

NATIONAL RADIO ASTRONOMY OBSERVATORY
Green Bank, West Virginia

TELESCOPE CONTROL USER STANDARDS MEMO NO. 4

HELP FILES FOR FOLLOWING DCL COMMANDS ON PDP FOR PLATO DE BURE:

SOURCE
SCAN
LINE
FREQUENCY
SWITCH
TOTAL
FB1MHZ
SPECTRAL CORRELATOR
ACQUISITION

25 March 1985

1 SUPERGALACTIC

SOURCE/SUPERGALACTIC long,lat

long and lat: Source coordinates in super galactic coordinate system

2 ECLIPTIC

SOURCE/ECLIPtic long,lat

long and lat: Source coordinates in ecliptic coordinate system

2 HORIZON

SOURCE/HORIZON az,el

az and el : Source coordinates in horizon coordinate system at command time

2 CATALOG

SOURCE [/CATALOG] sourcespec

sourcespec: [catalogname:]sourcefilename

The coordinates and the speed are found in the specified or default catalog file.

/CATALOG is the default qualifier of SOURCE

2 VLSR

SOURCE[/CATALOG] sourcespec/VLSR=v

SOURCE/coordinate_system coordinates/VLSR=v

Specifies the VLSR velocity in Km/s

the default value is the velocity specified in the catalog file if it exists and if command qualifier CATALOG is mentioned. Otherwise VLSR=0. .

2 HELIOCENTRIC

SOURCE[/CATALOG] sourcespec/HELIOPCENTRIC=v

SOURCE/coordinate_system coordinates/HELIOPCENTRIC=v

Specifies the HELIOCENTRIC velocity in Km/s

the default value is the velocity specified in the catalog file if it exists and if command qualifier CATALOG is mentioned. Otherwise HELIOCENTRIC=0. .

DLW0:[1,3]SCAN.HLP;4

21-MAR-85 19:14

SCAN coordinate_system=angle,angle [/qualifier[s]]

coordinate_system:

EQUATORIAL GALACTIC SUPERGALACTIC ECLIPTIC HORIZON USER

angle:

[[deg:]mmss:]sec[.frac]["]
or [deg:]mmss[.frac]'
or deg[,frac]D
or [[hrs:]mmss:]sec[.frac]S
or [hrs:]mmss[.frac]M
or hrs[:,.frac]H

qualifiers:

/SPACING=angle
/OFFSET=angle,angle
/RATE=angle
/BIDIRECTIONAL
/MONODIRECTIONAL
/XSCAN
/YSCAN
/LOCAL
/BASIC
/LOWLOW
/LOWHIGH
/HIGHLOW
/HIGHHIGH

The SCAN command starts scanning around the present antenna direction when the antenna is already in tracking mode or around the target direction (as soon as it is reached) when the antenna is in preset mode.

For a description of a particular coordinate_system or qualifier, type
HELP COOR coordinate_system or
HELP COOR qualifier

2 EQUATORIAL

SCAN EQUATORIAL=r.a.,dec

r.a. and dec: Scan size in equatorial coordinate system

2 GALACTIC

SCAN GALACTIC=long,lat

long and lat: Scan size in galactic coordinate system

2 SUPERGALACTIC

SCAN SUPERGALACTIC=long,lat

long and lat: Scan size in super galactic coordinate system

2 ECLIPTIC

SCAN ECLIPTIC=long,lat

long and lat: Scan size in ecliptic coordinate system

2 HORIZON

SCAN HORIZON=az,el.

az and el : Scan size in horizon coordinate system

2 USER

SCAN USER=long,lat

long and lat: Scan size in USER coordinate system

2 SPACE

SCAN coordinate_system=angle,angle/SPACE=angle

The operation stops when the full box has been scanned.

If the spacing is larger than the box width, there is only one scan line.

the default is the former value

2 RATE

SCAN coordinate_system=angle,angle/RATE=angle

the scanning rate is angle per second

the default is the former value

2 BIDIRECTIONNAL

SCAN coordinate_system=angle,angle/BIDIRECTIONNAL

the scanning is birectional with a minimum of waste time between each line.

2 MONODIRECTIONNAL

SCAN coordinate_system=angle,angle/MONODIRECTIONNAL

the scanning is monodirectionnal corresponding to the positive direction.
Return at next line start is done at maximum guiding rate.
The default is /BIDIRECTINNAL.

2 XSCAN

SCAN coordinate_system=angle,angle/XSCAN
/YSCAN

The positive scanning direction corresponds either to an increase of the first coordinate (XCAN) in the given coordinate system or the second coordinate (YSCAN).
The default is /XSCAN.

2 YSCAN

SCAN coordinate_system=angle,angle/XSCAN
/YSCAN

The positive scanning direction corresponds either to an increase of the first coordinate (XCAN) in the given coordinate system or the second coordinate (YSCAN).
The default is /XSCAN.

2 LOCAL

SCAN coordinate_system=angle,angle/LOCAL
/BASIC

The coordinate system may be local (LOCAL) to the pointing direction or absolute (BASIC).
The default is LOCAL.

2 BASIC

SCAN coordinate_system=angle,angle/LOCAL
/BASIC

The coordinate system may be local (LOCAL) to the pointing direction or absolute (BASIC).
The default is LOCAL.

2 OFFSET

SCAN coordinate_system=angle,angle/OFFSET=angle,angle

Defined the box center offset in the given coordinate system and the applicable qualifier LOCAL or BASIC.

2 LOW

SCAN coordinate_system=angle,angle/LOW,where
/HIGH,where

where: LOW or HIGH

The 2 keywords of this qualifier defines the starting point of the scan with respect to the box and the local XY system.
LOW,LOW is the default.

2 HIGH

SCAN coordinate_system=angle,angle/HIGH,where
/HIGH,where

where: LOW or HIGH

The 2 keywords of this qualifier defines the starting point of the scan with respect to the box and the local XY system.
LOW,LOW is the default.

DLO:[1,3]LINE.HLP;2

27-MAR-85 11:21

LINE[LINE] /qualifier linespec
LINE/FREQUENCY /qualifier frequency

linespec:
[catalog:]linename

frequency:
Sky frequency in GHz

command qualifier:
LSB USB

The command LINE specifies the sky frequency which is used to set the 1st LO taking into account also the band (USB or LSB) and its width specified in FB1MHZ or FB100KHZ commands in order to keep always the frequency centered. A narrow band filter bank has priority over any larger band bank.

Qualifier LINE is default.

DE0:[1,3]FREQUENCY.HLP:3 27-MAR-85 11:23

FREQUENCY[FREQUENCY] /Qualifier frequency
FREQUENCY/LINE /qualifier linespec

linespec:
[catalog:]linename

frequency:
Sky frequency in GHz

command qualifier:
LSB USB

The command LINE specifies the sky frequency which is used to set the 1st LO taking into account also the band (USB or LSB) and its width specified in FB1MHZ or FB100KHZ commands in order to keep always the frequency centered. A narrow band filter bank has priority over any larger band bank.

Qualifier FREQUENCY is default.

DLO:[1,3]SWITCH.HLP;7

27-MAR-85 11:26

SWITCH [/qualifier] [mode[/qualifier[s]]]

command qualifier:

WALSH SQUARE DISABLE

mode:

LOAD_SKY BEAM FREQUENCY POSITION ALLAN

switching mode qualifiers:

FREQUENCY=f	valid for mode=LOAD_SKY,BEAM and ALLAN
coordinate_system=angle,angle	valid for mode=POSITION
BASIC	valid for mode=POSITION
LOCAL	valid for mode=POSITION
CATALOG=sourcespec	valid for mode=POSITION
DELTA_FREQUENCY=f	valid for mode=FREQUENCY
DEFTIME=interval	valid for mode=FREQUENCY and POSITION
ONTIME=interval	valid for mode=FREQUENCY and POSITION
DISABLE	

coordinate_system:

EQUATORIAL GALACTIC SUPERGALACTIC ECLIPTIC HORIZON USER

angle:

[[deg:]mm:ss:]sec[,frac][']
or [deg:]mm:ss[,frac]'
or deg[,frac]D
or [[hrs:]mm:ss:]sec[,frac]S
or [hrs:]mm:ss[,frac]M
or hrs:[,frac]H

interval:

[[hrs:]mm:ss:]sec[,frac]

The SWITCH command setup the switching mode valid for all devices. Up to 3 different modes may be included in the SWITCH command (number of modes limited to 8). Modes LOAD_SKY and BEAM are contradictory. ALLAN excludes all other modes.

The different mode frequencies and periods are rounded in order to fit together.

For a description of a particular mode or command qualifier type:

HELP SWITCH mode_name or HELP SWITCH command_qualifier

2 LOAD_SKY

SWITCH LOAD_SKY [/qualifier]

qualifier:

FREQUENCY=f

The acquisition is switched between the load and the sky.

If mode qualifier FREQUENCY=f is present the switching frequency is f in Hz, otherwise the default switching frequency is 30Hz

2 BEAM

SWITCH BEAM [/qualifier]

qualifier
QUALIFIER:

FREQUENCY=f

The acquisition is switched between the sky direction with a mirror.
If mode Qualifier FREQUENCY=f is present the switching frequency
is f in Hz, otherwise the default switching frequency is 30Hz.

2 FREQUENCY

SWITCH FREQUENCY [/qualifier]

qualifier:
ONTIME=interval
OFFTIME=interval
DELTAFREQUENCY=f

The acquisition is switched between 2 sky frequencies of which f is
the difference in MHz.

When a mode qualifier is not mentioned to set a parameter the prev:
value is used. There is no other default parameter value.

2 POSITION

SWITCH POSITION [/qualifier[s]]

Qualifiers:
ONTIME=interval
OFFTIME=interval
CATALOG=sourcespec
BASIC
LOCAL
coordinate_system=angle,angle
coordinate_system:
EQUATORIAL GALACTIC SUPERGALACTIC ECLIPTIC HORIZON
angle:
[[des:]mmss:]sec[.frac][']
or [des:]mmss[.frac]'
or des[.frac]D
or [[hrs:]mmss:]sec[.frac]S
or [hrs:]mmss[.frac]M
or hrs[.frac]H

The acquisition is switched between 2 antenna positions.
Former to the command, the tracked position is the primary one.

With qualifier equal to any coordinate_system name the
secondary position is offset of the primary by angle,angle in the
given coordinate system. The offset is calculated in the BASIC or
LOCAL coordinate system.

With CATALOG=sourcespec the secondary position is obsolete. BASIC or LOCAL do not apply.
When a mode qualifier is not mentioned to set a parameter the previous value is used. There is no other default parameter value.

2 ALLAN

SWITCH ALLAN [/qualifier]

Qualifier:

FREQUENCY=f

For all channels (filters and continuums) the ALLAN variance is calculated for sampling frequencies = f f/2 f/4...f/2**14 if mode qualifier FREQUENCY=f is not present the main sampling frequency f is 30 Hz.

2 WALSH

SWITCH/WALSH mode

Valid if modes FREQUENCY and/or POSITION are selected.

The sequence of the ON and OFF phases constitutes a Walsh function. When qualifier SQUARE is not mentioned WALSH is the default.

2 SQUARE

SWITCH/SQUARE mode

Valid if modes FREQUENCY and/or POSITION are selected.

The sequence of the ON and OFF phases constitutes a square function.

2 DISABLE

SWITCH/DISABLE

SWITCH mode/DISABLE

Disable all the specified modes.

BLO:[1,3]TOTAL.HLP:2

27-MAR-85 11:28

TOTALPOWER [/qualifier[s]]

command qualifiers:

INTEGRATIONTIME=interval
CHART=detector
YFACTOR
DISABLE

The command TOTALPOWER selects the 2 total power detectors for the given or deduced integration time.

For a description of a particular qualifier type:
TOTALPOWER qualifiername

2 INTEGRATIONTIME=interval

TOTALPOWER/INTEGRATIONTIME=interval

interval:
[[hrs:]]mmss[:]sec[.frac]

If device qualifier INTEGRATIONTIME is not present the default value depends on the dump interval and the number of phases defined with command SWITCH. the integration time is rounded in order to fit the switching periods.

2 CHART

TOTALPOWER/CHART=detector

For device qualifier CHART the different phases of the detector are with the given or deduced integration time in order to be displayed. the display data may be as old as the dump interval.

2 YFACTOR

TOTALPOWER/YFACTOR

When requested the Y factor is calculated with the given or deduced integration time.

2 DISABLE

TOTALPOWER/DISABLE

Disable the totalpower detectors. The device parameters remain unchanged.

DLO: E1, 33FB1MHZ, HLP:4

27-MAR-95 11:30

FB1MHZ [filter_bank] [/Qualifier[s]] Spectrometer 1MHz

Filter_bank:
HIGH **LOW**

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Qualifiers:  
/128 /256  
/LOAD /OFFSET  
/RECEIVER:n  
/NOISE [/LEVEL=a]  
/DISPLAY n n=1 or 2  
    /CALIBRATION  
    /NOCALIBRATION  
    /TERMINAL=terminal_name  
/NODISPLAY n  
/INTEGRATIONTIME=interval  
/CHART=Channel
```

The FB1MHZ command selects input to and/or distribution of the 1 MHz Filter-Bank. It is considered in two halves, each with 256x1MHz channels. The two halves are called LOW (chan 1-256) and HIGH (257-512). The filter_bank specification is not required if qualifiers apply to both.

For a description of a particular qualifier, type HELP SPECTRO qualifier.

2 RECEIVER

FB1MHZ filter_bank /RECEIVER:n

The /RECEIVER:n qualifier switches the specified filter-bank to Receiver n. Should be set to A or B.

FB1MHZ /RECEIVERID /512

The two filter-banks are switched to Receiver n.

2 128

FB1MHZ filter_bank /128
/256

The /128 & /256 qualifiers switch banks of 128 channels within the specific filter-bank.

/128 gives the same 128 MHz in both halves
/256 gives the full 256 MHz

2 256

FB1MHZ filter_bank /128
/256

The /128 & /256 qualifiers switch banks of 128 channels within the specific filter-bank.

/128 gives the same 128 MHz in both halves
/256 gives the full 256 MHz

2 512

FB1MHZ /512 /input

The /512 qualifier switches banks of 256 channels to the full 512 MHz
/input specifies either calibration mode or receiver number

2 NOISE

FB1MHZ /NOISE [/LEVEL=a] Default /LEVEL=0

The NOISE qualifier switches both filter-banks to noise source.

/LEVEL=a sets dB's of attenuation in the noise generator. Should be set in the range -12 to +3.

2 LOAD

FB1MHZ /LOAD
FB1MHZ /OFFSET

The LOAD [or OFFSET] qualifier switches both filter-banks to calibration source for zero-offset measurements.

2 OFFSET

FB1MHZ LOAD
FB1MHZ OFFSET

The LOAD [or OFFSET] qualifier switches both filter-banks to calibration source for zero-offset measurements.

DLO:[1,3]SPECTRAL.HLP;2

27-MAR-85 13:15

SPECTRALCORRELATOR /qualifier[s]

command qualifiers:

1 2 4

LINE=11,12,13,14

FREQUENCY=f1,f2,f3,f4

CHANNEL=c1,c2,c3,c4

BAND=b1,b2,b3,b4

INTEGRATIONTIME=interval

[NO]DISABLE

interval: [[hrs:]mmss:]sec[.frac]

The command initiates and enable the spectralscorrelator for acquisition.
NODISABLE is the default for any command SPECTRALCORRELATOR.
For a description of a particular command qualifier type
HELP SPECTRALCORRELATOR qualifier

2 1

SPECTRALCORRELATOR/1

SPECTRALCORRELATOR/2

SPECTRALCORRELATOR/4

Defines the number of bands

Previous value is the default.

2 2

SPECTRALCORRELATOR/1

SPECTRALCORRELATOR/2

SPECTRALCORRELATOR/4

Defines the number of bands

Previous value is the default.

2 4

SPECTRALCORRELATOR/1

SPECTRALCORRELATOR/2

SPECTRALCORRELATOR/4

Defines the number of bands

Previous value is the default.

2 FREQUENCY

SPECTRALCORRELATOR/FREQUENCY=f1,f2,f3,f4

Defines a sky frequency for each band.

For a band, when a frequency is not specified the previous value is used.

FREQUENCY and LINE qualifiers may be used together to specify either line or frequency for each band.

2 LINE

SPECTRALCORRELATOR/LINE=linespec1,linespec2,linespec3,linespec4

Defines a sky line frequency for each band.

For a band, when a linespec is not mentionned the previous ch

frequency value is used.

FREQUENCY and LINE qualifiers may be used together to specify either line or frequency for each band.

2 CHANNEL

SPECTRALCORRELATOR/CHANNEL=c1,c2,c3,c4

Defines a channel for each frequency in each band

With a 4 band correlator each band has 64 channels (1 to 64)

With a 2 band correlator each band has 128 channels (1 to 128)

With a single band correlator the band has 256 channels (1 to 256)

Previous values are the default

2 BAND

SPECTRALCORRELATOR/BAND=b1,b2,b3,b4

Defines the bandwidth for each band.

The possible values are 80,40,20,10,5,2.5 or 1.25 in MHz

Only 2 different values may be specified at a time for all bands.

Previous values are the default.

2 SIDEBAND

SPECTRALCORRELATOR/SIDEBAND=s,s,s,s

s: UPPER or LOWER

When the bandwidth is 80MHz the sideband is UPPERT+LOWER whatever the parameter s is.

Previous values are the default.

2 DISABLE

SPECTRALCORRELATOR/DISABLE

Disable the spectralcorrelator. No more acquisition is done with this device until new command with no qualifier DISABLE.

WLO:[1,3]ACQUIS.HLP;5

27-MAR-85 13:21

ACQUISITION[/qualifier[s]]

command qualifiers:

AFTER=time GO UNTIL=time FOR=interval STOP DISABLE

The ACQUISITION command initiates the acquisition for the selected devices (except for command qualifier STOP).

At start time the dumping period is calculated depending on the different switching frequencies and integration times and checked against CPU possibilities. Whatever the selected integration times, data may be old as the dumping interval.

For a description of a particular command qualifier type:
HELP ACQUISITION command_qualifier_name

2 AFTER

ACQUISITION/AFTER=time

time=hrs:mms[:ss]

Specifies the sideral starting time

OBSERVE

RE

2 GO

ACQUISITION/GO

Requests to start immediately. GO is the default starting qualifier.

2 UNTIL

ACQUISITION/UNTIL=time

time=hrs:mms[:ss]

Specifies the sideral end time

2 FOR

ACQUISITION/FOR=interval

interval=[[hrs:]mms]sec[,frac]

Specifies the acquisition duration

2 STOP

ACQUISITION/STOP

Request to stop immediately the acquisition

2 DISABLE

ACQUISITION/DISABLE

Disable all devices.

Help files for the following DCL commands on PDP for P.de BURE:

SOURCE
SCAN
LINE
FREQUENCY
SWITCH
TOTAL
FB1MHZ
SPECTRALCORRELATOR
ACQUISITION

Please your comments.

AP 27/3/85

DL0:[1,3]SOURCE.HLP;3

25-MAR-85 11:15

SOURCE/coordinate_system /qualifier angle[,epoch] /qualifier
SOURCE/[CATALOG] /qualifier sourcespec /qualifier

coordinate_system:

EQUATORIAL GALACTIC SUPERGALACTIC ECLIPTIC HORIZON

angle:

[[deg:]mmss:]sec[.frac]"
or [deg:]mmss[.frac]'
or deg[.frac]D
or [[hrs:]mmss:]sec[.frac]S
or [hrs:]mmss[.frac]M
or hrs[:.frac]H

epoch:

years[.frac]

command qualifier:

WAIT

sourcespec:

[catalogname:]sourcename

coordinate or sourcename qualifiers:

VLSR=v
HELIOPCENTRIC=v

The SOURCE command presets the antenna to a direction given in a coordinate system or found in a catalog.

Any correction needed (precession, refraction...) is performed and when the direction is reached the antenna switches to the tracking mode

For a description of a particular qualifier type
HELP SOUR qualifier

2 EQUATORIAL

SOURCE/EQUATORIAL r.a.,dec,epoch

r.a. and dec: Source coordinates in equatorial coordinate system at time=epoch

2 GALACTIC

SOURCE/GALACTIC long,lat

long and lat: Source coordinates in galactic coordinate system