Tech-note

Updating Systems Components in UniOP Series 400 Products

This document describes how to update the system components of the UniOP Series 400 HMI products, including Operating System and run-time software.

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1 Introduction

eTOP Series 400 products offer powerful tools for a complete upgrade of the system components: Operating System, FPGA and run-time software.
Upgrade can be done using USB flash drives that include the new software modules and running on the device the procedure described in details in this document.

Each unit comes out from manufacturing labeled with a “product code” which includes all the information related to factory settings in terms of hardware, software and firmware components.

The product labeling is the first reference to know factory settings and version of the components installed at manufacturing time.

The update tool on the panel also provides the user with detailed information on the components actually running in the system.

Note: *Files required for upgrades depend on the product code. Using wrong files for upgrade may result in system malfunctions and even in a unusable system.*

Note: *files for upgrade are distributed on demand by technical support department*

2 Product Code Description

The UniOP eTOP400 series are identified with a product label as showed in Figure 1 below. The label reports several information including the model name, the part number, the power supply, the date of production (in the following format: mm/yy) and two bard code.

The first code is the versioning code, the second one the serial number (S.N.).

Figure 1

The versioning code is a 15 characters code which contains the following information:

Typology/Series	2 chars – 00..ZZ	Identifies the series, for instance 400 series
HW type	2 chars – 00..ZZ	Identifies the carrier board and the CPU module
Display and Touch	2 chars – 00..ZZ	Identifies the combination of display and touch screen components
Operating System Type	1 char – A..9	Identifies the type of operating system, for instance Windows CE 6
BSP (Board Support Package) version	2 chars – 00..ZZ	Identifies the BSP version

Type and version of firmware components (boot loader, FPGA, etc..)	3 chars	Identifies the type of boot loader and the versions of the firmware components
Customer code (brand)	3 chars – 000…ZZZ	Identifies the custom brand

Table 1

Each single field is incremented any time a change in the related component is introduced.

3 System Settings Tool

The System settings tool comes in the shape of a rotating menu with navigation buttons at top and bottom to scroll between the available options. The tool is showed in Figure 2.

On the left side the several components and functions are highlighted and, per each of them, the right side ("Info" pane) shows the information about the current version, when applicable. In the picture below it is showed the version of the Main OS component.

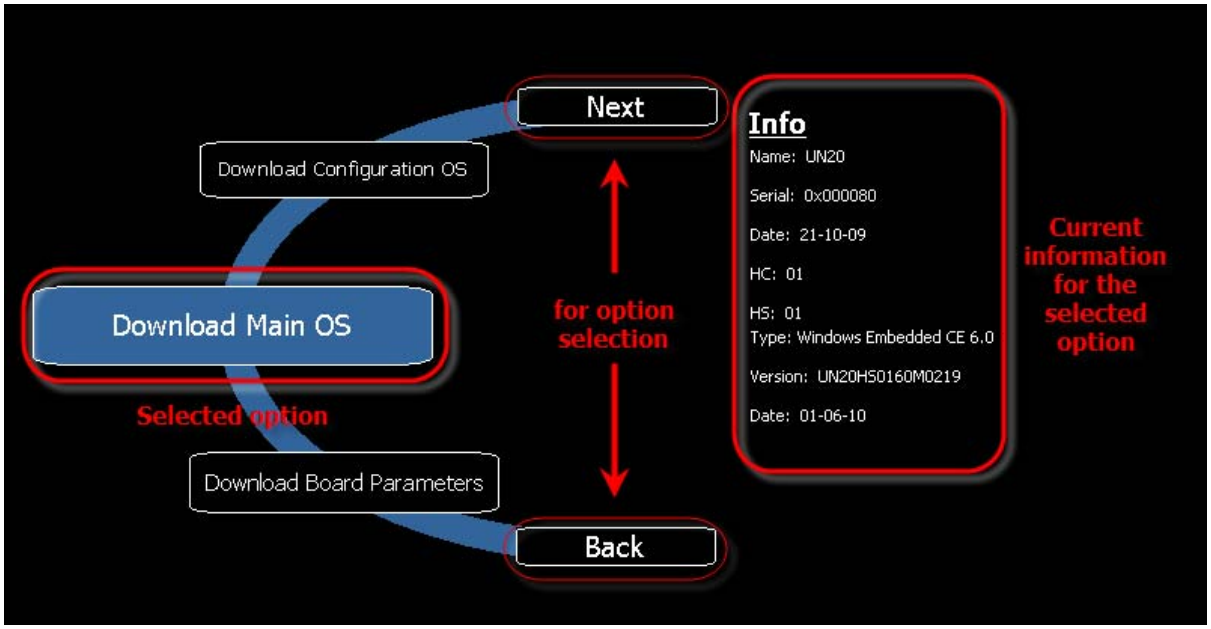

Figure 2

System Settings has two operating modes: **User Mode** and **System Mode**. The difference between them is just in the number of available options.

"**User mode**" is the simplest possible interface where a generic user can get access to the basic settings of the panel:

- **Calibrate Touch**: allows to calibrate the touch screen interface
- **Network**: allows to change the options of the panel on-board network card
- **Time**: allows to change the panel RTC options, including time zone and DST
- **Display settings**: automatic backlight turnoff and brightness adjustment
- **BSP settings**: allows to check the **BSP** (**B**oard **S**upport **P**ackage) version (example 2.37), check the operating hours timers for the unit and separately for the backlight, enable/disable the buzzer, enable/disable the use of the "low battery" front LED indicator

"**System Mode**" is the complete interface of the System Settings tool where all the available options are available; in addition to the options available in the "User Mode" we have the following important options:

- **Format Flash**: allows to format the internal panel flash disk
- **Resize Image Area**: allows to resize the flash portion reserved to store the splash screen image displayed by the unit at power up; default settings are normally ok for all the units
- **Download Configuration OS**: allows to check actual version and upgrade the back-up operating system, see below in the next chapter for additional details
- **Download Main OS**: allows to check actual version and upgrade the main operating system, see below in the next chapter for additional details
- **Download Splash Image**: allows changing the splash screen image displayed by the unit at power up; the image should be provide in a specific format. We suggest to update Splash Screen Image directly from Studio software which supports this feature starting from V 1. 50
- **Download Bootloader**: allows to check actual version of the system boot loader and to upgrade it, see below for additional details
- **Download Main FPGA**: allows to check actual version and upgrade the main FPGA firmware, see below for additional details
- **Download Safe FPGA**: allows to check actual version and upgrade the back-up (safe) copy of the FPGA Firmware, see below for additional details
- **Download System Supervisor**: allows to check actual version and upgrade the system supervisor firmware responsible for RTC and power supply handling, see below for additional details

***Note**: the System Settings tool includes also other options, not described and not documented at this moment*

System Settings tool is accessible from the JMobile context menu selecting the item "Show system settings".
When activated in this way the System Settings tools starts always in "User Mode".

JMobile context menu can be activated by pressing and holding on a free area on the screen until the menu is displayed.

The eTOP400 series products support also a special procedure to get access to the System Settings tool; special procedure is required when the System Settings has to be started in System Mode or when the standard access procedure is not accessible for any reason.
When activated with special procedure the System Settings tool starts always in "System Mode".

The special access to the System Settings tool can be activated with a tap-tap sequence over the touch interface during power-up phase.
Tap-tap consist in a high frequency sequence of touch activations by simple means of the finger tapping the touch screen performed during the power up and started immediately after the panel is powered.

4 Update of the System components via USB Flash Drive

The upgradable components in a unit are listed following. Per each component it is provided a sample of the file name used when distributing the update.

***Note:** IMPORTANT – only units with regular serial number can be upgraded; units market as "prototype" or having "Prot." serial number **cannot** be upgraded*

4.1 List of upgradable components

The panels support the upgrade of the following components:

System Supervisor Firmware of the system supervisor controller
(sample file name: *packaged_GekkoZigBee_v4.13.bin*)

Note: *IMPORTANT - The System Supervisor Component can be upgraded only if actual version on panel is V4.13 or above. Version V4.08, V4.09, V4.10 and V4.11 MUST not be updated, they do not support automatic update from System Settings.*

Main FPGA FPGA firmware
(sample file name: *h146xaf02r06.bin*)

Safe FPGA back-up copy of the Main FPGA that ensures unit booting in case of main FPGA corruption (may be after failed update)
(Sample file name: *h146xaf02r06.bin*)

Note: *when updating FPGA firmware on the panel, the same file must be used for Main and Safe FPGA components*

Boot-loader Loader to handles panel start-up
(sample file name: *redboot_UN20HS010025.bin*)

Main OS Main Operating System
(sample file name: *mainos_UN20HS0160M0237.bin*)

Configuration OS Back-up operating system that ensures units recovering in case of main operating system corruption (may be after a failed update)
(sample file name: *configos_UN20HS0160C0237.bin*)

4.2 Upgrade Steps

Copy all files you need to upgrade in a USB Memory and plug it on the USB port of the panel.

Start the System Settings tool with the special procedure to get it “System Mode” and locate in the rotating menu the desired item. Click directly on the item (the blue button with white label) and browse to locate the proper file stored on the pen drive (USBMemory). Figure 3 shows an example for the Main OS components.

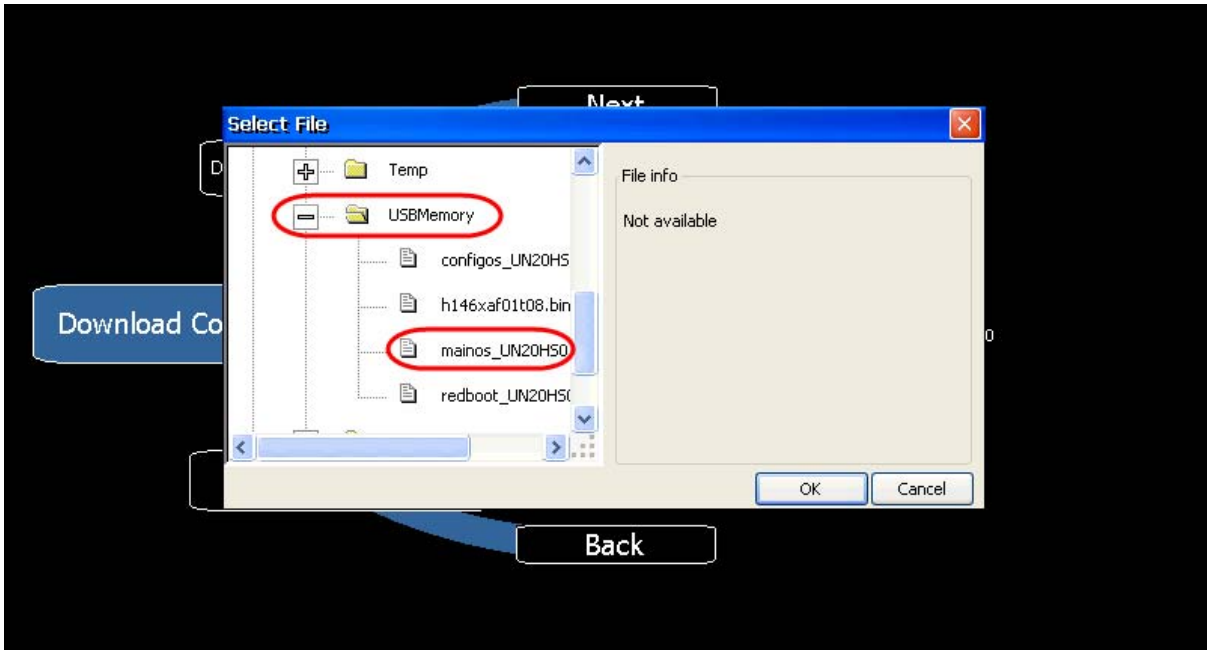

Figure 3

Note: *Select the "Download" command to transfer files to the panel. Select the "Upload" commands to get files from the panel.*

Follow then the instruction on the screen to proceed with the update. A progress bar on the screen will inform on the status of the operation.
The System components have to be upgraded in the following order, without to cycle the power of the unit between one upgrade and the next one:

1) System Supervisor
2) Main FPGA
3) Safe FPGA
4) Bootloader
5) Main OS
6) Configuration OS

Note: *when all the upgrades are completed, just power cycle the unit to return to normal operation. Power cycle is required only ONCE after all the components have been updated.*

4.3 Additional Steps for units with BSP older than V2.37

The next steps are ONLY required if the Main OS version currently installed is older than V2.37.
With reference to the product versioning explained in chapter 2, the procedure described here is required for all the units with BSP version "01".

Figure 2 above shows how to read Main OS version directly from the rotating menu in the Info pane (right side). The last 3 digit of the version string gave the version number; in the picture the version is V2.19.

After the **Configuration OS** component is upgraded, power cycle the unit and recall again the System Setting tool in its "System Mode" with the tap-tap procedure.

Locate in the rotating menu the **Format Flash** command and execute it.

At first the system will try a “quick format” of the flash disk. The quick format method is called “Partition Format”.
If Partition Format fails for any reason the panel reports a dialog with the following message:
“**Partition Format Failed – Doing Store Format – System may appear stuck for a while**”
Confirm then with OK to start the Store Format.

Note: *Store Format requires up to 15 minutes to complete. During this period the panel appears frozen. Do not cycle the power and leve the process finish. At the end the system automatically restarts.*

When format is completed, connect the network cable, enter the Windows CE Control Panel and double click on the “System Settings” icon.

Locate in the rotating menu the **Calibrate touch** item and start it.

Execute the calibration following the instruction on the screen using a stylus pen with thin but soft point.

Once the calibration process is completed, go back to Control Panel, locate the icon “Registry Save” and double click on it to store on the registry the calibration parameters.

4.3.1 JMobile runtime installation

Because of the flash format operation, the panel requires now the installation of the JMobile runtime.

Install the JMobile Suite software on the computer and locate the “runtime” folder under JMobile Suite installation directory.
Copy the entire folder “UN20_WCE6 (MIPSIV_FP)” on the USB pen drive.
Rename the “UN20_WCE6 (MIPSIV_FP)” folder name in “**qthmi**”. Please note the system is case sensitive, the new name has to be with lower cases.
Insert the USB pen driv on the panel USB port, open “My Device”, open “USBMemory” and copy the entire “qthmi” folder from USB to the Flash disk immediately under the root: \Flash\qthmi.

Cycle the power of the unit to return to normal operation; the panel will start launching automatically the JMobile runtime during the boot up phase.