CSHELL XUI / IC Command Reference
Amended for cshell2 GUI.

Array - Set the size and location of sub-arrays to be readout for r the next GO. These coordinate are relative to the physical device. You data is normally viewed rotated 90˚ clockwise.

Prompt	Array_icon on the Parameters screen, OBS page.
Range	x y wid hgt - The (x,y) location of the upper left corner and its width and hgt is specified. Please note that these values must be multiples of 8.
Initial	Full size (0 0 256 256).
Syntax	ARRAY x y wid hgt

AutoSave - Determines whether the data is saved to disk.

Prompt	'Autosave' on the observing parameter's Obs page.
Range	Off - Data is not saved, just display in DV.
	On - Data is save and displayed on DV.
Initial	Off
Syntax	AutoSave { off l on }

Calcmean – When TRUE, the different frame ("c") can be averaged into buffer D for each cycle. The buffer C and D are DV buffers. Also see SubAB.

Prompt	'CalcMean D = mean(c)' check box on the XUI window.
Range	OFF or ON.
Initial	ON
Syntax	CalMean { off | on }

CamMode - Specifies the clocking and readout modes in the GO sequence.

Prompt	N/A
Range	Basic- Acquires single images with just the basic options.
	SIM- Simulation mode. Allows the software to be used with out the actual camera hardware.
Initial	Basic
Syntax	CAMMODE { basic l sim }

ChgClkBias -.Changes the bias voltage to the clock/bias DAC. This is an engineering command.

Prompt	'ChgClkBias' button on the Observing Parameter's Engineering page.	
Range	Board	1 to 4.
	DAC	1 to 16.
	Volts:	-10 to 10.
Initial	N/A	
Syntax	CHGCLKBIAS board dac volt	

CoAdd - The number of intergrations summed together per beam or chop position in a GO.

Prompt	'Coadd' on the observing parameter's Obs page.
Range	1 ti 32000
Initial	1
Syntax	COADD num

Comment - Specifies a string to be place in the fits header of the saved file as a comment.

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

Control – An XUI command to specify with control page should be displayed on the GUI..

Range	Observing, Macro, Setup, Eng.
Initial	Observing
Syntax	Control { observing l macro l setup l eng }

Cycles - Cycles is a repeat factor in a GO sequence under basic mode. For the ObsMode NoiseImage, Cycles indicates how many frames will be used to calculate the noise.

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

CVFwlen - When a CVF filter is selected, this parameter specifies the wavelenght for the CVF filter. Setting the CVFWlen update the user's order, which specifies which order to be used by grating to observe at the wavelen specified by CVFwlen.

Prompt	'CVFWLen' on the Filter Wheel Dialog Box.

Range	1.0 to 2.449, or 2.46 to 5.6
Initial	2.20
Syntax	CVFWLEN num

Die - This command stops the execution of the IC program. This command can only be executed from the IC program.

Syntax	DIE

DiMirrorInit - The command to initialize the Direct Imaging Mirror. The DiMirror places the insturment in spectrscopic or imaging mode.

Syntax	DIMIRRORINIT

DoFastMode - Select the fast or slow clocking mode by setting Fastmode on or off. This is an engineering command.

Prompt	'DoFastMode' on the observing parameter's Eng page.
Range	Off — Slow clocking mode.
	On — Fast clocking mode.
Initial	Off
Syntax	DOFASTMODE { off l on }

DSPResetMSec - Specifies the amount of time in millisecond between array reset. Array resets are performed during idle periods.

Prompt	'DSP Reset Msec' on the observing parameter's Eng page.
Range	500 to 10000 milliseconds
Initial	1000
Syntax	DSPRESECMSEC num

DSPSampleMode - Specifies the sampling mode used to readout the array during a GO.

Prompt	'Sample Mode' on the observing parameter's Eng page.
Range	Single - A single sample is done by reseting the array. After the integration time has passed the array is readout to produce an image.
	Double - After an array reset, a pedestal image is readout. After the intergration time, a sample image is readout. The final image is the result of the sample minus the pedestal readout.
Initial	Double

Syntax	DSPSAMPLEMODE { single l Double }

DTime - Specifies the dead time after a beam swith in seconds.

Prompt	'Beamswitch DTime' on the observing parameter's Setup page.
Range	0 to 10 seconds.
Initial	2
Syntax	DTIME sec

DV - 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*

DV.Enable - This toggle determines if the IC sends data to DV at DV's home:port_number..

Prompt	'dv.enable' on the XUI Setup tab.
Range	Off – Do not display images on DV.
	On – display images on DV.
Initial	On
Syntax	DV.enable *{off	on}*

DV.HostName - The IC program uses this hostname when send data or commands to DV.

Prompt	'dv.hostname' on the XUI Setup tab.
Range	Enter the hostname of the workstation running DV.
Initial	localhost
Syntax	DV.HOSTNAME *name*

DV.Port - Specifies the TCP/IP port number when communication to DV for DV.

Prompt	'DV.Port' on the XUI Setup tab.
Range	Enter the port number of the DV application.
Initial	30130
Syntax	DV.Port *port_number*

Echo – An XUI command to displays text on the XUI's text feedback window. Useful in XUI macros.

Range	Any string.
Syntax	Echo *Starting macro file*

EPassWord - The Epassword command allows you to enter a password. After entering the password sucessfully, any restrictive parameters (ie engineering) can be modified. Issing the command with an invalid password will cause those parameters to be restricted.

Prompt	'epassword' on the observing parameter's Eng page.	
Range	Any string	
Syntax	EPASSWORD string	

Filename - The filename's prefix is used ot create filenames when saving data to disk. New filenames are constructed by concatendating 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 '01jan045.a'.

Prompt	'Filename' on the observing parameter's Obs frame.
Range	A string of 8 characters
Initial	The current date in the form DDMMM
Syntax	FILENAME string

Filter - Select a filter combination using the 2 filter wheels. The selection are indicated by the index values.

Prompt	Click on the FIlter Icon on the observing parameters window.
Range	0 - CVF Wlen & Open
	1 - 2.35 um NBF & Open
	2 - 4.05 um NBF & Open
	3 - He 1.083 & Open
	4 - HI 2.167 & Open
	5 - Both wheels blank
	6 - CVF Wlen & Open
	7 - 2.35 um NBF & Blocker
	8 - 4.05 um NBF & Blocker
	9 - 2.5 um Blocker
	10 - 4.1 um Blocker
Initial	Blank Blank 2.20
Syntax	FILTER { 0 l 1 l 2 l 3 l 4 l 5 l 6 l 7 l 8 l 9 l 10 }

FilterInit - This command will initialize the filter wheels by moving them to their limit switches and then moving them to their initial position.

Syntax	FILTERINIT

FIlterPos - Allows you to position the filter wheels to any step position. Normaily you may only offset the wheel position -100 or +100 steps from its normal location. After entering the engineering password, this restrictions is removed, but be careful of flashing the array in this mode.

Range	1 to 40000 .
Syntax	FILTERPOS { A l B } step# [{AlB} step# }]

Full Array – When TRUE, the full array is sampled and read out (256 x 256 pixels). When FALSE, the subarray parameter define the array's read out region.

Prompt:	Subarray/Fullarray tabs on the XUI Observing screen.
Syntax	Fullarray { off l on }

Go - Performs a GO, which is a set of integrations. The GO command can take an optional parameter which determines the type extension for filenames in basic mode. Please read the section description of CamModes for a more complete description.

Syntax	GO [{ obs l dark l flat l comp }]

GoInit - Initializies the go task in the IC program. The go task is responsible for controlling the DSPs and Array's electornics.

Syntax	GOINIT

GoReset - Places the DSP in a reset operation mode. The go task's state will be change to ERROR.

Syntax	GORESET

GratingInit - Initializes the grating. The grating is initialized by reading the step position from the encoder to set the step postion of the grating's stepper motor.

Syntax	GRATINGINIT

GratingPos - Commands the grating's stepper motor to move to a specific step position.

Syntax	GRATINGPOS
Range	100000 to 400000

GratingRMove - Moves the grating from its current position by a relative number of steps.

Range	-2000 to 2000
Syntax	GRATINGRMOVE steps

GWLen - Moves the grating to the indicated wavelenght. First the optimum order is calculated. The user's order is set to the optimum order. Then the step position of the grating is determined from the inputted wavelenght and this order. The grating is moved to this position.

Prompt	See 'WaveLen' command.
Range	1.0 to 6.0.
Syntax	GWLEN micons

ICPath - The path identifies the subdirectory the IC program uses when writing data files. This command will create new subdirectories if path doesn't exist. Supports the $DATE and $HOME macors.

Range	Any legal unix subdirectory. 80 chars max.
Initial	$HOME/data/$DATE
Syntax	ICpath string

ImageNumber - An ID number used to create the filename. See Filename for an example.

Prompt	'Next Image Number' on the observing parameters Obs page.
Range	1 to 9999
Initial	1
Syntax	IMAGENUMBER num

InstMode - Places the instrument in Spectrocopic or Direct Imaging mode by moving the Direct Imaging mirror out or in.

Prompt	'Instrument Mode' menu is accessed by clicking on the Grating or DiMirror icon on Parameter's Observing page.
Range	S (Spectroscopic) Optical path is through grating.
	D (Direct Imaging) Blocks the grating
Initial	S
Syntax	INSTMODE { S I D }

Itime - The amount of time the array is exposed between readouts, or the time interval for 1 Coadd. The minimum value is determined by the readout rate.

Prompt	'Itime' on the observing parameter's Obs page.
Range	0.1 to 3600.0 seconds
Initial	1
Syntax	ITIME sec

isready - Returns ERR_NONE when 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

Lamp - Turn off/on the calbration lamps This command automaticly move the lamp mirror out when the lamps are turned off, and in when the lamps are on.

Prompt	'Cal_Lamp' icon on the Parameter window's Observing page.
Range	off
	AR - Argon Lamp
	KR - Krypton Lamp
	XE - Xenon Lamp
	Cont - Continuum Lamp
Initial	Blank
Syntax	LAMP { off I AR I KR I XE I Cont }

LampInit - The command to initialize the lamp and lamp mirror by turning the lamp off and moving the mirror out of position.

Syntax	LAMPINIT

LampMirror - More a mirror so the calibration lamp are out or in the optical light path.

Range	Out - lamps are out of optical path.
	In- lamp are in optical path.
Syntax	LAMPMIRROR { out I in }

Object - This information identifies the object you are observing and is placed in the fits header.

Prompt	'Object' on the observing parameter's Obs page.
Range	Any string up to 40 characters.
Initial	'Name of Object'
Syntax	OBJECT string

Observer - This information identifies the observers and is placed in the fits header.

Prompt	'Observer' on the observing parameter's Obs page.
Range	Any string up to 40 characters.
Initial	'Your name'
Syntax	OBSERVER string

ObsMode - The observing mode determines the beam switch pattern performed in a GO sequence and when in the sequence the files are saved. The obmode is identified by an index number

Prompt	'Obs Mode' on the observing parameter's Obs page.
Range	0 - Obj(A) integrates at the present beam position. This data is treated as an 'object' frame.
	1 - Sky (B) integrates at the present beam position. This data is treated as a 'sky' frame.
	3 - Pair (AB). In this mode, a pair of frames are taken. First the telescope is position at the A beam and a 'object' frame is taken. Then the telescope is positioned a the B beam and a 'sky' frame is taken.
	4 - Noise Image. This is a special mode used to produce noise images. For each cycle a image is readout. Using these images, the standard deviation of each pixel is calculated. A frame is produced where each pixel position contains the standard deviation of that pixel position. These value are multipled by 100 to preserve decimal information.
Initial	0
Syntax	OBSMODE num

Order - Set the user's order. The grating wavelenght is calculated based on the grating angle (step position) and an implied order. This implied order is called the user's order. Normal the user's order is set to the optimum order for a given wavelenght. This command allows you to change the user's order.

Prompt	None. Enter command at prompt.
Range	8 to 60
Initial	Optimum order
Syntax	ORDER num

Path - The path identifies the subdirectory the IC programs uses when saving FITS files. Will create the 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
Syntax	PATH *string*

PVoltage - Sets the user programmable voltage's VDDUC and VDET on the clock bias board.

Prompt	The observing parameter's Setup page contains prompts for set the voltages. First input the appropriate values in VDDUC and VDET. Then select the 'Set Programmable Voltages' with the mouse to send these values.
Range	VDDUC range is -3.75 to -2.505 volts.
	VDET range is -3.75 to -2.505 volts.
	In addition, vdet >= vdduc and (vdet-vdduc)<=1.5 volts.
Initial	Undefined. You must initialize the voltage as part of your startup procedures.
Syntax	PVOLTAGE vdduc vdet

RotateImage - This option automatically rotates the image clockwise 90˚ in the obsmode Stare and Nod.

Prompt	None. Enter command at command prompt.
Range	Off - No rotation performed.
	On - Rotates the image.
Initial	On
Syntax	ROTATEIMAGE { Off	ON }

Samples - This parameter identifies the number of samples or times the array is readout to obtain the image for 1 coadd. Note that increased the number of samples will lower you noise, but will also increase you minimum integration time. This is a engineering or restricted command.

Prompt	'Samples' on the Observing Parameter's Eng page.
Range	1 to 256.
Initial	1
Syntax	SAMPLES num

SetMotorRdy - This command sets the status for all the motorized items (filter, dit, len, pplate) to the READY state. This command is intended for engineering purposes only. Since all item must in in a ready state before a GO is accepted, this command clears any ERROR condition due to mechincal failures. Do not attempt to move any motors which has been set ready using this command. This is an engineering or restricted command.

Syntax	SETMOTORDY

Shutter - Selects a shutter wheel position.

Prompt	Shutter
Range	Open
	Close
	2.5SPF
Initial	Close
Syntax	SHUTTER {Close	Open	2.5SPF }

ShutterInit - This command initializes the shutter wheel by searching for it limit switch, then moving the shutter to the closed position.

Prompt	None. Enter command at command prompt.
Syntax	ShutterInit

ShutterPos - Allows you to move the shutter to an absolute step position.

Prompt	None. Enter command at command prompt.
Range	0 to 4999
Syntax	ShutterPos step#

Slit - Select and moves to a slit wheel position.

Prompt	Slit
Range	0.5, 1.0, 1.5, 2..0, 4.0, Blank, Open, J, H, K, L, L', M
Initial	Blank
Syntax	Slit {0.5	1.0	1.5	2..0	4.0	Blank	Open	J	H	K	L	L'	M }

SlitInit - Initializes the slit wheel by moving it into the limit and then setting it to BLANK.

Prompt	None. Enter command at command prompt.
Syntax	SlitInit

SlitPos- Move the slit wheel to a step position

Prompt	None. Enter command at command prompt.
Range	0 to 64000
Syntax	SlitPos step#

SlowCnt - When DoFastMode is OFF, 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. This is an engineering or restricted command.

Prompt	'SlowCnt' on the Observing Parameter'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 command frame.
Syntax	STOP

SubAB - After an image is taken, it can be read by DV for display, this switch also instructs DV to calculate the the object - sky image when the SubAB switch is ON.

Prompt	'SubAB c=a-b' check box on the XUI window.
Range	OFF or ON.
Initial	OFF
Syntax	SUBAB { *off*	*on* }

TCLS – Use this command to send a text string to the Lake Shore Temperature Controller. This string is assumed to be a valid controller command.

Range	Any text up to 60 characters.
Syntax	TCLS *string*

TCS - Using this command you may send a string to the Telescope Control System (TCS). This string is assumed to be a correct TCS command with a 40 character maximum limit.

Range	Any legal TCS command.
Syntax	TCS string

TCSHostName - Identifies the computer host accepting TCS commands.

Range	The TCS1 host is 'tcsd_host'
Initial	'tcsd_hosts'
Syntax	TCSHOSTNAME name

TCSI – Use this command to send a text string to the Scientific Instruments Temperature Controller. This string is assumed to be a valid controller command.

Range	Any text up to 60 characters.
Syntax	TCSI *string*

TCSSystem – An option which control how cshell communications to the TCS.

Range	OFF – Don't talk to the tcs.

Sim – simulated communications to the tcs.

TCS1 – communicate to the tcs1 system.

TCS3 – communicate to the tcs3 system.

Initial   TCS1

Syntax   TCSSystem { off | sim | tcs1 | tcs3 }

TempRecord - TempRecord allows you to switch OFF/ON the recording to temperature information. When ON, the temperature information is appended to the file 'temper.log'. The recording interval is once every 5 minutes.

Prompt   'TempRecord' on the Observing parameter's Eng page.

Range   OFF or ON.

Initial   OFF

Syntax   TEMPRECORD { off | on }

VCCD - Selects the position for the visible CCD dichroic/Netural Density filter assembly.

Prompt   Click on the VCCD Icon on the observing parameters window.

Range   Out - VCCD Dichroic and ND filter out of light path.

          In - Places the VCCD Dichroic and ND filter in light path.

Initial   Out

Syntax   VCCD { out | in }

VCCDInit - The command to initialize the visible CCD dichroic/Netural Density filter assembly.

Syntax   VCCDINIT

Wait - Sets the acquire or Go task busy for a time interval specified seconds.

Range   0.1 to 60.0 seconds

Initial   N/A

Syntax   WAIT sec

Wavelength- This command changes the value of the CVFWlen and GWLen. It is provide to allow the use to change the grating and CVF wavelenght with a single command.

Prompt   WaveLen on the Parameters window Observing Page.

Range   1.10 to 2.449, 2.46 to 5.60 microns

Syntax   WAVELEN num

Command - Describe_command.

Prompt   XUi_PROMPTS

Range   describe_parameters.

Initial   N/A

Syntax   SYNTAX