
grg-psse2grg Documentation

Release 0.0.2

Carleton Coffrin

Aug 18, 2019

Contents:

1	Introduction	1
1.1	Overview	1
1.2	Installation	1
1.3	Testing	1
2	grg-psse2grg package	3
2.1	grg_psse2grg.io module	3
2.2	grg_psse2grg.exception module	4
2.3	grg_psse2grg.struct module	4
2.4	Module contents	6
3	Indices and tables	7
	Python Module Index	9
	Index	11

1.1 Overview

grg-psse2grg is a python package for translating PSSE and GRG network data files.

The primary entry point of the library is `grg_psse2grg.io` module, which contains the methods for bi-directional translation.

1.2 Installation

Simply run:

```
pip install grg-psse2grg
```

1.3 Testing

grg-psse2grg is designed to be a library that supports other software. It is not immediately useful from the terminal. However, you can test the parsing functionality from the command line with:

```
python -m grg_psse2grg.io <path to PSSE or GRG case file>
```

If this command is successful, you will see a translated plain text version of the translated network data printed to the terminal.

2.1 grg_psse2grg.io module

`grg_psse2grg.io.build_cli_parser()`

`grg_psse2grg.io.build_psse_case` (*grg_data*, *starting_point_map_id*,
switch_assignment_map_id)

`grg_psse2grg.io.main` (*args*)

reads a psse or grg case files and processes them based on command line arguments.

Args: *args*: an argparse data structure

`grg_psse2grg.io.parse_grg_case_file` (*grg_file_name*)

opens the given path and parses it as json data

Args: *grg_file_name*(str): path to the a json data file

Returns: Dict: a dictionary case

`grg_psse2grg.io.parse_psse_case_file` (*psse_file_name*)

opens the given path and parses it as pss/e data

Args: *psse_file_name*(str): path to the a psse data file

Returns: Case: a grg_pssedata case

`grg_psse2grg.io.parse_psse_case_lines` (*lines*)

`grg_psse2grg.io.print_err` ()

print(value, ..., sep=' ', end='n', file=sys.stdout)

Prints the values to a stream, or to sys.stdout by default. Optional keyword arguments: *file*: a file-like object (stream); defaults to the current sys.stdout. *sep*: string inserted between values, default a space. *end*: string appended after the last value, default a newline.

`grg_psse2grg.io.psse_name` (*data*, *default_name*, *name_key*='name', *length*=8)

`grg_psse2grg.io.test_idempotent` (*input_data_file*, *name*)

2.2 grg_psse2grg.exception module

a collection of all grg_psse2grg exception classes

exception grg_psse2grg.exception.PSSE2GRGWarning

Bases: exceptions.Warning

root class for all PSSE2GRG Warnings

2.3 grg_psse2grg.struct module

extensions to data structures for encoding psse data files to support grg data encoding

class grg_psse2grg.struct.Area (*i, isw=0, pdes=0.0, ptol=0.0, arnam=""*)

Bases: grg_pssedata.struct.Area

to_grg_area ()

Returns: a grg area data dictionary

class grg_psse2grg.struct.Branch (*index, i, j, ckt, r, x, b, ratea, rateb, ratec, gi, bi, gj, bj, st, met, len, o1, f1, o2, f2, o3, f3, o4, f4*)

Bases: grg_pssedata.struct.Branch

get_grg_operations (*lookup*)

get_grg_status ()

Returns: a grg data status assignment as a dictionary

to_grg_line (*lookup, base_mva, omit_subtype=False*)

Returns: a grg data line name and data as a dictionary

class grg_psse2grg.struct.Bus (*i, name, basekv, ide, area, zone, owner, vm, va, nvhi, nvlo, evhi, evlo*)

Bases: grg_pssedata.struct.Bus

get_grg_bus_setpoint (*lookup*)

Returns: a grg data voltage set point as a dictionary

get_grg_status ()

Returns: a grg data status assignment as a dictionary

to_grg_bus (*lookup, omit_subtype=False*)

Returns: a grg data bus name and data as a dictionary

class grg_psse2grg.struct.Case (*ic, sbase, rev, xfrat, nxfrat, basfrq, record1, record2, buses, loads, fixed_shunts, generators, branches, transformers, areas, tt_dc_lines, vsc_dc_lines, transformer_corrections, mt_dc_lines, line_groupings, zones, transfers, owners, facts, switched_shunts, gnes, induction_machines*)

Bases: grg_pssedata.struct.Case

to_grg (*network_id, omit_subtype=False, skip_validation=False*)

Returns: an encoding of this data structure as a grg data dictionary

class grg_psse2grg.struct.FixedShunt (*index, i, id, status, gl, bl*)

Bases: grg_pssedata.struct.FixedShunt

get_grg_status ()

Returns: a grg data status assignment as a dictionary


```

to_grg_shunt (lookup, base_mva, omit_subtype=False)
    Returns: a grg data shunt name and data as a dictionary

class grg_psse2grg.struct.Generator (index, i, id, pg, qg, qt, qb, vs, ireg, mbase, zr, zx, rt, xt,
                                     gtap, stat, rmpct, pt, pb, o1, f1, o2, f2, o3, f3, o4, f4,
                                     wmod, wpf)
    Bases: grg_pssedata.struct.Generator

get_grg_cost_model (lookup, base_mva)
    Returns: a grg data encoding of this data structure as a dictionary

get_grg_setpoint (lookup, base_mva)
    Returns: a grg data power output set point as a dictionary

get_grg_status ()
    Returns: a grg data status assignment as a dictionary

is_synchronous_condenser ()

to_grg_generator (lookup, base_mva, omit_subtype=False)
    Returns: a grg data gen name and data as a dictionary

class grg_psse2grg.struct.Load (index, i, id, status, area, zone, pl, ql, ip, iq, yp, yq, owner, scale,
                                intrpt=0)
    Bases: grg_pssedata.struct.Load

get_grg_load_setpoint (lookup, base_mva)

get_grg_status ()
    Returns: a grg data status assignment as a dictionary

to_grg_load (lookup, base_mva, omit_subtype=False)
    Returns: a grg data load name and data as a dictionary

class grg_psse2grg.struct.Owner (i, owname)
    Bases: grg_pssedata.struct.Owner

to_grg_owner ()

class grg_psse2grg.struct.SwitchedShunt (index, i, modsw, adjm, stat, vswhi, vswlo, swrem,
                                           rmpct, rmidnt, binit, n1, b1, n2=None, b2=None,
                                           n3=None, b3=None, n4=None, b4=None,
                                           n5=None, b5=None, n6=None, b6=None,
                                           n7=None, b7=None, n8=None, b8=None)
    Bases: grg_pssedata.struct.SwitchedShunt

get_grg_shunt_setpoint (lookup, base_mva)

get_grg_status ()
    Returns: a grg data status assignment as a dictionary

to_grg_shunt (lookup, base_mva, omit_subtype=False)
    Returns: a grg data shunt name and data as a dictionary

class grg_psse2grg.struct.ThreeWindingTransformer (index, p1, p2, w1, w2, w3)
    Bases: grg_pssedata.struct.ThreeWindingTransformer

get_grg_status ()
    Returns: a grg data status assignment as a dictionary

to_grg_three_winding_transformer (bus_lookup, base_mva, omit_subtype=False)

class grg_psse2grg.struct.TwoWindingTransformer (index, p1, p2, w1, w2)
    Bases: grg_pssedata.struct.TwoWindingTransformer

```

get_grg_status()

Returns: a grg data status assignment as a dictionary

get_grg_tap_changer_setpoint() (*lookup*)

to_grg_two_winding_transformer() (*lookup, base_mva, omit_subtype=False*)

Returns: grg transformer data as a dictionary

class grg_psse2grg.struct.Zone(*i, zoname*)

Bases: grg_pssedata.struct.Zone

to_grg_zone()

Returns: a grg zone data dictionary

2.4 Module contents

a package for converting psse data files to grg data files

CHAPTER 3

Indices and tables

- `genindex`
- `modindex`
- `search`

g

- `grg_psse2grg`, 6
- `grg_psse2grg.exception`, 4
- `grg_psse2grg.io`, 3
- `grg_psse2grg.struct`, 4

A

Area (class in grg_psse2grg.struct), 4

B

Branch (class in grg_psse2grg.struct), 4

build_cli_parser() (in module grg_psse2grg.io), 3

build_psse_case() (in module grg_psse2grg.io), 3

Bus (class in grg_psse2grg.struct), 4

C

Case (class in grg_psse2grg.struct), 4

F

FixedShunt (class in grg_psse2grg.struct), 4

G

Generator (class in grg_psse2grg.struct), 5

get_grg_bus_setpoint() (grg_psse2grg.struct.Bus method), 4

get_grg_cost_model() (grg_psse2grg.struct.Generator method), 5

get_grg_load_setpoint() (grg_psse2grg.struct.Load method), 5

get_grg_operations() (grg_psse2grg.struct.Branch method), 4

get_grg_setpoint() (grg_psse2grg.struct.Generator method), 5

get_grg_shunt_setpoint() (grg_psse2grg.struct.SwitchedShunt method), 5

get_grg_status() (grg_psse2grg.struct.Branch method), 4

get_grg_status() (grg_psse2grg.struct.Bus method), 4

get_grg_status() (grg_psse2grg.struct.FixedShunt method), 4

get_grg_status() (grg_psse2grg.struct.Generator method), 5

get_grg_status() (grg_psse2grg.struct.Load method), 5

get_grg_status() (grg_psse2grg.struct.SwitchedShunt method), 5

get_grg_status() (grg_psse2grg.struct.ThreeWindingTransformer method), 5

get_grg_status() (grg_psse2grg.struct.TwoWindingTransformer method), 5

get_grg_tap_changer_setpoint() (grg_psse2grg.struct.TwoWindingTransformer method), 6

grg_psse2grg (module), 6

grg_psse2grg.exception (module), 4

grg_psse2grg.io (module), 3

grg_psse2grg.struct (module), 4

I

is_synchronous_condenser() (grg_psse2grg.struct.Generator method), 5

L

Load (class in grg_psse2grg.struct), 5

M

main() (in module grg_psse2grg.io), 3

O

Owner (class in grg_psse2grg.struct), 5

P

parse_grg_case_file() (in module grg_psse2grg.io), 3

parse_psse_case_file() (in module grg_psse2grg.io), 3

parse_psse_case_lines() (in module grg_psse2grg.io), 3

`print_err()` (in module `grg_psse2grg.io`), 3
`PSSE2GRGWarning`, 4
`psse_name()` (in module `grg_psse2grg.io`), 3

S

`SwitchedShunt` (class in `grg_psse2grg.struct`), 5

T

`test_idempotent()` (in module `grg_psse2grg.io`), 3
`ThreeWindingTransformer` (class in `grg_psse2grg.struct`), 5
`to_grg()` (`grg_psse2grg.struct.Case` method), 4
`to_grg_area()` (`grg_psse2grg.struct.Area` method), 4
`to_grg_bus()` (`grg_psse2grg.struct.Bus` method), 4
`to_grg_generator()`
 (`grg_psse2grg.struct.Generator` method),
 5
`to_grg_line()` (`grg_psse2grg.struct.Branch`
 method), 4
`to_grg_load()` (`grg_psse2grg.struct.Load` method),
 5
`to_grg_owner()` (`grg_psse2grg.struct.Owner`
 method), 5
`to_grg_shunt()` (`grg_psse2grg.struct.FixedShunt`
 method), 4
`to_grg_shunt()` (`grg_psse2grg.struct.SwitchedShunt`
 method), 5
`to_grg_three_winding_transformer()`
 (`grg_psse2grg.struct.ThreeWindingTransformer`
 method), 5
`to_grg_two_winding_transformer()`
 (`grg_psse2grg.struct.TwoWindingTransformer`
 method), 6
`to_grg_zone()` (`grg_psse2grg.struct.Zone` method), 6
`TwoWindingTransformer` (class in `grg_psse2grg.struct`), 5

Z

`Zone` (class in `grg_psse2grg.struct`), 6