TE-USB-FX2 technology stack

Migration from the 2nd (aka DEWESoft USB FX2) to the 3rd (aka TE USB FX2) generation – firmware and device driver

UM-TE-USB-FX2-gen2-to-gen3 (v 1.0) 24 April 2013 Trenz Electronic GmbH

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1 Introduction

At first, you should check VID/PID of your module:

- 0547/1002 – they correspond to old DEWESoft (gen 2) firmware and driver;
- 0DB0/0300 – they correspond to new Trenz Electronic (gen 3) firmware and driver: probably you do not need download a new firmware;
- 04B4/8613 – they correspond to default Cypress. These VID/PID are used by a micromodule when EEPROM switch (S1A on TE0320 and TE0630, S1 on TE0300) has been set to OFF during a **reset** (“**power-on reset**” or “**powered reset**”, see step 11 in the table of chapter 3).

2 Generic Cypress Drivers

2.1 Latest Cypress Signed Driver

The latest signed Cypress driver (Cypress FX2LP Development kit, version 3.4.7.000) now exists only on Trenz Electronic Web Site, the original has been withdrawn from Cypress Web Site (http://www.cypress.com/?id=4&rID=53338 , the attachment has been removed) and it does not exist in Microsoft Update Catalog.

It can be downloaded from

- Cypress FX2LP Development kit, version 3.4.7.000)

  http://www.trenz-electronic.de/fileadmin/docs/Trenz_Electronic/TE-USB-Suite/recovery/drivers/Cypress_generic_USB_driver.MS-Windows-Vista+7-64-bit.signed.zip

2.2 Older Cypress Signed Driver

Another signed Cypress driver (Cypress USB Generic Driver, version 3.4.1.20) exists. It can be downloaded from Microsoft Update Catalog as:

- Cypress-Bus Controller and Ports – ND-tech USB Adapter

  http://catalog.update.microsoft.com

  http://catalog.update.microsoft.com/v7/site/ScopedViewRedirect.aspx?updateid=1a6a853e-bc0c-45c7-9a20-71edd1f58ea2

  http://listing.driveragent.com/c/usb/04b4/1004

Same VID and two different PIDs are used (written in the .inf file):

- Cypress VID (0x04B4) and PID (0x8613) (are typically shown)
- Cypress VID (0x04B4) and ND-tech PID (0x1004) (it is shown if the board is disconnected and reconnected without power cycle after the firmware download onto EEPROM: **this procedure is not correct**)

3 Migration Methods

	Path A : Cypress USB Console	Path B : Cypress USB Control Center
1	Download Cypress generic driver (Cypress FX2LP Development kit) http://www.trenz-electronic.de/fileadmin/docs/Trenz_Electronic/TE-USB-Suite/recovery/drivers/Cypress_generic_USB_driver.MS-Windows-Vista+7-64-bit.signed.zip and unzip it OR download Cypress generic driver Cypress-Bus Controller and Ports – ND-tech USB Adapter (Cypress USB Generic Driver (3.4.1.20) http://catalog.update.microsoft.com http://catalog.update.microsoft.com/v7/site/ScopedViewRedirect.aspx?updateid=1a6a853e-bc0c-45c7-9a20-71edd1f58ea2 http://listing.driveragent.com/c/usb/04b4/1004 and unzip it	
2	Download Cypress USB Console http://www.trenz-electronic.de/fileadmin/docs/Trenz_Electronic/TE-USB-Suite/recovery/tools/CyConsole.zip	Download Cypress USB Control Center http://www.trenz-electronic.de/fileadmin/docs/Trenz_Electronic/TE-USB-Suite/recovery/tools/CyUSB.NET.zip
3	On your micromodule, 1. if the micromodule is plugged on a baseboard, you shall **disconnect** the **external power supply** 2. set **EEPROM switch** (**S1A** on TE0320 and TE0630, **S1** on TE0300) to **OFF** 3. set **master reset switch** to **work** (not reset): • *TE0300:* set **S2** to **ON** (work) • *TE0320:* set **S1D** to **OFF** (work) • *TE0630:* this switch does not exist 4. if the micromodule is plugged on a baseboard, you shall **connect** the **external power supply** 5. **connect** the micromodule to the **USB port** of the host computer Please note the labels of switch S1 on TE0320 are not “A”,”B”,”C” and “D” but rather "1" (A), "2" (B), "3" (C) and "4" (D).	
4	Open Device Manger and wait; a Cypress Generic Driver or an Unknown Device shall appear.	
5	After this, you shall set EEPROM switch (**S1** on TE0300, **S1A** on TE0320 and TE0630) to **ON**.	
6	If an Unknown Device appears, you must select “Update Driver” and you should point to a signed Cypress driver.	
7	Download the latest firmware (TE-USB-FX2_current_TE.iic) from GitHub: https://github.com/Trenz-Electronic/TE-USB-Suite/tree/master/TE_USB_FX2.firmware/ready_for_download On GitHub, you can always find latest firmware.	
8.1	Run Cypress USB console, go to "Misc" tab and select the driver in the drop-down menu. After that, a USB device should appear in	Run Cypress USB Control Center by clicking CyControl.exe file. You must trust the publisher by clicking "Run". After that, a USB device should appear in

	the list.	the list.
8.2	CyConsole is unable to automatically see Cypress_generic_USB_driver.MS-Windows-Vista+7-64-bit.signed: you must go to "Misc" tab and select the driver from the drop-down menu, even if it is already selected (this is a small bug of CyConsole). The “Misc” tab step is not always required, but it is for this driver.	The device are automatically listed on the left.
9	On Cypress USB Console, click“Options” and then “EZ-USB Interface”. On "Device" field, you should see your device name (Cypress FX2LP Development kit or Cypress USB Generic Driver (3.4.1.20))	On Cypress USB Control Center, select Cypress FX2LP Development kit (or Cypress USB Generic Driver (3.4.1.20) in case of ND-tech USB Adapter), then click “Program FX2”.
10	Press "Lg EEPROM" button and select TE-USB-FX2_current_TE.iic file you download earlier.	Click “64KB EEPROM” (it is Lg EEPROM of CyConsole) and select TE-USB-FX2_current_TE.iic file you download earlier.
11	Now, it is necessary to reset the USB FX2 microcontroller. In this way, the EEROM firmware is moved into RAM. After this reset, an unknown device is registered in Device Manager. From VID/PID, you can check whether the new firmware has been loaded into RAM. VID/PID shall have been changed from 04B4/8613 to 0DB0/0300. Reset types (two types but four methods): 1. Power-on reset: The simpler way to achieve a power-on reset is to **manually detach and reconnect the power supply**: • (**Method 1**) for a micromodule **without** baseboard, the power supply source is the **USB port: detach and reconnect the USB port** • (**Method 2**) for a micromodule **with** baseboard, the power supply source is the **external power supply: detach and reconnect the external power supply** 2. Powered reset: A switch or a button is used to assert the reset pin of the Cypress USB FX2 microcontroller: • (**Method 3**) for a micromodule **without** baseboard, TE0300: • Substep 1:set S2 to OFF (reset) • Substep 2:set S2 again to ON (work) TE0320: • Substep 1:set S1D to ON (reset) • Substep 2:set S1D again to OFF (work) TE0630: not available • (**Method 4**) for a micromodule **with** baseboard, button S1 on its baseboard can be used to assert the reset: **push button S1.**	
12	You can find the driver of Trenz Electronic device at http://www.trenz-electronic.de/fileadmin/docs/Trenz_Electronic/TE-USB-	

	Suite/generation_3/drivers/TE_USB_FX2-drivers.zip Download and unzip it. Install the driver for the correct operating systems (for example D:\TE_USB_FX2-drivers\MS-Windows-Vista+7)
-	The installation of the new firmware and driver ends here.
-	From now on, it is possible to use 1. CyConsole 2. Cypress Controll Center 3. Open_FUT tool to download new firmware into the USB FX2 microcontroller. Open_FUT tool can be downloaded from https://github.com/Trenz-Electronic/TE-USB-Suite/tree/master/TE_USB_FX2.gen_3/Open_FUT Open_FUT tool can be used also for downloading the configuration file into the FPGA. If you prefer scripting: 1. *TE0300* To update the Flash memory, you can use *reflash.bat* script (it requires python 2.7). Copy *reflash.bat* and script folder to your project from https://github.com/Trenz-Electronic/TE03XX-Reference-Designs/blob/master/reference-TE0300/reflash.bat 2. *TE0320* To update the Flash memory, you can use *reflash.bat* script (it requires python 2.7). Copy *reflash.bat* and script folder to your project from https://github.com/Trenz-Electronic/TE03XX-Reference-Designs/blob/master/reference-TE0320/reflash.bat 3. *TE0630* To update the Flash memory, you can use *reflash.bat* script (it requires python 2.7). Copy *reflash.bat* and script folder to your project from https://github.com/Trenz-Electronic/TE063X-Reference-Designs/tree/edk13.3/reference-TE0630

4 Migration methods (visual aid)

4.1 Step 1, 2

It is not necessary a visual aid for these steps.

Please watch generation 2 to generation 3 migration videos:

http://www.youtube.com/playlist?list=PL_T7L7yrNs4nE5OD977Vt78Asy64xjZhf

4.2 Step 3

It is necessary a visual aid for this step to gather the knowledge of TE0300, TE0320 and TE0630 module user manuals.

4.2.1 TE0300

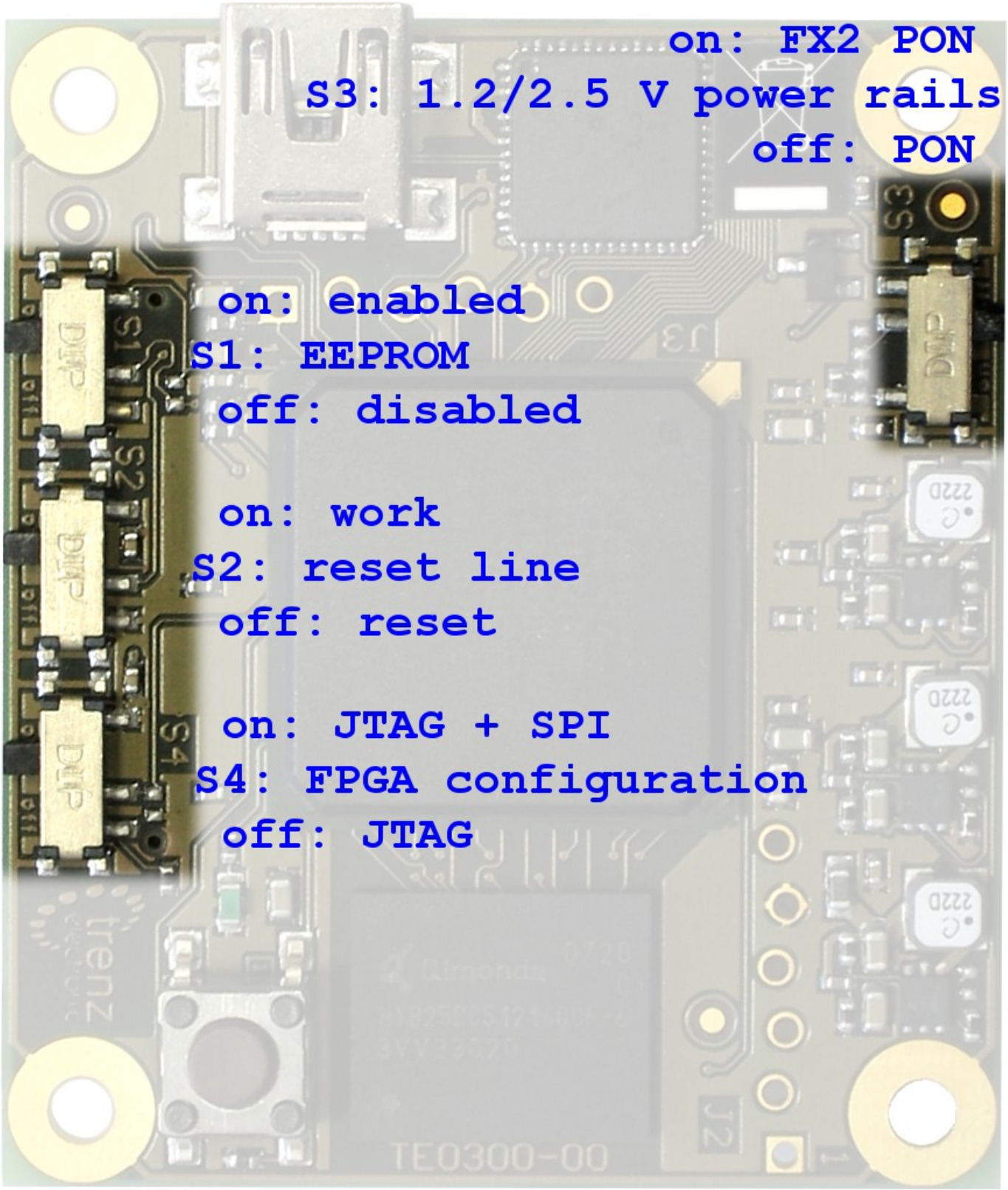

Figure 2: general description of TE0300.

4.2.2 TE0320 and TE0630

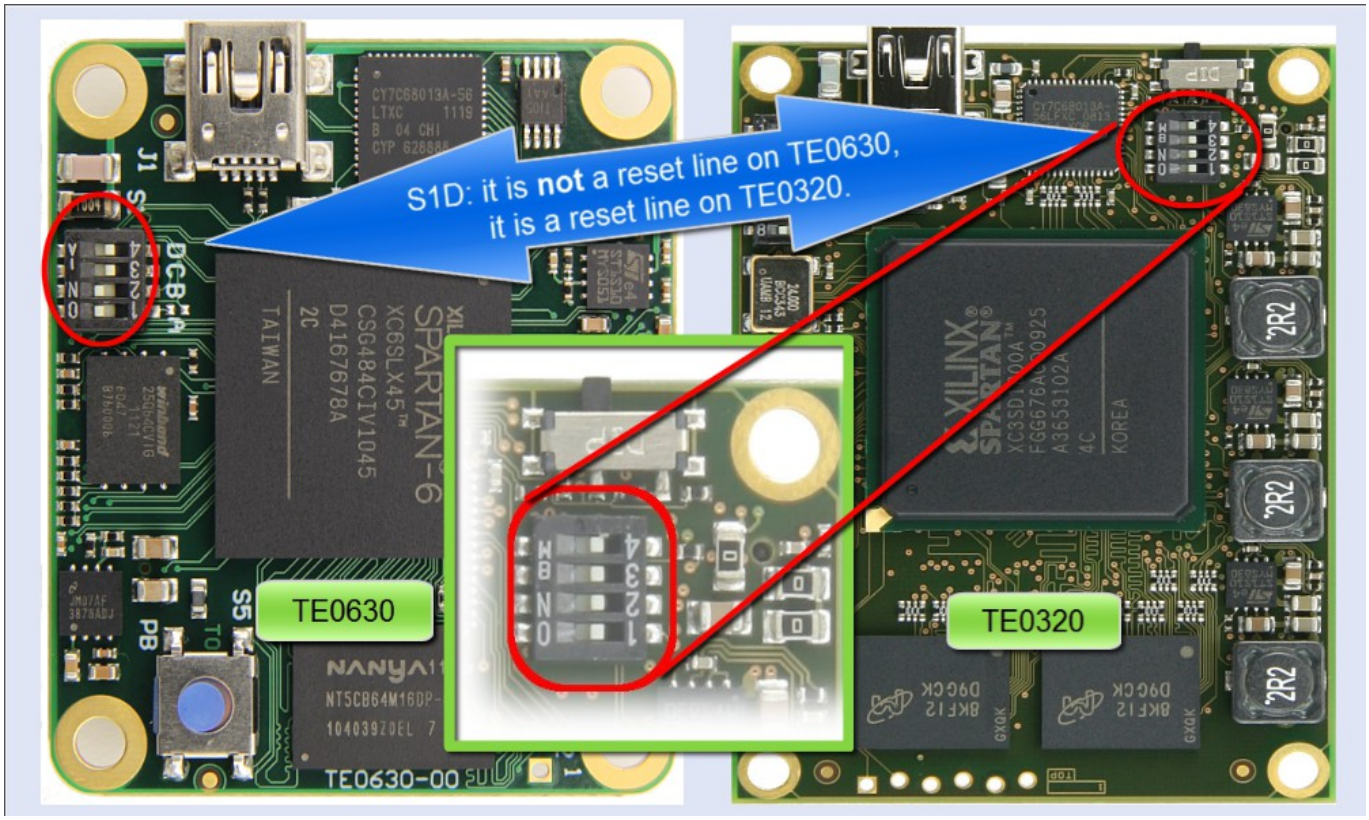

Figure 1: general description of TE0630 and TE0320.

S1A : it is a EEPROM switch on both TE0320 and TE0630:

- ON: enabled;
- OFF: disabled.

S1D: it is a reset line on TE0320; it is not a reset line on TE0630:

- ON: enabled;
- OFF: disabled.

Please note that switch S1 labels on TE0320 are not “A”,”B”,”C” and “D” but rather "1" (A), "2" (B), "3" (C) and "4" (D).

4.2.3 Step 3, sub-step 2 and 3

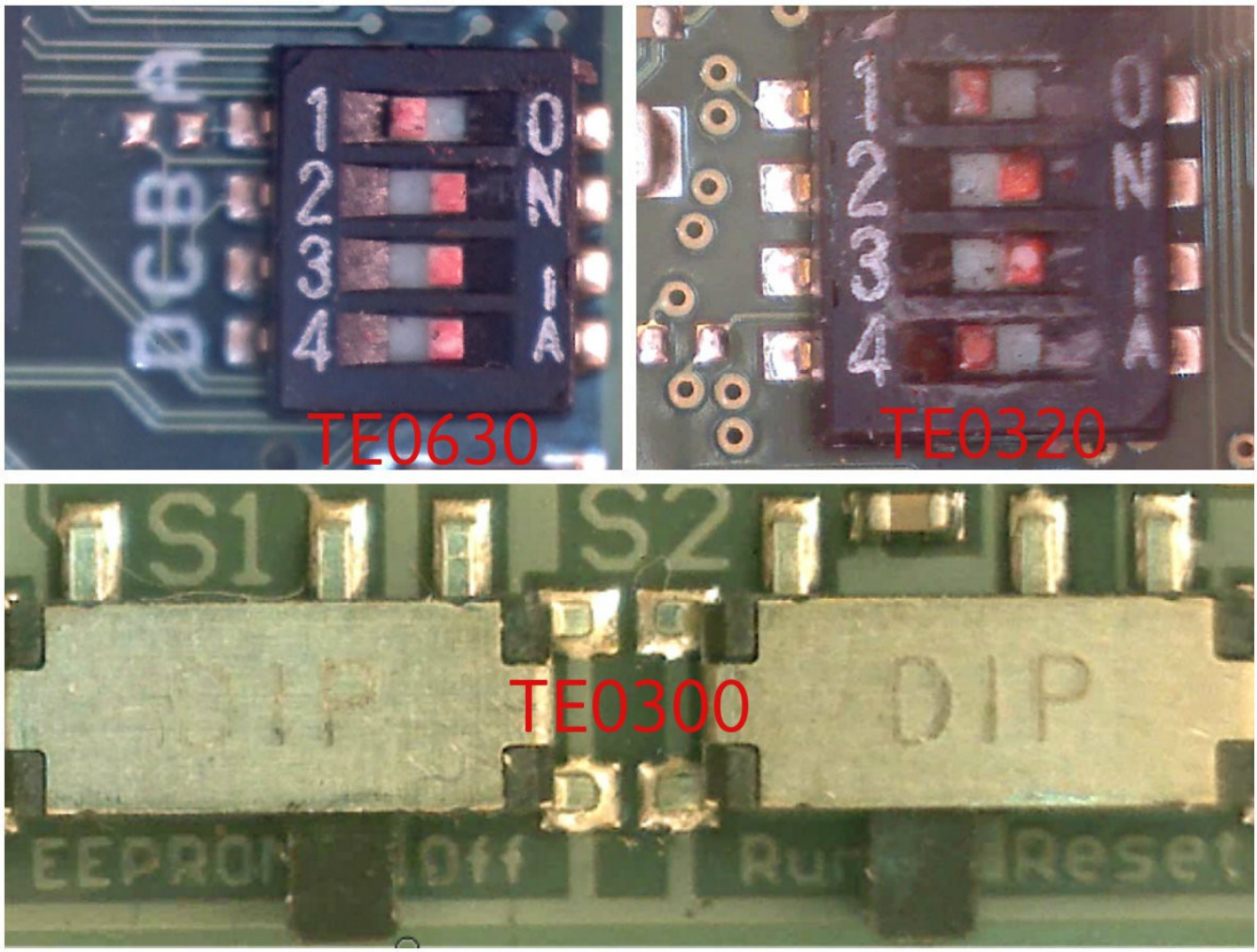

Figure 3: EEPROM is switched OFF, with Reset inactive.

EEPROM is switched OFF (S1 for TE0300, S1A for TE0320 and TE0630).

Reset is inactive for TE0300 (S2 ON) and TE0320 (S1D OFF); TE0630 does not have a reset switch.

4.3 Step 5

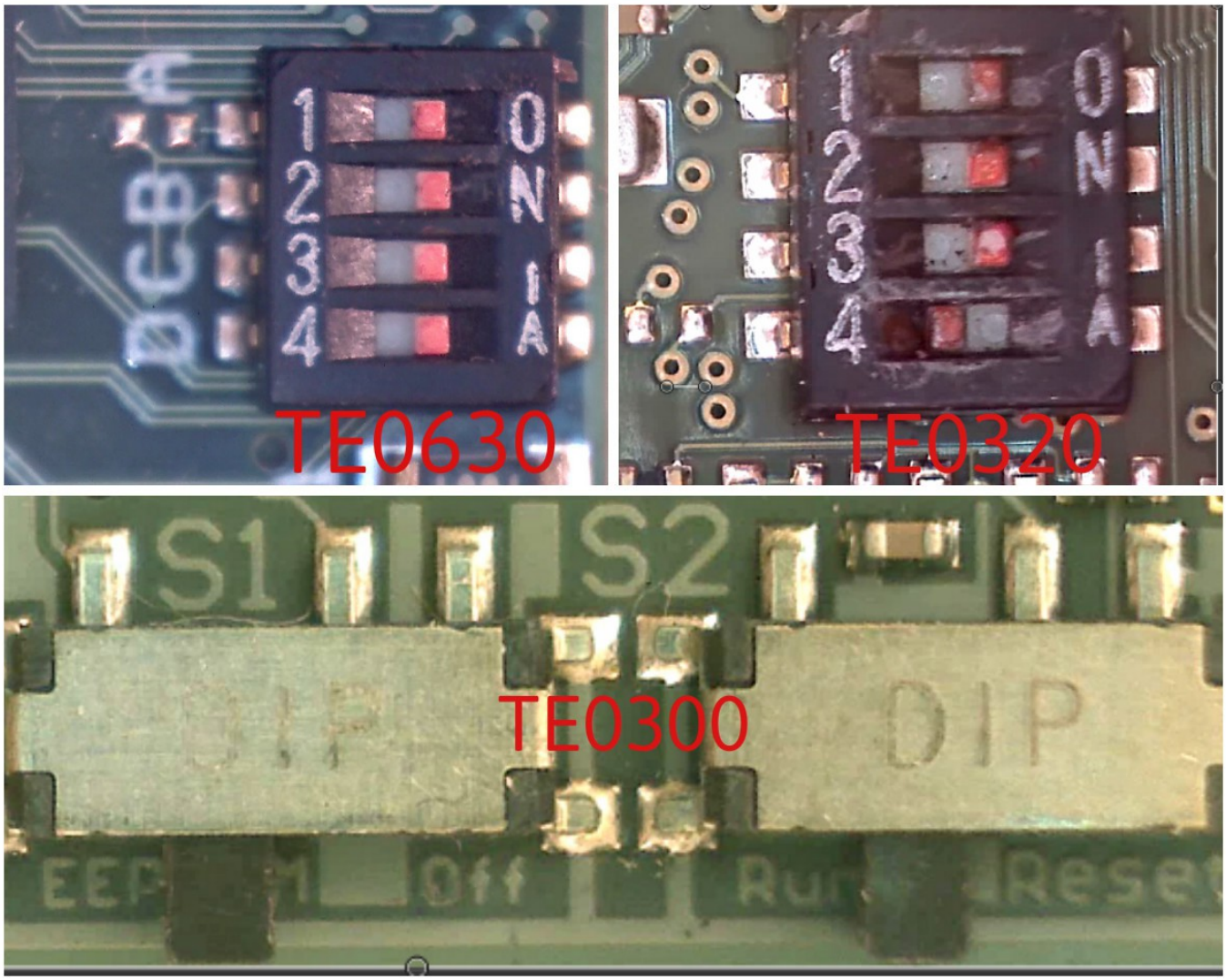

Figure 4: EEPROM is switched ON, with Reset inactive.

EEPROM is switched ON (S1 for TE0300, S1A for TE0320 and TE0630).

Reset is inactive for TE0300 (S2 ON) and TE0320 (S1D OFF); TE0630 does not have a reset switch.

4.4 Step 6,7,8,9,10

It is not necessary a visual aid for these steps.

Please watch generation 2 to generation 3 migration videos:

http://www.youtube.com/playlist?list=PL_T7L7yrNs4nE5OD977Vt78Asy64xjZhf

4.5 Step 11

4.5.1 Step 11, method 1 and 2

It is not necessary a visual aid for this step.

Please watch generation 2 to generation 3 migration videos:

http://www.youtube.com/playlist?list=PL_T7L7yrNs4nE5OD977Vt78Asy64xjZhf

4.5.2 Step 11, mehod 3, substep 1

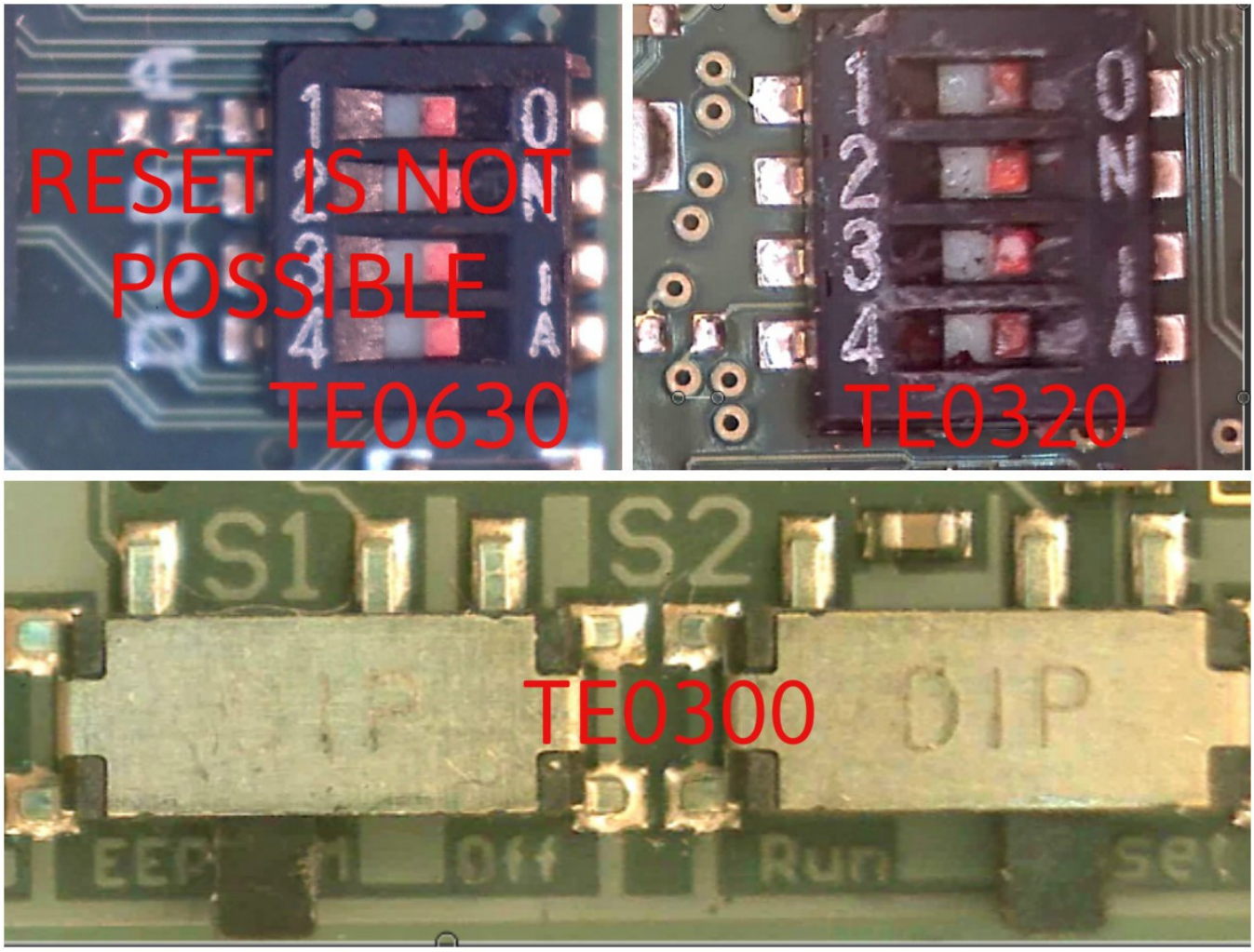

Figure 5A: EEPROM is switched ON, with Reset active.

EEPROM is switched ON (S1 for TE0300,S1A for TE0320 and TE0630).

Reset is active for TE0300 (S2 OFF) and TE0320 (S1D ON); TE0630 does not have a reset switch.

4.5.3 Step 11, Method 3 ,Substep 2

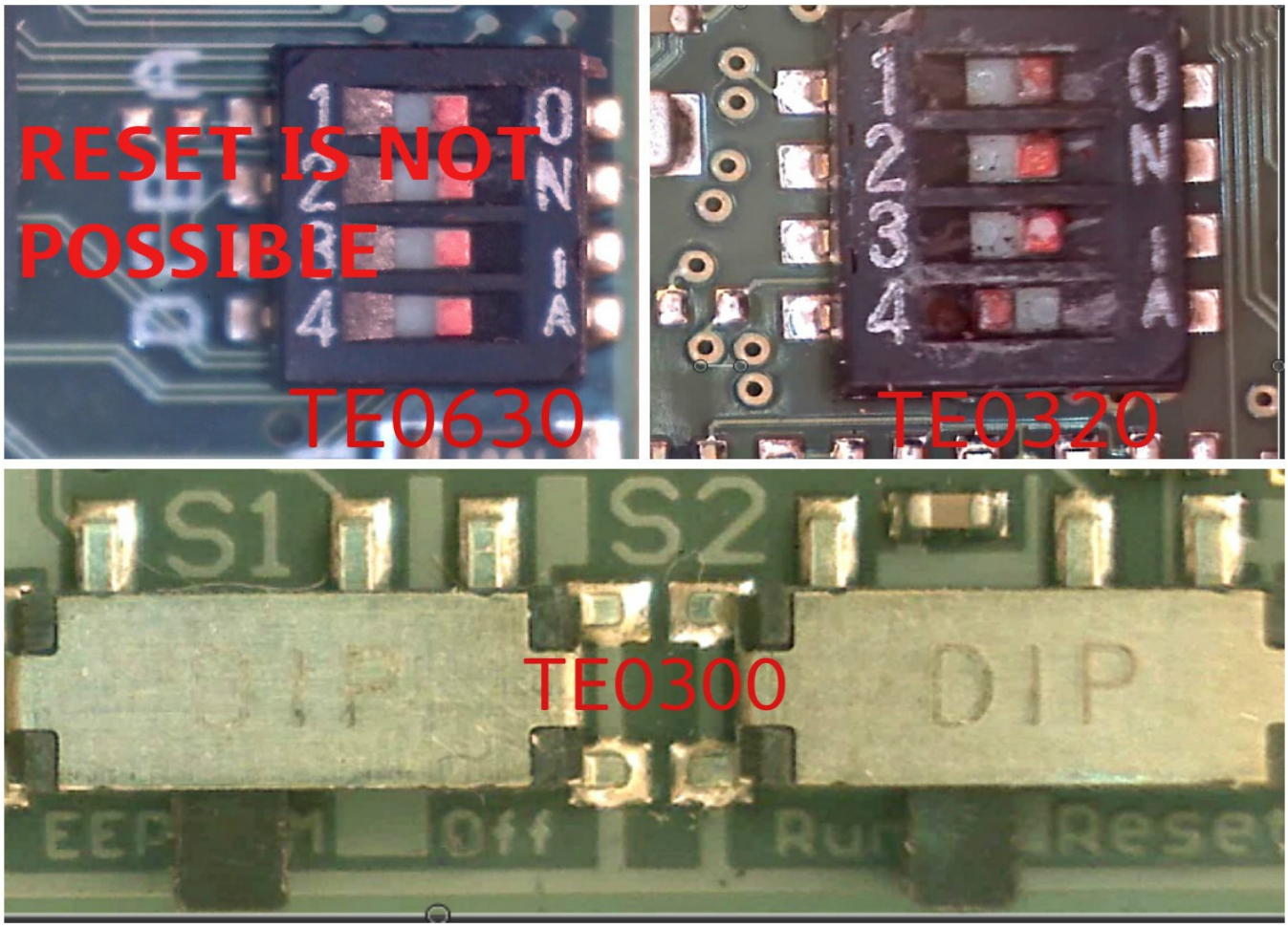

Figure 5B: EEPROM is switched ON, with Reset inactive.

EEPROM is switched ON (S1 for TE0300, S1A for TE0320 and TE0630).

Reset is inactive for TE0300 (S2 ON) and TE0320 (S1D OFF); TE0630 does not have a reset switch.

4.5.4 Step 11, method 4

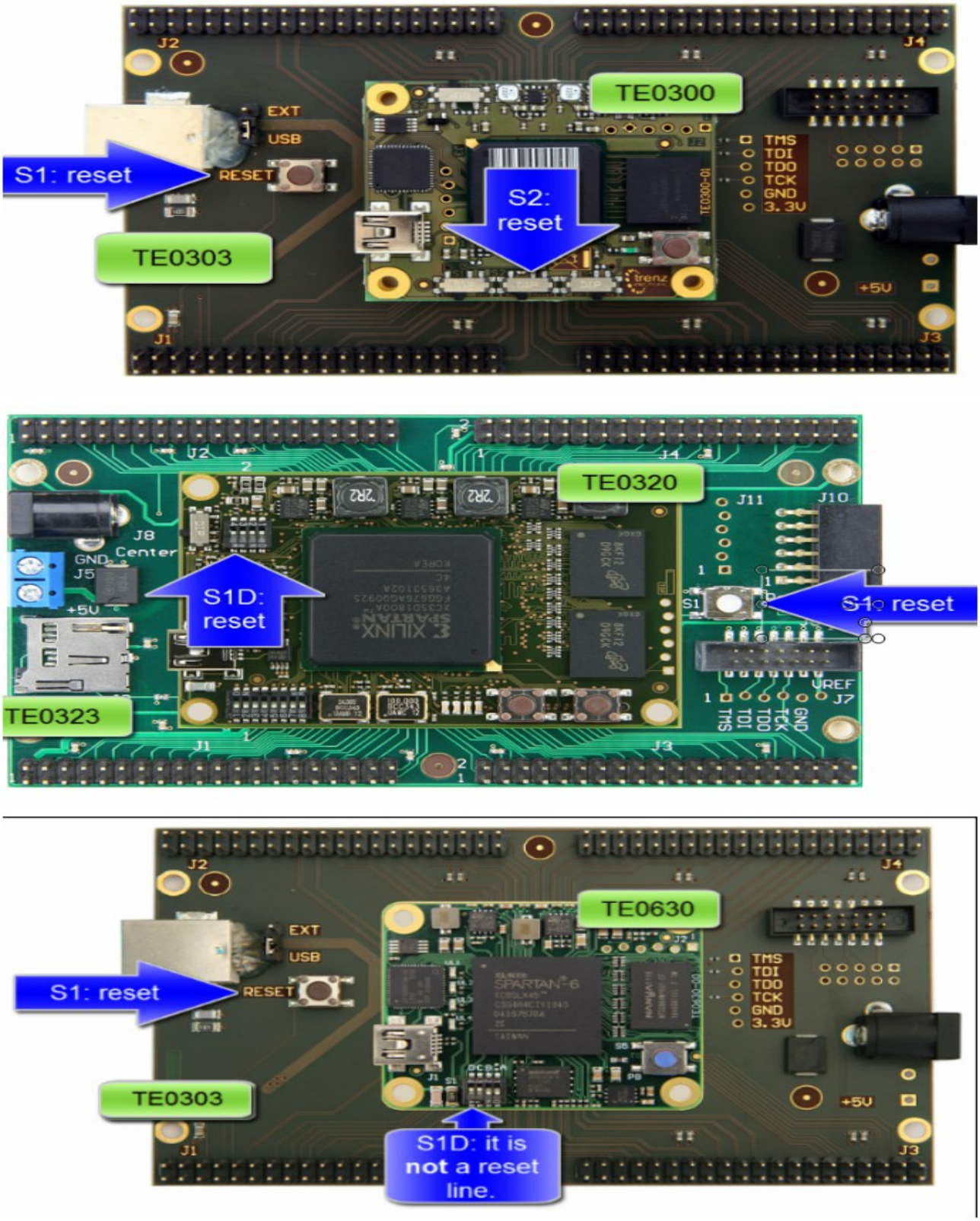

Figure 6 : micromodule with baseboard

Push S1 button to reset the micromodule.

4.6 Step 12

It is not necessary a visual aid for this step.

Please watch generation 2 to generation 3 migration videos:

http://www.youtube.com/playlist?list=PL_T7L7yrNs4nE5OD977Vt78Asy64xjZhf

5 Further References

Please watch generation 2 to generation 3 migration videos:

http://www.youtube.com/playlist?list=PL_T7L7yrNs4nE5OD977Vt78Asy64xjZhf

6 Document Change History

ver.	date	author	description
0.9	2012-12-12	SP, FDR	Release preview.
1.0	2012-12-13	SP, FDR	Initial release.
1.1	2012-12-22	SP,FDR	Images added
2.0	2012-04-24	SP, FDR	Added chapter "Migration methods (visual aid)".