# μPD72002
# Serial Communications Controller: Single-Channel, Advanced Multiprotocol, CMOS

## Description

The μPD72002 Serial Communications Controller is an advanced multiprotocol serial controller (AMPSC). The high-performance μPD72002 is a software-compatible, single-channel version of NEC's powerful μPD72001 AMPSC. Both the μPD72002 and the μPD72001 have a superset of the functions of the 8530 SCC.

The μPD72002 AMPSC contains a single full-duplex serial channel that can be configured to transmit and receive data in either asynchronous protocol or one of two synchronous protocols.

- Character-oriented protocol (COP), such as binary synchronous control (Bisync) and Monosync.
- Bit-oriented protocol (BOP), such as high-level data link control (HDLC) and synchronous data link control (SDLC).

The μPD72002 AMPSC, like its forerunner the μPD72001, provides vectored and non-vectored interrupt operation. Vectored operation allows multiple AMPSCs (both μPD72001s and μPD72002s) to be connected in an interrupt daisy chain configuration.

Separate direct memory access (DMA) request and acknowledge lines, available for both transmitter and receiver, provide a direct interface to the μPD71071 and 8237 DMA controllers, allowing for high-speed operation. The AMPSC is easily interfaced to most microprocessors with a minimum of additional logic.

Features that make the μPD72001 the right choice for today's advanced communications requirements are also present in the μPD72002. An on-chip digital phase-locked loop (DPLL) and two baud rate generator (BRG)/timers are available, one BRG for the transmitter and one for the receiver. The BRGs provide the flexibility of operation with asymmetrical data rates on the serial channel.

A crystal oscillator and a low-power standby mode of operation are also included. The standby mode reduces power consumption dramatically, preserving all register values while disabling the transmitter and receiver. The μPD72002's features simplify design requirements and make it an excellent choice for applications that require only one serial communications channel.

## Features

- Single-channel version of μPD72001
- Software compatible with μPD72001
- Functional superset of industry standard 8530
- CMOS technology
- Multiprotocol
  - Asynchronous
  - Synchronous
  - Character-oriented (Bisync and Monosync)
  - Bit-oriented (SDLC/HDLC)
- One full-duplex channel
- Versatile host-system interface
  - Software polling
  - Interrupt
  - DMA
- Direct interface to μPD71071 and 8237 DMA controllers
- Interface to a majority of microprocessors (V-Series, 8080, 8085, 80x86/80x88, and others)
- Dc to 2.5-Mb/s data rate at 12.5 MHz
- Modem control signals
- NRZ, NRZI, and FM encoding/decoding, Manchester decoding
- Digital phase-locked loop
- Two baud rate generator/timers (receive and transmit)
- Crystal oscillator
- SDLC loop mode
- Mark idle detection
- Short-frame detection
- Single + 5-volt power supply
- Standby mode for reduced power consumption
- 11-MHz, 12 MHz, or 12.5 MHz systems and input data clocks
- Available in DIP, PLCC, and QFP packages

## Ordering Information

| Part Number | Package | Max Operating Clock Speed |
|---|---|---|
| μPD72002C | 40-pin plastic DIP | 12.5 MHz |
| GB | 44-pin plastic QFP | |
| L | 44-pin plastic leaded chip carrier (PLCC) | |

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## Block Diagram