

INSTALLATION MANUAL

# Smart Glass Installation Manual

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Laminated · SG-01 · LG-01 · LG-AC

On-site installation procedure for PRIVASEE factory-laminated PDLC smart glass panels into architectural openings. For qualified glaziers and PRIVASEE Authorised Partners.

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**PVS-SGS-INS-TEC-07**

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Authorised Recipients Only

# Document control

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|--------------------------|---|
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| <b>CLASSIFICATION</b>    | CONFIDENTIAL — Authorised Recipients Only   |
| <b>OWNER</b>             | PRIVASEE® Group · Smart Glass Division  |
| <b>AUDIENCE</b>          | Glazing contractors · architectural glaziers · PRIVASEE Authorised Partners                                       |
| <b>COVERAGE</b>          | All laminated PDLC Smart Glass builds: SG-01 (standard), LG-01 (safety), LG-AC (acoustic)                         |
| <b>COMPANION DOCS</b>    | TEC-02 (Smart Glass datasheet) · TEC-11b (Maintenance) · QUA-01b (Warranty) · OPS-03 RAMS · Power Drive Catalogue |
| <b>APPROVED SILICONE</b> | TOSSEAL 381 (LP-003) — no other silicone is approved  |
| <b>APPROVED CLEANER</b>  | Isopropyl Alcohol 70% (IPA 70%) — no ammonia, abrasive, acidic, alkaline, or solvent cleaner permitted            |

## SCOPE

This manual covers field installation of finished PRIVASEE laminated smart-glass panels (SG-01 / LG-01 / LG-AC) into architectural openings. For retrofit smart-film application onto existing glass, see TEC-06. For factory lamination of non-adhesive film, see Partner Pack OPS-02.

# Installation workflow — 11 stages

PRIVASEE laminated smart glass arrives as a sealed factory-built unit. The install procedure focuses on safe handling, frame preparation, sealing integrity, and drive commissioning — not on field-applied film work.

|           |  |
|-----------|--|
| <b>01</b> | <b>Pre-delivery survey</b><br><i>Frame opening, drainage, electrical route, access</i>           |
| <b>02</b> | <b>Receipt inspection</b><br><i>Crate condition, panel SKU, busbar pigtail integrity</i>         |
| <b>03</b> | <b>Tool inventory</b><br><i>PRIVASEE-approved consumables, lifting, electrical kit</i>           |
| <b>04</b> | <b>Frame preparation</b><br><i>Clean rebate, setting blocks, primer if specified</i>             |
| <b>05</b> | <b>Lifting + positioning</b><br><i>Two-person minimum, suction lifters, plumb panel</i>          |
| <b>06</b> | <b>Cable routing</b><br><i>Frame channel, no pinch, strain relief</i>                            |
| <b>07</b> | <b>Sealing</b><br><i>TOSSEAL 381 only, encapsulate busbar exit</i>                               |
| <b>08</b> | <b>Electrical termination</b><br><i>Drive sized at 5 W/m<sup>2</sup> · qualified electrician</i> |
| <b>09</b> | <b>Commissioning</b><br><i>Cycle test, uniform clearing, fail-safe verification</i>              |
| <b>10</b> | <b>Final clean + handover</b><br><i>Remove protection, brief customer, sign off</i>              |
| <b>11</b> | <b>Immediate care</b><br><i>First 7 days of restricted operation</i>                             |

# Stage 1 — Pre-delivery site survey

## STAGE 01

### Pre-delivery site survey

Site visit before panels ship from PRIVASEE production. Catch frame and access issues before the panel arrives.

- 1 Verify glazing rebate dimensions match the specified panel size plus standard tolerance for the frame system. Out-of-tolerance frames must be remediated before delivery.
- 2 Confirm the glazing pocket has appropriate drainage and ventilation. Sealed pockets with no drainage path produce moisture build-up that compromises panel longevity.
- 3 Check structural openings — head and sill must be plumb and level within frame manufacturer tolerance. Out-of-plumb frames cause uneven panel loading.
- 4 Identify electrical route from drive location to panel busbar pigtail. Verify mains supply, switch / BMS termination location, cable channels available.
- 5 Verify floor protection in place — laminated smart glass cannot rest on bare frame edges or unprotected floors during install setup.
- 6 Check site access for large panels — crane, manipulator, or scissor-lift access route. Two-person manual handling caps at 2.0 × 1.5 m or 50 kg whichever is lower.
- 7 Heated areas: panel must not rest against direct heat (radiator, sun-trap). Brief client on positioning rules where unavoidable.

#### DOCUMENTATION

Document survey results in writing. Photographs of frame condition and access route protect both PRIVASEE and the installing partner if downstream issues arise.

## Stage 2 — Receipt inspection

### STAGE 02

## Receipt inspection

*On-site receipt of PRIVASEE-laminated panels. Mandatory inspection before signing off delivery.*

- 1 Inspect crate exterior for shipping damage. Photograph any external damage before unwrapping.
- 2 Unwrap with care — laminated panels are heavy and the protective film on glass faces must remain in place until final clean.
- 3 Verify panel SKU code matches purchase order: SG-01 (standard), LG-01 (safety), LG-AC (acoustic). Build-up details on the QC label per panel.
- 4 Check orientation marker — PDLC face orientation matters for some installs (specifier dependant).
- 5 Inspect the busbar pigtail terminations — wire jacket intact, factory-sealed terminations not damaged in transit.
- 6 Verify protective film on glass is undamaged. Tears or detachment expose factory-clean glass to site contamination.
- 7 Acclimatise panels to site temperature before install. Glass moved directly from cold storage into a warm interior produces condensation that compromises sealing.
- 8 Reject damaged panels at receipt — do not install. Photograph defects and notify PRIVASEE technical sales the same day.

### LIABILITY

Damaged panels installed despite visible defect = installer accepts liability for the defect. PRIVASEE warranty does not cover damage already present at receipt.

# Stage 3 — Tool inventory

## STAGE 03

### Tool inventory

*PRIVASEE-approved consumables and architectural-glazing tooling.*

1

Lifting: suction lifters with capacity 1.5× panel weight. Two-handle for two-person manual lift, single-handle for crane / manipulator. Inspect rubber pads before use.

2

Setting blocks: rubber, neoprene, or EPDM (Shore A 70–90). Never metal — direct loading damages glass edge. Block height = frame depth – glass thickness – 3 mm sealant clearance.

3

Glazing tape / setting tape per frame system manufacturer spec.

4

Sealing: TOSSEAL 381 silicone (LP-003) — the only approved silicone · cartridge gun · damp wooden spatula for tooling.

5

Cleaning: Isopropyl Alcohol 70% (IPA 70%) only · lint-free microfibre cloths.

6

Electrical: wire strippers, crimps for cable termination, resistance test meter (ACC-RES-MTR). Final wiring by qualified electrician.

7

Survey: spirit level, plumb line, measuring tape — verify panel set plumb after positioning.

8

PPE: safety glasses, cut-resistant gloves, safety footwear. Full harness if working at height per project risk assessment.

#### WARRANTY CONDITION

Substituting non-approved silicones, setting blocks, or cleaners voids the PRIVASEE warranty regardless of the equivalent's specification.

## Stage 4 — Frame preparation

### STAGE 04

### Frame preparation

*Frame must be clean, true, and sealant-ready before the panel arrives at the opening.*

1

Clean glazing rebate with IPA 70% — remove construction dust, debris, old sealant residue. Compressed air for stubborn debris, but verify no oil contamination from compressor.

2

Inspect rebate for sharp burrs from frame fabrication. File smooth — burrs cut into glass edge under load.

3

Apply setting blocks at the quarter points of the bottom edge (typically Q1 and Q3, measured along the bottom edge length). Symmetrical loading.

4

Setting block height = frame depth – glass thickness – 3 mm sealant clearance. For LG-AC acoustic panels, setting blocks must support the full glass weight without gap.

5

Apply frame primer if specified by the frame manufacturer. Allow primer to cure per primer instructions before sealant work.

6

Mask frame face with painter's tape to protect the frame finish from sealant overspray during stage 7.

## Stage 5 — Lifting and positioning

### STAGE 05

### Lifting and positioning

*Safe handling of factory-laminated smart glass. The most consequential stage for both panel integrity and installer safety.*

- 1 Two-person minimum for any panel above 1.5 × 1.5 m or 50 kg. Larger panels require crane, manipulator, or scissor-lift — refer to project risk assessment (OPS-03 RAMS).
- 2 Apply suction lifters to clean glass face — at the centre of mass, never near edges. Verify suction grip before lifting.
- 3 Lift panel maintaining vertical orientation. Tilting laminated PDLC panels can stress the EVA layer at the busbar termination.
- 4 Approach the opening slowly — avoid frame contact during transit. Glass-to-frame impact damages both surfaces.
- 5 Lower onto setting blocks ensuring even contact. Confirm 3–5 mm edge clearance to frame on all sides for sealant penetration.
- 6 Plumb the panel within the rebate — adjust setting blocks if needed. Use spirit level on top edge and side edges.
- 7 Lock panel in position with temporary spacers / wedges before sealant. The panel must not move once sealing begins.

#### SAFETY

Suction lifters lose grip if applied to wet, dusty, or recently-cleaned glass. Wait for IPA flash-evaporation before lifting.

# Stage 6 — Cable routing · Stage 7 — Sealing

## STAGE 06+07

### Cable routing and sealing

*Two stages combined: route the busbar cable, then seal the panel into the frame.*

1

Stage 6 — Identify busbar pigtail location on the panel (typically top or one side). Route lead wires through the frame channel toward the drive location.

2

Stage 6 — Do not pinch wires between glass and frame. Use the frame-supplied cable grommets — never drill through structural members.

3

Stage 6 — Maintain 50 mm minimum bend radius on lead wires. Strain-relieve at frame exit. Leave a 200 mm service loop near the drive for serviceability.

4

Stage 7 — Apply TOSSEAL 381 (LP-003) in a continuous bead in the glazing rebate. Bead size per frame system — typical 5×5 mm minimum.

5

Stage 7 — Tool sealant smooth with damp wooden spatula. Encapsulate the panel edge so the sealant fully blocks any water ingress path.

6

Stage 7 — Pay particular attention to the busbar exit point — sealant must encapsulate the cable strain-relief AND the frame exit grommet.

7

Stage 7 — Remove painter's tape from frame face while sealant is still wet for a clean line. Allow skin cure (30–60 min) before further work. Full cure 24 h.

#### WARRANTY CONDITION

TOSSEAL 381 is the only approved silicone. Other silicones — even those marketed as architectural-grade — void the PRIVASEE warranty.

# Stage 8 — Electrical termination

## STAGE 08

### Electrical termination

*Drive installation is electrical work — qualified electrician only.*

1

Drive installation by a qualified electrician per local regulations: BS 7671 in the UK, GCC equivalent in MENA, host-country code elsewhere.

2

Confirm drive sized at 5 W per m<sup>2</sup> of panel area. Round up to the next available class. For multi-panel installs, sum all areas.

3

Strip lead wires per drive terminal specification. Connect red to + and black to – per polarity diagram supplied with drive.

4

Multi-zone Jumbo panels: each zone has its own pair of leads. Match zones to drive channels (DZ6L 6-channel for independent zone control).

5

Torque drive terminals to specification (typically 0.5–0.8 Nm). Earth/ground per drive specification.

6

Test continuity with resistance meter (ACC-RES-MTR) before energising — dry-run check protects against shorted leads or miswiring.

7

Verify mains voltage at drive terminals is within ±5% of nominal before first energisation.

#### BRAND DISCIPLINE

Operating voltage of the panel itself is INTERNAL specification. Field installers wire per the supplied drive diagram only — do not measure or document drive output for inclusion in client documentation.

# Stage 9 — Commissioning · Stage 10 — Final clean +

## handover

STAGE 09+10

## Commissioning and handover

*Verification cycle and customer brief.*

1

Stage 9 — Energise drive. Cycle panel: opaque (drive off) → clear (drive on) within < 0.5 s.

2

Stage 9 — Inspect for uniform clearing — no edge haze, no dark patches, no flickering. Cycle 5 times consecutive.

3

Stage 9 — Verify default state on power loss = opaque (fail-safe privacy default).

4

Stage 9 — Test customer-facing controls: wall switch, BMS interface, app — per project specification.

5

Stage 9 — Document all test results in project handover file.

6

Stage 10 — Once sealant has skin-cured, remove all installation protection films and tapes. Final clean with IPA 70% on lint-free microfibre.

7

Stage 10 — Provide customer with TEC-11b Maintenance Guide, QUA-01b Warranty Policy, Power Drive operating instructions.

8

Stage 10 — Brief customer on operation, what voids warranty, contact route for support. Obtain signed handover certificate. Lodge in project file.

### CUSTOMER BRIEF NOTE

"First switch may take longer to clear fully" — film outgases minimal moisture from lamination. This is normal and resolves within the first few cycles.

# Common defects and corrective actions

Field-encountered issues during install or commissioning. Apply corrective action below; if defect persists, contact PRIVASEE technical sales — do not attempt field repair beyond the procedures listed.

| DEFECT                         | PROBABLE CAUSE  | CORRECTIVE ACTION  |
|--------------------------------|---|--|
| Edge haze in clear state       | Water ingress at sealant — incomplete encapsulation               | Inspect sealant integrity. Re-seal if water ingress confirmed. If field fix fails, contact PRIVASEE for assessment.                      |
| Dark spots in clear state      | Factory laminated panel — pre-existing factory defect             | Field repair NOT possible. Contact PRIVASEE technical sales for warranty assessment. Do not attempt to disassemble panel.                |
| Partial switching              | Drive sizing, miswiring, busbar continuity                        | Resistance test at panel, then at drive terminals. Verify drive class matches panel area at 5 W/m <sup>2</sup> .                         |
| Audible buzz from drive        | Typical at high load · may indicate ventilation or class mismatch | Verify drive ventilation clearance per manufacturer spec. If buzz persists, drive class may be undersized — confirm 5 W/m <sup>2</sup> . |
| Slow clearing in cold ambient  | PDLC slows below 0 °C — not a defect                              | No action. Customer briefing: switching speed is ambient-dependent within design envelope.   |
| Panel will not energise at all | Mains fault, drive fault, miswiring, fuse                         | Qualified electrician check: mains presence, drive output, lead-wire continuity, busbar pigtail integrity.                               |

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# Safety, qualifications and sign-off

## Safety requirements

- Glass weight — large panels require lifting equipment. Do not manual-handle beyond two-person capacity (typically 50 kg or 1.5 × 1.5 m, whichever is lower).
- Working at height — use scaffold and harness per local regulations and project risk assessment (OPS-03 RAMS).
- Cuts from glass edges — wear cut-resistant gloves during install. Never handle glass barehanded.
- Sealant — read TOSSEAL 381 SDS before use. Eye protection mandatory during application.
- Electrical — qualified electrician only. No site personnel may energise or modify drive wiring without certification.
- Stage 11 — Immediate care: no mechanical cleaning for 7 days · no water spray at glass-frame interface for 72 hours · avoid panel switching for 4 hours after install · avoid direct sunlight exposure for first 24 hours where avoidable.

## Qualifications required

Architectural glazier with experience installing laminated structural glass — minimum 12 months supervised experience or PRIVASEE Authorised Partner certification.

Drive electrical termination by a qualified electrician — local certification (NICEIC, ELECSA, GCC equivalent) mandatory.

Project supervisor signs the handover record only after all 11 stages have passed sign-off and customer countersign confirms receipt of TEC-11b + QUA-01b.

### PROJECT SIGN-OFF

Installer signs the project handover record once all stages above are complete and panel passes commissioning.

Customer countersign confirms receipt of TEC-11 maintenance guide and warranty certificate.

# Revisions

## Revision history

| REV | DATE       | AUTHOR   | SUMMARY OF CHANGES   |
|-----|------------|----------|--|
| 1.0 | 2026-05-06 | PRIVASEE | Initial issue. 11-stage installation procedure for PRIVASEE factory-laminated PDLC smart glass (SG-01 / LG-01 / LG-AC). Built from architectural glazing industry-standard practice + PRIVASEE locked rules: TOSSEAL 381 only · IPA 70% only · 5 W/m <sup>2</sup> Power Drive · qualified electrician for drive · PRIVASEE-approved setting blocks and consumables only · no supplier names · operating voltage INTERNAL · neutral SKU codes. No [VERIFY] markers — full procedural depth. |

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