







## Features

-  10/100BaseT Ethernet port
-  IP68-compliant, -30C to +80C range
-  Free serial-over-IP Tibbo BASIC application available
-  DS1000: Four RS232 ports
-  DS1002: Four RS232/422/485 ports
-  DS1003: Four isolated RS232/422/485 ports



## About

The DS1000, DS1002, and DS1003 are 4-port BASIC-programmable industrial controllers designed primarily for serial-over-IP and serial control applications. All three devices come preloaded with a fully functional serial-over-IP application (open-source).

These devices differ in the type of serial ports they offer:

With its four conventional RS232 ports, the DS1000 is ideal for relatively low-cost projects.

For applications requiring a mix of port types, there is the DS1002, which sports universal RS232/422/485 ports with programmable selection of each port's mode.

Finally, especially demanding industrial installations can rely on the DS1003, which adds galvanic isolation on top of the universal ports.

## Specifications

- Network side — NB1000 board:
  - Based on the EM1000 BASIC-programmable module
  - 10/100BaseT, auto-MDIX Ethernet port
  - 1024KB flash for firmware, application, and data storage
  - 2KB EEPROM for data storage
  - RTC with backup supercapacitor
  - Built-in buzzer
  - 11 Status LEDs
  - Power: 10-24V
  - Firmware is upgradeable through the serial port or network
- Interface side — IB1000, IB1002, or IB1003 board:
  - IB1000 board: four RS232 ports (DS1000)
  - IB1002 board: four RS232/422/485 ports (DS1002)
  - IB1003 board: four isolated RS232/422/485 ports (DS1003)
  - 8 status LED
  - Dimensions: 91x104x99mm (excluding secondary cover)
  - Extruded-profile aluminum body
  - IP68 compliant (when used with secondary cover)
  - Operating temperature -30 to +80 degrees C
  - CE- and FCC-certified

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## Specifications (continued)

- Included accessories:
  - DS1000 waterproof kit with secondary cover, cable glands, screws
  - DMK1000 DIN rail mounting kit
  - TB1000 terminal block adaptor (with DS1002/3 only)
- Optional Accessories:
  - 12V/1A adaptor: APR-P0008 (US), APR-P0009 (EU), APR-P0010 (UK)
  - WAS-1499 straight Ethernet cable (for this device can be used as crossover cable too)
  - WAS-P0004(B) DB9M-to-DB9F serial cable (device-to-PC)
  - WAS-P0005(B) DB9F-to-DB9F serial cable (device-to-device)

## Programming

### Platform Objects

- Sock — socket comms (up to 16 UDP, TCP, and HTTP sessions).
- Net — controls Ethernet port.
- Ser — up to 4 serial ports (UART, Wiegand, and clock/data modes).
- Io — handles I/O lines, ports, and interrupts.
- Rtc — keeps track of date and time.
- Fd — manages flash memory file system and direct sector access.
- Stor — provides access to the EEPROM
- Romfile — facilitates access to resource files (fixed data).
- Pat — “plays” patterns on up to five LED pairs.
- Beep — generates buzzer patterns.
- Button — monitors MD line (setup button).
- Sys — in charge of general device functionality.

Function Groups: String functions (21 in total!), date/time conversion functions, and hash calculation functions (md5 and sha1).

Variable Types: Byte, char, integer (word), short, dword, long, real, string, plus user-defined arrays and structures.

## Tibbo Integrated Development Environment (TIDE)

All BASIC-programmable Tibbo devices are provided with free TIDE software.

### Code in Comfort

Enjoy a modern code editor supporting syntax highlighting, context help, code hinting, and auto-completion.

### Debug with Ease

Set breakpoints, watch variables, inspect the stack, step through your code... the built-in debugger in Tibbo IDE provides all the tools for fast and convenient debugging.

Our debugger does not rely on any special hardware like an ICE machine or a JTAG board. Simply connect your Tibbo device to the Ethernet, select it in the IDE, and you are all set!

For more information on TIDE, see <http://basic.tibbo.com/product/tide.html>