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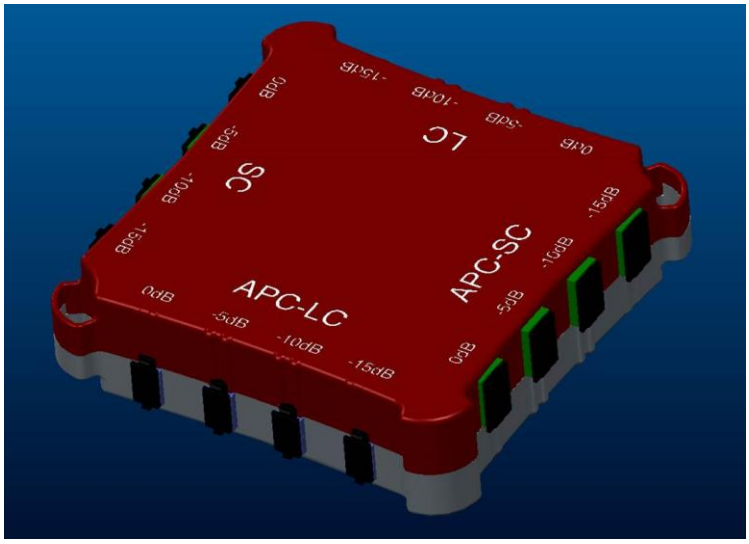
Dasa-Rägister
EN ISO 9001:2008
IQ-0511-02

ATTENUATOR
TEST BOX



Purpose

The device comes from the need of technical staff working on the optical fibers either during creation of the connections, both in the maintenance phase, and troubleshooting.
On this need has been developed a device called "Attenuator Test Box" with the aim to provide it individually to the personnel who work on these network elements.

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Description of the device

The device, entirely passive, is composed of two half-shells in highly resistant plastic material, self-extinguishing, inside which there are 16 fiber optic loop for the following types of fibers:
SC, LC, APC-SC, APC-LC

Furthermore, for each type of fiber is made a loop with the following levels of attenuation:
0 db, -5 db, -10 db, -15 db

These types are grouped on each side of the device so as to ensure a practicality and ease of use . In fact, for each connection are stamped on the type of fiber to be inserted and the levels of attenuation prepared so as to make it easy to identify .
On two opposite corners of the device has two eyelets to allow for a possible coupling at the top and also at the base of the same are the rubber feet to isolate heat from heat sources in the case of support of active systems .
Moreover, all fiber connections have protective caps for fibers constructed so as to remain connected to the device also in the use phase of the same , avoiding, in this way , the possibility of losing them .

The various attenuations are made via adapters attenuated , complying with IEC , Telcordia GR -326 and the JIS formance requirements and the following are the technical characteristics of the same:
Tolerance on attenuation: ± 0.5dB (for 5 and 10dB attenuation)
± 1.0 dB (15 dB attenuation)
Number of connections:> 1000
Operating temperature: -40 ° C to + 85 ° C
Storage temperature: -40 ° C to + 85 ° C
Weight: <400g
Dimensions: 200mm x 200mm h 50mm

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Device fields of application

Creating an optical connection

The process of creating a physical optical carrier is regulated by test standard that provides for various measures and controls before the same is issued to connect to active equipment transport telecommunication signals .
The various types of connection are:
• Network of Junction ;
• Interior fittings in power;
• Routes terrestrial and submarine.

The first test concerns the calculation of the attenuation between the two branches of the link in fact, in front of any intervention made , must be verified , that the total attenuation of the network portion between the two ends of the link, is not greater dell ' theoretical maximum permissible attenuation , calculated according to the following equation:

A max = [(Af x L) + (ng x Ag) + (nd x Ad) + (n x Ac) + Asp] (dB)
in which:
• Af and mitigation mileage to the different length
• L and the optical length of the section expressed in Km ;
• ng and the number of joints in the system ;
• Ag and the nominal value of attenuation introduced by a second joint fusion
• nd and the number of mixer devices present in the system ;
• For conventional and the attenuation value of 0.25 dB mixer ;
• n and the number of mechanical connections in the system ;
• Ac and the nominal attenuation value for each mechanical connection , which is 0.5 dB ;
• Asp and the nominal value of attenuation introduced by the optical splitter

The device inserted at one end of the link allows these measurements with an instrument connected to the other end . Moreover, given the availability of the loop

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attenuation at different standardized tests can be replicated to see how it behaves the link.

Other measures , as well as the attenuation achievable by making the loop at one end of the link are:

1 . Through the use of a tool OTDR (Optical Time Domain Reflectometer) , can be detected:
- Measure the total attenuation in the cable network ;
- Diagram of the backscattered power ;
- Measurement of optical lengths ;
- Measurement of insertion and return loss of the connectors.

2 . Through the use of a receiver Pon Power Meter can be verified :
- Power levels received .

3 . Through the use of measuring insulation (megger) :
- Measurement of the insulation resistance of the metal sheath ;
- Check continuity of the metal .

It is clear that some expensive tools and more complex (OTDR , OSA) allow to perform such tests avoiding enter a loop at one end of the link.

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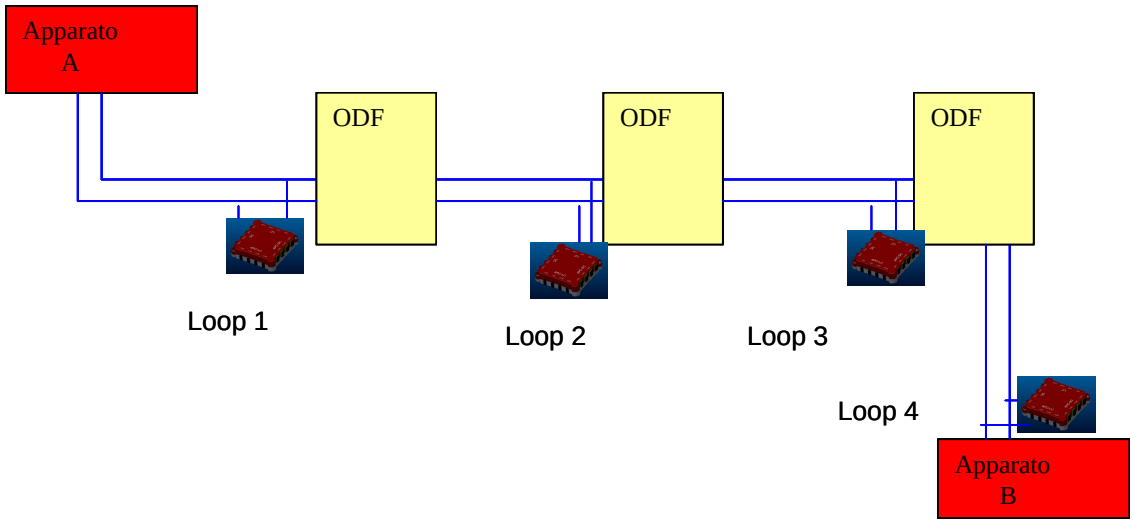
Maintenance of an optical connection.

The device application is increased during the maintenance phase of the network; so, to discriminate whether a failure is due to active devices or connection of the optical carrier, it is possible to use the loop technique on the various sections of transit.
The maintenance phase of an optical connection is realized as a first step in identifying if there is an interruption of the fiber itself. *To do this it is necessary to , enter a loop at one end of the link while the other side it transmits the signal in transmission waiting to find it in reception, simply using an inexpensive optical instrument. In this way it is possible to discriminate quickly in which section the connection is aborted and then aim the repair. The figure helps in understanding the operation mode.*



A seconda dell'inserzione del loop si determina la sezione del collegamento interrotta.

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Another important aspect that has enabled the realization of the device in object was to avoid that, in case of need, the technician was devoid of loops.
In fact, the supply at the individual level of the device allows the technician who is in the management of a failure in one location, to be able to require another technician present in other locations, the test loop by shortening the time discrimination of the same and then to proceed with the repair.