

Manual

Wireless LAN Module

(Lantronix xPico)

for Reinhardt Weather Stations



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**Wireless LAN Modul
(LANTRONIX)**

**for
Reinhardt Weather stations**



1 For compliance

1.1 Usage

The wireless LAN module for all Reinhardt MWS weather stations and sensors of the M and 55 series includes a WLAN module from Lantronix (xPico) with antenna for connecting a weather station with simultaneous data retrieval on 2 ports. In addition to the WLAN functionality, these modules have a serial port that can be used for configuration if the WLAN has not yet been set up. The WLAN module with its 2 serial ports enables the integration of a weather station into your network via WLAN at a single IP address via 2 ports (ports 10001 (full access) and 10002 (read only) are preset by default).

With the WLAN outdoor module, a wireless connection to your network can be established in infrastructure mode. With a PC or laptop with an integrated WLAN module, you can establish an ad-hoc connection to the WLAN module. This then corresponds to a cable replacement for the direct connection of the weather station and PC.

When operating with a router, you must integrate the wireless outdoor module into your network. For details, please refer to the instructions for your router and the detailed technical manual for the WLAN module on the weather USB stick.

Please note that only one PC can access the IP address of the WLAN module exclusively!

The minimum supply voltage is 6VDC, the maximum supply voltage is 24 VDC !
The current consumption at 18VDC is app. 75 mA.



1.2 Safety instructions



The instruments are manufactured in accordance with modern technical standards and can be operated without danger when used as directed.



Damage caused by non-observance of this operating manual can lead to forfeiture of warranty. REINHARDT System- und Messelectronic GmbH is not liable for subsequent damage.



REINHARDT System- und Messelectronic GmbH is not liable for damage of items or persons caused by improper handling or non-observance of the safety instructions! In such cases any guarantee claims shall become null and void.



Dear customer, the following safety and hazard notices not only protect your health, but also the appliance. Please read the following points carefully.



Do not leave the packaging material lying around. These parts are dangerous toys in the hands of children.

1.3 Mounting

The WLAN module is installed by clamping it to the pipe bracket on a 1 "pipe directly under the weather station.

The connection sockets must point downwards, unused sockets must be closed with the cover caps!

2 Commissioning

2.1 Hardware Installation

2.1.1 WLAN-Module in Infrastructure mode

In WLAN mode, the WLAN module is connected to the standard cable (7-pin round plug, possibly with an additional WLAN adapter cable) and supplied with voltage.

The weather station (s) are also connected directly to the WLAN outdoor module (on the middle socket) using a 1: 1 cable. The button on the right is used to configure settings via the serial interface. The antenna is plugged into the 4th connection (SMA socket) (far left).

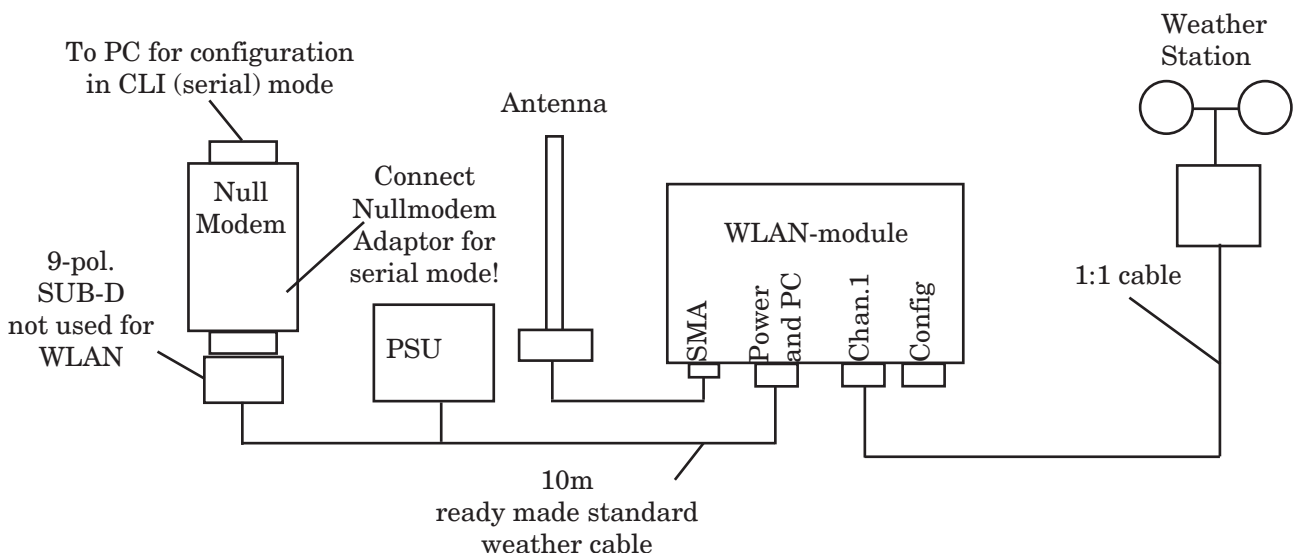
If there are problems transmitting data due to too big distance to the router or WLAN-Indoor. Module or due to fences then in most casses an antenna with amplifier or a directional antenna will solve this problem.



Please do not use any tools to fasten the connectors in order to avoid the connectors working themselves loose due to too big force when fastening the connectors!!

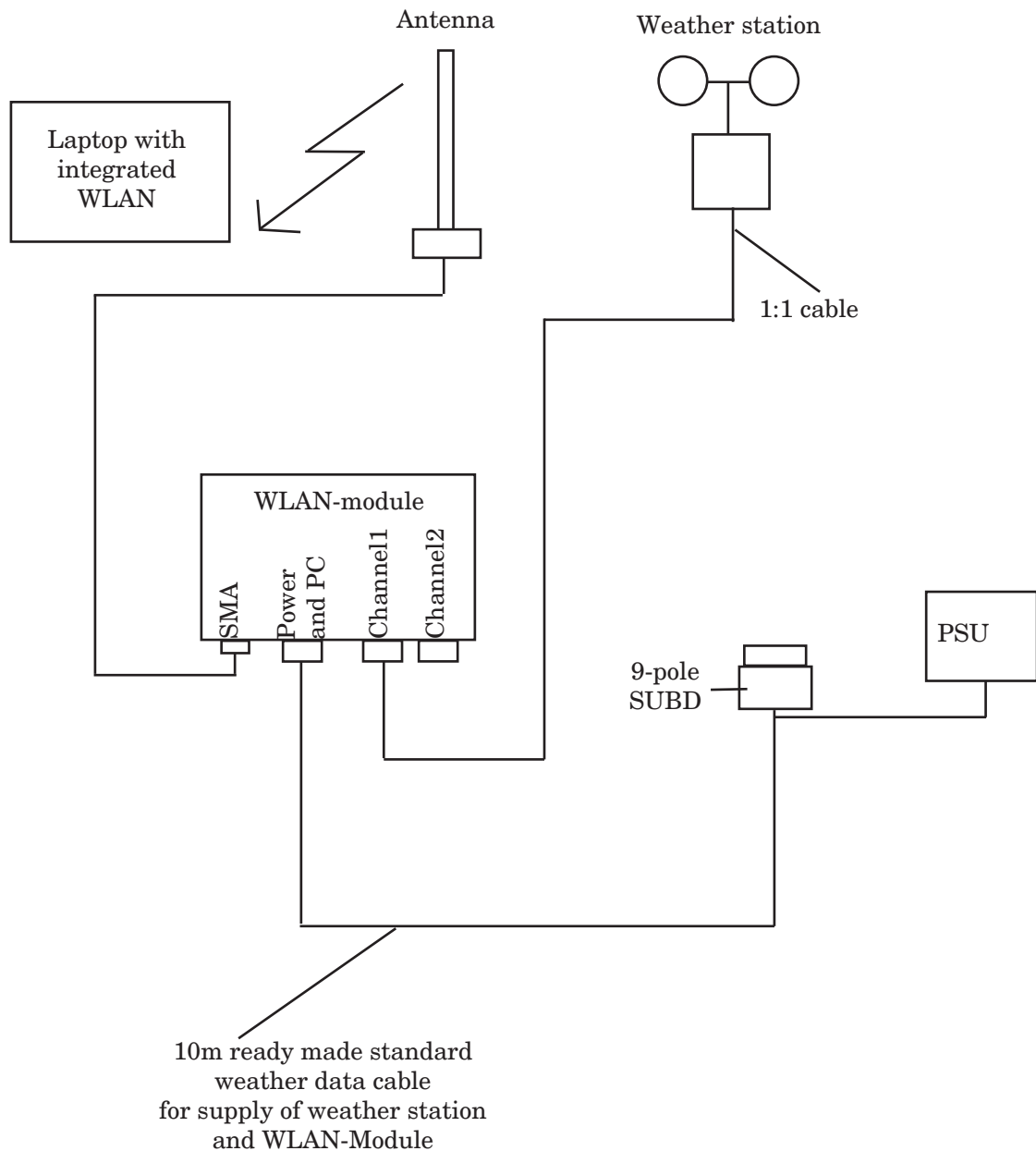


For serial operation via CLI (for configuration changes on the module via the COM port), the weather station must be unplugged and the COM port of the pre-assembled power cable connected to the COM port of a PC via a null modem adapter, as well as the Coding plug must be plugged into the right connection of the module!



2.12 WLAN Module in Ad-Hoc-Mode (direct cable replacement)

If integration into a network is not desired or is not possible, a WLAN module can be operated directly with a laptop via WLAN as a cable replacement in ad-hoc mode. The WLAN module is located on the weather station and is supplied with power via the standard cable. Parallel to the WLAN, the data can be read in on another PC via a serial interface.



2.13 Direct connection to a Laptop (Ad-Hoc connection)

In WIN10, an ad hoc connection with a WLAN module can no longer be set up in the network settings.

The following shows how you can still create an ad hoc connection with WIN10

A hotspot must be set up under Windows 10:

- Start command prompt as administrator:

(WIN + R, then type cmd, then press CTRL & SHIFT + ENTER simultaneously)

- Enter in the command prompt:

netsh wlan show drivers

If the listing shows:

"Supports hosted networks: yes"

then the laptop has a suitable WLAN module installed, if **"no"**,

then procure a suitable WLAN adapter (e.g. FRITZ! WLAN Stick AC860)

- Start displaying network connections:

ncpa.cpl

- Create a new network:

netsh wlan set hostednetwork mode = allow ssid = NAME key = PASSWORD

(PASSWORD must be at least 8 characters long)

- Start new network (hotspot):

netsh wlan start hostednetwork

- Deactivate new network (hotspot):

netsh wlan stop hostednetwork

Proceed as follows to integrate the WLAN module:

- Determine the laptop's IP address on the laptop with ***ipconfig*** (e.g. 192.168.137.1)

- Set the WLAN module to a suitable IP address in the network (e.g. 192.168.137.100)

- Encryption is WPA2 / TKIP

- Alternatively, adapt the properties of the new network to the WLAN module in the network connections of the laptop.

2.2 Security

The WLAN module features WPA, WPS2 and setting with no security is also possible.

Encryption:
CCMP, TKIP

CAUTION!

EAP-TLS, EAP-TTLS, PEAP and LEAP are not supported at all!

When the customer hasn't ordered with explicit settings the WLAN module is delivered with following settings:

SSID: WETTER

Topology: Infrastructure

Security: none

BOOTP, DHCP und AutoIP: enabled

2.3 Software Installation

The installation and commissioning of the weather32 software is described in the software manual enclosed on the CD.

Operation with a WLAN router requires the input of the WLAN outdoor module's IP-address and port(s) (port 10001 for channel1 (full access) and 10002 for channel2 (only read) by default) instead.

3 Technical appendix

3.1 Settings of the WLAN module

3.1.1 WEB interface

In order to access the WEB interface, the wireless outdoor module must of course already be "known" to your router. To do this, the IP address, SUB network mask, SSID and the security settings must be correctly entered in the WLAN module to match the settings of your router.

The preset ports of the WLAN module are 10001 and 10002.

If you did not specify a desired IP address when ordering, the default IP address is "192.168.240.93/24", the SSID is "WEATHER" and Security is "none". (see XML file: xPico_set_# 192_168_240_93.txt on stick)

This IP address takes you to the WEB interface of the WLAN option, in which you can make all further settings.

Further information can be found in the two manuals for the xPico WLAN module ([xPico-Wi-Fi UG.pdf](#) and [xPico IG.pdf](#)).

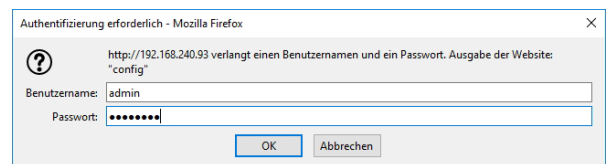
To access the xPico's WEB interface, enter the IP address of the WLAN module in a browser, in our case: 192.168.240.93.

A password query appears:

The default user is: admin,

the default password is: PASSWORD.

After clicking OK the WEB interface opens:



Tunneling	Accept Mode	Connect Mode
Tunnel 1:	1 Active	Disabled
Tunnel 2:	Waiting	Disabled

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Here you can perform all desired settings.

3.1.1.1 Setting a new IP-address

Select in WEB-Interface NETWORK --> WLAN0 --> CONFIGURATION

The screenshot shows the 'Interface wlan0 Configuration' page in the xPico Wi-Fi web interface. The interface includes a sidebar menu with 'Network' selected, and a main content area with the following configuration options:

State:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
DHCP Client:	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
IP Address:	192.168.240.206/24
Default Gateway:	<None>
Hostname:	
Primary DNS:	<None>
Secondary DNS:	<None>
MSS:	1460 bytes

The 'Submit' button is located at the bottom of the configuration form. A copyright notice at the bottom of the page reads: 'Copyright © Lantronix, Inc. 2007-2018. All rights reserved.'

After you have entered the desired IP address, click on Submit to apply the settings!

CAUTION:

If you set a different network mask, i.e. change the existing IP address 192.168.240.206/24, e.g. to 192.168.0.100/24, you can only reach the WEB interface in the new network (192.168.0.x) !!

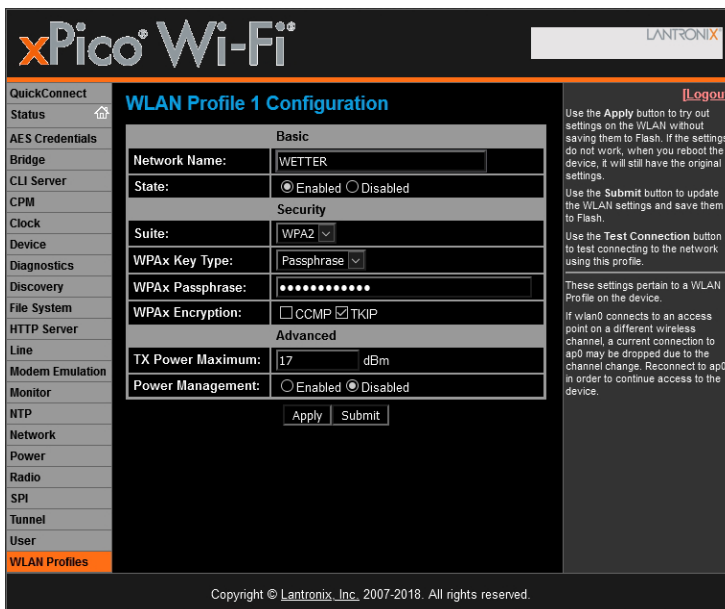
3.1.1.2 Setting SSID and Security

To change the SSID (Network Name) and the encryption (Security), select WLAN Profiles and then the profile to be changed (in most cases profile #1).



After you set the SSID and the security settings, you can try out the settings by clicking on Apply without saving them.

If your settings work, click Submit to permanently save the new settings!

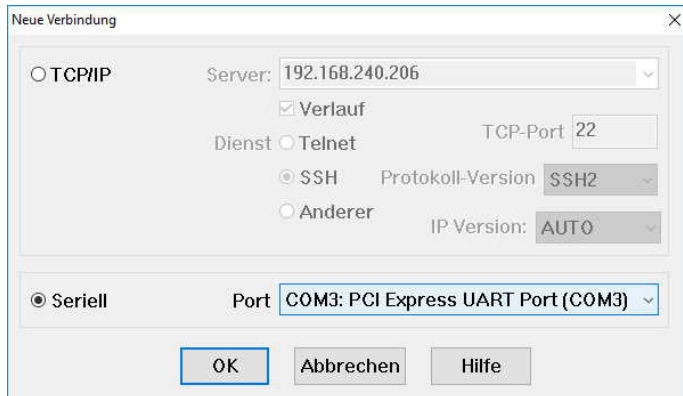


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3.1.2 Basic settings of the WLAN module via serial port (CLI)

If you do not have access to the WEB interface, you can perform the basic settings such as IP address, network name (SSID) and settings of the serial interface parameters using the standard RS-232 cable with null modem adaptor on a serial port of the PC.

To perform this, start a terminal program (TeraTerm, Putty, Hyperterminal, etc.) with 9600 baud, 8 bit, no parity, 1 stop bit and no protocol.

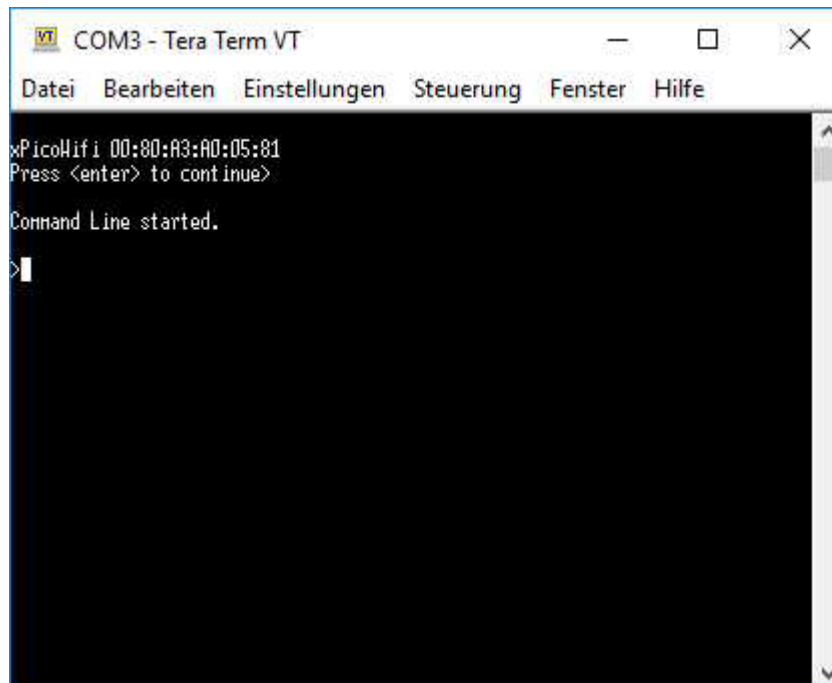


Now connect the serial cable to the power / data input (left socket) of the WLAN module, the 9-pin D-SUB plug to a serial port of the PC **- with null modem adaptor (V3.1) - without null modem adaptor (since V3.2)** and finally the power supply unit of the serial cable to the 230V mains voltage.

Now press the CONFIG button on the WLAN module and then, within the next 3 seconds, press the x button in the terminal program until you receive a message from the WLAN module in the terminal program (up to 10 seconds).

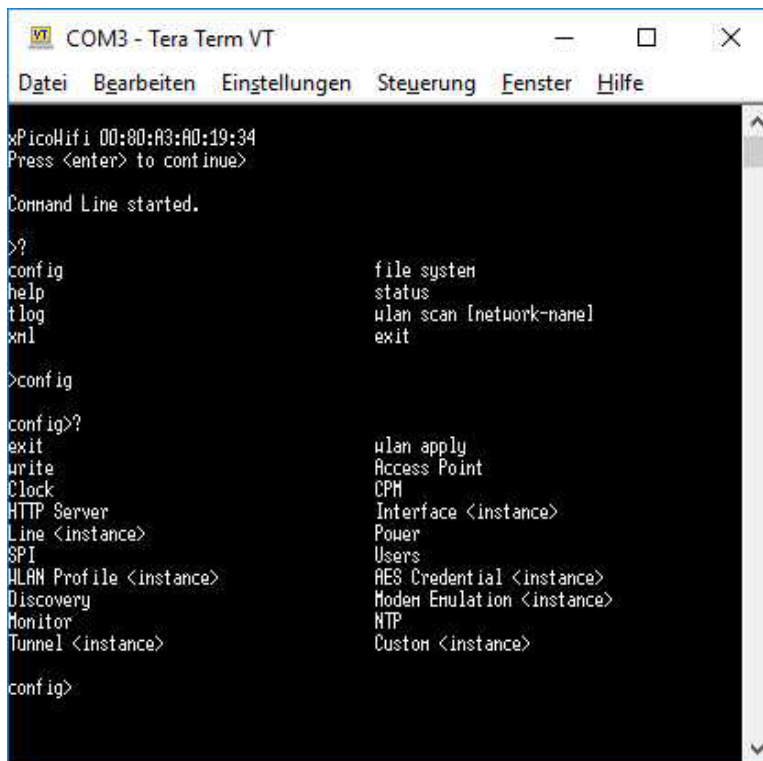
Then immediately press the Enter key.

You are now in the serial interface (CLI) of the WLAN module.



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By entering a "?" you will receive a list of the possible commands at each command level. With the following commands you can now set the most important parameters to access the module via WLAN and thus also to be able to reach the more comfortable WEB interface:



```
COM3 - Tera Term VT
Datei Bearbeiten Einstellungen Steuerung Fenster Hilfe

xPicoWifi 00:80:A3:A0:19:34
Press <enter> to continue

Command Line started.

>?
config          file system
help            status
tlog            wlan scan [network-name]
wlan            exit

>config

config?
exit            wlan apply
write          Access Point
Clock          CPM
HTTP Server    Interface <instance>
Line <instance> Power
SPI            Users
WLAN Profile <instance> AES Credential <instance>
Discovery      Modem Emulation <instance>
Monitor        NTP
Tunnel <instance> Custom <instance>

config>
```

```
config
  WLAN profile 1
    Basic
      Network name NETWORK-NAME
    exit
    Security
      Suite WPA2
        WPAx
          key type passphrase
          Passphrase PASSWORD
          encryption TKIP
        write
      exit
    exit
  Interface WLAN0
    IP address 192.168.240.93/24
    DHCP client disable
  write
exit
```

After the EXIT command, with which you left the CLI module, now press the CONFIG button for at least 10 seconds to restart the module, or briefly pull out the power plug and plug it in again.

A description of all commands which can be sent via the serial port you'll find on the USB-stick in [xPico-Wi-Fi UG.pdf](#), under "Using CLI".

Manual Wireless LAN Modules for Weather Stations

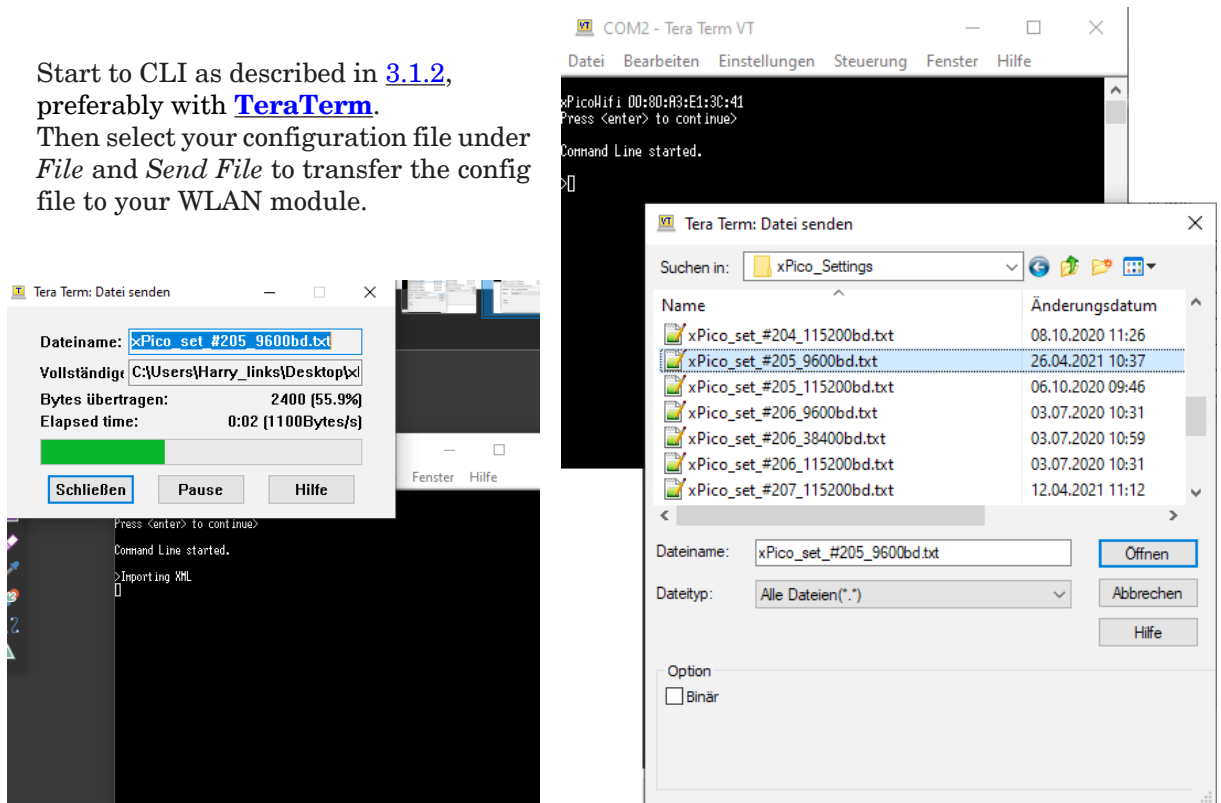
3.1.3 Configuration with a text file

A more convenient configuration option is to transfer a text file to the WLAN module using a terminal program.

On the **WetterStick** you will find some ready-made configuration files in the folder named **!_WLAN-Modul_config**, which you can adapt to your specifications.

Once you have completed a configuration file, proceed as follows:

Start to CLI as described in [3.1.2](#), preferably with **TeraTerm**. Then select your configuration file under **File** and **Send File** to transfer the config file to your WLAN module.



If the file has been transferred correctly, the following completion message appears:

XML import completed

ATTENTION: The transfer and the following processing take approx. 2 minutes! Do not abort the process under any circumstances before the completion message appears!

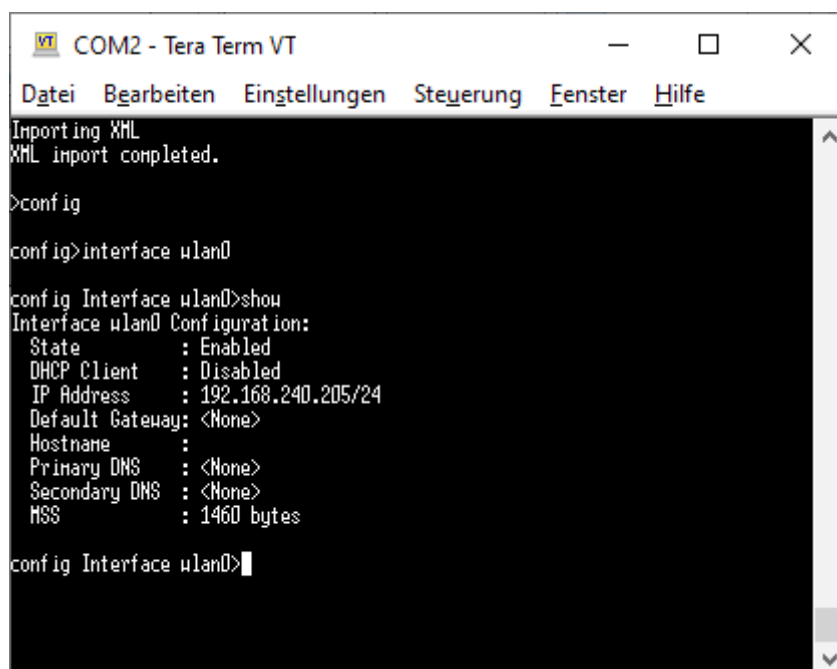


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In order to check whether the desired IP address has been entered in the WLAN module, enter the following commands one after the other, each followed by the ENTER key:

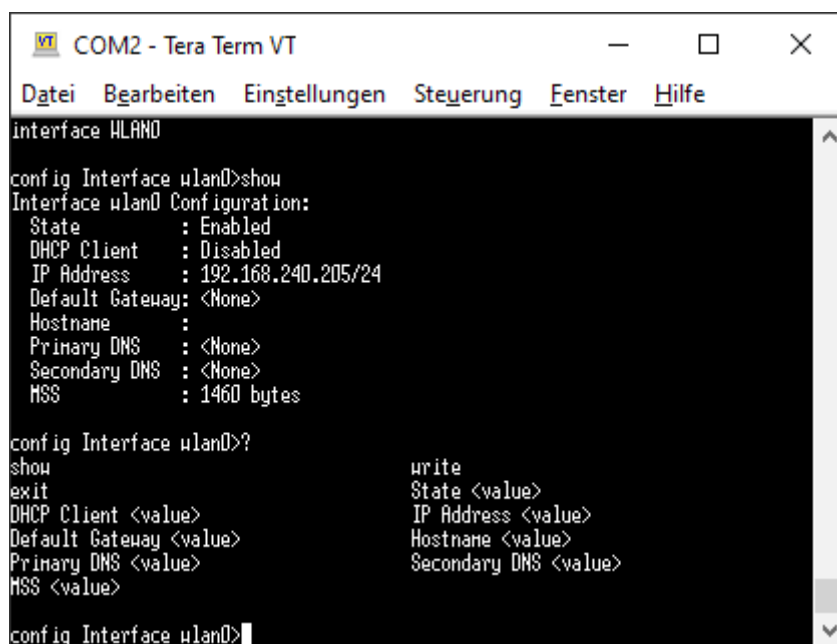
```
config
interface wlan0
show
```

The list of the settings for the wireless interface WLAN0 appears:



```
COM2 - Tera Term VT
Datei Bearbeiten Einstellungen Steuerung Fenster Hilfe
Importing XML
XML import completed.
>config
config>interface wlan0
config Interface wlan0>show
Interface wlan0 Configuration:
  State      : Enabled
  DHCP Client : Disabled
  IP Address  : 192.168.240.205/24
  Default Gateway: <None>
  Hostname    :
  Primary DNS : <None>
  Secondary DNS : <None>
  MSS        : 1460 bytes
config Interface wlan0>
```

You can list other possible commands with an ?



```
COM2 - Tera Term VT
Datei Bearbeiten Einstellungen Steuerung Fenster Hilfe
interface wlan0
config Interface wlan0>show
Interface wlan0 Configuration:
  State      : Enabled
  DHCP Client : Disabled
  IP Address  : 192.168.240.205/24
  Default Gateway: <None>
  Hostname    :
  Primary DNS : <None>
  Secondary DNS : <None>
  MSS        : 1460 bytes
config Interface wlan0>?
show          write
exit         State <value>
DHCP Client <value> IP Address <value>
Default Gateway <value> Hostname <value>
Primary DNS <value> Secondary DNS <value>
MSS <value>
config Interface wlan0>
```

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You leave the active level with the command *exit*

```
COM2 - Tera Term VT
Datei Bearbeiten Einstellungen Steuerung Fenster Hilfe
State      : Enabled
DHCP Client : Disabled
IP Address  : 192.168.240.205/24
Default Gateway: <None>
Hostname    :
Primary DNS : <None>
Secondary DNS : <None>
MSS        : 1460 bytes

config Interface wlan0?
show
exit
write
DHCP Client <value>
Default Gateway <value>
Primary DNS <value>
MSS <value>
State <value>
IP Address <value>
Hostname <value>
Secondary DNS <value>

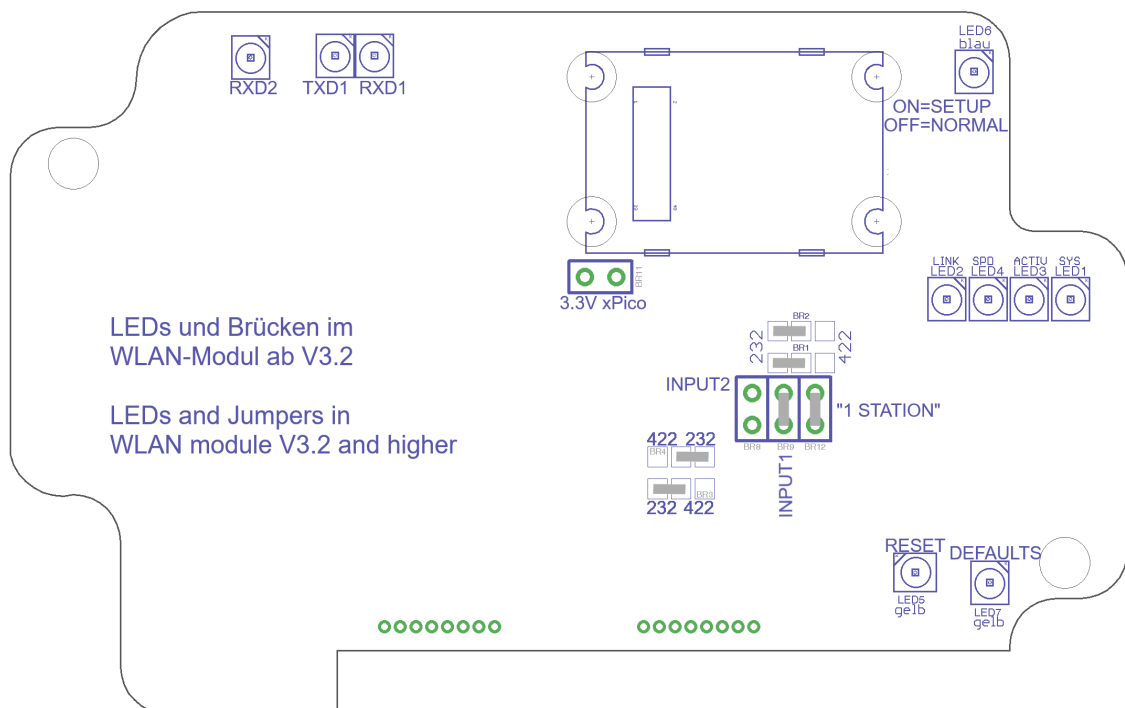
config Interface wlan0>exit
config>exit
>
```

If everything is OK, press the CONFIG button for at least 10 seconds to restart the WLAN module, or pull out the power plug for more than 10 seconds and then plug it in again.

The settings are now permanently saved.

For more information on the xPico WLAN module, read the documentation on the xPico-Wifi from Lantronix. You can find this on the WetterStick or on the [Lantronix Homepage](#).

3.1.4 LEDs and jumpers since V3.2



3.2 Connection cables

3.2.1 Connection cable weather station RS-232 (1:1)

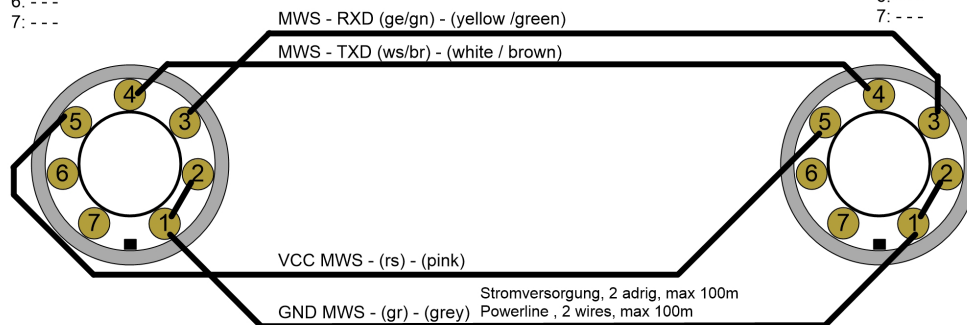
1:1 Kabel RS232 - 1:1 Cable RS232 (MWS, Sens_55 & Sens_M)

(Stand 27.07.2018)

(alle Ansichten auf die Frontseite - all views onto front side)

MWS 5M, 8, 9-5:
1,2: GND (gr)
3: RXD MWS (ge/gn)
4: TXD MWS (ws/br)
5: VCC (rs)
6: ---
7: ---

WLAN-Modul,
TCP/IP-Converter ...
1,2: GND (gr)
3: RXD MWS (ge/gn)
4: TXD MWS (ws/br)
5: VCC (rs)
6: ---
7: ---



RS232 1:1 Kabel, 6 adrig, max 100m
RS232 1:1 cable, 6 wires, max 100m

3.22 Connection cable weather station RS-422 for MWS55, 88, 10 (1:1)

1:1 Kabel RS422 - 1:1 Cable RS422 (MWS55 / MWS88 / MWS10 / Sens_55

(Stand 27.07.2018)

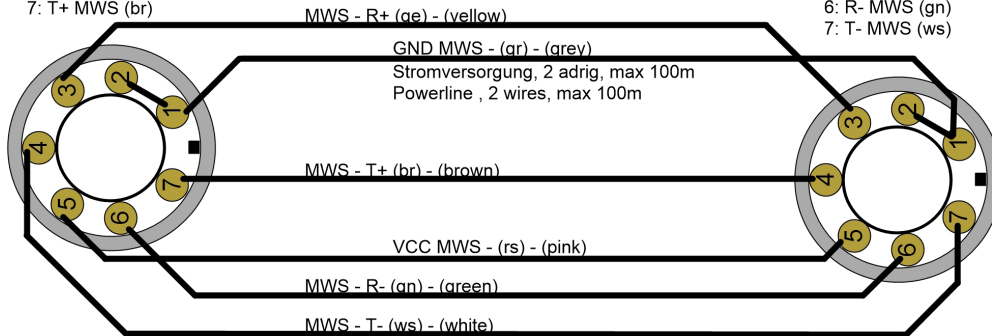
(alle Ansichten auf die Frontseite - all views onto front side)

MWS 55, 88, 10:

- 1,2: GND (gr)
- 3: R+ MWS (ge)
- 4: T- MWS (ws)
- 5: VCC (rs)
- 6: R- MWS (gn)
- 7: T+ MWS (br)

WLAN-Modul, ...:

- 1,2: GND (gr)
- 3: R+ MWS (ge)
- 4: T+ MWS (br)
- 5: VCC (rs)
- 6: R- MWS (gn)
- 7: T- MWS (ws)



RS422 1:1 Kabel, 6 adrig, max 1000m
RS422 1:1 cable, 6 wires, max 1000m

3.23 Connection cable weather station RS-422 for MWS5, 8, 9-5 (1:1) (old stations)

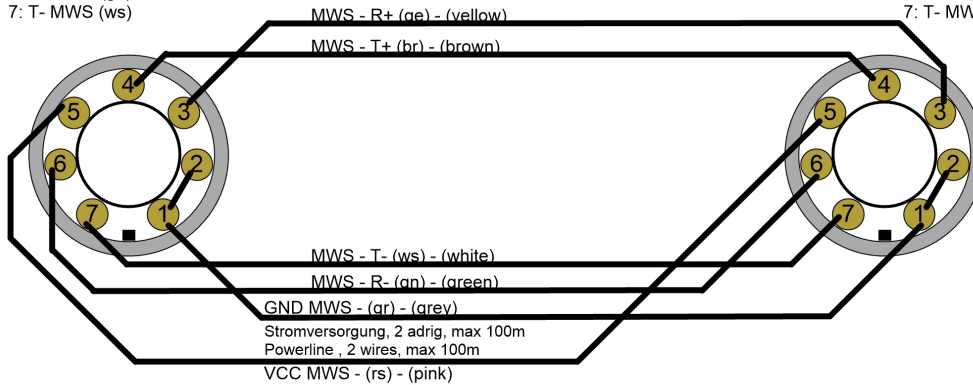
1:1 Kabel RS422 - 1:1 Cable RS422 (MWS 5M / MWS 8 / MWS 9-5 / Sens_M

(Stand 27.07.2018)

(alle Ansichten auf die Frontseite - all views onto front side)

MWS 5M, 8, 9-5:
1,2: GND (gr)
3: R+ MWS (ge)
4: T+ MWS (br)
5: VCC (rs)
6: R- MWS (gn)
7: T- MWS (ws)

WLAN-Modul, ...:
1,2: GND (gr)
3: R+ MWS (ge)
4: T+ MWS (br)
5: VCC (rs)
6: R- MWS (gn)
7: T- MWS (ws)



RS422 1:1 Kabel , 6 adrig, max 1000m
RS422 1:1 cable , 6 wires, max 1000m

I&OE / Specifications subject to change without prior notice !
06/23