ANDES for Power System Simulation Cheat Sheet

by Hantao Cui (cuihantao) via cheatography.com/108220/cs/21477/

Introduction

ANDES is a symbolic-numeric tool for power system analysis developed by CURENT. (Source code: GitHub)

ANDES is run with `andes command option(s)`. Please refer to **All Commands** section for available commands. Next, look up the corresponding section for options.

All Commands

run	Run a simulation routine.
plot	Plot figures from output files.
prepare	Run the symbolic-to-numeric preparation.
misc	Miscellaneous functions.
-v {10, 20, 30, 40, 50}	Logging verbosity. 10-DEBUG, 20-INFO, 30-WARNING, 40-ERROR, 50-CRITICAL.

andes run options

filename	Input file name in relative or absolute path.
-r {tds, eig}	Routine to run. Options are **tds** (time-domain simulation) and **eig** (eigenvalue analysis).
-p INPUT_PATH	Search path for cases.
-o OUTPUT-_PATH	Path for output files.
--convert [CONVERT]	Convert input files to FORMAT. The default is *xlsx*.
--profile	Enable Python cProfiler.
-n	Disable all outputs.

andes plot options

filename	One output file name to plot.
x	X-axis variable index. The default is 0 (time).
y	Y-axis variable index (or indices). Supports Python indexing.
-s	Save figure to a PNG file.
-c	Convert to a *csv* file.
--xmin	X-axis minimum tick XMIN.
--xmax	X-axis maximum tick XMAX.
--ymin	Y-axis minimum tick YMIN.
--ymax	Y-axis maximum tick YMAX.
--dpi	Set figure DPI.
-g	Grid on.
-d	Disable LaTeX.

andes plot options (cont)

-n	Disable figure showing.

andes misc options

--save-config	Save configurations to a file.
--edit-config	Edit an existing configuration file.
--clean	Clean all output files.

Basic Command-Line Interface (CLI) Examples

Run power flow for `case14.xlsx` in the current directory:

```
andes run case14.xlsx
```

Run time-domain simulation for `case14.xlsx`:

```
andes run case14.xlsx -r tds
```

Run TDS for `case14.xlsx` to simulate 40 seconds:

```
andes run case14.xlsx -r tds --tf 40
```

Run eigenvalue analysis for `case14.xlsx`:

```
andes run case14.xlsx -r eig
```

Plot TDS variables with indices 2 and 4 against time:

```
andes plot case14 _ou t.npy 0 2 4
```

Plot TDS variables with indices 2, 4, ..., 20 against time:

```
andes plot case14 _ou t.npy 0 2:21:2
```

Advanced CLI Examples

Save ANDES configuration file to home directory:

```
andes misc --save
```

Edit ANDES configuration file in home directory:

```
andes misc --edit
```

Batch run power flow for all files with the `.xlsx` extension:

```
andes run *.xlsx
```

Run TDS with verbose outputs for debugging:

```
andes -v 10 run case14.xlsx -r tds
```

Run TDS with profiling and print the results:

```
andes run case14.xlsx -r tds --profile
```

By **Hantao Cui** (cuihantao)
cheatography.com/cuihantao/

Published 28th December, 2019.
Last updated 29th December, 2019.