
ecdtools Documentation

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CHAPTER 1

About

Electronic circuit design in Python 3.

- **IBIS** parsing. Currently only a subset of the **IBIS 6.1** specification is supported.

Project homepage: <https://github.com/erimoq/ecdttools>

Documentation: <http://ecdttools.readthedocs.org/en/latest>

CHAPTER 2

Installation

```
pip install ecdtools
```


CHAPTER 3

Example usage

In this example we load an IBS-file and access some of its content.

```
>>> from pprint import pprint
>>> import ecdtools
>>> ibs_file = ecdtools.ibis.load_file('tests/files/ibis/pybis/bushold.ibs')
>>> model = ibs_file.get_model_by_name('TOP_MODEL_BUS_HOLD')
>>> model.model_type
'Input'
>>> pprint(model.gnd_clamp)
[('-2.0000e+00', '-6.158e+17', 'NA', 'NA'),
 ('-1.9000e+00', '-1.697e+16', 'NA', 'NA'),
 ('-1.8000e+00', '-4.679e+14', 'NA', 'NA'),
 ('-1.7000e+00', '-1.290e+13', 'NA', 'NA'),
 ('-1.6000e+00', '-3.556e+11', 'NA', 'NA'),
 ('-1.5000e+00', '-9.802e+09', 'NA', 'NA'),
 ('-1.4000e+00', '-2.702e+08', 'NA', 'NA'),
 ('-1.3000e+00', '-7.449e+06', 'NA', 'NA'),
 ('-1.2000e+00', '-2.053e+05', 'NA', 'NA'),
 ('-1.1000e+00', '-5.660e+03', 'NA', 'NA'),
 ('-1.0000e+00', '-1.560e+02', 'NA', 'NA'),
 ('-9.0000e-01', '-4.308e+00', 'NA', 'NA'),
 ('-8.0000e-01', '-1.221e-01', 'NA', 'NA'),
 ('-7.0000e-01', '-4.315e-03', 'NA', 'NA'),
 ('-6.0000e-01', '-1.715e-04', 'NA', 'NA'),
 ('-5.0000e-01', '-4.959e-06', 'NA', 'NA'),
 ('-4.0000e-01', '-1.373e-07', 'NA', 'NA'),
 ('-3.0000e-01', '-4.075e-09', 'NA', 'NA'),
 ('-2.0000e-01', '-3.044e-10', 'NA', 'NA'),
 ('-1.0000e-01', '-1.030e-10', 'NA', 'NA'),
 ('0.', '0', 'NA', 'NA'),
 ('5', '0', 'NA', 'NA')]
```

Alternatively, with `transform=True`, the same input as above gives:

```
>>> from pprint import pprint
>>> import ecdtools
>>> ibs_file = ecdtools.ibis.load_file('tests/files/ibis/pybis/bushold.ibs',
                                     transform=True)
>>> model = ibs_file.get_model_by_name('TOP_MODEL_BUS_HOLD')
>>> model.model_type
'Input'
>>> pprint(model.gnd_clamp)
[(Decimal('-2.0000'), Decimal('-6.158E+17'), None, None),
 (Decimal('-1.9000'), Decimal('-1.697E+16'), None, None),
 (Decimal('-1.8000'), Decimal('-4.679E+14'), None, None),
 (Decimal('-1.7000'), Decimal('-1.290E+13'), None, None),
 (Decimal('-1.6000'), Decimal('-3.556E+11'), None, None),
 (Decimal('-1.5000'), Decimal('-9.802E+9'), None, None),
 (Decimal('-1.4000'), Decimal('-2.702E+8'), None, None),
 (Decimal('-1.3000'), Decimal('-7.449E+6'), None, None),
 (Decimal('-1.2000'), Decimal('-2.053E+5'), None, None),
 (Decimal('-1.1000'), Decimal('-5660'), None, None),
 (Decimal('-1.0000'), Decimal('-156.0'), None, None),
 (Decimal('-0.90000'), Decimal('-4.308'), None, None),
 (Decimal('-0.80000'), Decimal('-0.1221'), None, None),
 (Decimal('-0.70000'), Decimal('-0.004315'), None, None),
 (Decimal('-0.60000'), Decimal('-0.0001715'), None, None),
 (Decimal('-0.50000'), Decimal('-0.000004959'), None, None),
 (Decimal('-0.40000'), Decimal('-1.373E-7'), None, None),
 (Decimal('-0.30000'), Decimal('-4.075E-9'), None, None),
 (Decimal('-0.20000'), Decimal('-3.044E-10'), None, None),
 (Decimal('-0.10000'), Decimal('-1.030E-10'), None, None),
 (Decimal('0'), Decimal('0'), None, None),
 (Decimal('5'), Decimal('0'), None, None)]
```

CHAPTER 4

Contributing

1. Fork the repository.
2. Install prerequisites.

```
pip install -r requirements.txt
```

3. Implement the new feature or bug fix.
4. Implement test case(s) to ensure that future changes do not break legacy.
5. Run the tests.

```
make test
```

6. Create a pull request.

Functions and classes

`ecdtools.ibis.load_file(filename, transform=False)`

Load given IBIS file and return an `IbsFile` object with its contents.

Give *transform* as `True` to convert numerical numbers from strings to `decimal.Decimal` and `'NA'` to `None`.

`ecdtools.ibis.split_numerical(string)`

Split given string into a number, suffix and unit tuple.

```
>>> split_numerical('1.1kOhm')
('1.1', 'k', 'Ohm')
```

`ecdtools.ibis.convert_numerical(string)`

Convert given string to a `Decimal` value.

```
>>> convert_numerical('1.1kOhm')
Decimal('1.1e3')
```

class `ecdtools.ibis.IbsFile(string, transform)`

An `.ibs` file.

component_names

A list of all component names.

model_selector_names

A list of all model selector names.

model_names

A list of all model names.

get_component_by_name(name)

Get the component named *name*.

get_model_selector_by_name(name)

Get the model selector named *name*.

get_model_by_name (*name*)

Get the model named *name*.

ibis_version

The IBIS version string.

file_name

The file name string.

file_revision

The file revision string.

date

The date string.

source

The source string.

notes

The notes string.

disclaimer

The disclaimer string.

copyright

The copyright string.

components

A list of all components.

models

A list of all models.

model_selectors

A list of all model selectors.

submodels

A list of all submodels.

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