**Guide to LDF to DBC conversion**

In short, to convert an LDF file to DBC, you'll go through the following steps for each LIN signal:

* Get the LIN signal name and length from the Signals section
* Get the LIN signal message name, ID from the Frames section
* Get the LIN signal bit start from the Frames section
* Go to the LDF Signal\_encoding\_types section and find "Enc\_[signal\_name]"
* Get remaining info via the syntax: 'physical\_value, [min], [max], [scale], [offset], "[unit]" ;'

If you're looking to create your own LIN DBC file, we suggest you review our [DBC file introduction](https://www.csselectronics.com/pages/can-dbc-file-database-intro) for details on the syntax, as well as DBC editor tools like our [online DBC editor](https://www.csselectronics.com/pages/dbc-editor-can-bus-database).

**Minor pitfalls**

The conversion from LDF to DBC is not entirely 1-to-1. In particular, note how the LIN signal BatteryVoltage has 2 entries for the physical value, one for the decimal range 0 to 32000 and one for 32001 to 65533. In this specific case, only the data in the first range are valid (the unit is "invalid" for the 2nd range). However, in some cases there can be multiple ranges that require separate scaling factors - something which is not possible to handle in the DBC file format. In this case, you will need to choose one of the ranges and e.g. treat results outside this range as invalid.

This is also the simplest way to handle the LIN signal 'logical\_value' entries in the Signal\_encoding\_types section. These typically reflect how specific values of the LIN signal should be treated (e.g. as errors). One way of treating these entries would be to ignore them and possibly exclude them as part of your data post processing - similar to how FF byte values in CAN bus are often excluded as they represent invalid or N/A data.

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// Description: Example LIN description file (CSS Electronics LIN bus intro)

// Created: 11 December 2020 09:00:00

// Author: CSS Electronics

//

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LIN\_description\_file;

LIN\_protocol\_version = "2.0";

LIN\_language\_version = "2.0";

LIN\_speed = 19.2 kbps;

Nodes {

Master: SG, 10 ms, 0 ms ;

Slaves: IBS ;

}

Signals {

BatteryVoltage: 16, 65535, IBS, SG ;

}

Frames {

IBS\_DataAcquisition: 33, IBS, 8 {

BatteryCurrent, 0 ;

BatteryVoltage, 16 ;

CentreTapVoltage, 32 ;

InChipTemperature, 48 ;

CurrentRangeMeas, 57 ;

}

}

Signal\_encoding\_types {

Enc\_BatteryVoltage {

physical\_value, 0, 32000, 0.001, 0, "Volt" ;

physical\_value, 32001, 65533, 1, 0, "invalid" ;

logical\_value, 65534, "BatteryVoltage\_Error" ;

logical\_value, 65535, "LIN\_INIT" ;

}

}

Signal\_representation {

Enc\_BatteryVoltage: BatteryVoltage ;

}

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Description: Example CAN DBC \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

VERSION ""

NS\_ :

NS\_DESC\_

CM\_

BA\_DEF\_

BA\_

VAL\_

CAT\_DEF\_

CAT\_

FILTER

BA\_DEF\_DEF\_

EV\_DATA\_

ENVVAR\_DATA\_

SGTYPE\_

SGTYPE\_VAL\_

BA\_DEF\_SGTYPE\_

BA\_SGTYPE\_

SIG\_TYPE\_REF\_

VAL\_TABLE\_

SIG\_GROUP\_

SIG\_VALTYPE\_

SIGTYPE\_VALTYPE\_

BO\_TX\_BU\_

BA\_DEF\_REL\_

BA\_REL\_

BA\_DEF\_DEF\_REL\_

BU\_SG\_REL\_

BU\_EV\_REL\_

BU\_BO\_REL\_

SG\_MUL\_VAL\_

BS\_:

BU\_:

BO\_ 33 IBS\_DataAcquisition: 8 Vector\_\_XXX

SG\_ BatteryVoltage : 16|16@1+ (0.001,0) [0|32] "Volt" Vector\_\_XXX

BA\_DEF\_ "LinProtocolType" ENUM "LDF","DBC";

BA\_DEF\_ "BusType" STRING ;

BA\_DEF\_ "LinSpeedDefinition" FLOAT 0.2 20;

BA\_DEF\_ BU\_ "LinMaster" ENUM "No","Yes";

BA\_DEF\_ "LinTimeBase" FLOAT 1 100;

BA\_DEF\_ "LinJitter" FLOAT 0 10;

BA\_DEF\_ BU\_ "LinSlave" ENUM "No","Yes";

BA\_DEF\_ SG\_ "LinInitValue" INT 0 65535;

BA\_DEF\_DEF\_ "LinProtocolType" "DBC";

BA\_DEF\_DEF\_ "BusType" "";

BA\_ "BusType" "LIN";