

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
    Args: N/A
    returns [EL] [AZ]
  GETSATECI Satellite Earth Centered Inertial Cartesian coords
    Args: N.A
    Returns: [X] [Y] [Z]
  GETSATECEF Satellite Earth Centered Earth Fixed Cartesian coords
    Args: N.A
    Returns: [X] [Y] [Z]

```

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] [RH0] [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 Azimuth) = +XXX.XXXXXXX
AZ(Dome Azimuth) = +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 arcseconds/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 Azmouth

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"

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"

Periodic Error Correction Request

PECSTAT Current PEC operation status
Args: N/A
Returns: [PEC_Condition] [PEC_Count] [PEC_Index] [PEC_Mode]

PECPR0G 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: [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

TLE Gives TCS a new TLE for tracking Earth Satellites
 Args: Follows this format exactly:

[[https://en.wikipedia.org/wiki/Two-line_element_set]]

SATTRACK Tracks the current satellite TLE with the telescope.
 Args: N/A

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