

DIY Fibre Optic kit Installation guide



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DIY Installation of fibre optics

Components

- Lightsource The unit that provides the light and effects for your ceiling.
- Fibre harness A harness of sheathed tails of optical fibre gathered and terminated in a single metal ferrule. Individual tails lengths will be marked on the sheathing.

*******THIS MANUAL COVERS INSTALLATION OF FIBRES INTO A PANEL TO BE INSTALLED ON A CEILING AND FIBRES INTO AN EXISTING CEILING*******

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Light source position

Ensure the light source is positioned on a flat surface e.g. on a plywood base rather than balanced on a joist. If the unit is to be wall mounted, the rear vent must not be obstructed. There must be air flow room around the unit at all times.

The manual for the light source is included in the box.

If a hard wire kit has been requested, this should be installed by a qualified electrician.

Installing fibres in panels

Panel material selection

If the fibres are to be installed into separate panels for fitting rather than being installed directly into an existing ceiling, then a few points need to be considered depending on the material

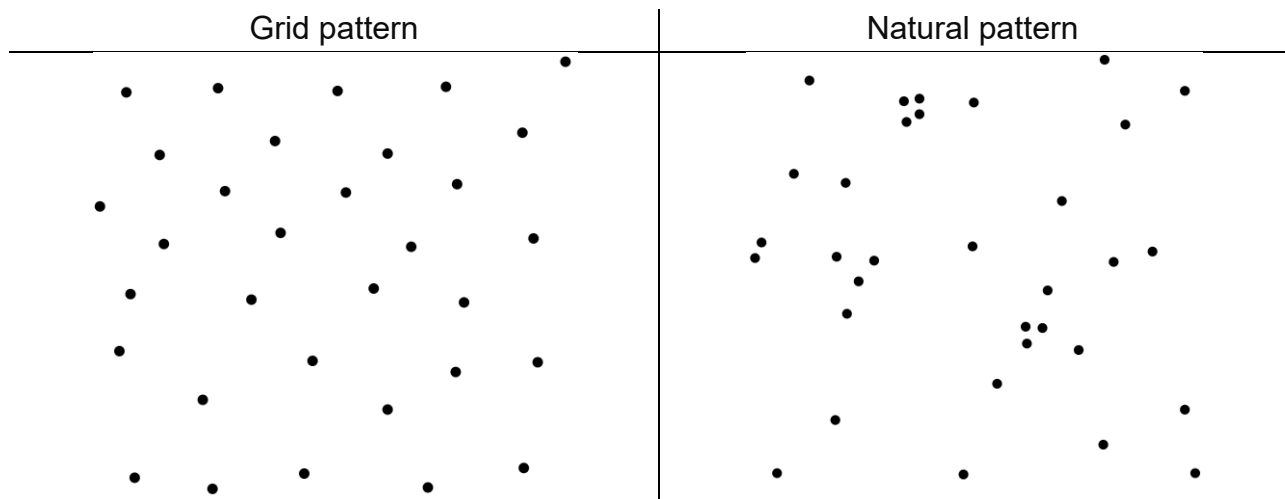
- Panels without framing – if the panel is to be fitted with others and will not have an attached frame, then we recommend a minimum thickness of 10mm to keep the panel rigid.
- Panels with framing – if the panel is to be fitted with a frame on the rear, then we recommend a minimum thickness of 3-5mm depending on the rigidity of the panel.
- Plasterboard – Tapered Edge (TE) boards for dry lining are recommended as they require only the joints and screw heads to be filled whereas standard Square Edge (SE) boards would require a full skim of plaster.

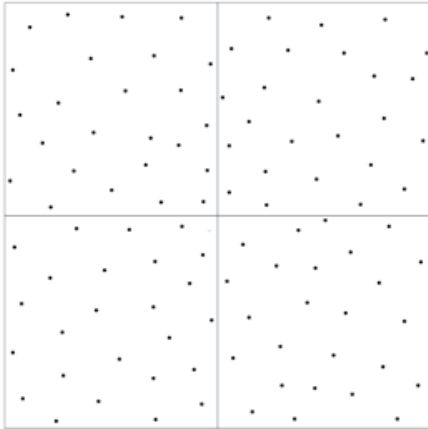
If any panels are going to have additional components screwed into them (e.g. magnets, tethers etc) then the panel must be thick enough to hold suitable length screws, and should be not less than 10mm thick.

Installing fibre into a panel

Star field layout

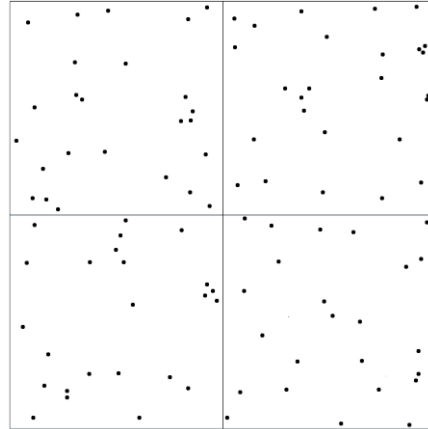
The decision needs to be made as to whether a natural star pattern or a gridded, more regular pattern is required. If specific patterns or constellations are to be included then these should be carefully marked out prior to drilling.





Each one of the quarters in this picture has 25 star points evenly spaced. It may help to lay out the star field with a PALE coloured pen as it can be hard to see drill holes if a dark pen has been used, but this can be dependent on the colour of the material being used.

It is also generally easier to mark the holes is small batches as the panel is drilled.



A natural star layout may seem daunting however it can be achieved very easily. The main thing to remember is to include pairs and clusters of star points. Having bare areas is natural.

Each quarter still has 25 stars, but with larger spaces between, and sometimes with stars in small clusters. Remember to also drill up to and on any marking out lines to avoid a grid-like layout.

*******IT IS RECOMMENDED THAT A SMALL PRACTISE PANEL IS MADE UP TO TEST ADHESIVE, COVERING, DRILLING ETC*******

Preparing the panel

Depending on the material of the panel and the required finish, varying degrees of preparation will be needed.

- ACP (or similar non-porous material) – generally no additional preparation is required, but the rear will need to be keyed for adhesion.
- MDF (or similar porous material) – the rear of the panel should be brushed, wiped with a lightly damp cloth and keyed with a spray adhesive. If a painted finish is required, then the face should be primed and at least two coats of the paint applied.
- Plasterboard - the rear of the panel should be brushed, wiped with a lightly damp cloth and keyed with a spray adhesive.

If a panel is being fabric covered, then ensure the surface is keyed by lightly sanding it, then ensuring it is dust free as above, before fitting the fabric.

Drilling the panel

The composition and any coverings on the panel determine how it should be drilled. If drilling the material could result in splinters or bulging on the reverse, e.g. plywood, then it should be drilled from the face. Drilling from the front will ensure any damage or splintering is restricted to the back of the panel where it will not be seen. If the material does not splinter, e.g., MDF then it can be drilled from the front or the rear.

Any panel that has a covering on the face should be carefully drilled from the front to avoid lifting the covering as the drill bit exits the panel. This also ensures that the drill bit cuts cleanly through the covering rather than tearing it. When the panel is drilled from the front, particular care should be taken to ensure that the chuck does not touch the surface as this can cause irreversible damage to the panel.

Always drill fewer holes than are needed e.g., drill 95 holes for 1 tail of 100 fibres. This allows for any mistakes or snapped fibres. Remaining fibres can then be fitted afterwards.

If the material leaves a rough edge when the drill bit exits the panel, such as with ACP, then the back of the panel should be lightly sanded down to remove the rough edges, then brushed and wiped down to remove any dust.

Tail and tail position

The tail may be attached anywhere on your panel; ideally the ferrule should point towards the light source and not be less than 50mm from the edge. Ensure that the non-ferrule end of the tail will reach to around 50mm beyond the furthest edge of the panel.

The harness should be tied with a cable tie at the point where it will be attached the panel. It can then be fitted to the panel with either a sticky pad and second cable tie, or strong duct tape. Once attached, the excess clear plastic sheathing between the attachment point and loose end can be removed from each tail as the panel is fibred.

Inserting fibres

Open out a bundle of fibres and insert the fibres into the drilled holes. Fan the fibres out to avoid them getting too tangled. Intersperse the thinner fibres with thicker fibres for a more natural effect. Care must be taken when fitting as the fibres may snap if they are pulled too hard and could lose light or snap if bent more than 90 degrees. Fibres may need to be taped down to the panel as they are fitted to avoid tangling or lifting. Thicker

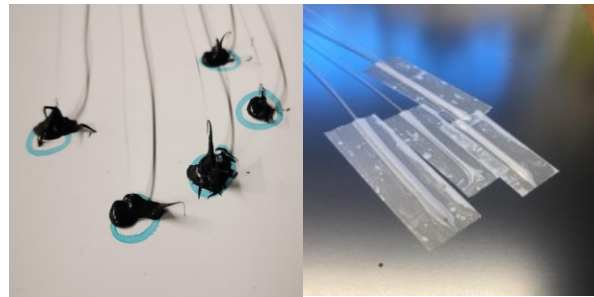
fibres in particular are prone not lying flat to the board.

When fitting into plasterboard, use only the thinnest fibres in holes in the tapered edge so that they can flex when the filler is applied.

Fixing fibres

After the fibres are fitted, they need to be secured. This can either be with a small amount of silicone or adhesive tape.

In either case, it is important that the fibre is secured where it enters the panel.



A vinyl backing or similar is necessary when using tape. When used on a surface that required keying, repeat the process before fitting the backing.

Clipping fibres

The projecting fibres on the face can be trimmed back to the desired length once any adhesive has cured, and ideally once the panel has been fitted. The length of the cut fibres depends on the final finish of the panel:

- Plasterboard – cut fibres to approximately 50mm long until ready for decorating, then follow as below for Painted.
- Painted – cut fibres to approximately 5mm long, then finish decorating using a roller. Fibres can then be cut to 2mm long
- Fabric finish - cut fibres to approximately 2mm long from fabric surface.
- Smooth, unpainted finish - cut fibres to approximately 2mm long from panel surface.

Care must be taken not to cut the fibres too short or flush with the surface of the panel. When in doubt always leave long and retrim as necessary rather than cutting too short.

The fibres can be cut using scissors or nail clippers. Care should be taken when handling panels with cut fibres as the cut ends can be sharp. Once the panel is finished, the face should be lightly brushed with a soft nylon bristled handbrush to remove any loose fibre clippings. Fabric covered panels should also be brushed again after installation to remove any handling marks.

Installing fibres in a pre-existing ceiling

Installing a fibre optic kit in an existing ceiling is similar to the method for individual panels with a couple of differences; more preparation is usually required, and it is easier with two people (one above and one below the ceiling).

Refer to the previous guide for the majority of the install, but while taking into account the following differences.

Preparing the area

If necessary, remove and store any insulation above the ceiling. Brush or vacuum the area where the stars are to be fitted to ensure the adhesive sticks securely.

Joists may be in the way of the fibre runs, in which case either the fibre can be run over the top of them, or the fibres can be threaded through small holes drilled through the joists. The second option is preferred but take care to ensure that the integrity of the timber is not compromised by the drilling of excessive holes.

Drilling the ceiling

As described previously, decide on the type of layout that will be required and mark out accordingly (if necessary). When drilling the ceiling, it is preferable to have two people – one below who drills, and one above who fibres and informs the driller of proximity to joists or any other obstructions. It is advised to start drilling at the point furthest from the lightsource location and work back towards the lightsource.

When drilling around joists, the drill can be angled so that the visible hole is below the joist but exits in the loft to one side of the timber to allow for fitting the fibre. This ensures that there are no obvious regular gaps in the starfield, that would be left if the joists were totally avoided. This may not be necessary depending on the star layout, as obvious joist lines can be avoided by careful placing of clusters and open spaces. .

Installing the fibres

When fitting the fibres, it is best to fit them to an area that is that is a comfortable size to reach over e.g. 40cm or 50cm square, then glue that area before fitting and gluing the next area. This ensures that the installer is not moving over fibres that are already glued and prevents them pulling out or tangling. Usually, a backing vinyl or such is not required when installing fibres in a pre-existing ceiling.