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INTRA Firmware

Quick Guide to Update the Firmware

BRUSAG Ref: INTRA/DOC/2267-BRU

Version 1.03 of 10-Sep-2014

Change Record

Date	Version	Who	Description
09-May-2014	1.00	RB	Draft – then finalized
12-May-2014	1.01	RB	b11 not b10 suppresses the encoder- hall-counter mismatch test.
08-Sep-2014	1.02	RB	IntraCfg got a new feature that makes download of the firmware somewhat easier.s
10-Sep-2014	1.03	RB	Easier yes, but it it works only as of firmware v2.12 and this fact was missing in document version 1.02

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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. Further changes have brought the version up to 2.03. Most changes were minor and mainly for beauty and consistency – except the change to version 2.03 where a new menu item was added: Remote Cfg>Run_Bootloader.

This document describes how to update to IntraCfg V2.03 and how to update INTRAs firmware. In the following, we assume that you updated your PC to work with IntraCfg V2.03.

2 Updating to IntraCfg_203 and Updating INTRAs Firmware

You will need three things:

- The file IntraCfg_203.exe from our website
- The firmware mot-file from our website
- A terminal emulator capable of uploading files using the ymodem protocol.

2.1 Installation of IntraCfg_203

Download IntraCfg_203.exe from our website: http://www.brusag.ch/DL/INTRA2/IntraCfg_203.exe and store it in a suitable folder. No special installation procedure is required, but setting up a link on your desktop might be helpful.

IntraCfg_203.exe is compatible with the earlier version IntraCfg version 1.06, but you will have to follow a specific procedure to make sure EEPROM settings are properly transferred from your previous setup/firmware to the new one. Old and new 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. See chapter 2.4 for further details on how to upgrade from IntraCfg_106 to IntraCfg_203.

2.2 Update of Firmware - Preparatory Actions

- Download the new firmware from our website. The filename tells you about its date of creation, version and configuration.

Typically the filename is `ifw_140909_212_icb-21.mot` where `ifw_140909` stands for INTRA firmware build of 9-Sep-2014, `_212` 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.

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. Configure the emulator to use the same port you are using with IntraCfg and set its communication parameters to 57600,8,1,n. (57600 bps, 8 data, 1 stop and no parity-bit – no handshake)

In order to ease later start of the tracker with the new firmware, you should position its two axis at app. +5°. Using IntraCfg_203 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 – check current position by clicking on GetPos, then
- with a firmware version older than 2.12, go to chapter 2.3 else
select RemoteCfg>Run_Bootloader

The Run_Bootloader¹ will perform a hardware reset of INTRA's controller and it will come up with the boot loader. IntraCfg_203 then sets the bootloader up for download using ymodem and exits (that is, IntraCfg_203 terminates). Now you have somewhat less than 2 minutes² to launch a terminal emulator with which you download the new firmware.

2.3 Updating the Firmware

- Start Hyperterm with configuration 57600,8,N,1
- if you have a firmware older than version 2.12 you must:
 - power down and up again INTRA and then
 - within less than 4s catch the bootloader by sending it Ctrl-C (ASCII 03)
 - the bootloader will send a prompt, then you must type `load -m ymodem<enter>`

¹ A firmware older than version 2.12 does not have the hook to recognize the Run_Bootloader command, Instead, it will produce an error message.

² The bootloader will exit from its ymodem upload mode following a time-out of app. 2 minutes. If this happens and assuming you are in the terminal emulator, type `load -m ymodem<enter>` to set the bootloader back to ymodem upload mode.

- Select "send file" from Hyperterms "transfer" menu (hint: the English terms used by Hyperterm may be somewhat different from 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 (several minutes), 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. The part that is done by IntraCfg_203 has a yellow background, the part done with Hyperterm with blue background.

```
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
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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 and it is time to terminate the terminal emulator and relaunch IntraCfg_203. The first thing you should do now is to perform a "search zero":

- click Utilities>Position and the Position and Modes-Window will pop up.
- Click on Go in the "Find Zero frame"

Because you positioned INTRAs axis at app. 5° of the zero mark, it should run and detect the zero mask within a few seconds. The corresponding message will appear on screen. Now you are ready to resume normal operation

- by clicking on Sun in the mode frame.

2.4 Setting up IntraCfg203

As previously mentioned, when updating from a version 1.x of IntraCfg to IntraCfg203, you will have to configure it and – most important – you also have to make sure that the old IROM-settings of INTRAs firmware are present also in the new IntraCfg.

- Close Hyperterm to free the com-port.
- Run IntraCfg_203.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
- Click PutRAM, then
- In the "EEProm in Flash"-frame, click on Erase, then Write and you will receive corresponding status message from IntraCfg203.
- 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.
- Click on Remote in the Mode-frame, then enter 5 in the PA and SA fields of the Go To Positions – frame.
- Make sure the Astro-box is NOT selected, then click on SetTarget.
- Wait for the tracker to reach the specified position. Click on GetPos to check its current position.
- Now you are ready to run a "find zero". 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 -