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8000



Intecolor[®] 8000 Series Terminals

 Intelligent Systems Corp.[®]

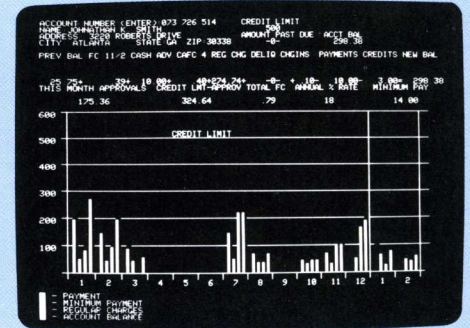
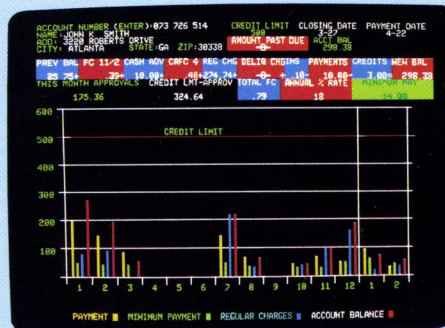
Intecolor: Color Data Terminals at Black-and-White Prices

Information becomes useful only when communicated – and communicated *well*. That's why every Intelligent Systems Corp. data terminal uses a color CRT display; because color can organize data in a logical, easily-read format. A format that is *quickly* comprehensible. Color does away with confusing black-and-white displays that only present data as so many lines of look-alike figures. And because ISC terminals are competitively priced with black-and-white terminals, color can be put to work improving *any* system's performance.

The Color Advantage

Research studies chronicled in such professional publications as the *Journal of Applied Psychology* and the *Journal of Experimental Psychology** as well as extensive on-the-job experience have proven repeatedly that *color displays convey information more quickly and more effectively than any other visual method*. Color-coded displays lead to easier data recognition, thus minimizing search time and permitting faster operator response. Color dramatically reduces operator fatigue and *can cut costly error by as much as 80%*.

The advantage of color becomes even more apparent in ISC's graphics terminals. Bar graphs, charts and diagrams displayed in color provide the operator with an almost instantaneous *visual* analysis of data – reducing response time to an absolute minimum.



ISC color displays convey information faster and more effectively than monochrome displays.

Intecolor Terminals Are Used Throughout The World

Companies in the process control industry were among the first to realize the unique advantages that ISC's color terminals can offer. These companies rely on Intecolor terminals around the clock. They are used to perform a wide variety of complex tasks – to locate and report on the status of intricate system components, to monitor process performance, to alert operators in case of malfunctions, and much more.

As awareness of low-cost color graphics spreads, OEM's and data processing users are finding a multitude of new and interesting uses for ISC color terminals. Among these users are many Fortune 500 firms, as well as other companies, both large and small, that know color makes a

big difference in their operations. ISC color works to their advantage by displaying data in a way that *every* manager can deal with intelligently and effectively.

Leading the way in Low-Cost Color Terminals

By combining inspired research and development with volume sales, ISC has accomplished something not even the commercial television industry has been able to manage – bringing the price of color down to the level of black-and-white. This has, of course, resulted in increased demand for Intecolor terminals. Already, Intelligent Systems Corp. is the largest supplier of color CRT terminals in the world. Every day more and more data processing users are discovering...

Color Communicates Better

*See Journal of Experimental Psychology, 1962, Vol. 64, No. 5 and 1956, Vol. 51, No. 1; Journal of Applied Psychology, 1963, Vol. 47, No. 6.

Intecolor: The Complete Line of Color Terminals

Intecolor terminals are available in four different packages: the thirteen-inch 8301 series; the nineteen-inch 8901 series; the standard nineteen-inch 8001 series; and the twenty-five-inch 8001 series. Each series features terminals capable of displaying alpha-numerics, standard graphics or high-resolution graphics, all in color.

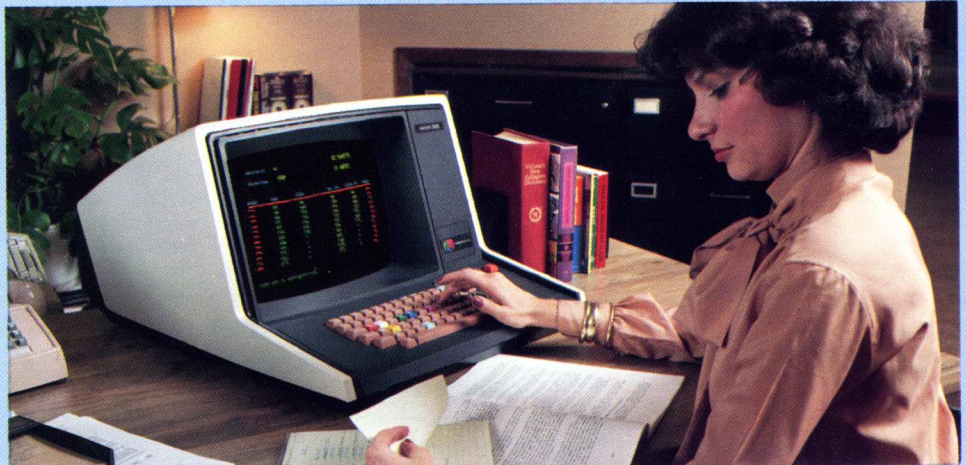
The 8301 and 8901 series are housed in stylized, contemporary cabinets. Their clean lines make these terminals suitable for use in any office, from the reception area to the boardroom.

The 8301 series (top photo) uses a 13" diagonal display for high performance in a compact, space-saving cabinet. The keyboard is built in for easy, one-piece portability.

The 8901 series (bottom left) features a 19" diagonal display that's easy to read even from a distance. The separate keyboard can be positioned flush with the display unit for a modular look. For process control applications, the 8901 can also be ordered without a keyboard.

The 8001 series (bottom right) is available with either a 19" or 25" diagonal display and separate keyboard. This series is ideal for custom installations.

Color display convergence adjustments are normally a time consuming operation. With Intecolor's Nine Sector Convergence System, simple and precise adjustments can be made from the front of the terminal in a matter of minutes.



Compact 13" 8301 series — perfect for desktop use.



8901 series features large, 19" CRT.



19" 8001 series in industrial cabinet.

Donald G. McBrien

Color Alphanumerics For Improved Performance at an Affordable Price.

Now you can get color — dynamic, informative ISC color — in a terminal that costs no more than comparable black-and-white terminals. So whether your plans call for designing a new computer system or upgrading your present one, color belongs.

These terminals are suited for applications that don't require special plotting or graphing capabilities. They provide improved alphanumeric presentations that increase user comprehension and lower response time.

Display

FORM # 5 PURCHASE ORDER

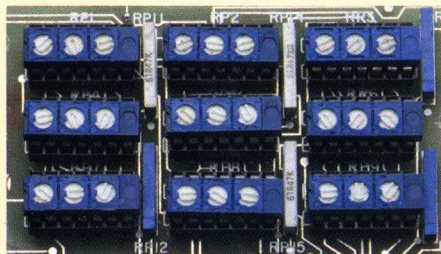
VENDOR NAME	ADDRESS	CITY	STATE	ZIP
ACME ELECTRONICS	5652 NATH ST NE	ATLANTA	GA	30345
QTY	PRODUCT DESCRIPTION	U-COST	TOTAL COST	CONTROL NO
500	110/250 VOLT XFORMER	300.00	150000.00	1000250
100	100 UF @ 140 MVDC	2.50	250.00	200565
200	3300 UF @ 20 MVDC	4.35	870.00	200768
100	PCB ASSY'S #1128	5.00	500.00	500700

INTELLIGENT SYSTEMS CORP BY JOHN T. BUYER DATE 12-18

Sixty-four standard ASCII alphanumeric characters are formed using a 5x7 dot pattern on a 6x8 matrix. Double-height characters are keyboard selectable, using a 5x14 dot pattern on a 6x16 matrix.

Characters are displayed in eight foreground and background colors: white, red, green, blue, yellow, magenta, cyan, and black. Along with color, characters or entire lines can be programmed to blink to emphasize important data. The data refresh rate is 60 times per second, insuring a flicker-free display.

Up to 80 characters per line can be displayed in a 48 line format. Double-height characters can be intermixed with standard characters.



Convenient, up-front convergence controls.

Keyboards

All ISC keyboards feature two-key rollover for fast data input. The basic keyboard supplied with Intecolor terminals is equipped with 192 ASCII codes and cursor controls.

Two keyboards are available as options. The extended keyboard adds color and numeric clusters for more convenience in entering numbers and selecting colors. The deluxe keyboard adds sixteen special-function keys to the extended keyboard, providing the ultimate in speed, convenience and flexibility.



Standard keyboard.

Flexible Editing Features

Intecolor terminals can automatically set tabs every eight character spaces. And a single line or an entire page can be deleted with a single keystroke. A page roll mode is also incorporated for user convenience.

CPU and Memory

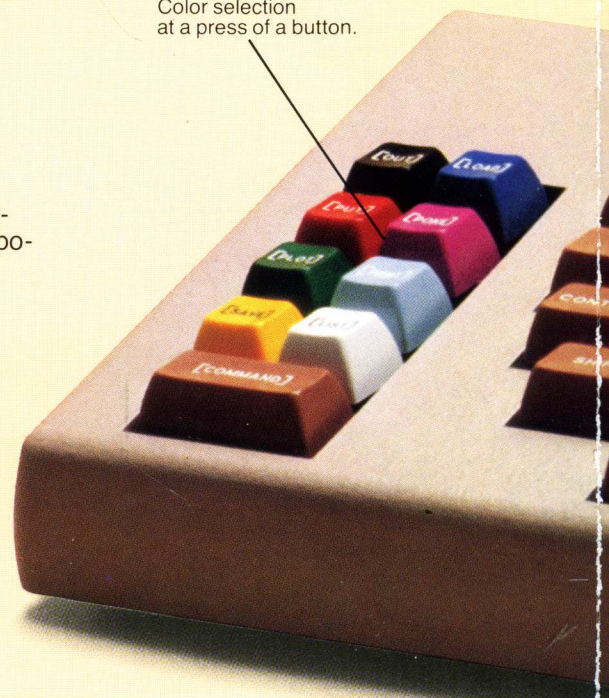
ISC terminals use an 8080A microprocessor with a 2 microsecond processing cycle as the Central Processing Unit. Alphanumeric terminals are equipped with 5K bytes of ROM and 8K of RAM for refresh. Provisions exist for up to 27K of optional EPROM for custom user-developed software.

Interface

A standard RS-232C compatible I/O port allows all Intecolor terminals to interface with an asynchronous modem or host computer at seven keyboard selectable rates from 110 to 9600 baud. Serial, full-duplex, half-duplex and local transmission are all selectable via the keyboard or RS-232C port.

Several options are available for interfacing Intecolor terminals to peripherals or host computers which are not RS-232C compatible. These options include a 20/60mA current loop and a 24-bit I/O port. Optional interfaces also include a second RS-232C port and 8-bit parallel I/O channel, and a third RS-232C synchronous/asynchronous channel.

Color selection at a press of a button.



Extended keyboard.

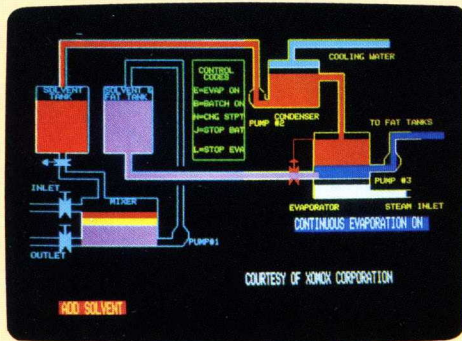
Color Graphics

The Most Cost-Effective in the Industry.

ISC's color graphic terminals are the key to more powerful computing. Graphics can present information symbolically, making CRT displays easier and faster to understand. Patterns and trends become instantly visible. Seasonal sales patterns, for example, are easy to spot when historical sales figures are presented in a chart. But graphics alone aren't enough. Without color, graphics are only of limited value.

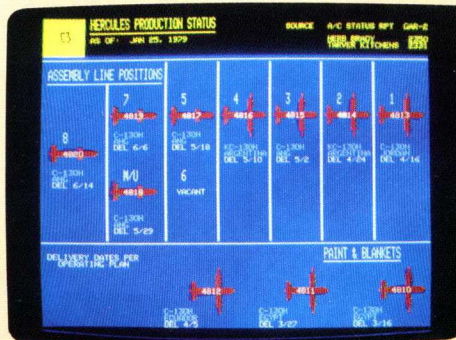
Eight foreground and background colors can be used in any combination, so even complex diagrams can be displayed with ease. Only ISC offers the advantages of both graphics and color at remarkably low prices — without sacrificing important features.

Color Graphics



With ISC color graphics, a multitude of information can be conveyed on a single display. Data is made much more meaningful because color can code similar data and emphasize unique data. Numerous and often confusing figures can be converted into a wide variety of color charts, curves, bar graphs and diagrams.

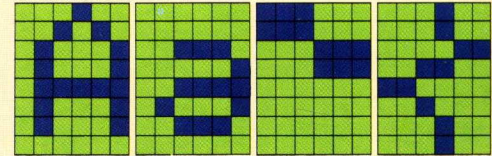
Display



Point plotting is displayed on a 160H x 192V grid area. Firmware is provided for bar graphs, vectors and point plots.

In addition to the standard ASCII characters, 64 special ISA (Intelligent Systems "A") characters can be displayed. Up to 80 characters can be displayed in a 48 line format. Double-height characters are keyboard selectable and can be intermixed with standard characters.

Special characters such as lower case and plot symbols are available as an option. ISC can also program special PROMs for customer-designed characters.



Special character options enhance Intecolor's display capabilities.

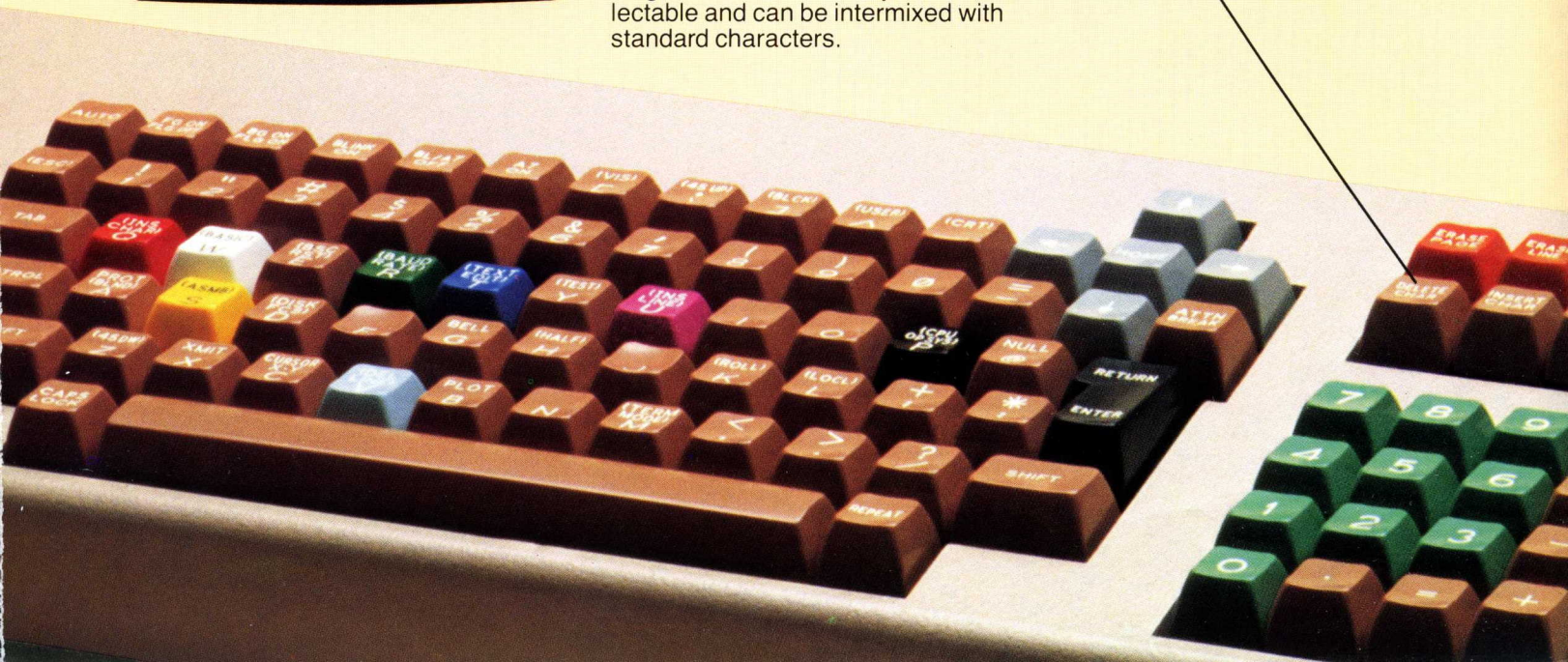
Keyboards

Intecolor graphics terminals come with extended keyboards (shown below) and feature convenient numeric and color clusters. The deluxe keyboard (shown next page) with an additional sixteen special-function keys is available as an option.

Expanded Editing

Standard with every Intecolor graphics terminal is the ability to insert or delete individual characters or lines with just a few keystrokes. Editing is made fast and effortless.

Convenient editing features.

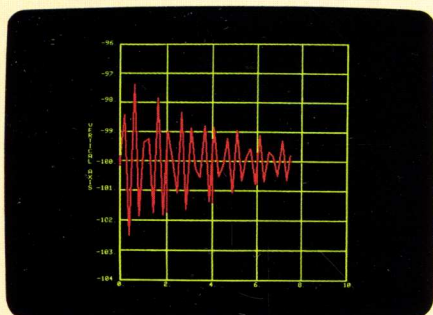


High Resolution Color Graphics

The Ultimate in Cost/Performance.

Now there's an economical approach to applications that demand critical picture definition. ISC has developed not one, but three of the most cost-effective high resolution terminals on the market today. Each provides the same capabilities as our standard graphics terminals, but feature six times better resolution. For much more precise, well-defined color graphics.

High Resolution



ISC high resolution terminals plot random vectors or symbols on a 480 x 384 grid. The graphics generator allows vectors to be drawn with ease. Simply specify the coordinates of the start point (X_1, Y_1) and end point (X_2, Y_2) — all points between are automatically plotted. Rectangles can be drawn by specifying diagonally opposed corners. Circles can be drawn just as easily by specifying a center and radius.

Examples:

Vectors: (ESC) T/0,0,479,383 plots a vector diagonally across the screen, from point (0,0) to point (479,383).

Rectangles: (ESC) T<,100,100,350,300 plots a rectangle with diagonally-opposed corner points (100,100) and (350,300).

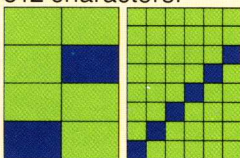
Circles: (ESC) T (,240,192,100 plots a circle with a center-point at (240,192) and a radius of 100 points.

Display

The high resolution capabilities are implemented by 512 software programmable characters, independent of the standard alphanumeric characters. In addition, the user can define up to 128 of these characters and download them from the host computer or from a disk.

Individual characters consist of a 6x8 dot matrix, with all 48 dots software addressable. Foreground and background color is defined on a character-by-character basis.

Characters are contained in a 4K by 6-bit wide programmable RAM memory organized as 6 bits wide by 8 words deep for each of the 512 characters.



ISC plot block mode (left) makes 8 blocks addressable per character position. High resolution addresses 48 bits per character position.

Keyboards

The extended keyboard is a standard feature of all Intecolor high resolution terminals. The deluxe keyboard (shown below) with an additional sixteen special-function keys is available as an option.

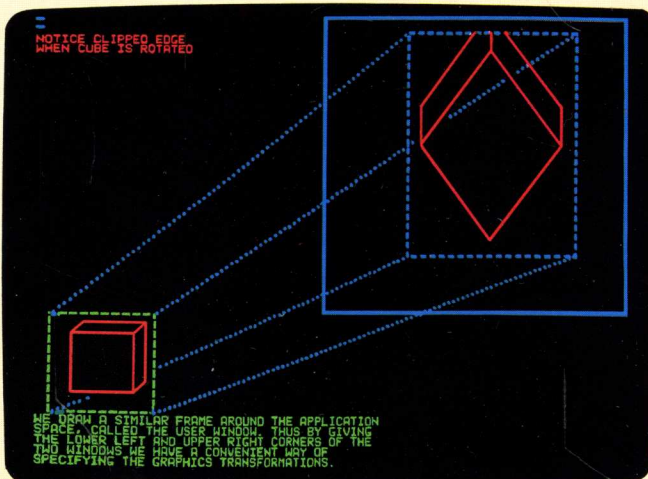


Deluxe keyboard.

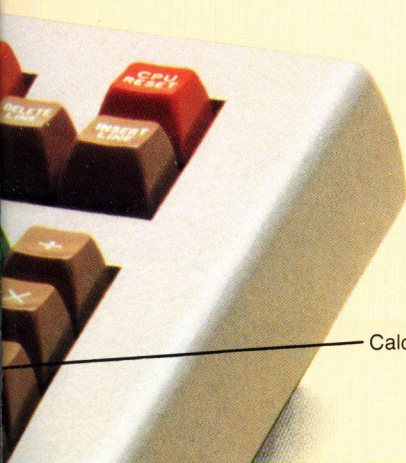
Conversion of Existing Units

Any ISC 48-line unit in the field can be upgraded to high resolution. Conversion is simple; both the display generator and the 8K Refresh RAM memory are replaced, as well as a software package option that provides an easy interface to the hardware.

Color Communicates Better



High resolution greatly enhances color graphics displays.



Calculator-style numeric cluster.

Intecolor Terminal Specifications

8301/8901/8001
ALPHANUMERIC

8301G/8901G/8001G
GRAPHICS

8301H/8901H/8001H
HIGH RESOLUTION

Display	All units in the 8300 Series have a 13" high-phosphor density CRT. All units in the 8000 and 8900 Series have a 19" CRT. Optional 25" CRT available in 8000 Series only.			
Display Format	80 characters/line x 48 lines	•	•	•
Graphics	Plotting on a 160H x 192V grid area. Firmware for vector, bar graph and point plots.		•	•
	Plotting on a 384H x 480V grid for high resolution circles, rectangles, vectors, and point plots.			•
Character Style	64 Standard ASCII characters, 5x7 dot pattern in 6x8 matrix (double-height characters use 5x14 dot pattern in 6x16 matrix.)	•	•	•
	64 ISA Special Characters		•	•
	512 total software programmable characters; 6x8 matrix with all 48 dots addressable by software			•
Cursor	White, blinking overscore/underscore non-destructive	•	•	•
Colors	Eight foreground and eight background: Black, Red, Green, Blue, Yellow, Magenta, Cyan, White	•	•	•
Editing	Tab; Erase Page; Erase Line; Blink*; Color Selection; Cursor Up, Down, Left, Right and Home; Cursor XY Positioning; Transmit; Page Roll Mode. Protect optional.	•	•	•
	Insert/Delete-Character/Line		•	•
Keyboard	Basic. Standard ASCII 4-level coded with 192 codes and cursor	•		
	Extended. As above, but with color and numeric clusters		•	•
Communication Modes	RS-232C Serial, full duplex/half- duplex/local, keyboard selectable	•	•	•
Data Transfer	No parity, 7 rates from 110 to 9600 baud, 1 or 2 stop bits, all keyboard selectable.	•	•	•
CPU	8080A microprocessor, 2 microsecond cycle	•	•	•
Memory	5K ROM, 8K RAM for refresh	•	•	
	10K ROM, 8K RAM for refresh, 4K RAM for programmable characters.			•

* High Resolution programmable characters do not blink. For additional capabilities and options see the Intecolor 8000 Series OEM Price List.

KEYBOARDS - 8300 Series units come with built-in keyboard. 8900 Series units come with detachable modular keyboard. 8000 Series units come with separate-unit keyboard. Deluxe - Extended keyboard with 16 special-function keys. Optional.

	8300 Series	8900 Series	8000 Series	
Screen Size (diag.)	13"	19"	19"	25"
Area	90 sq. in.	186 sq. in.	186 sq. in.	312 sq. in.
Aspect Ratio	4x3	4x3	4x3	4x3
Display Area	72.5 sq. in.	130 sq. in.	130 sq. in.	221 sq. in.
Size in inches	7¼x10	10x13	10x13	13x17
Keyboard Size in inches (HWD)	Built-in.	3x25¾x8¼	2¾x18½x7	2¾x18½x7
Weight		5.5 lbs.	5 lbs.	5 lbs.

	8300 Series	8900 Series	8000 Series	
Terminal Size H	13¾"	17½"	17½"	22¼"
W	19¾"	26⅛"	19¾"	25"
D	26⅝"	23½"	22½"	23"
Weight	53 lbs.	70 lbs.	85 lbs.	115 lbs.
Power: 105-125 volts, 60Hz, 250 watts. CRT Refresh rate: 60 times/second synchronized to line frequency. Temperature: +10°C-40°C operating, -30°C-70°C storage. Humidity: 0-95% non-condensing.				

Intelligent Systems Corp., founded in 1973, is the largest manufacturer of color alphanumeric/graphics terminals in the world. Product quality is foremost at ISC. Only after each unit has been burned in for 168 hours – at an elevated temperature – is it shipped from ISC's modern new facility north of Atlanta, Georgia.

ISC representatives are located throughout the world, always ready to assist you with your DP equipment needs. Are you still thinking in black-and-white? Call us for a demonstration and more reasons why...

Color Communicates Better

CONTROL CODES				ESCAPE CODES			
CONTROL	DECIMAL CODE	FUNCTION	DESCRIPTION	ESCAPE	DECIMAL CODE*	FUNCTION	DESCRIPTION
@	0	NULL	NO EFFECT	@	0	NOT USED	
A	1	PROTECT	REQUIRES OPTION 06	A	1	BLIND CURSOR MODE	FOR DUAL CURSOR OPERATION
B	2	ENTER PLOT MODE	GRAPHICS MODELS ONLY	B	2	PLOT VIA COLOR PAD	OR FROM CTL P THROUGH W
C	3	ENTER X-Y		C	3	TRANSMIT CURSOR X-Y	3, X, Y, 6, STATUS, ASCII CHR, CR
		CURSOR MODE	03 X(0-79) Y(0-47)	D	4	ENTER FCS	
D	4	EOT	PRINTER ON	E	5	RE-ENTER BASIC	SOURCE PROGRAM INTACT
E	5	ENQ	PRINTER OFF	F	6	SETS FULL DUPLEX	ALSO SETS TERMINAL ON LINE
F	6	NEXT CHAR. IS VISIBLE STATUS	PLOT CHAR., BLINK, BGD-BLUE, GREEN, RED, FGD-BLUE, GREEN, RED 150 MS DURATION	G	7	SELECT INPUT PARITY	REQUIRES OPTION 14
G	7	BELL		H	8	SETS HALF DUPLEX	ALSO SETS TERMINAL ON LINE
H	8	CURSOR HOME		I	9	NOT USED	
I	9	CURSOR TABS	TABS EVERY 8 SPACES STARTING FROM FIRST COLUMN	J	10	SET WRITE VERTICAL	EFFECTS VISIBLE CURSOR ONLY
J	10	LINE FEED		K	11	ROLL UP & WRITE L TO R	REQUIRES PAGE ROLL OPTION
K	11	ERASE LINE		L	12	SETS LOCAL MODE	ALSO SETS TERMINAL OFF LINE
L	12	ERASE PAGE		M	13	PRINTER GRAPHICS ON	REQUIRES OPTION 18
M	13	RETURN		N	14	SELECT DEFAULT PRINTER	DESKTOP COMPUTERS ONLY
N	14	A7 ON	LARGE CHARACTERS	O	15	SELECT OUTPUT PARITY	REQUIRES OPTION 14
O	15	BLINK & A7 OFF	SMALL CHARACTERS AND NO BLINKING	P	16	ENTER CPU O.S.	REQUIRES OPTION 34
P	16	SETS COLOR TO BLACK		Q	17	CHARACTER INSERT MODE	CHARACTER DELETE MODE AVAILABLE USING DELETE KEY FOLLOW BY 1-7 TO SET BAUD RATE. PRECEDE BY CONTROL N FOR 1 STOP BIT OR CONTROL 0 FOR 2 STOP BITS.
Q	17	RED		R	18	BAUD RATE/STOP BITS SELECTION	
R	18	GREEN	*FOREGROUND IF FLAG OFF (CODE 29)	S	19	NOT USED	
S	19	YELLOW	*BACKGROUND IF FLAG ON (CODE 30)	T	20	NOT USED	
T	20	BLUE		U	21	INSERT LINE	
U	21	VIOLET		V	22	DELETE LINE	
V	22	CYAN		W	23	INITIALIZES BASIC AND CLEARS PREVIOUS PROGRAM	
W	23	WHITE		X	24	PAGE MODE & WRITE L TO R	NO ROLLING
X	24	TRANSMIT PAGE	FROM CURSOR TO PAGE END OR FF,00 SEQUENCE	Y	25	TEST MODE	FILLS SCREEN WITH NEXT CHARACTER
Y	25	CURSOR RIGHT		Z	26	45 DEG. WRITE DOWN	
Z	26	CURSOR LEFT		[	27		PERFORMS A RETURN TO VISIBLE CHARACTER MODE
[	27	ESCAPE CODE	HAS TO BE FOLLOWED BY A CODE FROM THE ESCAPE TABLE	\	28	45 DEG. WRITE UP	
\	28	CURSOR UP		]	29	BLOCK RECEIVE MODE	USES BLIND CURSOR TO POSITION DATA CRT O.S. BRANCHES TO 9F93 HEX
|	29	FLAG OFF	*FOREGROUND COLOR SELECT	^	30	JUMP TO 9F93H	
^	30	FLAG ON	*BACKGROUND COLOR SELECT	_	31	TRANSFER TO CRT MODE	
^	31	BLINK ON					
—	32-95	ASCII UPPERCASE, PUNCTUATION AND NUMERALS					
	96-127	ASCII LOWERCASE OR 32/64 SPECIAL CHARACTER SET					

* If the Flag is off, it need not be repeated to change foreground colors. If it is on, it need not be repeated to change background colors.

* Precede codes in this column by decimal code 27 when using the plot command. Example: "Plot 27,4" will enter FCS.

PLOT MODES (GRAPHICS MODELS ONLY)

OPT. FUNCT. KEYS	CONTROL CODE	DECIMAL CODE	FUNCTION	DESCRIPTION
F15	?	255	PLOT MODE ESCAPE	
F14	>	254	CHARACTER PLOT	CANNOT GO DIRECTLY TO OTHER SUBMODES
F13	=	253	X POINT PLOT	NEXT WORD 0-159
F12	<	252	Y POINT PLOT	NEXT WORD 0-191
F11	:	251	X-Y INCR. POINT PLOT	NEXT WORD GIVES NEXT 2 INCREMENTS 0-239
F10	:	250	X0 OF X BAR GRAPH	NEXT WORD 0-159
F9	9	249	Y OF X BAR GRAPH	NEXT WORD 0-191
F8	8	248	X MAX OF X BAR GRAPH	NEXT WORD 0-159
F7	7	247	INCR. X BAR GRAPH	NEXT WORD GIVES NEXT 2 H&V INCREMENTS FOR 2 HOR. BAR GRAPHS
F6	6	246	Y0 OF Y BAR GRAPH	NEXT WORD 0-191
F5	5	245	X OF Y BAR GRAPH	NEXT WORD 0-159
F4	4	244	Y MAX OF Y BAR GRAPH	NEXT WORD 0-191
F3	3	243	INCR. Y BAR GRAPH	NEXT WORD GIVES NEXT 2 H&V INCREMENTS FOR 2 VERT. BAR GRAPHS
F2	2	242	X0 VECTOR PLOT	NEXT WORD 0-159 X1Y1 PREVIOUSLY GIVEN BY CODES 253 & 252
F1	1	241	Y0 VECTOR PLOT	NEXT WORD 0-191
F0	0	240	INCR. VECTOR PLOT	NEXT WORD GIVES X & Y INCREMENTS OF BOTH ENDS OF THE VECTOR

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70265019.9