Memory Configuration for X10 UP Motherboards

(Socket R3)

USER'S GUIDE

Revision 1.0

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Memory Support for X10 UP Motherboards

This document provides the user with an easy-to-use guide for proper memory configuration and installation of X10 UP (Socket R3) motherboards utilizing RDIMM and LRDIMM DDR4 memory modules. To ensure proper memory installation, please follow the information and instructions listed below.

1 ESD Precautions

Electrostatic Discharge (ESD) can damage electronic components, including memory modules. To avoid damaging DIMMs, it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.

- Handle the memory module by its edges only.

- Put the memory modules into antistatic bags when not in use.

- Check the Supermicro website for recommended memory modules.

Note: All graphics shown in this manual are for reference only. Your system components may not look the same as the graphics shown in this guide.

2   Memory Support

The X10 UP (Socket R3) motherboards support Load Reduced DIMM (LRDIMM) and Registered DIMM (RDIMM) DDR4 (288-pin) ECC memory with speeds of up to 2400MHz in eight memory slots. Refer to the following tables for detailed information on memory support.

RDIMM / LRDIMM DDR4 Memory Support (E5-2600 v3 Motherboards)						
DIMM Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s), Voltage (V), Slot Per Channel (SPC), and DIMM Per Channel (DPC)		
				1 Slot Per Channel	2 Slots Per Channel	
		DRAM Density		1DPC	1DPC	2DPC
		4GB	8GB	1.2V	1.2V	1.2V
RDIMM	SRx4	8GB	16GB	2133	2133	1866
RDIMM	SRx8	4GB	8GB	2133	2133	1866
RDIMM	DRx8	8GB	16GB	2133	2133	1866
RDIMM	DRx4	16GB	32GB	2133	2133	1866
LRDIMM	QRx4	32GB	64GB	2133	2133	2133
LRDIMM 3DS	8Rx4	64GB	128GB	2133	2133	2133

| RDIMM / LRDIMM DDR4 Memory Support (E5-2600 v4 Motherboards)						
DIMM Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s), Voltage (V), Slot Per Channel (SPC), and DIMM Per Channel (DPC)		
				1 Slot Per Channel	2 Slots Per Channel	
		DRAM Density		1DPC	1DPC	2DPC
		4GB	8GB	1.2V	1.2V	1.2V
RDIMM	SRx4	8GB	16GB	2400	2400	2133
RDIMM	SRx8	4GB	8GB	2400	2400	2133
RDIMM	DRx8	8GB	16GB	2400	2400	2133
RDIMM	DRx4	16GB	32GB	2400	2400	2133
LRDIMM	QRx4	32GB	64GB	2400	2400	2400
LRDIMM 3DS	8Rx4	64GB	128GB	2400	2400	2400

3   Memory Population Order

Memory slots for the X10 UP motherboards are populated using the "Fill First" method. The blue memory slot of each channel is considered the "first DIMM" of the channel, while the black slot is the second. When installing memory modules, be sure to populate the blue memory slots first before populating the black slots. To maximize memory capacity and performance, please populate all DIMM slots on the motherboard. Refer to the table below for the recommended DIMM population order.

> **Note 1.** The following memory population table applies to X10SRW-F, X10SRi-F, X10SRL-F, X10SRG-F, and X10SRH-CF/-CLN4F.

> **Note 2.** X10SRM-F/-TF has 4-DIMM slots with 1DPC and will follow the same population order.

| Recommended DIMM Population Order (1 CPU, 8-DIMM Slots)	
Number of DIMMs	**Memory Population Sequence**
1	DIMMA1
2	DIMMA1 / DIMMB1
3 (Unbalanced: Not Recommended)	DIMMA1 / DIMMB1 / DIMMC1
4	DIMMA1 / DIMMB1 / DIMMD1 / DIMMC1
5 (Unbalanced: Not Recommended)	DIMMA1 / DIMMA2 / DIMMB1 / DIMMD1 / DIMMC1
6 (Unbalanced: Not Recommended)	DIMMA1 / DIMMA2 / DIMMB1 / DIMMD1 / DIMMC2 / DIMMC1
7 (Unbalanced: Not Recommended)	DIMMA1 / DIMMA2 / DIMMB1 / DIMMB2 / DIMMD1 / DIMMC2 / DIMMC1
8	DIMMA1 / DIMMA2 / DIMMB1 / DIMMB2 / DIMMD2 / DIMMD1 / DIMMC2 / DIMMC1
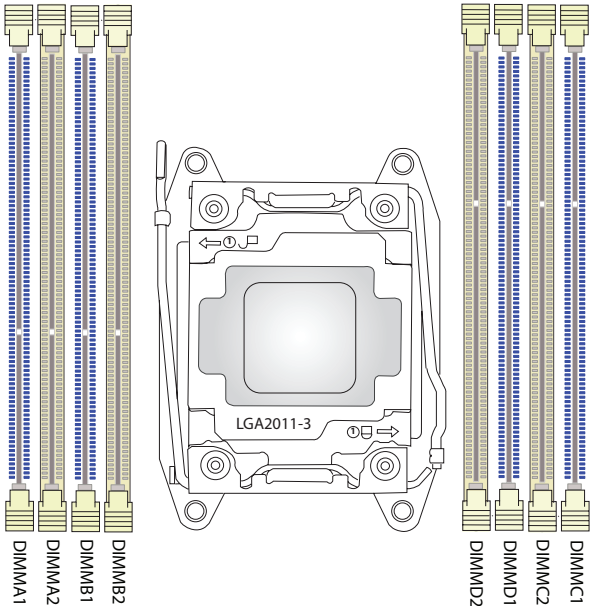
# 4   General Guidelines for Optimizing Memory Performance

1. All DIMMs must be DDR4 and Registered DIMMs must be ECC only.

2. Unbuffered DIMMs (UDIMM) are not supported.

3. A maximum of eight logical ranks per channel is allowed.

4. When single, dual, or quad rank DIMMs are populated for 2DPC, always populate the higher number rank DIMM first (starting from the farthest slot).

5. Be sure to use memory modules of the same type and speed. Mixing memory modules of different types and speeds is not allowed.

6. Populating memory slots with a pair of DIMMs of the same type and size will result in interleaved memory, which will improve memory performance.

7. Motherboards will support odd-numbered modules. However, to achieve the best memory performance, a balanced memory population is recommended.

8. When one DIMM is used, it must be populated in the blue DIMM slot (furthest away from the CPU) of a given channel.

9. Mixing of Physical Rank DIMMs within a channel is allowed.

10. Mixing of different DDR4 operating frequencies is not recommended. If DIMMs are mixed, all DIMMs will run at the lowest common frequency.

General Population Requirements
DIMM Mixing Rules
• Please populate all memory modules with DDR4 DIMMs only.   • Mixing of LRDIMMs and RDIMMs is not allowed.   • Mixing of non-3DS and 3DS LRDIMM is not allowed.

Mixing of DIMM Types within a Channel			
DIMM Types	**RDIMM**	**LRDIMM**	**3DS LRDIMM**
RDIMM	Allowed	Not Allowed	Not Allowed
LRDIMM	Not Allowed	Allowed	Not Allowed
3DS LRDIMM	Not Allowed	Not Allowed	Allowed

5   DIMM Installation

1. Follow the instructions given in the memory population order guidelines listed in the previous sections to install memory modules on your motherboard.

2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.

3. Align the key of the DIMM module with the receptive point on the memory slot.

4. Align the notches on both ends of the module against the receptive points on the ends of the slot.

5. Press the notches on both ends of the module straight down into the slot until the module snaps into place.

6. Press the release tabs to the lock positions to secure the DIMM module into the slot.
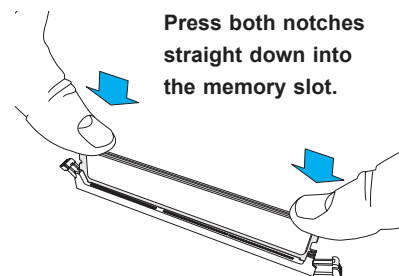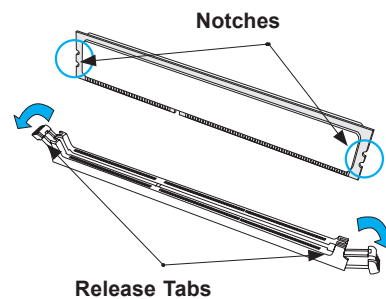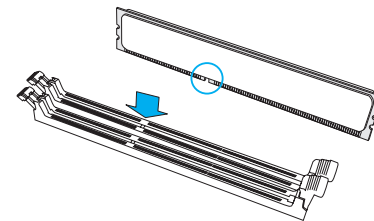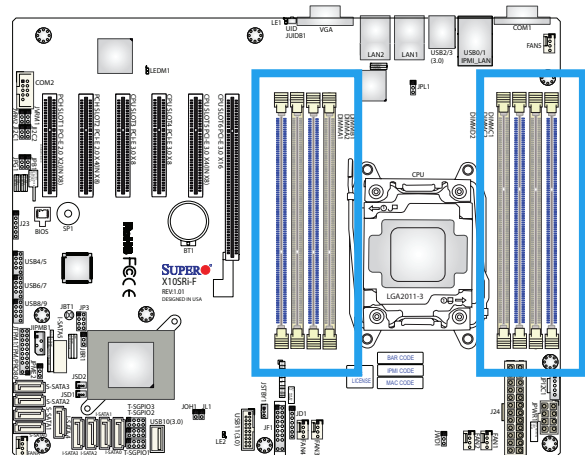
6   DIMM Removal

Reverse the steps above to remove memory modules from the motherboard.

Notches

Release Tabs

Press both notches straight down into the memory slot.