Lighting built into *joinery*: drivers, heat and access

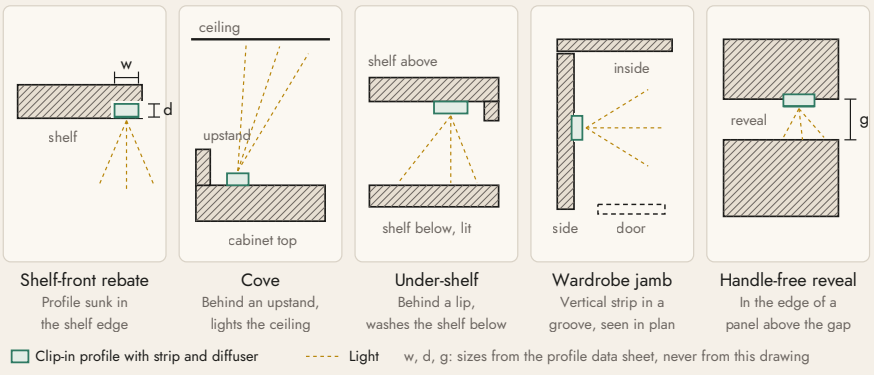
How to specify LED strip and downlights in joinery so that it stays cool and can be repaired. Rules are quoted only from documents we read; check the current standards.

Compliance guidance. Rules quoted come from SI 2021/1095 (regulations 2(1) and 6) and Approved Document P, 2013 edition (England, dwellings), read on 5 November 2026, with one dated IET article on BS 7671:2008 and a 2007 US Department of Energy fact sheet. BS 7671 and BS EN IEC 60598-1 were not read in their current editions: check them. Guidance, not electrical, fire or legal advice. Fixed wiring, driver selection and protection are for a competent electrician or lighting engineer; confirm with building control where the work is regulated.

AT A GLANCE

Option	Best for	Heat and depth	Evenness and colour	Replace without dismantling
Strip in a profile with a diffuser (constant voltage, 12 or 24 V)	Continuous lines: shelf fronts, coves, reveals, jambs	The profile spreads heat; allow its depth plus a diffuser gap	Even if the diffuser sits clear of the LEDs; one batch per run	Good if the diffuser unclips and the profile is reachable
Strip bonded to bare timber	A hidden run where nothing else fits	Little thermal path; the adhesive can fail	LED dots show without a diffuser	Poor: the strip is stuck down
Constant-current strip	Long runs that must stay level in brightness	The same heat questions as other strips	Behaves differently along a run: ask the supplier	As the strip in a profile
Rigid linear module	Wardrobe rails, shelf undersides, straight runs	Heat path built in; fixed lengths	Even along its length; joins between modules show	Good: unplug and swap a module
Puck or small downlight	Display niches, glass shelves, deep alcoves	Needs depth and clearance behind	Pools of light; spacing sets evenness	Good if the unit clips out
Recessed downlight	Cabinet tops, canopies, soffits	Depth and ventilation; check the mounting-surface marking	Pools; needs a spacing check	Good from below if the module is serviceable

Typical behaviour from general practice: confirm against the strip, profile and driver data sheets. Only the heat principle and the replaceability rule are sourced.



Five ways to build a strip into joinery, in section. Schematic and not to scale: sizes come from the profile data sheet. Original drawing by Make Bespoke Studio.

SPECIFICATION WORDING

REPLACEABILITY

All LED light sources and drivers to be replaceable with commonly available tools, without removing or damaging fixed joinery, panels or finishes. Strip to be fitted in clip-in profiles with removable diffusers; no strip to be bonded behind a fixed panel or trim. The supplier states in writing how each light source and driver is replaced, in line with regulation 6 of SI 2021/1095 where it applies.

DRIVER LOCATION AND ACCESS

Drivers located at [position, for example plinth or top void] in a ventilated compartment, reached through a hatch not smaller than [ ] mm by [ ] mm, fixed with [screws / magnets], not glued. Ventilation openings [ ] mm2 top and bottom. Each driver loaded to not more than [80] per cent of its rating. A switched spur or isolator within reach of the hatch.

ELECTRICAL WORK AND CABLES

Mains supply to each driver by [electrician] from [spur or isolator], installed, inspected and certified to BS 7671 [edition in force]. Low-voltage cable [type, size] sized so the voltage at the far end is not less than [ ] per cent of supply, within the strip's stated maximum run. Plug connectors at [hatch or reachable end]; no joint behind a fixed panel; cable clear of hinges and runners; service loop [ ] mm.

HEAT AND MOUNTING

Strip, profiles and drivers suitable for fixing to [timber / wood-based board] and for the enclosure as drawn, as the supplier's data sheet states [mounting-surface classification, maximum ambient or case temperature, maximum power per metre for the profile]. Strip in an aluminium profile in thermal contact, fixed by [clips / screws], not by tape alone.

COLOUR, BATCHES, SPARES AND HANDOVER

Strip for [area] from one batch per run, [2700] K, colour consistency not worse than [3] SDCM, colour rendering index not less than [90], R9 not less than [ ], as the data sheet shows. Spares: [10] per cent spare length of each strip type from the same batch and [ ] spare driver per type, with data sheets and a labelled drawing of driver and cable positions in the handover pack.

TERMS USED

Driver (LED)
The electronic unit that converts mains to the controlled current or voltage an LED needs; it is also the part that most often fails and the part dimming compatibility depends on.

Containing product
A product that has light sources or control gear built in, such as a luminaire or a piece of lit furniture. UK lighting regulations require those parts to be replaceable and documented.

SDCM
A measure of how closely light sources match in colour; fewer steps (such as 3) mean fittings look the same when installed side by side.

Extra-low voltage
A voltage not exceeding 50 V a.c. or 120 V ripple-free d.c., whether between conductors or to earth (Approved Document P, Appendix A).

STANDARDS AND SOURCES

- SI 2021/1095, Ecodesign (Lighting Products) Regulations 2021, regs 2(1) and 6: read 5 Nov 2026.
- Approved Document P, Electrical safety, Dwellings, 2013 edition (England): paras 1.1, 2.5, 2.7 to 2.9, 3.13; England, dwellings.
- IET Wiring Matters, Autumn 2008: Section 559, luminaires and lighting installations: BS 7671:2008; confirm current edition.
- US DOE / PNNL: Thermal Management of White LEDs (PNNL-SA-51901, Feb 2007): principle; figures are dated.
- BS 7671 and BS EN IEC 60598-1 (current editions): named only; not read.

Full guide: https://makebespoke.com/trade/technical/lighting-built-into-joinery. Make Bespoke Studio coordinates manufacture through its partner workshops. Figures are guidance only and your specification governs; some may be superseded, so contact the studio to verify.