Saber Standalone Solar™/L20

Industrial-/Military-Grade, LED Backlit, Sunlight Readable Standalone/Mountable LCD Monitor

General Digital's™ Saber Standalone Solar™/L20 is a rugged, high performance sunlight readable LCD monitor intended for use in industrial and military environments. Incorporating our latest LED backlight capable of up to 1300 nits luminance, the Saber Standalone Solar™/L20 features the following benefits over previous incarnations utilizing CCFL backlights:

- Brighter, more efficient backlight
- Reduced power consumption and internal heat generation
- Simplified cooling solutions for monitor display and electronics
- Extended operating temperature, especially on the low end
- Minimal warm-up time for maximum brightness
- Truer white reproduction and optimized color gamut
- No mercury content (flicker-free operation)
- Reduced electromagnetic interference (EMI)
- Low voltage level requirements permit high altitude operation
- Serial-parallel LED PCB design provides "soft-failure" redundancy
- Solid-state design better tolerates shock and vibration

In the tradition of all Saber Series LCD monitors, the L20 is a highly versatile and configurable product that allows customers to select from a variety of video controllers, display overlays (touch screens, vandal shields, contrast filters, EMI filters, and heaters are some examples) and power supplies to personalize their monitor configuration to meet their price and performance objectives. Video controllers are available to support most inputs including Analog RGB, DVI, NTSC, SECAM, PAL, HD-SDI, SD-SDI and RS-170. With the variety of video controllers offered, configurations can include numerous advanced imaging features, such as picture-in-picture, image rotation and inversion, and RS-232 control, just to name a few. The performance can be further enhanced by optically bonding the display overlays to the LCD. Optical bonding inherently improves the mechanical reliability of the LCD and minimizes internal reflections, thereby improving the contrast and readability of the monitor when exposed to high ambient light. Users can select a commercial-, industrial- or military-grade power supply, with or without power factor correction, and have it attached to the rear of the monitor, or operated remotely to minimize the monitor's depth.

General Digital™ has also developed optional brackets and bezels that facilitate various mounting techniques and/or the integration of a power supply. A Rack Mount Adaptor Bracket can be added in the field to convert it from a desktop monitor to a console/panel mount device. A Power Supply Bridge is available to mount an "attached" power supply. A VESA Mount Extender Bracket facilitates mounting to the rear of the enclosure when an attached power supply is selected.

Please feel welcome to consult with a General Digital™ Sales Engineer to discuss configuration options or request additional information, or visit our web site on-line at **www.GeneralDigital.com**.

QUICK LOOK

ENCLOSURE

» Rugged, Industrial Grade, All-Metal Construction

» Supports Standard VESA Mounting
- 100 mm & 200 mm

DISPLAY/LED CONTROLLER

» 20.1" Diagonal Active Matrix TFT LCD

» UXGA (1600 x 1200 Pixels) or SXGA (1280 x 1024) Resolution

» Wide Viewing Angles (Horizontal & Vertical)

» Sunlight Readable LCD Monitor Employing LED Backlights

» Intelligent LED Controller
- Regulates Fan Speed to Cool Internal Electronics and Minimize Audible Noise
- In Over-Temperature Condition, Reduces Backlight Brightness & Power
- 1000:1 Dimming Control

VIDEO CONTROLLER

Default Controller is Configured as Follows:

» Supports Analog RGB and DVI/HDMI Inputs
- Analog RGB: 60 Hz @ WUXGA, UXGA; 75 HZ @ SXGA, WXGA, XGA, SVGA, VGA
- DVI-D/HDMI: 60 Hz @ WUXGA, UXGA; 75 Hz @ SXGA, WXGA, XGA, SVGA, VGA

» Support for Interlaced and Non-Interlaced Video Sources

» Support for Digital Separate Sync, Composite Sync, and Sync-on-Green; Auto Detects VGA–WUXGA, Interlaced and Non-interlaced

» Video Inputs Supported
- NTSC / PAL / SECAM (Interlaced), Composite Video, S-Video, SD-SDI, HD-SDI

» Advanced Imaging Features
- Auto Picture Setup, Auto Source Seek, Image Rotation & Inversion, Picture-in-Picture, Ambient Light Sensor, RS-232 Control and More

POWER

» Attached or Separate AC Input Supply Provides +24 VDC
- Power Factor Correction on Some Supplies

» Low Power Consumption

OPTIONS

» Variety of Video Controllers with Various Advanced Features

» Display Overlays: Touch Screens, AR & AG Filters, Vandal Shields, Heaters, EMI Filters, Privacy Screens, More

» Optical Bonding of Display Overlays for Mechanical Ruggedization and Improved Sunlight Readability

» Field-Installable, Panel Mount Adaptor Bracket

» VESA Mounting Extender Bracket

» Attached, Power Factor Corrected, AC Input Power Supply or Low Cost, Consumer-Grade Remote Power Supply Brick

» Custom Enclosures

» Automatic Brightness Adjustment Sensor

» Built-in Dual Front-Mounted Speakers

Designed and Manufactured in the U.S.A.

GENERAL DIGITAL™
The Innovators of Flat Panel Technology

DISPLAY

	Size (Diag.)	Viewing Area (W x H)	Resolution (Pixels)	Number of Colors	Luminance (0° Max.)[1, 2]	Backlight Power (Watts)	Contrast (Max.)	Response Time (Rise/Decay)	Horizontal Viewing Angle	Vertical Viewing Angle	Shock	Vibration
SGD-20U-977	20.1"	16.06" x 12.05"	1600 x 1200	16.7 Million	500 Nits 900 Nits 1000 Nits 1300 Nits	25 52 63 99	1000:1[2]	7/9 ms	±89°	±89°	100 G, 2 ms, ½ Sine Wave	1.0 G (10–500 Hz)
SGD-20W-974	20.1"	15.72" x 12.58"	1280 x 1024	16.7 Million	347 Nits 480 Nits 613 Nits 827 Nits	57 80 96 115	350:1[3]	25 ms	±85°	±85°	300 G, 11 ms, ½ Sine Wave	1.2 G (5–100 Hz)

1 Brightness and Contrast values reflect measurements obtained with a Minolta® CS100 photometer; these values are nominal and may vary.

2 Per MIL-L-3009, Class 4 (Weber contrast ratio of 3.97:0) with antireflective- and antiglare-coated 75% contrast filter.

3 Per MIL-L-3009, Class 5 (Weber contrast ratio of 5.27:0) with General Digital's antireflective coating, and Class 1 (Weber contrast ratio of 1.23:0) without an antireflective coating.

VIDEO CONTROLLER

			Resolution/Frequency[4]									
	dd	Display Supported	640 x 480 VGA	800 x 600 SVGA	1024 x 768 XGA	1366 x 768 WXGA	1280 x 1024 SXGA	1600 x 1200 UXGA	1920 x 1200 WUXGA	Scaling	NTSC / SECAM / PAL / RS-170	Video Supported
	31	20.1"	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	–	Separate, Composite, Sync-on-Green
	32	20.1"	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	Digital Processor, Picture-in-Picture	Separate, Composite, Sync-on-Green
	33	20.1"	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	Digital Processor, Picture-in-Picture	DVI-D
	34	20.1"	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	–	Separate, Composite, Sync-on-Green, DVI-D
	35	20.1"	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	Digital Processor, Picture-in-Picture	Separate, Composite, Sync-on-Green, DVI-D[5]
Default	52	20.1"	60, 72, 75 Hz	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	On/Off	Digital Processor, Picture-in-Picture	Separate, Composite, Sync-on-Green, DVI-D
	55	20.1"	60 Hz	56, 60 Hz	60 Hz	Yes	60 Hz	60 Hz	–	–	Digital Processor, No RS-170	Separate, Composite, Sync-on-Green, DVI-D

4 Most common video modes listed. Other video modes supported. Speak with a Sales Engineer for more information.

5 Most common video inputs listed. Also supported are ARGB, S-Video, SD Component, HD Component, HD-SDI. Speak with a Sales Engineer for more information.

MTBF

All units

Display	Backlight[6]	Inverter	Power Supply
>50,000 Hours (Minimum)	>50,000 Hours (Typical)[7]	Not Applicable	>100,000 Hours

6 The hours for MTBF refer to the half-life of the LED backlight; that is, the point at which the LEDs reach half of their original brightness. *It does not indicate the life expectancy of the LEDs.*

7 Represents typical half-brightness life expectancy when operated at maximum brightness; life expectancy will increase if operated below maximum brightness.

ENVIRONMENTAL

All units

Temperature, Operating	Temperature, Storage	Humidity, Operating	Humidity, Storage	Altitude, Operating	Altitude, Storage
0° C to 40° C	-20° C to 60° C	0% to 90% RH Non-condensing	0% to 90% RH Non-condensing	12,000 Feet	40,000 Feet

MECHANICAL

	Dimensions (H x W x D)[8, 9]	Construction	Finish	Mounting Holes[10]	Weight, Operating	Weight, Shipping
SGD-20U-977	15.63" x 17.34" x 3.86"	5052-H32 Aluminum	Black Matte Powder Coat	VESA MIS-D 100 (100mm x 100 mm), VESA MIS-E (200mm x 200mm)	22 Pounds	27 Pounds
SGD-20W-974	15.75" x 19.00" x 4.00"	5052-H32 Aluminum	Black Matte Powder Coat	VESA MIS-D 100 (100mm x 100 mm), VESA MIS-E (200mm x 200mm)	22 Pounds	27 Pounds

8 Adding the Power Supply Option will add 1.55" to the overall depth of the unit.

9 Adding the VESA Mounting Extender Bracket Option will add 2.38" to the overall depth of the unit.

10 VESA Mounting Extender Bracket supports only VESA MIS-D 75 (75mm x 75mm) and VESA MIS-D 100 (100mm x 100mm) mounting pattern.

I/O CONNECTIONS

Power (DC)	On/Standby (DC)	Analog Video	DVI-D	NTSC Video	Touch (Optional)
2W2 D-sub. Plug	LED on Membrane Pad	High Density 15-pin Socket	30-pin MicroCross Socket	BNC Socket	DE-9 Socket

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CALIBRATION

dd	Interface	Functions	Advanced
31/32/ 33/34/35	On-screen Displays Navigated by 8-button Membrane Pad or Optional 11-button (Volume Controls)	Volume, Brightness, Contrast, Saturation, Hue, Sharpness, Input Signal, Aspect Size (Scaling), Image Position (Horizontal & Vertical), Utilities, Volume Controls (Optional)	Auto Source Seek, Auto Picture Setup, Auto Color Gain, Auto Power Off, Picture-In-Picture, Color Temperature, Hot Keys, Manual Clock/Phase, Video Standard, Image Orientation, Gamma, OSD (Position, Timeout, Language [English, Chinese], Transparency)
52 (Default)	On-screen Displays Navigated by 8-button Membrane Pad or Optional 11-button (Volume Controls)	Brightness, Contrast, Saturation, Hue, Color Temperature, Gamma, Sharpness, Clock, Phase, Image Position, Scaling (1:1, fill screen, fill to aspect ratio, etc.), Volume Controls (Optional)	Auto Source Seek, Auto Picture Setup, Auto Color Gain, Auto Power Off, Picture-in-Picture (Variable Position, Any Input Combination, 3 Sizes), OSD (Position, Timeout, Language, Transparency), Video Standard, Image Orientation (Horizontal & Vertical Image Inversion, Rotate), Ambient Light Sensor, Programmable Hot Keys, Serial Port Protocol, Reset
55	On-screen Displays Navigated by 8-button Membrane Pad or Optional 11-button (Volume Controls)	Brightness, Contrast, Saturation, Hue, Sharpness, Input Signal, Image Position (Horizontal & Vertical), Utilities, Volume Controls (Optional)	Auto Source Seek, Auto Picture Setup, Auto Calibration, Color Temperature, OSD (Position, Timeout, OSD Menu Lock), Manual Clock/Phase, Video Standard, Gamma, Backlight Brightness, Backlight On/Off, Wide Screen Mode

POWER SUPPLY[11]

hijj	Input Voltage Range	Output	Frequency Range	Line Entry Module/Filter	Power Factor Correction
EP11 (Rear Mount)	85–264 VAC	150 W / +24 VDC	47–63 Hz	Yes (IEC-320)	0.85
EP13 (Rear Mount)	85–264 VAC	240 W / +24 VDC	47–63 Hz	Yes (IEC-320)	0.93–0.98
EA25 (Rear Mount)	90–132 & 180–264	300 W / +24 VDC	47–63 Hz	Yes (IEC-320)	–
0094 (None)	+24 VDC	Filtering and regulation provided by customer			

11 Includes 6'7" AC Power Cable.

OPTIONS

Ordered Separately – Please Inquire with a Sales Engineer for Additional Options and Accessories

Type	Description
Optical Enhancements	Bonding of Filter and Display Using Indice-Matched Optical Materials; Brightness and Contrast Enhancing Films and Laminations
Power Supplies	AC and DC Supplies; Various Input Ranges, Input Frequencies; Separate or Attached; Power Factor Correction; AC and DC Power Cables
Video Accessories	Video Cables; Signal Extenders; Cable Adaptors (HD 15-pin, 13W3 [SUN], BNC); NTSC/PAL Support; Picture-in-Picture
Remote Control	IR or Serial Calibration/Control Interface
Customization	Custom Mechanical and Electrical Modifications; Custom Finishing; Custom Software and Performance Modifications; Private Labeling

DISPLAY OVERLAY

General Digital supports a wide varitey of touch screens and controllers, coated glass (AR, AG, AR/AG), EMI filters, contrast filters, optical heaters, vandal shields, and more. In many cases, these overlays can be optically bonded to the LCD. Please contact a Sales Engineer for additional information.

MODEL NUMBER CONFIGURATOR[12]

Model Style	Size & Resolution (***aab***)	Display (***ccc***)	Video Controller (***dd***)	Keyboard/Pointer (***ee***)	Industrial Enclosure (***ff***)	Display Overlay (***gg***)	Power Supply (***hijj***)
SGD-	20U-	977-	##-	00-	16-	##-	EP11
SGD-	20W-	974-	##-	00-	16-	##-	EP13 or EA25

12 The pound symbol (#) indicates customer-defined values.

ORDERING

Part Number	Model Number[13]	Description
90-850-xxx	SGD-20U-977-***dd***-00-16-***gg***-EA11	Saber Standalone Solar™/L20, 20.1" Diagonal, UXGA, Standalone / Mountable, Sunlight Readable, Ruggedized LCD Monitor
90-850-xxx	SGD-20W-974-***dd***-00-16-***gg-hijj***	Saber Standalone Solar™/L20, 20.1" Diagonal, WXGA, Standalone / Mountable, Sunlight Readable, Ruggedized LCD Monitor
90-1204-004	—	VESA Mounting Extender Bracket Option
90-1204-005	—	Panel Mount Adaptor Bracket Option, 8 Mounting Holes (for SGD-20U-977)
90-1204-006	—	Panel Mount Adaptor Bracket Option, 8 Mounting Holes (for SGD-20U-974)

13 ***Bold Italicized letters*** refer to standard customer-defined configurations (see Model Number Configurator above).

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Saber Standalone Solar with
Optional Panel Mount Adaptor Bracket
and Optional Front-Mounted Speakers

Saber Standalone Solar with
Rear Attached Power Supply and
Optional VESA Mounting Extender Bracket

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