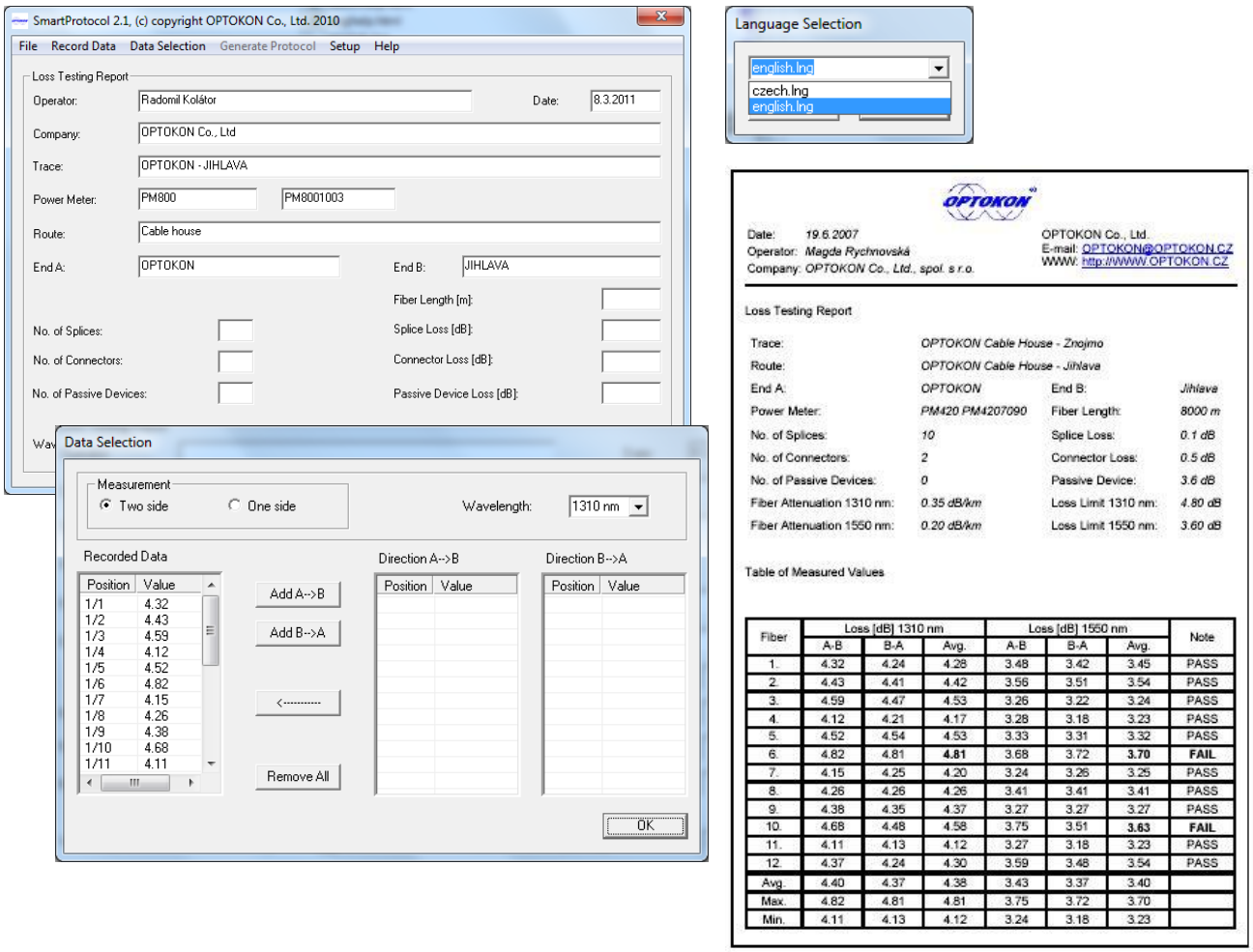
FIBER OPTIC TECHNOLOGY
CALIBRATION LABORATORY

SmartProtocol PC Software

INSTRUCTION MANUAL



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s/w:2.1 06/04/2012

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Contents

1 Introduction

SmartProtocol software is a flexible solution for data capture, analysis and reporting of fiber optic loss.
It is optimized for the following OPTOKON test instruments: PM-212, PM-800, OFT-820, PM-830.

Features

- One-sided or two-sided measurement.
- Data recording from internal instrument or TXT file memory.
- Creation of test protocols from recorded data.
- Recording instrument serial numbers.
- Reports can be imported or saved in TXT format for compatibility with other applications (Word, Excel).
- Pass / Fail assessment.
- High productivity.
- Easy language or report customisation.
- Detailed heading.
- Simple operating and editing of protocols.

Application

- Optical network measurements
- Creation of test protocols
- Downloading data from the power meter

Accessories

- CD with SmartProtocol PC Software

2 Preparing the connection

(Windows XP)

1. Connect the instrument to a PC using the USB cable and switch the instrument ON. The PC will prompt you to install the new hardware drivers. (first connection)

Fig 1.

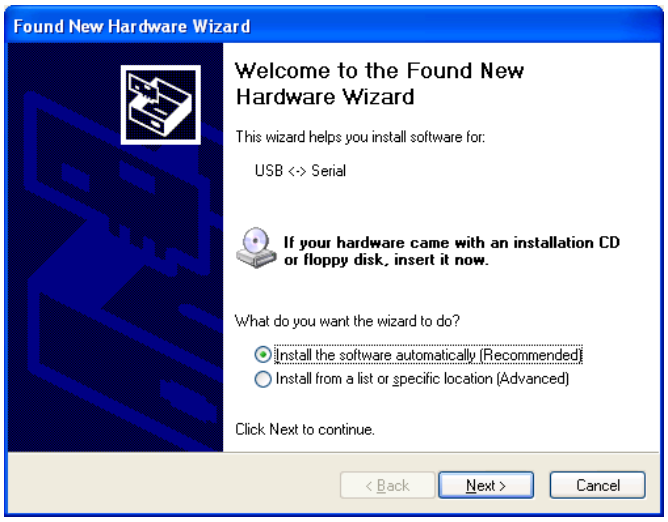


Fig 2.

2. Use the driver provided by OPTOKON (insert the supplied CD-ROM) and the driver will be installed automatically. This driver will create a virtual serial com port.

Fig 3.

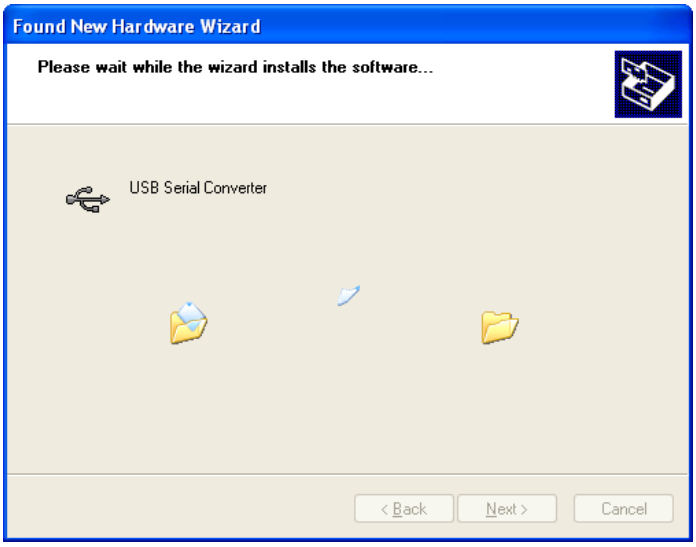


Fig 4.

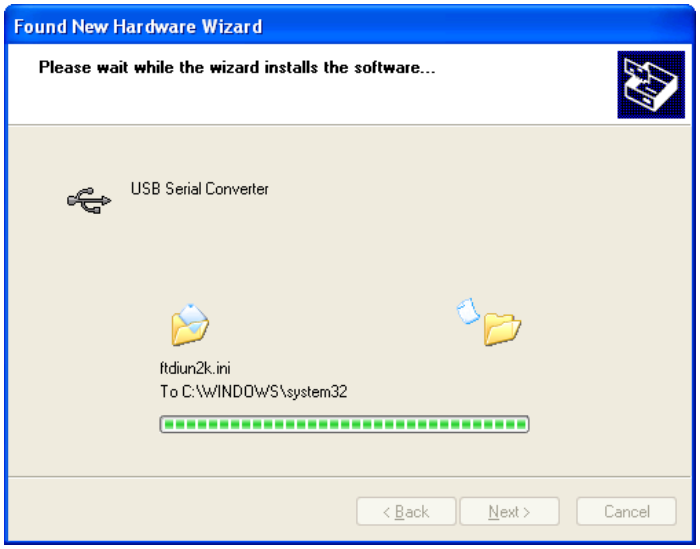


Fig 5.

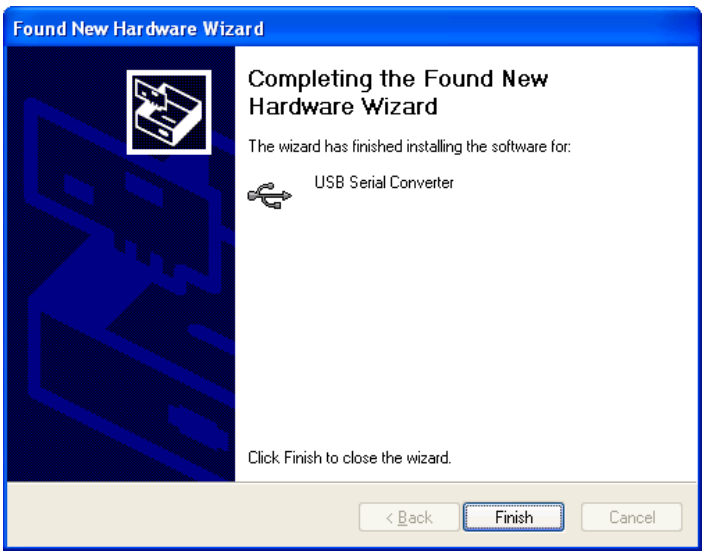


Fig 6.

3. It is recommended to verify the driver installation after completing.

4. Click on Control panel -> System -> Device manager.

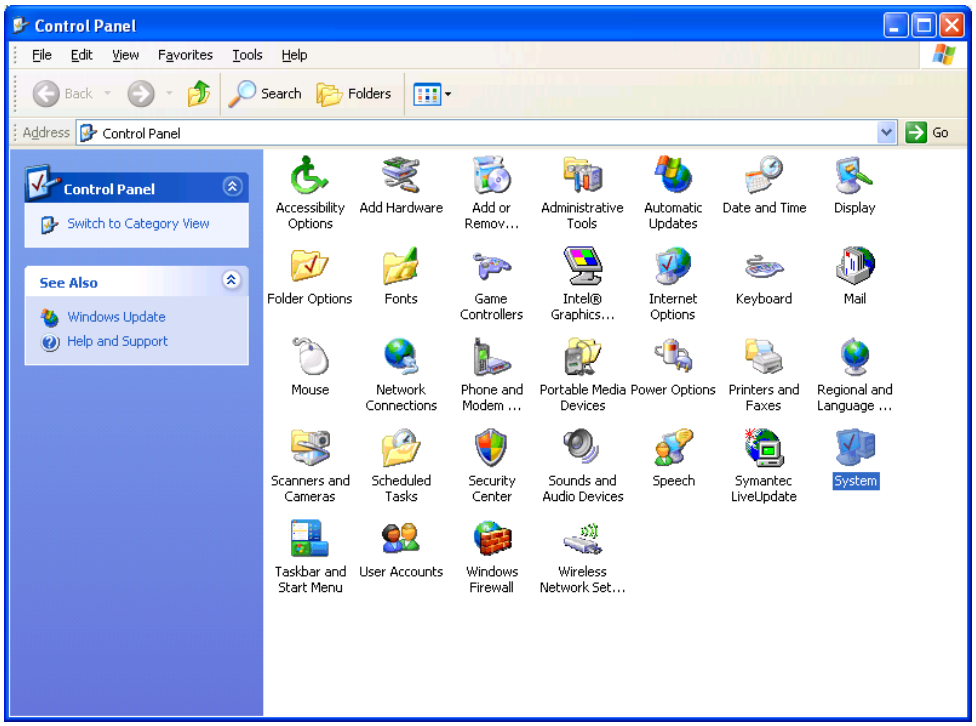


Fig 7.

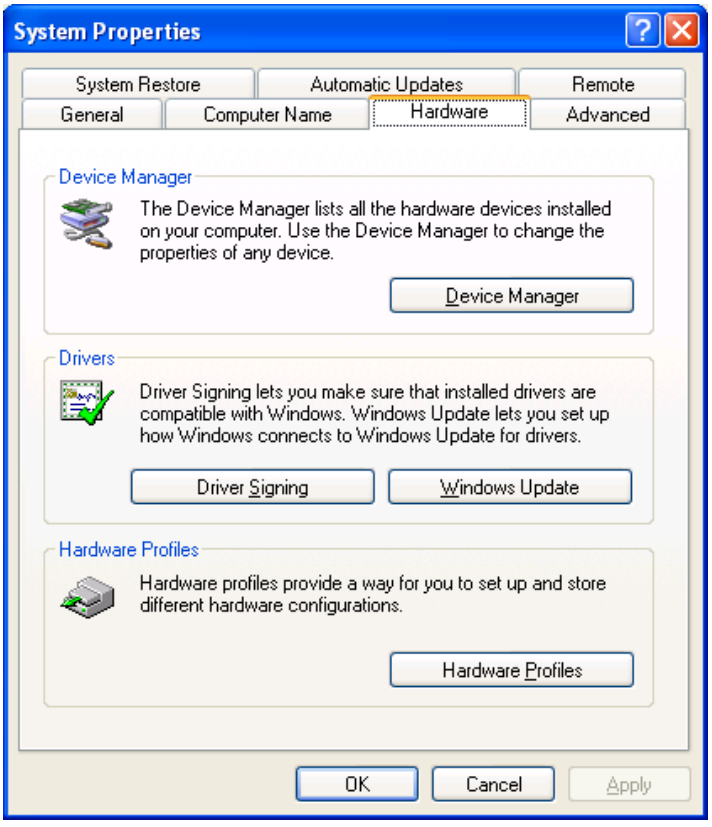


Fig 8.

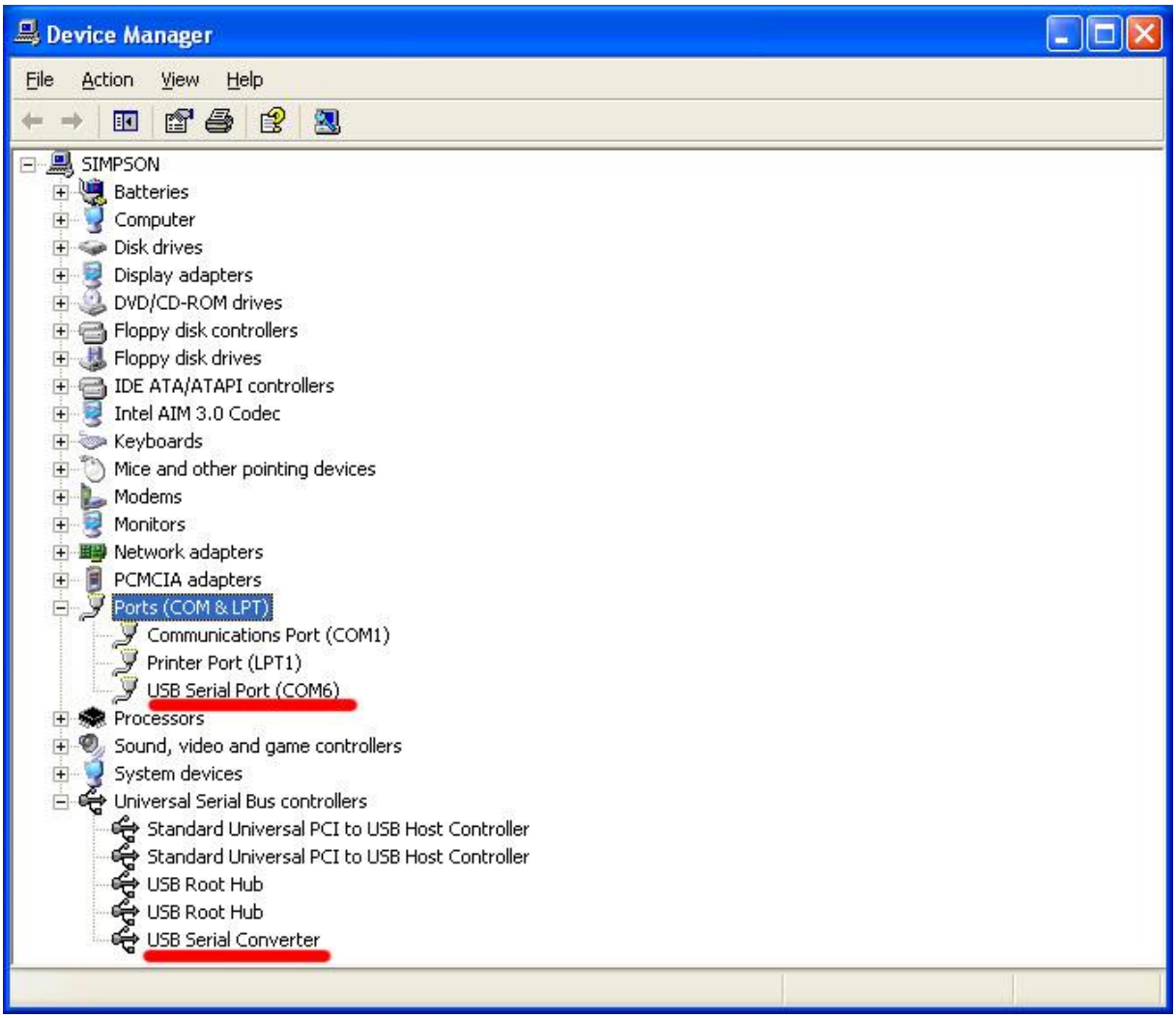


Fig 9

5. Check if the devices marked in red are correctly installed.

6. Installation of the USB driver is finished.

Note: In the case of a PC with Windows 7, all necessary installations will be completed automatically.

If the case of a PC with Windows Vista, you have to install drivers manually.

3 SmartProtocol

3.1 Starting SmartProtocol – Main screen

1. Copy all the content of the SmartProtocol folder from the supplied CD to a PC.
2. Start the SmartProtocol – "SmartProtocol.exe". The following screen will appear after the software starts up.
3. Using the USB cable, connect the instrument in OFF status to the PC.

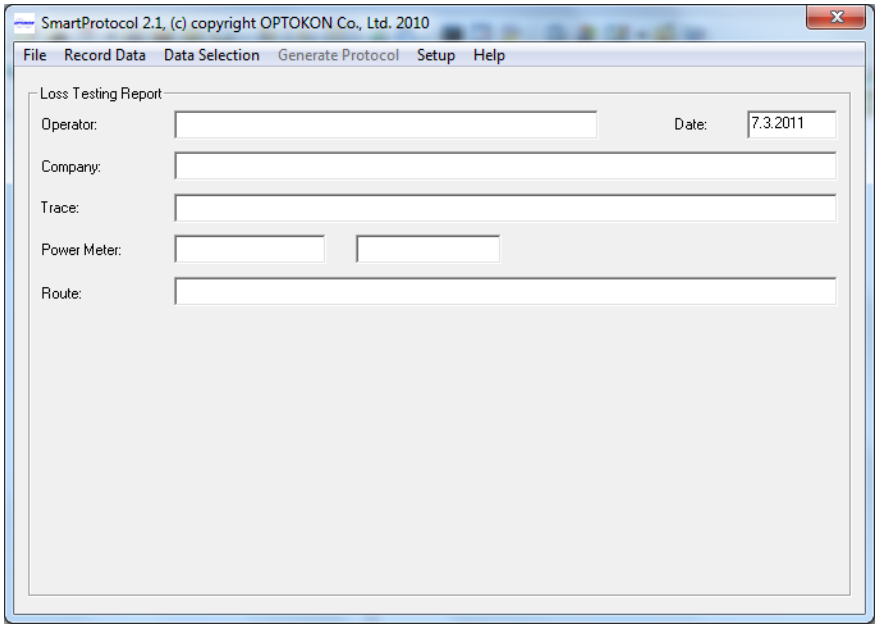


Fig 1.

3.2 Setting the serial port and language

1. Turn ON the instrument.
2. Click on "Setup" on the main menu.
3. Select "Serial Port".(type and serial number of the instrument must be shown)

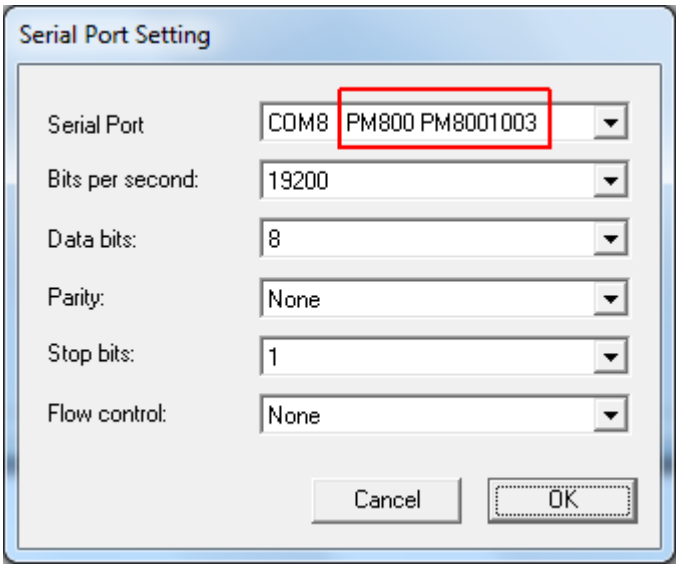


Fig 2.

4. Check the appropriate parameters of the serial port according to the diagram. The marking of the serial port depends on the PC (see chapter "Preparing connection").
5. Select "Language" and set the required language. For other languages please contact the OPTOKON service center.

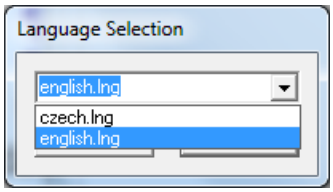


Fig 3.

3.3 Recording data – PM-800, OFT-820, PM-212

There are two methods for recording measured data into SmartProtocol: From the Power Meter or from the TXT file (before the stored data from the Power Meter by using the Hyper Terminal).

1. On the main menu, click on "Record Data"
2. Select the required option: "From Meter" or "From TXT file".

3.3.1 From Meter

(Note: When recording from the meter, the Power Meter must be correctly connected to the PC and must be ON)

1. Click on "Record Data from Meter"
2. Immediately in the instrument menu "MORE"->"MEM" and choose "UPLOAD MEMORY" (see instrument´s manual)
3. The instrument will display "UPLOADING…"
4. The SmartProtocol will appear

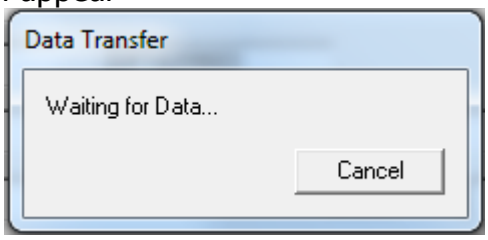


Fig 4.

5. Data successfully transferred from the instrument.

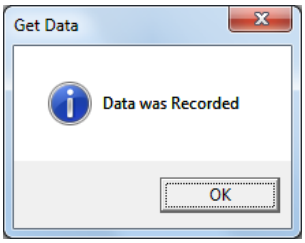
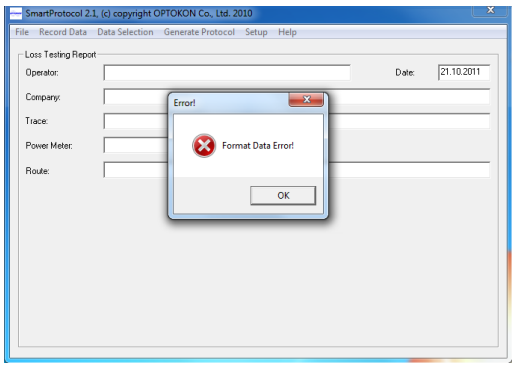


Fig 5

6. Data format error (check the connection, the instrument status or serial port installation and repeat all steps in chapter 3.3.1)



Depending on the type of connected Power Meter the serial number of the instrument will be displayed and the main SmartProtocol window will change.

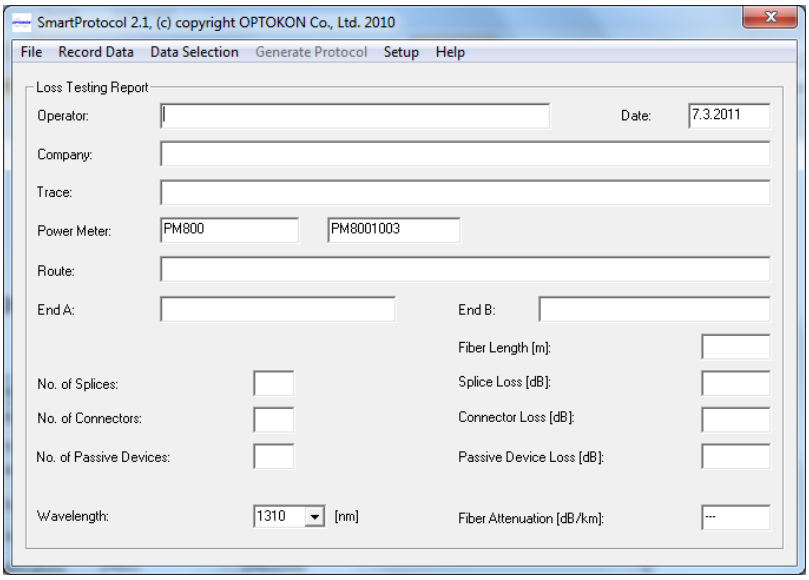


Fig 5.

In this table the operator can fill in basic data such as: operator name, company name, label for measured trace, route etc.
It is necessary to fill in the number of splices, connectors or passive devices included in a measured optical trace, fiber length and loss limits. From these values the final results for the measured trace (fibers) in the loss test report are calculated.

3.3.2 From TXT file

After selecting "From TXT file", the following screen will appear.

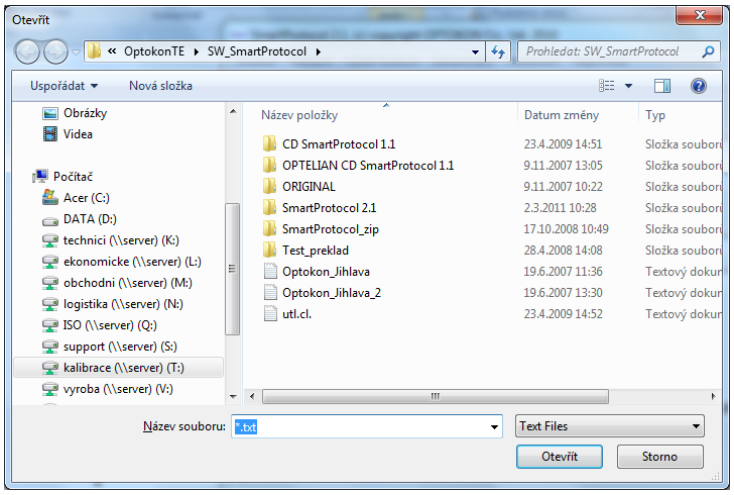


Fig 6.

Select and open the appropriate TXT file. The next procedure is the same as for the meter.

3.3.3 Selecting data

1. Click on "Data Selection" and select data on the main menu.
2. Select "one-sided" or "two-sided" measurement.
3. Select the wavelength.
4. By using the buttons, transfer the value to the appropriate column (A-B or B-A).
5. After completing click on "OK".

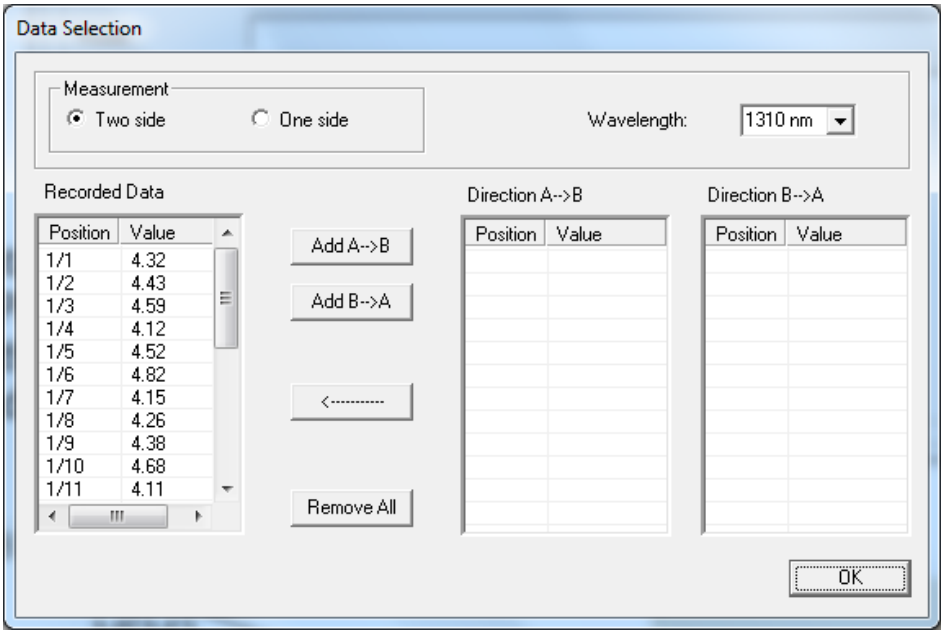


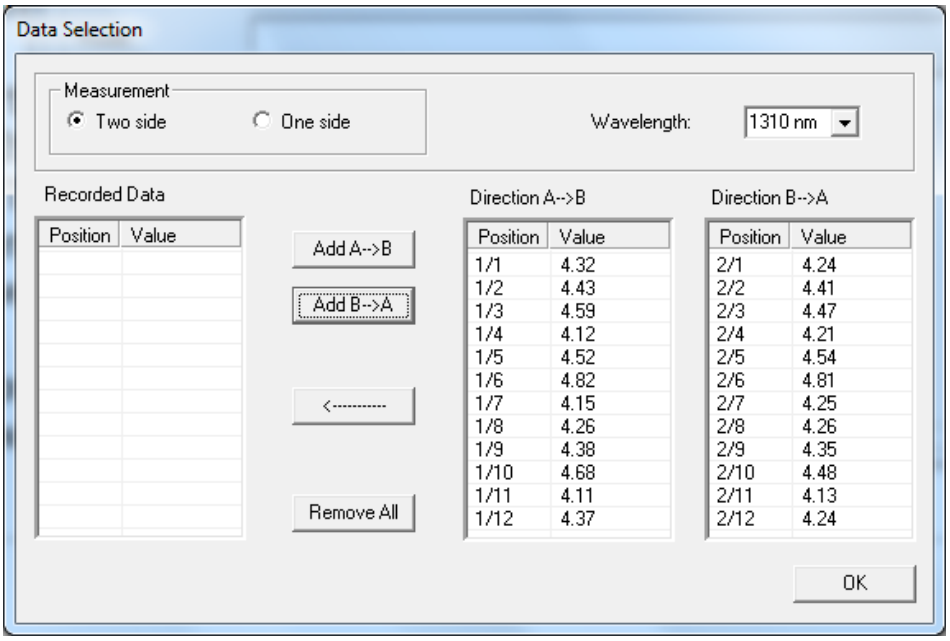
Fig 7.

The recorded data is displayed in the table with the positions corresponding to the positions in the power meter's internal memory.
The power meter's memory has a structured, two-level organization. The results are stored in the CABLE/FIBER memory positions.

The first digit of the position means CABLE folder and the second digit means FIBER (see the power meter manual). It is automatically recognized at which wavelength the measurement was taken. A warning message will be displayed in case the data in the internal power meter's memory contains results with a negative sign (gain). The results stored in "Absolute power measurement mode" (units dBm) will not be transferred into SmartProtocol.
It is important for the operator to consider the memory positions in particular where measured data will be stored before measurement.

For example:

CABLE1, FIBER 1-12 - 12 measurements on 1310 nm, direction A-B
CABLE2, FIBER 1-12 - 12 measurements on 1310 nm, direction B-A
CABLE3, FIBER 1-12 - 12 measurements on 1550 nm, direction A-B
CABLE4, FIBER 1-12 - 12 measurements on 1550 nm, direction B-A



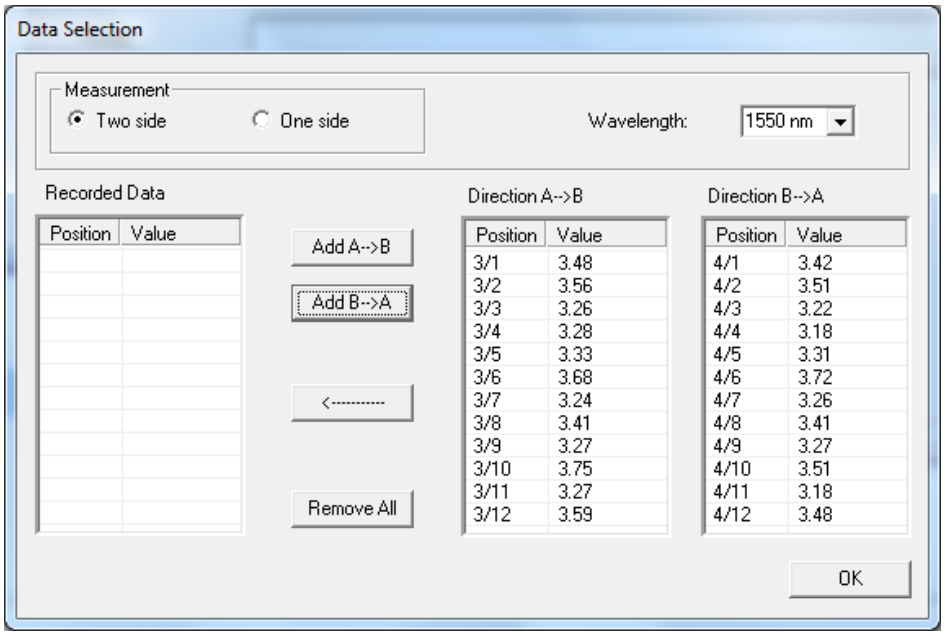


Fig 8.

3.4 Recording data – PM-830

The procedure is similar as in the previous chapter.

1. On the main menu, click on "Record Data"
2. Select the required option: "From Meter" or "From TXT file".
3. Depending on the type of power meter connected the serial number of the instrument will be displayed and the main SmartProtocol window will change.

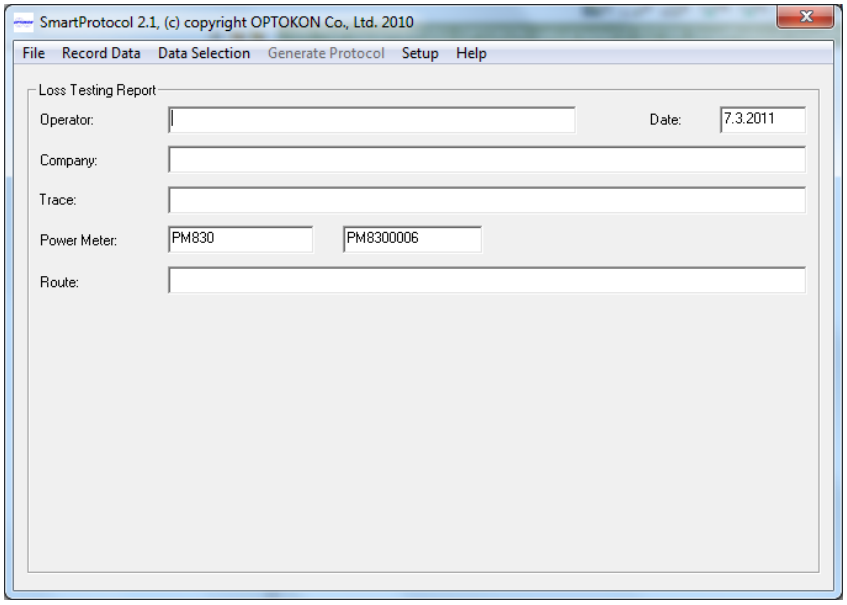


Fig 9

3.4.1 Selecting data

1. Click on "Data Selection" and select data from the main menu.

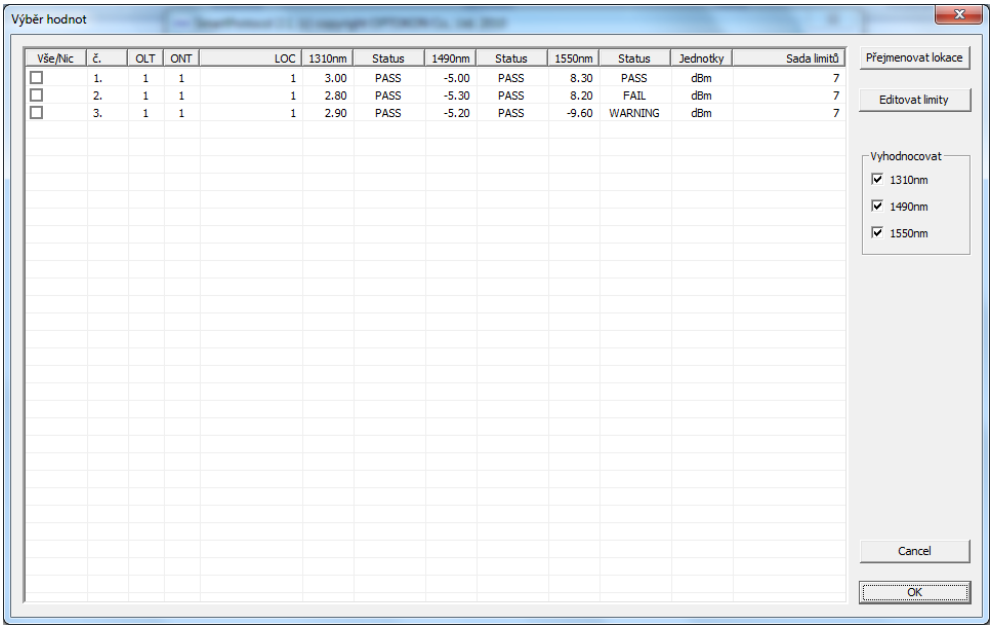


Fig. 10

2. Select the measurements to be used in the final test report.
3. If necessary, rename locations, select the appropriate wavelength or edit thresholds.
4. After completing, click on "OK".

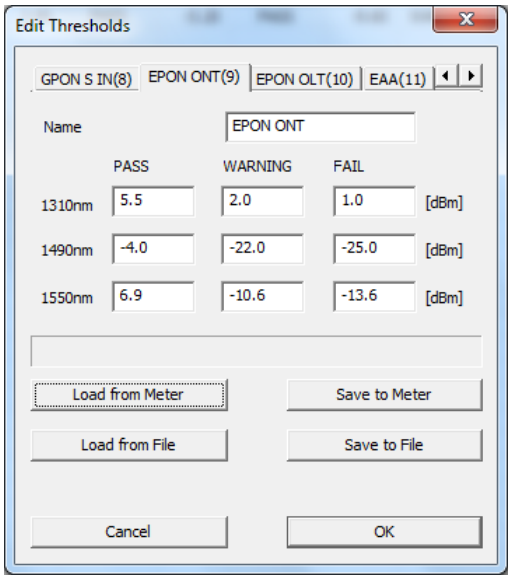


Fig. 11

3.5 Creating a loss test report

1. Click on "Generate Protocol" in the main menu.
2. HTML Protocol will be created.

The final measurement protocol depends on the type of test method and measurement device used. There are different measuring protocols for the PM-830 and other measuring instruments.

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Operator: *Magda Rychnovská*
Company: *OPTOKON Co., Ltd*

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Loss Testing Report

Trace:	*OPTOKON Cable House - Znojmo*		
Route:	*OPTOKON Cable House - Jihlava*		
End A:	*Cable House*	End B:	*Jihlava*
Power Meter:	*PM420 PM4207090*	Fiber Length:	*8000 m*
No. of Splices:	*10*	Splice Loss:	*0.1 dB*
No. of Connectors:	*2*	Connector Loss:	*0.5 dB*
No. of Passive Devices:	*0*	Passive Device:	*3.6 dB*
Fiber Attenuation 1310 nm:	*0.35 dB/km*	Loss Limit 1310 nm:	*4.80 dB*
Fiber Attenuation 1550 nm:	*0.20 dB/km*	Loss Limit 1550 nm:	*3.60 dB*

Table of Measured Values

Fiber	Loss [dB] 1310 nm			Loss [dB] 1550 nm			Note
	A-B	B-A	Avg.	A-B	B-A	Avg.	
1.	4.32	4.24	4.28	3.48	3.42	3.45	PASS
2.	4.43	4.41	4.42	3.56	3.51	3.54	PASS
3.	4.59	4.47	4.53	3.26	3.22	3.24	PASS
4.	4.12	4.21	4.17	3.28	3.18	3.23	PASS
5.	4.52	4.54	4.53	3.33	3.31	3.32	PASS
6.	4.82	4.81	**4.81**	3.68	3.72	**3.70**	**FAIL**
7.	4.15	4.25	4.20	3.24	3.26	3.25	PASS
8.	4.26	4.26	4.26	3.41	3.41	3.41	PASS
9.	4.38	4.35	4.37	3.27	3.27	3.27	PASS
10.	4.68	4.48	4.58	3.75	3.51	**3.63**	**FAIL**
11.	4.11	4.13	4.12	3.27	3.18	3.23	PASS
12.	4.37	4.24	4.30	3.59	3.48	3.54	PASS
Avg.	4.40	4.37	4.38	3.43	3.37	3.40	
Max.	4.82	4.81	4.81	3.75	3.72	3.70	
Min.	4.11	4.13	4.12	3.24	3.18	3.23	

Fig 12.

Date: *8.3.2011*
Operator: *Jiří Tragan*
Organization: *OPTOKON Co., Ltd*

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Test Results

Trace:	*GPON*
Route:	*OPTOKON*
Power Meter:	*PM830 PM8300006*

Table of measured values

OLT ID:1 <-> ONT ID:1			WARNING	
Location	Wavelength [nm]	Power [dBm]	Status	Thresholds
1	1310	3.00	PASS	GPON S OUT(7)
	1490	-5.00	PASS	
	1550	8.30	PASS	
1	1310	2.80	PASS	GPON S OUT(7)
	1490	-5.30	PASS	
	1550	8.20	PASS	
1	1310	2.90	PASS	GPON S OUT(7)
	1490	-5.20	PASS	
	1550	-9.60	WARNING	
Note:				

Aplied Thresholds				
Threshold Set	Wavelength [nm]	PASS [dBm]	WARNING [dBm]	FAIL [dBm]
GPON S OUT(7)	1310	3.0	-1.5	-2.5
	1490	-2.5	-21.0	-24.0
	1550	8.4	-9.6	-12.6

Fig 13.

3. The created HTML protocol can be printed, converted to a PDF file or saved.

3.6 Protocol management

Click on "File" on the main menu. There are the following options:

- Create a new Protocol
- Open the saved Protocol
- Save the pre-configured SmartProtocol for future use
- Export the recorded data into the TXT file using SmartProtocol

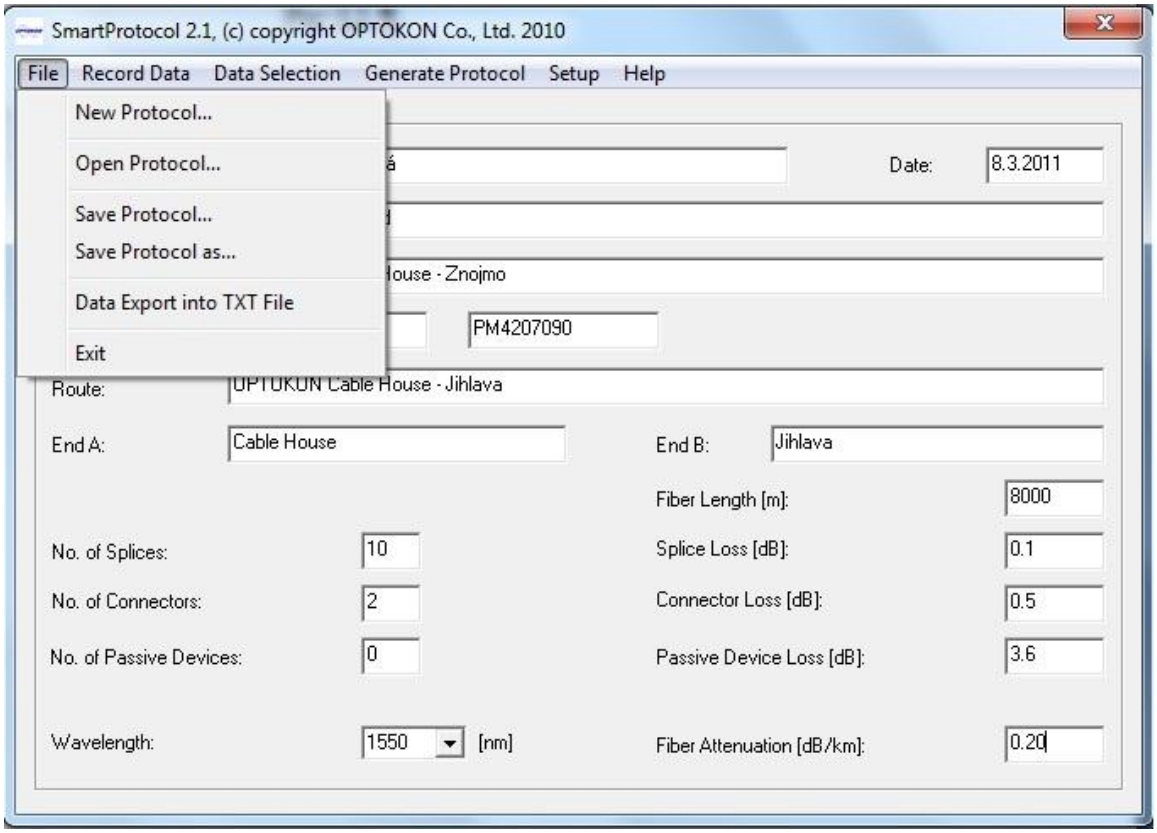

Fig 14.

4 Calibration, OPTOKON service center

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