USERS' MANUAL

MODEL SMTNR2-1
PANEL MOUNT TERMINAL

ANAHEIM AUTOMATION

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SMTNR2-1   Keypad Operation

The SMTNR2-1 keypad includes the digits 0 through 9 and Period, Yes and No, Space, Backspace and Enter keys, as well as four user-programmable Function keys.

1	2	3	F1 -	F2 –
4	5	6	F3 ¬	F4 ®
7	8	9	YES	NO
.	0	SPACE	BKSP	ENTER

Default Keypad Outputs

KEY	DEC	HEX	ASCII
0	48	30H	0
1	49	31H	1
2	50	32H	2
3	51	33H	3
4	52	34H	4
5	53	35H	5
6	54	36H	6
7	55	37H	7
8	56	38H	8
9	57	39H	9
.	46	2EH	.
SPACE	32	20H	SP
YES	43	2BH	+
NO	45	2DH	-
BKSP	08	08H	BS
ENTER	13	0DH	CR
F1	65	41H	A
F2	66	42H	B
F3	67	43H	C
F4	68	44H	D

Keys to Reset Factory Defaults

1	2	3	F1 -	F2 –
4	5	6	F3 ¬	F4 ®
7	8	9	YES	NO
.	0	SPACE	BKSP	ENTER

Press the period (.), zero (0), and arrow up (–) keys simultaneously to reset the default parameters.

Options

The default configuration parameters can be changed to meet the specific application requirements. The options available for each parameter are shown below.

PARAMETER	PRESET	OPTIONS
BAUD	9600	300-600-1200-2400-4800-9600
DATA BITS	8	7-8
PARITY	NONE	EVEN-ODD-MARK-SPACE-NONE
DISPLAY PE	ENABLED	ENABLED-DISABLED
REPEAT	FAST	SLOW-FAST-DISABLED
ECHO	DISABLED	ENABLE-DISABLE
HANDSHAKE	ENABLED	ENABLE-DISABLE
SELF TEST	DISABLED	ENABLE-DISABLE

BAUD – The data rate can be set to :300,600,1200,2400,4800,and 9600 BAUD.

DATA BITS – The number of data bits in each character. Either 7 or 8 data bits can be selected.

PARITY – When enabled, an extra bit is added to each character sent by the terminal. This bit is used by the receiving device to perform a simple error check on incoming data. The SMTNR2-1 cab be set to transmit an EVEN, ODD, MARK, or SPACE parity bit. With any of these settings, the receiver in the terminal will perform the corresponding check on incoming data. Additionally, the PARITY option can be set to NONE.

DISPLAY PE – When PARITY is set to EVEN,ODD, MARK or SPACE and DISPLAY PE is set to ENABLED, any character received containing a parity error is not displayed. Rather, a special parity error symbol (**PE**) is displayed in place of that character. With this option set to DISABLED, the character is displayed as received.

ECHO – When set to ENABLED, characters sent by the terminal are also written to the display. This enables the terminal to be used in HALF-DUPLEX installations. When set to DISABLED, only characters received by the terminal are displayed.

HANDSHAKING – This setting controls the operation of the two handshake lines available in models equipped with the RS232 or TTL/CMOS interface. When set to ENABLED, the terminal will not send characters unless the handshake input line is asserted. If the terminal is temporarily Unable to process incoming characters, it will de-assert the handshake output line. Any characters sent in this state will be lost. When set to DISABLE, the terminal ignores the handshake input line and the handshake output line is always asserted.

SELF TEST – When set to ENABLED, the SMTNR2-1 will conduct a self-test when first turned on. The display is exercised and the internal RAM and ROM are checked. Any errors encountered are reported on the display.

Host Control Commands

In the following description of escape sequences, ESC is used to indicate the ASCII escape character, hexadecimal 1B. Any occurrence of a numeric parameter is indicated by the notation Pn. Escape sequences must be sent to the terminal exactly as shown, with no embedded blank permitted at any time.

Cursor movement commands

CURSOR UP	ESC A
CURSOR DOWN	ESC B
CURSOR RIGHT	ESC C
CURSOR LEFT	ESC D

In the above sequences, the cursor moves one position in the indicated direction. The cursor will not move beyond the start or end of a line, and will not cause the display to scroll.

CURSOR POSTION   ECS Y Pr Pc

In the above sequence, Pr is the row number and Pc is the column number of the target cursor location. These parameters are formed by adding hexadecimal 1F to the row and column numbers. Row and column numbers are absolute, with row 1, column 1 (Pr=H20, Pc=H20) representing the upper left corner of the display.

CURSOR HOME   ECS H

Note that this command is functiopnally equivalent to the Cursor Position command with Pr =H20 And Pc = H20.

Erasing

CLEAR DISPLAY AND HOME	ESC E
CLEAR DISPLAY	ESC I
CURSOR TO END OF DISPLAY	ESC J
CURSOR TO END OF LINE	ESC K
LINE CONTAINING CURSOR	ESC M

All erase commands include the character at the cursor location. The last four do not alter the cursor position.

Sounds

SHORT BELL	ECS T
LONG BELL	ESC L
CLICK	ESC P
ALERT	ESC Q

These commands cause the SMTNR2-1 to emit the indicated sound through an external speaker (when connected). There is no "buffering" of commands which generate sounds. To produce a properly spaced chain of any of these sounds, the host must delay time between issuing these commands.

Cursor Style

UNDERSCORE CURSOR ON	ESC F
UNDERSCORE CURSOR OFF	ESC G
BLINKING CURSOR ON	ESC R
BLINKING CURSOR OFF	ESC S

These commands establish the presence and style of the cursor.

ENABLE KEY CLICK	ESC U
DISABLE KEY CLICK	ESC V

These commands enable and disable the audible keyclick (when an external speaker is connected.)

Identify

SEND TERMINAL ID	ESC Z

The command will poll the terminal. The terminal will reply with model number and check sum. Returns: SMT NNNN. (Where NNNN represents the check sum).

Backlight Control

BACKLIGHT OFF	ESC f
BACKLIGHT ON	ESC n

ESCAPE SEQUENCES

Sequence	Description
ESC A	CURSOR UP
ESC B	CURSOR DOWN
ESC C	CURSOR RIGHT
ESC D	CURSOR LEFT
ESC E	CLEAR DISPLAY AND GO HOME
ESC F	UNDERSCORE CURSOR ON
ESC G	UNDERSCORE CURSOR OFF
ESC H	CURSOR HOME
ESC I	CLEAR DISPLAY
ESC J	ERASE CURSOR TO END OF DISPLAY
ESC K	ERASE CURSOR TO END OF LINE
ESC L	SOUND LONG BELL*
ESC M	ERASE LINE CONTAINING CURSOR
ESC P	SOUND CLICK*
ESC Q	SOUND ALERT*
ESC R	BLINKING CURSOR ON
ESC S	BLINKING CURSOR OFF
ESC T	SOUND SHORT BELL*
ESC U	ENABLE KEY CLICK*
ESC V	DISABLE KEY CLICK*
ESC Y	SET CURSOR POSITION PR(ROW), PC(COLUMN)
ESC Z	SEND TERMINAL ID
ESC f	BACKLIGHT OFF
ESC n	BACKLIGHT ON

* External speaker must be connected

Control Characters

Control

CODE	DEC	HEX	ASCII	FUNCTION
CTRL + E	5	05H	ENQ	ENQUIRE
CTRL + G	7	07H	BEL	SOUNDS BELL*
CTRL + H	8	08H	BS	BACK SPACE CURSOR
CTRL + J	10	0AH	LF	LINE FEED
CTRL + K	11	0BH	VT	CURSOR DOWN
CTRL + M	13	0DH	CR	CURSOR LEFT TO COLUMN 1
DEL	127	7FH	DEL	DELETE CHAR. AT CURSOR

When CTRL + E (DEC 5) is sent to the SMTNR2-1, it will answer with an ASCII Acknowlegde (DEC 6). All other control codes will be ignored.

* Extenal speaker must be connected

ASCII TABLE

| DEC	ASCII	PC KEY	HEX	DEC	ASCII	PC KEY	HEX
0	NUL	CTRL @	00H	32	SP	SP	20H
1	SOH	CTRL A	01H	33	!	!	21H
2	STX	CTRL B	02H	34	"	"	22H
3	ETX	CTRL C	03H	35	#	#	23H
4	EOT	CTRL D	04H	36	$	$	24H
5	ENQ	CTRL E	05H	37	%	%	25H
6	ACK	CTRL F	06H	38	&	&	26H
7	BEL	CTRL G	07H	39	'	'	27H
8	BS	CTRL H	08H	40	(	(	28H
9	HT	CTRL I	09H	41	)	)	29H
10	LF	CTRL J	0AH	42	*	*	2AH
11	VT	CTRL K	0BH	43	+	+	2BH
12	FF	CTRL L	0CH	44	,	,	2CH
13	CR	CTRL M	0DH	45	-	-	2DH
14	SO	CTRL N	0EH	46	.	.	2EH
15	SI	CTRL O	0FH	47	/	/	2FH
16	DLE	CTRL P	10H	48	0	0	30H
17	DC1	CTRL Q	11H	49	1	1	31H
18	DC2	CTRL R	12H	50	2	2	32H
19	DC3	CTRL S	13H	51	3	3	33H
20	DC4	CTRL T	14H	52	4	4	34H
21	NAK	CTRL U	15H	53	5	5	35H
22	SYN	CTRL V	16H	54	6	6	36H
23	ETB	CTRL W	17H	55	7	7	37H
24	CAN	CTRL X	18H	56	8	8	38H
25	EM	CTRL Y	19H	57	9	9	39H
26	SUB	CTRL Z	1AH	58	:	:	3AH
27	ESC	CTRL [	1BH	59	;	;	3BH
28	FS	CTRL \	1CH	60	<	<	3CH
29	GS	CTRL]	1DH	61	=	=	3DH
30	RS	CTRL ^	1EH	62	>	>	3EH
31	US	CTRL _	1FH	63	?	?	3FH

ASCII TABLE - CONTINUED

| DEC	ASCII	PC KEY	HEX	DEC	ASCII	PC KEY	HEX
64	@	@	40H	96	'	'	60H
65	A	A	41H	97	a	a	61H
66	B	B	42H	98	b	b	62H
67	C	C	43H	99	c	c	63H
68	D	D	44H	100	d	d	64H
69	E	E	45H	101	e	e	65H
70	F	F	46H	102	f	f	66H
71	G	G	47H	103	g	g	67H
72	H	H	48H	104	h	h	68H
73	I	I	49H	105	i	i	69H
74	J	J	4AH	106	j	j	6AH
75	K	K	4BH	107	k	k	6BH
76	L	L	4CH	108	l	l	6CH
77	M	M	4DH	109	m	m	6DH
78	N	N	4EH	110	n	n	6EH
79	O	O	4FH	111	o	o	6FH
80	P	P	50H	112	p	p	70H
81	Q	Q	51H	113	q	q	71H
82	R	R	52H	114	r	r	72H
83	S	S	53H	115	s	s	73H
84	T	T	54H	116	t	t	74H
85	U	U	55H	117	u	u	75H
86	V	V	56H	118	v	v	76H
87	W	W	57H	119	w	w	77H
88	X	X	58H	120	x	x	78H
89	Y	Y	59H	121	y	y	79H
90	Z	Z	5AH	122	z	z	7AH
91	[	[	5BH	123	{	{	7BH
92	\	\	5CH	124	|	|	7CH
93	]	]	5DH	125	}	}	7DH
94	^	^	5EH	126	~	~	7EH
95	_	_	5FH	127	DEL	DEL	7FH

SMTNR2-1   Sample1 – Program using SMC40 Controller

The SMC40 Terminal Commands allow the user to send and receive ascii data. Under the Select a Command Menu of the editor software press the Terminal Commands Button.

Step 1: Terminal Commands
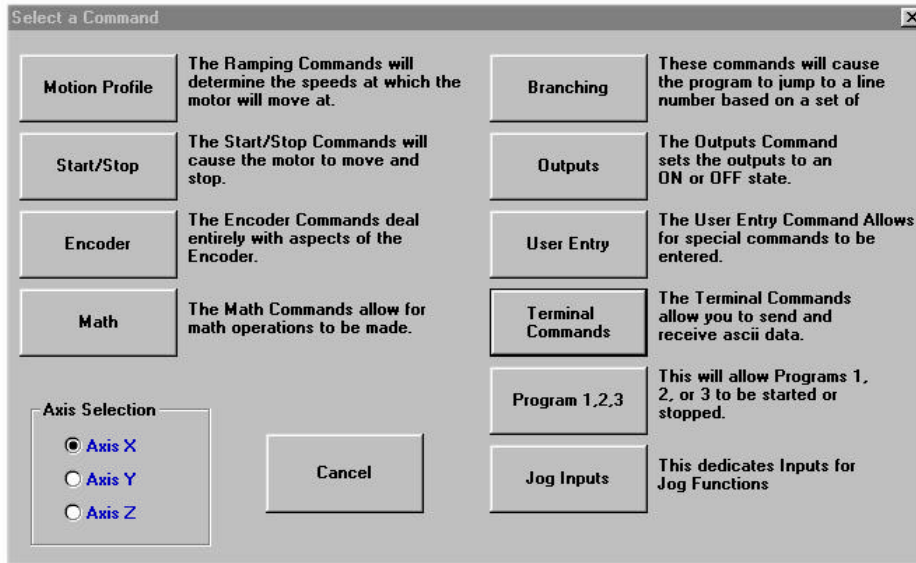
Step 2: Terminal Commands
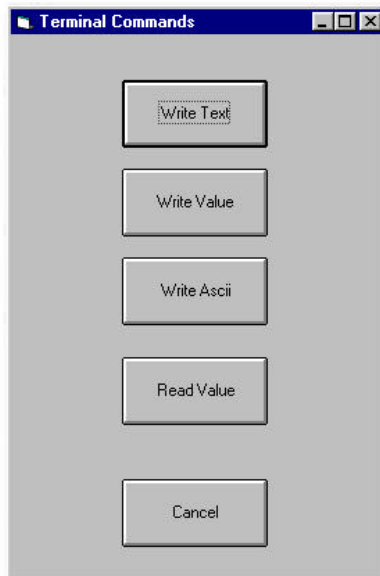
Write Text – This function allows the user to transmit a character string to the handheld terminal, which produces a character string on the termnal display.

Write Value - This function allows the user to transmit a numerical values to the ternminal display.

Write ASCII - This function allows the user to transmit an ASCII character/code to the ternminal display.

Read Value - This function waits for a numerical value entry – a numerical terminated by a carriage return from the handheld terminal. The SMC40 Controller stores the value in the RV Register.

Write Text

The SMTRN2-1 Handheld Terminal will display text strings on its display. Note that there are 20 Characters per Row and 4 Rows to display your instruction.

Limit Your Instruction to 20 Characters per Line (1 Row)

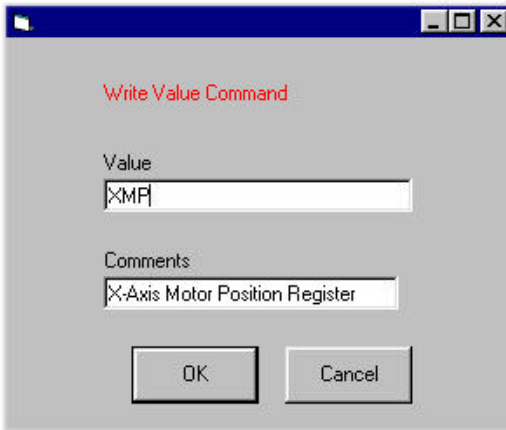Pressing the OK button will insert the command into the program.

	Line	Command	Parameter 1	Parameter 2	Comments	
▶	1	Write Text	Press 1 for 1 Inch			

When executing the program the SMTNR2 –1 will display the instruction : **Press 1 for 1 Inch**

Write Value

The SMTRN2-1 Handheld Terminal will display a Numerical Value from a Register that is contantly being updated in the SMC40 program.

The Write Value Instruction is useful for verifying registers. The XMP is a Register that stores the X-Axis Motor Position Value.

The SMTNR2-1 allow the user to verify the numerical value of any register that is being updated within a program.

Example(s): Batch Count Register, Number of Cycles, Register's, etc.

	Line	Command	Parameter 1	Parameter 2	Comments	
	1	Write Value	XMP		X-Axis Motor Position Register	▲

Pressing the OK button will insert the command into the program.

When executing the program the SMTNR2 –1 will display the instruction : **400**
The value 400 can be set as the *current position* that the motor register (XMP) has stored.

Write ASCII

The SMTRN2-1 Handheld Terminal will allow the user to transmit an ASCII character/code to the terminal for character manipulation or placement on the display screen.

Control

CODE	DEC	HEX	ASCII	FUNCTION
CTRL + E	5	05H	ENQ	ENQUIRE
CTRL + G	7	07H	BEL	SOUNDS BELL*
CTRL + H	8	08H	BS	BACK SPACE CURSOR
CTRL + J	10	0AH	LF	LINE FEED
CTRL + K	11	0BH	VT	CURSOR DOWN
CTRL + M	13	0DH	CR	CURSOR LEFT TO COLUMN 1
DEL	127	7FH	DEL	DELETE CHAR. AT CURSOR

ESCAPE SEQUENCES

| Sequence	Description
ESC A	CURSOR UP
ESC B	CURSOR DOWN
ESC C	CURSOR RIGHT
ESC D	CURSOR LEFT
ESC E	CLEAR DISPLAY AND GO HOME
ESC F	UNDERSCORE CURSOR ON
ESC G	UNDERSCORE CURSOR OFF
ESC H	CURSOR HOME
ESC I	CLEAR DISPLAY
ESC J	ERASE CURSOR TO END OF DISPLAY
ESC K	ERASE CURSOR TO END OF LINE
ESC L	SOUND LONG BELL*
ESC M	ERASE LINE CONTAINING CURSOR
ESC P	SOUND CLICK*
ESC Q	SOUND ALERT*
ESC R	BLINKING CURSOR ON
ESC S	BLINKING CURSOR OFF
ESC T	SOUND SHORT BELL*
ESC U	ENABLE KEY CLICK*
ESC V	DISABLE KEY CLICK*
ESC Y	SET CURSOR POSITION PR(ROW), PC(COLUMN)
ESC Z	SEND TERMINAL ID
ESC f	BACKLIGHT OFF
ESC n	BACKLIGHT ON

	Line	Command	Parameter 1	Parameter 2	Comments
	1	Write Ascii	27		ESC
	2	Write Ascii	69		ESC E means clear display & home
	3	Write Text	Anaheim Automation		Text String
	4	Write Ascii	13		Cursor Left to Column 1

The example above demonstrates how to the SMTNR2 –1 will execute the instruction to **Clear the Display and Home the Curso**r using the instruction **ESC E,** but **in order to do this the user must enter in ASCII 27 followed by ASCII 69 instructions when selecting the Wrtie ASCII function.**

Read Value

The SMTRN2-1 Handheld Terminal will allow the user to pause the program momentarily until the user enters a numerical value entry – a numerical value entry terminated by a carriage return from the handheld terminal. The SMC40 Controller stores the value in the RV Register.
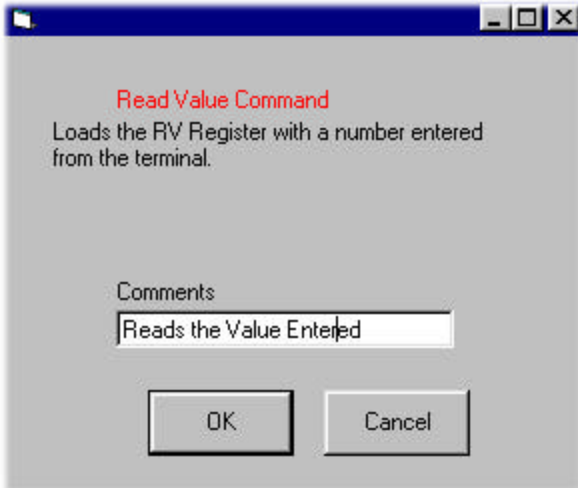

|	5	Read Value			RV Register is loaded
	6	Math	xmn=rv*400		AXIS X Motor Number = Register Value * 400
	7	XGo Relative	RR		Result Register = RV*400

Once the user enters a numerical value the SMC40 Program the numerical entry followed by a carriage return (Pressing ENTER) will be loaded into the RV – RegisterValue with the Numerical Value.

The SMC40 Software allows the user to manipulate the RV – Register Value for Math Routines that can vary. The example above demonstrates how the XMN (X-Axis Motor Distance Number) can be used in an equation which multiplies the RV Value to a factor (or number).
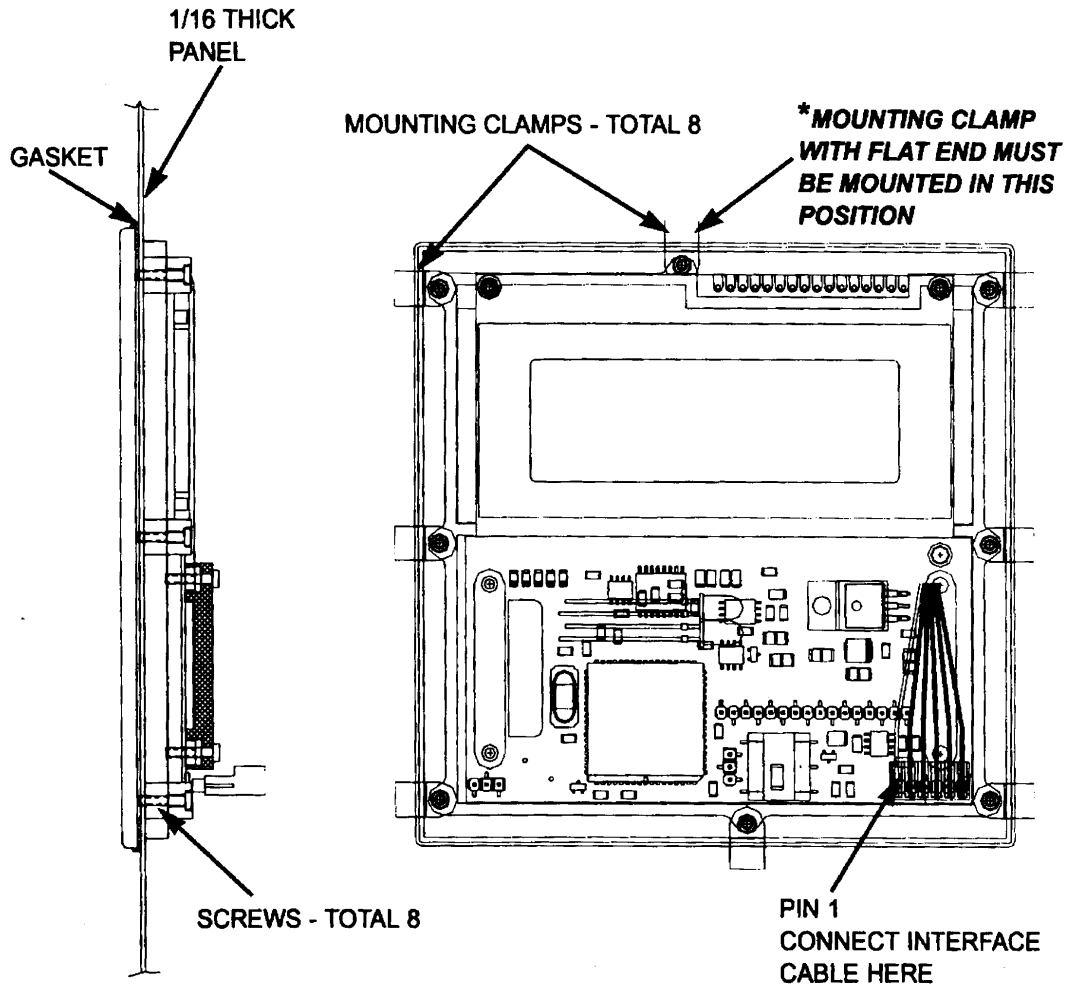
FLUSH MOUNT – CLOSED BACK

1/16 TO 1/8
THICK PANEL

SCREWS - TOTAL 8

GASKET
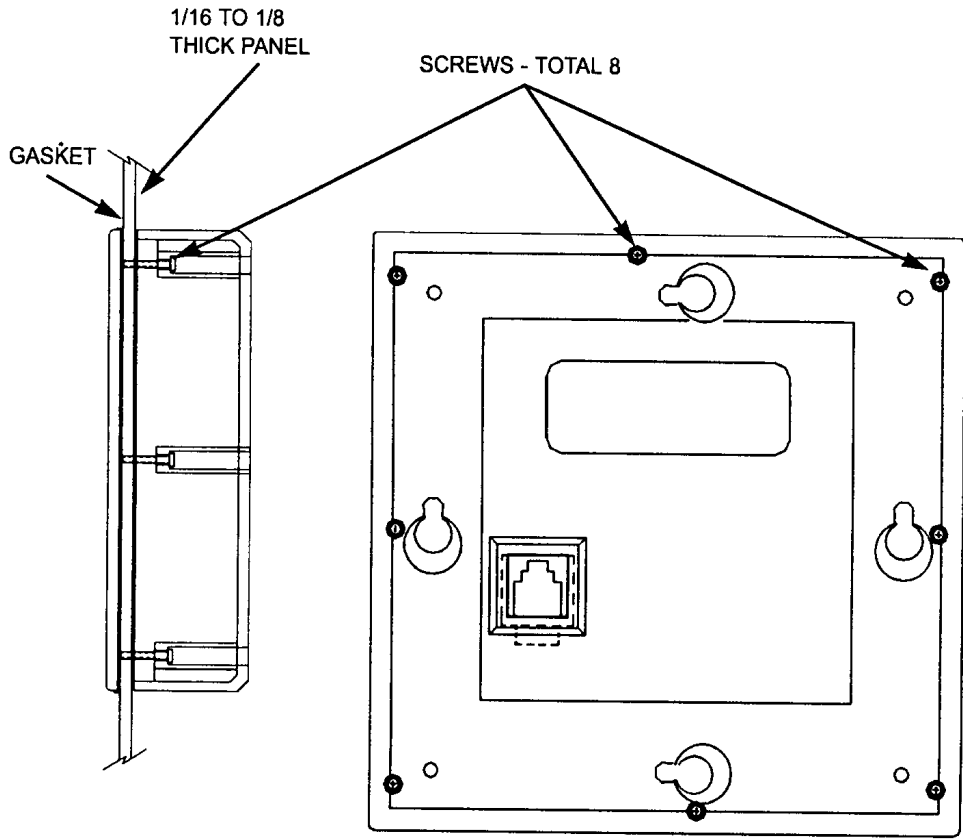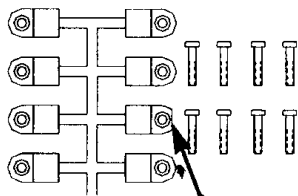
MOUNTING HARDWARE
(FLUSH MOUNT – CLOSED BACK)
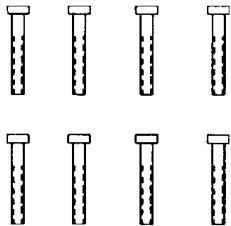
SCREWS, PLASTITE - #1-32 X 1/2 LG.
TWO TECHNOLOGIES PART #12311 (GOLD)
QUANTITY: 8 PER UNIT

FLUSH MOUNT – OPEN BACK

1/16 THICK
PANEL

GASKET

MOUNTING CLAMPS - TOTAL 8

*MOUNTING CLAMP
WITH FLAT END MUST
BE MOUNTED IN THIS
POSITION

SCREWS - TOTAL 8

PIN 1
CONNECT INTERFACE
CABLE HERE

MOUNTING HARDWARE
(FLUSH MOUNT – OPEN BACK)

SCREWS, PLASTITE - #1-32 X 3/8 LG.
TWO TECHNOLOGIES PART #12269 (SILVER)
QUANTITY: 8 PER UNIT

MOUNTING CLAMPS -
TWO TECHNOLOGIES PART #12285
QUANTITY: 8 PER UNIT

(DETACH CLAMPS
FROM RUNNERS &
ASSEMBLE TO UNIT)

*NOTE CLAMP WITH FLAT END

SMTNR2-1 DIMENSIONS