

# *Operating Instructions*

# **METROTEC**

Systems for Measuring and Controlling Oxygen

## **METROTEC APP**

Configuration Application  
(Android) for

**Oxygen measuring module**

\*\*\* Version 1.2 \*\*\*

Our management system is certified according to

DIN EN ISO 9001:2015

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## 1. General

The application for Android end devices described below enables the communication with compatible oxygen measuring modules via Bluetooth connection. The application enables measuring values to be seen and configuration settings to be changed. Another feature is the alignment of oxygen measuring modules. The required hardware is an Android end device and an compatible oxygen measuring module.

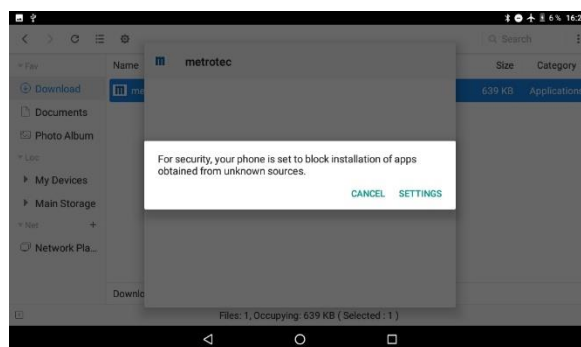
## 2. Installation

In order to install the application on the Android end device, please proceed as follows:

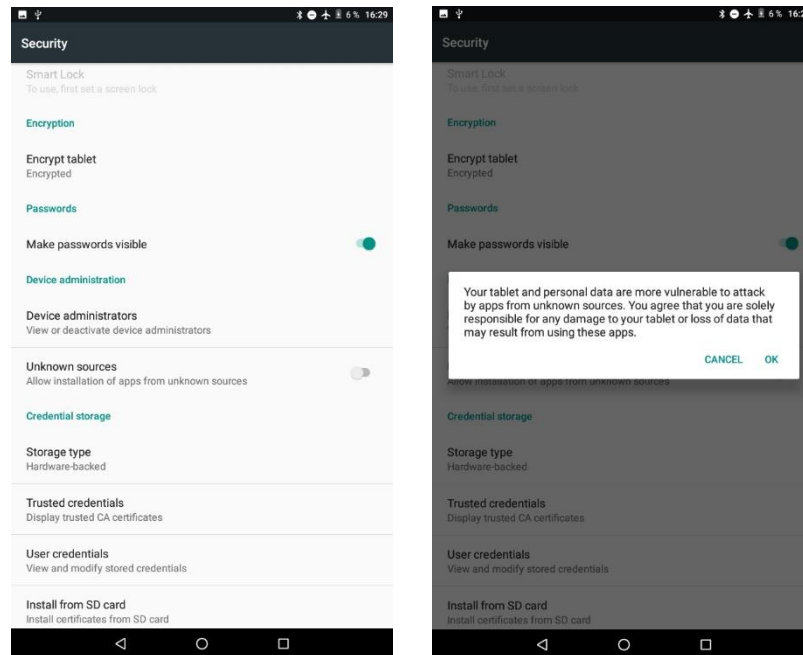
1. Look for the current version of the application on the website [www.metrotec.eu](http://www.metrotec.eu) in the *Downloads/App* section and download it.
2. If you downloaded the app directly onto the Android end device, the file is now in the Downloads folder.



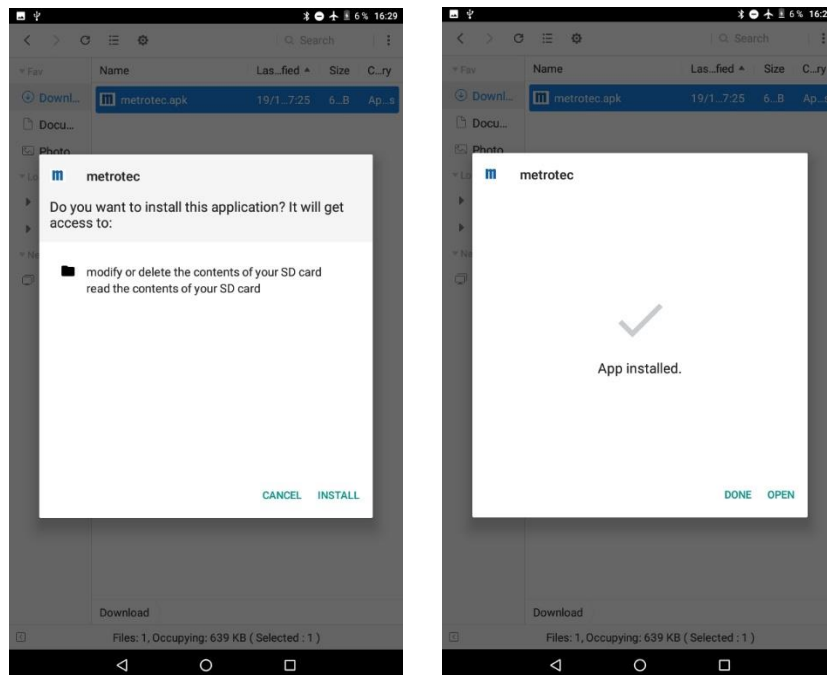
3. The application is installed by double-clicking on the file.
4. Under some circumstances, the following error message may be displayed on your device.



5. In this case, press the *Settings* button and activate the “Unknown sources” option.
6. Confirm the following dialog by clicking *OK*.



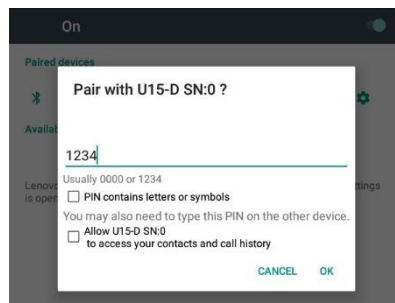
7. Now confirm the installation by clicking the *Install* button.
8. After completing the installation, return to the Home screen by clicking the *Done* button.



### 3. Pairing

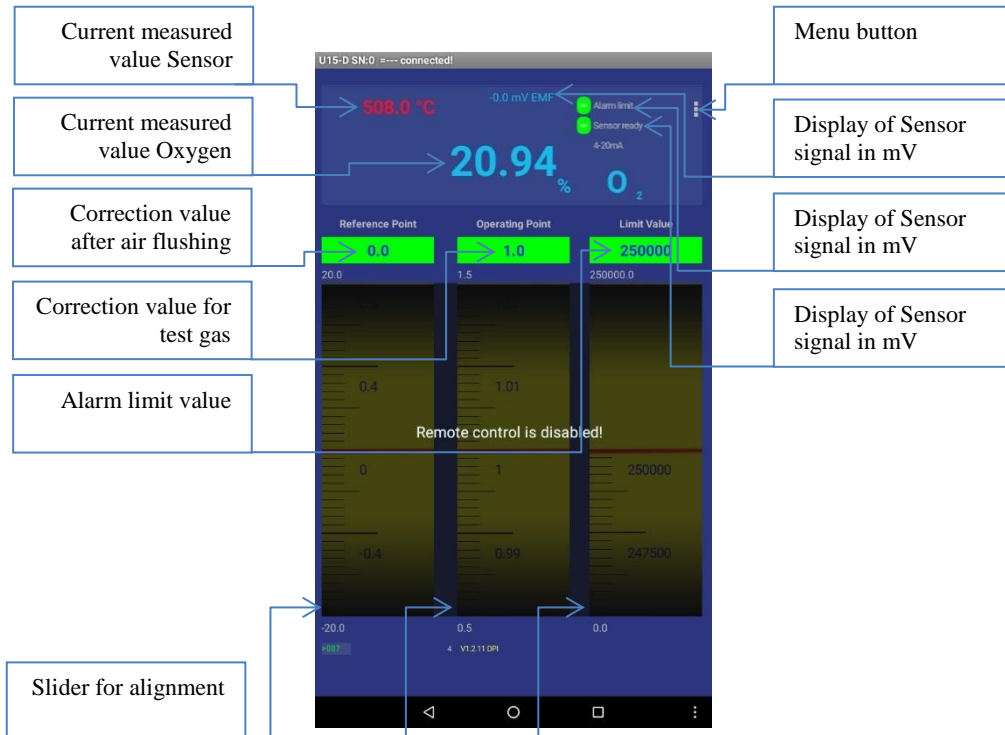
In order to use the application in combination with an oxygen measuring module, it must be paired with your Android end device. Proceed as follows:

1. Activate the Bluetooth function of your oxygen measuring module. (Please see the information given in the operating instructions of the module used.)
2. Activate the Bluetooth function of your Android end device. (This is device-dependent; please see the information given in the operating instructions of your Android end device.)
3. Start searching for Bluetooth devices on your Android end device.
4. Select the desired oxygen measuring module and pair the module by entering the *code* "1234".
5. Return to the Home screen.

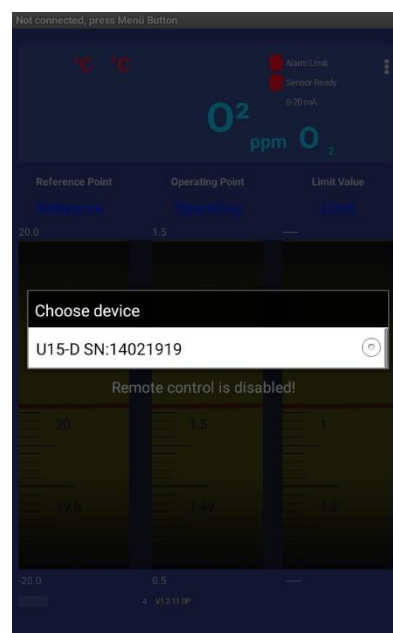
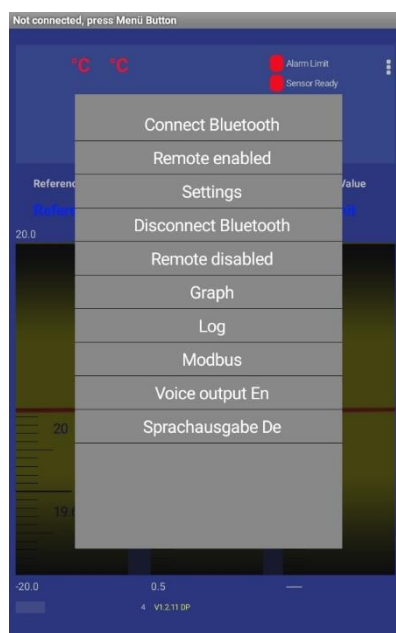


## 4. Operation

Below please find a description of how to establish the connection with an oxygen measuring module and an overview of the user interface and the functions of the individual menus.



1. Open the application by double-clicking on the *Metrotec* icon.
2. Open the menu by clicking on the *Menu* button.
3. Select the *Connect Bluetooth* submenu.
4. Select the desired oxygen measuring module from the displayed list.



5. All relevant measured values are displayed on the main page which is now shown.
6. The input area is locked in order to avoid parameters being changed by accident. In order to make changes, open the menu by clicking on the *Menu* button.
7. Select the *Remote Enabled* submenu.
8. The write lockout is switched off by entering the *code* “5678”.
9. Now the parameters *Reference Point*, *Operating Point* and *Limit Value* can be changed by adjusting the sliders. **Attention: Adjusting the parameters Reference Point and Operating Point will erase the factory calibration!**

The following table contains and describes the functions of the menu bar:

<b>Menu</b>	<b>Function</b>
Connect Bluetooth	Connecting an oxygen measuring module
Remote enabled	Disable write lockout
Settings	Settings (see Chapter 5: Configuration)
Disconnect Bluetooth	Disconnect oxygen measuring module and close application
Remote disabled	Enable write lockout
Graph	Graphic representation of the measured oxygen and temperature values
Log	Recording of measured oxygen values
Modbus	Without function
Voice output En	English voice output of measured oxygen value
Voice output De	German voice output of measured oxygen value



## 5. Configuration

The parameters for alignment and change of the configuration of an oxygen measuring module by means of the application is described below.

In order to be able to change the configuration, the write lockout must be disabled as described in *Chapter 4: Operation*.

All input boxes with a white background can now be changed. The other boxes serve as displays for current measured values and statuses.

0	O2 Lin ppm	209400
1	Temperature	508
2	*Reference Point	<input type="text" value="4"/>
3	*Operating Point	<input type="text" value="1"/>
4	*Output1 Min Lin	<input type="text" value="0"/>
5	*Output1 Max Lin	<input type="text" value="250000"/>
6	*Limit Value Lin	<input type="text" value="250000"/>
7	System flags	000000011110110
9	EMF (mV)	0.173
10	Output1 (4-20mA)	17.402
11	Output2 (4-20mA)	20
12	*Output2 Min Lin	<input type="text" value="0"/>
13	*Output2 Max Lin	<input type="text" value="1000"/>
14	*Hyst.Lim Relay Lin	<input type="text" value="0"/>
64	*Cable length (m)	<input type="text" value="1"/>
80	Status :1	Sensor ready

The following table contains and describes the functions of the menu bar:

Parameter	Function
0 O2 (Lin/Log*)	Current measured value Oxygen content
1 Temperature	Current measured value Sensor temperature
2 Reference Point	Correction value after air flushing
3 Operating Point	Correction value for test gas
4 Output 1 Min (Lin/Log*)	Oxygen value for Analog output 1/Measuring range 1 <sup>***</sup> at 0/4 mA <sup>**</sup>
5 Output 1 Max (Lin/Log*)	Oxygen value for Analog output 1/Measuring range 1 <sup>***</sup> at 20 mA <sup>**</sup>
6 Limit Value (Lin/Log*)	Alarm limit value
9 EMF (mV)	Display of Sensor signal in mV
10 Output 1 (0/4-20mA <sup>**</sup> )	Reading of output value in mA
11 Output 2 (0/4-20mA <sup>**</sup> )	Reading of output value in mA
12 Output 2 Min (Lin/Log*)	Oxygen value for Analog output 2/Measuring range 2 <sup>***</sup> at 0/4 mA <sup>**</sup>
13 Output 2 Max (Lin/Log*)	Oxygen value for Analog output 2/Measuring range 2 <sup>***</sup> at 20 mA <sup>**</sup>
14 Hyst.LimRelais (Lin/Log*)	Hysteresis for alarm relay
64 Cable length (m)	Length of cable between sensor and oxygen measuring module

	(Parameter not available with all module types)	
80 Status	Display of module status (Parameter not available with all module types)	
	Sensor ready	Measurement active, no errors
	Preheat xxx sec.	Measurement during heating up
	Line break	Cable break in sensor line
	Short circuit	Short circuit in sensor line
	Undertemperature	Sensor temperature too low

\*The unit ppm O<sub>2</sub> or log O<sub>2</sub> depends on type/configuration of oxygen measuring module

\*\*The output in 0-20mA or 4-20mA depends on type/configuration of oxygen measuring module

\*\*\* The presence of a second analog output depends on the type of oxygen measuring module

## 6. Alignment

The following describes how the alignment of the oxygen measurement, consisting of the oxygen sensor and oxygen measuring module, is carried out.

1. Put the oxygen measurement in operation as described in the operating instruction of the module used (Current operating instructions can be found on the website [www.metrotec.eu](http://www.metrotec.eu) in the *Downloads/Manuals* section).
2. The oxygen measurement should be ready to operate about 30 minutes before the alignment procedure starts.
3. Connect the oxygen measuring module up as described in *Chapter 4: Operation*.
4. Make sure that clean ambient air flows through the sensor.
5. Disable the write lockout by entering the code “5678”, as described in *Chapter 4: Bedienung*.
6. Continue to adjust the *Reference Point* slider until the current sensor signal EMF displays 0mV. The current sensor signal is not displayed on the main page by all module types. Proceed as described above until the current measured oxygen value displays 20.9%.
7. If the value is not to be aligned with test gas, the alignment process is finished. In case of an additional test gas alignment please proceed with Step 8.
8. Let test gas flow through the sensor of which the oxygen content is known.
9. Wait until the displayed current measured oxygen value is no longer changing.
10. Continue to adjust the *Operating Point* slider until the current measured oxygen value equals the value of the test gas.
11. The alignment is finished and the test gas can be removed again.

## 7. Data logging function

The application's data logging function enables the measured values to be stored in the internal memory of the Android end device.

1. Open the menu by clicking on the *Menu* button.
2. Select the *Log* submenu.
3. Select the recording interval in the *Choose log interval* menu.
4. The following dialog shows the file name of the recording.
5. Start the recording session by clicking *OK*.
6. In order to stop the recording, open the menu by clicking on the *Menu* button.
7. Select the *Log* submenu.
8. Finish the recording session by clicking *OK*.

