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DS1101 Programmable 3.5-channel RS232 Controller

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The DS1101 is a compact [Tibbo BASIC/C-programmable](#) controller with Ethernet and optional Wi-Fi* connectivity. The DS1101 targets serial-over-IP and serial control applications.

The DS1101 features a multi-channel RS232 port. The device has a single DB9M connector and is priced as a single-port product, yet packs 3.5 independent serial channels.

Another feature of the DS1101 is its software-controlled power output on pin 9 of the DB9 (serial port) connector — you can power an attached serial device directly through the DS1101. Alternatively, the DS1101 itself can be powered through that pin. The device can also be powered via its power jack or the available power-over-Ethernet module*.

In addition, the DS1101 can be equipped with a 96x32 monochrome OLED display.

There are eight LEDs on the device's front: green and red main status LEDs, yellow Ethernet link LED, and five blue LEDs, which can be used for Wi-Fi signal strength indication and other purposes. A buzzer is provided as well.

Each DS1101 is supplied with the DIN rail and wall mounting plates.

The DS1101 comes preloaded with a full-featured [serial-over-IP \(Sol\) application](#) that turns the DS1101 into a powerful [serial over IP \(Sol\)](#) device (a.k.a. "device server"). A versatile [Modbus Gateway](#) application is also

available.

* *Wi-Fi and power-over-Ethernet options are mutually exclusive.*



Serial port



Ethernet port

Here is How You Can Use the DS1101



As a
Serial-
over-IP
(SoI)
Device



As a
Modbus
Gateway

[Modbus](#) is everywhere — it is virtually synonymous with industrial control! Our open-source [Modbus gateway](#)



Build
Your
Own
IoT
Solution

Serial-over-IP conversion is a large part of what we do, and there is an [entire section](#) of our website dedicated to serial converters (a.k.a. "serial device servers"). We offer an open-source [serial-over-IP \(Sol\) app](#) that turns the DS1101 into a full-featured RS232-to-IP converter.

[app](#) allows you to seamlessly interconnect Modbus TCP, Modbus ASCII, and Modbus RTU masters and slaves.

The DS1101 is [programmable in Tibbo BASIC and Tibbo C](#). Develop your very own IoT solution from scratch or take inspiration from our open-source applications and code samples published in the [Code and Apps](#) section.

Key Features



10/100 Base-T Ethernet port



Optional OLED display



2048-byte EEPROM



Optional Wi-Fi (802.11abgn)



Onboard RTC (no backup battery)



Optional power-over-Ethernet (PoE)



3.5-channel RS232 port



1MB flash for TiOS, application code, and file system



Power in/out on DB9 (pin 9)



Buzzer

Hardware

Specifications:

- Powered by [Tibbo OS \(TiOS\)](#)
- 10/100Base-T, auto-MDIX Ethernet port
- Optional 802.11abgn Wi-Fi interface*
- 3.5-channel RS232 port on a DB9M connector
 - TX, RX, RTS, CTS, DTR, DSR, DCD lines
 - Baudrates of up to 460,800bps
 - None/even/odd/mark/space parity modes
 - 7 or 8 bits/character

Programming

Create powerful, network-enabled applications in Tibbo BASIC and Tibbo C. [Learn more...](#)

Platform objects:

- [beep](#) — generates buzzer patterns.
- [button](#) — monitors the MD (setup) button.
- [fd](#) — manages the flash memory file system and direct sector access.
- [io](#) — handles I/O lines, ports, and interrupts.
- [lcd](#) — controls the OLED display.
- [net](#) — controls the Ethernet port.

- RTS/CTS and XON/XOFF flow control
- Flexible mapping with 15 different options, such as
 - A single channel: RX, TX, CTS, RTS, DSR, and DTR lines
 - 3.5 channels: RX, TX, RX2, TX2, RX3, TX3, and RX4 lines
 - 13 additional arrangements
- Built-in buzzer
- Optional 96x32 monochrome OLED display
- RTC (no backup battery)
- 22KB SRAM for Tibbo BASIC/C variables and data
- 1MB flash memory for TiOS, application code, and file system
- 2048-byte EEPROM for data storage
- Eight LEDs
 - Green and red main status LEDs
 - Yellow Ethernet link LED
 - Five blue LEDs (for Wi-Fi signal strength indication, etc.)
- Software-controlled PLL for selecting high or low speed
- Power: 12VDC (9 ~ 18V)
- Optional power-over-Ethernet (PoE)*
- Programmable "12V" power output on pin 9 of the DB9
- Pin 9 can also be used for "12V" power input
- Dimensions (LxWxH): 90 x 48 x 25mm
- Operating temperature range: -5 ~ +70°C
- Firmware is upgradeable through the serial port or network

- [pat](#) — "plays" patterns on a pair of status LEDs.
- [ppp](#) — accesses the Internet over a serial modem (4G/LTE, etc.).
- [pppoe](#) — accesses the Internet over an ADSL modem.
- [romfile](#) — facilitates access to resource files (fixed data).
- [rtc](#) — keeps track of date and time.
- [ser](#) — controls the serial channels.
- [sock](#) — socket comms (up to 16 UDP, TCP, and HTTP sessions).
- [stor](#) — provides access to the EEPROM.
- [sys](#) — in charge of general device functionality.
- [wln](#) — handles the Wi-Fi interface.

Function Groups: 27 string functions, 8 date/time conversion functions, encryption/hash calculation functions (RC4, MD5, SHA-1), and more.

Variable Types: Signed and unsigned 8-bit, 16-bit, and 32-bit types; floating point and string types; user-defined arrays and structures.

Files and Documentation

[tios-ds1101n-3 70 02.bin](#) — supports the WA2000 add-on; uploadable using Device Explorer*

TiOS Firmware

Files for Over-the-Air (OTA) firmware updates can be produced [here](#).

Sol Firmware [soi_application-4 32a-ds1101n.bin](#)

- Tibbo BASIC/C application can be debugged through the Ethernet LAN

- [CE](#)- and [FCC](#)-certified

** Wi-Fi and PoE options are mutually exclusive.*

Included Accessories:

- DIN rail mounting plate
- Wall mounting plate and two screws

Optional Accessories:

- [TB1100](#) terminal block adaptor (version "B" recommended)
- [12V/0.5A adaptor](#): APR-P0011(US),APR-P0012(EU),APR-P0013(UK)
- [WAS-1499](#) straight Ethernet cable*
- [WAS-P0004\(B\)](#) DB9M-to-DB9F serial cable (device-to-PC)
- [WAS-P0005\(B\)](#) DB9F-to-DB9F serial cable (device-to-device)

See Also:

- [WS1102](#) Wireless RS232/422/485 controller
- [DS1100](#) single-channel RS232 controller
- [DS1102](#) 3-channel RS232/422/485 controller

**For this device can be used as crossover cable too*

Documentation [DS110x Hardware Manual](#)
[DS1101W Programming Platform](#)
[Tibbo Modbus Gateway Manual](#)

CE Certificate [ds110x-ce.pdf](#)

FCC Certificate [ds110x-fcc.pdf](#)

** Device Explorer is a part of Tibbo IDE (TIDE) software. It installs alongside TIDE, and you can also install it separately, without installing TIDE. Both TIDE and Device Explorer can be downloaded [here](#).*



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