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Introduction

The software application ESDA (Enhanced Serial Data Analyzer) is mainly focused on serial data protocols of vending machines. It is a extreme help full tool for software engineers developing vending machine controllers and MDB peripherals.

The purpose of ESDA:

- It allows to record serial data streams in real time and create analyzer files on the computers hard disk. To record serial data streams the MDB Interface BD-4000-U, BD-4000-S or BD-4000-E is needed.
- It is used to visualize and analyze previous recorded analyzer data files.

Terms of usage

The ESDA software is license free for the visualization of analyzer acquisition files. It is also license free for distribution together with analyzer data files to third parties.

Manual Software Installation

ESDA has no installer, copy ESDA.EXE to the hard disk and run it, there are no other files needed.

On download from the internet choose save to store ESDA.ZIP on the hard disk and then unzip it to get the ESDA.EXE application.

But to put it in order we recommend following standard setup.

Create following folder structure on your hard disk:

```
C:\Program Files\BonusData\ESDA\ESDA.EXE           // ESDA application
C:\Program Files\BonusData\ESDA\Driver\BD-4000.INF // Driver location
C:\Program Files\BonusData\ESDA\Data\ANALIZER.ANL  // Data location
```

ESDA Configuration

On the first launch of ESDA a default configuration is used which may force an error message. Such messages must be closed to get to the main window.

Note: Additional information is available in the “Technical Manual for the MDB Interface BD-4000”.

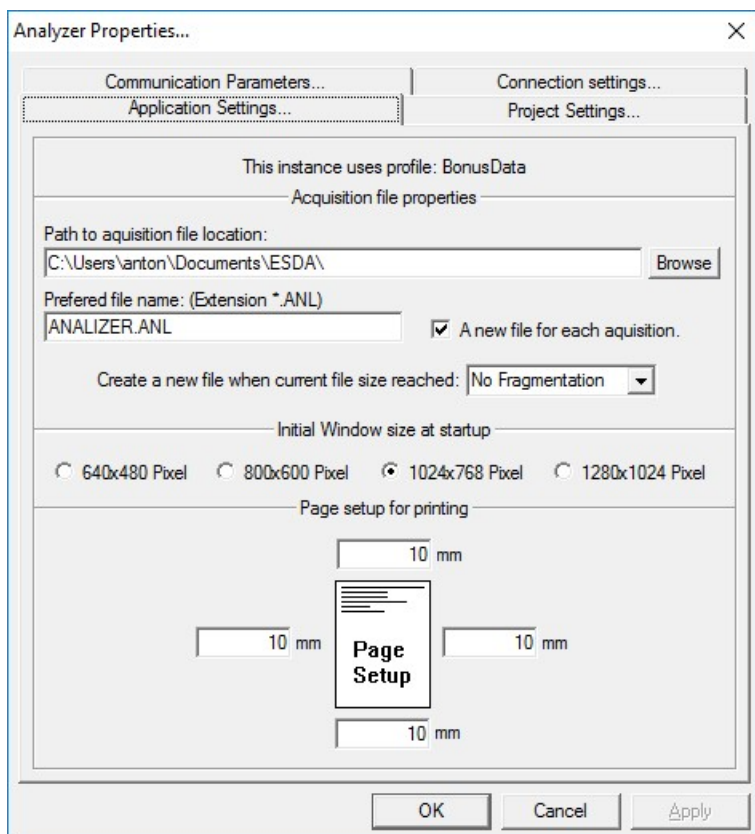


Fig. 2

Application settings

Click: “Menu -> Options -> Settings” to find the properties.

- Select tab 'Application Settings...'
- Set the path to the location of the acquisition files. It must be a location with enough access rights like “User” or “All User”.
- Adjust the screen size.

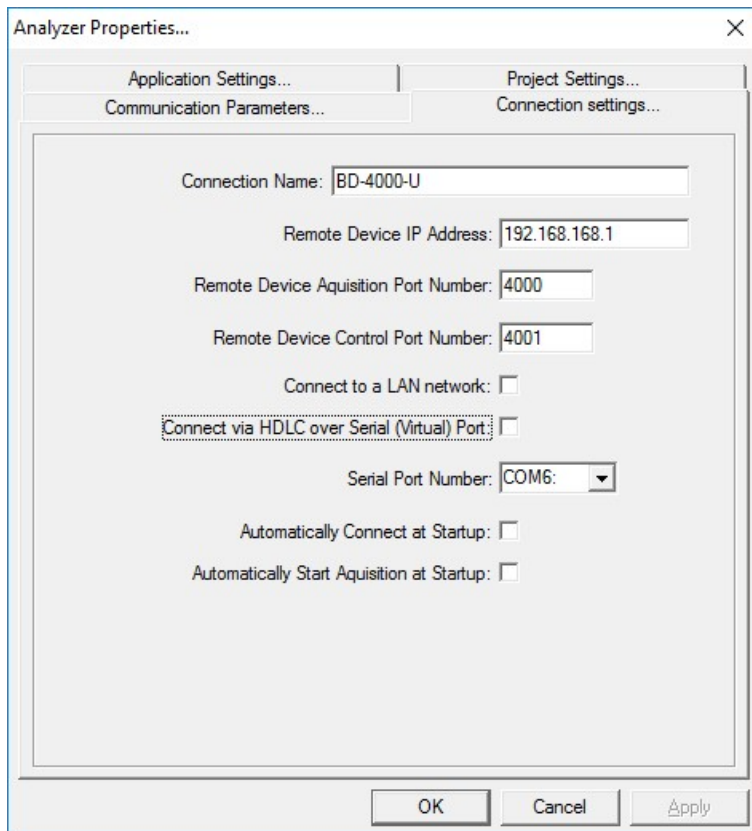


Fig. 3

Connection settings

Select tab “Connection settings...”

- If you connect via UDP protocol make sure the Connection Name is correct.
- If you connect via HDLC over Serial (Virtual) Port, make sure the correct serial port is selected.
- Here uncheck 'Automatically connect at startup...' to avoid error messages at startup caused by a missing MDB Interface.

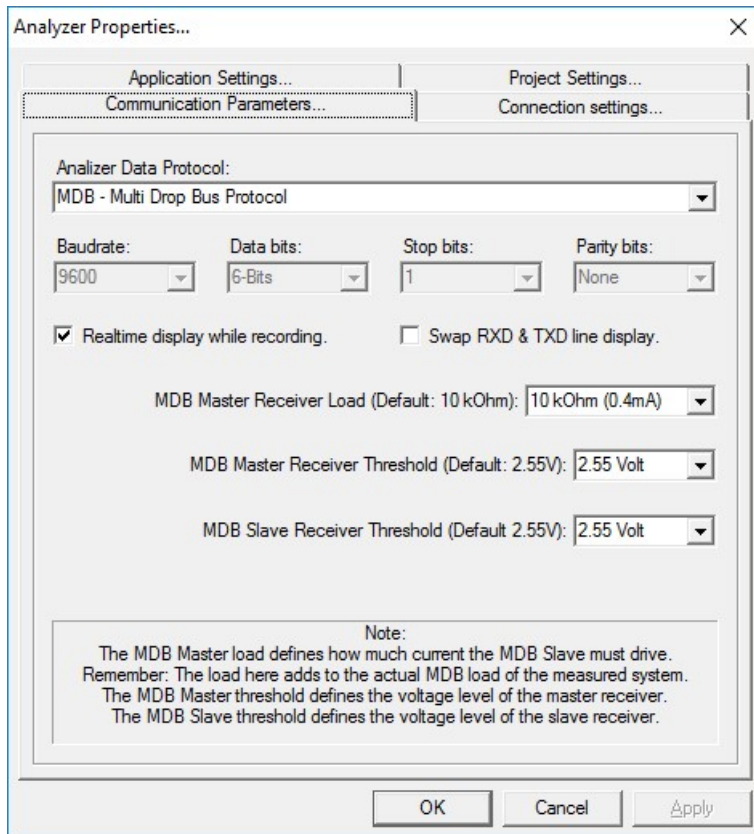


Fig. 4

Communication Parameters

Select tab “Communication Parameters...”

- Here select the protocol for the acquisition. If RS-232 is selected also the Baudrate, Data bits, Stop bits and parity must be set accordingly.
- Check Real time display while recording to see recorded bytes immediate.
- If MDB is selected make sure that the master is on top of the recording line. This is important for a correct display of the MDB interpreter in list view.

Using the ESDA analyzer application

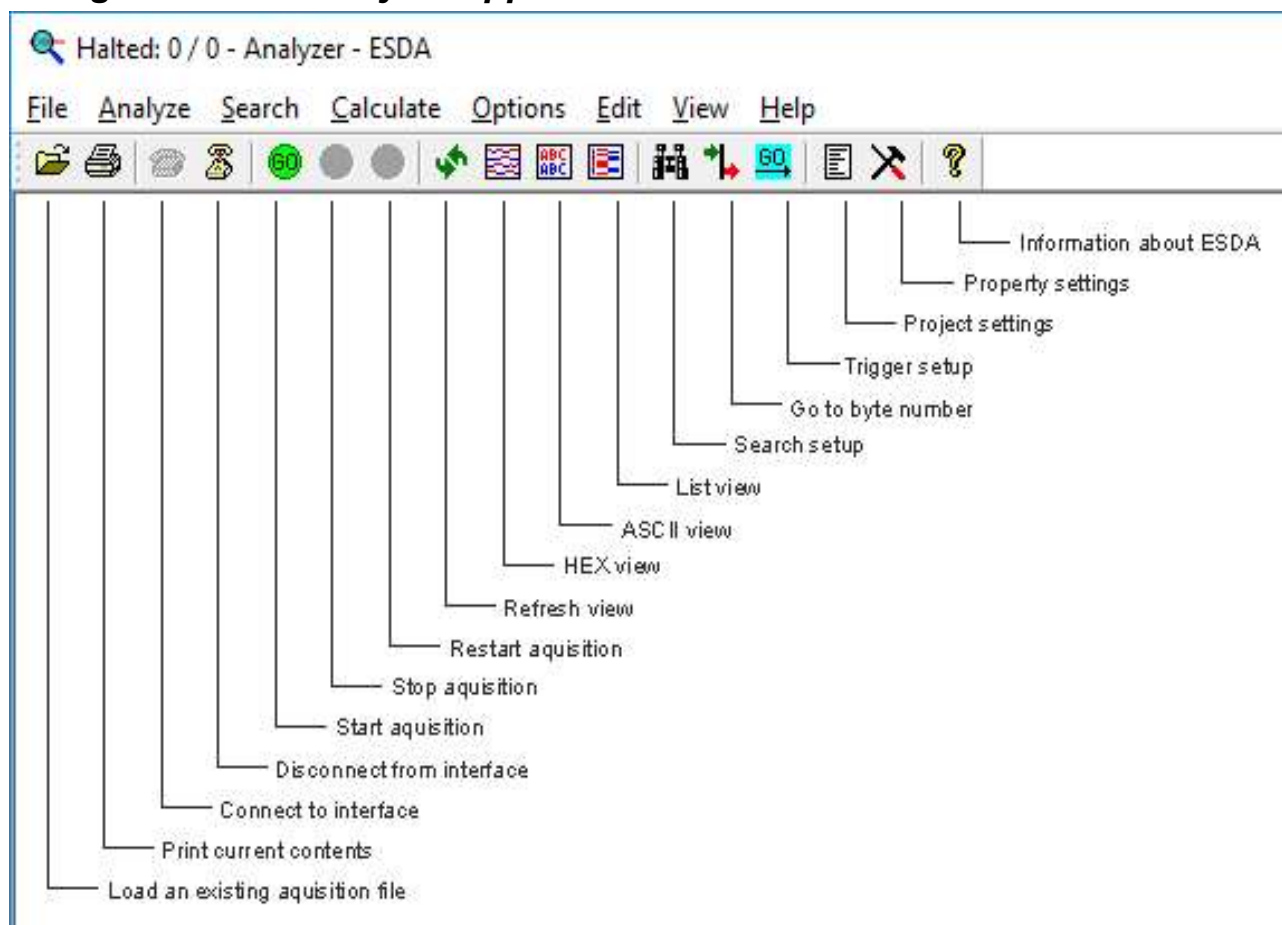


Fig. 5

Recording over a long time period

If a long time period recording is planned then following points must be considered:

Avoid huge recording files:

Avoiding very huge recording files to make it easier to search for the expected malfunction data.

- > In the analyzer application ESDA click on menu item 'Options', then 'Settings'.
- > Select tab 'Application Settings...'
- > Set 'Create a new file when current file size reached:' to 1 MBytes.

Avoid a disconnection by communication idle timeout:

- > Right click on BD-4000-U connection.
- > Left click on 'Properties'.
- > Select tab 'Options'.
- > Set 'Idle time before hanging up:' to Never.
- > Leave dialog by clicking 'OK'.

Avoid a disconnection by connection idle timeout:

- > Open control panel by click on 'Start' -> 'Control panel'.
- > Select 'Internet Options'.
- > Select tab 'Connections'.

- > Select the BD-4000-U connection.
- > Click 'Settings'.
- > Click 'Advanced' in Dial-up settings.
- > Uncheck 'Disconnect when connection may not longer be used'.
- > Leave the dialog by click 'OK'.

Setup of a second Instance of ESDA

To setup a second instance of ESDA a different set of connection parameters are needed (here we call it profile) to avoid conflicts between the two instances. The connection for the second instance is according the installation instructions in the "Technical Manual for the MDB Interfaces BD-4000". The procedure is the same as for the first instance but with a different name, for example 'BD-4000-U2'.

Select a different profile

To select a specific profile for the second instance the command parameter '/Profile=1' is used. A simple solution is to use s shortcut and then adding the command parameter.

- Open the file explorer and right click ESDA.EXE
- Then choose "Create Shortcut" and place it on your desktop
- Then right click on the shortcut to get the dialog like in Fig. 4
- Append the command parameter '/Profile=1' in field Target:

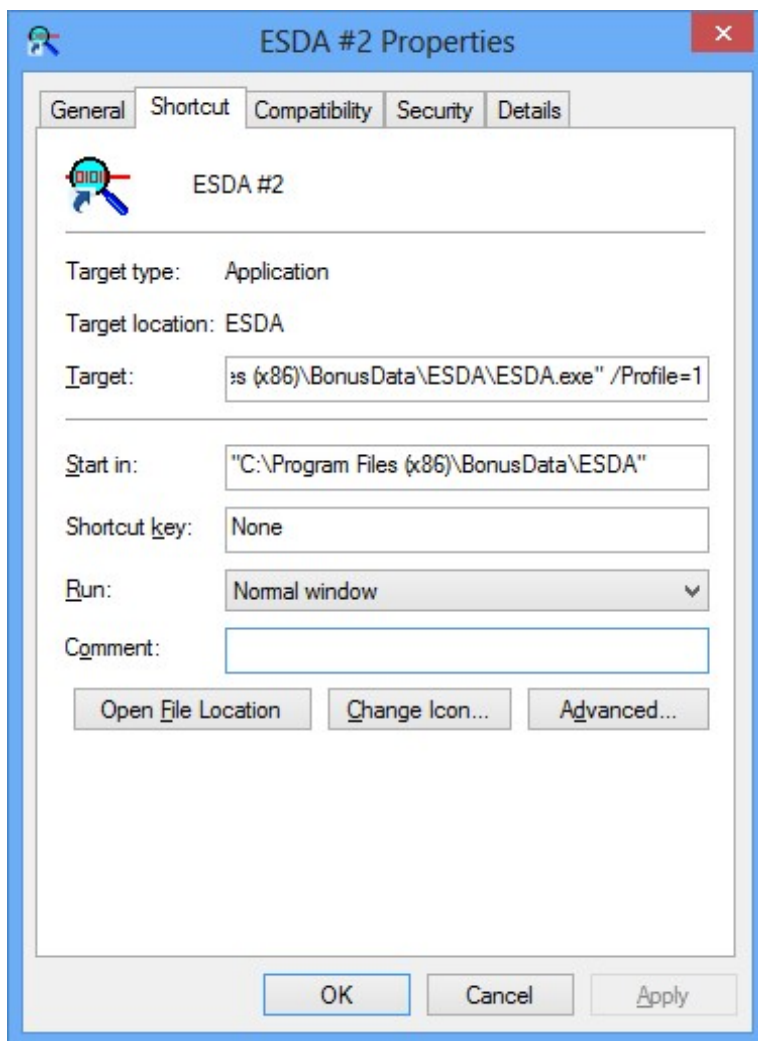


Fig. 6

To check the active profile run the ESDA instance:

- Click Menu -> Options -> Settings
- Select tab 'Application Settings...'

Here you see 'This instance uses profile: BonusData' for the first profile (Fig. 5) and 'This instance uses profile: BonusData_01' for the second profile (Fig. 6).

Setup a different path to acquisition file location for each instance.

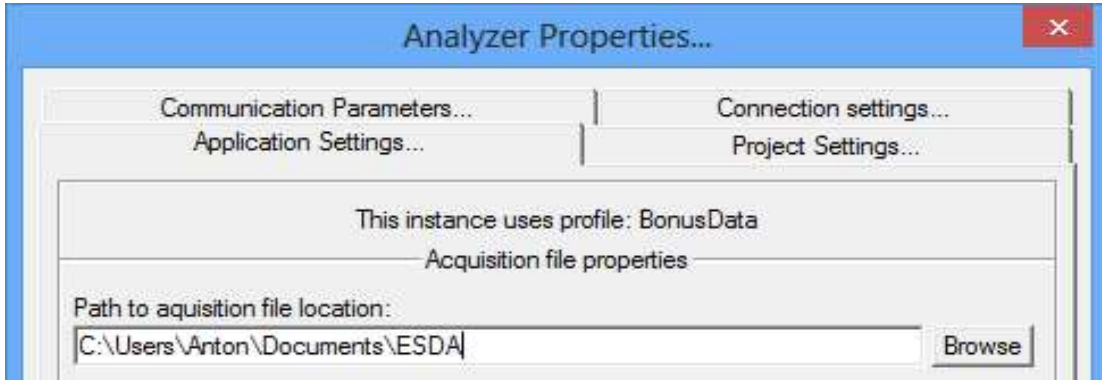


Fig. 7

Fig. 6

- Select the tab 'Connection settings...'

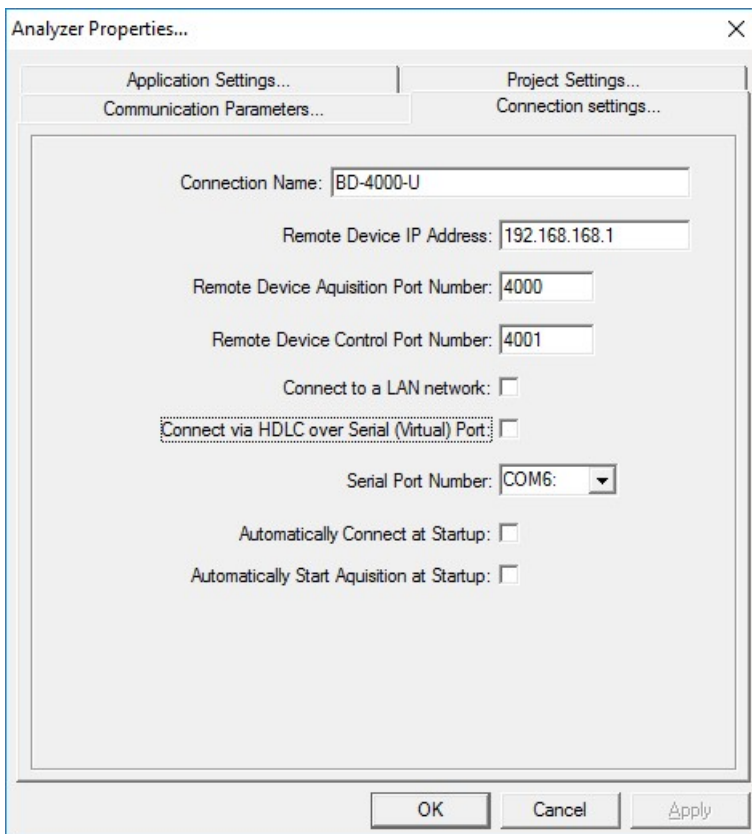


Fig. 8

Select the connection name of the second instance here. Also a different IP address and port numbers are required.

Important:

The IP address and port numbers must correspond with the settings of the BD-4000-x interface. For information how to change it refer to the "Technical Manual for the MDB Interfaces BD-4000".

Structure of the Analyzer file .ANL

The following description of the file structure is based on Microsoft Visual Studio 2012. The software application ESDA has been compiled with Microsoft Visual Studio 2012. The byte order is little endian e.g. LSB to MSB.

Byte 0 to 7 = Trailing zeros
 Byte 8 to 11 = Offset to start of acquisition data. Type long.
 Byte 12 to 15 = Text mark 'ESDA'.
 Byte 16 to 23 = Acquisition date and time. Type COleDateTime.
 Byte 24 to EOF = Acquired Data.

Note: If the analyzer file contains some comment then the comment text is placed from Byte 16 to offset.

Each acquired byte consists on 6 bytes in the analyzer file (.ANL) where the format is as follow:

Byte 0 = Status.
 Byte 1 = Acquired data byte.
 Byte 2 = Acquisition time in ticks (LSB).
 Byte 3 = Acquisition time in ticks.
 Byte 4 = Acquisition time in ticks.
 Byte 5 = Acquisition time in ticks (MSB).

The time stamp is always 4 bytes and the status bits are ignored.

Note: One tick equals 13.028 microseconds.

Sample contents of a acquired analyzer file:

Offset	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00000000	00	00	00	00	00	00	00	00	18	00	00	00	45	53	44	41
00000010	61	0B	B6	20	4B	39	E4	40	41	08	62	1E	07	00	02	08
00000020	BA	1E	07	00	23	08	AA	32	07	00	02	08	02	33	07	00
00000030	23	08	D3	46	07	00	02	08	2B	47	07	00	23	30	9B	55
00000040	07	00	02	30	F3	55	07	00	23	30	4B	64	07	00	02	30
00000050	A3	64	07	00	41	30	E3	72	07	00	02	30	3B	73	07	00
00000060	23	10	64	81	07	00	02	10	BC	81	07	00	A3	00	B8	83
00000070	07	00	23	12	94	90	07	00	02	12	EC	90	07	00	82	00
00000080	9A	91	07	00	83	00	F2	91	07	00	02	00	64	92	07	00
00000090	41	11	3F	30	08	00	02	00	97	30	08	00	02	02	F7	30
000000A0	08	00	02	10												

The first acquired byte is at offset 0x00000018 with data: 0x41, 0x08, 0x62, 0x1E, 0x07, 0x00.

Byte 0 = Status with 0x41 = 3 byte time stamp and relative time.
 Byte 1 = Acquired data byte 0x08.
 Byte 2 to 5 = Time stamp equals 0x00071E62.

To calculate the correct time multiply it with tick time 13.028.

Hex 0x00071E62 equals 466530 in decimal.

Real time = time stamp * tick time resulting in:

$466530 * 0.000013028 = 6.07795284$ milliseconds.

For additional information on the status byte encoding see 'Technical Manual for the MDB Interfaces BD-4000-U / BD-4000-S / BD-4000-E'.

Document history:

Modified:	Version:	Description:
20.08.2012	4.00	Preliminary draft.
15.07.2013	4.01	Added chapter 'Setup of a second Instance of ESDA'.
08.07.2016	4.11	Added several chapters.
02.02.2018	4.15	Added chapter 'Structure of the analyzer file.'

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