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# **INTRA Firmware**

Quick Guide to Update the Firmware

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Version 1.00 of 09-May-2014

**Change Record**

| <b>Date</b> | <b>Version</b> | <b>Who</b> | <b>Description</b>     |
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## 1 Introduction

As of INTRA #66 in June 2009, a new controller with a new user interface has become part of INTRA. This new controller – termed INTRA Controller Version 2 (icb-2.10) has recently got an update and this updated version is termed icb-2.50. This also called for some modifications of the firmware and we took the opportunity to fix a few problems with the old version of the firmware.

The new firmware is now available in two configurations: One for the controller icb-2.10 (boards serial numbers 200 to 215) and one for the new controller icb-2.50 (boards serial numbers 250 and up). You find the serial numbers in the IROM-window of IntraCfg: e. g. 77.210 –where 77 is the serial number of the INTRA mechanics, and 210 the serial number of its controller board.

We also updated the utility IntraCfg, which is used to set up and/or monitor INTRAs operation. The previous, most recent version was 1.06, the new IntraCfg is version 2.00 Changes are minor and mainly for beauty and consistency. Updating IntraCfg with the old Delphi 7 – with which IntraCfg was developed years ago– seemed inappropriate. Hence we moved to Delphi XE4 to implement the changes.

You may operate an icb-2.10 or icb-2.50 equipped INTRA with IntraCfg 1.06, but we recommend moving on to IntraCfg 2.00.

This document describes how to update INTRAs firmware and how to install IntraCfg V2.00.

## 2 Updating INTRAs Firmware and Updating to IntraCfg200

### 2.1 Preparatory Actions

In order to ease start of the tracker with the new firmware, you should firstly position its both axis at app. +5°. Using IntraCfg (the current one) you

- Select Pos from the Utilities menu which opens the "Position and Modes" window
- Enter 5 in both, the PA and SA-boxes in the Position frame of the "Positions and Modes" window
- Click SetTarget and
- Select REMOTE mode in the Mode frame.
- Wait until it reaches the position, then switch power off
  
- Download the new firmware from our website. The filename tells you about its date of creation, version and configuration.

Typically the filename is `ifw_140510_210_icb-21.mot` where `ifw_140510` stands for INTRA firmware build of 10-May-2014, `_210` is the version and `icb-210` stands for the hardware-version the firmware is configured for – that is for boards with serial numbers 200 to 215. Newer boards use serial numbers as of 250 and higher.

We have also updated IntraCfg to version 2.00. You find this program IntraCfg200.exe on our website. It does not require installation – just download it and copy it to a suitable folder for later execution.

IntraCfg200.exe is compatible with the earlier version IntraCfg version 1.06, but you will have to follow a proper procedure to make sure EEPROM settings are properly transferred from your previous setup/firmware to the new one. Both IntraCfg-versions store their configuration data in the registry – but not under the same key. This makes it possible to have the old and new IntraCfg on the same computer without any interference between them.

Use IntraCfg to get a screenshot of your current EEPROM-settings and print it. Do not forget to click GetRAM prior to taking the screenshot of the IROM-window.

## 2.2 Updating the Firmware

Now you are ready to update the firmware. You will need a terminal emulator such as Hyperterm, but others, capable of transferring files with ymodem-protocol are also suitable. If you are using a more recent Window OS than Windows XP, you may not have Hyperterm on your computer. You may copy it from an old XP-computer: Locate the two files hyperterm.exe and hyperterm.dll on the XP-computer and copy them into a suitable folder on your computer. The exe-file you find in the Program Folder, the dll-file in the WINDOWS\system32-folder. You will run Hyperterm using the same com-port as previously used with IntraCfg.

- Start Hyperterm with configuration 57600,8,N,1
- Switch power of INTRA on. You should now receive the start message of INTRAs boot loader.
- Within less than 4s type ctrl-c and on the resulting command prompt you enter:
- load -m ymodem<enter>
- Select "send file" from Hyperterms "transfer" menu (hint: the English terms used by Hyperterm may be somewhat different than the ones mentioned here). A window will pop up which allows you to select the protocol and the file.
- Select ymodem, locate the mot-file with the firmware version and configuration that suits the needs of your INTRA (see above), and then click ok.
- The file is now transferred to INTRA and when done, the command prompt of the boot loader will appear in Hyperterms window.
- Type go 0x114000<enter> and you will see the start message of INTRA.

A log of such an update session is shown below:

```
RedBoot(tm) bootstrap and debug environment [ROM]
Non-certified release, version icb_ser by brusag - built 15:35:17, Oct 29 2010

Copyright (C) 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Free Software Foundation, Inc.
RedBoot is free software, covered by the eCos license, derived from the
GNU General Public License. You are welcome to change it and/or distribute
copies of it under certain conditions. Under the license terms, RedBoot's
source code and full license terms must have been made available to you.
Redboot comes with ABSOLUTELY NO WARRANTY.

Platform: ICB_NET (ARM7TDMI)
RAM: 0x00200000-0x00220000 [0x002057f8-0x0021cf00 available]
FLASH: 0x00100000-0x0017ffff, 2048 x 0x100 blocks
== Executing boot script in 4.000 seconds - enter ^C to abort
^C
RedBoot> load -m ymodem
CCCCCCEnter point: 0x00114040, address range: 0x00114000-0x001570bc
xyzModem - CRC mode, 3(SOH)/771(STX)/0(CAN) packets, 9 retries
RedBoot> go 0x114000
INTRA FW V2.10 - build of May 10 2014 09:52:29 hw:icb_21
```

INTRAs firmware is now running.

## 2.3 Setting up IntraCfg200

As previously mentioned, when using IntraCfg200, we will have to configure it and – most important – we also have to make sure that the old IROM-setting of INTRAs firmware are also present in the new version that has been loaded.

- Close Hyperterm to free the com-port.

- Run IntraCfg200.exe and select a suitable directory to write its output to.
- Select RemoteCfg from the menu and click ComSettings, then select the port you are connected to.
- Select RemoteCfg again and click EEPROM to bring up the IROM window.
- Select GetRAM to fetch data from INTRA
- Check or update all the values from the print-out you previously made, then
- **Special: If you want to suppress the check between encoder- and hall-counts click on b10 in the tbits-frame.**
- Click PutRAM, then
- In the "EEPROM in Flash"-frame, click on Erase, then Write and you will receive corresponding output from IntraCfg200.
- Click on Save in the Registry-frame to save your settings also to the registry.
- Finally, click on Utilities>Position to bring up the Positions and Modes Window.
- There, click on Go in the Find Zero frame and INTRA will execute a zero search and report results in the main window of IntraCfg200.
- Now your system is ready again for unattended operation. Simply click on mode Sun and it goes.

- end of text -