



«SBS data logger»

Model DL-1000



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“SBS Data Logger” program description.

The program *SBS Data Logger* is designed for collection, representation, storage and processing of data received from the device **SBS 1001** through the serial interface (RS 232) with help of the analog-to-digital converter.

The system consists of two programs:

- Palm program
- Desktop program (conduit)

Attention! Be sure to read Instructions for Palm Pilot before beginning to work with this program.

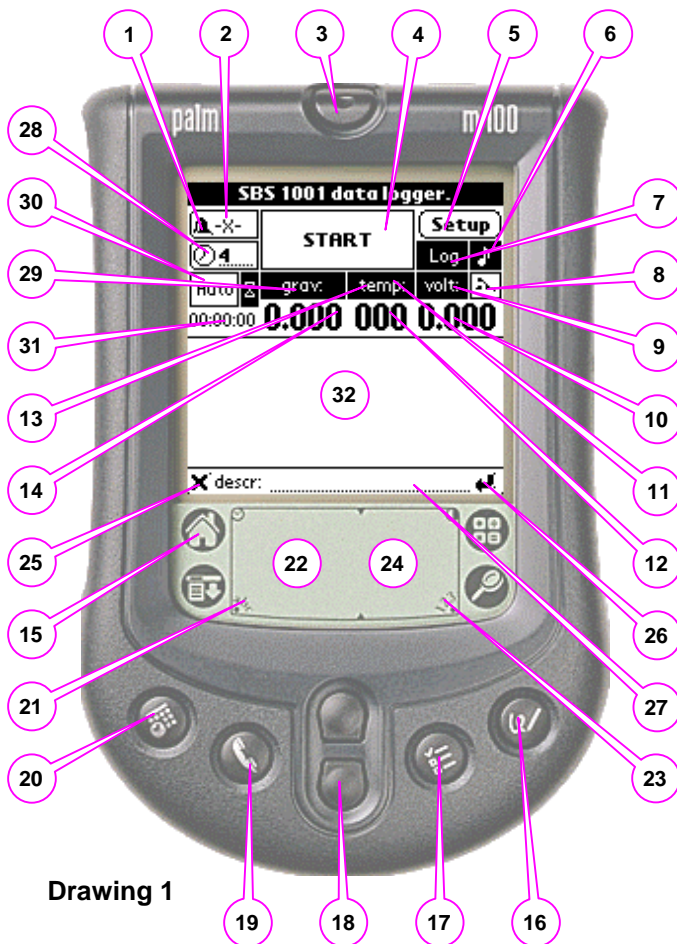
Palm program.

- Sends requests to the serial port (RS 232) in a fixed time interval.
- Takes measurements of voltage, temperature and gravity. Any measurement can be switched off.
- Shows current readings and puts them down into the table.
- Stores time when measurements were taken and its serial numbers.
- Gives a sound signal when measurements are taken; gives sound warning if measurements are out of range.
- Allows to turn off alarm signal.
- Shows if current parameters are out of range.
- Allows to set up alarm and warning bounds for measurements.
- Automatically enters comments in table when some parameter exceeds the bounds.
- Allows to make any comments manually.
- Allows to remove any records from the table.
- Allows to switch off the recording process into the table.
- Allows to set up auto recording in the table when the voltage reaches a certain value.

Pre-starting procedure.

Before getting started you need to install programs for Palm Pilot and Desktop part using the installation disk (see chapter “**Installation**”).

Connect analog output **SBS 1001** and Palm serial port using cable with analog-to-digit converter. Switch on **SBS 1001**. Switch on Palm by pressing button 3 (drawing 1). Main window of the Palm operating system will appear. Find an icon of **SBS Data Logger** and press it with stylus. The main window will appear (drawing 1). If the program already has some data, wait until it loads this data.

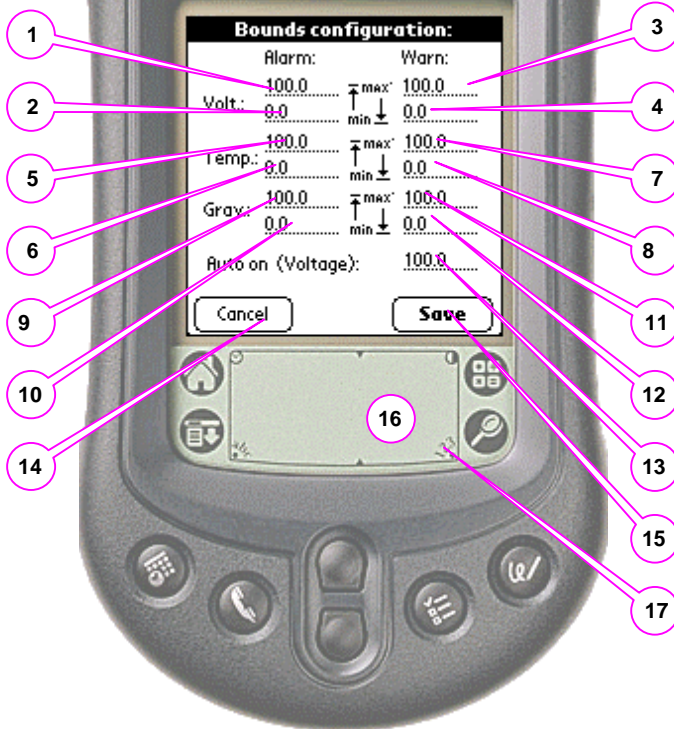


Drawing 1

1. Shutting off alarm signal.
2. Information panel:
 - -x- no connection
 - <-> connection established
 - --- no warnings or alarms
 - **GtV** capital letter indicates the existence of a alarm; small letter means "warning" for voltage, temperature or gravity.
3. Palm switch on/off. Pushing long will turn on/off the light.
4. Information receiving process on/off. Is duplicated by the Sync button on the unit cable.
5. The key opens the setting window for measurement's range (drawing 2). The button disappears when program is taking measurements.
6. Switches the sound mode. If there is a note symbol you will hear three short signals when taking measurements of voltage, temperature and gravity; and a long signal - when the measurement is recorded. If it displays a bell, warning and alarm signals are on (also see # 16).
7. Turns on/off the process of recording data into the table (also see # 17).
8. When it is on, the data will be recorded into the table only when the voltage reaches a certain value.
9. Switching on/off of voltage parameter.
10. Current voltage representation.
11. Switching on/off of temperature parameter.

12. Current temperature representation.
13. Switching on/off of gravity parameter.
14. Current gravity representation.
15. Program exit. Wait after pressing once.
16. Duplicates button # 6.
17. Duplicates button # 7.
18. Sets up (increases/decreases) scanning interval (also see # 28).
19. Sets up representation of time or number of measurement (also see # 29).
20. Switches on/off automatic mode of taking readings (also see # 30).
21. Turns on the keyboard for entering text. See detailed description of operating Graffiti and Virtual keyboard in instructions for Palm.
22. Field for text input.
23. Turns on the keyboard for entering digits.
24. Field for digits input.
25. Deletes the selected record in the table.
26. Adds a text from the field for comment input (# 27) into the table.
27. Field for comment input.
28. Scanning interval in seconds. To change interval, use button 18 or enter digit directly to this field.
29. Sets up representation of time or number of measurement (also see # 19). Wait after pressing the button once. When program is taking measurements, the change will occur on the next measurement reading. When the scanning stops, wait several seconds until change occurs.
30. Switches on/off automatic mode of taking readings (also see # 20).
31. Shows current time when scanning process is on. When scanning stops, shows time of last taken measurement.
32. Table of measurements. Shows time or number of measurement. Always shows time for comments. When the measurements are taken, only last six of them can be seen. When scanning stops, on the right side of a table arrows appear. Using them you can look through all the records. The number of records is limited by Palm's memory. If there is a big amount of records, the program slows down and the scanning interval increases.

Form for setting warning and alarm bounds



Drawing 2

Range values introduced once will remain effective until hard restart of Palm is accomplished.

1. Voltage superior alarm limit.
2. Voltage inferior alarm limit.
3. Voltage superior warning limit.
4. Voltage inferior warning limit.
5. Temperature superior alarm limit.
6. Temperature inferior alarm limit.
7. Temperature superior warning limit.
8. Temperature inferior warning limit.
9. Gravity superior alarm limit.
10. Gravity inferior alarm limit.
11. Gravity superior warning limit.
12. Gravity inferior warning limit.
13. Voltage bound (if exceeded, will be recorded into the table)
14. Cancel changes.
15. Save changes.
16. Field for entering range values. To enter a value, put a cursor on a selected range using stylus. Then enter the range value on field (16) or using virtual keyboard (17).
17. Virtual keyboard for entering range values.

If the measurements exceed warning bounds, a sound signal will ring. If measurements return to normal, warning signal will stop. If measurements exceed alarm bounds, and later return to normal, alarm signal will not stop. It can be switched off by pressing button 1 (drawing 1).

Comment will be recorded automatically when any change in the parameter condition occurs (not only if some parameter goes out of range, but if it goes from alarm to normal, from warning to alarm, etc.). Comment sample:

15:03:45 T: norm G: alarm V: warn

Also for the current state of alarm/warning condition see indicator (2) (drawing 2).

Desktop program

Desktop part is designed for storage, removal, printing and transferring data into the desktop computer.

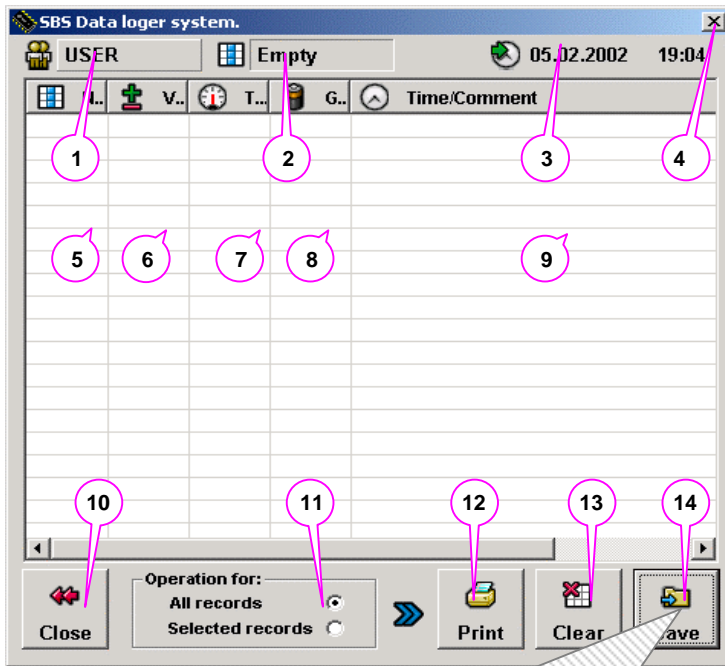
Main functions:

- ❖ Transferring data from Palm Pilot to Desktop system
- ❖ Removal of all or selected data from the Palm Pilot memory
- ❖ Data review
- ❖ Printing of all or selected data
- ❖ Storing of all or selected data as a text file for further export into any data processing program. Files can be comma separated or fixed column width.

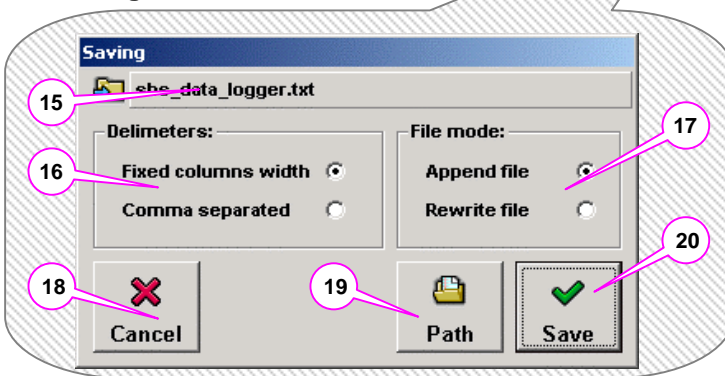
Pre-starting procedure:

Before getting started you need to install programs for Palm Pilot and Desktop part using the installation disk (see chapter “**Installation**”).

After you perform the installation and enter some measurements into the Palm Pilot memory, put device into the cradle in order to be able to transfer all the data into the desktop computer. Make sure that there is a HotSync program icon on the desktop computer taskbar. It is a synchronization program which is supplied with Palm Pilot and is also included in the installation disk. Close the “*SBS data logger*” program by pressing the button 15 (drawing 1) and press the Sync button on the Palm Pilot cradle. Then the standard procedure of data synchronization between Palm Pilot and Desktop computer will begin. If there is a big amount of data on the Palm Pilot, it can take time to transfer all the data. When it finishes, the window of the program of transferring data from “*SBS data logger*” to desktop will appear on the screen (see drawing 3).



Drawing 3



file with fixed column width:

SBS-data logger:	File Alex	02.02.2002	20:43:38	
Record Number:	Voltage	Temperature	Gravity	Time/Comment
1				Ground Alarm Voltage
540	0.03	41	1.333	12.02.2002 16:28:50
547	0.03	50	1.333	12.02.2002 16:28:45

or comma separated file:

"SBS-data logger:"	"File Alex"	"02.02.2002"	"20:43:38"	
"Record Number:"	"Voltage"	"Temperature"	"Gravity"	"Time/Comment"
"1"				"Ground Alarm Voltage"
"540"	"0.03"	"41"	"1.333"	"12.02.2002 16:28:50"
"547"	"0.03"	"50"	"1.333"	"12.02.2002 16:28:45"

1. User's name for a given Palm.
2. Records amount including comment.
3. Current date and time.
4. Exit key (see # 10).
5. Record number (comment are not given numbers).
6. Voltage.
7. Temperature.
8. Gravity.
9. Time and date of measurement; comment.
10. Exit key (see # 4).
11. Switch. Indicates to which records will apply functions "Print", "Save" and "Clear".
12. Print button. Will print table contents. According to indication of switch 11 will print all or selected records.
13. Clear button. Will clear data from Palm Pilot memory and reload data into the desktop computer. According to indication of switch 11 will clear all or selected records.
14. Save button. Will save table contents as a file through dialog shown as a remote drawing. According to indication of switch 11 will save all or selected records.
15. File name made to save data by default. File will be saved in the current catalog. Usually current catalog for transferring program is the catalog where the Palm Pilot software is situated. By default it is C:\PALM. Choose name and path for file you want to save. You can also use button 19.
16. Using this switch you can choose file type where you want to save records. It can be

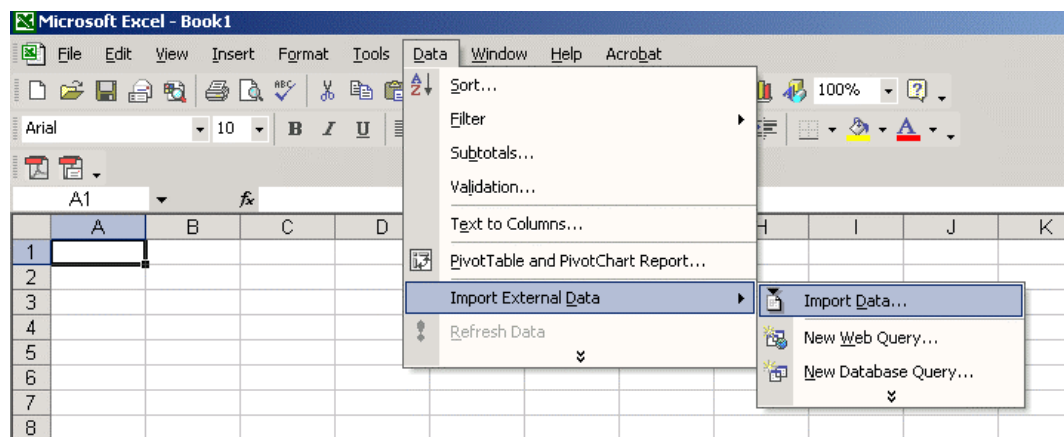
17. File mode button. If you already have file with indicated name, this switch allows you to choose whether the file will be appended or rewritten.
18. Cancel button. Will close dialog without saving file.
19. Path button. Choose name and path for file you want to save. You can also use button 15.
20. Save button. Will save file and exit the saving dialog.

Palm part. How to:

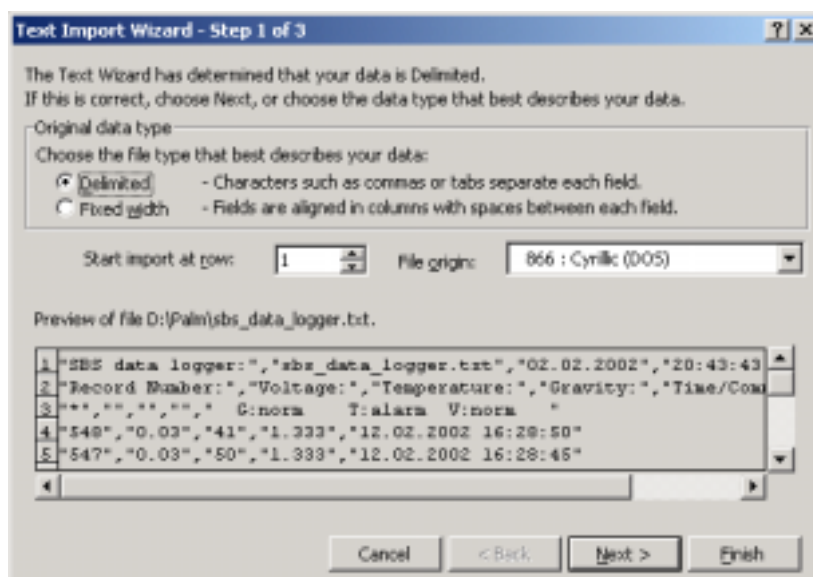
- **Remove the record** – before trying to remove any records, make sure that the program is inactivated. Data removal function is blocked when the measurements are being taken. To remove, select necessary records in the table with a cursor and press key 25 (drawing 1).
- **Add a comment** – this function is also blocked when the measurements are being taken. Enter a comment into the field 27 (drawing 1) using graffiti (fields 22, 24) or virtual keyboard 21, 23. Then press the button 26 and a comment will appear in the table.
- **Set up the warning and alarm bounds** - press Setup button (5) and then use proper window (drawing 2).
- **Take a single measurement** – set up a comfortable time interval (use buttons 18 or 28), turn on the sound (key 8, note icon). Press Start key 4 or button Sync on the cable. The long deep signal of interface initialization will ring. Fix the measuring leads. When time, set up in a time interval, elapses, the measurement will be taken. Every measurement reading is accompanied by a short sound signal. Recording data into the table is accompanied by a long sound signal.
- **Another way to take a single measurement** – set up a minimal time interval and set up such voltage value when the measurements will be recorded automatically. The voltage can be set up in a field 13 (drawing 2). Start automatic scanning process by pressing button 20 or 30 (drawing 1). Then press Start button (4) or Sync button on the cable. This will initiate continuous scanning process. When you put the leads on the battery and voltage value reaches a certain limit, the recording of measurements into the table will occur accompanied by a long sound signal. In order to avoid repeated recording, remove the leads from the battery. Then press again the button 4 to stop scanning.
- **Set up permanent scanning process** - set up a necessary time interval (use buttons 18 or 28). Start automatic scanning process by pressing button 20 or 30 (drawing 1). If there is a need, set up warning and alarm bounds (drawing 2). Switch warning and alarm sound signals on (key 8, bell icon). Then press Start button (4) or Sync button on the cable. This will initiate continuous scanning process. To record data into the table permanently, turn on “log” button (7), (drawing 1) and turn off the key 8 (drawing 1). If the parameters go out of range, automatic comments also will be recorded into the table.

Desktop part. How to:

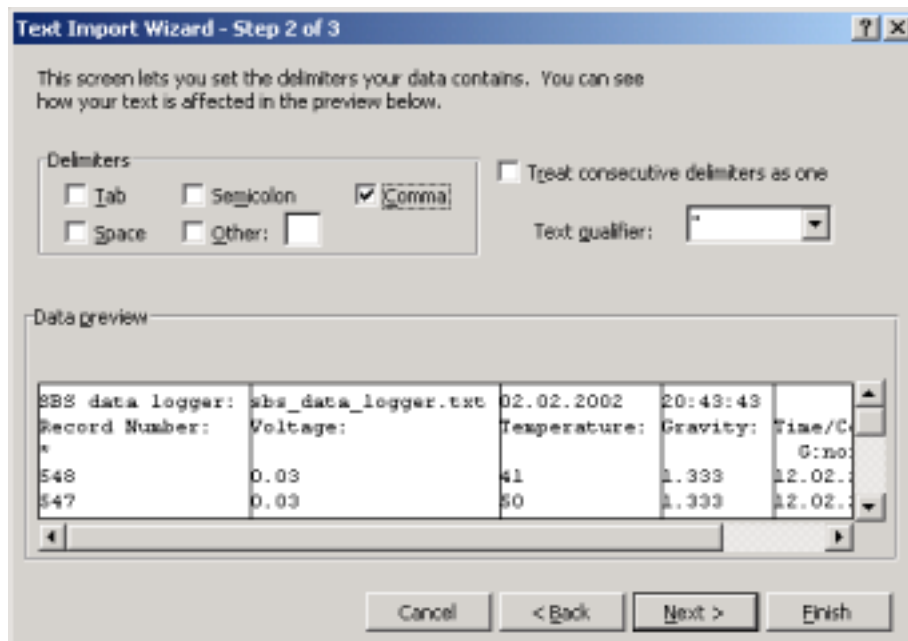
- **To select records in the table you have the following options:**
 - To select several records in a row, select the first one by pointing cursor at it, press Shift button and holding Shift, select the last one – then all the records in the selected area will be highlighted
 - To select several isolated records, select each record with a cursor while holding the Ctrl key.
- **To transfer the record's table into the Excel you need to:**
 - Perform data synchronization process between Palm and Desktop computer (see chapter "Installation" or Palm instruction manual).
 - In data synchronization program SBS1001 select necessary data and press Save button (# 14, drawing 3).
 - In the record dialog choose file type and file path. Save file by pressing button 20 (drawing 3).
 - Open Excel.
 - Choose *Import Data* in the menu:



- Choose the file with data. Excel will offer automatically the dialog of transferring data from the text file



- It is recommended to use comma separated text for transferring. After choosing this file type, you will see the following window:



- After having completed all the steps dictated by Excel, you will see the following table on the screen:

	A	B	C	D	E
1	SBS data logger:	sbs_data_logger.txt	37289,00	20:43:43	
2	Record Number:	Voltage:	Temperature:	Gravity:	Time/Comment:
3	*				G:norm T:alarm V:norm
4	548	0.03	41,00	1.333	12.02.2002 16:28
5	547	0.03	50,00	1.333	12.02.2002 16:28
6	*				G:norm T:norm V:norm
7	546	0.03	72,00	1.332	12.02.2002 16:28
8	545	0.03	95,00	1.333	12.02.2002 16:28
9	544	0.03	100,00	1.333	12.02.2002 16:28
10	*				G:norm T:warn V:norm
11	543	0.03	92,00	1.334	12.02.2002 16:28
12	*				G:norm T:warn V:norm
13	542	0.03	64,00	1.333	12.02.2002 16:28
14	541	0.03	64,00	1.331	12.02.2002 16:28
15	540	0.03	54,00	1.333	12.02.2002 16:28
16	*				G:norm T:norm V:norm
17	539	0.03	7,00	1.115	12.02.2002 16:28
18	538	0.03	7,00	1.114	12.02.2002 16:27
19	537	0.03	7,00	1.115	12.02.2002 16:27
20	536	0.03	7,00	1.113	12.02.2002 16:27
21	535	0.03	7,00	1.115	12.02.2002 16:27
22	534	0.03	7,00	1.114	12.02.2002 16:27
23	533	0.03	2,00	1.115	12.02.2002 16:27
24	*				G:norm T:warn V:norm
25	532	0.03	57,00	1.136	12.02.2002 16:27
26	531	0.03	64,00	1.137	12.02.2002 16:27
27	530	0.03	64,00	1.135	12.02.2002 16:27

- The data has been successfully transferred for further processing.

Installation

Install *SBS data logger* using installation compact disk.

- Insert a disk into the CD ROM,
- To install Palm Desktop Software and Visual Basic Runtime Library launch program **install_first.bat**. You can miss this part of installation if you have already installed Palm Desktop Software using the original disk from the Palm Pilot set.
- During the installation give a name to Palm Pilot.
- Set your Palm Pilot into the cradle and perform the first synchronization. Switch on the Palm Pilot (see Palm Pilot original manual).
- Launch the program **install_second.bat** (Palm should be remained into the cradle). This file will install additional components for Palm Pilot, Palm program **SBS1001** and Desktop program **SBSdata.exe**. It also will register Desktop program as program of data exchange for Palm program SBS1001.
- Now the program complex "*SBS data logger*" is ready for use.

Disk contents:

L	[Documentation]	-this document.
L	[Misc]	-Source file, Development tools e.t.c. It is not present in user version.
L	[SBS_inst]	-Install files.
📄	Install_first.bat	
📄	Install_second.bat	
📄	!README.txt	