

3D Christmas Village – Construction & Assembly Guide

by Marcello | MB-Creations

Table of Contents

- Project Overview
- Parts List
- Tools & Materials
- 3D Printing Guide (with tables)
- Painting Guide
- Snow & Natural Details
- Base & Electronics
- Backplate & Lighting
- Acrylic Front Panel
- Presentation Box
- Final Assembly (Step-by-Step)
- FAQ
- Troubleshooting
- Glossary
- Dimensions
- Final Notes



1. Project Overview

This project is a compact, detailed 3D diorama of a winter-themed Christmas village. It consists of:

- a sculpted 3D landscape
- houses, church, fair booth
- fir trees, boat & pier
- a backplate with moon & stars
- an internal electronics compartment
- a wooden presentation box
- a 2.0 mm acrylic front panel

Total size: approx. **270 × 181 mm** (width × depth), height depending on the chosen box.

2. Parts List

2.1 Printed Elements

- Landscape base
- Mountain modules
- Backplate (moon & stars)
- Houses
- Church
- Fir trees
- Fair booth
- Boat & pier
- Star of Bethlehem
- Window inlays (yellow/orange PLA)
- Base struts (frame-style construction)
- Holders for the acrylic front panel

2.2 Non-printed Materials

- Acrylic sheet (2.0 mm)
- Wooden wine box or decorative box (as desired)
- LED string lights or LED module (openings may need slight adjustment)
- Battery holder or USB module (as desired)
- Acrylic paints (as desired)
- White glue + water
- Baking soda (sodium bicarbonate)
- Dried moss

3. Tools & Materials

3.1 Tools

- Side cutters
- Sandpaper (fine & medium)
- Brush set (fine, medium, flat) or airbrush
- Cutter knife
- Hot glue gun or wood glue
- Fine sieve (for applying baking soda)
- Optional: mini file, tweezers

3.2 Materials

- PLA white
- PLA yellow/orange (diffusers)
- Acrylic paints
- White glue (wood glue)
- Water
- Baking soda
- Dried moss

4. 3D Printing Guide (Optimized)

4.1 General Recommendations

- Print bed: **SuperTack recommended**, PEI also possible
- Wall thickness: **1.2 mm**
- Temperatures: standard PLA settings
- Speed: moderate, especially for fine details
- Materials: white PLA + yellow/orange PLA (inlays)

4.2 Print Parameter Table

Component	Layer height	Infill	Nozzle	Notes
landscape	0.20 mm	10–15%	0.4	Best adhesion for filler
Mountains	0.20 mm	10–15%	0.4	Putty structure later
Building	0.16 mm	100%	0.4	No light see
Church	0.16 mm	100%	0.4	Stable for painting
Inlays	0.16–0.20 mm	100%	0.4	Warm light, fan 100%
tree’s	0.16 mm	100%	0.4	Fine re-mantling possible
Boat	0.10 mm	100%	0.2	Highest level of detail
Jetty	0.10 mm	100%	0.2	Clean beam structure
Fairground stand	0.10 mm	100%	0.2	Fine details
Back wall	0.20 mm	10%	0.4	Optimised light transmission

5. Painting Guide

5.1 Recommended Acrylic Colors

- Grey (dark, medium, light)
- White
- Cream / beige
- Brown (various wood tones)
- Green (fir trees)
- Blue (lake)
- Yellow (star)
- Clear coat (optional, semi-matte)

5.2 Painting Process

Mountains

- Fill surface with putty
- Let dry at least 12 hours
- Sand to taste
- Basecoat dark grey
- Drybrush light grey
- Add snow edges with white

Houses & Church

- Walls: cream / beige
- Roofs: brown / terracotta red
- Window & door frames: carefully accentuate

Fir Trees

- Paint dark green
- Drybrush white for snow
(very little paint on a dry brush)

Lake

- Light blue
- White highlights
- Optional: clear coat for an icy shimmer

6. Snow & Nature Details

6.1 Snow (Baking Soda Method)

1. Mix **1 part white glue + 1 part water**
2. Apply to roofs, paths, trees
3. Sift baking soda over it
4. Let dry 2–4 hours
5. Drybrush white for the “Marcello Snow Look”

Result: fine, fluffy, realistic snow.

6.2 Moss

- Use dried moss
- Fix with glue/water mixture
- Ideal for rock transitions, slopes, paths
- Optionally drizzle a second thin layer of glue mixture to secure

7. Base & Electronics

7.1 Construction

- Frame made of struts (see STL)
- Interior completely hollow
→ perfect for electronics

7.2 Electronics

Space for:

- battery holder
- LED string lights
- USB module
- switch
- cables

Note:

Electronics are not supplied or recommended; each user chooses their preferred system.

8. Backplate & Lighting

- Insert backplate behind the landscape
- Distance spacers may be required in some boxes
- Place LED light source directly behind it
→ moon & stars glow warmly

*The backplate features several small round openings as well as a larger cut-out moon. The LED lighting inside the base is positioned so that it shines **against the wooden back panel** of the box. This creates no direct visible light; instead, a warm, indirect glow softly shines through the round holes and the moon opening.*

The result is an atmospheric, warm illuminated effect that resembles a night sky or starry sky without causing glare.

9. Acrylic Front Panel

- Material: acrylic / plexiglass
- Thickness: **2.0 mm**
- Slides into printed holders on the sides
- Provides dust protection & display appearance

10. Presentation Box

- Wooden wine box or decorative box
- Contains the base + landscape
- Optional exterior painting

11. Final Assembly – Step by Step

1. Build the base frame
2. Install electronics
3. Mount the backplate
4. Attach the landscape
5. Route LEDs upward
6. Install houses
7. Install the church
8. Position the fir trees
9. Attach boat & pier
10. Insert window inlays
11. Perform any final touch-up painting
12. Apply snow & moss
13. Slide in the acrylic front panel
14. Close the box

12. FAQ

Q: Can I use PETG instead of PLA?

A: Not recommended for fine details (stringing).

Q: Which LED color works best?

A: Warm white (2700–3000 K).

Q: Why 100% infill for buildings?

A: Prevents light shining through and increases stability.

Q: Can I scale the model?

A: Yes, all parts can be scaled, but LEDs and inlays must be adjusted accordingly.

13. Troubleshooting

Issue: Inlays glow too strongly

→ Lightly matt the backside with white acrylic paint

Issue: Backplate casts shadows

→ Move LEDs 1–2 cm further back

Issue: Snow turns yellow

→ Too much glue / baking soda not fresh

Issue: PLA lifts on PEI

→ Use SuperTack or heat bed to 65°C + add a brim

14. Glossary

Diffuser: Softens LED light

Drybrushing: Technique to highlight raised details

Infill: Internal print structure

Brim: Adhesion edge for prints

Warping: Corners lifting from the print bed

15. Dimensions

- Total: approx. **270 × 181 mm**
- Height depends on the chosen box

16. Enjoy Building!

A project for creatives, makers, and Christmas enthusiasts.

Greetings,

Marcello