



Smart Film Solutions

TECHNICAL GUIDE

Electrical Wiring & Power Supply Installation

Smart Dimming Film

DOCUMENT VERSION

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MANUFACTURER

Hunan Changxin
Technology Co., LTD

CONTACT

www.cxsmartfilm.com
info@cxsmartfilm.com

This official document provides the complete, step-by-step procedure for electrode processing, tool selection, and transformer wiring, ensuring the safe and stable operation of the smart dimming film system.

01 SECTION ESSENTIAL TOOLS For Installation

Before starting the wiring process, ensure that all the following specialized tools are prepared, clean, and completely dry:

Specialized Electrode Blade Used for precise cutting and cleanly exposing the wiring ports.	Scouring Pad, Clean Water/Alcohol & Heat Gun Used together to clear away the liquid crystal layer and thoroughly dry the exposed conductive area.
Masking Tape / Clear Tape Used to mask and isolate the area around the ports, establishing neat and clear construction boundaries.	Fine-Tip Dust-Free Cotton Swabs Specially designed for the precise and even application of the conductive silver paste.
Specialized Conductive Silver Paste Original factory-grade, high-purity matching silver paste — the core material required to ensure optimal electrical conductivity.	Matching Copper Foil Electrodes (9mm & 4mm) Available in two widths to perfectly adapt to both the self-adhesive and non-adhesive surfaces of the dimming film.
Soldering Iron & Solder Wire Used to securely and firmly solder the power cables onto the copper foil electrodes.	Digital Multimeter An indispensable tool for continuity checks, voltage measurements, and live electrical safety testing.

02

SECTION

WIRING PROCESS
Flow

01 Expose the Wiring Ports

Preparation Stage

The conductive busbars of the dimming film do not have positive or negative polarity. Use the specialized electrode blade to cut out wiring ports on both sides of the film where connections are needed.

Pro Tip: You can partially peel back and secure the protective film to make operating on the port area easier.

02 Clean the PDLC Liquid Crystal Layer

Coating Removal

Dampen a scouring pad with clean water or alcohol. Gently wipe the port area to remove the liquid crystal coating until the transparent ITO conductive layer is fully exposed. Dry completely with a heat gun on warm setting.

03 Mask and Isolate with Tape

Area Protection

Apply masking tape horizontally along the port cutline edge to define a clean, straight boundary. Prevents conductive silver paste from overflowing or contaminating the surrounding film surface.

04 Apply Conductive Silver Paste

Conductive Layer Establishment

Use fine-tip cotton swabs to apply RSAI-175 silver paste evenly onto the clean ITO layer. Official optimal curing: bake at 80°C for 30 minutes. Peel off masking tape after full curing.

05 Apply Copper Foil Electrodes

Electrode Attachment

Cut copper foil to length and press firmly onto the cured silver paste layer.

Note: Self-adhesive film: 9mm foil on adhesive side, 4mm foil on exposed side — prevents protruding solder joints.

06 Solder the Wires

Circuit Connection

Melt solder wire evenly onto the copper foil surface, then firmly solder the power cable. Two sets of wiring ports on the same busbar are recommended as dual safeguard.

07 Pre-installation Inspection & Power-On Test

Final Quality Control

Verify line continuity with a digital multimeter, then run a complete power-on test. Confirm smooth transition between transparent and opaque states before permanent installation.

03

SECTION

CONDUCTIVE SILVER PASTE
Specifications & Safety

■ CRITICAL — SAFETY WARNING

■ Never use low-quality or non-original alternative silver pastes. High carbon content (dark gray appearance) degrades conductivity, causing localized overheating, accelerated aging, permanent film damage, or fire hazard.

Technical Performance Parameters

Performance Metric	Standard Parameter
Nano-Silver Content	75% – 80%
Sheet Resistance	Less than 0.05 ohms/sq
Viscosity	10,000 – 20,000 cPs
Curing Conditions	Bake at 80°C for 30 min

Core Product Advantages

■ Superior Conductivity

Exceptionally low internal resistance ensures stable year-round operation, eliminating hot spot risk.

■ Excellent Adhesion & Flexibility

Highly flexible formula withstands minor construction friction and 180° outward bend without peeling.

■ High Chemical Stability

Strong environmental oxidation resistance with excellent resilience against weak acids and bases.

■ Effortless Application

Creates thick, smooth continuous lines. Cures at lower temperature and faster than industrial pastes.

Technical Support & Manufacturer

CX SMART FILM provides worldwide technical support for electrical wiring installations. Remote guidance and on-site training for all authorized partners.

Hunan Changxin Technology Co., LTD
No. 580 Changsha Avenue, Yuhua District
Changsha City, Hunan Province, China

Contact

Web: www.cxsmartfilm.com
Email: info@cxsmartfilm.com
Phone: +86 153 6366 9377

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