



### **MC2210511-PIR4-OPC**

Mellanox® MC2210511-PIR4 Compatible TAA 40GBase-IR4 QSFP+ Transceiver (SMF, 1310nm, 2km, MPO, DOM)

#### **Features**

- SFF-8436 Compliance
- MPO Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



#### **Applications:**

- 40GBase Ethernet
- Access and Enterprise

#### **Product Description**

This Mellanox® MC2210511-PIR4 compatible QSFP+ transceiver provides 40GBase-IR4 throughput up to 2km over single-mode fiber (SMF) using a wavelength of 1310nm via an MPO connector. It is guaranteed to be 100% compatible with the equivalent Mellanox® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V <sub>CC</sub>	0		+3.6	V
Storage Temperature	T <sub>st</sub>	-40		+85	°C
Humidity (non-condensing)	Rh	5		85	%

## Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	V <sub>CC</sub>	3.13	3.3	3.47	V
Operating Case Temperature	T <sub>ca</sub>	0	25	+70	°C
Data Rate Per Channel				10.3125	Gbps
Power Supply Voltage	V <sub>CC</sub>	3.135	3.3	3.465	%
Power Supply Current				2.5	W

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter Differential Input Voltage	V <sub>IN</sub>	180		800	mV <sub>pp</sub>	
Receiver Differential Output Voltage	V <sub>O</sub>	400	450	850	mV <sub>pp</sub>	1
Loss of Signal (LOS)	V <sub>CH</sub>	2		V <sub>CC</sub>	V	2
	V <sub>OL</sub>	V <sub>EE</sub>		V <sub>EE</sub> + 0.8		
Transmitter Disable (TX-Disable)	V <sub>IH</sub>	2		V <sub>CC</sub>	V	
	V <sub>IL</sub>	V <sub>EE</sub>		V <sub>EE</sub> + 0.8		
Rx Output Rise and Fall Time	T <sub>r</sub> /T <sub>f</sub>	28			P <sub>s</sub>	20% to 80%

### Notes:

1. SFF-8431, SFP+ Module receiver output specifications at C'.
2. LOS is an open collector output. Should be pulled up with 4.7kΩ – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1.

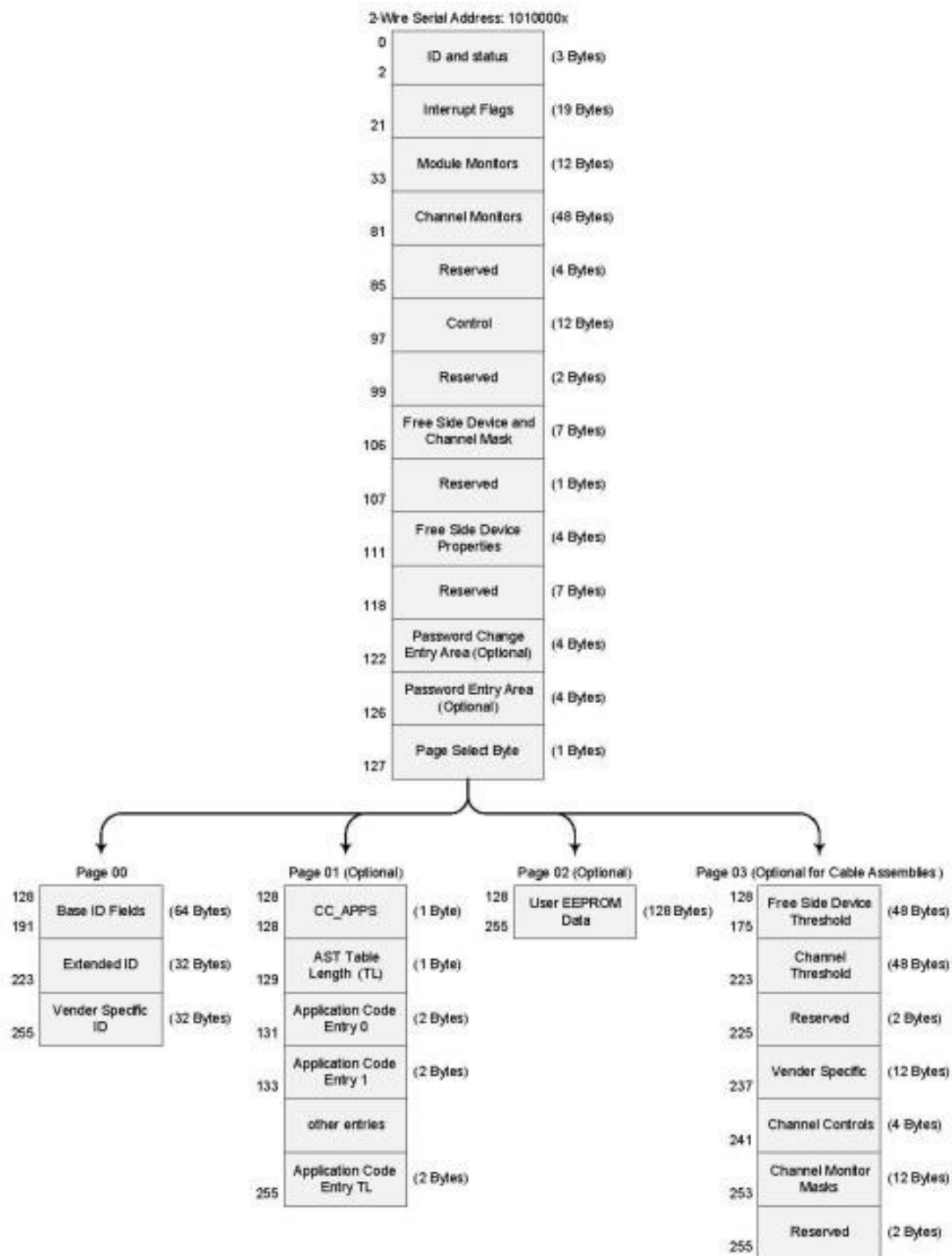
## Optical Characteristics

Parameter		Symbol	Unit	Min.	Typ.	Max.	Notes
Transmitter							
Average Launch Power, each lane		P <sub>o</sub>	dBm	-8.2		+0.5	
Center wavelength		λ <sub>c</sub>	nm	1260		1355	
Optical Spectral Width (RMS)		Δλ	nm			2.5	
Extinction ratio		ER	Db	3.0			
Optical power OMA, each lane		P <sub>OMA</sub>	dBm	-5.2		+1.5	1
Average launch power of OFF transmitted, each lane		P <sub>off</sub>	dBm			-30	
RIN <sub>12</sub> OMA		RIN	dB/Hz			-128	
Optical return loss tolerance		ORL <sub>T</sub>	dB	12			2
Output eye			Compliant with IEEE802.3ba eye mask				
Receiver							
Center Wavelength		λ <sub>c</sub>	nm	1260		1355	
Receiver Overload in OMA, each lane		RxOMA	dBm	+1.5			
Receiver Overload in average power, each lane		P <sub>max</sub>	dBm	+0.5			3
Average receive power, each lane		RxP <sub>x</sub>	dBm	-11.5			4
Receiver Sensitivity in OMA, each lane		Sen <sub>OMA</sub>	dBm			-9.5	5, for 1.0km type
Receiver Sensitivity in OMA, each lane		Sen <sub>OMA</sub>	dBm			-10.5	5, for 1.5km type
Receiver Crossing		RCP	%	45		55	
Receiver Eye Mask		SFF-8431, SFP+MODULE RECEIVER OUTPUT SPECIFICATIONS AT C'.					
Receiver Eye Mask Margin		REMM	%	0			
Receiver Reflectance		R <sub>rx</sub>	dB			-12	
LOS	Assert	LOSA	dBm	-30			
	De-assert	LOSD	dBm			-12	
LOS Hysteresis		LOSH	dB	0.5		6	

### Notes:

1. Even if the TDP < 1 dB, the OMA (min) must exceed this value.
2. Transmitter reflectance is defined looking into the transmitter
3. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having a power level equal to the average receive power (max) plus at least 1 dB.
4. Average receive power (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
5. PRBS 231 -1 at BER 10<sup>-12</sup> , ER=3.0dB

Digital Diagnostic Memory Map



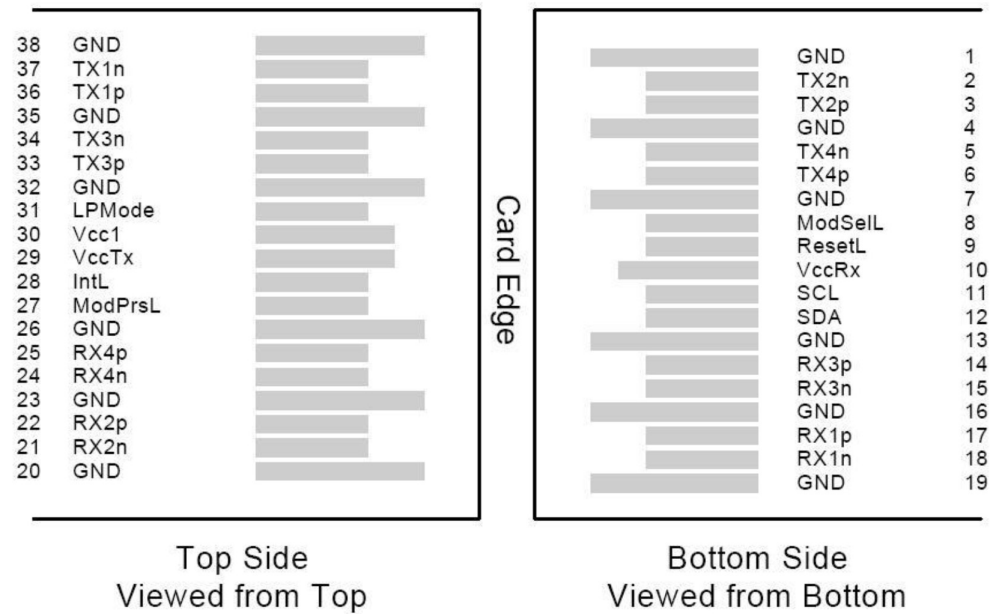
## Pin Descriptions

Pin	Logic	Symbol	Name/Descriptions	Ref.
1		GND	Module Ground	1
2	CML-I	Tx2-	Transmitter inverted data input	
3	CML-I	Tx2+	Transmitter non-inverted data input	
4		GND	Module Ground	1
5	CML-I	Tx4-	Transmitter inverted data input	
6	CML-I	Tx4+	Transmitter non-inverted data input	
7		GND	Module Ground	1
8	LVTTL-I	MODSEIL	Module Select	2
9	LVTTL-I	ResetL	Module Reset	2
10		VCCR <sub>x</sub>	+3.3v Receiver Power Supply	
11	LVC <sub>MOS</sub> -I	SCL	2-wire Serial interface clock	2
12	LVC <sub>MOS</sub> -I/O	SDA	2-wire Serial interface data	2
13		GND	Module Ground	1
14	CML-O	RX3+	Receiver non-inverted data output	
15	CML-O	RX3-	Receiver inverted data output	
16		GND	Module Ground	1
17	CML-O	RX1+	Receiver non-inverted data output	
18	CML-O	RX1-	Receiver inverted data output	
19		GND	Module Ground	1
20		GND	Module Ground	1
21	CML-O	RX2-	Receiver inverted data output	
22	CML-O	RX2+	Receiver non-inverted data output	
23		GND	Module Ground	1
24	CML-O	RX4-	Receiver inverted data output	
25	CML-O	RX4+	Receiver non-inverted data output	
26		GND	Module Ground	1
27	LVTTL-O	ModPrsL	Module Present, internal pulled down to GND	
28	LVTTL-O	IntL	Interrupt output should be pulled up on host board	2
29		VCCT <sub>x</sub>	+3.3v Transmitter Power Supply	
30		VCC1	+3.3v Power Supply	
31	LVTTL-I	LPM <sub>Mode</sub>	Low Power Mode	2
32		GND	Module Ground	1
33	CML-I	Tx3+	Transmitter non-inverted data input	
34	CML-I	Tx3-	Transmitter inverted data input	
35		GND	Module Ground	1
36	CML-I	Tx1+	Transmitter non-inverted data input	
37	CML-I	Tx1-	Transmitter inverted data input	
38		GND	Module Ground	1

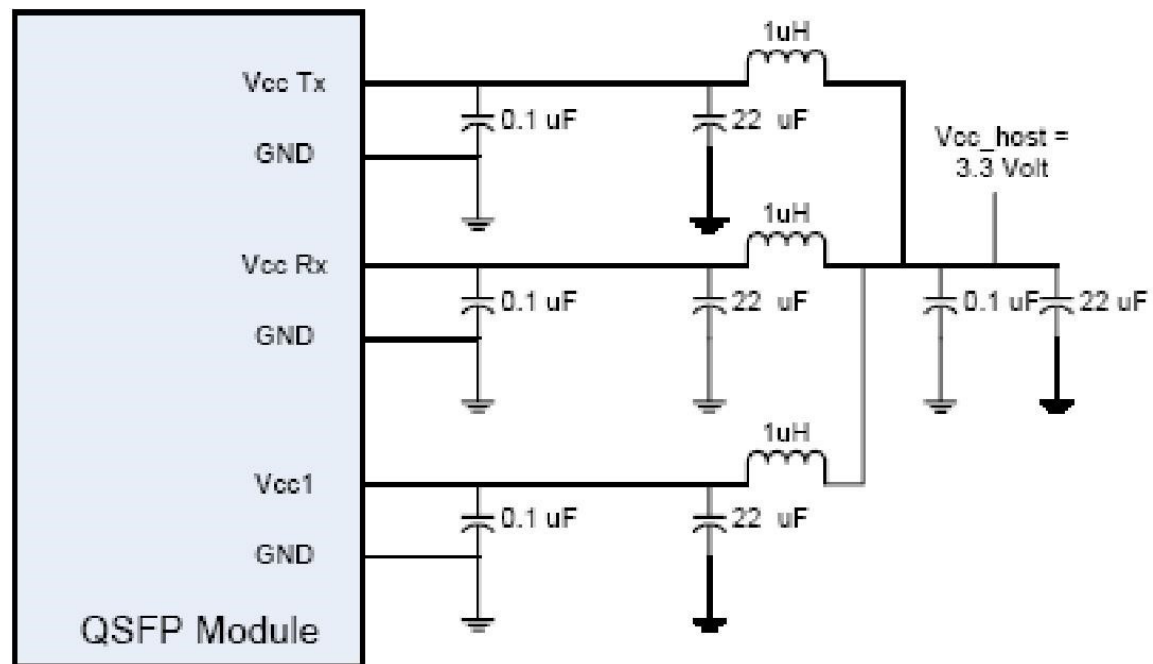
**Notes:**

- 1. GND is the symbol for signal and supply (power) common for QSFP+ modules. All are common within the QSFP+ module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal common ground plane.
- 2. VccRx, Vcc1 and VccTx are the receiver and transmitter power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown in the figure below. Vcc Rx, Vcc1 and VccTx may be internally connected within the QSFP+ transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

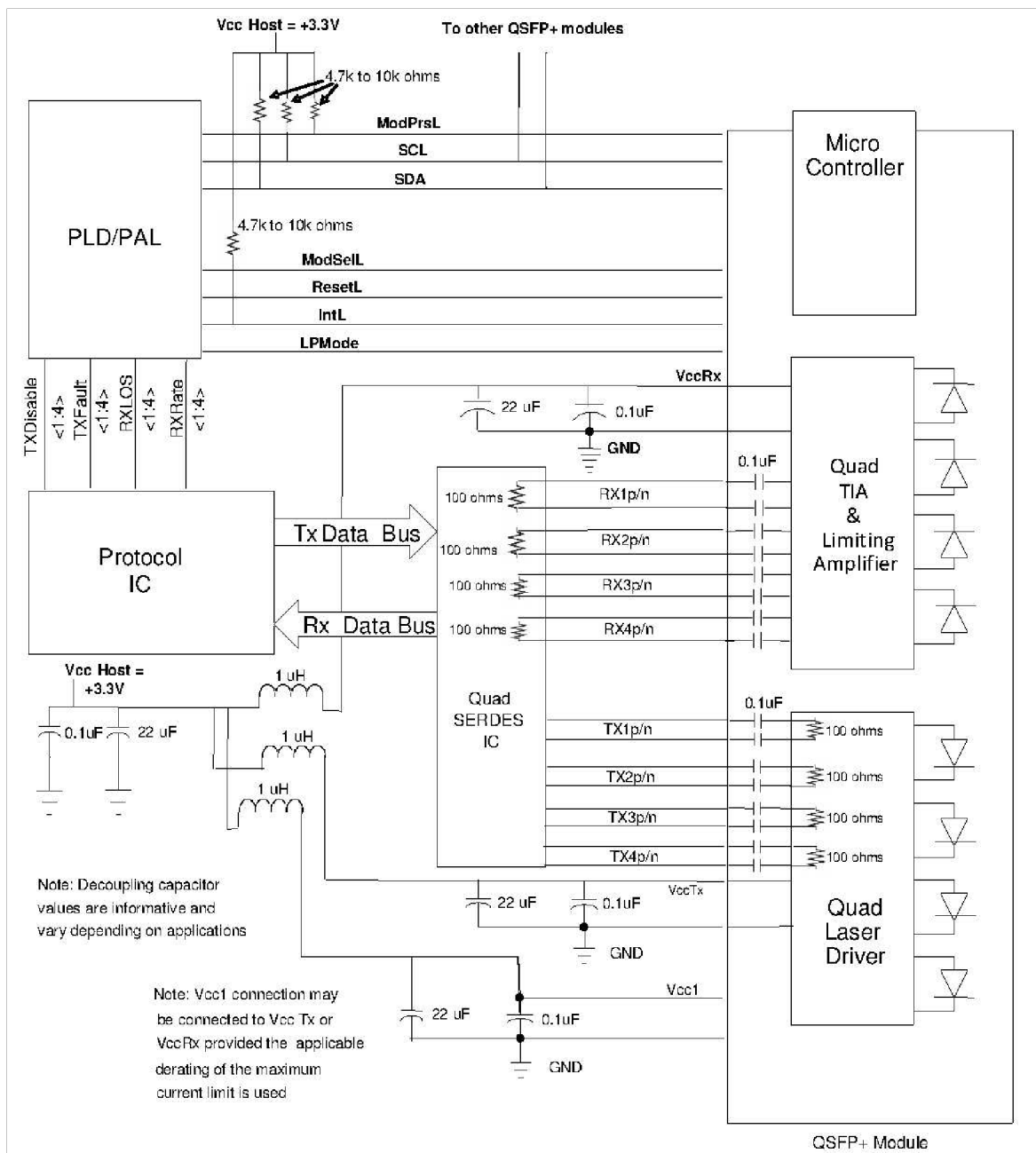
**Electrical Pin-out Details**



### Recommended Power Supply Filter

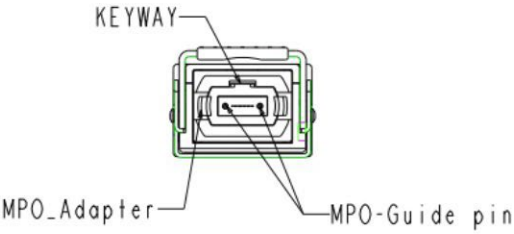
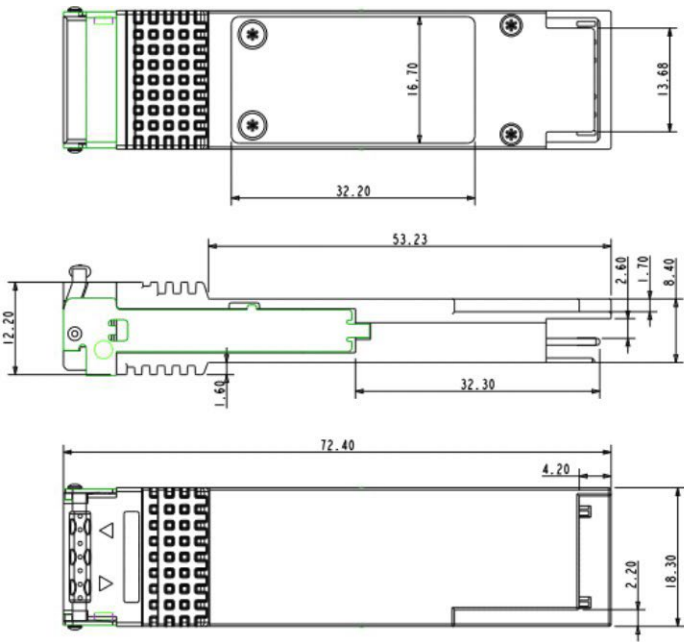


## Typical Application Circuit





Mechanical Specifications



## **OptioConnect**

### **Innovation for the Future of High-Speed Networking**

#### **Who We Are**

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

#### **What We Do**

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

#### **Smarter Networks by Design**

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

#### **Our Team**

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

#### **Our Mission**

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

#### **Let's Connect**

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

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