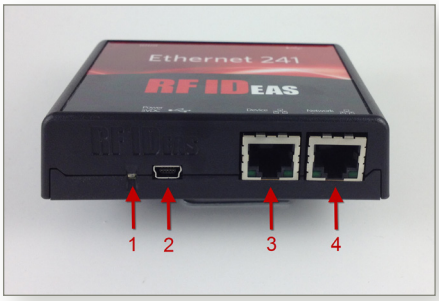
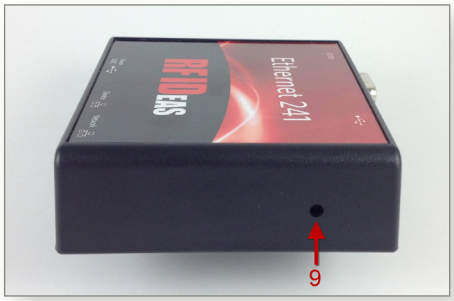
Ethernet 241™ (USB/Serial) Quick Start Guide

I. Ethernet 241 Device Overview

The Ethernet 241 device is a two port switch that interfaces a networked device (such as a printer) with a networked device server, while connecting a card reader through either a serial or USB port. The operational process of the Ethernet 241 begins with a user presenting a card containing data to the attached RF IDeas reader. The data is then transmitted from the card to the network host via the card reader. Once the card data is received, the host determines what actions need to be taken based on the card ID. For instance, if there are any print jobs associated with the user the print jobs are released to the designated printer.





1. **LED-System Status**
   Green: The Ethernet 241 is powered and operating.
   Solid Red: A system fault has occurred.
   Flashing Red: The system settings are being reset to the default values.

2. **Power Supply Input**
   5 VDC, 1A power supply mini-USB input (supplied power adapter)

3. **Device Ethernet Port**
   The Ethernet port that connects from the Ethernet 241 to the network-enabled device (printer)

4. **Network Ethernet Port**
   The Ethernet port that connects the Ethernet 241 to the network

5. **LED-USB Reader Status**
   Off: There is no reader connected
   Red: The reader has been detected and is initializing
   Green: The reader can accept card presentations

6. **USB Reader Port**
   The USB port that supports RF IDeas' USB readers

7. **Serial Reader Status LED**
   Red: There is no reader connected.
   Green: A reader is connected and is operational.

8. **Serial Port**
   The serial interface that supports RF IDeas' serial readers

9. **Push Button (recessed)**
   Configuration Via Serial Port: When pressed, the serial port can be used to configure the Ethernet 241 via a serial connection and a terminal emulation program.

   Default Value Reset: When pressed and held during the powering on process, all settings are reset to their default values, including the password.

   Print Network Configuration: When pressed and held for several seconds after startup, a print job with the current settings, including IP addresses, is sent to the attached printer.

II. Connecting the Ethernet 241

1. Connect the Ethernet 241 to the network by inserting an Ethernet cable into the network port (4) and connecting the device to an active network connection.

2. Connect the Ethernet 241 to the printer by inserting an Ethernet cable into the Ethernet 241 device port (3).

3. Plug the supplied 5 VDC 1A power adapter into a power outlet and connect the mini-USB connector to the Ethernet 241 devices' input power port (2).

When power is applied, all LEDs on the device will briefly be display as red. The system status LED (1) will turn green once the Ethernet 241 is operational.

III. Network Connection

In order for the Ethernet 241 to communicate with other computers on the network, the IP (Internet Protocol) settings must be assigned to uniquely identify the specific Ethernet 241 device. These can be assigned automatically (DHCP) if your network supports this capability, or they can be assigned manually, also known as static addressing.

DHCP (Default)
The Ethernet 241 network interface is configured from the factory to use Dynamic Host Configuration Protocol (DHCP). This enables the Ethernet 241 to obtain a network configuration from a DHCP server on the network.

Static
If a DHCP server is not available on your network, it will default to 192.168.1.2. Using the web interface, you can configure the Ethernet 241 manually to a static IP address of your choosing (see example below).

> ***Note:*** You may need to contact your network administrator to obtain a unique IP address for your device, as well as values for the network mask, gateway address and DNS server address(es).

Configuration using the Web Interface
If a printer is not available (to find the assigned IP address in DHCP mode), or the default address cannot be used in static mode, it may be necessary to use the command line interface, as given at the end of this document.

1. With a printer connected to the Device Ethernet Port, turn the Ethernet 241 device on. Wait at least a couple seconds after the System Status LED has turned green.

2. Press the Push Button (9), recessed on the side of the device, using a small screwdriver, paperclip or similar tool. Hold it for five seconds and a print job will be sent to the attached printer showing the IP address of the Ethernet 241, along with other parameters.

3. In a web browser, type the IP address of the Ethernet 241 as the URL (for example, http://192.168.1.2)

4. The web interface for the Ethernet 241 will be shown in the browser.

5. To configure the Ethernet 241 for Static Mode:

    a. Select the IP page if needed. Set Addressing Mode to Static.
    b. Set IP Address to desired value.
    c. Set IP Mask (typically 255.255.255.0), Gateway, DNS1 and DNS2 (DNS2 is optional).
    d. Set the location to any readable text, if desired.
    e. Click the Update button and refresh the screen.
    f. Changes take effect the next time the 241 starts up. If desired, click the 'Reboot' button to do that now.

6. To protect the configuration settings, set the password:

    a. Select the System page.
    b. Click on the Password button in the bottom right.
    c. Enter the password twice. To clear the password, simply hit return on each prompt.

Other features of the web interface are described in more detail in the User Manual.

IV. Connecting a pcProx®/pcProx Plus Reader

Once the connection to the network is established, a reader can be connected.

> ***Note:*** Supported readers include pcProx, pcProx Plus, MFP24 and pcSwipe readers. Unrecognized USB readers are treated as a generic HID keypad input and may have reduced functionality.

Plug the reader into the serial or USB port of the Ethernet 241 device. Once the reader has been identified and confirmed operational, the respective port LED will change from red to green.

V. Communication with the Ethernet 241 (Client and Server Modes)

Card data is available from the Ethernet 241 in either client (default) or server modes.

Client Mode
Client mode is the default setting for communicating card data to a host computer. The Ethernet 241 connects to a host using either an IP address or a URL to a specified port. Upon connection of a reader, an initialization string is sent to the reader. When a card is presented to the reader, a data message is sent.

SSL (Secure Socket Layer) can be enabled for secure transmission of card data. The Ethernet 241 implements an SSL client, and connects securely to the host computer (as identified in the Ethernet 241 configuration) for an encryption key. The key is then used to encrypt card ID data before it is sent to the host computer. This requires the host computer to provide an SSL server.

An example of a data message is shown below:

```
data_serv_addr =  0.0.0.0
data_serv_url    =  http://www.serverName.com
data_str           =   /url/path/?cardid=$1&mac=$2&luid=$3&seq=$4
data_serv_port  =  80
```

This would expand to:

```
http://www.serverName.com:80/url/path/?cardid=$1&mac=$2&luid=$3&seq=$4
```

To configure the device, establish a command line connection (as shown on page 5), or telnet to the device's IP address (and port 23, by default). Use "show all" to see configuration options and "set <config item> <value>" to set a value. "Help" will provide additional details. See the User Manual for more information, including limits on the data parameters and configuration options.

Client Mode Example

When the Ethernet 241 **init_serv** and **data_serv** parameters are in their default configuration, the Ethernet 241 will connect to an RF IDeas server to post initialization and data requests to a web page.

The page is located at **http://www.rfideas241.com/demo/view/**

This configuration can be used to test your network connection. A tool such as Wireshark, can be used to provide a live example of data transfer between a server and the Ethernet 241 device.

Server Mode

In server mode, the card data must be polled from the host. A tunnel can be established on port 2000 (serial port) or port 2001 (USB port). pcProx and pcProx plus USB readers can be polled using the pcProx API SDK, available with the pcProx Config Utility.

VI. Web Server

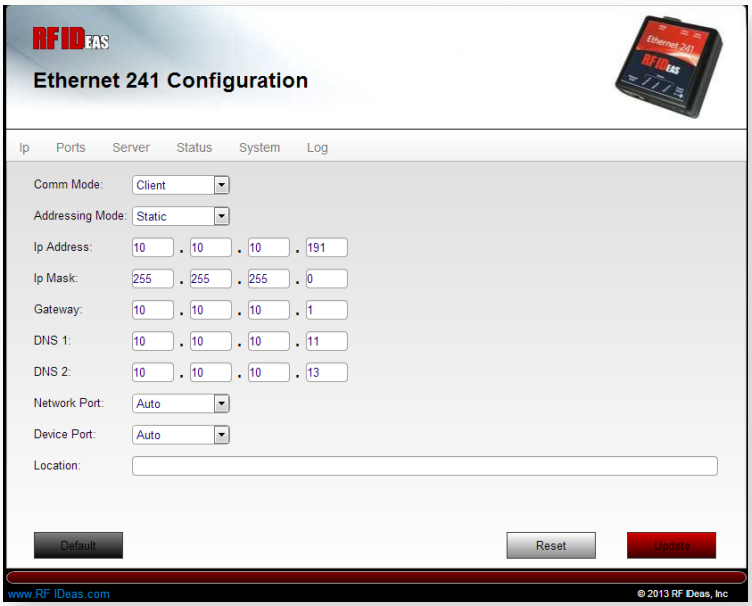
The Ethernet 241 has an embedded web server allowing for configuration of the device and provides for the ability to view the status of all ports. To access the Ethernet 241 web interface, open a web browser and type the IP address of the Ethernet 241 into the browser address bar.

The Status page shows the real-time status of both Ethernet ports and the details of the connected readers.

The Log page dynamically displays the actions of the system and is useful in determining the resolution of communication issues.

The System page allows the updating of the Ethernet 241 firmware without any additional application.

The IP page of the web interface is shown below.



VII. Command Line Interface

Command Line Interface
If the IP address of the 241 is not known, or it is needed to set the 241 to a specific static IP address, it is possible to connect directly into a command line interface using the serial port.

1. Connect a serial null modem cable (not supplied) from the serial port of the Ethernet 241 to a computer.
2. Open a terminal emulation program (Putty, TeraTerm, HyperTerminal, etc.) on the computer and set the port configuration to 9600 baud, 8 data bits, 1 stop bit and no parity (9600-8-1-N).
3. After the 241 has powered up, press the Push Button (9), recessed on the side of the device. Type 'Y' at the prompt.
4. Follow the example below to configure the interface for a static IP connection using your network configuration.

```
RF IDeas 241, enable echo [Y|N]>y
Session: 2:
RF IDeas{}>set ip_addr_mode static
000:OK
RF IDeas{}>set ip_addr 10.10.10.200
000:OK
RF IDeas{}>set ip_mask 255.255.255.0
000:OK
RF IDeas{}>set gw_addr 10.10.10.1
000:OK
RF IDeas{}>set dns1_addr 10.10.10.11
000:OK
```

5. Configuration settings can be protected by setting the password. The password will be needed on any future serial, telnet or web interface connection.

```
RF IDeas{}>password
Type New Password:>
******
Re-type  Password:>
******
000:OK
```

The above changes will take effect on the next reboot and/or power cycle. View the current network settings with the "net_status" command. The "help" or "?" command will provide help on all available commands.

If you require additional assistance or have technical questions, please contact our Technical Support team by phone at (866) 439-4884 or through e-mail at **TechSupport@RFIDeas.com**.

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