



## PREFACE

This manual describes the capabilities, operation, and functions of the MC68377 microcontroller unit. Documentation for the modular microcontroller family follows the modular construction of the devices in the product line. Each device has a comprehensive user's manual which provides sufficient information for normal operation of the device. The user's manual is supplemented by module reference manuals that provide detailed information about module operation and applications. Please refer to the list of documents below for further information.

### Audience

This manual is intended for system software and hardware developers and applications programmers who want to develop products using MC68377. It is assumed that the reader understands operating systems, microprocessor and microcontroller system design.

### Additional Reading

The following Motorola documents provide an in-depth functional description of the MC68377 modules:

- *MC68332 User's Manual* (MC68332UM/AD)
- *CPU32 Central Processor Unit Reference Manual* (CPU32RM/AD)
- *QSM Reference Manual* (QSMRM/AD)
- TPU documentation (TPULITPAK/D, including the TPURM/AD)
- *MC68336/376 Reference Manual*, with TouCAN, (MC68336/376RM/AD)
- *Configurable Timer Module Reference Manual* (CTMRM/AD)

### 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 shown by 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.

**0x0F** shows hexadecimal numbers

**0b0011** shows binary numbers

A **specific bit or signal** within a range is referred to by mnemonic and number. For example, ADDR15 is bit 15 of the address bus. A **range of bits or signals** is referred

to by mnemonic and the numbers that define the range. For example, DATA[7:0] form the low byte of the data bus.



**REG[FIELD]** are abbreviations or acronyms for registers are shown in uppercase text. Specific bit fields or ranges are shown in brackets.

**x** in certain contexts, such as signal encoding, 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.

### NOTE

Throughout this manual references to 3 V refer to the nominal supply voltage of 3.3 V.

## 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.

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

**Asserted** means that a signal is in active logic state. An active low signal changes from logic level one to logic level zero when asserted. An active high signal changes from logic level zero to logic level one when asserted.

**Negated** means that an asserted signal changes 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.

**A range of mnemonics** is referred to by mnemonic and the numbers that define the range. For example, VBR[ 4:0] are bits four to zero of the vector base register.



## Symbols and Operators

Symbol	Function
+	Addition
−	Subtraction (two's complement) or negation
*	Multiplication
/	Division
>	Greater
<	Less
=	Equal
≥	Equal or greater
≤	Equal or less
≠	Not equal
•	AND
;	Inclusive OR (OR)
⊕	Exclusive OR (EOR)
NOT	Complementation
:	Concatenation
?	Transferred
□	Exchanges
±	Sign bit; also used to show tolerance
«	Sign extension
%	Binary value
\$	Hexadecimal value

## References

It is recommended to use the Sematech *Official Dictionary* and the *Reference Guide to Letter Symbols for Semiconductor Devices* by the JEDEC Council/Electronics Industries Association as references for terminology and symbology.

