ☐ Integration of solid state keyboard with TASA's Ferenstat brand solid state potentiometers.
- ☐ Incorporation of extra "invisible" sensors in the initial design, providing simple future key expandability.

ASCII Chart

BIT NUMBERS								0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
B_6	B_5	B_4	B_3	B_2	B_1	B_0	ROW \ COLUMN	0	1	2	3	4	5	6	7
			0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
			0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
			0	0	1	0	2	STX	DC2	"	2	B	R	b	r
			0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
			0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
			0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
			0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
			0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
			1	0	0	0	8	BS	CAN	(	8	H	X	h	x
			1	0	0	1	9	HT	EM	)	9	I	Y	i	y
			1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
			1	0	1	1	11	VT	ESC	+	;	K	[	k	{
			1	1	0	0	12	FF	FS	,	<	L	\	l	|
			1	1	0	1	13	CR	GS	-	=	M	]	m	}
			1	1	1	0	14	SO	RS	.	>	N	^	n	~
			1	1	1	1	15	SI	US	/	?	O	_	o	DEL

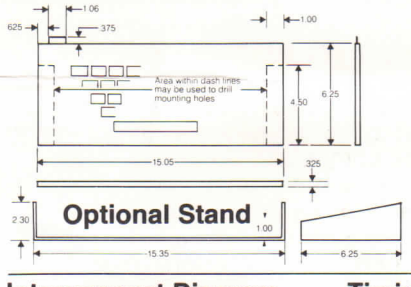
NUL	Null, or all zeros	BEL	Bell, or alarm	SO	Shift out	NAK	Negative acknowledge	FS	File separator
SOH	Start of heading	BS	Backspace	SI	Shift in	SYN	Synchronous idle	GS	Group separator
STX	Start of text	HT	Horizontal tabulation	DLE	Data link escape	ETB	End of transmission block	RS	Record separator
ETX	End of text	LF	Line feed	DC1	Device control 1	CAN	Cancel	US	Unit separator
EOT	End of transmission	VT	Vertical tabulation	DC2	Device control 2	EM	End of medium	SP	Space
ENQ	Enquiry	FF	Form feed	DC3	Device control 3	SUB	Substitute	DEL	Delete
ACK	Acknowledge	CR	Carriage return	DC4	Device control 4	ESC	Escape		

Pin Out

1 V-(Ground)
2 Bit 0 Out
3 Bit 1 Out
4 Bit 2 Out
5 Bit 3 Out
6 Strobe Out
A V+In
B Bit 4 Out
C Bit 5 Out
D Bit 6 Out
E Bit 7 Out
F Parity Select O/E

Parity is "ODD" when pin "F" unconnected, "EVEN" when connected to V-(GND)

Mechanical Outline

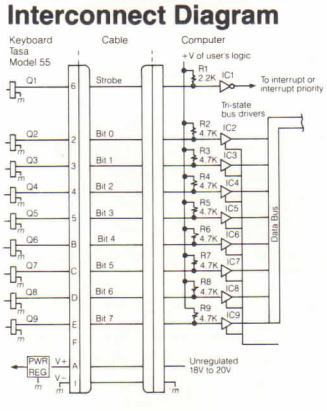


Mounting Suggestions

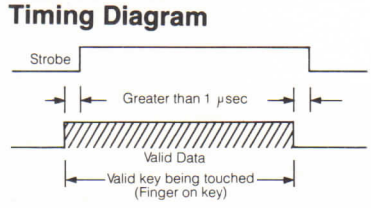
To the optional base
The keyboard is available with an optional lightweight base manufactured with inside ridges on either side, to which the keyboard can be permanently affixed with bonding glue.

To your own enclosure
As indicated on the mechanical outline drawing (left) the keyboard has been manufactured to leave a 1-inch wide area on either end where holes can be drilled without damage to the keyboard. In this way, the keyboard can be permanently affixed to any enclosure.

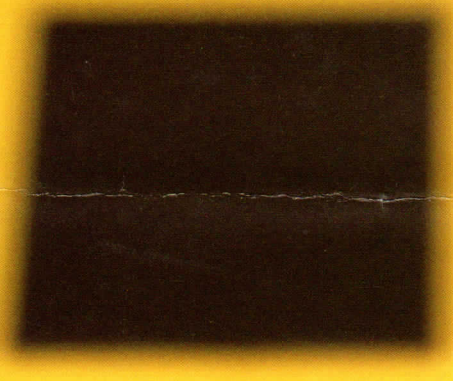
Interconnect Diagram

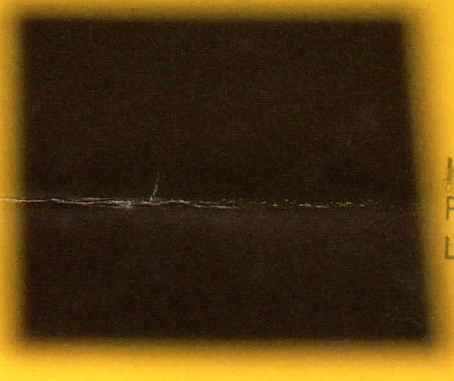


Timing Diagram



Notes:
1. Q1 through Q9 are part of keyboard and show the pull down type structure supplied.
2. R1 through R9 are installed by user. They must all be returned to the plus voltage of the power supply which supplies users logic (IC1 thru IC9)
3. IC1 thru IC9 are TTL or high impedance input devices such as 7404 or 74367 bus drivers.
4. Keyboard will be damaged if the strobe or data lines are shorted to power supply. Connect only as shown.
5. Keyboard power supply must have negative terminal connected to users logic ground and earth ground.
6. Turn off power before plugging or unplugging keyboard.





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TASA Model 16 Micro Proximity Keyboards

Designed for the customer who wishes to increase the flexibility of his system with or without the Model 55 ASCII keyboard, the Model 16 4x4 keyboard is available in two formats, the Model 16A alphanumeric and the Model 16C with numerics and cursor controls. These fully encoded solid state keyboards may be used as user-defineable 16-key companions to the Model 55 ASCII keyboard or as stand alone data entry units with any system.

The Model 16's input/output lines are seven standard .025 square pins, 0.100 inch spacing, arranged in a standard 8-pin line to eliminate the possibility of keyboard damage due to accidental interconnect plug reversal.

Construction: Fully solid state, sealed, washable, tough polycarbonate surface.

Output: 16 address-encoded locations, 4-bit and continuous strobe. Active pull-down, direct TTL compatible (one load), open collector type. CMOS compatible with pull-up resistors.

Power Requirements: 12V DC, 20mA.

Immune to external noise or static discharge.

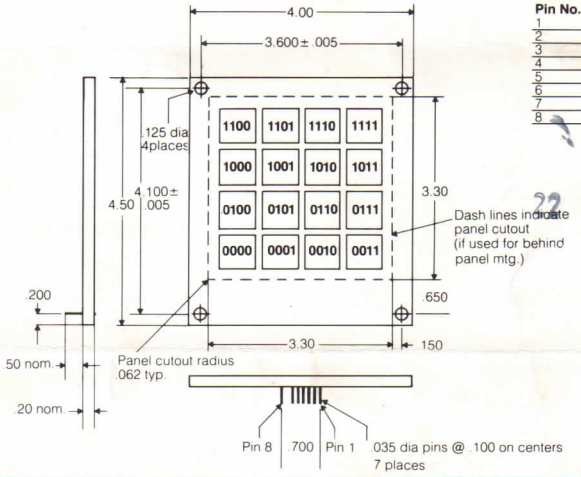
Two-key rollover, built-in electronic hysteresis for firm "feel".

Activation time—1 millisecond, no "bounce".

The basic Model 16 solid state keyboard is designed to provide maximum flexibility for all applications requiring control of up to 16 different parameters or functions. TASA's redesign of front panel graphics can expose any number and arrangement of keys up to 16, and provide your own corporate and product identification, key nomenclature, color selection and future key-expansion flexibility. Design turn-around time may be as short as three weeks.

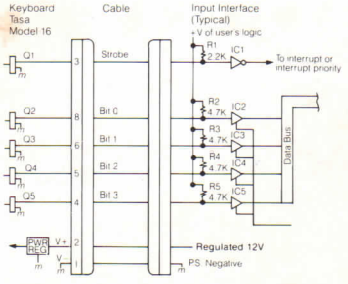
Full custom keyboards are also possible, including selection of key sizes, location, number and function, output format, connector type, plus special features such as backlighting, display apertures, hinged or slide-drawer mounting and many other customer-definable features.

Mechanical Outline

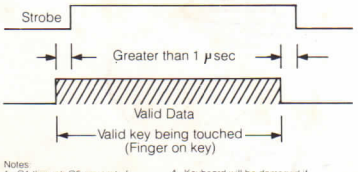


Pin No.	Function
1	GRD
2	+ 12V
3	Strobe
4	Bit 3
5	Bit 2
6	Bit 1
7	(No pin)
8	Bit Ø

Interconnect Diagram



Timing Diagram



Notes:
1. Q1 through Q5 are part of keyboard and show the pull down type structure supplied. Connect only as shown.
2. R1 through R5 are installed by user. They must all be returned to the plus voltage of the power supply which supplies users logic (IC1 thru IC5).
3. IC1 thru IC9 are TTL or high impedance input devices such as 7404 or 74367 bus drivers.
4. Keyboard will be damaged if the strobe or data lines are shorted to power supply. Connect only as shown.
5. Keyboard power supply must have negative terminal connected to users logic ground and earth ground.
6. Turn off power before plugging or unplugging keyboard.

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