

IMC500/IMC501 Service Manual

1. Firmware Update	3
1.1. <i>Firmware Update One-Click with RUC (Runtime Utility Center)</i>	3
1.2. <i>Firmware Transfer / Firmware Update with installation files (USB STICK / Install Folder)</i>	5
1.3. <i>Firmware Installation/Update Universal Master</i>	10
1.3.1. <i>Initial installation</i>	10
1.3.2. <i>Creating update file</i>	10
1.3.3. <i>Software update install</i>	11
1.4. <i>Replacement of a pre-installed CFast card</i>	13
2. Trouble Shooting	16
2.1. <i>Boot Problem</i>	17
2.2. <i>Firmware Update does not start from USB Stick</i>	20
3. Network Settings	21
3.1. <i>General Description</i>	21
3.2. <i>Remote Teamviewer Support</i>	22
3.3. <i>Change of IMC500 IP Address / IMC500 configuration settings</i>	23
4. Maintenance	26
4.1. <i>APC910 / Evaluating the battery status</i>	26
4.2. <i>APC910 / Replacing the battery</i>	27
4.3. <i>APC910 / Replacing fan filters</i>	28
5. Commissioning	29
5.1. <i>Enable Screw Protection</i>	29
5.2. <i>Enable SQL Table</i>	29
5.3. <i>Checking FIX data</i>	29
6. IMC500/IMC501 Startup	30
6.1. <i>Manual Start of IMC500 from Windows 7</i>	30
7. CFast Card Image	31
7.1. <i>CFast Image recovery</i>	32
7.2. <i>CFast Image Creation</i>	35
8. TEA5 Series	36
8.1. <i>Greasing Settings</i>	36
8.2. <i>Axis Calibration</i>	37
8.2.1. <i>Clamp Calibration</i>	38
8.2.2. <i>Injection Unit</i>	39
8.2.3. <i>Ejector Unit</i>	39

8.3.	<i>PID Controller Setting</i>	40
8.4.	<i>Limitation</i>	40
9.	Woojin Internal Information	41
9.1.	<i>IMC500 / IMC501 System Overview</i>	41
9.1.1.	Windows 7	41
9.1.2.	Google Chrome Browser	41
9.1.3.	ARwin Configurator	41
9.1.4.	Batch Files	43
9.1.5.	Automation Runtime ARwin.....	43
9.1.6.	Network Bridge	44
9.2.	<i>Linux</i>	45
9.2.1.	BIOS Settings	45
9.2.2.	General Information.....	47
9.2.3.	Operations.....	47
9.2.4.	Configuration.....	48
9.3.	<i>Folder Structure</i>	55
9.4.	<i>USB Device Access</i>	56
9.5.	<i>User Settings</i>	58
9.6.	<i>Install/Uninstall ArWin</i>	59
9.7.	<i>Firewall Settings</i>	61
9.8.	<i>Automation Studio - Generation of Firmware Installation Files</i>	62
9.9.	<i>X20 CPU Connection Problem</i>	64
9.10.	<i>SQL DataBase Setup</i>	67
9.11.	<i>Update Node.js version</i>	71
9.11.1.	Update SQL Database Config Files	72
9.12.	<i>ARsim on PC</i>	74
9.12.1.	New Versions (SVN: DL version > 6806, TH version > 3420, TE version > 3035)	74
9.12.2.	Old Versions (SVN: DL version < 6806, TH version < 3420, TE version < 3035)	77
9.12.3.	Transfer software to ARsim	83
9.12.4.	Access from Chrome browser	83
9.13.	<i>Remove Dependencies from Automation Studio</i>	84
9.14.	<i>Touch Screen Calibration</i>	85
9.15.	<i>Touch Keyboard Enabling and Disabling</i>	86
9.16.	<i>Dynamic Service Password</i>	88
9.17.	<i>Setup SFM Fingerprint Sensor TE Tag 6</i>	89
9.17.1.	Step 1 Check Settings in B&R Slim Controller App	89
9.17.2.	Step 2 Initial Setup of sensor and activate option	90
9.17.3.	Step 3 Write config to Sensor.....	91
9.17.4.	Assigning a fingerprint.....	92
9.17.5.	Deleting a fingerprint	92
9.17.6.	Deleting all fingerprints	92

1. Firmware Update

1.1. Firmware Update One-Click with RUC (Runtime Utility Center)

Automated installation. All data (recipe REC and FIX data, software counter, IP addresses,..) are automatically backed up and restored after the update.

RucPackage.zip will be created from Automation Studio (projects/export to RUC).



Step 1

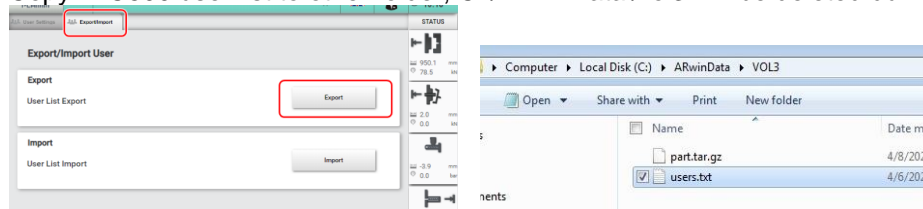
Save IMC500 user list

Export User List

File Name: users.txt

File Path: C:\ARwinData\Vol3

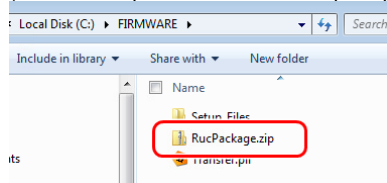
Copy IMC500 user list to other folder, C:\ARwinData\Vol3 will be deleted during firmware update.



Step 2

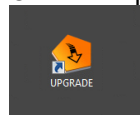
Copy Firmware Upgrade Files (RucPackage.zip) to C:\FIRMWARE

(Folder_Setup_Files and Transfer.pil is pre-installed on image file If not available download here: <https://we.tl/t-ktw34QeyrA>)



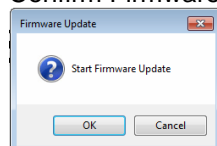
Step 3

On Desktop you will find shortcut link "UPGRADE" – double click to start.

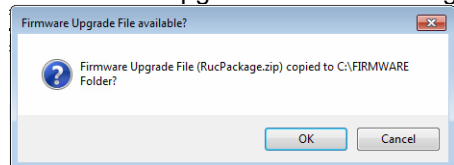


Step 4

Confirm Firmware Update Process

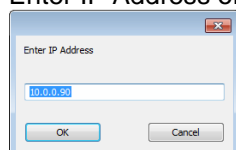


Confirm that Upgrade File RecPackage.zip is located in C:\FIRMWARE Folder.



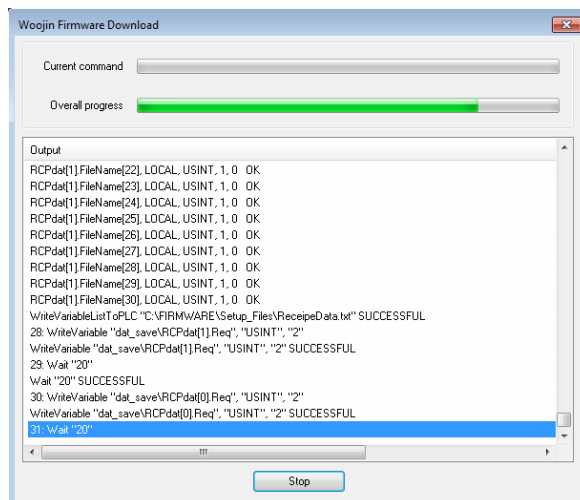
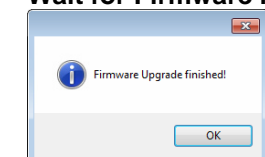
Step 5

Enter IP Address of ARwin and confirm



Step 6

Wait for Firmware has been finished





Step 7

Check Number of Motors

Before restarting the machine, check if the numbers of Clamp and Injection motors are correct.

1.General	3.Clamp	4.Injectio	5.Safety	6.Temper	7.Control	8.Hardwar	9.MoldMoi	10. Customer
04A050 - Cascade Valves 0..100 (Pneumatic and Hyd. Accu)		<input type="text" value="0"/>	Use Sequential Injection Gate		<input type="text" value="0"/>			
04A204 - Pneumatic Shutoff Nozzle		<input type="text" value="1"/>	Cushion control		<input type="text" value="0"/>			
04A450 - Steam Interface		<input type="text" value="0"/>	Gas injection		<input type="text" value="0"/>			
04A470 - Signal Injected		<input type="text" value="0"/>	Charge parallel		<input type="text" value="1"/>			
			Use Suckback output during charge		<input type="text" value="0"/>			
			Number of Motors		<input type="text" value="1"/>			

http://92.168.0.15:83/index.html?visuId=woojin_18inch

1.General	3.Clamp	4.Injectio	5.Safety	6.Temper	7.Control	8.Hardwar	9.MoldMoi	10. Customer
03A042 - Ejector After Coreback		<input type="text" value="0"/>	Number of internal hotrunner		<input type="text" value="10"/>			
03A100 - Advanced Mould Protection		<input type="text" value="1"/>	Use compression molding		<input type="text" value="0"/>			
03A101 - Advanced Mould Protection (MA/MB)		<input type="text" value="0"/>						
03A102 - Advanced Ejector Protection		<input type="text" value="0"/>	Disable clamp auto release		<input type="text" value="1"/>			
03A302 - Coreback		<input type="text" value="0"/>	Nr.pneum. ejectors(0-6)		<input type="text" value="3"/>			
02A500 - KEB_Dominger_Hyd		<input type="text" value="0"/>	Ejector parallel		<input type="text" value="1"/>			
02A501 - Reinprecht Accu Hyd		<input type="text" value="1"/>	Carriage Retract Mode Enable		<input type="text" value="1"/>			
02A502 - Additional Pressure Sensor		<input type="text" value="1"/>	Ejector compression Enable		<input type="text" value="0"/>			
			Number of Motors		<input type="text" value="1"/>			
			Mould Open Interlock		<input type="text" value="0"/>			
			Keep Ejector Force		<input type="text" value="0"/>			

http://92.168.0.15:83/index.html?visuId=woojin_18inch

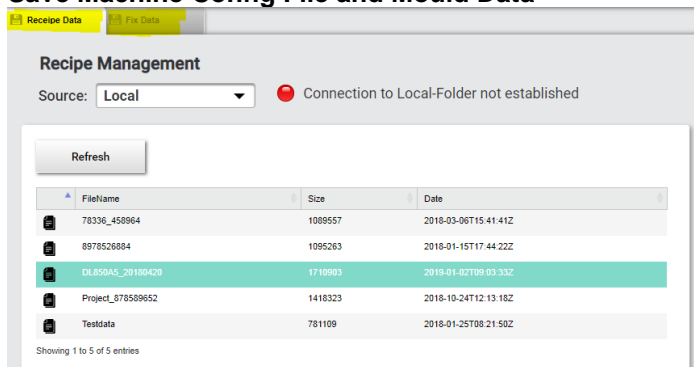
1.2. Firmware Transfer / Firmware Update with installation files (USB STICK / Install Folder)

Follow the instruction to update Firmware of Injection Moulding machine.



Step 1

Save Machine Config File and Mould Data



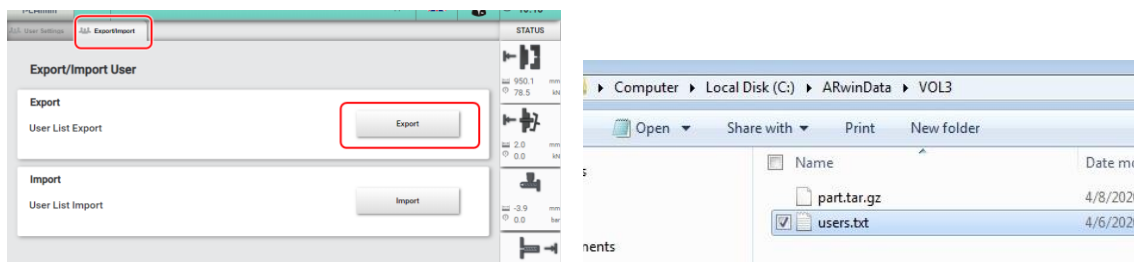
Step 2

Save IMC500 user list

Export User List

File Name: users.txt

File Path: C:\ARwinData\Vol3



Step 3

Save other files

If there should be problems with the firmware update, you can switch back to a running runtime very fast and simply. It is recommended to back up all IMC500 system folders to a USB stick.

- | | |
|---------------------|---|
| C:\CONFIG | CONFIG data |
| C:\SPC_LOG | SPC Log data |
| C:\RECDAT | Mould Data (Receipe Data) |
| C:\FIXDAT | Machine Config Data (Fix data) |
| C:\PDF_DATA | PDF and other File Data |
| C:\SPC_LOG | SPC Log data |
| C:\Data | Internal Data Log |
| C:\USER_LOG | USER Log data |
| C:\ARwinData | Automation Runtime Folder, PLC program |

It is highly recommended to save that folder before update.
Close Arwin, and just rename that folder / e.g: C:\ArwinData_20190821
After restart new C:\ArwinData Folder will be created, and all PLC program is set to factory settings

C:\VisuStartUp

Now you can install new IMC500 firmware with USB stick on fresh ARwin PLC Configuration Files and executable files to operate the HMI



Step 4

Note current IP Address

Goto Fix Setting page "IP Setting" and note IP FIX setting for Windows Address, and ARwin Address. After Update this address may be set again.

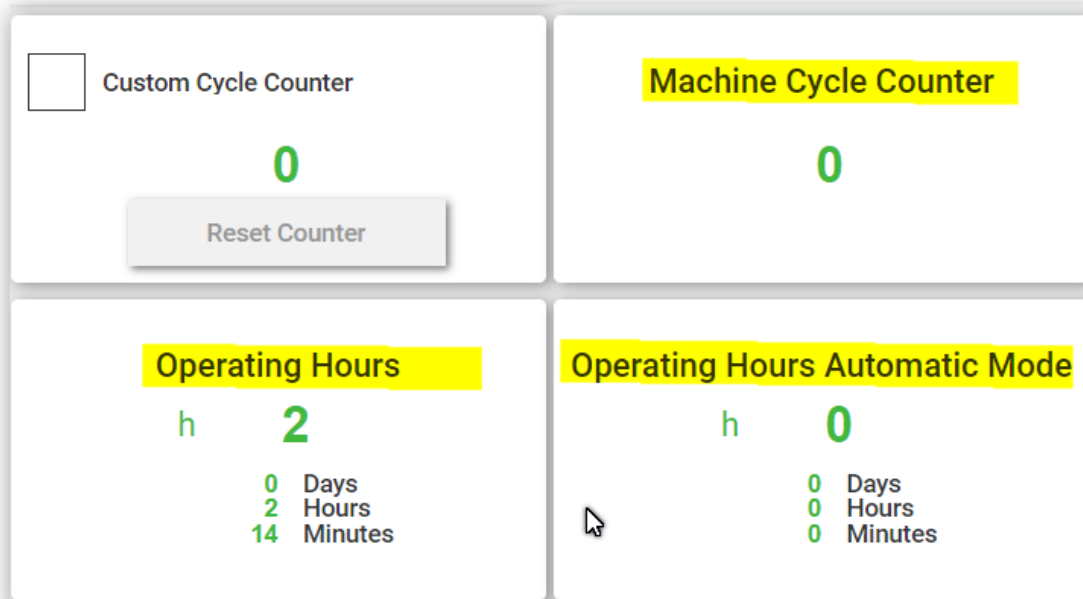




Step 5

Note machine Counters

Go to Maintenance Page and Note Operating Hours, Operating Hours in Automatic Mode and Cycle Counter



Step 6

Crate Backup

Create a Backup from the folder C:\ARwinData

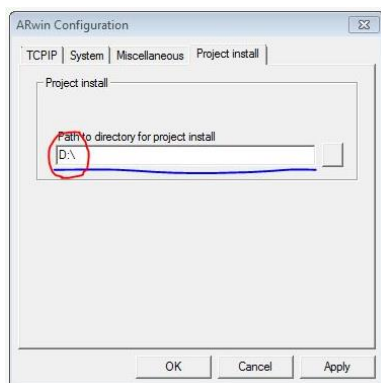


Step 7

Copy installation files on USB Stick / Installation Folder

Copy IMC500 Installation Files to USB Stick on Root Folder and connect to machine. You can use any USB slot on the Automation PC.

Before Restart check in ARwin Configuration Tool the Path for project install
It is recommended to copy the Project Installation Files to C:\INSTALL

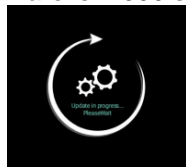




Step 8

Restart Machine and wait until Firmware Update has finished

Restart Injection Moulding Machine. (Main Switch OFF and Main switch ON). When machine is boot up again the Firmware Update Page will appear. As configured the delay time to install the new firmware is 1.000 s.



Step 9

Check if Firmware Update was successful

Check Log-File on your USB-Stick if firmware update was successful (Log file stored in D:\Default_AR010 folder). After Firmware Transfer has been finished successfully, please remove USB Stick or delete the installation files (e.g. delete folder C:\INSTALL)



Step 10

Step 8 Check IP Settings

On FIX-Pages → IP-Setting check correct IP settings

IP Address Windows	10.0.2.39	Refresh
IP Address ARWin	192.168.0.14	



Step 11

Load Machine and Mould Data again

Load Machine Config Data (FIX Data) and Mould Data (Receipe Data).

If no access to FIX-Data folder (C:\FIXDAT") is possible, the IP Address on IMC500 must be setup again to be able to establish connection to FIXDAT and RECDAT folder.



Step 12

Restore Machine Counters

Go to Fix Page for Maintenance and set the Noted Operating Hours.

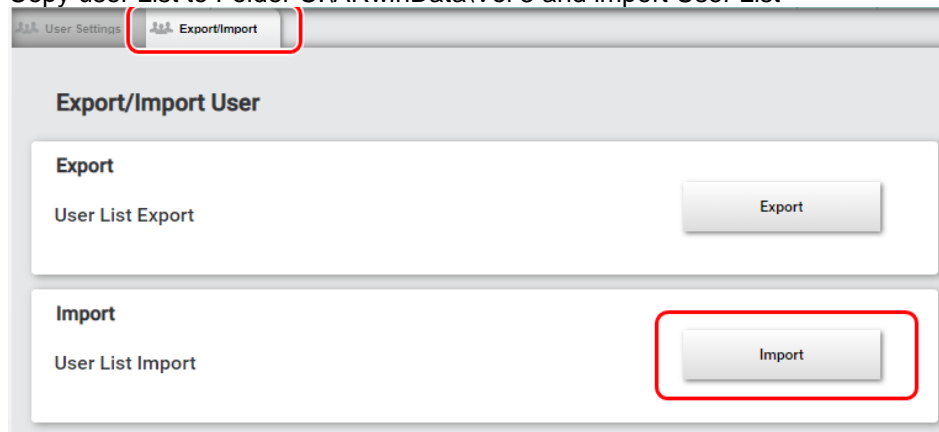
http://192.168.0.15:83/index.html?visuId=woojin_18inch



Step 13

Import User List

Copy user List to Folder C:\ARwinData\Vol 3 and import User List



Step 14

Delete Installation Files / Check USB Stick

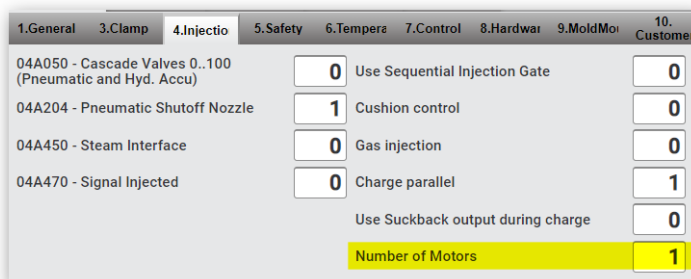
Check once again if USB Stick has been removed / or the installation files are deleted or removed from installation path (e.g. C:\INSTALL)



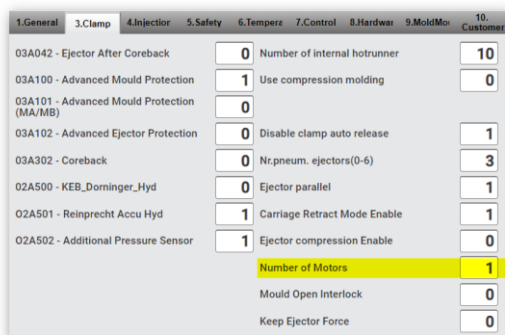
Step 15

Check Number of Motors

Before restarting the machine, check if the numbers of Clamp and Injection motors are correct.



http://92.168.0.15:83/index.html?visuId=woojin_18inch



http://92.168.0.15:83/index.html?visuId=woojin_18inch



Step 16

Check SDM

Check SDM Hardware Status



Step 17

Restart Machine

After loading the Fix and Rec-Data turn off Main Switch, wait for 5 seconds, and turn on main switch again.



Step 18

Note Machine Information

Note SVN Revision and Hardware Config on Firmware Page and refresh in Database

1.3. Firmware Installation/Update Universal Master

1.3.1. Initial installation



Step 1

Download or create Project file (.zip file)



Step 2

Open RUC (Runtime Utility Center)



Step 3

Open project file



Step 4

Connect CF card to PC



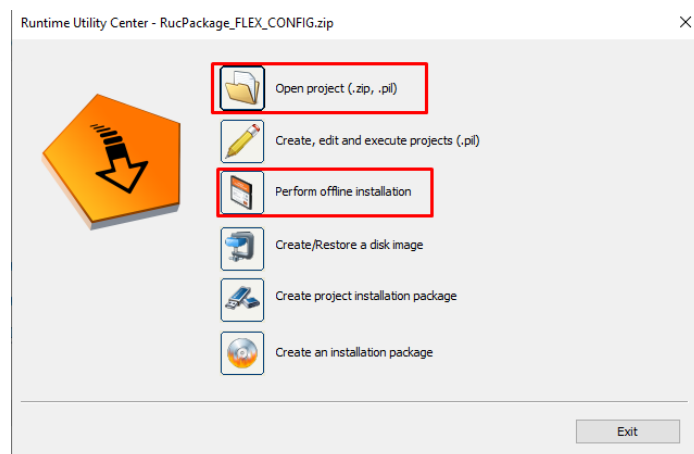
Step 5

Preform offline installation to CF



Step 6

Place CF card in X20CPU

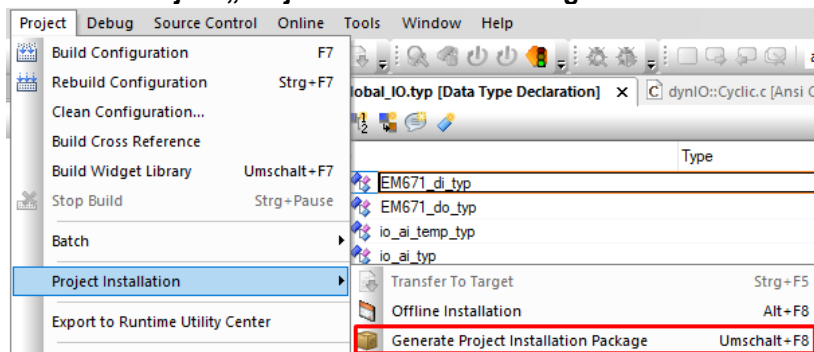


1.3.2. Creating update file



Step 1

Generate Project „Project Installation Package”

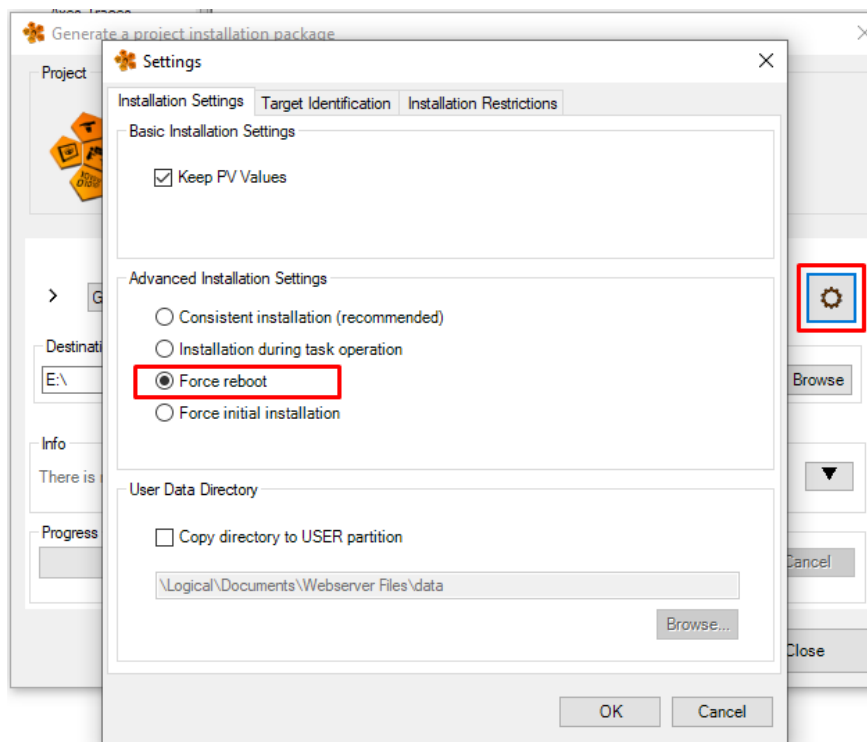




Step 2

Select Install option

Select advanced install option and select “Force Reboot”



1.3.3. Software update install



Step 1

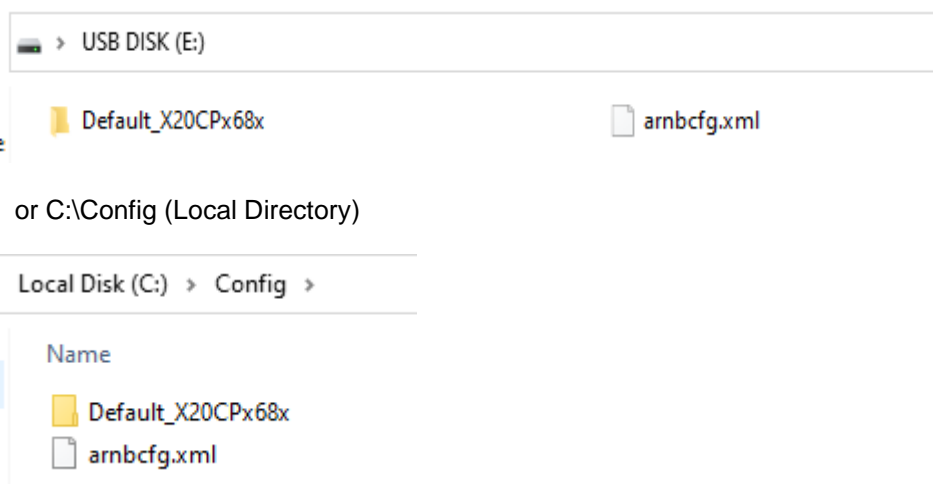
Download Update File from Server



Step 2

Copy Firmware Update Files to:

USB and plug it in the Panel





Step 3

Start Update

Go to General fix page and scroll to bottom

Select location where file is and start update



Step 4

Update process start (steps are done automatically)

1. FIX data saved
2. REC data saved
3. Recovery data saved
4. Update installation started
5. PLC reboot after installation is done
6. FIX data loaded
7. REC data loaded
8. Recovery data loaded
9. IP restored
10. PLC reboot
11. Update done

1.4. Replacement of a pre-installed CFast card



To close Google Chrome Browser in Full Screen Mode (Kiosk Mode) please login at Service Engineer, open page “Optional” and press button “Shutdown Chrome”.



For the easier copying process of all data, it is recommended to use a USB keyboard or also a USB mouse.

Follow the instruction to update Firmware of Injection Moulding machine.



Step 1

Save Machine Config File and Mould Data

Recipe Management

Source: Local ● Connection to Local-Folder not established

Refresh

FileName	Size	Date
78336_458964	1089557	2018-03-06T15:41:41Z
8978526884	1095263	2018-01-15T17:44:22Z
DL850A5_20180420	1710903	2019-01-02T09:03:33Z
Project_878589652	1418323	2018-10-24T12:13:18Z
Testdata	781109	2018-01-25T08:21:50Z

Showing 1 to 5 of 5 entries



Step 2

Save IMC500 user list

Export User List

File Name: users.txt

File Path: C:\ARwinData\Vol3



Step 3

Save other files

All the data of the old CFast card must be transferred to the new CF card. For this process an USB stick need to be connected to the APC USB slot, and all folders can be temporarily stored on the USB stick for the later copying process.

C:\CONFIG	CONFIG data
C:\RECDAT	Mould Data (Receipe Data)
C:\FIXDAT	Machine Config Data (Fix data)
C:\PDF_DATA	PDF and other File Data
C:\SPC_LOG	SPC Log data

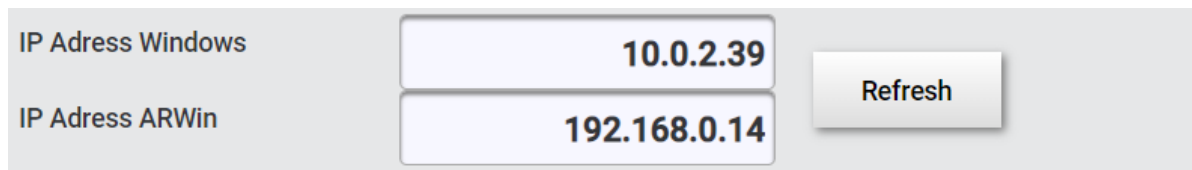


Step 4

Note current IP Address

(Only customer integrate Woojin Injection Moulding machine to company network)

Goto Fix Setting page "IP Setting" and note IP FIX setting for Windows Address, and ARwin Address. After Update this address may be set again.



Step 5

Switch Off Machine with Main Switch

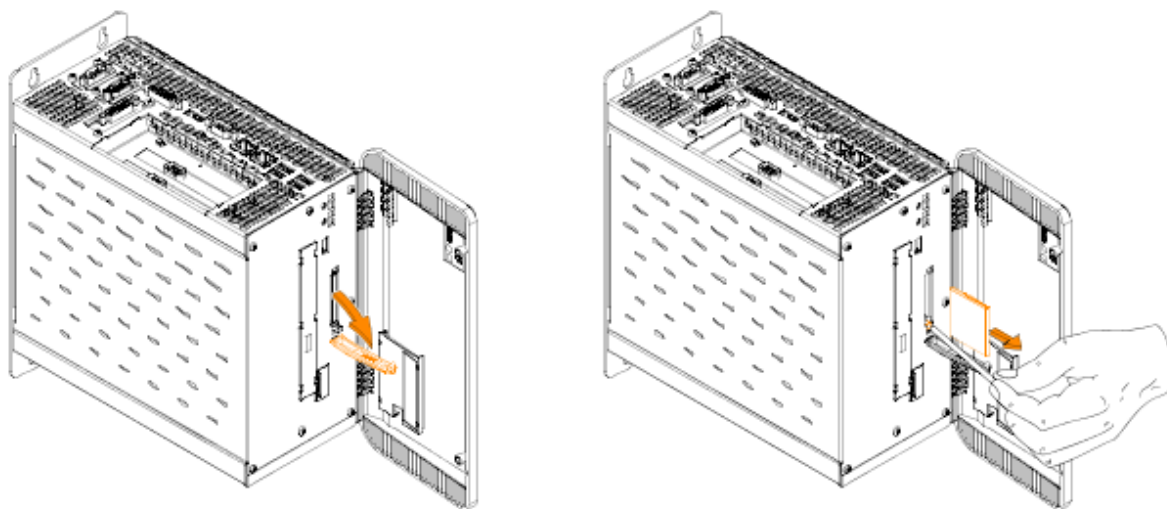
Before the CFast card can be replaced, the entire machine must be switched off using the main switch.



Step 6

Remove Old CFast card, and insert new CFast card

The CFast card can be exchanged quickly and easily by pressing the ejector (see image) with a pointed object such as a pen.



After the old CFast card has been removed, the new CF card can be carefully inserted. Then switch on again the machine.



Step 7

Check IP Settings

(Only customer integrate Woojin Injection Moulding machine to company network)

If IP Settings need to be changed, follow the instructions in the manual how to adjust IP Addresses on IMC500 Controllers.



Step 8

Load Machine and Mould Data again

Load Machine Config Data (FIX Data) and Mould Data (Receipe Data).

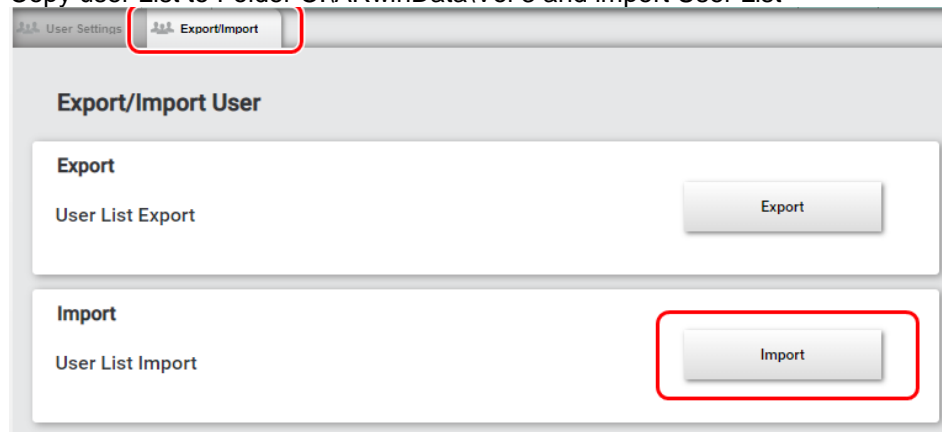
If no access to FIX-Data folder (C:\FIXDAT") is possible, the IP Address on IMC500 must be setup again to be able to establish connection to FIXDAT and RECDAT folder.



Step 9

Import User List

Copy user List to Folder C:\ARwinData\Vol 3 and import User List



Step
 11

Restart Machine

After loading the Fix and Rec-Data turn off Main Switch, wait for 5 seconds, and turn on main switch again.

2. Trouble Shooting



To close Google Chrome Browser in Full Screen Mode (Kiosk Mode) please login at Service Engineer, open page "Optional" and press button "Shutdown Chrome".



The IP addresses for Windows 7 and the Automation Runtime are pre-set at Woojin factory. If the machine is to be integrated into the company network, it is necessary to change the network settings. Please note that two IP addresses are required for each injection moulding machine.



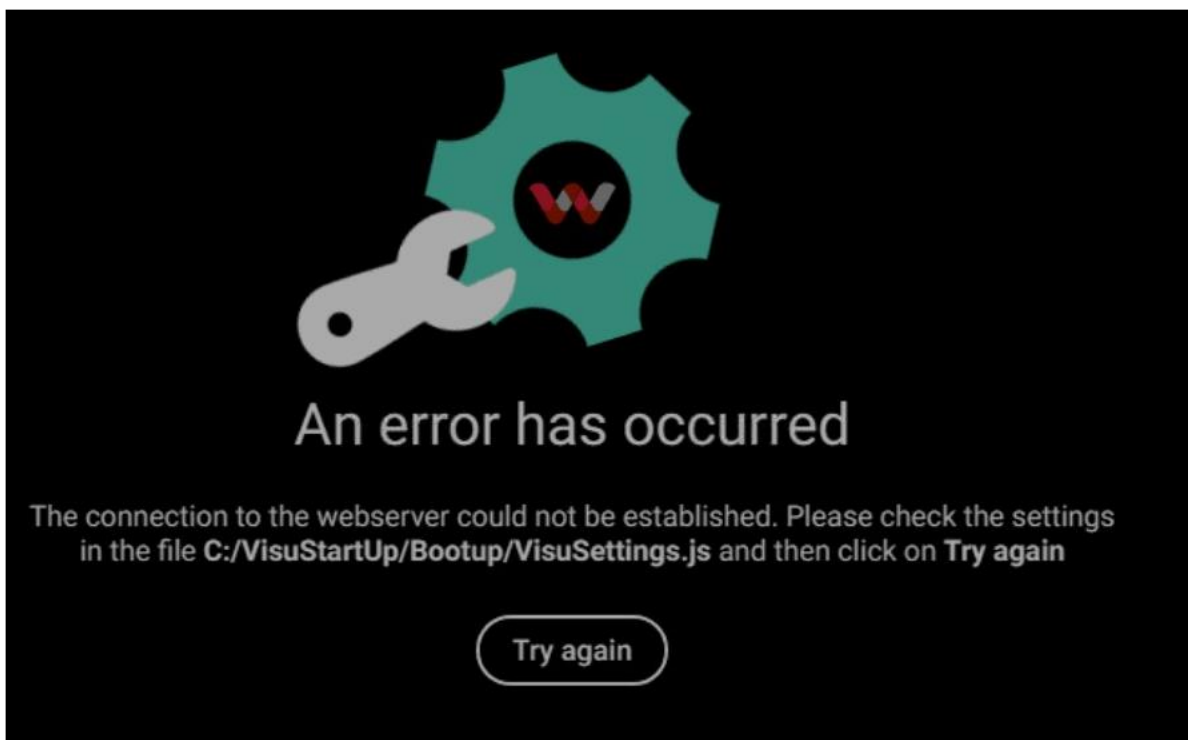
For the easier copying process of all data, it is recommended to use a USB keyboard or also a USB mouse.

In this chapter you will find checklist how to proceed with problems

2.1 Boot Problems: IMC500 does not boot up

2.2 Not possible to install via USB stick

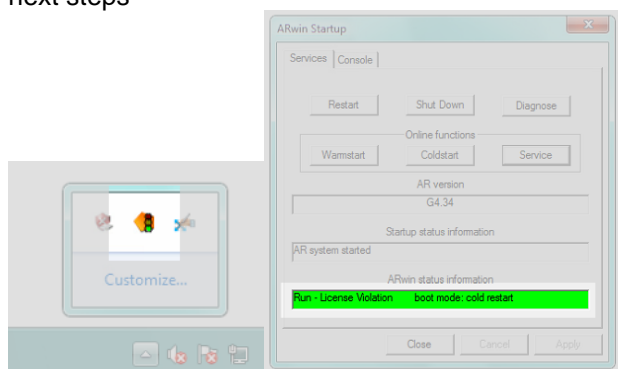
2.1. Boot Problem



Step 1

Check ARwin RUN Mode

Automation Runtime ARwin must be in RUN mode. If not, wait some minutes until boot process has been finished. If ARwin remains in Error or Service Status (Red or Yellow state) then proceed with next steps



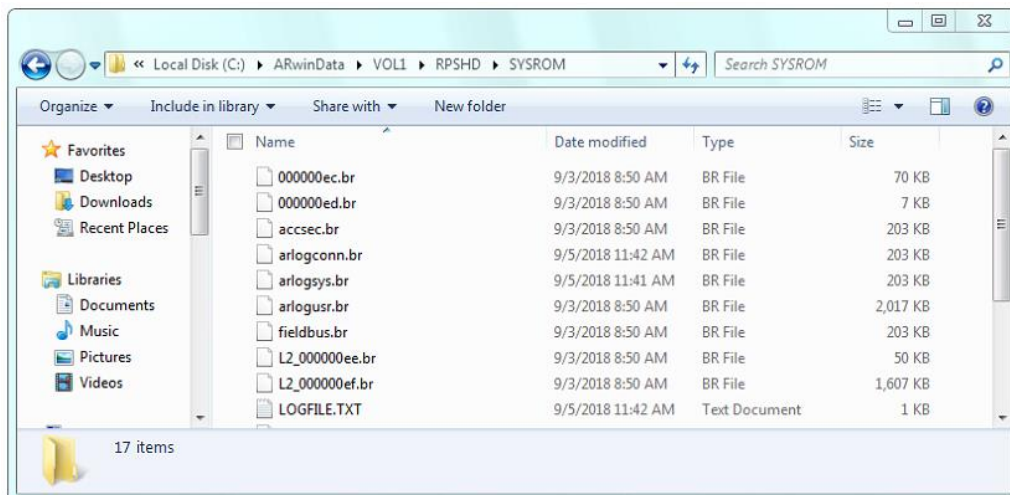


Step 2

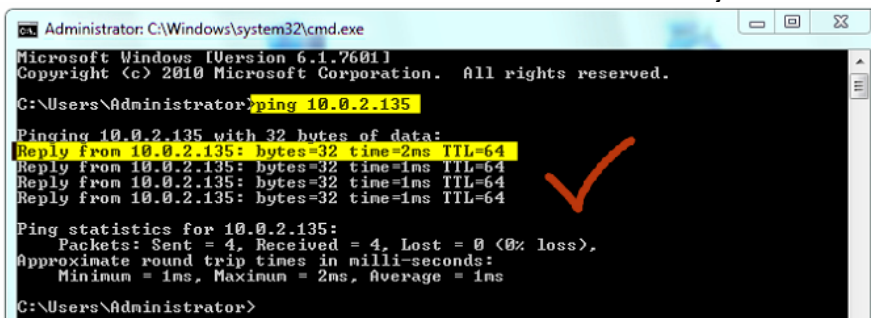
If ARwin is NOT in RUN Mode

Automation Runtime ARwin must be in RUN mode. If not, wait some minutes until boot process has been finished. If ARwin remains in Error or Service Status (Red or Yellow state) then proceed with next steps

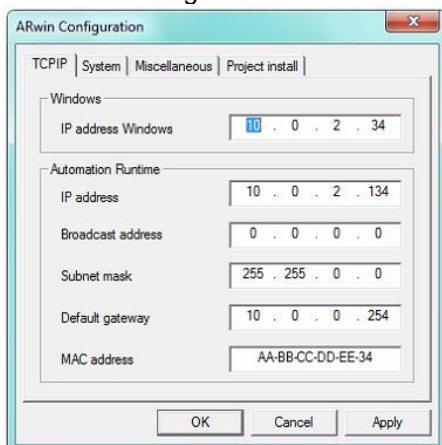
- Press Warm Start Button in ARwin Startup Screen.
- Press Cold Start Button in ARwin Startup Screen
- Check X20 Input and Output Modules if any card is in error state
- Save Logbook to Woojin Technician. Logbook is located in folder “C:\AR-winData\VOL1\RPSHD\SYSTEM”. It contains all information why machine is not in RUN Mode.



- Only correct network settings ensure correct machine operation. Open command line editor (Windows Start button – search for cmd) and ping Automation Runtime IP-Address. Also connect any PC to Ethernet Slot to machine and try to ping Windows IP and Automation Runtime IP. Please make sure the PC is in the same network as the injection moulding machine.



Actual IP Settings can be found in ARwin Configurator





Step 3

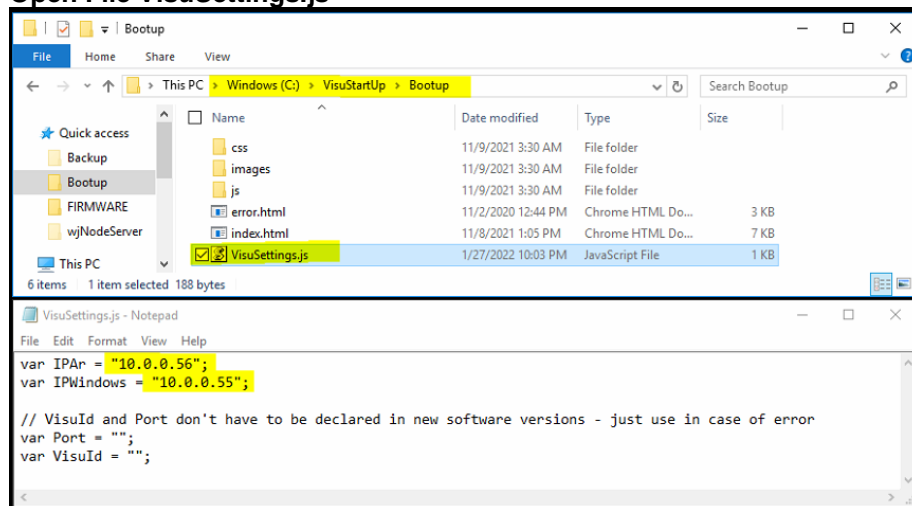
If ARwin is in RUN Mode, check IMC500 configuration and IP settings

IP addresses, Port-Settings and VisuID settings must be set correct

Only one image for all A5 machines series exists, so IMC500 configuration settings must be adjusted after CFast card replacement

Image Version >= IMC.500.011

Open File VisuSettings.js



DL-A5 Project Settings

Var Port = "81"
Var VisuId = "Woojin_24inch"

TH-A5 Project Settings

Var Port = "82"
Var VisuId = "Woojin_18inch"

TE-A5 Project Settings

Var Port = "83"
Var VisuId = "Woojin_18inch"

Image Version < IMC.500.011

Open File VisuSettings.js

index.html / Location: C:\VisuStartUp\Bootup\

```

15
16      /* SETTINGS FOR REDIRECT TO VISUALIZATION */
17      var redirTime = "170000";
18      var redirTimeUpdate = "1000000";
19      var IP = "10.0.2.140";
20      var PORT = "81";
21      var VisuId = "Woojin_24inch";
22

```

indexDIR.html / Location: C:\VisuStartUp\Bootup\

```

/* SETTINGS FOR REDIRECT TO VISUALIZATION */
var redirTime = "5000";
var redirTimeUpdate = "5000";
var IP = "10.0.2.140";
var PORT = "81";
var VisuId = "Woojin_24inch";

```

DL-A5 Project Settings

Var PORT = "81"
Var VisuId = "Woojin_24inch"

TH-A5 Project Settings

Var PORT = "82"
Var VisuId = "Woojin_18inch"

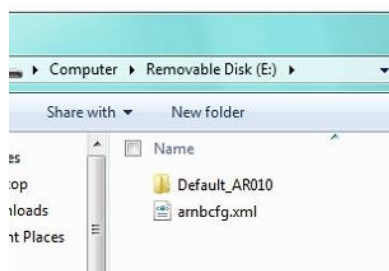
TE-A5 Project Settings

Var PORT = "83"
Var VisuId = "Woojin_18inch"

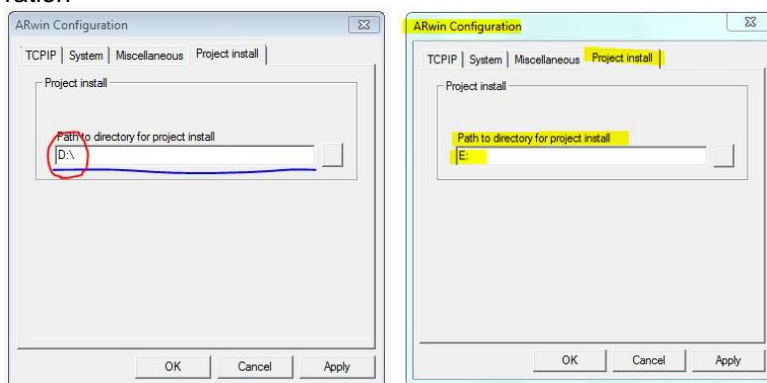
2.2. Firmware Update does not start from USB Stick



→ Check if USB contains file as shown on the next screenshot



→ Check if USB Stick is connected as drive D or E. Adjust the path to directory for project install in ARwin Configurator tool. Detailed information can be found in chapter ARwin Configuration



3. Network Settings



Never install additional software to enable connection to the Internet (e.g. USB WIFI adapter). This usually compromises the communication between Windows and the PLC, and the operation of the injection molding machine can no longer be guaranteed properly.

If an external Internet connection is to be established, use ETH2 port (customer network, or WIFI Ethernet client and smartphone hotspot) or USB tethering from smartphone)



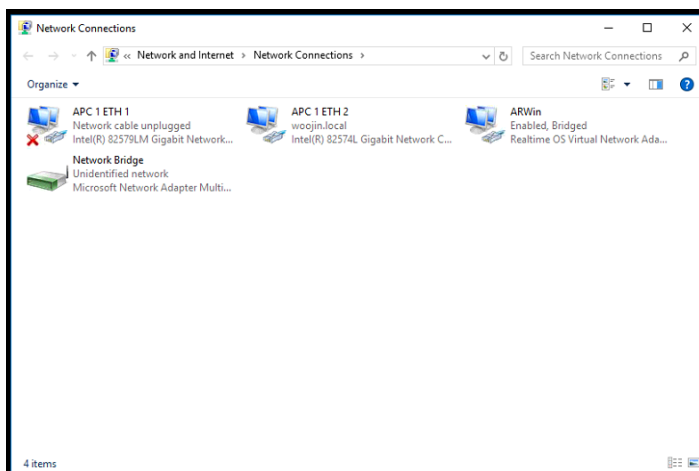
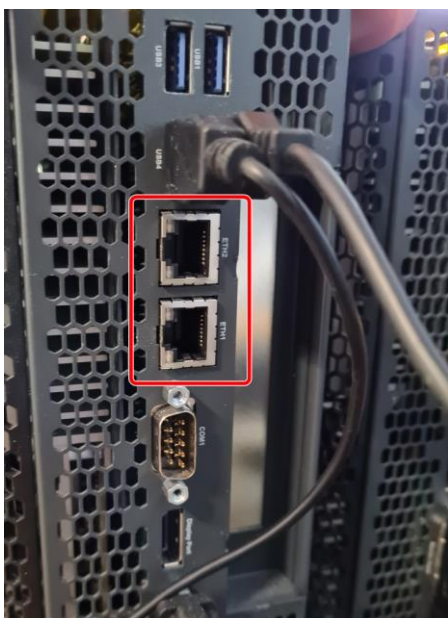
Two static IP-Adresses are needed for every Woojin Injection Moulding Machine with IMC500 control unit.

- Windows Operating System
- PLC System

3.1. General Description

Two ethernet adapters are available for IMC500 system.

- **ETH1** – generally reserved to communicate to PLC (e.g. OPC-UA connection to MES system)
- **ETH2** – generally reserved to connect IMC500 to internet (e.g. remote support via teamviewer)



ETH1: Static IP Address required
ETH2: Automatic IP Address via DHCP Server
ARwin, Virtual Network Adapter: PLC Ethernet Adapter
Network Bridge: Connect Windows System with PLC System

3.2. Remote Teamviewer Support



Step 1

Establish access to internet

Woojin Austria suggests to use WIFI client to provide internet connection – or USB Tethering from Smartphone.

Type Name: TP-Link TL-WR802N N300 WLAN Nano Router (Price Amazon app. 20 Euro)



Please find video tutorial how to setup TP-Link TL-WR802N with IMC500 controller.

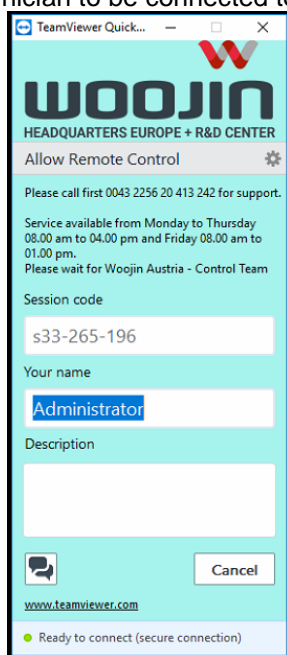
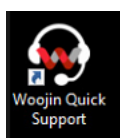
https://www.youtube.com/watch?v=jOPUEBlkBjA&ab_channel=WoojinPlaimm



Step 2

Start Teamviewer

On Desktop you will find Teamviewer Quick Support Button. After that, you just have to wait for a Woojin technician to be connected to the injection molding machine.



3.3. Change of IMC500 IP Address / IMC500 configuration settings

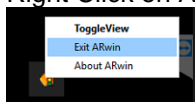


IP addresses are pre-configured - and allow operation without connection to the customer's network.
If the machine should be integrated into the customer's network (e.g. to enable data exchange) - the customer must provide 2 static IP addresses for each injection molding machine.



Step 1

Return to Windows System, and close ARwin service
Right Click on ARwin Symbol – near Windows Clock



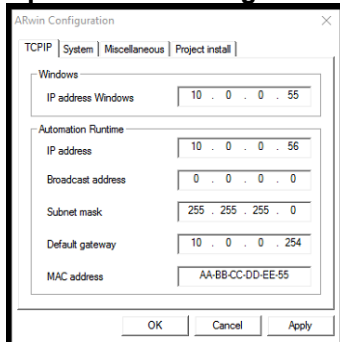
Step 2

Open Windows Adapter Settings in Control Panel and delete Network Bridge



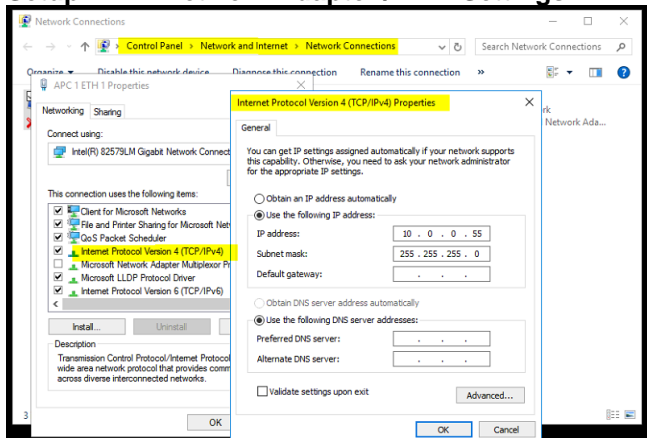
Step 3

Open ARwin Configurator – and setup IP Addresses for Windows and PLC System



Step 4

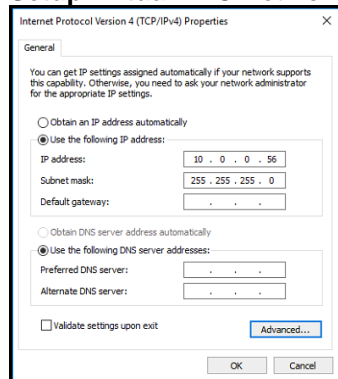
Setup ETH1 Network Adapter / IPv4 Settings





Step 5

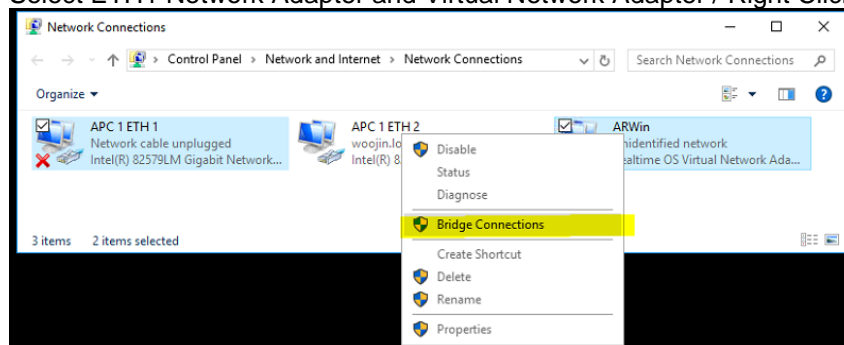
Setup Virtual PLC Network Adapter / IPv4 Settings



Step 6

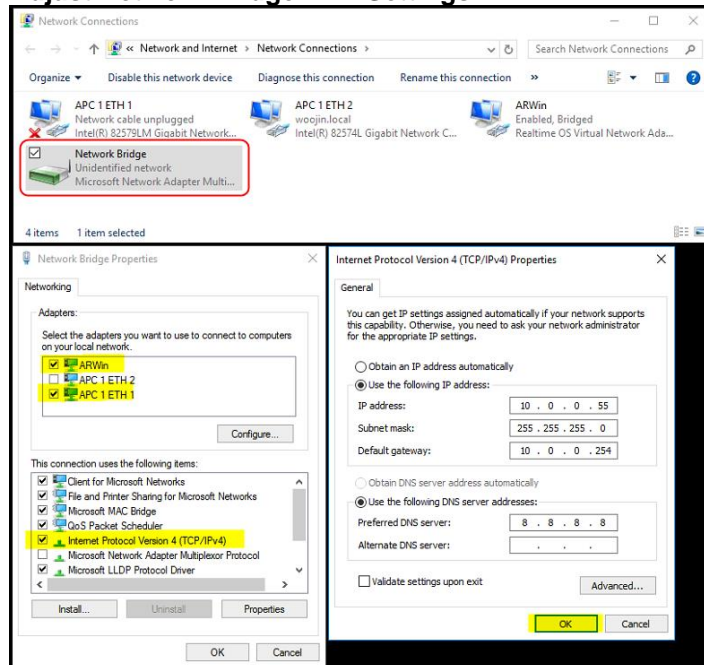
Create Network Bridge

Select ETH1 Network Adapter and Virtual Network Adapter / Right Click / Bridge Connections



Step 7

Adjust Network Bridge IPv4 Settings





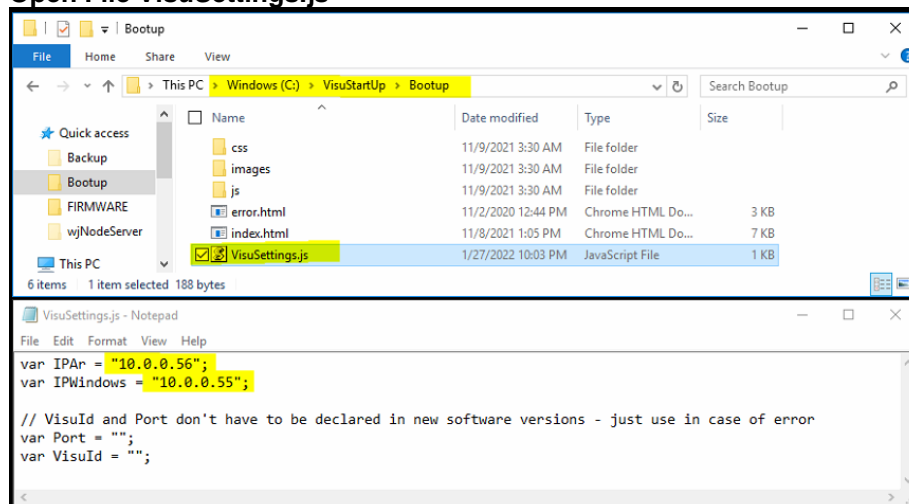
Step 8

Adjust IMC500 configuration files

Only one image for all A5 machines series exists, so IMC500 configuration settings must be adjusted after CFast card replacement

Image Version >= IMC.500.011

Open File VisuSettings.js



DL-A5 Project Settings

Var Port = "81"
Var VisuId = "Woojin_24inch"

TH-A5 Project Settings

Var Port = "82"
Var VisuId = "Woojin_18inch"

TE-A5 Project Settings

Var Port = "83"
Var VisuId = "Woojin_18inch"

Image Version < IMC.500.011

Open File VisuSettings.js

index.html / Location: C:\VisuStartUp\Bootup\

```

15
16      /* SETTINGS FOR REDIRECT TO VISUALIZATION */
17      var redirTime = "170000";
18      var redirTimeUpdate = "10000000";
19      var IP = "10.0.2.140";
20      var PORT = "81";
21      var VisuId = "Woojin_24inch";
22

```

indexDIR.html / Location: C:\VisuStartUp\Bootup\

```

/* SETTINGS FOR REDIRECT TO VISUALIZATION */
var redirTime = "5000";
var redirTimeUpdate = "5000";
var IP = "10.0.2.140";
var PORT = "81";
var VisuId = "Woojin_24inch";

```

DL-A5 Project Settings

Var PORT = "81"
Var VisuId = "Woojin_24inch"

TH-A5 Project Settings

Var PORT = "82"
Var VisuId = "Woojin_18inch"

TE-A5 Project Settings

Var PORT = "83"
Var VisuId = "Woojin_18inch"

4. Maintenance

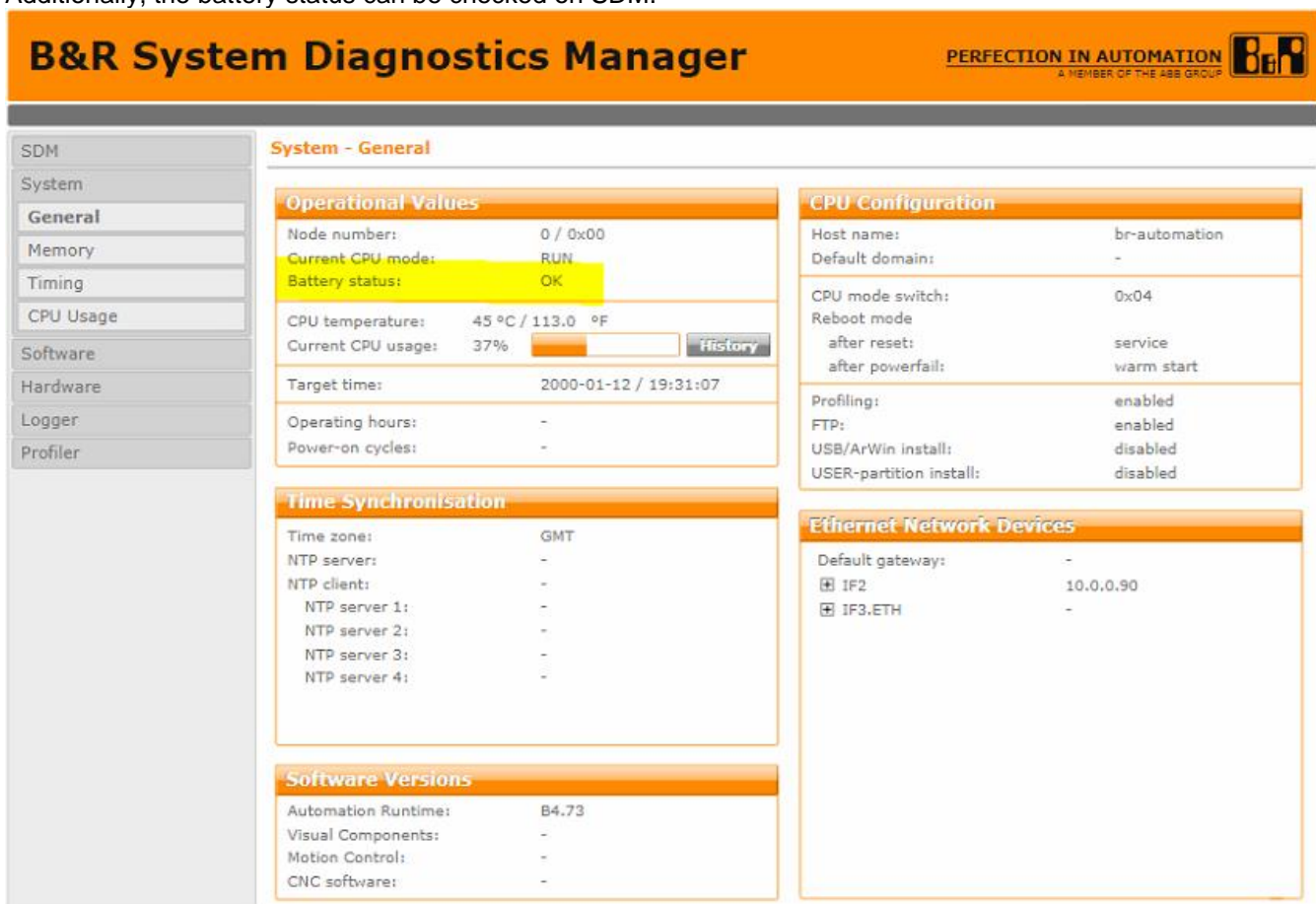
4.1. APC910 / Evaluating the battery status


The status of the battery is determined immediately after the device is started and subsequently checked by the system every 24 hours. During this measurement, the battery is subjected to a brief load (approximately 1 second) and then evaluated. Once determined, the battery status is displayed in BIOS (Advanced - OEM features - System board features - Voltage values) and in the B&R Control Center (ADI driver); it can also be read in a customer application using the ADI library.

Check on maintenance page the battery status

PLC info	
Battery Status	Battery OK
Operating Hours	0
CPU Temperature °C	0
Board Temperatur °C	0

Additionally, the battery status can be checked on SDM.



B&R System Diagnostics Manager PERFECTION IN AUTOMATION
A MEMBER OF THE ABB GROUP 

System - General

Operational Values	
Node number:	0 / 0x00
Current CPU mode:	RUN
Battery status:	OK
CPU temperature:	45 °C / 113.0 °F
Current CPU usage:	37% <input type="text"/> <input type="button" value="History"/>
Target time:	2000-01-12 / 19:31:07
Operating hours:	-
Power-on cycles:	-

Time Synchronisation	
Time zone:	GMT
NTP server:	-
NTP client:	-
NTP server 1:	-
NTP server 2:	-
NTP server 3:	-
NTP server 4:	-

Software Versions	
Automation Runtime:	B4.73
Visual Components:	-
Motion Control:	-
CNC software:	-

CPU Configuration	
Host name:	br-automation
Default domain:	-
CPU mode switch:	0x04
Reboot mode	
after reset:	service
after powerfail:	warm start
Profiling:	enabled
FTP:	enabled
USB/ArWin install:	disabled
USER-partition install:	disabled

Ethernet Network Devices	
Default gateway:	-
<input checked="" type="checkbox"/> IF2	10.0.0.90
<input checked="" type="checkbox"/> IF3.ETH	-

4.2. APC910 / Replacing the battery



The product design allows the battery to be changed with the B&R device switched either on or off.

In some countries, safety regulations do not allow batteries to be changed while the module is switched on.



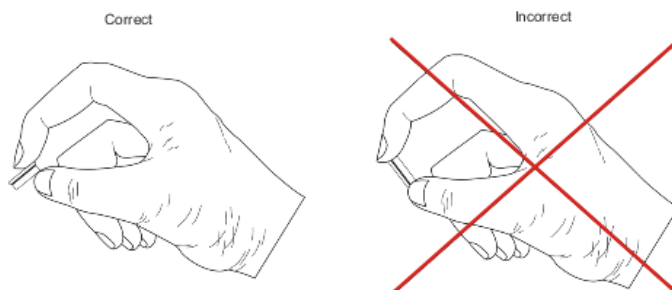
Any BIOS settings that have been made will remain when the battery is changed with the power turned off (stored in nonvolatile EEPROM). The date and time must be reset later since this data is lost when the battery is changed.



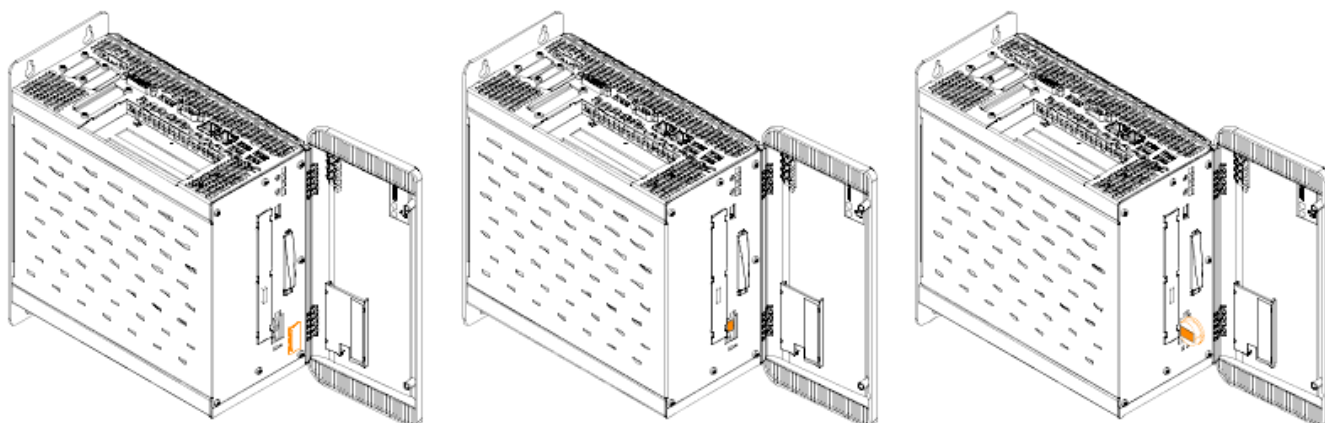
The battery is only permitted to be replaced by a Renata CR2477N battery. The use of another battery may present a risk of fire or explosion.

The battery may explode if handled improperly. Do not recharge, disassemble or dispose of in fire.

- Disconnect the power supply to the B&R Industrial PC.
- Touch the housing or ground connection in order to discharge any electrostatic charge from your body.
- Remove the cover from the battery compartment and carefully pull out the battery using the removal strip.
- The battery should not be held by its edges. Insulated tweezers may also be used to insert the battery.



- Insert the new battery with the correct polarity.



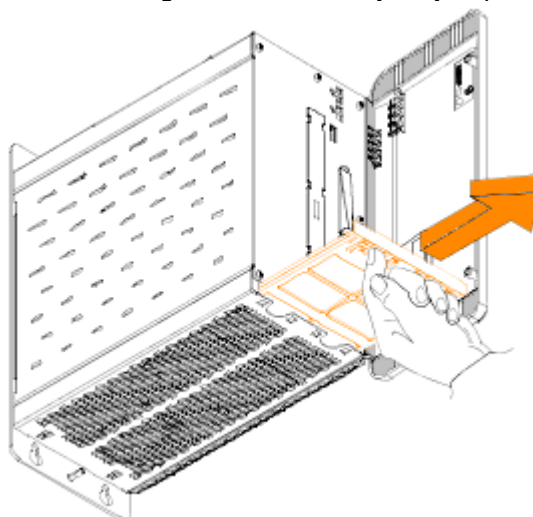
- To make the next battery replacement easier, be sure the removal strip is in place when inserting the battery.
- Reconnect the power supply to the B&R Industrial PC (plug in the power cable).
- Reset the date and time in BIOS.



Lithium batteries are considered hazardous waste. Used batteries should be disposed of in accordance with applicable local regulations.

4.3. APC910 / Replacing fan filters

- Disconnect the power supply to the B&R Industrial PC.
- Touch the housing or ground connection in order to discharge any electrostatic charge from your body.
- Open the front cover.
- To remove the fan filter from the B&R Industrial PC, push up on the locking mechanism while pulling the fan filter outward. The number of locking mechanisms may vary depending on the system unit.



5. Commissioning

5.1. Enable Screw Protection



Screw Protection is important for screw safety. Please check if it is enabled in FIX area.

Open Heating Fix Page 1:

5.2. Enable SQL Table

Parameter	Value
07A005 - Aut. Cycle Start/Interrupt	0
07A002 - Energy Report	0
07A003 - Advanced Energy Report	0
07A020 - Additional Panel	1
07A030 - Injection Startup Parameter	0
07A040 - External Error Input	0
07A075 - Conveyor Belt	1
07A076 - Bidirectional Conveyor Belt	0
07A080 - Fluid Injection	0
07A090 - Enable Intrusion	0
07A102 - Woonjin 4.0 SPC Export	0
07A104 - Network REC_DATA	0
07A106 - SPC Quality Table SQL DB	1
07A107 - Machine Data Web Access	0
07A140 - Automatic Signal	0
07A225 - Evikon Interface	0
07A230 - Dosage Unit	0
07A320 - Pre Injection	0

5.3. Checking FIX data



In case of software update, where the old version is older than the new update, it is possible that some FIX values have been moved to a new structure and might not be loaded with the old FIX_DATA file. For this reason, it is important to double check if all the customer specific options are enabled, and in case of changes to save/overwrite the FIX_DATA file.

Some examples of such changes are:

- Core option settings
- Lubrication settings
- Euromap 67 – Robot interface
- Automatic Swiveling
- Injection Gate
- Shutoff Nozzle
- QDC

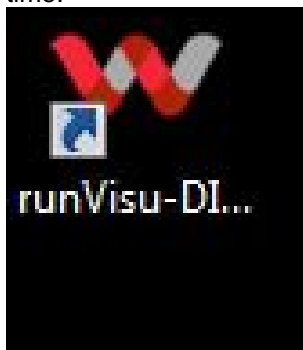
6. IMC500/IMC501 Startup

6.1. Manual Start of IMC500 from Windows 7



Check first if ARwin is in RUN Modus (green Status) before launch runVisu-DIRECT.bat on Desktop.

Launch Batch File “runVisu-DIRECT.bat”, which is located on the Desktop. IMC500 Controller starts without delay time.



7. CFast Card Image



To create CFast Image Backup a you need

- CFast Card Reader,
- and app. 10GB free ROM space on your PC.



You need Admin rights to create and recovery images.



CFast Card size need to be 32GB!



For each firmware installation at least the ARwinData folder should be saved. In some cases it may be advisable to back up the entire CFast card.



Image Program can be downloaded here: HDD Raw Copy.exe

<https://we.tl/t-dgVfGjNR3e>

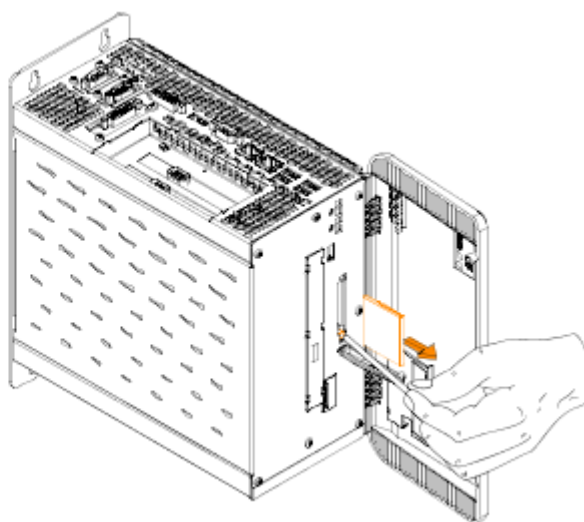
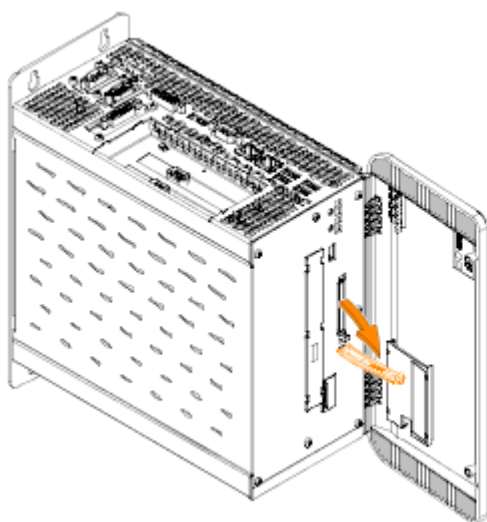
It is freeware and portable (can be used without installation)



An initial image of CFast Card can be download here:

<https://we.tl/t-9qEH0Bnmcr>

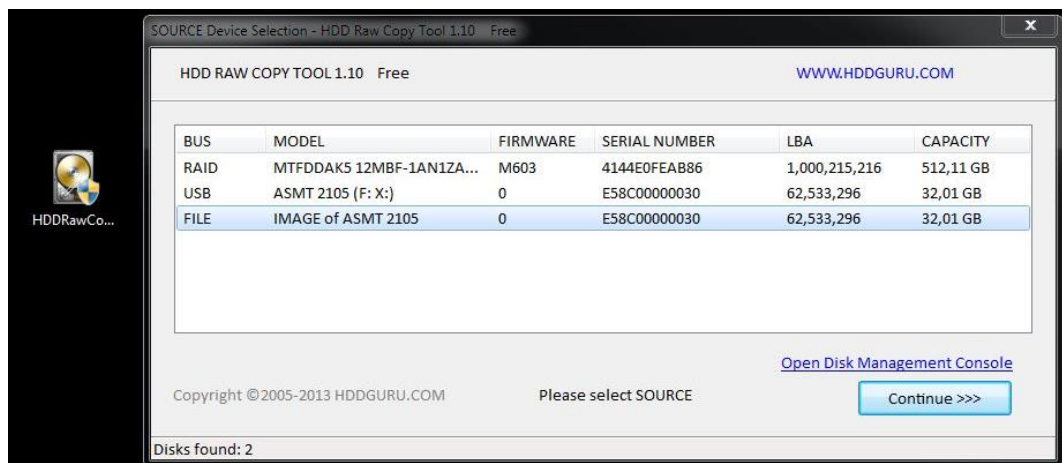
The CFast card can be exchanged quickly and easily by pressing the ejector (see image) with a pointed object such as a pen.



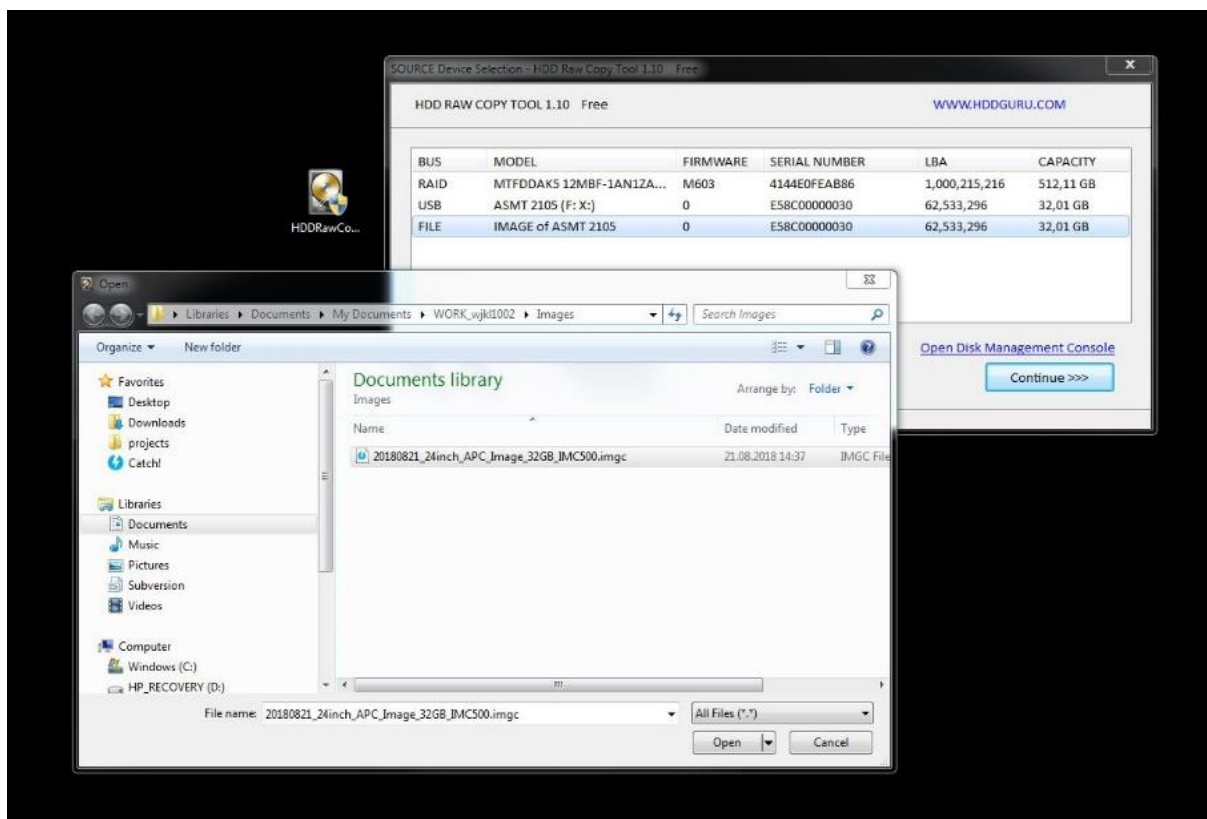
7.1. CFast Image recovery



Open program HDD Raw Copy.exe.



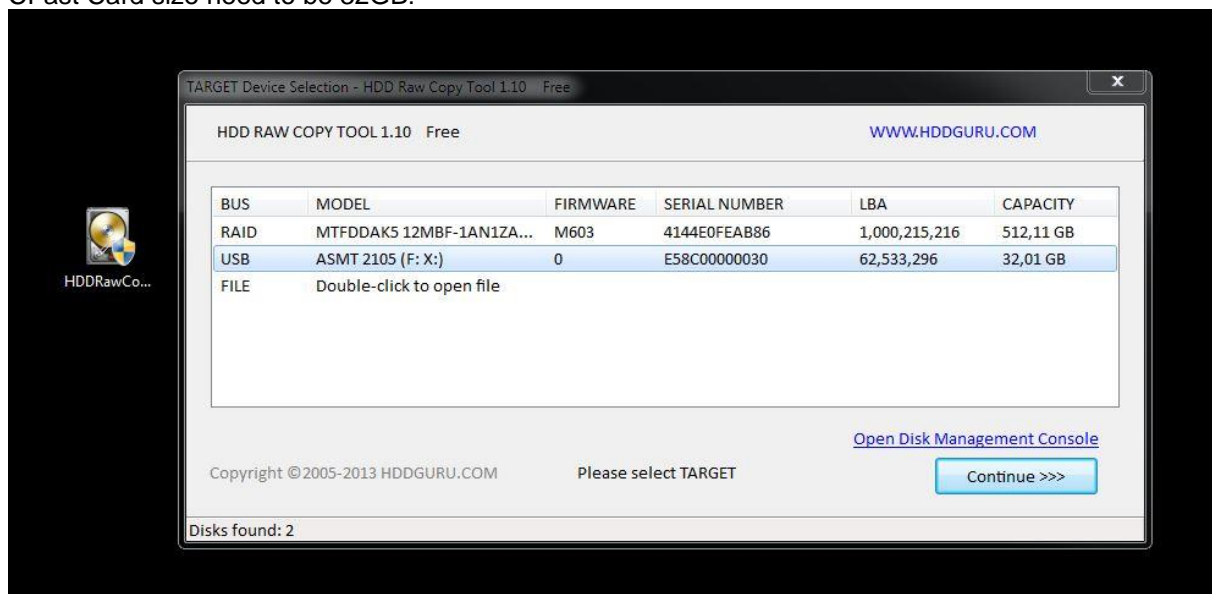
You need to select option **FILE** as **SOURCE Device selection**



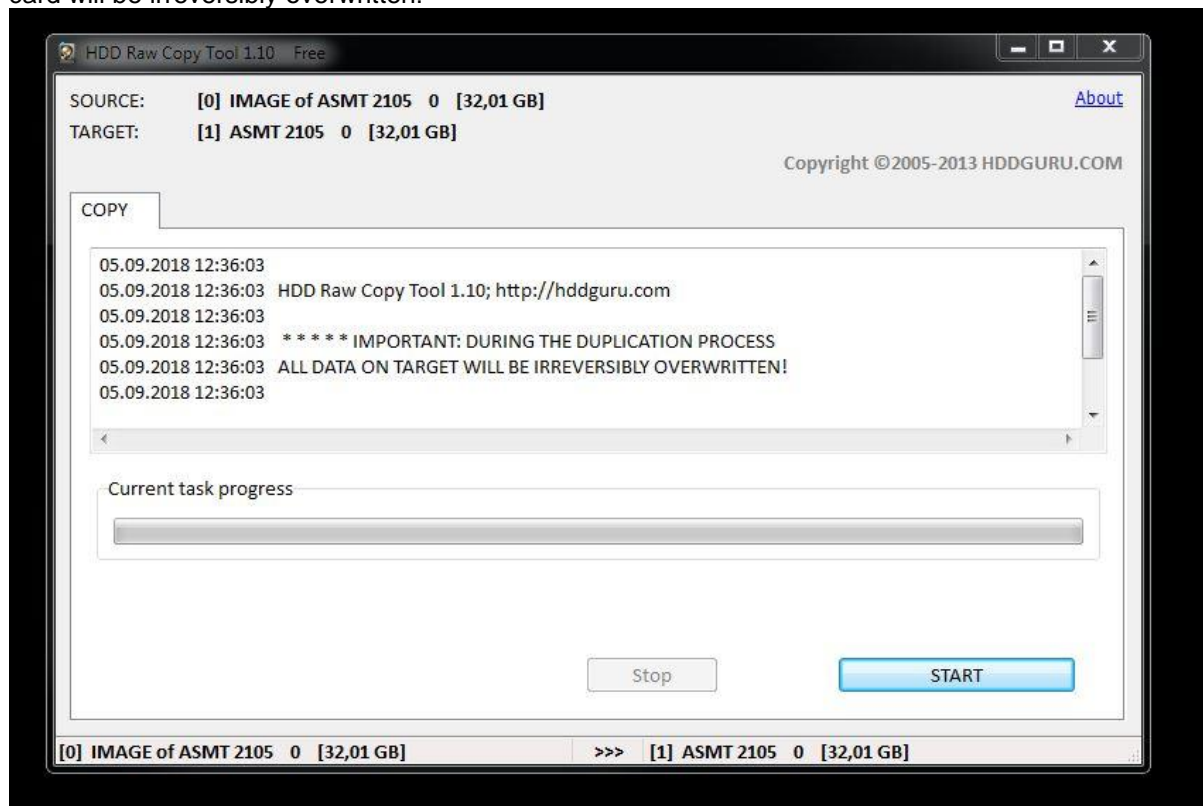
After selection of Image File, confirm selection with "CONTINUE" button.



In the next step the TARGET (CFast Card in f.e. Card Reader) has to be selected. CFAST Card size need to be 32GB!

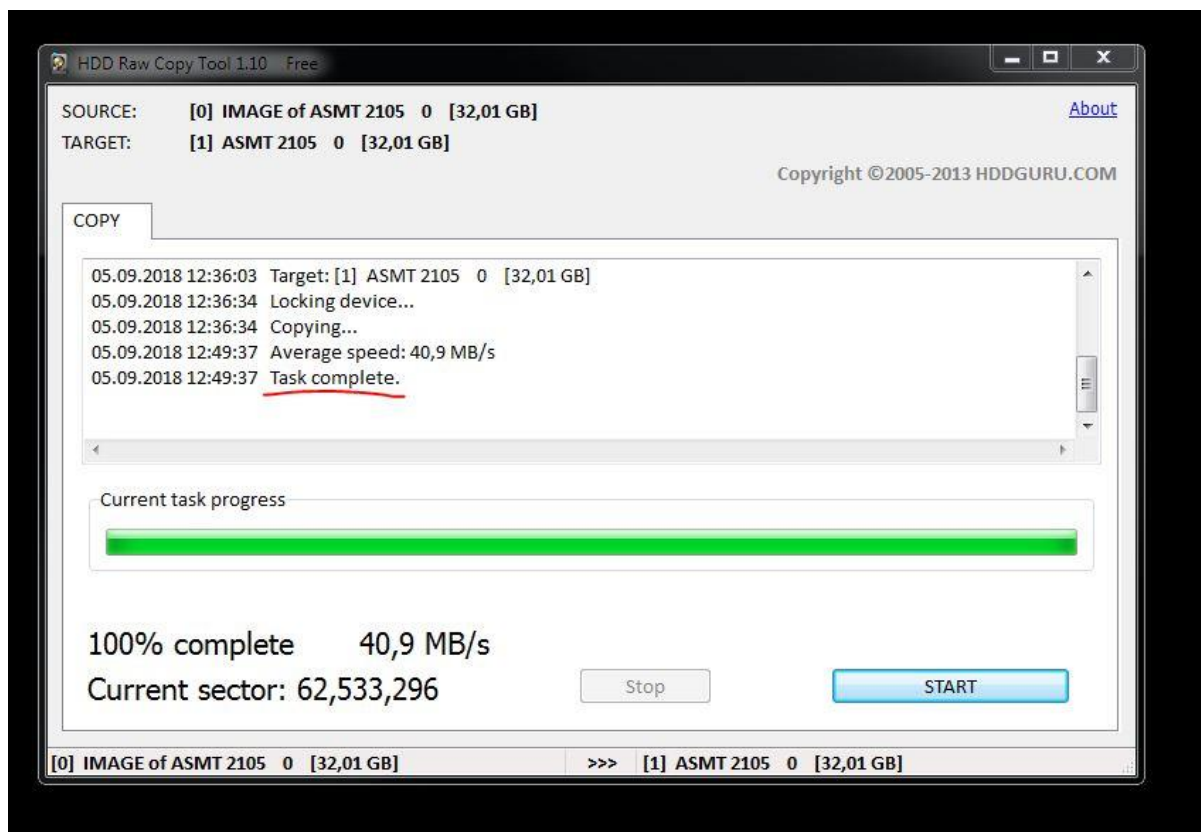


Press Start Button to start CFAST Recovery Process. Please note that everything from the target cfast card will be irreversibly overwritten!





Wait until message "Task complete" is displayed. (app. 15 Minutes)



Only one image for all A5 machines series exists, so IMC500 configuration settings must be adjusted after CFast card replacement

Check [Chapter 3.3 Change of IMC500 IP Address / IMC500 configuration settings on page 23](#) how to setup IP address and IMC500 configuration settings.

7.2. CFast Image Creation

Same procedure as “CFast Image Recovery”, but you need to select **CFast Device** as **SOURCE Device selection**, and a **FILE** as **TARGET Device Selection**.

8. TEA5 Series

8.1. Greasing Settings



If lubrication times are selected too short, the lubrication pressure cannot build up and unintended lubrication alarms are displayed.

WOOJIN PLAIMM Alarm Product Info SIM_TE Manual Mode Language WJ 2021-03-08 08:02

Greasing

Lubrication

Enable Toggle Part Lubrication

Lubrication Cycle 18057 2000

Lubrication Time s 0 s 300

Lubrication Pump Output

Lubrication oil level

Enable Clamp-Injection Greasing

Clamp

Lubrication Cycle 18057 600

Lubrication Time s 0 s 40

Injection

Lubrication Cycle 18057 4000

Lubrication Time s 0 s 300

Grease Pump Output

Grease distributor

Manual Greasing Mode Mold Part

Injection

200.0 mm

0.0 mm

0.0 mm

250.0 bar

0.0 bar

3.5 s

0.0 rpm

0.0 bar

1 2 3 4

5 6

Cycle Time 40.9 s

Cooling Time 0.0 s

Shift Counter

Bad 0

Good 0

Total Counter

Bad 0

Good 0

Barrel

Clamp Motor

mSet 0 %

mAct 0 %

nSet 0 rpm

Status

WOOJIN Greasing

Warning icon

8.2. Axis Calibration



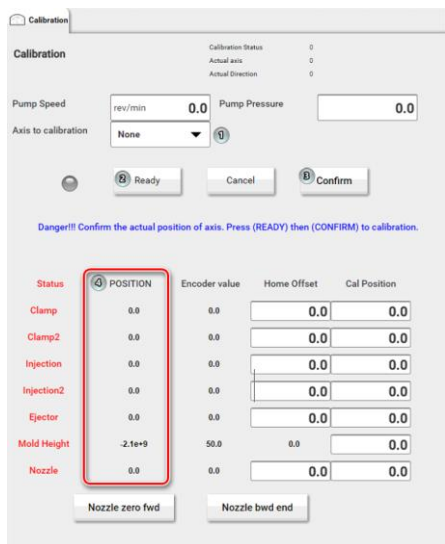
The calibration process must be carried out when the belt tension is adjusted, or the belt has slipped due to various causes.



The calibration result is stored in the FIX data. So after calibration is done, create new FIX data set.




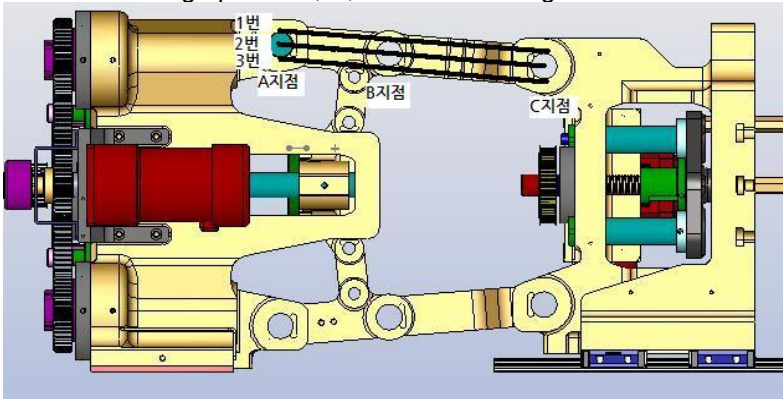





In any case, injection calibration must be carried on only if the barrel temperature has reached!








	<p>Select in dropdown listbox the axis you want to calibrate. Move the axis to zero position with axis movement buttons in the black footer area.</p>
	<p>Alternative approach: You can adjust calibration position manually. e.g. type 10mm, if axis is actual at the position 10mm.</p>
	<p>Press Ready Button for calibration. Check that the LED next to Ready Button is on.</p>
	<p>Press Confirmation Button</p>
	<p>Check if the values has modified by the calibration process.</p>






8.2.1.Clamp Calibration

	<p>Ensure that the mold is removed or that the mold height is moved to the rear end position to allow the toggle to be fully extended. In no cases the height of the mold or sliders on the mould should prevent the calibration process to fully stretch to toggle. In this case the calibration process will fail.</p>
	<p>Go to "Calibration Page", and press "Button for closing the mould". Stopp when toggle is stretched.</p>  <p>Align points A, B, and C in a straight line.</p>  <p>Check also the gap. In front position the crosshead should not be in mechanical end position and touch the frame.</p> 
	<p>When correct gap is adjusted, press button "Ready" and then "Confirm" to overtake new position.</p>
	<p>Safe new FIX data set.</p>

8.2.2. Injection Unit

	<p>Ensure that the barrel temperature is already reached. Moving with cold barrel will damage the screw and barrel cylinder.</p>
	<p>Press the “Inject button” to move the injection position in front position.</p> 
	<p>Check if the position is 0 at the screen.</p>
	<p>Safe new FIX data set.</p>

8.2.3. Ejector Unit

	<p>Ensure that ejector is not coupled to mould ejector.</p>
	<p>Press the “Ejector button backward” to move the injection position in front position.</p> 
	<p>Check if the position is 0 at the screen.</p>
	<p>Safe new FIX data set.</p>

8.3. PID Controller Setting

ToDo

8.4. Limitation

ToDo

9. Woojin Internal Information

9.1. IMC500 / IMC501 System Overview

9.1.1. Windows 7

Windows 7 is the operating system. It is started automatically after the machine has been started.

9.1.2. Google Chrome Browser

The Google Chrome Browser is launched in full screen mode, and is the central element of our injection moulding visualization.

9.1.3. ARwin Configurator

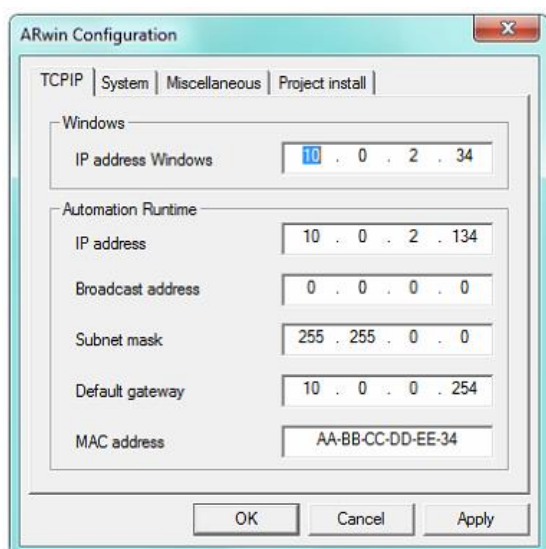
The ARwin Configuration tool is the central program for adjusting Automation Runtime settings (IP addresses, memory,...) Normally the Automation Runtime ARwin must be terminated before changes to these system settings can be made.

Open **ARwin Configurator** (Windows Start Button, Click on ARwin Configurator) and set

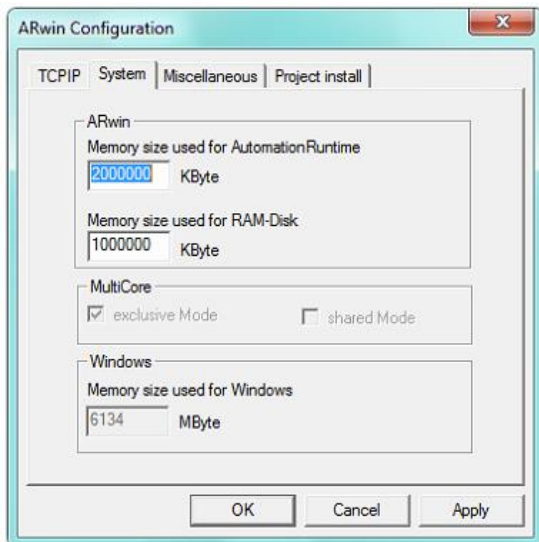
- IP-Address
- Subnet mask
- MAC Address
- Default Gateway and
- Memory

For **Windows** and **Automation Runtime** adjust IP Addresses according to the previous settings

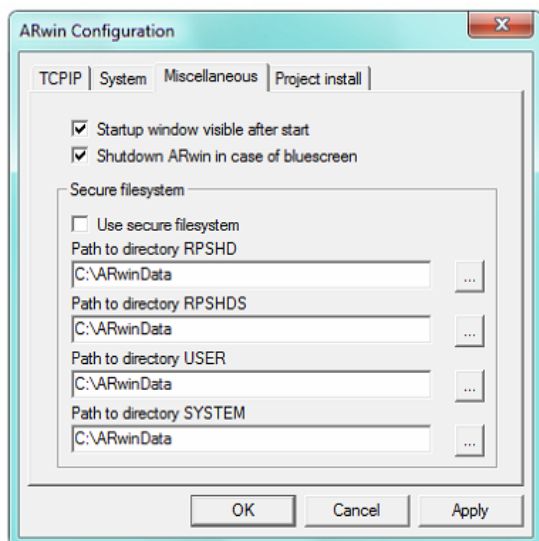
Please note: Also MAC address must be unique within the whole LAN. Shared MAC addresses lead to an unstable connection to Windows Runtime Systems.



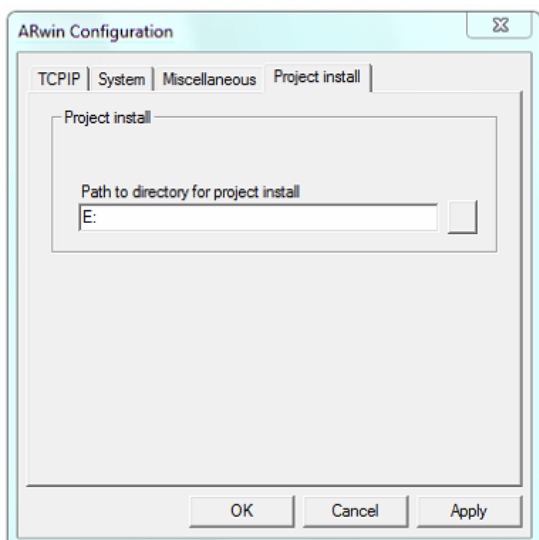
In this tab the memory can be adjusted. In general the values should not be changed.



Tab "Filesystem" must be adjusted as shown on next screen.



On this tab the path for project install must be adjusted.



9.1.4. Batch Files

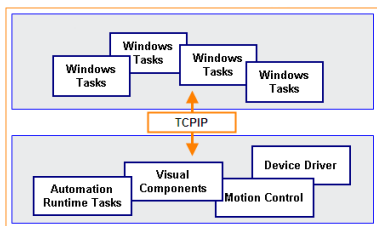
The Google Chrome Browser is never started directly, it is started via batch files. Batch files can execute multiple commands with one single command. Therefore Batch files simplify the start of the Google Chrome browser.

- **wjStartup.bat**
This batch file is called via Windows Autostart and load other Batch Files.
Located in C:\VisuStartUp
- **Run-Visu.bat**
This Batch File starts the Google Chrome Browser and waits until the PLC has been started and the Drive System is intitalized.
Located in C:\VisuStartUp
- **Run-Visu-DIREKT.bat**
This file is located as a reference on the Desktop, in the upper left area of the Desktop. It starts the IMC500 system without delay. This is sometimes needed for Service issue to restart Google Chrome Browser.
- **Run-Visu-DIREKT-debug.bat**
This Batch File starts the Google Chrome Browser not in full screen mode to be able to debug problems.

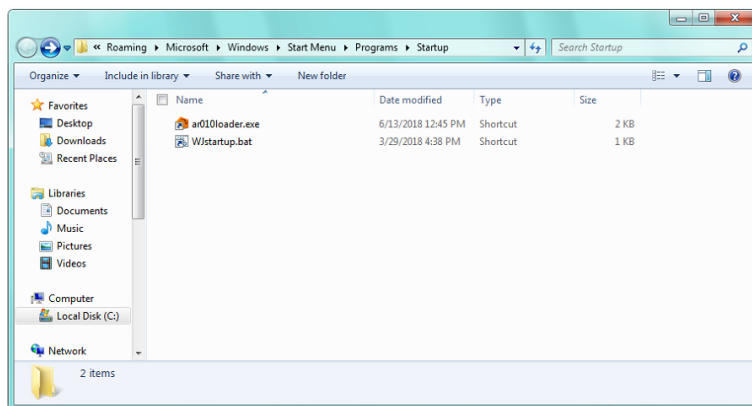
9.1.5. Automation Runtime ARwin

The Automation Runtime is the real-time operating system. In this environment, the machine cycle is processed time-critically. The Automation Runtime can simply be described as a Standard Windows program - but it has major impact on the Windows operating system. It is started automatically after Windows 7 has been started.

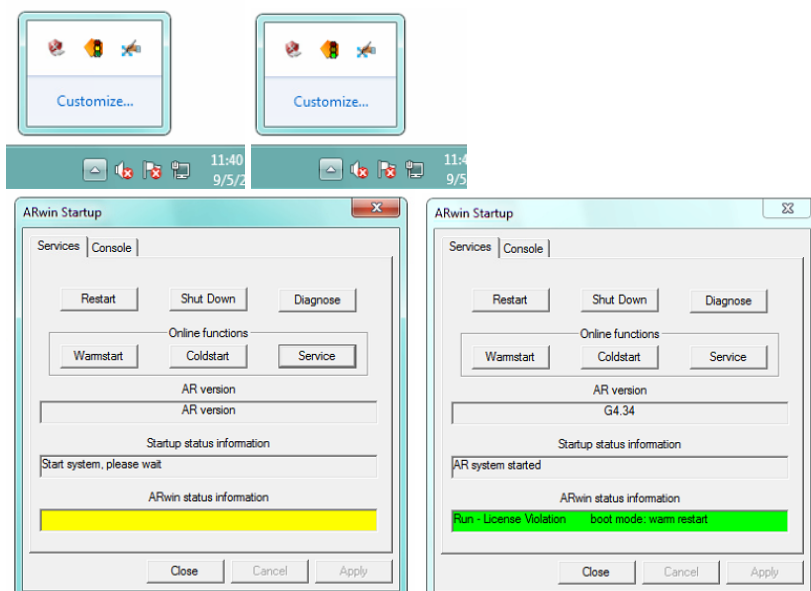
This real-time operating system imposes itself over the operating system on the computer, thereby taking total control of PC resources and handling the operating system as the lowest priority task within this real-time operating system.



ARwin is automatically started when the injection moulding machine is started. In the folder “C:\Users\Administrator\AppData\Roaming\Microsoft\Windows” you can find ar010loader.exe, which start ARwin as a Windows service.



Near the clock you can find ARWin Service. It should be highlighted in green.



It is possible to perform a Restart, Warmstart or Coldstart.

To close Automation Runtime ARwin you have to Right-Click on the Symbol and Press "Exit ARwin".

9.1.6. Network Bridge

Network bridge is necessary to enable communication between the two operating systems.

9.2. Linux

9.2.1. BIOS Settings

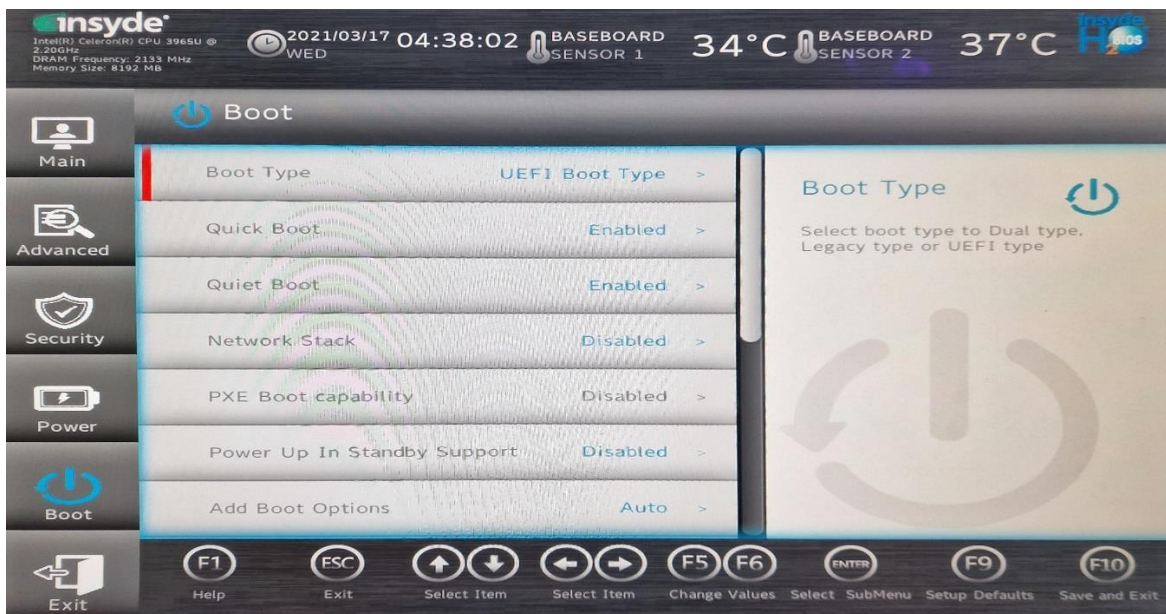
To successfully bootup Linux system, the bootup type must be changed to **UEFI Boot type**.

Following steps are required:

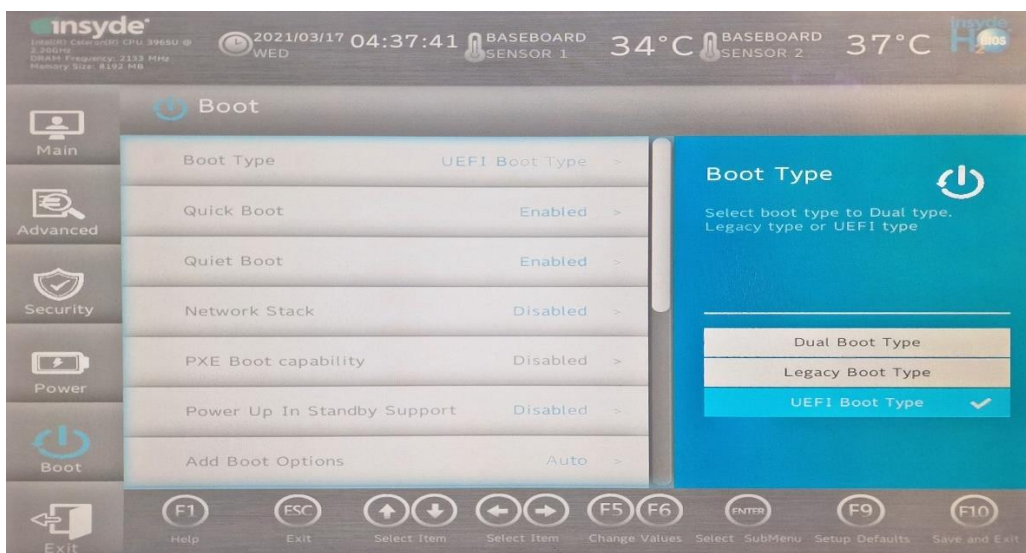
Press “**ESC**” when the pc is booting up to access bios. The screen should look like this:



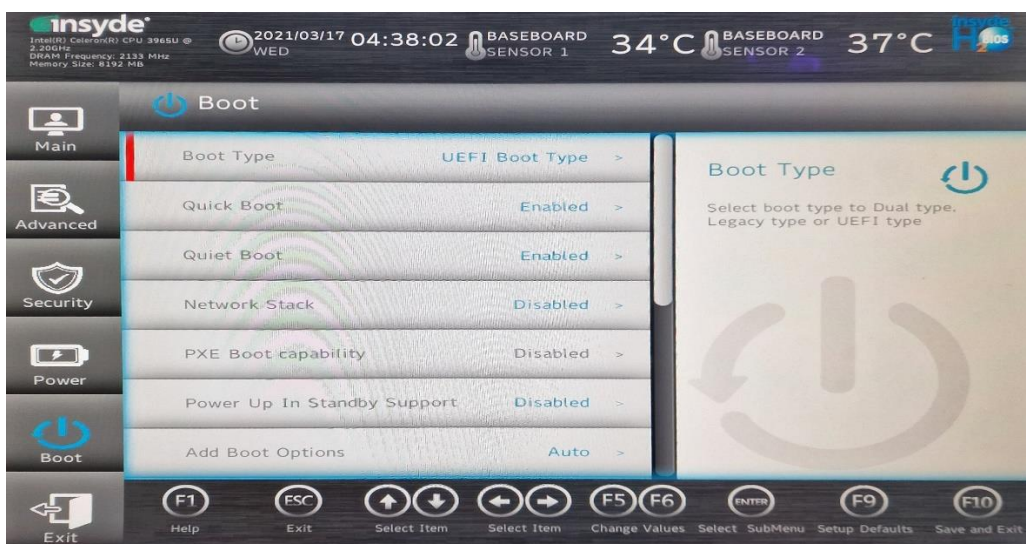
Press on “**Setup Utility**”. The screen should look like this:



On the left pane click “**Boot**”.



Then change the Boot Type to “UEFI Boot Type”.



After the change click on “Save and Exit” in the right corner of the page.



Confirm by clicking “Yes”. Now the Linux should boot up properly.

9.2.2. General Information

Linux **Debian 10** is our new operating system. It will automatically boot up with the machine.

On bootup different custom services are started, which include:

- **MariaDB Database:**
stores all data of the visu in different tables (alarm, uselog, spc)
service location: ***/etc/systemd/system/mysql.service***
- **Node.js Server:**
connection of the MariaDB with the visu
service location: ***/etc/systemd/system/wjNodeServer.service***
- **VisuStartUp:**
loading screen + visu opening when X20 is ready
service location: ***/etc/systemd/user/wjStartup.service***
- **wjStartUp:**
executes script located in ***/woojin/wjStartUp.sh***
used to set custom permissions + hide cursor when not moved etc.
service location: ***/etc/systemd/system/wjStartup.service***

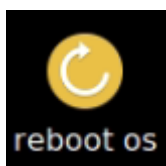
9.2.3. Operations

All available operations of visualization are located on the left side of the desktop:

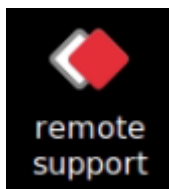
- **Start Visualization** with double click on following button:



- **Reboot Linux** with double click on following button:



- **Request Remote-Support** with double click on following button:



9.2.4. Configuration

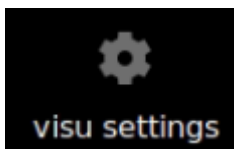
All settings to configure the visualization are located on the right side of the desktop:

9.2.4.1. Visu Settings

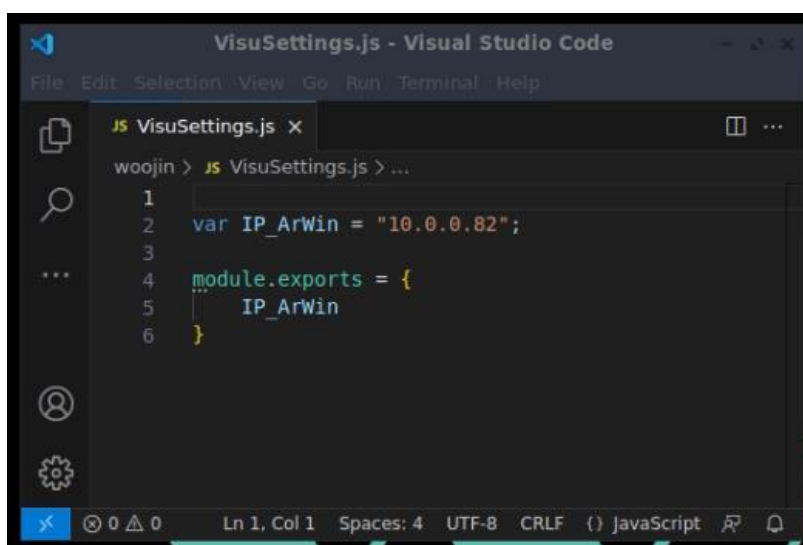
These settings are used to set the IP address of the X20 CPU to which the visu should connect.

To change the IP, do the following:

1. Double click the cog icon with the text “visu settings”



2. Change the IP address between the quotation marks.



```

VisuSettings.js - Visual Studio Code
File Edit Selection View Go Run Terminal Help
JS VisuSettings.js x
woojin > JS VisuSettings.js > ...
1
2 var IP_ArWin = "10.0.0.82";
3
4 module.exports = {
5   IP_ArWin
6 }
  
```

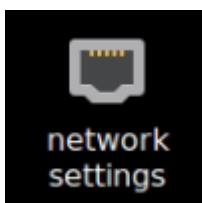
3. Save the file with Control + S and close the file.
4. Start Visu (Operations -> Start Visu) -> Done!

9.2.4.2. Network Settings

These settings are used to change the IP address of the current panel.

To change the IP, do the following:

1. Double click the cog icon with the text “visu settings”



2. Change the IP address after “address” entry.
If necessary, you can also adjust the “netmask” and the “gateway”.

```

etc > network > interfaces
1 source-directory /etc/network/interfaces.d
2
3 auto enp0s31f6
4 iface enp0s31f6 inet static
5 address 10.0.0.50
6 netmask 255.255.255.0
7 gateway 10.0.0.254
8 dns-nameservers 8.8.8.8
9
10 #restart after change
11

```

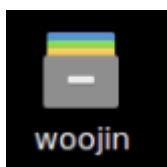
3. Save the file with Control + S and close the file.
4. To apply the changes, you must reboot the OS. (Operations -> Reboot Linux) -> Done!

9.2.4.3. Recipe Data

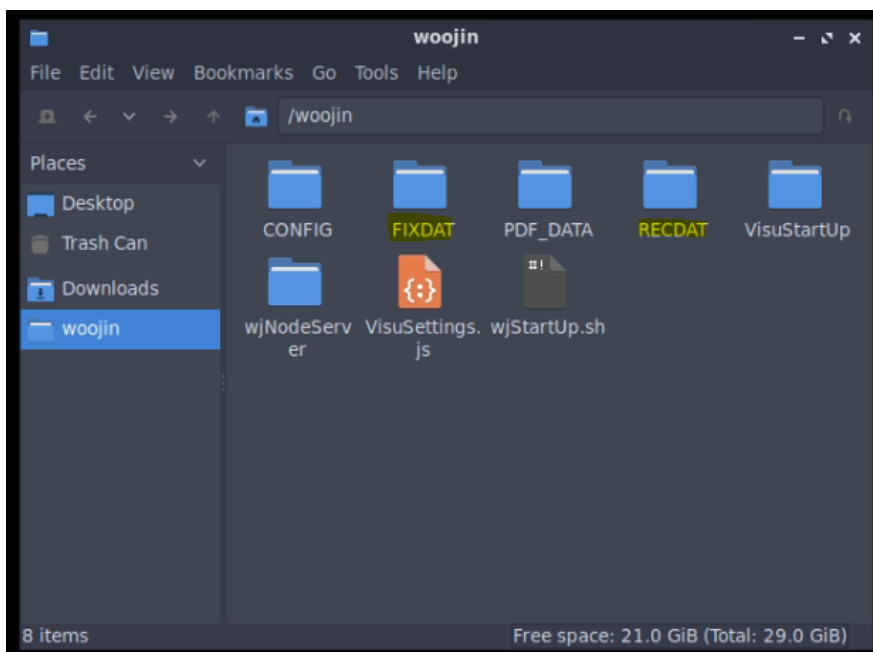
The recipe data is stored in two different repositories, one for fix-data, one for rec-data.

RECDAT: */woojin/RECDAT*
FIXDAT: */woojin/FIXDAT*

There is a shortcut on the desktop for easy navigation to these repositories:



Double click it to open the folder structure:



Here you can see the folders **FIX-** and **RECDAT**.
 Simply import/delete files as you wish.

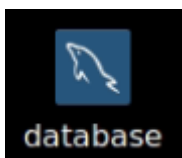
Important Note:

Restart the OS (Operations -> Reboot Linux) after modifying to apply the correct permissions.
 Without Restart you probably won't be able to load the data.

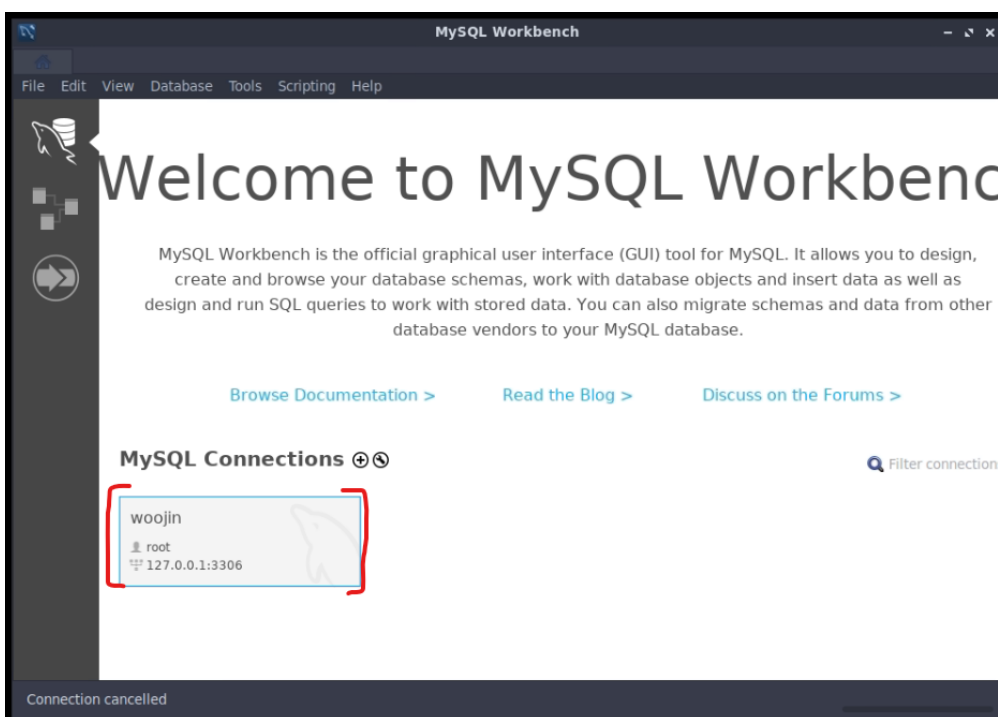
9.2.4.4. Database

To modify the table structure inside of the database or to update the SQL version to the following:

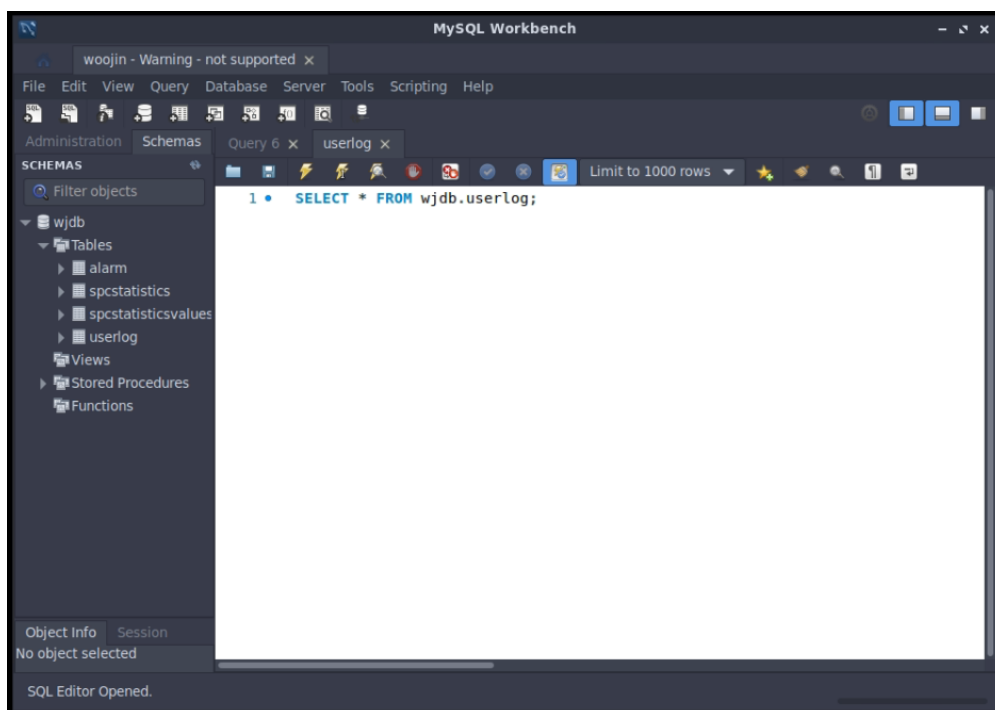
1. Double click the MySQL icon with the text “database”



2. Click the “woojin” section inside of MySQL Connections.

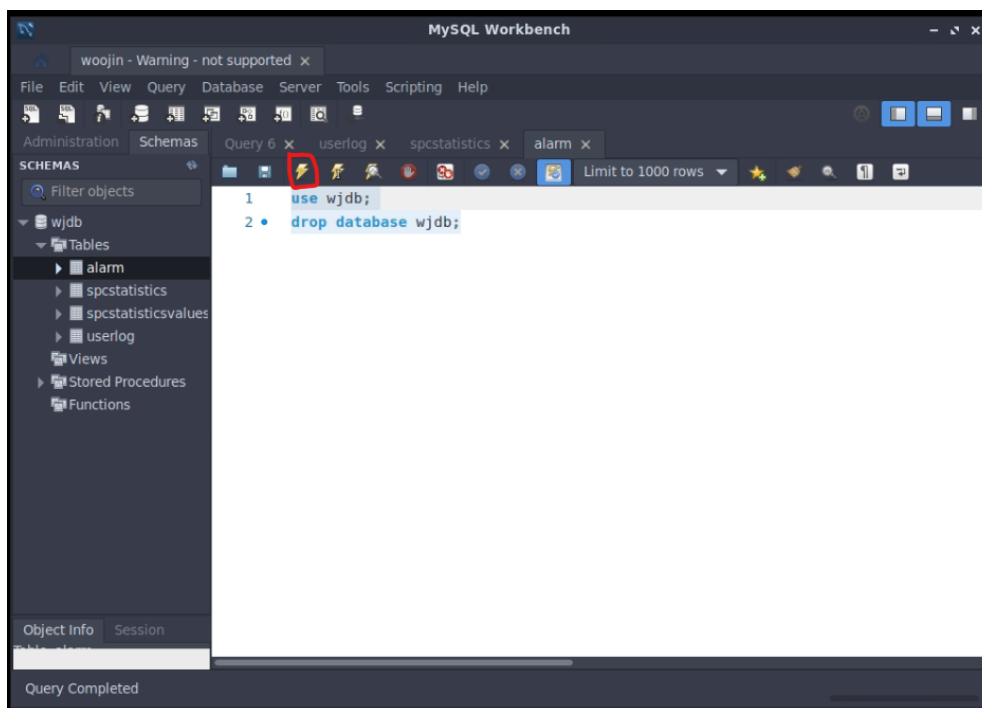


3. Enter the password “**Woojin2544**” and click “OK”.
4. Now you should see following screen:



On the left side (“shemas”) you should see our database “**wjdb**” with different tables inside of it. You can right click the tables and click on “select rows” to see the content of the table. If you want to update the database version, you first have to delete the old database -> move on the point 5.

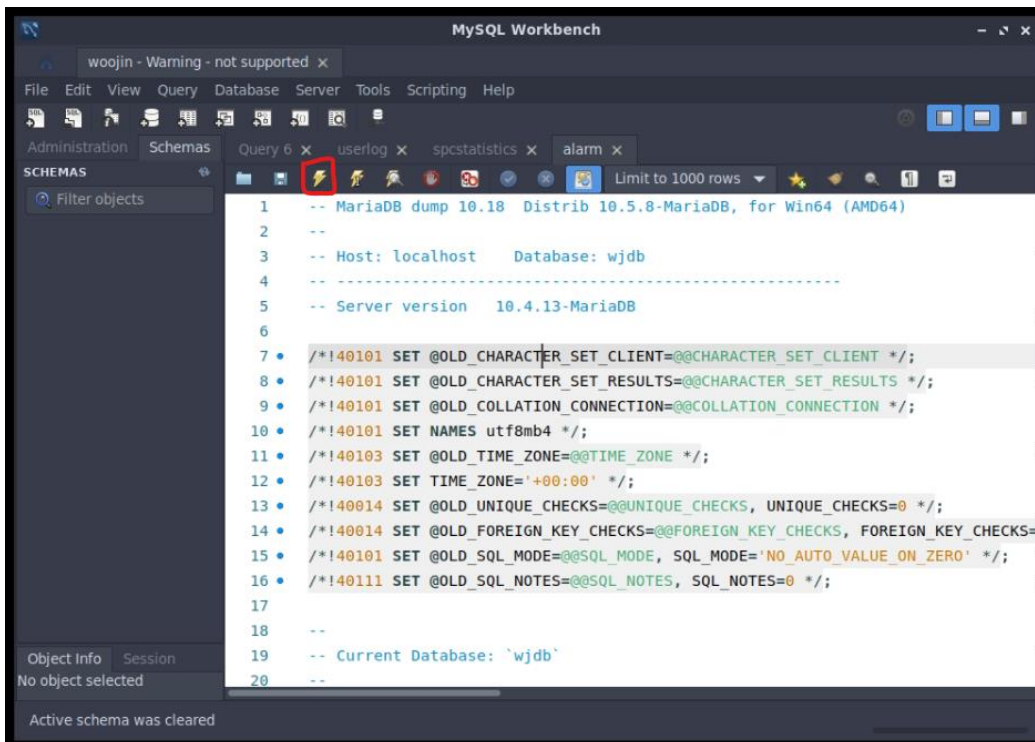
5. Delete the old database:
Copy following command in the workbench: ***use wjdb; drop database wjdb;***
Like this:



Now execute the code with the thunder icon (red circle).
The old database should be gone. (“shemas” area is empty now)

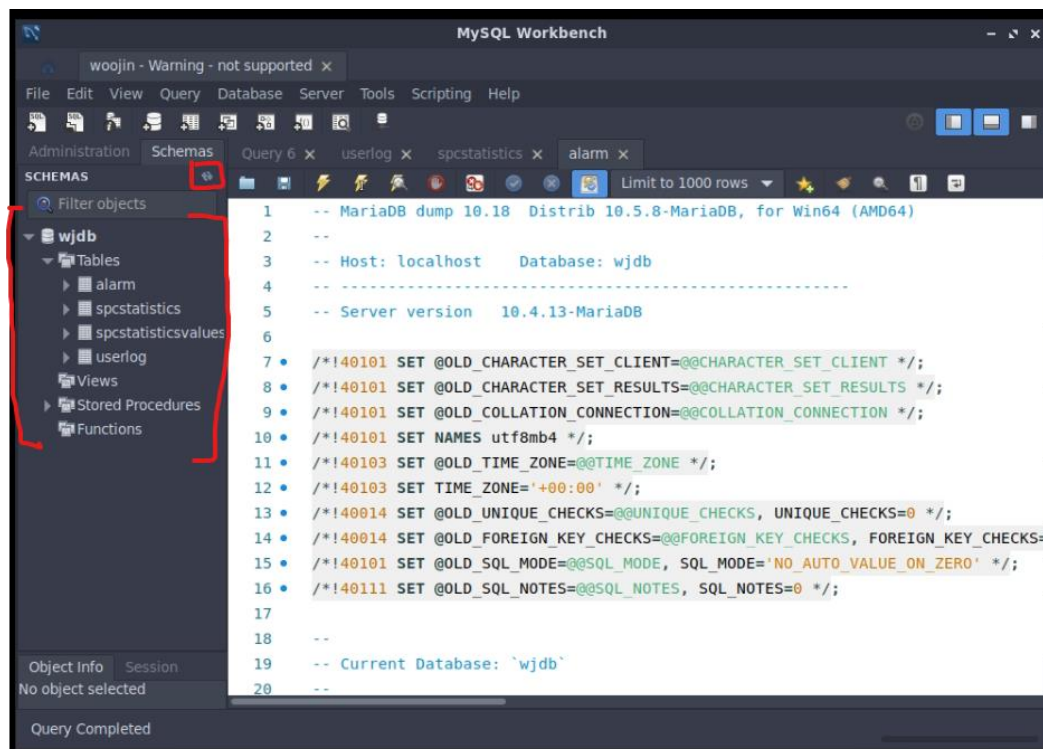
- Now navigate on your PC to your desired SQL version:
10_IMC500_Release130_SQLVx.x\ldb_tablestructure\wjdb.sql
x... SQL version number

Copy the whole content of the file to the MySQL workbench, should look like this:



Now execute the code with the thunder icon (red circle).

- Refresh the “shemas” area with the refresh symbol (red circle).

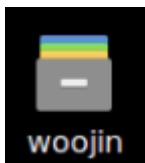


Now you should see the database and the tables again. -> Done!

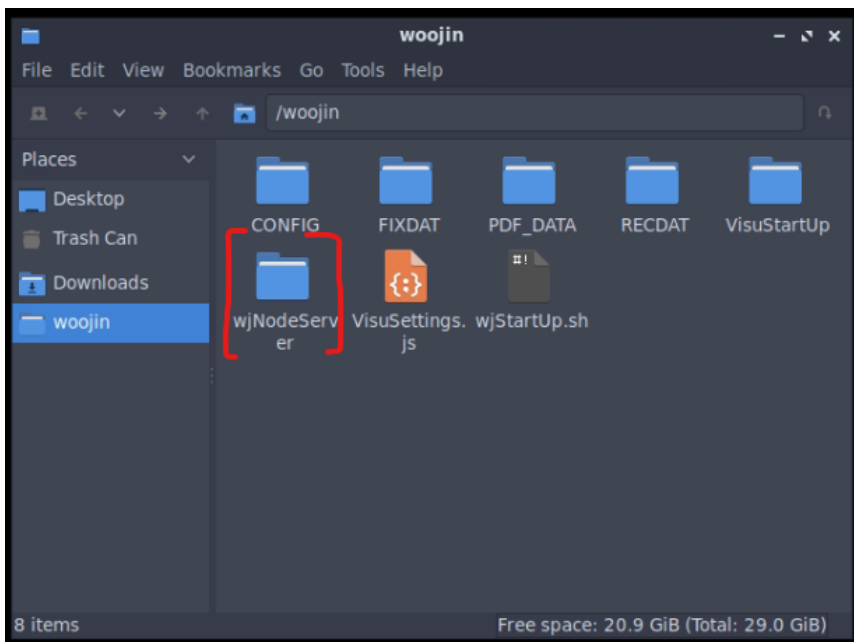
9.2.4.5. Node.js

Node.js is used to connect the MariaDB database to the visu.
 To update the version, do the following:

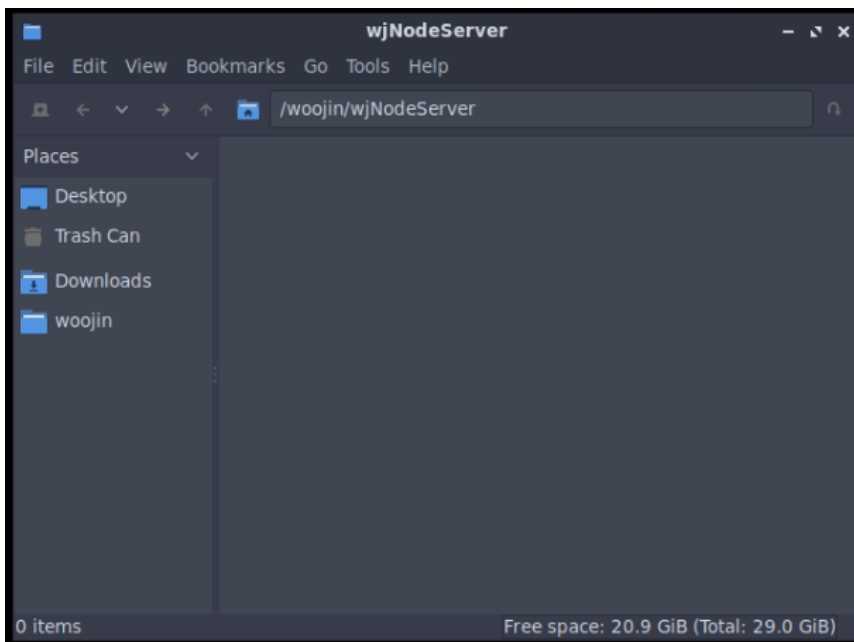
1. Double click the folder icon with the text “woojin”



2. Navigate to wjNodeServer (click on the circled folder):

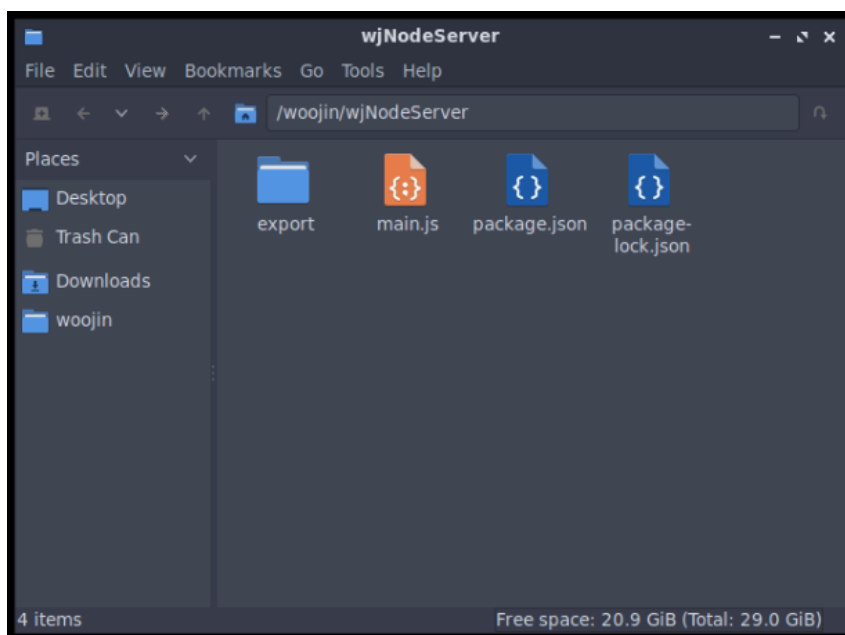


3. Delete all files in it, so the folder is empty:



- Now navigate on your PC to your desired SQL version:
10_IMC500_Release\30_SQL\Iv.x\wJNodeServer
x... SQL version number

Copy the whole content of the folder the wJNodeServer folder, should look like this:



- Now press “F4” to open the terminal.

```

woojin@woojin: /woojin/wJNodeServer
File Edit Tabs Help
woojin@woojin:/woojin/wJNodeServer$ npm install
npm WARN npm npm does not support Node.js v10.24.0
npm WARN npm You should probably upgrade to a newer version of node as we
npm WARN npm can't make any promises that npm will work with this version.
npm WARN npm Supported releases of Node.js are the latest release of 4, 6, 7, 8,
npm WARN npm 9.
npm WARN npm You can find the latest version at https://nodejs.org/
npm WARN node_mysql@1.0.0 No description
npm WARN node_mysql@1.0.0 No repository field.

added 280 packages from 212 contributors in 4.644s
woojin@woojin:/woojin/wJNodeServer$

```

Type “npm install” and confirm with enter.
After the installation of the packages you can close the terminal again.

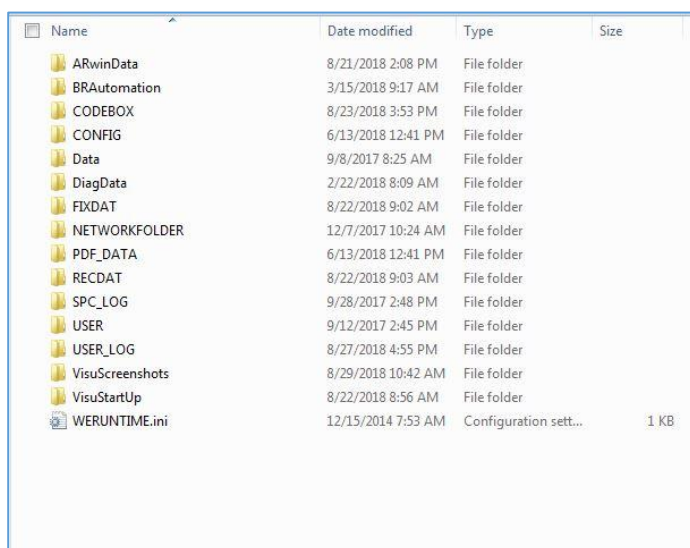
You should see a new folder called “node_modules” inside of the wJNodeServer folder.

- Restart the OS (Operations -> Reboot Linux) -> Done!

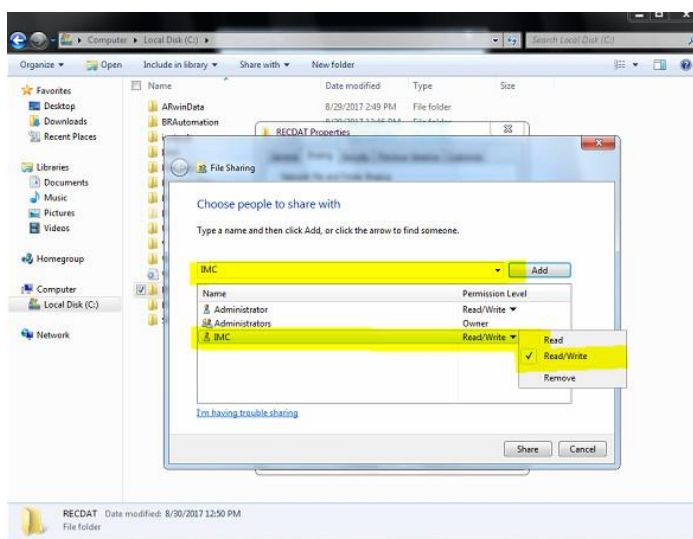
9.3. Folder Structure

Some folders are mandatory to operate the IMC500.

C:\CONFIG	CONFIG data
C:\SPC_LOG	SPC Log data
C:\RECDAT	Mould Data (Receipe Data)
C:\FIXDAT	Machine Config Data (Fix data)
C:\PDF_DATA	PDF and other File Data
C:\SPC_LOG	SPC Log data
C:\Data	Internal Data Log
C:\USER_LOG	USER Log data
C:\ARwinData	Automation Runtime Folder, PLC programm
C:\VisuStartUp	Configrution Files and executable files to operate the HMI

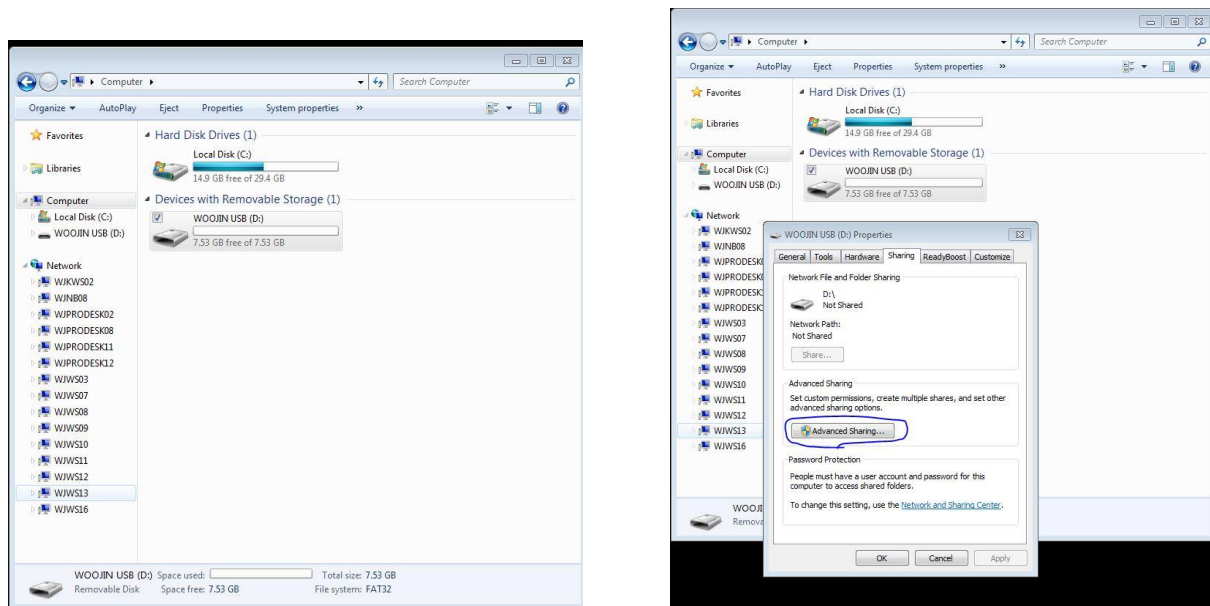


The folders CONFIG, SPC_LOG, RECDAT, FIXDAT, PDF_DATA, SPC_LOG and USER_LOG must be shared for user IMC.

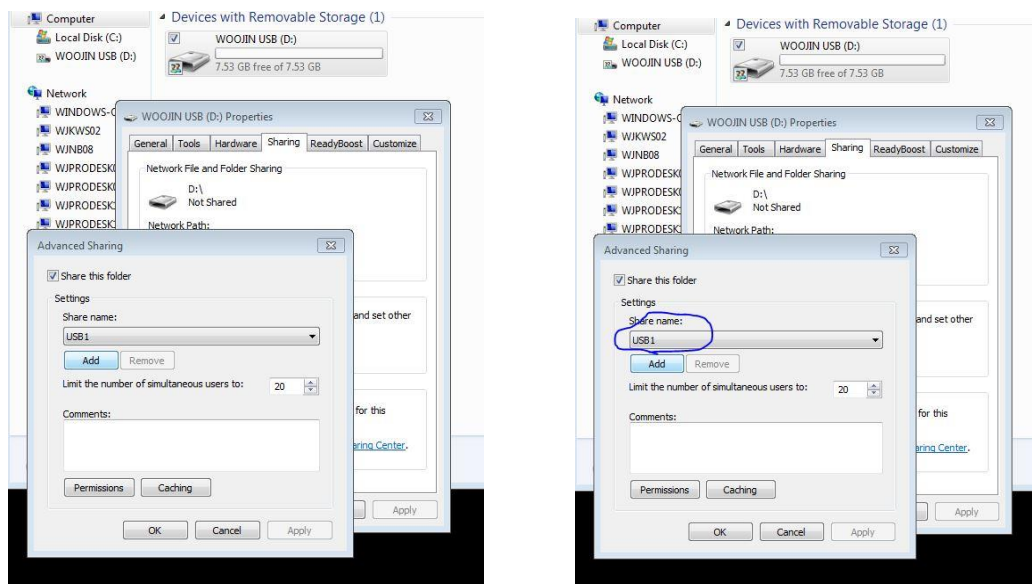


9.4. USB Device Access

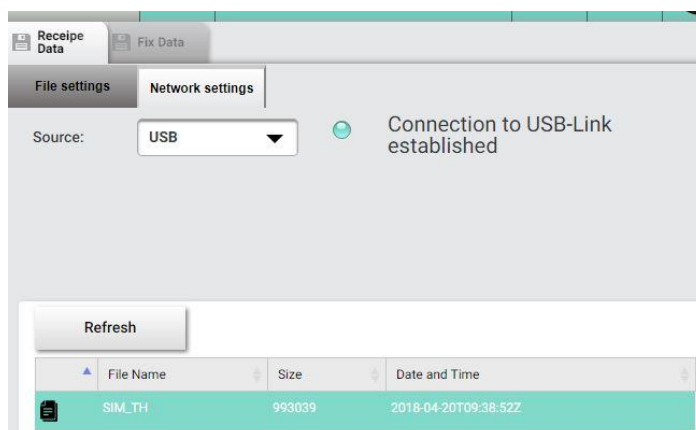
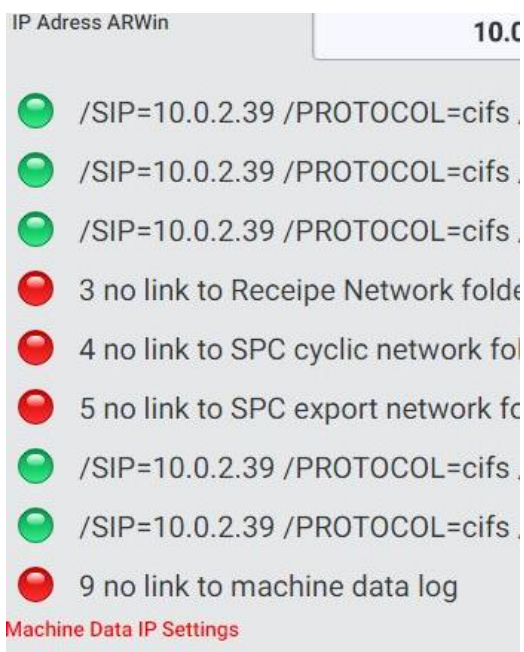
For accessing a plugged in USB stick on the machine panel and to use it in the Controller, USB device also have to be shared for IMC User.



- 1) In the Properties Window by opening “Advanced Sharing”, the checkbox “Share this folder” must be activated.
- 2) Share name: **MUST BE** always named as “USB1” !!!



By Applying this changes and going back into Visu, USB device is available. You can check it on “IP Settings” Page or by trying to Connect to USB in Receipe or Fixdata Page.



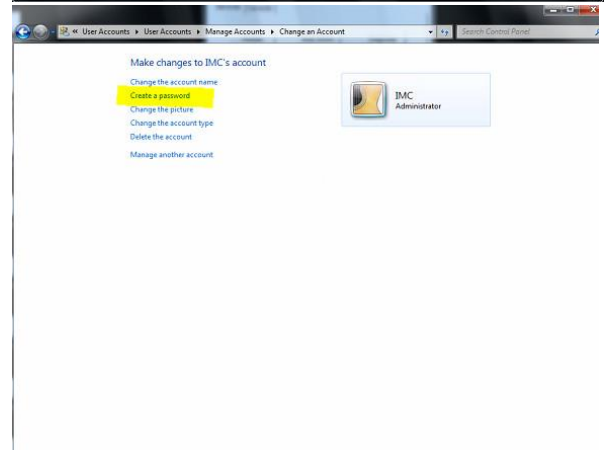
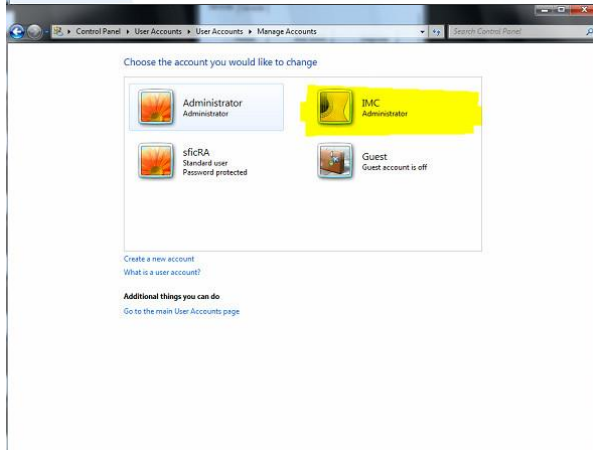
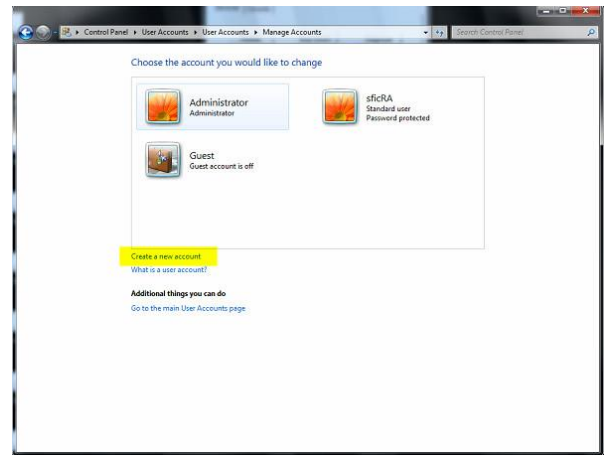
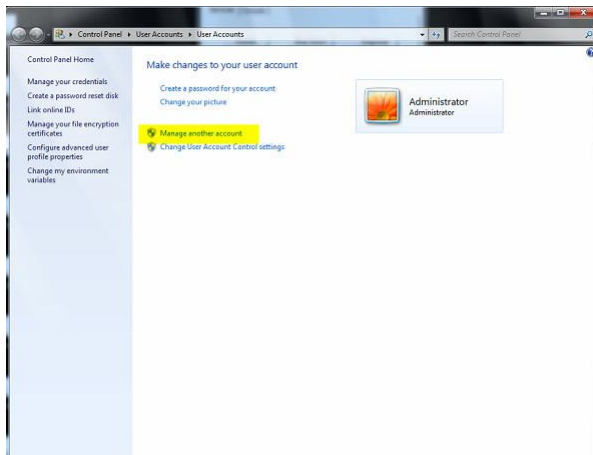
After sharing USB, datas can be saved, loaded or used for example as Receipe and Fixdata storage on USB device.

9.5. User Settings

We need standard IMC with administrator privileges user to access local ROM.

Username: IMC

Password: Woojin2544



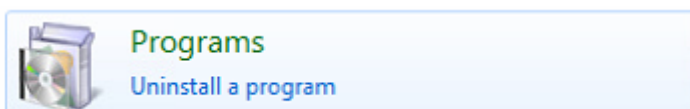
9.6. Install/Uninstall ArWin



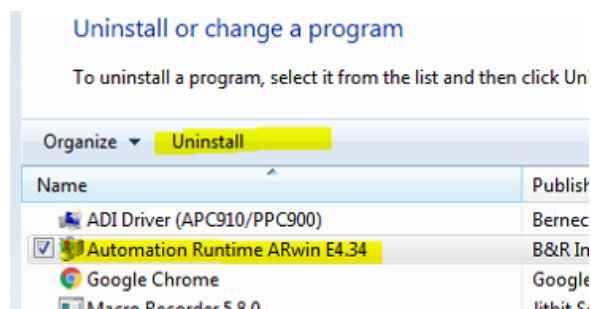
Automation Runtime is already pre-installed. Only in very rare cases it is necessary to uninstall and install again ARwin. Changes to the Automation Runtime configuration should only be made by highly experienced service technicians.

1.1.1 Uninstall ARWin

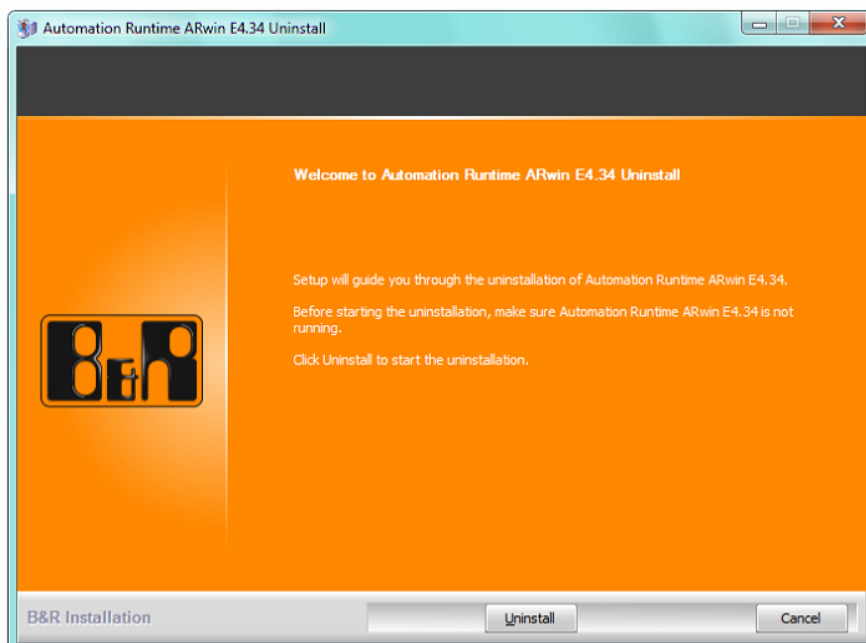
Open control Panel / Uninstall a programm.



Press Uninstall “automation Runtime ARwin”



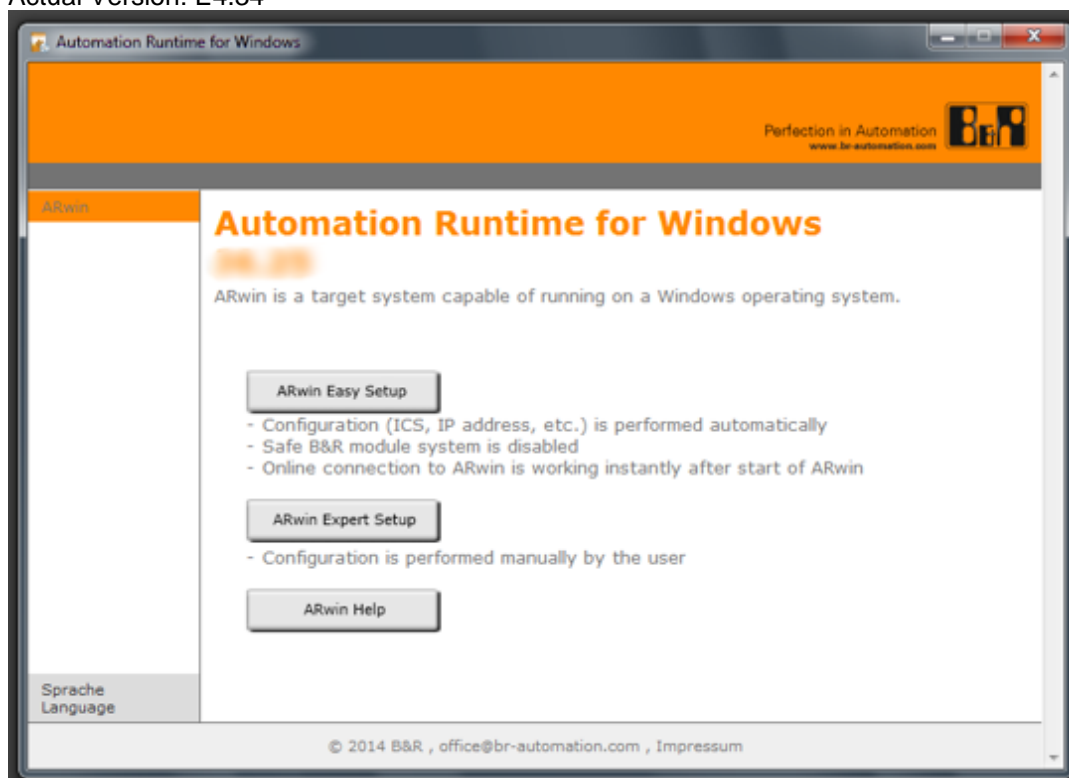
Follow the instructions of Uninstall Wizard.



1.1.2 Install ARwin

Install ARwin always as ARsin Easy Setup. Follow the B&R Install Wizard.

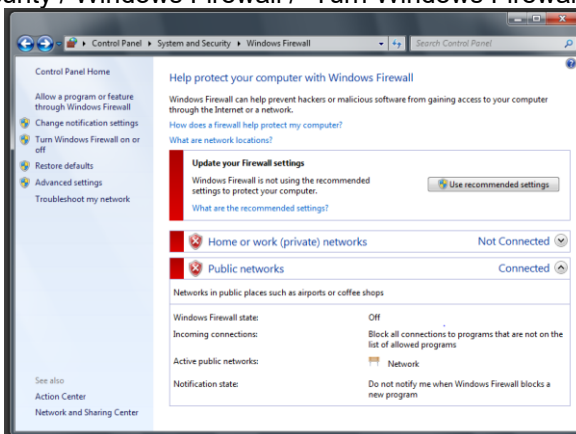
Actual Version: E4.34



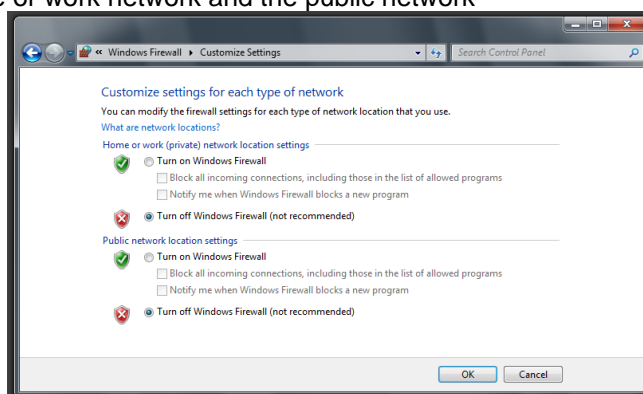
9.7. Firewall Settings

Turn off the Firewall

Control Panel / System and Security / Windows Firewall / "Turn Windows Firewall on or off"



Deactivate as well the private or work network and the public network



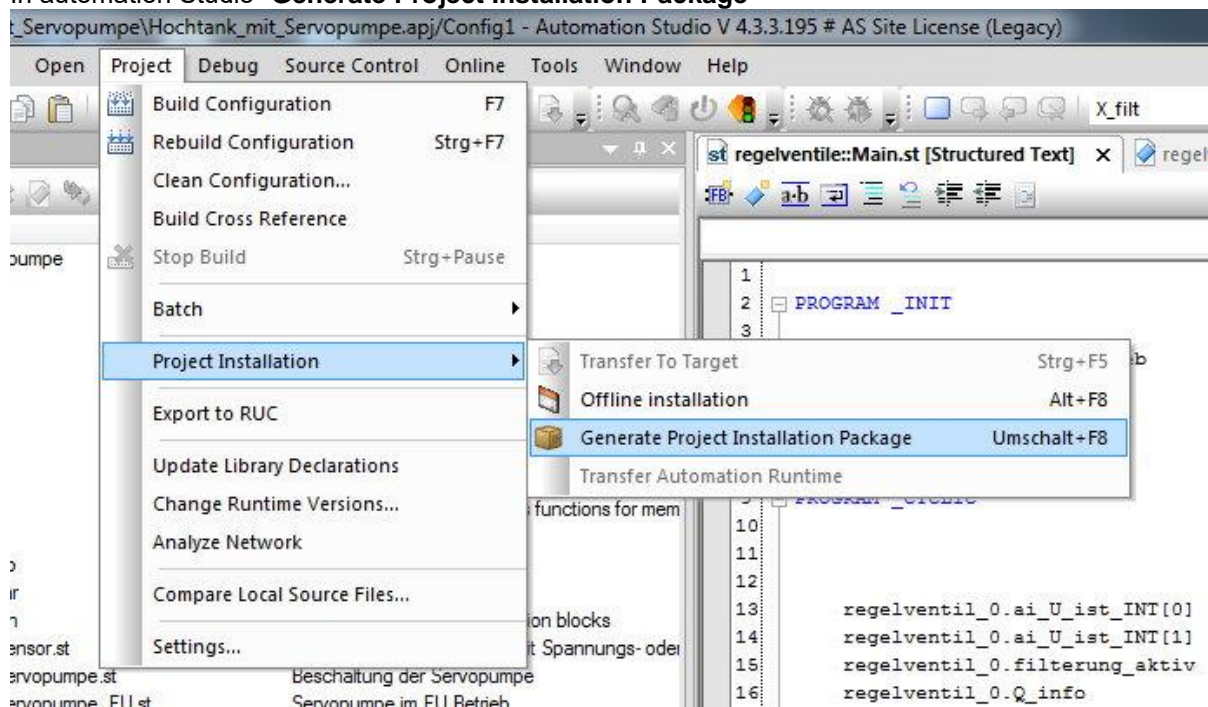
9.8. Automation Studio - Generation of Firmware Installation Files

1.1.3 Generate Files for USB Firmware Update

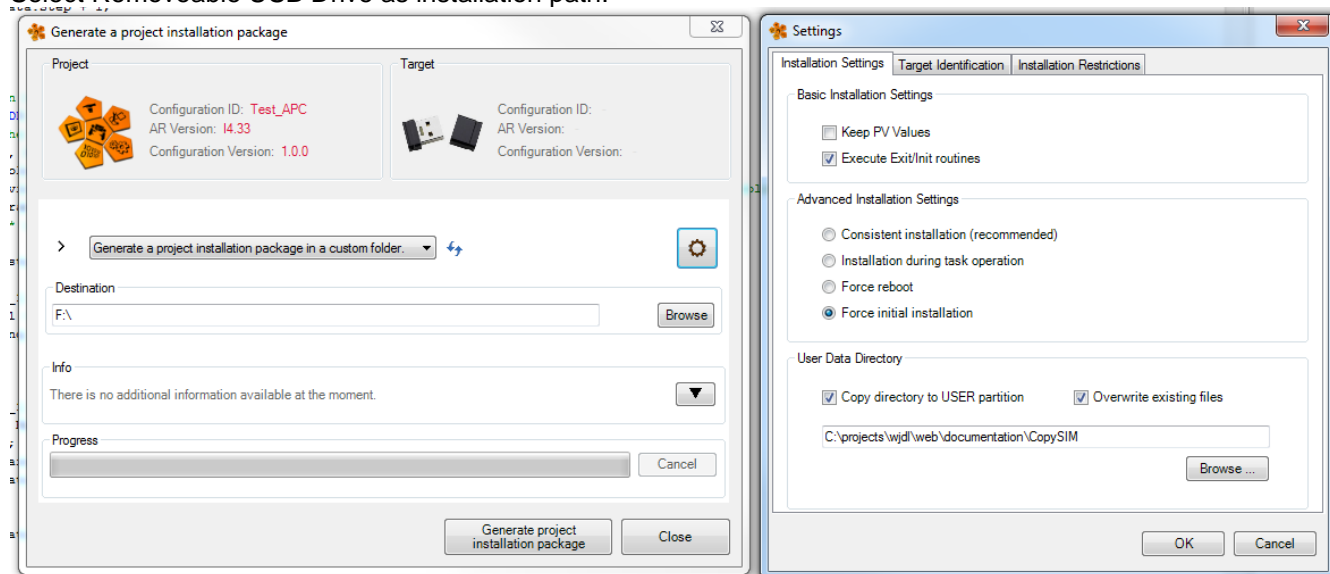


You need Automation Studio and the correct Version and the Source Files to create Files for Firmware update.

In automation Studio “Generate Project Installation Package”



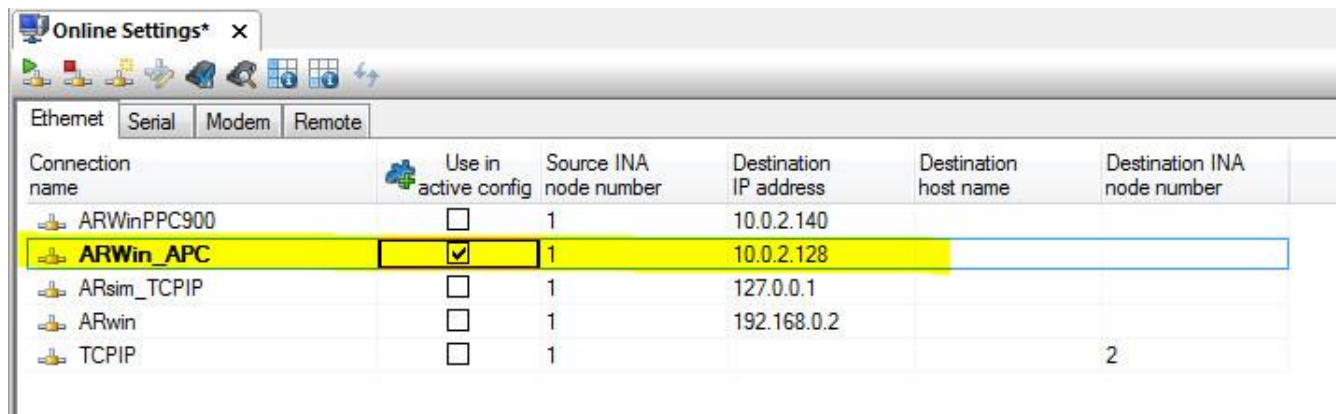
Select Removeable USB Drive as installation path.



Also select on Tab “Target Identification” the option “Always initial install”

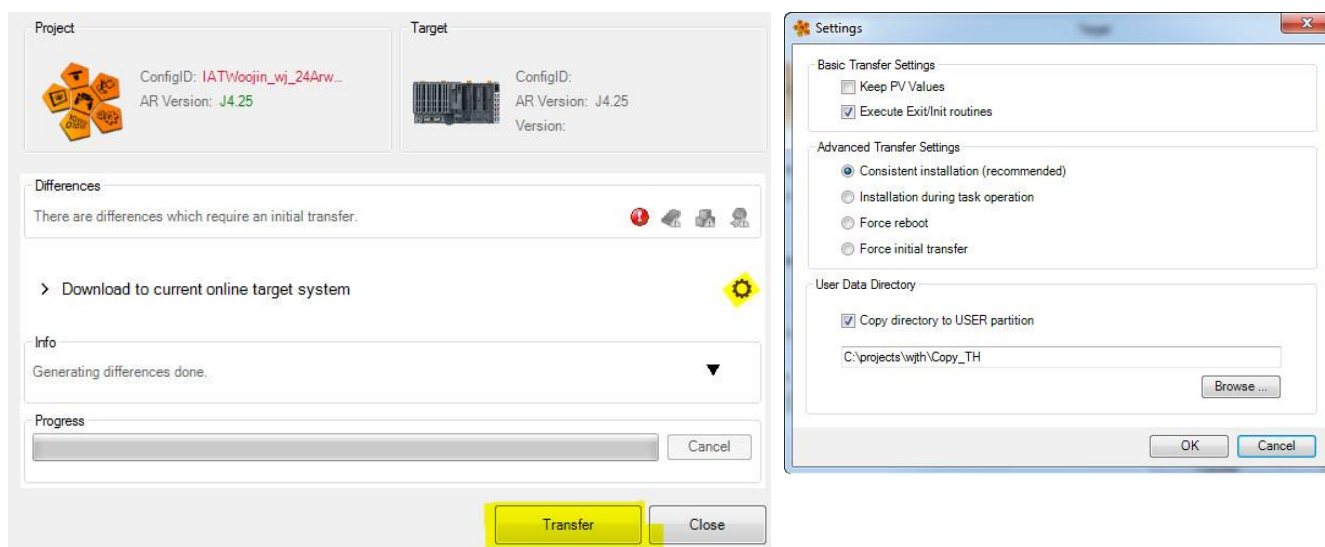
1.1.4 Firmware Transfer with Automation Studio

Setup Online-Settings in Automation Studio – please use the ARwin IP Address



After you have established a connection with the APC you can download the project easily with the Transfer-Button

After the project compilation ended successfully and before pressing the Transfer Button please check the download – settings



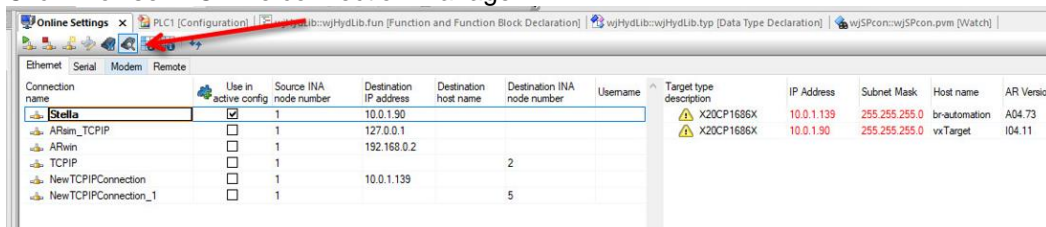
Please select the User Data Directory what you want to transfer to the ARwin USER partition.

9.9. X20 CPU Connection Problem

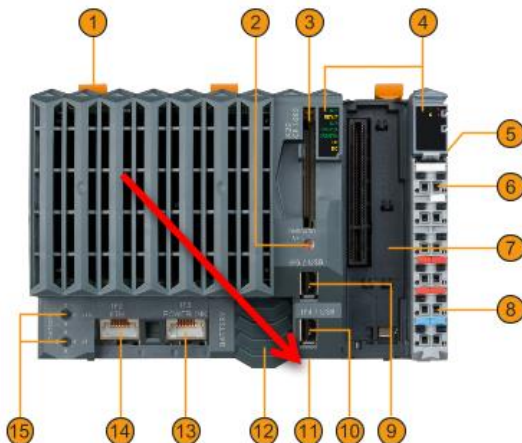


Before transfer project with Automation studio to X20 target it is strongly recommended to stop cyclic operation of X20 CPU (reboot in service mode)

- If transfer fails, and reconnect to X20 CPU target is not possible anymore, connect directly to X20 CPU with ethernet cable (no switch inbetween)
- Click Browse in Online connection manager



- If CPU can be found, but no connection is possible, do factory reset on X20 CPU (number 11)



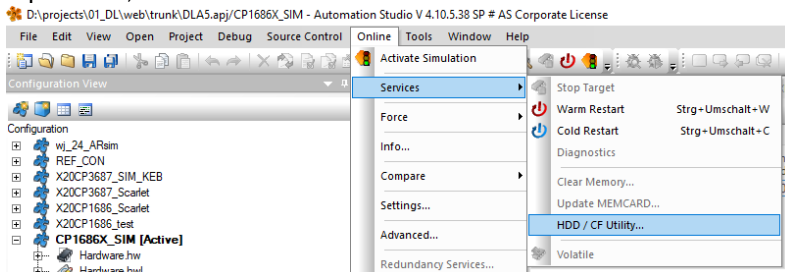
- Factory reset, short press on reset button, release, and press again 2 seconds on reset button
- CPU should boot up in boot mode



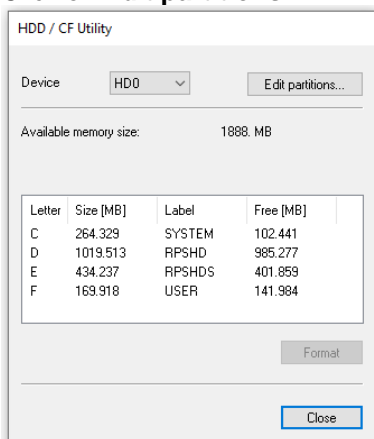
- Browser again in online connection manager, IP Address of X20 CPU should be set to 0.0.0.0. With Right-Click IP-Address of X20 CPU can be set



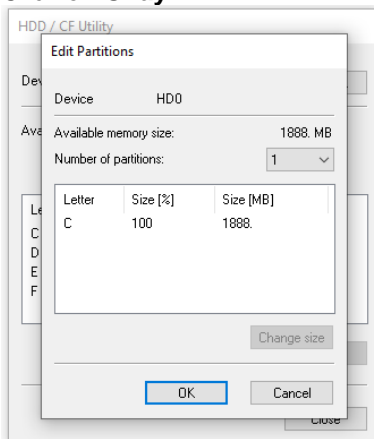
- If possible, connect to the CPU and click on **Online** → **Services** → **HDD / CF Utility**



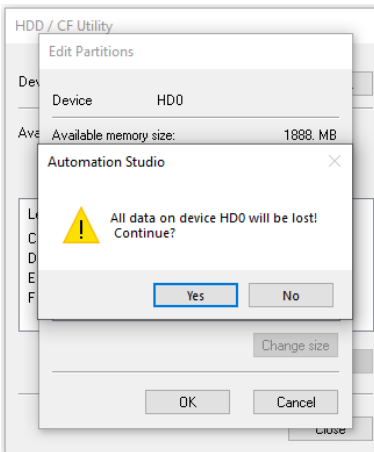
- Click on **Edit partitions**



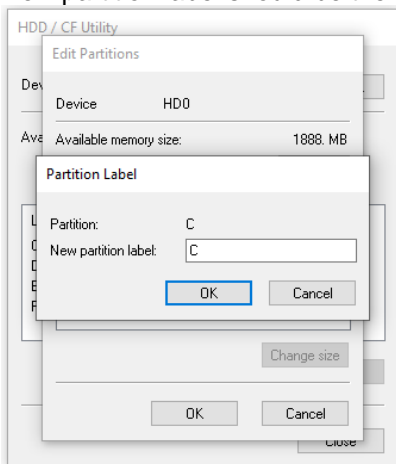
- Click on **Okay**



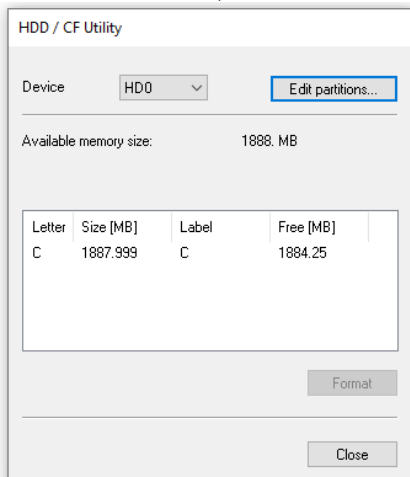
- Click on **Yes**



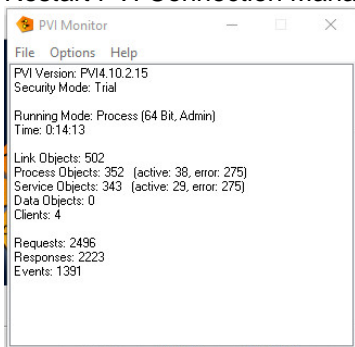
- New partition label should be the same as the old one, click on **OK**



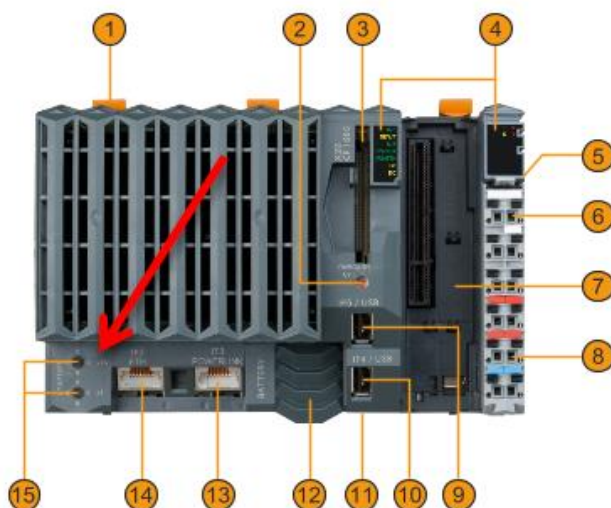
- Wait for reconnection
- After reconnection, it should look like this



- Close this window, **the X20 CPU is now ready for transfer**
- If still no connection is possible, restart automation studio in “administrator mode”
- Restart PVI Connection Manager (File, Stop and Start)



- If still no connection is possible, connect with Ethernet Station Adress, f.e. change adresse to 5



- Create new TCP Connection with empty ip address, and INA node number 5

Connection name	Use in active config	Source INA node number	Destination IP address	Destination host name	Destination INA node number	Username	Targ desc
Stella	<input checked="" type="checkbox"/>	1	10.0.1.90				
ARsim_TCPIP	<input type="checkbox"/>	1	127.0.0.1				
ARwin	<input type="checkbox"/>	1	192.168.0.2				
TCPIP	<input type="checkbox"/>	1			2		
NewTCPConnection	<input type="checkbox"/>	1	10.0.1.139				
NewTCPConnection_1	<input type="checkbox"/>	1			5		

9.10. SQL DataBase Setup

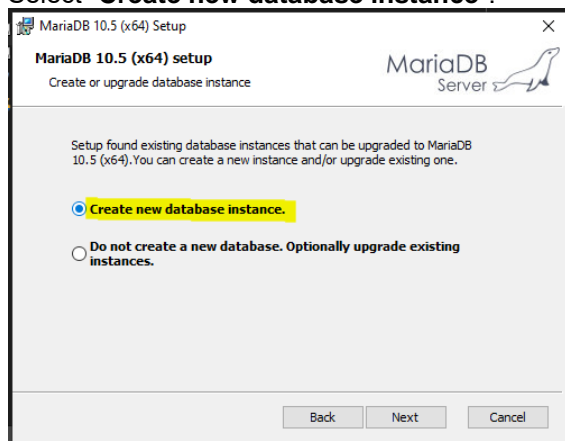


Install **MariaDB Server**.

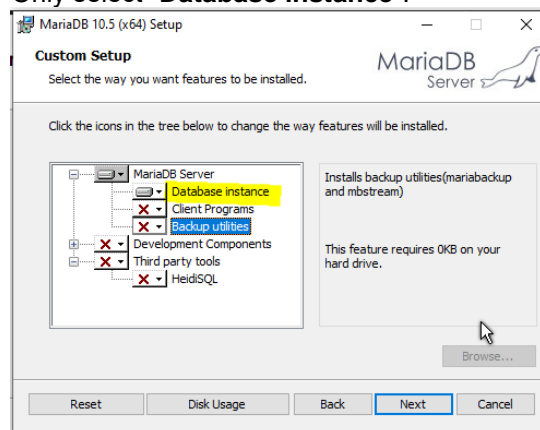
Use “**mariadb-10.5.9-winx64.msi**” for installing MariaDB Server.

https://svn.woojin.info/svn/IMC500_Release/93_MariaDB/mariadb-10.5.9-winx64.msi

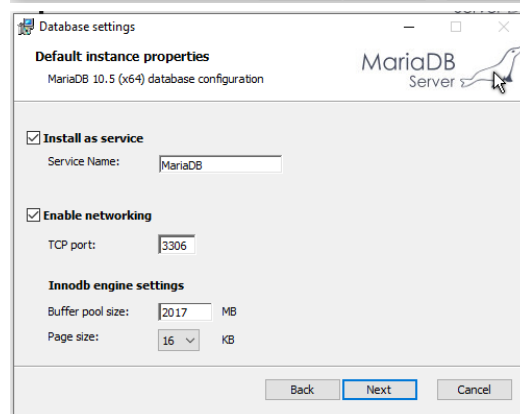
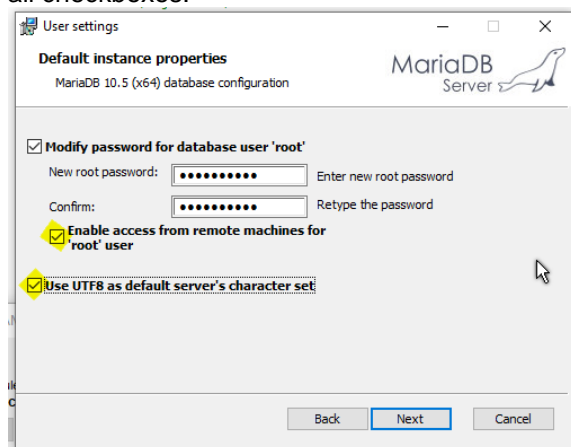
Select “**Create new database instance**”.



Only select “**Database instance**”.



Use “**Woojin2544**” for root password and enable all checkboxes.

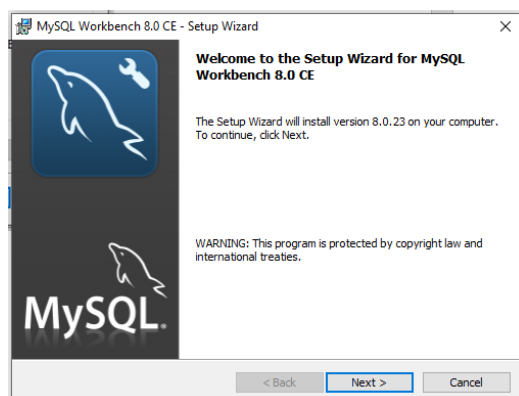


Click “**Next**” to install MariaDB Server.

After installation is finished move on to install MySQL Workbench.



Install SQL Workbench “**mysql-workbench-community-8.0.23-winx64.msi**” with standard settings.

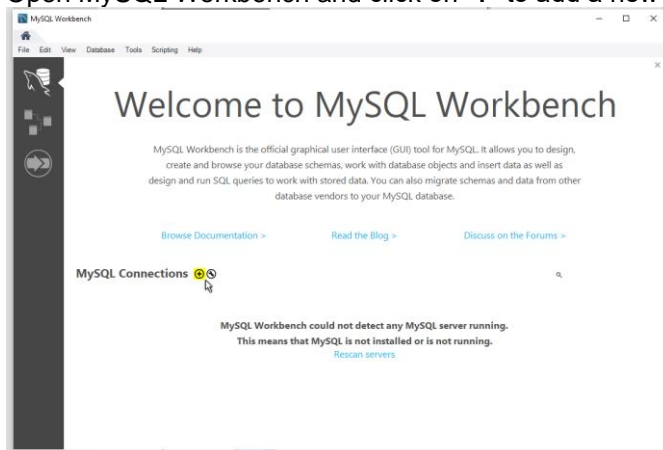


Go through the setup by clicking “**Next**” a few times and then click “**Install**”.

After installation is complete, all necessary programs are installed

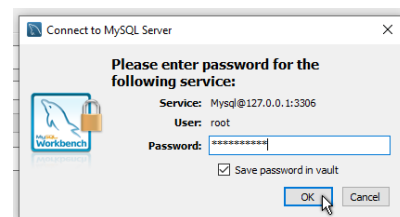
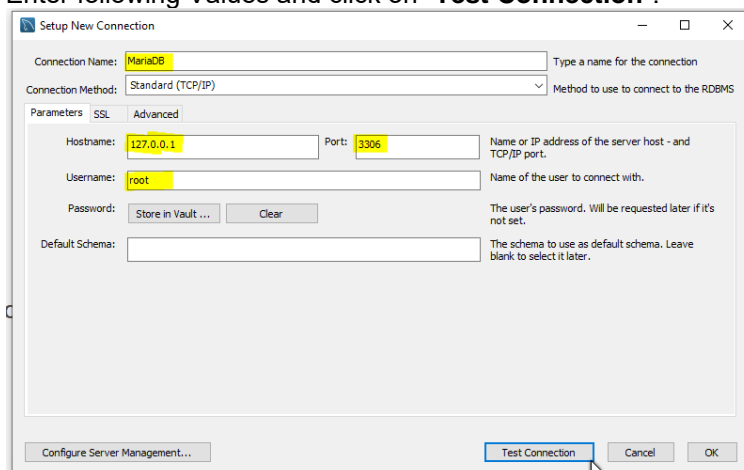


Open MySQL Workbench and click on “+” to add a new connection.

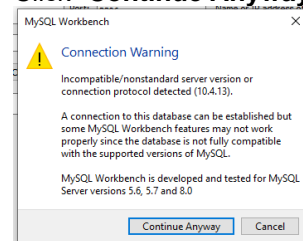


Connection Settings

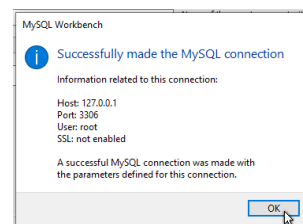
Enter following Values and click on “Test Connection”.



Click “Continue Anyway”.

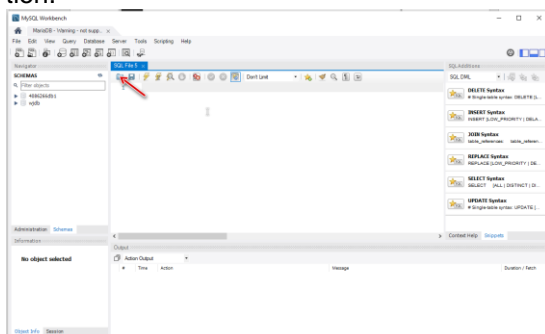


Enter the Password “Woojin2544” and enable checkbox → click “OK”.

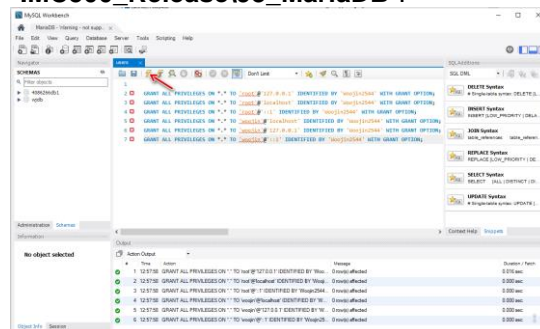


Setup User

Now you should see the new connection in the workbench. Click on it to establish the connection.



Select the **users.sql** file from following path: **“IMC500_Release93_MariaDB”**.



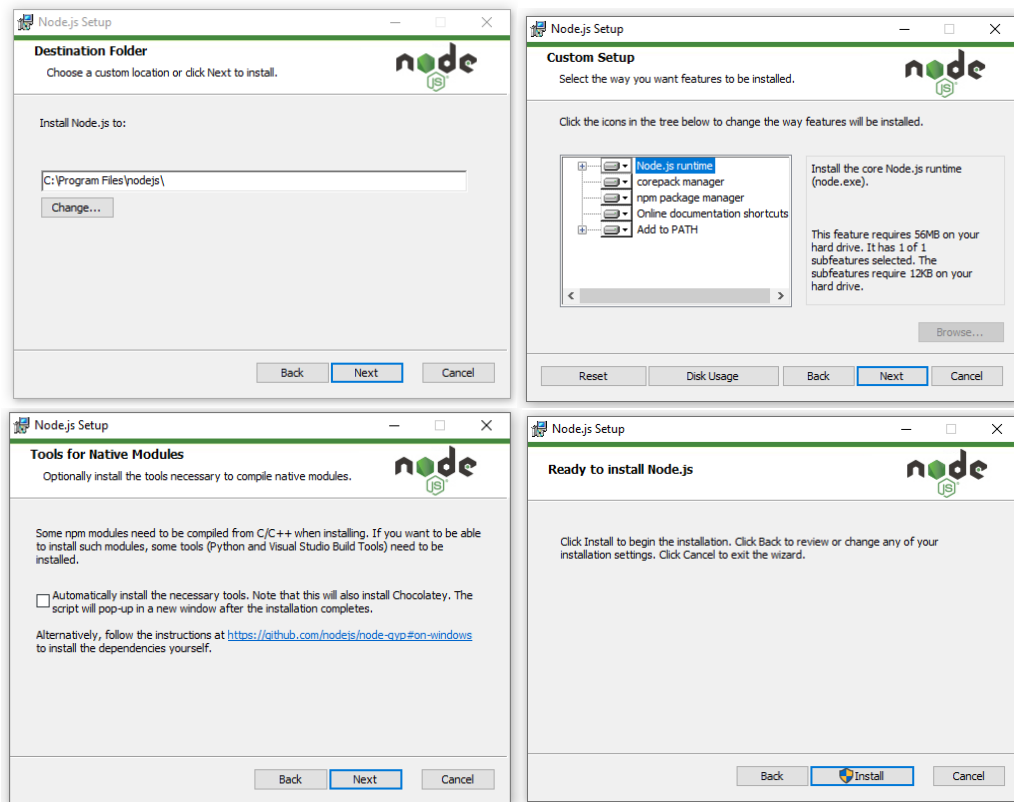
Click on the **flash icon** to execute the query. Now you should see some messages with **green check icons** in the bottom of the workbench. The users are configured correctly now.



Install NodeJS Version 16.13 LTS

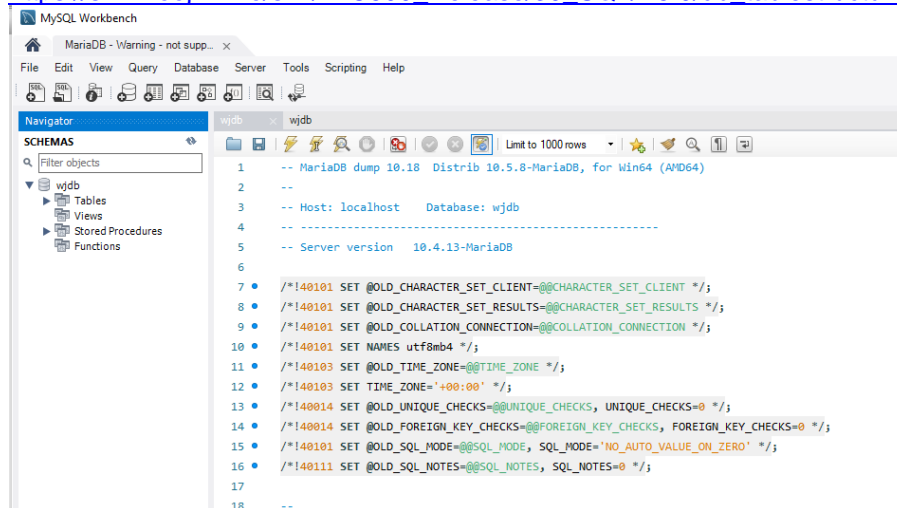
https://svn.wojin.info/svn/IMC500_Release/93_MariaDB/node-v16.13.0-x64.msi

Install with default settings



Load and execute SQL Files

https://svn.wojin.info/svn/IMC500_Release/30_SQL/V5.0/db_tablestructure/wjdb.sql





Open CMD, and navigate to local path

https://svn.woojin.info/svn/IMC500_Release/30_SQL/V5.0/wjNodeServer

```

Eingabeaufforderung
Microsoft Windows [Version 10.0.18363.592]
(c) 2019 Microsoft Corporation. Alle Rechte vorbehalten.

P:\>cd d:
D:\

P:\>d:
D:\>cd projects
D:\projects>cd 35_IMC500_Release
D:\projects\35_IMC500_Release>cd 30_SQL
D:\projects\35_IMC500_Release\30_SQL>cd V5.0
D:\projects\35_IMC500_Release\30_SQL\V5.0>cd wjNodeServer
D:\projects\35_IMC500_Release\30_SQL\V5.0\wjNodeServer>_
  
```



Type “**npm install**” and hit enter. This should install all required packages.

```

C:\Windows\System32\cmd.exe
D:\IMC500_Release\30_SQL\V5.0\wjNodeServer>npm install
npm WARN config global '--global', '--local' are deprecated. Use '--location=global' instead.
npm WARN deprecated cross-spawn-async@2.2.5: cross-spawn no longer requires a build toolchain, use it instead
added 256 packages, and audited 257 packages in 5s

13 packages are looking for funding
  run `npm fund` for details

3 high severity vulnerabilities

Some issues need review, and may require choosing
a different dependency.

Run `npm audit` for details.
D:\IMC500_Release\30_SQL\V5.0\wjNodeServer>
  
```



After the installation, close the **cmd** window and start main.js with batch-file.

https://svn.woojin.info/svn/IMC500_Release/30_SQL/V5.0/startNode.bat

```

C:\windows\system32\cmd.exe
D:\IMC500_Release\30_SQL\V5.0>cd .\wjNodeServer
D:\IMC500_Release\30_SQL\V5.0\wjNodeServer>node main.js
Server started on port 90
MySql connected
  
```

9.11. Update Node.js version



To change the node.js version you just have to delete the current content of `wjNodeServer` folder and replace it with the content of following path:

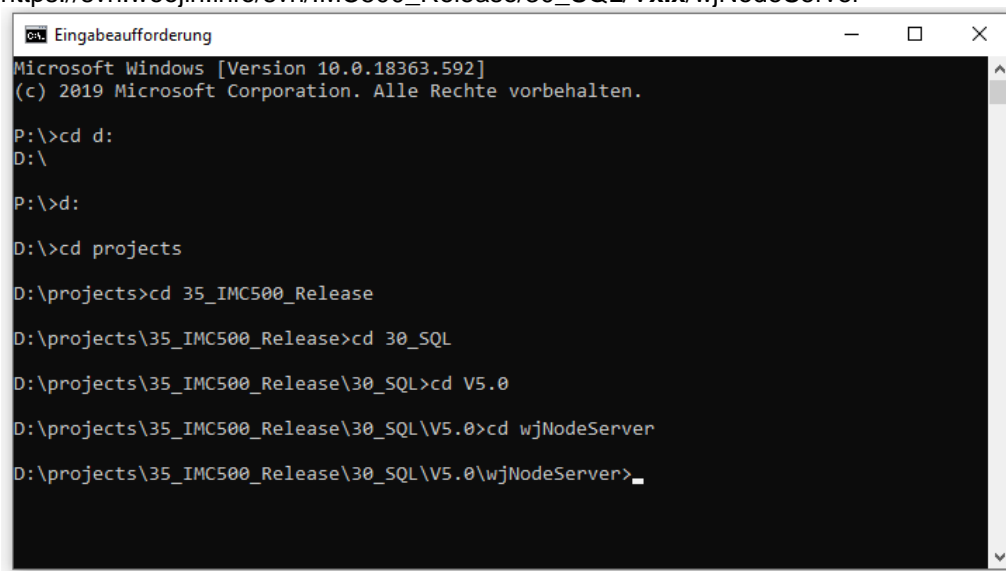
https://svn.woojin.info/svn/IMC500_Release/30_SQL/Vx.x/wjNodeServer
x.. SQL Version Number

wjNodeServer folder is hidden on the panel, so you have to access it with the absolute path (C:\wjNodeServer).



After replacing, open CMD, and navigate to local path (**C:\wjNodeServer** on panel)

https://svn.woojin.info/svn/IMC500_Release/30_SQL/Vx.x/wjNodeServer



```

Eingabeaufforderung
Microsoft Windows [Version 10.0.18363.592]
(c) 2019 Microsoft Corporation. Alle Rechte vorbehalten.

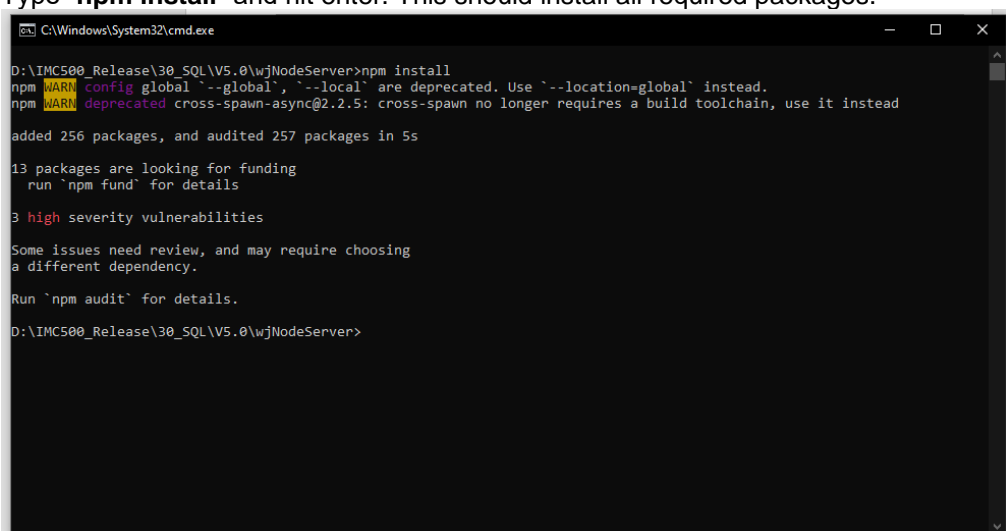
P:\>cd d:
D:\

P:\>d:
D:\

D:\>cd projects
D:\projects>cd 35_IMC500_Release
D:\projects\35_IMC500_Release>cd 30_SQL
D:\projects\35_IMC500_Release\30_SQL>cd V5.0
D:\projects\35_IMC500_Release\30_SQL\V5.0>cd wjNodeServer
D:\projects\35_IMC500_Release\30_SQL\V5.0\wjNodeServer>_
  
```



Type **“npm install”** and hit enter. This should install all required packages.



```

C:\Windows\System32\cmd.exe
D:\IMC500_Release\30_SQL\V5.0\wjNodeServer>npm install
npm WARN config global '--global', '--local' are deprecated. Use '--location=global' instead.
npm WARN deprecated cross-spawn-async@2.2.5: cross-spawn no longer requires a build toolchain, use it instead
added 256 packages, and audited 257 packages in 5s
13 packages are looking for funding
  run `npm fund` for details
3 high severity vulnerabilities
Some issues need review, and may require choosing
a different dependency.
Run `npm audit` for details.
D:\IMC500_Release\30_SQL\V5.0\wjNodeServer>
  
```



After the installation, close the **cmd** window and start `main.js` with batch-file.
 If you are working on a panel, just restart windows – the script will be executed on startup.

https://svn.woojin.info/svn/IMC500_Release/30_SQL/Vx.x/startNode.bat

```

C:\windows\system32\cmd.exe

D:\IMC500_Release\30_SQL\V5.0>cd .\wjNodeServer
D:\IMC500_Release\30_SQL\V5.0\wjNodeServer>node main.js
Server started on port 90
MySQL connected
  
```

9.11.1. Update SQL Database Config Files



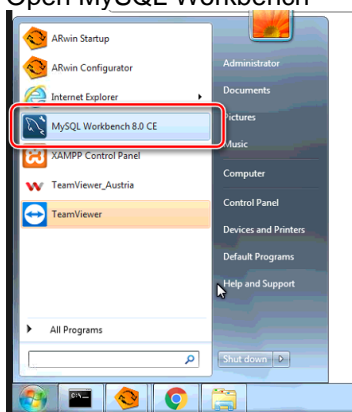
The SQL script file is used to define the database structure (Schema, Table, Attributes...) If you recover latest image version on CFast card, the database is already configured correctly!



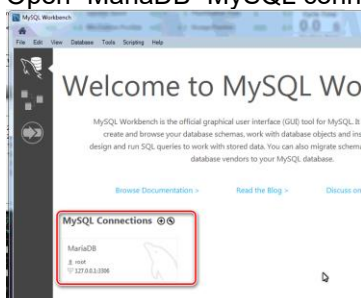
The following manual describes how to setup database with an image version 008 or higher. To update SQL database structure in image 007 or older please contact Woojin Austria / Felix Neunkirchner.



Open MySQL Workbench

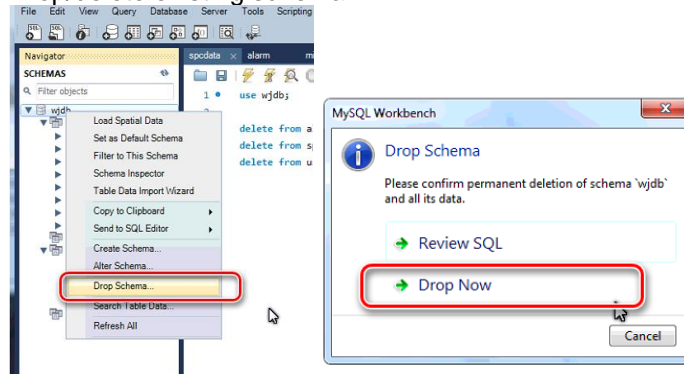


Open "MariaDB" MySQL connection

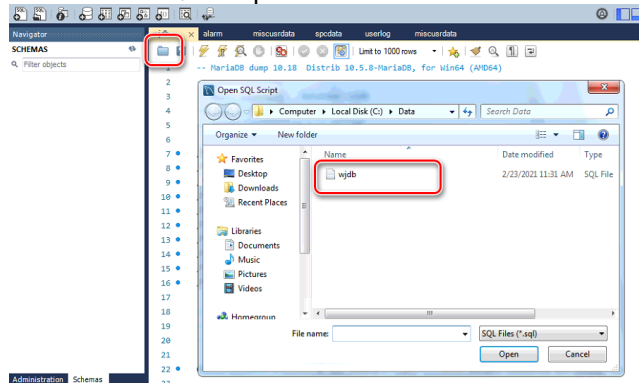




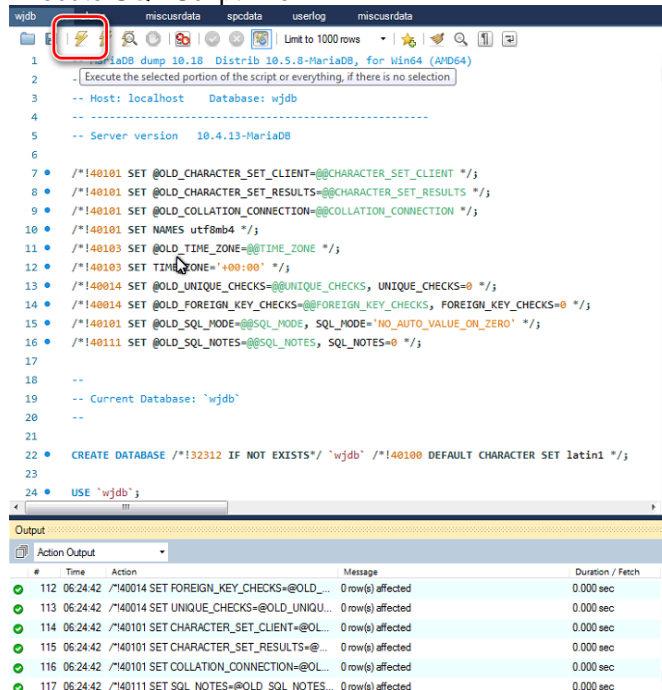
Drop/delete existing schema



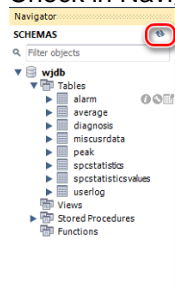
Load latest SQL Script File



Execute SQL Script File



Check in Navigator Window, if schema was loaded correctly

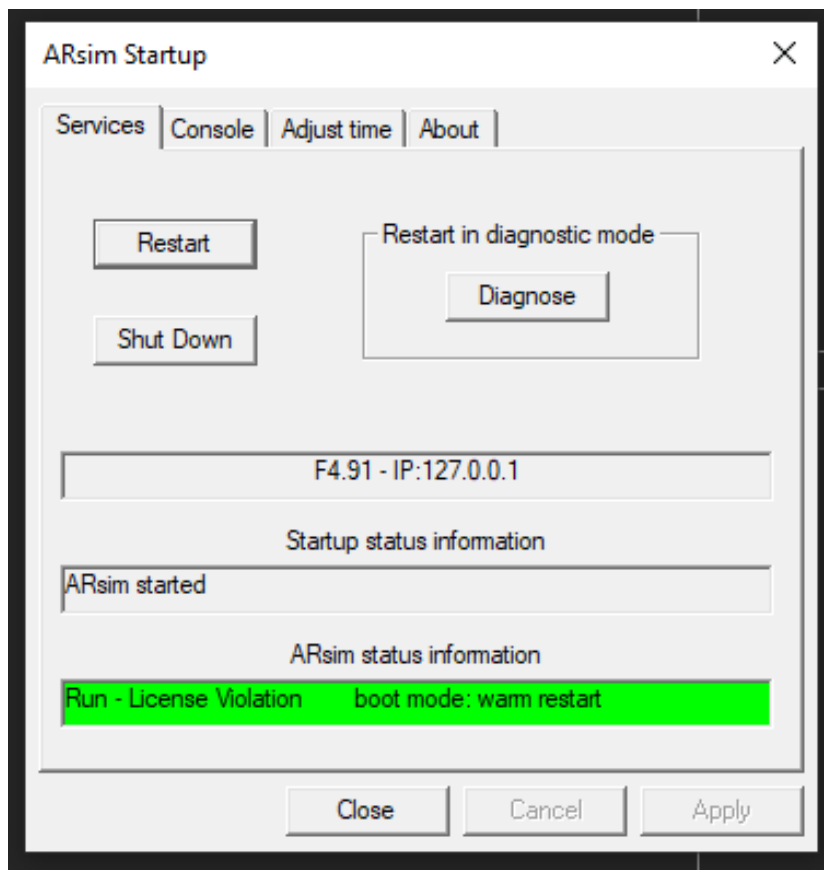


9.12. ARsim on PC

9.12.1. New Versions (SVN: DL version > 6806, TH version > 3420, TE version > 3035)

9.12.1.1. Target

ARsim should be operated simultaneously on one PC. (Only one simulation per time is possible)



All simulations are running on the default IP (127.0.0.1 = localhost), but different port:

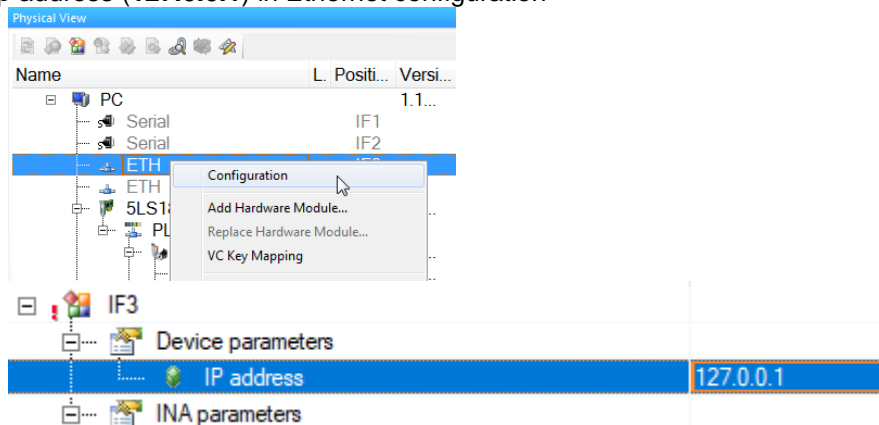
- DL: 81
- TH: 82
- TE: 83

Address of Visualization:

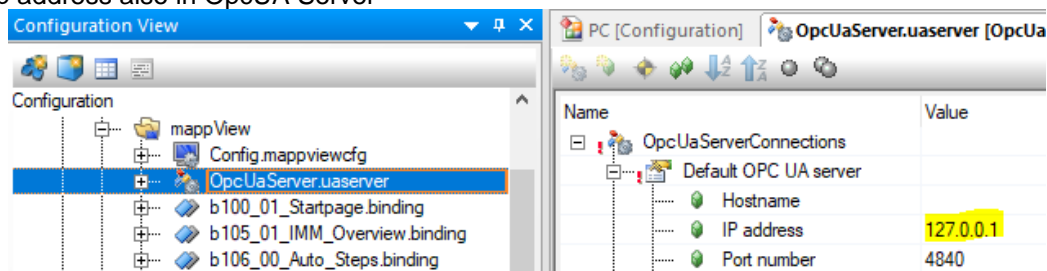
- DL: 127.0.0.1:**81**/index.html?visuld=Woojin_24inch
- TH: 127.0.0.1:**82**/index.html?visuld=Woojin_18inch
- TE: 127.0.0.1:**83**/index.html?visuld=Woojin_18inch

9.12.1.2. Setup on Automation Studio

- Setup Ip address (**127.0.0.1**) in Ethernet configuration

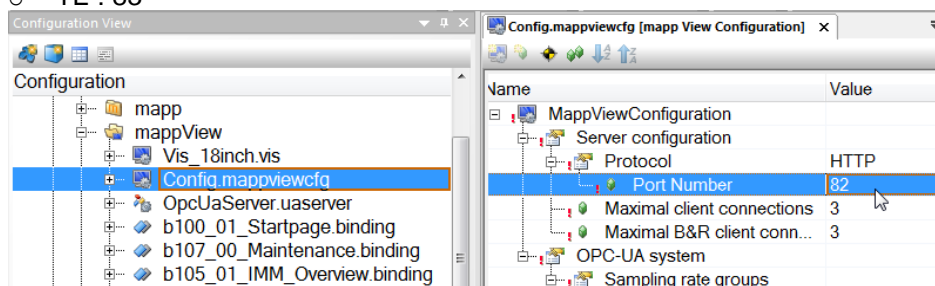


- Setup ip address also in OpcUa Server



- Change a port number in mappView Configuration

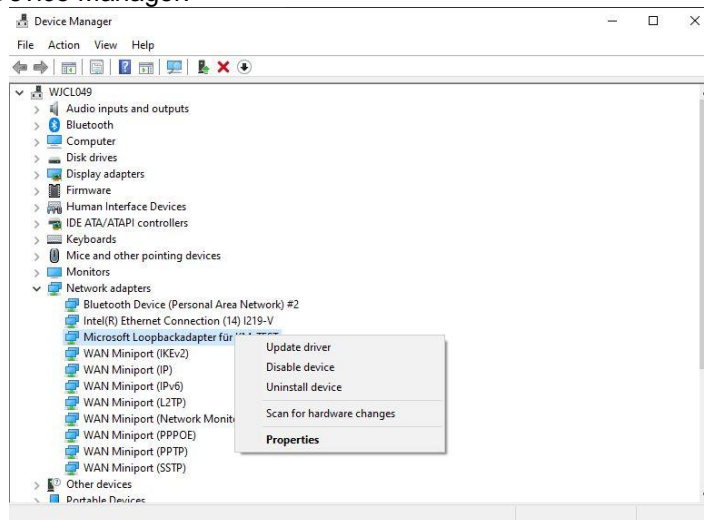
- DL : 81
- TH : 82
- TE : 83



9.12.1.3. Additional Information if you switch from old version -> new version

Uninstall old loopback adapter:

- Open Device Manager:

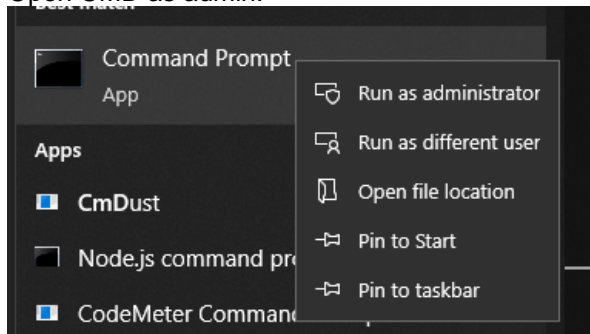


- Click on "Uninstall device" -> Finished!

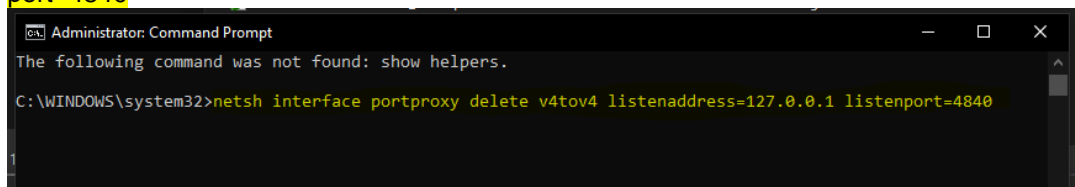
Unbind portproxy:

If you used "connectOPCUaToSim.bat" before to connect the OPCUa to the sim, you have to delete this connection.

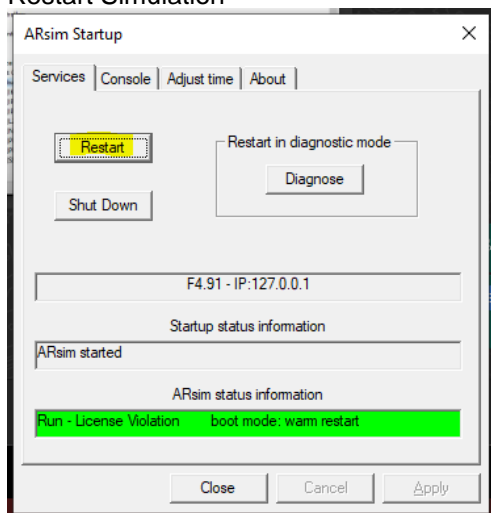
- Open CMD as admin:



- Run following command: "netsh interface portproxy delete v4tov4 listenaddress=127.0.0.1 listenport=4840"



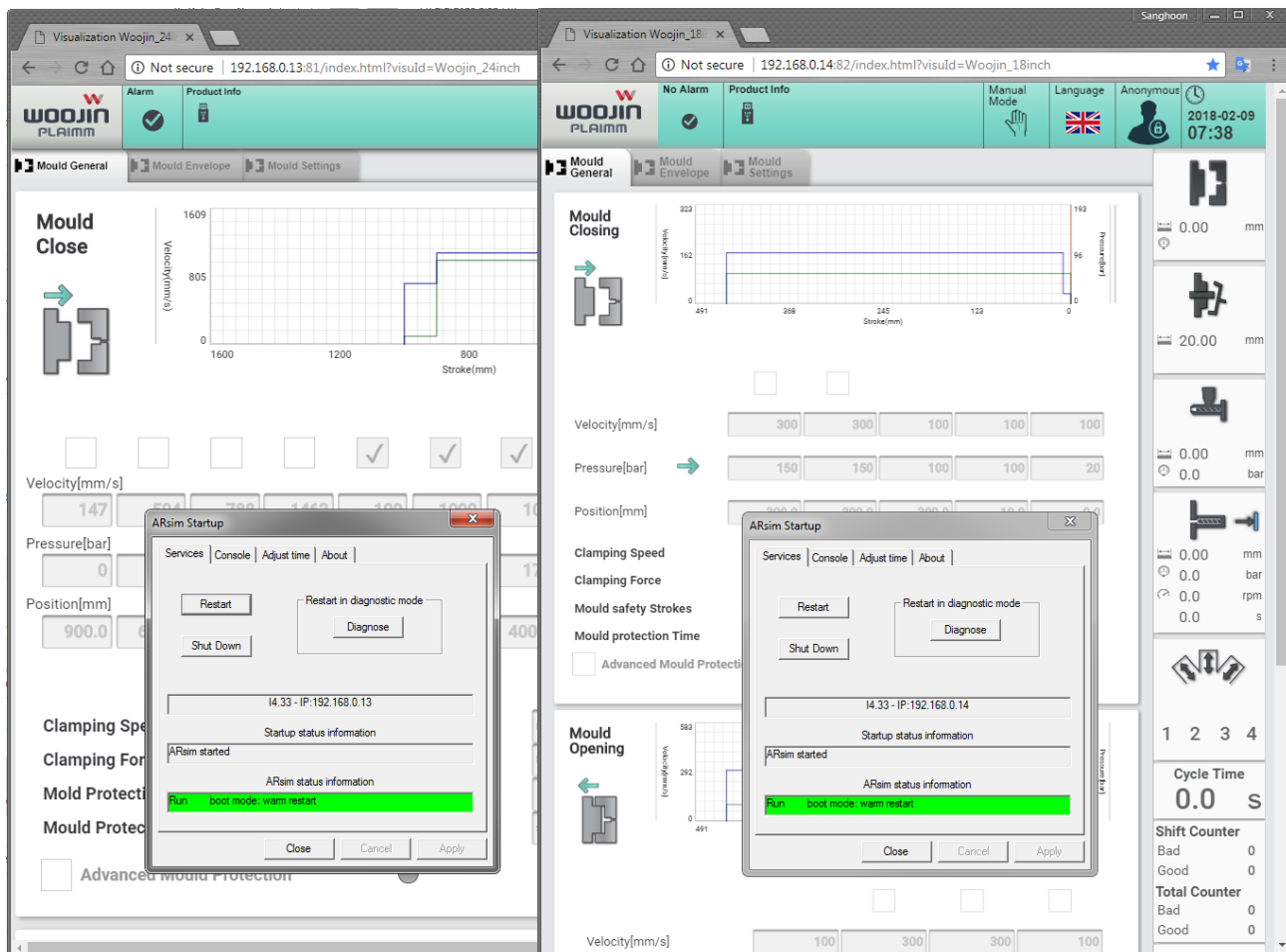
- Restart Simulation



9.12.2. Old Versions (SVN: DL version < 6806, TH version < 3420, TE version < 3035)

9.12.2.1. Target

Multiple ARsim should be operated simultaneously on one PC, then we can continue all the development of multiple project (DL,TH,TE..) in a PC.



- For this purpose, all the IP address is change to 192.168.0.x from default IP 127.0.0.1.
 - DL : 192.168.0.13
 - TH : 192.168.0.14
 - TE : 192.168.0.15

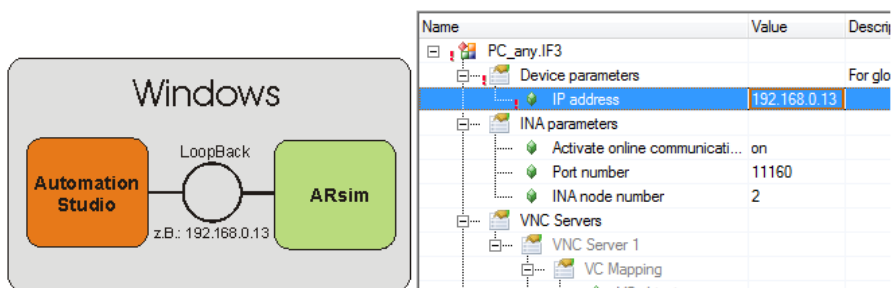
- Address of Visualization
 - DL : 192.168.0.13:81/index.html?visuld=Woojin_24inch
 - TH : 192.168.0.14:82/index.html?visuld=Woojin_18inch
 - TE : 192.168.0.15:83/index.html?visuld=Woojin_18inch

9.12.2.2. Setup on Windows (PC)

- loopback adapter

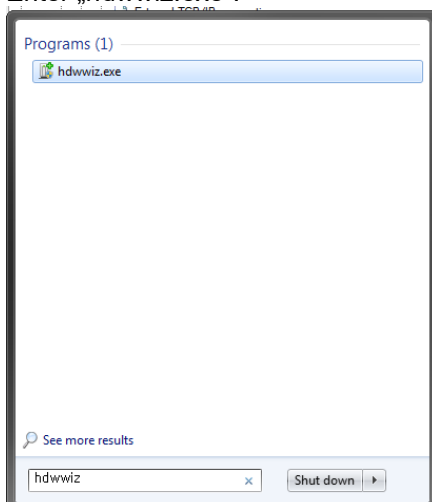
Connection via loopback

If the Ethernet interface is configured in Automation Studio for loopback, an unlimited number of virtual connections are possible between Automation Studio and an ARsim. Since each ARsim is assigned its own IP address, multiple ARsim devices can communicate with each other.

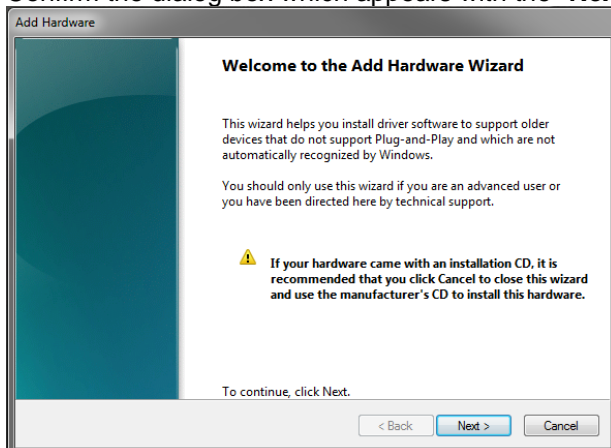


The following steps are necessary:

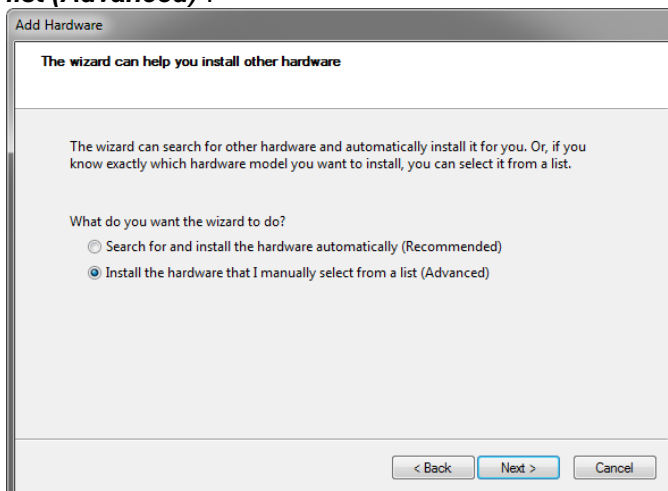
- Set the IP address in the project (see previous image)
 - Install the loopback adapter
 - Transfer the project to the target system
 - Change the online connection to the IP address configured in the project (/REPO=11160)
- Installation of Loopback adapter
 - Click the Start menu
 - Search for „cmd“
 - Enter „hdwwiz.exe“.



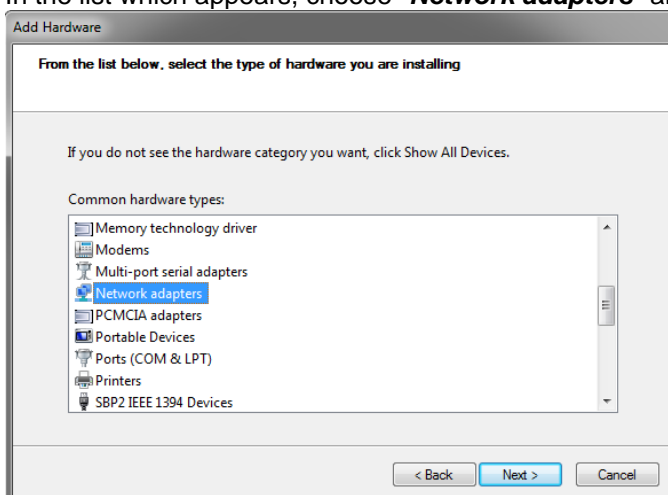
- Confirm the dialog box which appears with the "Next>" button.



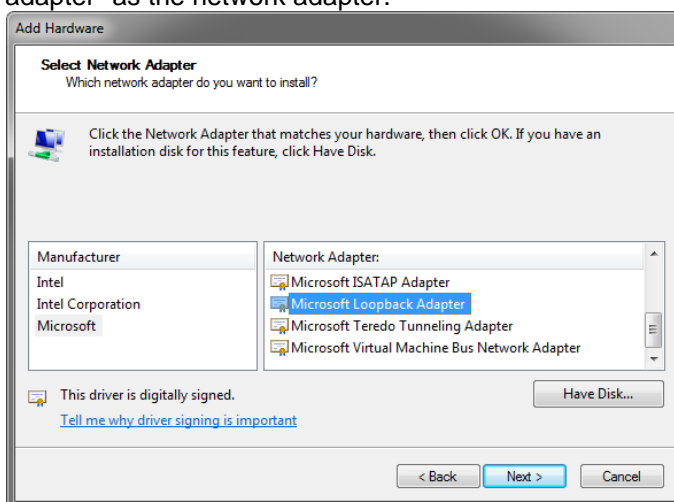
- After clicking on **"Next"**, select the option **"Install the hardware that I manually select from a list (Advanced)"**.



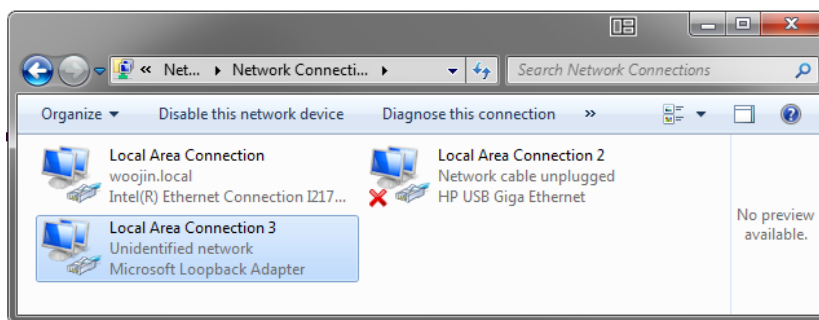
- In the list which appears, choose **"Network adapters"** and confirm by clicking **"Next>"**.



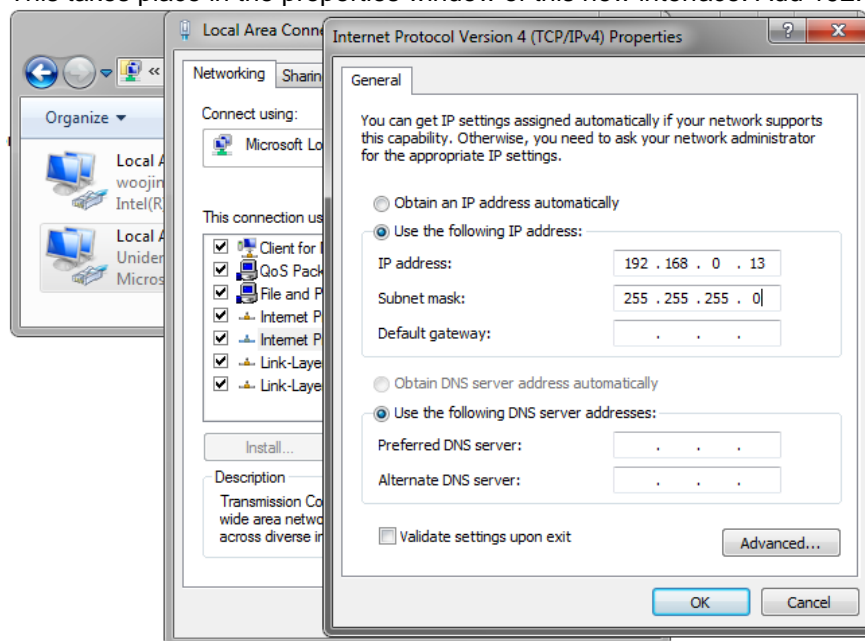
- In the dialog box that opens, select **"Microsoft"** as the manufacturer and **"Microsoft loopback adapter"** as the network adapter.



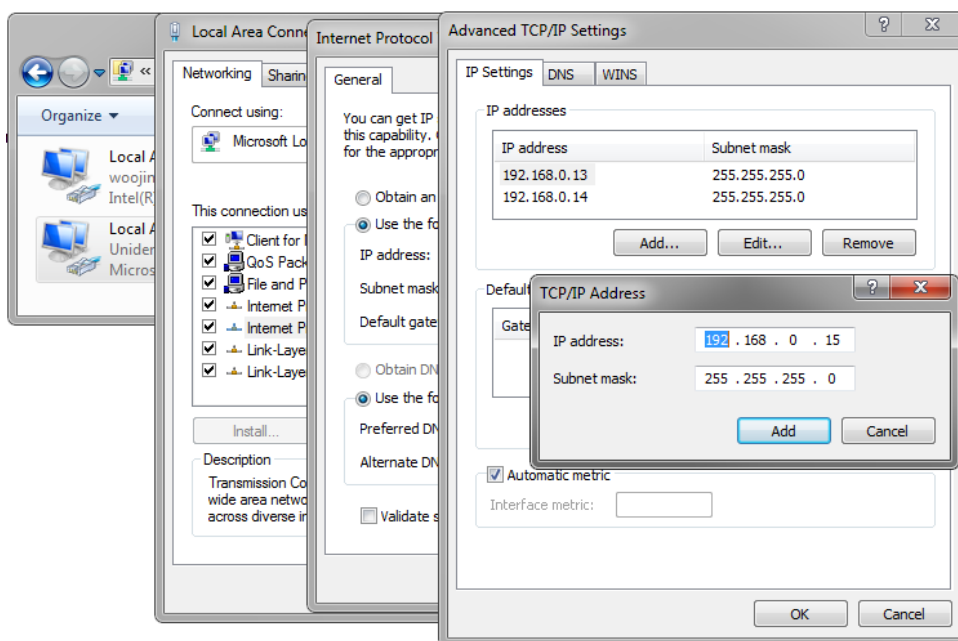
- Driver installation takes place once **"Next>"** has been pressed.
- Installing the **"Microsoft loopback adapter"** creates a new (virtual) network connection. This network connection must now be configured.



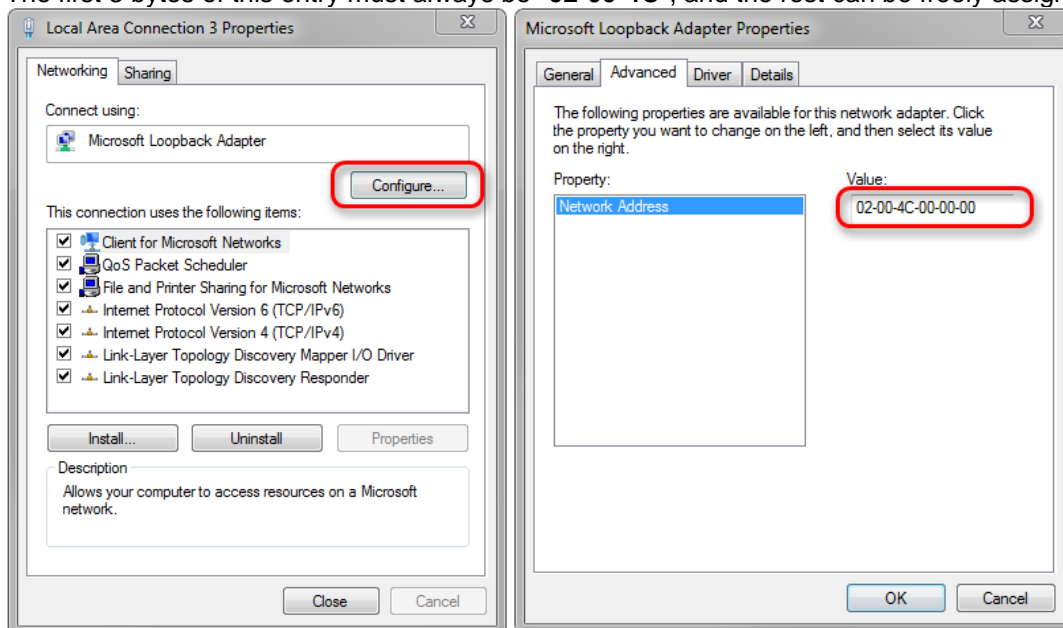
- This takes place in the properties window of this new interface: Add 192.168.0.13.



- To add more IP addresses (to start multiple ARsim simultaneously), click on the "**Advanced**" button. In the dialog box that opens, click on the "**Add**" button.
 - IP address : 192.168.0.13 (DL), 192.168.0.14 (TH), 192.168.0.15 (TE)
 - Subnet mast : 255.255.255.0



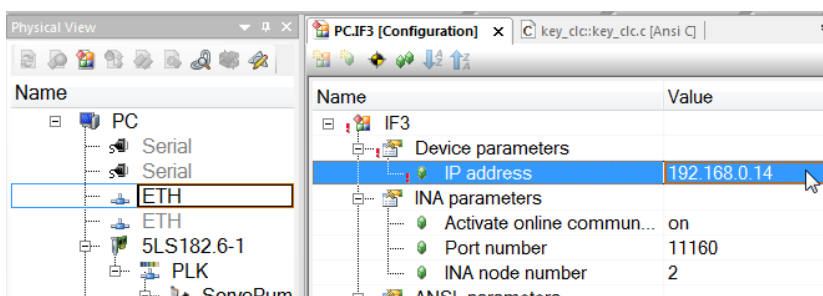
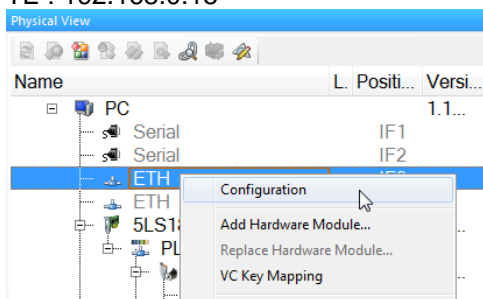
- In order for the function "Browse for Targets" to work in the Automation Studio online dialog box, the MAC address must first be set in the properties window of the loopback adapter. To do this, press the "Configure..." button in the properties window. The first 3 bytes of this entry must always be "02-00-4C", and the rest can be freely assigned.



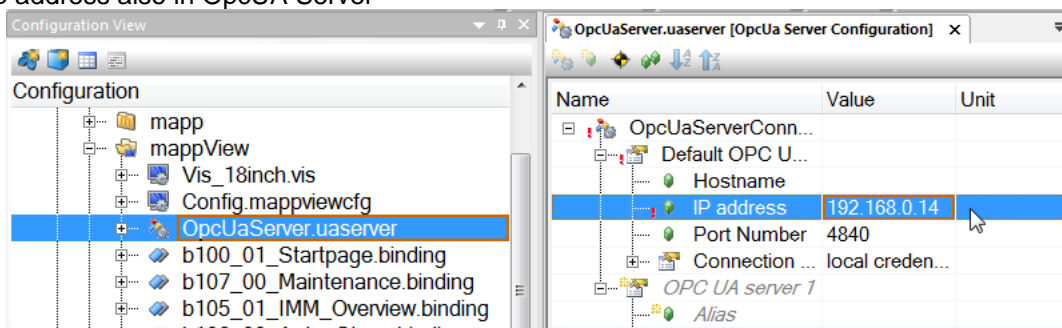
- Installation finished!!

9.12.2.3. Setup on Automation Studio

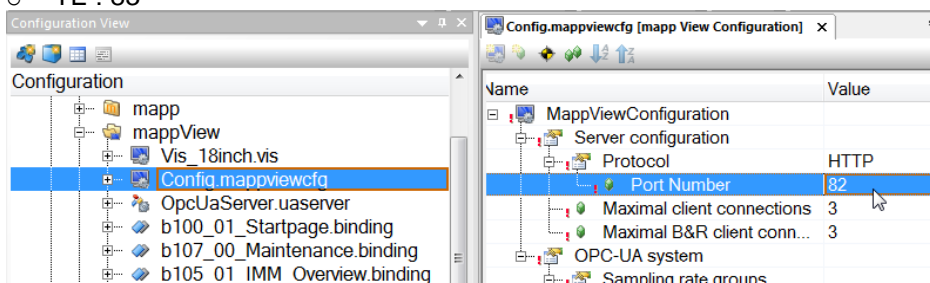
- Setup ip address in Ethernet configuration
 - DL : 192.168.0.13
 - TH : 192.168.0.14
 - TE : 192.168.0.15



- Setup ip address also in OpcUa Server

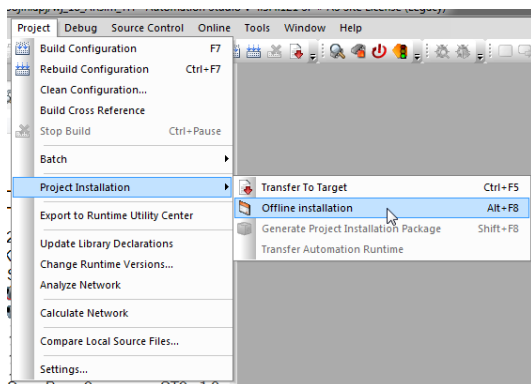


- Change a port number in mappView Configuration
 - DL : 81
 - TH : 82
 - TE : 83



9.12.3. Transfer software to ARsim

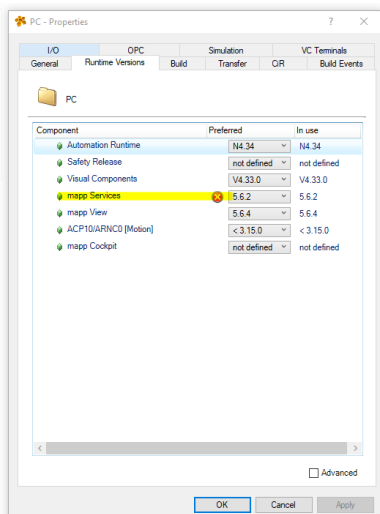
- If an ARsim was configured the default IP address 127.0.0.1 (local host), then it will starts also with this IP.
- Firstly connect with default IP address 127.0.0.1, then execute a transfer software with „Offline installation“ to change the IP address.
- After all the software transferred, the „Offline Installation“ will be not finished because IP address is changed, so press a „Cancel“ button and then connect with new IP address.
- All the configuration is finished!! Try to access visualization from Chrome browser.



9.12.4. Access from Chrome browser

- DL : 192.168.0.13:81/index.html?visuld=Woojin_24inch
- TH : 192.168.0.14:82/index.html?visuld=Woojin_18inch
- TE : 192.168.0.15:83/index.html?visuld=Woojin_18inch

9.13. Remove Dependencies from Automation Studio



- Remove Lockout Acp10Arnc0 and Cpc10Arnc0 from config file **C:\B&RAutomation\ASyyl\AS\TechnologyPackages\mapp\X.X.X\ApplicationSettings\TP.cfg**
yy is your actual Automation studio version
x.x.x is your mapp service version

```

</Group>
<Group ID="Lockout9">
  <Property ID="VersionType" Value="Acp10Arnc0" />
  <Property ID="ToVersion" Value="5.5.9999" />
</Group>
<Group ID="Lockout10">
  <Property ID="VersionType" Value="Acp10Arnc0" />
  <Property ID="FromVersion" Value="5.7.0" />
</Group>
<!-- Default objects are automatically applied to a new configuration

```

The restriction is only for CNC core, but we do not use it. So we can delete lockout for dependency.

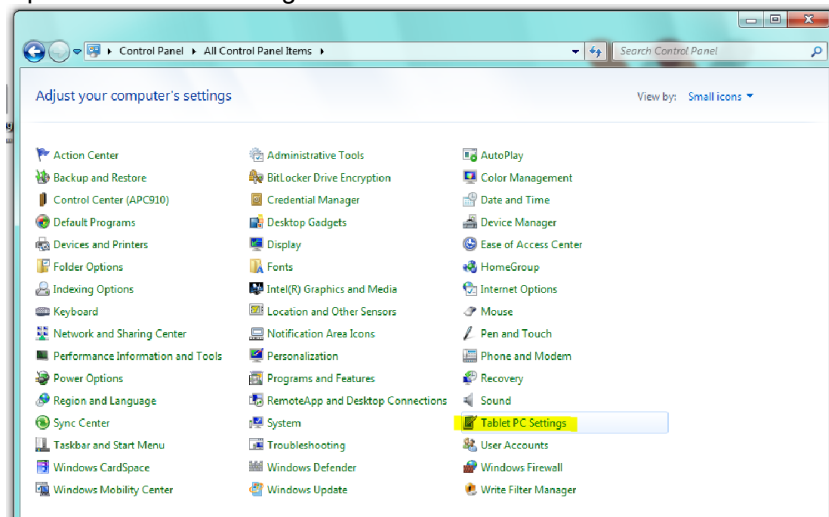
- If you have same problem with other B&R technology packages you must repeat it for other packages in same way
- Restart Automation Studio, then compile project

9.14. Touch Screen Calibration

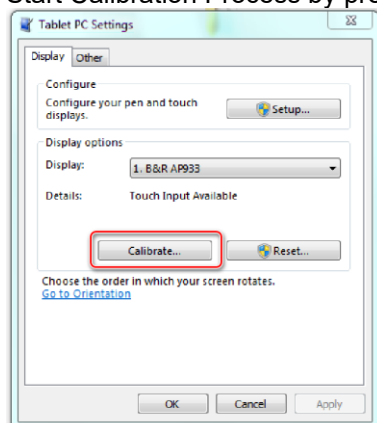
Open “Control Panel” and set View to Small Icons



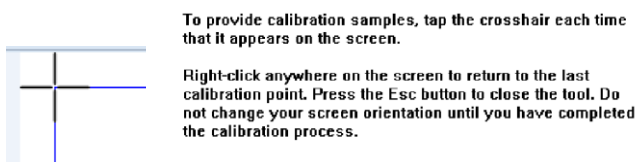
Open “Tablet PC Settings”



Start Calibration Process by pressing on the Button “Calibrate...”



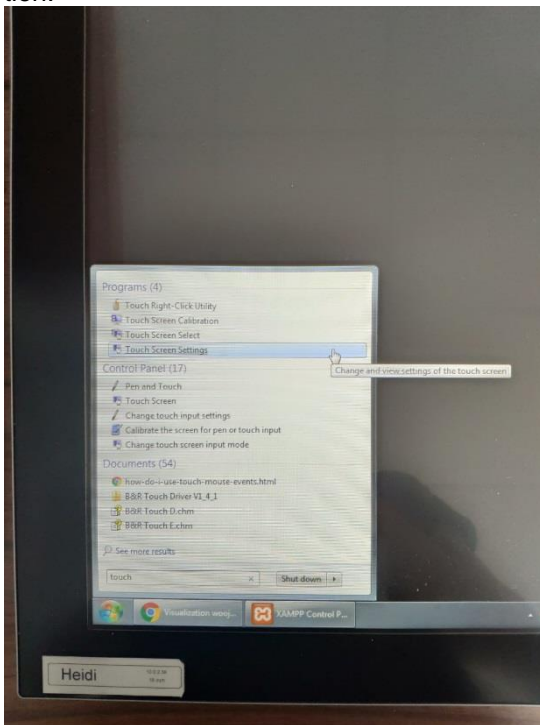
Touch the crosshair as precise as possible.



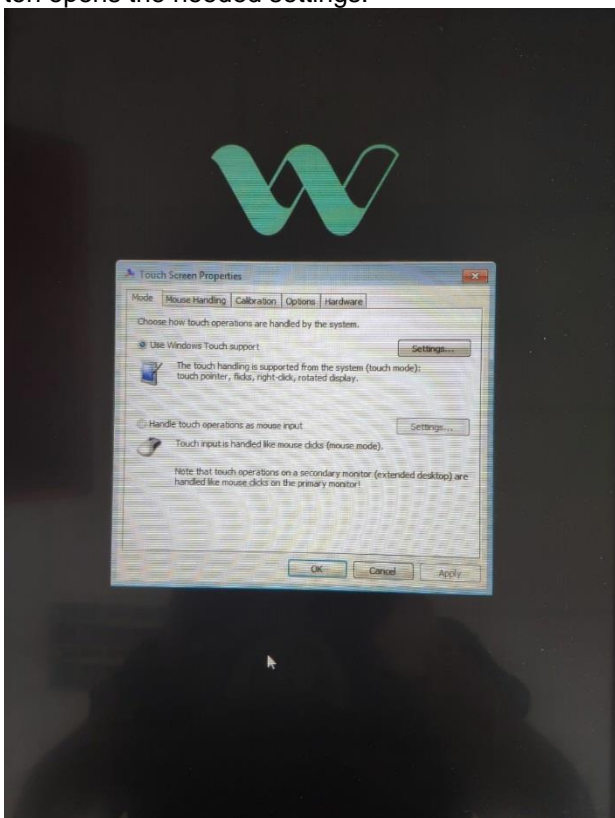
9.15. Touch Keyboard Enabling and Disabling

By default on the provided Win 7 APC Image the Touch keyboard possibility is disabled. To activate or deactivate please follow the upcoming steps:

- 1) Open Windows Menu and search in the Search Input Field for “Touch Screen Settings”, select this Option.

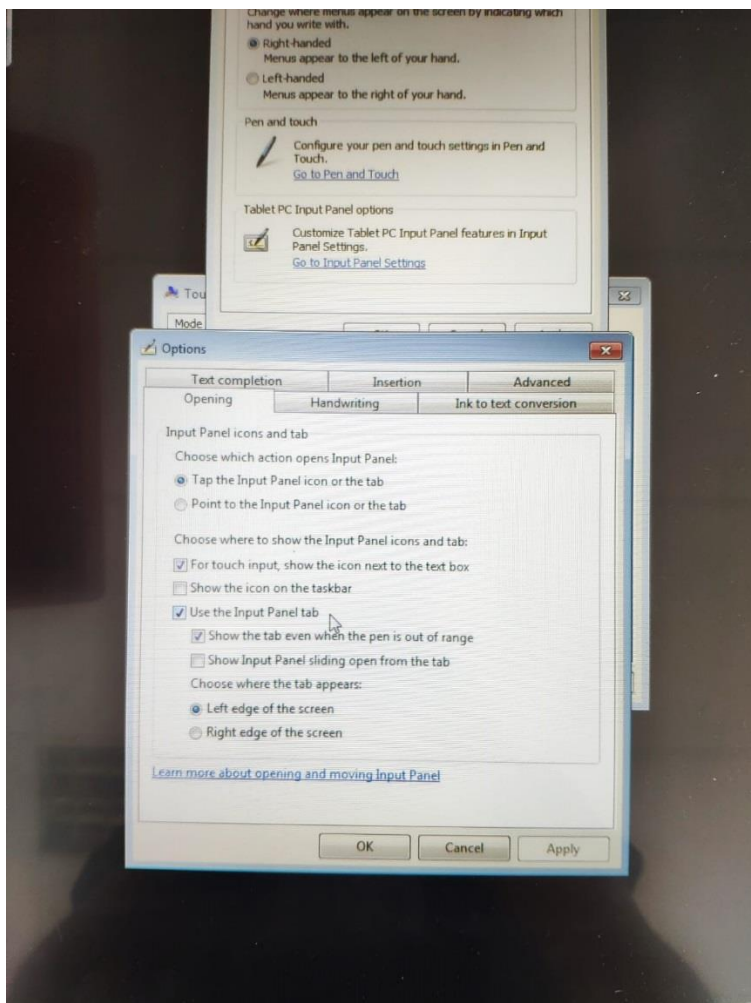


- 2) In the opened Touch Screen Properties Window, at “Use Window Touch Support” – Area, “Settings” Button opens the needed settings.



- 3) The opened Window “Tablet PC Settings” includes 2 Options: “Display” and “Other”. On the Tab “Other”, Tablet PC Input Panel Options can be chosen. By clicking the link “Go to Input Panel Settings” the Options for Text and Keyboard settings can be adjusted.

To enable or disable now the Virtual Keyboard, the checkbox “Use the Input Panel tab” must be checked or unchecked. After successful changing the Touch Screen Keyboard is setted. “Options” should look like on the following Screenshot:



9.16. Dynamic Service Password

The Password for Service-User will be generated dynamically in the future. The password is generated every **ten minutes** after the following criteria:

- The first two characters are always "WJ".
- The third character is the first digit of the current day.
- The fourth character is the first digit of the current hour.
- The fifth character is the tens digit of the current minute.
- The sixth character is the number representing the current weekday, where Sunday is represented by the digit 0.

- As a helper you can use the schematic shown in the picture on the right.



Example:

Assuming the current date is Tuesday June 13, 2023, and the current time is 10:40 PM.
 The extracted information is as follows:

- The first two characters are "WJ".
- The third character is "3" (first digit of the day).
- The fourth character is "1" (first digit of the hour).
- The fifth character is "4" (tens digit of the minute).
- The sixth character is "2" (Tuesday, since Sunday = 0).

The generated password is "WJ3142".

Note: Make sure to keep the password secure and avoid sharing it, as it is a dynamically generated password.

9.17. Setup SFM Fingerprint Sensor TE Tag 6

This manual is valid for Image version IMC500.009.1. Please ensure that the correct version is installed.

9.17.1. Step 1 Check Settings in B&R Slim Controller App

Open B&R Slim Controller by right-clicking on the symbol in the taskbar and then left-click on "Open" (Figure 1). B&R Slim Controller opens on its main tab "Info" (Figure 2).

The only setting that must be changed is the IP-Address when the Windows Ip-Adress needs to be changed. The standard setting is 10.1.1.200.

Therefore, open the tab "Setting". Enter the new IP-Address as follows:

opc.tcp://xxx.xxx.xxx.xxx:4841

IMPORTANT:

THE PORT NUMBER MUST NOT BE CHANGED

After the Setting is changed, B&R Slim Controller restarts. Please check on the Info Tab, if the OpcUa-Server is running and the COM-Port is active and in the State "IDLE".

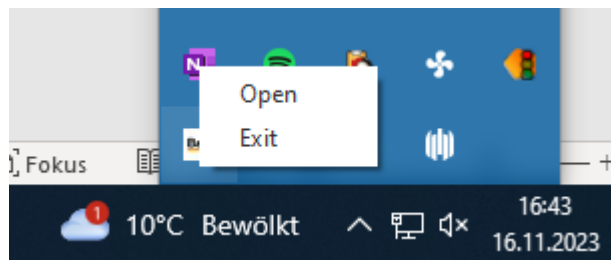


Figure 1 Open Controller App

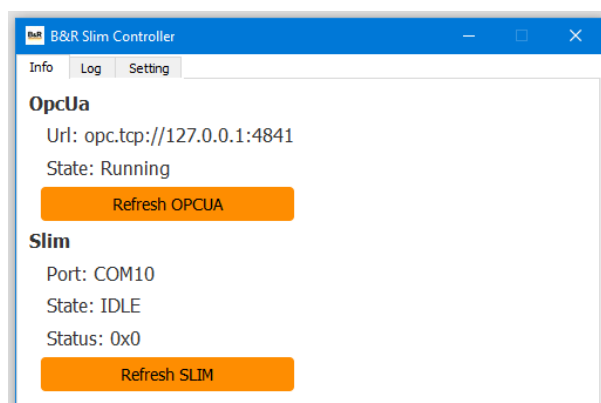


Figure 2 Main Tab "Info"

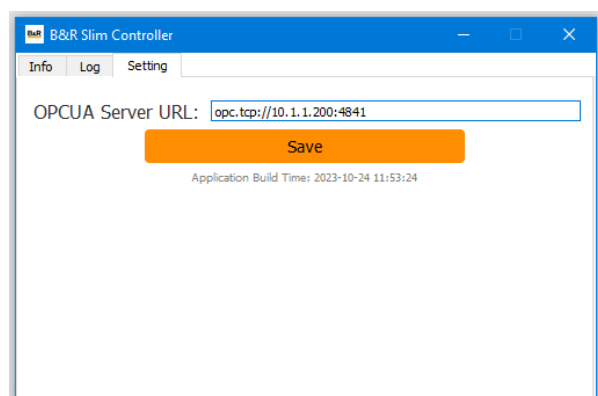


Figure 3 Tab "Setting"

9.17.2. Step 2 Initial Setup of sensor and activate option

Connect the sensor to a free USB-Port. The required driver software is already installed in Image-File.

The Status of “Slim” changes according to Figure 5. If the sensor is connected properly, the OpcUa status also changes to “Running”.

To activate the option login as user “Service” and change to the content-page “**Optional**”, and in the page to the tab “**7.Control**” (Figure 6). Set the value “**07A021 – SFM Slim Fingerprint**” from 0 to 1.

The sensor is now activated and ready to use. For the further setup proceed with step 3.

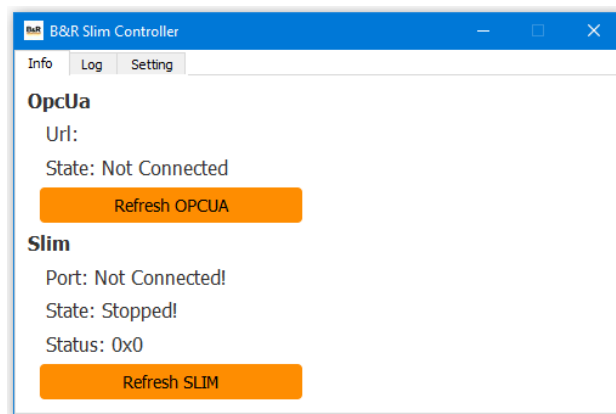


Figure 4 Sensor not connected

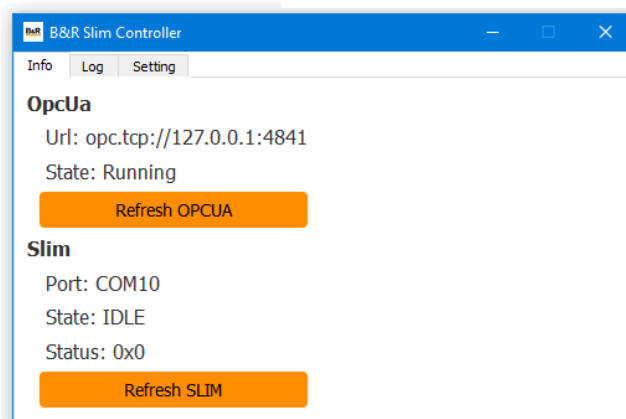


Figure 5 Sensor connected

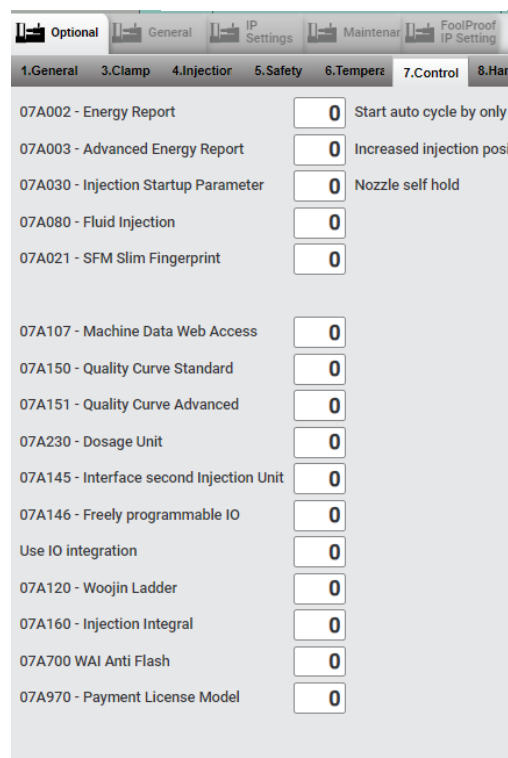


Figure 6 Options Page

9.17.3. Step 3 Write config to Sensor

If a factory new sensor is used, the configuration needs to be written on the sensor. Therefore, change to the User settings (Figure 7).

To write the configuration, activate the checkbox “Enable User Settings Management” and then the button “Write Configuration” (Figure 8).

The status will change to “Write Configuration to sensor.”

The status will change to “Sensor ready” when the write was successful.

The sensor is now completely activated, and fingerprints can be assigned to users. To do that proceed with step 4.

The screenshot shows the 'User Management' section of the software. It includes a 'Role' configuration area with several checkboxes: 'Enable Role Alarm Reset', 'Enable Automatic Mode', 'Enable Role Manual Mode', 'Enable Role for Machine Parameters', 'Enable Role for SPC Parameters' (which is checked), and 'Enable User Creation'. Below this is a table of users with columns for 'Username', 'User Role', and 'Fingerprint'. The 'Albin' user is highlighted in green. At the bottom, there is a section for 'Enable User Settings Management' with a checkbox, a 'Status: Sensor Ready' indicator, and a 'Write Configuration' button. To the right are buttons for 'Register Fingerprint', 'Delete Fingerprint', and 'Delete all fingerprints'.

Username	User Role	Fingerprint
Albin	AlarmReset AutomaticMode Everyone ManualMode SettingSPC SettingsMachineData UserCreation	no
Anonymous	Everyone	no
Elia	AlarmReset AutomaticMode Everyone ManualMode SettingSPC SettingsMachineData UserCreation	no
Engineer	AlarmReset AutomaticMode ManualMode SettingSPC SettingsMachineData	no

Figure 7 UserSettings

This close-up shows the 'Enable User Settings Management' checkbox checked and highlighted with a red box. Below it, the status is 'Write Configuration to sensor'. The 'Write Configuration' button is also highlighted with a red box. To the right are the 'Register Fingerprint', 'Delete Fingerprint', and 'Delete all fingerprints' buttons.

Figure 8 Status Change and Buttons

9.17.4. Assigning a fingerprint

For assigning a fingerprint select the specific user in the users table. Then activate the checkbox “Enable user Settings Management” and press the button “Register Fingerprint”. The status changes from “Sensor ready” to “Place Finger on Sensor and wait for green light two times”.

- Place finger on the sensor and wait for the green light.
- Remove the finger and place it on the sensor and again.
- Wait for the green light.
- The status changes to “Fingerprint OK” if the fingerprint was assigned successfully.

9.17.5. Deleting a fingerprint

For deleting a fingerprint select the specific user in the users table. Then activate the checkbox “Enable user Settings Management” and press the button “Delete Fingerprint”. The status changes from “Sensor ready” to “Deleting Fingerprint”. When the status returns to “Sensor ready” the fingerprint was deleted and unassigned from the user.

9.17.6. Deleting all fingerprints

For deleting all fingerprints login as user “Service”. The button “Delete all fingerprints” is now visible and unlocked. Press the button and the status changes to “All Fingerprints will be deleted”. Wait for the status to change to “Fingerprints deleted successfully”.