

## QSFP passive 4x10G Twinaxial Direct Attach Cable



### Description

The BlueLAN® SC253501KXMX QSFP Direct Attach Cable is a low-power, low-cost and low-latency solution for short interconnections between devices in data centers. Choose the most popular connection for 4x10G QSFP data links with up to 5 Meter length.

BlueLAN® QSFP Direct Attach Cables deliver the most flexible and scalable solution for today's demands in data center environments.

BlueLAN® QSFP Direct Attach Cables are 100% compliant with QSFP Multi-Source Agreement (MSA).

### Applications

- ✓ 40GBase-CR4
- ✓ Ethernet / Fiber Channel
- ✓ Infiniband
- ✓ Switch to Switch Interface
- ✓ Router/Server Interface
- ✓ Other links

### Features

- ✓ 40Gb/s serial optical interface
- ✓ Go Green and reduce OPEX:  
Maximum 1 mW power consumption
- ✓ Hot-pluggable QSFP footprint compliant to SFF-8436
- ✓ 100 Ohm differential impedance
- ✓ Available in following length (Meter):  
1, 3, 5
- ✓ AC coupled input and outputs
- ✓ Custom EEPROM signature
- ✓ Nickel plated zinc diecast enclosure, for lower EMI
- ✓ RoHS compliant and lead-free
- ✓ Single +3.3V power supply
- ✓ Case operating temperature  
Commercial: 0°C to +70°C  
Industrial: -40°C to +85°C

## Warnings

**Handling Precautions:** This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended.

## Warranty

Every BlueLAN® Direct Attach Cable comes with a 5 year replacement warranty and lifetime support.

For a warranty inquiry, please contact your CBO sales representative.

This warranty only covers the first user of the equipment.

## Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by CBO before they become applicable to any particular order or contract. In accordance with the CBO policy of continuous improvement specifications may change without notice.

The publication of information in this data sheet does not imply freedom from patent or other protective rights of CBO or others.

Further details are available from any CBO sales representative.

## Installation

Before installation attach an ESD-preventive wrist to ensure not to damage the Direct Attach Cable or hardware.

BlueLAN® SC253501KXMX can be installed in any Small Form Factor Pluggable (QSFP) port. You can install the SC253501KXMX regardless if the system is powered on or off, because it is hot-swappable.

Insert each connector of the Direct Attach Cable into the QSFP port of your devices.

You can now use your link.

## Order Information

| Part No.        | Length  | Temperature  | AWG |
|-----------------|---------|--------------|-----|
| SC253501K1M30   | 1 Meter | 0°C – 70°C   | 30  |
| SC253501K3M30   | 3 Meter | 0°C – 70°C   | 30  |
| SC253501K1M28   | 1 Meter | 0°C – 70°C   | 28  |
| SC253501K3M28   | 3 Meter | 0°C – 70°C   | 28  |
| SC253501K5M28   | 5 Meter | 0°C – 70°C   | 28  |
| SC253501K1M24   | 1 Meter | 0°C – 70°C   | 24  |
| SC253501K3M24   | 3 Meter | 0°C – 70°C   | 24  |
| SC253501K5M24   | 5 Meter | 0°C – 70°C   | 24  |
| SC253501K1M30IN | 1 Meter | -40°C – 85°C | 30  |
| SC253501K3M30IN | 3 Meter | -40°C – 85°C | 30  |
| SC253501K1M28IN | 1 Meter | -40°C – 85°C | 28  |
| SC253501K3M28IN | 3 Meter | -40°C – 85°C | 28  |
| SC253501K5M28IN | 5 Meter | -40°C – 85°C | 28  |
| SC253501K1M24IN | 1 Meter | -40°C – 85°C | 24  |
| SC253501K3M24IN | 3 Meter | -40°C – 85°C | 24  |
| SC253501K5M24IN | 5 Meter | -40°C – 85°C | 24  |

## Regulatory Compliance

| Feature                            | Standard                                                | Co. |
|------------------------------------|---------------------------------------------------------|-----|
| Electrostatic Discharge (ESD)      | - IEC/EN 61000-4- 2                                     | ✓   |
| Electromagnetic Interference (EMI) | - FCC Part 15 Class B EN 55022<br>- Class B (CISPR 22A) | ✓   |
| Component Recognition              | - IEC/EN 60950, UL                                      | ✓   |
| RoHS                               | - 2002/95/EC                                            | ✓   |
| EMC                                | - EN61000-3                                             | ✓   |

## 1. General Information

| Parameter                         | Value                      |
|-----------------------------------|----------------------------|
| Min. Dielectric Withstand Voltage | 300 VDC                    |
| Insulation Resistance             | 100 Mega Ohm               |
| Mega Ohm Current Rating           | 0.5 Amp Min/Signal Contact |
| Flammability Rating               | UL 94 V-0                  |
| Shield                            | Braid/Foil                 |

## 2. Raw Cable Characteristics

| Parameter      | Value                                              |
|----------------|----------------------------------------------------|
| Conductor      | Solid                                              |
| Wire Gauge     | 30 AWG to 24 AWG                                   |
| Impedance      | 100 $\pm$ 5 Ohm                                    |
| Construction   | Twinaxial                                          |
| Cable Diameter | 30 AWG = 4.2mm<br>28 AWG = 4.7mm<br>24 AWG = 6.2mm |
| Jacket Type    | PVC                                                |
| Bend Radius    | 5X Cable Diameter                                  |

## 3. Plug Characteristics

| Parameter           | Value                       |
|---------------------|-----------------------------|
| Back shell Material | Nickel Plated Zinc Diecast  |
| Contact             | PCB with Gold-Plated Pads   |
| Latch               | Positive latching with pull |
|                     | SFP+ 40N maximum            |
|                     | QSFP 40N maximum            |
|                     | SFP+ 11.5N maximum          |
|                     | QSFP 30N maximum            |
| Retention Force     | 90N maximum                 |
|                     | SFP+ 50 Cycles minimum      |
|                     | QSFP 250 Cycles minimum     |

## 4. Electrical Interface Characteristics

| Parameter                  | Symbol | Min.  | Typ. | Max.              | Unit | Note |
|----------------------------|--------|-------|------|-------------------|------|------|
| Power Supply Voltage       | Vcc    | 3.15  | 3.3  | 3.46              | V    |      |
| Power Supply Current       | Icc    |       |      | 0.1               | mA   |      |
| Power Total                |        |       |      | 1                 | mW   |      |
| Clock frequency            | Fscl   |       |      | 400               | kHz  |      |
| Data Rate per Channel (4x) |        | 0.010 |      | 10.3125(QDR)      | Gbps |      |
| Bit Error Rate             |        |       |      | 10 <sup>-12</sup> |      |      |

## 5. EEPROM Information SFP+

The SFP MSA defines a 256-byte memory map in EEPROM describing the transceivers capabilities, standard interfaces, manufacturer, and other information, which is accessible over a 2 wire serial interface at the 8-bit address 1010000X (A0h).

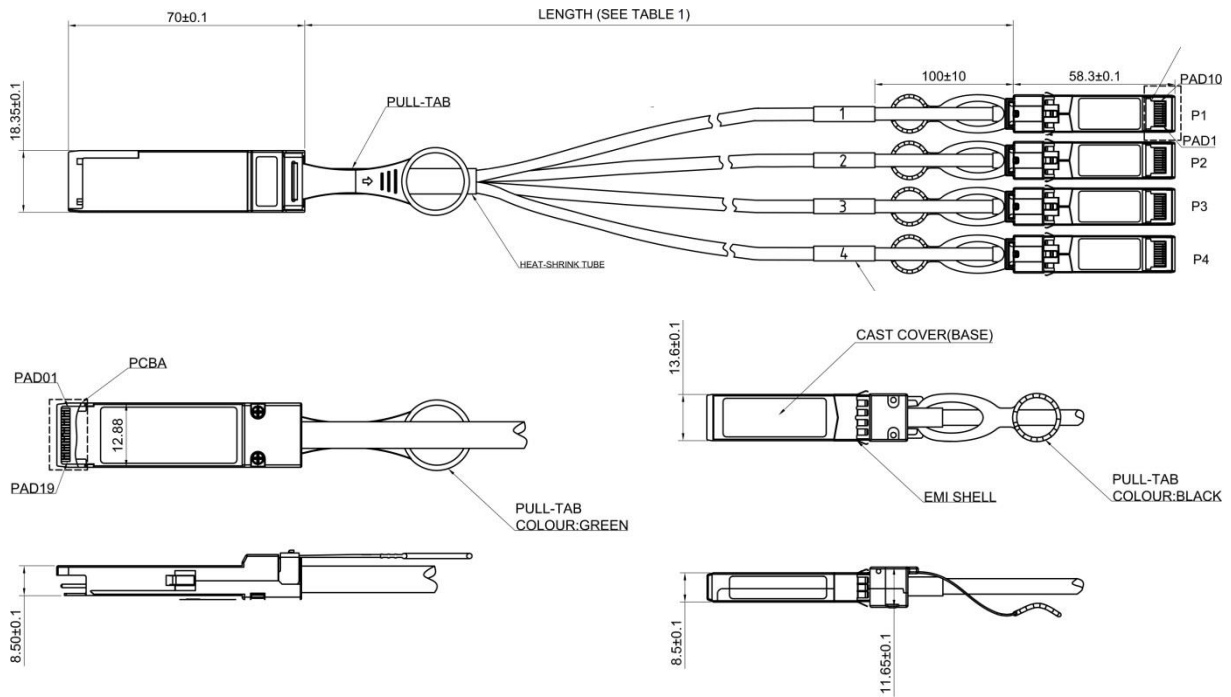
| Data Address | Field Size (Bytes) | Name of Field     | Contents (Hex)                                     | Description                        |
|--------------|--------------------|-------------------|----------------------------------------------------|------------------------------------|
| 0            | 1                  | Identifier        | XX                                                 | Formfactor                         |
| 1            | 1                  | Ext. Identifier   | XX                                                 |                                    |
| 2            | 1                  | Connector         | XX                                                 |                                    |
| 3-10         | 8                  | Transceiver       | XX XX XX XX XX XX XX XX                            | Transmittter Code                  |
| 11           | 1                  | Encoding          | XX                                                 |                                    |
| 12           | 1                  | BR, Nominal       | XX                                                 | Transceiver Speed                  |
| 13           | 1                  | Reserved          | 00                                                 |                                    |
| 14           | 1                  | Length (9μm) km   | XX                                                 | Max. link length in KM             |
| 15           | 1                  | Length (9μm) 100m | XX                                                 | Max. link length in M              |
| 16           | 1                  | Length (50μm) 10m | XX                                                 | Max. link length in M              |
| 17           | 1                  | Length(62.5μm)10m | XX                                                 | Max. link length in M              |
| 18           | 1                  | Length (Copper)   | XX                                                 | Max. link length in M              |
| 29           | 1                  | Reserved          | 00                                                 |                                    |
| 30-35        | 16                 | Vendor name       | XX XX XX XX XX XX XX XX<br>XX XX XX XX XX XX XX XX | Vendor name - OEM                  |
| 36           | 1                  | Reserved          | 00                                                 |                                    |
| 37-39        | 3                  | Vendor OUI        | XX XX XX                                           |                                    |
| 40-55        | 16                 | Vendor PN         | XX XX XX XX XX XX XX XX<br>XX XX XX XX XX XX XX XX | Product Number - depending on Part |
| 56-59        | 4                  | Vendor rev        | XX XX XX XX                                        | Vendor revision                    |
| 60-61        | 2                  | Wavelength        | XX XX                                              | Transceiver Wavelength             |
| 62           | 1                  | Reserved          | 00                                                 |                                    |
| 63           | 1                  | CC BASE           | XX                                                 | Checksum of bytes 0-62             |
| 64-65        | 2                  | Options           | XX XX                                              |                                    |
| 66           | 1                  | BR, max           | XX                                                 |                                    |
| 67           | 1                  | BR, min           | XX                                                 |                                    |
| 68-83        | 16                 | Vendor SN         | XX XX XX XX XX XX XX XX<br>XX XX XX XX XX XX XX XX | Part serial number                 |
| 84-91        | 8                  | Vendor date code  | XX XX XX XX XX XX 20 20                            | Year, Month, Day                   |
| 92           | 1                  | Diagnostic type   | XX                                                 | Diagnostics                        |
| 93           | 1                  | Enhanced option   | XX                                                 | Diagnostics                        |
| 94           | 1                  | SFF-8472          | XX                                                 | Diagnostics                        |
| 95           | 1                  | CC_EXT            | XX                                                 | Checksum of bytes 64-94            |
| 96-255       | 160                | Vendor Specific   |                                                    |                                    |

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The SFP MSA defines a 256-byte memory map in EEPROM describing the transceivers capabilities, standard interfaces, manufacturer, and other information, which is accessible over a 2 wire serial interface at the 8-bit address 1010000X (A0h).

| Data Address | Field Size (Bytes) | Name of Field                  | Description                                                                                                  |
|--------------|--------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------|
| 128          | 1                  | Identifier                     | Formfactor                                                                                                   |
| 129          | 1                  | Ext. Identifier                |                                                                                                              |
| 130          | 1                  | Connector                      |                                                                                                              |
| 131-138      | 8                  | Transceiver                    | Transmittter Code                                                                                            |
| 139          | 1                  | Encoding                       |                                                                                                              |
| 140          | 1                  | BR, Nominal                    | Transceiver Speed                                                                                            |
| 141          | 1                  | Extended RateSelect Compliance | Tags for Extended RateSelect compliance                                                                      |
| 142          | 1                  | Length (9µm) km                | Max. link length in KM                                                                                       |
| 143          | 1                  | Length (9µm) 100m              | Max. link length in M                                                                                        |
| 144          | 1                  | Length (50µm) 10m              | Max. link length in M                                                                                        |
| 145          | 1                  | Length(62.5µm)10m              | Max. link length in M                                                                                        |
| 146          | 1                  | Length (Copper)                | Max. link length in M                                                                                        |
| 147          | 1                  | Device Tech                    | Device technology                                                                                            |
| 148-163      | 16                 | Vendor name                    | Vendor name - OEM                                                                                            |
| 164          | 1                  | Extended Transceiver           | Extended Transceiver Codes for InfiniBand                                                                    |
| 165-167      | 3                  | Vendor OUI                     |                                                                                                              |
| 168-183      | 16                 | Vendor PN                      | Product Number - depending on Part                                                                           |
| 184-185      | 2                  | Vendor rev                     | Vendor revision                                                                                              |
| 186-187      | 2                  | Wavelength                     | Transceiver Wavelength                                                                                       |
| 188-189      | 2                  | Wavelength tolerance           | Guaranteed range of laser wavelength (+/- value) from Nominal wavelength (Wavelength Tol. = value/200 in nm) |
| 190          | 1                  | Max Case Temp                  | Maximum Case Temperature in Degrees C                                                                        |
| 191          | 1                  | CC_BASE                        | Check code for Base ID Fields (addresses 128-190)                                                            |
| 192-195      | 4                  | Options                        | Rate Select, TX Disable, TX Fault, LOS                                                                       |
| 196-211      | 16                 | Vendor SN                      | Part serial number                                                                                           |
| 212-219      | 8                  | Vendor date code               | Year, Month, Day                                                                                             |
| 220          | 1                  | Diagnostic type                | Diagnostics                                                                                                  |
| 221          | 1                  | Enhanced option                | Indicates which optional enhanced features are implemented in the transceiver.                               |
| 222          | 1                  | Reserved                       | Reserved                                                                                                     |
| 223          | 1                  | CC_EXT                         | Check code for the Extended ID Fields (addresses 192-222)                                                    |
| 224-255      | 32                 | Vendor Specific                | Vendor Specific EEPROM                                                                                       |

## 7. Mechanical Specifications (Unit: mm)



| Bend Radi |          |      |                          |      |                         |       |
|-----------|----------|------|--------------------------|------|-------------------------|-------|
| AWG       | Diameter |      | Bend Radius min.<br>(mm) |      | Bend Space min.<br>(mm) |       |
|           | SFP+     | QSFP | SFP+                     | QSFP | SFP+                    | QSFP  |
| 30        | 4.4      | 10.3 | 22.0                     | 56.5 | 55.0                    | 113.0 |
| 28        | 4.7      | 10.6 | 23.5                     | 53.0 | 48.6                    | 106.0 |
| 24        | 6.0      | 11.3 | 30                       | 51.5 | 46.2                    | 103.0 |

