This section describes the command set of the Spex BigDog and GuideDog Instrument control applications.

**Keys**
- **B** - This command applies to BigDog's IC application.
- **G** - This command applies to GuideDog IC application.
- **X** - This is an XUI specific command.

**AFoc.Init** - **B G**
Array Focus Initialization initializes the focus motor by searching for the position sensor and recalibrating the 0 position.

- **Prompt** 'AFoc.Init' button on the XUI Setup Window.
- **Syntax** Afoc.Init

**AFoc.Pos** - **B G**
Array Focus Position command allows you to position the focus to a particular step position.

- **Prompt** 'AFoc.Pos' prompt on the XUI's setup page.
- **Range** step is from 0 to MAX.
- **Syntax** Afoc.pos step

**AFoc.Sim** - **B G**
Array Focus Simulation sets the simulation flag for the array focus.

- **Prompt** none
- **Range** off - moves the real motor.
- **Initial** off
- **Syntax** Afoc.Sim {off|on}

**Array** - **B**
Sets the size and location of sub-arrays within quadrant 1. These subarrays are mirror in quadrants 2, 3 and 4. The sub-arrays determine which array pixel will be readout for a GO.

- **Prompt** 'Array' prompt on the observing parameter's Obs page.
- **Range** inx - range is 0 to 2.
- **Initial** All subarray are defined as full arrays (0 0 512 514).
- **Syntax** ARRAY inx x y wid hgt

**AFResets** - **G**
Array Background Resets command for the various parameters. As may be beneficial to periodically reset the array, the software is able to automatically reset the array by toggling its global reset line. The AFResets command turns the background resets off/on.

- **Prompt** 'AFResets' prompt on the XUI's Eng widow.
- **Range** Off - Turns Background resets off.

**AutoSave** - **B G**
Determines whether the data is saved by the IC program. Note that in Movie Mode the data is always saved.

- **Prompt** 'AutoSave' on the observing parameter's Obs page.
- **Range** Off - Data is not saved.
- **Initial** Off
- **Syntax** AutoSave { off | on }

**bb2dv** - **B G**
Send the bufferboard memory (ixr1) to DV as a fits file.

- **Prompt** none
- **Syntax** BB2DV

**BBMemSet** - **B G**
Initializes the bufferboard memory (dsp3's ixr1) to a value.

- **Prompt** none
- **Range** nwords - number of words, 1 to 1024^2.
- **Initial** value - Initial memory to this value.
- **Syntax** BBMemSet nwords value

**BGR** - **B G**
There are sets of commands are uses to control the various parameters related to the BackGround Resets. As may be beneficial to periodically reset the array, the software is able to automatically reset the array by toggling its global reset line. The BGR command turns the background resets off/on.

- **Prompt** 'BGResets' prompt on the XUI's Eng widow.
- **Range** Off - Turns Background resets off.
**SPeX User’s Guide**

**Dictionary of Commands**

**On** – Turns Background resets on.

**Syntax**

```
BGR { off | on }
```

**BGR.min.ms** – Specifies the minimum time between a global reset and the start of a GO sequence. Note that the GO sequence usually begins with a global reset.

**Prompt**

‘BGR resets’ prompt on the XUI’s Eng widow.

**Range**

1 to 60,000 ms. (1ms to 60secs).

**Syntax**

```
BGR.min.ms milliseconds
```

**BGR.ms** – sets the background Resets period. This parameter determines how often BGR will occur.

**Prompt**

‘BGR resets’ prompt on the XUI’s Eng widow.

**Range**

1 to 3,600,000 ms. (1ms to 1hour).

**Syntax**

```
BGR.ms milliseconds
```

**BGR.ns** - Specifies how long the global reset is held (or Active) during a background reset. The time is rounded to the nearest 25 ns period.

**Prompt**

‘BGR resets’ prompt on the XUI’s Eng widow.

**Range**

250 to 250,000,000 nanoseconds. (250 ns to 0.250 secs).

**Syntax**

```
BGR.ns nanoseconds
```

**BM2DV** - Sends the bad mask to DV as a FITS images.

**Syntax**

```
BM2DV
```

**BM.Clear** - Marks a pixel as ‘good’ in the bad pixel mask.

**Syntax**

```
BM.Clear x y
```

**BM.ClearAll** - Marks all pixels as ‘good’ in the bad pixel mask.

**Syntax**

```
BM.ClearAll
```

**BM.IsBad** - Print message indicating if the pixel is marked bad or good.

**Syntax**

```
BM.IsBad x y
```

**BM.Set** - Marks a pixel as ‘bad’ in the bad pixel mask.

**Syntax**

```
BM.Set x y
```

**CalMir** - Selection the Calibration Mirror position.

**Prompt**

Lamp/Mirror icon in XUI window.

**Range**

Out - lamps not visible.

In - lamps are in the optical path.

**Initial**

out

**Syntax**

```
CalMir { out | in }
```

**CalMir.Init** - Calibration Mirror Initialization calibrations the motors and set the initial positions to off/out.

**Prompt**

‘CalMir.Init’ button on the XUI Setup Window.

**Syntax**

```
CalMir.Init
```

**CalMir.Pos** - CalMir Position command allows you to position the calibration mirror to a particular step position.

**Prompt**

‘CalMir.Pos’ on the XUI Setup Window.

**Range**

step is from 0 to MAX.

**Syntax**

```
CalMir.pos step
```

**CalMir.Sim** - CalMir Simulation sets the simulation flag for the calmir software.

**Prompt**

none

**Range**

off - moves the real motor.

on - simulate motor movements.

**Initial**

off

**Syntax**

```
CalMir.Sim { off | on }
```

**CamMode** - Sets the Camera Mode, which defines the mode of camera operations.

**Prompt**

‘CamMode’ on the Obs XUI window.

**Range**

An explanation of the different mode are in the BigDog and GuideDog How-to-Guides.

**Initial**

Basic

**Syntax**

```
CamMode { sim | basic }
```

**CBMode** - Set the Clocking and Buffer Mode, which defines the fundamental method of clocking and sampling the array to obtain pixels values

**Prompt**

‘CBMode’ on the setup XUI window.

**Range**

An explanation of the different mode are in the BigDog and GuideDog How-to-Guides.
TSac – number of Time Slices for After Converts.
TSrd – number of Time Slices for Read Data.
TSpc – number of Time Slices for Pre-converts

Syntax

CvTest nconverts TSac TSrd TSpc

Cycles - [B] Cycles is a repetition factor in a GO sequence.

Prompt 'Cycles' on the XUI's Obs page.
Range 1 to 1000.
Initial 1
Syntax CYCLES num

Die - [B] This command stops the execution of the IC program.
Syntax DIE

DisableRPC - [B] This command disable/enable RPC calls to littledog. SpeX requires the littledog computer to be up and running. Disabling RPC allows you to run SpeX when littledog is offline.

Prompt none
Range off - IC will use RPC to command littledog.
on - RPC are not issued.
Initial off
Syntax DisableRPC {off|on}

CoAdd - [B] The number of integrations summed together per beam or chop position in a GO.

Prompt 'Coadd' on the XUI's Obs page.
Range 1 to 32000
Initial 1
Syntax COADD num

Comment - [B] Specifies a string to be place in the FITS header of the saved file as a comment.

Prompt 'Comment' on the XUI's Obs page.
Range Any string up to 40 characters.
Initial Undefined.
Syntax COMMENT string

CvTest - [B] Performs the ConvertTest procedure, which is an engineering testing tool. CvTest just generation a number of convert and captures the digitized values..

Prompt none
Range nconverts - 1 to 32768 (32768*32pixel per converts is 1024*1024 pixels)

Syntax

Dit.Pos - [B] Dichroic Position command allows you to position the dichroic wheel to a particular step position.

Prompt 'Dit.Pos' prompt on the XUI's Setup page.
Range step is from 0 to MAX.
Syntax Dit.pos step
Dit.Sim - [B G]  Dichroic Simulation sets the simulation flag for the dichroic wheel.

Prompt  none
Range    off - moves the real motor.
          on - simulate motor movements.
Initial  off
Syntax   Dit.Sim {off | on}

DSPTimingInfo - [B G]  When ON, speX will procedure a 'DSPTiming_9999.txt' file in the data directory. This text file contains details on the DSP timing during the array clocking. Refer to the Software Users Guide Vol II, 4.4 for details.

Prompt  'DSPTimingInfo' on XUI's Setup page
Range    OFF – Do not produced timing information file.
             ON – Produce the timing information file.
Syntax   DSPTiming {off | on}

DTime - [B G]  Sets the deadtime delay after a telescope beam switch command is issued during a GO.

Prompt  ‘Beam Dtime’ on XUI's Obs page
Range    From 0.5 to 20 seconds
Syntax   DTime sec

DV - [B G]  Sends a command to DV (the Data Viewer). Only works on DV1.

Prompt  none
Range    Any legal DV command.
Syntax   DV Any_Legal_DV_Command

DV1.Enable - [B G]  This toggle determines if the IC sends data to DV at DV1’s home:port_number..

Prompt  ‘dv1.enable’ on the XUI Setup tab.
Range    Off – Do not display images on DV.
          On – display images on DV.
Initial  On
Syntax   DV1.enable {off | on}

DV1.HostName - [B G]  The IC program uses this hostname when send data or commands to DV1.

Prompt  ‘dv1.hostname’ on the XUI Setup tab.
Range    Enter the hostname of the workstation running DV.
Initial  localhost
Syntax   DV1.HOSTNAME name

DV1.Port - [B G]  Specifies the TCP/IP port number when communication to DV for DV1.

Prompt  ‘DV1.Port’ on the XUI Setup tab.
Range    Enter the port number of the DV application.
Initial  BigDog is 30123.
          GuideDog is 30124.
Syntax   DV1.Port port_number

DV2.enable, DV2.hostname, DV2.port - [B G]  Similar to DV1 commands, except directory towards DV2. Thus a second data view can be used with speX.

Filename - [B G]  This command defines the filename prefix is used to create filenames when saving data to disk. New filenames are constructed by concatenating Filename with the Image Number, then adding a file extension. For example, if Filename is '01jan' and image number is 45, the data file saved could be '01jan0045.a.fits'.

Prompt  'Filename' on the XUI's Setup page.
Range    A string of 8 characters
Initial  The current date in the form DDMMM
Syntax   FILENAME string

FullArray - [B G]  The FullArray flag tell the camera to ignore the current NumArray, and Sub-Array parameters and take a single full size array image. This allows you to toggle between a sub-array setup and full array images.

Prompt  'SubArray/FillArray' tabs on the XUI window.
Range    off – Use NumArray, Array parameters to define sub-arrays.
          On – Take a single full size array image.
Initial  off
Syntax   FullArray {off | on}

GFIt - [B G]  Positions the Guider Filter wheel.

Prompt  GFIt icon in XUI window.
Range    GFIt selections are full described in the 'LittleDog Mechanism' manual. Section 8.1. The table below lists the GFIT selections.

<table>
<thead>
<tr>
<th>Selection</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Open</td>
</tr>
<tr>
<td>Z</td>
<td>Z</td>
</tr>
<tr>
<td>J</td>
<td>J</td>
</tr>
<tr>
<td>H</td>
<td>H</td>
</tr>
</tbody>
</table>
Go.Restart - [B G] Kills the UNIX go process (the program which handles the array operations) and re-starts a new one.

Syntax: Go.Restart

GPSTime - [B G] The GPSTime parameter indicates which time source is used to timestamp the images: either the internal computer clock or the GPS clock board.

Prompt: none
Range: off - Timestamp obtained from GPS timer board.
        on - Time stamp obtained from UNIX host timer.
Initial: off
Syntax: GPSTime {off | on}

Grat - [B G] Positions the grating turret.
Prompt: Grat icon in XUI window.
Range: Grating selections are fully described in the ‘LittleDog Mechanism’ manual. Section 7.1. The table below lists the Grating selections.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>ShortXD</td>
</tr>
<tr>
<td>LongXD1.9</td>
</tr>
<tr>
<td>LongXD2.3</td>
</tr>
<tr>
<td>LowRes60</td>
</tr>
<tr>
<td>LowRes15</td>
</tr>
<tr>
<td>ShortOS</td>
</tr>
<tr>
<td>LongOS</td>
</tr>
</tbody>
</table>

Syntax: Grat { ShortXD | ... | LongOS }

Grat.Init - [B G] The Grating Initialization command initializes the grating turret by searching for a position sensor and re-calibrating its position.

Prompt: ‘Grat.Init’ button on the XUI Setup Window.
Syntax: Grat.Init

Grat.Pos - [B G] The Grating Position command allows you to position the Grating turret to a particular step position.

Range: step is from 0 to MAX.
Syntax: Grat.pos step


Prompt: none
Range: off - moves the real motor.
       on - simulate motor movements.
Initial: off
Syntax: Grat.Sim {off | on}

Go - [B G] Performs a GO, which is a set of integrations. Please read the section SECTION_NAME for a more complete description.

Syntax: GO

Go.Init - [B G] Reset the DSP board and reloads their program, data, and parameters.

Syntax: Go.Init

Go.Restart - [B G] Kills the UNIX go process (the program which handles the array operations) and re-starts a new one.

Syntax: Go.Restart

GPSTime - [B G] The GPSTime parameter indicates which time source is used to timestamp the images: either the internal computer clock or the GPS clock board.

Prompt: none
Range: off - Timestamp obtained from GPS timer board.
       on - Time stamp obtained from UNIX host timer.
Initial: off
Syntax: GPSTime {off | on}

Grat - [B G] Positions the grating turret.
Prompt: Grat icon in XUI window.
Range: Grating selections are fully described in the ‘LittleDog Mechanism’ manual. Section 7.1. The table below lists the Grating selections.

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Syntax: Grat { ShortXD | ... | LongOS }

Grat.Init - [B G] The Grating Initialization command initializes the grating turret by searching for a position sensor and re-calibrating its position.

Prompt: ‘Grat.Init’ button on the XUI Setup Window.
Syntax: Grat.Init

Grat.Pos - [B G] The Grating Position command allows you to position the grading turret to a particular step position.

Range: step is from 0 to MAX.
Syntax: Grat.pos step


Prompt: none
GuideCorrectionsTo - [G] Tells the camera where to sent the guide correction offset.

- Prompt ‘CorrectionsTo’ on Slow.Gd Tab on XUI’s Obs panel.
- Range Off – Correction not send.
  - TCS – Correction sent to TCS.
- Syntax GuideCorrectionsTo {Off|TCS}

Guide.ClearRate - [G] This command zeros the accumulated offset totals send to the TCS while in GuideDog is Guiding. These total are used to determine a rate error.

- Prompt ‘ClearRate’ button on XUI Slow.Gd Cammode tab.
- Syntax Guide.ClearRate

Guide.ClearSky - [G] This command clears the sky buffer in the IC for the slowguide mode.

- Prompt ‘Guide.Clearsky’ button on XUI Slow.Gd Cammode tab.
- Syntax Guide.ClearSky

Guide.FullImage - [G] This slowguide command takes a full frame images and displays it in buffer D of DV (data viewer). You need a full frame image to specify your subarrays.

- Syntax Guide.FullImage

Guide.TakeSky - [G] This command take and stores and image in the sky buffer for slow guide mode. The sky buffer is subtracted from the image while guiding.

- Syntax Guide.TakeSky

GuideGainX, GuideGainY - [G] A gain factor is applied to the offset magnitude when calculating pixel offset to RA,DEC sky offsets. Separate command are provide for the X and Y axis.

- Prompt ‘GainXY’ on the XUI Slow.Gd Cammode tab.
- Range The gain ranges from 0 to 50
- Initial n/a
- Syntax GuideGainX gain
  - GuideGainY gain

GuideBox - [G] Sets the size and position of the Box on the array used in the guiding/offset calculations.

- Prompt N/A
- Range A or B to identify GuideBox A or B.
- x, y, wid, hgt – location and size for the guide subarray..
- Syntax GuideBox { a | b } x y wid hgt

GuideBox.Center - [G] Adjust the position of the guidebox so it is centered an (x,y).

- Prompt A & B ‘CenXY’ on the XUI subarray tabs.
- Range A or B to identify GuideBox A or B.
- x, y – location for the guide subarray..
- Syntax GuideBox.Center { a | b } x y

GuideBox.Wid - [G] Adjust the size (both wid & hgt) of the guidebox. Adjusted so that the center pixel is still in the same location.

- Prompt A & B ‘WH’ on the XUI subarray tabs.
- Range A or B to identify GuideBox A or B.
- Wid – size for the guide subarray..
- Syntax GuideBox.Wid { a | b } wid

GuideResetNS - [B G] The Global Reset NS parameter specifies the time of the global reset in nanoseconds. The actual reset pulse is rounded to the nearest 25 ns due to the clock frequency of the DSP board.

- Prompt ‘GresetNS’ on XUI's Eng page.
- Range 250 to 250,000,000.
- Syntax GuideResetNS nanoseconds

GuideAB - [G] GuideAB is a slow guide parameter used to specify if the need to guide just in the A beam, or in both beams (A & B).

- Prompt ‘GuideAB’ pulldown on XUI Slow.Gd CamMode tab.
- Range .
- Syntax GuideAB { off | on }

Guide.ClearRate - [G] This command zeros the accumulated offset totals send to the TCS while in GuideDog is Guiding. These total are used to determine a rate error.

- Prompt ‘ClearRate’ button on XUI Slow.Gd Cammode tab.
- Syntax Guide.ClearRate

Guide.ClearSky - [G] This command clears the sky buffer in the IC for the slowguide mode.

- Prompt ‘Guide.Clearsky’ button on XUI Slow.Gd Cammode tab.
- Syntax Guide.ClearSky

Guide.FullImage - [G] This slowguide command takes a full frame images and displays it in buffer D of DV (data viewer). You need a full frame image to specify your subarrays.

- Syntax Guide.FullImage

Guide.TakeSky - [G] This command take and stores and image in the sky buffer for slow guide mode. The sky buffer is subtracted from the image while guiding.

- Syntax Guide.TakeSky

GuideGainX, GuideGainY - [G] A gain factor is applied to the offset magnitude when calculating pixel offset to RA,DEC sky offsets. Separate command are provide for the X and Y axis.

- Prompt ‘GainXY’ on the XUI Slow.Gd Cammode tab.
- Range The gain ranges from 0 to 50
- Initial n/a
- Syntax GuideGainX gain
  - GuideGainY gain

GuideBox - [G] Sets the size and position of the Box on the array used in the guiding/offset calculations.

- Prompt N/A
- Range A or B to identify GuideBox A or B.
- x, y, wid, hgt – location and size for the guide subarray..
- Syntax GuideBox { a | b } x y wid hgt

GuideBox.Center - [G] Adjust the position of the guidebox so it is centered an (x,y).

- Prompt A & B ‘CenXY’ on the XUI subarray tabs.
- Range A or B to identify GuideBox A or B.
- x, y – location for the guide subarray..
- Syntax GuideBox.Center { a | b } x y

GuideBox.Wid - [G] Adjust the size (both wid & hgt) of the guidebox. Adjusted so that the center pixel is still in the same location.

- Prompt A & B ‘WH’ on the XUI subarray tabs.
- Range A or B to identify GuideBox A or B.
- Wid – size for the guide subarray..
- Syntax GuideBox.Wid { a | b } wid
**GuideMethod - [G]** The algorithm used to calculate the X, Y displacement in the Guide Array is specified by the GuideMethod command.

- **Prompt** ‘Method’ on the XUI Slow.Gd CamMode tab.
- **Range** Available GuideMethods are:
  - **Peak** – Maximum pixel value in the guide array determines the object’s locations.
  - **Peak+Smooth** – Each pixel value is replaced by averaging its value and all its neighboring pixels, then the Peak algorithm is applied.
  - **Centroid** – A centroid is calculated by weighting the pixel values and its location to determine the object’s location.
  - **Centroid+Flt1** – Before the centroid algorithm is applied the data modified by:
    - a. rescaled so that [mean-std, mean+std] is mapped to [-25,25].
    - b. Set any negative values to 0.
  - **Centroid+Flt2** – Before the centroid algorithm is applied the data is modified by:
    - a. Subtract the mean value from each pixel.
    - b. Divide by the standard deviation.
    - c. Set any values < 1 is set to 0.

- **Initial** n/a
- **Syntax** `GuideMethod { peak | peak+smooth | centroid | centroid+flt1 | centroid+flt2 }`

**GuideSleep - [G]** During slow guiding a sleep interval can be specified to control the rate of correction issues to the Telescope Control System.

- **Prompt** ‘?’
- **Range** 0.25 to 60 seconds.
- **Initial** ‘?’
- **Syntax** `GuideSleep seconds`

**IgnoreMotors - [B G]** Normally GO cannot be issued if the motors are in any other state that READY (in other words, the motors are idle and have already been initialized). This command disables that restriction, allowing GO to proceed regardless of the motor state.

- **Prompt** ‘Ignore Motors’ on the XUI setup page.
- **Range** off – Only allow GO when motors are READY.
  on – Ignore motor’s state when executing the go command.
- **Initial** off
- **Syntax** IgnoreMotors {off | on}

**ImageNumber - [B G]** An ID number used to create the FITS filenames. See Filename for details.

- **Prompt** ‘?’
- **Range** 1 to 9999
- **Initial** 1
- **Syntax** `ImageNumber number`

**Instrument - [B G]** This command sets the value portion of the INSTRUME keyword for the FITS image header.

- **Prompt** none
- **Range** any string up to 40 characters.
- **Initial** n/a
- **Syntax** `Instrument string`

**isready - [B G]** Returns ERR_NONE is all the components (array, motors) of the camera is ready. Otherwise, returns ERR_BUSY. This command gives you a way to test if the camera is ready. Intended for macro files. The next line in a macro file after the isready command will not be executed until all component return to the ready state.

- **Syntax** `isready`

**Itime - [B G]** The amount of time the array is exposed between readouts, or the time interval for 1 coadd. The minimum value is depend on the array readout rate.

- **Prompt** ‘Itime’ on the XUI Obs page.
- **Range** 0.0001 to 1800 seconds
- **Initial** 1
- **Syntax** `itime seconds`

**Lamp - [B G]** This command turns off/on individual lamp and position calibration mirror.

- **Prompt** ‘?’
- **Range** Lamp states are:
  - Off – all lamp are off.
  - QTH – turn on the QTH lamp.
  - IR – turn on the IR source.
  - AR – turn on the argon lamp
- **Calibration mirror states are:**
  - Out – Mirror is out of the beam.
  - In – Mirror is in the beam (lamps are visible).
- **Initial** off out
- **Syntax** Lamp states: Off QTH IR AR Calibration mirror states: Out In
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Object - \[B \] \[G \] This text identifies the object you are observing and is placed in the FITS header on the OBJECT header line.

Prompt ‘Object’ on the XUI Setup page.

Range Any string up to 40 characters.

Initial ‘Name of Object’

Syntax Object string

Observer - \[B \] \[G \] This text identifies the observers and is placed in the FITS header on the OBSERVER header line.

Prompt ‘Observer’ on the XUI Setup tab.

Range Any string up to 40 characters.

Initial ‘Your name’

Syntax Observer string

ObsMode - \[B \] \[G \] Determines the beam switch pattern for 1 cycle in the Basic CamMode.

Prompt ‘Obs Mode’ on the XUI’s Obs page.

Range 0 - Obj(A) integrates at the present beam position.

1 - Sky (B) integrates at the present beam position.

2 - Pair (AB). In this mode, a pair of images are taken. First the telescope is positioned at the A beam and a ‘object’ image is taken. Then the telescope is positioned at the B beam and a ‘sky’ image is taken.

Initial 0

Syntax ObsMode index

Origin - \[B \] \[G \] This command sets the value portion of the ORGIN keyword for the FITS image header. The origin normally indicates the institution writing the data.

Prompt none

Range any string up to 40 characters.

Initial n/a

Syntax Origin string

NumArray - \[B \] \[G \] Specifies the number of sub-arrays to be readout on the Infrared Device.

Prompt ‘NumArray’ on the XUI Obs page.

Range BigDog supports 1 to 3 sub-arrays.

GuideDog supports 1 to 2 sub-arrays.

Initial 1

Syntax NumArray number

LDHostName - \[B \] \[G \] Specifies the hostname of the littledog computer. Littledog is an embedded PC used by spex for motor control, temperature control and various analog/digital IO functions.

Prompt ‘LD hostname’ prompt on the XUI Setup tab.

Range Enter the hostname for the littledog PC.

Initial littledog

Syntax LDHostName name

LocalDisplay - \[B \] \[G \] The camera software can display image to a program running on the UNIX console monitor. This command controls whether the image data is display.

Prompt ‘LocalDisplay’ prompt on the XUI Setup tab.

Range off – Do not display data on local display.

On – Display the data on the local display.

Initial off

Syntax LocalDisplay {off | on}

Log - \[B \] \[G \] The camera software keeps a log of message it produces during execution. This command allows the users to log a message into this file.

Range Any text message.

Syntax log message

NDR - \[B \] \[G \] The Non-Destructive Read parameter identifies the number of samples or times the array is readout to obtain the image for 1 coadd. Not the increasing NDR may lower your noise, but will increase your minimum integration time.

Prompt ‘NDR’ on the XUI’s Setup page.

Range 1 to 32

Initial 8

Syntax NDR number

Open

PK_50

Osd - \[B \] \[G \] Positions the order sorter filter wheel.

Prompt OSF icon in XUI window.

Range OSF selections are fully described in the ‘LittleDog Mechanism’ manual. Section 4.1. The table below lists the selections.
Path - [B G] This path identifies the subdirectory the IC programs uses when saving FITS data files. Will create a directory if it doesn’t exist. The following strings substitution are applied:

- $HOME is replaced with your home path.
- $DATE is replaced with the current date, ie: 01JAN

Prompt  'Path' on the XUI's Obs page.
Range Any legal UNIX subdirectory
Initial  ?
Syntax  PATH string

ReadCkPattern - [B G] Issuing this command will force the IC to read the clocking patterns and generate a new clock table on the next GO.

Prompt  'ReadCkPatterns' button on the XUI's Eng page.
Syntax  ReadCkPattern

RemoveExtra206MuxData - [B] If On, the garbage data row obtain using a 206 (Aladdin 3) multiplexer is removed from the saved or display images.

Prompt  'RemoveExtra206MuxData' button on the XUI's Eng page.
Syntax  RemoveExtra206MuxData { off | on }

ResetCE - [B G] This command causes a reset command to issued to the cryostat electronics.

Prompt  'Reset CE' button on the XUI's Eng page.
Syntax  ResetCE

ResetFIFO - [B G] The command causes a reset FIFO command to be issued to the cryostat electronics.

Prompt  'ResetFIFO' button on the XUI's Eng page.
Syntax  ResetFIFO

Rot - [B G] Positions the Rotator to the Sky's position angle.

Prompt  ROT icon in XUI window.
Range  0 to 360 degrees.
Syntax  Rot Position_angle

RotAng - [B G] Positions the Rotator to the mechanical device’s rotation angle.

Prompt  N/A.
**Rot.Init - [B G]** Rotator Initialization initializes the Rot device by searching for its home sensor and initializing its position.

- **Prompt**: 'Rot.Init' button on the XUI Setup Window.
- **Initial**: N/A
- **Syntax**: Rot.Init

**Shutter - [B G]** Opens or Closes the shutter.

- **Prompt**: Open the Cal Box Dialog Box.
- **Range**: Close – shutter is closed.
  - Open – shutter is open.
- **Syntax**: Shutter {close|open}

**Rot.Pos - [B G]** The Rotator Position command allows you to position the Rotator to a particular step position.

- **Prompt**: 'Rot.Pos' prompt on the XUI's Setup page.
- **Range**: step is from 0 to MAX.
- **Syntax**: Rot.pos step

**Rot.PASummary - [B G]** Updates the parallactic angle summary information on the XUI status window.

- **Syntax**: Rot.PASummary

**SetDAC - [B G]** Changes the bias voltage to the clock/bias DAC.

- **Prompt**: 'Set DAC:' prompt on the XUI's Eng page.
- **Range**: board = 0 to 7
  - dac = 0 to 15
  - voltage = -10.0 to 10.0
- **Syntax**: SetDAC board dac voltage

**SetMask - [B G]** Sets the OR mask on the clocking board output interface.

- **Prompt**: 'Set Mask:' prompt on the XUI's Eng page.
- **Range**: 32 bit hex number.
- **Initial**: N/A
- **Syntax**: SetMask hex_number

**Slit - [B G]** Positions the slit wheel to a slit position.

- **Prompt**: Slit icon in XUI window.
- **Range**: Slit selections are full described in the 'LittleDog Mechanism' manual. Section 6.1. The table below lists the selections.

<table>
<thead>
<tr>
<th>Slit Position</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>0.3x15</td>
</tr>
<tr>
<td></td>
<td>0.5x15</td>
</tr>
<tr>
<td></td>
<td>0.8x15</td>
</tr>
<tr>
<td></td>
<td>1.6x15</td>
</tr>
<tr>
<td></td>
<td>3.0x15</td>
</tr>
<tr>
<td></td>
<td>0.3x60</td>
</tr>
<tr>
<td></td>
<td>0.5x60</td>
</tr>
<tr>
<td></td>
<td>0.8x60</td>
</tr>
<tr>
<td></td>
<td>1.6x60</td>
</tr>
<tr>
<td></td>
<td>3.0x60</td>
</tr>
</tbody>
</table>

- **Syntax**: Slit { Open | Mirror | ... | 3.0x60 }

**Slit.Init - [B G]** The Slit Initialization command initializes the Slit device by searching for its home sensor and initializing its position.

- **Prompt**: 'Slit.Init' button on the XUI Setup Window.
- **Syntax**: Slit.Init

**Slit.Pos - [B G]** The Slit Position command allows you to position the Slit to a particular step position.

- **Prompt**: 'Slit.Pos' prompt on the XUI's Setup page.
- **Range**: step is from 0 to MAX.
- **Syntax**: Slit.pos step
Slit.Sim - The Slit Simulation command sets the simulation flag for the slit wheel.
- off - moves the real motor.
- on - simulate motor movements.
Initial off
Syntax slit.sim {off | on}

SlowCnt - The SlowCnt variable specifies the numbers of NOP’s or delays in the DSP clocking algorithm. This effectively slows down the clocking pattern which lowers the readout rate and read noise.
Prompt ‘SlowCnt’ on the XUI’s Eng page.
Range 1 to 100.
Initial 1
Syntax SlowCnt num

Stop - During an integration or GO cycle, the stop command is used to abort the acquisition.
Prompt ‘Stop’ button on the XUI’s main window.
Syntax Stop

SubAB - After an image is taken, it can be read by DV for display, this switch also instructs DV to calculate the object-sky image when the SubAB switch is ON.
Prompt ‘Objeck-Sky’ check box on the XUI window.
Range OFF or ON.
Initial OFF
Syntax SUBAB { off | on }

SyncFocusToGrating - When ON, the Array Focus position is synchronize whenever a Grating is selected.
Range off – Real IO to temperature controller.
- on – Grating command don’t affect the array focus.
Initial on
Syntax SyncFocusToGrating {off | on}

TC308 – Use this command to send a text string to the Temperature controller Model 208. This string is assumed to be a temperature controller command.
Range Any text up to 60 characters.
Syntax TC308 string

TC.sim - The Temperature Controller Simulation command sets the simulation flag for the temperature controller process.
Range off – Real IO to temperature controller.
- on – simulates via software.
Initial off
Syntax tc.sim {off | on}

TC330 – Use this command to send a text string to the Temperature controller Model 330. This string is assumed to be a temperature controller command.
Range Any text up to 60 characters.
Syntax TC330 string

TCS - Sends a command string to the TCS.
Range cmd – Any valid TCS command, 50 characters maximum.
Syntax tc cmd

TCS.com - The command enable (on) or disables (off) any TCS communication from spex to the telescope control system.
Range off – TCS communication is not attempt.
- on – TCS communications are performed
Initial on
Syntax tc.com {off | on}

TCSHostname - Specifies the hostname of the TCS computer. TCS command will be directed towards this host.
Prompt ‘TCS Hostname’ on the XUI Setup tab.
Range Enter the hostname for the tcs computer.
Initial n/a
Syntax TCSHostname string

Telescope - This command set the value portion of the TELESCOP keyword for the FITS image header.
Prompt none
Range any string up to 40 characters.
Initial n/a
Syntax Telescope string