

## Technical Data - Fiber Optic Module (101-201510)

| Technical Data - 2 Channel Fiber Optic Module Type 1 (101-201510)                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| <b>Backplane</b>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| PROFIBUS networks<br>Modules<br>Power supply<br>Current consumption<br><br>Compatible backplane units                                                                           | 4 (set by dipswitches or web server)<br>10 (positioned in the first 10 slots)<br>Provided through the backplane<br>± 360 mA (510 mA max)<br><br>101-200011, 101-200012, 101-200023, 101-200024,<br>101-200027                                                                                                                                                                                                                                            |
| <b>Protocol specifications</b>                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Supported Protocols<br><br>Address<br><br>Transmission speed<br><br>Transmission speed detection<br><br>Fiber optic cable delay calculation<br>(between 2 modules, 1 direction) | DP-V0, DP- V1, DP-V2, FDL, MPI, FMS, PROFIsafe,<br>PROFIdrive and any other FDL based protocol<br><br>NO bus address required<br><br>9.6 kbps .. 12 Mbps (including 45.45 kbps)<br><br>Auto detect (< 10 s detection and 50 s lost time)<br><br>FO cable delay = $(5 * 10^{-6}) \times \text{FO cable length} \times \text{Baudrate}$<br>Example: 1.5 Mbps, 3 km FO cable<br><br>FO cable delay = $0.000005 \times 3 \times 1500000 = 22.5 \text{ TBit}$ |
| Module delay time (normal mode)<br><br><br><br>Module delay time (redundant mode)<br><br><br><br>Delay time jitter                                                              | 1.6 TBit at 9.6 kbps .. 93.75 kbps<br>1.7 TBit at 187.5 kbps .. 500 kbps<br>1.8 TBit at 1.5 Mbps<br>2.0 TBit at 3 Mbps<br>2.75 TBit at 6 Mbps<br>3.75 TBit at 12 Mbps<br><br>11.6 TBit at 9.6 kbps .. 93.75 kbps<br>11.7 TBit at 187.5 kbps .. 500 kbps<br>11.8 TBit at 1.5 Mbps<br>12.0 TBit at 3 Mbps<br>12.75 TBit at 6 Mbps<br>13.75 TBit at 12 Mbps<br><br>Max. ¼ TBit                                                                              |

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| Total delay between 2 modules<br>(2 directions)                                                                                                                                                                                                                                                                                                                                                                    | $T_{delay} = (FO \text{ cable delay} + (2 \times \text{Module delay time})) \times 2$<br><br>Continued example: 1.5 Mbps, 22.5 TBit FO delay:<br><br>$T_{delay} = (22.5 + (2 \times 1.8)) \times 2 = 52.2 \text{ TBit}$                                                                                                              |
| <b>Fiber optic specifications</b>                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                      |
| Cable type<br>Cable length<br>Connectors<br><br>Topologies<br><br>Fiber Optic type<br><br>Cascading depth<br>Redundancy                                                                                                                                                                                                                                                                                            | Multimode G62.5 / 125 (OM1)<br>Max. 3 km (baudrate independent)<br>4 x ST/BFOC (2 channels)<br><br>Point-to-point, Star, Bus<br><br>Multimode 850 nm<br>Compatible with most other vendors in 3rd party compatibility mode<br><br>No limit, only busparameter limitation of the master<br>Yes, maximum 10 cables activated by switch |
| <b>Dipswitches</b>                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                      |
| <div><div><div>NW0</div><div>LEFT</div></div><div><div>NW1</div><div>LEFT</div></div><div><div></div><div>RIGHT</div></div><div><div></div><div>LEFT</div></div><div><div></div><div>RIGHT</div></div><div><div></div><div>RIGHT</div></div></div> <div><div>RED</div><div>LEFT</div></div> <div><div></div><div>RIGHT</div></div> <div><div>H/S</div><div>LEFT</div></div> <div><div></div><div>RIGHT</div></div> | <div><div>PROFIBUS Network</div><div>1</div><div>2</div><div>3</div><div>4</div></div> <div><div>Redundancy</div><div>OFF</div><div>ON</div></div> <div><div>Settings</div><div>Hardware</div><div>Software</div></div>                                                                                                              |
| <div><div><div>Redundancy for the current network</div><div>CH1</div><div>CH2</div><div>Dipswitches or web server settings</div><div>Network 1: NW0=L, NW1=L<br/>Network 2: NW0=R, NW1=L<br/>Network 3: NW0=L, NW1=R<br/>Network 4: NW0=R, NW1=R</div></div></div>                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                      |
| <b>Others</b>                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                      |
| Head Station firmware<br>Operating temperature<br>Weight<br>MTBF                                                                                                                                                                                                                                                                                                                                                   | 1.264 and higher<br>0 .. 60 °C<br>121 gram<br>To be defined                                                                                                                                                                                                                                                                          |
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