

# MiniPlex firmware V3.33.4 & WiFi Firmware V4.75

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## Please read this document carefully!

Updating the WiFi firmware is a complicated process which requires careful planning and a number of steps that need to be executed in exactly the right order. Many problem reports we receive regarding this update can be traced back to not having read these instructions carefully!

## Introduction

This update contains two firmware files: MiniPlex-2 V3.33.4 firmware and WiFi V4.75 firmware.

The MiniPlex-2 firmware is what makes your multiplexer tick and which is present in every MiniPlex-2 series multiplexer. We developed this firmware.

The MiniPlex-2Wi also contains a WiFi module running its own firmware. The manufacturer of the WiFi module is the supplier the WiFi firmware.

## What's new

### WiFi V4.75

Version 4.75 contains many improvements regarding the stability of the WiFi access point. Also the discovery and connect time of clients attempting to join the access point has been shortened. The need to power-cycle the MiniPlex in order for clients to re-establish a connection to the access point has been eliminated.

### MiniPlex-2 V3.33.4

The MiniPlex firmware update to V3.33.4 is necessary to support the new WiFi firmware. Both firmware updates must be loaded using the latest version of MPX-Config2, V3.71.0 or higher.

This firmware also corrects some errors in the WiFi update procedure, making it less susceptible to errors during the update process.

Since January 2020, our web site and firmware repository run on a new server, with a new IP address and new login credentials to obtain firmware images. MiniPlex-2 V3.33.4 contains this new information, which is programmed into the WiFi module in order to download its firmware when an update over the Internet is performed.

## New Features

### WiFi Channel Setting

In Access Point mode the WiFi channel can now be set with the PSMDWI,W,x command. PSMDWI,W,0 completely disables the WiFi interface. Any number from 1 to 13 will set the WiFi channel. If the WiFi interface was disabled, it is enabled first and a message is shown.

When disabled, the WiFi module is completely shut down. It radiates no RF and it does not accept any configuration commands. It must be enabled before any other PSMDWI command can be executed.

### WiFi SSID and passphrase

The WiFi SSID and passphrase may now contain spaces. Thus, a command like

```
PSMDWI,W,I,Blue Lagoon Marina,Big Secret
```

is now allowed.

When this update has been completed, the MiniPlex WiFi network will be visible as

### MiniPlex-25001234

where the numbers will match the serial number as printed on the label. Once you have joined the MiniPlex WiFi network, it can be reached at **IP address 10.0.0.1** and TCP or UDP port 10110.

## Updating the Firmware

First the MiniPlex firmware needs to be updated. This procedure is described in the manual of the MiniPlex but it will be explained in the following steps too. It is also required to re-initialize the WiFi module after updating the MiniPlex. This re-initialization programs the new server address and login credentials into the WiFi module so it knows where to find its new firmware.

If you have navigation data visible in MPX-Config2, its best to either shut down all sources of NMEA data into the MiniPlex or to temporary set the speed of the NMEA inputs of the MiniPlex to non-standard values. This will effectively mute the inputs and ensures that all messages during the firmware update can be seen. Don't forget to restore the original settings after the update procedure is completed.

After a successful update of the MiniPlex firmware, the WiFi firmware needs to be updated. The WiFi module needs to connect to an FTP server to download its firmware file. This can be accomplished in two different ways:

### **1. Update from the Internet (Windows and OS X)**

The MiniPlex is set up as WiFi client to connect to an existing WiFi router/access point that has a connection to the internet.

This must be "normal" access point as opposed to the type of access point often seen in marina's, were a user logs in through a web site. An on-board WiFi router with 3G/4G access as well as a smartphone providing a personal hotspot will also work. If such a router is not available, your best option will be to perform this update at home, using your home WiFi network.

Once the WiFi module has joined your WiFi network, it will be able to download its firmware file from the ShipModul FTP server.

At the same time your computer must be connected to the USB port of the MiniPlex, in order to enter update instructions through MPX-Config2.

This method requires more setup than method 2, but the update itself is more reliable because you won't have any firewall issues.

### **2. Local update (Windows only)**

The MiniPlex is used in its default Access Point mode and your computer is connected to the MiniPlex via WiFi.

At the same time, the computer must also be connected to the USB port of the MiniPlex. In this setup, your computer will be the FTP server where the WiFi module loads its firmware file from. The USB connection is used to instruct the MiniPlex to start the update process.

The advantage of this method is that the update can be performed locally, without being dependent on an internet connection. The drawback is that running an FTP server application, which is built-in in MPX-Config2, is normally not allowed and blocked by your local firewall.

**It is therefore required that you disable your firewall during the update procedure.**

The local update is not supported for OS X users of MPX-Config2.

## **Update from the Internet**

To be able to update the WiFi firmware from the internet, you must have access to a WiFi router/access point that is connected to the internet. A smartphone setup as a personal hotspot will also work. You need direct access: setting an SSID and a passphrase should be the only requirement for a successful connection. If you need to log in through a web page before access is granted, this procedure will not work.

Typically you will be connecting to your own WiFi router at home, on-board with 3G/4G access or your smartphone. Let's assume that the SSID of your router is "MyAccessPoint" and its passphrase/WPA key is "MyPassWord". Whereever you see those names used in commands below, replace them with the SSID and passphrase of your WiFi router/hotspot.

### **Preparation**

In order to successfully update the WiFi firmware, a few preparations must be made:

1. You must be using MPX-Config2 V3.71.x or higher.
2. The zip file containing the firmware files must be unpacked into a folder on your computer.
3. Your computer must be connected to the MiniPlex with a USB cable. The update process uses both the USB connection and the WiFi connection at the same time!  
The computer initiates the firmware update through the USB connection, the WiFi module then loads it firmware over WiFi.

## Update Procedure

In the following steps, you will be asked to enter specific commands. These commands must be entered in the Manual NMEA Sentence Input section of MPX-Config2. All resulting responses are visible in the NMEA viewer on the top half of the window.

1. Start MPX-Config2 and connect to the USB COM port. If you are running pre-V3.30 firmware, MPX-Config2 will now prompt you to automatically update the firmware. Choose "No" or "Cancel".
2. From the File menu choose "Update MiniPlex Firmware...", select the **miniplex-2\_3.33.4** file from the folder where you unzipped the firmware to and click "Open" to start the update. Wait until the update is completed. If the update fails for some reason, retry until the update completed successfully.
3. Enter the following command:

**PSMDWI,A**

This resets the WiFi module to factory settings and loads the right server address and login credentials of our FTP server. The following message should appear:

**\$PSMDWI,Initializing WiFi interface...  
\$PSMDWI,RDY**

4. Now we're going to connect the MiniPlex to your WiFi router/hotspot. Enter the following command:

**PSMDWI,W,I,MyAccessPoint,MyPassword**

The following message should appear:

**\$PSMDWI,Initializing WiFi interface...  
\$PSMDWI,RDY**

Now check the yellow LED on the MiniPlex. It should be lit within a few seconds after this command is entered. When lit, it indicates that the MiniPlex has successfully connected to your WiFi router/hotspot. If the LED is not lit, check if you entered the right SSID and passphrase in the command above.

5. This step will update the firmware in the WiFi module. Enter the following command to start the update process:

**PSMDWI,U**

The following messages should now appear:

**\$PSMDWI,Initiating WiFi firmware update  
\$PSMDWC,connecting to 136.144.212.76  
\$PSMDWI,  
\$PSMDWC,FTP file=xx:.....  
\$PSMDWC,.....  
\$PSMDWC,.....  
\$PSMDWC,UPDATE OK  
\$PSMDWC,Resetting WiFi interface...  
\$PSMDWI,Initializing WiFi interface...  
\$PSMDWI,RDY**

This finalizes the WiFi firmware update. Please be patient, the last step (Initializing WiFi interface) may take up to 10 seconds.

You can verify the version of the WiFi firmware with the following command:

**PSMDWI,V**

The MiniPlex responds with:

**PSMDWI,VER,4.75**

In some cases, a **\$PSMDWC,No response** message appears after the last WiFi initialization message. Enter the following two commands:

**PSMDRESET  
PSMDWI,A**

After the last command, the following messages should appear:

**\$PSMDWI,Initializing WiFi interface...  
\$PSMDWI,RDY**

Verify if the new firmware was loaded: the version reported should be 4.75. If that is not the case, start the update procedure over again from step 3.

If this still doesn't work, you might have a rare problem that the WiFi module has crashed after the update. In most cases, you can recover from this by entering:

#### **PSMDRESET**

Then leave the multiplexer powered and wait for appr. 15 minutes. Eventually the WiFi module will be able to restart in this period. Then enter:

#### **PSMDWI,A**

To re-initialize the WiFi module.

When the update has been completed, the MiniPlex WiFi network will be visible as "MiniPlex-25001234" where the numbers will match the serial number as printed on the label. Once you are connected to the MiniPlex WiFi network, it can be reached at **IP address 10.0.0.1** and TCP or UDP port 10110.

If you're updating from WiFi V2.32 or below, it is important to know that the WiFi interface now provides an Access Point instead of an Ad-Hoc hotspot.

The Access Point supports DHCP for automatic configuration of the IP parameters of your connected device. It is no longer necessary to set a static IP address and netmask device. Set your device to DHCP or Automatic.

## **Local Update**

The local update procedure does not need a WiFi router/access point, nor a connection to the internet. In this case, your computer will act as an FTP server to the WiFi module. FTP server software built-in in MPX-Config2 will take care of this. ***During this update procedure, your computer must be connected to the WiFi access point of the MiniPlex and you MUST disable any firewall!***

At the same time, the computer must also be connected to the USB port of the MiniPlex. The USB connection is used to instruct the MiniPlex to setup the FTP connection to your computer and to start the update process.

### **Preparation**

In order to successfully update the WiFi firmware, a few preparations must be made:

1. You must be using MPX-Config2 V3.71.x or higher.
2. The zip file containing the firmware files must be unpacked into a folder on your computer.
3. Your computer must be connected to the MiniPlex with a USB cable. The update process uses both the USB connection and the WiFi connection at the same time!  
The computer initiates the firmware update through the USB connection, the WiFi module then loads it firmware over WiFi.
4. Your firewall must be temporarily disabled. A firewall usually prevents any server software from being run on your computer for obvious security reasons. The FTP server in MPX-Config2 will certainly trigger your firewall when it is activated, resulting in a Windows Security Alert.

### **Update Procedure**

In the following steps, you will be asked to enter specific commands. These commands must be entered in the Manual NMEA Sentence Input section of MPX-Config2. All resulting responses are visible in the NMEA viewer on the top half of the window.

1. Start MPX-Config2 and connect to the USB COM port. If you are running pre-V3.30 firmware, MPX-Config2 will now prompt you to automatically update the firmware. Choose "No" or "Cancel".
2. From the File menu choose "Update MiniPlex Firmware...", select the **miniplex-2\_3.33.4** file from the folder where you unzipped the firmware to and click "Open" to start the update. Wait until the update is completed. If the update fails for some reason, retry until the update completed successfully.
3. Enter the following command:

#### **PSMDWI,A**

This resets the WiFi module to factory settings. The following message should appear:

```
$PSMDWI,Initializing WiFi interface...  
$PSMDWI,RDY
```

4. Retrieve the current WiFi firmware version with the following command:

## **PSMDWI,V**

The MiniPlex responds with:

**PSMDWI,VER,x.xx**

Where x.xx is the version number. Write this number down, you need it in step 6.

5. Now setup your computer to **connect to the WiFi network of the MiniPlex**. If you are unable to connect, make sure no other device is still connected. You may need to temporarily disable the WiFi connection on your iPad or iPhone. Even if these devices are in stand-by, they can maintain a WiFi connection to the MiniPlex, which prevents your computer to connect.
6. Verify the WiFi connection by using MPX-Config2 to connect via TCP. For WiFi firmware versions V2.32 or below, enter host address **169.254.1.1**. For V2.42 and up, enter **10.0.0.1**. If you can connect to the MiniPlex using TCP, the WiFi connection is working.  
**Do not disable the WiFi connection. It is needed to perform the update!!**
7. Now connect via USB again. You are ready to perform the WiFi update.
8. From the File menu choose "Update WiFi Firmware...", select the **wifi-4.75.img** file from the folder where you unzipped the firmware to and click "Open" to start the update.  
The following messages should now appear:

```
$PSMDWI,Initiating WiFi firmware update  
$PSMDWC,connecting to xxx.xxx.xxx.xxx  
$PSMDWI,  
$PSMDWC,FTP file=xx:.....  
$PSMDWC,.....  
$PSMDWC,.....  
$PSMDWC,UPDATE OK  
$PSMDWC,Resetting WiFi interface...  
$PSMDWI,Initializing WiFi interface...  
$PSMDWI,RDY
```

This finalizes the WiFi firmware update. Please be patient, the last step (Initializing WiFi interface) may take up to 10 seconds.

If you get an FTP connection error, check the IP address in the **\$PSMDWC,connecting to xxx.xxx.xxx.xxx** message. If this address does not begin with 169.254... or 10.0..., your computer was not connected to the WiFi access point of the MiniPlex. In that case, go back to step 5.

In some cases, a **\$PSMDWC,No response** message appears after the last WiFi initialization message. This means that the update was successful but the reconfiguration of the WiFi module was not. If this is case, enter the following two commands:

```
PSMDRESET  
PSMDWI,A
```

After the last command, the following messages should appear:

```
$PSMDWI,Initializing WiFi interface...  
$PSMDWI,RDY
```

If this still doesn't work, you might have a rare problem that the WiFi module has crashed after the update. In most cases, you can recover from this by entering:

```
PSMDRESET
```

Then leave the multiplexer powered and wait for appr. 15 minutes. Eventually the WiFi module will be able to restart in this period. Then enter:

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To re-initialize the WiFi module.

When the update has been completed, the MiniPlex WiFi network will be visible as "MiniPlex-25001234" where the numbers will match the serial number as printed on the label. Once you are connected to the MiniPlex WiFi network, it can be reached at **IP address 10.0.0.1** and TCP or UDP port 10110.

If you're updating from WiFi V2.32 or below, it is important to know that the WiFi interface now provides an Access Point instead of an Ad-Hoc hotspot. This Access Point is also compatible with Android devices.

The Access Point supports DHCP for automatic configuration of the IP parameters of your connected device. It is no longer necessary to set a static IP address and netmask device. Set your device to DHCP or Automatic.

**When the update has completed, the IP address of the MiniPlex has changed to 10.0.0.1**

**You must change the IP settings in your navigation software to 10.0.0.1 to be able to connect to the MiniPlex.**

## Security

After this firmware update, the access point is unsecured and open to everyone. You can use the command below to set the SSID and the passphrase of the access point:

**PSMDWI,W,A,<ssid>,<passphrase>**

Example: to set the SSID to BlueJoy and the passphrase to S3cr3t123, you enter

**PSMDWI,W,A,BlueJoy,S3cr3t123**

If you're happy with the default SSID of the MiniPlex (MiniPlex-xxxxxxx), then leave the SSID field empty:

**PSMDWI,W,A,,S3cr3t123**

In the same way, you can leave the passphrase field empty and only change the SSID.

To remove the security, enter a '0' (zero) in the passphrase field:

**PSMDWI,W,A,,0**

The SSID and passphrase may only contain characters and digits. The passphrase must be at least 8 characters. The maximum length for both fields is 32 characters.

Both SSID and passphrase fields are optional but at least one of them must be present in the PSMDWI,W,A command.