

In-Line Attenuators

Description:

The In-Line attenuators provide a fixed level of attenuation and feature excellent return loss. Low cost and performance determine them for universal using in optical networks.



Features:

- Return loss > 50 dB
- Insertion loss on customer's demands
- Fiber or cable version
- Pigtail with connector by specification

Application:

- Fiber optic systems
- Receiver padding for optical receiver protection
- Optical power equalization
- Linearity and dynamic range testing in laboratory equipment

Specifications:

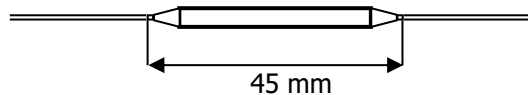
| | |
|------------------------------------|-------------------------------------|
| Loss | 5, 10, 15, 20, 25, 30 dB $\pm 10\%$ |
| Wavelength SM | 1310 nm, 1550 nm, 1625 nm |
| Wavelength MM | 1300 nm, 850 nm |
| Return loss | > 50 dB |
| Type | Fiber, Cable |
| Length | by specification |
| Operation temperature ¹ | -40 to 75°C |

Note: 1) conditioned by cable type: standard -5 to +50°C, extended on request

Dimension:

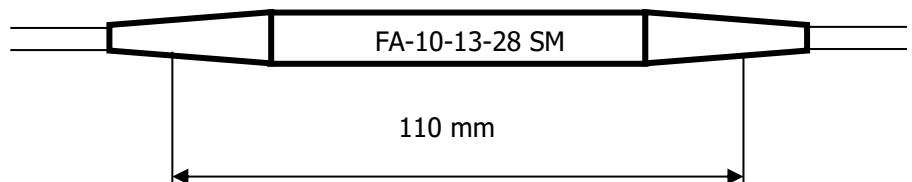
Fiber Attenuator

Length - 45 mm
 \varnothing - 3 mm



Cable Attenuator

Length - 110 mm
 \varnothing - 7 mm



Ordering Code:

| FA(D) - XX - XX - XX XX - AAA ² - XXX - (C) ³ - YY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|------------|-----------------------|------------------|----|------------------|-----------|------------------|-------------------|----------------|--|----------------|-------|----------------|--------|----------------------|--------|----------------|-------|-----------------------|--------|----------------|--------|----------------------|-------|-----|--------|--------|--|--------|-----------------------|----|-------|-----|--------|-----|--------|----|-------|-----|--------|-----|----------------|------|-------------------------|------|------------------------|-----|--------|------|---------|-----|----------------------|-----|-------------------------|-----|--------|
| (D) Duplex | <table border="1"> <tr> <td>Length (m)</td> <td>BU Blue</td> <td>GN Green</td> </tr> <tr> <td></td> <td>OG Orange</td> <td>YE Yellow</td> </tr> </table> | Length (m) | BU Blue | GN Green | | OG Orange | YE Yellow | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Length (m) | BU Blue | GN Green | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | OG Orange | YE Yellow | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">Insertion Loss</th> </tr> <tr> <td>05</td> <td>5 dB</td> </tr> <tr> <td>10</td> <td>10 dB</td> </tr> <tr> <td>15</td> <td>15 dB1</td> </tr> <tr> <td colspan="2">other on request2</td> </tr> </table> | Insertion Loss | | 05 | 5 dB | 10 | 10 dB | 15 | 15 dB1 | other on request2 | | <table border="1"> <tr> <td>LC</td> <td>LC/PC</td> </tr> <tr> <td>ULC</td> <td>LC/UPC</td> </tr> <tr> <td>NLC</td> <td>LC/APC</td> </tr> <tr> <td>MU</td> <td>MU/PC</td> </tr> <tr> <td>UMU</td> <td>MU/UPC</td> </tr> <tr> <td>NMU</td> <td>MU/APC</td> </tr> <tr> <td>PC</td> <td>FC/PC</td> </tr> <tr> <td>UPC</td> <td>FC/UPC</td> </tr> <tr> <td>NPC205</td> <td>FC/APC standard Seikoh Giken, Methode, JDS</td> </tr> <tr> <td>NPC215</td> <td>FC/APC standard Seiko</td> </tr> <tr> <td>SC</td> <td>SC/PC</td> </tr> <tr> <td>USC</td> <td>SC/UPC</td> </tr> <tr> <td>NSC</td> <td>SC/APC</td> </tr> <tr> <td>SL</td> <td>ST/PC</td> </tr> <tr> <td>SSL</td> <td>ST/SPC</td> </tr> <tr> <td>PE2</td> <td>LSH (E2000)/PC</td> </tr> <tr> <td>NE2S</td> <td>LSH(E2000)/APC standard</td> </tr> <tr> <td>NE2P</td> <td>LSH(E2000)/APC premium</td> </tr> <tr> <td>DIN</td> <td>DIN/PC</td> </tr> <tr> <td>NDIN</td> <td>DIN/APC</td> </tr> <tr> <td>MJF</td> <td>MT/RJ - without pins</td> </tr> <tr> <td>MJM</td> <td>MT/RJ - with guide pins</td> </tr> <tr> <td>SK2</td> <td>SMA905</td> </tr> </table> | LC | LC/PC | ULC | LC/UPC | NLC | LC/APC | MU | MU/PC | UMU | MU/UPC | NMU | MU/APC | PC | FC/PC | UPC | FC/UPC | NPC205 | FC/APC standard Seikoh Giken, Methode, JDS | NPC215 | FC/APC standard Seiko | SC | SC/PC | USC | SC/UPC | NSC | SC/APC | SL | ST/PC | SSL | ST/SPC | PE2 | LSH (E2000)/PC | NE2S | LSH(E2000)/APC standard | NE2P | LSH(E2000)/APC premium | DIN | DIN/PC | NDIN | DIN/APC | MJF | MT/RJ - without pins | MJM | MT/RJ - with guide pins | SK2 | SMA905 |
| Insertion Loss | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | 5 dB | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 10 dB | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 15 dB1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| other on request2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LC | LC/PC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ULC | LC/UPC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NLC | LC/APC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MU | MU/PC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UMU | MU/UPC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NMU | MU/APC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PC | FC/PC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UPC | FC/UPC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NPC205 | FC/APC standard Seikoh Giken, Methode, JDS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NPC215 | FC/APC standard Seiko | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SC | SC/PC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| USC | SC/UPC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NSC | SC/APC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SL | ST/PC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SSL | ST/SPC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PE2 | LSH (E2000)/PC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NE2S | LSH(E2000)/APC standard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NE2P | LSH(E2000)/APC premium | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DIN | DIN/PC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NDIN | DIN/APC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MJF | MT/RJ - without pins | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MJM | MT/RJ - with guide pins | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SK2 | SMA905 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">Optimized Wavelength</th> </tr> <tr> <td>13</td> <td>SM laser 1310 nm</td> </tr> <tr> <td>15</td> <td>SM laser 1550 nm</td> </tr> <tr> <td>16</td> <td>SM laser 1625 nm</td> </tr> <tr> <td>50</td> <td>MM LED 850 nm</td> </tr> </table> | Optimized Wavelength | | 13 | SM laser 1310 nm | 15 | SM laser 1550 nm | 16 | SM laser 1625 nm | 50 | MM LED 850 nm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Optimized Wavelength | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | SM laser 1310 nm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | SM laser 1550 nm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | SM laser 1625 nm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | MM LED 850 nm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="4">Performance</th> </tr> <tr> <td>09</td> <td>fiber Ø 0.9 mm</td> <td>OM2-5</td> <td>MM 50/125 µm</td> </tr> <tr> <td>18</td> <td>cable Ø 1.8 mm</td> <td>OM1</td> <td>MM 62.5/125 µm</td> </tr> <tr> <td>20</td> <td>cable Ø 2.0 mm</td> <td>S2D</td> <td>SM 9/125 µm (G.652D)</td> </tr> <tr> <td>24</td> <td>cable Ø 2.4 mm</td> <td>S7A1</td> <td>SM 9/125 µm (G.657A1)</td> </tr> <tr> <td>28</td> <td>cable Ø 2.8 mm</td> <td>S5X1</td> <td>SM 9/125 µm (G.655X)</td> </tr> </table> | Performance | | | | 09 | fiber Ø 0.9 mm | OM2-5 | MM 50/125 µm | 18 | cable Ø 1.8 mm | OM1 | MM 62.5/125 µm | 20 | cable Ø 2.0 mm | S2D | SM 9/125 µm (G.652D) | 24 | cable Ø 2.4 mm | S7A1 | SM 9/125 µm (G.657A1) | 28 | cable Ø 2.8 mm | S5X1 | SM 9/125 µm (G.655X) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Performance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 09 | fiber Ø 0.9 mm | OM2-5 | MM 50/125 µm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | cable Ø 1.8 mm | OM1 | MM 62.5/125 µm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | cable Ø 2.0 mm | S2D | SM 9/125 µm (G.652D) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | cable Ø 2.4 mm | S7A1 | SM 9/125 µm (G.657A1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | cable Ø 2.8 mm | S5X1 | SM 9/125 µm (G.655X) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

- Note:** 2) Other connector types – on request
3) C – without this mark is standard position 1m from,connector, with C is position in center.

Sample of In-Line Attenuators :

- standard 5 dB SM attenuator (1310 nm)
FA – 05 – 13 – 28 S2D – UPC – 003
- duplex 5 dB MM attenuator (850 nm)
FAD – 05 – 50 – 28 OM1 – SL – 003
- hybrid 5 dB SM attenuator (1550 nm)
FA – 05 – 15 – 28 S2D – UPC/USC - 003

