DC DRIVES - INFORMATION

FDNA-01 and DCS880 drive family

Modification of EDS file for DeviceNet communication

Purpose

The FDNA-01 field adapter is providing a DeviceNet interface for DCS880. To establish the communication between the DCS880 and the control system an EDS (**E**lectronic **D**ata**s**heet) file is used.

The EDS file is containing all relevant information to setup the communication channel. It can be downloaded from ABB Library (3ADW000742) or it can be created by using the Drive composer pro.

For each FDNA-01 firmware version a dedicated EDS file must be used. The FDNA-01 adapter broadcasts (according to ODVA-standard) the information necessary for communication. This broadcasted information must match with the stored information in the EDS-file which is used for the control structure. In case the information is matching, it is accepted by the DeviceNet and the communication can be established.

If the EDS file is loaded directly from the ABB Library and the FDNA-01 is using firmware 2.035 no further action needs to be taken.

In case the FDNA-01 firmware in not equal to 2.035 or the EDS file is created by using the Drive composer pro the FDNA-01 will reject the loaded EDS file due to a mismatch of the stored information.

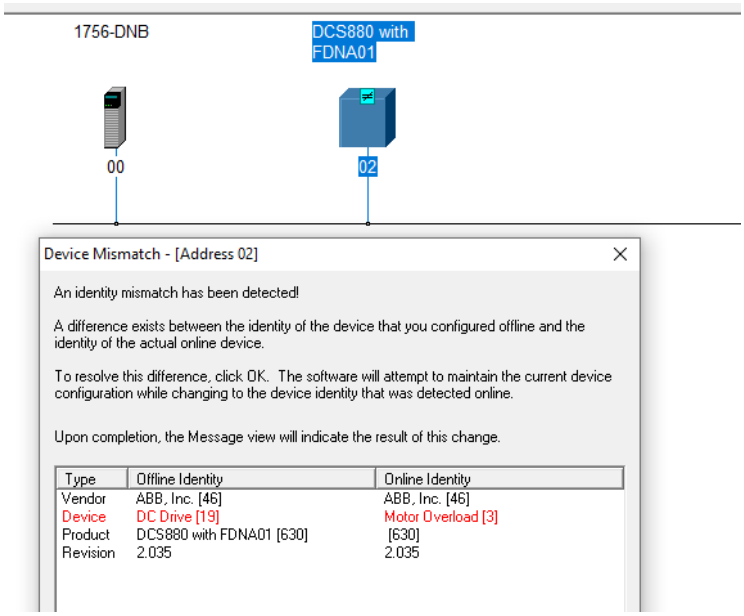
This document shows the steps to be executed to make the FDNA-01 EDS files compatible with the DCS880 in case of DeviceNet communication.

Details

The necessary changes must be done within the “[Device]”- section of the EDS file. The crucial information is stored in the following EDS file tags:

- “ProdType”: product type identifier
- “MajRev”: major revision (firmware)
- “MinRev”: minor revision (firmware)

During EDS verification process the FDNA-01 adapter is comparing the DCS880 product type identifier stored in the adapter firmware (motor overload device [3]) against the product type identifier mentioned inside the EDS file (DC Drive [19]). In the same way the firmware is verified. In case of a mismatch (e.g. product type identifier) the following error message is shown:



DCS880 with FDNA-01 displayed as Motor Overload

A mismatch leads always to communication problems. To resolve this issue, a manual adaption of the EDS file is required.

There are two options to get an EDS file for the DeviceNet adapter:

EDS File - download and modify

In this scenario the EDS file for FDNA-01 firmware version 2.035 is loaded from the ABB Library (3ADW000742). If done it could be required to change the “MajRev” and “MinRev” values in the EDS file in case any other than “2.035 “for FDNA-01 is used (e.g. for earlier firmware versions).

EDS File - create and modify

In this scenario the EDS file is created by using the Drive composer pro. If done there are changes only for the “ProdType” required. The FDNA firmware (“MajRev” and “MinRev”) is already properly prepared during the EDS file creation process.

EDS file creation process

The following chapter is giving a step by step procedure to prepare a proper EDS file.

EDS File - download and modify

The EDS file for the latest firmware version 2.035 can be downloaded directly from the ABB library (3ADW000742). The file contains the modified values for “ProdType” =3; “MajRev” =2 and “MinRev” =35.

If an earlier firmware version is used the “MajRev” and “MinRev” values need to be modified according to the firmware version of the FDNA-01 adapter. Be sure to use firmware version 2.05 of the adapter firmware or later for proper fieldbus communication setup results. For custom firmware or special application firmware, the previous outline steps will have to be done to get communications.

The “MajRev”, “MinRev” values must be adapted according to the fieldbus adapter. The used firmware of the adapter needs to be filled into the “MajRev”, “MinRev” (see example below). The firmware of the FDNA-01 adapter can be found on the nameplate on the back of the hardware of the FDNA-01 fieldbus adapter.

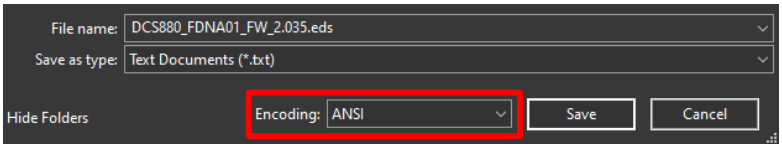
The firmware of the FDNA-01 adapter also can be read via Drive composer pro. The regarding process is described in chapter “Drive composer pro – show FDNA-01 firmware” of this document.

```
[Device]
    VendCode=46;
    VendName="ABB Automation Inc.";
    ProdType=3;                $ Product Type
    ProdTypeStr="DC Drive";
    ProdCode=630;                $ Product Code
    MajRev=2;           $ Major Rev
    MinRev=05;           $ Minor Rev
    ProdName="DCS880 with FDNA01";
    Catalog="DCS880";
    Icon="ABBDCS880.ico";
```

```
[Device]
    VendCode=46;
    VendName="ABB Automation Inc.";
    ProdType=3;                $ Product Type
    ProdTypeStr="DC Drive";
    ProdCode=630;                $ Product Code
    MajRev=2;           $ Major Rev
    MinRev=35;           $ Minor Rev
    ProdName="DCS880 with FDNA01";
    Catalog="DCS880";
    Icon="ABBDCS880.ico";
```

EDS-file downloaded (left modification to earlier firmware version 2.05 / right with latest firmware version 2.035)

Note: To be able to run the EDS file properly, the file format needs to be ANSI format.

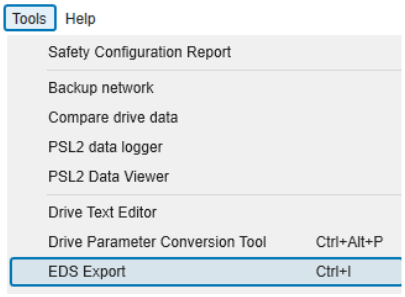


Save as – dialog – encoding type ANS

After completing the modification, the EDS file can be used for the FDNA-01 adapter with the DCS880 drive system.

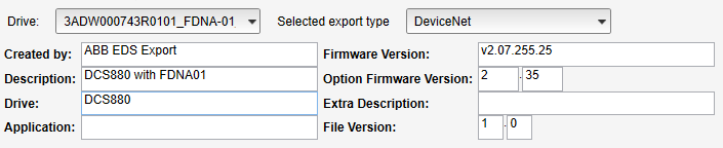
EDS File – create and modify

To generate an EDS file with Drive composer pro, select the Tab “Tool” and use the “EDS Export Tool” (shown in the image below) or press “Ctrl+I”.



Open EDS-file Drive Composer Pro EDS-Export-Tool

The correct export type needs to be selected, in this case “DeviceNet”. The displayed “firmware version” shows the currently used firmware of the DCS880 drive. The “option firmware version” is corresponding to the firmware version of the FDNA-01 adapter, displayed on the nameplate on the back of the adapter. The used firmware of the adapter needs to be filled into the “Option Firmware Version”. The firmware of the FDNA-01 adapter also can be read via Drive Composer Pro. The regarding process is described in chapter “Drive composer pro – show FDNA-01 firmware” of this document.



Settings to generate EDS file by Drive Composer Pro EDS-Export-Tool (example firmware version 2.035)

To create the EDS file, press the “Export”- button at the lower end of the Drive composer pro Export tool and follow the wizard instructions. The “ProdType” is inserted by Drive composer pro automatically and needs to be changed afterwards.

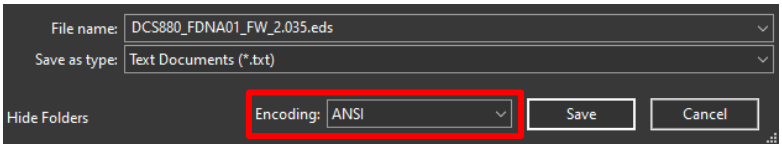
The necessary changes must be done within the “[Device]”- section of the EDS file (see image below). The “ProdType” and the “MajRev”, “MinRev” values must be adapted according to the fieldbus adapter. The modified “ProdType”- value must be changed from (19) to (3) to match the internal broadcasted product type from the FDNA-01 adapter.

```
[Device]
    VendCode=46;
    VendName="ABB Automation Inc.";
    ProdType=19;              $ Product Type
    ProdTypeStr="DC Drive";
    ProdCode=630;              $ Product Code
    MajRev=2;          $ Major Rev
    MinRev=35;          $ Minor Rev
    ProdName="DCS880 with FDNA01";
    Catalog="DCS880";
    Icon="ABBDCS880.ico";
```

```
[Device]
    VendCode=46;
    VendName="ABB Automation Inc.";
    ProdType=3;               $ Product Type
    ProdTypeStr="DC Drive";
    ProdCode=630;              $ Product Code
    MajRev=2;          $ Major Rev
    MinRev=35;          $ Minor Rev
    ProdName="DCS880 with FDNA01";
    Catalog="DCS880";
    Icon="ABBDCS880.ico";
```

EDS-file generated with Drive Composer Pro (left created “ProdTyp” =19 by Drive Composer Pro/ right modified “ProdTyp” =3)

Note: To be able to run the EDS file properly, the file format needs to be ANSI format.



Save as – dialog – encoding type ANS

After completing the modification, the EDS file can be used for the FDNA-01 adapter with the DCS880 drive system.

Drive composer pro – show FDNA-01 firmware

This step needs to be done in case the firmware of the FDNA-01 adapter is not known.

To be able to see the broadcasted firmware of the fieldbus-adapter Drive composer pro can be used. The FDNA-01 needs to be installed and configured in one of the free slots of the DCS880.

Afterwards it is required to connect a PC to the DCS880 via USB-cable and to start Drive composer pro. The parameters of the drive can be viewed online. To show the revision of the firmware select the parameter group of the configured slot (check "**50. Fieldbus adapter (FBA)** and e. g. **51.FBA A settings"**, since in this example the FNDA-01 adapter is configured on "Slot 1" as "FBA A"). The parameter **"51.33 – FBA A appl SW ver"** (or for FBA B – 54.33) contains the information about the firmware version of the fieldbus adapter.

The firmware version of the adapter is shown in hexadecimal:

Parameter 51.33 shown in the Drive Composer Pro online parameter set of the DCS880 drive

To calculate the firmware, e. g. 0x0223 the numbers must be separated according to the "DCS880 – Firmware Manual" in 02 and 23 and then converted into a decimal number:

$$02 = 2 \cdot 1 + 0 \cdot 16 = 2$$

$$23 = 3 \cdot 1 + 2 \cdot 16 = 35$$

the firmware's major revision is = 2 and the firmware's minor revision is = 35, displayed in the parameter of the EDS file under "[Device]" in "MajRev" and "MinRev". These values must be taken over into the EDS file as described in chapter "Modification of the EDS file" of this document.

Manuals and technical information

- EDS file – firmware 2.035 (download-link) 3ADW000742
- DCS880 Firmware Manual 3ADW000474
- FDNA-01 Adapter Module User Manual 3AFE68573360
- DCS880 Fieldbus options and parameter sets 3ADW000586

DCS family

DCS550-S modules
The compact drive for machinery application

20 ... 1,000 A_{DC}
0 ... 610 V_{DC}
230 ... 525 V_{AC}
IP00

- Compact
- Robust design
- Adaptive and winder program
- High field exciter current

DCS880 modules
For safe productivity

20 ... 5,200 A_{DC}
0 ... 1,600 V_{DC}
230 ... 1,000 V_{AC}
IP00

- Safe torque off (STO) built in as standard
- Compact and robust
- Single drives, 20 A to 5,200 A, up to 1,600 V_{DC}
- IEC 61131 programmable
- Intuitive control panel and PC tool with USB connection and start up assistant
- Wide range of options to serve any DC motor application

DCS880-A enclosed converters
Complete drive solutions

20 ... 20,000 A_{DC}
0 ... 1,500 V_{DC}
230 ... 1,200 V_{AC}
IP21 – IP54

- Individually adaptable to customer requirements
- User-defined accessories like external PLC or automation systems can be included
- High power solutions in 6- and 12-pulse up to 20,000 A, 1,500 V
- In accordance to usual standards
- Individually factory load tested
- Detailed documentation

DCT880 modules
Thyristor controller

20 ... 4,200 A_{AC}
110 ... 990 V_{AC}
IP00

- Precise power control in industrial heating applications
- Two or three phase devices
- Power optimizer for peak load reduction
- Built on ABB's all-compatible drives architecture
- Intuitive control panel and PC tool with USB connection and start up assistant
- Application control programs and drive application programming with IEC 61131 programming

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