

SMART FILM BUSBAR PREPARATION GUIDE

SMART-HEALTHY-GREEN



Introduction

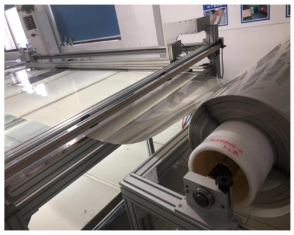
This guide describes the standard procedure for preparing and installing busbars on switchable smart film. Correct busbar installation is critical to ensure proper electrical conductivity, uniform switching performance, and long-term reliability.

The procedure includes film preparation, resistance verification, busbar installation, and final electrical connection.

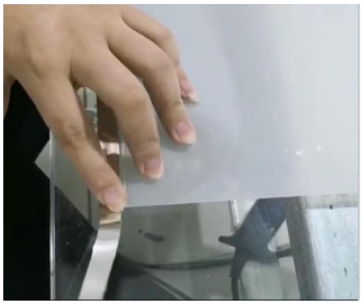
Required Tools And Materials

Tool/Material	Purpose
Film Cutting Machine	Precise cutting of switchable film
Measuring Ruler	Precise cutting of switchable film
Busbar Blade	Cutting electrical busbar strips
Lint-Free Cloth	Cleaning the liquid crystal surface
Isopropyl Alcohol	Removing residues before busbar application
Ohmmeter	Measuring square resistance
3M Transparent Protective Tape	Protecting busbar edge during paste application
Silver Conductive Paste	Creating electrical contact with ITO layer
Heat Gun	Drying and curing conductive paste
5 mm Silver Tape	Primary electrical conductor
10 mm Silver Tape	Secondary reinforcement conductor

Process Overview

Step	Process	Tool	Comments	Picture
1	Measure and cut the switchable film	Cutting Machine	Ensure edges are straight and free of damage	
2	Measure the busbar length and mark	Ruler and Marker	This ensures the busbar covers the full conductive edge of the ITO layer.	
3	Cut the positive and negative polarity busbar	Busbar Knife	Make sure the cut is clean and that the polarity (+/–) is clearly identified	
4	Clean the LC edge with alcohol	Lint-free cloth Isopropyl alcohol	Be careful: Excessive force may damage or remove the ITO conductive layer	
5	Verify square resistance < 200Ω	Ohmmeter	Higher resistance may indicate ITO damage or contamination	
6	Apply protective tape	3M transparent protective tape	Prevent paste spreading Maintain a clean conductive line	

Process Overview

Step	Process	Tool	Comments	Picture
7	Apply silver conductive paste	Silver Conductive Paste	Apply evenly Avoid excessive thickness Ensure full contact with the ITO layer	
8	Dry paste using heat gun (3–5 min)	Heat gun	Cure the conductive layer without overheating the film	
9	Remove protective tape		Carefully peel off the 3M protective tape	
10	Apply 5 mm silver tape	5 mm silver conductive tape	Establish main electrical connection	
11	Apply 10 mm silver tape	10 mm silver conductive tape	Apply over the previous layer to reinforce electrical connection and provide mechanical strength.	

Quality Control Checklist

Before final assembly verify:

- Busbar alignment is straight
- Silver paste is fully cured
- No damage to the ITO layer
- Resistance < 200 Ω
- Busbar tape is securely attached

