Technical Manual for ESDA Software Application

Enhanced Serial Data Analyzer

Document Version 5.02

29-04-2024

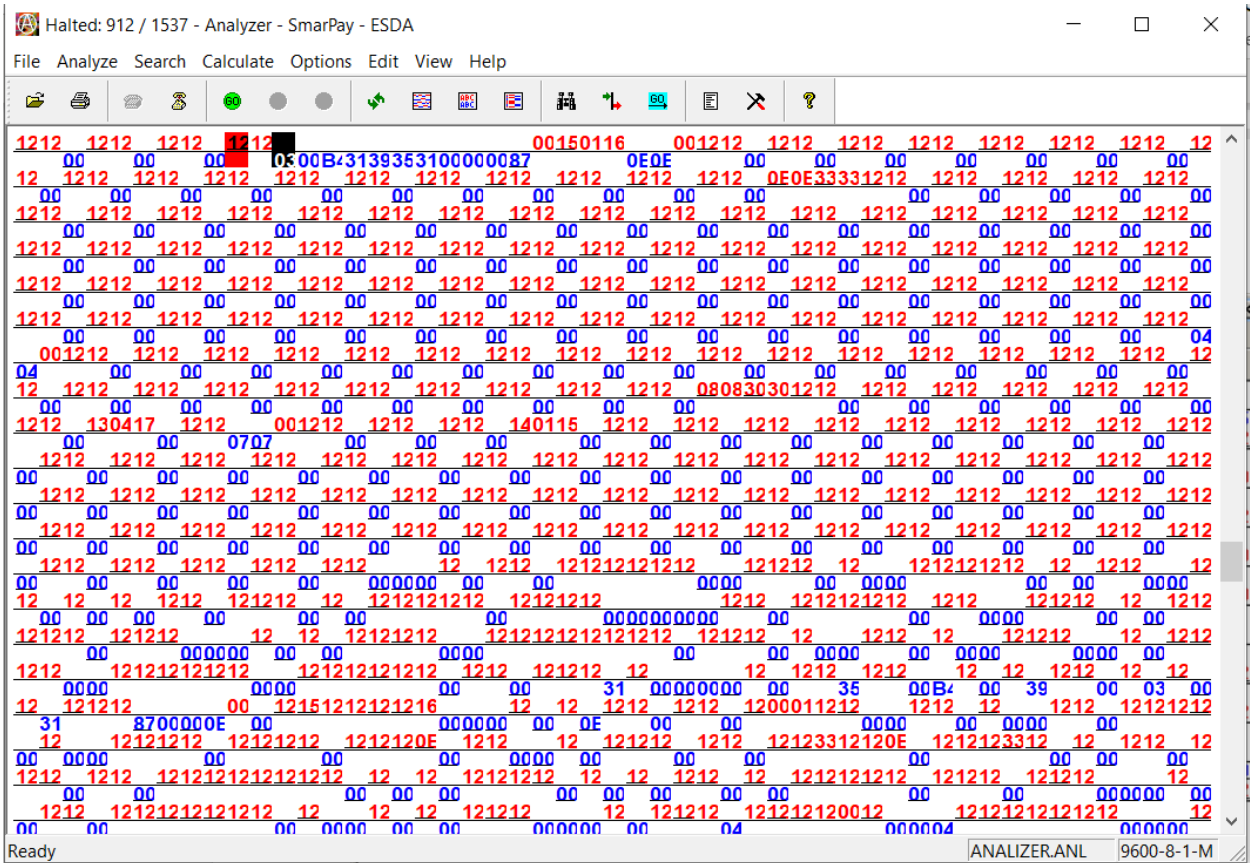


Fig. 1

Main window of ESDA v5

Table of Contents

Copyright (C) 2021 by Schulz Marketing & Sales, Boden 5, CH-6376 Emmetten

1. Introduction

The software application ESDA (Enhanced Serial Data Analyzer) is mainly focused on serial data protocols of vending machines. It is an extreme helpful 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 is needed.
- It is also used to visualize and to analyze previously recorded analyzer data files.

2. Terms of usage

The ESDA software is distributed with a company licence with unlimited installations within the same company.

3. Software Installation

ESDA v5 has a new installer.
The installer “Install_ESDA_V5_00.exe” can be executed on any Win 10+ computer and all settings will be configured automatically during setup. The user can modify the predefined settings during setup, if required.

Copyright (C) 2021 by Schulz Marketing & Sales, Boden 5, CH-6376 Emmetten

4. *ESDA Configuration*

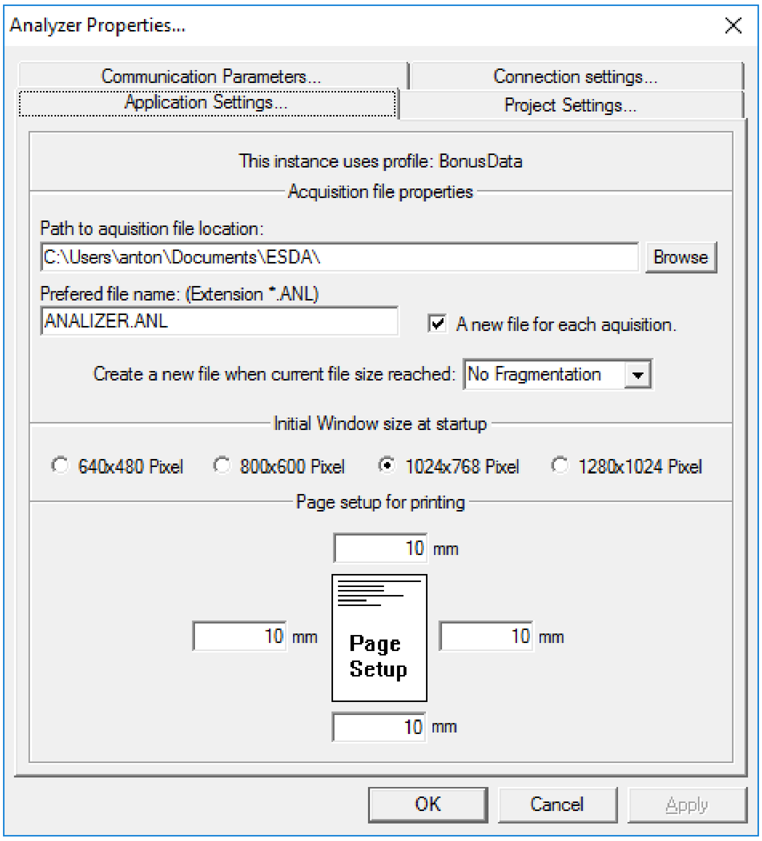


Fig. 2

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.

Copyright (C) 2021 by Schulz Marketing & Sales, Boden 5, CH-6376 Emmetten

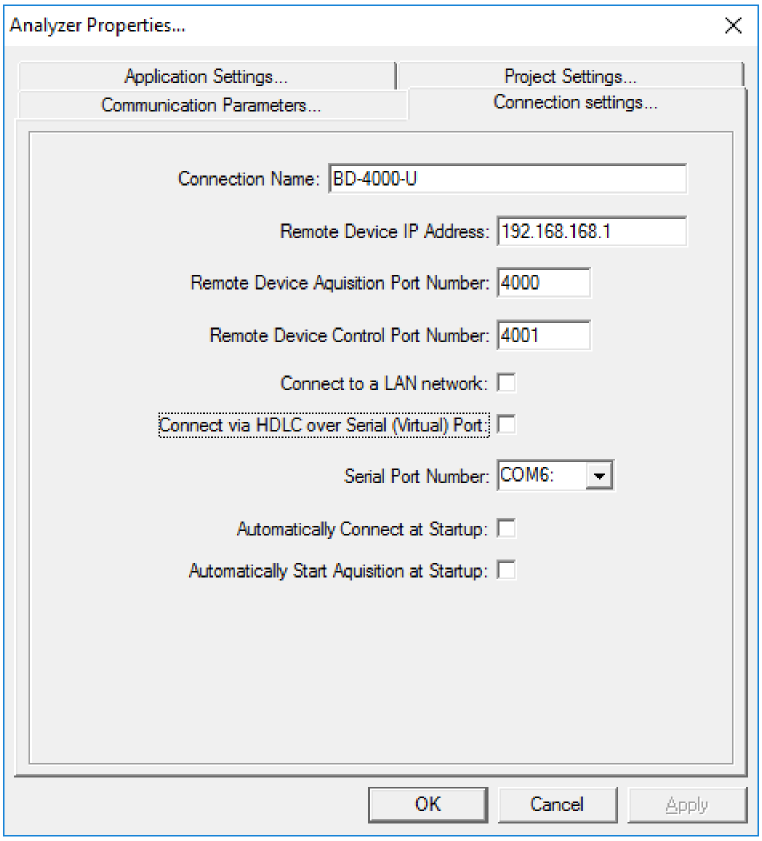


Fig. 3

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.

Copyright (C) 2021 by Schulz Marketing & Sales, Boden 5, CH-6376 Emmetten

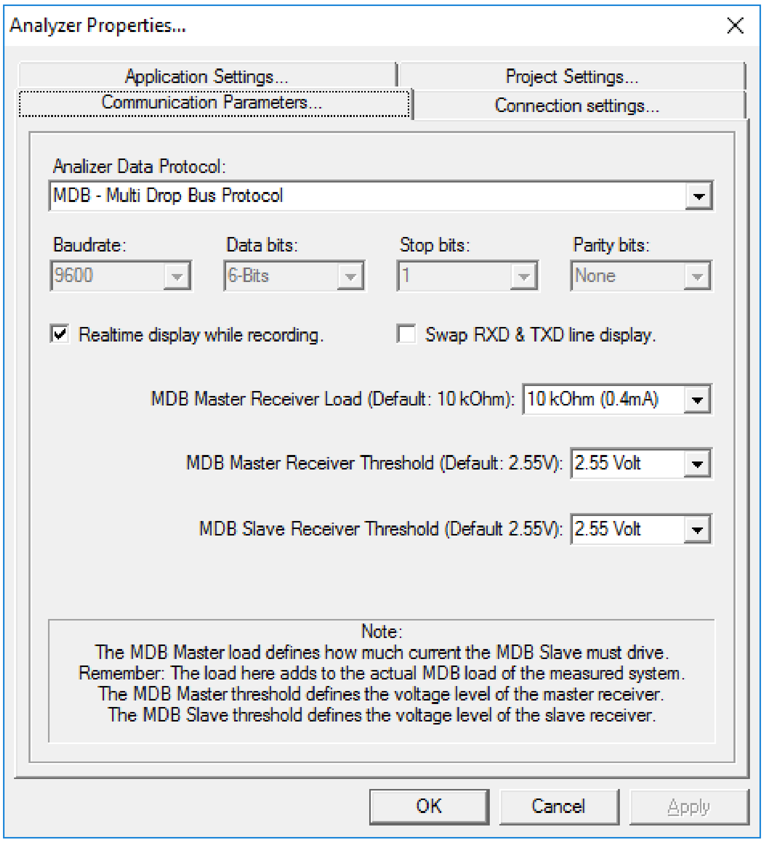


Fig. 4

Communication Parameters

Select tab “Communication Parameters...”

- Please select the protocol for the acquisition. If RS-232 is selected also the Baud Rate, 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.

Copyright (C) 2021 by Schulz Marketing & Sales, Boden 5, CH-6376 Emmetten

5. Using the ESDA Analyzer Application

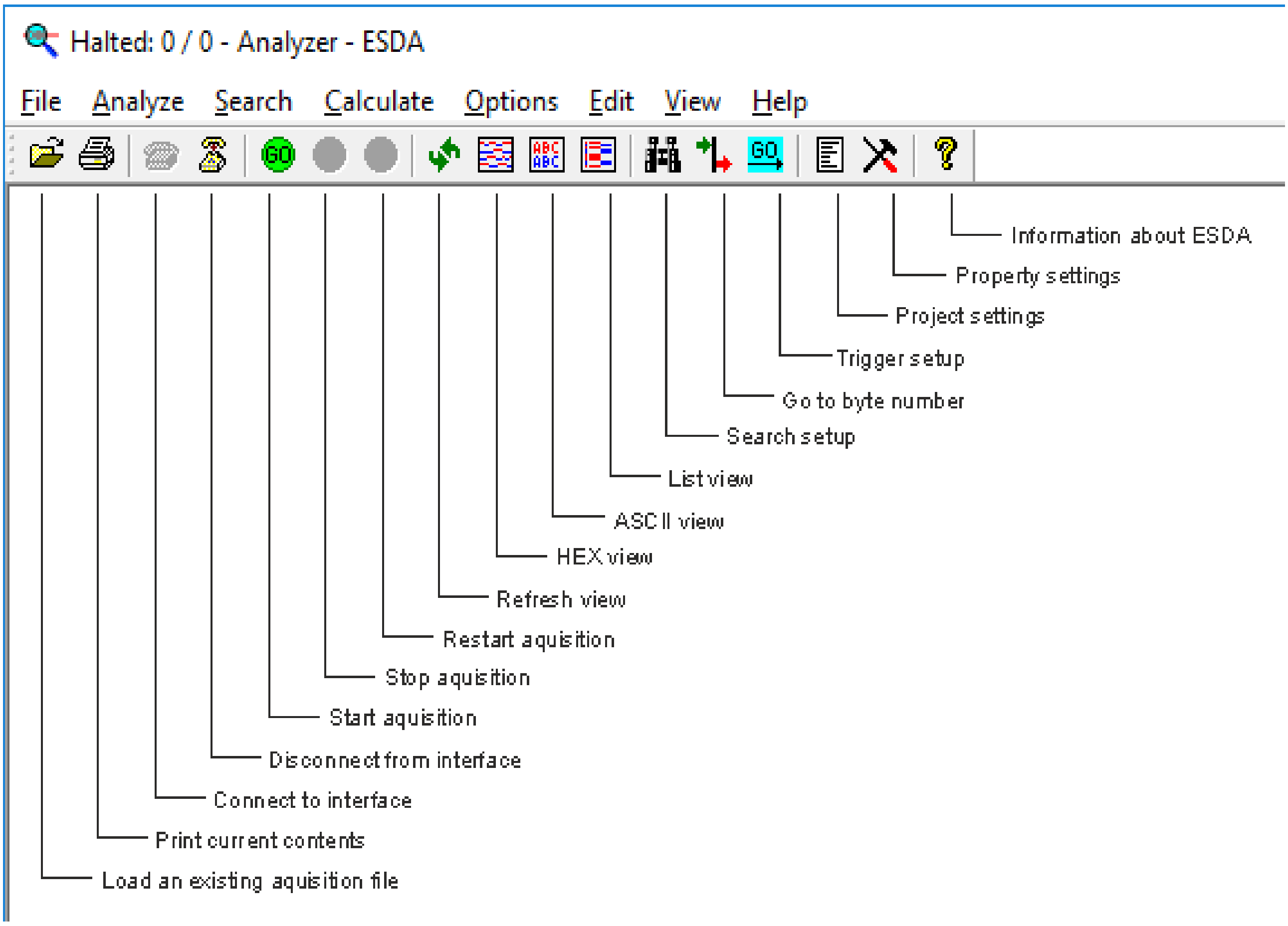


Fig. 5

6. 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.

Copyright (C) 2021 by Schulz Marketing & Sales, Boden 5, CH-6376 Emmetten

-> Click 'Settings'.
-> Click 'Advanced' in Dial-up settings.
-> Uncheck 'Disconnect when connection may no longer be used'.
-> Leave the dialog by click 'OK'.

7. *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:

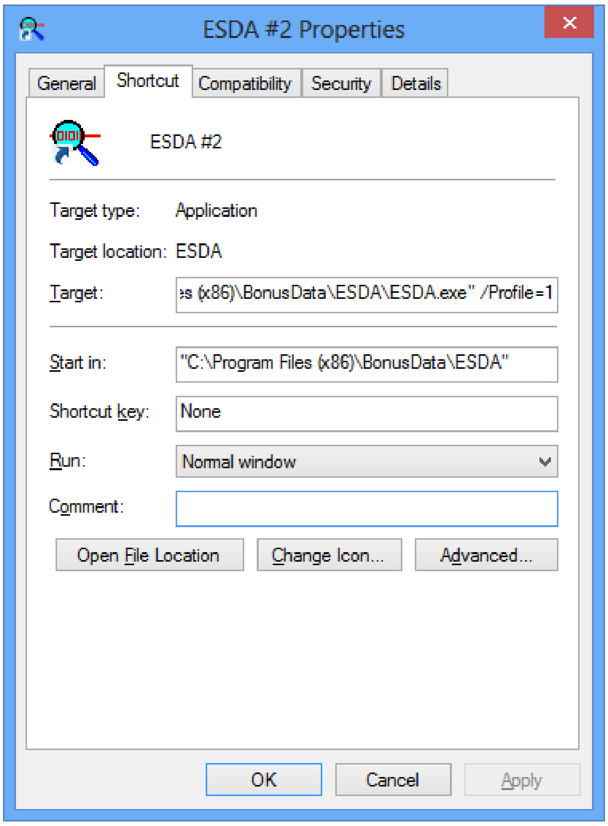


Fig. 6

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.

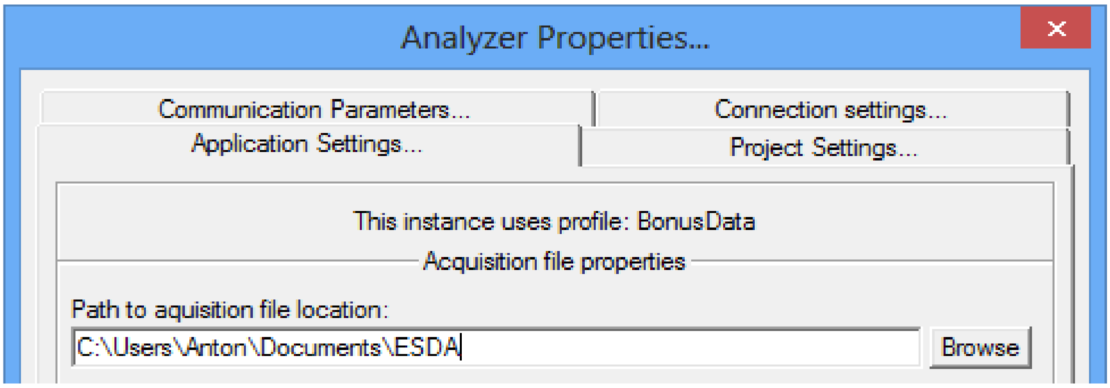


Fig. 7

- Select the tab 'Connection settings...'

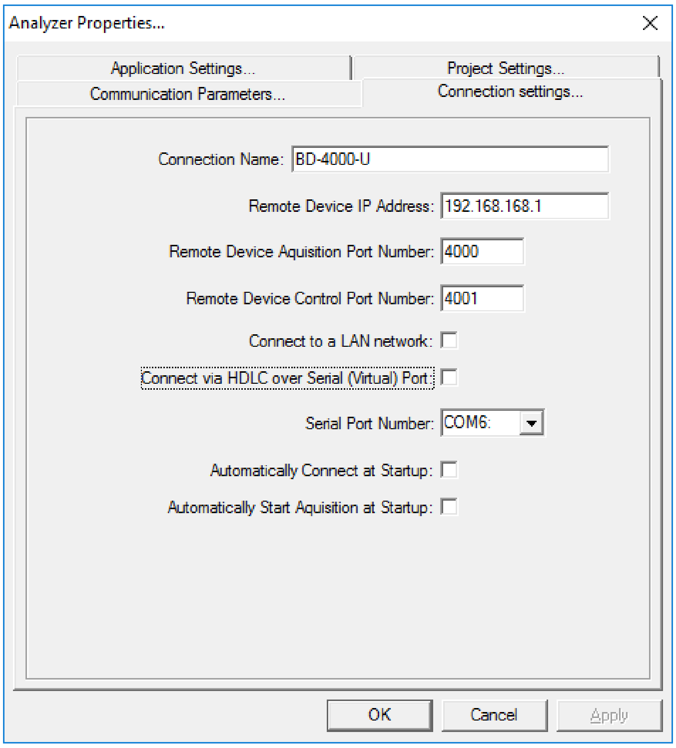


Fig. 8

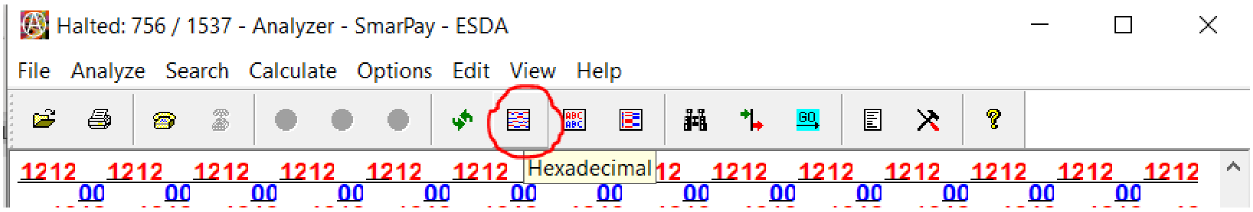
Select the connection name of the second instance here. Also a different IP address and port numbers are required.

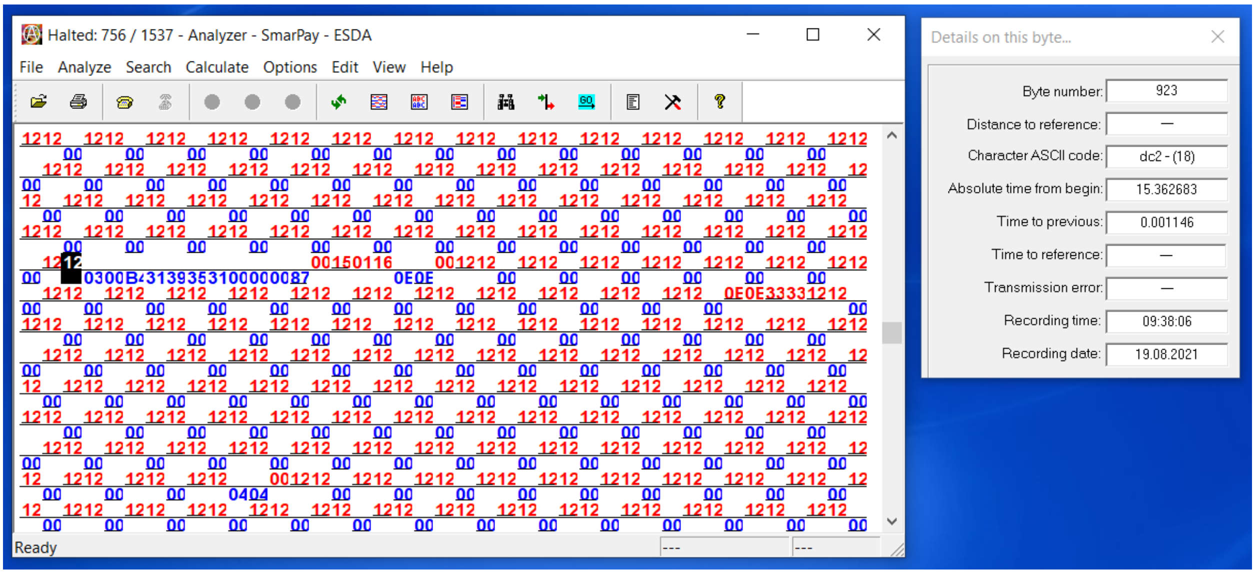
Important:
The IP address and port numbers must correspond with the settings of the BD-4000-x interface. For information how to change it refer to the "Technical Manual for the MDB Interfaces BD-4000".

Copyright (C) 2021 by Schulz Marketing & Sales, Boden 5, CH-6376 Emmetten

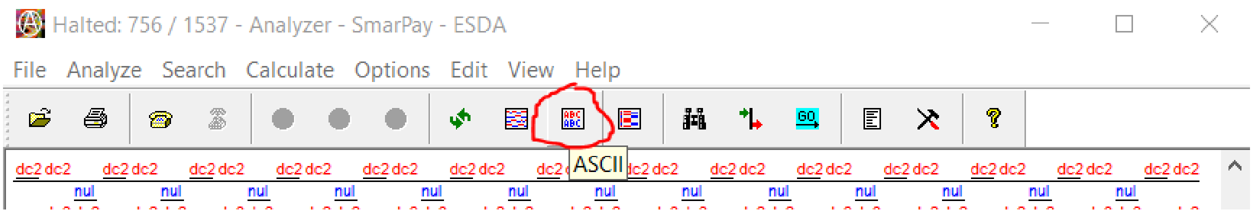
8. *Examples with Different Data Views*

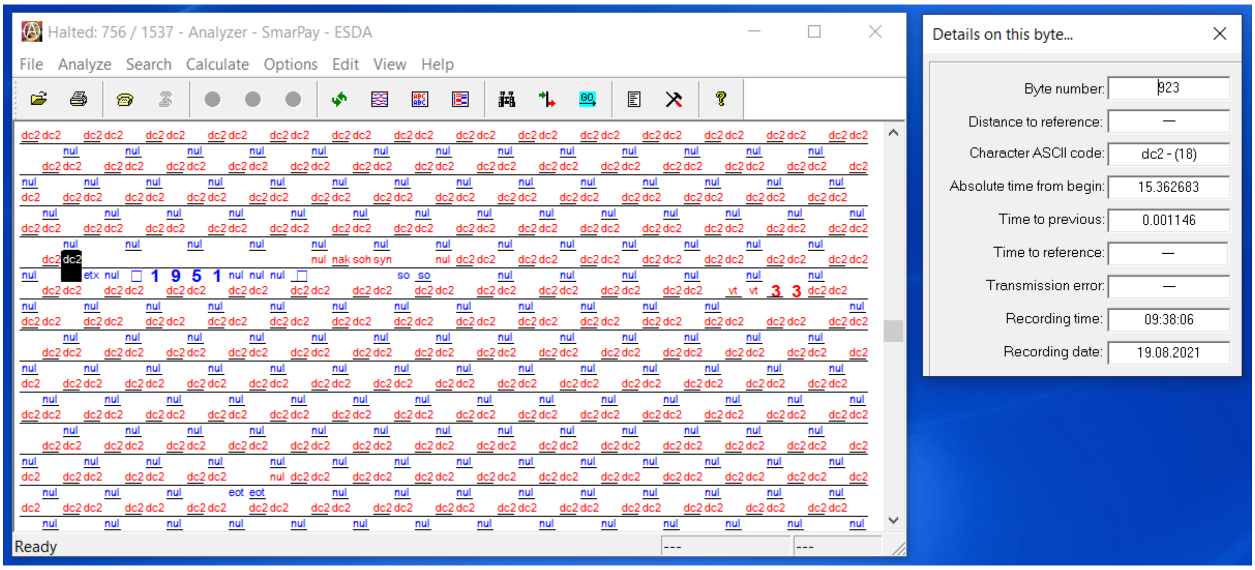
Display **Hexadecimal** when selecting byte 923



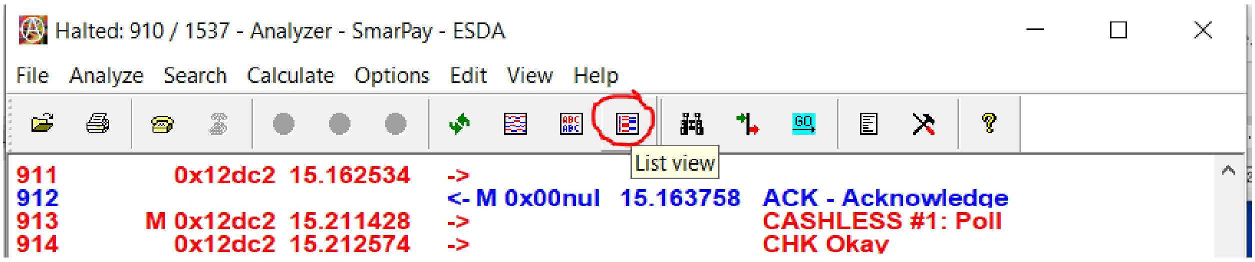


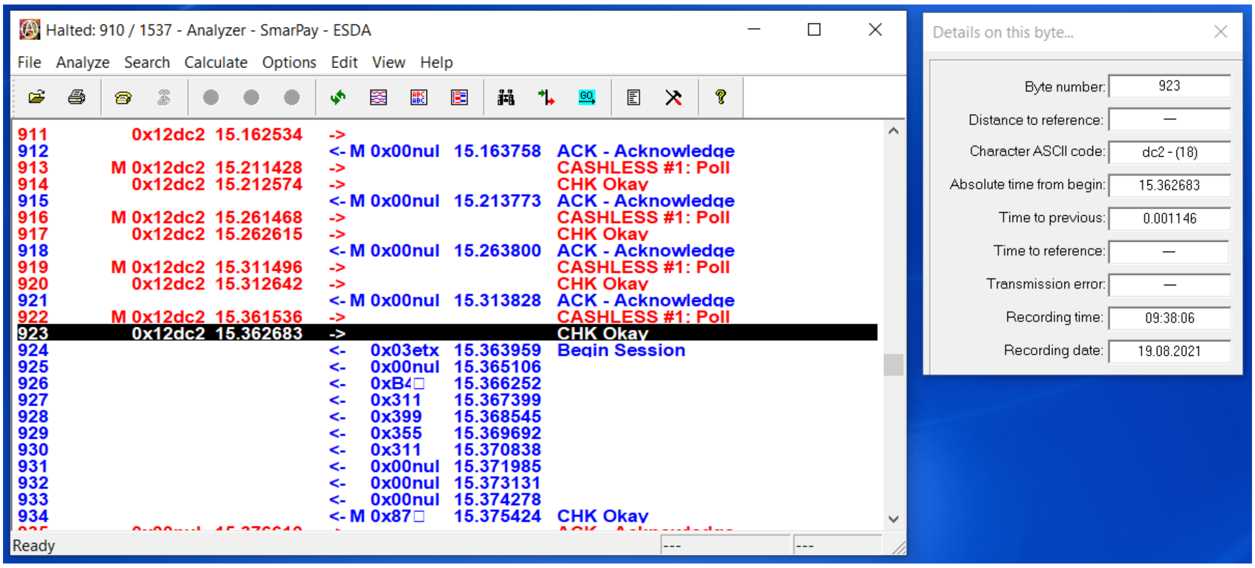
Display **ASCII** when selecting byte 923





Display **List** when selecting byte 923





Copyright (C) 2021 by Schulz Marketing & Sales, Boden 5, CH-6376 Emmetten

9. 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).

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'.

Copyright (C) 2021 by Schulz Marketing & Sales, Boden 5, CH-6376 Emmetten

10. 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.
19-AUG-2021	5.00	New release v5.00
10-DEC-2022	5.01	New screenshots with different data views
29-APR-2024	5.02	Typos

11. Contact BonusData

Schulz Marketing & Sales
Bonusdata Solutions
Boden 5
CH – 6376 Emmetten
Switzerland

Mobile: +41 79 803 10 10

E-Mail: team@bonusdata.net
WWW: http://www.bonusdata.net

Copyright (C) 2021 by Schulz Marketing & Sales, Boden 5, CH-6376 Emmetten