SUMMARY

To provide an in-line embedded adapter without introducing optical loss to optically and mechanically couple an "LC" receptacle (LC being short for little connector or Lucent connector) and a terminus, such as the ARINC 801 terminus, disclosed is an adapter that provides a separable mechanical connection to the receptacle while providing a secure retention of the terminus.

According to one aspect, there is provided a fiber optic adapter, comprising:

a housing having a longitudinal passage extending between a first opening at a first end of the housing and a second opening at a second end of the housing, the housing sized to fit within a fiber optic receptacle;

a deflectable member in the longitudinal passage of the housing configured to retain a fiber optic terminus in the housing; and

a locking member interfaced with the housing and sized to fit within a retaining notch in the fiber optic receptacle to prevent separation of the housing from the receptacle,

wherein the deflectable member functions as a rearward direction stop for the terminus to bring a leading end of a fiber optic filament retained by the terminus into optical contact with an optical component retained by the fiber optic receptacle.

According to another aspect, there is provided a fiber optic adapter, comprising:

a housing having a longitudinal passage extending between a first opening at a first end of the housing and a second opening at a second end of the housing, the housing sized to fit within a fiber optic receptacle;

a deflectable member in the longitudinal passage of the housing configured to retain a fiber optic terminus in the housing; and

a locking member interfaced with the housing and sized to fit within a retaining notch in the fiber optic receptacle to prevent separation of the housing from the receptacle,

wherein the deflectable member includes one or more inwardly biased deflectable fingers configured to be urged radially outward by the terminus when the terminus is inserted through the longitudinal passage, and

wherein the fingers are configured to move radially inward to engage a rearward ledge of the terminus as the terminus moves through the longitudinal passage to prevent the terminus from being removed from the adapter.

According to yet another aspect, there is provided a fiber optic adapter, comprising:

a housing having a longitudinal passage extending between a first opening at a first end of the housing and a second opening at a second end of the housing, the housing sized to fit within a fiber optic receptacle;

a deflectable member in the longitudinal passage of the housing configured to retain a fiber optic terminus in the housing; and

a locking member interfaced with the housing and sized to fit within a retaining notch in the fiber optic receptacle to prevent separation of the housing from the receptacle,

wherein the housing includes an inner wall that defines the longitudinal passage and a slot in the inner wall, and wherein the deflectable member interfaces with the slot to secure the deflectable member in the longitudinal passage.

According to yet another aspect, there is provided a fiber optic adapter, comprising:

a housing having a longitudinal passage extending between a first opening at a first end of the housing and a second opening at a second end of the housing, the housing sized to fit within and mate with a fiber optic receptacle that is configured to accept a fiber optic connector compliant with a first fiber optic connector standard; and

a deflectable member disposed in the longitudinal passage of the housing,

wherein the housing and deflectable member are configured to receive and retain a fiber optic connector compliant with a second fiber optic connector standard, and

wherein when the housing is within the fiber optic receptacle, a fiber optic filament of a fiber optic cable held by the fiber optic connector compliant with the second standard is optically coupled with an active or passive optical component retained by the receptacle.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded perspective view of a representative embodiment of a locking fiber optic terminus adapter and coordinating receptacle.

FIG. 2 is a perspective view of the locking fiber optic terminus adapter assembled with the coordinating receptacle.

FIG. 3 is a perspective view of a fiber optic terminus and the locking fiber optic terminus adapter assembled with the coordinating receptacle.

FIG. 4 is a cross-section of the terminus, adapter and receptacle taken along the line 4--4 in FIG. 3.

FIG. 5 is a perspective view of the fiber optic terminus assembled with the adapter and the adapter assembled with the coordinating receptacle.

FIG. 6 is a cross-section of the terminus, adapter and receptacle taken along the line 6--6 in FIG. 5.

FIG. 7 is a perspective view of another representative embodiment of a locking fiber optic terminus adapter in a default state.

FIG. 8 is a cross-sectional view of the adapter taken along the line 8--8 in FIG. 7.

FIG. 9 is a perspective view of the locking fiber optic terminus adapter in a locked state.

FIG. 10 is a cross-sectional view of the adapter taken along the line 10--10 in FIG. 9.

FIG. 11 is a perspective view of the adapter and coordinating receptacle.

FIG. 12 is a perspective view of the adapter in the default state inserted in the coordinating receptacle.

FIG. 13 is a perspective view of the adapter assembled with the coordinating receptacle.

CLAIMS

1. A fiber optic adapter, comprising:

a housing having a longitudinal passage extending between a first opening at a first end of the housing and a second opening at a second end of the housing, the housing sized to fit within a fiber optic receptacle;

a deflectable member in the longitudinal passage of the housing configured to retain a fiber optic terminus in the housing; and

a locking member interfaced with the housing and sized to fit within a retaining notch in the fiber optic receptacle to prevent separation of the housing from the receptacle,

wherein the deflectable member functions as a rearward direction stop for the terminus to bring a leading end of a fiber optic filament retained by the terminus into optical contact with an optical component retained by the fiber optic receptacle.

2. The adapter according to claim 1, wherein the deflectable member includes one or more inwardly biased deflectable fingers configured to be urged radially outward by the terminus when the terminus is inserted through the longitudinal passage.

3. A fiber optic adapter, comprising:

a housing having a longitudinal passage extending between a first opening at a first end of the housing and a second opening at a second end of the housing, the housing sized to fit within a fiber optic receptacle;

a deflectable member in the longitudinal passage of the housing configured to retain a fiber optic terminus in the housing; and

a locking member interfaced with the housing and sized to fit within a retaining notch in the fiber optic receptacle to prevent separation of the housing from the receptacle,

wherein the deflectable member includes one or more inwardly biased deflectable fingers configured to be urged radially outward by the terminus when the terminus is inserted through the longitudinal passage, and

wherein the fingers are configured to move radially inward to engage a rearward

ledge of the terminus as the terminus moves through the longitudinal passage to prevent the terminus from being removed from the adapter.

4. A fiber optic adapter, comprising:

a housing having a longitudinal passage extending between a first opening at a first end of the housing and a second opening at a second end of the housing, the housing sized to fit within a fiber optic receptacle;

a deflectable member in the longitudinal passage of the housing configured to retain a fiber optic terminus in the housing; and

a locking member interfaced with the housing and sized to fit within a retaining notch in the fiber optic receptacle to prevent separation of the housing from the receptacle,

wherein the housing includes an inner wall that defines the longitudinal passage and a slot in the inner wall, and wherein the deflectable member interfaces with the slot to secure the deflectable member in the longitudinal passage.

5. The adapter according to claim 4, wherein the deflectable member is a c-shaped clip that snaps into the slot.

6. The adapter according to claim 1, wherein the locking member is a separate part from the housing.

7. The adapter according to claim 1, further including a sealing member secured to the housing to seal an optical path between the fiber optic terminus and an optical component in the fiber optic receptacle.

8. The adapter according to claim 7, wherein a portion of the sealing member is disposed in the longitudinal passage and a portion of the sealing member extends through the first opening and past the first end of the housing.

9. The adapter according to claim 8, wherein a portion of the sealing member extends through a third opening in the housing perpendicular the first opening.

10. The adapter according to claim 1, further including a securing member that secures the locking member to the housing.

11. The adapter according to claim 10, wherein the housing and the locking member each include an opening configured to be aligned with the other for receiving the securing member to secure the locking member to the housing.

12. The adapter according to claim 10, wherein the locking member includes a recess to accommodate a head of the securing member.

13. The adapter according to claim 1, wherein the longitudinal passage includes one or more notches extending at least partially along a length of the passage to serve as guides for a radially outwardly extending members of the fiber optic terminus.

14. The adapter according to claim 1, further including a securing member, wherein the locking member, the securing member, and the housing are captive with one another.

15. A fiber optic adapter, comprising:

a housing having a longitudinal passage extending between a first opening at a first end of the housing and a second opening at a second end of the housing, the housing sized to fit within and mate with a fiber optic receptacle that is configured to accept a fiber optic connector compliant with a first fiber optic connector standard; and

a deflectable member disposed in the longitudinal passage of the housing,

wherein the housing and deflectable member are configured to receive and retain a fiber optic connector compliant with a second fiber optic connector standard, and

wherein when the housing is within the fiber optic receptacle, a fiber optic filament of a fiber optic cable held by the fiber optic connector compliant with the second standard is optically coupled with an active or passive optical component retained by the receptacle.

16. The fiber optic adapter according to claim 15, wherein the deflectable member functions as a rearward direction stop for the fiber optic connector compliant with the second fiber optic connector standard to bring a leading edge of the fiber optic filament into optical contact with the active or passive optical component.

17. The fiber optic adapter according to claim 15, wherein the housing includes an inner wall that defines the longitudinal passage and a slot in the inner wall, and wherein the deflectable member interfaces with the slot to secure the deflectable member in the longitudinal passage.

18. The fiber optic adapter according to claim 15, wherein the longitudinal passage includes one or more notches extending at least partially along a length of the passage to serve as guides for a radially outwardly extending member of the fiber optic connector compliant with the second fiber optic connector standard.

19. The fiber optic adapter according to claim 15, wherein the deflectable member includes one or more inwardly biased deflectable fingers configured to be urged radially outward by the fiber optic connector compliant with a second fiber optic connector standard when the fiber optic connector is inserted through the longitudinal passage.

20. The fiber optic adapter according to claim 19, wherein the fingers are configured to move radially inward to engage a rearward ledge of the fiber optic connector as the fiber optic connector moves through the longitudinal passage to prevent the fiber optic connector from being removed from the adapter.