

# Samsung IAB / IAC Series LED System Engineering & Design Guide

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# 01 Introduction

The purpose of this System Engineering and Design Guide is to provide strong guidance, recommendations, and requirements for the most common aspects of preparing for the installation of a Samsung All-In-One LED wall.

Samsung is committed in providing our Business Partners with up-front design and consultation support as it pertains to Indoor dvLED installations. This document should be shared and reviewed during the Pre-Sales process between Samsung and customer stakeholders (particularly Systems Integrators and Customer Installers who would review with General Contractors, End Users, etc.).

Please note that this Guide is one of many documents that should be shared during the Pre-Sales process. Please reach out to your Samsung representative to ensure that you have reviewed (and shared) all documentation in order to ensure a successful project!



# 01-A Delivery Box Sizes

One major consideration when accepting a delivery of either the IAB or IAC Product is the size of the box. As noted below please make sure the installation location can accommodate receiving a box of this size. This includes making sure the delivery location has a loading dock, or the delivery truck has a lift gate.

When maneuvering the box, it is best to be left on the pallet and to utilize dollies to allow ease to moving from the delivery location to the installation location.

We do not recommend unpacking the box at the loading dock.



## 02 Environment and HVAC Requirements

### 02-A

#### Finished, clean, and dust-free environment

Any general construction work in and around the space must be completed prior to an install. The Samsung products must be installed when the space is "furniture-ready."

This will mitigate risk of damage to the product from other trades (out-ofwarranty damage would be customer's responsibility)





- Active construction
- Lots of dust and debris (risk to the cabinets)
- Construction not finished working next to and above wall (adds risk to damage by others)



## 02 Environment and HVAC Requirements

## 02-B Mounting Surface Backer

- Backer wall should provide a (1) stable and (2) flat surface to mount Samsung Assembly Wall Brackets. (*Backer must be on top of, <u>not behind</u>, sheetrock*)
  - (1) Ideal qualities are traditionally found in Grade A (sometimes referred to as hardwood furniture grade) plywood with higher count layers that help avoid moisture retention & warping<sup>1</sup>
  - (1) Any plywood backer seams must <u>not</u> be behind individual Wall Brackets
  - (1) Wood must also <u>not</u> have been left outside prior to installation (tends to increase moisture retention and can lead to warping post-installation)
  - (2) Flatness of backer must be less than 1/8" deflection

#### **REQUIREMENT for Samsung ProServices Installations:**

<sup>3</sup>/4" hardwood plywood, birch or maple common materials, 7 layers or more, hardwood internal core (no gap), grade B or better surface, plywood backer seams must not be behind individual Wall Brackets, and flatness of backer must be less than 1/8" deflection. *No Sheetrock or other substrate to be in front of the plywood backer.* 

- IAB 110" Required Backer:
  - 91-3/8" Wide x 53-3/4" Tall
- IAB 146" Required Backer:
  - 123-1/4" Wide x 71-1/2" Tall
- IAC 130" Required Backer:
  - 109-3/4" Wide x 64" Tall

#### Acceptable Example



- Correct hardwood plywood
- Wood painted white prior to install (Optional)
- Flatness within 1/8" deflection
- Refer to the Install Summary Guide for Power and Data locations





<sup>1</sup>For non-Samsung installations, other types of backer wall should only be considered if they meet certain criteria. Please consult a Samsung Engineer.

## 02 Environment and HVAC Requirements

## 02-B Mounting Surface Backer (Fire Rated Wall Applications)

Samsung recognizes that there may be applications where an indoor dvLED Wall would need to be installed onto a wall that is required to be Fire Rated. Typically Fire Rated Plywood is not an acceptable quality wood to mount dvLED onto. Thus, the Reseller / System Integrator would need to work with the General Contractor and find a solution to meet Samsung Requirements.

Below are potential solutions that could meet Samsung's mounting requirements, subject to code restrictions:

- General Contractor can install <sup>3</sup>/<sub>4</sub>" Fireshield Poplar Fire Rated Plywood.
- Place <sup>3</sup>/<sub>4</sub>" Furniture Grade Plywood Birch or Maple Composition on top of the Fire Rated Plywood. This allows the Samsung Frame Kit to be mounted directly to the Furniture Grade Plywood.
- Install <sup>3</sup>/<sub>4</sub>" Furniture Grade Plywood, Birch or Maple Composition & utilize a Fire Retardant Paint. This allows the Samsung Frame Kit to be mounted directly to the Furniture Grade Plywood.
- Depending on the size of the dvLED Wall, <sup>3</sup>/<sub>4</sub>" Furniture Grade Plywood Strips, Birch or Maple Composition on top of the Fire Rated Plywood may be an option. This requires more coordination and exact placement depending on the Samsung Frame Kits being used. *Please work with Samsung Engineering for more details*
- Additional Options may be available depending on local Fire Codes. Please work with your General Contractor to finalize a solution for Samsung to review.

#### **REQUIREMENT for Samsung ProServices Installations:**

<sup>3</sup>/<sub>4</sub>" hardwood plywood, birch or maple common materials, 7 layers or more, hardwood internal core (no gap), grade B or better surface, plywood backer seams must not be behind individual Wall Brackets, and flatness of backer must be less than 1/8" deflection. *No Sheetrock or other substrate to be in front of the plywood backer.* 

- IAB 110" Required Backer:
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  - 109-3/4" Wide x 64" Tall

# 02 Environment and HVAC Requirements

#### 02-C Minimum space around the product

- An absolute bare minimum of 3.5" (89mm) around the display is required to install and service the Samsung product
  - Please consult the manual for additional details

#### **REQUIREMENT for Samsung ProServices Installations:**

Minimum of 3.5" (89mm) around the display





Display in a niche
with insufficient
spacing on left and
right sides



## 02 Environment and HVAC Requirements

#### 02-D Ambient Temperature

- Room ambient temp 77°F (25°C) or lower measured 300mm (12") in front of both bottom and top rows.
- Room ambient temp of 77°F is used for Online LED Configurator's fan requirement and Backlight 7 at full white
- Equivalent of using LED HDR with typical content
- Additional CFM maybe required for static bright content
- Max 104F (40C) measured immediately above center of top row



### 02-E Active or Passive Ventilation Requirements

- Depending on the product, array, and room specifications, varying levels of active or passive ventilation may be required.
- The LED install guide will contain additional information specific to various configurations and wall layouts.
- Please reference the guide and speak with a Samsung engineer for more details.

### 02-F Additional Environment Considerations

Please be prepared to take physical measurements and photographs of the location being considered for an LED Wall installation.

- Measure the width, height, and depth of the area of installation
- Note if the product will sit in front (or proud) of the current wall or recessed in a niche
- Note any potential obstacles, both moveable and immoveable that could either limit the view of the LED wall or be in the way of the installation
- Make note of any room ventilation that is in the floor or ceiling
- Note if this will be a new or being remodeled location and any current product that is being replaced.
- Consideration should be given to avoiding Direct Air Conditioning being blown on the surface of the dvLED product. Engineering has explained that when a hot wall is turned off, and has AC blowing on it, it will create condensation. That condensation leads to "Diode Migration", and Pixel failure (Line Defect).

## 02 Environment and HVAC Requirements

### 02-G Consideration for Wall Vibration

- Please note the alignment and calibration of an installed LED wall is very delicate. Environmental factors causing significant vibration may cause the LED Wall to come out of alignment.
- Sources of wall vibration may include, but not limited to; Low Frequency Audio Systems, Parking Garages, HVAC Systems, Factory Environments w/ machinery, etc.
- Wall vibration shall be less than 0.1 Gram of Force for impact/shake to make sure "x,y,z" alignment is maintained.
- Please consult a Samsung Engineer for additional guidance.

### 02-H Dehumidification

A dehumidification cycle must be ran on the LED Display if any of the following conditions are met:

- Manufacture Date on Product is more than 6 months from installation date.
- Product has been powered off (at the breaker) for more than 7 days.
- Installation environment is a high humidity environment and air conditioning has been turned off.

\*Please refer to the installation manual for the steps to start Dehumidification.

### 02-I Direct Sunlight

Samsung's Direct View Indoor LED products are not intended for installation applications where direct sunlight and high amounts of UV are present.

For these types of installations you will want to consult with a Samsung Engineer for further discussion.

### 03 Power Requirements

### 03-A Type & Number of Circuits

- The Samsung IAB/IAC Products requires a Single 20Amp Circuit regardless of the model chosen.
  - If using the IAB 110" Model, a Single Duplex Outlet with a 20Amp Dedicated Circuit is required.
  - If using the IAB 146" or the IAC 130" Models, <u>two</u> Single Duplex Outlets with a 20Amp Dedicated Circuit is required.

#### **REQUIREMENT for Samsung ProServices Installations:**

Minimum 110V & a dedicated 20A Circuit are required for all installations. Recessed Power A/V Boxes are also required for all installations.

#### Circuit Determination

# IAB 146 4K, IAB 110 2K, IAB 146 2K, IAC 130 2K

Model Name	IAB 146 4K	IAB 110 2K	IAB 146 2K	IAC 130 2K
Video Rate	50/60 Hz 100/120 (FRC) Hz			
Input Power Range	100~240 VAC, 50/60 Hz			
Power Consumption - Max	1,700 (W/Screen)	900 (W/Screen)	1,240 (W/Screen)	1700 (W/Screen)
Power Consumption - Typ	1,100 (W/Screen)	650 (W/Screen)	860 (W/Screen)	685 (W/Screen)
Number of Power Inputs	2	1	2	2

## 03 Power Requirements

### 03-B Number, Type, and Positioning of Outlets

- Recessed A/V Power Boxes are required so that the head of the plug is not protruding outside of the recessed area & any extra cord can be tucked into the recessed box.
- NOTE: Refer to section 3-C for exact placement of recessed in-wall A/V boxes.

#### **REQUIREMENT for Samsung ProServices Installations:**

Recessed A/V Power Boxes, positioned according to optimal power layout. Please refer to the next page for placement.



## 03 Power Requirements

#### 03-C Placement of Recessed In-Wall AV Boxes

• It is highly recommended that recessed in-wall AV boxes with Power Outlets are installed as part of the wall preparation phase. This is to allow the wall frames to mount flush and securely to the wall without any interference.

\*If utilizing the rear A/V inputs of the display, you must install a recessed in-wall box.

## Required Placement of In-Wall AV Boxes (146")

#### Purpose:

• It is recommended that recessed in-wall AV boxes with Power Outlets are installed as part of the wall preparation phase. This is to allow the wall frames to mount flush and securely to the wall without any interference.



<sup>\*</sup>If utilizing the rear A/V inputs of the display, you must install a recessed in-wall box.

#### **REQUIREMENT for Samsung ProServices Installations:**

Recessed A/V Power Boxes, positioned according to optimal power layout. If utilizing rear inputs, see above for recessed In-Wall AV Box Placement.

<sup>\*</sup>Additional models shown on next pages...

## 03 Power Requirements (Cont'd)

#### 03-C

## Required Placement of In-Wall AV Boxes (110")

#### Purpose:

It is recommended that recessed in-wall AV boxes with Power Outlets are installed as part of the wall preparation phase. This is to allow the wall frames to mount flush and securely to the wall without any interference.

\*If utilizing the rear A/V inputs of the display, you must install a recessed in-wall box.



### Required Placement of In-Wall AV Boxes (IAC 130")

#### Purpose:

It is recommended that recessed in-wall AV boxes with Power Outlets are installed as part of the wall preparation phase. This is to allow the wall frames to mount flush and securely to the wall without any interference.



#### **REQUIREMENT for Samsung ProServices Installations:**

Recessed A/V Power Boxes, positioned according to optimal power layout. If utilizing rear inputs, see above for recessed In-Wall AV Box Placement.

## 04 Data Requirements

### 04-A IAB & IAC Data Requirements

 The IAB & IAC Displays do not require Data Cabling for the unit to operate. However the end-user may want to connect the display to a network for 3<sup>rd</sup> Party Control, OTA Firmware Updates, or features such as Samsung Smartview+ or Screen Mirroring.

## 05 Video Inputs

### **05-A** IAB & IAC Video Inputs (110", 130" & 146")

The IAB & IAC Displays have a total of 3 HDMI Inputs and 1 DisplayPort Input. Please see below image showing the location of these inputs. Please note there are only 2 HDMI Inputs on the rear of the display, whereas the third HDMI is built into the bottom right trim panel.



## 06 Appendix

## 06-A IAB & IAC Side-by-Side Considerations

The IAB & IAC Displays can be mounted in a side-by-side configuration so that there is no gap in between multiple units. This can be done for up to 4 units in total.

Please note the following considerations:

- Side by Side units shall be ordered together so that all units have bin matched diodes
- You cannot exceed 4 units in total for side-by-side
- You cannot stack units vertically, only left/right configuration
- You must order the Side Link Accessory kit for each IAB or IAC that will be placed in the side-by-side configurations.
  - i.e. 3 Side by Side units will need 2 Side Link Accessory Kits
  - Side Link Accessory Part Numbers:
    - IAB 110": VG-IABPS1
    - IAB 146": VG-IABPS2
    - IAC 130": VG-IACNS3



## 06 Appendix

### 06-A IAB & IAC Side-by-Side Considerations

When installing IAB/IAC Products Side-by-Side its important that the units are ordered together and Samsung is aware these units are to be installed in a Side-by-Side fashion. Upon receiving the product, its important to verify the yellow sticker below indicates a letter "M" meaning Multiscreen installation.

In order to distinguish multiscreen from normal screen, the rank # label will be slightly changed.

Label for multiscreen:

- 1) Rank # will have the letter "M"
- 2) and indicate a PO number as well (this isn't there for normal screens)

Example (left is multiscreen and right is normal screen)





# Thank You

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