

SABER STANDALONE SOLAR™ /LS22 & LS24

Industrial-/Commercial-Grade, LED Backlit, Sunlight Readable, Standalone/Mountable 21.5" and 24.0" LCD Monitors



QUICK LOOK

ENCLOSURE

- » Rugged All-Metal Construction
- » Supports Standard VESA Mounting
 - 100 mm x 100 mm, 200 mm x 100 mm
- » Built-in Front Mounted Speaker/Alarm Annunciator
- » Silicone Buttons (User Controls)
 - LED Backlit (Programmable Brightness)
 - 10 Front Accessible, Easy to Operate Buttons
 - Power, Backlight, Brightness, Volume, Menu, Contrast, Brightness

DISPLAY/TOUCH SCREEN

- » 21.5"/24.0" Diagonal Active Matrix TFT LCD
- » WUXGA Resolution (1920 x 1080 Pixels, 16:9 Aspect Ratio)
- » Sunlight Readable LED Backlight
 - Series-Parallel LED Design for Improved Reliability
- » Surface Capacitive or Projected Capacitive Multi-Touch Sensor
 - Optically Bonded for Reduced Internal Reflections
 - Antiglare Surface Treatment
- » Serial or USB Touch Controller

VIDEO CONTROLLER

- » Supports DVI, HDMI, and Analog RGB Inputs
- » Supports Interlaced and Non-Interlaced Video Sources
- » Support for Digital Separate Sync, Composite Sync, and Sync-on-Green
- » Supports Resolutions up to 1920 x 1080 @ 60 Hz
- » Intuitive On-Screen Menus for Display Calibration and User Control
- » Image Control
 - Auto Configuration, Brightness, Contrast, Clock, Phase, Color Temperature, Image Position, Saturation, Hue, Gamma
- » Advanced Imaging Features
 - Ethernet Control
 - Serial Control
 - Picture-in-Picture (18 Sizes), Picture-by-Picture, System Information, OSD Position, Scaling to Fill Screen and to Fill Aspect Ratio, OSD Timeout, Factory Reset, OSD Menu Transparency, More

LED CONTROLLER

- » Industrial-Grade Controller
 - Up to 1000:1 Dimming Control
 - Minimum Brightness Factory Configured (Default = 2 Nits)

POWER SUPPLY

- » Internal, 75 Watt, Universal Input, Power Factor Corrected
- » Compliant with FAA-G-2100-H Inrush Current Requirements

OPTIONS

- » Field-Installable, Panel Mount Adaptor Bracket
- » Film Lamination
- » Multi-touch and Other Touch Screen Technologies
- » Display Calibration and Monitor Matching Service
 - Color, Gamma, Contrast, Brightness, Black Level Calibration for Consistency Between Monitors
- » Cooling Fans

CERTIFICATIONS

- » Designed to Meet UL60950-1; FCC Class A; FAA-G-2100-H (ESD)

Designed and Manufactured in the U.S.A.

Two sunlight readable LCD touch screen monitor models are available to display air traffic control data in a variety of demanding environments. The touch screen capability allows operators to interactively and precisely select the data they need to display. The wall mounting and console mounting options allow the monitors to be deployed in a wide variety of settings.

Each model has a typical viewing angle of $\pm 85\text{--}89$ horizontal and $\pm 80\text{--}89$ vertical, and can be mounted from the back or in a console (by mounting an optional bracket directly to the exterior of the monitor without jeopardizing the warranty or requiring a return to the factory).

Touch screen choices include a surface capacitive touch sensor and a projected capacitive multi-touch sensor, both with a touch controller. The front surface is treated with an antiglare coating to enhance the viewing of the display in various demanding natural and artificial lighting conditions. The touch screen is optically bonded to the LCD to minimize internal reflections and improve optical clarity and contrast. The pointer resolution accuracy is within $\frac{1}{4}$ inch of the point-of-screen contact.

General Digital offers a display calibration and LCD monitor matching service to ensure consistency of color, gamma, contrast, brightness and black level across multiple displays.

Extensive monitor controls are accessible from the front—an on/off button, backlight, volume, contrast and backlight controls, as well as a menu button to active an On-Screen Display (OSD), which provides access to other calibration and user features.

A speaker is integrated into the monitor in the upper right-hand corner. The speaker volume has a programmable minimum and maximum limit, adjustable over a 10-step range, and controlled via a software utility. Volume settings are retained following power cycling.



DISPLAY

	Size (Diag.)	Viewing Area (W x H)	Resolution (Pixels)	Number of Colors	Luminance (Typ./Min.)	Contrast (Max.)	Response Time (Rise & Decay)	Horizontal Viewing Angle	Vertical Viewing Angle	Shock	Vibration
LS22	21.5"	18.76" x 10.56"	1920 x 1080	16.7 Million	695/525 Nits ¹	3743:1	5 ms	± 85°	± 80°	50 G, 11 ms, ½ Sine Wave	1.5 G (10–300 Hz)
LS24	24.0"	20.92" x 11.77"	1920 x 1080	16.7 Million	893/668 Nits ¹	5000:1	25 ms	± 89°	± 89°	50 G, 20 ms, ½ Sine Wave	1.5 G (10–200 Hz)

¹ Brightness measurements reflect a 100/100 and 50/50 brightness/contrast video controller setting, respectively (excluding touch screen).

TOUCH SCREEN

gg	Type	Viewing Surface Coating	Number of Touches	Light Transmission (Typ.)	Controller	Method of Attachment	Operating System Supported
58	Surface Capacitive	Antiglare	1	91.5%	Serial, USB	Optically Bonded and Closed Cell Adhesive Gasket	Windows 7/8 (32 bit and 64 bit), Vista, XP, Server 2003/2008, Linux
73	Projected Capacitive Multi-Touch	Antiglare	20+	84–90%	Serial, USB	Optically Bonded and Closed Cell Adhesive Gasket	Windows 7/8 (32 bit and 64 bit), Vista, XP, Server 2003/2008, Linux

VIDEO CONTROLLER²

dd	Display Supported	Resolution/Frequency ³								HDMI 1.3	DVI-D	NTSC / SECAM / PAL / RS-170	Analog Video Supported
		800 x 600 SVGA	1024 x 768 XGA	1366 x 768 WXGA	1280 x 1024 SXGA	1440 x 900 WUXGA	1600 x 1200 UXGA	1920 x 1080 WUXGA					
45	21.5"/24.0"	56, 60, 72, 75 Hz	60, 70, 75 Hz	60 Hz	60, 75 Hz	60 Hz	60 Hz	60 Hz	60 Hz	Yes	Yes	Digital Processor, Picture-in-Picture	Separate, Composite, Sync-on-Green

² 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.

³ Most common video modes listed. Other video modes supported. Speak with a Sales Engineer for more information.

VIDEO CONTROLLER FEATURES

S-Video	Picture-in-Picture	Image Scale Up	Image Scale Down	Ethernet Control	Image Flip	Text Overlay	Variable Aspect	Freeze/Zoom	Firmware RS-232	Memory Buffer
Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

CALIBRATION

Interface	Functions	Advanced
On-screen Displays Navigated by 10 Silicone Buttons	Brightness, Contrast, Saturation, Hue, Color Temperature, Gamma, Sharpness, Manual Clock/Phase, Image Position (Horizontal & Vertical), Scaling (1:1, fill screen, fill to aspect ratio, etc.), Volume Controls	Auto Source Seek, Auto Picture Setup, Auto Color Gain, Auto Power Off, Picture-in-Picture (Port, Position, Size, Transparency, Swap, Auto Off), OSD (Position, Timeout, Language, Transparency, Screen Marker), Video Standard, Programmable Hot Keys, Source Select, Backlight Brightness Adjust, Reset to Factory Default, Backlight Setup, Monochrome Mode, Wide Screen Mode Detect, De-Interlacing Mode, Freeze & Zoom, Text Overlay

POWER SUPPLY⁴

hijj	Input Voltage Range	Output	Frequency Range	Line Entry Module/Filter	Power Factor Correction
IP14	85–264 VAC	75 Watts @ +24 VDC	47–63 Hz	Yes (IEC-320)	0.99
IP15	85–264 VAC	100 Watts @ +24 VDC	47–63 Hz	Yes (IEC-320)	0.99

⁴ Includes 6'7" AC Power Cable.

MTBF

Display	Backlight ⁵	Video Controller	Power Supply
> 50,000 Hours (Minimum)	> 50,000 Hours (Typical) ⁶	100,000 hrs.	> 443,000 Hours

⁵ 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.*

⁶ Represents typical half-brightness life expectancy when operated at maximum brightness; life expectancy will increase if operated below maximum brightness.

ENVIRONMENTAL

Temperature, Operating	Temperature, Storage	Humidity, Operating	Humidity, Storage	Altitude, Operating	Altitude, Storage
0° C to 38° C	-20° C to 60° C	30% to 80% RH Non-condensing	30% to 80% RH Non-condensing	10,000 Feet	30,000 Feet

MECHANICAL

	Dimensions (H x W x D)	Construction	Finish	Mounting Holes	Weight, Operating	Weight, Shipping
LS22	12.11" x 22.00" x 3.07"	Aluminum	Black Matte Powder Coat	VESA MIS-D 100 (100 mm x 100 mm), VESA MIS-E (200 mm x 100 mm)	13.6 Pounds	22 Pounds
LS24	13.77" x 24.53" x 2.58"	Aluminum	Black Matte Powder Coat	VESA MIS-D 100 (100 mm x 100 mm), VESA MIS-E (200 mm x 100 mm)	16.6 Pounds	24 Pounds

I/O CONNECTIONS

Power (AC)	On (DC)	Analog Video	DVI-D	HDMI	Touch/Serial	Control Over Network	Programming Port
IEC-320	Silicone Power Button	High Density 15-pin Socket	30-pin MicroCross Socket	19-pin Plug	DE-9 Socket	RJ45	DE-15 Plug

SPEAKER

Quantity	Sound	Size	Volume Control
One (1) Front Mounted	82 dB @ 1 Watt	2" Diameter	Programmable minimum and maximum limits; 10-step range

OPTIONS

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

Console Mount Adaptor

	Dimensions (H x W)	Mounting	Part Number
LS22	14.42" x 24.31"	Eight (8) Countersunk Holes for #8 Flathead Machine Screws	90-1204-008
LS24	16.08" x 26.84"	Eight (8) Countersunk Holes for #8 Flathead Machine Screws	90-1204-009

CERTIFICATIONS Designed to meet the following certifications

UL	FCC	ESD
60950-1	Class A	FAA-G-2100-H / IEC EN-6100-4-2

MODEL NUMBER CONFIGURATOR

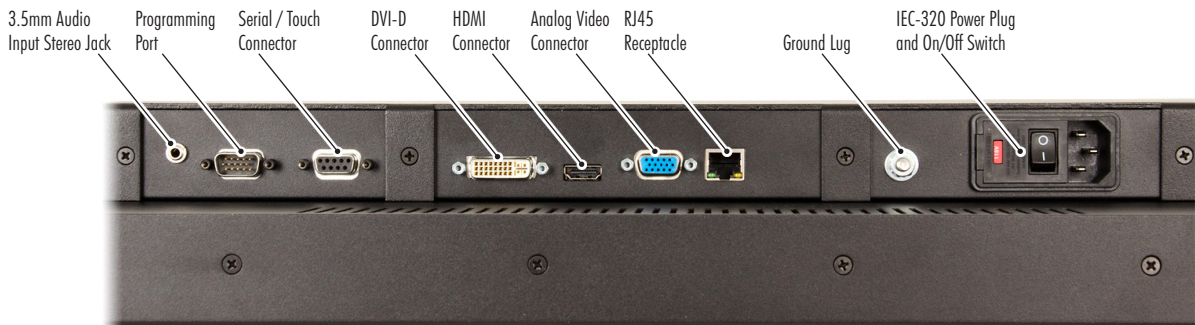
Model Style	Size & Resolution (aab)	Display (ccc)	Video Controller (dd)	Keyboard/Pointer (ee)	Industrial Enclosure (ff)	Display Overlay (gg)	Power Supply (hij)
SGD-	22D-	987-	45-	00-	18-	58-	IPjj
SGD-	24D-	986-	45-	00-	18-	58-	IPjj
SGD-	24D-	986-	45-	00-	18-	73-	IPjj

ORDERING

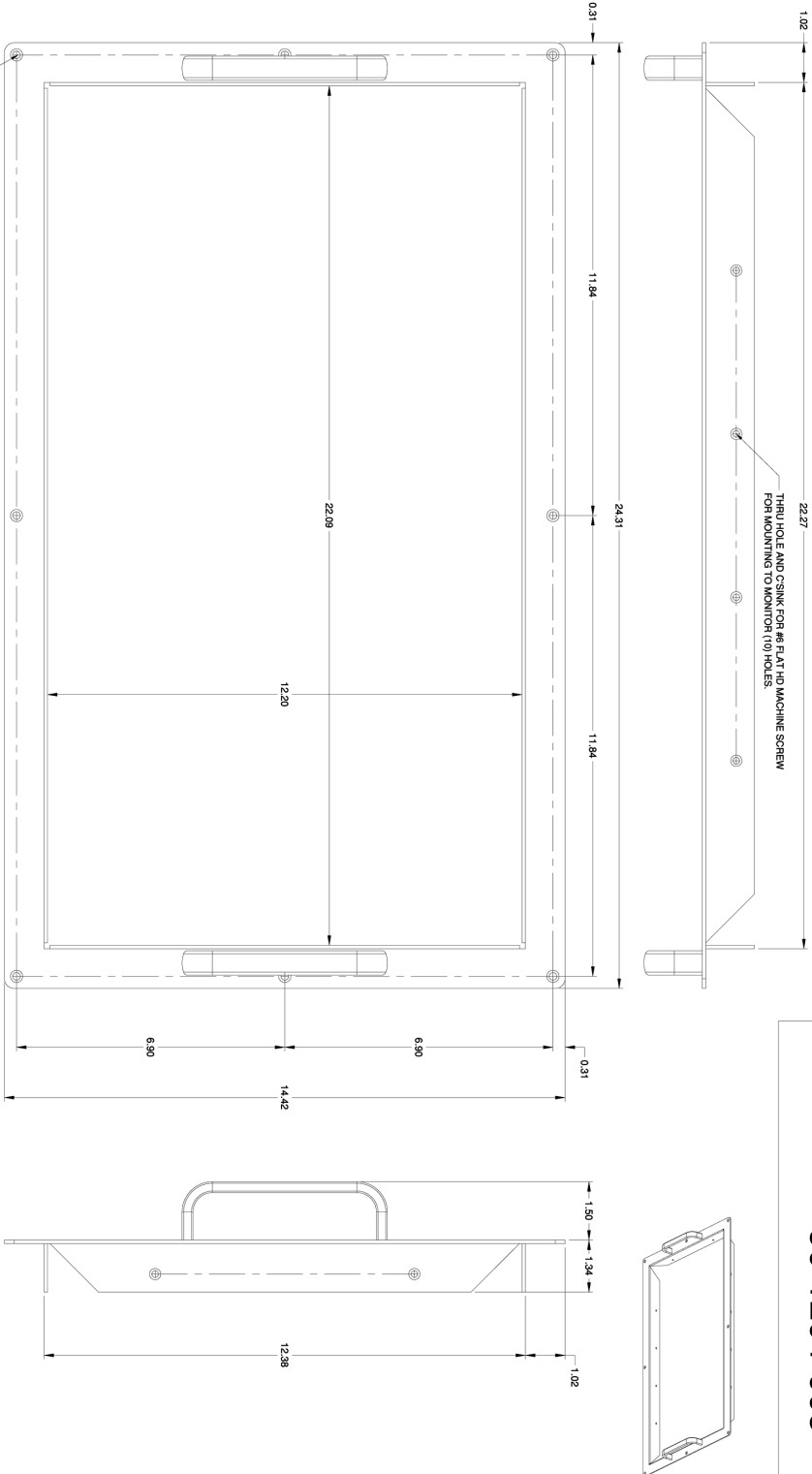
Model Number	Description
SGD-22D-987-45-00-18-58-IPjj-121	Saber Standalone Solar/LS22, 21.5" Diagonal, WUXGA, Standalone/Mountable, Ruggedized, Sunlight Readable, Touch Sensitive LCD Monitor
SGD-24D-986-45-00-18-58-IPjj-121	Saber Standalone Solar/LS24, 24.0" Diagonal, WUXGA, Standalone/Mountable, Ruggedized, Sunlight Readable, Touch Sensitive LCD Monitor
SGD-24D-986-45-00-18-73-IPjj-121	Saber Standalone Solar/LS24, 24.0" Diagonal, WUXGA, Standalone/Mountable, Ruggedized, Sunlight Readable, Multi-Touch LCD Monitor



Saber Standalone Solar/L24 Rear View



Saber Standalone/L24 Connector Panel



90-1204-008

CUSTOMER APPROVAL

NAME (PRINT) _____
 SIGNATURE _____
 DATE _____

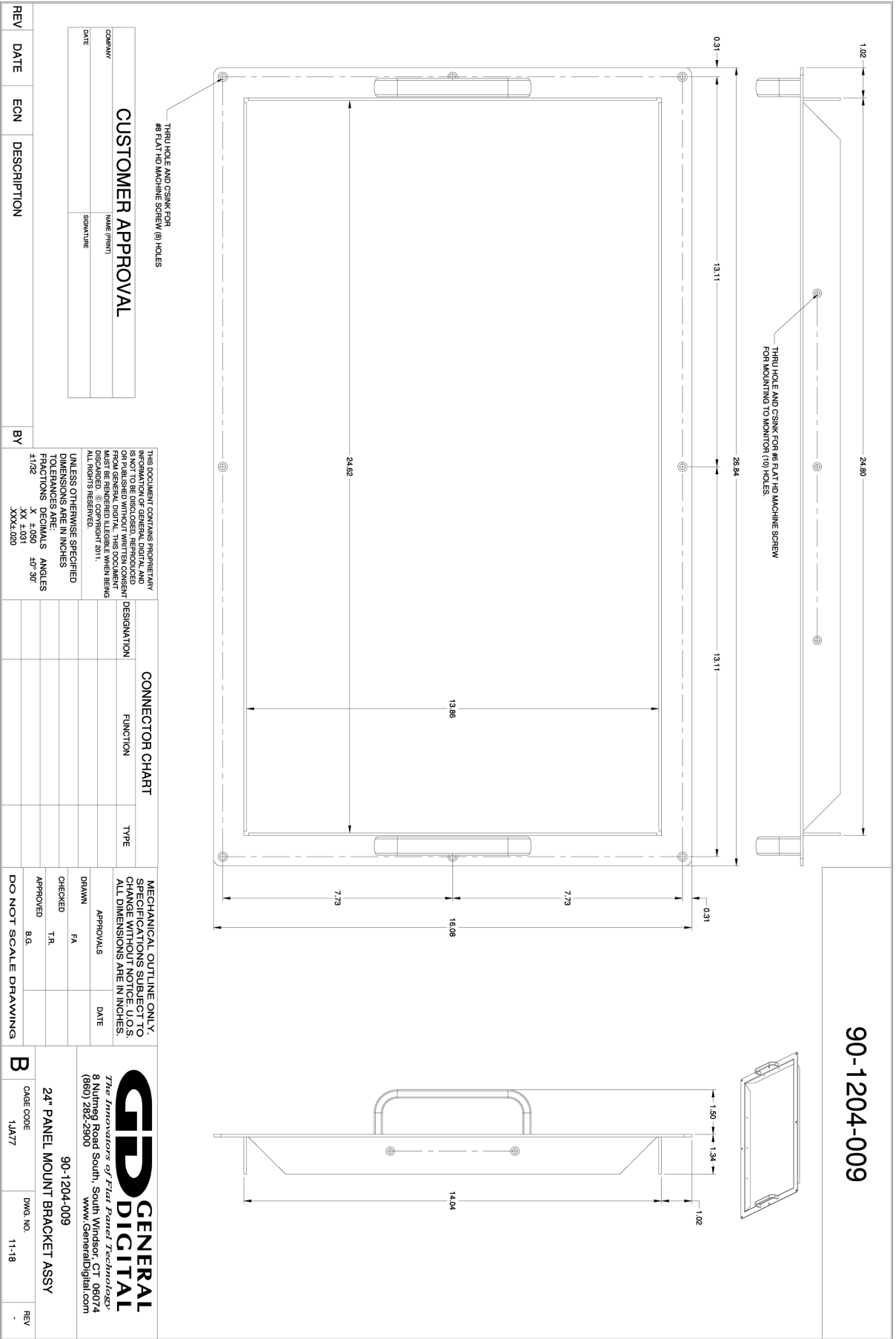
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ARE:
 FRACTIONS DECIMALS ANGLES
 .XX .000 .00°30'
 .XXXL 0.00

DESIGNATION	FUNCTION	TYPE

APPROVALS	DATE

REV	DATE	ECN	DESCRIPTION	BY



CUSTOMER APPROVAL

COMPANY: _____ NAME (PRINT): _____
 DATE: _____ SIGNATURE: _____

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS: DECIMALS ANGLES: ±.002 X ±.001 ±0°30'

CONNECTOR CHART

DESIGNATION	FUNCTION	TYPE

MECHANICAL OUTLINE ONLY. SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. ALL DIMENSIONS ARE IN INCHES.

APPROVALS: _____ DATE: _____
 DRAWN: FA
 CHECKED: T.R.
 APPROVED: B.G.

DO NOT SCALE DRAWING

REV	DATE	ECN	DESCRIPTION	BY
B			24" PANEL MOUNT BRACKET ASSY	
			CAGE CODE 1A477	
			DWG. NO. 11-18	
			REV -	