

# **IT8951 Basic Operation and Frequently Asked Questions**

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**Version v0.4**

## ■ Revision history

Revision History			
Version	Date	Description	Modified by
0.1	2017 Nov.	Document created	Richard Chen
0.2	2017 Dec.	v0.2 released	Richard Chen
0.3	2018 Apr.	v0.3 released	Richard Chen
<b>0.4</b>	<b>2018 May.</b>	<b>v0.4 released</b>	<b>Richard Chen</b>

## ■ Summary

The IT8951, EPD timing controller for products of E-ink, can take command from host through SPI or USB interface.

For driving E-ink EPD through IT8951, please contact us to get corresponding firmware. The different EPD may need different firmware to make IT8951 be able to drive it.

There are different host platforms can implement the control of IT8951. To remain the flexibility, we do not prepare the coding resource for specific platform, like Linux or Android; that is, there has no preferred host environment. You can control IT8951 by any system you want to use as long as the chosen communication method is realizable on it.

We also provide demo application and sample code of USB and of SPI. Please notice that the demo application was built for checking the working status of IT8951; the sample code are provided as referring resource for C language developing; neither of them is provided as implementation resource of Windows system. Again, you can implement the control of IT8951 on any host platform you want.

For the command formats of USB and of SPI, provided programming guide document has detailed introduction. Reading these documents before start to develop would make everything easier.

## ■ Basic Operation

### USB

1. Check if the used host device supports USB device connection.  
(Install USB driver or realize it)
2. Implement program for sending **SCSI command** to a device through USB interface and then send SCSI command to the IT8951.
3. It should work normally if the sent SCSI command meets the required format described in *IT8951 USB Programming Guide*. Please refer to the documents we provided.

## ■ FAQ

### IT8951 & E-ink EPD

#### Q: How to start to use IT8951?

A: At first, please **confirm the used EPD model**. It's recommended to contact us (and the E-ink) for **reviewing the circuit wiring to ensure the IT8951 (and EPD) can work**. You can also get helpful suggestion of product development from us.

We'll release firmware to you for the requested EPD model. If any customized function is needed, please feel free to discuss with us.

#### Q: How to upgrade FW?

A: The simplest way is to use **DemoAP** to upgrade it. Or you can use **IC programmer device to write it into the flash**, just start from address 0.

For the first time, IT8951 has no FW and cannot be reported as USB device. You have to update the FW directly into the flash.

#### Q: The maximum supported resolution of IT8951?

A: IT8951 supports resolution up to **2048x2048**. The higher resolution requires the larger flash space.

If the height or width over 2048, it still can supports as long as the **(width x height) is not over (2048 x 2048)**. In this case, please provide the panel frame rate to check if the CPU of IT8951 is able to support it.

If the height or width is x (over 2048), you can still ask IT8951 to deal with it as long as **divide the x into smaller parts** (less than 2048).

In this case, the limitation of IT8951 is reached, so it **cannot be guaranteed to work normally** for all supported functions.

**Q: Can the IT8951 show a certain image as it startup?**

A: Yes, we can write the assigned image into flash. For this function, please contact us and **provide the required image**. The image file should be a 4bpp raw data.

**Q: I just cannot use IT8951. Is it breakdown?**

A: We provided a demo application to check the working status of IT8951 through Windows USB interface. **Please use it for checking first.**

The most common reason is the **incorrect command format** that cannot be recognized by IT8951. Please refer to the **Programming Guide files** we provided.

In some case, the reason is that IT8951 wasn't powered properly (even not be powered), or some problem within circuit. We also provide service of review circuit for avoiding this.

**Q: The latest firmware version has not the function I asked for.**

A: Please remember to **restart IT8951 after upgrading** the firmware.

If the new firmware doesn't work or doesn't meet your request, please contact to us.

## USB

**Q: After connecting to the host device, I cannot see where the directory of IT8951 is. How can I open it? Should I install any driver?**

A: The IT8951 will be considered as a **mass storage device** as long as the host device supports USB interface. To control it, **just send SCSI command to it through USB interface** of host device; the IT8951 demo application is useful to check if the IT8951 is working normally.

**Q: I sent SCSI command to it but didn't get any response.**

A: It's probably that the sent command has a wrong format so IT8951 cannot recognize it; or the command was sent to a wrong object.

Please check following:

- If the host device can choose an object to send command, **ensure that the target is really IT8951.**
- **Check if the sent command format is correct** according to *IT8951 USB Programming Guide*.

**Q: Will the USB sample code that can be executed on our host platform (Linux, Android...) be provided?**

A: There are different host platforms able to control IT8951 through USB interface; **we didn't build demo model on every probable devices**. The provided sample code and demo application were built on Windows system, but **the command format is general**.

**Q: For the USB transmission, what's the limitation?**

A: The maximum amount that IT8951 can pass/take from USB is **(not more than) 64k Bytes each block**. Please don't over it to avoid the lost or failure of data transfer.

But if the **host has already limits the USB transmission** (such as Android), you should follow its spec. Over this limitation may also cause failed transmission.