
Fusion Data Framework Documentation

Release 0.0.0

John Schmitt, David R. Smith, Kevin Tritz, Howard Yuh

October 06, 2015

CONTENTS

1	About FDF	1
2	Getting Started Guide	2
2.1	User Guide	2
2.2	Developer Guide	2
3	Usage Examples	3
4	Package Reference	4
4.1	Module factory.py	4
4.2	Class Machine	4
4.3	Class Shot	5
4.4	Class Logbook	5
4.5	Module fdf_signal.py	5
4.6	Class Signal	5
4.7	Module fdf_globals.py	5
5	License	6
6	Indices and tables	7
	Python Module Index	8
	Index	9

ABOUT FDF

Fusion Data Framework (FDF) is a data access, management, and visualization framework for magnetic fusion experiments.

Repository: <https://github.com/Fusion-Data-Framework/fdf>

[HTML Documentation](#) or [PDF Documentation](#)

Submit bugs or feature requests: <https://github.com/Fusion-Data-Framework/fdf/issues>

Created by:

- John Schmitt, Princeton Plasma Physics Lab
- David R. Smith, U. Wisconsin-Madison
- Kevin Tritz, The Johns Hopkins U.
- Howard Yuh, Nova Photonics

To contribute to the FDF project, please contact John, David, Kevin, or Howard.

GETTING STARTED GUIDE

2.1 User Guide

2.2 Developer Guide

**CHAPTER
THREE**

USAGE EXAMPLES

PACKAGE REFERENCE

4.1 Module factory.py

Root module for the FDF package.

Classes

- Machine - root class for the FDF package
- Shot - shot container class
- Logbook - logbook connection class
- Container - diagnostic container class
- Node - mdsplus signal node class
- FdfError - error class for FDF package

Usage:

```
>>> import fdf
>>> nstx = fdf.Machine('nstx')
>>> nstx.s140000.logbook()
>>> nstx.addshots(xp=1048)
>>> nstx.s140000.mpts.plot()
```

4.2 Class Machine

class `factory.Machine` (*name='nstx', shotlist=[], xp=[], date=[]*)

Factory root class that contains shot objects and MDS access methods.

Basic class initialization is performed as follows: >>>nstx = Machine(name='nstx')

the Machine class contains a model shot object: nstx.s0

shot data can be accessed directly through the Machine class: >>> nstx.s141398 >>> nstx.s141399

alternatively, a list of shot #'s may be provided during initialization: >>>nstx = Machine(name='nstx', shotlist=[141398, 141399])

or added later using the addshot method: >>>nstx.addshot([141398, 141399])

4.3 Class Shot

```
class factory.Shot (shot, root=None, parent=None)
```

4.4 Class Logbook

```
class factory.Logbook (name='nstx', root=None)
```

4.5 Module fdf_signal.py

fdf-signals.py - module containing Signal class

Classes

- Signal - signal class for data objects

Created on Tue Jun 23 2015

@author: hyuh

4.6 Class Signal

```
class fdf_signal.Signal (**kwargs)
    sig=fdf.Signal(signal_ndarray, units='m/s', axes=['radius','time'], axes_values=[ax1_1Darray,
    ax2_1Darray], axes_units=['s','cm'])

    e.g.:    mds.Signal(np.arange((20*10)).reshape((10,20)), units='keV', axes=['radius','time'],
    axes_values=[100+np.arange(10)*5, np.arange(20)*0.1], axes_units=['s','cm'])

    or an empty signal: s=mds.Signal() default axes order=[time, space] sig=fdf.Signal(units='m/s',
    axes=['radius','time'], axes_values=[radiusSignal, timeSignal])
```

4.7 Module fdf_globals.py

fdf_globals.py contains package-level constants

Created on Thu Jun 18 11:18:16 2015

@author: ktritz

LICENSE

The MIT License (MIT)

Copyright (c) 2015 David R. Smith, Kevin Tritz, Howard Yuh

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the “Software”), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

INDICES AND TABLES

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

PYTHON MODULE INDEX

f

factory, 4
fdf_globals, 5
fdf_signal, 5

F

[factory \(module\)](#), 4

[fdf_globals \(module\)](#), 5

[fdf_signal \(module\)](#), 5

L

[Logbook \(class in factory\)](#), 5

M

[Machine \(class in factory\)](#), 4

S

[Shot \(class in factory\)](#), 5

[Signal \(class in fdf_signal\)](#), 5