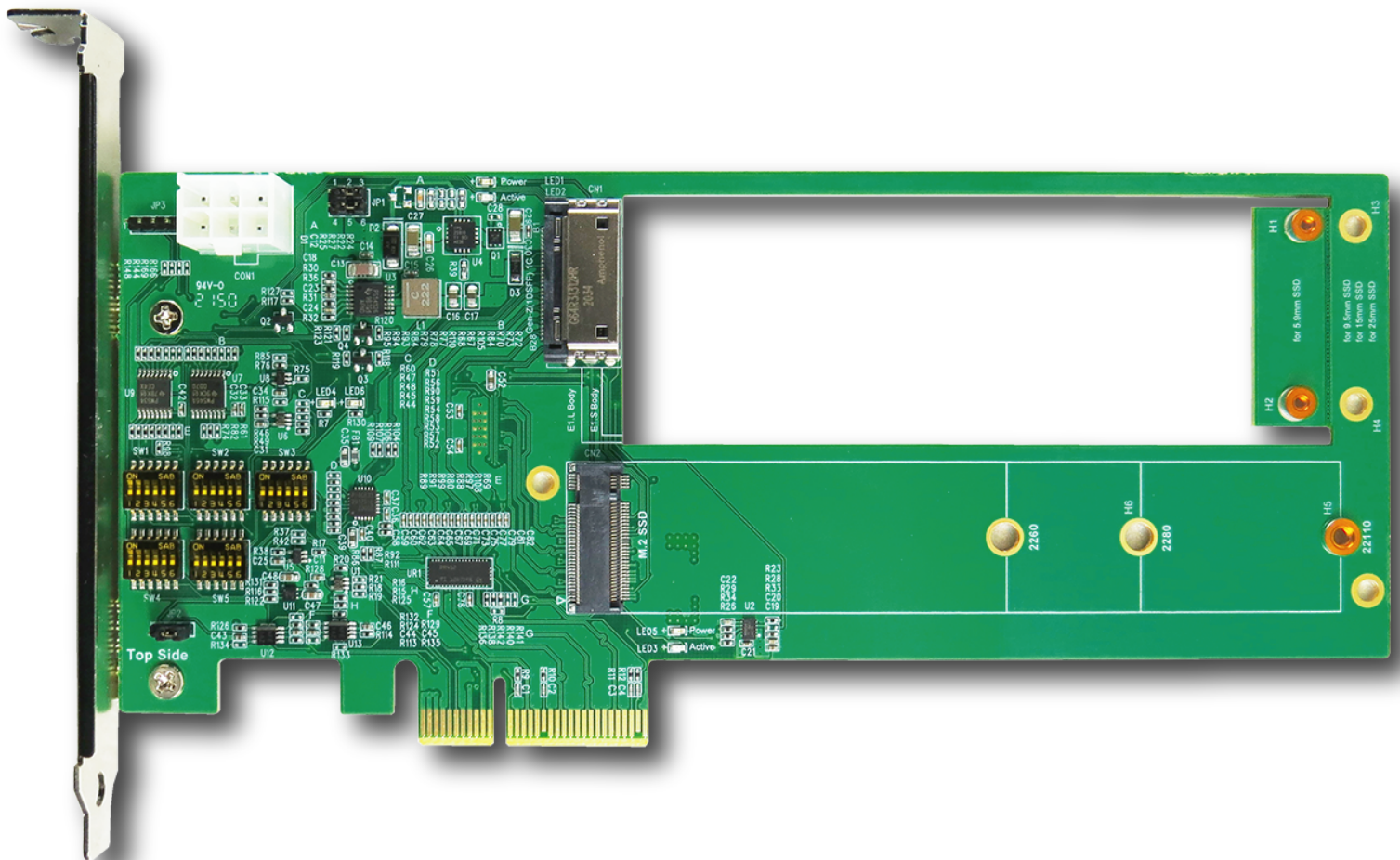


Innocard Minerva

DP9007

PCIe x4 Gen4 with ReDriver to Gen-Z 1C(EDSFF) AIC
or
PCIe x4 Gen4 with ReDriver to M.2 NVMe SSD AIC



PCIe x4 Gen4 with ReDriver to Gen-Z 1C(EDSFF) & M.2 NVMe AIC

Features

- ※ Gen-Z 1C (EDSFF) or M.2 M-key to PCIe 4.0 x4 convert, two choose one
- ※ Built- in EDSFF 1C with latch connector
- ※ Built- in M.2 M-key connector
- ※ Built- in PCIe ReDriver to extend PCIe Gen4, 16GT/s differential pair signals.
- ※ The controller with its CTLE set to the maximum gain to 17 dB boost.
- ※ Built- in PCIe 100MHz Clock buffer to drive longer trace lengths and longer cable with SMBus (Address: 0x6C/7 bits) for BMC & IPMI control
- ※ Built- in SMBus Switch with Reset Function(Address: 0x71/7 bits) for Gen-Z 1C & M.2 SMBus
- ※ Built- in SMBus I/O Expander(Address: 0x21/7 bits)
- ※ For EDSFF PWRDIS, SMBRST# control
- ※ For M.2 PWRDIS control
- ※ PCIe PERST# for OOB(Out Of Band) management to remote Gen-Z & M.2 Reset
- ※ Control Gen-Z 12V enable or disable
- ※ Control M.2 3.3V enable or disable
- ※ Built- in PCIe PERST# Bus Buffer Gate to be used over longer trace lengths and over longer cable
- ※ Built- in PCIe WAKE# Bus Buffer Gate to be used over longer trace lengths and over longer cable
- ※ Built- in PCIe CLKREQ# Bus Buffer Gate to be used over longer trace lengths and longer over cable

Specifications

- ※ PCI Express Base Specification Rev 4.0
- ※ PCIe_CEM_SPEC_R4_V1_0_08072019_NCB
- ※ Support SSD_Form_Factor_Version1_a
- ※ Compliant with SFF-TA-1002 Specification Version 1.3
- ※ Compliant with SFF-TA-1009 Specification Version 2.0
- ※ Compliant with SFF-TA-1020 Specification Version 2.0
- ※ Compliant with Gen-Z Scalable Connector Rev1.1
- ※ Compliant with PCIe M.2 Specification Revision 3.0, Version 1.2

Supports the following form factor EDSFF 1C(Gen-Z) SSD

- ※ EDSFF 1C(Gen-Z) E1.S 5.9mm Height
- ※ EDSFF 1C(Gen-Z) E1.S 9.5mm Height
- ※ EDSFF 1C(Gen-Z) E1.S 15mm Height
- ※ EDSFF 1C(Gen-Z) E1.S 25mm Height

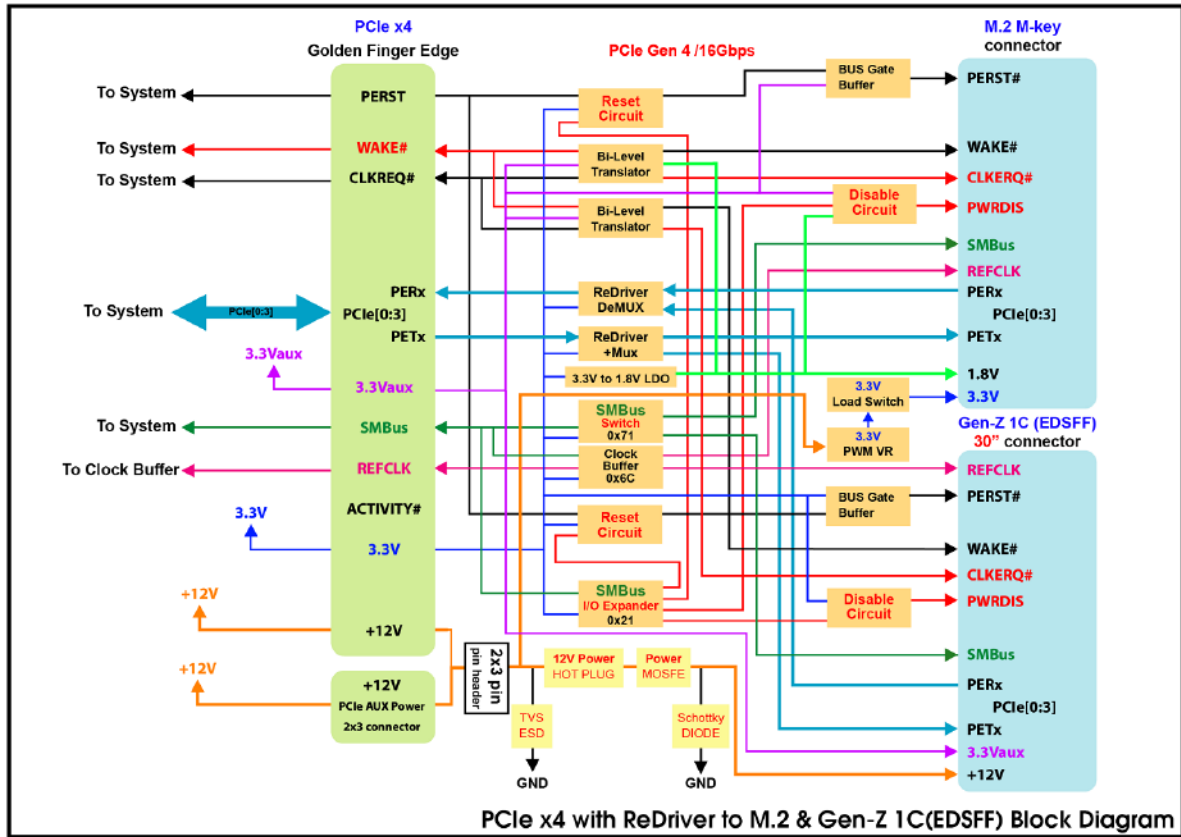
Supports the following form factor M.2 SSD:

- ※ Type 2260-D2-B-M: 60mm(L) x 22mm(W)
- ※ Type 2280-D2-B-M: 80mm(L) x 22mm(W)
- ※ Type 22110-D2-B-M: 110mm(L) x 22mm(W)

Applications

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

PCIe x4 Gen4 with ReDriver to Gen-Z 1C(EDSFF) & M.2 NVMe AIC



The switches settings are as noted below

SW1 for UR1 ReDriver	Pin	EQ0 Equalization Setting		
		Setting	Mode	
1-12	on	L0		
	off	X		
	2-11	on	L1	
		off	X	
	3-10	on	L2	
		off	X	
2-11	off	L3		
	off			
	off			
4-9	on	L0		
	off	X		
	off	X		
5-8	on	L1		
	off	X		
6-7	on	L2		
	off	X		
4-9	off			
	off			
5-8	off	L3		
	off			
6-7	off			
	off			

SW2 for UR1 ReDriver	Pin	DC Gain Control		
		Setting	Mode	
1-12	on	L0		
	off	X		
	2-11	on	L1	
		off	X	
	3-10	on	L2	
		off	X	
1-12	off	L3		
	off			
	off			
4-9	on	X		
	off	X		
	off	X		
5-8	on	L1		
	off	L3		
6-7	on	Low	SEL pin	
	off	High		

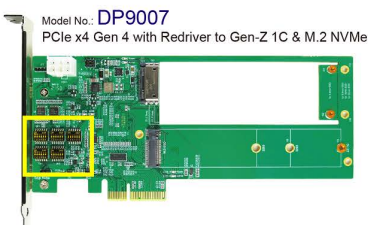
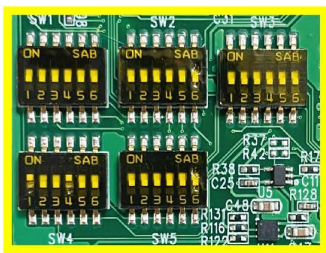
SW3 for UR2 ReDriver	Pin	EQ0 Equalization Setting		
		Setting	Mode	
1-12	on	L0		
	off	X		
	2-11	on	L1	
		off	X	
	3-10	on	L2	
		off	X	
1-12	off	L3		
	off			
	off			
4-9	on	L0		
	off	X		
	off	X		
5-8	on	L1		
	off	X		
6-7	on	L2		
	off	X		
4-9	off			
	off			
5-8	off	L3		
	off			
6-7	off			
	off			

EQ1	EQ0	CTLE BOOST AT 8 GHz (dB)
L0	L0	-0.5
L0	L1	4.0
L0	L2	5.0
L0	L3	6.0
L1	L0	7.0
L1	L1	7.5
L1	L2	8.0
L1	L3	9.5
L2	L0	10
L2	L1	11
L2	L2	12.5
L2	L3	13
L3	L0	14.5
L3	L1	15
L3	L2	16
L3	L3	18

L0	GAIN Control	
	Setting	Mode
L0	-6dB	
L1	-3dB	
L2	3dB	
L3	0dB (Recommended for most use cases)	

L3	RX Common-mode Impedance	
	Setting	Mode
L3	0dB (Recommended for most use cases)	

High	SEL pin	
	Setting	Mode
High	M.2 SSD	
Low	Gen-Z SSD	



SW4 For UR1 MODE	Pin	Pin Control Mode (Default)		
		Setting	Mode	
1-12	on	L0	no function	
	off	X		
	2-11	on	L1	SMBus Mode or I2C Slave Mode
		off	X	no function
	3-10	on	L2	SMBus Mode or I2C Slave Mode
		off	X	no function
4-9	on	L0	Pin Control Mode (Default)	
	off	X	no function	
	off	X	no function	
5-8	on	L1	SMBus Mode or I2C Slave Mode	
	off	X	no function	
6-7	on	L2	SMBus Mode or I2C Slave Mode	
	off	X	no function	

SW5 for UR2 ReDriver	Pin	DC Gain Control		
		Setting	Mode	
1-12	on	L0		
	off	X		
	2-11	on	L1	
		off	X	
	3-10	on	L2	
		off	X	
1-12	off	L3		
	off			
	off			
4-9	on	X		
	off	X		
	off	X		
5-8	on	X		
	off	L3		
6-7	on	Low	SEL pin	
	off	High		