microMIND V2
Installation Guide

NTware

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microMIND V2 Installation & Configuration

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Symbols used in this manual:

Note 

Important Note 

Online link 

Printer Wizard 

Settings 

Advanced Configuration 

Advanced Printer Configuration 

Table of Contents

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Short Summary:

This manual describes the features, the installation, and the configuration of the microMIND V2 in detail.

microMIND V2

2

2.1 Introduction

The microMIND V2 provides the possibility to add a MiCard (V2) reader as a secure print solution to any printer. This allows you to turn your normal office printer into a cost effective secure print solution. It does not matter if this printer is a USB, a network printer or a printer with a different connection. As long as the respective printer is available and configurable in uniFLOW, a microMIND V2 can be used in conjunction with the printer. The microMIND V2 supports both MiCard V1 (formerly known as MiCard) and MiCard V2 readers.

Secure Printing

The microMIND V2 is designed to add the Secure Print feature to single function printers, regardless of whether they are Canon devices or not. Each device from each vendor is supported. It does not matter if your printer provides an Ethernet TCP/IP network, WLAN, USB or other connection. Thus, NT-ware provides an easy and cost effective solution to include almost all printers and install them in uniFLOW as a secure printer.

However, an Ethernet TCP/IP network connection is required for the microMIND V2. The microMIND V2 has a built-in network switch, allowing it to connect the printer to the network through the microMIND V2. This can be required for network printers. Note that the microMIND V2 does not have to be attached to the printer. It only transfers the ID data, reads from the users ID card, to the uniFLOW Server and thus tells the uniFLOW Server to release the print jobs for this user.

The microMIND V2 is designed to support Secure Printing. As Secure Printing always requires a uniFLOW Server to be present, Emergency Access is not possible with the microMIND V2. This is not a specific limitation of the microMIND V2 itself, but should be mentioned here.

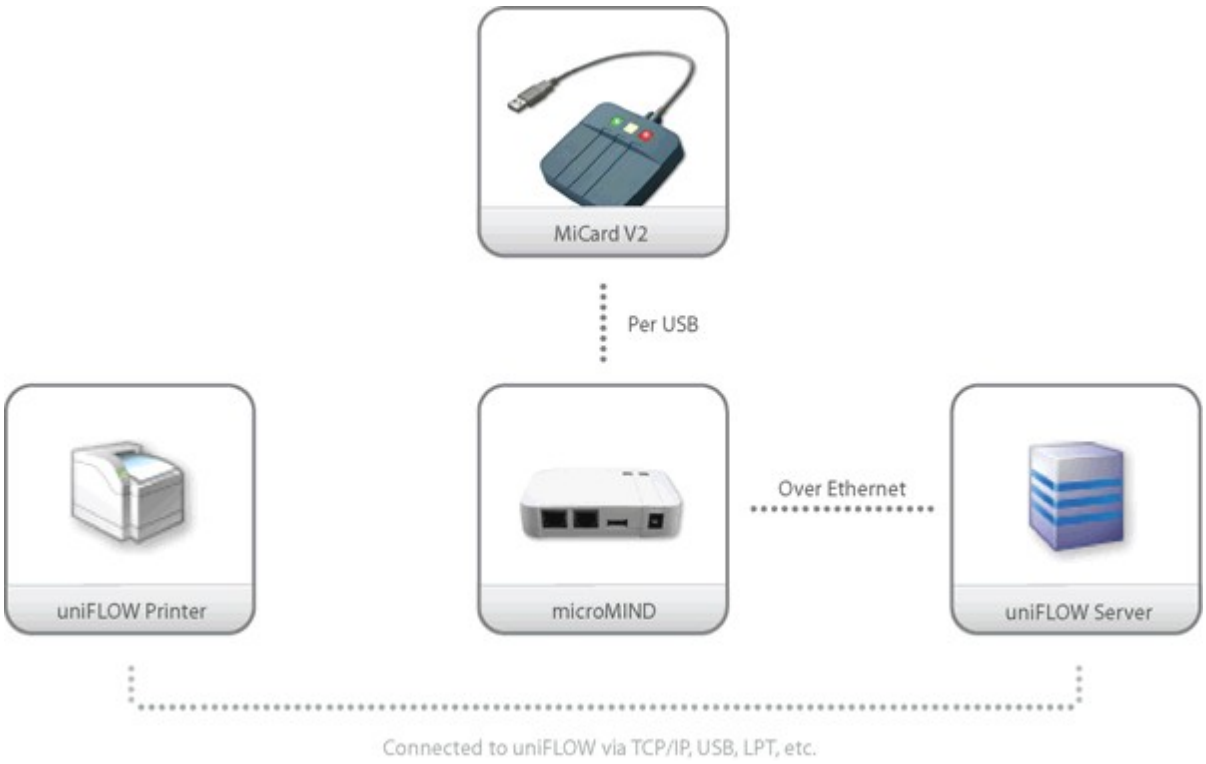
Copy Accounting

Furthermore the microMIND V2 supports copy accounting. In order to allow for accounting of copy costs on an MFD, the user interface of the device needs to be locked until a user has been identified at the MFP. After identification the user interface opens up, the user starts copying, and the costs can be assigned to the user, a user group, or a cost centre.

To lock the interface you need to connect a cable with the relevant machine and make the required settings in the service mode of the MFP.

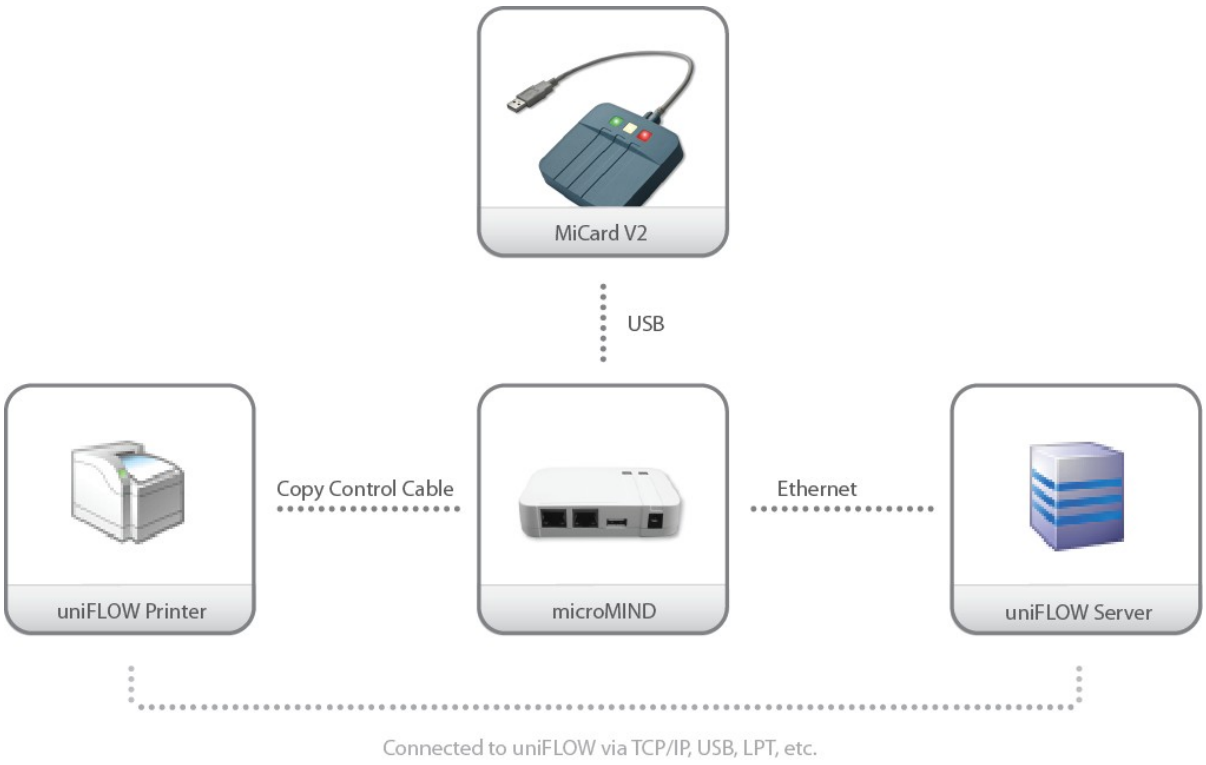
The following two graphics outline how the microMIND V2 can be implemented in the network environment. The microMIND V2 also offers two Ethernet ports, allowing both, the microMIND V2 and a network printer to connect to the company's network. Thus, no additional network port or switch port is required.

microMIND V2 (only secure printing - without copy accounting)



microMIND connected to a uniFLOW printer for secure printing only

microMIND V2 (secure printing and copy accounting / device locking)



microMIND connected with a copy accounting cable to lock the MFD

2.2 Scope of supply

The microMIND V2 package includes

- the microMIND V2 device
- a patch cable to connect the device to a printer
- Power supply (if no PoE microMIND V2)
- the microMIND V2 Installation Guide
- 2 strips of Velcro®

2.3 Technical Specifications

Power Supply:	The microMIND V2 is available in two different versions. One with PoE (Power over Ethernet) and one without. If you have a microMIND V2 which does not support PoE or if your network switch does not support PoE, you have to use the respective power supply. The power supply must be a limited power source (LPS), which delivers a voltage of 12 V DC and a min. current of 450 mA. A polarized plug 2.1/5.5 mm is to be used, with positive wire to the inner jack.
Rated Voltage:	12 V ⎓ LPS, max. 450 mA
Ethernet:	2x RJ-45 Ethernet connection with a built in 10/100MBit switch
USB:	USB Type A connection with USB 1.1 (Full-Speed) to connect a MiCard (V2) reader
D-SUB-15:	Digital I/O Connector to lock / unlock the machine for copy accounting.
Ambient temperature:	0 … +40 °C (32 … +104 °F)
Printer:	Any printer with or without a respective network interface can be connected to the uniFLOW Server. Printers without network connections, such as USB or LPT connections, can also be "virtually" attached to the microMIND V2 via the uniFLOW Server.
Supported Readers:	MiCard (V1) and MiCard V2

uniFLOW: uniFLOW and/or RPS V5.x or higher

Status LEDs: The microMIND V2 is equipped with colored status LEDs 9.

Note that the MiCard (V1) and MiCard V2 readers are the only readers supported by the microMIND V2. Do not attach different readers or USB devices to the microMIND V2.

Changes and/or modifications of the microMIND V2 not approved by NT-ware Systemprogrammierung GmbH will invalidate the user's authority to operate the microMIND V2.

2.4 FCC and IC Compliance Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

2.5 Installation

Required components:

- microMIND V2
- Power supply for the microMIND V2 if no PoE support
- Printer
- Ethernet patch cable (delivered with the microMIND V2)
- MiCard (V2)
- USB cable (delivered with the MiCard (V2)

Installation

1. Switch off the desired printer.
2. If it is a network printer, disconnect the device from the network.
3. If it is a network printer, plug-in the printers network cable in one of the RJ45 input jacks.
4. Attach the MiCard (V2) reader to the microMIND V2's USB port.
5. Optional in case copy accounting is required on an MFD: Attach the microMIND V2 with the respective copy accounting cable to the MFD.
6. Attach the microMIND V2 reader to the network.
7. Plug-in the power supply of the microMIND V2 if required. This is necessary if you have no PoE microMIND V2 or if you have a PoE microMIND V2 but your network doesn't support PoE.
8. The microMIND V2 reader boots up.
9. Switch on the printer.

The microMIND V2 and MiCard (V2) reader are now ready for more advanced configurations. For the microMIND V2 configuration, see chapter Configuration 10. For the MiCard (V2) reader, refer to the respective MiCard (V2) manual and the uniFLOW manual.

2.6 LED Status

The microMIND V2 is equipped with two status LEDs. The tables below show the status information given by the respective LED.

Power LED:

Status/Color	Status description
Off	No power supplied or boot loader phase (see also chapter Firmware update 16).
Green	Device is powered with Power over Ethernet (PoE).
Orange	Device is powered with an external power supply.

Status LED:

Status/Color	Status description
Off	The microMIND V2 did not boot. It is most likely defective.
Green	A MiCard (V2) card reader is connected and has been identified. The microMIND V2 is ready to receive data from the MiCard (V2).
Green flashing	No USB card reader is connected. This status will only be displayed if the microMIND V2 is connected to the network and to a uniFLOW Server.
Green flashing (fast)	If a new firmware has been loaded successfully during the boot loader phase, the green LED is flashing fast (see also chapter Firmware update 16).
Orange	A card has been detected by the MiCard (V2) reader and the uniFLOW server has been informed about it. This status is shown for approx. 2 seconds. Afterwards the LED turns green again. It also lights up in orange during the boot loader phase.
Orange flashing	A not supported USB card reader has been connected. Note that only MiCard (V2) readers are supported by the microMIND V2.
Red	The microMIND V2 has an IP address but is not connected to a uniFLOW Server nor to an RPS, thus it is inoperable.
Red Flashing	The microMIND V2 has no IP address and is trying to acquire an IP address, thus it is inoperable.

RJ45 LEDs:

LEDs	Status description
Green	A link to a network is established.
Green flashing	Link established and data is transmitting.
Yellow ON	Network speed is 100 Mbit/s
Yellow OFF	Network speed is 10 Mbit/s

2.7 Configuration

The microMIND V2 works without any additional configuration if your network has a DHCP server configured to provide an IP address for the microMIND V2. However, some “advanced” options are available which are explained below.

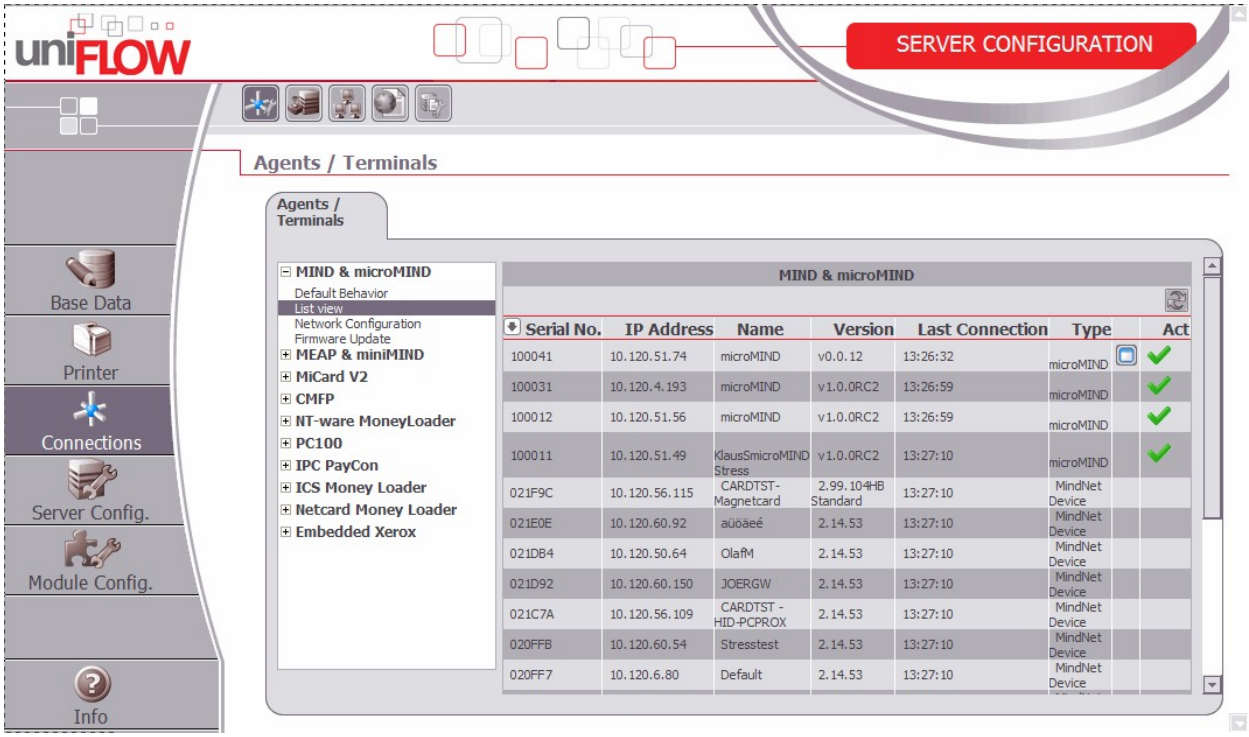
2.7.1 Configurable parameters

IP Address

The IP configuration of the microMIND V2 is performed directly via uniFLOW.

To configure a microMIND V2 IP address, open the uniFLOW Server Configuration, choose the main menu ***Connections / Agents/Terminals*** / ***MIND & microMIND*** and select the ***List view*** page.

In this screen you can see the status information of the attached MINDs / microMINDs / microMIND V2. The column ***Type*** shows you if it is a MIND (MindNet Device) or a microMIND V2.



The microMIND V2 IP configuration can be found by selecting a microMIND V2 via mouse click on the IP address. You'll find the serial number of the respective microMIND V2 on a sticker on the back of the microMIND V2. A browser screen will open to configure the microMIND V2 IP address.

By default the microMIND V2 is set to DHCP, meaning that the microMIND V2 receives it's configuration from the companies DHCP server if available.

If there is no DHCP server available or if a DHCP server doesn't send any IP configuration to the microMIND V2, the microMIND V2 will appear on the ***MIND & microMIND / List view*** page as well. This is because the microMIND V2 vendor MAC address portion is known to the uniFLOW Server. Additionally, the microMIND V2 assigns an Auto-IP address (Automatic Private IP Addressing 169.254.0.0/16) to itself.

After all settings have been made, confirm the settings by clicking on ***Save Settings***.

The rebooting process of the microMIND V2 takes a few seconds.

2.7.1.1 Code Conversion

The ***Code Conversion*** functionality lets you convert the read ID into a number of other notations, e.g. you read out an ID in hexadecimal, but you need it in decimal, or you need the read ID in a reverse order etc. For such cases, a code conversion option is available in the uniFLOW Server Configuration. It has been implemented, primarily to support a Code Conversion for microMIND. However, the Code Conversion can be set to a "Global Code Conversion" for all ID devices or to microMINDs only.

The configuration is done on the uniFLOW Server under ***Server Config. / General Settings / Code Conversion***.

Parameter:

Code Conversion Script:

Here you can enter the desired Code Conversion rules. The supported commands are the following:

- `HexToDecimal`
- `DecimalToHex`
- `RemoveLeadingZeros`
- `StringReverse`
- `ReverseHexBytes`
- `ReverseBitorderInBytes`
- `ConvertToAscii`
- `RemoveFirst <n>`
- `RemoveLast <n>`
- `RestrictLength <n>`

where <n> represents a numeric parameter.

You can enter one command per line. A '#' can be used for comments.

Example:

To remove the first 2 characters and then do a hex bytes reversion use:

```
RemoveFirst 2 # take away unnecessary characters
ReverseHexBytes # convert the data to reverse hexadecimal
```

Apply to microMIND V2 only:

Set this parameter to ***Yes***, if the Code Conversion should only take place for microMINDs.

Set it to ***No***, if the Code Conversion should take place for all ID devices.

2.8 microMIND V2 Website

The microMIND V2 has a built-in web server. It provides the following websites:

- ***microMIND V2***
- ***USB Device***
- ***About***

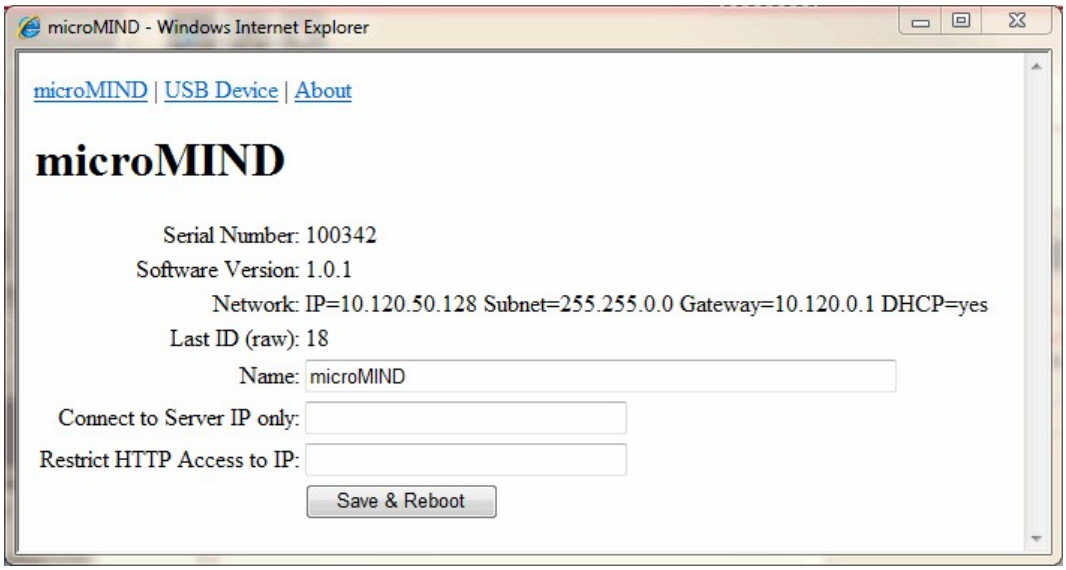
The websites can either be reached by clicking on the respective microMIND ***List view*** entry of the ***Connections / Agents/Terminals / MIND & microMIND / List view*** site of the uniFLOW Server Configuration, or via ***http://<microMIND IP>/mind.shtml***.

The ***microMIND V2*** site gives information about the following:

- ***Serial Number***
  This is the serial number of the microMIND V2 itself. It is used to select a microMIND V2 during a printer configuration. You will also find this number on a sticker on the back of each microMIND V2. The serial number is displayed in hexadecimal format and reflects the last 3 Bytes of the device's MAC address.

- ***Software Version***
  The current firmware version of the microMIND V2.
- ***Network***
  Shows the IP address of the microMIND V2, the Subnet, Gateway address and whether it is configured manually or via DHCP.
- ***Last ID (raw)***
  Shows the last ID of a read out authentication card without code conversion (raw data).
- ***Name***
  You can change the default name microMIND V2 for an easier identification of the device itself, for example the name of the associated printer.
- ***Connect to Server IP only***
  Here you can limit the communication between a certain uniFLOW Server and the microMIND V2. This means that this microMIND V2 only "talks" to the entered uniFLOW Server IP address and to no other computer in the network.
- ***Restrict HTTP Access to IP***
  Only the computer with the IP address entered here is able to open the websites of the microMIND V2. The uniFLOW Server will always have access to the microMIND V2 independent of the settings here. If left blank, there is no access limitation.

Note that HTTP port 80 must not be blocked by a firewall to reach the microMIND V2 website.

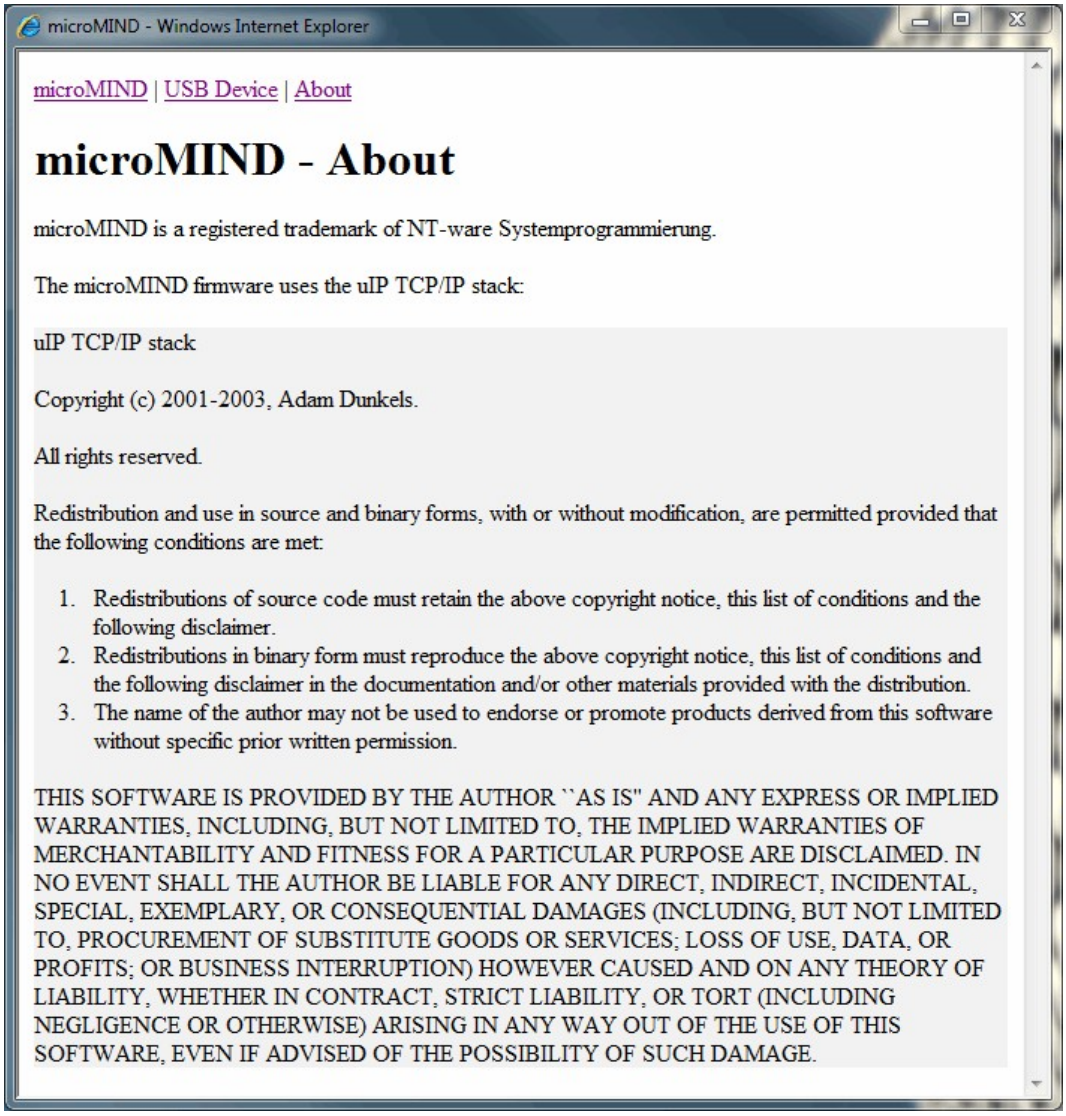


The ***USB Device*** site gives information about the following:

- If it is connected to a USB Device, it shows which device is connected (see example screenshot below).

- ***Configured HID Device***
  Displays if a keyfile has been loaded and shows the name of the configured device.
- ***Use Card Track***
  Use this parameter to address the respective card track of magnetic cards or specific Human Interface Devices.
  If this parameter is set to 0, all tracks are read out at once. This can be used for example for debugging purposes.
- ***MiCard V2 HID: use extended data***
  Tick this parameter if you are using the MiCard V2 HID with SSP (Serverless Secure Printing). Leave it disabled in a normal uniFLOW environment.
- ***Upload USB HID configuration file***
  Here you can upload specific USB Human Interface Device Reader configuration files (Key Files). These are required in certain projects. The files are distributed through the NT-ware project team or support.

The ***About*** site shows legal information.


microMIND - Windows Internet Explorer
microMIND | USB Device | About
microMIND - About
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uIP TCP/IP stack
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2.9 Firmware update

The microMIND V2 firmware can be updated with a normal USB stick.

Requirements:

- USB stick formatted with FAT and a sector size of 512 bytes.
- New firmware with the file name ***MMAPP*** (note that the file name has no extension).

Update process:

- Format your USB stick according to the requirements listed above.
- Copy the ***MMAPP*** file onto the USB stick.
- Detach your microMIND V2 from the power supply. If PoE is used, detach the network connection.
- Attach the USB stick to the microMIND V2.
- Attach the power supply. If PoE is used, attach the network connection.

Update proceedure:	LED Status:
1. The device starts with the boot loader phase. The microMIND V2 checks if there is a USB stick with a valid firmware connected to the device.	Power LED: off Status LED: orange
2. If there is no valid firmware found, the device starts normally (step 3. and 4. are skipped).	
3. If there is a valid firmware found, it gets loaded.	
4. Once the firmware has been loaded successfully, the Status LED will flash green. Now you can unplug the USB stick and reboot the device.	Power LED: off Status LED: green flashing
5. Afterwards the microMIND V2 starts its normal application.	

2.10 FAQ

How to obtain the MAC Address of a microMIND V2?

The MAC Address consists of two parts. The first part is the vendor ID for NT-ware which is always the same: 743256

The second part is the serial number of the microMIND V2, for example 100012.

Following this, the resulting MAC Address will be: 74:32:56:10:00:12