SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

19ITT204 – MICROCONTROLLER & EMBEDDED SYSTEMS

III YEAR - V SEM

UNIT 2 – 8255 PPI

Programmable Peripheral Interface

➢A programmable peripheral interface is a multiport device.

➢ The ports may be programmed in a variety of ways as required by the programmer.

➢The device is very useful for interfacing peripheral devices.

➢The term PIA, Peripheral Interface Adapter is also used by some manufacturer.

Intel 8255

➢It has three 8-bit ports, namely Port A, Port B and Port C.

➢The port C has been further divided into two 4-bit ports, port C upper and Port C lower.

➢Thus a total of 4-ports are available, two 8-bit ports and two 4-bit ports.   Each port can be programmed either as an input port or an output port.

Architecture of 8255
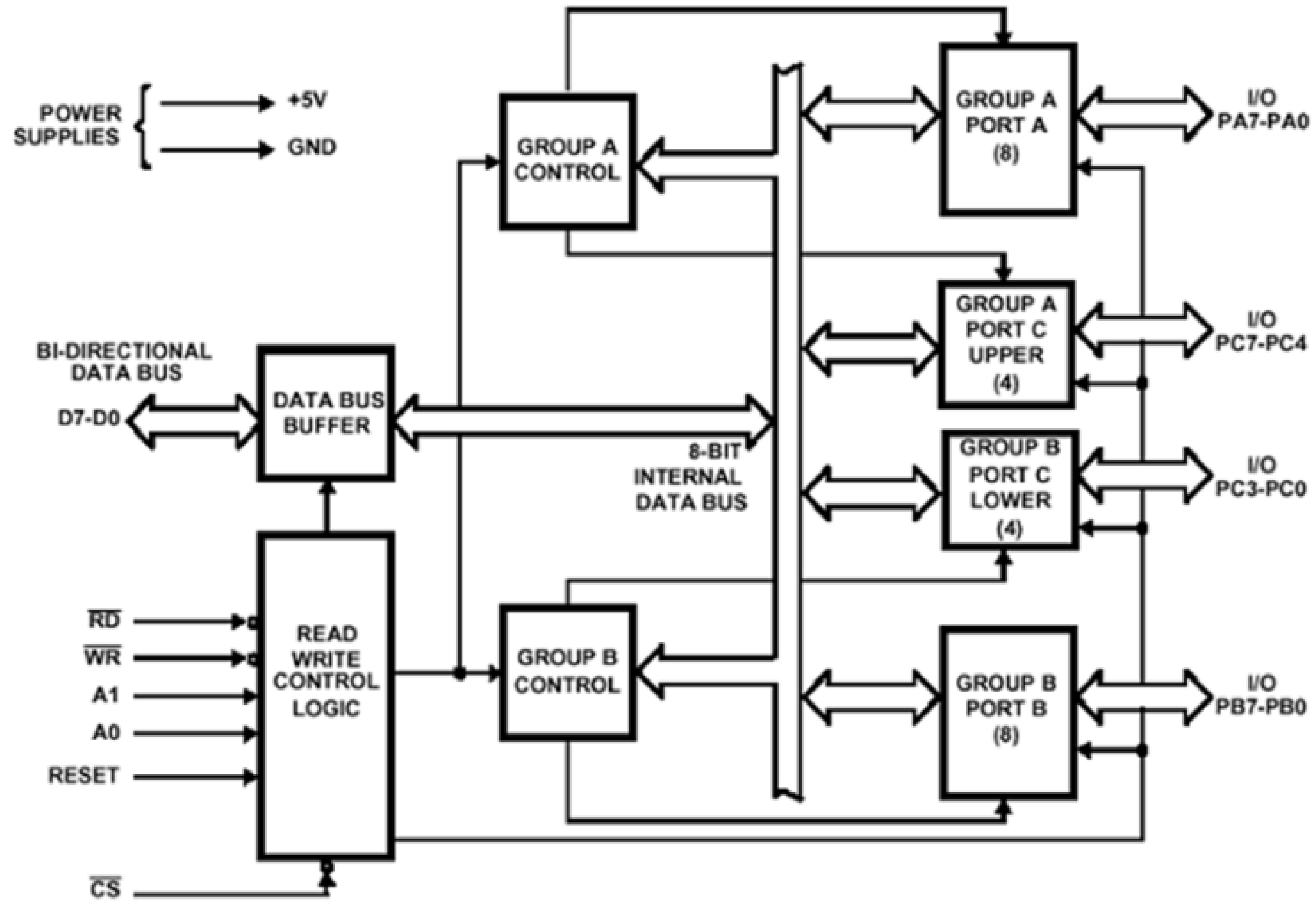
Operating modes of 8255

Mode 0 - Simple Input/output: The 8255 has two 8-bit ports (Port A and Port B) and two 4-bit ports (Port C_{upper} and Port C_{lower}).

In Mode 0 operation, a port can be operated as a simple input or output port. Each of the 4 ports of 8255 can be programmed to be either an input or output port.

Mode 1-Strobed Input/output: Mode 1 is strobed input/output mode of operation.

The Port A and Port B both are designed to operate in this mode of operation.

When Port A and Port B are programmed in Mode 1, six pins of Port C are used for their control.

Mode 0.

Mode 2 -Bidirectional Port: Mode 2 is strobed bidirectional mode of operation. In this mode Port A can be programmed to operate as a bidirectional port.

The mode 2 operation is only for Port A.

When Port A is programmed in Mode 2, the port B can be used either Mode 1 or Mode 0.

Advantages of 8255

Versatility: The PPI 8255 can be programmed to operate in a variety of modes, which makes it a versatile component in many different systems

Ease of use: The PPI 8255 is relatively easy to use and program, even for novice programmers

Compatibility: The PPI 8255 is widely used and has been around for many years, which means that it is compatible with a wide range of devices and software.

Low cost: The PPI 8255 is a relatively low-cost component, which makes it an affordable option for many different applications.

Disadvantages of 8255

Limited functionality: While the PPI 8255 is versatile, it has limited functionality compared to newer I/O interface components. It is not capable of high-speed data transfer and has limited memory capacity.

Limited number of ports: The PPI 8255 provides only three 8-bit ports, which may not be sufficient for some applications that require more I/O ports.

Limited resolution: The PPI 8255 provides only 8 bits of resolution for each port, which may not be sufficient for some applications that require higher resolution.

Obsolete technology: While the PPI 8255 is still used in some applications, it is considered an older technology and is being replaced by newer, more advanced I/O interface components.

References

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