# SPP85P3010xD – SFP+ Dual Fibre

## 850nm / 300m / 1x/10x Gigabit Ethernet

*For your product safety, please read the following information carefully before any manipulation of the transceiver:*

*ESD*
*This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.*

*LASER SAFETY*
*This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).*

*The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.*

## 1. Overview

SPP85P3010xD is a high performance transceiver module for up to 10× Gigabit Ethernet data links over a multimode fibre pair. The maximum reach is 300m (50/125µm), with 4dB end of life (EOL) power budget. The transmitter is an 850nm VCSEL, the receiver is a PIN photodiode.

This transceiver module is compliant with the Small Form-factor Pluggable (SFP+) Multisource Agreement (MSA) and hot pluggable. Always contact Skylane Optics commercial agents for compatibility with different equipment platforms.

## 2. Features

- Electrical interface specification as per SFF-8431
- Hot pluggable SFP+ footprint
- Management interface specification as per SFF-8431 and SFF-8472
- Class 1 laser safety standard IEC 60825 compliant
- SFP+ MSA package with duplex LC connector
- 850nm VCSEL transmitter
- PIN receiver
- 300m point-to-point transmission on 50/125µm fibre
- Operating temperature range 0°C to 70°C or -40°C to 85°C
- Low power dissipation (< 1W)
- Digital Diagnostics Monitoring (DDM)

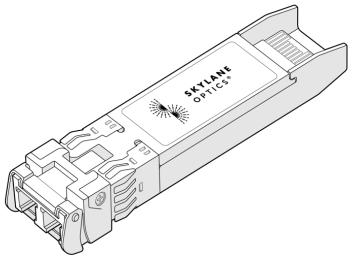

Figure 1. SFP+ Dual Fibre
(non-binding illustration)

## 3. Applications

- 10× Gigabit Ethernet
- 9.83 Gbps CPRI
- 8× Fiber Channel
- 4× Fiber Channel
- 2× Fiber Channel

## 4. Optical Interface

| P/N | Wavelength [nm] | Optical Output Power[2] [dBm] | Receiver Sensitivity[3] [dBm] | Transmitter and Dispersion Penalty [dB] | Receiver Overload[4] [dBm] | Power Budget[2] [dB] |
|---|---|---|---|---|---|---|
| **SPP85P30100D** | 850 | -6 to -1 | ≤ -10 | 3.9 | -1 | ≥ 4 |

1. Distance is estimated assuming typical optical losses after decent quality fibre deployment; Only optical budget value is guaranteed
2. EOL, over operating temperature range
3. Measured with 10.3125Gbps PRBS 231-1, BER≤10-12
4. The optical input to the receiver should not exceed this value. Transmitters must never be directly connected to receivers (optical loop back) before ensuring that proper optical attenuation is used

## 5. Technical Parameters

| 5.1. Recommended Operating Conditions | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Min** | **Typ** | **Max** | **Unit** | **Notes** |
| Storage temperature | -40 | | 85 | °C | |
| Operating Case Temperature | 0 | | 70 | °C | SPP85P30100D, SPP85P3010AD, SPP85P3010GD |
| | -40 | | 85 | | SPP85P30102D |
| Relative Humidity | 5 | | 95 | % | Non condensing |
| Power Supply Voltage | 3.15 | 3.3 | 3.45 | V | |
| Power Supply Current | | | 300 | mA | |
| Power Dissipation | | | 1 | W | |

| 5.2. Transmitter Optical Specifications | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Min** | **Typ** | **Max** | **Unit** | **Notes** |
| Average Output Power | -6 | | -1 | dBm | 5 |
| Centre Wavelength | 840 | | 860 | nm | |
| Spectral Width (RMS) | | | 0.45 | nm | |
| Extinction Ratio | 3 | | | dB | |
| Transmitter and Dispersion Penalty (TDP) | | | 3.9 | dB | |

5. Output power coupled into a 50/125μm μm multimode fibre

| 5.3. Receiver Optical Specifications | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Min** | **Typ** | **Max** | **Unit** | **Notes** |
| Receiver Sensitivity | | | -10 | dBm | 6 |
| Receiver Overload | -1 | | | dBm | 6 |
| Receiver Operating Range | 840 | | 860 | nm | |

6. Measured with 10.3125Gbps PRBS $2^{31}$-1, BER≤$10^{-12}$

## 6. Transceiver Electrical Pad Layout

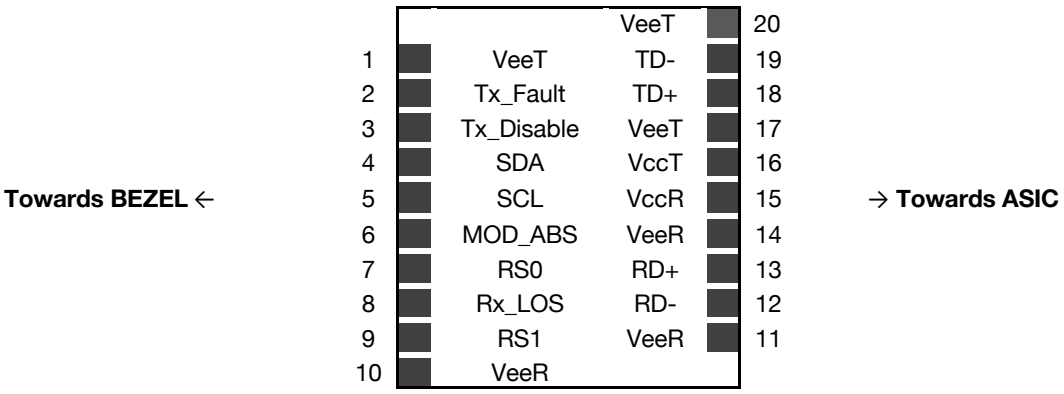


Figure 2. Transceiver Electrical Pad Layout

## 7. Module Electrical Pin Definition

SFP+ MSA (SFF-8431)

| Pin Number | Name | Function |
|---|---|---|
| 1 | VeeT | Module Transmitter Ground |
| 2 | Tx_Fault | Module Transmitter Fault |
| 3 | Tx_ Disable | Transmitter Disable |
| 4 | SDA | 2-Wire Serial Interface Data |
| 5 | SCL | 2-Wire Serial Interface Clock |
| 6 | Mod_ABS | Module Absent |
| 7 | RS0 | Not Used |
| 8 | Rx_LOS | Receiver Loss of Signal |
| 9 | RS1 | Not Used |
| 10 | VeeR | Module Receiver Ground |
| 11 | VeeR | Module Receiver Ground |
| 12 | RD- | Receiver Inverted Data Output |
| 13 | RD+ | Receiver Non-Inverted Data Output |
| 14 | VeeR | Module Receiver Ground |
| 15 | VccR | Module Receiver 3.3V Supply |
| 16 | VccT | Module Transmitter 3.3V Supply |
| 17 | VeeT | Module Transmitter Ground |
| 18 | TD+ | Transmitter Non-Inverted Data Input |
| 19 | TD- | Transmitter Inverted Data Input |
| 20 | VeeT | Module Transmitter Ground |

## 8. EEPROM

SFP+ MSA [SFF-8472]

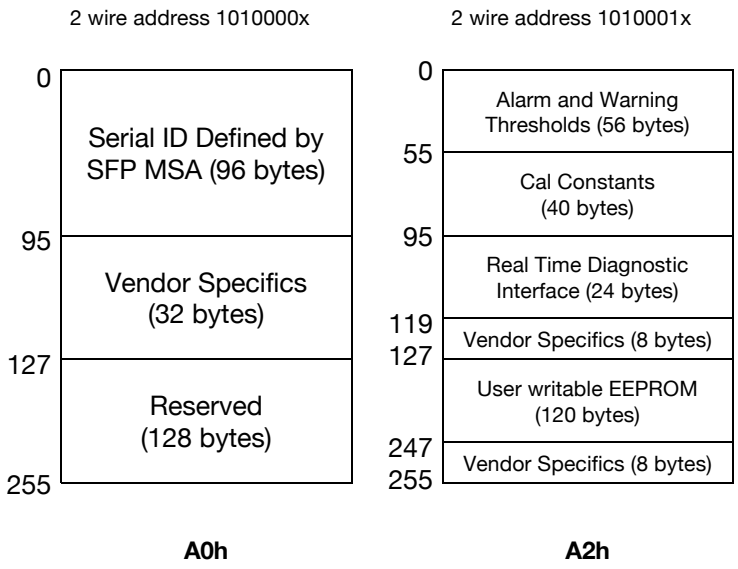


Figure 3. EEPROM of a SFP+

## 9. Ordering Information

| Part Number | Description |
|---|---|
| **SPP85P30100D** | SFP+ Dual Fibre, Tx 850nm (VCSEL), Rx (PIN), maximum distance 300m, power budget 4dB, 10x Gigabit Ethernet, LC connector, **0°C to 70°C**, DDM |
| **SPP85P30102D** | SFP+ Dual Fibre, Tx 850nm (VCSEL), Rx (PIN), maximum distance 300m, power budget 4dB, 10x Gigabit Ethernet, LC connector, **-40°C to 85°C**, DDM |
| **SPP85P3010GD** | SFP+ Dual Fibre, Tx 850nm (VCSEL), Rx (PIN), maximum distance 300m, power budget 4dB, 10x Gigabit Ethernet, LC connector, 0°C to 70°C, DDM, Specific Firmware |
| **SPP85P3010AD** | SFP+ Dual Fibre, Tx 850nm (VCSEL), Rx (PIN), maximum distance 300m, power budget 4dB, 10x Gigabit Ethernet, LC connector, 0°C to 70°C, DDM, Specific Firmware |

## 10. Document Revision Information

| Revision | Description |
|---|---|
| **A** | Initial release |
| **B** | Specification updated to include 8x Fiber Channel compatibility |
| **C** | Ordering information table updated with the “G” and “A” versions |
| **D** | Industrial temperature part SPP85P30102D added |
| **E** | Specification updated to include CPRI compatibility |

Skylane Optics supplies a broad range of optical transceivers. Our engineers work closely with our customers to find the best solutions for every application. We are committed to provide high quality products and services to our customers.

For questions on this product please contact:
**support@skylaneoptics.com**