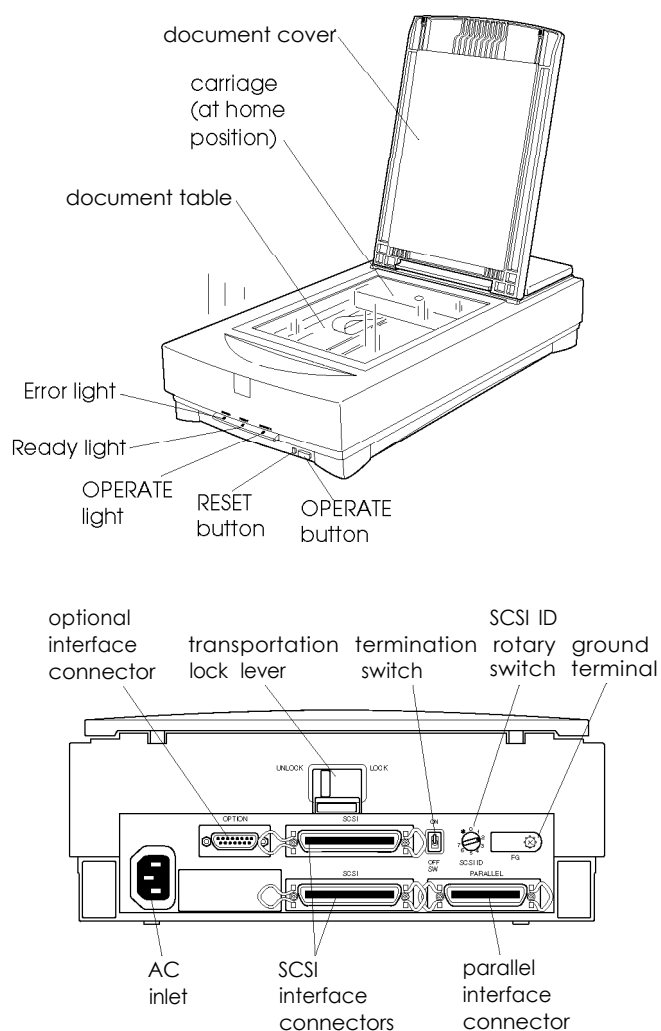




Scanner Specifications

Scanner type:	Flatbed, color
Photoelectric device:	Color CCD (Charged Coupled Device) line sensor
Effective pixels:	5096 dots by 7020 dots at 600 dpi, 100%
Maximum document size:	8.5 inches x 11.7 inches (216 mm x 297 mm) to allow US letter size or A4 (The reading area can be specified from software.)
Scanning resolution:	600 dpi (main, sub)
Output resolution:	50 to 4800 dpi. Values above 2400 through software interpolation.
Command level:	ESC /I-B6 (B5+AAS)

Scanning speed (A4,600 dpi, draft mode):	Line art: approx. 5.5 ms/line 256 gray levels: approx. 5.5 ms/line Full color: approx. 8 ms/line (line/byte sequence)
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Color separation: RGB color filters on CCD

Reading sequence: Monochrome mode:
One-pass scanning
Color page sequence mode:
Three-pass scanning (R, G, B)
Color byte sequence
One-pass scanning (R, G, B)
Color line sequence mode:
One-pass scanning (R, G, B)

Zoom: 50 to 200% in 1% steps (hardware); software selectable up to 2000%, depending on output device

Image data: 12 bits per pixel per color (input). When over 8 bits are captured, they are saved as 8 bits per pixel per color (maximum output)

Brightness: 7 levels

Line art settings: Fixed threshold with TET (Text Enhancement Technology) enabled
0 to 255 adjustable threshold with TET disabled

Halftoning process: Enable/disable selectable
3 halftoning modes (A, B, and C) and 4 dither patterns (A, B, C, and D) for bi-level and quad-level data
Halftoning mode A only in color line sequence mode
2 user-defined dither patterns

Gamma correction: 2 types for CRT display

3 types for printer
1 type for user-defined

Color correction: 1 type for CRT display
3 types for printer output (available in color line sequence mode only)
1 type for user-defined

Interface: Bidirectional parallel and SCSI

Light source: Xe-gas cold cathode fluorescent lamp

Reliability: Main unit MCBF: 100,000 cycles of carriage movements

Dimensions: Width: 13 inches (332 mm)
Depth: 22.2 inches (563 mm)
Height: 5.2 inches (133 mm)

Weight: About 22 lb (10 kg)

Electrical Specifications

Input voltage range:	100-120 VAC, ± 10%
Rated frequency:	50 to 60 Hz
Input frequency:	49.5 to 60.5 Hz
Rated current:	0.8 A
Power consumption:	Approx. 25 W (self-test mode without optional unit), 50 W maximum with optional unit
Insulation resistance:	10 MΩ between AC power line and chassis at 500 VDC

Environmental Conditions

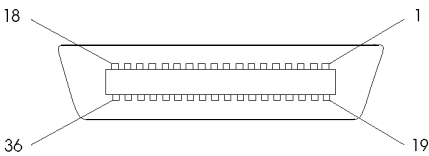
Temperature:	Operation: 41 F to 95 F (5° C to 35 C) Storage: -13 F to 140 F (-25 C to 60 C)
Humidity:	Operation: 10% to 80%, without condensation Storage: 10% to 85%, without condensation
Operating conditions:	Ordinary office or home conditions. Extremely dusty conditions should be avoided. Operation under direct sunlight or near a strong light source should be avoided.

Note:
Specifications are subject to change without notice.

Parallel Interface Specifications

Interface type:	Bidirectional parallel interface
Data format:	8-bit parallel
Synchronization:	By external strobe pulse
Handshaking:	By ACKNLG and BUSY signals
Logic level:	Input/output data and interface control signals are TTL compatible
Connector type:	36-pin Centronics® type connector

Connector pin arrangement:



Pin assignments for the bidirectional parallel interface:

Pin no.	Signal name	I/O	Description
1	STROBE	I	Data strobe pulse
2-9	DATA 0 - 8	I/O	8-bit data bus
10	ACK	O	Acknowledge signal
11	BUSY	O	Scanner busy signal
12-15	NC	—	Not used
16	GND	—	Ground
17	C_GND	—	Frame Ground
18	NC	—	Not used
19-30	GND. Ground	—	Ground
31	INIT	I	Scanner reset signal. The pulse width at the receiving terminal must be longer than 50 μs.
32	NC	—	Not used
33	GND	—	Ground
34,35	NC	—	Not used
36	DIR	I	Direction

SCSI Specifications

Interface type:	ANSI X3.131-1986 standard
Function:	BUS FREE phase ARBITRATION phase SELECTION/RESELECTION phase COMMAND phase (Logical Unit Number is fixed at 0 and command link function is not supported.) DATA phase Data in phase Data out phase STATUS phase MESSAGE phase MESSAGE IN phase MESSAGE OUT phase ATTENTION condition RESET condition

Logic level: TTL compatible

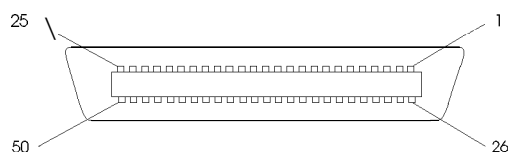
Electrical standard: ANSI X3.131-1986

ID number: Selectable from 0 to 7
(Select * for ES-1200C Emulation mode.
In this mode, the SCSI ID number is 2.)

Connector type: Two 50-pin connectors

Terminator: Internal terminator selectable
(enable/disable)

Connector pin
arrangement:



SCSI pin
assignments:

Pin No.	Signal	I/O	Description
1-12, 14-25, 35-37, 39, 40, 42	GND		Signal ground
13	NC		Not used
26-33	DBO-DB7	I/O	Data bus 0-7
34	DBP	I/O	Data bus parity
38	TERMPWR	—	Terminal power
41	ATN	I	Attention
43	BSY	I/O	Busy
4	ACK	I	Acknowledge
45	RST	I	Reset
46	MSG	O	Message
47	SEL	I/O	Select
48	C/D	O	Command/data
49	REQ	O	Request
50	I/O	O	Input / output

Scanning Functions

Scanner settings

The following table summarizes the scanner functions and settings available on your scanner. These functions are controlled by the commands from your scanner software.

Function	Available settings
Output resolution	30 settings from 50 to 2400 dpi (hardware) 31 settings from 50 to 4800 dpi (software)
Reading sequence	One or three pass scanning
Zoom	50% to 200% in 1% increments
Data format	1 to 8 bits per pixel per color Captures up to 12 bits/pixel/color. When it captures over 8 bits, it converts the information to 8 bits/pixel/color.
Color mode	Color line sequence mode, color page sequence mode and monochrome mode (dropout color selectable)
Brightness	7 levels
Halftoning mode	3 modes and disabled 4 dither patterns 2 user-defined dither patterns
Gamma correction	5 settings for output devices plus 1 user-defined
Color correction	4 settings for output devices plus 1 user-defined

Resolution guidelines

The table below shows the recommended resolutions in dots per inch or pixels per inch for the image types and printing or display methods. You may want to experiment with your scanner settings, possibly using a cropped version of your image to save time, until you achieve the desired results.

The resolution that you use to scan an image (input resolution) does not have to match the dots per inch of your printer (output resolution). Input and output resolution are two quite different measurements.

Output/display device	Line art (dpi)	Grayscale (dpi)	Color (dpi)
Black and white printer	300-600	80	
300-dpi black and white laser	300-600	80-110	
600-dpi black and white laser	300-600	125-170	
Electronic color printer	300-600	150-200	150-200
Printing press/Imagesetter	600-1200	150-350	150-350
Computer screen	72	72	72

Data format

The data format specifies the number of bits used to represent the tone of a pixel. The data format can be set in the range of 1 bit to 8 bits per pixel per color.

As the value increases, more tones and colors can be captured in the scanned image as shown in the following table:

Data format	Monochrome	Color
1 bit/pixel/color	2 grays	8 colors
2 bits/pixel/color	4 grays	64 colors
3 bits/pixel/color	8 grays	512 colors
4 bits/pixel/color	16 grays	4,096 colors
5 bits/pixel/color	32 grays	32,768 colors
6 bits/pixel/color	64 grays	1262,144 colors
7 bits/pixel/color	128 grays	2,097,152 colors
8 bits/pixel/color	256 grays	16,777,216 colors

Initialization

The scanner can be initialized (returned to a fixed set of conditions) from hardware or software.

Hardware initialization	* When the power is turned on * When the scanner parallel interface receives an INIT signal (pin 31 goes low) * When the scanner receives a SCSI Reset signal at the SCSI interface
Software initialization	* When the software command ESC @ (initialize the scanner) is received * When the SCSI Bus Device Message is received

When the scanner is initialized, the scanner terminates the scanning operation, and the carriage returns to the home position (rear of the scanner).

Problems and Solutions

The problems you may have while using the scanner often involve the operation of your software and computer. Problems fall in the following major categories:

- ☐ Incorrect setup of the interface
- ☐ Inappropriate selection of the scanner functions
- ☐ Incorrect setup of your computer or software
- ☐ Incorrect operation of your software.

Also see the documentation that came with your software, computer, and printer for possible solutions.

Indicator lights

If an error occurs, the scanner stops operating and the READY and ERROR lights show the type of error.

Error type	READY light	ERROR light
Command error	On	On
Interface error	Off	Flashing
Fatal error	Flashing	Flashing
Option error	Off	Off

Command error

The scanner received incorrect commands from your scanning software.

When this error occurs, try to rescan the document. The scanner returns to normal when it receives correct commands. Normally you do not need to reset the scanner.

Interface error

The interface setup is wrong, or the scanner is not properly connected to the computer.

When this error occurs, check the interface connection. Then push the RESET button or turn the scanner off and then back on to reset it.

Fatal error

One of the following problems occurred:

- ☐ The fluorescent lamp needs to be replaced.
- ☐ The transportation lock lever is not released.
- ☐ The scanner is broken.
- ☐ There is a problem, such as an open cover, with the optional transparency unit or the optional automatic document feeder.

When this error occurs, check that the transportation lock lever is released and check any options installed; then push the RESET button. If the scanner still does not operate properly, try turning the scanner off and then back on. If the scanner still does not operate properly, or if this error occurs repeatedly, consult your dealer.

Option error

This indicates a problem such as a paper jam with an installed option unit.

When this error occurs, check the option unit and correct the cause of the trouble.

Options

Automatic Document Feeder (B813001)

The automatic document feeder (ADF) option allows you to stack up to 30 sheets and scan them automatically. This is especially helpful for optical character recognition (OCR) scanning. The ADF replaces the scanner cover but still allows scanning of individual items.

Note:

The ADF (B823011) for the ES-1200C may also be used.

Transparency Unit (B813071)

The transparency unit option allows you to scan slides, negatives, and transparencies up to 8.5 x 11.7 inches. The transparency unit replaces the scanner cover but still allows scanning of individual items.

Scanner Bundled Kits

The scanner is available in bundled kits that include software for operating the scanner in a PC or Macintosh® environment. The following kits are available:

Expression™ 636 Upgrade-Windows and Macintosh Expression 636 Color Scanner EPSON Scanning II utilities TWAIN driver PC and MAC SCSI cables	
Expression 636 Executive-Windows Expression 636 Color Scanner Adobe Photoshop® LE Xerox® Textbridge Pro NewSoft Presto! PageManager LE Epson Scanning II utilities Twain driver SCSI interface and cable	Expression 636 Executive-Macintosh Expression 636 Color Scanner Adobe Photoshop® LE e.Paper™ Epson Scanning II utilities Twain driver SCSI cable
Expression 636 Artist-Windows Expression 636 Color Scanner Adobe Photoshop® Kai's Power Tools™ Claris Home Page™ Xerox® Textbridge® Pro NewSoft Presto! PageManager LE Epson Scanning II utilities Twain driver SCSI interface and cable	Expression 636 Artist-Macintosh Expression 636 Color Scanner Adobe Photoshop® Kai's Power Tools™ Claris Home Page™ e.Paper™ Epson Scanning II utilities Twain driver SCSI cable
Expression 636 Professional-Windows Expression 636 Color Scanner Transparency unit Adobe Photoshop Kai's Power Tools™ Claris Home Page™ Xerox® Textbridge® Pro NewSoft Presto! PageManager LE Epson Scanning II utilities Twain driver SCSI interface and cable	Expression 636 Professional-Macintosh Expression 636 Color Scanner Transparency unit Live Picture™ 2.5 Kai's Power Tools™ Claris Home Page™ e.Paper™ Epson Scanning II utilities Twain driver SCSI interface and cable

Information Reference List

Engineering Change Notices

None

Product Support Bulletins

None

Technical Support Bulletins

None

Related Documentation

TM-EXPR636	Expression 636 Service Manual
PL-EXPR636	Expression 636 Parts Price List
CPD-4086	Expression 636 User's Guide
CPD-4087	EPSON Scanning Utilities User's Guide-Windows
CPD-4088	EPSON Scanning Utilities User's Guide-Macintosh
CPD-4028	Expression 636 Easy Setup Guide-Windows
CPD-4029	Expression 636 Easy Setup Guide-Macintosh
TM-B813071	Transparency Unit Service Manual
PL-B813071	Transparency Unit Parts Price List