

# 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 Path and file name of current flex map Added by Scott  
12/2012  
Args: N/A  
Returns: [PATH/][pctcs\_.tp]

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
bit1 = DEC
bit2 = Derotator
bit3 = Hardware Horizon
bit4 = Software Horizon
bit5 = Focus Upper
bit6 = Focus Lower
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

```

LIMITINHIBIT limit inhibit status

args N/A

Returns: 0 if limits are active and 1 if limits are inactive

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
  GETSATELAZ Satellite horizontal coordinates
```

### 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: +XXXXXX
```

## 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 = XXXXXXX.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"

PROPM0 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"

YBC YBC 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"

### Periodic Error Correction 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: ???

YSKILL 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: [TIME] [DD/MM/YY] [HH:MM:SS]  
If no arguments are used the TCS simply restarts as if you had restarted the TCS computer. If for some reason the time is bad on the TCS computer you can add the TIME argument followed by the date and time in UT and TCS will use this and not the computer time for astrometry.  
Returns OK or Failure

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