

iSMA-B-FCU

User Manual

FCU Updater

FCU Updater v2.1

New Project Open Project SOX Console Download Latest Firmwares About

Project Name: Project Name
Protocol: Modbus RTU
Path: C:\

Select Outdated Devices Select All Devices Clear Selection Backup_20180427_132307_Manual

Selected Devices: 0/2

Checked	MAC Address	Device Name	BACnet ID	Application Status	Firmware Version	Firmware Status	Available Backup
<input checked="" type="checkbox"/>	1	iSMA-B-FCU	826001	OK	1.4	ONLINE	Backup_20180427_132307_Manual
<input checked="" type="checkbox"/>	2	iSMA-B-FCU	826002	N/A	1.3	OUTDATED	Backup_20180427_132307_Manual

Upload/Download Wizard

Start Transmission

Stop Transmission

Transmission Settings

Discover Devices

Add Device

Remove Device

Reset Devices

Default Settings

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1 Introduction

1.1 Revision history

Rev	Date	Description
1.0	06.12.2016	<ul style="list-style-type: none"> • First edition
1.2	19.07.2017	<ul style="list-style-type: none"> • Updated to FCU Updater v.2.0
2.1	30.04.2018	<ul style="list-style-type: none"> • Updated to FCU Updater v.2.1.1

Table 1 - Revision History

1.2 Software requirements

Windows compatibility – FCU Updater is an application intended for Windows only, which can be run on Windows 7, 8 and 10 series.

WARNING! To use all features of the FCU Updater the latest Oracle Java 32-bit is required. Please download the latest Java software from Oracle Download website first.

1.3 General purpose of FCU Updater software

The FCU Updater software is designed to perform a start-up and maintenance operations for both a single device or for many devices connected to a communication network on the site. The FCU Updater is ready to communicate with iSMA-B-FCU controller and iSMA-B-LP panel. The software is free and can be obtained from your distribution partner or downloaded from support server at www.support.gc5.pl

Note: The FCU Updater has been developed in a way to guarantee the highest level of security against the loss of an existing application loaded on the devices before any changes are made. The software always automatically backups the application by downloading it to a local PC where FCU Updater is running. Moreover, the system always checks compatibility between

the firmware and the uploading application before transferring them to the controller to make sure they can work together on the device, without problems.

For simplicity and time-saving, the FCU Updater allows, e.g. to upload firmware, upload an application, reset a device or set it to default settings on more than a single device at a time. This function can be beneficial as far as updating the firmware on all devices at once, is concerned. Similarly, a backup of the existing applications from all devices can be automatically transferred to a local PC from many controllers at once without operator interactions.

FCU Updater is a project-oriented application which means that whole network configuration parameters, iSMA-B-FCU controllers with their application backups and firmware versions are stored locally inside the project folder for later reuse.

FCU Updater offers the following actions:

- Managing projects
- Loading the latest firmware versions from a Global Control 5 Sp. z o.o. server
- Uploading new firmware on devices
- Uploading default or custom application on devices
- Performing backups of the existing device's application on a local PC
- Restoring earlier saved application to one or more devices
- Resetting devices
- Resetting to default settings on many devices,
- Starting/stopping SOX protocol to support programming on WorkPlace
- Viewing internal logs on Console

All functions are available and work in the same way for all three communication types:

- Modbus RTU - using the RS485 port
- BACnet MSTP - using the RS485 port
- USB - using the direct USB cable connection except for SOX and Console option

1.4 Naming and its definition

FCU Updater communicates to one or more devices and transfers data in both directions. It is crucial to distinguish the direction of data flow as described below.

- **Uploading** – means transferring data from PC to a controller, for example when a new firmware or custom application flows to the iSMA-B-FCU device.
- **Downloading** – means transferring data back from the iSMA-B-FCU controller, for example when data flows back from iSMA-B-FCU device to a local PC.

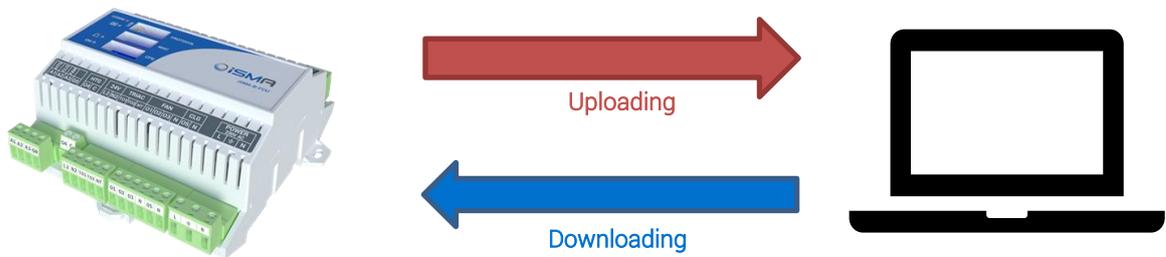


Figure 1 – communication transfer directions

2 Checking software requirements at application start

2.1 Java version

FCU Updater software requires Oracle Java 32-bit to be installed on user's PC. Each time the FCU Updater starts, the system notifies whether the core version of Java is available.

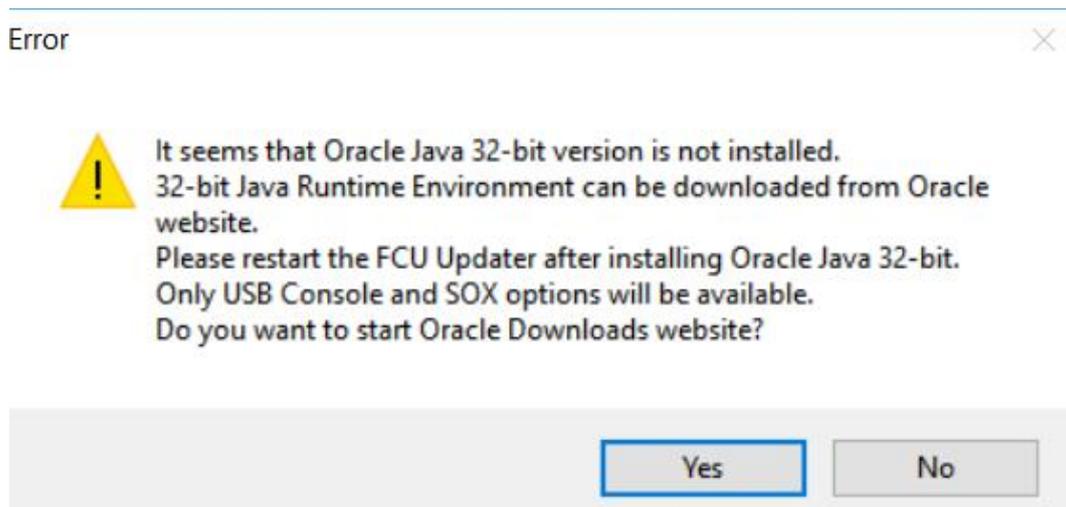


Figure 2 – JAVA not installed

The user can run FCU Updater without having correct Java version installed with limited functionality, such as opening the SOX protocol and viewing internal and live logs on the console. The SOX protocol and Console are described in detail in the following chapters herein.

WARNING! In the case when the required Java version is not installed, it is recommended to close the FCU Updater and download Java SE 32-bit (windows x86) software from the Oracle's website.

2.2 Internet access and firmware availability

WARNING! When the FCU Updater is run for the first time, it is mandatory to have the Internet access on a local PC. The Internet access allows the application to connect to the Global Control 5 Sp. z o.o. server and download (in the background) all new firmware files to local PC automatically. When FCU Updater finishes the downloading, the following information dialogue appears.

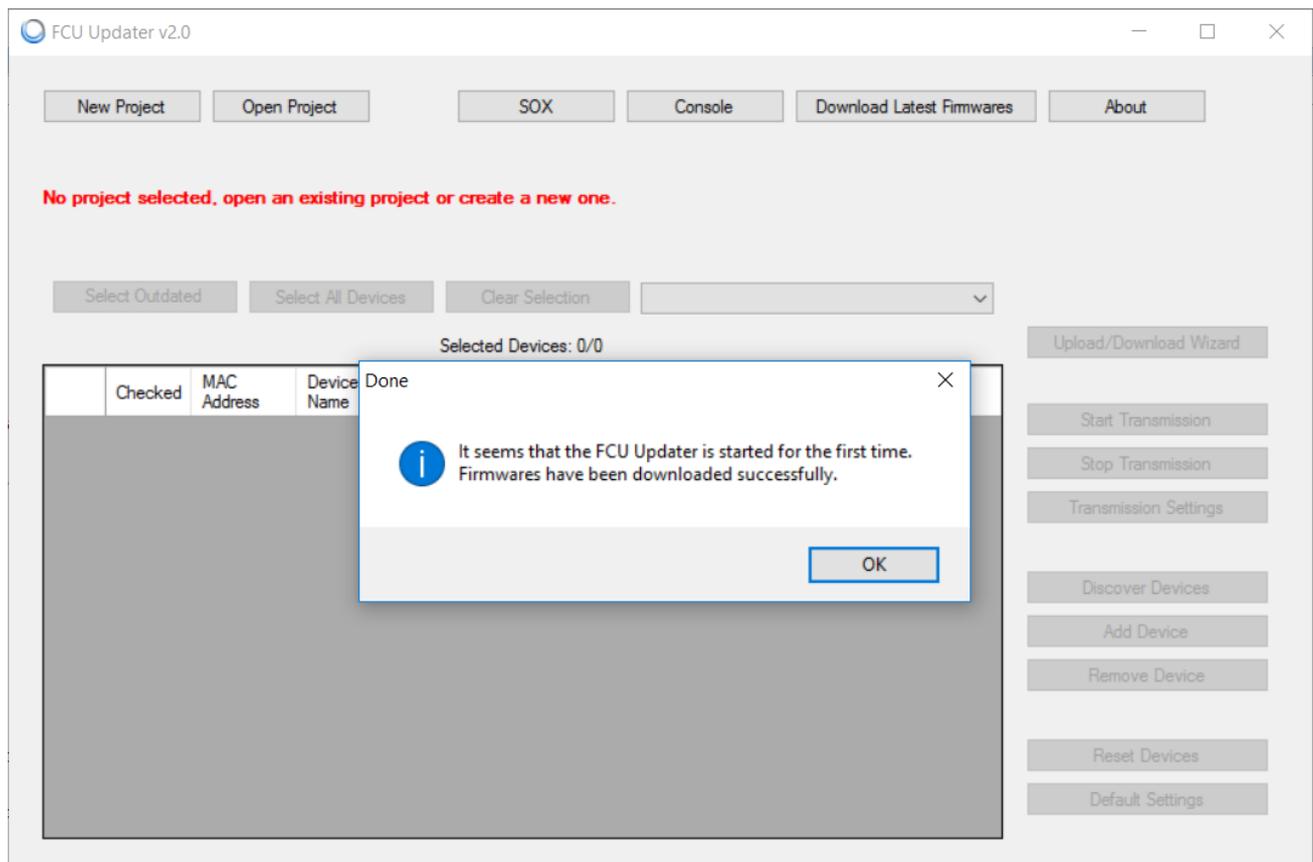


Figure 3 – First run

Later, after the first start up, each time the FCU Updater is switched on, the system automatically checks (without downloading it automatically) whether a newer firmware version is available on the Global Control 5 Sp. z o.o. server. It is recommended to download the latest available firmware from the server each time when prompted by the system. The user can check if the newest firmware is available at any time by pressing 'Download Latest Firmware' button.

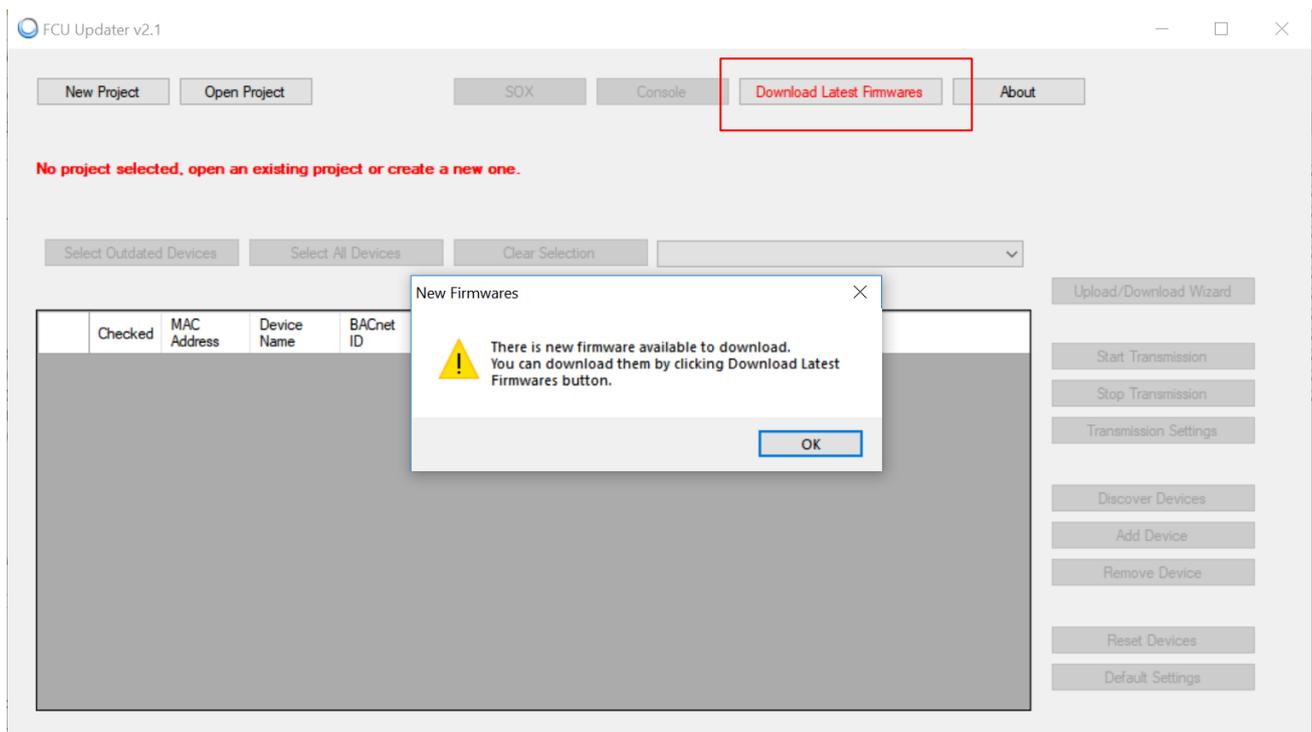


Figure 3 – Each time FCU Updater runs

After the new firmware files are successfully downloaded, the following confirmation dialogue is displayed.

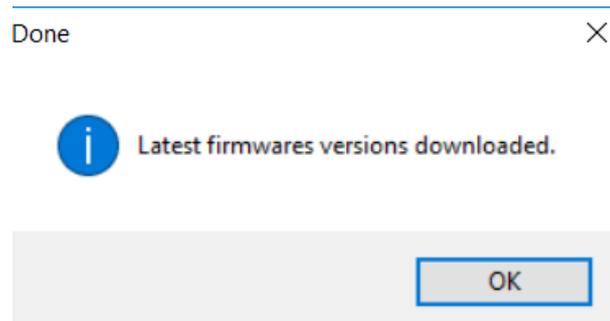


Figure 4 – New firmware downloaded successfully

In the case when no new firmware files are available on the server, the below dialogue appears.

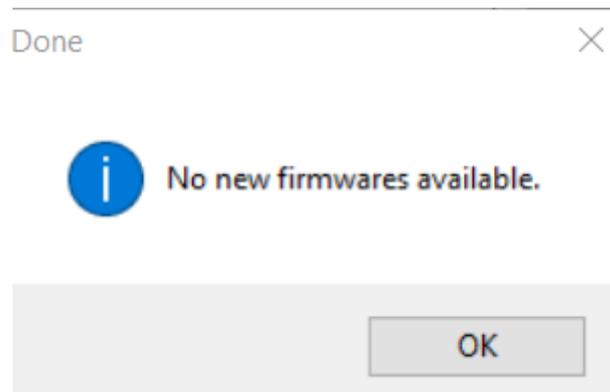


Figure 5 – No new firmware available

2.3 After the first run

Each time the FCU Updater is running (except for the first start up as described above), a below FCU Updater window displays.

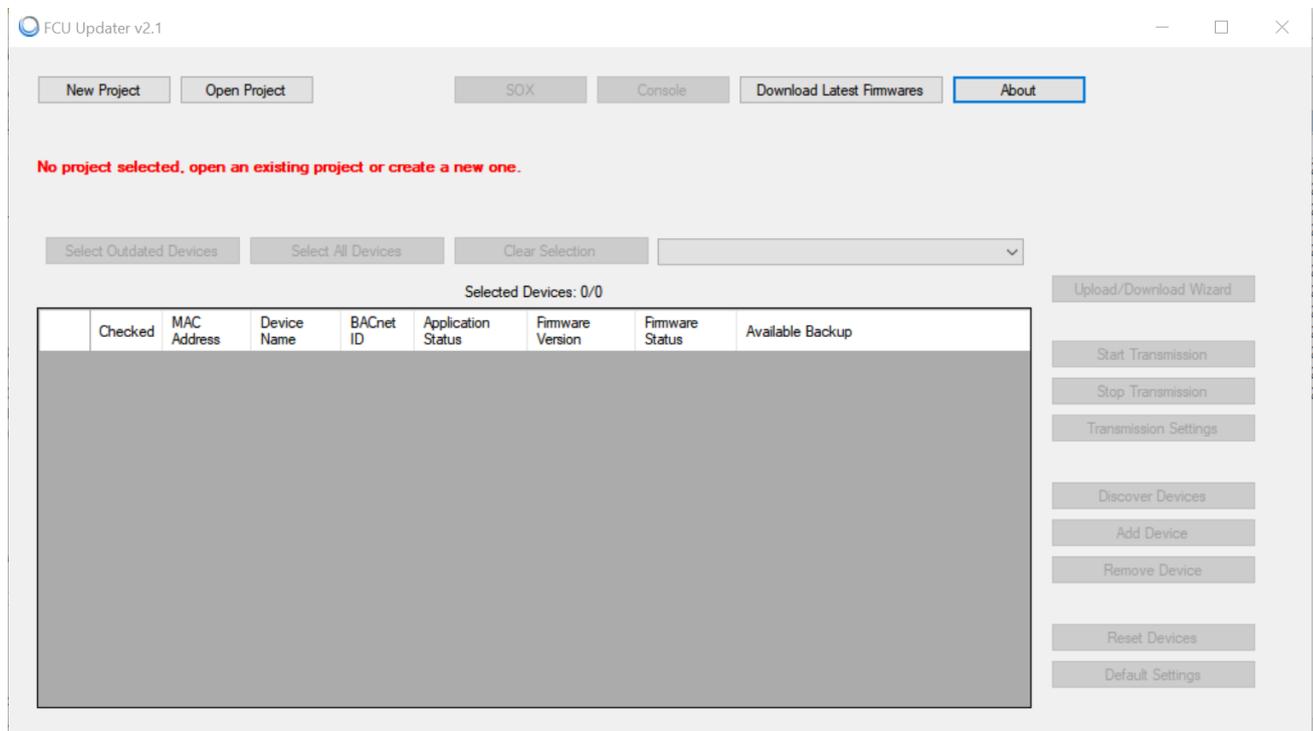


Figure 6 – After the first run

Note: FCU Updater has almost all options disabled at this moment. The user has two choices depends on what is expected:

If the user wants to work with external software, e.g. 'Work Place', before running the SOX protocol it is essential to configure the connection of iSMA-B-FCU controller directly to the USB port on a local PC. For more details, please refer to a relevant chapter herein.

If the user wants to use any impaired functions of the FCU Updater software, it is required to open or created the project first. Please follow next chapter for more details.

3 Working with projects

The FCU Updater is designed to be more consistent and portable through the introduction of a project orientation. Working with projects allows the user to keep all information in regards to the huge number of devices from different sites scored and organised in folders and subfolders. Operating with the projects also allows the system to automatically update project folders with any newly discovered devices or backup, and other features.

Note: At first, it is essential to create a new project or open an existing one by selecting the 'New Project' or 'Open Project' button respectively.

3.1 Creating a new project

After clicking the 'New Project' button, the new project is created and stored in a selected location, usually on a local PC drive.

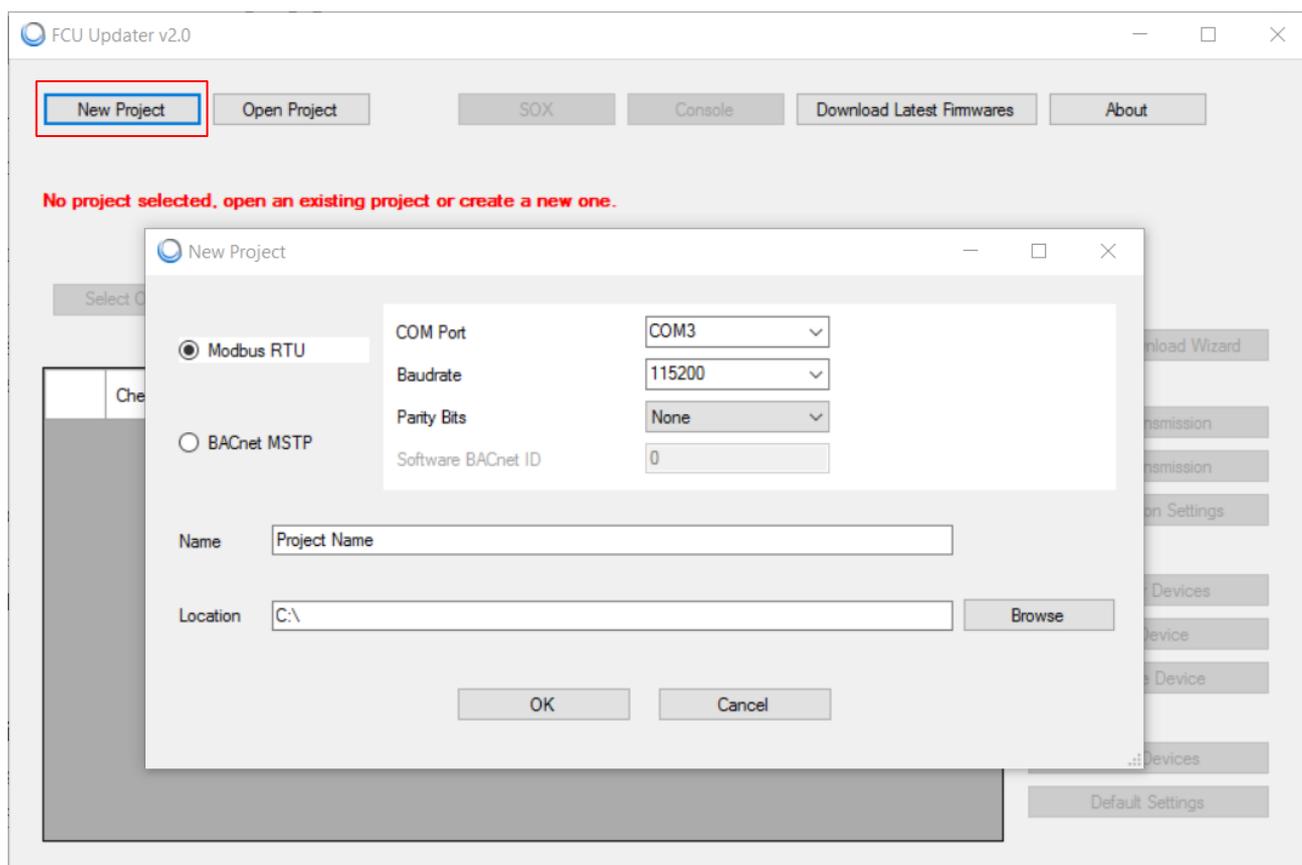


Figure 7 - Creating a new project

The window with transmission settings and specification of the location appears. Select the protocol type: Modbus RTU or BACnet MSTP with all required communication settings for a chosen protocol. For more details of transmission settings, please refer to relevant chapters describing how to setup Modbus RTU and BACnet MSTP protocols.

If at this point the exact protocol type is not known, the user can change protocol type and its setting later at any time.

Note: It is recommended to connect PC to the required Modbus or BACnet network first which guarantees that the new COM port (other than built-in COM1) appears in the 'COM Port' field, for example, 'COM3'.

Note: If it is required to make a direct connection (via USB on local PC port) to only one device: iSMA-B-FCU or iSMA-B-LP panel, please select a built-in 'COM1' in 'COM Port' field and leave default values for other settings.

The second part of dialogue asks for a project name and its location on a local PC.

Pressing the 'OK' button verifies the typed data and creates a new folder in a particular place. The folder name is the same as the one chosen for Project Name. Thus the user can easily copy and move the folder to any other location or email or even rename it. Before performing any operations with the folder, close the FCU Updater first.

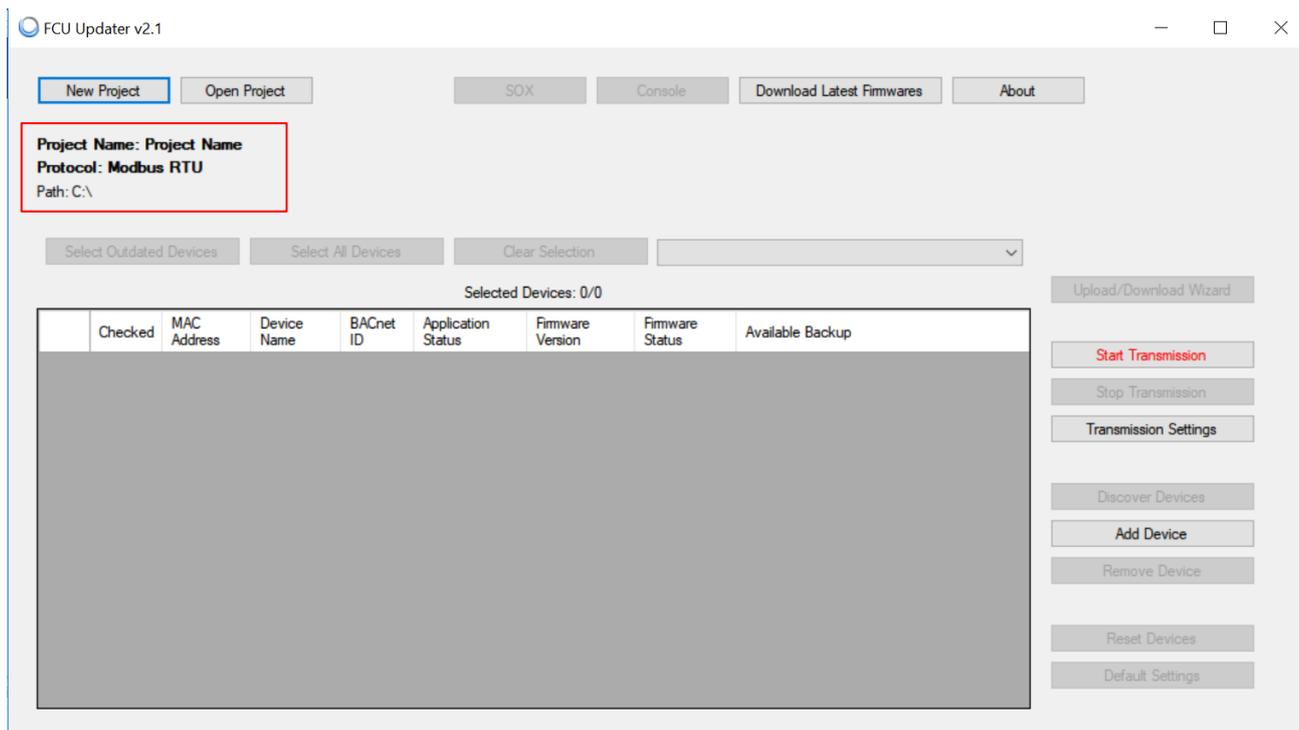


Figure 8 - After creating a new project

Now the project is created and opened. FCU Updater displays the current context by showing information line about the opened project: its name, location and setup transmission protocol. All that information appears on labels located under 'New Project', 'Open Project' buttons. Some of the previously disabled functions are now enabled, including 'Start Transmission' and 'Transmission Settings'.

The next step is to start transmission on a chosen protocol which is described below herein.

3.2 Opening an existing project

Pressing the 'Open Project' button opens an existing project stored on given location usually locally on a PC.

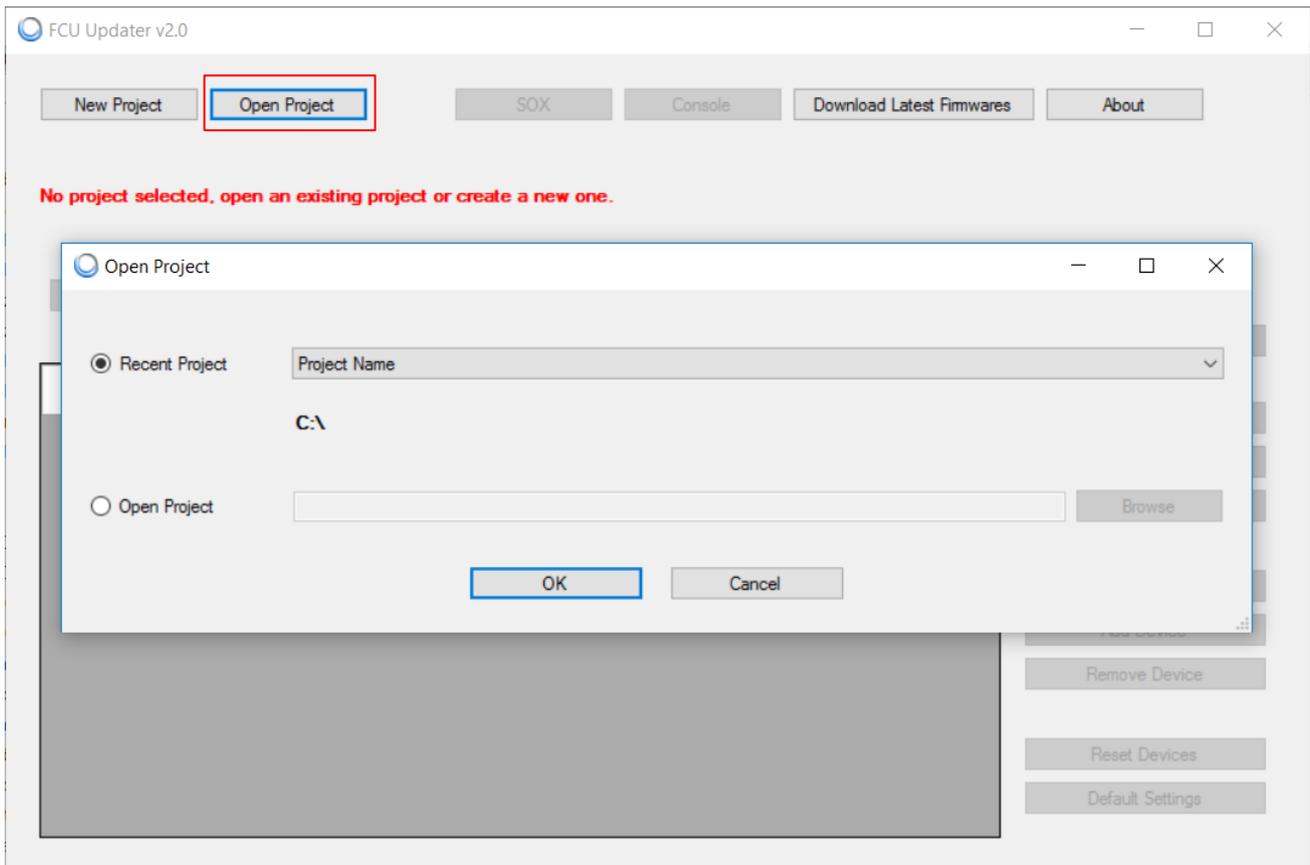


Figure 9 - Opening an existing project

To open an existing project, the user has two options available:

- selecting the project name directly from the drop-down list in the 'Recent Project' field
- browsing and finding a folder of an existing project, then pointing out a project's configuration file 'config.iSMA' in the project folder.

After pressing the 'OK' button, the existing project opens depending whether the system can localise the configuration file.

Now the project is opened. FCU Updater displays the current context by showing a confirmation information about the opened project: its name, location and setup transmission protocol. All that information appears on labels located under 'New Project', 'Open Project' buttons. Also, all the information about devices name, type, versions, backups previously saved in the project folder appears in the main table on the application screen.

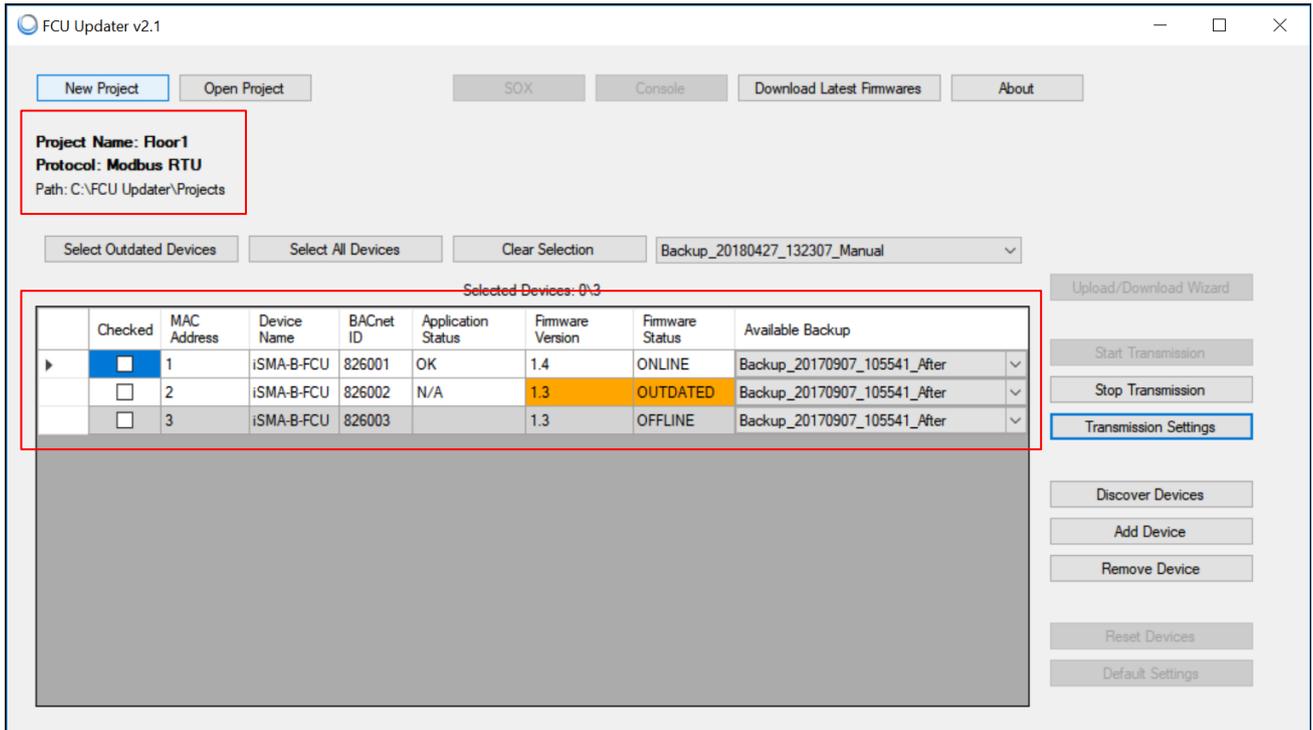


Figure 10 - After opening an existing project

Some of the previously disabled functions are now enabled, including 'Start Transmission' and 'Transmission Settings'. The next step is to start transmission on a chosen protocol which is described in the following part of this manual.

The next step is to start communication with the controllers listed in the project. After pressing the 'Start Transmission' button, the system rechecks the current status of devices and begin to work with them online.

4 Start and Stop Transmission

After opening a new project or an existing one and connecting to a network (Modbus or BACnet), it is recommended to switch to online mode, by starting data transmission. Press the 'Start Transmission' button and wait until the 'Start Transmission' button becomes disabled to indicate that the communication port COM was opened successfully.

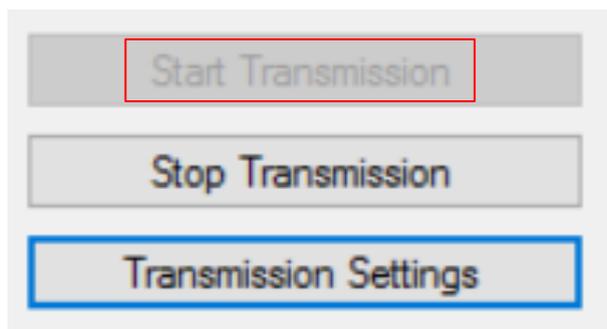


Figure 11 - Start Transmission successfully

If the system cannot open the COM port (setup in transmission settings), a warning dialogue appears. In this case, please reopen protocol settings by pressing 'Transmission Settings' and adjust them accordingly.

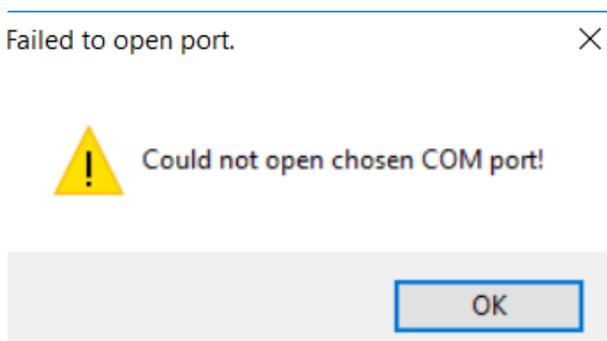


Figure 12 - COM port cannot be opened

Note: Remember to start transmission again after changing communication settings.

When the FCU Updater opens the COM port successfully statuses for all devices in the table updates automatically on a periodic basis. Depending on how many devices are shown in the table, the speed of rechecking the status of each device varies. The rate drops, even more, when some of the devices are not physically connected to the network, but they are present

in the table. In this case, the user can always manually check the status of the selected device by pressing the right mouse button and choosing the 'Ping device' option. In the below image the selected controller is still offline even though the transmission is running. In this situation, it is recommended to ping the device manually, and if this operation does not help, there may be a communication issue, the device is offline, transmission settings are wrong, or protocol type is not adequate.

<input type="checkbox"/>	2	iSMA-B-FCU	826002	N/A	1.3	OUTDATED	Backup_20170907_105541_After	▼
<input type="checkbox"/>	3	iSMA-B-FCU	826003		1.3	OFFLINE	Backup_20170907_105541_After	▼

Ping device at place 3 on the list.

Figure 13 - Ping device manually

Note: Remember that after changing some of the transmission settings the COM port is automatically closed. To open the COM port again and to start transmission data, please press the 'Start Transmission' button again.

The user can stop transmission at any point by pressing the 'Stop Transmission' button although it is not necessary because the FCU Updater performs it automatically as needed, for example when the user opens other project or closes the software.

Note: The transmission must operate properly if the user wants to work with devices connected to the Modbus or BACnet network.

Only with the successful connection setup the user can:

- discover new devices on the network
- upload/download firmware and application
- perform backup/restore of application
- ping devices
- reset devices
- set devices to default settings

All these functions are described in the following parts of this manual.

5 Discover Devices

If the connection to Modbus or BACnet network is setup properly, it is possible to discover all the devices physically connected on the bus. The discovering process means recognition of device type together with its address in the network. Each found device is automatically added to the table of the current project, so the user does not need to know the type, address and number of devices connected on the bus. The discovering process is fast, and it is recommended to run it at the beginning to have an overview of the whole network. It is also advisable to run it whenever a new physical device is added on the site.

Note: Before starting the discovering process, make sure that the right project is opened by checking the project name and its path is shown under 'New Project', 'Open Project' buttons.

To start the discovering process press the 'Discover Devices' button to open a supporting dialogue with some settings. The discovering process requires some individual settings depending on a protocol type.

5.1 Discovering Devices for Modbus

For the Modbus protocol, it is required to setup the addresses range. The FCU Updater starts searching for the first device with the given address in the 'Start Address' field until reaching the last device with the address specified in the 'Stop Address' field. Time spent for the discovering time varies based on the devices range and network's baud rate. To reduce the discovering time, it is recommended to adjust the range accordingly.

Press the 'Find' button to run identification process. During the process, all already detected devices are listed at the bottom of the dialogue box. It is possible to abort this process without adding any devices to the table in the project by pressing the 'Cancel' button. If the number of already identified devices is satisfactory, the user can stop the further process and add just the found devices to the table by pressing the 'Finish' button.

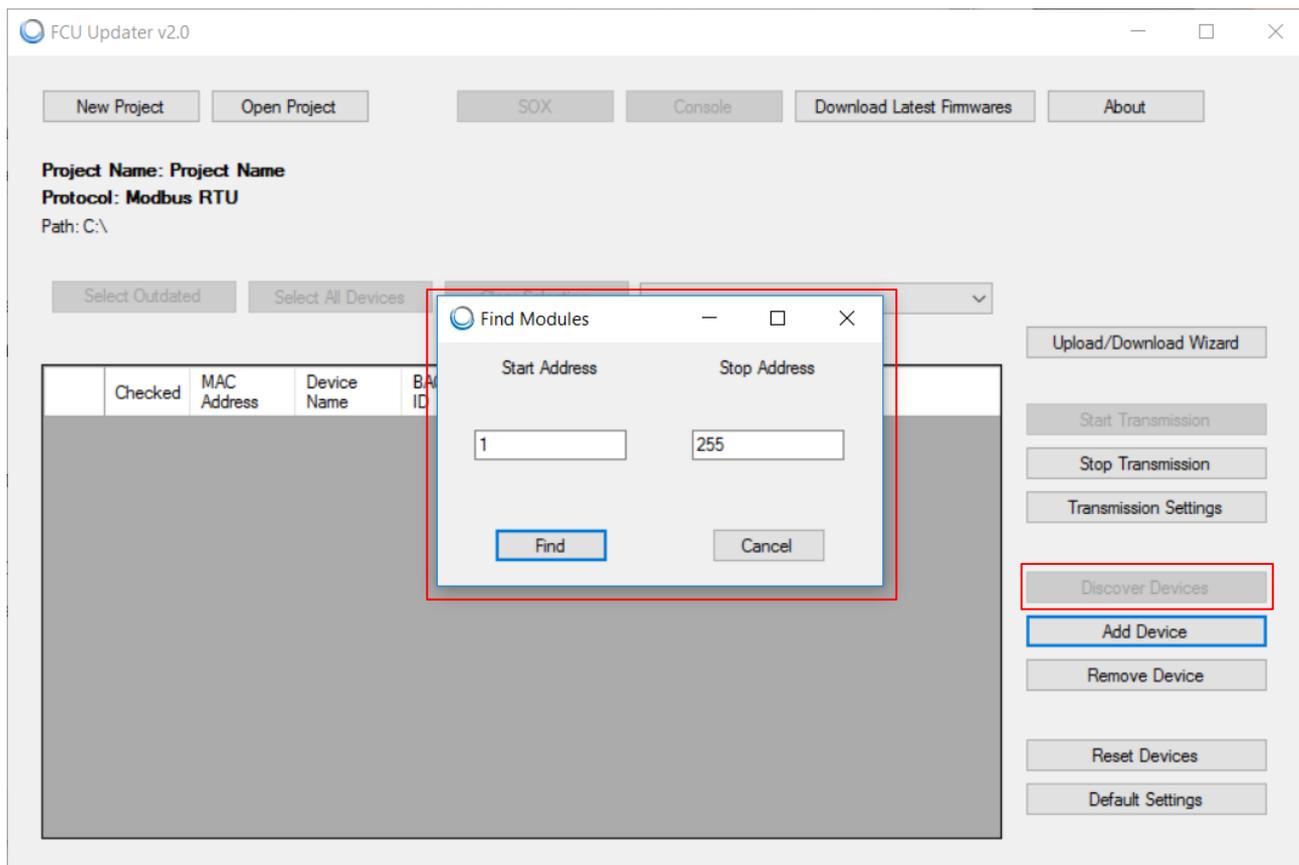


Figure 14 - Discovering Devices for Modbus

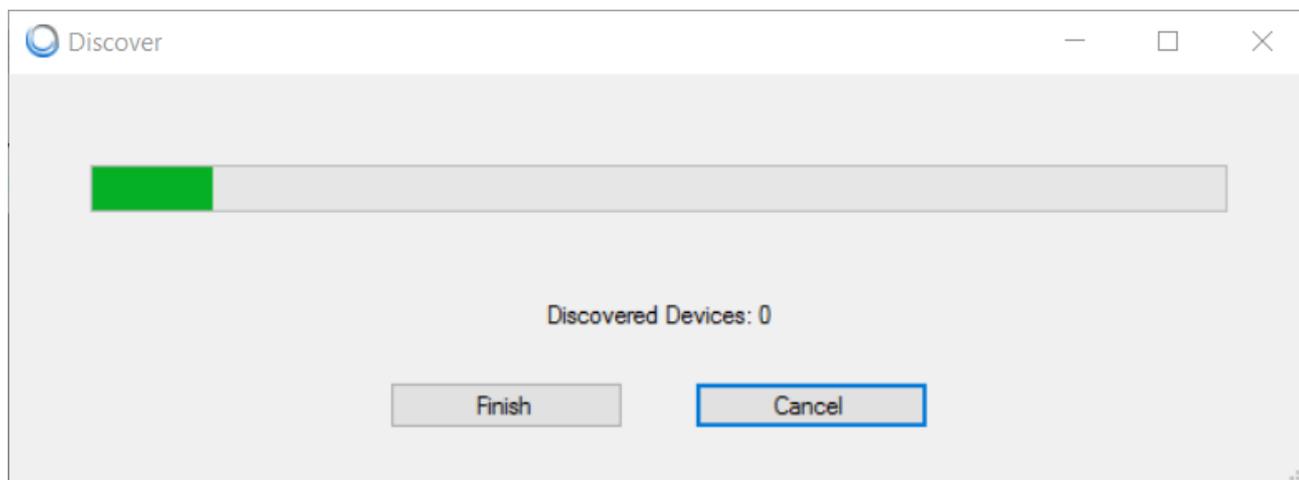


Figure 15 - Discovering process in progress for Modbus

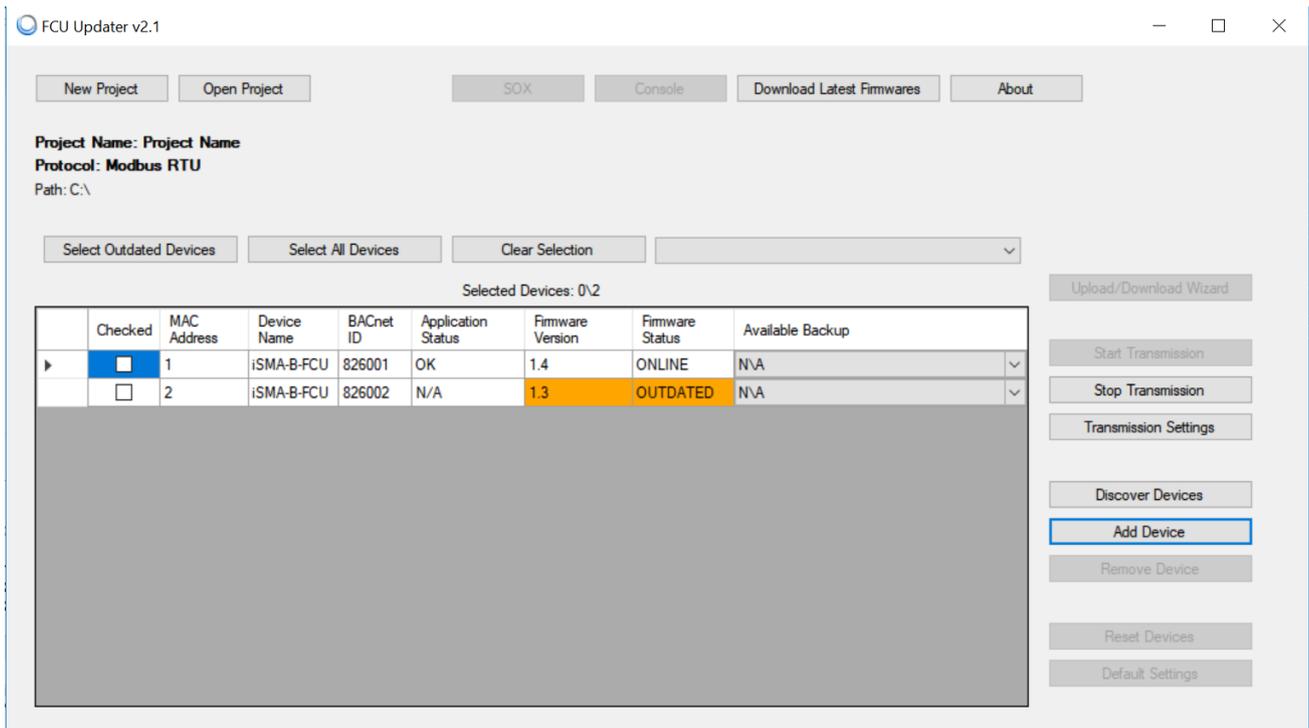


Figure 16 - Discovered devices

5.2 Discovering Devices for BACnet

With the discovering process for the BACnet protocol, it is required to define the timeout. The user is asked to set the timeout at the 'Timeout in second' field to guarantee enough time to find all devices on the BACnet bus. Choosing the correct value depends on the network's baud rate (inversely proportionally) and the number of devices (proportionally) connected to the BACnet bus.

Press the 'OK' button to run the identification process. During this process, the number of already detected devices is shown at the bottom of the dialogue box. It is possible to abort this process without adding any devices to the table in the project by pressing the 'Cancel' button. If the number of already identified devices is satisfactory, the user can stop the further process and add the found devices only to the table by pressing the 'Finish' button.

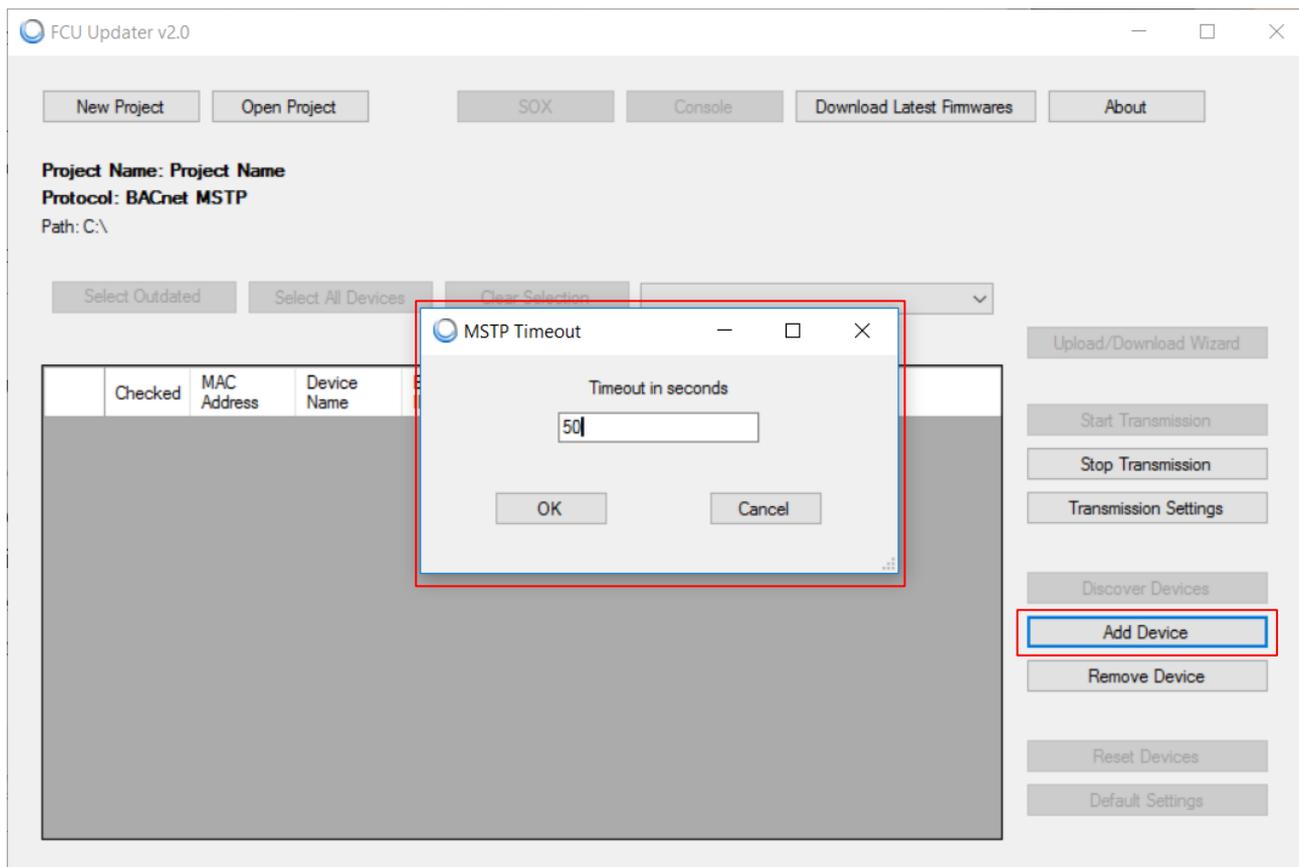


Figure 17 - Discovering Devices for BACnet

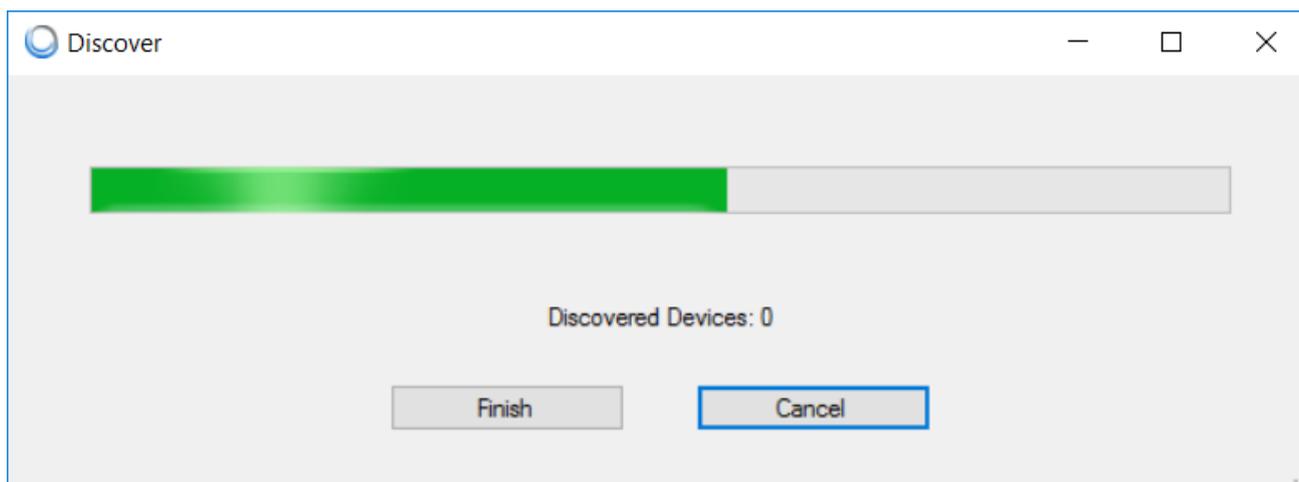


Figure 18 - Discovering process in progress for BACnet

Note: If all devices are not found after the first scanning process is complete, increase the timeout value. If some missing controllers are still found, add the missing devices manually by pressing the 'Add Device' button. The procedure of adding the devices manually is described below herein. Adding and removing devices manually

Adding the device to the table or removing it allows a manual manipulation. Both functions (adding and removing) can be used either online or offline even without starting the transmission. This approach allows the user to edit the list of devices on any project before arriving on the site.

The discovering devices function together with adding and removing option helps the user to build a virtual list of all physical devices installed on the Modbus or BACnet network.

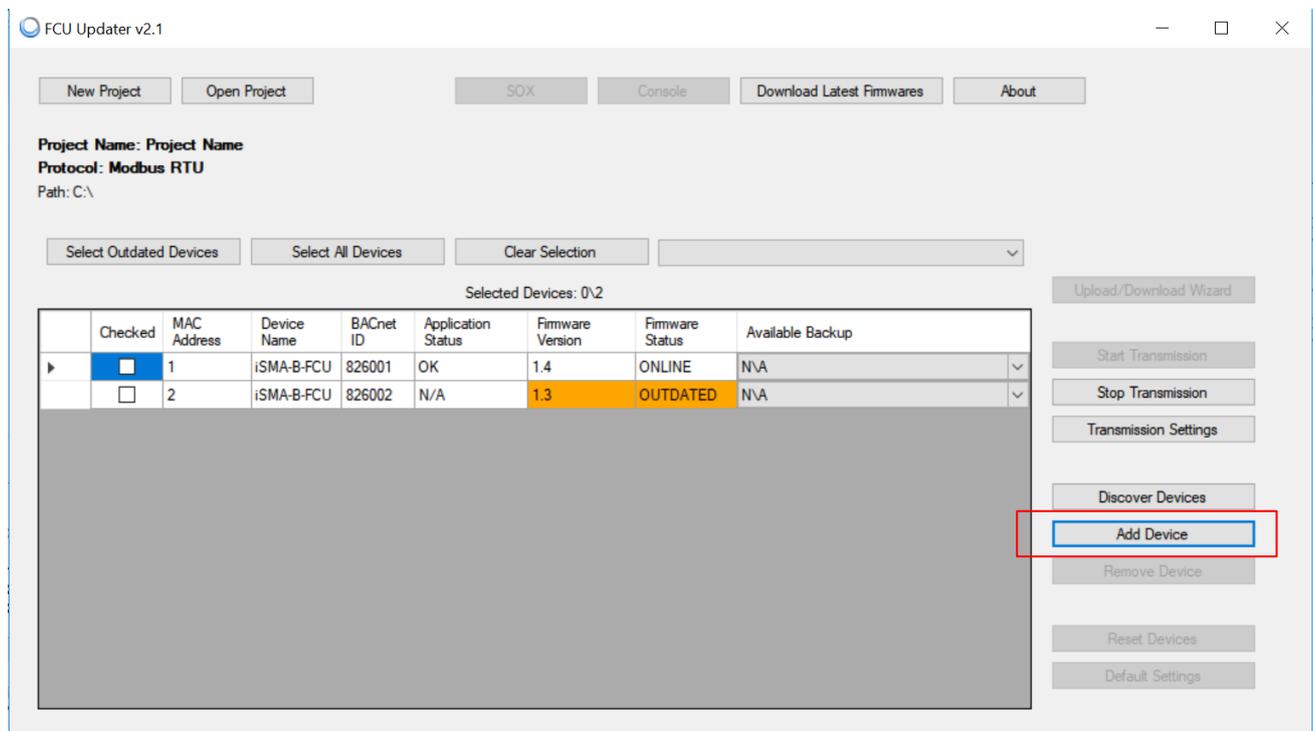


Figure 19 - Add Device

The adding new device process varies depending on the type of connection chosen for the project. Both protocol types ask for unique device identification on the bus. In the case of Modbus, the Modbus address (MAC address filed) is required but in BACnet, the BACnet ID is needed. To simplify the process, the system automatically calculates and gives proposition of a BACnet ID based on the typed MAC Address assuming that BACnet net is built with default 82600 sub-net (provided by BACnet organisation to all Global Control 5 Sp. z o.o. devices).

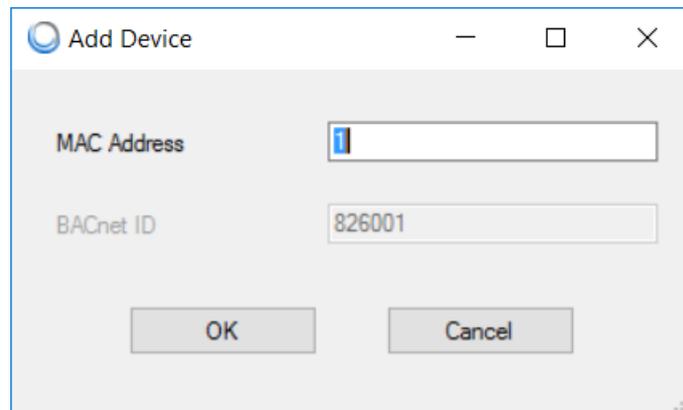


Figure 20 - Manually adding a device on Modbus

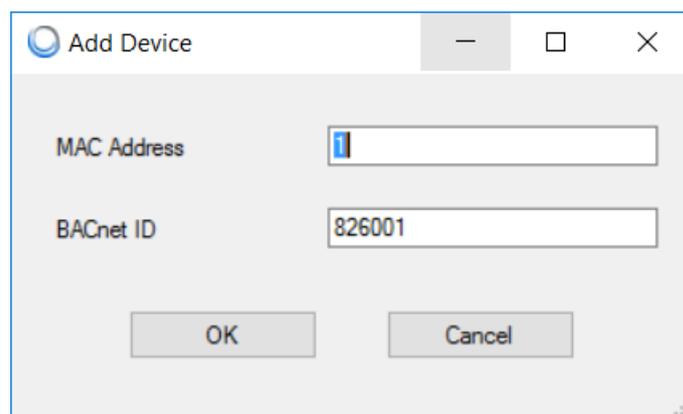


Figure 21 - Manually adding a device on BACnet

Removing devices from the project allows to select one or more devices and remove them by pressing the 'Remove Device' button. The FCU updater requires confirmation before removing anything.

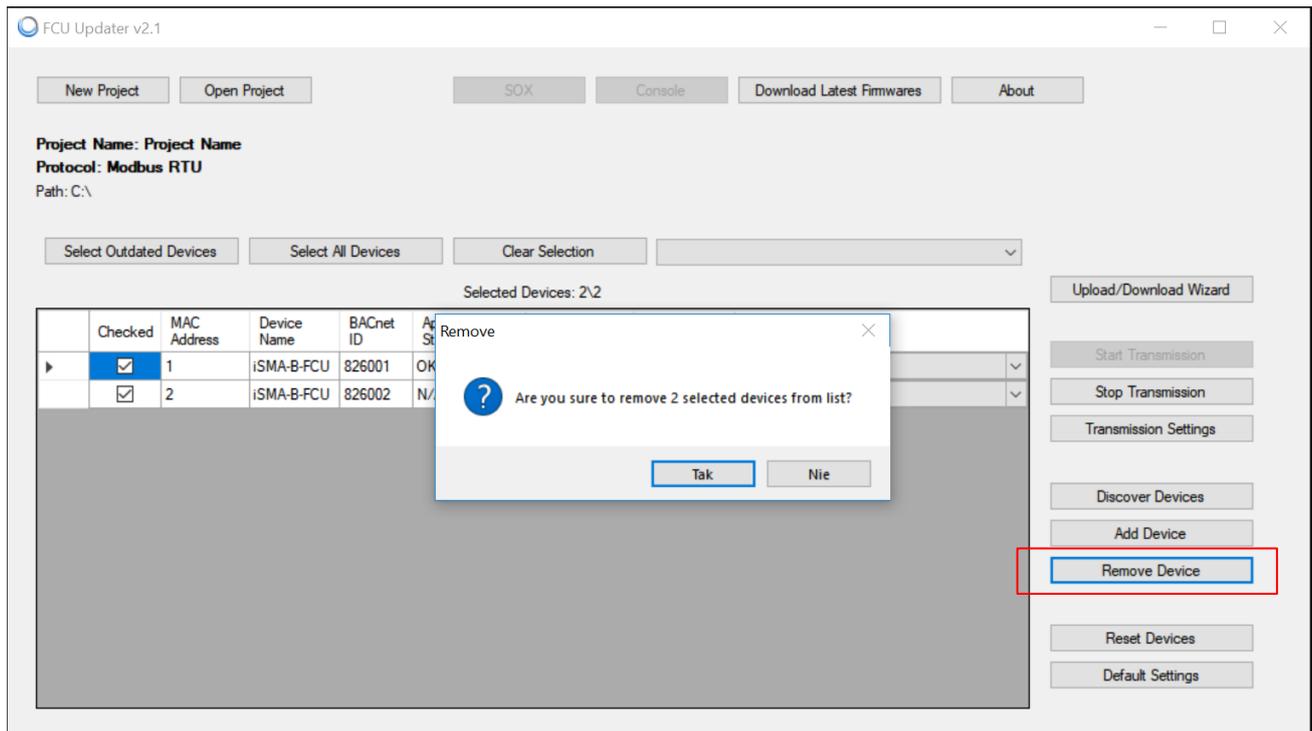


Figure 22 - Manually removing devices

It is possible to add the device to the list automatically (extend the list of devices) as soon as the physical unit is connected to the FCU Updater directly by the cable. This feature is convenient when there is the controller that is not yet attached to the bus, but the user can easily connect USB cable to it. Next chapter describes this process in more detail.

6 Lists of devices with list of Errors

The main window of the FCU Updater shows the table with lists of devices. The list represents the physical devices collected either by using the discovery function or manually by adding device option in an opened project. Each row in the table represents one physical device.

The table shows the following information for each instrument:

- 'MAC address' - address set inside the device
- 'Device Name' - type of device
- 'BACnet ID' - BACnet ID address for BACnet network
- 'Application Status' – current status of running application on the controller (the following are available: ANY ERROR (see explanation bellow), N/A, OK)
- 'Firmware Version' - firmware version running on the device
- 'Firmware Status' - firmware status (the following are available: offline, online, outdated, not compatible, bootloader, USB)
- 'Available Backup' - backup files already stored on the project

ANY ERROR: The FCU Updater from version 2.1.1 can read Application Status from iSMA-B-FCU controller starting from firmware version 1.4.

From now, it is possible to see if the application ("app") in the controller is running without any issue even though the controller is 'online'. The 'Application State' shows the current state of SVM (Sedona Virtual Machine) including details information related to bootstrap, image, system, application, component and runtime errors.

Bellow, there is a full list of possible errors (ANY ERROR) getting from Modbus register 99 or BACnet device property 5002:

Group	Type	Code
gc5	INIT	65535
ok	OK	0
non-recoverable: bootstrap	MALLOC IMAGE	1
	MALLOC STACK	2
	MALLOC STATIC DATA	3

	INPUT FILE NOT FOUND	4
	CANNOT READ INPUT FILE	5
non-recoverable: bad image	BAD IMAGE MAGIC	6
	BAD IMAGE VERSION	7
	BAD IMAGE BLOCK SIZE	8
	BAD IMAGE REF SIZE	9
	BAD IMAGE CODE SIZE	10
non-recoverable: runtime errors	UNKNOWN OPCODE	11
	MISSING NATIVE	12
non-recoverable: Sys	INVALID ARGS	40
	CANNOT INIT APP	41
non-recoverable: App	CANNOT OPEN FILE	42
	INVALID MAGIC	43
	INVALID VERSION	44
	INVALID SCHEMA	45
	UNEXPECTED EOF	46
	INVALID KIT ID	47
	INVALID TYPE ID	48
	CANNOT MALLOC	49
	CANNOT INSERT	50
	CANNOT LOAD LINK	51
	INVALID APP END MARKER	52
	NO PLATFORM SERVICE	53
	BAD PLATFORM SERVICE	54
non-recoverable: Component	INVALID COMP END MARKER	60
	NAME TOO LONG	61

recoverable: runtime errors	NULL_POINTER	100
	STACK_OVERFLOW	101
	INVALID_METHOD_PARAMS	102
special codes	YIELD	253
	RESTART	254
	HIBERNATE	255
	Max input frequency	100 Hz

For better visualisation, each row in the table changes its background colour following the controller's application status, firmware status and connection type. The colours meanings are:

- grey - offline
- white - online
- orange - outdated
- yellow - not compatible
- red – bootloader or any error
- green - USB direct connection

Selected Devices: 1/3								
	Checked	MAC Address	Device Name	BACnet ID	Application Status	Firmware Version	Firmware Status	Available Backup
▶	<input checked="" type="checkbox"/>	1	iSMA-B-FCU	826001		BOOT 1.3	BOOTLOADER	Backup_20180427_133349_Before
	<input type="checkbox"/>	2	iSMA-B-FCU	826002	N/A	1.3	OUTDATED	Backup_20170907_105541_After
	<input type="checkbox"/>	3	iSMA-B-FCU	826003		1.3	OFFLINE	Backup_20170907_105541_After

Figure 23 - List of devices

7 Direct connection to device by USB cable

Each iSMA-B-FCU controller and iSMA-B-LP panel has one mini USB type B available on its board which allows direct connection to a PC with the FCU Updater running. This USB connection automatically configures the communication COM port on the PC and enables adequate functions on the FCU Updater.

Note: With USB cable connected to mini USB slot on the device it is not possible to operate on any other device from the list except for the ones automatically recognised as attached to the controller and marked with green colour (see the image below).

After selecting a marked device, available functions are as follows:

- upload/download
- reset
- set to default
- open console
- run SOX driver

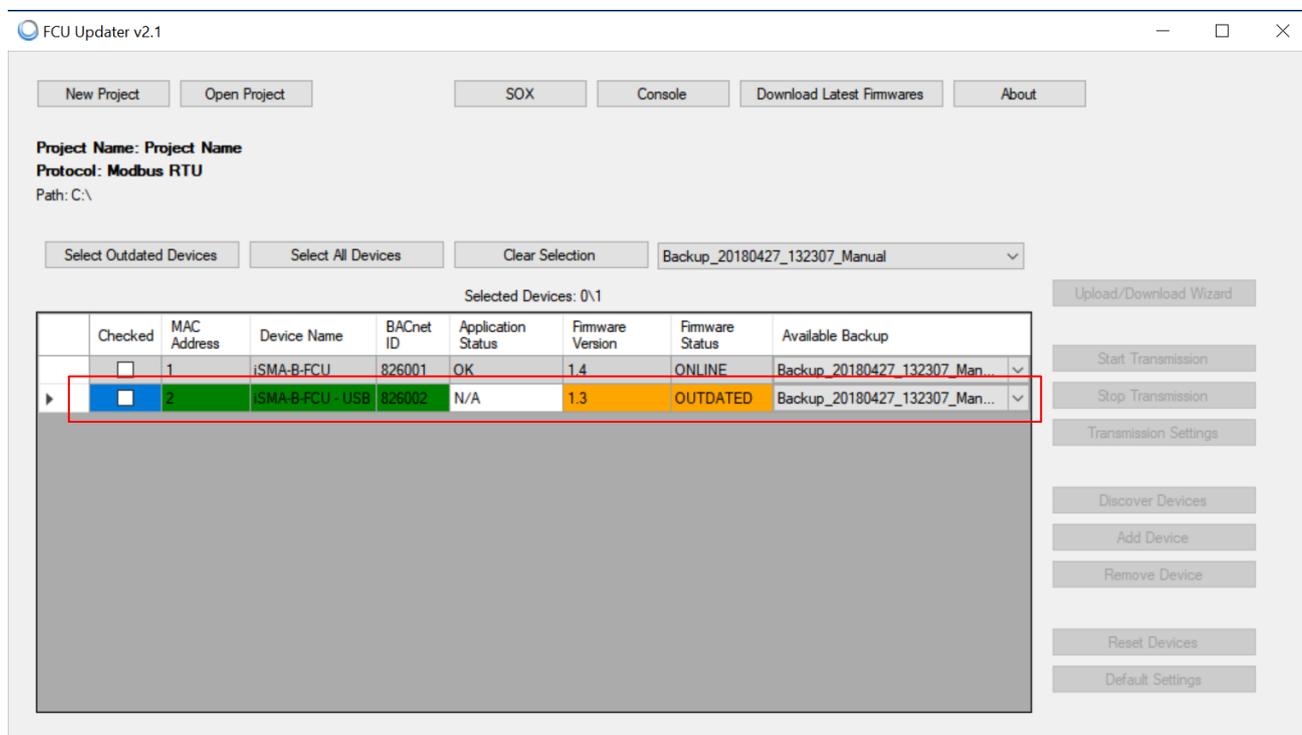


Figure 24 - List with direct connection to device by USB cable

All mentioned functions are described in detail in the following parts of this manual.

Note: Direct connection of the device by USB cable adds this controller automatically to the project's list for the future use, see the picture below with added iSMA-B-FCU controller. Please note that after disconnection of the USB cable re-start the connection with the bus by pressing the 'Start Transmission' button.

Note: Only the device with the unique address can be added to the list. Before connecting any devices by USB, please check that there is no object on the list with the same address as the unit to be attached.

8 Upload and Download

The Upload and Download functions are available under 'Upload/Download Wizard'. Before pressing this button, it is necessary to start transmission and to select device or devices. The selection can be done by checking the box at the beginning of each table's row or by using filter buttons ('Select Outdated', 'Select All Devices', 'Clear Selection') at the top of the table.

'Upload/Download Wizard' offers the following options:

- Upload firmware and keep application
- Upload firmware and default application
- Upload custom application and firmware (if outdated)
- Restore backup to devices
- Backup application from devices.

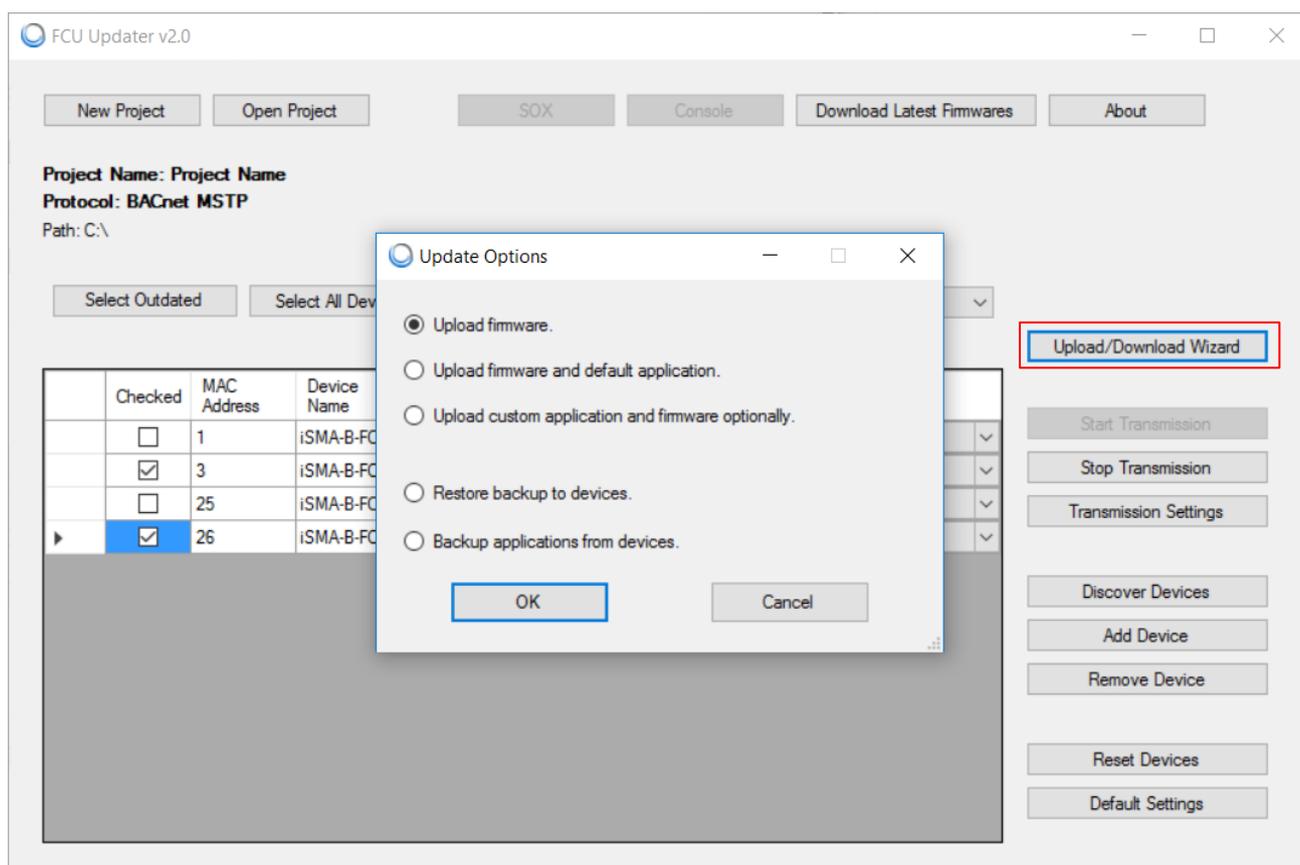


Figure 25 - Upload and Download options

All upload options are quite sensitive because they transfer some data from a local PC to the external device and some of them override firmware and application on the controller. Therefore the FCU updater always does a safety backup of the existing application in the controller before and after the uploading process. Moreover, it recompiles the application with dedicated firmware locally on the PC before uploading to the controller. This approach guarantees that in the case of a failure the user can restore the old program with its firmware and run the previous version of the application on the controller smoothly.

The upload option has three variations:

- 'Upload firmware and keep application' - only firmware and kits are uploaded, the application remains the same and is not overridden. This option updates the firmware to the latest firmware version downloaded from the Global Control 5 Sp. z o.o. server only after a successful recompilation. It takes the existing application from the controller and recompiles it with the newest manifests before replacing the old firmware on the controller. This approach guarantees smooth operation of the current application with the newest firmware.
- 'Upload firmware and default application' – firmware, kits and default application are uploaded. The present application on the device is overridden. This option uploads the newest version of the default application together with the newest firmware (*) available on the Global Control 5 Sp. z o.o. server. It is recommended to use this option when the user does not have the custom application. System recompiles the downloaded application with the newest firmware, and if everything goes right, it uploads the firmware and the default application to the device.

WARNING! This option clears the existing application.

- 'Upload custom application, and firmware (if outdated)' – firmware, kits and custom application are uploaded. The system asks for the custom application to upload to the device. The current application on the controller is overridden. If firmware on the device is outdated, this option downloads (*) the latest firmware version from the Global Control 5 Sp. z o.o. server. If the firmware on the controller is not outdated, this option keeps the current firmware version. In both cases after verification of the firmware, system recompiles the firmware with the custom application. If the recompilation finishes successfully, the FCU Updater uploads the custom application to the device followed by the firmware.

WARNING! This option clears the existing application.

(*) - During any uploading function, the system will not check what is available on the server. The FCU Updater transfers the latest and compatible firmware that is stored locally on the PC. The user must manually download the latest firmware version from the Global Control 5 Sp. z o.o. server by pressing the 'Download Latest Firmware' button after the FCU Updater is run.

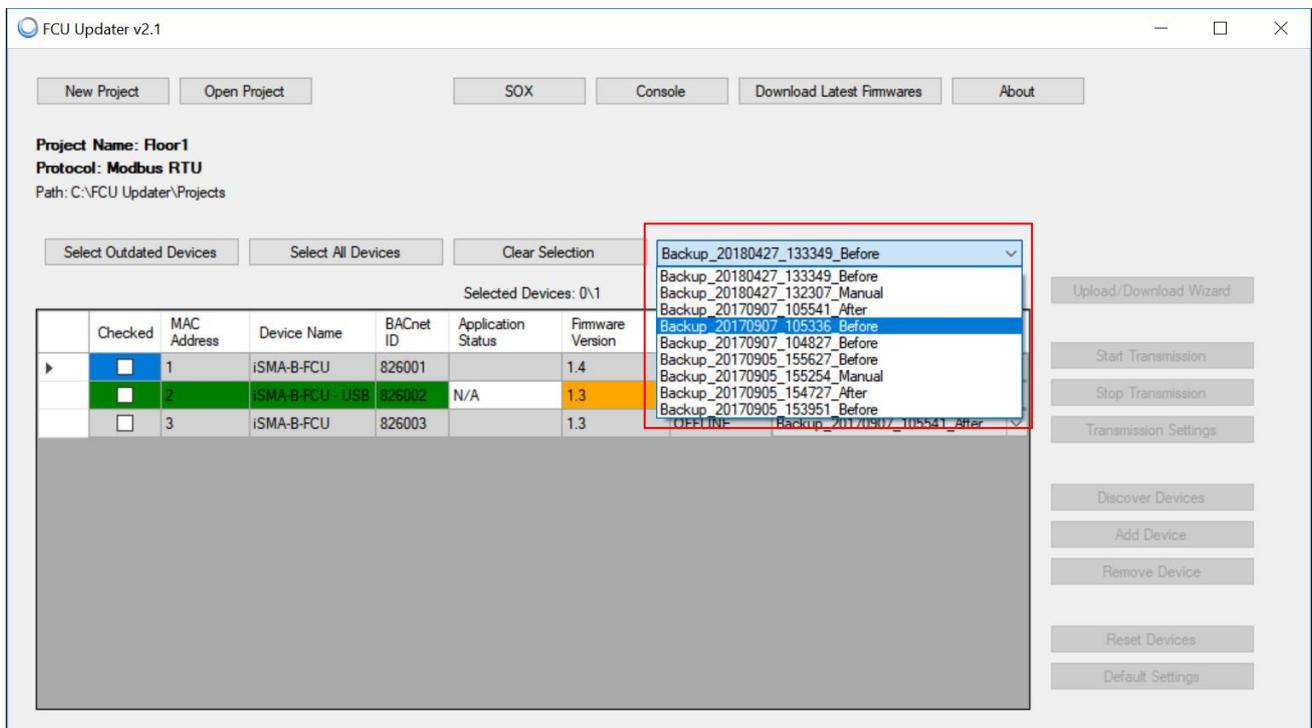
Last two options are related to backup operations.

- 'Restore backup to devices' - restores the older backup (application with its firmware) to the controller. The stored data for restoring process is chosen from the available backups for each device individually by selecting the backup from the drop-down list in the table. When the system makes the backup, either automatically or by the user, the FCU Updater creates a new folder in the project folder and names it as 'Backup_XXXXXXXXXX', where 'xx XXXXXXXXXXXX' represents the timestamp. This folder contains the backups taken at the same time for all the selected devices. The FCU Updater explores all backup folders within the project to find out all backups available for each controller. Results are sorted and presented in the drop-down list for each device individually. Before proceeding to the restore option, the user has to select not only the devices but also choose the backup from the drop-down list for each device individually. There is a general choice (in the table column named: 'Available Backup') to simplify the selection of backup for all devices. If the controller has no backup made at the time selected by general form, the user should choose any other backup from the device's drop-down list to specify which backup should be used for the restoring process.

Figure 26 - Defining backups for restore process

- 'Backup applications from devices' - transfers the application from selected devices to the local PC. First, the FCU Updater creates a backup folder and names it, e.g. as 'Backup_XXXXXXXXXX_manual', where 'XXXXXXXXXX' is the current timestamp and postfix 'manual' describes that the user requests it manually. If the system performs the backup automatically, the postfixes are 'before' or 'after' depending on whether the backups have been made before or after the whole process. When the backup process starts out, the system creates a new backup folder to which the applications from each selected devices are transferred. Finally, the FCU Updater updates the drop down lists in the table according to the latest backup.

After running one of the above-mentioned functions, the progress bar window appears on the screen. Additionally, it shows the status of the phase the FCU Updater is performing (backup, upload or restore) and the device number on which it is being executed. The information varies



depending on the protocol and function being performed as shown in the pictures below.

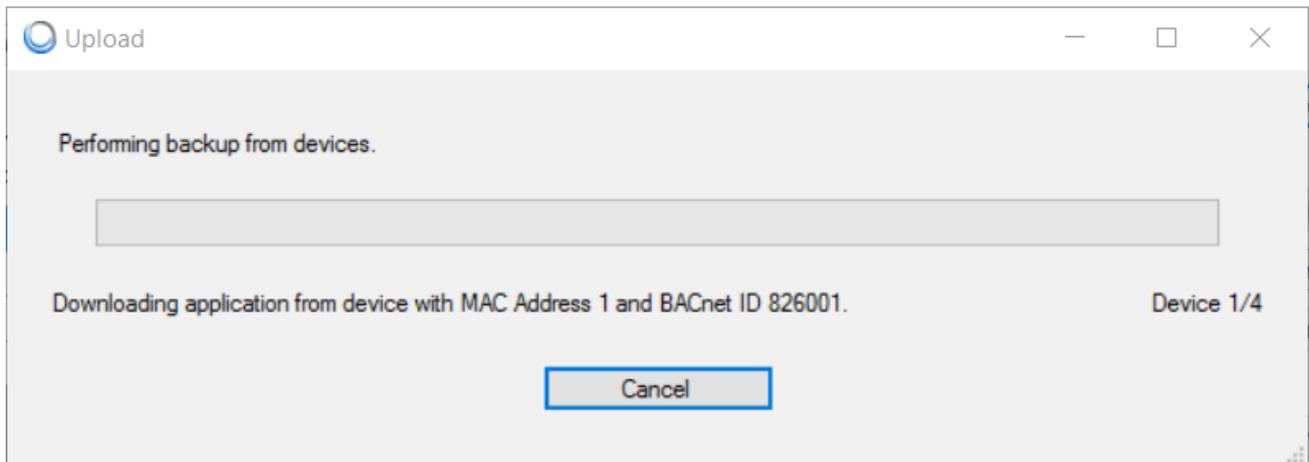


Figure 27 - Performing backup on Upload

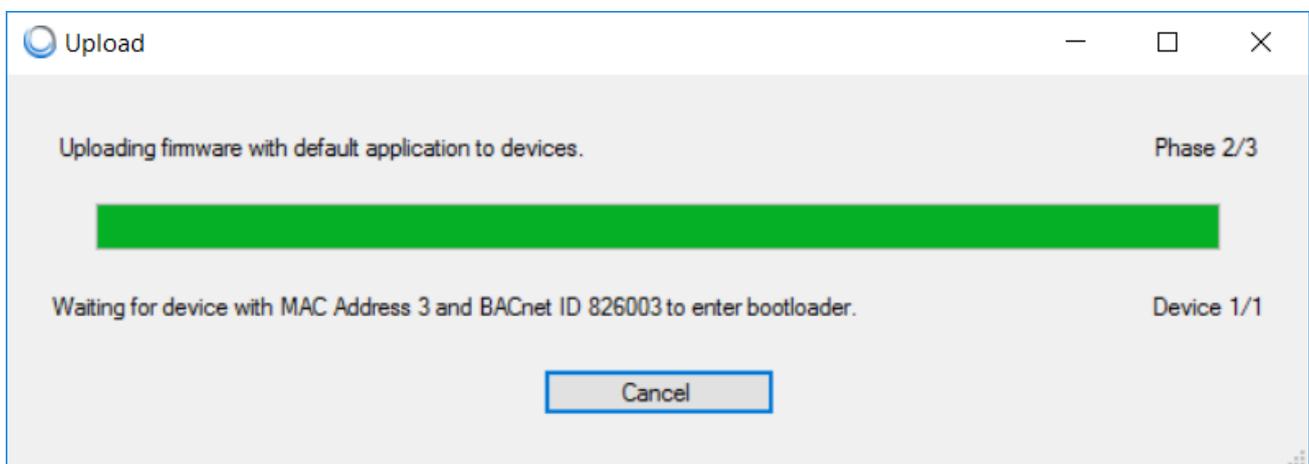


Figure 28 - Uploading firmware in progress

When the process finishes, the confirmation box pops up showing all phases and devices. The user can view the log to verify if the required job has been executed on all selected devices successfully.

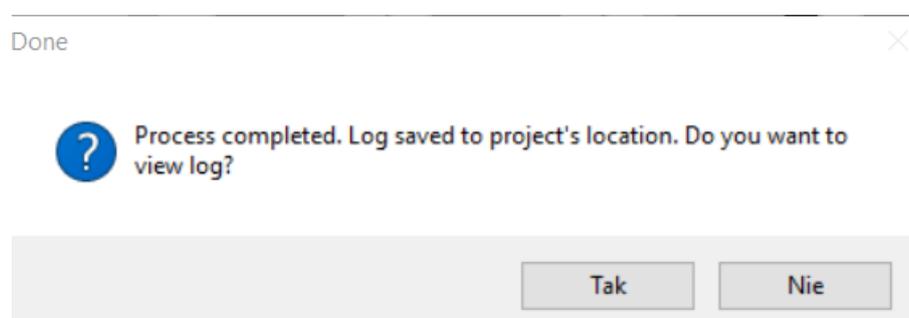


Figure 29 - Confirmation dialogue after download/upload process

9 Restarting Devices

Restarting the device should be the first action that user does in case of problems with the controller or application functionality in general. The restarting procedure forces the application to start execution of the program from the beginning and initiates reading raw values for inputs.

Note: It is recommended to restart the application before contacting technical support.

Restarting the selected device or multiple devices by pressing the 'Reset Devices' button sends a special request by the Modbus or BACnet network or by USB (if the controller is connected directly). When the device receives the request, it processes the restart, and the FCU Updater shows the driver status as offline for a moment.

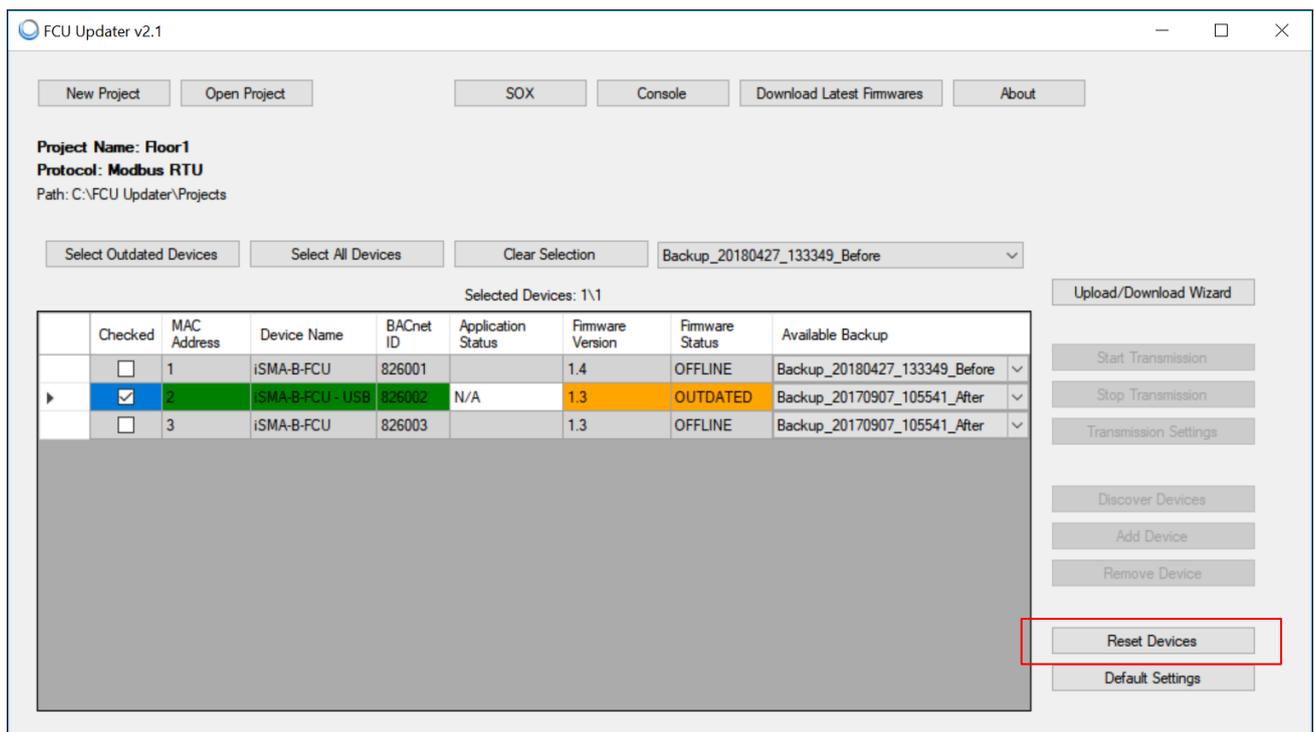


Figure 30 - Restarting device

10 Default Settings

The 'Default Settings' button sets all selected controller's parameters to their initial (default) values. In application, all NV parameters are set to their default values. All communication settings that are not configured by dip switches are set to their default values as well. For example, RS485 communication parameters are set to the following parameters:

- for the iSMA-B-FCU controller, the COM1 is set to Data bits - 8, Parity bits - 0, Stop bits - 1
- for the iSMA-B-FCU controller, the COM2 is set to Data bits - 8, Parity bits - 0, Stop bits - 1, Baud rate - 115200, Modbus protocol type – 0

Note: It is recommended to perform the setting to default settings procedure in the following cases:

- the controlled physical object has been replaced,
- the role of controller in the network has been changed in regards to master-slave configuration
- the application does not work as presumed and restarting of the application with its default parameters could help

To perform the set to default action, select one device or multiple devices and press the 'Default Settings' button. The FCU Updater sends a special request by the Modbus or BACnet network or by USB (if the controller is connected directly). When the device receives the request, it processes it, and the FCU Updater shows the device status as offline for a moment.

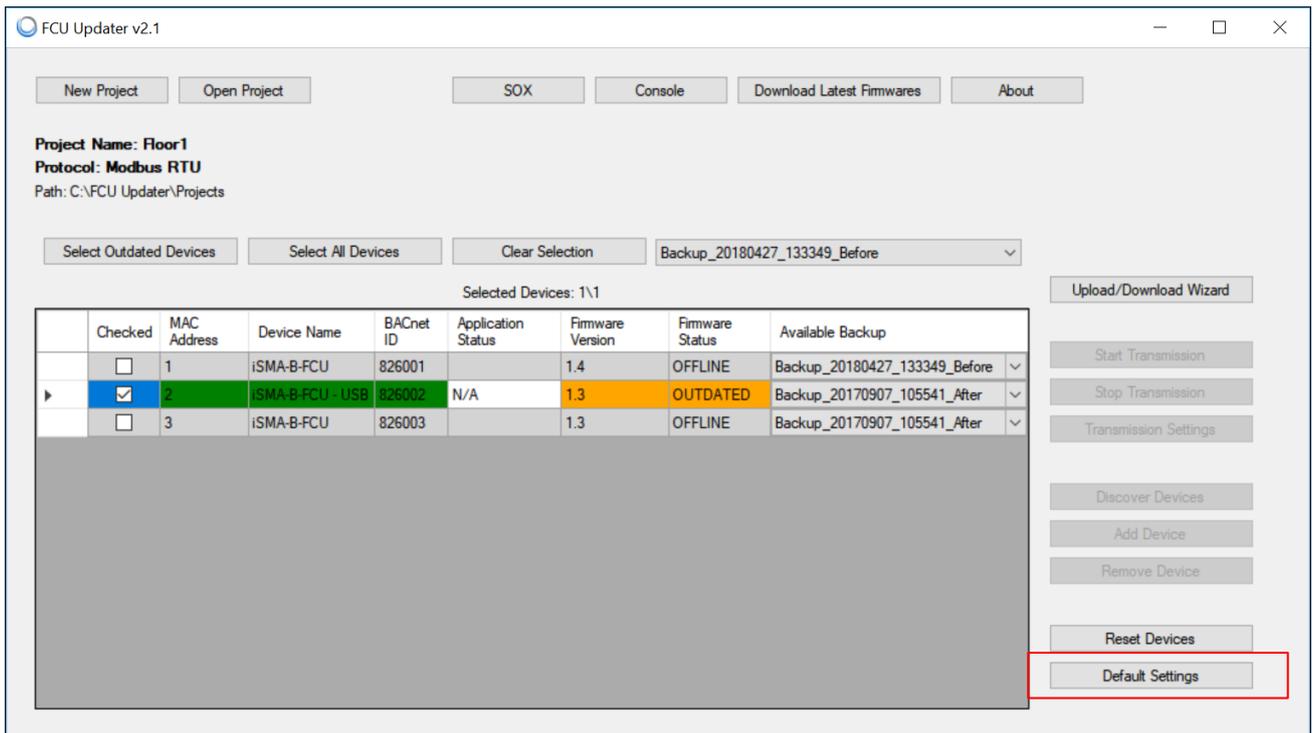


Figure 31 - Setting to default settings

11 How to connect FCU Updater to physical device or bus

The FCU Updater is a software that runs under Windows operating system and transmits data to iSMA-B-FCU controllers or iSMA-B-LP panel. In both cases, the FCU Updater uses COM port for communication. There are two ways of connecting to the device/s: the direct way by USB cable to only one device or the whole RS485 bus network to multiple devices.

Note: FCU Updater allows for only one type of connection at a time. The user can setup the direct connection by USB cable or make the RS485 connection to the whole network. Parallel connections through the direct USB cable and by the RS485 bus are not allowed.

Note: It is not allowed to interrupt any process performed by FCU Updater like transferring data to/from device/s by connecting or disconnecting communication cable.

11.1 Direct connection by USB cable

Both iSMA-B-FCU controller and the iSMA-B-LP panel have a mini USB slot on the housing. The Mini USB slot can be connected to the PC with the FCU Updater software running by the 'mini USB - USB' cable.



Figure 32 - Direct connection to iSMA-B-FCU controller



Figure 33 - Direct connection to iSMA-B-LP panel

After direct connection of the controller or the panel to the PC, the system automatically recognises the attached device and shows it in the main table assuming a project is already opened. No particular communication settings are required for setting transmission parameters or starting the transmission. The system marked the device in the list with the green background in its line.

Note: All available operations included in this manual such as upload, backup, restore, reset and set to default, are only to be executed by the connected device. The user cannot select another controller from the table as long as a direct connection setup is being performed.

Note: The direct connection by USB cable can only be setup to one device at the time. To end the direct link simply disconnect the cable. The device being disconnected is automatically added to the list of devices.

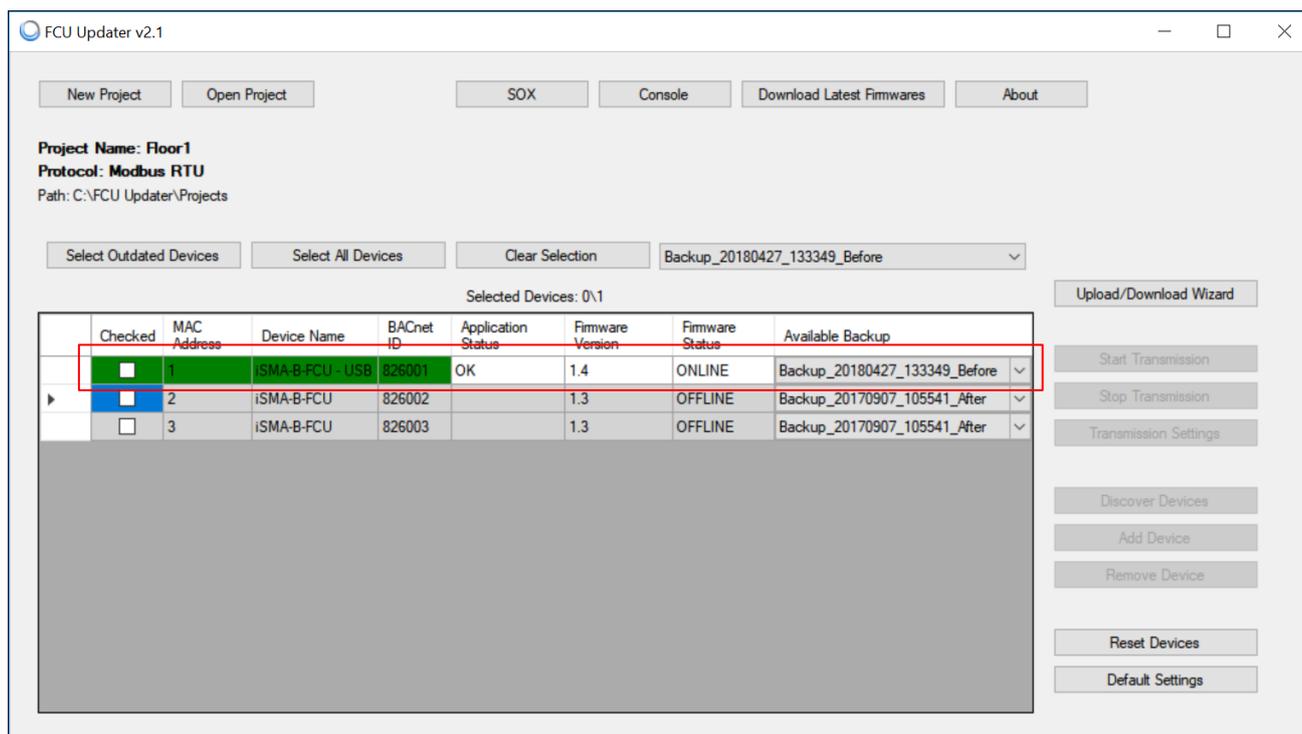


Figure 34 - Direct connection with green background

11.2 Connection to RS485 bus

Connecting the FCU Updater to the RS485 bus is recommended on a site where all devices are linked together. The RS485 network needs to be connected to the PC with the FCU Updater software running. If the PC is not equipped with the RS485 communication port, a converter is required. Global Control 5 Sp. z o.o. company recommends using Mera-Project MP01512A, sold separately.



Figure 35 - RS485 converter

Note: Before connecting the PC to the FCU Updater running on the RS485 network, it is recommended to disconnect a master controller. The next step is to connect the PC via the RS485 converter (if required) and run the FC Updater. After this, the new project needs to be opened or created. When done, setup all required transmission settings and transmission will start. The transmission settings for the Modbus and BACnet protocols are described below.

Note: Once operation with the FCU Updater is finished, please remember to disconnect the PC from the RS485 network and reconnect the master unit.

Depending on the chosen protocol, the following transmission settings are required:

for BACnet communication protocol

- 'COM Port' – COM port used for the BACnet MSTP communication to which the RS485 bus is attached
- 'Baud rate' – baud rate for communication
- 'Software Device ID' – BACnet ID of the local PC. It must be different from ones for the other devices connected to BACnet bus.

For Modbus communication protocol

- 'COM Port' – COM port used for the Modbus RTU communication to which the RS485 bus is attached
- 'Baud rate' – baud rate for communication
- 'Parity Bits' – defining parity bits; available options: None, Even, Odd

12 Manage 'Bootloader' state on the controller

In some circumstances, the controller can get to the state of 'Bootloader'. This state can happen when the firmware has not been transferred successfully to the device due to any interruption like disconnecting transmission cable or power failure. In bootloader state, the controller can not operate properly, and its application is not executed either. To return the controller to normal operation, the FCU Updater needs to upload the latest firmware without touching the existing application. This process can be achieved by Modbus or BACnet network or directly by USB cable. In both cases, the newest firmware will be transferred to the controller in 'Bootloader' state.

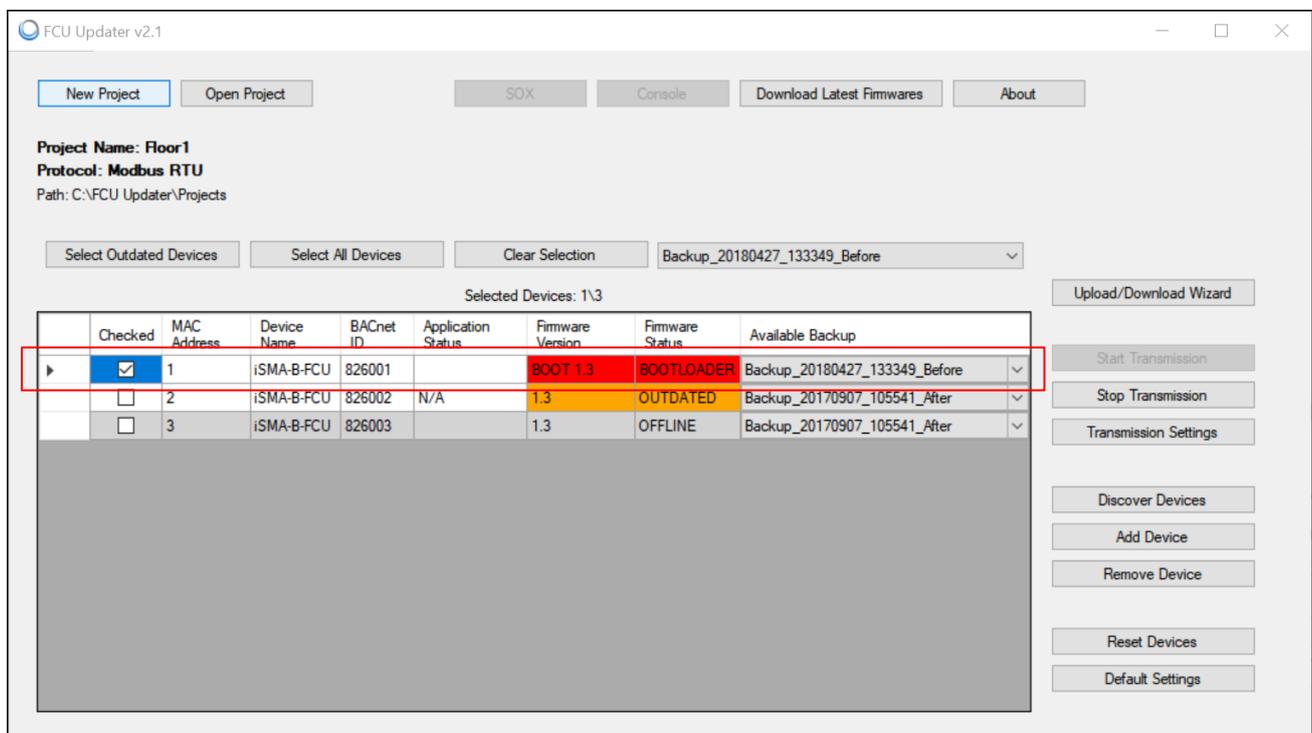


Figure 36 - One controller is in the 'Bootloader' state

If the iSMA-B-FCU controller is connected directly by USB cable and FCU Updater recognises its 'Bootloader' state then the following dialogue appears.

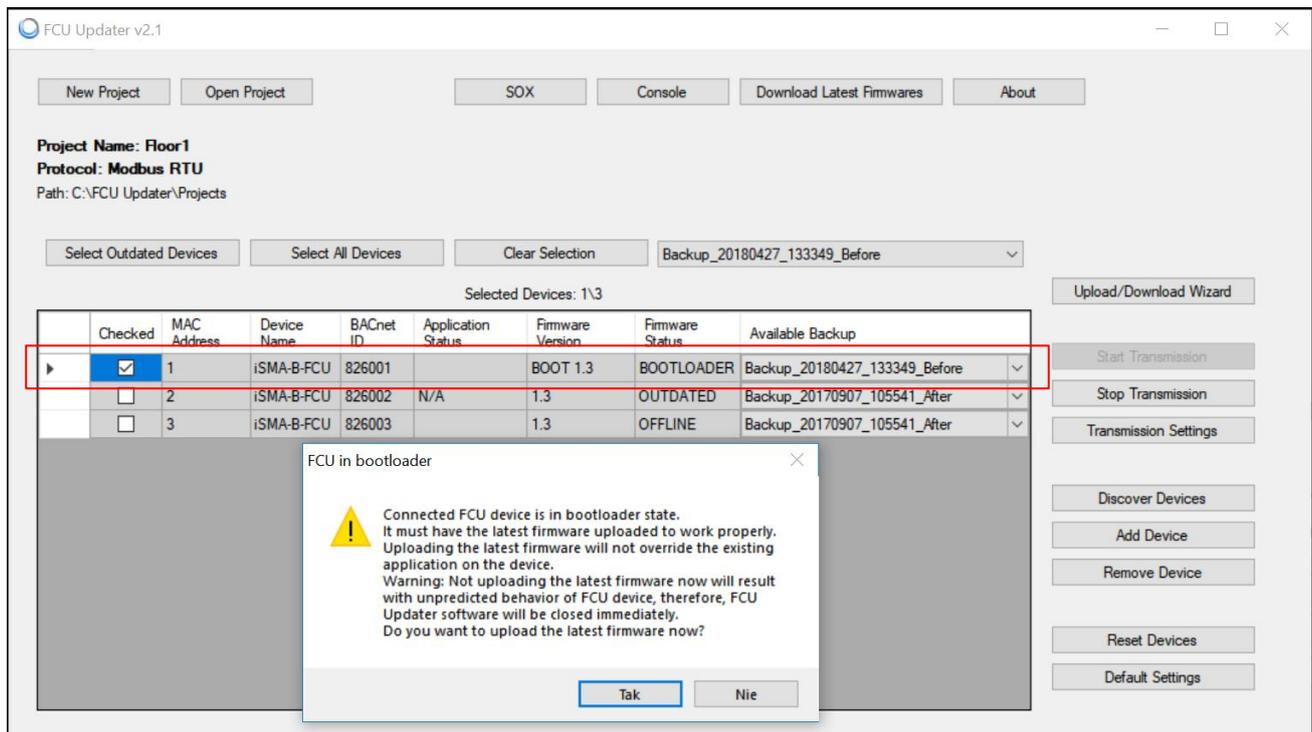


Figure 37 - FCU Updater recognises the 'Bootloader' state for the connected controller

Pressing 'Yes' button starts upload of the latest firmware to the controller to returns the controller to normal operation.

Choosing 'No' button closes FCU Updater because further work with the controller in 'Bootloader' state will result in unpredicted behaviours which can not be properly controlled by FCU Updater.

13 SOX Protocol

The SOX function allows programming of the iSMA-B-FCU controller online (real-time). The controller must be connected directly via USB cable as described above. The 'SOX' button is always enabled each time the USB cable is connected directly to the iSMA-B-FCU controller, and moreover, opening of any project is not required.

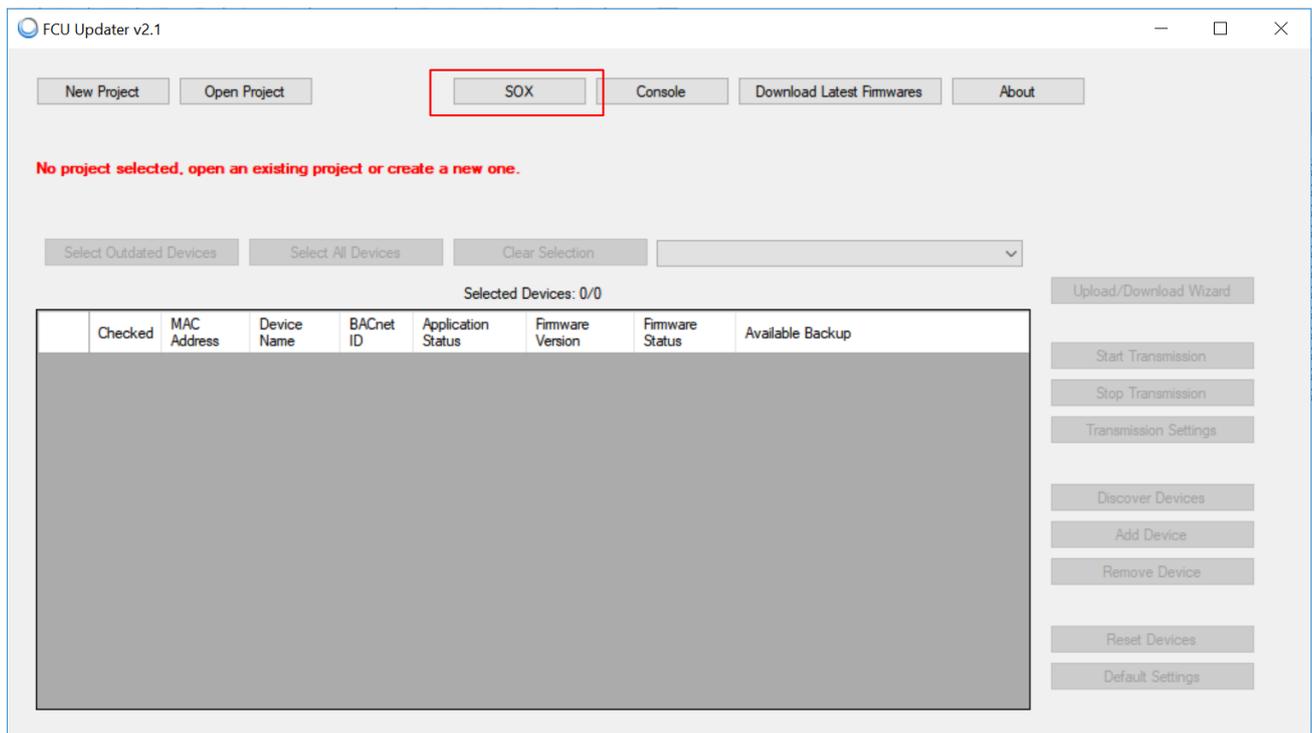


Figure 38 - Opening SOX protocol

The 'SOX' button guides the user to the next window where the SOX protocol can be started by pressing the 'Begin Communication' button. After starting the communication to the connected controller, the user can edit or build the application inside the iSMA-B-FCU controller by using the WorkPlace software.

The 'SOX' window has the following communication parameters:

- 'Port' – port number (usually 1876) used by SOX protocol
- 'Begin Communication' button – start SOX communication. It is recommended to open SOX communication with the iSMA-B-FCU controller before running the WorkPlace software.
- 'Stop Communication' button – stop SOX communication.

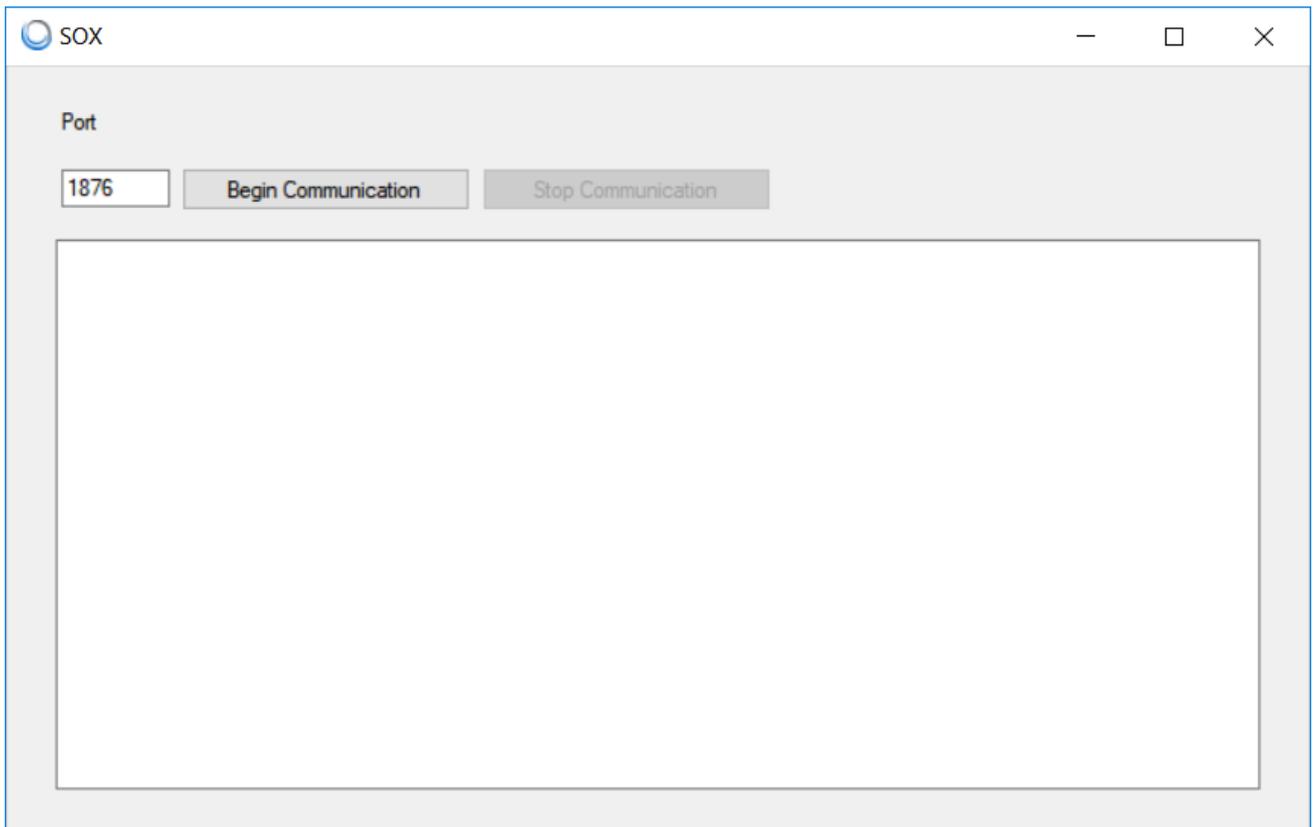


Figure 39 - SOX Protocol console

Note: Only one instance of SOX Protocol console can be opened at a time. If the 'SOX' button in the main application window is disabled, the SOX Protocol console has been already opened, and probably it is hidden somewhere under other windows on the user's screen.

14 Console

The console allows viewing internal system logs of the directly connected iSMA-B-FCU device. The console can only be used, when the device is connected to the PC directly by USB cable even without opening any project.

To open the console, connect the iSMA-B-FCU device to the PC using the USB cable as shown above and press the 'Console' button. The new console window appears listing the iSMA-B-FCU controller's internal logs.

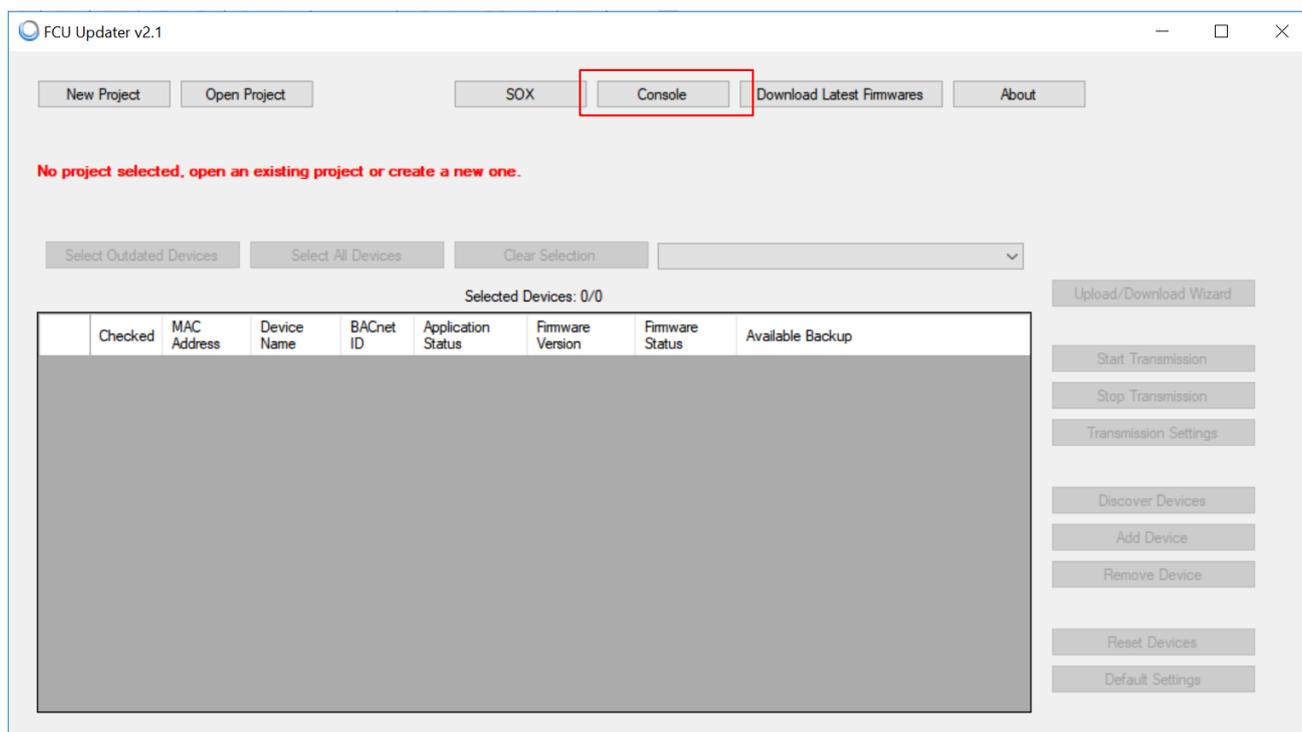


Figure 40 - Opening console logs

```

-- MESSAGE [sox::SoxService] started port=1876
-- MESSAGE [sys::App] Application starting.
file_closed()
file_open(app.sab, r)
Running SVM in Platform Mode

Console log from FCU device. || Time: 2017.07.20 12:33:20 || Project: None || Device MAC Address: unknown
Cannot run VM (45)
ERROR: Cannot load app err=45
file_closed()
-- ERROR [sys::App] Schema mismatch (checksum): iSMA_AdvancedControl 0xbd256685 != iSMA_AdvancedControl 0xe424258
file_open(app.sab, r)
Running SVM in Platform Mode

Console log from FCU device. || Time: 2017.07.21 13:29:03 || Project: Project Name || Device MAC Address: unknown
EEPROM Write NV structure
-- MESSAGE [sys::App] Application running.
-- MESSAGE [iSMA_BACnetMasterSlave::BACnetMasterSlaveNetwork] BACnet MSTP Master is limited to 100 points
-- MESSAGE [sox::SoxService] DASP Discovery enabled
-- MESSAGE [sox::SoxService] started port=1876
-- MESSAGE [sys::App] Application starting.
file_closed()
file_open(app.sab, r)
Running SVM in Platform Mode

Console log from FCU device. || Time: 2017.08.08 09:36:54 || Project: None || Device MAC Address: unknown
LOG END.

```

Figure 41 - Console with internal logs

Note: Only one instance of Console can be opened at a time. If the 'Console' button on main application window is disabled, it is because the Console has been already opened and probably it is hidden somewhere under other windows on the user's screen.