DSP 800

Customer Display

User's Manual

Contents

1. INFORMATION

Model DSP800

A. Standard package

1. Display main unit	1 pc
2. Power plug cable for power source	1 pack
3. Mounting screws pack	1 pack
4. Side wall mounting bracket	1 pc

B. Optional Accessories
   1. Power supply adaptor DC 12V/120VAC
   2. Power supply adaptor DC 12V/220VAC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2. INTRODUCTION

DSP800 Customer Display is an artistic design POS system peripheral device. It is for use with ECR, POS system to display the purchased prices and the amount of change to customers. Also it is capable to display the advertizing message. The major features of DSP800 are:

A. Displays up to 40 characters (20 columns × 2 lines).

B. Large font (9.2 × 6.4mm) is easy to read.

C. The vacuum fluorescent display (VFD) provides a wide viewing angle, long life, high reliability and high display quality.

D. The blue-green display color is gentle to the eyes.

E. The display panel is adjustable to provide the best viewing angle up to 30 degrees.

F. The support pole is adjustable to provide the best system installation. (Height adjusted from 380mm to 550mm.)

G. Provides good general utilities:
   - User-defined message can be down loaded.
   - International character sets.
   - Advertizing message running.

H. Provieds an interface based on RS-232C with baud rate selectable from 300 to 9600 BPS.

3. INSTALLATION

A. If you could get the power source DC 12V from the computer (POS system), you might use the enclosed "Power Plug Cable" pack.
   1. Turn off the power on the computer (POS system).
   2. Connect the power plug cable with the power source (DC 12V) inside the computer (POS system) and secure the RCA jack bracket on the rear panel of the computer (POS system).
   3. Connect the RCA jack with the DC power jack on the D-sub 25 pin connector by using the RCA plug-DC plug adaptor cable.
   4. Connect the D-sub 25 pin connector with the computer (POS system).
   5. Turn on the power of the computer (POS system). The display will be ON.

B. If you would use the external power unit for the power supply, please refer paragraph 1-B to obtain the proper optional power supply unit for the display at first.
   1. Turn off the power of the computer (POS system).
   2. Connect the D-sub 25 pin connector with the computer (POS system).
   3. Connect the power supply unit with the DC power jack on the D-sub 25 pin connector.
   4. Turn on the computer (POS system) and the power supply unit. The display will be ON.

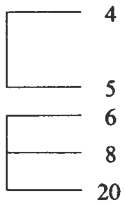
Note: 1. Mount the DSP800 on the flat top surface of the desired place and use the enclosed mounting screws to fasten it in place.
      2. If you want to mount the DSP800 on a side wall surface, use side wall mounting bracket.

4. PIN ASSIGNMENT

A. D-sub 25 pin female connector

Pin#	Signal
2	RXD
3	TXD
7	GROUND
9	TO NEXT
25	FROM NEXT

Short connection



B. DC power jack

Pin#	Signal
Center	+12VDC
Outer	GROUND

5. CHARACTER TABLES

Character code tables

A. International character set TABLE 1, when U.S.A. characters are selected.

TABLE 1

Hex.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	16	SP 32	0 48	@ 64	P 80	96	p 112	Ç 128	É 144	á 160	▮ 176	└ 192	╨ 208	α 224	■ 240
1	1	17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	β 225	± 241
2	2	18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	3	19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	4	20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	5	21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	μ 230	÷ 246
7	7	23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	8	24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	9	25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	∙ 249
A	10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	11	27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	12	28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	13	29	- 45	= 61	M 77	] 93	m 109	} 125	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	φ 237	² 253
E	14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	15	31	/ 47	? 63	O 79	_ 95	o 111	⌂ 127	Å 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

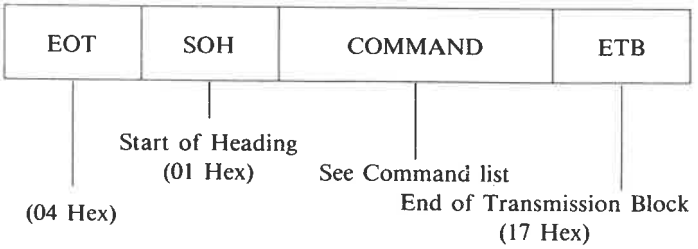
B. International character set TABLE 2

TABLE 2

	Counter name	Hexadecimal											
		23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
0	U.S.A.	#	$	@	[	\	]	^	`	{	|	}	~
1	France	#	$	à	°	ç	§	^	`	è	ù	é	¨
2	Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
3	U.K.	£	$	@	[	\	]	^	`	{	|	}	~
4	Denmark I	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	ü
5	Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
7	Spain	₧	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
8	Japan	#	$	@	[	¥	]	^	`	{	|	}	¯
9	Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
A	Denmark II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü

6. SOFTWARE CONTROL

A. Command format



B. Command list

1. Set Baud Rate and Parity

COMMAND: B

COMPUTER:	EOT	SOH	'B'	'BAUD RATE'	'N'	ETB
ASCII	(04H)	(01H)	(42H)	(31H...36H)	(4EH)	(17H)
Byte	1	1	1	1	1	1
DISPLAY:	ACK			(or NACK if failed)		
ASCII	(06H)			(15H)		
Byte	1			1		

Note: Baud rates

31H : 9600
32H : 4800
33H : 2400
34H : 1200
35H : 600
36H : 300

2. Select international code table

COMMAND: I

COMPUTER:	EOT	SOH	'I'	'CHAR'	ETB
ASCII	(04H)	(01H)	(49H)	(30H...3AH)	(17H)
Byte	1	1	1	1	1

DISPLAY: ACK (or NACK if failed)
ASCII (06H) (15H)
Byte 1 1
Note: International Character code
30H : U.S.A.
31H : France
32H : Germany
33H : U.K.
34H : Denmark I
35H : Sweden
36H : Italy
37H : Spain
38H : Japan
39H : Norway
3AH: Denmark II
Also please refer to International character set TABLE 1 and TABLE 2.

3. Save the current view message (Save Demo view data)
COMMAND: S
COMPUTER: EOT SOH 'S' 'Layer' ETB
ASCII (04H)(01H)(53H) (31H...33H) (17H)
Byte 1 1 1 1 1
DISPLAY: ACK (or NACK if failed)
ASCII (06H) (15H)
Byte 1 1
Note: DSP800 is capable to save 3 layers of view messages. Each layer can be 40 characters maximum.

4. Set cursor position
COMMAND: P
COMPUTER: EOT SOH 'P' 'Position' ETB
ASCII: (04H)(01H)(50H) (31H...58H) (17H)
Byte 1 1 1 1 1
DISPLAY: ACK (or NACK if failed)
ASCII (06H) (15H)
Byte 1 1
Note: The cursor can be set to the position from 1 to 40.

Position 1 means the upper left corner position.
Position 20 means the upper right corner position.
Position 21 means the lower left corner position.
Position 40 means the lower right corner position.

5. Clear display range

COMMAND: C

COMPUTER:	EOT	SOH	'C'	'START'	'END'	ETB
ASCII	(04H)	(01H)	(43H)	(31H...58H)	(31H...58H)	(17H)
Byte	1	1	1	1	1	1

DISPLAY:	ACK	(or NACK if failed)
ASCII	(06H)	(15H)
Byte	1	1

Note: Some part of the current view messages can be cleared by this COMMAND. It can start clearing between position 1 and position 40.

6. Display the saved DEMO message (DEMO on set)

COMMAND: D

COMPUTER:	EOT	SOH	'D'	'Layer'	'Mode'	ETB
ASCII:	(04H)	(01H)	(44H)	(31H...37H)	(31H...33H)	(17H)
Byte	1	1	1	1	1	1

DISPLAY:	ACK	(or NACK if failed)
ASCII	(06H)	(15H)
Byte	1	1

Note: 1. There are three layers of saved view messages as described on COMMAND 'S'.
2. There are two modes of display.
Mode 1 is running the saved messages from right to left, which is a horizontal scroll mode.
Mode 2 is running the saved messages from the lower line to the upper line, which is a vertical scroll mode.

3. For display layers,
   select 31H means display the message saved on layer 1.
   select 32H means display the message saved on layer 2.
   select 33H means display the two messages saved on layer 1 + layer 2.
   select 34H means display the message saved on layer 3.
   select 35H means display the two messages saved on layer 1 + layer 3.
   select 36H means display the two messages saved on layer 2 + layer 3.
   select 37H means display all the three messages saved on layer 1 + layer 2 + layer 3.
4. For display modes,
   select 31H means display the message with Mode 1.
   select 32H means display the message with Mode 2.
   select 33H means display the message with both Mode 1 + Mode 2.
   For this Demo display function, you must have saved the messages by COMMAND 'S' previously. For example, select 37H for displaying layers and select 33H for displaying modes, DSP800 would display all the three messages saved on layer 1 + layer 2 + layer 3 with both Mode 1 + Mode 2 displaying modes.
5. Any new message from the computer would stop this Demo display function and DSP800 would display that new message from the computer.

7. Select the driver ON/OFF setting (Not used.)

8. Transmit the current view message to computer

COMMAND: T

COMPUTER:	EOT	SOH	'T'	ETB
ASCII	(04H)	(01H)	(54H)	(17H)
Byte	1	1	1	1

DISPLAY:	SOH	'DATA'	ETB
ASCII	(01H)		(17H)
Byte	1	40	1

C. Transmission method

Each ASCII character is transmitted with

1 start bit

8 data bits

1 stop bit

No parity

Note: You may generate your own application software to run the display according to the standard RS-232C communication protocols and the SOFTWARE CONTROL informations listed on this paragraph.

7. SPECIFICATIONS

A. Display
- Vacuum fluorescent display (VFD).
- Number of characters: 40 (20 columns × 2 lines).
- Display color: Blue-green.
- Character font: 5 × 7 dot matrix.
- Character size; H9.2 × W6.4mm.
- Character type: Alpha numeric : 95
  International characters : 32
  Graphic characters : 128

B. Dimension
- Display unit: H110 × W230 × D45mm.
- Support pole: Telescopic pole from 270mm to 440mm with diameter 38mm.
- Base: 12mm with 80mm diameter.
- Tilt angle: 30 degree MAX.
- Horizontal rotation: 360 degree.
- Weight: Approx. 800 grams.

C. Interface
- Display interface: RS-232C.
- Data transmission method: Serial
  8 data bits
  1 stop bit
  No parity
- Interface connector: Female D-sub 25 pin connector with 1700mm cable.

D. Operating environment
- Temperature: 5 to 45 degree C.
- Humidity: 10 to 85% relative.

E. Storage environment
- Temperature: – 10 to 50 degree C.
- Humidity: 10 to 90% relative.

8. INSTRUCTIONS OF DEMO SOFTWARE

Note: for the first installation, your better connect DSP800 with the COM2 port of the computer due to the initial value COM2 for DSP800.

A. How to run the Demo software

1. Find the enclosed disk DSP800.EXE.
2. Make sure the installation of DSP800 is completed.
3. Enter the DOS system to start your computer.
4. Insert the software disk into Drive A (or B) of your computer under DOS system and key in DSP800 as below: (if Drive A used).

   A:\>DSP800

5. Press 'Enter', you will see the DSP FUNCTION DEMO software menu on the screen as below:

```
******* DSP FUNCTION DEMO *******
  F1.  PC RS232 Communication set: COM2 9600 N 8 1
  F2.  DSP RS232 Communication set:     9600 N 8 1
  F3.  DSP Internation character set:   0
  F4.  DSP Save demo view data
-------------------------------------------------------
  F5.  DSP cursor position set (1-40)
  F6.  DSP clear display range
  F7.  DSP DEMO on set
  F8.  DSP & DRIVE ON/OFF setting (Not used.)
  F9.  DSP TX view data to PC (EOT SOH 'T' ETB)
-------------------------------------------------------
  ESC  QUIT
```

6. Then, follow this menu to run DSP800 Demo software.
   - Press F1 to set RS-232 communication of the computer, select COM port. Baud rate must be set as the same as the baud rate shown on the lower line of the display, such as '9600 N 8 1' means baud rate 9600, No Parity, 8 data bits, 1 stop bit, and Parity must be No Parity.
   - Press F2 to set RS-232 communication of DSP800, select Baud rate and Parity must be No Parity. Also the selections at F1 and F2 must be the same, otherwise DSP800 can not communicate with the computer.

- Press F3 to select International Character code set.
- Press F4 to save the current view message into the memory of DSP800.
- Press F5 to move the cursor position.
- Press F6 to clear some or all the current view message.
- Press F7 to display the previously saved message.
- Press F8 to select the driver feature. (Not used.)
- Press F9 to transmit the current view message to the computer.

B. After the handshaking between DSP800 and the computer is completed, this means the operations F1 and F2 have successfully been done, DSP800 would display any message character from the computer. Any new message from the computer would cover the old message on DSP800 display. You may enter any message to display.

Note: First of all, install DSP800 to the COM2 of your computer to run this DEMO software. The Default value of DSP800 communication parameters are:

COM port : COM2
Baud rate = 9600
Parity = None

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