**Help on package LX200:**

NAME: LX200

DESCRIPTION

#-----------------------------------------------------------------------------

# Name: pyLX200.py

# Purpose: General access to and use of LX200 telescopes and accesories

# Author(s): R J Schumacher

# Created: 2006/01/28

# RCS-ID: $Id: pyLX200.py $

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#-----------------------------------------------------------------------------

PACKAGE CONTENTS

Derotator

Focuser

LX200Error

LX200Exception

LX200Utils

LXGPS

LXSerial

Library

Pec

Reticule

Telescope

\_\_version\_\_

CLASSES

LX200.LX200Error.Error(builtins.Exception)

LX200.LX200Error.LX200Error

builtins.object

LX200.Derotator.Derotator

LX200.Focuser.Focuser

LX200.LXGPS.LXGPS

LX200.LXSerial.LXSerial

LX200.Library.Library

LX200.Reticule.Reticule

LX200.Telescope.Telescope

class Derotator(builtins.object)

| Derotator(comPort, debug=False)

|

| LX200 class for Derotator movement and properties

|

| Methods defined here:

|

| \_\_init\_\_(self, comPort, debug=False)

| Constructor.

|

| setOff(self)

| Turn off Field Derotator, halt slew in progress. [Lx 16" and LX200GPS]

| Returns Nothing

|

| setOn(self)

| Turn on Field Derotator [LX 16" and LX200GPS]

| Returns: Nothing

|

| ----------------------------------------------------------------------

| Data descriptors defined here:

|

| \_\_dict\_\_

| dictionary for instance variables (if defined)

|

| \_\_weakref\_\_

| list of weak references to the object (if defined)

class Focuser(builtins.object)

| Focuser(comPort, debug=False)

|

| LX200 class for Focuser movement and properties

|

| Methods defined here:

|

| Halt(self)

| Halt Focuser Motion

| Returns: Nothing

|

| Move(Position)

| Position (Long) Step distance

| Return (Nothing) Does not return a value.

| Remarks

| If the Absolute property is True, then this is an absolute positioning focuser. The

| Move command tells the focuser to move to an exact step position, and the Position

| property is an integer between 0 and MaxStep.

| If the Absolute property is False, then this is a relative positioning

| focuser. The Move command tells the focuser to move in a relative direction,

| and the Position property is an integer between minus MaxIncrement and plus

| MaxIncrement.

|

| SetupDialog(self, fileName='Focuser.cfg')

| Mandatory, in advanced mode additional

| parameters, such as the scope position, guide rates etc. will be set.

| No dialog, just read config...

|

| \_\_init\_\_(self, comPort, debug=False)

| Constructor.

| Arguments:

|

| \_\_repr\_\_(self)

| Return a representation string.

|

| focus\_fast(self)

| Set Focus speed to fastest setting

| Returns: Nothing

|

| focus\_in(self, speed=1, t=0)

| Start Focuser moving inward (toward objective)

| Returns: None

|

| focus\_out(self)

| Start Focuser moving outward (away from objective)

| Returns: None

|

| focus\_slow(self)

| Set Focus speed to slowest setting

| Returns: Nothing

|

| focus\_speed(self, speed)

| Autostar & LX200GPS - set focuser speed to <n> where <n> is an ASCII digit 1..4

| Returns: Nothing

| LX200 - Not Supported

|

| ----------------------------------------------------------------------

| Data descriptors defined here:

|

| \_\_dict\_\_

| dictionary for instance variables (if defined)

|

| \_\_weakref\_\_

| list of weak references to the object (if defined)

class LX200Error(Error)

| Exception raised for telescope specific errors

|

| Attributes:

| expression -- input expression in which the error occurred

| message -- explanation of the error

|

| Method resolution order:

| LX200Error

| Error

| builtins.Exception

| builtins.BaseException

| builtins.object

|

| Data descriptors inherited from Error:

|

| \_\_weakref\_\_

| list of weak references to the object (if defined)

|

| ----------------------------------------------------------------------

| Methods inherited from builtins.Exception:

|

| \_\_init\_\_(self, /, \*args, \*\*kwargs)

| Initialize self. See help(type(self)) for accurate signature.

|

| ----------------------------------------------------------------------

| Static methods inherited from builtins.Exception:

|

| \_\_new\_\_(\*args, \*\*kwargs) from builtins.type

| Create and return a new object. See help(type) for accurate signature.

|

| ----------------------------------------------------------------------

| Methods inherited from builtins.BaseException:

|

| \_\_delattr\_\_(self, name, /)

| Implement delattr(self, name).

|

| \_\_getattribute\_\_(self, name, /)

| Return getattr(self, name).

|

| \_\_reduce\_\_(...)

| Helper for pickle.

|

| \_\_repr\_\_(self, /)

| Return repr(self).

| \_\_setattr\_\_(self, name, value, /)

| Implement setattr(self, name, value).

|

| \_\_setstate\_\_(...)

|

| \_\_str\_\_(self, /)

| Return str(self).

|

| with\_traceback(...)

| Exception.with\_traceback(tb) --

| set self.\_\_traceback\_\_ to tb and return self.

|

| ----------------------------------------------------------------------

| Data descriptors inherited from builtins.BaseException:

|

| \_\_cause\_\_

| exception cause

|

| \_\_context\_\_

| exception context

|

| \_\_dict\_\_

|

| \_\_suppress\_context\_\_

|

| \_\_traceback\_\_

|

| args

class LXGPS(builtins.object)

| LXGPS(comPort, debug=False)

|

| LX200 class for GPS and properties

| TO DO: implement the NAK wait

|

| Methods defined here:

|

| GPS(self, state='on', data=None)

| #-------------------------------------------------------------------------------

| # g - GPS/Magnetometer commands

| #-------------------------------------------------------------------------------

|

| GPS\_off(self)

| Turn off GPS power

|

| GPS\_on(self)

| Turn on GPS power

|

| TO\_DO(self)

| Stream GPS data

|

| \_\_init\_\_(self, comPort, debug=False)

| Constructor.

|

| \_\_repr\_\_(self)

| Return a representation string.

|

| auto\_align(self)

| Automatically align scope

|

| deisable\_DEC\_PEC(self)

| Dec PEC Disable

|

| disable\_DEC\_PEC(self)

| disable Dec/Alt PEC [LX200gps only]

| Returns: Nothing

|

| disable\_RA\_PEC(self)

| RA PEC Disable

|

| enable\_DEC\_PEC(self)

| Dec PEC Enable

|

| enable\_RA\_PEC(self)

| RA PEC Enable

|

| get\_GPS\_data(self)

| LX200GPS Only - Turns on NMEA GPS data stream.

| Returns: The next string from the GPS in standard NEMA format followed by a '#' key

|

| get\_GPS\_time(self)

| Powers up the GPS and updates the system time from the GPS stream.

| The process my take several minutes to complete.

| During GPS update, normal handbox operations are interrupted. [LX200gps only]

| Returns: '0' In the event that the user interrupts the process, or the GPS times out.

| Returns: '1' After successful updates

|

| get\_firmware\_date(self)

| Get Telescope Firmware Date

| Returns: mmm dd yyyy#

|

| get\_firmware\_num(self)

| Get Telescope Firmware Number

| Returns: dd.d#

|

| get\_firmware\_time(self)

| Get Telescope Firmware Time

| returns: HH:MM:SS#

|

| get\_product\_name(self)

| Get Telescope Product Name

| Returns: <string>#

|

| init\_scope(self)

| Initialize Telescope

|

| restart(self)

| LX200 GPS Only - Causes the telescope to cease current operations

| and restart at its power on initialization.

|

| reticule\_duty(self, n)

| Programmable Reticule Duty Cycle

|

| set\_DEC\_backlash(self, dd)

| Set Altitude/Dec Antibacklash

|

| set\_DEC\_slew\_rate(self, r)

| Programmable Slew Rates

|

| set\_RA\_backlash(self, dd)

| Set Azimuth/RA Antibacklash

|

| set\_RA\_slew\_rate(self, r)

| Programmable Slew Rates

|

| set\_baud\_rate(self, r)

| Set Baud Rate

|

| set\_dec\_backlash(self, seconds)

| Set Altitude/Dec Antibacklash

| Returns Nothing

|

| set\_guide\_rate(self, r)

| Programmable Guiding Rates

|

| set\_ra\_backlash(self, seconds)

| Set Azimuth/RA Antibacklash

| Returns Nothing

| sleep(self, t=None)

| LX200GPS only: Sleep Telescope. Power off motors, encoders, displays and lights.

Scope remains in minimum power mode until a keystroke is received or a wake

command is sent.

| Takes optional param time in seconds

|

| toggle\_smart\_PEC(self)

| Toggles Smart Drive PEC on and off for both axis

| Returns: Nothing

| Not supported on Autostar

|

| update\_time(self)

| Updates Time of Day from GPS

|

| version\_info(self)

|

| version\_info\_list(self)

|

| wake(self)

| LX200 GPS Only: Wake up sleeping telescope.

| ----------------------------------------------------------------------

| Data descriptors defined here:

|

| \_\_dict\_\_

| dictionary for instance variables (if defined)

|

| \_\_weakref\_\_

| list of weak references to the object (if defined)

**class LXSerial(builtins.object)**

| LXSerial(model='LX200', debug=False)

|

| Methods defined here:

|

| CommandBlind(self, cmd, \*args)

| simply packages up command letters in #: # and sends to telescope

|

| CommandBool(self, cmd, \*args)

| issues command and checks for '0' or '1' response. returns true

| on success. no hash returned in response.

|

| CommandString(self, cmd, \*args)

| issues a command to the telescope, and awaits a string response

| terminated by a '#'. returns string

|

| \_\_init\_\_(self, model='LX200', debug=False)

| Constructor.

| Arguments: serial port where the LX200 is connected

| Note:

| two ports can be opened on the LX200

| - access to the port settings trough Python properties

| - port numbering starts at zero, no need to know the platform dependant port

| name in the user program

| - port name can be specified if access through numbering is inappropriate

|

| if self.debug == True, port reads will return the last command chars,

| and no scope need be connected

|

| \_\_repr\_\_(self)

| Return a representation string.

|

| close(self)

| close the com port

|

| connect(self, port, baud=9600, ptimeout=10)

| Opens the port and checks for a telescope

| - port can be int: [0,...], or alpha: "COMn"

| - ptimeout>240 recommended for LX200GPS using auto\_align

|

| read\_to\_hash(self)

| reads from port until hash encountered and returns

|

| scan\_ports(self)

| check all com ports possible for LX connections

|

| set\_baud\_rate(self, baud)

| Set Baud Rate n, where n is an ASCII digit (1..9) with the following interpertation:

| 1 56.7K

| 2 38.4K

| 3 28.8K

| 4 19.2K

| 5 14.4K

| 6 9600

| 7 4800

| 8 2400

| 9 1200

| Returns: 1 At the current baud rate and then changes to the new rate for further

| communication

| test\_baud\_rates(self, portNum)

| check com port for possible speeds

| blist[0] will be the fastest

| ----------------------------------------------------------------------

| Data descriptors defined here:

|

| \_\_dict\_\_

| dictionary for instance variables (if defined)

|

| \_\_weakref\_\_

| list of weak references to the object (if defined)

class Library(builtins.object)

| Library(comPort, debug=False)

|

| Class for the LX200 built-in object library

|

| Methods defined here:

|

| \_\_init\_\_(self, comPort, debug=False)

| Constructor.

|

| Arguments: a COM port object instance from LXSerial to talk through

|

| \_\_repr\_\_(self)

| Return a representation string.

|

| find\_next\_obj(self)

| Find next deep sky target object subject to the current constraints.

| LX200GPS & AutoStar - Performs no function

|

| find\_obj(self)

| Find Object using the current Size, Type, Upper limit, lower limt

| and Quality contraints and set it as current target object.

| Returns: Nothing

| LX200GPS & Autostar - Performs no function

|

| getFindField(self)

| Get Find Field Diameter

| Returns: NNN#

| An ASCIi interger expressing the diameter of the field search used

| in the IDENTIFY/FIND commands.

|

| getMagBrightLimit(self)

| Get Browse Brighter Magnitude Limit

| Returns: sMM.M#

| The magnitude of the brightest object to be returned from the telescope

FIND/BROWSE command.

| Command when searching for objects in the Deep Sky database.

| getMagFaintLimit(self)

| Get Browse Faint Magnitude Limit

| Returns: sMM.M")

| The magnitude or the faintest object to be returned from the telescope

| FIND/BROWSE command.

|

| get\_largest\_limit(self)

| Get Smaller Size Limit

| Returns: NNN'#

| The size of the largest object returned by the FIND command expressed in

arcminutes.

|

| get\_min\_quality(self)

| Get Minimum Quality For Find Operation

| Returns:

| SU# Super

| EX# Excellent

| VG# Very Good

| GD# Good

| FR# Fair

| PR# Poor

| VP# Very Poor

| The mimum quality of object returned by the FIND command.

|

| get\_obj\_info(self)

| Get Object Information

| Returns: <string>")

| Returns a string containing the current target object's name and object type.

| LX200GPS & Autostar - performs no operation. Returns static description of

Andromeda Galaxy.

|

| get\_object\_Dec(self)

| Get Currently Selected Object/Target Declination

| Returns: sDD\*MM#

| or sDD\*MM'SS#

| Depending upon the current precision setting for the telescope.

|

| get\_search\_string(self)

| Get deepsky object search string

| Returns: GPDCO#

| A string indicaing the class of objects that should be returned by the FIND/BROWSE

command. If the character is upper case, the object class is return. If the character

is lowercase, objects of this class are ignored. The character meanings are as follows:

| G - Galaxies

| P - Planetary Nebulas

| D - Diffuse Nebulas

| C - Globular Clusters

| O - Open Clusters

|

| get\_smallest\_limit(self)

| Get Larger Size Limit

| Returns: NNN'#

| The size of the smallest object to be returned by a search of the telescope using the

BROWSE/FIND commands.

|

| get\_target\_RA(self)

| Get current/target object RA

| Returns: HH:MM.T#

| or HH:MM:SS

| Depending upon which precision is set for the telescope

|

| identify(self)

| Identify object in current field.

| Returns: <string>")

| Where the string contains the number of objects in field & object in center field.

| LX200GPS & Autostar - Performs no function.

| Returns static string "0 - Objects found".

|

| set\_M\_object(self, num)

| Set current target object to Messier Object NNNN, an ASCII expressed decimal

number.

| Returns: Nothing.

| LX200GPS and Autostar - Implemented in later versions.

|

| set\_bright\_limit(self, lim)

| Set Brighter limit to the ASCII decimal magnitude string. SMM.M

| Returns:

| 0 - Valid

| 1 - invalid number

|

| set\_faint\_limit(self, lim)

| Set faint magnitude limit to sMM.M

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_field\_dia(self, mins)

| Set FIELD/IDENTIFY field diamter to NNNN arc minutes.

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_largest\_size(self, size)

| Set the size of the largest object the FIND/BROWSE command will return to NNNN

arc minutes

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_library(self, libNum)

| Select deep sky Library where D specifices

| 0 - Objects CNGC / NGC in Autostar & LX200GPS

| 1 - Objects IC

| 2 - UGC

| 3 - Caldwell (Autostar & LX200GPS)

| 4 - Arp (LX200 GPS)

| 5 - Abell (LX200 GPS)

| Returns:

| 1 Catalog available

| 0 Catalog Not found

| LX200GPS & AutoStar - Performs no function always returns "1"

|

| set\_min\_obj(self, elev)

| Set the minimum object elevation limit to DD")

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_obj\_select(self)

| Sets the object selection string used by the FIND/BROWSE command.

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_prev(self)

| Find previous object and set it as the current target object.

| Returns: Nothing

| LX200GPS & Autostar - Performs no function

|

| set\_smallest\_size(self, size)

| Set the size of the smallest object returned by FIND/BROWSE to NNNN arc minutes

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_star\_catalog(self, num)

| Select star catalog D, an ASCII integer where D specifies:

| 0 STAR library (Not supported on Autostar I & II)

| 1 SAO library

| 2 GCVS library

| 3 Hipparcos (Autostar I & 2)

| 4 HR (Autostar I & 2)

| 5 HD (Autostar I & 2)

| Returns:

| 1 Catalog Available

| 2 Catalog Not Found

|

| set\_star\_object(self, num)

| Select star NNNN as the current target object from the currently selected catalog

| Returns: Nothing

| LX200GPS & AutoStar - Available in later firmwares

|

| set\_target\_object(self, num)

| Set current target object to deep sky catalog object number NNNN

| Returns : Nothing

| LX200GPS & Autostar - Implemented in later firmware revisions

|

| step\_quality(self)

| Step the quality of limit used in FIND/BROWSE through its cycle of

| VP ... SU. Current setting can be queried with: Gq#

| Returns: Nothing

|

| sync\_object(self, object=None)

| Synchronizes the telescope's position with the currently selected database object's

coordinates.

| Returns:

| LX200's - a "#" terminated string with the name of the object that was sync'd.

| Autostars & LX200GPS - A static string: " M31 EX GAL MAG 3.5 SZ178.0'#"

|

| ----------------------------------------------------------------------

| Data descriptors defined here:

|

| \_\_dict\_\_

| dictionary for instance variables (if defined)

|

| \_\_weakref\_\_

| list of weak references to the object (if defined)

class Reticule(builtins.object)

| Reticule(comPort, debug=False)

|

| LX200 class for Reticule and properties

|

| Methods defined here:

| \_\_init\_\_(self, comPort, debug=False)

| Constructor.

| Arguments:

|

| \_\_repr\_\_(self)

| Return a representation string.

|

| brighter(self)

| #-------------------------------------------------------------------------------

| # B - Reticule/Accessory Control

| #-------------------------------------------------------------------------------

|

| darker(self)

|

| setDutyCycle(self)

|

| setFlashRate(self)

|

| ----------------------------------------------------------------------

| Data descriptors defined here:

|

| \_\_dict\_\_

| dictionary for instance variables (if defined)

|

| \_\_weakref\_\_

| list of weak references to the object (if defined)

class Telescope(builtins.object)

| Telescope(comPort, model='LX200', debug=False)

|

| LX200 class for scope movement and properties

| Note:

| - two ports can be opened on the LX200

| - as many scopes as COM ports available can be driven

|

| Methods defined here:

|

| AbortSlew(self, direction=None)

| Halt all current slewing

| Returns:Nothing

|

| AbortSlew\_East(self)

| Halt eastward Slews

| Returns: Nothing

|

| AbortSlew\_North(self)

| Halt northward Slews

| Returns: Nothing

|

| AbortSlew\_South(self)

| Halt southward Slews

| Returns: Nothing

|

| AbortSlew\_West(self)

| Halt westward Slews

| Returns: Nothing

|

| FindHome(self)

| Autostar, LX200GPS and LX 16"Slew to Park Position

| Returns: Nothing

|

| \_\_init\_\_(self, comPort, model='LX200', debug=False)

| Constructor.

|

| \_\_repr\_\_(self)

| Return a representation string.

|

| align\_home(self)

| LX200GPS and LX 16" Seeks the Home Position of the scope and sets/aligns

| the scope based on the encoder values stored in non-volatile memory

| Returns: Nothing

| Autostar,LX200 - Igrnored ???

|

| auto\_align(self)

| Start Telescope Automatic Alignment Sequence [LX200GPS only]

| Returns:

| 1: When complete (can take several minutes).

| 0: If scope not AzEl Mounted or align fails

|

| axis\_rates(Axis)

| Axis (TelescopeAxes) The axis about which rate information is desired

| Return (Object) Collection of Rate objects describing the supported

| rates of motion that can be supplied to the MoveAxis() method for the

| specified axis.

|

| can\_move\_axis(Axis)

| Axis (TelescopeAxes) The identifier for the axis to be tested

| Return (Boolean) True if the telescope can be controlled about the

| specified axis via the MoveAxis() method.

|

| change\_date(self, date)

| Change Handbox Date to MM/DD/YY

| Returns: <D><string>

| D = '0' if the date is invalid. The string is the null string.

| D = '1' for valid dates and the string is "Updating Planetary Data"

| #"

| Note: For LX200GPS this is the UTC data!

|

| determine\_model(self, model='LX200')

| TO DO

| run a series of commands to test for pass/fail

|

| fan\_off(self)

| LX 16"- Turn off tube exhaust fan

| LX200GPS - Turn off power to accessory panel

| LX200 7" Maksutov - Turn off cooling fan

| Autostar & LX200 < 16" - Not Supported

| Returns: Nothing

|

| fan\_on(self)

| LX 16"- Turn on the tube exhaust fan

|

| LX200GPSTurn on power to accessor panel

| LX200 7" Maksutov - Turn on cooling fan

| Autostar & LX200 < 16" - Not Supported

| Returns: nothing

|

| get\_AZ(self)

| Get telescope azimuth

| Returns: DDD\*MM#T or DDD\*MM'SS#

| The current telescope Azimuth depending on the selected precision.

|

| get\_Altitude(self)

| Get Telescope Altitude

| Returns: sDD\*MM#

| or sDD\*MM'SS#

| The current scope altitude.

| The returned format depending on the current precision setting.

|

| get\_Dec(self)

| Get Telescope Declination.

| Returns: sDD\*MM#

| or sDD\*MM'SS#

| Depending upon the current precision setting for the telescope.

|

| get\_RA(self)

| Get Telescope RA

| Returns: HH:MM.T#

| or HH:MM:SS#

| Depending which precision is set for the telescope

|

| get\_UTC\_offset(self)

| Get UTC offset time

| Returns: sHH#

| or sHH.H#

| The number of decimal hours to add to local time to convert it to UTC.

| If the number is a whole number the sHH# form is returned, otherwise

the longer form is return. On Autostar and LX200GPS, the daylight savings setting in

effect is factored into returned value.

|

| get\_alignment(self)

| Query of alignment mounting mode.

| Returns:

| A If scope in AltAz Mode

| L If scope in Land Mode

| P If scope in Polar Mode

|

| get\_calendar\_format(self)

| Get Calendar Format

| Returns: 12#

| or 24#

| Depending on the current telescope format setting.

|

| get\_current\_long(self)

| Get Current Site Longitude

| Returns: sDDD\*MM")

| The current site Longitude. East Longitudes are expressed as negative

|

| get\_date(self)

| Get current date.

| Returns: MM/DD/YY#

| The current local calendar date for the telescope.

|

| get\_distance(self)

| #-------------------------------------------------------------------------------

| # D - Distance Bars

| #-------------------------------------------------------------------------------

|

| get\_high\_limit(self)

| Get High Limit

| Returns: sDD\*

| The minimum elevation of an object above the horizon to which the telescope will

slew with reporting a "Below Horizon" error.

|

| get\_home\_status(self)

| Autostar, LX200GPS and LX 16" Query Home Status

| Returns:

| 0 Home Search Failed

| 1 Home Search Found

| 2 Home Search in Progress

| LX200 Not Supported

|

| get\_local\_time12(self)

| Get Local Telescope Time In 12 Hour Format

| Returns: HH:MM:SS#

| The time in 12 format

|

| get\_local\_time\_24(self)

| Get Local Time in 24 hour format

| Returns: HH:MM:SS#

| The Local Time in 24-hour Format

|

| get\_lower\_limit(self)

| Get Lower Limit

| Returns: DD\*#

| The highest elevation above the horizon that the telescope will be

| allowed to slew to without a warning message.

|

| get\_menu\_entry(self, entry)

| Get Alignment Menu Entry

| Returns: A '#' Terminated ASCII string. [LX200 legacy command]

|

| get\_sidereal\_time(self)

| Get the Sidereal Time

| Returns: HH:MM:SS#

| The Sidereal Time as an ASCII Sexidecimal value in 24 hour format

|

| get\_site(self, siteNum)

| return site name

|

| get\_site1(self)

| Get Site 1 Name

| Returns: <string>#

| A '#' terminated string with the name of the requested site.

|

| get\_site2(self)

| Get Site 2 Name

| Returns: <string>#

| A '#' terminated string with the name of the requested site.

|

| get\_site3(self)

| Get Site 3 Name

| Returns: <string>#

| A '#' terminated string with the name of the requested site.

|

| get\_site4(self)

| Get Site 4 Name

| Returns: <string>#

| A '#' terminated string with the name of the requested site.

|

| get\_site\_lat(self)

| Get Current Site Latitude

| Returns: sDD\*MM#

| The latitude of the current site. Positive inplies North latitude.

|

| get\_site\_names(self)

| return all names in a List

|

| get\_temperature(self)

| LX200GPS - Return Optical Tube Assembly Temperature

| Returns <sdd.ddd> - a '#' terminated signed ASCII real number

| indicating the Celsius ambient temperature.

| All others - Not supported

|

| get\_tracking\_rate(self)

| Get tracking rate

| Returns: TT.T#

| Current Track Frequency expressed in hertz assuming a synchonous motor design

where a 60.0 Hz motor clock would produce 1 revolution of the telescope in 24

hours.

|

| help\_next(self)

| Retrieve the next line of help text

| Returns: <string>#

| The <string> contains the next string of general handbox help file

|

| help\_prev(self)

| Retreive previous line of the handbox help text file.

| Returns: <string>#

| The <string> contains the next string of general handbox help file

|

| help\_start(self)

| Set help text cursor to the start of the first line.

| Returns: <string>#

| The <string> contains first string of the general handbox help file.

|

| lunar\_sync(self, coords=None)

| Synchonize the telescope with the current Selenographic coordinates.

|

| move\_East(self, rate=None, t=None)

| Move Telescope East at current slew rate

| Returns: Nothing

|

| move\_North(self)

| Move Telescope North at current slew rate

| Returns: Nothing

|

| move\_South(self)

| Move Telescope South at current slew rate

| Returns: Nothing

|

| move\_West(self)

| Move Telescope West at current slew rate

| Returns: Nothing

|

| move\_to\_current\_target(self)

| Autostar, LX 16", LX200GPS - Slew to target Alt and Az

| Returns:

| 0 - No fault

| 1 - Fault

| LX200 - Not supported

|

| move\_to\_object(self)

| Slew to Target Object

| Returns:

| 0 Slew is Possible

| 1<string> Object Below Horizon w/string message

| 2<string> Object Below Higher w/string message

|

| precision\_toggle(self)

| Toggle between low/hi precision positions

| Low - RA displays and messages HH:MM.T sDD\*MM

| High - Dec/Az/El displays and messages HH:MM:SS sDD\*MM:SS

| Returns Nothing

|

| ser\_slew\_guide(self)

| Set Slew rate to Guiding Rate (slowest)

| Returns: Nothing

|

| set\_UTC\_offset(self, hours)

| Set the number of hours added to local time to yield UTC "sHH.H"

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_align\_mode(self, mode)

| Sets method of alignment used

| L Land alignment mode

| P Polar alignment mode

| A AltAz alignment mode

| Returns: nothing

|

| set\_local\_time(self, ltime)

| Set the local Time "HH:MM:SS"

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_lunar\_latitude(self, lat)

| Sets target object to the specificed selenographic latitude on the Moon.

| Returns 1- If moon is up and coordinates are accepted. sDD\*MM

| 0 - If the coordinates are invalid

|

| set\_lunar\_longitude(self, lon)

| Sets the target object to the specified selenogrphic longitude on the Moon

| Returns 1 - If the Moon is up and coordinates are accepted. sDDD\*MM

| 0 - If the coordinates are invalid for any reason.

|

| set\_manual\_track\_rate(self, rate)

| Set Manual rate do the ASCII expressed decimal DDD.DD

| Returns: '1'

|

| set\_max\_elev(self, elev)

| Set highest elevation to which the telescope will slew - DD

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_pointing\_mode(self, mode=None)

| set or toggle precision

| in high precision mode -- requires centering

|

| set\_precision\_type(self, pType)

| Sets telescope to give various position responses

| No command to check precision, so read something

|

| set\_sideral\_time(self, stime)

| Sets the local sideral time to HH:MM:SS

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_site(self, site)

| Set current site to <n>, an ASCII digit in the range 0..3

| Returns: Nothing

|

| set\_site\_latitude(self, angle)

| Sets the current site latitude to sDD\*MM#

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_site\_longitude(self, angle)

| Set current site's longitude to DDD\*MM an ASCII position string

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_site\_name(self, site, name)

| Set site name to be <string>. LX200s only accept 3 character strings. Other scopes

accept up to 15 characters.

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_site\_num(self, num)

| Set current site to <n>, an ASCII digit in the range 0..3

| Returns: Nothing

|

| set\_slew\_centering(self)

| Set Slew rate to Centering rate (2nd slowest)

| Returns: Nothing

|

| set\_slew\_find(self)

| Set Slew rate to Find Rate (2nd Fastest)

| Returns: Nothing

|

| set\_slew\_max(self)

| Set Slew rate to max (fastest)

| Returns: Nothing

|

| set\_slew\_rate(self, N)

| Set maximum slew rate to N degrees per second. N is the range (2..8)

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_target\_AZ(self, az)

| Sets the target Object Azimuth [LX 16" and LX200GPS only]

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_target\_DEC(self, angle)

| Set target object declination to sDD\*MM or sDD\*MM:SS depending on

| the current precision setting

| Accepts float or sDD:MM or sDD:MM:SS

| Returns:

| 1 - Dec Accepted

| 0 - Dec invalid

|

| set\_target\_RA(self, angle)

| Set target object RA to HH:MM.T or HH:MM:SS depending on the current precision

setting.

| Angle is a float or HH:MM.T or HH:MM:SS

| Returns:

| 0 - Invalid

| 1 - Valid

|

| set\_target\_alt(self, alt)

| Set target object altitude to sDD\*MM# or sDD\*MM'SS"

| [LX 16", Autostar, LX200GPS]

| Returns:

| 0 Object within slew range

| 1 Object out of slew range

|

| set\_time\_lon(self, time, lon)

| Since the time setting in seconds is 4x better than the Lon setting of minutes,

propose using the combination of Lon and time to minimize error of rounding: ie, if

Lon is 117deg15'19" use the time setting to compensate for the 19".

|

| set\_tracking\_rate(self, rate)

| Sets the current tracking rate to TT.T hertz, assuming a model where a 60.0 Hertz

synchronous motor will cause the RA axis to make exactly one revolution in 24 hours.

| Returns:

| 0 - Invalid

| 1 - Valid

|

| setup\_dialog(self, fileName='LX200.cfg')

| Mandatory, in advanced mode additional

| parameters, such as the scope position, guide rates etc. will be set.

| No dialog, just read config...

|

| smart\_PEC\_toggle(self)

| Toggles Smart Drive PEC on and off for both axis

| Returns: Nothing

| Not supported on Autostar

|

| store\_home(self)

| LX200GPS and LX 16" Seeks Home Position and stores the encoder values from the

aligned telescope at the home position in the nonvolatile memory of the scope.

| Returns: Nothing

| Autostar,LX200 - Ignored ???

|

| toggle\_precision(self)

| Toggles High Precsion Pointing. When High precision pointing is enabled scope will

first allow the operator to center a nearby bright star before moving to the actual

taget.

| Returns: <string>

| "HIGH PRECISION" Current setting after this command.

| "LOW PRECISION" Current setting after this command.

|

| toggle\_time\_format(self)

| Toggle Between 24 and 12 hour time format

| Returns: Nothing

|

| track\_custom(self)

| Select custom tracking rate

| Returns: Nothing

|

| track\_default(self)

| Select default tracking rate

| Returns: Nothing

|

| track\_lunar(self)

| Set Lunar Tracking Rate

| Returns: Nothing

|

| track\_rate\_dec(self)

| Decrement Manual rate by 0.1 Hz

| Returns: Nothing

|

| track\_rate\_incr(self)

| Increment Manual rate by 0.1 Hz

| Returns: Nothing

|

| ----------------------------------------------------------------------

| Data descriptors defined here:

|

| \_\_dict\_\_

| dictionary for instance variables (if defined)

|

| \_\_weakref\_\_

| list of weak references to the object (if defined)

DATA

\_\_all\_\_ = ['Derotator', 'Focuser', 'Library', 'LXSerial', 'LXGPS', 'LX...

VERSION

<module 'LX200.\_\_version\_\_' from 'C:\\Podravka\\Programi\\lib\\site-packages\\LX200\\\_\_version\_\_.py'>

FILE

c:\podravka\programi\lib\site-packages\lx200\\_\_init\_\_.py