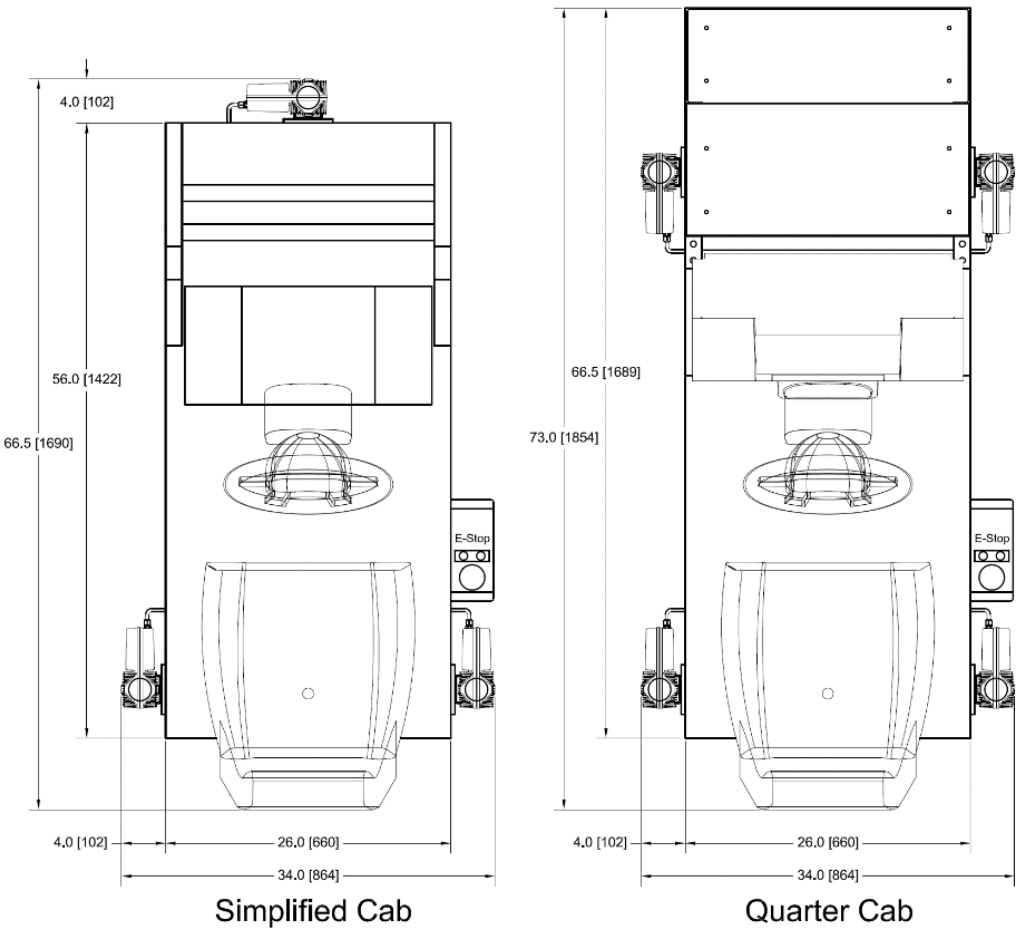
miniSim™ Dimensions and Power Requirements

April 3, 2025

Cab Dimensions

Simplified Cab:
- Length: 56 in [1422 mm] MIN, 66.5 in [1690 mm] MAX
- Width: 27 in [660 mm]
- Height: 41 in [1041 mm]
- Weight: 180 lb [82 kg]

Quarter Cab:
- Length: 67 in [1702 mm] MIN, 73 in [1854 mm] MAX
- Width: 27 in [660 mm]
- Height: 41 in [1041 mm]
- Weight: 350 lb [159 kg]

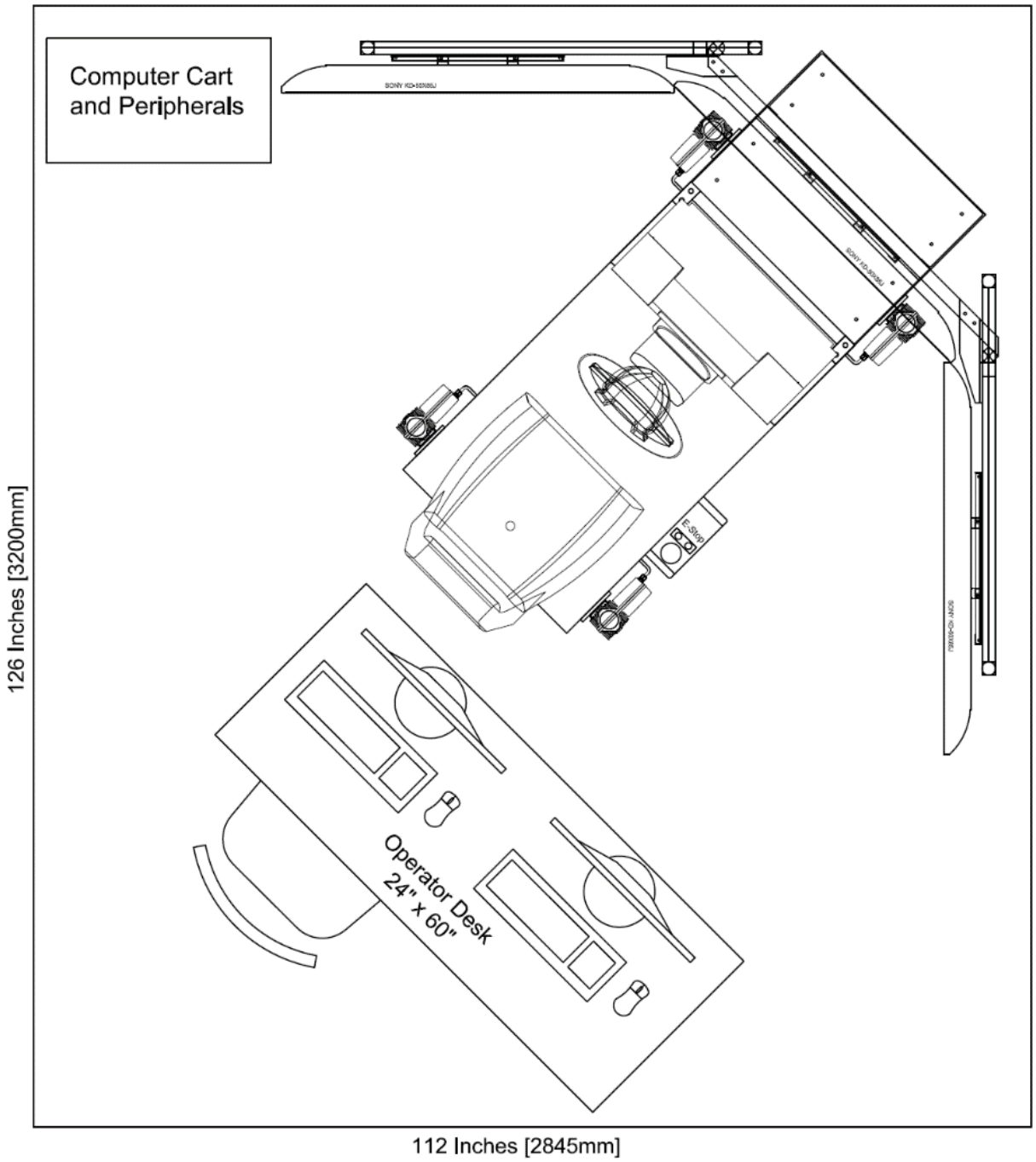


Simplified Cab Quarter Cab

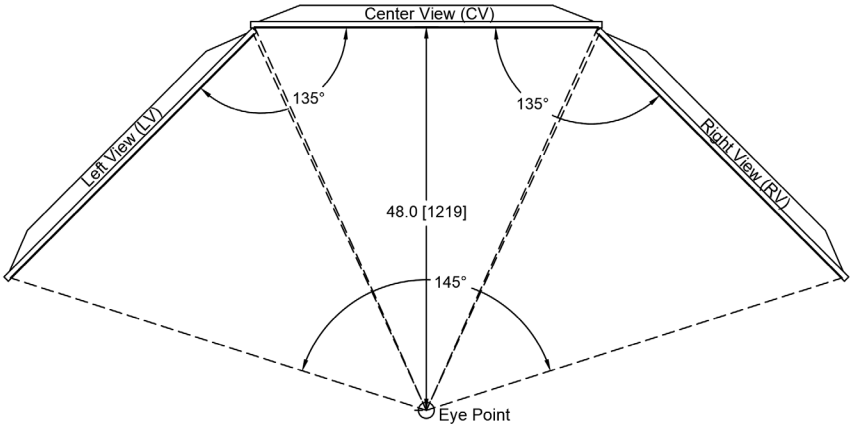
A typical configuration with three 50-inch displays is shown below.

The operator/researcher's desk is not included, but a 60-inch x 24-inch desk is shown for size. This system has the Video Capture option, so there are two 24-inch monitors with mouse and keyboard shown.

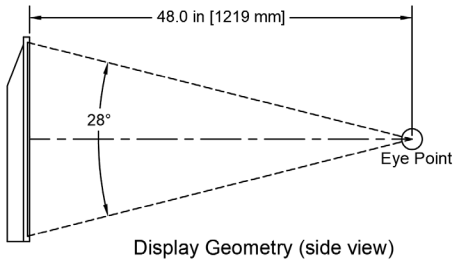
The *minimum* system footprint is roughly 126 inches x 112 inches



For Simplified Cab and Quarter Cab systems with 50 inch LCD displays, the viewing distance is 48 inches [1219mm] with a 145 degree horizontal field of view:

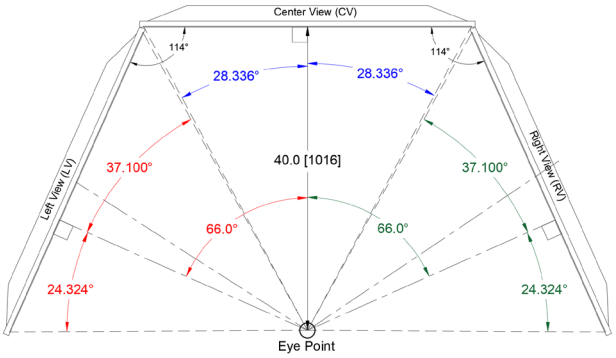


Display Geometry (top view)
Quarter-Cab/Simplified-Cab MiniSim
49.5" LED LCD Displays, at 135 Degrees
~145 Degree Horizontal FOV
Sony X85J 50" Class HDR 4K UHD Smart LED TV

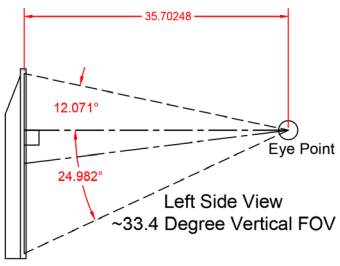


Display Geometry (side view)
~27 Degree Vertical FOV

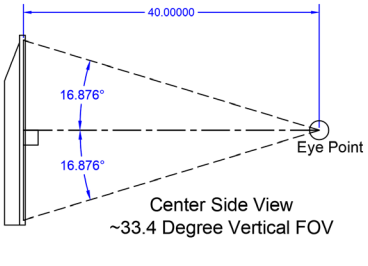
For the Quarter Cab Heavy Truck with 50 inch LCD displays, the viewing distance is 40 inches [1016 mm] with a 181 degree horizontal field of view. This arrangement is needed in order for the driver to adequately see out the side windows and use the mirrors.



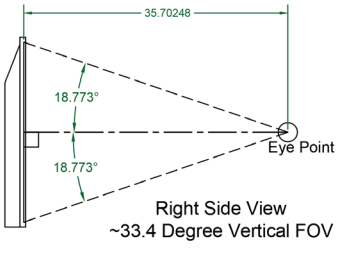
Display Geometry (top view)
Heavy Truck MiniSim, 2023
49.5" LED LCD Displays, at 114 Degrees
~180.6 Degree Horizontal FOV
Sony X85J 50" Class HDR 4K UHD Smart LED TV



Left Side View
~33.4 Degree Vertical FOV



Center Side View
~33.4 Degree Vertical FOV



Right Side View
~33.4 Degree Vertical FOV

Power Requirements:

Listed below are the ***rated*** power for the miniSim systems with Video Capture and Motion options.

The manufacturer's rated power is generally the maximum possible (ie worst-case) for their product in normal operation, and takes into consideration the operating conditions causing maximum power consumption, such as max display brightness, max steering wheel torque, maximum audio volume, or max acceleration and mass on the motion system, etc. The values below are taken from datasheets for the typical components used in these systems.

However, ***in operation***, the measured power consumption is typically less than the rated power, and often much less. This is expected. The measured power consumption of a Simplified Cab system with motion was found to be roughly 1000-1200 Watts (PF=0.98) with the displays ON, a GPU stress test running, and the motion system cycling up and down.

These systems operate comfortably on 2 outlets rated at 20Amps, 115Volt. Outlets in commercial buildings are typically 20Amp, while residential outlets are 15Amp. The cab and display stand are usually plugged into one outlet, and the PC cart into another.

Quarter Cab miniSim with Video Capture and Simplified Cab miniSim with Video Capture and Motion System options:

		Description	Qty	Rated Power [W]	Total Power [W]	Notes
Monitor Stand		50" LCD Display (main)	3	148	444	Brightness Dependant
PC Cart	Base miniSim	Router	1	8	8	Power Supply Capacity
		miniSim PC	1	1350	1350	Power Supply Capacity
		24" LCD Display (operator)	1	25	25	Power Supply Capacity
		USB Hub	1	5	5	Power Supply Capacity
		Subwoofer 8" 80W	1	80	80	Power Supply Capacity
		Audio Amp (tactile)	1	100	100	Power Supply Capacity
		Audio Amp (front L, R)	1	100	100	Power Supply Capacity
		Active Crossover	1	5	5	Power Supply Capacity
	VidCap	Video Capture PC	1	1000	1000	Power Supply Capacity
		24" LCD Display (operator)	1	25	25	Power Supply Capacity
		4 SDI Video Cameras	4	10	40	Power Supply Capacity
		Decimator Video Quad Split	1	10	10	Power Supply Capacity
Cab		Motion System (4-actuator)	1	540	540	(8A@120V peak, 540 W average)
		Steering System	1	320	320	Peak, Torque Dependant
		12" LCD Display (cab)	1	15	15	Power Supply Capacity
				Total Watts	4067	
				Voltage	120	
				Total Amps	34	

Simplified Cab miniSim with Video Capture and Motion System options:

		Description	Qty	Rated Power [W]	Total Power [W]	Notes
Monitor Stand		50" LCD Display (main)	3	148	444	Brightness Dependant
PC Cart	Base miniSim	Router	1	8	8	Power Supply Capacity
		miniSim PC	1	1350	1350	Power Supply Capacity
		24" LCD Display (operator)	1	25	25	Power Supply Capacity
		USB Hub	1	5	5	Power Supply Capacity
		Subwoofer 8" 80W	1	80	80	Power Supply Capacity
		Audio Amp (tactile)	1	100	100	Power Supply Capacity
		Sound Bar	1	140	140	(Mfr. rating Bar 60W, Sub 80W)
	VidCap	Video Capture PC	1	1000	1000	Power Supply Capacity
		24" LCD Display (operator)	1	25	25	Power Supply Capacity
		4 SDI Video Cameras	4	10	40	Power Supply Capacity
		Decimator Video Quad Split	1	10	10	Power Supply Capacity
Cab		Motion System (3-actuator)	1	0	0	(6A@120V peak, 420 W average)
		Steering System	1	320	320	Peak, Torque Dependant
		16-18" LCD Display (cab)	1	20	20	Power Supply Capacity
				Total Watts	3567	
				Voltage	120	
				Total Amps	30	

Air Conditioning Considerations:

Electrical products such as PC, displays, refrigerators, etc. consume electricity to do the requires task. This power, measured in Watts, is ultimately **dissipated as heat into the room the appliance occupies**.

Rated power is useful for identifying electrical and air conditioning requirements. In addition to this, each human in the room dissipates an additional 60-100W. Please share the above information with your facilities team.

We recommend the room temperature stay in the 68-72F range for participant comfort and to reduce the likelihood of simulator sickness. Some adjustments to the room HVAC settings may be required to achieve this.

A small fan (6”) is also helpful to keep the air moving near the driver.

Lighting Considerations:

During data collection with a participant driving, we recommend that the room be dimly lit to dark. There should be no reflections from light sources on the displays that are visible to driver. To accomplish this, its often helpful to:

1. Obtain light blocking window shades
2. Keep the experimenter station out of the field of view of the driver
3. Have local control of the room lighting. Typically, the room overhead lights are only on/off, and in this case, a dimmable light fixture or lamp is very helpful.