

## FEATURES

- High-Speed 12Mbps Universal Serial Bus (USB) Interface
- Supports Standard and Overdrive 1-Wire<sup>®</sup> Communication
- Slew-Rate-Controlled 1-Wire Timing and Active Pullup for Improved 1-Wire Network Performance
- DS9490R has an RJ11 Interface for Standard Connectivity Accessories such as the DS1402D-DR8
- DS9490B has an iButton<sup>®</sup> Interface and Retains a Fixed iButton
- Built-In Custom DS2401 Identification Chip
- Reads all 1-Wire and iButton Devices. Writes All Except EPROM 1-Wire/iButton Devices

## APPLICATIONS

- Software Authorization—Protection against software piracy by tying software operation to the presence of iButton hardware.
- iButton Initialization and Download—Loggers like the ThermoChron<sup>®</sup> can be missioned and downloaded. Monetary iButtons can be refilled with money.
- Demonstration—Demonstrate the features of iButtons or 1-Wire chips on personal computers.
- Development—Aid development of 1-Wire applications by providing a PC interface to verify device contents and state.

## DESCRIPTION

The DS9490B is a USB bridge and holder for a single F5-size iButton. The iButton is securely held behind a latched door. The DS9490R is a USB bridge with 1-Wire RJ11 interface to accommodate 1-Wire receptacles and networks. The DS1402D-DR8 (Blue Dot<sup>™</sup>) can readily be used in conjunction with the DS9490R to create an iButton PC reader. Both adapters are based on the DS2490 USB to 1-Wire bridge chip.

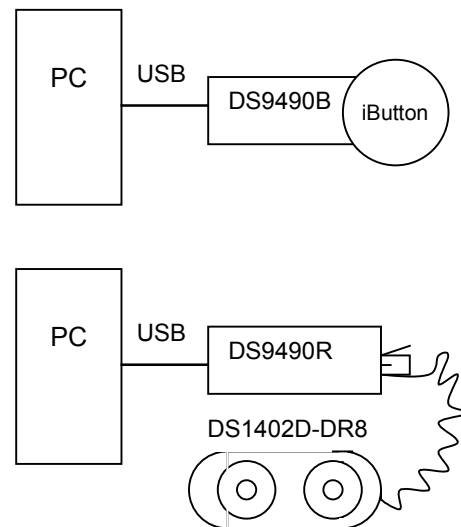
PC software drivers for Windows<sup>®</sup> 98, Windows 2000, Windows ME, and Windows XP can be found on the iButton website under software support at: <http://www.ibutton.com/software/tmex/index.html>

1-Wire, iButton, and ThermoChron are registered trademarks of Dallas Semiconductor.

Blue Dot is a trademark of Dallas Semiconductor.

Windows is a registered trademark of Microsoft Corp.

## TYPICAL OPERATING CIRCUIT



## ORDERING INFORMATION

PART	DESCRIPTION
DS9490B	USB Single F5 iButton Holder with Protective Cap
DS9490R	USB to 1-Wire RJ11

## PACKAGING/SHIPPING INFORMATION

The part is shipped individually in an anti-static bag.

**Figure 1. DS9490R**

\* Color subject to change



**Figure 2. DS9490B**

\* Color subject to change



**\*Note:** To eject an iButton, insert a straightened paper clip into the side access hole of the DS9490B. Push the paper clip in the direction of the iButton. A different iButton can then be inserted. The data contact faces down and away from the embossed ‘i’. Before inserting the paper clip disconnect the DS9490B from the USB bus.

Each USB bridge contains a unique built-in identification chip. The identification chip is a custom DS2401 that is a 64-bit ID number (see Figure 3).

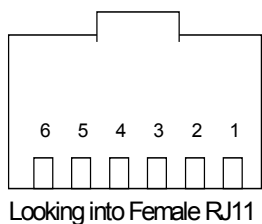
**Figure 3. DS2401 ID CHIP 64-BIT LASERED ROM**

MSB								LSB	
8-BIT CRC CODE		12-BIT FIXED (000H)		36-BIT SERIAL NUMBER				8-BIT FAMILY CODE (81H)	
MSB	LSB	MSB	LSB	MSB	LSB	MSB	LSB	MSB	LSB

## PIN CONFIGURATION

**Figure 4. 1-WIRE RJ11 SOCKET FOR DS9490R**

PIN	SIGNAL NAME	DESCRIPTION
1	V <sub>DD</sub>	5VDC Output
2	GND	Power Ground
3	OW	1-Wire Data
4	GND_OW	1-Wire Return
5, 6	N.C.	No Connection
6	N.C.	No Connection



**Figure 5. iBUTTON SOCKET FOR DS9490B**

PIN	SIGNAL NAME	DESCRIPTION
1	OW	1-Wire Data
2	GND_OW	1-Wire Return

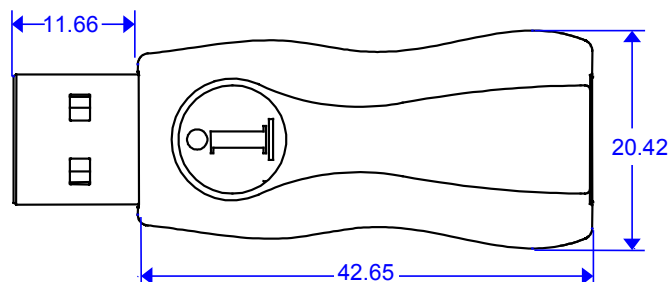


**\*Note:** The data contact faces down and away from the embossed ‘i’. Once the iButton is inserted in the enclosure, snap the end cap over it. The end cap is removed by depressing the release tab, swinging it fully open, and sliding out the hinge.

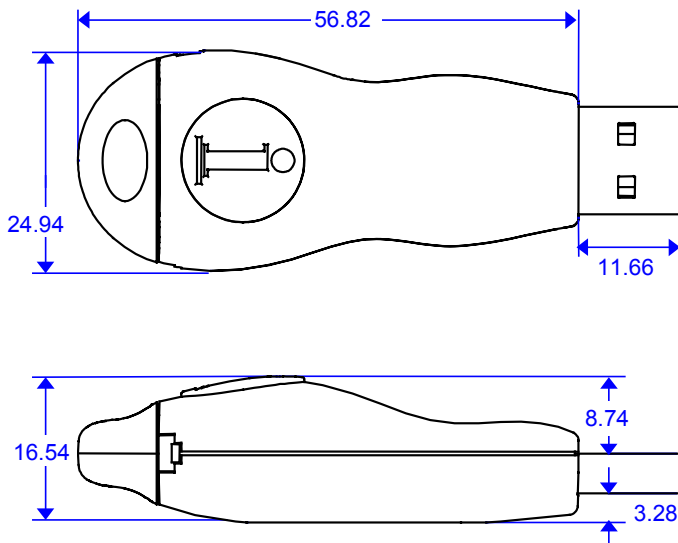
## MECHANICAL DIMENSIONS

All dimensions are in millimeters.

**Figure 6. DS9490R**



**Figure 7. DS9490B**



## ENVIRONMENTAL REQUIREMENTS

CONDITION	PARAMETER	VALUE
Storage	Temperature	-10°C to +85°C
Storage	Relative humidity, noncondensing	95%
Storage	Duration	1yr (max) at 95%RH and +85°C
Operating	Temperature	0°C to +70°C
Operating	Relative humidity, noncondensing	80%

# ELECTRICAL CHARACTERISTICS

PARAMETER	SPECIFICATION
USB I/F	As defined in Chapter 7 of the USB Specification*
1-Wire I/F	See the DS2490 data sheet**

The DS9490R and DS9490B consume 58mA in USB active mode and 0.5mA in suspend mode\*. The DS9490R has the  $V_{BUS}$  power and ground available on the RJ11 connector. In active mode the current available to an externally powered fixture is 42mA\* (100mA to 58mA); however it is recommended that no more than 25mA be used. Note that in suspend mode there is zero current available to an external circuit. An external circuit cannot detect when the module is in suspend or active mode. Consequently, when in suspend mode, the DS9490R module with external circuit combination is in violation of the USB power specification. Application developers should be aware of this when using this module in conjunction with an externally powered circuit on power restricted platforms such as laptops.

\*Guaranteed by design, not production tested.  
 \*\*Tested at DS2490 component level.

**Figure 8. FUNCTIONAL DIAGRAM**

