

# TCSng Commands

This is the most comprehensive list to date of the TCSng requests and commands.

## Requests

ALL Bulk information

Args: N/A

Returns: [MOT] [RA] [DEC] [HA] [UT] [ALT] [AZ] [SECZ] [Epoch]

MOT = (see MOTION)

RA(Right Assention) = HH:MM:SS.ss

DEC(Declination) = +DD:MM:SS.ss

HA(Hour Angle) = HH:MM:SS

UT(Universal Time) = HH:MM:SS

ALT(Elevation) = XXX.xx

AZ(Azmouth) = XXX.xx

SECZ(airmass) = XX.xx

EPOCH = EEEE.e

AZ Azimuth

Args: N/A

Returns: [ddd.dd]

BEAM Chop/Nod info for chopping secondary

Args: N/A

Returns: ???

CORRECTIONS String describing what corrections and rates are enabled/disabled

Args: N/A

Returns: MPNARFp+tob

M=Proper Motion

P=Precession

N=Nutation

A=Aberration

R=Refraction

F=Flexure

p=Parallax

+ =pointing model used... can change to a,b,c,d?

t=Sidereal

o=Object

b=Bias

If disabled, character will be replaced by "\_"

DATE date based on UT

Args: N/A

Returns: [MM/DD/YYYY]

DEC Declination  
Args: N/A  
Returns [ddmmss.ss]

DISABLE Output state  
Args: N/A  
Returns: 1 for disabled, 0 for enabled

DISEPOCH Current Epoch  
Args: N/A  
Returns: XXXX.x

EL Elevation  
Args: N/A  
Returns: [ddd.dd]

EQ Equinox  
Args: N/A  
Returns: XXXXX.x

HA Hour Angle  
Args: N/A  
Returns: [dd:mm:ss]

JD Julian Date  
Args: N/A  
Returns: [JJJJJJJ.j]

FLEXFILE Retrieve contents of current flex file (Pointing Correction)  
being used Added by Scott 12/2012  
Args: N/A  
Returns: [line 1\n] [line 2\n] [line 3\n] ...

LIMITPROF Horizon limit profile as a function of azimuth Added by  
Scott 12/2012  
The first (and last) value given is the horizon limit  
at 0 degrees azimuth  
each subsequent value is a horizon limit at increments  
of 15 degrees of azimuth  
so the 2nd value is the limit at 15 degrees azimuth,  
the third is the horizon limit  
at 30 degrees azimuth etc.  
Args: N/A  
Returns [hh] [hh] [hh] [hh] ... (25 in all)

LIMIT limit status bits (ACCORDING TO JAVA GUI)  
Args: N/A  
Returns: this returns an 8 bit integer whose bits represent the  
following

```

bit0(LSB) = RA low limit
bit1      = RA upper limit
bit2      = DEC low limit
bit3      = DEC upper limit
bit4-6    = unknown ???????
bit7      = limit warning?
bit8      = limit warning?
a 1 indicates limit active, 0 indicates limit not active

```

LIMIT limit status bits (ACCORDING TO ERIC CHRISTIENSEN)  
 Args: N/A  
 Returns: this returns an 8 bit integer whose bits represent the following

```

bit0(LSB) = RA/HA limit
bit1      = DEC limit
bit2      = derot.
bit3      = hor. hard limit
bit4      = hor. soft limit
bit5      = focus lo limit?
bit6      = focus hi limit?
a 1 indicates limit active, 0 indicates limit not active

```

MOTION Motion status bits  
 Args: N/A  
 Returns: this returns an 8 bit integer whose bits represent the following

```

bit0(LSB) = RA/AZ
bit1      = DEC/EL
bit2      = FOC
bit3      = DOME
bit4-8    = undefined
a 1 indicates axis in motion, 0 indicates no motion

```

PAD String describing hardware paddle button states  
 Args: N/A  
 Returns: any combination of the following characters  
 N = North  
 S = South  
 E = East  
 W = West  
 D = Drift (if not present, assume Guide)  
 A character is present if switch active, otherwise switch inactive

PADDRIFT Hardware paddle drift rate arcsec/sec  
 Args: N/A  
 Returns: -XXXXXXXXX.xxx

PADGUIDE Hardware paddle guide rate arcsec/sec  
 Args: N/A  
 Returns: -XXXXXXXXX.xxx

RA Right Assention  
 Args: N/A  
 Returns: [ddmmss.ss]

SECZ Air Mass  
 Args: N/A  
 Returns: [XXXXX.XX]

ST Sidereal Time  
 Args: N/A  
 Returns: [hh:mm:ss]

TIME Universal Time  
 Args: N/A  
 Returns: [HH:MM:SS]

VERIFY Verify that an RA/DEC position is within telescope limits  
 Args: [RA] [DEC] [Epoch]  
     RA=HH:MM:SS.ss  
     DEC=DD:MM:SS.ss  
     Epoch=EEEE.eeee  
 Returns: 1 if coordinate is within limits

XALL "Extended ALL"  
 Args: N/A  
 Returns: [FOC] [DOME] [IIS] [PA] [UTD] [JD]  
     FOC(focus pos) = +XXXXXX  
     DOME(Dome Position) = -180 (always this value...)  
     IIS(???) = -224.4 (always this value...)  
     PA(Paralactic Angle) = -145.7 (always this value...)  
     UTD(UT Date) = MM/DD/YYYY  
     JD(Julian Date) = XXXXXXXX.x

XDEC "Extended DEC"  
 Args: N/A  
 Returns: [COM] [NEXT] [REF] [OFF] [WOB] [DIFF] [BIAS] [GUIDE] [DRIFT]  
     COM(Commanded Position) = +HH:MM:SS.ss  
     NEXT(Next Position) = +HH:MM:SS.ss  
     REF(Reference Position) = +HH:MM:SS.ss  
     OFF(Offset Position) = +HH:MM:SS.ss  
     WOB(Wobble) = +HH:MM:SS.ss  
     DIFF(Difference) = +XXXXXXXXXX.xxx  
     BIAS(Bias Rate) = +XXXXXXXXXX.xxx  
     GUIDE(Guide Rate) = +XXXXXXXXXX.xxx  
     DRIFT(Drift Rate) = +XXXXXXXXXX.xxx

XRA "Extended RA"  
 Args: N/A  
 Returns: [COM] [NEXT] [REF] [OFF] [WOB] [DIFF] [BIAS] [GUIDE] [DRIFT]

```

COM(Commanded Position) = HH:MM:SS.ss
NEXT(Next Position) = HH:MM:SS.ss
REF(Reference Position) = HH:MM:SS.ss
OFF(Offset Position) = +HH:MM:SS.ss
WOB(Wobble) = +HH:MM:SS.ss
DIFF(Difference) = +XXXXXXXXXX.xxx
BIAS(Bias Rate) = +XXXXXXXXXX.xxx
GUIDE(Guide Rate) = +XXXXXXXXXX.xxx
DRIFT(Drift Rate) = +XXXXXXXXXX.xxx

```

## undefined Request

```

TEST1  ??? >> probably useless but is currently in the command set
  Args: ???
  Returns: ???

```

```

INDEX  ???
  Args: ???
  Returns: ???

```

```

PP  ???
  Args: ???
  Returns: ???

```

```

SRVFRQ  ???
  Args: ???
  Returns: ???

```

## Dome Request

```

DOME    Dome control information
  Args: "PARAM" returns dome setup parameters, all other strings return
control info
  Returns:
    Parameters: [CPD] [SD] [W] [SDW] [NU] [RHO] [PHI] [LOOK] [HOLD]
      CPD(Counts Per Degree) = XXX.xxxxxxx
      SD(Stow Degrees)= XXX.xxxxxxx
      W(Dome Width) = XXX.xxxxxxx
      SDW(Stow Dome Width)= XXX.xxxxxxx
      NU = XXX.xxxxxxx
      RHO = XXX.xxxxxxx
      PHI = XXX.xxxxxxx
      LOOK(Lookahead) = XX
      HOLD(Hold Dome) = XX
    Control Info: [DEL] [MOD] [INIT] [TELAZ] [AZ] [HOME]
      DEL(Delta Position) = +XXX.XXXXXXX
      MOD(Mode) = XX
      INIT(Initialized) = XX

```

```
TELAZ(Telescope Azmouth) = +XXX.XXXXXXX  
AZ(Dome Azmouth) = +XXX.XXXXXXX  
HOME(Home Position) = +XXX.XXXXXXX
```

## Focus Request

FOCSPEED Focus Speed

Args: N/A

Returns: ["FAST" or "SLOW"]

FOCUS Focus position

Args: N/A

Returns: +XXXXX

## Commands

ABERRATE Aberration corrections enable/disable

Args: "ON" = enable, any other string will disable

Returns: "OK" or "FAILED"

BIAS Bias enable/disable

Args: "ON" = enable, any other string will disable

Returns: "OK" or "FAILED"

BIASDEC DEC bias rate in arcseconds/second

Args: [XXXXX.XX]

Returns: "OK" or "FAILED"

BIASRA RA biasrate in arcsseconds/second

Args: [XXXXX.XX]

Returns: "OK" or "FAILED"

CANCEL Cancel current move

Args: N/A

Returns: "OK" or "FAILED"

CLEARDIFF Clear RA and DEC difference value

Args: N/A

Returns: N/A

DISABLE disable motion output

Args: N/A

Returns: "OK" or "FAILED"

DISEPOCH Set Epoch

Args: XXXX.x

Returns: "OK" or "FAILED"

DECLARE Initialize current position

Args: "INITNEXT" to initialize "NEXT" position as current position

"INITCOM" to initialize "COMMANDED" position as current position

Returns: "OK" or "FAILED"

ELAZ Move to position in Elevation and Azimuth

Args: [EE.EE] [AAA.AA]

Returns: "OK" or "FAILED"

ENABLE enable motion output

Args: N/A

Returns: "OK" or "FAILED"

FLEX Flexure corrections enable/disable

Args: "ON" = enable, any other string will disable

Returns: "OK" or "FAILED"

LIMIT Limit override >> USE WITH EXTREME CAUTION!!!!

Args: "INHIBIT" will override limits, all other strings will enable limits

Returns: "OK" or "FAILED"

MOVNEXT Move to NEXT position

Args: N/A

Returns: "OK" or "FAILED"

MOVOFF move to OFFSET position

Args: N/A

Returns: "OK" or "FAILED"

MOVRADEC Move to RA-DEC position

Args: RA DEC EPOCH RAPM DECPM

RA = HH:MM:SS.ss

DEC = +DD:MM:SS.ss

EPOCH = EEEE.eeee

RAPM(RA Proper Motion) = XXXXX.xxx

DECPM(DEC Proper Motion) = XXXXX.xxx

Returns: "OK" or "FAILED"

MOVSTOW Move to stow position

Args: N/A

Returns: "OK" or "FAILED"

MOVWOB MOVWOB beam

Args: ???

Returns: ???

NEXTPOS Set NEXT position

Args: RA DEC EPOCH RAPM DECPM  
RA = HH:MM:SS.ss  
DEC = +DD:MM:SS.ss  
EPOCH = EEEE.eeee  
RAPM(RA Proper Motion) = XXXXX.xxx  
DECPM(DEC Proper Motion) = XXXXX.xxx  
Returns: "OK" or "FAILED"

NUTAT Nutation corrections enable/disable  
Args: "ON" = enable, any other string will disable  
Returns: "OK" or "FAILED"

PAD Software paddle command [Direction] [rate] or PAD XX for termination  
This function is not recommended for use near the  
horizon limits!  
Args: [Direction] [rate]  
DIRECTION = NORTH, SOUTH, EAST, WEST, NE, NW, SE, SW  
RATE = XXXXXX.xx (arcsecs/sec)  
any string not described in DIRECTION will terminate paddle  
this terminate string must be sent at the end of each  
movement  
when the button is released.  
Returns: "OK" or "FAILED"

PADDLE Paddle enable/disable  
Args: "ON" = enable, any other string will disable  
Returns: "OK" or "FAILED"

PADDRIFT Paddle Drift rate in arcseconds/second  
Args: [XXXXX.XX]  
Returns: "OK" or "FAILED"

PADGUIDE Paddle Guide rate in arcseconds/second  
Args: [XXXXX.XX]  
Returns: "OK" or "FAILED"

PARALLAX Parallax corrections enable/disable  
Args: "ON" = enable, any other string will disable  
Returns: "OK" or "FAILED"

PARAM ???  
Args: ???  
Returns: ???

PRECES Precession corrections enable/disable  
Args: "ON" = enable, any other string will disable  
Returns: "OK" or "FAILED"

PROPMO Proper motion corrections enable/disable



Args: "ON" = enable, any other string will disable  
Returns: "OK" or "FAILED"

REFPOS REFerence POSition (tod)

Args: ???  
Returns: ???

REFRAC Refraction corrections enable/disable

Args: "ON" = enable, any other string will disable  
Returns: "OK" or "FAILED"

STEPDEC Move Declination XXXXX.XX arcseconds

Args: [XXXXX.XX]  
Returns: "OK" or "FAILED"

STEPRA Move Right Assention XXXXX.XX arcseconds

Args: [XXXXX.XX]  
Returns: "OK" or "FAILED"

TRACK Enable/Disable sidereal tracking

Args: "ON" = enable, any other string will disable  
Returns: "OK" or "FAILED"

WOBBLE WOBBLE -HH:MM:SS.ss -DD:MM:SS.ss

Args: ???  
Returns: ???

## Catalogs Command

ABELL ABELL Catalog object XXXXXXXX

Args: XXXXXXXX  
Returns: "OK" or "FAILED"

FK5 FK5 Catalog object XXXXXXXX

Args: XXXXXXXX  
Returns: "OK" or "FAILED"

IC IC Catalog object XXXXXXXX

Args: XXXXXXXX  
Returns: "OK" or "FAILED"

NGC NGC Catalog object XXXXXXXX

Args: XXXXXXXX  
Returns: "OK" or "FAILED"

OKESTONE Okestone Catalog object XXXXXXXX

Args: XXXXXXXX  
Returns: "OK" or "FAILED"

PPM PPM Catalog object XXXXXXXX  
Args: XXXXXXXX  
Returns: "OK" or "FAILED"

SAO SAO Catalog Object XXXXXXXX  
Args: XXXXXXXX  
Returns: "OK" or "FAILED"

YBSC YBSC Catalog Object XXXXXXXX  
Args: XXXXXXXX  
Returns: "OK" or "FAILED"

ZWICKY ZWICKY Catalog object XXXXXXXX  
Args: XXXXXXXX  
Returns: "OK" or "FAILED"

## Planets Command

MERCURY Track Mercury  
Args: N/A  
Returns: "OK" or "FAILED"

VENUS Track Venus  
Args: N/A  
Returns: "OK" or "FAILED"

MARS Track Mars  
Args: N/A  
Returns: "OK" or "FAILED"

JUPITER Track Jupiter  
Args: N/A  
Returns: "OK" or "FAILED"

SATURN Track Saturn  
Args: N/A  
Returns: "OK" or "FAILED"

URANUS Track Uranus  
Args: N/A  
Returns: "OK" or "FAILED"

NEPTUNE Track Neptune  
Args: N/A  
Returns: "OK" or "FAILED"

PLUTO Track Pluto  
Args: N/A

Returns: "OK" or "FAILED"

MOON Track Moon

Args: N/A

Returns: "OK" or "FAILED"

SUN Track Sun

Args: N/A

Returns: "OK" or "FAILED"

DOME Command dome control

Args: This command takes one argument at a time from the following

AUTO Autodome enable

Args: ON = autodome on, any other = autodome off

Returns: "OK" or "FAILED"

INIT Initialize dome

Args: N/A

Returns: "OK" or "FAILED"

STOW Stow dome

Args: N/A

Returns: "OK" or "FAILED"

LOOKAHEAD Lookahead enable

Args: positive nonzero number=enable, any other = disable

Returns: "OK" or "FAILED"

PARAM Set Dome Parameters

Args: [CPD] [SD] [W] [SDW] [NU] [RHO] [PHI] [LOOK] [HOLD]

CPD(Counts Per Degree) = XXX.xxxxxxx

SD(Stow Degrees)= XXX.xxxxxxx

W(Dome Width) = XXX.xxxxxxx

SDW(Stow Dome Width)= XXX.xxxxxxx

NU = XXX.xxxxxxx

RHO = XXX.xxxxxxx

PHI = XXX.xxxxxxx

LOOK(Lookahead) = XX

HOLD(Hold Dome) = XX

Returns: "OK" or "FAILED"

PADDLE Control Paddle buttons

Args: RIGHT = move right, LEFT = move left, any other= stop

Returns: "OK" or "FAILED"

FOCUS move to absolute focus value XXXXXXXX

Args: XXXXXXXX

Returns: "OK" or "FAILED"

RELFOCUS relative move focus value XXXXXXXX

Args: XXXXXXXX  
Returns: "OK" or "FAILED"

FOCZERO Zero current focus position

Args: N/A  
Returns: "OK" or "FAILED"

FOCSTOP focus paddle stop

Args: N/A  
Returns: "OK" or "FAILED"

FOCUP focus paddle up

Args: N/A  
Returns: "OK" or "FAILED"

FOCDN focus paddle down

Args: N/A  
Returns: "OK" or "FAILED"

FOCSPEED Set focus speed

Args: "FAST" sets to fast, all other strings set speed slow  
Returns: "OK" or "FAILED"

#### PEC Request

PECSTAT Current PEC operation status

Args: N/A  
Returns: [PEC\_Condition] [PEC\_Count] [PEC\_Index] [PEC\_Mode]

PECPRG Current PEC programming status

Args: N/A  
Returns: [Percent\_Done] [PEC\_Correction]

#### Command

PECFILE Attempt to create a PEC file.

Args: ???  
Returns: ???

PEC Turn on PEC

Args: "ON" = enable, any other string will disable  
Returns: "OK" or "FAILED"

#### Servo Request

CON ??? >> SERVO STUFF... NOT FOR NORMAL USE

Args: ???  
Returns: ???

```
SAMDATA ??? >> SERVO STUFF... NOT FOR NORMAL USE  
  Args: ???  
  Returns: ???
```

```
SAMDONE ??? >> SERVO STUFF... NOT FOR NORMAL USE  
  Args: ???  
  Returns: ???
```

```
SERVO  ??? >> SERVO STUFF... NOT FOR NORMAL USE  
  Args: ???  
  Returns: ???
```

## Command

```
WCON  axis, gd gp gi dmax vmax groot >> SERVO CONST... DO NOT MODIFY  
  Args: ???  
  Returns: ???
```

```
SERVO  ??? >> AXIS SERVO SAMPLING... DO NOT MODIFY  
  Args: ???  
  Returns: ???
```

```
GD  axis, value >> SERVO CONST... DO NOT MODIFY  
  Args: ???  
  Returns: ???
```

```
GP  axis, value >> SERVO CONST... DO NOT MODIFY  
  Args: ???  
  Returns: ???
```

```
GPI axis, value >> SERVO CONST... DO NOT MODIFY  
  Args: ???  
  Returns: ???
```

```
DMAX  axis, value >> SERVO CONST... DO NOT MODIFY  
  Args: ???  
  Returns: ???
```

```
VMAX  axis, value >> SERVO CONST... DO NOT MODIFY  
  Args: ???  
  Returns: ???
```

```
PERMAX axis, value >> SERVO CONST... DO NOT MODIFY  
  Args: ???  
  Returns: ???
```

```
SAMPLE axis, interval, total samples >> AXIS SERVO SAMPLING... DO NOT  
MODIFY  
  Args: ???
```

Returns: ???

DUMPSAM axis >> AXIS SERVO SAMPLING... DO NOT MODIFY  
Args: ???  
Returns: ???

SAMSTART ??? >> AXIS SERVO SAMPLING... DO NOT MODIFY  
Args: ???  
Returns: ???

SAMABORT ??? >> AXIS SERVO SAMPLING... DO NOT MODIFY  
Args: ???  
Returns: ???

SYSSAVE ???  
Args: ???  
Returns: ???

SYSKILL Kills TCS process after disabling stopping all telescope motion.  
Args: N/A  
Returns: OK or Failure  
SYSRESET Restarts TCS process after disbling the telescope Added  
by Scott 12/2012  
Telescope should be stowed before doing this.  
Args: N/A  
Returns OK or Failure

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