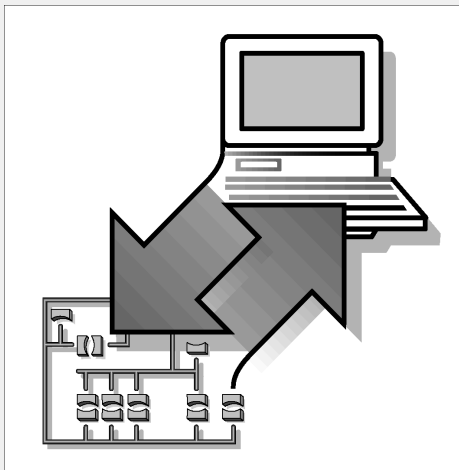




Allen-Bradley

***PLC-2[®] Family
Programmable
Controllers***



Addressing Reference Manual

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication *SGI-1.1, Safety Guidelines for the Application, Installation, and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we make notes to alert you to possible injury to people or damage to equipment under specific circumstances.



WARNING: Tells readers where people may be hurt if procedures are not followed properly.



CAUTION: Tells readers where machinery may be damaged or economic loss can occur if procedures are not followed properly.

Warnings and Cautions:

- identify a possible trouble spot
- tell what causes the trouble
- give the result of improper action
- tell the reader how to avoid trouble

Important: We recommend that you frequently back up your application programs on an appropriate storage medium to avoid possible data loss

Addressing PLC-2 Memory

Using this Addressing Reference

This addressing reference helps you specify the addresses in the memory of PLC-2® family of processors. This reference contains:

For This Subject:

memory maps for various PLC-2 processors
addressing
address formats
timer and counter words

Refer to:

page 2
page 10
page 11
page 12

Related Publications

For more information about memory configuration and use in PLC-2 family of processors, refer to the appropriate processor manual, as listed in Table 1.A.

Table 1.A
PLC-2 Processor Manuals

Processor	Publication Number	Title
PLC-2/30	1772-6.8.3	Programming and Operations Manual PLC-2/30 Programmable Controller
PLC-2/20	1772-6.8.1	Programming and Operations Manual PLC-2/20 Programmable Controller
Mini-PLC-2/15	1772-6.8.2	Programming and Operations Manual Mini-PLC-2/15 Programmable Controller (Series B)
Mini-PLC-2/05	1772-6.8.6	Programming and Operations Manual Bulletin 1772 Mini PLC-2/05 Processor
Mini-PLC-2	1772-6.8.4	Programming and Operations Manual Mini-PLC-2 Programmable Controller
Mini-PLC-2/02, -2/16, -2/17	1772-6.5.8	User's Manual Mini-PLC-2/02, -2/16, -2/17

Memory Maps

Figures 1 thru 7 show how memory is organized in various PLC-2 processors. Use Table 1.B to locate the memory map for a specific processor.

Table 1.B
Memory Maps in this Addressing Reference

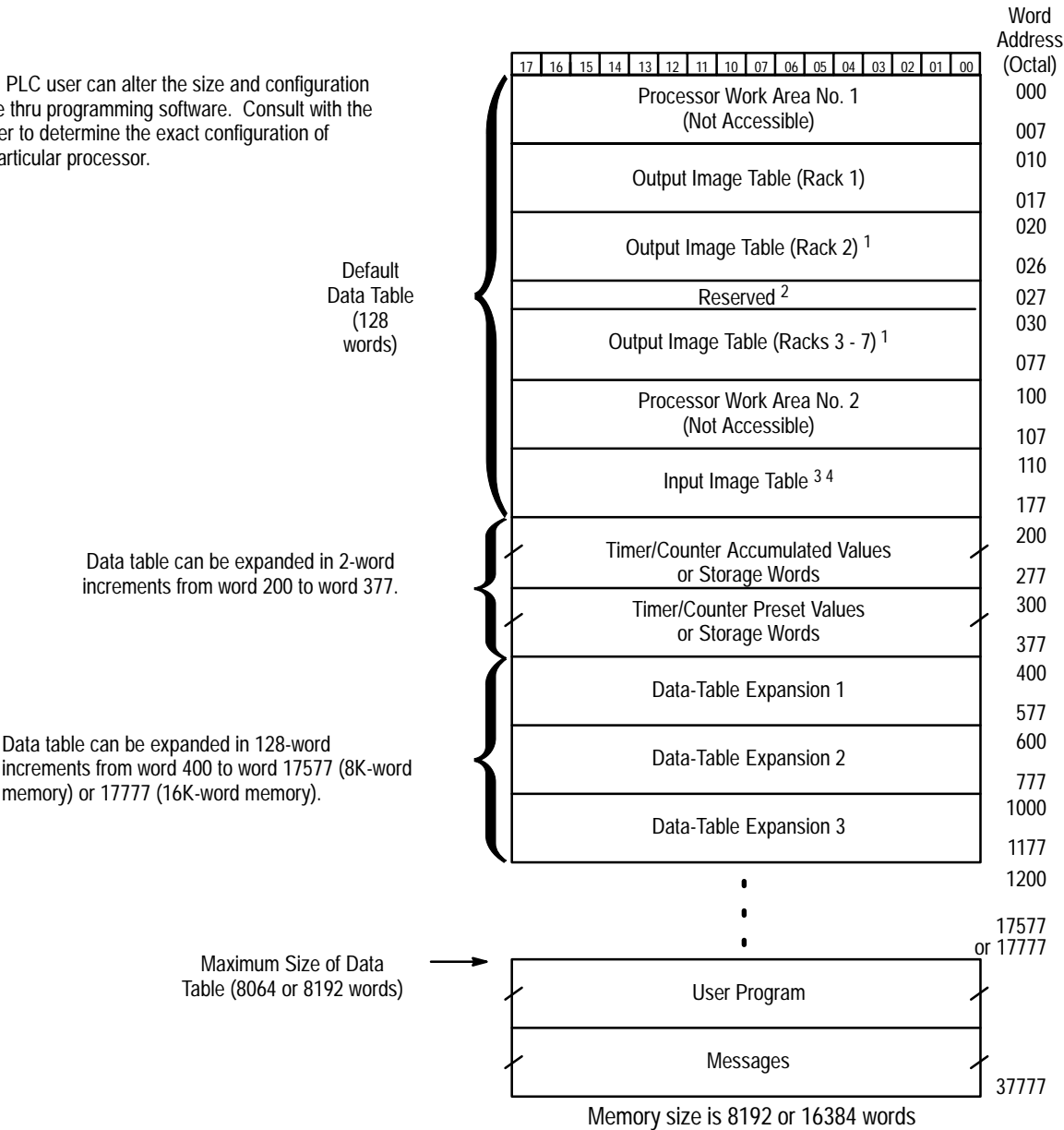
For This Processor:	Refer to:
PLC-2/30	Figure 1
PLC-2/20, cat. no. 1770-LP1	Figure 2
PLC-2/20, cat. no. 1770-LP2	Figure 3
Mini-PLC-2/15	Figure 4
Mini-PLC-2/05	Figure 5
Mini-PLC-2	Figure 6
Mini-PLC-2/02, -2/16, and -2/17	Figure 7

For each PLC-2 processor, you can alter the factory configuration of memory. Consult with the PLC® programmer to determine the exact configuration for a particular processor. Also refer to the appropriate processor manual (Table 1.A).

For each PLC-2 processor, each word of memory has the PLC data type of unsigned word.

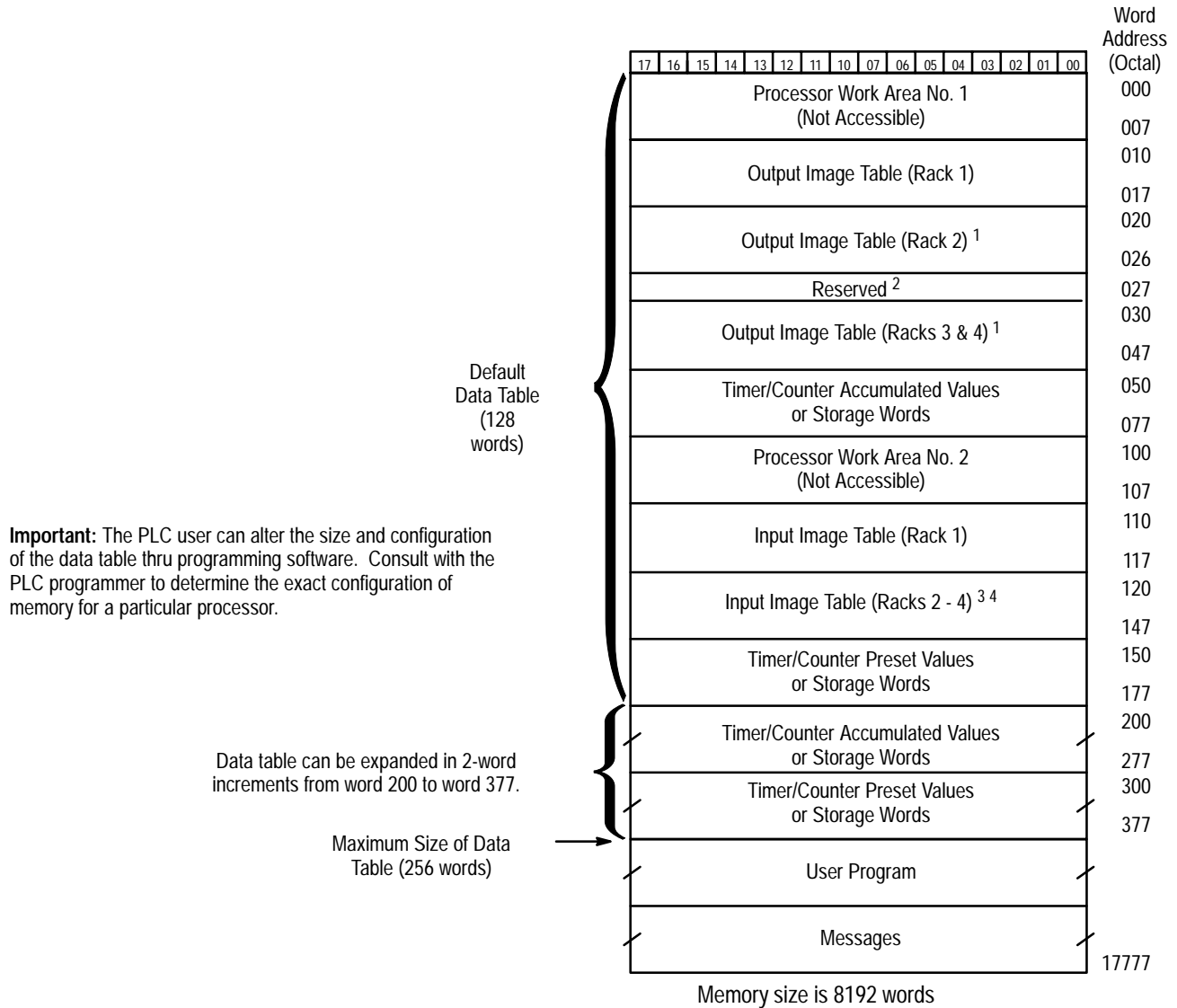
Figure 1
Memory Map of the PLC-2/30

Important: The PLC user can alter the size and configuration of the data table thru programming software. Consult with the PLC programmer to determine the exact configuration of memory for a particular processor.



¹ If not configured for output image table, can be used for storage or timer/counter accumulated values.
² Bits in this word are used by the processor for battery-low condition, message generation, and Data Highway.
³ If not configured for input image table, can be used for storage or timer/counter preset values.
⁴ In a remote I/O system, bits in words 125 and 126 indicate remote I/O rack fault status.
/ Indicates that the size of this section is adjustable.

Figure 2
Memory Map of PLC-2/20 (1772-LP1)



¹ If not configured for output image table, can be used for storage or timer/counter accumulated values.

² Bits in this word are used by the processor for battery-low condition, message generation, and Data Highway.

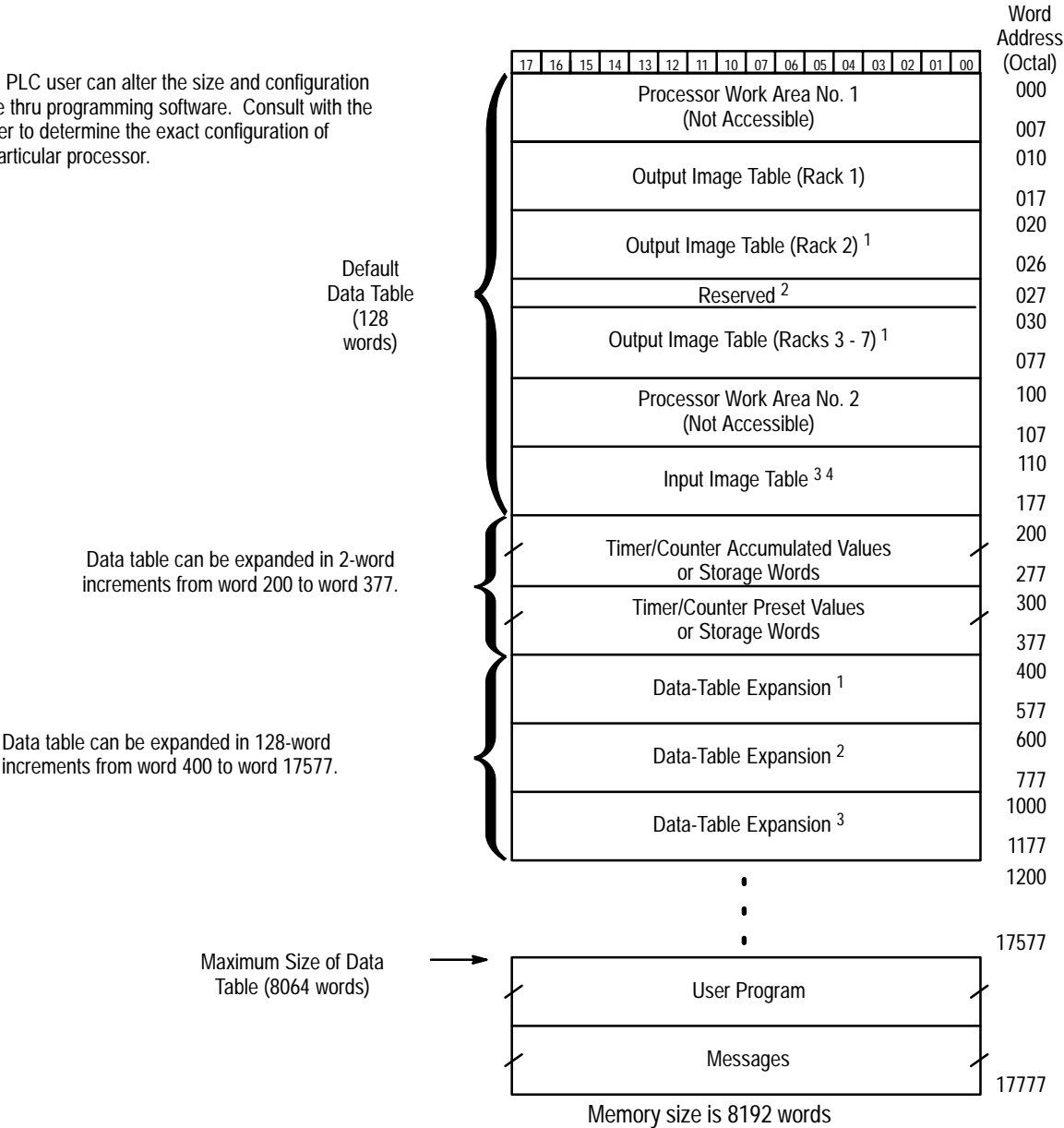
³ If not configured for input image table, can be used for storage or timer/counter preset values.

⁴ In a remote I/O system, bits in words 125 and 126 indicate remote I/O rack fault status.

/ Indicates that the size of this section is adjustable.

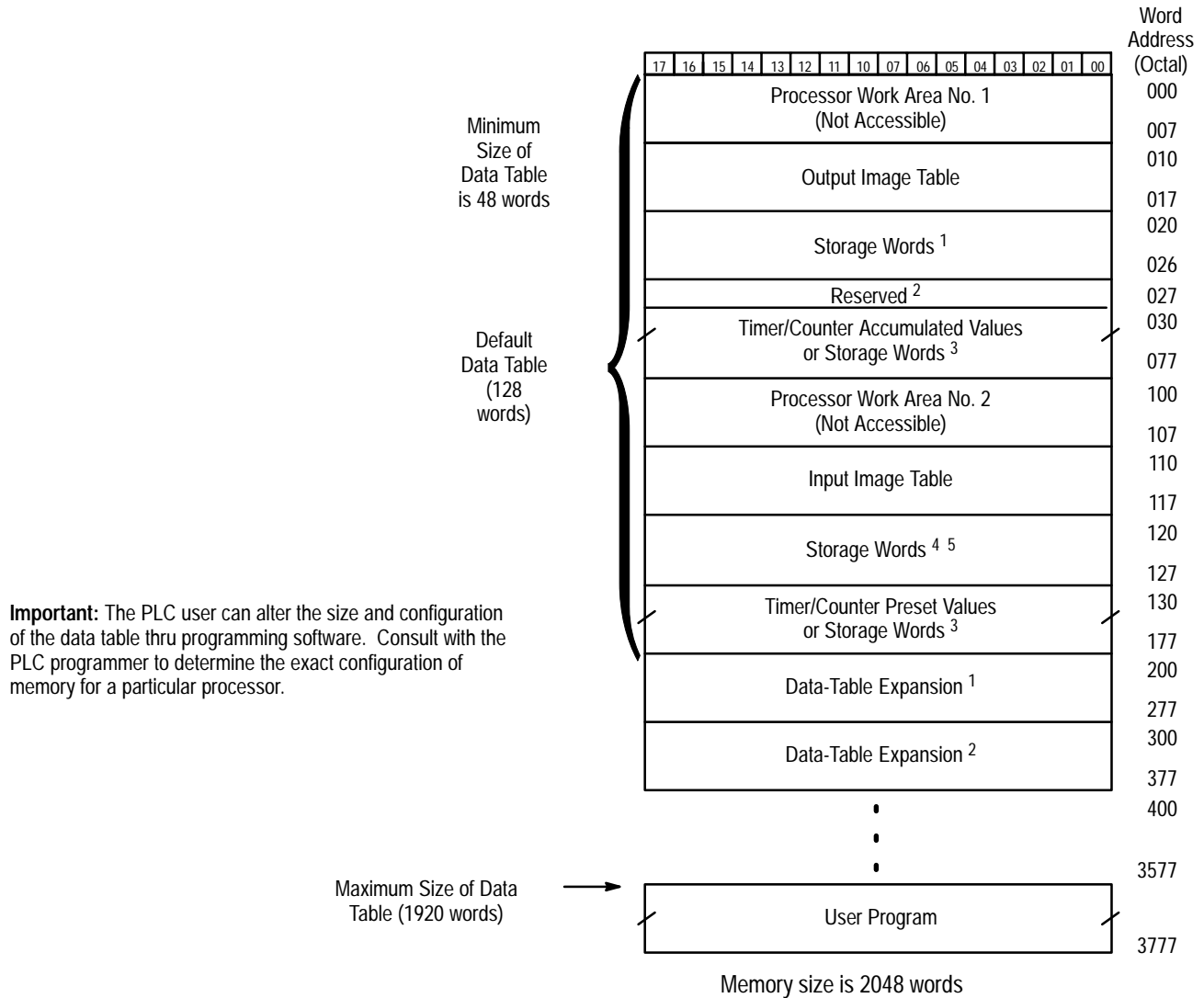
Figure 3
Memory Map of PLC-2/20 (1772-LP2)

Important: The PLC user can alter the size and configuration of the data table thru programming software. Consult with the PLC programmer to determine the exact configuration of memory for a particular processor.



¹ If not configured for output image table, can be used for storage or timer/counter accumulated values.
² Bits in this word are used by the processor for battery-low condition, message generation, and Data Highway.
³ If not configured for input image table, can be used for storage or timer/counter preset values.
⁴ In a remote I/O system, bits in words 125 and 126 indicate remote I/O rack fault status.
/ Indicates that the size of this section is adjustable.

Figure 4
Memory Map of PLC-2/15



¹ Can not be used for accumulated values.

² Not available for storage word. Bits in this word are used by the processor for battery-low condition, message generation, EEPROM transfer, and Data Highway.

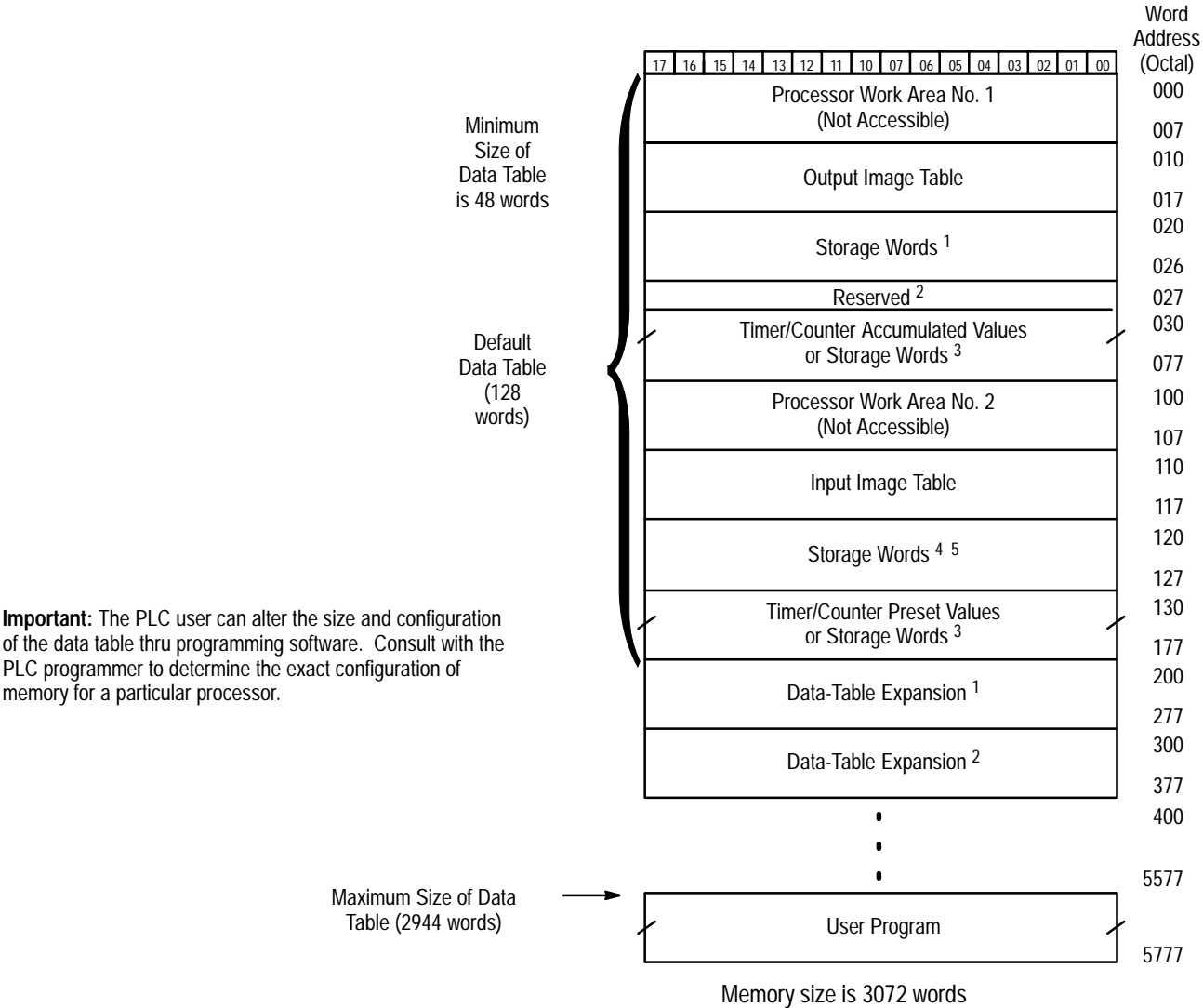
³ Unused timer/counter words can reduce data-table size and increase user program area.

⁴ Can not be used for preset values.

⁵ Do not user word 127 for block-transfer storage.

/ Indicates that the size of this section is adjustable.

Figure 5
 Memory Map of PLC-2/05



¹ Can not be used for accumulated values.

² Not available for storage word. Bits in this word are used by the processor for battery-low condition, message generation, EEPROM transfer, and Data Highway.

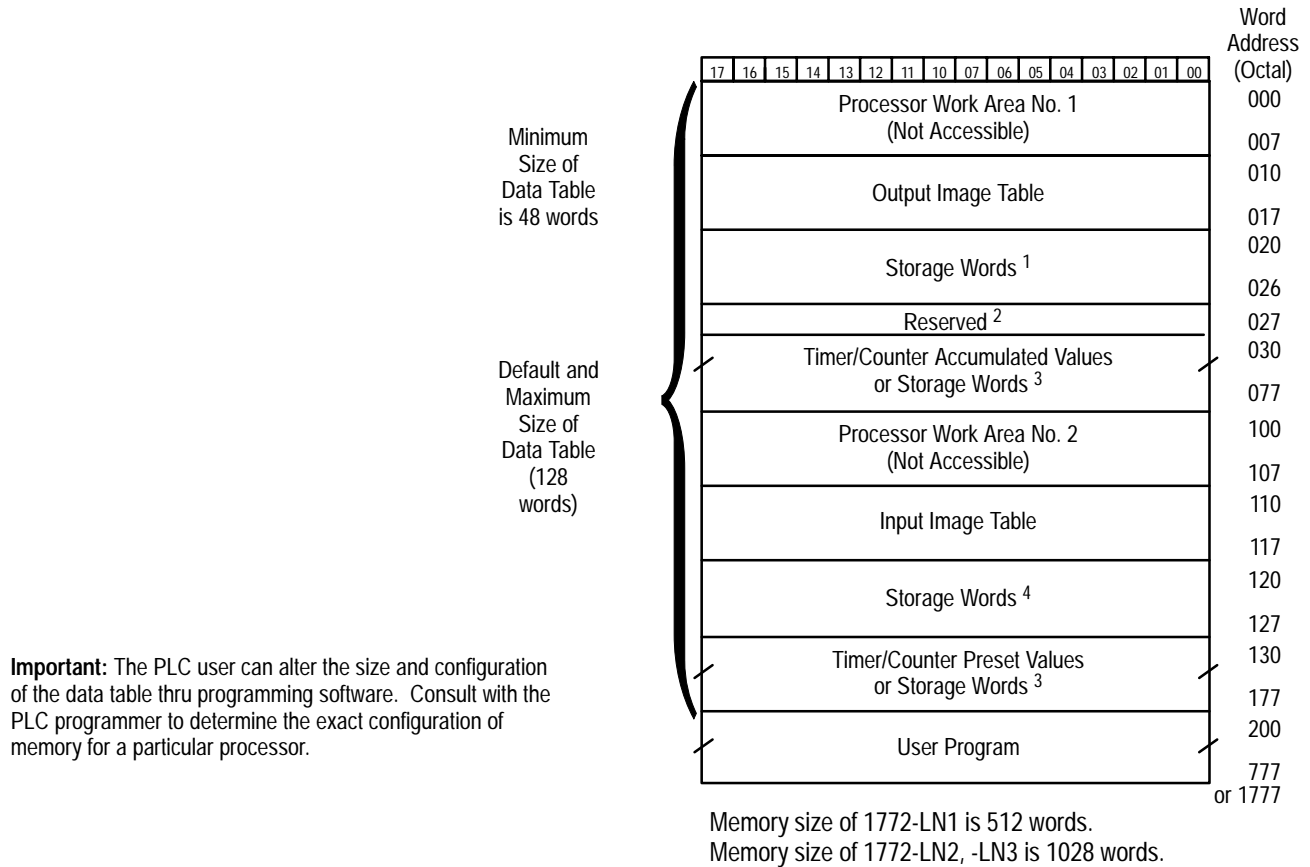
³ Unused timer/counter words can reduce data-table size and increase user program area.

⁴ Can not be used for preset values.

⁵ Do not user word 127 for block-transfer storage.

/ Indicates that the size of this section is adjustable.

Figure 6
Memory Map for PLC-2



¹ Can not be used for accumulated values.

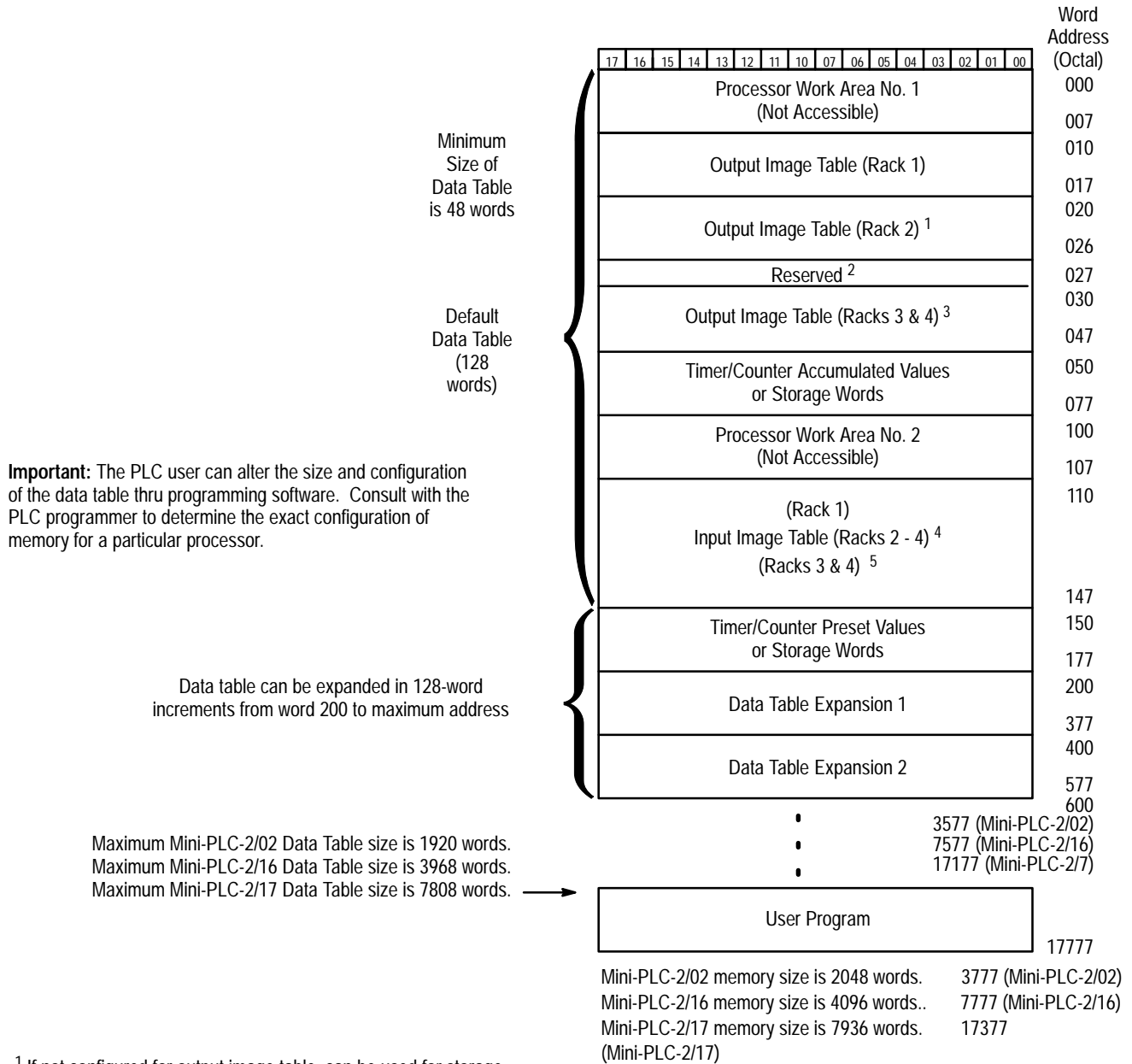
² Not available for storage word. Bits in this word are used by the processor for battery-low condition, message generation, and Data Highway.

³ Unused timer/counter words can reduce data-table size and increase user program area.

⁴ Can not be used for preset values.

/ Indicates that the size of this section is adjustable.

Figure 7
Memory Map for PLC-2/02, -2/16, -2/17 Processor



¹ If not configured for output image table, can be used for storage.

² Not available for storage. Used by the processor for battery-low condition, message generation, EEPROM transfer, and Data Highway.

³ If not configured for output image table, can be used for storage or timer/counter preset values.

⁴ If not configured for input image table, can be used for storage

⁵ If not configured for input image table, can be used for storage or timer/counter preset values.

/ Indicates that the size of this section is adjustable.

Addressing

All data in PLC-2 memory is stored in 16-bit words. You address this data by word number and (optionally) bit number. You must express word and bit numbers in octal form.

Locating Addressing Information

The remainder of this addressing reference provides addressing formats and data structures for addressing various PLC-2 memory sections. Use Table 1.C to locate information about a specific topic.

Table 1.C
Addressing Formats and Data Structures

For Information About:	Refer to:
General Address Format	Figure 8
Inputs	Figure 9
Outputs	Figure 9
Timers	Figure 8, Figure 10, Figure 11
Counters	Figure 8, Figure 12, Figure 13

Address Formats

Figure 8
General Format for Data Table Addresses

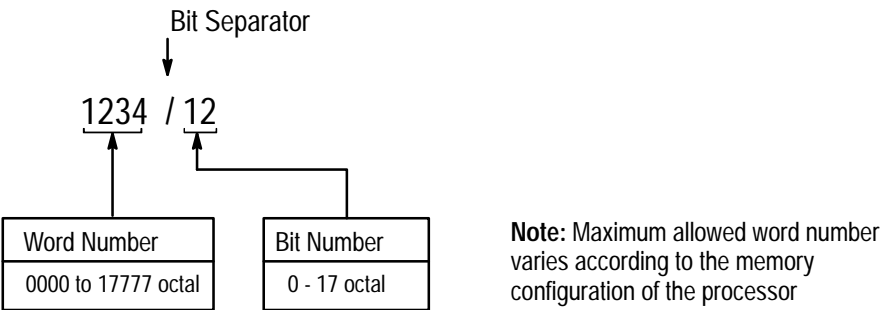
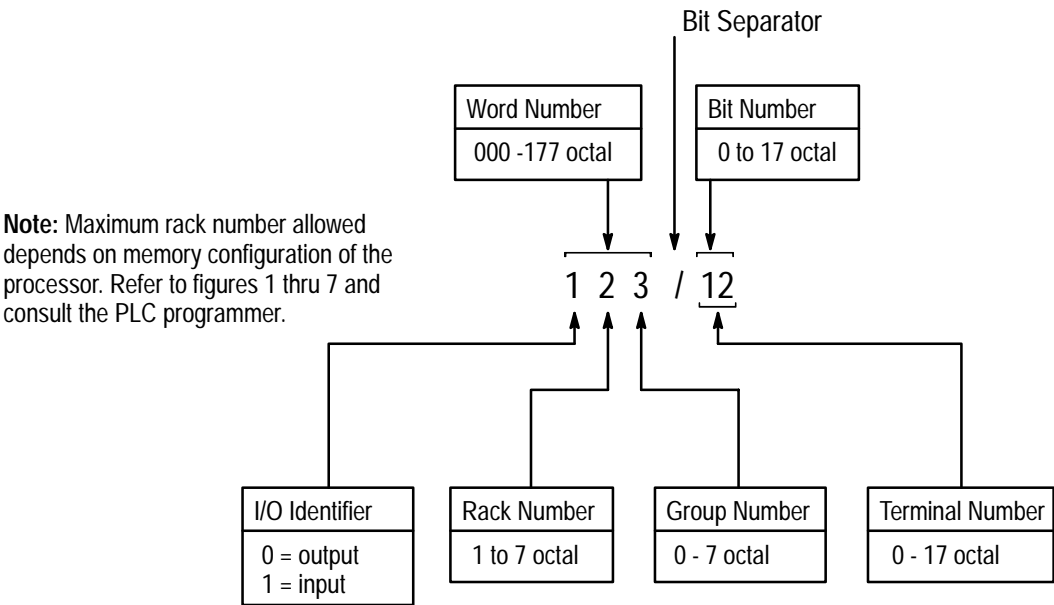


Figure 9
Format for I/O Image Tables Addresses



Timer and Counter Words

Figures 10 thru 13 show the format in which accumulated values, preset values, and control conditions are stored in data-table words for timers and counters. Consult with the PLC programmer to determine specific word addresses for timers and counters. Refer to the appropriate Programming and Operations Manual (Table 1.A) for more information.

Figure 10
Structure of Timer Accumulated Value Word

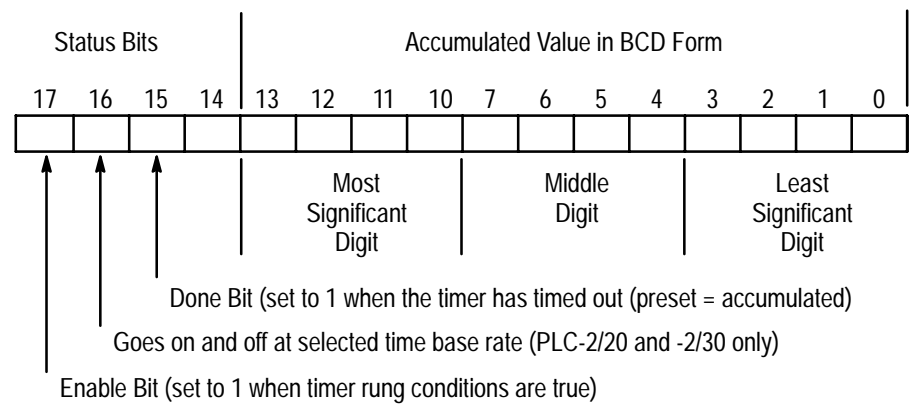


Figure 11
Structure of Timer Preset Value Word

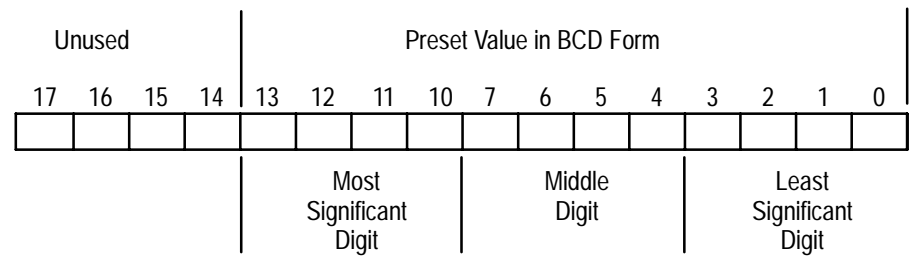


Figure 12
Structure of Counter Accumulated Value Word

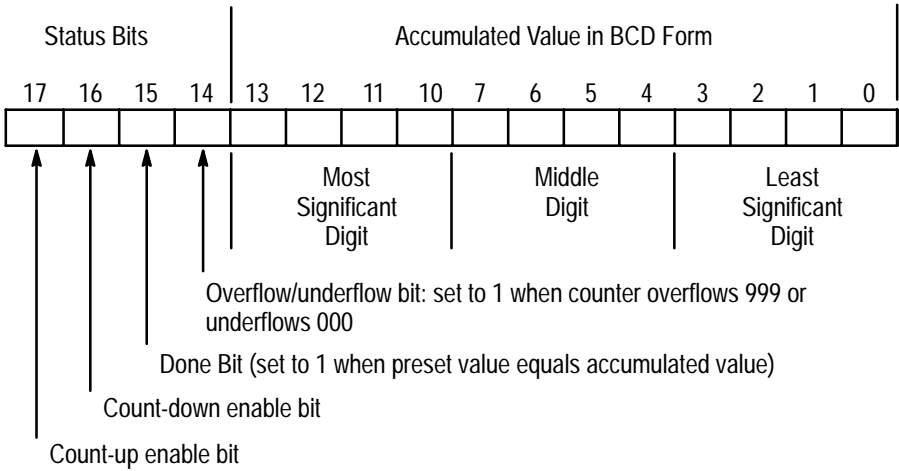
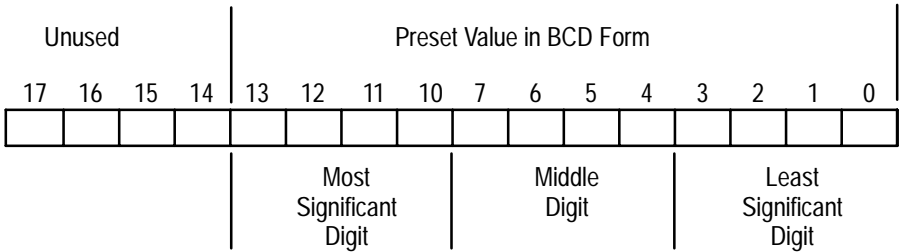


Figure 13
Structure of Counter Preset Value Word





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