INDIGO properties

Introduction

INDIGO properties and items are abstraction of INDI properties and items. As far as INDIGO uses software bus instead of XML messages,
properties are first of all defined memory structures which are, if needed, mapped to XML or JSON textual representation.

Common properties

Property name	Type	RO	Required	Item name	Required	Comments
CONNECTION	switch	no	yes	CONNECTED	yes	Item values are undefined if state is not Idle or Ok.
				DISCONNECTED	yes	
INFO	text	yes	yes	DEVICE_NAME	yes	"Device in INDIGO strictly represents device itself and not device driver. Valid DEVICE_INTERFACE values are defined in indigo_driver.h as indigo_device_interface enumeration."
				DEVICE_VERSION	yes	
				DEVICE_INTERFACE	yes	
				FRAMEWORK_NAME	no	
				FRAMEWORK_VERSION	no	
				DEVICE_MODEL	no	
				DEVICE_FIRMWARE_REVISION	no	
				DEVICE_HARDWARE_REVISION	no	
				DEVICE_SERIAL_NUMBER	no	

SIMULATION	switch	no	no	ENABLED	yes	
				DISABLED	yes	
CONFIG	switch	no	yes	LOAD	yes	
				SAVE	yes	
				REMOVE	yes	
PROFILE_NAME	text	no	yes	NAME_0,...	yes	Set profile name
PROFILE	switch	no	yes	PROFILE_0,...	yes	Select the profile number for subsequent CONFIG operation
DEVICE_PORT	text	no	no	PORT	no	Either device path like "/dev/tty0" or URL like "lx200://host:port ".
DEVICE_BAUDRATE	text	no	no	BAUDRATE	no	Serial port configuration in a string like this: 9600-8N1
DEVICE_PORTS	switch	no	no	valid serial port name		When selected, it is copied to DEVICE_PORT property.
GEOGRAPHIC_COORDINATES	number	no	yes	LATITUDE	yes	
				LONGITUDE	yes	
				ELEVATION	yes	
				ACCURACY	no	GPS driver only
UTC_TIME	number		no	TIME	yes	It depends on hardware if it is undefined, read-only or read-write.
				OFFSET	yes	

Properties are implemented by driver base class in indigo_driver.c.

CCD specific properties

Property name	Type	RO	Required	Item name	Required	Comments
CCD_INFO	number	yes	yes	WIDTH	yes	
				HEIGHT	yes	
				MAX_HORIZONTAL_BIN	yes	
				MAX_VERTICAL_BIN	yes	
				PIXEL_SIZE	yes	in microns
				PIXEL_WIDTH	yes	in microns
				PIXEL_HEIGHT	yes	in microns
				BITS_PER_PIXEL	yes	
CCD_LENS	number	no	yes	APERTURE	yes	in centimeters
			FOCAL_LENGTH	yes	in centimeters	
CCD_UPLOAD_MODE	switch	no	yes	CLIENT	yes	
				LOCAL	yes	
				BOTH	yes	
CCD_LOCAL_MODE	text	no	yes	DIR	yes	
				PREFIX	yes	XXX or XXXX is replaced by sequence or a template with %M (MD5), %E/%nE (exposure), %D/%xD (date), %H/%xH (time), %C (filter name), %nS (sequence)

						format specifier.
CCD_EXPOSURE	number	no	yes	EXPOSURE	yes	
CCD_STREAMING	number	no	no	EXPOSURE	yes	The same as CCD_EXPOSURE, but will upload COUNT images. Use COUNT -1 for endless loop.
				COUNT	yes	
CCD_ABORT_EXPOSURE	switch	no	yes	ABORT_EXPOSURE	yes	
CCD_FRAME	number	no	no	LEFT	yes	If BITS_PER_PIXEL can't be changed, set min and max to the same value.
				TOP	yes	
				WIDTH	yes	
				HEIGHT	yes	
				BITS_PER_PIXEL	yes	
CCD_BIN	number	no	no	HORIZONTAL	yes	CCD_MODE is prefered way how to set binning.
				VERTICAL	yes	
CCD_MODE	switch	no	yes	mode identifier	yes	CCD_MODE is a prefered way how to set binning, resolution, color mode etc.
CCD_READ_MODE	switch	no	no	HIGH_SPEED	yes	

				LOW_NOISE	yes	
CCD_GAIN	number	no	no	GAIN	yes	
CCD_OFFSET	number	no	no	OFFSET	yes	
CCD_GAMMA	number	no	no	GAMMA	yes	
CCD_FRAME_TYPE	switch	no	yes	LIGHT	yes	
				BIAS	yes	
				DARK	yes	
				FLAT	yes	
				DARKFLAT	yes	
CCD_IMAGE_FORMAT	switch	no	yes	RAW	yes	
				FITS	yes	
				XISF	yes	
				JPEG	yes	
				JPEG_AVI	yes	JPEG for capture, AVI for streaming
				RAW_SER	yes	RAW for capture, SER for streaming
CCD_IMAGE_FILE	text	no	yes	FILE	yes	
CCD_IMAGE	blob	no	yes	IMAGE	yes	
CCD_TEMPERATURE	number		no	TEMPERATURE	yes	It depends on hardware if it is undefined, read-only or read-write.
CCD_COOLER	switch	no	no	ON	yes	
				OFF	yes	
CCD_COOLER_POWER	number	yes	no	POWER	yes	It depends on hardware if it is undefined, read-only or

						read-write.
CCD_FITS_HEADERS	text	yes	yes	FITS key name, ...	yes	String in form "value" or "'value'"
CCD_SET_FITS_HEADER	text	no	yes	KEYWORD	yes	FITS key name
				VALUE	yes	FITS key value
CCD_REMOVE_FITS_HEADER	text	no	yes	KEYWORD	yes	FITS key name
CCD_PREVIEW	switch	no	yes	ENABLED	yes	Send JPEG preview to client
				DISABLED	yes	
CCD_PREVIEW_IMAGE	blob	no	yes	IMAGE	yes	

Properties are implemented by CCD driver base class in indigo_ccd_driver.c.

DSLR extensions (in addition to CCD specific properties)

Property name	Type	RO	Required	Item name	Required	Comments
DSLR_PROGRAM	switch		no	...	yes	RO/RW status and items set depends on particular camera
DSLR_APERTURE	switch		no	...	yes	RO/RW status and items set depends on particular camera/lens
DSLR_SHUTTER	switch		no	...	yes	RO/RW status and items set depends on particular camera
DSLR_COMPRESSION	switch		no	...	yes	RO/RW status and items set

						depends on particular camera
DSLR_WHITE_BALANCE	switch		no	...	yes	RO/RW status and items set depends on particular camera
DSLR_ISO	switch		no	...	yes	RO/RW status and items set depends on particular camera
DSLR_EXPOSURE_METERING	switch	...	no		yes	RO/RW status and items set depends on particular camera
DSLR_FOCUS_METERING	switch		no	...	yes	RO/RW status and items set depends on particular camera
DSLR_FOCUS_MODE	switch		no	...	yes	RO/RW status and items set depends on particular camera
DSLR_FOCUS_MODE	switch		no	...	yes	RO/RW status and items set depends on particular camera
DSLR_CAPTURE_MODE	switch		no	...	yes	RO/RW status and items set depends on

						particular camera
DSLR_FLASH_MODE	switch		no	...	yes	RO/RW status and items set depends on particular camera
DSLR_EXPOSURE_COMPENSATION	switch		no	...	yes	RO/RW status and items set depends on particular camera
DSLR_BATTERY_LEVEL	switch	yes	no	VALUE	yes	RO/RW status and items set depends on particular camera
DSLR_FOCAL_LENGTH	switch	yes	no	VALUE	yes	RO/RW status and items set depends on particular camera
DSLR_LOCK	switch	no	no	LOCK	yes	Lock camera UI
				UNLOCK	yes	
DSLR_MIRROR_LOCKUP	switch	no	no	LOCK	yes	Lock camera mirror
				UNLOCK	yes	
DSLR_AF	switch	no	no	AF	yes	Start autofocus
DSLR_AVOID_AF	switch	no	no	ON	yes	Avoid autofocus
				OF	yes	
DSLR_STREAMING_MODE	switch	no	no	LIVE_VIEW	yes	Operation used for streaming

				BURST_MODE	yes	
DSLR_ZOOM_PREVIEW	switch	no	no	ON	yes	LiveView zoom
				OFF	yes	
DSLR_DELETE_IMAGE	switch	no	no	ON	yes	Delete image from camera memory/card
				OFF	yes	

A reference implementation is ICA driver indigo_ccd_ica.m.

Wheel specific properties

Property name	Type	RO	Required	Item name	Required	Comments
WHEEL_SLOT	number	no	yes	SLOT	yes	
WHEEL_SLOT_NAME	switch	no	yes	SLOT_NAME_1, ...	yes	
WHEEL_SLOT_OFFSET	switch	no	yes	SLOT_OFFSET_1, ...	yes	Value is number of focuser steps

Properties are implemented by wheel driver base class in indigo_wheel_driver.c.

Focuser specific properties

Property name	Type	RO	Required	Item name	Required	Comments
FOCUSER_SPEED	number	no	no	SPEED	yes	
FOCUSER_REVERSE_MOTION	switch	no	no	ENABLED	yes	
				DIABLED	yes	
FOCUSER_DIRECTION	switch	no	yes	MOVE_INWARD	yes	
				MOVE_OUTWARD	yes	
FOCUSER_STEPS	number	no	yes	STEPS	yes	
FOCUSER_ON_POSITION	switch	n	no	GOTO	yes	

_SET		o				
				SYNC	yes	
FOCUSER_POSITION	number		no	POSITION	yes	It depends on hardware if it is undefined, read-only or read-write.
FOCUSER_ABORT_MOTION	switch	no	yes	ABORT_MOTION	yes	
FOCUSER_TEMPERATURE	number	no	no	TEMPERATURE	yes	
FOCUSER_BACKLASH	number	no	no	BACKLASH	yes	Mechanical backlash compensation
FOCUSER_COMPENSATION	number	no	no	COMPENSATION	yes	Temperature compensation (if FOCUSER_MODE.AUTOMATIC is set
				PERIOD	no	Compensation period
				THRESHOLD	no	Compensation threshold
FOCUSER_MODE	switch	no	no	MANUAL	yes	Manual mode
				AUTOMATIC	yes	Temperature compensated mode
FOCUSER_LIMITS	number	no	no	MIN_POSITION	yes	
				MAX_POSITION	yes	

Properties are implemented by focuser driver base class in indigo_focuser_driver.c.

Mount specific properties

Property name	Type	RO	Required	Item name	Required	Comments
MOUNT_INFO	text	no	no	MODEL	yes	
				VENDOR	yes	
				FIRMWARE_VERSION	yes	
MOUNT_LST_TIME	number		yes	TIME	yes	It depends on

						hardware if it is undefined, read-only or read-write.
MOUNT_SET_HOST_TIME	switch	no	no	SET	yes	
MOUNT_PARK	switch	no	no	PARKED	yes	
				UNPARKED	yes	
MOUT_PARK_SET	switch	no	no	DEFAULT	yes	
				CURRENT	yes	
MOUNT_PARK_POSITION	number	no	no	HA	yes	
				DEC	yes	
MOUNT_HOME	switch	no	no	HOME	yes	
MOUNT_ON_COORDINATES_SET	switch	no	yes	TRACK	yes	
				SYNC	yes	
				SLEW	no	
MOUNT_SLEW_RATE	switch	no	no	GUIDE	no	
				CENTERING	no	
				FIND	no	
				MAX	no	
MOUNT_MOTION_DEC	switch	no	yes	NORTH	yes	
				SOUTH	yes	
MOUNT_MOTION_RA	switch	no	yes	WEST	yes	

				EAST	yes	
MOUNT_TRACK_RATE	switch	no	no	SIDEREAL	no	
				SOLAR	no	
				LUNAR	no	
MOUNT_TRACKING	switch	no	no	ON	yes	
				OFF	yes	
MOUNT_GUIDE_RATE	nuber	no	no	RA	yes	
				DEC	yes	
MOUNT_EQUATORIAL_COORDINATES	number	no	yes	RA	yes	
				DEC	yes	
MOUNT_HORIZONTAL_COORDINATES	number	no	no	ALT	yes	
				AZ	yes	
MOUNT_ABORT_MOTION	switch	no	yes	ABORT_MOTION	yes	
MOUNT_RAW_COORDINATES	number	yes	yes	RA	yes	
				DEC	yes	
MOUNT_ALIGNMENT_MODE	switch	no	no	CONTROLLER	yes	
				SINGLE_POINT	yes	
				NEAREST_POINT	yes	
				MULTI_POINT	yes	
MOUNT_ALIGNMENT_SELECT_POINTS	switch	no	no	point id	yes	
MOUNT_ALIGNMENT_DELETE_POINTS_PROPERTY	switch	no	no	point id	yes	
MOUNT_ALIGNMENT_RESET	switch	no	no	RESET	yes	
MOUNT_EPOCH	numb	no	yes	EPOCH	yes	

				er		
MOUNT_SIDE_OF_PIER	switch	no	no	EAST	yes	
				WEST	yes	
MOUNT_PEC	switch	no	no	ENABLED	yes	
				DISABLED	yes	
MOUNT_PEC_TRAINING	switch	no	no	STARTED	yes	
				STOPPED	yes	

Properties are implemented by mount driver base class in indigo_mount_driver.c.

Guider specific properties

Property name	Type	RO	Required	Item name	Required	Comments
GUIDER_GUIDE_DEC	number	no	yes	NORTH	yes	
				SOUTH	yes	
GUIDER_GUIDE_RA	number	no	yes	EAST	yes	
				WEST	yes	
GUIDER_RATE	number	no	no	RATE	yes	% of sidereal rate (RA or both)
	number	no	no	DEC_RATE	no	% of sidereal rate (DEC)

Properties are implemented by guider driver base class in indigo_guider_driver.c.

AO specific properties

Property name	Type	RO	Required	Item name	Required	Comments
AO_GUIDE_DEC	number	no	yes	NORTH	yes	
				SOUTH	yes	
AO_GUIDE_RA	number	no	yes	EAST	yes	
				WEST	yes	
AO_RESET	switch	no	yes	CENTER	yes	
				UNJAM	no	

Properties are implemented by AO driver base class in indigo_ao_driver.c.

GPS specific properties

Property name	Type	RO	Required	Item name	Required	Comments
GPS_STATUS	light	yes	no	NO_FIX	yes	GPS fix status
				2D_FIX	yes	
				3D_FIX	yes	
GPS_ADVANCED	switch	no	no	ENABLED	yes	Enable advanced status report
				DISABLED	yes	
GPS_ADVANCED_STATUS	number	yes	no	SVS_IN_USE	yes	Advanced status report
				SVS_IN_VIEW	yes	
				PDOP	yes	
				HDOP	yes	
				VDOP	yes	

Properties are implemented by GPS driver base class in indigo_gps_driver.c.

Dome specific properties

Property name	Type	RO	Required	Item name	Required	Comments
DOME_SPEED	number	no	no	SPEED	yes	
DOME_DIRECTION	switch	no	no	CLOCKWISE	yes	
				COUNTERCLOCKWISE	yes	
DOME_ON_HORIZONTAL_COORDINATES_SET	switch	no	no	GOTO	yes	
				SYNC	yes	
DOME_STEPS	number	no	no	STEPS	yes	
DOME_EQUATORIAL_COORDINATES	number	no	no	RA	yes	
				DEC	yes	
DOME_HORIZONTAL_COORDINATES	number	no	no	AZ	yes	

				ALT	yes	
DOME_SLAVING	switch	no	no	ENABLED	yes	
				DISABLED	yes	
DOME_SLAVING_PARAMETERS	number	no	no	MOVE_THRESHOLD	yes	
DOME_ABORT_MOTION	switch	no	no	ABORT_MOTION	yes	
DOME_SHUTTER	switch	no	no	OPENED	yes	
				CLOSED	yes	
DOME_FLAP	switch	no	no	OPENED	yes	
				CLOSED	yes	
DOME_PARK	switch	no	no	PARKED	yes	
				UNPARKED	yes	
DOME_PARK_POSITION	number	no	no	AZ	yes	
				ALT	no	
DOME_HOME	switch	no	no	HOME	yes	
DOME_DIMENSION	number	no	no	RADIUS	yes	
				SHUTTER_WIDTH	yes	
				MOUNT_PIVOT_OFFSET_NS	yes	
				MOUNT_PIVOT_OFFSET_EW	yes	
				MOUNT_PIVOT_VERTICAL_OFFSET	yes	
				MOUNT_PIVOT_OTA_OFFSET	yes	
				MOUNT_PIVOT_VERTICAL_OFFSET	yes	

				MOUNT_PIVOT_VERTICAL _OFFSET	yes	
DOME_SET_HOST_TIME	switch	no	no	SET	yes	

Properties are implemented by dome driver base class in indigo_dome_driver.c

Rotator specific properties

Property name	Type	RO	Required	Item name	Required	Comments
ROTATOR_ON_POSITION_SET	switch	no	no	GOTO	yes	
				SYNC	yes	
ROTATOR_POSITION	number	no	yes	POSITION	yes	
ROTATOR_DIRECTION	switch	no	no	NORMAL	yes	
				REVERSED	yes	
ROTATOR_ABORT_MOTION	switch	no	yes	ABORT_MOTION	yes	
ROTATOR_BACKLASH	number	no	no	BACKLASH	yes	
ROTATOR_LIMITS	number	no	no	MIN_POSITION	yes	
				MAX_POSITION	yes	
ROTATOR_STEPS_PER_REVOLUTION	number	no	no	STEPS_PER_REVOLUTION	yes	

Properties are implemented by rotator driver base class in indigo_rotator_driver.c

Auxiliary properties

To be used by auxiliary devices like powerboxes, weather stations, etc.

Property name	Type	RO	Required	Item name	Required	Comments
AUX_POWER_OUTLET	switch	no	no	OUTLET_1	yes	Enable power outlets
				OUTLET_2	no	
				OUTLET_3	no	
				OUTLET_4	no	
AUX_POWER_OUTLET_STAT	light	ye	no	OUTLET_1	yes	Power outlets state

E		s				(IDLE = unused, OK = used, ALERT = over-current etc.)
				OUTLET_2	no	
				OUTLET_3	no	
				OUTLET_4	no	
AUX_POWER_OUTLET_CURRENT	number	yes	no	OUTLET_1	yes	Power outlets current
			no	OUTLET_2	no	
			no	OUTLET_3	no	
			no	OUTLET_4	no	
AUX_HEATER_OUTLET	number	no	no	OUTLET_1	yes	Set heater outlets power
				OUTLET_2	no	
				OUTLET_3	no	
				OUTLET_4	no	
AUX_HEATER_OUTLET_STATE	light	yes	no	OUTLET_1	yes	Heater outlets state (IDLE = unused, OK = used, ALERT = over-current etc.)
				OUTLET_2	no	
				OUTLET_3	no	
				OUTLET_4	no	
AUX_HEATER_OUTLET_CURRENT	number	yes	no	OUTLET_1	yes	Heater outlets current
				OUTLET_2	no	
				OUTLET_3	no	
				OUTLET_4	no	
AUX_USB_PORT	switch	no	no	PORT_1	yes	Enable USB ports on smart hub
				PORT_2	no	
				PORT_3	no	

				PORT_4	no	
				PORT_5	no	
				PORT_6	no	
				PORT_7	no	
				PORT_8	no	
AUX_USB_PORT_STATE	light	yes	no	PORT_1	yes	USB port state (IDLE = unused or disabled, OK = used, BUSY = transient state, ALERT = over-current etc.)
				PORT_2	no	
				PORT_3	no	
				PORT_4	no	
				PORT_5	no	
				PORT_6	no	
				PORT_7	no	
				PORT_8	no	
AUX_DEW_CONTROL	switch	no	no	MANUAL	yes	Use AUX_HEATER_OUTLET values
				AUTOMATIC	yes	Set power automatically
AUX_WEATHER	number	yes	no	TEMPERATURE	no	
				HUMIDITY	no	
				DEWPOINT	no	
AUX_INFO	number	yes	no	...	no	Any number of any number items
AUX_CONTROL	switch	no	no	...	no	Any number of any switch items
AUX_LIGHT_SWITCH	switch	no	no	ON	yes	Flatbox light on
				OFF	yes	Turn light off

AUX_LIGHT_INTENSITY	number	no	no	LIGHT_INTENSITY	yes	Flatbox light intensity

Agent specific properties

Snoop agent (obsoleted by various filter agents)

Property name	Type	RO	Required	Item name	Required	Comments
SNOOP_ADD_RULE	text	no	yes	SOURCE_DEVICE	yes	Add new rule
				SOURCE_PROPERTY	yes	
				TARGET_DEVICE	yes	
				TARGET_PROPERTY	yes	
SNOOP_REMOVE_RULE	text	no	yes	SOURCE_DEVICE	yes	Remove existing rule
				SOURCE_PROPERTY	yes	
				TARGET_DEVICE	yes	
				TARGET_PROPERTY	yes	
SNOOP_RULES	light	yes	yes	…	yes	Lists all rules

LX200 server agent (obsoleted by Mount Agent)

Property name	Type	RO	Required	Item name	Required	Comments
LX200_DEVICES	text	no	yes	MOUNT	yes	Select snooped mount
				GUIDER	yes	Select snooped guider (not used yet)
LX200_CONFIGURATION	number	no	yes	PORT	yes	Server port number
LX200_SERVER	switch	no	yes	STARTED	yes	Select server state
				STOPPED	yes	

Imager agent

Property name	Type	RO	Required	Item name	Required	Comments
FILTER_CCD_LIST	switch	no	yes	…	yes	Select CCD
FILTER_WHEEL_LIST	switc	n	yes	…	yes	Select wheel

	h	o				
FILTER_FOCUSER_LIST	switch	no	yes	...	yes	Select focuser
FILTER_ROTATOR_LIST	switch	no	yes	...	yes	Select rotator
FILTER_RELATED_AGENT_LIST	switch	no	yes	...	yes	Select related agents
FILTER_FORCE_SYMMETRIC_RELATIONS	switch	no	yes	ENABLED	yes	Set symmetric relation
				DISABLED	yes	
AGENT_START_PROCESS	switch	no	yes	EXPOSURE	yes	Start exposure
				STREAMING	yes	Start streaming
AGENT_PAUSE_PROCESS	switch	no	yes	PAUSE	yes	Pause batch immediately (abort running capture) or resume
				PAUSE_WAIT	yes	Pause batch after running capture or resume
				PAUSE_AFTER_TRANSIT	yes	Resume batch paused at configured transit time (e.g. after meridian flip)
AGENT_ABORT_PROCESS	switch	no	yes	ABORT	yes	Abort running process
AGENT_IMAGER_BATCH	number	no	yes	COUNT	yes	Frame count
				EXPOSURE	yes	Exposure duration (in seconds)
				DELAY	yes	Delay between exposures duration (in seconds)
				PAUSE_AFTER_TRANSIT	yes	Pause batch when transit time reached; e.g. before meridian flip; use 24:00:00 to turn it off
AGENT_IMAGER_DOWNLOADFILE	text	no	yes	FILE	yes	Files to load into AGENT_IMAGER_DOWNLOAD_IMAGE property and remove on the host

AGENT_IMAGER_DOWNLOADFILES	switch	no	yes	REFRESH	yes	Refresh the list of available files
				file name	yes	Set the file to AGENT_IMAGER_DOWNLOADFILE
AGENT_IMAGER_DOWNLOAD_IMAGE	blob	no	yes	IMAGE	yes	
AGENT_IMAGER_SEQUENCE	text	no	yes	SEQUENCE	yes	Sequence control string
				01...16	yes	Batch control string
AGENT_IMAGER_SEQUENCE_STATE	light	no	yes	SEQUENCE	yes	Sequence state
				01...16	yes	Batch state

Guider agent

Property name	Type	RO	Required	Item name	Required	Comments
FILTER_CCD_LIST	switch	no	yes	...	yes	Select CCD
FILTER_GUIDER_LIST	switch	no	yes	...	yes	Select guider
FILTER_RELATED_AGENT_LIST	switch	no	yes	...	yes	Select related agents
FILTER_FORCE_SYMMETRIC_RELATIONS	switch	no	yes	ENABLED	yes	Set symmetric relation
				DISABLED	yes	
AGENT_START_PROCESS	switch	no	yes	PREVIEW	yes	Start preview
				CALIBRATION	yes	Start calibration
				GUIDING	yes	Start guiding
AGENT_ABORT_PROCESS	switch	no	yes	ABORT	yes	Abort running process

AGENT_PROCESS_FEATURES	switch	no	yes	ENABLE_LOGGING	yes	Make guiding log
AGENT_GUIDER_LOG	text	no	yes	DIR	yes	Guiding log folder
				TEMPLATE	yes	File name template, strftime() format specifiers accepted
AGENT_GUIDER_DETECTION_MODE	switch	no	yes	DONUTS	yes	Use DONUTS algorithm
				CENTROID	yes	Use full frame centroid algorithm
				SELECTION	yes	Use selected star centroid algorithm
AGENT_GUIDER_DEC_MODE	switch	no	yes	BOTH	yes	Guide both north and south
				NORTH	yes	Guide north only
				SOUTH	yes	Guide south only
				NONE	yes	Don't guide in declination axis
AGENT_GUIDER_SELECTION	switch	no	yes	X	yes	Selected star coordinates (pixels)
				Y	yes	Guide north only
AGENT_GUIDER_SETTINGS	numb	no	yes	EXPOSURE	yes	Exposure

	er				duration (in seconds)
			STEP0	yes	Initial step size (in pixels)
			ANGLE	yes	Measured angle (in degrees)
			BACKLASH	yes	Measured backlash (in pixels)
			SPEED_RA	yes	Measured RA speed (in pixels/secon d)
			SPEED_DEC	yes	Measured dec speed (in pixels/secon ds)
			MAX_BL_STEPS	yes	Max backlash clearing steps
			MIN_BL_DRIFT	yes	Min required backlash drift (in pixels)
			MAX_CALIBRATION_ STEPS	yes	Max calibration steps
			AGGRESSIVITY_RA	yes	RA aggressivity (in %)
			AGGRESSIVITY_DEC	yes	Dec aggressivity (in %)
			MIN_ERROR	yes	Min error to coorect (in

						pixels)
				MIN_PULSE	yes	Min pulse length to emit (in seconds)
				MAX_PULSE	yes	Max pulse length to emit (in seconds)
				DITHERING_X	yes	Dithering offset (in pixels)
				DITHERING_Y	yes	
AGENT_GUIDER_STATS	number	yes	yes	PHASE	yes	Process phase
				FRAME	yes	Frame number
				DRIFT_X	yes	Measured drift (X/Y)
				DRIFT_Y	yes	
				DRIFT_RA	yes	Measured drift (RA/dec)
				DRIFT_DEC	yes	
				CORR_RA	yes	Correction (RA/dec)
				CORR_DEC	yes	
				RMSE_RA	yes	Root Mean Square Error (RA/dec)
				RMSE_DEC	yes	

Mount agent

Property name	Type	RO	Required	Item name	Required	Comments
FILTER_DOME_LIST	switc	n	yes	...	yes	Select

	h	o				dome
FILTER_MOUNT_LIST	switc h	n o	yes	...	yes	Select mount
FILTER_GPS_LIST	switc h	n o	yes	...	yes	Select GPS
FILTER_RELATED_AGENT_LIS T	switc h	n o	yes	...	yes	Select related agents
FILTER_FORCE_SYMMETRIC_ RELATIONS	switc h	n o	yes	ENABLED	yes	Set symmetr ic relation
				DISABLED	yes	
GEOGRAPHIC_COORDINATES	numb er	n o	yes	LATITUDE	yes	Observat ory coordina tes
				LONGITUDE	yes	
				ELEVATION	yes	
AGENT_SITE_DATA_SOURCE	switc h	n o	yes	HOST	yes	Use host coordina tes
				MOUNT	yes	Use mount controlle r coordina tes
				DOME	yes	Use dome controlle r coordina tes
				GPS	yes	Use GPS coordina tes
AGENT_SET_HOST_TIME	switc h	n o	yes	MOUNT	yes	Set host time to

						device
				DOME	yes	
AGENT_LIMITS	number	no	yes	HA_TRACKING	yes	HA limit for tracking; park when reached; use 24:00:00 to turn it off
				LOCAL_TIME	yes	Time limit for tracking; park when reached; use 12:00:00 to turn it off
				COORDINATES_PROPAGATE_ THESHOLD	yes	The minimal difference in geographic coordinates that trigger change propagation