








## Features

-  10/100BaseT Ethernet port
-  IP68-compliant, -30C to +80C range
-  Free Tibbo BASIC application available
-  8 A/D inputs (24 bits)
-  4 D/A outputs (14 bits, voltage/current)
-  2 low-power (1A/24VDC) relays
-  1 RS232/485 port (on a terminal block)



## About

Featuring high-precision A/D and D/A channels, the DS1004 is ideally suited for measurement and control applications in the fields of building automation (think HVAC), process automation, lab work, etc.

Unlike many “remote I/O” products, the DS1004’s capabilities are not limited to just relaying I/O data to a central server. Programmability in Tibbo BASIC means you can create systems where intelligent decisions are taken in real-time by the DS1004 itself.

The capabilities of the DS1004 are further expanded by two low-power relays and one simple RS232/485 port. This port can be used for connecting an auxiliary serial device, a card or barcode reader, or even additional DS10xx devices.

The DS1004 comes preloaded with an open-source application for remote control/monitoring of the device’s A/Ds, D/As, and relays through a web-browser or Tibbo’s AggreGate device management system. This application can easily be customized for any functionality desired.

## 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: 10-18V;
  - Firmware is upgradeable through the serial port or network.
- Interface side — IB1004 board:
  - 8 A/D inputs (24-bit resolution);
  - 4 D/A outputs (14-bit resolution, voltage/current outputs);
  - 2 low-power (1A/24VDC) relays;
  - 1 RS232/485 port;
  - 8 status LEDs.
- Dimensions: 91x104x99mm (excluding secondary cover).
- Extruded-profile aluminum body.
- IP68 compliant (when used with secondary cover).

*continued on next page*

## Specifications (continued)

- Operating temperature -30 to +80 degrees C.
- CE- and FCC-certified.
- Included accessories:
  - DS1000 waterproof kit with secondary cover, cable glands, screws;
  - DMK1000 DIN rail mounting kit;
  - TB1004 test board;
  - WAS-P0040 serial cable for firmware upgrades.
- 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).

## 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.
- Lcd — controls graphical display panels (several types supported).
- 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>