Transduction

USER MANUAL

VERSION 1.3
12/06/2012

TR-LCD-AB MONITOR SERIES – REPLACEMENT PANEL MOUNT MONITORS FOR ALLEN-BRADLEY ROCKWELL AUTOMATION, XYCOM AND INTERCOLOR

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Important Information

The information in this document is subject to change without notice.
All relevant issues have been considered in the preparation of this document.
Should you notice an omission or any questionable item, please feel free to notify Transduction.

Regardless of the foregoing statement, Transduction assumes no responsibility for any errors that may appear in this document or for results obtained by the user as a result of using this product.

Return policy

Warranty is 5 years for the whole system from the date of purchase. Products returned for repair must be accompanied by a Return Material Authorization (RMA) number obtained from Transduction prior to return. The customer is responsible for any loss or damage caused by the carrier in transit.

To obtain an RMA number, call us at 905-625-1907. We will need the following information:

- Return company address and contract
- Model name, model number, and serial number
- Description of the failure

Mark the RMA number clearly on the outside of each box, include a failure report and return the product to:

Transduction Inc.
23 – 5155 Spectrum Way
Mississauga, ON L4W 5A1
Canada

1 15”, 17” & 19” PANEL MOUNT MONITORS

1.1 Safety Precautions

When not used for extended periods of time, set your PC to DPMS. If using a screen saver, set it to the active screen mode.

Do not use a damaged or loose plug. This may cause an electric shock or fire.

Do not pull the plug out by the wire or touch the plug with wet hands. This may cause an electric shock or fire.

Use only a properly grounded plug or receptacle. An improper ground may cause electric shock or equipment damage.

Do not excessively bend the plug and wire or place heavy objects on them. This could cause damage and an electric shock or fire.

Do not place the monitor face down. The CDT surface may be damaged.

When cleaning, wipe with a slightly moistened, soft cloth. Do not spray any cleaner directly on to the monitor.

Do not remove housing. No serviceable parts inside. Refer servicing to Transduction.

1.2 Overview

TR-LCD1500-AB, TR-LCD1700-AB and TR-LCD1900-AB are industrial panel mount monitors designed to replace Allen-Bradley Rockwell-Automation, Xycom and Intercolor monitors that clients are using. These monitors have been manufactured under strict QA Standard CSA Z299.3 and are mechanically compatible with existing panel cut-outs including A-B type easy screw-on mounting clips and NEMA 4X type neoprene LCD panel mount hose proof gaskets.

TR-LCD-AB Series Monitor Front View

TR-LCD-AB Series Monitor Rear View

1.3 TR-LCD-AB Series Monitor Quick Start Guide

To attach the TR-LCD-AB series monitor to your system, follow these instructions:

1. Turn off power to your computer.
2. Plug the power cord for the monitor into a nearby outlet.
3. Using the analog SVGA input on the video card, connect one end of SVGA connector cable into the video card. Connect other end of the cable to the SVGA input on the back of your monitor.
4. **This is optional (DVI cable not provided)**. Using the DVI (digital) input on the video card, connect one end of the DVI cable into the video card and the other end to the DVI input on the back of your monitor.
5. **For monitor configuration with USB touch screen**. Connect one end of the USB cable to USB input on the back of your computer. Connect the other end of the USB cable to the USB input on the back of your monitor.
6. Turn on your computer and monitor. If your monitor displays an image, installation is complete.

TR-LCD-AB Rear External Connectors

1.4 TR-LCD-AB Series Monitors

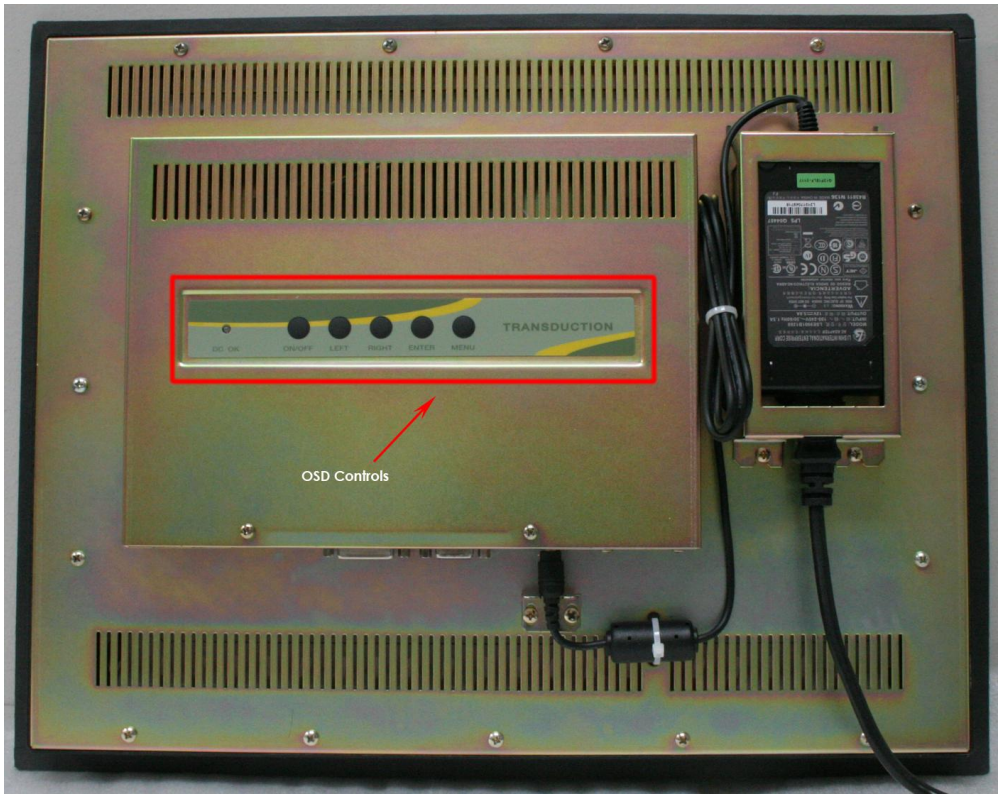
TR-LCD-AB series monitors are highly reliable industrial monitors packaged in a custom enclosure made of steel. Only the most reliable components have been used such as no-glare 15" LCD (TR-LCD1500-AB), 17" LCD (TR-LCD1700-AB) and 19" LCD (TR-LCD1900-AB) that have stable crystal clear video display, video controller board with highly effective noise filter and highly reliable 12VDC power adapter. This results in high quality display with estimated reliability in excess of 150,000 hours.

These monitors can be supplied with optional USB or RS232 resistive touch screen and 24, 48, 125 and 250V DC input power. Other options include various video inputs including RGB w/ Sync In Green and RGBVH with custom timing for any RS170 video standard. In addition, a "long distance" version for mono or RGB distance of up to 1000 feet from the video source is available.

1.4.1 On Screen Display (OSD) Control Buttons

Each monitor is preset with default settings and do not need to be altered. Rear panel controls allow personnel to adjust elements of screen image with on-screen menus. These controls should only be used if the image quality or size needs to be optimized.

The rear panel controls contains view access to “Power ON” LED and OSD buttons (On Screen Display). OSD buttons include “ON/OFF”, “LEFT”, “RIGHT”, “ENTER” and “MENU”.



TR-LCD-AB Rear with OSD Control Buttons

TR-LCD-AB OSD Control Buttons

1.4.2 OSD Setup

1.4.2.1 Overview

The TR-LCD-AB features an on-chip OSD (On-Screen Display) controller that creates the OSD user interface menus and overlays them onto the output data stream. User can adjust the display conditions on the monitor using the OSD control buttons. After powering on, the monitor restores itself to the last known conditions saved in Non-Volatile Random Access Memory (NVRAM). All parameters (Settings) are saved whenever user selects icon in OSD. Not making a selection within a defined time period causes the OSD menu to close. The **LEFT** and **RIGHT** keypad push buttons are used to scroll through items within the main menu. The selected item is highlighted. The **MENU** push button is used to open and close the OSD menu. The **MENU** push button is defined as Confirm or Enable button to activate the highlighted item. The **ON/OFF** push button enables user to perform LCD power-up sequence.

1.4.2.2 Main Menu

Press **MENU** of OSD board to start Main Menu. There are five major icons in the Main menu: Image, Display, PIP, Sound (NOT APPLICABLE), and System. Use **LEFT** or **RIGHT** to select target icon and press **ENTER** to start adjustment. For example, when Image icon is highlighted, press **ENTER** and then use **LEFT** or **RIGHT** to select the sub-item. If sub-item Brightness is selected, press **ENTER** and then **LEFT** or **RIGHT** to adjust the brightness level. If setting is finished, press **MENU** back to Brightness sub-item and press **MENU** again back to Image menu. New OSD parameters are saved in NVRAM after pressing **MENU**.

Note: If changing the setting is finished, press MENU back to sub-item and press MENU again back to Image menu. New OSD parameters are saved in NVRAM after pressing MENU.

1.4.2.3 Image

Brightness – Press **LEFT** or **RIGHT** to adjust the brightness of LCD backlight directly. This feature should work together with the inverter which provides PWM (Pulse Width Modulation) or DC Voltage control feature.

- **BlackLevel** – Press **LEFT** or **RIGHT** to adjust the black level.
- **Contrast** – Press **LEFT** or **RIGHT** to adjust contrast setting.
- **Hue** – Press **LEFT** or **RIGHT** to adjust video hue level (for video signal only).
- **Saturation** – Press **LEFT** or **RIGHT** to adjust video saturation (for video signal only).

Color

- **Auto color** – Press **ENTER** to apply this function, and then press **LEFT** or **RIGHT** to select Yes to save or No to exit.
  - **Yes**
  - **No**

Color temperature – Press **ENTER** to select color temperature. And press **ENTER** again to enable color depth adjustment. Press **LEFT** or **RIGHT** to adjust color depth for RGB.

- **9300K**
- **7500K**
- **6500K**
- **5000K**
- **4200K**
- **USER**
  - **Red**
  - **Green**
  - **Blue**
  -

sRGB – Press **ENTER** to set standard color defined in MS Windows. Press **LEFT** or **RIGHT** to select On or Off to enable or disable sRGB.

- **On**
- **Off**

1.4.2.4 Display

Auto Configuration – Press **ENTER** to automatically configure an optimal display setting. Then press **LEFT** or **RIGHT** to select Yes to save or No to exit.

- **Yes**
- **No**

Phase – Press **LEFT** or **RIGHT** to adjust signal phase for RGB input.

Clock – Press **LEFT** or **RIGHT** to adjust signal clock for RGB input.

Display Control

Display Image – Press **LEFT** or **RIGHT** to select image size. And press **ENTER** to Enable and Save the setting.

- **Auto**
- **1:1**
- **Aspect**

Aspect Ratio – Press **LEFT** or **RIGHT** to select aspect ratio. And press **ENTER** to Enable and Save the setting.

- **Auto**
- **>16x9**
- **16x9**
- **14x9**
- **4x3**

Display Position

- **Horizontal** – Press **LEFT** or **RIGHT** to adjust horizontal position of display.
- **Vertical** – Press **LEFT** or **RIGHT** to adjust vertical position of display.

Zoom

- **In/Out** – Press **LEFT** or **RIGHT** to enable or disable the function.
- **Zoom Position** – This feature works only when Zoom Out function works.
  - **Horizontal** – Press **LEFT** or **RIGHT** to adjust horizontal position of zoom-out display.
  - **Vertical** – Press **LEFT** or **RIGHT** to adjust vertical position of zoom-out display.

Sharpness – Press **LEFT** or **RIGHT** to adjust the sharpness level.

1.4.2.5 PIP

PIP – Press **LEFT** or **RIGHT** to enable or disable the function.

- **On**
- **Off**

PIP Input Select – Press **LEFT** or **RIGHT** to select PIP input port.

- **VGA**
- **VGA2**
- **DVI**
- **V-Port**

PIP Size – Press **LEFT** or **RIGHT** to select PIP size.

- **Side**
- **Large**
- **Medium**
- **Small**

PIP Position – Press **LEFT** or **RIGHT** to set PIP position.

- **Right-Top**
- **Right-Down**
- **Left-Top**
- **Left-Down**

PIP Color Controls

- **BlackLevel** – Press **LEFT** or **RIGHT** to adjust black level.
- **Contrast** – Press **LEFT** or **RIGHT** to adjust contrast level.
- **Hue** – Press **LEFT** or **RIGHT** to adjust video hue level (for video signal only).
- **Saturation** – Press **LEFT** or **RIGHT** to adjust video saturation (for video signal only).

Blend – Press **ENTER** to enter blend slider, and use **LEFT** or **RIGHT** to adjust blend value

1.4.2.6 Sound - NOT APPLICABLE

1.4.2.7 System

Input Select – Press **LEFT** or **RIGHT** to select main input port.

- **VGA**
- **DVI**
- **S-Video**
- **Composite**
- **Components**
- **V-port (Optional)**
- **VGA2 (Optional)**

OSD Configuration

- **OSD Timer –** Press **LEFT** or **RIGHT** to decrease or increase the amount of time that elapses before the menu disappears.
- **OSD Position**
  - **Horizontal –** Press **LEFT** or **RIGHT** to adjust horizontal position of OSD screen.
  - **Vertical –** Press **LEFT** or **RIGHT** to adjust vertical position of OSD screen.
- **OSD Zoom –** Press **ENTER** to enable On or Off to expand OSD image or not.
  - **On**
  - **Off**

Factory Reset – Press **ENTER** to enable factory reset, and previous setting stored in NVRAM will be lost. This feature helps users return back to original default setting in NVRAM, especially when users get problems when adjusting OSD features.

Light Sensor – NOT APPLICABLE

2 TR-LCD1500-AB FEATURES & SPECIFICATIONS

2.1.1 Features

- Viewable area: 15”
- Brightness: 600cd/m²
- Contrast ratio: 700:1
- Viewable angle: V/H 140°
- Response time: 8ms
- Pixel pitch: 0.297mm
- Resolution: 1280 x 768
- Warranty: 5 years

2.1.2 Specifications

LCD Module	Diagonal: 15” Native resolution (pixel count): 1024 x 768 Active matrix, thin film transistor (TFT) liquid crystal display (0.294mm dot pitch, 350cd/m² white luminance, 700:1 contrast ratio
Input Signal	SVGA, DVI and optional RS170 RGBVH
Display Colours	Analog input 16.2M
Maximum Viewing Angles	Left/Right and Up/Down 140°
Active Display Area	Horizontal: 304.128mm Vertical: 228.096mm
Input Power	60W, 90-264VAC, 50/60Hz regulated 12VDC output power adapter
Operating Temperature	0°C~50°C, 60°C for 2 hours
Operating Humidity	10%~90% non-condensing
Operating Altitude	0~10,000 ft
Storage Temperature	-20°C~60°C
Storage Humidity	5%~50% non-condensing
Storage Altitude	0~30,000 ft
Vibration & Shock	5/30G
Regulatory Approvals	ESA FCC Class B compliance
Options	- 24, 48, 125 and 250V DC power input - Resistive touch screen, USB or RS232
Model	TR-LCD1500-AB

3 TR-LCD1700-AB FEATURES & SPECIFICATIONS

3.1.1 Features

- Viewable area: 17”
- Brightness: 350cd/m²
- Contrast ratio: 1000:1
- Viewable angle: V/H 165°
- Response time: 5ms
- Pixel pitch: 0.264mm
- Resolution: 1280 x 1024
- Warranty: 5 years

3.1.2 Specifications

LCD Module	Diagonal: 17” Native resolution (pixel count): 1280 x 1024 Active matrix, thin film transistor (TFT) liquid crystal display (0.264mm dot pitch, 350cd/m² white luminance, 1000:1 contrast ratio
Input Signal	SVGA, DVI and optional RS170 RGBVH
Display Colours	Analog input 16.7M
Maximum Viewing Angles	Left/Right and Up/Down 165°
Active Display Area	Horizontal: 337.92mm Vertical: 270.34mm
Input Power	60W, 90-264VAC, 50/60Hz regulated 12VDC output power adapter
Operating Temperature	0°C~50°C, 60°C for hours
Operating Humidity	10%~90% non-condensing
Operating Altitude	0~10,000 ft
Storage Temperature	-20°C~60°C
Storage Humidity	5%~50% non-condensing
Storage Altitude	0~30,000 ft
Vibration & Shock	5/30G
Regulatory Approvals	ESA FCC Class B compliance
Options	- 24, 48, 125 and 250V DC power input - Resistive touch screen, USB or RS232
Model	TR-LCD1700-AB

4 TR-LCD1900-AB FEATURES & SPECIFICATIONS

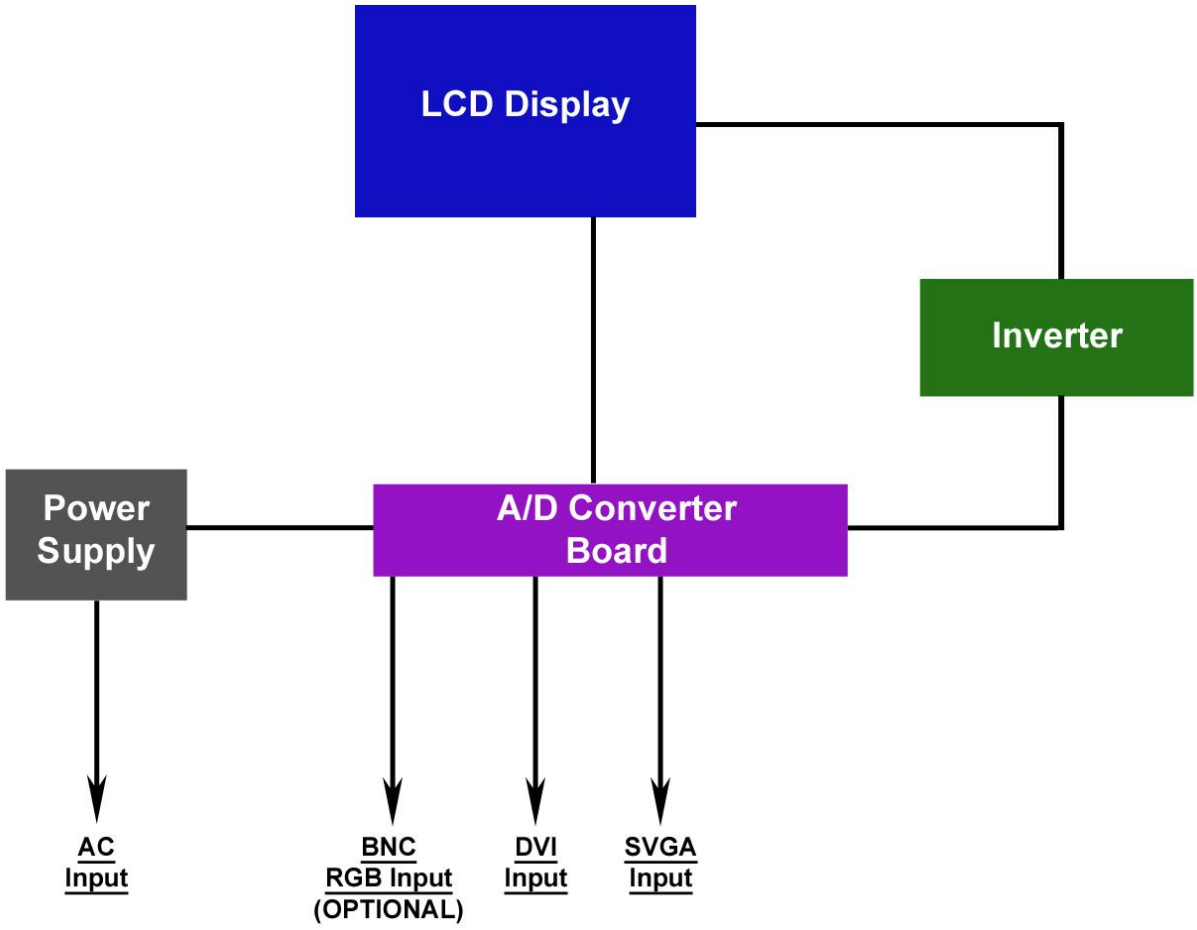
4.1.1 Features

- Viewable area: 19”
- Brightness: 300cd/m²
- Contrast ratio: 800:1
- Viewable angle: V/H 170°
- Response time: 8ms
- Pixel pitch: 0.294mm
- Resolution: 1280 x 1024
- Warranty: 5 years

4.1.2 Specifications

LCD Module	Diagonal: 19” Native resolution (pixel count): 1280 x 1024 Active matrix, thin film transistor (TFT) liquid crystal display (0.294mm dot pitch, 300cd/m² white luminance, 800:1 contrast ratio
Input Signal	SVGA, DVI and optional RS170 RGBVH
Display Colours	Analog input 16.7M
Maximum Viewing Angles	Left/Right and Up/Down 170°
Active Display Area	Horizontal: 376.32mm Vertical: 301.06mm
Input Power	60W, 90-264VAC, 50/60Hz regulated 12VDC output power adapter
Operating Temperature	0°C~50°C, 60°C for hours
Operating Humidity	10%~90% non-condensing
Operating Altitude	0~10,000 ft
Storage Temperature	-20°C~60°C
Storage Humidity	5%~50% non-condensing
Storage Altitude	0~30,000 ft
Vibration & Shock	5/30G
Regulatory Approvals	ESA FCC Class B compliance
Options	- 24, 48, 125 and 250V DC power input - Resistive touch screen, USB or RS232
Model	TR-LCD1900-AB

5 FUNCTIONAL BLOCK DIAGRAM



6 SERIAL NUMBER LABEL

Each serial number label consists of 5 numbers. There is 1 label that is applied to each monitor.

1. Rear of LCD display panel

7 RESISTIVE TOUCH SCREEN

7.1 Overview

5-wire resistive touchscreen is composed of glass (bottom layer) coated with transparentconductive material (ITO) film (top layer) and top and bottom layers touch screeneach other, and electric analog X, Y signals are transmitted to the touch controller. The analog signals transmitted from the panel are converted to digital signals by the A/D converter of the controller and then transmitted to the control driver of each operating system. The software driver is optimized to operate the touch panel for each operating system by receiving digital signals converted from the controller.

7.2 Specifications

7.2.1 Mechanical

7.2.1.1 Features

- Analog resistive type touch screen with 5-wire technology.

- Input mode: finger, gloved finger or stylus pen.

- Input method
  Pen: 110g 9 (polyacetal)
  Stylus: 110g 9 (silicon rubber)

- Structure
  PET (ITO Film)→ Anti-Glare film, 188Φm ±15%(T), 3H
  → Clear film, 188Φm ±15%(T), 3H
  Glass→ ITO Glass 1.8, 2.9mm ±10%(T)

- Controller: Serial (RS232) and USB

7.2.1.2 Linearity Accuracy

Standard deviation of error is less than 2% error on most displays. Detected touch coordinates, after being mathematically fitted to actual touch coordinate patterns shall not have a standard deviation of error in excess of 1.5% in either axis using Test software as the data collection and calculation tool.

- Criteria →Direction [X] : 1.5% or less
  → Direction [Y] : 1.5% or less

7.2.1.3 Touch Activation Force

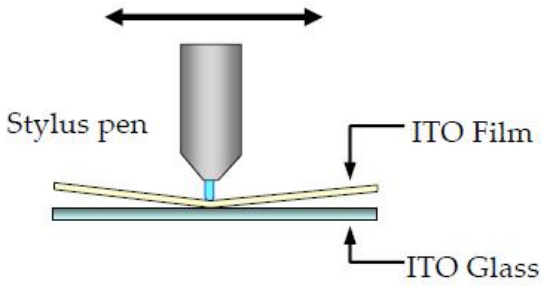
When activated by a “Standard Finger” the activating force is typically less than 110g.

7.2.1.4 Hard Coat Pencil Hardness

Meets pencil hardness 3H.

7.2.1.5 Surface Durability

Surface durability is tested as follows:



As shown above the touch screen is mounted on measuring equipment and then stroked 10,000 times in a straight line in one location of the ITO film hard coated on panel by stylus pen with pressure. The pen speed is 100±15mm per second with 250gf of force of pressure. Abrasion test will be reported well if there is no abrasion shown up with the above procedure without failure.

7.3 Optical

- Light Transmittance (Total Transmittance): 81% ± 8 (550nm wavelength, according to JIS-K7105)

7.4 Reliability

7.4.1 Charter Writing Operation (Iterated drawing in 20mm x 20mm squares)

Writing 10,000,000 characters must satisfy requirements in section 7.2.1.2 and 7.6. Hits must be made in the following manner at any point within effective area.

1. Testing equipment: Pen plotter
2. Testing load: 250gf
3. Press speed: 2 hits/second
4. Tip probe: silicon rubber R8.0, hardness shore 12

7.4.2 Rubber Stroke Operation

30,000,000 strokes with a piece of rubber must satisfy requirements in paragraph 7.2.1.2 and 7.6. Hits must be made in the following manner at any point within effective area.

1. Testing equipment: Pen plotter
2. Testing load: 250gf
3. Press speed: 2 hits/second
4. Tip probe: silicon rubber R8.0, hardness shore of 12

7.4.3 Shock Resistance

Requirement in section 7.2.1.2 and 7.6 must be satisfied. No breakage when R10mm steel ball is dropped from 15cm height at one time on the touch panel supported with the display module.

7.5 Resistance to Chemicals

Industrial chemicals: acetone, methylene chloride, methyl ethyl ketone, isopropyl alcohol, hexane, turpentine, mineral spirits, unleaded gasoline, diesel fuel, motor oil, transmission fluid and antifreeze.
Food-service chemicals: vinegar, coffee, tea, grease, cooking oil, salt, plus most commercial cleaners including ammonia-based glass cleaner and laundry detergent.

Property	Specification	Test Method
Acetone	Change in Ω/sq. < 3%	10min. @ 25°C
Isopropanol	Change in Ω/sq. < 3%	10min. @ 25°C
Toluene	Change in Ω/sq. < 3%	10min. @ 25°C
Boiling Water	Change in Ω/sq. < 3%	10min.
Curling Test	< 20mm	450mm x 450mm 150°C for 30min., measured at corners
Humidity Resistance	±8%	Change in Ω/sq. 24hrs. @ 60°C 95%RH
Flexibility	> 13mm	Diameter

7.6 Electrical

7.6.1 Electrical Discharge Protection

Meets 24kV air/13kV contact discharges.

7.6.2 Contact Bounce

Beginning of the touch pulse shall not exceed 15msec.

7.6.3 Open Circuit Resistance

The controller is designed to distinguish resistance values less than 20k ohms to filter false or near touches.

7.6.4 Close Circuit Resistance

Shall be less than 3,000 ohms when measured between the signals contact (pin 3) to any drive contact (pin 1,2,4, or 5) on the connector when the touch screen is actuated anywhere within the touch active area with a standard finger exerting a force of 10 to 20 ounces.

7.6.5 Breakdown Voltage

The touch screen, with no force applied to the active surface, shall be capable of withstanding a difference of potential 50VDC between the signal contact (pin 3) and any drive contact (pin 1,2,4, or 5) on the connector for a period of 5min.

8 AC POWER ADAPTER

8.1 Overview

TR-LCD-AB-ADAPTERAC-V3 is a reliable universal isolated 60W power adapter with regulated 12VDC output, 90-264VAC, 50/60Hz.

As a replacement any 12VDC power adapter regulated can be used as long as it can produce more than 5A of DC output current. Alternatively regulated 12VDC/5A can be obtained from 12VDC section of the power supply in the computer.

TR-LCD-AB-ADAPTERAC-V3 12VDC Power Adapter for TR-LCD-AB Series

8.2 Specifications

8.2.1 Electrical

8.2.1.1 Input Voltage (AC~)

- 100-240VAC nominal.
- 90-264VAC maximum.

8.2.1.2 Input Frequency

- 47-63Hz

8.2.1.3 Input Current

- 1.5A max. @ 90VAC

8.2.1.4 Inrush Current

- 100A max. cold-start @ 25°C, DC output full load and 230VAC input.

8.2.1.5 Hold-Up Time

- 8msec. min. at DC output full load and 100VAC 50/60Hz input.

8.2.1.6 Input Wattage at Output No Load/Minimum Load Condition

- Less than 0.75W at output no load and 240VAC input voltage frequency condition.

8.2.1.7 Efficiency

- 75% min. at DC output full load and 100VAC input voltage range, including DC output cable voltage drop loss.

8.2.1.8 Safety Test

- Leakage current less than 0.75mA at 254VAC 50/60Hz
- Hi-Pot Test: 3000VAC 10mA, 2 sec. between primary and secondary circuit and chassis.
- Insulation: 500VDC, 2 sec. between primary and secondary circuit, IR shall ∃20MΩ.
- Grounding: AC 30A, 2 sec. between input safety ground and SELV output GND, GR#0.1Ω.

8.2.1.9 Output Voltage and Current (DC)

V_{OUT}	12.0V	I_{OUT}	0 – 5.0A
Range	11.40 – 12.60V	Range	

8.2.1.10 Ripple and Noise

- Low frequency ripple (<100KHz) ≤ 150mVpp
- Total composite ripple and noise < 150mVpp tested by DC loading side parallel with 10uF/EC and 0.1uF/Ceramic capacitors, measured band-width with DC-20MHz.

8.2.1.11 Over-Shoot and Under-Shoot

- Less than 5% of nominal voltage.

8.2.1.12 Protection

- SCP: for short circuit protection and with auto-recovery function.
- OVP: over-voltage protection, 18VDC 100mS max. at DC output full load and with auto-recovery function.

8.2.1.13 LED Indication

- Green light for nominal operation and blank for SCP and OVP mode.

8.2.1.14 Start Up Rise Time

- The output voltage should rise from 0V and settle within regulation in less than 3sec. from applying 100VAC for start up and rise time input voltage condition.

8.2.1.15 Output Voltage Temperature Coefficient

- Less than 0.2%/°C

8.2.1.16 Output Transient Response

DC Output	I1(A)	I2(A)	dV max (V)	Tset-max	dI/dt
12.0	0.00	1.25	±1.0V	10msec.	∃50mA/usec.
12.0	1.25	2.50	±1.0V	10msec.	∃50mA/usec.
12.0	2.50	5.00	±1.0V	10msec.	∃50mA/usec.

8.2.2 Environment

8.2.2.1 Temperature

- Operating: 0 - 40°C (32 - 104°F) for nominal input 100-240VAC.
- Storage: -40 - 70°C (-40 - 158°F).

8.2.2.2 Humidity

- Operating: 5 – 90% non-condensing for nominal input 100-240VAC.
- Storage: 5 – 95% non-condensing.

8.2.2.3 Altitude

- 10,000ft operating, 40,000ft non-operating.

8.2.3 EMC Characteristics

8.2.3.1 EMS

Test Item	Test Specification	IEC Standards
ESD	Contact: 8KV	61000-4-2
ESD	Air: 15KV	61000-4-2
RS	Fr: 26MHz -1.0GHz, Field Strength: 3V/M	61000-4-3
EFT	2KV on AC power line	61000-4-4
SURGE	1KV (L.N) and 2KV (L.N-PE)	61000-4-5
CS	3V/M	61000-4-6
DIPS	0% 250 cycle, 40% 5 cycle, 70% 0.5 cycle	61000-4-11

8.2.3.2 Conducted and Radiated EMI

Referring Standard	
CISPR EN55022	Pub 22, class B
C-TICK	Meet
FCC	Part 15, class B
VCCI	Class B
BSMI	Meet

8.2.4 Reliability

8.2.4.1 MTBF

- 60,000 hours at 25°C.

8.2.4.2 Temperature Rise

- Less than 40°C at nominal 100-240VAC input.

8.2.4.3 Burn-In

- 100% Burn-In with 80 – 100% load at 35 - 50°C.

8.2.4.4 Vibration Test

- Non-operation vibration with shipping container shall be 5G peak 7 – 250Hz.
- 5G peak 50 – 500Hz after 30min. test no abnormality found.
- Operation vibration shall be 0.5G 5 – 250Hz 3-axes after 30min. test no abnormality.

8.2.4.5 Drop Test

- Test height 75cm, no abnormality noted.

8.2.5 Mechanical

- Plastic case with UL PC+ABS GE C2950 material, colour Black.
- Physical Size: 110mm (L) x 63.00mm (W) x 31.50mm (H) (4.33” (L) x 2.48” (W) x 1.24” (H)).
- Output cable with UL1185, 18AWG wires and DC jack plug with two direct pins.
- Weight: 330g (0.73lb).

9 MECHANICAL DRAWINGS

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9.1 TR-LCD1500-AB Drawings

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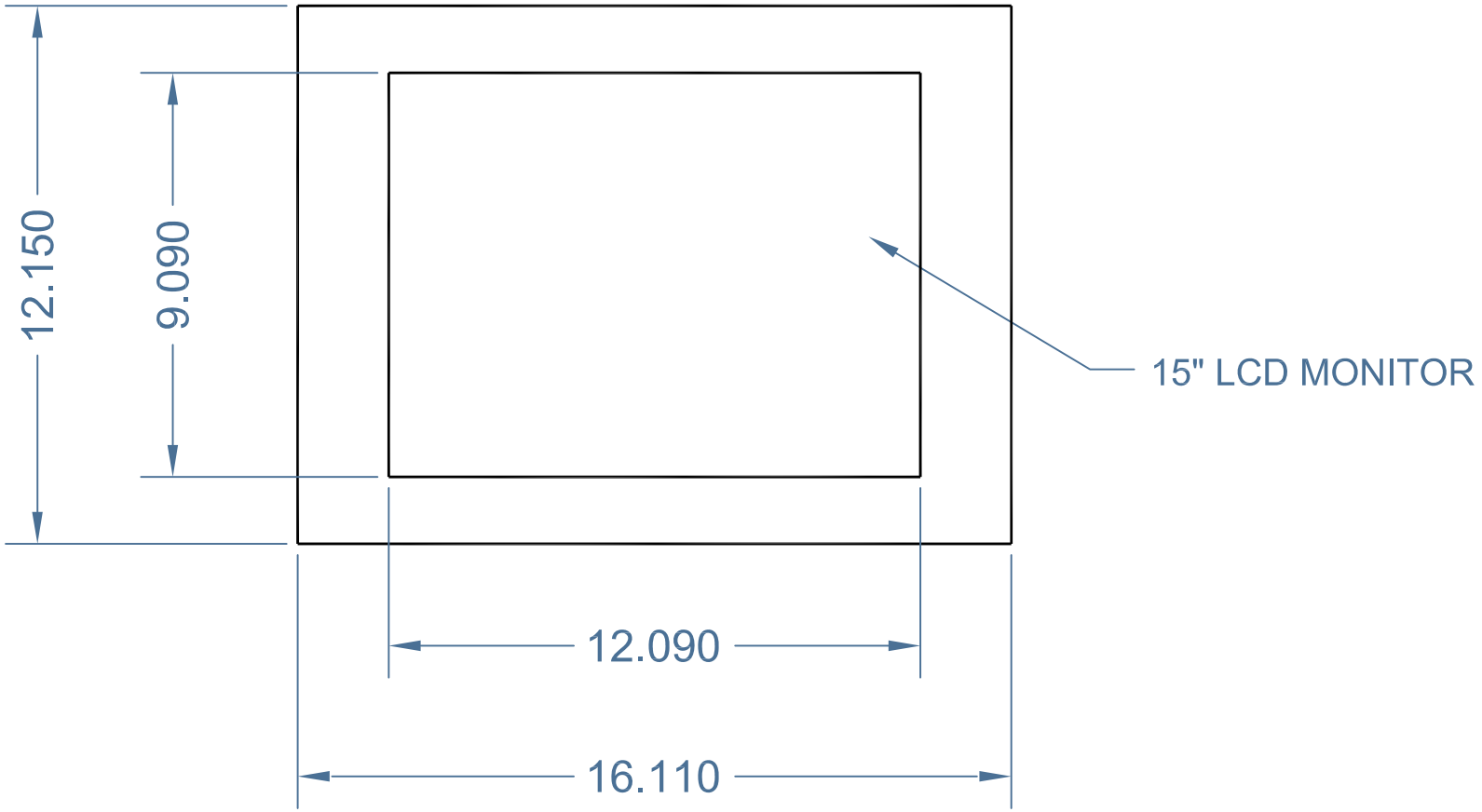
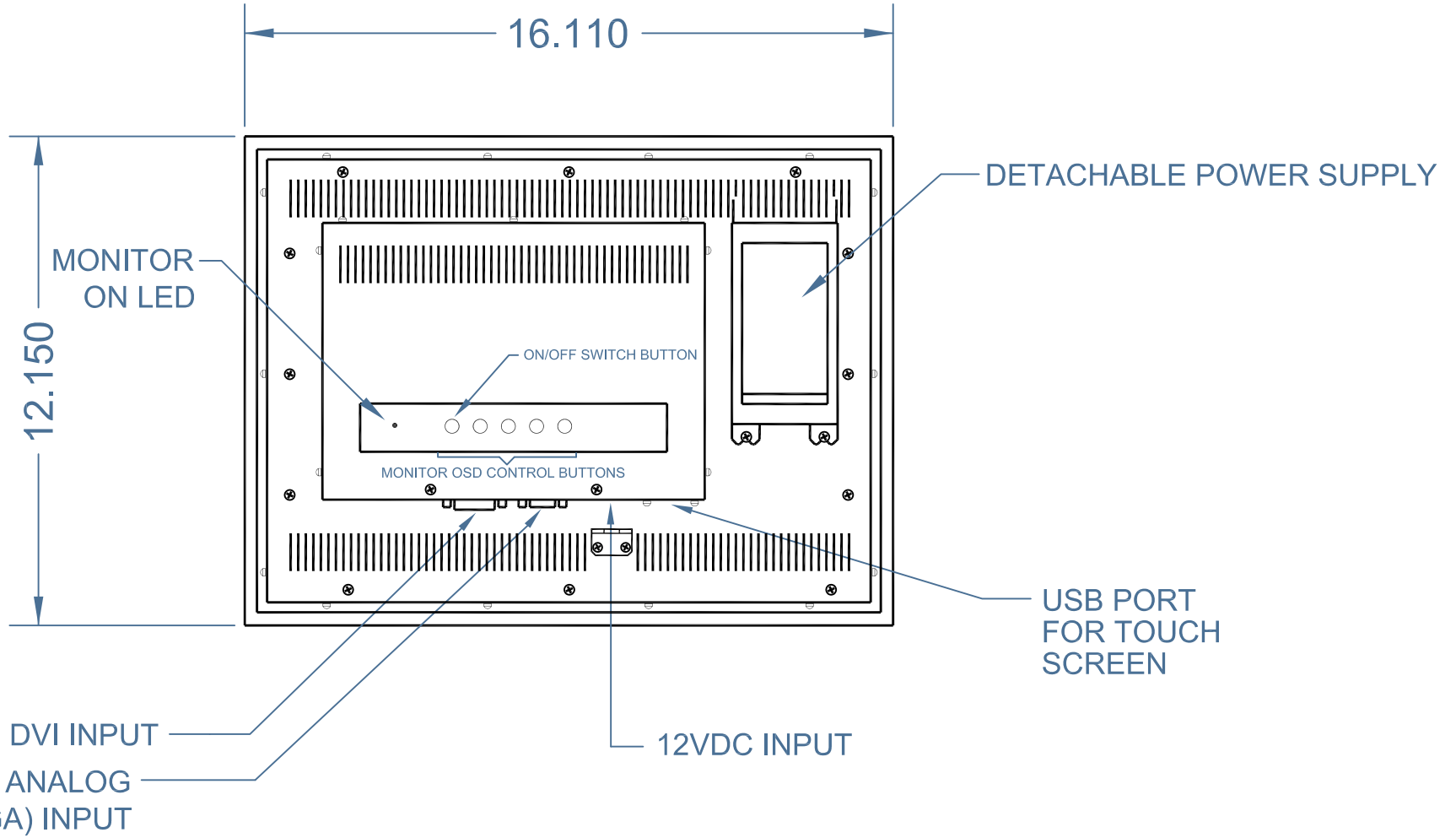


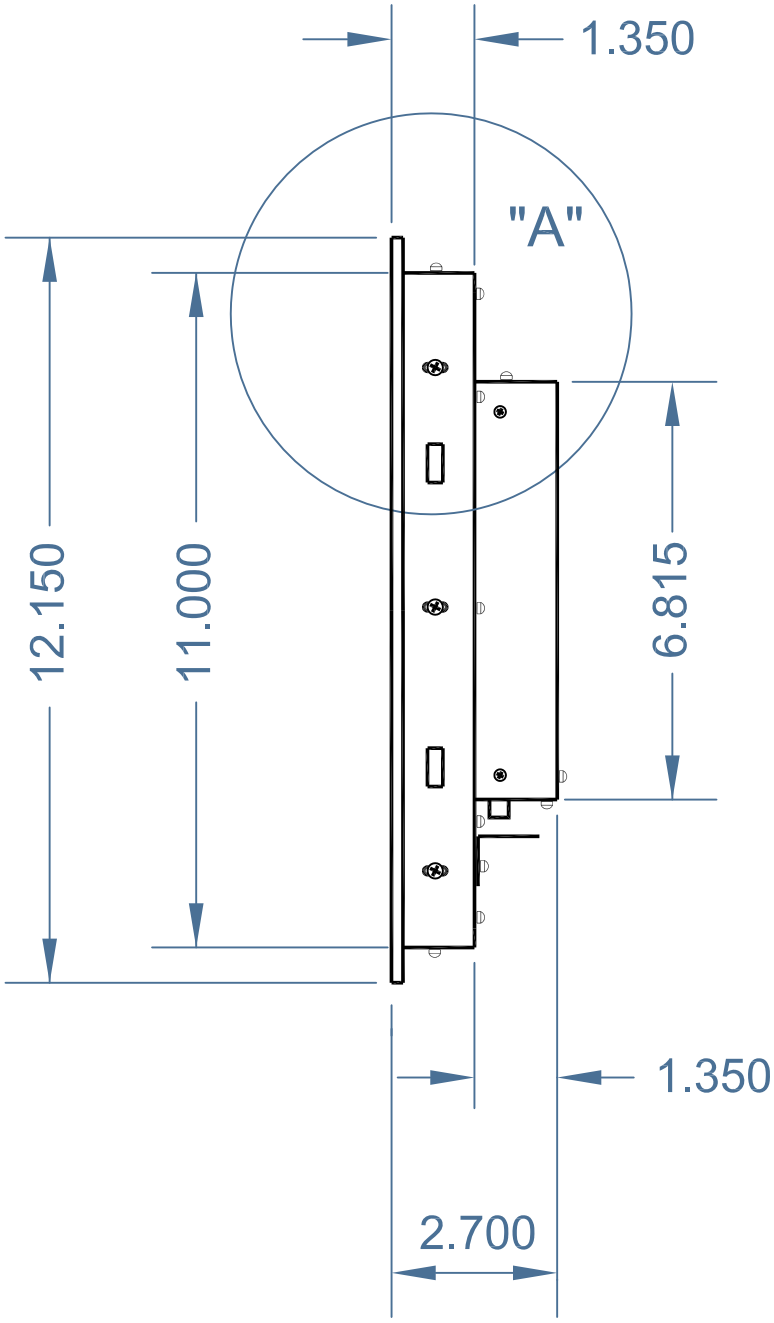
FRONT VIEW

DATE 12-13-2012	DRAWN BY B.G.	MODEL TR-LCD1500-AB	
PRODUCT PANEL MOUNT MONITOR		REVISION	SCALE NTS
FINISH CRINKLE BLACK POWDER PAINT	Transducton	CHECKED BY	
TITLE LAYOUT		DRAWING No B-545	



REAR VIEW

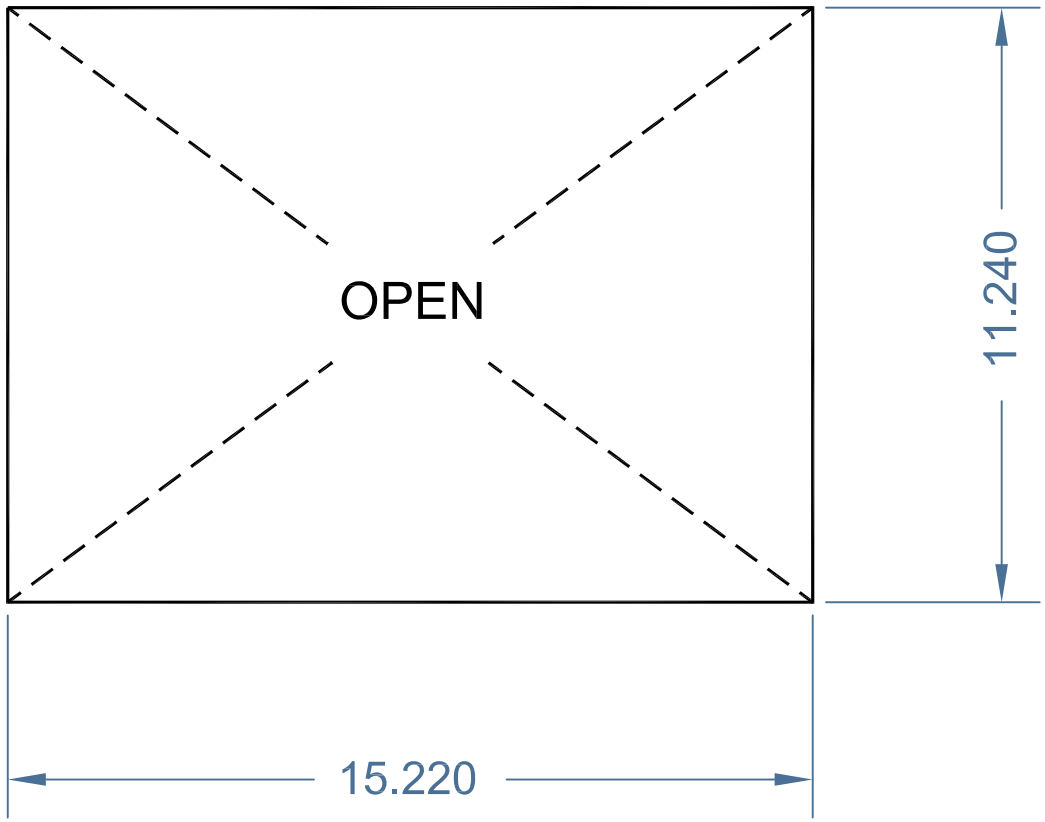
DATE 12-13-2012	DRAWN BY B.G.	MODEL TR-LCD1500-AB	
PRODUCT PANEL MOUNT MONITOR		REVISION	SCALE NTS
FINISH CRINKLE BLACK POWDER PAINT	Transduction	CHECKED BY	
TITLE LAYOUT		DRAWING No B-546	



RIGHT SIDE VIEW

NOTE: FOR DETAIL "A" LOOK
DRAWING B-544

DATE 12-13-2012	DRAWN BY B. G.	MODEL TR-LCD1500-AB	
PRODUCT PANEL MOUNT MONITOR		REVISION	SCALE NTS
FINISH	Transducton	CHECKED BY	
TITLE LAYOUT		DRAWING No B-547	



DATE 12-13-2012	DRAWN BY B.G.	MODEL TR-LCD1500-AB	
PRODUCT PANEL CUTOUT		REVISION	SCALE NTS
FINISH	Transduction	CHECKED BY	
TITLE CUTOUT		DRAWING No B-548	

9.2 TR-LCD1700-AB Drawings

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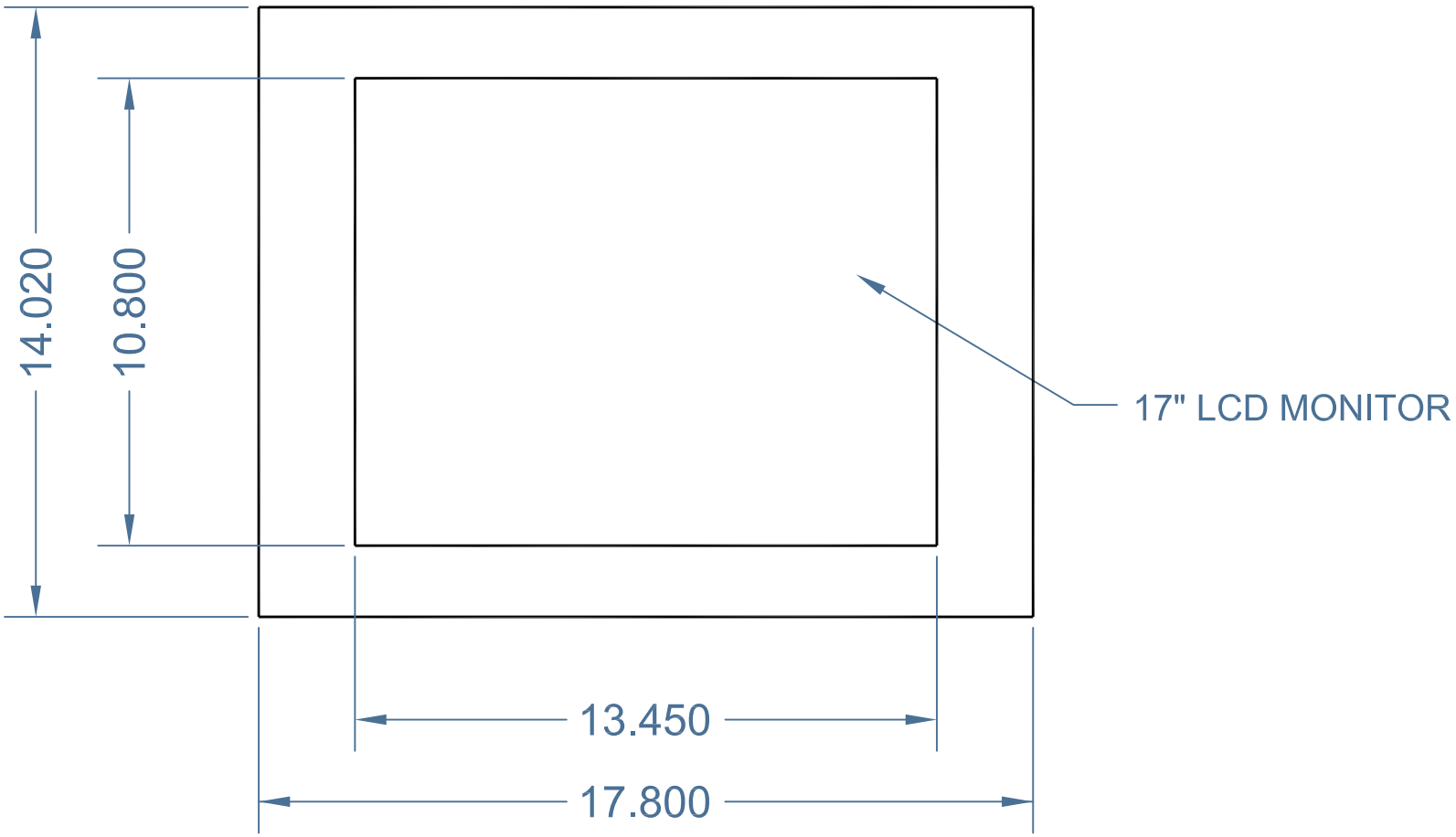
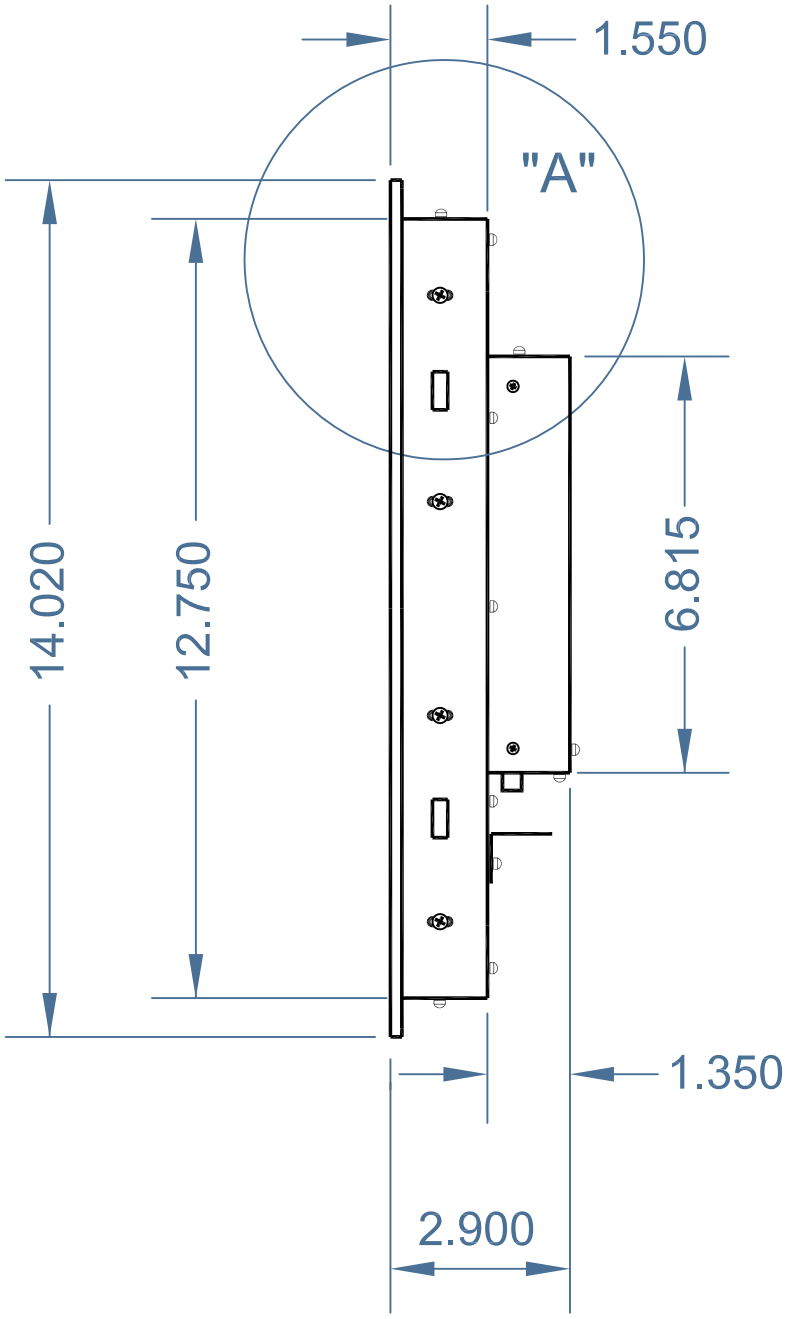


FRONT VIEW

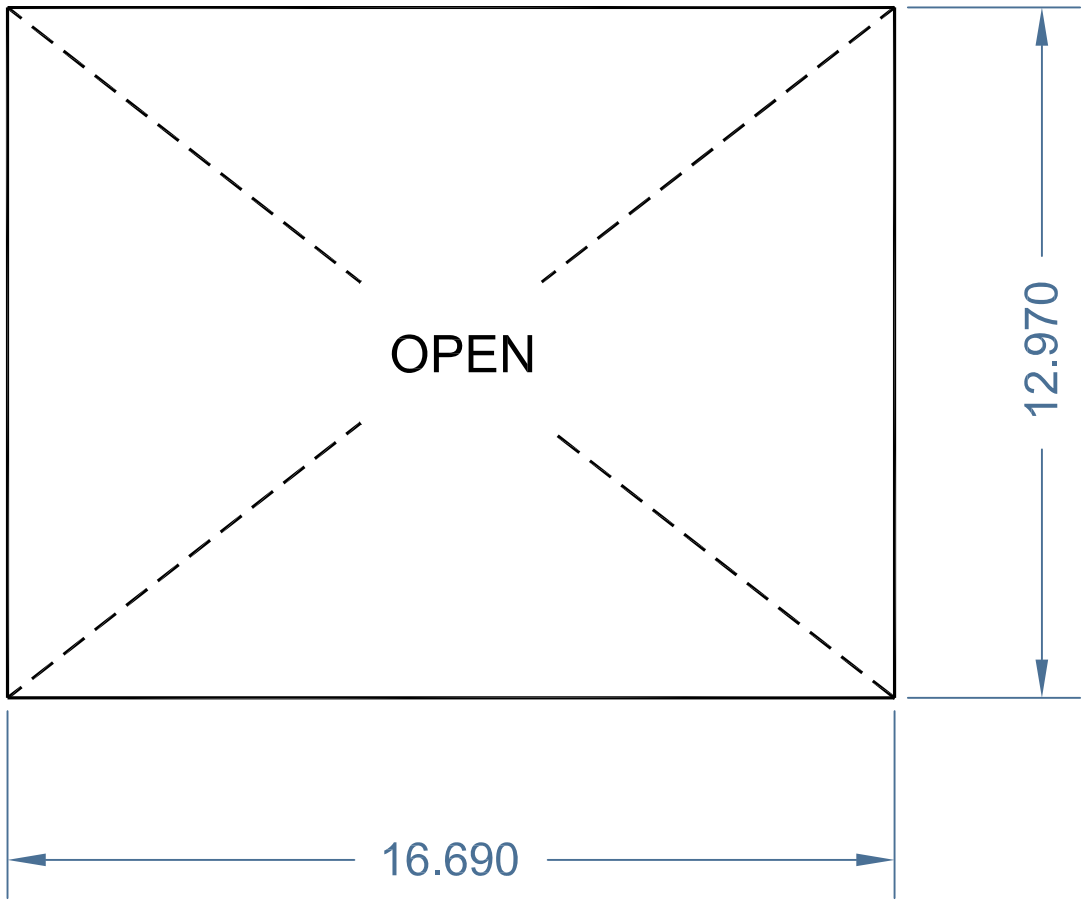
DATE 12-10-2012	DRAWN BY B.G.	MODEL TR-LCD1700-AB	
PRODUCT PANEL MOUNT MONITOR		REVISION	SCALE NTS
FINISH CRINKLE BLACK POWDER PAINT	Transduction	CHECKED BY	
TITLE LAYOUT		DRAWING No B-540	



RIGHT SIDE VIEW

NOTE: FOR DETAIL "A" LOOK
DRAWING B-544

DATE 12-10-2012	DRAWN BY B. G.	MODEL TR-LCD1700-AB	
PRODUCT PANEL MOUNT MONITOR		REVISION	SCALE NTS
FINISH	Transducton	CHECKED BY	
TITLE LAYOUT		DRAWING No B-542	



DATE 12-10-2012	DRAWN BY B.G.	MODEL TR-LCD1700-AB	
PRODUCT PANEL CUTOUT		REVISION	SCALE NTS
FINISH	Transducton	CHECKED BY	
TITLE CUTOUT		DRAWING No B-543	

9.3 TR-LCD1900-AB Drawings

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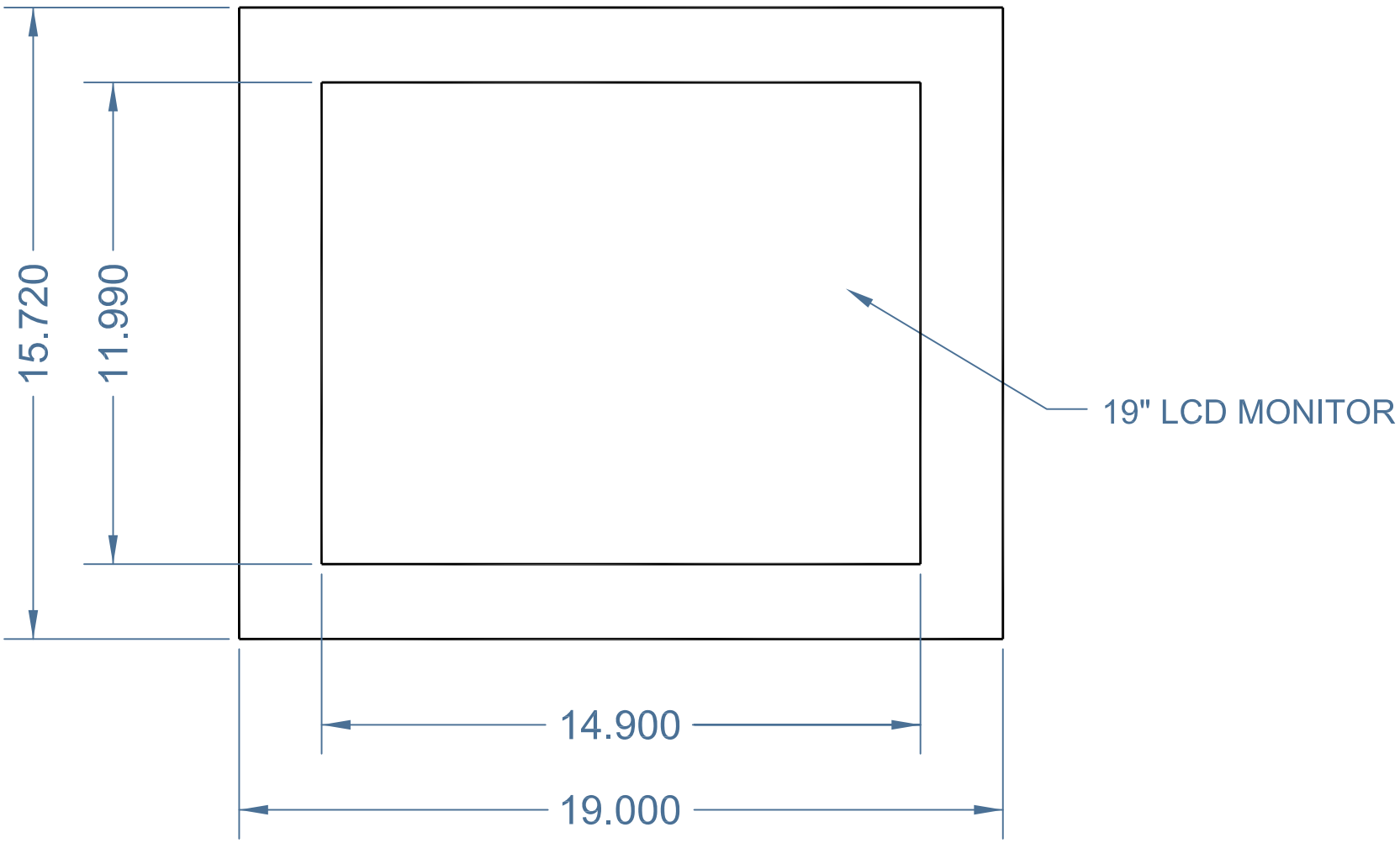
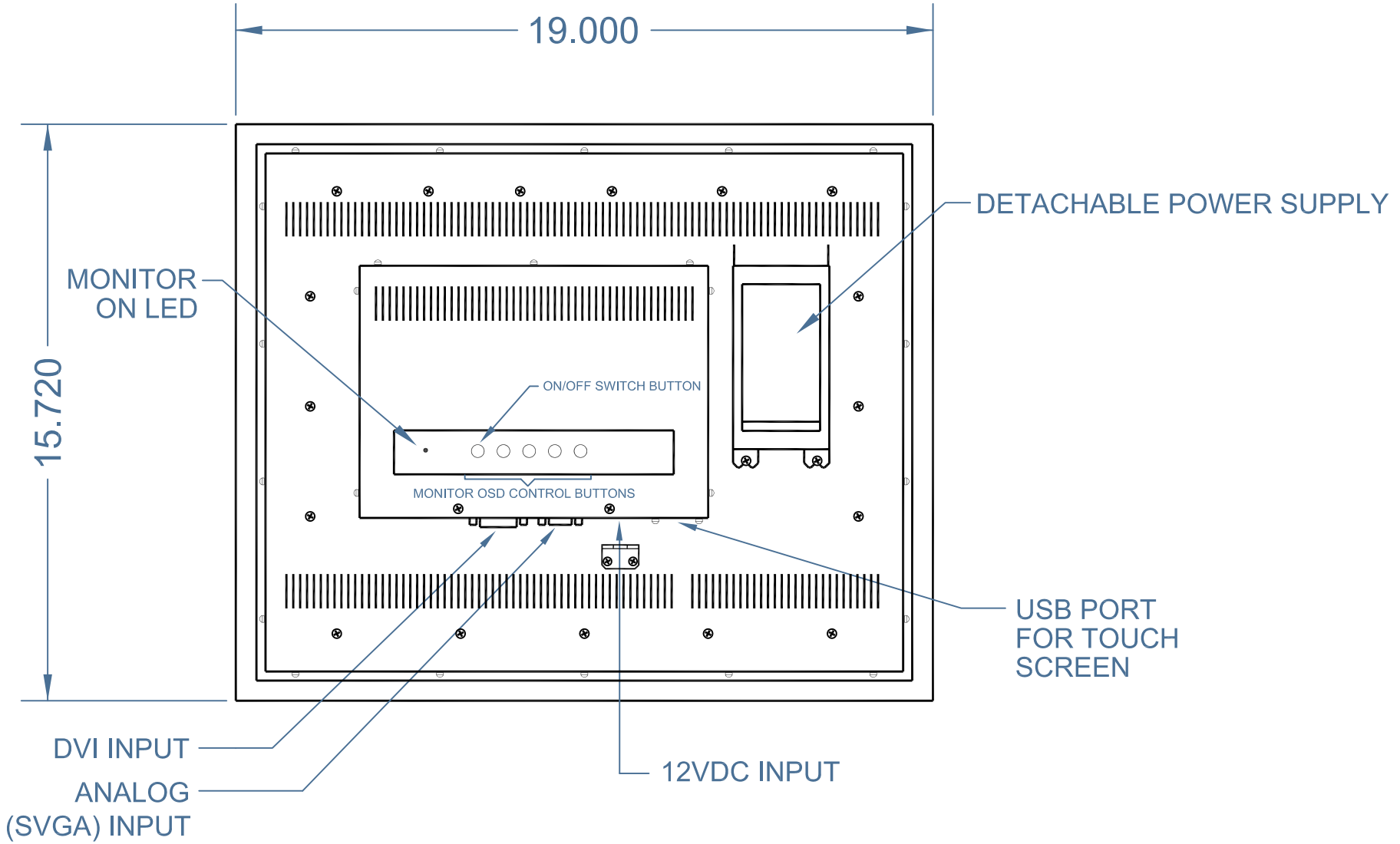


FRONT VIEW

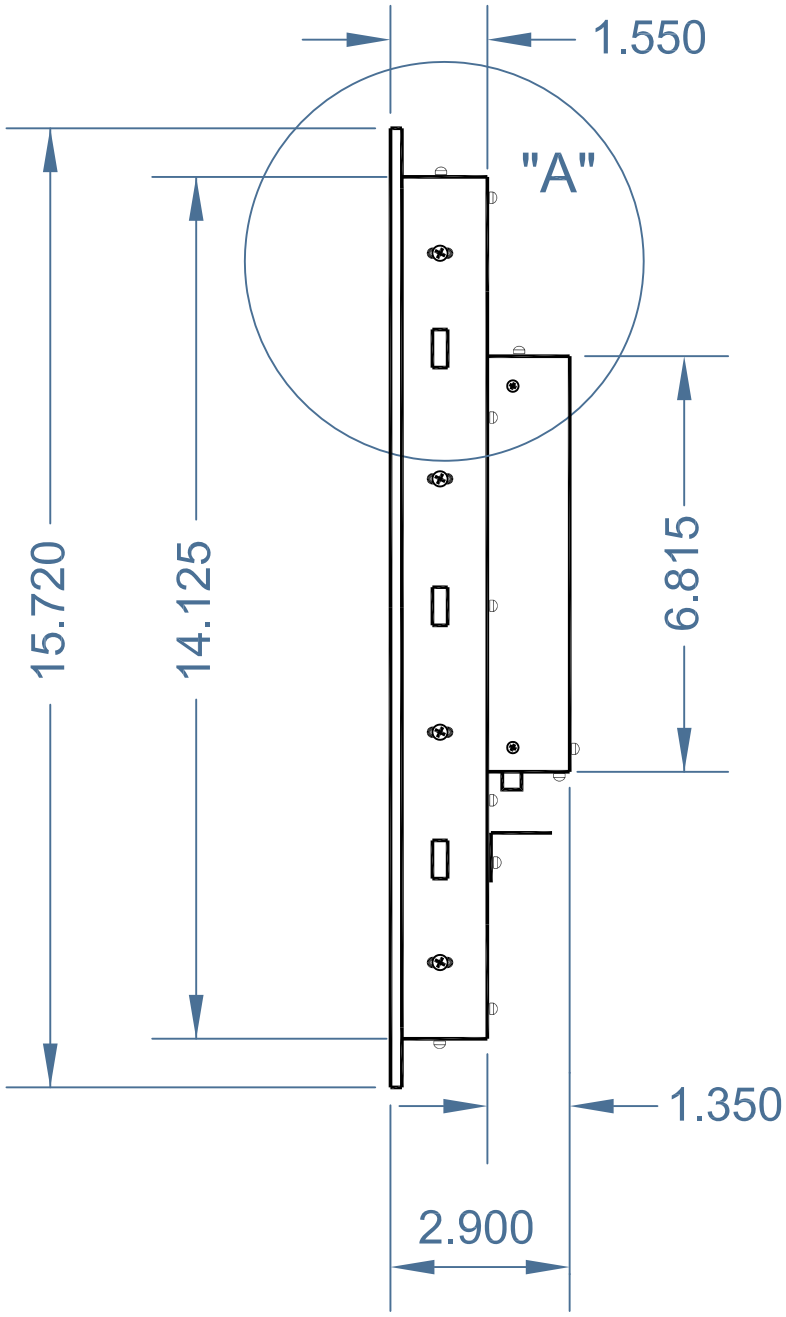
DATE 12-19-2012	DRAWN BY B.G.	MODEL TR-LCD1900-AB
PRODUCT PANEL MOUNT MONITOR		REVISION
FINISH CRINKLE BLACK POWDER PAINT	Transducton	CHECKED BY
TITLE LAYOUT		DRAWING No B-549

SCALE NTS



REAR VIEW

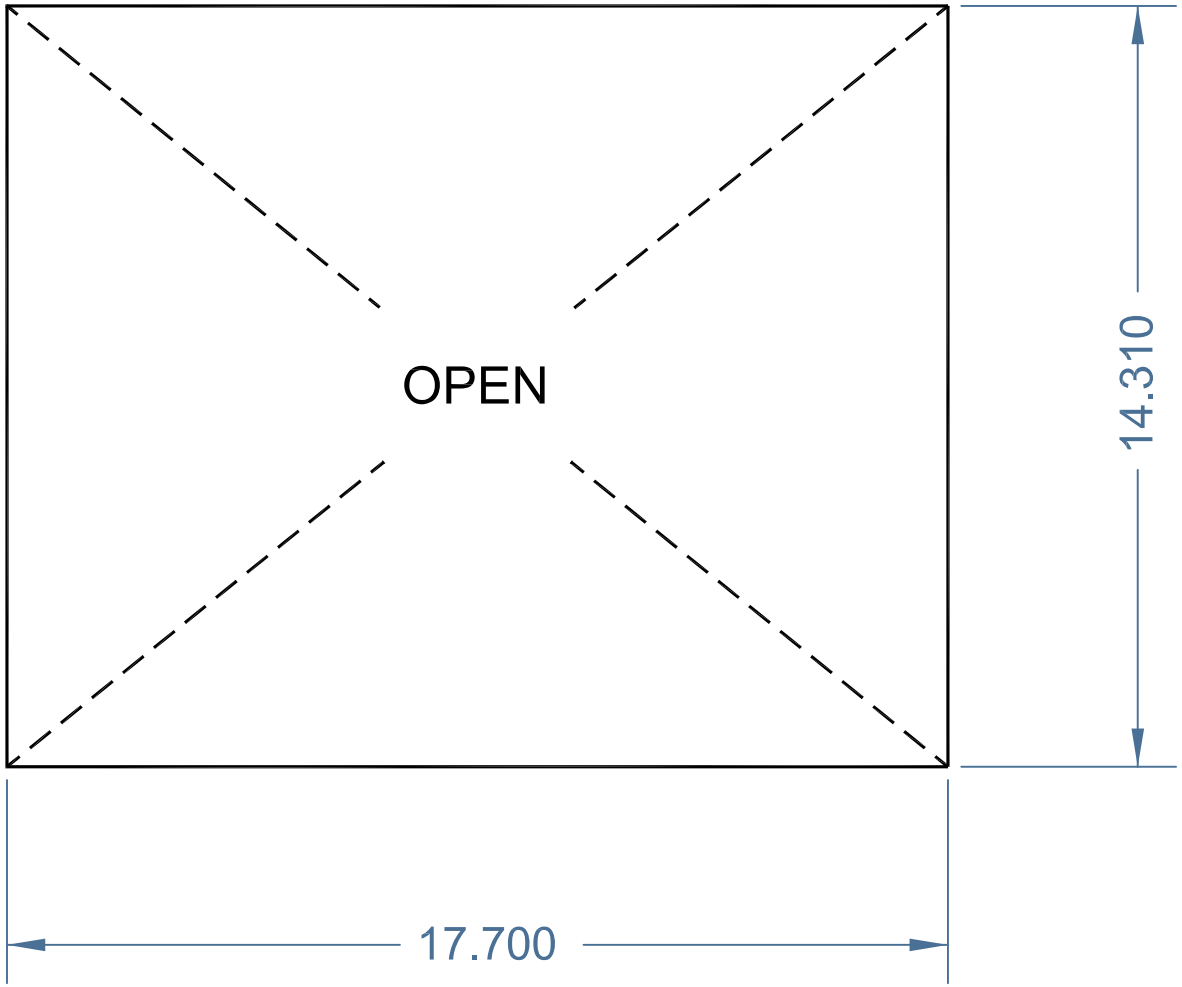
DATE 12-19-2012	DRAWN BY B.G.	MODEL TR-LCD1900-AB	
PRODUCT PANEL MOUNT MONITOR		REVISION	SCALE NTS
FINISH CRINKLE BLACK POWDER PAINT	Transduction	CHECKED BY	
TITLE LAYOUT		DRAWING No B-550	



RIGHT SIDE VIEW

NOTE: FOR DETAIL "A" LOOK
DRAWING B-544

DATE 12-19-2012	DRAWN BY B. G.	MODEL TR-LCD1900-AB	
PRODUCT PANEL MOUNT MONITOR		REVISION	SCALE NTS
FINISH	Transducton	CHECKED BY	
TITLE LAYOUT		DRAWING No B-551	



DATE 12-19-2012	DRAWN BY B.G.	MODEL TR-LCD1900-AB	
PRODUCT PANEL CUTOUT		REVISION	SCALE NTS
FINISH	Transducton	CHECKED BY	
TITLE CUTOUT		DRAWING No B-552	

9.4 Panel Mount Monitor Clip

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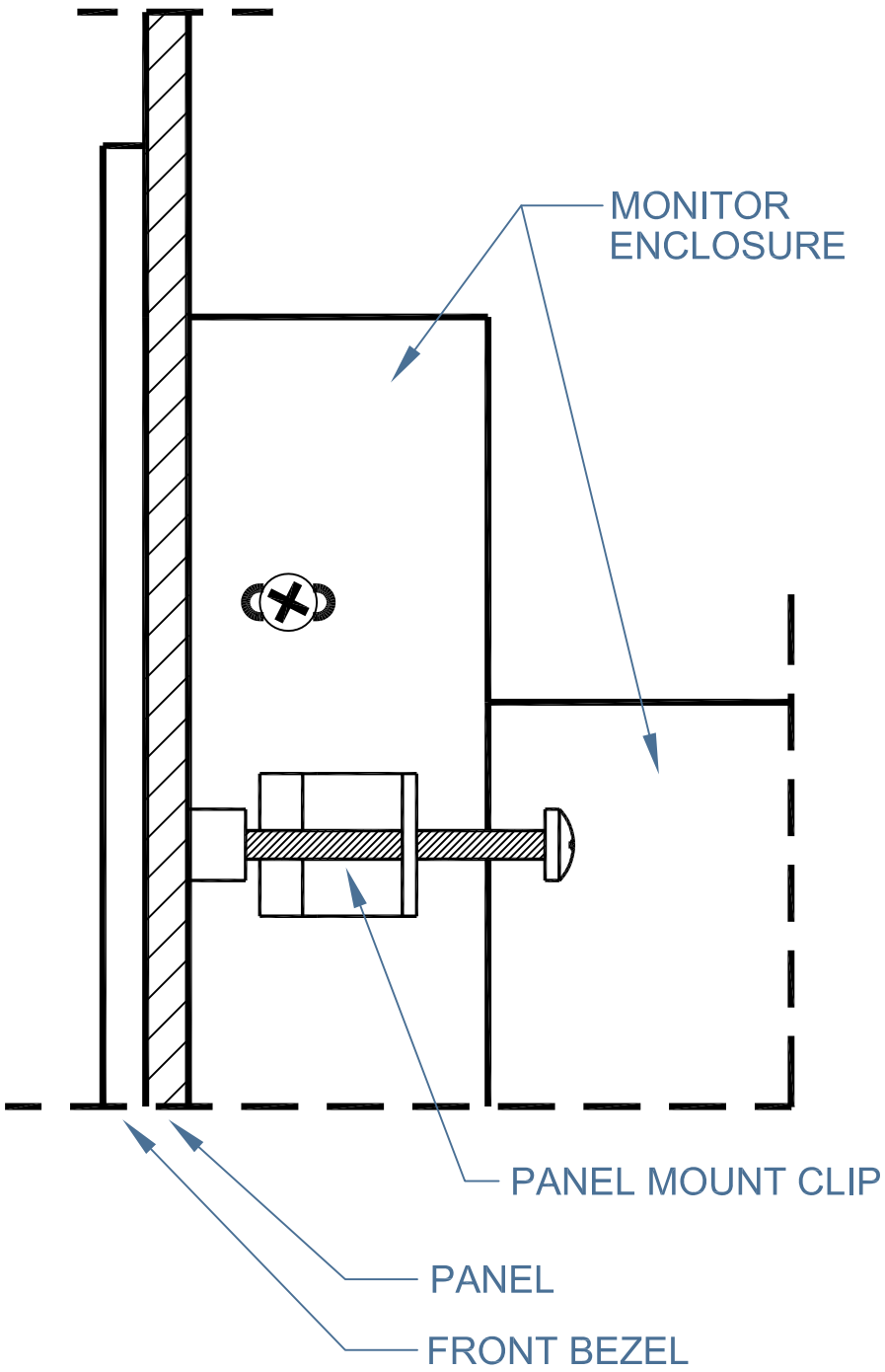

NOTE: CLIP ATTACHED FROM BEHIND AFTER CHASSIS PLACEMENT IN THE PANEL OPENING.

DATE 12-10-2012	DRAWN BY B. G.	MODEL TR-PANEL-CLIP	
PRODUCT 15", 17" & 19" PANEL MOUNT MONITOR		REVISION	SCALE NTS
FINISH	Transduction	CHECKED BY	
TITLE DETAIL "A"		DRAWING No B-544	