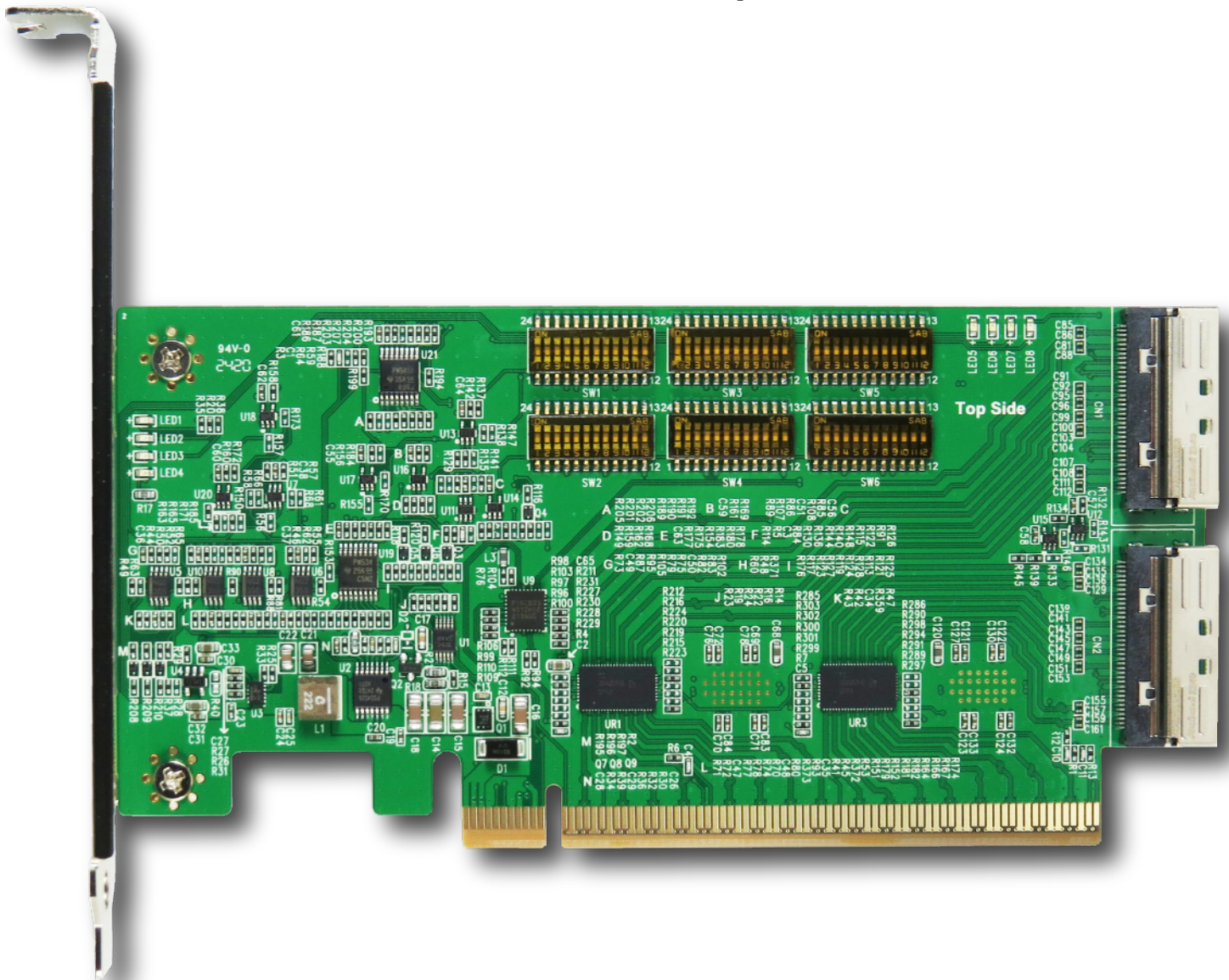




# Minerva

## EP6121

PCIe x16 Gen5 with ReDriver to MCIO 74P  
(SFF-TA-1016) dual port AIC



# PCIe x16 Gen5 with ReDriver to MCIO 74P dual port

## Features

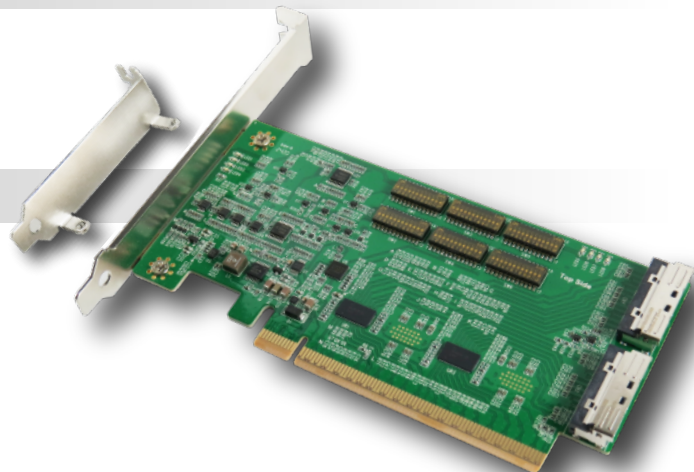
- ※ MCIO 74P dual port to PCIe x16 Gen5 convert
- ※ Built-in MCIO 74P dual port connectors with 30u"(0.38um) min Au mating area plating
- ※ Input PCIe CEM +12V power with TVS protection, 400W Peak Pulse Power Dissipation
- ※ PCIe CEM +12V power with high side protection controller to enable N-MOS FET for 12V, 5A output
- ※ PCIe CEM +12V PWM buck to 3.3V, 5A output with Eco-mode
- ※ 3.3V, 5A Load Switch With Automatic Restart after Supervisor Fault Detection when Enabled to protect PCIe 5.0 ReDriver controller
- ※ Input PCIe CEM power 3.3Vaux with Load Switch protection for Bus Buffer IC.
- ※ Built-in ReDriver controller to extend PCIe 5.0, 32GT/s 16 lanes signals and may provide programmable linear equalization, flat gain.
- ※ ReDriver CTLE boosts up to 22 dB at 16 GHz
- ※ The PCIe 16 lanes can be bifurcated into four x4 link width to support different system topologies
- ※ Built-in PCIe 100MHz clock buffer(Address: 0x6C) for MCIO 74P dual port to drive PCB more trace reach and longer cable length.
- ※ Built-in SMBus Switch(Address: 0x70) with Reset function for MCIO 74P dual port SMBus communication
- ※ Built-in SMBus I/O Expander(Address: 0x20) for OOB(out of band) management to remote MCIO 74P dual port Reset signals
- ※ Built-in PERST# Bus Buffer Gate to be used in PCB more trace reach and longer cable length.
- ※ Supports PCIe PERST# for OOB(out of band) management to remote MCIO 74P dual port Reset signals.
- ※ Built-in WAKE# Bus Buffer Gate to be used in PCB more trace reach and longer cable length.
- ※ Built-in CLKREQ# Bus Buffer Gate to be used in PCB more trace reach and longer cable length.
- ※ LED1 Green ON indicates +12V ready
- ※ LED2 Green ON indicates +3.3V ready
- ※ LED3 Green ON indicates Vaux ready
- ※ LED4 Red ON indicates Input +12V Error
- ※ LED5 Red OFF indicates PERST# Normal (Function intentionally inverted)
- ※ LED6 Red OFF indicates WAKE# Normal (Function intentionally inverted)
- ※ LED7 Red OFF indicates CLKREQ# Normal (Function intentionally inverted)
- ※ LED8 Green ON indicates Add-in card presnt

## Specifications

- ※ PCI Express Base Specification Rev 5.0
- ※ PCIe\_CEM\_R5.1\_V1.0\_08072023\_NCB
- ※ SFF-TA-1016 Rev 1.2

## Applications

- ※ Rack server
- ※ Microserver and Tower server
- ※ High performance computing
- ※ Hardware accelerator
- ※ Storage Controller HBA(Host Bus Adapter)
- ※ Desktop PC/motherboard



# PCIe x16 Gen5 with ReDriver to MCIO 74P dual port

EP6121 AIC Switch Setting for Equalization, Flat Gain as below:

Equalization Control Settings					
				INDEX	EQ Gain
SW1 For UR1	1-24	on	EQ1 BANK1 Settings	L0	
	2-23	on		L1	
	3-22	on		L2	
	4-21	on		L3	
				L4	
	5-20	on	EQ0 BANK1 Settings	L0	
	6-19	on		L1	
	7-18	on		L2	
	8-17	on		L3	
				L4	
	9-16	on	EQ1 BANK0 Settings	L0	
	10-15	on		L1	
11-14	on	L2			
12-13	on	L3			
			L4		

Equalization Control Settings					
				INDEX	EQ Gain
SW2 For UR1	1-24	on	EQ0 BANK0 Settings	L0	
	2-23	on		L1	
	3-22	on		L2	
	4-21	on		L3	
			L4		
SW2 For UR2	5-20	on	EQ1 BANK1 Settings	L0	
	6-19	on		L1	
	7-18	on		L2	
	8-17	on		L3	
			L4		
SW3 For UR2	9-16	on	EQ0 BANK1 Settings	L0	
	10-15	on		L1	
	11-14	on		L2	
	12-13	on		L3	
			L4		

Equalization Control Settings						
				INDEX	EQ Gain	
SW3 For UR2	1-24	on	EQ1 BANK0 Settings	L0		
	2-23	on		L1		
	3-22	on		L2		
	4-21	on		L3		
				L4		
	5-20	on	EQ0 BANK0 Settings	L0		
	6-19	on		L1		
	7-18	on		L2		
	8-17	on		L3		
				L4		
	SW3 For UR1, UR2	Flat Gain Settings			INDEX	Flat Gain
		9-16	on		L0	-6 dB
10-15		on		L1	-4 dB	
11-14		on		L2	-2 dB	
				L3	2 dB	
				L4 (float)	0 dB	

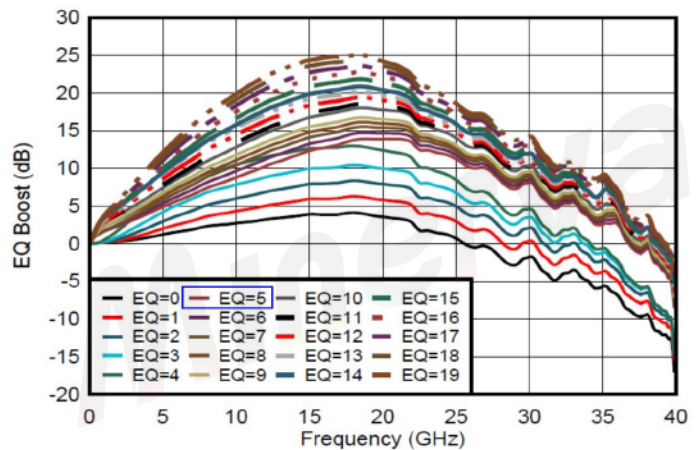
Equalization Control Settings					
				INDEX	EQ Gain
SW4 For UR3	1-24	on	EQ1 BANK1 Settings	L0	
	2-23	on		L1	
	3-22	on		L2	
	4-21	on		L3	
				L4	
	5-20	on	EQ0 BANK1 Settings	L0	
	6-19	on		L1	
	7-18	on		L2	
	8-17	on		L3	
				L4	
	9-16	on	EQ1 BANK0 Settings	L0	
	10-15	on		L1	
11-14	on	L2			
12-13	on	L3			
			L4		

Equalization Control Settings					
				INDEX	EQ Gain
SW5 For UR3	1-24	on	EQ0 BANK0 Settings	L0	
	2-23	on		L1	
	3-22	on		L2	
	4-21	on		L3	
			L4		
SW5 For UR4	5-20	on	EQ1 BANK1 Settings	L0	
	6-19	on		L1	
	7-18	on		L2	
	8-17	on		L3	
			L4		
SW6 For UR4	9-16	on	EQ0 BANK1 Settings	L0	
	10-15	on		L1	
	11-14	on		L2	
	12-13	on		L3	
			L4		

Equalization Control Settings						
				INDEX	EQ Gain	
SW6 For UR4	1-24	on	EQ1 BANK0 Settings	L0		
	2-23	on		L1		
	3-22	on		L2		
	4-21	on		L3		
				L4		
	5-20	on	EQ0 BANK0 Settings	L0		
	6-19	on		L1		
	7-18	on		L2		
	8-17	on		L3		
				L4		
	SW6 For UR3, UR4	Flat Gain Settings			INDEX	Flat Gain
		9-16	on		L0	-6 dB
10-15		on		L1	-4 dB	
11-14		on		L2	-2 dB	
				L3	2 dB	
				L4 (float)	0 dB	

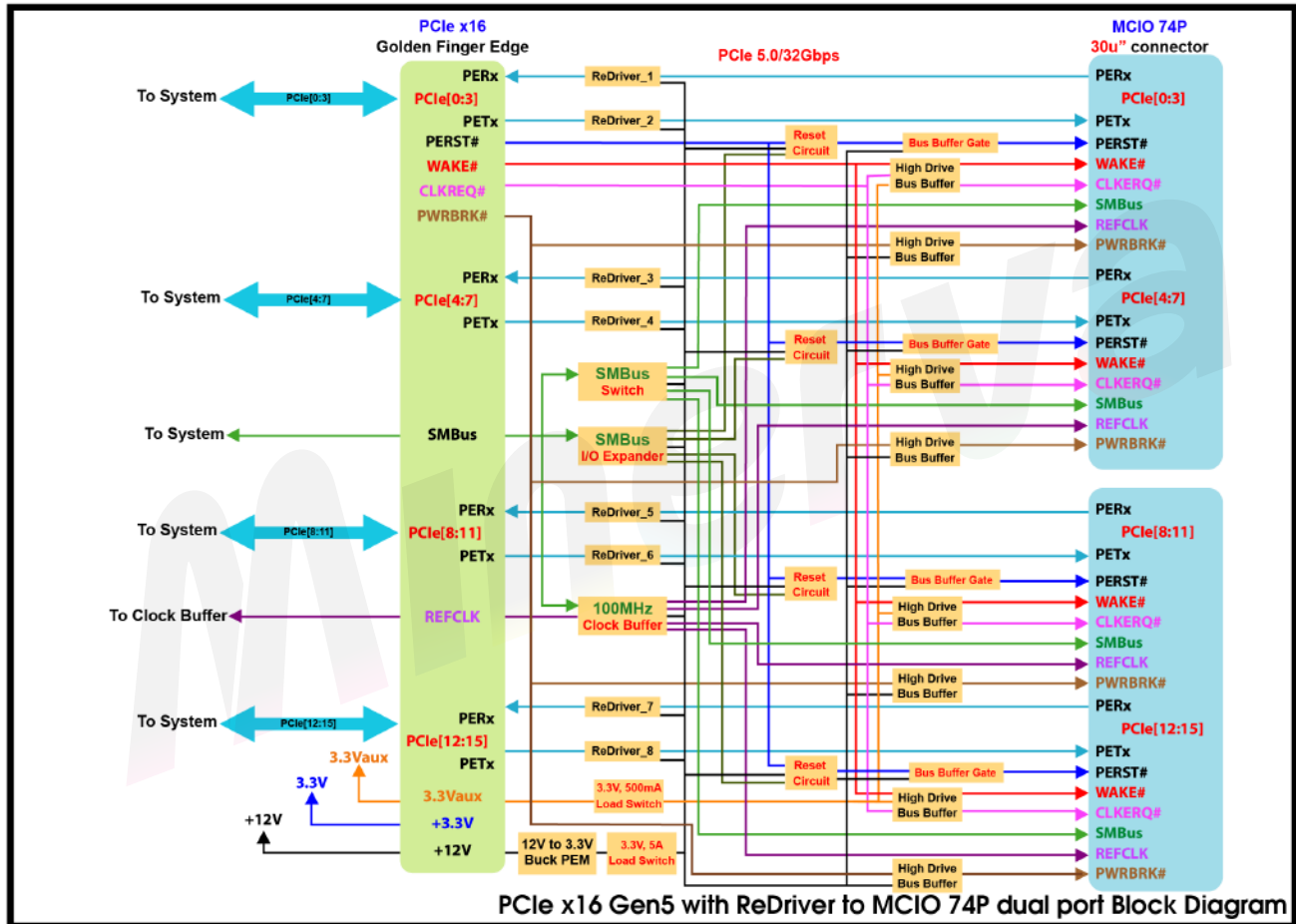
EQ Setup Default: EQ1/L1 & EQ0/L0  
Flat Gain Setup Default: Float/L4

Equalization Control Settings				
EQ INDEX	EQUALIZATION SETTING		TYPICAL EQ BOOST (dB)	
	EQ1	EQ0	At 8 GHz	At 16 GHz
0	L0	L0	3.0	4.0
1	L0	L1	4.0	6.0
2	L0	L2	5.5	8.0
5	L1	L0	6.5	10.5
6	L1	L1	7.0	11.5
7	L1	L2	7.5	12.5
8	L1	L3	8.5	13.0
9	L1	L4	9.0	14.0
10	L2	L0	10.0	15.0
11	L2	L1	10.5	15.5
12	L2	L2	11.0	16.5
13	L2	L3	12.0	17.0
14	L3	L4	12.5	18.0
15	L3	L0	13.0	19.0
16	L3	L1	14.0	19.5
17	L3	L2	14.5	20.5
18	L3	L3	15.5	21.0
19	L3	L4	16.0	22.0



Typical EQ Boost vs Frequency

# PCIe x16 Gen5 with ReDriver to MCIO 74P dual port



PCIe x16 Gen5 with ReDriver to MCIO 74P dual port Block Diagram