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Optical Fibre Connection Housing

This invention relates to a housing for use in providing a connection between optical fibres located in trunking or in wall boxes or underfloor boxes in a building and one or more items of equipment located within that building.

The use of optical fibres as the medium for carrying signals is becoming evermore widespread and it is now not uncommon for equipment used in a building to have an optical fibre by means of which it can be coupled to a wall outlet. Wall outlets for optical fibres need to be able to provide interconnection between equipment such as that referred to above and optical fibres located in for example the trunking of the building. They also need to provide a facility which allows for the fact that sometimes re-termination of fibres within the outlet is necessary.

The present invention is concerned with a housing which is designed to meet such requirements.

According to the present invention there is provided a housing for use in providing a connection between optical fibres located in trunking or the like in a building and one or more items of equipment, said housing comprising first and second housing members which are connectable, said first housing member being mountable on a wall or the like in the building so that it can receive optical fibres from said trunking and having formations which define a path for said fibres, said second housing member having formations which define a path which can receive said fibres from said first housing member and along which the fibres can be guided to a splice region, said housing member having further formations which define paths for fibres extending from said splice region to one or more outlets.

Said second housing member may comprise two parts, a first part being pivotally connected to a first housing member and being moulded so as to define said one or more outlets, and said second part may include a tray-like member which has said formations which define said paths. The splice region can be defined in said tray-like member and can be arranged to receive one or more splice units. Each splice



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unit may comprise a moulded member which defines a number of side-by-side channels. The splice region may also accommodate a breakout unit which, when used, is disposed below the splice unit or units.

5 The moulded formations may define paths which are arranged to have a radius of curvature which is not less than a preselected critical radius. The paths may be so defined that the optical fibres can extend around them a plurality of times.

10 The formations provided on the first housing member may define a path whose shape enables the direction of the fibres to be changed without subjecting the fibre to bending of less than a critical bending radius.

The invention will be described now by way of example only, with particular reference to the accompanying drawings. In the drawings:

15 Figure 1 is a perspective view of a wall outlet housing for optical fibres in accordance with an embodiment of the present invention;

Figure 2 shows the outlet housing in an open condition;

Figure 3 is an exploded view of the outlet housing;

Figure 4 is a perspective view of a splice unit, and

Figure 5 is a perspective view of a breakout unit.

20 Referring to the drawings, a housing for use as a wall outlet for optical fibres comprises first and second housing parts (10) and (11). The housing part (10) is moulded from plastics material and can be secured to a wall, such as an internal wall of a building, by means of screws extending through apertures (12). The housing part (10) is
25 moulded so that it has a recessed part (14) within which are formed a plurality of moulded formations (15). A wall of the recess part (14) also includes one or more apertures (16, 16a). The formations (15) are designed to define paths along which optical fibres can extend, these paths allowing the direction of the fibres to change without subjecting
30 them to bending of less than a critical bending radius. For example optical fibres entering from trunking through aperture (16a) can pass along the path shown by reference numeral (18). The housing part also includes two split annular formations (19) which act as restraint points for a kevlar member which can be used to secure an optical fibre cable.

The second housing part (11) is also moulded from plastics material and has a hinged connection (20) to the first housing part so that the first and second housing parts can pivot one relative to the other. The second housing part (20) is moulded to define a number of
5 side-by-side outlets (22) and (23) which can receive optical fibre connector parts.

The second housing part (11) can receive a tray-like member (25) which sits within the second housing member (11) so that it is disposed above the outlets (22) and (23). The tray-like member (25) is
10 moulded from plastics material and includes a plurality of curved formations shown generally at (28). These formations (28) define a number of tracks along which optical fibres can extend. These include an outer track shown at (29), inner tracks (30) and an intermediate region (31). In addition formations (32) define pathways through which
15 fibres can extend to the outlets (22) and (23). In this respect it should be noted that the central region (36) of the tray is open. The formations (28) and (32) include projecting fingers (38) which can act as retaining members for fibres disposed in tracks (29, 30).

The tray is also moulded to define a shelf (40). The area above
20 the shelf (40) constitutes a splice region which can receive one or more splice units (42) such as that shown in Figure 4 of the drawings. This splice unit (42) is moulded from plastics material and defines four side-by-side channels (43), each of which can accommodate an optical fibre. The splice unit (42) also has formed thereon formations shown at (44)
25 which constitute clip members. The lower clip members (44) can engage similar clip members formed on the shelf (40) to secure the splice unit in position on the shelf. The upper clip units (44) can be engaged by another splice unit placed above the one shown in Figure 4 to secure two such units relative to one another.

30 It is possible also optionally to locate what is known as a breakout unit in the splice region. A typical breakout unit is shown in Figure 5 of the drawings and when used will be located beneath a splice unit such as (42), i.e. will be directly mounted on the shelf (40). The breakout unit is a moulded plastics element which defines a path for a
35 group of optical fibres which has an inlet (50) and a diverging portion

(52) at its opposite end which allow optical fibres to be spread out along a number of side-by-side channels. The breakout unit also has formations (54) whose function is the same as the formations (44) on the splice unit.

5 In use the wall outlet is secured to a wall by means of screws extending through the apertures (12). A length of optical fibre cabling or a bundle of optical fibres is fed in from trunking behind the wall through for example aperture (16a) and around the path (18). These fibres are then fed into the tray section (25) so that they extend around the outer
10 path (29) defined by the formations (28). These fibres can be fed a number of times around the tray, each time passing through the region (31). This in effect provides a degree of slack or excess length of fibres which is sufficient to enable re-termination should that be required in the future. Ultimately the fibres are fed into the splice region (40). If the
15 breakout unit is employed the fibres are fed first into the breakout unit from where they emerge into the inner channels (30) and then pass around the inner path to a splice unit such as that shown in (42). The ends of these fibres are then spliced with further lengths of optical fibre, the splices being located one within each of the channels (43) of the
20 splice unit (42). The additional fibre lengths are then fed into the channels (30) and can be themselves passed a number of times around the tray through the slack area (31) until ultimately passing along the outer path (29) and exiting through the outlet sections (32). These lengths of fibre have on their ends appropriate optical fibre connector
25 elements which are secured within the outlets shown at (22) and (23). These connector elements can receive mating connector elements provided on the ends of optical fibres extending from equipment within the building.

30 The formations (15) and (28) are all designed to define paths whose radius of curvature is not less than the critical radius of curvature to which an optical fibre should be subjected. A feature of the present wall outlet is the provision within the housing of a slack area (31) which can accommodate significant length of optical fibre. The reason for this is that should re-termination and splicing of the fibres be necessary at

some time in the future, this is possible since within the housing there is sufficient length of fibre accommodated to allow for such re-termination.

Claims:

1. A housing for use in providing a connection between optical fibres located in trunking or the like in a building and one or more items of equipment, said housing comprising first and second housing members which are connectable, said first housing member being mountable on a wall or the like in the building so that it can receive optical fibres from said trunking and having formations which define a path for said fibres, said second housing member having formations which define a path which can receive said fibres from said first housing member and along which the fibres can be guided to a splice region, said housing member having further formations which define paths for fibres extending from said splice region to one or more outlets.
2. A housing according to claim 1, wherein said second housing member comprises two parts, a first part being pivotally connected to a first housing member and being moulded so as to define said one or more outlets, and said second part including a tray-like member which has said formations which define said paths.
3. A housing according to claim 2, wherein the splice region is defined in said tray-like member and is arranged to receive one or more splice units.
4. A housing according to claim 3, wherein each splice unit comprises a moulded member which defines a number of side-by-side channels.
5. A housing according to claim 3, or claim 4, wherein the splice region also accommodates a breakout unit which, when used, is disposed below the splice unit or units.
6. A housing according to any preceding claim, wherein the formations define paths which are arranged to have a radius of curvature which is not less than a preselected critical radius.

7. A housing according to any preceding claim, wherein the paths are so defined that the optical fibres can extend around them a plurality of times.

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8. A housing according to any preceding claim, wherein the formations provided on the first housing member define a path whose shape enables the direction of the fibres to be changed without subjecting the fibre to bending of less than a critical bending radius.