# 5G-Ready Industrial-Grade DDR5

Industrial-Grade Strength, Reliability, and Speed for Next-Gen 5G Applications

- Higher capacity: up to 4x total capacity
- Faster speeds: up to 2x overall speed
- Power regulation: more options with PMIC on-module
- Efficient power: voltage decreased to 1.1V for lower power consumption
- Flexible integration: system management bus updated to I3C Basic
- More reliable: better system stability with on-die ECC

innodisk

Innodisk's DDR5 is faster and more reliable than DDR4, providing the speed and quantity requirements to meet the capacity, throughput, and low-latency demands of 5G applications like HPC, networking, deep learning, AI, Edge computing, smart medical, and supercomputing. DDR4 is rapidly approaching the upper threshold of its performance capabilities, necessitating a new approach that can overcome inherent design limitations. DDR5 is the answer and features high bandwidth, greater memory density, and lower overall power consumption characteristic of modern 5G applications in various industries.

Features
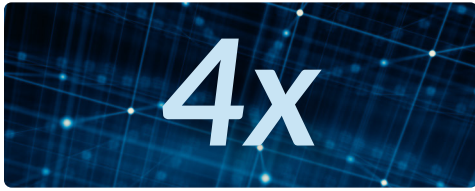
4x Capacity

Optimizing capacity by getting more in the same space increases overall data efficiency. Maximum IC capacity increases from DDR4's 16Gb to 64Gb, for a maximum potential capacity of 128GB, a 4x improvement over DDR4.
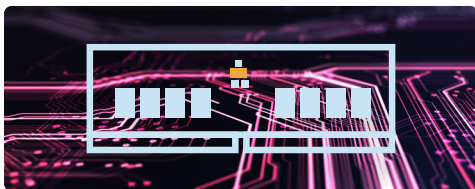
On-Module PMIC

Power management, originally located on the motherboard, is now on the module, allowing threshold protection, error injection capabilities, programmable power-on sequence, and power management.

2x Speed

By utilizing two independent 32-bit data channels per DIMM (40-bit with ECC) and increasing the burst length from 8 bytes (BL8) to 16 bytes (BL16), DDR5 doubles its predecessor's 3200MT/s to 6400MT/s.

I3C Basic

DDR5 system management uses the JEDEC Module Sideband Bus Specification (JESD403), which relies on MIPI I3C Basic. The I3C specification is the power-efficient successor of the I2C used in DDR4 modules.
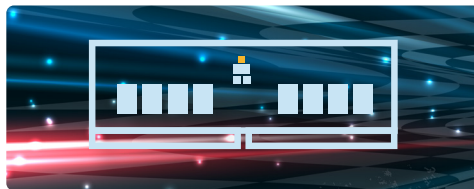
Lower Voltage

Lower voltage, reduced from 1.2V to 1.1V, lessens the overall power consumption. The placement of the PMIC on the memory module partially counters any noise immunity concerns from lower voltages.

On-die ECC

More capacity and faster data throughput multiply the necessity to ensure no data loss. On-die ECC provides an extra layer of protection by adding 8-bit ECC checking at the IC level for every 128 bits of data.

Anti-sulfuration   Free

All Innodisk DDR4 & DDR5 modules will be upgraded without any added cost to include robust anti-sulfuration measures

	DDR4	DDR5
Max IC Density	16Gbit	64Gbit
Memory Capacity (SODIMM/UDIMM/RDIMM)	2GB~32GB	16GB~128GB
Data Rate (MT/s)	2133~3200	4800~6400
Voltage (Vdd)	1.2v	1.1v
Power Management	on motherboard	PMIC (on DIMM)
Channel	1 channel per DIMM Non-ECC: 64bit, ECC: 72bit	2 channel per DIMM, Non-ECC: 64bit (2x32bit) ECC: 80bit (2x40bit)
SPD Interface	I2C	I3C
Storage Temp	-55~100℃	-55~100℃
Operating Temp	0~85℃	0~85℃