



## PREFACE

This manual defines the functionality of the MPC509 for use by software and hardware developers. The MPC509 is a member of the PowerPC-based Motorola MPC500 family of microcontrollers.

### Audience

This manual is intended for system software and hardware developers and applications programmers. It is assumed that the reader understands operating systems, microprocessor and microcontroller system design, and the basic principles of RISC processing.

### Additional Reading

This section lists additional reading that provides background to or supplements the information in this manual.

- John L. Hennessy and David A. Patterson, *Computer Architecture: A Quantitative Approach*, Morgan Kaufmann Publishers, Inc., San Mateo, CA
- *PowerPC Microprocessor Family: the Programming Environments* (MPCFPE/AD)
- ***RCPU Reference Manual*** (RCPURM/AD)
- ***SIU Reference Manual*** (SIURM/AD)
- Additional Motorola MPC500-Family documentation. Refer to <http://mot-sps.com> for a comprehensive listing of available documentation.

### Conventions

This document uses the following notational conventions:

ACTIVE_HIGH	Names for signals that are active high are shown in uppercase text without an overbar. Signals that are active high are referred to as asserted when they are high and negated when they are low.
ACTIVE_LOW	A bar over a signal name indicates that the signal is active low. Active-low signals are referred to as asserted (active) when they are low and negated when they are high.
<b>mnemonics</b>	Instruction mnemonics are shown in lowercase bold.
<i>italics</i>	Italics indicate variable command parameters, for example, <b>bcctrx</b>
0x0F	Hexadecimal numbers
0b0011	Binary numbers
rA 0	The contents of a specified GPR or the value zero.
REG[FIELD]	Abbreviations or acronyms for registers are shown in uppercase

x

text. Specific bit fields or ranges are shown in brackets.

In certain contexts, such as a signal encoding, this indicates a don't care. For example, if a field is binary encoded 0bx001, the state of the first bit is a don't care.



## Nomenclature

**Logic level one** is the voltage that corresponds to Boolean true (1) state.

**Logic level zero** is the voltage that corresponds to Boolean false (0) state.

To **set** a bit or bits means to establish logic level one on the bit or bits.

To **clear** a bit or bits means to establish logic level zero on the bit or bits.

A signal that is **asserted** is in its active logic state. An active low signal changes from logic level one to logic level zero when asserted, and an active high signal changes from logic level zero to logic level one.

A signal that is **negated** is in its inactive logic state. An active low signal changes from logic level zero to logic level one when negated, and an active high signal changes from logic level one to logic level zero.

**LSB** means least significant bit or bits. **MSB** means most significant bit or bits. References to low and high bytes are spelled out.