Table Displays

2 by 20 character display

USER MANUAL

LOGIC CONTROLS

NOTICE

The manufacturer of the POS table display makes no representations or warranties, either expressed or implied, by or with respect to anything in this manual, and shall not be liable for any implied warranties of fitness for a particular purpose or for any indirect, special or consequential damages. Information in this document is subject to change without notice and does not represent a commitment on the part of the manufacturer.

FCC NOTICE

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with this manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

LOGIC CONTROLS, INC.
355 Denton Avenue
New Hyde Park, NY 11040
TEL: (516) 248-0400
FAX: (516) 248-0443
Email: lci@logiccontrols.com
http://www.logiccontrols.com

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FEATURES

The LT9000 family of table displays offers a wide range of high quality features and models to choice from. Listed below are the features incorporated into each table display. Not all features are available in all models. The model identification chart will assist you in selecting the model best suited to your needs.

The LT9000 family has the industry standard 9.5mm high vacuum fluorescent 5x7 pixel display.
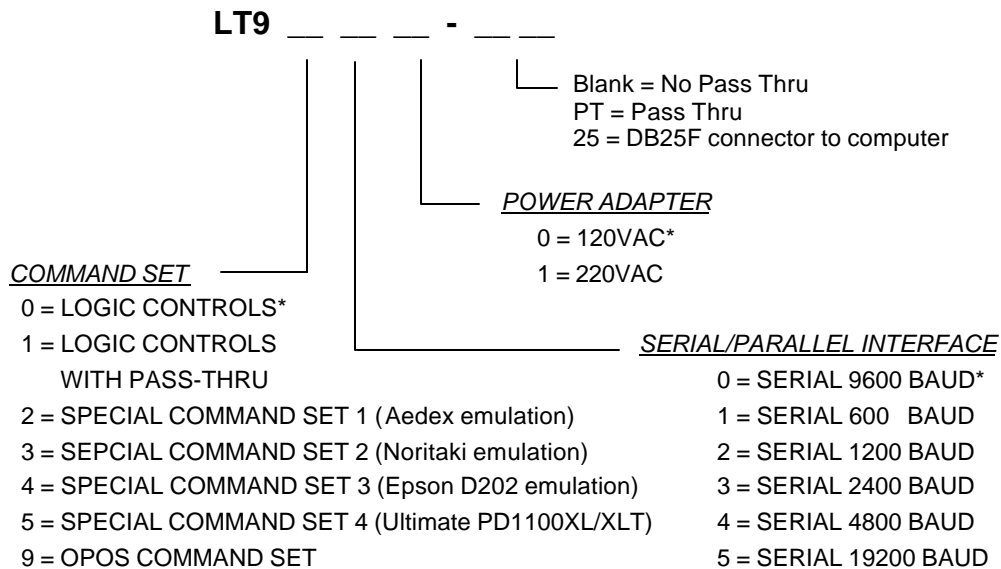
Features - All Models

- Bright blue-green fluorescent display
- Large 9.5mm character height
- Supports high speed serial protocol: up to 19,200 baud rate, 1 stop bit
- Automatic message scrolling
- Two line display with 20 characters per line
- Matched optical lens for better viewing contrast
- Ergonomic design
- Direct RS232C interface
- Long life and trouble free operation
- Simple installation
- Available with 120V or 220V Power Adapters

Features - Model dependent

- Emulation of other popular command sets
- User definable character
- True RS232C pass-thru
- Real time clock
- One time message scrolling
- Ability to disable attention code
- Ability to change attention code

MODEL IDENTIFICATION

LT9 __ __ __ - __ __

```
                          └── Blank = No Pass Thru
                              PT = Pass Thru
                              25 = DB25F connector to computer
```

POWER ADAPTER
0 = 120VAC*
1 = 220VAC

COMMAND SET
0 = LOGIC CONTROLS*
1 = LOGIC CONTROLS
   WITH PASS-THRU
2 = SPECIAL COMMAND SET 1 (Aedex emulation)
3 = SEPCIAL COMMAND SET 2 (Noritaki emulation)
4 = SPECIAL COMMAND SET 3 (Epson D202 emulation)
5 = SPECIAL COMMAND SET 4 (Ultimate PD1100XL/XLT)
9 = OPOS COMMAND SET

SERIAL/PARALLEL INTERFACE
0 = SERIAL 9600 BAUD*
1 = SERIAL 600   BAUD
2 = SERIAL 1200 BAUD
3 = SERIAL 2400 BAUD
4 = SERIAL 4800 BAUD
5 = SERIAL 19200 BAUD

* Default Values
** Call for description of Command Sets

CARTON CONTENTS

1. Table display, pre-assembled.

2. Interface cable, comes with a DB9F connector (to computer) and a DB9M connector (to table display) as standard equipment. Optional DB25F connector (to computer) is available.

   Note: This cable is only supplied with standard serial table displays with no pass-thru function. Other interface options will have different cables.

3. Transformer adapter 120VAC to 7.5VAC (optional 220VAC).

4. Quick Installation Guide.

INSTALLATION

Your LT9000 family of table displays has been pre-assembled to make the installation as simple as possible.

Serial Interface Non-pass-thru Models Installation

1. The table display can be used in a freestanding mode or mounted to the counter with the two holes at the rear of the unit.
2. Connect the DB9M connector of the interface cable to the table display.
3. Connect the DB9F connector to the computer's serial COM1 or COM2 port.
4. Connect the female phone jack of the power adapter to the male phone jack of the interface cable.
5. Plug the power adapter into a 120VAC outlet.
6. A start up text message (LOGIC CONTROLS POS COMPONENTS) will be present for a short time. When this message disappears the cursor will be displayed at the left-most digit of the top row.

Serial Interface Pass-thru Models Installation

1. The table display can be used in a freestanding mode or mounted to the counter with the two holes at the rear of the unit.
2. Connect the DB9M connector of the interface cable to the table display.
3. Connect the DB25M connector to the peripheral device or a serial pass-thru terminator (optional accessory). Turn on power of the peripheral device.
4. Connect the female phone jack of the power adapter to the male phone jack of the table display cable.
5. Connect the DB9F connector to the computer's serial COM1 or COM2 port.
6. Plug the power adapter into a 120VAC outlet.
7. A start up text message (LOGIC CONTROLS POS COMPONENTS) will be present for a short time. When this message disappears the cursor will be displayed at the left-most digit of the top row.

Parallel Interface Non-pass-thru Models Installation

1. The table display can be used in a freestanding mode or mounted to the counter with the two holes at the rear of the unit.
2. Connect the DB25F connector of the interface cable to the table display.
3. Connect the DB25M connector to the computer's parallel printer port (LPT1).
4. Connect the female phone jack of the power adapter to the male phone jack of the table display cable.
5. Plug the power adapter into a 120VAC outlet.
6. A start up text message (LOGIC CONTROLS POS COMPONENTS) will be present for a short time. When this message disappears the cursor will be displayed at the left-most digit of the top row.

Parallel Interface Pass-thru Models Installation

1. The table display can be used in a freestanding mode or mounted to the counter with the two holes at the rear of the unit.
2. Connect the DB25F connector of the interface cable to the table display.
3. Connect the DB25F side on the DB25M/25F connector to the peripheral device or parallel pass-thru terminator (optional accessory). Turn on power of the peripheral device.
4. Connect the DB25M side on the DB25M/25F connector to the computer's parallel printer port (LPT1).
5. Connect the female phone jack of the power adapter to the male phone jack at the DB25M/25F connector.
6. Plug the power adapter into a 120VAC outlet.
7. A start up text message (LOGIC CONTROLS POS COMPONENTS) will be present for a short time. When this message disappears the cursor will be displayed at the left-most digit of the top row.

FUNCTIONAL TEST

The following test sequence will verify that your table display is working properly. Before you start this procedure, you must install the table display correctly as outlined under the INSTALLATION section. The functional test should be done under *MSDOS command prompt* by booting up the computer in DOS mode, or shell out to DOS prompt (in window95/98/ME) or COMMAND prompt (in windows NT/2000).

NOTE: The actual key entries in the text below are enclosed within quotation marks (" "). Do **not** type the quotation marks as part of your entries.

Serial Interface Table Displays Functional Test

This test procedure assumes the table display is connected to COM1 of the computer. If COM2 is being used, type COM2 where COM1 is called out.

Close all opened application programs that use the same COM port before going into DOS command prompt. Enter the following command lines to open the COM port for communication with the table display:

Type "MODE COM1 96,N,8,1" and press the ENTER key.

LT9000, LT9300, TPD3400, LT9500 and LT9900

1. Type "Echo ABCDEFGH>COM1" and press ENTER key. The display will show "ABCDEFGH" on the first line.

LT9200

1. Type "Echo !#1ABCDEFGH>COM1" and press ENTER key. The display will show "ABCDEFGH" on the first line.

LT9100-PT, LT9300-PT, LT9400-PT and LT9500-PT

1. Type "Echo ABCDEFGH>COM1" and press ENTER key. The display will show "ABCDEFGH" on the first line.
2. Type "Echo **^A**PASSTHRU>COM1" (**^A** is entered as Ctrl-A) and press ENTER key. The data will be passed through to the peripheral (e.g. a printer). These characters are not shown on the display.
3. Type "Echo !#**^B**NUMBER12345>COM1", (**^B** is entered as Ctrl-B) then press ENTER key. The display will show "NUMBER12345" on the first line.

LT9200-PT

1. Type "Echo !#1ABCDEFGH>COM1" and press ENTER key. The display will show "ABCDEFGH" on the first line.
2. Type "Echo PASSTHRU>COM1" and press ENTER key. The data will be passed through to the peripheral (e.g. a printer). These characters are not shown on the display.
3. Type "Echo !#1NUMBER12345>COM1", then press ENTER key. The display will show "NUMBER12345" on the first line.

Parallel Interface Table Displays Functional Test

This procedure assumes the table display is connected to the LPT1 port of the computer. If parallel port LPT2 is being used, type LPT2 where LPT1 is called out.

LT9090, LT9390, LT9490, LT9590 and LT9990
1. Type "ECHO ABCDEFGH>LPT1" and press ENTER key. The display will show "ABCDEFGH" on the first line.

LT9290

1. Type "ECHO !#1ABCEDFGH>LPT1" and press ENTER key. The display will show "ABCDEFGH" on the first line.

LT9190-PT, LT9390-PT, LT9490-PT and LT9590-PT

1. Type "ECHO ABCDEFGH>LPT1" and press ENTER key. The display will show "ABCDEFGH" on the first line.
2. Type "ECHO **^A**PASSTHRU>LPT1" (**^A** is entered as Ctrl-A) and press ENTER key. The data will be passed through to the peripheral (e.g. a printer). These characters are not shown on the display.
3. Type "ECHO !#**^B**NUMBER12345>LPT1" (**^B** is entered as Ctrl-B), then press ENTER key. The display will show "NUMBER12345" on the first line.

LT9290-PT

1. Type "ECHO !#1ABCEDFGH>LPT1" and press ENTER key. The display will show "ABCDEFGH" on the first line.
2. Type "ECHO PASSTHRU>LPT1" and press ENTER key. The data will be passed through to the peripheral (e.g. a printer). These characters are not shown on the display.
3. Type "ECHO !#1NUMBER12345>LPT1", then press ENTER key. The display will show "NUMBER12345" on the first line.

For further testing of OPOS displays (LT9900), follow the instructions in the readme.doc file after software installation.

INTERFACE CONNECTION

Serial Interface Connector Configuration

The pin out configuration for the standard serial table display is a DB9F connector. It plugs directly into the serial port of the computer.

1. DCD (tied to pins 4&6)
2. NC
3. RXD from PC
4. DTR (tied to pins 1&6)
5. Ground
6. DSR (tied to pins 1&4)
7. RTS (tied to pin 8)
8. CTS (tied to pin 7)
9. NC
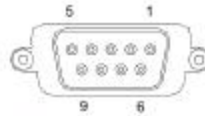
DB9F (to computer)

For pass-through models, the display cable comes with two connectors. The DB9F is to be connected to the computer while the DB25M is for connection to the peripheral.

1. DCD (tied to pins 4&6)
2. TXD to PC
3. RXD from PC
4. DTR (tied to pins 1&6)
5. Ground
6. DSR (tied to pins 1&4)
7. RTS (tied to pin 8)
8. CTS (tied to pin 7)
9. NC
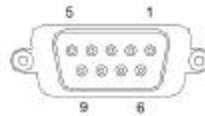
DB9F (to computer)

1. NC
2. TXD to peripheral
3. RXD from peripheral
4. RTS
5. CTS (tied to pin 20)
6. NC
7. Ground
8. NC
9-19 NC
20. DTR (tied to pin 5)
21-25 NC

DB25M (to peripheral)

Parallel Interface Connector Configuration

All standard parallel table displays will have a DB25 male connector. It is connected to the printer port of the computer.

1.	–Strobe
2.	Data 0
3.	Data 1
4.	Data 2
5.	Data 3
6.	Data 4
7.	Data 5
8.	Data 6
9.	Data 7
10.	–Ack
11.	Busy
12-17	NC
18-25	Ground

DB25M (to computer)

For pass-through models, the display cable comes with a dual DB25M/25F connector. The DB25M is to be connected to the computer while the DB25F is for connection to the peripheral.

1.	–Strobe
2.	Data 0
3.	Data 1
4.	Data 2
5.	Data 3
6.	Data 4
7.	Data 5
8.	Data 6
9.	Data 7
10.	–Ack
11.	Busy
12.	Paper End
13.	Select
14.	-Auto Feed
15.	-Error
16.	-Initialize Printer
17.	-Select In
18-25.	Ground

DB25M (to computer)

DB25F (to peripheral)

SOFTWARE COMMANDS

Logic Controls table displays are controlled by command codes and data from the computer. The model of table display that you have will determine which command set works with your table. Refer to the model identification chart for further information.

Commands are transmitted to the table display as ASCII codes. The command codes listed below are expressed in hexadecimal (base 16) numbers enclosed inside angle brackets < >, in decimal numbers enclosed in parenthesis ( ), and in ASCII characters enclosed in curly brackets { }. Do not include the brackets as part of the command. ' ^ ' character denotes 'Ctrl' in the keyboard. Press and hold 'Ctrl', then press the next key.

LOGIC CONTROLS COMMAND SET (LT9000):

1. **Vertical Scroll Mode <12>, (18), {^R}:**
   Data is written into the second row and transferred to the first row when carriage return is received, leaving the second row empty.

2. **Normal Display Mode <11>, (17), {^Q}:**
   Data can be written into either row. Moves to the left most digit of the other row when line is full.

3. **Brightness Control <04>, (04), {^D}:**
   The brightness of the display can be adjusted using this command followed by a data byte <FF>, <60>, <40> or <20>.

4. **Back Space <08>, (08), {^H}:**
   The cursor position moves one digit to the left erasing the previous information.

5. **Horizontal Tab <09>, (09), {^I}:**
   The cursor position shifts one digit to the right without erasing character at original cursor position.

6. **Line Feed <0A>, (10), {^J}:**
   The cursor position moves to the same position in the other row. In vertical scroll mode, if cursor was in second row, the cursor will not move and display will scroll up.

7. Carriage Return <0D>, (13), {^M}:
The cursor moves to the left most digit of the row it is in.

8. Digit Select <10>, (16), {^P}:
Moves the cursor to any position on the display with this command followed by a data byte of <00> to <27>, or in decimal (00) to (39).

9. Cursor On <13>, (19), {^S}:
Turns on the cursor.

10. Cursor Off <14>, (20), {^T}:
Turns off the cursor.

11. Reset <1F>, (31), {^_}:
All characters are erased and all settings are returned to the power-on reset conditions.

12. Down Load Font <03><X> <F> <F> <F> <F> <F>:
Assign a keyboard key (ASCII code <20> to <7F>) to a different style font. The "X" represents the ASCII code for the selected key. The "F's" represent the 5 segments that will make up the special font.

13. Message Scroll Left on Top Line
<05><X><X><X> ... <X><0D>:
Scrolls a continuous message of up to 45 characters from right to left on the top line.

14. Message Scroll Left on Bottom Line
<1B><06><X><X><X> ... <X><0D>:
Scrolls a continuous message of up to 45 characters from right to left on the bottom line.

15. Message Scroll Right on Top Line
<1B><07><X><X><X> ... <X><0D>:
Scrolls a continuous message of up to 45 characters from left to right on the top line.

16. Message Scroll Right on Bottom Line
<1B><0B><X><X><X> ... <X><0D>:
Scrolls a continuous message of up to 45 characters from left to right on the bottom line.

17. **Clock Display <1B><1A><h><h><3A><m><m>:**
    Displays real time clock on bottom line in the 12 hour format hh:mm.

18. **Smart Message Scroll Left on Top Line <1B><15><X><X><X> ... <1C> … <1C> … <X><0D>:**
    Scrolls a multi-part message of up to total of 45 characters from right to left on the top line. Message parts are separated by <1C> and each part must be less than 20 characters.

19. **Smart Message Scroll Left on Bottom Line <1B><16><X><X><X> ... <1C> … <1C> … <X><0D>:**
    Scrolls a multi-part message of up to total of 45 characters from right to left on the bottom line. Message parts are separated by <1C> and each part must be less than 20 characters.

20. **Smart Message Scroll Right on Top Line <1B><13><X><X><X> ... <1C> … <1C> … <X><0D>:**
    Scrolls a multi-part message of up to total of 45 characters from left to right on the top line. Message parts are separated by <1C> and each part must be less than 20 characters.

21. **Smart Message Scroll Right on Bottom Line <1B><14><X><X><X> ... <1C> … <1C> … <X><0D>:**
    Scrolls a multi-part message of up to total of 45 characters from left to right on the bottom line. Message parts are separated by <1C> and each part must be less than 20 characters.

PASS-THRU COMMAND SET (LT9100-PT):

All software commands of the non-pass-thru single sided model are available with following additional commands for pass-thru and double-sided display control. When power is turned on or after a reset command has been initiated, all text is displayed on the table display.

Extended Pass-thru Command Set is available as option.

Standard Pass-thru Command Set

1. **Data to Peripheral <01>, (01), <^A>:**
    All data following this command will be sent to the peripheral until a "Data to Display" command is received.

2. **Data to Display <21><23><02>, (33)(35)(02), {!}{#}{^B}:**
    All data following this command will be sent to the table display until a "Data to Peripheral" command is received.

Extended Pass-thru Command Set

1. **Data to Peripheral <01><1C><1D><1E>, (01)(28)(29)(30):**
    All data following this command will be sent to the peripheral until a "Data to Display" command is received.

2. **Data to Display <17><18><19><02>, (23)(24)(25)(02):**
    All data following this command will be sent to the table display until a "Data to Peripheral" command is received.

HARDWARE CONFIGURATION

Serial table displays were factory configured for serial RS232C interface using the following protocol:

> · 9600 Baud Rate
> · 8 Data Bits
> · 1 Stop Bit
> · No Parity

Other optional baud rates are available with factory settings. Refer to the model identification chart for further information.

DISPLAY CHARACTER CODES

				D7	0	0	0	0	0	0	0	0
				D6	0	0	0	0	1	1	1	1
				D5	0	0	1	1	0	0	1	1
				D4	0	1	0	1	0	1	0	1
D3	D2	D1	D0		0	1	2	3	4	5	6	7
0	0	0	0	0		DP	SP	0	@	P	'	p
0	0	0	1	1		DC1	!	1	A	Q	a	q
0	0	1	0	2		DC2	"	2	B	R	b	r
0	0	1	1	3	DL	DC3	#	3	C	S	c	s
0	1	0	0	4	DIM	DC4	$	4	D	T	d	t
0	1	0	1	5	MS		%	5	E	U	e	u
0	1	1	0	6			&	6	F	V	f	v
0	1	1	1	7			'	7	G	W	g	w
1	0	0	0	8	BS		(	8	H	X	h	x
1	0	0	1	9	HT		)	9	I	Y	i	y
1	0	1	0	A	LF		*	:	J	Z	j	z
1	0	1	1	B			+	;	K	[	k	{
1	1	0	0	C	CR		,	<	L	\	l	|
1	1	0	1	D			-	=	M	]	m	}
1	1	1	0	E			.	>	N	^	n	~
1	1	1	1	F		RST	/	?	O	_	o	

GENERAL SPECIFICATIONS

OPTICAL:

Number of rows	2
Number of digits/row	20
Dot matrix	5 x 7
Digit height)	0.347in. (9.5mm)
Digit width	0.244in. (6.2mm)
Character config.	ASCII
Brightness (typical)	900 cd/m^2
Display color	Blue-Green
MTBF (hours)	300,000

MECHANICAL:

Weight	1.2 lb.
Dimensions (in inches)	
Width	8.90
Depth	4.12
Height	4.10

ELECTRICAL:

Adapter input power	120VAC, 60Hz; optional 220VAC, 50Hz
Adapter output power	7.5VAC, 1000mA

ENVIRONMENTAL:

Operating temperature	0 to +50 $^\circ$ C
Storage temperature	-20 to +70 $^\circ$ C
Relative Humidity	80%, non-condensing
Vibration (10 to 55 Hz.)	4G's
Shock	40G's

CABLES & CONNECTORS:

Standard

Interface cable	DB9 (male) – to display
	DB9 (female) – to computer
	Phone jack (male) – to power adapter

Pass-thru

Interface cable	DB9 (male) – to display
	DB9 (female) – to computer
	DB25 (male) – to peripheral
	Phone jack (male)

Power adapter   Phone jack (female)