**Full-size PEMUX CPU Card supports LGA2066 Intel® Xeon® W CPU per , Intel® C422, DDR4 ECC RDIMM, IPMI VGA output, Intel® PCIe GbE, Aquantia 10GbE, USB 3.1 GEN 1 (5Gb/s) , USB 2.0,**

**SATA 6Gb/s, HD Audio, IPMI, TPM, M.2 and RoHS**

**PEMUX-XEW1**

**Quick Installation Guide**

**Version 1.0**

Feb.19, 2019

# Package List

PEMUX-XEW1 package includes the following items:

* 1 x PEMUX-XEW1 Single Board Computer
* 1 x mini SAS to 4 SATA Cable
* 1 x QIG (Quick Installation Guide)



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# Specifications

* + Form Factor: PEMUX Full-size CPU card (12 layers)
  + CPU:

LGA2066 socket supports Intel® Xeon W processor

* + Chipset: Intel® C422
  + Memory:

Four 288-pin Dual-Channel DDR4 ECC RDIMM supported up to 256GB

* + BIOS: UEFI BIOS
  + Super I/O: Fintek F81216D
  + EC: IWDD
  + Display Output: 1 x IPMI VGA display
  + Ethernet:

LAN1: 1 GbE NIC: Intel® i210-AT with NCSI support LAN2: 10 GbE NIC: Aquantia AQC107

* + Extemal I/O Interfaces: 2 x USB 2.0

4 x USB 3.1 GEN 1 (5Gb/s)

* + Internal I/O Interfaces:

2 x RS-232 by pin header

2 x USB 3.1 GEN 1 (5Gb/s) pin header 1 x USB DOM header

1 x M.2 2280

2 x mini SAS SFF-8643 (for 8 x SATA 6Gb/s)

* + Front Panel:

1. x Front Panel

(Power LED, HDD LED, Speaker, Power Button, Reset Button)

* + Audio:

1. x 5-pin pin header
   * TPM:

2 x 10-pin pin header

* + SMBus: 1 x SMBus to backplane
  + Expansion:

56-Lane PCIe signal via golden finger

* + Watchdog Timer:

Software programmable, supports 1~255 sec. system reset

* + Fan Connector:

1. x 4-pin Smart FAN Connector (CPU FAN)
2. x 4-pin Smart FAN Connector (System CPU FAN)
   * Power Supply:

5V/12V, AT/ATX support

* + Operating Temperature: -20°C ~ 40°C
  + Operating Humidity: 5% ~ 95%, non-condensing
  + Dimensions: 338.58 mm x 150.5 mm
  + Weight (GW/NW): 700g

# Ordering Information

* + **PEMUX-XEW1-R10:**

Full-size PEMUX CPU Card supports LGA2066 Intel® Xeon® W C422, DDR4 ECC RDIMM, VGA, Intel® PCIe GbE, Aquantia 10GbE, USB 3.1 GEN 1 (5Gb/s) , USB 2.0, SATA 6Gb/s, HD

Audio, IPMI and RoHS

* + **32102-000100-200-RS:** SATA Power Cable
  + **CF-2011B-RS:**

High performance LGA1355/1356/2011 cooler kit, 130W

* + **iRIS-2400-R10:**

IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface

* + **32037-000600-100-RS:** mini SAS to 4 SATA Cable
  + **32005-005000-100-RS:** RS-232 cable

# Jumper Settings and Connectors

|  |  |
| --- | --- |
| **LABEL** | **FUNCTION** |
| J\_CMOS1 | CMOS Setup Keep / Clear |
| J\_FLASH1 | Flash Descriptor Security Override |
| J\_LOAD1 | Load Default Connector |
| F\_PANEL1 | External Switches and Indicators Panel |
| CPU\_FAN1 | CPU Fan Connector |
| SYS\_FAN1/2 | System Fan Connectors |
| J\_AUDIO1 | Audio Source Connector |
| VGA1 | VGA Connector |
| TPM1 | Trusted Platform Module Connector |
| CON8 | EC Debug Port Connector |
| M2\_M1 | M-SATA Card Connector |
| USB3-1 | Internal USB 3.1 GEN 1 (5Gb/s) Connector |
| COM1/2 | Internal Serial Port Connectors |
| LAN\_USB1 | External USB 2.0 and RJ-45 LAN Connectors |
| JSPI1 | Flash SPI ROM Connector |
| EC\_SPI1 | Flash EC ROM Connector |
| LAN\_CN1 | RJ-45 LAN connector |
| USB\_CON1 | External USB 3.1 GEN 1 (5Gb/s) Connectors |
| PSU1 | +12V Power Connector |

|  |  |
| --- | --- |
| **J\_CMOS1: CMOS Setup Keep / Clear** | |
| **PIN NO.** | **DESCRIPTION** |
| NC (Default) | Keep CMOS Setup  (Normal Operation) |
| Press button | Clear CMOS Setup |

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| **J\_FLASH1: Flash Descriptor Security Override** | |
| **PIN NO.** | **DESCRIPTION** |
| Short 1 - 2 | Disabled (Default) |
| Short 2 - 3 | Enabled |

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| --- | --- |
| **J\_LOAD1: Load Default Connector** | |
| **PIN NO.** | **DESCRIPTION** |
| NC (Default) | GND |
| Press button | Load Default |

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| **F\_PANEL1: External Switches and Indicators Panel** | | | | | |
| **Function** | **PIN** | **DESCRIPTION** | **Function** | **PIN** | **DESCRIPTIO**  **N** |
| PWR LED | 1 | +5V | SPKR | 2 | BEEP\_PWR |
| 3 | NC | IPMI LED | 4 | IPMI ID\_LED+ |
| 5 | GND | 6 | IPMI ID\_LED- |
| PWR BTN | 7 | PWRBTN\_SW# | SPKR | 8 | PC\_BEEP |
| 9 | GND | RESET | 10 | NC |
| HDD LED | 11 | +5V | 12 | EXTRST- |
| 13 | SATA\_LED# | 14 | GND |

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| --- | --- | --- | --- |
| **CPU\_FAN1: CPU Fan Connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | GND | 2 | +12V |
| 3 | FANIO | 4 | PWM |

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| --- | --- | --- | --- |
| **SYS\_FAN1/2: System Fan Connectors** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | GND | 2 | +12V |
| 3 | FANIO | 4 | PWM |

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| --- | --- | --- | --- |
| **J\_AUDIO1: Audio Source Connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | HDA\_SYNC | 2 | HDA\_BIT\_CLK |
| 3 | HDA\_SDOUT | 4 | HDA\_SPKR |
| 5 | HDA\_SDIN | 6 | HDA\_RST# |
| 7 | HDA\_VCC | 8 | HDA\_GND |
| 9 | HDA\_+12V | 10 | HDA\_GND |

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| **VGA1: VGA Connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | RED | 2 | GREEN |
| 3 | BLUE | 4 | NC |
| 5 | GND | 6 | GND |
| 7 | GND | 8 | GND |
| 9 | VCC | 10 | GND |
| 11 | NC | 12 | DDCDA |
| 13 | HSYNC | 14 | VSYNC |
| 15 | DDCCLK |  |  |

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| --- | --- | --- | --- |
| **TPM1: Trusted Platform Module Connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | LCLK | 2 | GND |
| 3 | LFRAME# | 4 | KEY |
| 5 | LRERST# | 6 | +5V |
| 7 | LAD3 | 8 | LAD2 |
| 9 | +3.3V | 10 | LAD1 |
| 11 | LAD0 | 12 | GND |
| 13 | SCL | 14 | SDA |
| 15 | SB3V | 16 | SERIRQ |
| 17 | GND | 18 | GLKRUN# |
| 19 | LPCPD# | 20 | LDRQ# |

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| --- | --- | --- | --- |
| **CON8: EC Debug Port Connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | EC\_EPP\_STB# | 2 | EC\_EPP\_AFD# |
| 3 | EC\_EPP\_PD0 | 4 | NC |
| 5 | EC\_EPP\_PD1 | 6 | EC\_EPP\_INIT# |
| 7 | EC\_EPP\_PD2 | 8 | EC\_EPP\_SLIN# |
| 9 | EC\_EPP\_PD3 | 10 | GND |
| 11 | EC\_EPP\_PD4 | 12 | NC |
| 13 | EC\_EPP\_PD5 | 14 | EC\_EPP\_BUSY |
| 15 | EC\_EPP\_PD6 | 16 | EC\_EPP\_KSI5 |
| 17 | EC\_EPP\_PD7 | 18 | EC\_EPP\_KSI4 |

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| **USB3-1: Internal USB 3.1 Gen 1 (5Gb/s) Connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | VCC | 11 | USB\_DATA+ |
| 2 | USB3\_RX- | 12 | USB\_DATA- |
| 3 | USB3\_RX+ | 13 | GND |
| 4 | GND | 14 | USB3\_TX+ |
| 5 | USB3\_TX- | 15 | USB3\_TX- |
| 6 | USB3\_TX+ | 16 | GND |
| 7 | GND | 17 | USB3\_RX+ |
| 8 | USB\_DATA- | 18 | USB3\_RX- |
| 9 | USB\_DATA+ | 19 | VCC |
| 10 | NC |  |  |

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| --- | --- | --- | --- |
| **M2\_M1: M-SATA Card Connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | GND | 2 | +3.3V |
| 3 | GND | 4 | +3.3V |
| 5 | PCIE\_RXN3 | 6 | N/C |
| 7 | PCIE\_RXP3 | 8 | N/C |
| 9 | GND | 10 | DAS/DSS# |
| 11 | PCIE\_TXN3 | 12 | +3.3V |
| 13 | PCIE\_TXP3 | 14 | +3.3V |
| 15 | GND | 16 | +3.3V |
| 17 | PCIE\_RXN2 | 18 | +3.3V |
| 19 | PCIE\_RXP2 | 20 | N/C |
| 21 | GND | 22 | N/C |
| 23 | PCIE\_TXN2 | 24 | N/C |
| 25 | PCIE\_TXP2 | 26 | N/C |
| 27 | GND | 28 | N/C |
| 29 | PCIE\_RXN1 | 30 | N/C |
| 31 | PCIE\_RXP1 | 32 | N/C |
| 33 | GND | 34 | N/C |
| 35 | PCIE\_TXN1 | 36 | N/C |
| 37 | PCIE\_TXP1 | 38 | DEVSLP |
| 39 | GND | 40 | N/C |
| 41 | PCIE\_RXN0 | 42 | N/C |
| 43 | PCIE\_RXP0 | 44 | N/C |
| 45 | GND | 46 | N/C |
| 47 | PCIE\_TXN0 | 48 | N/C |
| 49 | PCIE\_TXP0 | 50 | PERST# |
| 51 | GND | 52 | CLKREQ# |
| 53 | REFCLKN | 54 | PEWAKE |
| 55 | REFCLKP | 56 | N/C |
| 57 | GND | 58 | N/C |
| 59 | Notch | 60 | Notch |
| 61 | Notch | 62 | Notch |

|  |  |  |  |
| --- | --- | --- | --- |
| 63 | Notch | 64 | Notch |
| 65 | Notch | 66 | Notch |
| 67 | N/C | 68 | SUSCLK |
| 69 | PEDET | 70 | +3.3V |
| 71 | GND | 72 | +3.3V |
| 73 | GND | 74 | +3.3V |
| 75 | GND |  |  |

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| --- | --- | --- | --- |
| **COM1/2: Internal Serial Port Connectors** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | DCD | 6 | CTS |
| 2 | DSR | 7 | DTR |
| 3 | RXD | 8 | RI |
| 4 | RTS | 9 | GND |
| 5 | TXD |  |  |

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| --- | --- | --- | --- |
| **LAN\_USB1: External USB 2.0 and RJ-45 LAN Connectors** | | | |
| **External USB 2.0 Connectors** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| U1 | VCC | U5 | VCC |
| U2 | USB\_DATA- | U6 | USB\_DATA- |
| U3 | USB\_DATA+ | U7 | USB\_ DATA+ |
| U4 | GND | U8 | GND |
| **RJ-45 LAN connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 2 | LAN\_MDI0P | 6 | LAN\_MDI2P |
| 3 | LAN\_MDI0N | 7 | LAN\_MDI2N |
| 4 | LAN\_MDI1P | 8 | LAN\_MDI3P |
| 5 | LAN\_MDI1N | 9 | LAN\_MDI3N |
| 2 | LAN\_MDI0P | 6 | LAN\_MDI2P |

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| --- | --- | --- | --- |
| **JSPI1: Flash SPI ROM Connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | +3.3V | 2 | SPI\_CS# |
| 3 | SPI\_SO | 4 | SPI\_CLK |
| 5 | SPI\_SI | 6 | GND |

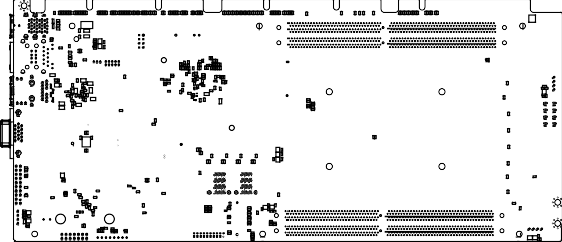
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| **EC\_SPI1: Flash EC ROM Connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | +3.3V | 2 | SPI\_CS# |
| 3 | SPI\_SO | 4 | SPI\_CLK |
| 5 | SPI\_SI | 6 | GND |

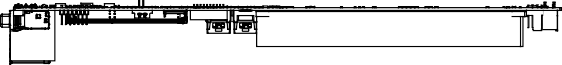
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| --- | --- | --- | --- |
| **LAN\_CN1: RJ-45 LAN connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | 10G\_MDI0+ | 7 | 10G\_MDI2+ |
| 2 | 10G\_MDI0- | 8 | 10G\_MDI2- |
| 3 | 10G\_MDI1+ | 9 | 10G\_MDI3+ |
| 4 | 10G\_MDI1- | 10 | 10G\_MDI3- |

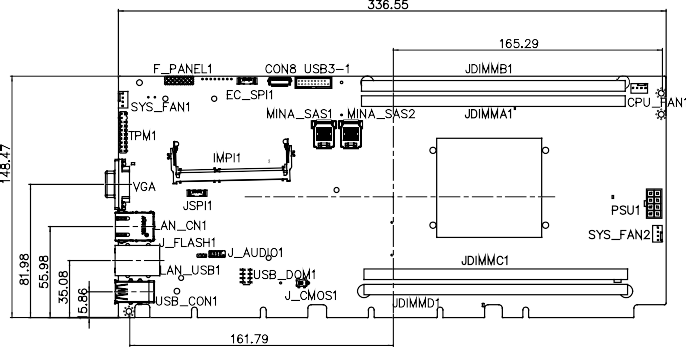
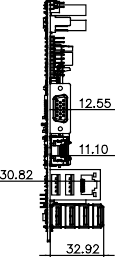
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| **PSU1: +12V Power Connector** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| 1 | GND | 5 | 12V |
| 2 | GND | 6 | 12V |
| 3 | GND | 7 | 12V |
| 4 | GND | 9 | 12V |

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| --- | --- | --- | --- |
| **USB\_CON1: External USB 3.1 Gen 1 (5Gb/s) Connectors** | | | |
| **PIN NO.** | **DESCRIPTION** | **PIN NO.** | **DESCRIPTION** |
| A1 | USB\_VCC | A2 | USB2\_D0- |
| A3 | USB2\_D0- | A4 | GND |
| A5 | USB3\_RXD0- | A6 | USB3\_RXD0+ |
| A7 | GND | A8 | USB3\_TXD0- |
| A9 | USB3\_TXD0+ |  |  |
| B1 | USB\_VCC | B2 | USB2\_D0- |
| B3 | USB2\_D0- | B4 | GND |
| B5 | USB3\_RXD0- | B6 | USB3\_RXD0+ |
| B7 | GND | B8 | USB3\_TXD0- |
| B9 | USB3\_TXD0+ |  |  |
| C1 | USB\_VCC | C2 | USB2\_D0- |
| C3 | USB2\_D0- | C4 | GND |
| C5 | USB3\_RXD0- | C6 | USB3\_RXD0+ |
| C7 | GND | C8 | USB3\_TXD0- |
| C9 | USB3\_TXD0+ |  |  |
| D1 | USB\_VCC | D2 | USB2\_D0- |
| D3 | USB2\_D0- | D4 | GND |
| D5 | USB3\_RXD0- | D6 | USB3\_RXD0+ |
| D7 | GND | D8 | USB3\_TXD0- |
| D9 | USB3\_TXD0+ |  |  |

**Board Layout: Jumper and Connector Locations**







**（Unit: mm）**