BlueRiver platform

Icron Extreme USB Programming Procedure
User Guide

Revision History

Version	Date	Revision
2.1	April 5, 2018	Updated BlueRiver Manager (Demo Client) details to release 3.5 functionality.
2.0	March 5, 2018	Document converted to Semtech format and rewritten matching new document standards.
1.1	June 20, 2017	Updated to include changes since first release.
1.0	August 10, 2015	Initial release of document.

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1 Purpose

Routing of USB 2.0 data between BlueRiver transmitter devices (TX) and BlueRiver receiver (RX) devices is done using ExtremeUSB over LAN chip technology from Icron Technologies.

消除

Icron ExtremeUSB eliminates the USB's 5-meter distance limitation, enabling applications where the host computer or USB device is required to be located away from the end user.

这个文档的目的是概述产品去编程和修改ICRON模块的默认设置使其能连接在我们的设备上

The purpose of this document is to outline the procedure required to program and modify default settings for the optional ICRON module that is can be connected to a BlueRiver device.

Note: Programming Icron is done using the Icron ExpressLink software; however, the BlueRiver Manager (Demo Client) is also required to configure the BlueRiver chipset to allow Icron programming.

编写icron已经由icron完成然后我们的管理软件需要配置允许IRCON编程

2 Overview

Icron programming is completed using Icron's ExpressLink software.

- The current version of this software will contain the latest firmware to be uploaded.
- The update is completed over the BlueRiver chipset RS-232 interface.

Note: There is no RS-232 interface directly connected to the Icron module on the BlueRiver chipset. It is therefore necessary to perform the programming through the BlueRiver chipset.

The figure below represents the communication flow from the computer that is hosting the Icron and BlueRiver configuration software to the BlueRiver device itself:

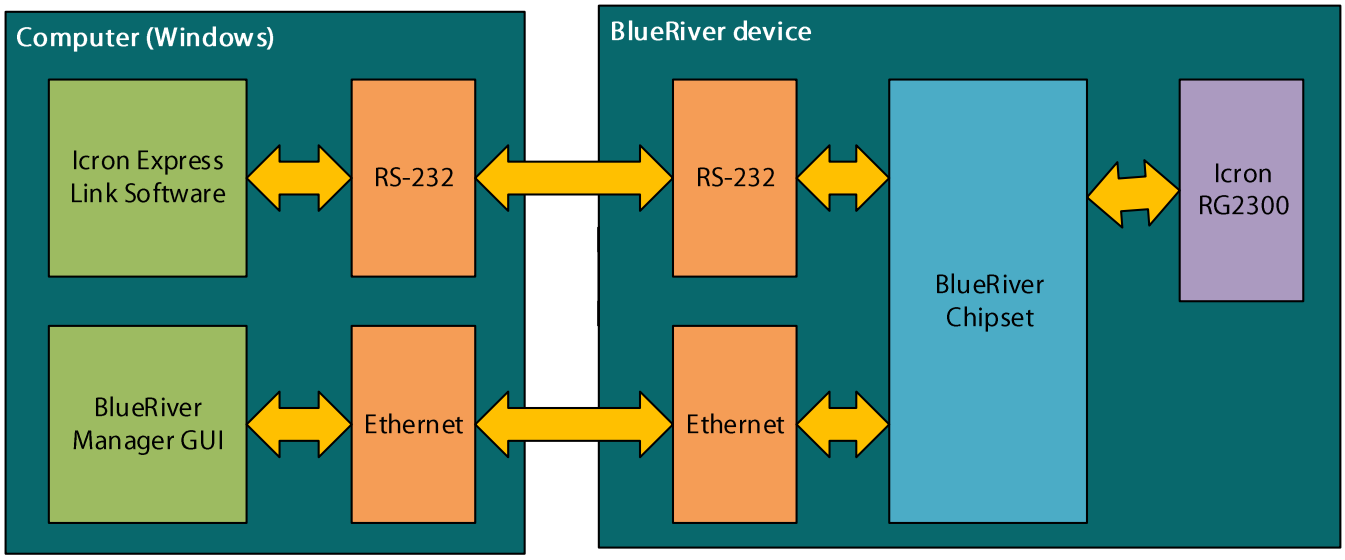

Figure 1: Icron and BlueRiver communication setup

When a BlueRiver Hardware Evaluation kit is sent out from Semtech AptoVision Products Group, the default settings for the Icron module are:

- BlueRiver transmitters (TX) set as Local Extenders (LEX) 发送设备设置为本地扩展
- BlueRiver receivers (RX) set as Remote Extenders (REX) 接收设备设置为远端扩展
- One-to-One pairing 一对一配对
- Mass Storage Acceleration 海量存储加速
- Supports ISO devices, such as web cams
- Network Acquisition mode -> DHCP

If it is planned to enable any of the following Icron advanced features, contact Icron to obtain documentation on the HEX addresses for each of these settings:

- Simultaneous users (1 LEX to 4 REX) - act like a virtual hub
- Change configuration via Icron API commands
- Define IP Address (Must disable DHCP)
- Define Subnet Mask
- Define Gateway
- Define DHCP Server IP

If you are a manufacturer and planning to design the Icron functionality from scratch, contact Icron to obtain the supporting documentation and the necessary firmware, as well as a bin file for the LEX and REX units. The bin file will contain the necessary Icron configuration file. It is possible that you may need to make arrangements, such as signing a non-disclosure with Icron to access this information.

Once these files are obtained, following the instructions provided in this document to flash the Icron firmware and write the bin file to your units.

2.1 Software to Download and Install

The table below outlines the software that is required to program or modify the Icron ExtremeUSB module.

Table 1: Required software to manage Icron ExtremeUSB module

PDF	Usage
Python 3.x	https://www.python.org/
PySerial 3.x	https://pypi.python.org/pypi/pyserial
BlueRiver Manager NT **BlueRiver Manager (Demo Client)**	Contact Semtech AptoVision Products Group BlueRiver support team for a copy of the BlueRiver Manager (DEMO Client). **Note:** Next release functionality of BlueRiver Manager NT will be provided directly in the BlueRiver Manager (Demo Client).
ge_eeprom.py	Contact Icron. **Note:** This is python script needed to write the new configuration file into Icron.
Latest Express link software	Contact Icron. **Note:** This software will contain the latest Icron Firmware.

接触

2.2 Equipment needed

- Computer running Windows 7 or higher,
- RS-232 cable
- ExpressLink software
- BlueRiver NT2000 device with ICRON RG2300 device installed
- BlueRiver NT2000 power cable
- Ethernet Cable
- BlueRiver NT1000 device could replace the BlueRiver NT2000 if the NT1000 design was modified to include the USBExtreme IC.

3 Icron ASIC Programming

3.1 Verification of Python and PySerial installation

Once `Python` and `PySerial` are downloaded and installed, the next step is to verify that the applications can successfully work together.

To complete this task, perform the following:

1. Open a command prompt window and change to the directory where the `Python` is installed.

   `Python` is normally installed in the following location:

   `C:\Users\<YOURNAME>\AppData\Local\Programs\Python\Python35-32`

2. In Command prompt, type the following:

   ```
   py -m serial.tools.list_ports
   ```

3. A list of the available Com ports will be provided:

4. Next type the following command to access the desired ports, where the Com port specified is one that was listed as available:

   ```
   py -m serial.tools.miniterm COM3
   ```

   If there are no errors returned, then `Python` and `PySerial` are correctly installed.

5. Proceed to access and program the Icron ASIC.

3.2 Updating or Initializing Icron Firmware

Next proceed to initialize or update the programming of the Icron module.

Note: The BlueRiver Manager (Demo Client) and the Icron ExpressLink software must be installed on the host computer prior to beginning this procedure.

1. Connect the 1G network port of the host computer to 1G network port of the BlueRiver device.
2. Connect a Serial Port cable between the computer hosting the BlueRiver Manager (Demo Client) and Icron ExtremeUSB software to the BlueRiver device RS-232 connector.
3. Confirm the following:
   a. Confirm that there is an ICRON RG2300 device installed on BlueRiver board. This verification can be done by either:
      a. Inspecting the physical board.
      b. Using aBlueRiver API `get` command to retrieve details of the board configuration. Refer to the BlueRiver API Developers Guide (ug-0003) for details on BlueRiver API commands.
   b. If not currently active, power up the BlueRiver device.
   c. Verify that the BlueRiver device is connected to the computer using an RS-232 cable.
4. Launch the Icron ExpressLink software.

Note: Once launched ExpressLink is waiting for an Icron device, keep application open until this section is completed.

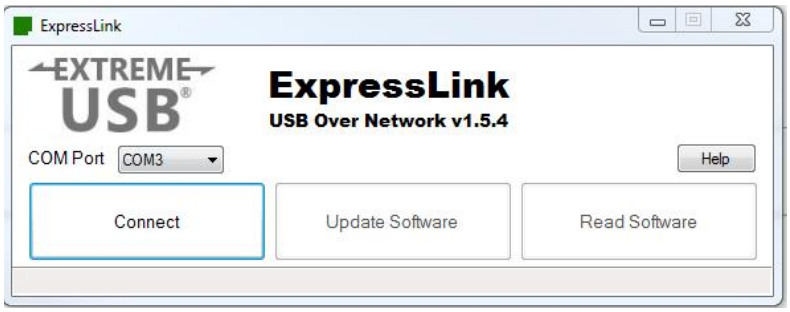

Figure 2: Example of the Icron ExpressLink software interface

5. Select the appropriate `COM port` from the drop down list.
6. Then click on the `Connect` button.
7. Launch the BlueRiver Manager (Demo Client) in Production mode.
    a. Open a command prompt and change to the directory where the BlueRiver Manager executable (blueriver_manager.exe) file is located.

       Example: `C:\Program Files (x86)\Semtech\`

    b. Then launch the BlueRiver Manager (Demo Client) in Production Mode.

        a. This is done by adding -a to the executable, so type at the command prompt:

```
blueriver_manager.exe -a
```

Tip: If the BlueRiver Manager (Demo Client) is to be used frequently in production mode it is possible to create a desktop shortcut to launch it in this mode.

8. The BlueRiver Manager (Demo Client) graphical user interface will load.
9. From a `Routing` tab, example `Video Routing`, right click over the BlueRiver device that is to be programmed and from the menu that appears select `Enable Program Icron Chip by RS232`.

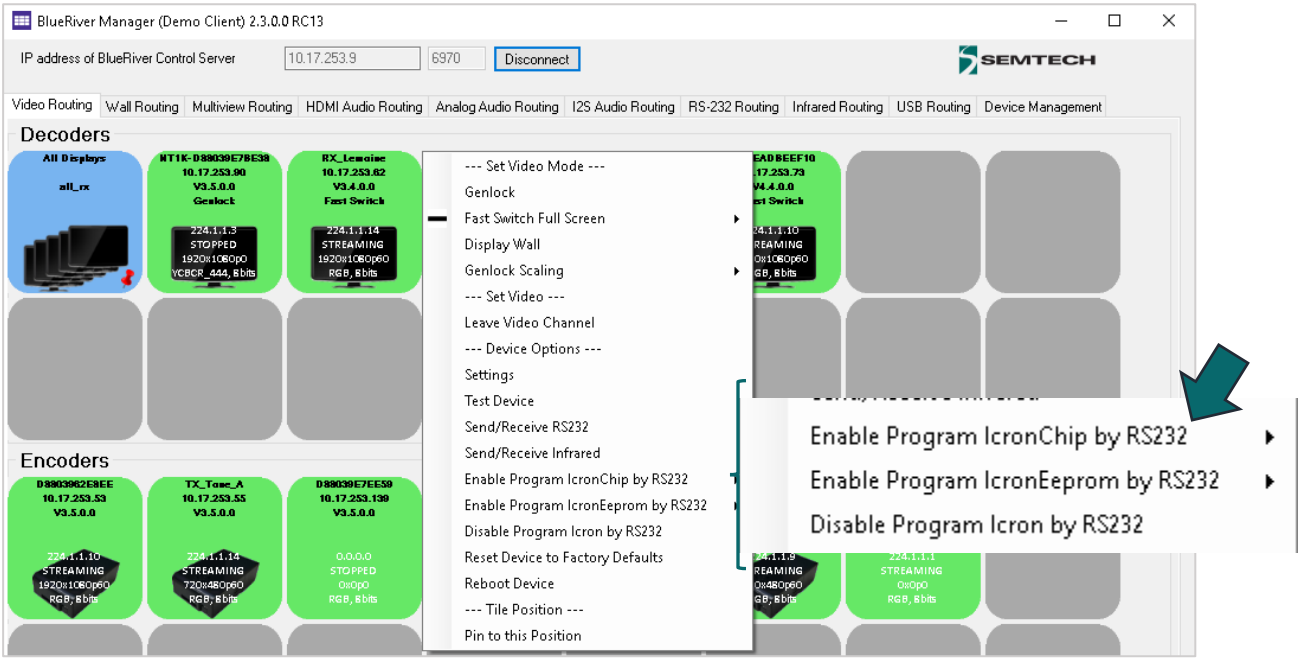

Figure 3: Example of the BlueRiver Manager (DEMO Client) interface – Enable program of Icron Chip

10. From within the `Icron ExpressLink` application, click on `Update Software` button.
11. A progress bar will appear indicating that ExpressLink has started the update.

    Note: When appropriate ExpressLink indicates that the Icron Firmware is initializing.
12. Once the firmware update completes, in the `Icron ExpressLink` application click the `Disconnect` button.
13. Return to the `BlueRiver Manager (Demo Client).`
14. Right click over the BlueRiver device that was just programmed and from the menu that appears select `Disable Program Icron Chip by RS232`.
15. Repeat this procedure for each of the BlueRiver devices that requires an update and/or initialization of the Icron Firmware.

3.3 Programming Icron Configuration File (.bin)

Important! This procedure is to be used if the Icron module did not come preprogrammed with a MAC Address or required to modify default configuration settings.

Refer to Icron documentation for details on creating a configuration file that is equipped with a unique MAC Address.

Confirm that the configuration files, `.bin` and `ge_eeprom.py`, are both located in the same folder.

1. Connect the 1G network port of the host computer to 1G network port of the BlueRiver device.
2. Connect a Serial Port cable between the computer hosting the `BlueRiver Manager (Demo Client)` and `Icron ExtremeUSB` software to the BlueRiver device RS-232 connector.
3. If not currently running, launch the BlueRiver Manager (Demo Client) in the production mode. Refer to step 7 of previous section for details.
4. From a `Routing` tab, example `Video Routing`, right click over the BlueRiver device that is to be programmed and from the menu that appears select `Enable Program Icron Eprom RS232`.
5. Open a command prompt window.
6. Change to the directory where the `ge_eeprom.py` is located and run the following command:

   py ge_eeprom.py COM5 write < test.bin

   Note: File name, `test.bin`, is an example only. Be sure to use the appropriate name of the `.bin` file created for your installation.
7. The above command triggers the system to write the new `.bin` configuration file into the Icron module.
8. Once the configuration has been written return to the BlueRiver Manager (Demo Client).
9. Right click over the BlueRiver device that was just programmed and from the menu that appears select `Disable Program Icron Chip by RS232`.
10. To apply the updated `.bin` file, reboot the device you just programmed.
    a. From the `BlueRiver Manager (Demo Client)`, right mouse click over the device updated.
    b. From the menu that appears select `Reboot Device`.
    c. The selected BlueRiver device will proceed to reboot. It will briefly go offline and then reappear online.

11. Repeat the above steps for each BlueRiver device that has an associated Icron module requiring modifications to be programmed.

Warning! Remember that the MAC address for each Icron module must be unique. This means that it is required to modify the existing .bin file or create a new .bin file for each Icron module that is to be programmed.

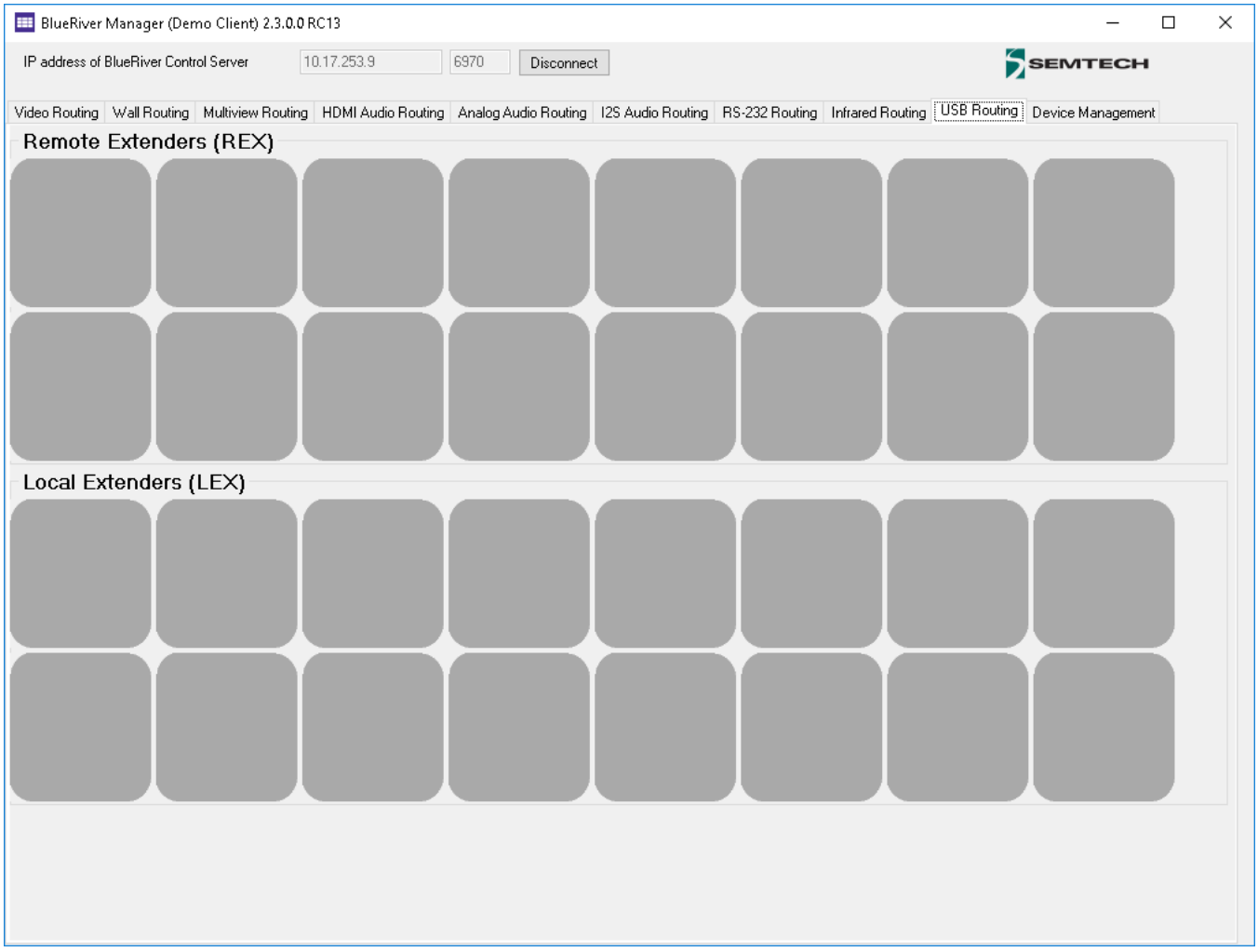

Figure 4 BlueRiver Manager (Demo Client) USB Routing tab

Contact Information:

Semtech Quebec Inc.
2344 Alfred Nobel Blvd. Suite 102, St. Laurent, QC, Canada H4S 0A4
Tel: 514-446-2400 • www.semtech.com