COLOR CELLS

PROGRAMING GUIDE CC784

6 COLOR MOVING MESSAGE SIGN

INTRODUCTION

Congratulations! You have now a powerful "Silent Sales Tool" – "COLOR CELLS"!

This carton contains your display, power pack, keypad and hardware for mounting the display.

These are the main features of the CC 784, the "State of the Art".

- 6 ULTRA BRIGHT COLORS, RED, ORANGE, YELLOW, LIME, GREEN AND BLACK
- FLASHES, BEEPS, SCROLLS UP & DOWN, FORWARDS, BACKWARDS AND JUMPS
- REAL TIME CLOCK
- LARGE MEMORY FOR UP TO 1200 CHARACTERS
- MEMORY BANKS ALLOW RETENTION OF UP TO 10 MESSAGES AT ANY ONE TIME
- VARIETY OF LETTER STYLES: BIG, BOLD, ITALIC AND NORMAL
- UPPER AND lower case LETTERS
- 16 SPECIAL GRAPHICS AND MANY USEFUL SYMBOLS
- HANDHELD ALPHANUMERIC KEYBOARD
- MESSAGES CAN BE DISPLAYED IN ANY DESIRED SEQUENCE
- ADJUSTABLE SPEED
- "MAGIC" FEATURE AUTOMATICALLY CHANGES THE COLORS OF YOUR MESSAGE EVERY TIME IT IS DISPLAYED.
- RS 232 COMPATIBLE
- 90 DAY BATTERY BACK-UP FOR MESSAGE MEMORY

ASSEMBLING THE DISPLAY FOR OPERATION

Power Pack:

Examine the power pack and note that there are two types of plugs attached to it; a small round plug and a conventional 2-prong plug.

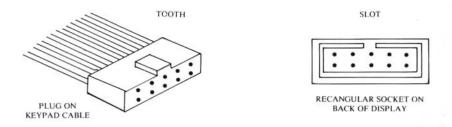
- Place the round shaped plug into its socket on the rear side of the display. NOTE: There is only ONE socket suitable for the power pack on the back side of the display.
- * Plug the conventional 2-prong plug into a standard 110Volt wall outlet.

This display will automatically begin to run a demonstration message that gives you a preview of its range of capabilities.

Keypad:

The handheld keypad is the device which allows you to program and operate your display.

Extending from the top edge of the keypad is a flat cable which is terminated with a small rectangular plug. To use the keypad, insert the small plug into the rectangular socket on the rear of the display. NOTE: The connector has a small tooth to ensure correct insertion. Please check that this tooth is correctly aligned with the slot in the display before inserting the plug. See illustration below.



To test whether your keypad is functioning, place the round and rectangular plugs FIRMLY into the back of the display. Then, place the "two prong" plug into your wall outlet. A "Demonstration" message will be displayed.

Should your unit "Beep" continuously or not turn on, remove the wall plug check that the plugs on the rear of the display are inserted correctly and plug into the wall outlet again.

Should your CC 784 come on showing odd numbers or symbols, DON'T PANIC. You can clear the display by pushing <u>STOP/RUN</u> and then <u>PROG</u> 0, <u>CLEAR</u>. <u>PROG</u> 1 <u>CLEAR</u> through to <u>PROG</u> 9 <u>CLEAR</u> then <u>STOP/RUN</u> to see demonstration message.

PROGRAMING YOUR 'COLOR CELLS'

"Practice makes perfect"

You cannot do anything to damage the sign from the keypad. Please feel free to experiment and practice to become an expert.

Your Color Cells display has memory available for up to 4 minutes of messages. There are 10 separate memory buffers -separate places to store 10 different messages. There is also an additional factoryset "Demonstration" message in a separate "DEMO" channel which runs when you turn the display on the first time. You can recall the "DEMO" at any time by pressing \underline{SEQ} \underline{D} followed by $\underline{STOP/RUN}$. (It will also run automatically if all your message channels are empty).

TO PROGRAM A MESSAGE

The following steps will illustrate how to program a sample message.

	* PRESS STOP/RUN to FREEZE	E THE DISPLAY
COLOR CELLS KEYPAD CC100		Display Shows:
$ \begin{array}{c} A \Leftrightarrow E & Y & I & \bullet M \\ B & \bullet & F & J & \bullet N & \odot \\ C & G & K & \delta & 0 & \bullet \\ D & \odot & H & \bullet L & A & P & \diamond \\ \end{array} $	* PRESS [PROG] You must specify a memory buffer between 0 and 9.	PROG MSG?
To miler a graphic press GAAPN and the letter baside but telector pretore.	* PRESS 1 key in our example.	TOP OF MSG 1.
	* Type in "HELLO MOM" using letter keys.	HELLO MOM
A B C D E	Input your message in this step.	
K L M N O	* PRESS SEQ key	SEQ MSG?
	The display is asking what order to dis	play messages it contains.
7 8 9 + 2	* PRESS 1 key	SEQ MSG? 1
4 5 6 *" *' 1 2 3 (*) ^c	 PRESS STOP/RUN key to playback message. 	
CODE . 1 HL	If "HELLO MOM" does not rep display, go back and start over.	peatedly scroll across the

ADDITIONAL TRAINING EXERCISES

- Exercise II Press STOP/RUN Press PROG 1 * Press To remove "Hello Mom" - to clear entire message: * Press CLEAR Now input the following new message: * Type in "HELLO" SPACE * Press BOLD * Press FLASH * Type in "TOM" SPACE * Push BIG * Type in your last name "JONES" for eg. SPACE Now to view your message * Press SEQ ; Press 1 ; Press STOP/RUN A new message: "HELLO TOM JONES" should appear. The name "TOM" should appear in BOLD letters and should be flashing. The last name "JONES" should appear in BIG letters. Exercise III Let's make a green sign: * Press STOP/RUN * Press PROG * Press 2 The colour of foreground/background is specified by the "FORE" and "BACK" keys. For a GREEN SIGN and BLACK BACKGROUND * Press FORE E BACK F to select green letters * Press GRAPH A * Press SPACE four times * Press BOLD ; type in "MONEY" * Press SPACE four times * Press NORMAL ; type in "BUYS" ; SPACE ; SPACE * Press BIG ; Press GRAPH then J * Press SPACE three times * Press B ; Press SPACE three times GRAPH * Type in "OR GIVES US CASH FOR A" * Press GRAPH K ; Press SPACE three times * Press GRAPH E ; Press SPACE three times * Type in "VACATION" NOW, to view message: * Press SEQ ; PRESS 2 ; Press STOP/RUN The message should read "MONEY BUYS 🏚 OR GIVES US CASH FOR A 👍 🏆 VACATION" If it doesn't, go back and start over. Exercise IV Let's do a short message of your choice and make the sign all RED. Use Prog. 3. * Press STOP/RUN ; Press PROG ; Press 3 * Press FORE A : Press BACK F to select red letters * Input the message your choice ... Once finished inputting your message:
- * Press SEQ ; Press 3 ; press STOP/RUN

Exercise V

Do a one or two word message in all "YELLOW" Use PROG. 4

- Press STOP/RUN
- * Press PROG ; Press 4
- * Press FORE D BACK F to select yellow letters

Input the message of your choice... Once finished inputting your message:

* Press SEO : Press 4 : Press STOP/RUN

Exercise VI

Now to demonstrate COLOR CELLS EXCLUSIVE "MAGIC".

- * Press STOP/RUN
- * Press PROG ; Press 5
- * Press MAGIC
- * Type in "MY GOAL IS TO SELL ONE WIDGET A DAY"
- * Press SEQ ; Press 5
- * Press STOP RUN

MESSAGE WILL BE DISPLAYED AND CHANGE COLOR RANDOMLY WITH EACH PASS.

TO LINK ALL 5 MESSAGES

To link all five messages so that they run together

- * Press STOP/RUN
- * Press SEQ
- * Press 1 2 3 4 5
- * Press STOP/RUN

All five messages should now be displayed in the order specified above. NOTE: The order can be varied by specifying a different order after pressing the SEQ key (e.g. "2, 1, 3, 5, 4)

USING GRAPHIC CHARACTERS

Color Cells comes with 16 graphics preprogrammed into your display. To insert a graphic into your message, first press the GRAPH key then type a letter from A to P which corresponds to the graphic you desire by refering to the top of the keypad. For example, push GRAPH E to insert the "Wine Glass" graphic.

Press GRAPH E ; GRAPH E ; GRAPH E this will give you 3 wine glasses.

USING BEEP AND FLASH

The **BEEP** and **FLASH** keys can be inserted at any point to add beep tones or to flash the next word in your message. To ensure that your selected word flashes, enter **FLASH** immediately before the word with no spaces in between.

CHANGING THE COLOR OF YOUR MESSAGE

To select the color of your message and its background use the FORE and BACK keys. The FORE key allows you to select the color of your message.

The BACK key allows you to select the color of the background behind your message.

To specify a color, press either FORE or BACK and then the letter corresponding to the color your desire.

For example, to create an all red message on a black background: press FORE A BACK F. You have a Red letter sign. You may do the same to create an all yellow sign. green sign, etc. NOTE: Colors corresponding to letters B & D cannot be used as background colors.

MAKING YOUR MESSAGE GO UP, DOWN, BACK AND JUMP

In addition to your message 'crawling' across to display from right to left, you can also program your message to move up, down, backwards and jump.

Up, Down, Back, Jump Press STOP/RUN Press PROG 6 Press CLEAR Press SHIFT [BIG] = (JUMP)Type "WINNER" SHIFT Press FLASH = (CRAWL) to end the JUMP command PRESS SHIFT BEEP = (UP)Type "LOVE" Press SHIFT [FLASH] = (CRAWL) to end the UP command NOTE: Letters and graphics default to show in BOLD font whenever you use UP, DOWN, JUMP or BCRAWL. Also the letters only show in Red and Green stripes.

Press SEQ 6

Press STOP/RUN

The word "WINNER" should appear instantly on the screen followed by the word "LOVE" rolling up. If this doesn't happen, please start over.

Use the same format of COMMAND followed by the text followed by the CRAWL command.

For: BACKWARD [BCRAWL] = [SHIFT] [MAGIC]

For: DOWN [DOWN] = [SHIFT] [ITALIC]

TO PAUSE OR STOP YOUR MESSAGE ON THE SCREEN

Pressing SHIFT BOLD inserts are a 'PAUSE' command in your message. This will cause your message to stop at that point for 1 second. If you wish a longer stop then press 'PAUSE' multiple times. e.g.: (PAUSE) (PAUSE) (PAUSE) for a 3 second wait.

NOTE: Whenever a (PAUSE) is shown the message on the screen will change from your selected color to Red and Green letters on a black background when paused and Yellow there after.

TO CORRECT ERRORS

If you type in an error in your message, use the arrow keys \triangleleft or \triangleright to move within your message to the character(s) that need correction and position the mistake on the right hand side of the screen. To remove a character it must be located in the last column on the right hand side of the display.

To remove a character, press the DEL key. By repeatedly pressing the DEL key you can remove as many characters as you wish.

To remove an entire message from its memory register, press the CLEAR key. This completely removes the entire message from this memory register.

ADDITIONAL PROGRAMING FEATURES

Color Cells has many features which allow you to enhance the presentation of your messages. These features are listed below.

TO CHANGE LETTER STYLE

Color Cells can present letters in four styles: "Normal, Big, Bold, or Italic."

Unless you change the letter style it will automatically present ALL letters in the "Normal" style. To Change Style:

Press either BIG , BOLD , or ITALIC key immediately preceding characters or phrases for which you want a different style.

For example, pressing BIG will make all characters after this instruction appear in the BIG style. To return the display to Normal style, just press the NORMAL key and all following characters or phrases will appear in Normal style.

USE OF "MAGIC" FEATURE

Exclusive to Color Cells. By using the "magic" key, each time your message scrolls across the screen the colors of the message (or whatever portion you may select) will randomly change.

This feature creates and holds customers' interest. The choice is yours as to whether a word, or the entire message is affected by "MAGIC".

USING THE REAL TIME CLOCK

Your Color Cells is equipped with a time clock function. upon your request it will show the time in your message. The clock will reset to 12:00 AM when ever you turn the display on.

To set the time in the display:

- * Press STOP/RUN to freeze the display
- * Press SHIFT NORMAL = (SET TIME)

Display shows	
TIME?	l

- * Type in the time NOTE: YOU MUST ALWAYS TYPE IN 4 NUMERALS. e.g. [0] [9] [3] [5] for 09:35 AM Y/N
- * Press Y for AM or N for PM

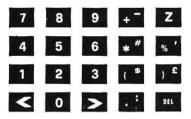
* Press STOP/RUN to run your message.

Your clock is now set internally.

To display the time in your message simply press SHIFT GRAPH in your message and whenever the message is shown the time will be displayed at that position in your message.

ADDITIONAL FEATURES OF THE KEYBOARD

To following keys are also available on the keyboard and can be used in programming your messages.



Press SHIFT or UPPER/LOWER to achieve upper or lower case letters and the alternate commands above the keys on the keypad.

e.g. SHIFT + GRAPH allows you to enter "time".

SUMMARY

This provides an overview for operating your Color Cells Display. Please refer to the following pages for a summary of Color Cell's features.

CC784 KEYPAD KEYS AND FUNCTIONS (ALPHABETICAL ORDER) FUNCTION KEY(S) TO ENTER DESCRIPTION

Back	BACK	Background color select. Use with letters A, C, E, F to select either RED YELLOW GREEN or BLACK background color.
Bcrawl	SHIFT BCRAWL	This is a frame movement, a word following this command will wipe back e.g. [BCRAWL] "SAFE" "SALE" [CRAWL]
Beep	BEEP	Causes the display to make a Beep sound at that point e.g. [BEEP]
Big	BIG	The letters and words following this command are displayed in a BIG font style. e.g. [BIG] "SALE" Use the NORMAL command to reset to the standard font.
Bold	BOLD	The letters and words following this command are displayed in a BOLD font style e.g. [BOLD] "LOOK". Use the NORMAL command to reset to the standard font.
Clear	CLEAR	Clears ALL the text out of the message buffer you are currently editing.
Crawl	SHIFT CRAWL	This is the default type of movement on the display. Messages crawl across the display from right to left. e.g. [CRAWL] "THIS IS A" Also use this command to end any other movement e.g. JUMP.
Delete	DEL	Use this key to remove errors from your message. Position the character to be deleted at the very right hand side of the display using \langle and \rangle , then press [DEL] to delete it.
Flash	FLASH	The letters and words following this command are displayed FLASHING. Press FLASH immediately in front of the word you wish to flash as FLASH is turned off by a space. e.g. [FLASH] "SALE" Use the NORMAL command to turn FLASH off within a word.
Fore	FORE	Foreground color select. Use with the letters A-F to select either RED, ORANGE, YELLOW, LIME GREEN or BLACK e.g. [FORE] [E] for green letters.
Graph	GRAPH	Graphic select. Use with the letters A-P to select a graphic to insert in your message. e.g. [GRAPH] [B] to display a car.
Italic	ITALIC	The letters and words following this command are displayed in an ITALIC font style. This font can be combined with BOLD or BIG to create other fonts. e.g. [ITALIC] [BOLD] "SALE" Use the NORMAL command to reset to the standard font.

Jump	SHIFT JUMP	This is a frame movement, a word following this command will appear instantly on the display. e.g. [JUMP] "SALE" [CRAWL]
Magic	MAGIC	Automatically changes the color of your message: — with each pass of your message — whenever you select a different font e.g. [BIG] — whenever you enter two consecutive spaces Normally you would enter [MAGIC] at the start of your message.
Normal	NORMAL	Resets fonts back to standard and turns flashing characters off. e.g. [BOLD] [FLASH] "SALE" [NORMAL] "SALE"
Pause	SHIFT PAUSE	Causes the message to pause on the display for 1 second. NOTE: All colors revert to red and green during a pause. Press PAUSE multiple times for a longer pause. e.g. "SPECIAL" [PAUSE]
Roll Down	SHIFT ROLL DOWN	This is a frame movement, the word following this command will wipe DOWN onto the display. e.g. [ROLL DOWN] "SALE" [CRAWL]
Roll Up	SHIFT ROLL UP	This is a frame movement, the word following this command will wipe UP onto the display. e.g. [ROLL UP] "SALE" [CRAWL]
Set Time	SHIFT SETTIME	Use this command to adjust the internal clock in the display. NOTE: This command should be used each time the power is connected to the display to set the time. Use TIME command to insert a time display in your message — See separate heading for details.
Sequence	SEQ	Allows selection of the message(s) you wish to run. e.g. [SEQ] [1] [2] [STOP RUN] will run messages 1 and 2 in that order. You can enter message numbers in any order and up to 32 total entries.
Shift	SHIFT	Press the SHIFT key to access letters and commands indicated on the top of the key, including lowercase. Press [SHIFT] again to cancel an inadvertently pressed [SHIFT]. e.g. [SHIFT] [FLASH] = [CRAWL]
Space	SPACE	Space bar — enters a blank character in your message. Use this key to separate words.
Speed	SHIFT PROG	Allows you to change the speed of the display in your message. NOTE: Slower speeds used with red or green colors may cause the unit to flicker. Use the numbers 0-7. 0 is the fastest (default) e.g. [SHIFT] [PROG] [2] = $S2$ = speed 2.
Stop	STOP RUN	This key toggles so that if the display is running and you press this key the sign will STOP and visa versa the sign will run if you press this key while it is stopped.

Time	SHIFT TIME	Use this command to show the time in your message. e.g. "THE TIME IS " [TIME] NOTE: Please refer to SETTIME to adjust the actual internal clock time.
Upper/lower	UPPER/LOWER	This swaps between Uppercase and Lowercase letters. e.g. "SALE" [UPPER/LOWER] "sale".

SPECIFICATIONS

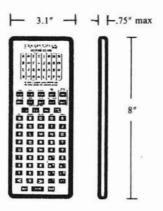
CC784 Display Unit



Cabinet Material	Aluminium housing with plastic end caps
Cabinet Size	29.5" × 5.25" × 2"
Weight	5.5 lb approx.
Display area	2" × 25.2"
Number of Characters	Average 14
Character height	2"
Number of Pixels	588
Vertical Resolution	7
Horizontal Resolution	84
Pixel Type	Extra Bright Light Emitting Diodes
Colors	6 - RED, ORANGE, YELLOW, LIME, GREEN, BLACK
Memory Capacity	1200 characters
Power Consumption	20-30W typical, 40W max.
Battery Backup	90 days
NOTE: INDOOR USE ON	LY

All specifications are subject to change without notice.

CC784 KEYBOARD



Case material Case Size Number of keys Key Type Cable length -NOTE: INDOOR USE ONLY

Injection molded plastic 8" × 3.1" × .75" max. 62 Rubber Tactile 8'

POWER SUPPLY UNIT



To Display

Case material Output power Input power NOTE: INDOOR USE ONLY

Injection molded plastic 9 Volts AC 2.5 Amps min. 117V 60Hz

RS232 OPTION

USING RS232 ON YOUR CC784

Your CC784 display is RS232 compatible and can receive all its commands via RS232.

To use RS232, insert the required cable into the keypad socket on the rear of your display. This cable can be purchased from supplier - or you can construct the cable yourself using the circut diagram shown.

Now apply power to the display. It is important to re-apply the power to your display each time you change from RS232 to keypad or vice versa. The display checks to see which is connected (either RS232 or Keypad) when power is applied and will not accept the other until power is applied again.

The other end of the cable (25pin 'D') plugs into the RS232 port of your PC or modem.

You can now program your sign direct from your PC using a communication program.

You should set the following parameters:

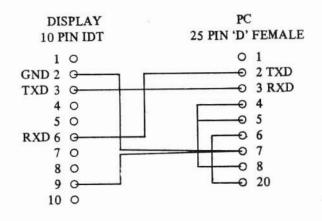
BAUD	:	300
STOP	:	2
DATA	:	8
PARITY	:	NONE
DUPLEX	:	FULL

Set the port to either COM 1 or COM 2 depending which you are using.

Now you can use the PC keyboard to program your sign. To use functions like 'STOP' or 'PAUSE' etc, simply hold down the 'ALT' key and type the ASCII decimal number onto the numerical keypad as per the table below.

Down loading complete messages thru RS232.

The CC784 echos back to the computer each character the computer sends it once it has accepted the character and is ready for the next character. If you send the next character before the display has echoed the previous character the display may miss characters causing errors in the displayed message.



RS232 ADAPTER CABLE FOR CC784

Networking / Multi-drop

Two special ascll codes are allocated to allow the CC784 to be networked in a multi drop system. These are

- ^ ^ (05Eh) This character tells the display that the next character it receives is a character it should save as its unique address. The format is - ∧ n - where n is any 8 bit ascll character. This allows up to 256 separate displays to be connected to the network. For example to set a sign with address "a" simply send ∧a.
- 2. "~" (07Eh) This character should be used to stop the displays when in a network situation. Sending this character will cause all the displays on the network to STOP and walt for an address character. You should then send the address of the display you wish to change. Upon receipt of the address character the displays compare it to their own address (set as per point 1) and if it doesn't match they imediately commence running again. Only the display with the matching address remains STOPPED. You can now send the your message to that display alone.

ASCII Dec	Function	ASCII Dec	Function	ASCII Dec	Function	ASCII Dec	Function
0		32	Space	64	(a)	96	
1	Stop	33	!	65	A	97	а
2	Speed	34	**	66	в	98	b
3		35	#	67	С	99	с
4	Sequence	36	\$	68	D	100	d
5	Top of text	37	%	69	E	101	e
6	Pause	38	&	70	F	102	f
7	Beep	39	:	71	G	103	g
8	Curser <	40	(72	н	104	h
9	Prog	41)	73	1	105	i
10	Curser >	42	*	74	1	106	j.
11	Move 8 <	43	+	75	K	107	k
12	Move 8 >	44	,	76	L	108	1
13	Run	45	-	77	M	109	m
14	Clear	46		78	N	110	n
15	Bcrawl	47	/	79	0	111	0
16	Big	48	0	80	Р	112	p
17	Normal	49	1	81	Q	113	q
18	Bold	50	2	82	R	114	r
19	Italic	51	3	83	S	115	S
20	Flash	52	4	84	Т	116	t
21	Fore color	53	5	85	U	117	u
22	Back color	54	6	86	v	118	v
23	Set time	55	7	87	w	119	w
24	Crawl	56	8	88	x	120	x
25	Jump	57	9	89	Y	121	У
26	Wipe up	58	:	90	Z	122	z
27	Wipe Down	59	;	91	ſ	123	1
28	Capitals	60	<	92	1	124	
29	Shift	61	=	93	1	125	}
30	Graphic sel	62	>	94	Set Addr	126	Stop Addr
31	Magic	63	?	95	Time	127	Delete

Table of ASCII commands for CC784 in RS232 mode

ASCII values 128 to 255 are reserved and should not be used.

SPEED SLOW DOWN CONTROL

The speed that the message runs across the screen is controllable from the keypad and can be varied through out your messages. The default speed (that is the speed it runs automatically) is 0 which is the fastest, and the slowest selection is 7.

TO SET THE SPEED OF YOUR MESSAGE

Step 1		TOP UN	to freeze the display
Step 2	PRESS P		and the number of the message bank of which you wish to set the speed for example $\boxed{1}$
Step 3	PRESS C	LR	To empty message bank
		SHIFT to set the	PROG and the speed number (0 is fastest -7 is slowest) speed to 4
Type in	your messa	ge, for ex	ample: "THIS IS SPEED 4"
Step 5	PRESS	SEQ	to enter this message
Step 6	PRESS	STOP RUN	to view your message

The message will crawl across the screen at a slower pace than normal. If not then go back to Step 1.

NOTE:

- 1. The speed command can be included at any point in your message and as many times as you like. Each time the message reaches the point where the speed command was entered, it adjusts its running speed accordingly.
- 2. Using very slow speeds (5, 6, 7) on Red or Green letters will cause the display to flicker. Very low speeds should be limited to characters of Orange, Yellow and Lime.

PLEASE NOTE

IMPORTANT

- 1. Place the round and the rectangular plugs firmly into the back of the display. Then, place the two prong end into your wall outlet.
- 2. Should your unit "Beep" and not turn on, pull wall plug, check the plugs on the display and plug into the wall again. Should your CC 784 come on showing odd numbers or symbols, DON'T PANIC. You can simply cleanse the display by:

pressing STOP/RUN, next push PROG 0 and than press CLEAR; repeat this process for ALL 10 memory banks, PROG 1, PROG 2 and so on through to PROG 9.

3. Now restart the unit. The DEMO message will appear automatically.

NOTE

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

SERVICE AND CAUTIONARY INFORMATION

Cleaning

The unit should be cleaned using a mild detergent on a soft cloth. Abrasive and active cleaning agents should not be used. Special care should be taken to ensure that no moisture enters the unit during cleaning.

Service

Your Color Cells CC784 Display System has been manufactured using the highest quality materials and methods. The Warranty Certificate sets out the period of Warranty. There are no user serviceable parts in either the Display or the Keyboard and no attempt to open these should be made by unqualified personnel. The Power Supply Unit is completely sealed.

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16.