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# Pipeline Tasks Reference Manual

*Release unknown*

**pipeline team**

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# PIPELINE TASKS

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CHAPTER  
ONE

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## PIPELINE.H.CLI

### Generic Tasks

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*cli*

<i>h_applycal</i> ([vis, field, intent, spw, ...])	Apply the calibration(s) to the data
<i>h_export_calstate</i> ([filename, state])	Save the pipeline calibration state to disk
<i>h_exportdata</i> ([vis, session, ...])	Prepare interferometry data for export
<i>h_import_calstate</i> (filename)	Import a calibration state from disk
<i>h_importdata</i> ([vis, session, asis, ...])	Imports data into the interferometry pipeline
<i>h_init</i> ([loglevel, plotlevel, weblog])	Initialize the pipeline
<i>h_mssplit</i> ([vis, outputvis, field, intent, ...])	Select data from calibrated MS(s) to form new MS(s) for imaging
<i>h_restoredata</i> ([vis, session, products_dir, ...])	Restore flags and calibration state from a pipeline run
<i>h_resume</i> ([filename])	Restore a saved pipeline state
<i>h_save</i> ([filename])	Save the pipeline state to disk
<i>h_show_calstate</i> ()	Show the current pipeline calibration state
<i>h_tsyscal</i> ([vis, caltable, chantol])	Derive a Tsys calibration table
<i>h_weblog</i> ([relpath])	Open the pipeline weblog in a browser
<i>utils</i>	

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- 1.1 [pipeline.h.cli.cli](#)
- 1.2 [pipeline.h.cli.h\\_applycal](#)
- 1.3 [pipeline.h.cli.h\\_export\\_calstate](#)
- 1.4 [pipeline.h.cli.h\\_exportdata](#)
- 1.5 [pipeline.h.cli.h\\_import\\_calstate](#)
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- 1.7 [pipeline.h.cli.h\\_init](#)
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- 1.9 [pipeline.h.cli.h\\_restoredata](#)
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- 1.14 [pipeline.h.cli.h\\_weblog](#)
- 1.15 [pipeline.h.cli.utils](#)

#### Functions

<code>cli_wrapper</code>	Wrap pipeline task CLI functions to handle the extra 'pipelinemode' argument.
<code>execute_task</code>	
<code>get_context</code>	
<code>get_heuristic</code>	
<code>get_ms</code>	
<code>get_output_dir</code>	

### 1.15.1 pipeline.h.cli.utils.cli\_wrapper

`cli_wrapper(func: Callable)`

Wrap pipeline task CLI functions to handle the extra ‘pipelinemode’ argument.

PIPE-1884: this decorator function removes the “pipelinemode” argument from pipeline CLI task calls, which commonly exists in archival casa\_pipescript.py/casa\_pipestorescript.py scripts generated by old pipeline versions before PIPE-1686.

### 1.15.2 pipeline.h.cli.utils.execute\_task

`execute_task(context, casa_task, casa_args)`

### 1.15.3 pipeline.h.cli.utils.get\_context

`get_context()`

### 1.15.4 pipeline.h.cli.utils.get\_heuristic

`get_heuristic(arg)`

### 1.15.5 pipeline.h.cli.utils.get\_ms

`get_ms(vis)`

### 1.15.6 pipeline.h.cli.utils.get\_output\_dir

`get_output_dir()`

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CHAPTER  
TWO

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**PIPELINE.HIF.CLI**

Interferometry Generic Tasks

<i>hif_analyzealpha</i> ([vis, image, alphafile, ...])	Extract spectral index from intensity peak in VLA/VLASS images
<i>hif_antpos</i> ([vis, caltable, hm_antpos, ...])	Derive an antenna position calibration table
<i>hif_applycal</i> ([vis, field, intent, spw, ...])	Apply the calibration(s) to the data
<i>hif_bandpass</i> ([vis, caltable, field, intent, ...])	Compute bandpass calibration solutions
<i>hif_checkproductsize</i> ([vis, maxcubesize, ...])	Check imaging product size
<i>hif_correctedampflag</i> ([vis, intent, field, ...])	Flag corrected - model amplitudes based on calibrators.
<i>hif_editimlist</i> ([imagename, ...])	Add to a list of images to be produced with hif_makeimages()
<i>hif_findcont</i> ([vis, target_list, ...])	Find continuum frequency ranges
<i>hif_gaincal</i> ([vis, caltable, field, intent, ...])	Determine temporal gains from calibrator observations
<i>hif_lowgainflag</i> ([vis, intent, spw, refant, ...])	Flag antennas with low or high gain
<i>hif_makecutoutimages</i> ([vis, offsetblc, offsettrc])	Cutout central 1 sq.
<i>hif_makeimages</i> ([vis, target_list, ...])	Compute clean map
<i>hif_makeimlist</i> ([vis, imagename, intent, ...])	Compute list of clean images to be produced
<i>hif_makersimages</i> ([vis])	Create RMS images for VLASS data.
<i>hif_mstransform</i> ([vis, outputvis, field, ...])	Create new MeasurementSets for science target imaging
<i>hif_rawflagchans</i> ([vis, spw, intent, ...])	Flag deviant baseline/channels in raw data
<i>hif_refant</i> ([vis, field, spw, intent, ...])	Select the best reference antennas
<i>hif_selfcal</i> ([vis, field, spw, confile, ...])	Determine and apply self-calibration with the science target data
<i>hif_setjy</i> ([vis, field, intent, spw, model, ...])	Fill the model column with calibrated visibilities
<i>hif_setmodels</i> ([vis, reference, refintent, ...])	Set calibrator source models
<i>hif_transformimagedata</i> ([vis, outputvis, ...])	Extract fields for the desired VLASS image to a new MS and reset weights if desired
<i>hif_uvcontsub</i> ([vis, field, intent, spw, ...])	Fit and subtract continuum from the data

- 2.1 `pipeline.hif.cli.hif_analyzealpha`
- 2.2 `pipeline.hif.cli.hif_antpos`
- 2.3 `pipeline.hif.cli.hif_applycal`
- 2.4 `pipeline.hif.cli.hif_bandpass`
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- 2.20 `pipeline.hif.cli.hif_setmodels`
- 2.21 `pipeline.hif.cli.hif_transformimagedata`
- 2.22 `pipeline.hif.cli.hif_uvcontsub`

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**CHAPTER  
THREE**

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**PIPELINE.HIFA.CLI**

Interferometry ALMA Tasks

<i>hifa_antpos</i> ([vis, caltable, hm_antpos, ...])	Derive an antenna position calibration table
<i>hifa_bandpass</i> ([vis, caltable, field, ...])	Compute bandpass calibration solutions
<i>hifa_bandpassflag</i> ([vis, caltable, intent, ...])	Bandpass calibration flagging
<i>hifa_bpsolint</i> ([vis, field, intent, spw, ...])	Compute optimal bandpass calibration solution intervals
<i>hifa_diffgaincal</i> ([vis])	Derive SpW phase offsets from differential gain calibrator.
<i>hifa_exportdata</i> ([vis, session, ...])	Prepare interferometry data for export
<i>hifa_flagdata</i> ([vis, autocorr, shadow, ...])	Do metadata based flagging of a list of MeasurementSets.
<i>hifa_flagtargets</i> ([vis, template, ...])	Do science target flagging
<i>hifa_fluxcalflag</i> ([vis, field, intent, spw, ...])	Locate and flag line regions in solar system flux calibrators
<i>hifa_gaincalsnr</i> ([vis, field, intent, spw, ...])	Compute gaincal signal-to-noise ratios per spw
<i>hifa_gfluxscale</i> ([vis, reference, transfer, ...])	Derive flux density scales from standard calibrators
<i>hifa_gfluxscaleflag</i> ([vis, intent, ...])	Flag the flux, diffgain, phase calibrators and check source
<i>hifa_imageprecheck</i> ([vis, ...])	Calculates the best Briggs robust parameter to achieve sensitivity and angular resolution goals.
<i>hifa_importdata</i> ([vis, session, asis, ...])	Imports data into the interferometry pipeline
<i>hifa_lock_refant</i> ([vis])	Lock reference antenna list
<i>hifa_polcal</i> ([vis, minpacov, solint_chavg, ...])	Derive instrumental polarization calibration for ALMA.
<i>hifa_polcalflag</i> ([vis])	Flag polarization calibrators
<i>hifa_renorm</i> ([vis, createcaltable, ...])	ALMA renormalization task
<i>hifa_restoredata</i> ([vis, session, ...])	Restore flagged and calibration interferometry data from a pipeline run
<i>hifa_session_refant</i> ([vis, phase_threshold])	Select best reference antenna for session(s)
<i>hifa_spwphaseup</i> ([vis, caltable, field, ...])	Compute phase calibration spw map and per spw phase offsets
<i>hifa_targetflag</i> ([vis])	Flag target source outliers
<i>hifa_timegaincal</i> ([vis, calamptable, ...])	Determine temporal gains from calibrator observations
<i>hifa_tsysflag</i> ([vis, caltable, flag_nmedian, ...])	Flag deviant system temperatures for ALMA interferometry measurements.
<i>hifa_tsysflagcontamination</i> ([vis, caltable, ...])	Flag line contamination in ALMA interferometric Tsys caltables
<i>hifa_unlock_refant</i> ([vis])	Unlock reference antenna list
<i>hifa_wvrgcal</i> ([vis, caltable, offsetstable, ...])	Generate a gain table based on Water Vapor Radiometer data, and calculate a QA score based on its effect on the interferometric data.
<i>hifa_wvrgcalflag</i> ([vis, caltable, ...])	Generate a gain table based on Water Vapor Radiometer data, interpolating over antennas with bad radiometers.



- 3.1 `pipeline.hifa.cli.hifa_antpos`
- 3.2 `pipeline.hifa.cli.hifa_bandpass`
- 3.3 `pipeline.hifa.cli.hifa_bandpassflag`
- 3.4 `pipeline.hifa.cli.hifa_bpsolint`
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- 3.23 `pipeline.hifa.cli.hifa_timegaincal`
- 3.24 `pipeline.hifa.cli.hifa_tsysflag`
- 3.25 `pipeline.hifa.cli.hifa_tsysflagcontamination`
- 3.26 `pipeline.hifa.cli.hifa_unlock_refant`

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CHAPTER  
FOUR

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**PIPELINE.HIFV.CLI**

Interferometry VLA Tasks

<code>hifv_analyzestokescubes</code> ([vis])	Characterize stokes IQUV flux densities as a function of frequency for VLASS Coarse Cube (CC) images.
<code>hifv_applycals</code> ([vis, field, intent, spw, ...])	Apply calibration tables to input MeasurementSets.
<code>hifv_checkflag</code> ([vis, checkflagmode, ...])	Run RFI flagging using flagdata in various modes.
<code>hifv_circfeedpolcal</code> ([vis, Dterm_solint, ...])	Perform polarization calibration for VLA circular feeds.
<code>hifv_exportdata</code> ([vis, session, ...])	Prepare and export interferometry and imaging data.
<code>hifv_exportvllassdata</code> ([vis])	Export Image data from QL, SE, and Coarse Cube modes of VLASS Survey.
<code>hifv_finalcals</code> ([vis, weakbp, refantignore, ...])	Compute final gain calibration tables.
<code>hifv_fixpointing</code> ([vis])	Base fixpointing task
<code>hifv_flagcal</code> ([vis, caltable, clipminmax])	Flagcal task.
<code>hifv_flagdata</code> ([vis, autocorr, shadow, scan, ...])	Do basic deterministic flagging of a list of MeasurementSets.
<code>hifv_flagtargetsdata</code> ([vis, template, ...])	Apply a flagtemplate to target data prior to running imaging pipeline tasks.
<code>hifv_fluxboot</code> ([vis, caltable, fitorder, ...])	Fluxboot
<code>hifv_gaincurves</code> ([vis, caltable])	Runs gencal in gc mode.
<code>hifv_hanning</code> ([vis, maser_detection])	Hanning smoothing on a dataset.
<code>hifv_importdata</code> ([vis, session, asis, ...])	Imports data into the VLA pipeline.
<code>hifv_mstransform</code> ([vis, outputvis, ...])	Create new MeasurementSets for science target imaging
<code>hifv_opcal</code> ([vis, caltable])	Runs gencal in opac mode.
<code>hifv_pbcor</code> ([vis])	Apply primary beam correction to VLA and VLASS images.
<code>hifv_plotsummary</code> ([vis])	Create pipeline summary plots.
<code>hifv_priorscals</code> ([vis, show_tec_maps, ...])	Runs gaincurves, opacities, requantizer gains, antenna position corrections, tec_maps, switched power.
<code>hifv_restoredata</code> ([vis, session, ...])	Restore flagged and calibration interferometry data from a pipeline run.
<code>hifv_restorepims</code> ([vis, reimaging_resources])	Restore VLASS SE per-image measurement set data, resetting flagging, weights, and applying self-calibration.
<code>hifv_rqcal</code> ([vis, caltable])	Runs gencal in rq mode.
<code>hifv_selfcal</code> ([vis, refantignore, combine, ...])	Perform phase-only self-calibration, per scan row, on VLASS SE images.
<code>hifv_semiFinalBPdcals</code> ([vis, weakbp, ...])	Runs a second delay and bandpass calibration and applies to calibrators to setup for RFI flagging.
<code>hifv_solint</code> ([vis, limit_short_solint, ...])	Determines different solution intervals.
<code>hifv_statwt</code> ([vis, datacolumn, ...])	Compute statistical weights and write them to measurement set.

continues on next page

Table 1 – continued from previous page

<i>hifv_swpowcal</i> ([vis, caltable, spw])	Runs gencal in swpow mode.
<i>hifv_syspower</i> ([vis, clip_sp_template, ...])	Determine amount of gain compression affecting VLA data below Ku-band.
<i>hifv_targetflag</i> ([vis, intents])	Targetflag
<i>hifv_tecmaps</i> ([vis])	Base tecmaps task
<i>hifv_testBPdcals</i> ([vis, weakbp, ...])	Runs initial delay and bandpass calibration to setup for RFI flagging.
<i>hifv_vlasetjy</i> ([vis, field, intent, spw, ...])	Sets flux density scale and fills calibrator model to measurement set.
<i>hifv_vlassmasking</i> ([vis, vlass_ql_database, ...])	Create clean masks for VLASS Single Epoch (SE) images.



**4.1 pipeline.hifv.cli.hifv\_analyzestokescubes**

**4.2 pipeline.hifv.cli.hifv\_applycals**

**4.3 pipeline.hifv.cli.hifv\_checkflag**

**4.4 pipeline.hifv.cli.hifv\_circfeedpolcal**

**4.5 pipeline.hifv.cli.hifv\_exportdata**

**4.6 pipeline.hifv.cli.hifv\_exportvlassdata**

**4.7 pipeline.hifv.cli.hifv\_finalcals**

**4.8 pipeline.hifv.cli.hifv\_fixpointing**

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**PIPELINE.HSD.CLI**

## ALMA Single Dish Tasks

<i>hsd_applycal</i> ([vis, field, intent, spw, ...])	Apply the calibration(s) to the data.
<i>hsd_atmcor</i> ([atmtype, ditem_dh, h0, infiles, ...])	Apply offline ATM correction to the data.
<i>hsd_baseline</i> ([fitfunc, fitorder, ...])	Detect and validate spectral lines, subtract baseline by masking detected lines.
<i>hsd_blfloor</i> ([iteration, edge, flag_tsys, ...])	Flag spectra based on predefined criteria of single dish pipeline.
<i>hsd_exportdata</i> ([pprfile, targetimages, ...])	Prepare single dish data for export.
<i>hsd_flagdata</i> ([vis, autocorr, shadow, scan, ...])	Do basic flagging of a list of MeasurementSets.
<i>hsd_imaging</i> ([mode, restfreq, infiles, ...])	Generate single dish images.
<i>hsd_importdata</i> ([vis, session, ...])	Imports data into the single dish pipeline.
<i>hsd_k2jycal</i> ([dbservice, endpoint, reffile, ...])	Derive Kelvin to Jy calibration tables.
<i>hsd_restoredata</i> ([vis, session, ...])	Restore flagged and calibration single dish data from a pipeline run.
<i>hsd_skycal</i> ([calmode, fraction, noff, width, ...])	Calibrate data.
<i>hsd_tsysflag</i> ([vis, caltable, flag_nmedian, ...])	Flag deviant system temperature measurements.

**5.1 pipeline.hsd.cli.hsd\_applycal****5.2 pipeline.hsd.cli.hsd\_atmcor****5.3 pipeline.hsd.cli.hsd\_baseline****5.4 pipeline.hsd.cli.hsd\_blfloor**

Created on 2013/06/23

@author: kana

**5.5 pipeline.hsd.cli.hsd\_exportdata**

**5.6 pipeline.hsd.cli.hsd\_flagdata**

**5.7 pipeline.hsd.cli.hsd\_imaging**

**5.8 pipeline.hsd.cli.hsd\_importdata**

**5.9 pipeline.hsd.cli.hsd\_k2jycal**

**5.10 pipeline.hsd.cli.hsd\_restoredata**

**5.11 pipeline.hsd.cli.hsd\_skycal**

**5.12 pipeline.hsd.cli.hsd\_tsysflag**

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CHAPTER  
SIX

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## PIPELINE.HSDN.CLI

### Nobeyama Tasks

<i>hsdn_exportdata</i> ([pprfile, targetimages, ...])	Prepare single dish data for export.
<i>hsdn_importdata</i> ([vis, session, ...])	Imports Nobeyama data into the single dish pipeline.
<i>hsdn_restoredata</i> ([vis, caltable, reffile, ...])	Restore flagged and calibration single dish data from a pipeline run.

### 6.1 pipeline.hsdn.cli.hsdn\_exportdata

### 6.2 pipeline.hsdn.cli.hsdn\_importdata

### 6.3 pipeline.hsdn.cli.hsdn\_restoredata

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