The heterogen structure of many high speed networks leads to problems at the transition point between different transmission media. The FH/FL-S matches exactly this type of demands in the SDH/SONET environment. It converts signals at STM-1 speeds (155.52 Mbps) from copper to fiber and vice versa. Besides the SDH standard also the SONET standard is supported (conversion from OC-3 to STS-3c). It operates transparent to higher protocols (e.g. ATM) using this basic layer as transport media.

On the copper side both standards are supported with coax (75 W) or STP (150 W) interface whereas the UTP (100 W) version is only suitable for STS-3c. The connectors are BNC or RJ45.

Based on the recommendations of SDH the fiber optic side fits intra-office (short range) and inter-office (long range) applications up to 60 km. Besides several 1300 nm and 1550 nm singlemode drivers (laser and DFB laser) there is also a 1300 nm multimode version available.

Several loops and error indication LEDs provide a suitable tool for error source isolation. For monitor and control purposes, a control processor is available which can be accessed via VT100 or SNMP. If used in a pair the optional Fiber Doubler increases the existing cable capacity by transmitting and receiving data on a single fiber instead of two.

The modems FH-S and FL-S can be delivered as standalone units or as rack mount cards supporting the PANDATEL Uni-Rack concept.
TECHNICAL DATA

General

- LED indicators for TXD, RXD, FO sync, loop mode and I/F signal
- Digital, line and remote loop modes
- Dimensions of the standalone unit: 40 x 145 x 225 mm (H x W x D)

Fiber Optic Side

- STM-1/OC-3 (155.52 Mbps)
- Multimode (MM): 1300 nm LED, 62.5/125 µm
- Singlemode (SM): 1300 nm or 1550 nm LED, Laser or DFB Laser, 9/125 µm
- ST, SC or FC-PC connectors

Copper Port Specification

- Clock is taken from external device
- Data rates: STM-1/STS-3c (155.52 Mbps)

Interfaces:

- STM-1 75 µ balanced (BNC)
- STS-3c 75 µ balanced (BNC)
- STS-3c 100/150 µ balanced (RJ45)

Options

- Relay contact for alarm (standalone units)
- NMS/SNMP for management and diagnostics
- 48 V DC power supply
- WDM Fiber Doubler
- High Power DFB Laser for extended range

LED indicators for TXD, RXD, FO sync, loop mode and I/F signal

Data rates:

Clock is taken from external device

Digital, line and remote loop modes

Dimensions of the standalone unit: 40 x 145 x 225 mm (H x W x D)

Copper Port Specification

- Clock is taken from external device
- Data rates: STM-1/STS-3c (155.52 Mbps)

Optical Data

<table>
<thead>
<tr>
<th></th>
<th>1300 nm MM LED</th>
<th>1300 nm SM LED</th>
<th>1300 nm SM Laser</th>
<th>1550 nm SM Laser</th>
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<tbody>
<tr>
<td>Output power</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(selectable)</td>
<td>-18 or -20 dBm</td>
<td>-14 or -18 dBm</td>
<td>-5 or -12 dBm</td>
<td>-5 or -12 dBm</td>
</tr>
<tr>
<td>Receiver</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>operation range</td>
<td>-18...29 dBm</td>
<td>-14...30 dBm</td>
<td>-14...29 dBm</td>
<td>-14...29 dBm</td>
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<td>Fiber optic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>budget</td>
<td>8 dB</td>
<td>16 dB</td>
<td>24 dB</td>
<td>24 dB</td>
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<tr>
<td>Max. distance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@ fiber type</td>
<td>Up to 5 km</td>
<td>Up to 40 km</td>
<td>Up to 60 km</td>
<td>Up to 80 km</td>
</tr>
<tr>
<td>@ fiber att.</td>
<td>62.5/125 µm</td>
<td>9/125 µm</td>
<td>9/125 µm</td>
<td>9/125 µm</td>
</tr>
<tr>
<td></td>
<td>1.6 dB/km</td>
<td>0.4 dB/km</td>
<td>0.4 dB/km</td>
<td>0.3 dB/km</td>
</tr>
</tbody>
</table>

(1) due to dispersion

Application Example

SDH / PDH Multiplexer

STM-1 / STS-3c

Copper

STM-1 / OC-3

SDH / PDH Multiplexer

FH/FL-S

STM-1 / STS-3c

Copper

STM-1 / OC-3

SDH / PDH Multiplexer

FH/FL-S

ORDER KEY

SONET / SDH
Fiber Optic Converter

Fud-So-(x)/w)xic-p

u: Unit Type Extension
H: Multimode unit
L: Singlemode unit
d: Design
T: Standalone unit
R: Rack mount card
x: Functional Extensions
A: Alarm contact (standalone units)
C: Control port
B: Alarm contact + control port (standalone units)
Y: WDM
w: WDM Specification (if WDM selected)
V: 850/1300 nm MM
Z: 1300/1550 nm SM
i: Fiber Optic Transmitter Specification
8: 850 nm MM Laser
3: 1300 nm MM (not with FC-PC)
9: 1300 nm SM LED
4: 1300 nm SM Laser
B: 1550 nm SM DFB Laser
C: 1550 nm SM DFB Power Laser
c: Fiber Optic Connectors
S: SC
T: ST
F: FC-PC
i: Data Interface Specification
GB: G.703 BNC
CR: ATM Twisted Par, RJ45
p: Power Supply
E: 230 V AC Euro plug
B: 230 V AC British plug
A: 230 V AC Australian plug
U: 115 V AC US
Z: 24 V DC
V: 48 V DC galv. sep.
R: Power supplied via 19” rack

Further combinations on request

For further information about this product line
please contact our distributor.