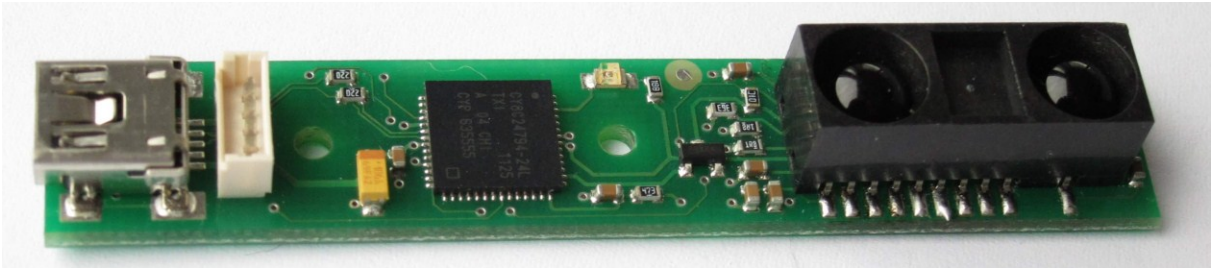
Oak Sensor Dist V1.4a.001

Test Instructions



Contents

Related Document

[1] Labeling Concept "Oak_Sensors_Labeling_Concept_YYYY-MM-DD.pdf"

[2] Programming Instructions "Oak_Sensors_Programming_Instruction_YYYY-MM-DD.pdf"

1. Oak Dist interfaces

1.1. "Oak Dist" Top Side Connectors: Physical Drawing

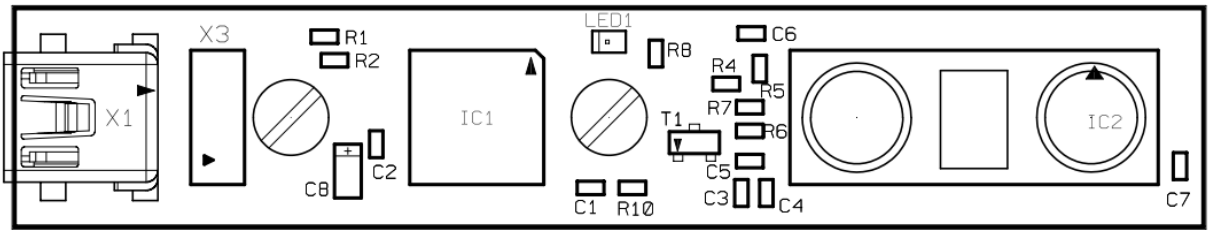
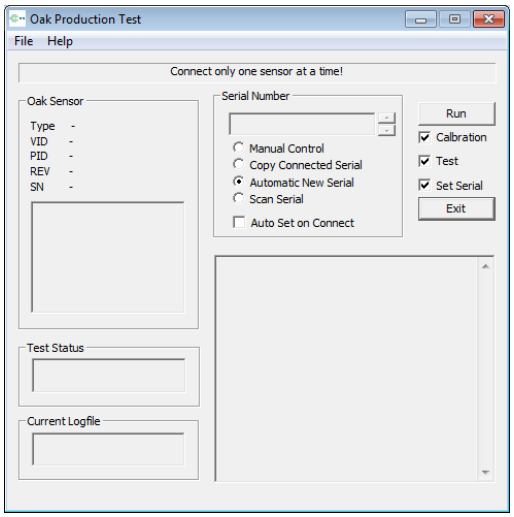


Fig.1 "Oak Dist" connectors – Top Side

2. Test Material

To test this Oak Sensor the following Material must be present:

	Program "Oak Production Test" delivered by Toradex
	2D Barcode scanner with USB Interface: Required quantity: 1

	USB Cable Type A-Mini B Required quantity: 1
	PC or Laptop with 2 USB connectors and installed Windows XP or Windows 7 Required quantity: 1
05051400_Oak_Dist_V1_4a_001_ Prog_Test_Data_YYYY-MM-DD.zip	Calibration Program for Oak Dist Test Program for Oak Dist This Zip file contains: • the Hex-File to program the Oak Dist Sensor • The calibration program • the Test program with the settings to test the Oak Dist.
	Test equipment to measure a distance

3. General workflow for calibration and testing

The “Oak Dist” sensor must be calibrated using a separate program. After that the “Oak Dist” is tested like other types of the Oak Sensors.

Workflow:

Precondition: **The “Oak Dist” sensors must be programmed.**

1. **Step Calibration**

- On Windows, create a directory according the roles of chapter 4.
- Expand the delivered Zip file with the Test program in the chosen directory.
- Setup the test equipment with a measuring distance of **30cm** according to chapter 11.
- Calibrate all “Oak Dist” sensors according to chapter 7.1.

2. **Step Test**

- On Windows, create a directory according the roles of chapter 4.
- Expand the delivered Zip file with the Test program in the chosen directory.
- Configure the test program (optinal).
- Setup the test equipment with a measuring distance of **50cm** according to chapter 11.
- Run the tests for all sensors according to chapter 9 (the test program creates a log file for all sensors in the current directory).
- Compress the whole directory structure according the roles of chapter 4 with all files in a Zip file. Use the name of the delivered Zip file and your factory name at the end.
- **Send this Zip files back to Toradex**
- Toradex puts the content of these Zip files in their archive so that Toradex can look up the test log from every Oak sensor

4. Install the calibration program

Create a directory somewhere on your PC. Expand the delivered Zip in temporary directories and copy the files of the subdirectory “Production_Calibration” in your directory.

Do not use the same directory for the Calibration program and the Test program (these program use different version of the library files).

5. Install and configure the Test program

5.1. Create the directory

Create the directory somewhere on the PC which is used for the test.

….\2012-29-02\Oak Dist\

The **last two subdirectories** of the path must include the current data and the Oak Sensor type like shown above.

5.2. Expand the delivered Zip File for the testing

Expand the delivered Zip in temporary directories and copy the files of the subdirectory "Production_Test" in your directory.

In your directory "….\2012-29-02\Oak Dist\" must be the followings files:

ini.xml	Configuration File
Oak_ProductionTest.exe oak.xml oak.xmt oak.xsl oaka.dll oaka.lib oakw.dll oakw.lib	Test program with its associated files

Remark: Unfortunately, the file "ini.xml" contains the setting for all sensors. In all test cases we use this file and the name is always the same. Therefore it is easily to mix it up. That's the reason to use for every Oak Sensor type a separate directory to do the test and send all files of the directory back. With this way we get the the log file, the used settings and test program back to register in our database

5.3. Adjust the configuration

The file ini.xml contains the setting for all Oak sensors.

In the file is a section for the Oak Dist:

```
<P0x0005 Name ="Oak Dist">
    <tol_dist>
      .06                (tolerance of the distance)
    </tol_dist>
    <PN>
      0505
    </PN>
    <dist>
```

```
        0.5                    (set point of the distance)
      </dist>
    </P0x0005>
```

We test the sensor with one specific distance.

Additional Files in the Zip File

The directory “Hex-File” contains the file:

0505_Oak_Dist_Firmware_Vx_x.hex

This is the Program code for programming the flash (see [2]) and is not used for the testing.

Please note that the version of the program is independent from the version of the product.

The directory “Instructions” contains this document.

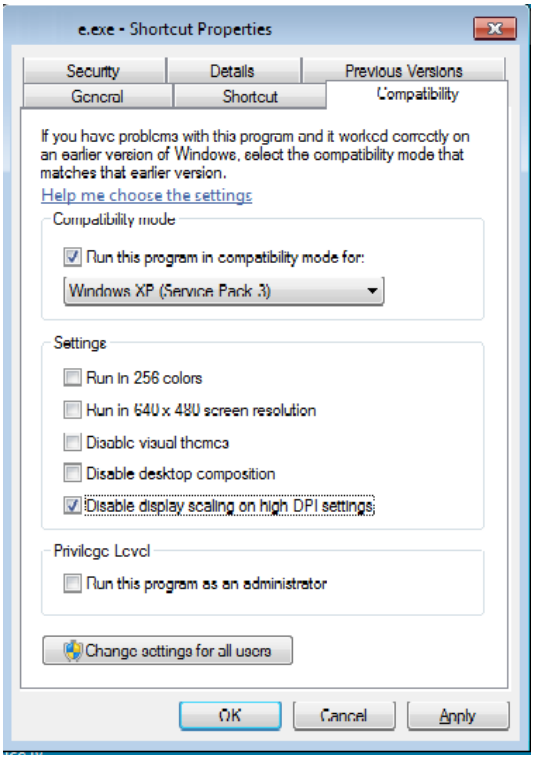
6. Run the Calibration and Test program on Windows 7

If the Calibration and/or Test program runs on Windows 7, sometime the program runs not as smooth as it should be (e.g. the output of the test results stops scrolling, the test is still running and at the end of the test all buffered outputs are showing at once etc.).

Our impression is that this behavior is depending on the graphical setup of the Windows.

The following workaround can help:

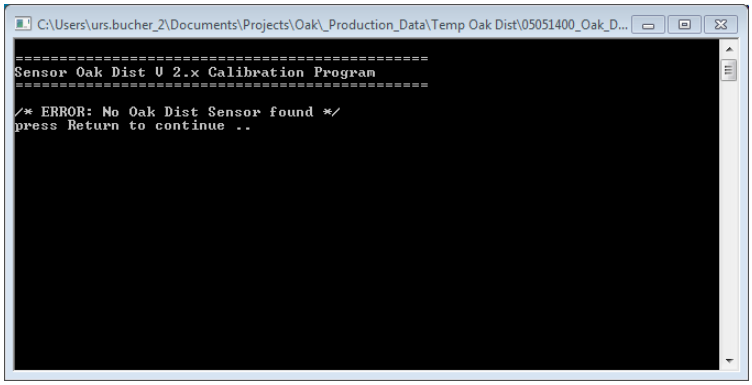
- Create link to start the Program
- Open the properties of this link (right mouse click)
- Setup the Compatibility as shown below



7. Start the Calibration program

It is not needed to install the calibration program. It can directly run by starting

“OakDistCalibration.exe” (double click on it or the according Link).



The program starts and tries to find an “Oak Dist” sensor. If no “Oak Dist” sensor found or other parameter are faulty the program displays an error message and and stops after pressing the “Return” key.

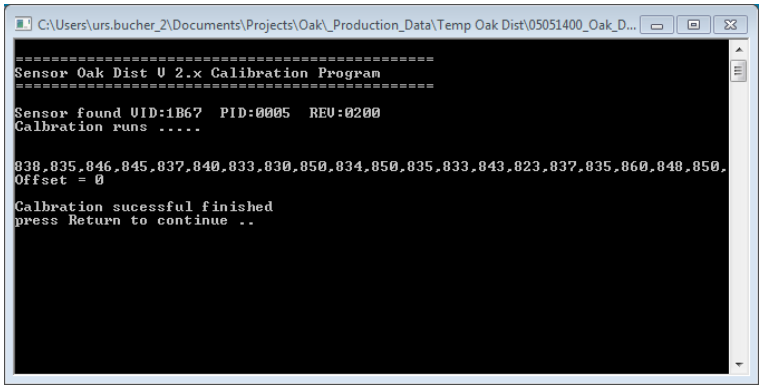
If the program is blocked for some reason “Ctrl”+”C” stops the program too.

7.1. Calibrate the “Oak Dist” sensors

To calibrate the “Oak Dist” the test equipment (see chapter 11) is used with

measure distance of 30cm.

After the “Oka Dist” sensor is mounted in the test equipment the Calibration Program can be started (see below).



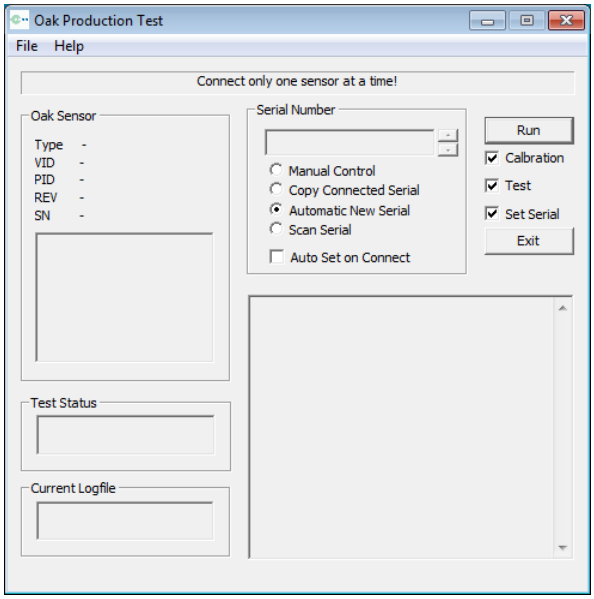
The Calibration program change the operation mode of the “Oak Dist” sensor, does several tests and mesurements, calculate an offset and write the offset back to the oka sensor.

After that the oak sensor can removed and is ready for the production test.

8. Start the Test program

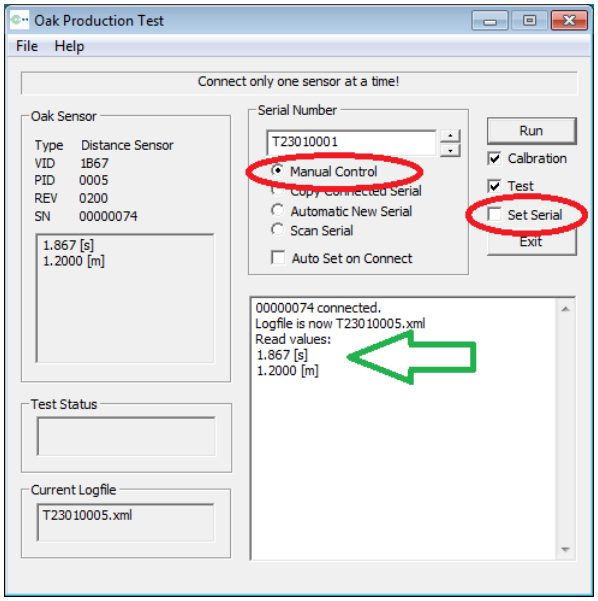
For the Test program is no installation needed. It can directly run by starting

“Oak_ProductionTest.exe” (double click on it or the according Link).



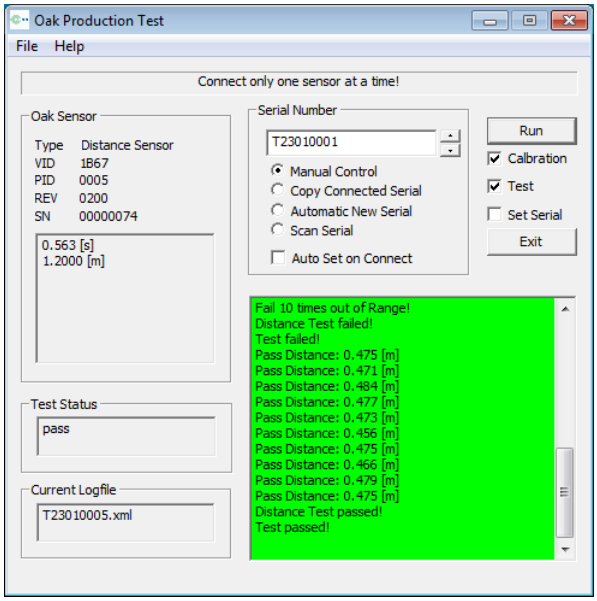
8.1. First connection of an “Oka Dist” sensor

After an „Oka Dist“ is connected the Test program shows on the left side Type, Serial number etc. In the log field the Test programm shows the measured values (green arrow). Additional the Led on the “Oak Dist” is flashing.



It is possibel to run a test without writing the serial number back to the sensor and create a log entry in the log file. To do such tests the “Set Serial” must be unmarkted and “Manual Control” must be enabled (see red oval in picture above) bevor the test ist start with the “Run Button”.

Depend on the test result the log field is green (passed) or red (fault).



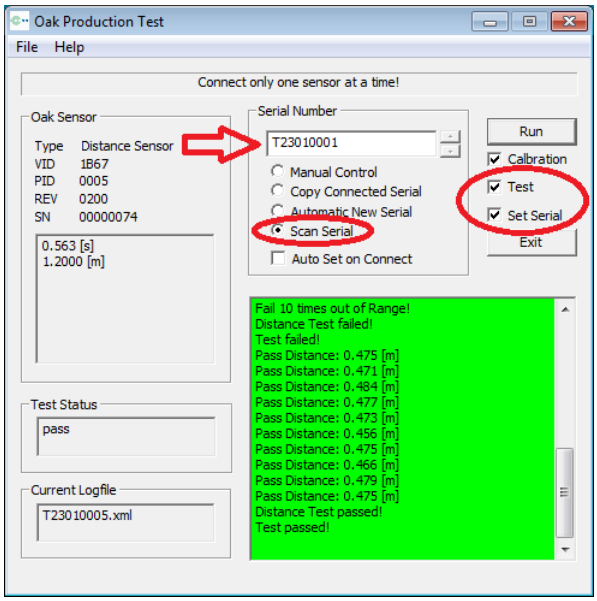
Please note: the colors of the log screen is changed at the end of every tests. This means during a test the logscreen can stay red because the test bevor was faulty.

9. Test a serie of the “Oka Dist” sensors

To test the “Oak Dist” the test equipment (see chapter 11) is used with

measure distance of 50cm.

After the “Oka Dist” sensor is mounted in the test equipment the Test Program can be started (see below).



To test a Oak Dist Sensor the option “Test”, “Set Serial” and “Scan Serial” (see red oval) must be set.

- “Test” executes the test cyle
- “Set Serial” writes the the “Serial Number” (see red arrow above) in the Flash of the Sensor at the end of the test sequence. But for that, the Serial Number must fulyfil the specification for this sensor (product name, range of the serial-number etc).
- “Scan Serial” give you the option to scan the barcode with the “2D Barcode scanner” and automatically run the test right after the scan.
  Remark: The field “Serial Number” (see red arrow) must be empty before a scan starts and the label must following the rules described in [1] otherwise an error message appears at the end of the test cycle.
  The field “Serial Number” is cleared by connecting a sensor or by the user.

Important **The serial number must be get from the lable with the barcode.**

To do that, the folling tow points must be fulfill:

- The label must be printed according to the document “Labeling Concept “Oak_Sensors_Labeling_Concept_YYYY1-MM-DD.pdf” (see [1]) and **put on the sensor before the test** starts.
  - Option “**Scan Serial” must be used** for testing the production.
    (other option can save a serial number in the flash witch is not in line with the serial number on the barcode).

9.1. Loging of the test result

All Test are log in the file “oak.xml” loacated in the same directory as the Test program ist. This file can be show with a HTML Browser which supports the XML format (nearly all of the current browser).

To show the logs oben the File “T1C120001.xml” with the browser (file open insteat of putting a URL address).

10. Send the test results back to Toradex

As described in chapter 3 at the end of the test of all Oka Dist sensors the test result must be send back to Toradex.

To do it, pack all files including the two subdirectories above in a zip file and mail it to Toradex.

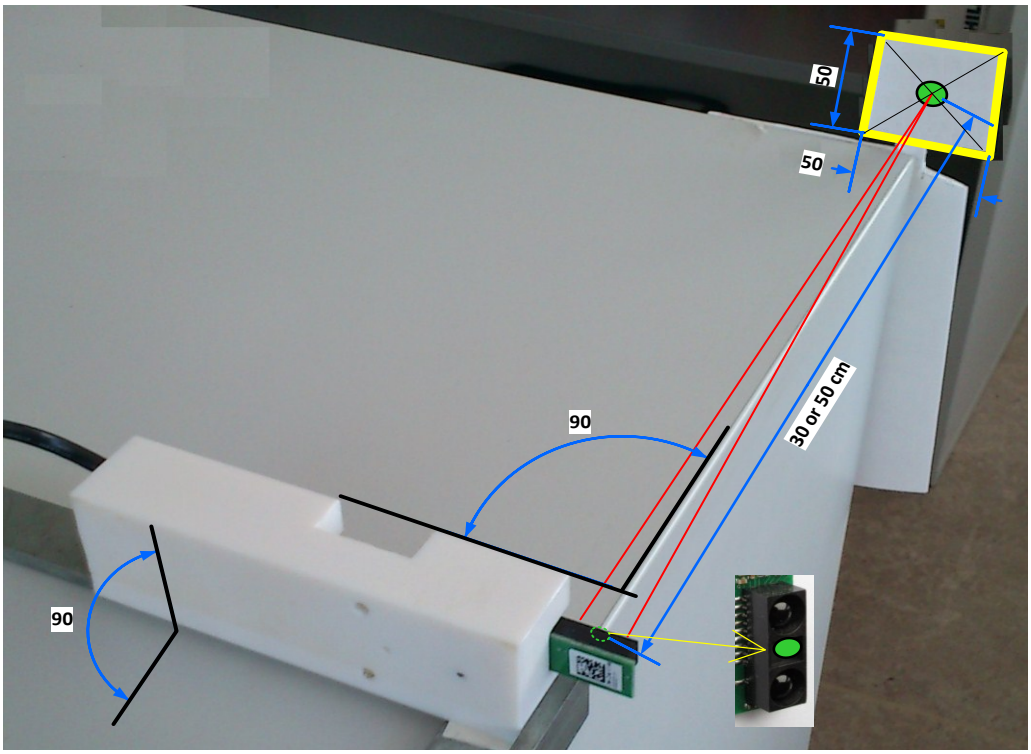
Example:

The following directory contains the test program with all the files like setup, log etc.

..\2012-29-02\Oak Dist\

Beside the files the Zip file should include the last two directories of your path. To do it commands the Zip program to zip all file of the directory “2012-29-02” including all subdirectories and files below.

11. Test equipment



For calibration and test the sensor measures the distance to a white small panel. The equipment should fulfill the following points:

- To measure all sensors with the same distance please use a mounting block and a use the mounting whole of the sensor to position the sensor in the block.
- The direction of the light beam for all the senor should be same. The sensors should be flush mount in the mounting block and fixed somehow (we used a small rubber block and taped it).
- The distance is measured from the middle of the sensor to the middle of the panel (see green points).
- The panel should stand alone so that the light beam is not reflected on other stuff. (If the optical lenses much out of tune then the light beam goes in the air and it is recognized during the test).
- There should be no bright light in the environment (direct sub light etc.).
- Please to not disturb the light beam during the measurement (with hand, clothes etc.).

Note: The test is automatically started after the label is scanned. Therefore the label must be scan able after the sensor is mounted in the test equipment.

Revision History

Date	File Name	Initial	Changes
2012-02-29	05051400_Oak_Dist_V1_4a_001_Test_Instructions_2012-02-29	ub	Initial release