

**COM Express Basic size Type 7 Module support, Intel® Broadwell-DE
Processor D-1500, Two ECC DDR4 SO-DIMM, GbE, 10G KR,
NCSI, SATAIII, USB 3.0, PCIe Gen3, RoHS**

ICE-BDE-T7

Quick Installation Guide

Version 1.0

Mar 28, 2018.

Package List

ICE-BDE-T7 package includes the following items:

- 1 x ICE-BDE-T7 single board computer
- 1 x Heatsink
- 1 x QIG



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Specifications

- Form Factor: PICMG COM.0 Rev 3.0 , Type 7
- CPU:
Intel® Broadwell-DE D-1500 Processors
- PCH: NA
- Memory:
Two 260-pin 1600/2133 MHz Dual-Channel DDR4 SDRAM supported
Support ECC
(system max. 32GB)
- BIOS: UEFI BIOS
- Ethernet:
Intel® I211-AT
2 x 10G KR Interfaces
10G Sideband Signals
(10G_INT 10G_PHY_MDC/MDIO 10G_PHY_SEL
10G_PHY_RST
10G_LED_I2C 10G_SFP_I2C 10G_SDP)
- Embedded Controller: IT8528EFX
- IO:
2 x RS-232 (2-Wire) to base board
4 x USB 2.0 to base board
4 x USB 3.0 to base board (with 4 x USB 2.0)
2 x SATA 6GB/s signal to base board
- SMBus/JTAG: YES, to base board
- JTAG: on board
- SPI:
1. On board connector
2. To base board
- I2C: YES, to base board
- LPC: YES, to base board

- Expansion:
 - 1x PCIe x16 Gen 3 (Bifurcatable to 2 x8, 1 x8 & 2 x4, or 4 x4)
 - 1x PCIe x8 Gen 3 (Bifurcatable to 1 x8 & 2 x4)
 - 8x PCIe x1 (Gen2) signal to base board
 - Bifurcatable to 1 x8 or 2 x4 or 4 x1 +1x4 or 8 x1
- Watchdog Timer:
 - Software programmable supports 1~255 sec system reset
- GPIO: 8 bit GPIO, to base board
- TPM: Through base board
- Power Supply:
 - 12V: 12V±5%, 5VSB: 5V±5%, RTC Battery: 2.0-3.3V
- Operating Temperature: -20°C ~ 60°C with air flow
- Operation Humidity: 5% ~ 95%, non-condensing
- Dimensions: 125 mm x 95 mm

Ordering Information

- **ICE-BDE-T7-1548-R10:**
 COM Express Basic size Type 7 Module support, Intel®
 Broadwell-DE Eight-Core processor D-1548 (45W), two ECC
 DDR4 SO-DIMM, GbE, 10G KR, NCSI, SATA 6Gb/s, USB 3.0,
 PCIe Gen3, RoHS
- **ICE-BDE-T7-1518-R10:**
 COM Express Basic size Type 7 Module support, Intel®
 Broadwell-DE Quad-Core processor D-1518 (35W), two ECC
 DDR4 SO-DIMM , GbE, 10G KR, NCSI, SATA 6Gb/s, USB 3.0,
 PCIe Gen3, RoHS
- **ICE-BDE-T7-1508-R10:**
 COM Express Basic size Type 7 Module support, Intel®

Broadwell-DE Quad-Core processor D-1508 (25W), two ECC
DDR4 SO-DIMM , GbE, 10G KR, NCSI, SATA 6Gb/s, USB 3.0,
PCIe Gen3, RoHS

- **ICE-DB-T7-i2-R10:**
Base Board for COM Express Type 7 Module

Jumpers setting and connectors

LABEL	FUNCTION
J_SPI1	BIOS Programmer Connector
J_EC1	EC Programmer Connector
J_CPLD1	CPLD Programmer Connector
DBG_PORT1	For LPC Debug card
DBG_EC1	For EC Debug Card (FPC 20-Pin)
J1	COMEXPRESS Type7 CPU Board Pin Define
J2	CPU Card Board to Board Pin Define

J_SPI1: BIOS Programmer Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC1.8V	4	CLK
2	CS	5	MOSI
3	MISO	6	GND

J_EC1: EC Programmer Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC3.3V	4	CLK
2	CS	5	MOSI
3	MISO	6	GND

J_CPLD1: CPLD Programmer Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC3.3SB	5	NC
2	CPLD_TDO	6	CPLD_TMS
3	CPLD_TDI	7	GND
4	NC	8	CPLD_TCK

DBG_PORT1: For LPC Debug Card			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NC	7	LPC_AD2
2	LPC_CLK_REF	8	LPC_AD3
3	SYS_RESET#	9	INT_SERIRQ
4	LPC_FRAME#	10	GND
5	LPC_AD0	11	VCC3
6	LPC_AD1	12	NC

DBG_EC1: For EC Debug Card (FPC 20-Pin)			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	KS10	11	KSO9
2	KSO0	12	KSO10
3	KSO1	13	KSO12
4	KSO2	14	KS11
5	KSO3	15	KSO11
6	KSO4	16	KS12
7	KSO5	17	KS13
8	KSO6	18	GND
9	KSO7	19	GND
10	KSO8	20	GND

J1: COMEXPRESS Type7 CPU Board Pin Define			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
A1	GND	B1	GND
A2	MDI3_N	B2	ACT
A3	MDI3_P	B3	LPC_FRAME#
A4	LINK100	B4	LPC_AD0
A5	LINK1000	B5	LPC_AD1
A6	MDI2_N	B6	LPC_AD2
A7	MDI2_P	B7	LPC_AD3
A8	LINK	B8	SIO_DRQ#0
A9	MDI1_N	B9	NC

A10	MDI1_P	B10	LPC_CLK_REF
A11	GND	B11	GND
A12	MDI0_N	B12	PM_PWRBTN#
A13	MDI0_P	B13	SMB_CLK
A14	NC	B14	SMB_DATA
A15	PM_SLP_S3#	B15	SMB_ALERT#
A16	SATA0_TX+	B16	SATA1_TX+
A17	SATA0_TX-	B17	SATA1_TX-
A18	PM_SLP_S4#	B18	LPCPD_N
A19	SATA0_RX+	B19	SATA1_RX+
A20	SATA0_RX-	B20	SATA1_RX-
A21	GND	B21	GND
A22	PE2_TX_DP_7	B22	PE2_RX_DP_7
A23	PE2_TX_DN_#7	B23	PE2_RX_DN#_7
A24	PM_SLP_S5#	B24	PWR_OK
A25	PE2_TX_DP_6	B25	PE2_RX_DP_6
A26	PE2_TX_DN_#6	B26	PE2_RX_DN#_6
A27	NC	B27	WDTRST#
A28	SATA_LED#	B28	NC
A29	NC	B29	NC
A30	NC	B30	AC_SDIN0
A31	GND	B31	GND
A32	NC	B32	SPKR
A33	NC	B33	I2C_CLK
A34	BIOS_DIS	B34	I2C_DATA
A35	NC	B35	NC
A36	PE2_TX_DP_5	B36	PE2_RX_DP_5
A37	PE2_TX_DN_#5	B37	PE2_RX_DN#_5
A38	GND	B38	GND
A39	PE2_TX_DP_4	B39	PE2_RX_DP_4
A40	PE2_TX_DN_#4	B40	PE2_RX_DN#_4
A41	GND	B41	GND
A42	USB2-	B42	USB3-
A43	USB2+	B43	USB3+
A44	USB_2_3_OC#	B44	USB_0_1_OC#
A45	USB0-	B45	USB1-

A46	USB0+	B46	USB1+
A47	+V3.3A_RTC	B47	NC
A48	NC	B48	NC
A49	NC	B49	SYS_RESET#
A50	INT_SERIRQ	B50	CB_RESET#
A51	GND	B51	GND
A52	PCIE_TX_DP_6	B52	PCIE_RX_DP_6
A53	PCIE_TX_DN#_6	B53	PCIE_RX_DN#_6
A54	DIN0	B54	DOUT1
A55	PCIE_TX_DP_5	B55	PCIE_RX_DP_5
A56	PCIE_TX_DN#_5	B56	PCIE_RX_DN#_5
A57	GND	B57	DOUT2
A58	PCIE_TX_DP_4	B58	PCIE_RX_DP_4
A59	PCIE_TX_DN#_4	B59	PCIE_RX_DN#_4
A60	GND	B60	GND
A61	PCIE_TX_DP_3	B61	PCIE_RX_DP_3
A62	PCIE_TX_DN#_3	B62	PCIE_RX_DN#_3
A63	DIN1	B63	DOUT3
A64	PCIE_TX_DP_2	B64	PCIE_RX_DP_2
A65	PCIE_TX_DN#_2	B65	PCIE_RX_DN#_2
A66	GND	B66	WAKE0#
A67	DIN2	B67	NC
A68	PCIE_TX_DP_1	B68	PCIE_RX_DP_1
A69	PCIE_TX_DN#_1	B69	PCIE_RX_DN#_1
A70	GND	B70	GND
A71	PE2_TX_DP_0	B71	PE2_RX_DP_0
A72	PE2_TX_DN#_0	B72	PE2_RX_DN#_0
A73	GND	B73	GND
A74	PE2_TX_DP_1	B74	PE2_RX_DP_1
A75	PE2_TX_DN#_1	B75	PE2_RX_DN#_1
A76	GND	B76	GND
A77	PE2_TX_DP_2	B77	PE2_RX_DP_2
A78	PE2_TX_DN#_2	B78	PE2_RX_DN#_2
A79	GND	B79	GND
A80	GND	B80	GND
A81	PE2_TX_DP_3	B81	PE2_RX_DP_3

A82	PE2_TX_DN_#3	B82	PE2_RX_DN#_3
A83	GND	B83	GND
A84	NCSI_TC_EN	B84	+V5A
A85	DIN3	B85	+V5A
A86	NC	B86	+V5A
A87	NC	B87	+V5A
A88	CLK_PCIE_CLK_P	B88	NC
A89	CLK_PCIE_CLK_N	B89	NC
A90	GND	B90	GND
A91	NC	B91	NCSI_CLK
A92	SPI_MISO	B92	NCSI_RXD1
A93	DOUT0	B93	NCSI_RXD0
A94	SPI_CLK	B94	NCSI_CRS
A95	SPI_MOSI	B95	NCSI_TXD1
A96	NC	B96	NCSI_TXD0
A97	NC	B97	SPI_CS
A98	RS1_TX	B98	NC
A99	RS1_RX	B99	NC
A100	GND	B100	GND
A101	RS2_TX	B101	FAN_PWROUT
A102	RS2_RX	B102	FAN_TACHIN
A103	LID#	B103	SLEEP
A104	VCC12	B104	VCC12
A105	VCC12	B105	VCC12
A106	VCC12	B106	VCC12
A107	VCC12	B107	VCC12
A108	VCC12	B108	VCC12
A109	VCC12	B109	VCC12
A110	GND	B110	GND

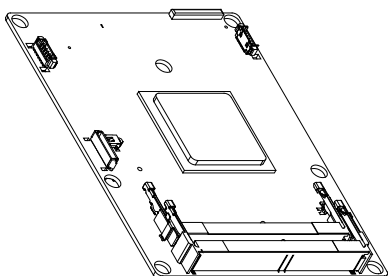
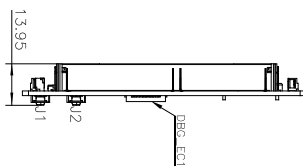
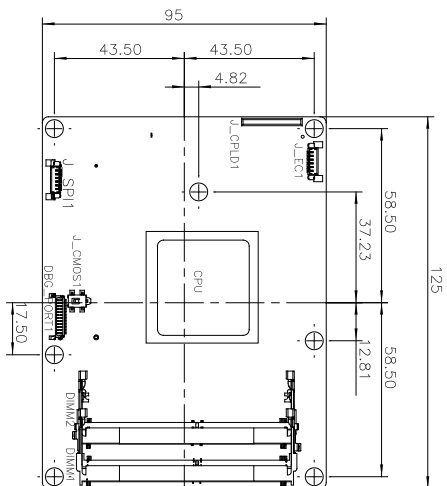
J2: CPU Card Board to Board Pin Define			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
C1	GND	D1	GND
C2	GND	D2	GND
C3	USB3_RXN_0	D3	USB3_TXN_0

C4	USB3_RXP_0	D4	USB3_TXP_0
C5	GND	D5	GND
C6	USB3_RXN_1	D6	USB3_TXN_1
C7	USB3_RXP_1	D7	USB3_TXP_1
C8	GND	D8	GND
C9	USB3_RXN_2	D9	USB3_TXN_2
C10	USB3_RXP_2	D10	USB3_TXP_2
C11	GND	D11	GND
C12	USB3_RXN_3	D12	USB3_TXN_3
C13	USB3_RXP_3	D13	USB3_TXP_3
C14	GND	D14	GND
C15	NC	D15	DDI1_CTRLCLK_AUX_P
C16	NC	D16	DDI1_CTRLCLK_AUX_N
C17	NC	D17	NC
C18	GND	D18	NC
C19	PCIE_RX_DP_7	D19	PCIE_TX_DP_7
C20	PCIE_RX_DN#_7	D20	PCIE_TX_DN#_7
C21	GND	D21	GND
C22	PCIE_RX_DP_8	D22	PCIE_TX_DP_8
C23	PCIE_RX_DN#_8	D23	PCIE_TX_DN#_8
C24	NC	D24	NC
C25	GND	D25	GND
C26	NC	D26	NC
C27	NC	D27	NC
C28	GND	D28	GND
C29	NC	D29	NC
C30	NC	D30	NC
C31	GND	D31	GND
C32	NC	D32	10GBE_SPI_CS_N_1P0V
C33	NC	D33	10GBE_SPI_DI_1P0V
C34	NC	D34	NC
C35	NC	D35	NC
C36	LAN_I2C_SDA_1P0V	D36	10G_SFP+_Present_N
C37	LAN_I2C_SCL_1P0V	D37	10G_BaseT_Present_N
C38	LAN_MDC_LED1_1	D38	10GBE_SPI_CLK_1P0V
C39	LAN_MDC_LED1_0	D39	10GBE_SPI_DO_1P0V

C40	LAN_SDP0_1_1P0V	D40	LAN_SDP0_0_1P0V
C41	GND	D41	GND
C42	GBE_KR_RX1_P	D42	GBE_KR_TX1_P
C43	GBE_KR_RX1_N	D43	GBE_KR_TX1_N
C44	GND	D44	GND
C45	LAN_MDC_LED0_1	D45	LAN_MDIO_DIR_CTL1
C46	LAN_MDC_LED0_0	D46	LAN_MDIO_DIR_CTL0
C47	SEL_I2C_1P0V	D47	LAN_SDP1_0_1P0V
C48	GND	D48	GND
C49	GBE_KR_RX0_P	D49	GBE_KR_TX0_P
C50	GBE_KR_RX0_N	D50	GBE_KR_TX0_N
C51	GND	D51	GND
C52	PE1_RX_DP_0	D52	PE1_TX_DP_0
C53	PE1_RX_DN#_0	D53	PE1_TX_DN_#0
C54	NC	D54	NC
C55	PE1_RX_DP_1	D55	PE1_TX_DP_1
C56	PE1_RX_DN#_1	D56	PE1_TX_DN_#1
C57	NC	D57	NC
C58	PE1_RX_DP_2	D58	PE1_TX_DP_2
C59	PE1_RX_DN#_2	D59	PE1_TX_DN_#2
C60	GND	D60	GND
C61	PE1_RX_DP_3	D61	PE1_TX_DP_3
C62	PE1_RX_DN#_3	D62	PE1_TX_DN_#3
C63	NC	D63	NC
C64	NC	D64	NC
C65	PE1_RX_DP_4	D65	PE1_TX_DP_4
C66	PE1_RX_DN#_4	D66	PE1_TX_DN_#4
C67	NC	D67	GND
C68	PE1_RX_DP_5	D68	PE1_TX_DP_5
C69	PE1_RX_DN#_5	D69	PE1_TX_DN_#5
C70	GND	D70	GND
C71	PE1_RX_DP_6	D71	PE1_TX_DP_6
C72	PE1_RX_DN#_6	D72	PE1_TX_DN_#6
C73	GND	D73	GND
C74	PE1_RX_DP_7	D74	PE1_TX_DP_7
C75	PE1_RX_DN#_7	D75	PE1_TX_DN_#7

C76	GND	D76	GND
C77	NC	D77	NC
C78	PE1_RX_DP_8	D78	PE1_TX_DP_8
C79	PE1_RX_DN#_8	D79	PE1_TX_DN_#8
C80	GND	D80	GND
C81	PE1_RX_DP_9	D81	PE1_TX_DP_9
C82	PE1_RX_DN#_9	D82	PE1_TX_DN_#9
C83	NC	D83	NC
C84	GND	D84	GND
C85	PE1_RX_DP_10	D85	PE1_TX_DP_10
C86	PE1_RX_DN#_10	D86	PE1_TX_DN_#10
C87	GND	D87	GND
C88	PE1_RX_DP_11	D88	PE1_TX_DP_11
C89	PE1_RX_DN#_11	D89	PE1_TX_DN_#11
C90	GND	D90	GND
C91	PE1_RX_DP_12	D91	PE1_TX_DP_12
C92	PE1_RX_DN#_12	D92	PE1_TX_DN_#12
C93	GND	D93	GND
C94	PE1_RX_DP_13	D94	PE1_TX_DP_13
C95	PE1_RX_DN#_13	D95	PE1_TX_DN_#13
C96	GND	D96	GND
C97	NC	D97	NC
C98	PE1_RX_DP_14	D98	PE1_TX_DP_14
C99	PE1_RX_DN#_14	D99	PE1_TX_DN_#14
C100	GND	D100	GND
C101	PE1_RX_DP_15	D101	PE1_TX_DP_15
C102	PE1_RX_DN#_15	D102	PE1_TX_DN_#15
C103	GND	D103	GND
C104	VCC12	D104	VCC12
C105	VCC12	D105	VCC12
C106	VCC12	D106	VCC12
C107	VCC12	D107	VCC12
C108	VCC12	D108	VCC12
C109	VCC12	D109	VCC12
C110	GND	D110	GND

Board Layout: Jumper and Connector Locations



(Unit: mm)