DWARF II API V1.0 (english version)

1. API Introduction

The DWARF II API can be divided into the following types of interfaces according to protocol types and functions：

1. Bluetooth connection API, providing Bluetooth network-related interfaces
2. Basic function API, providing camera preview, photo, video, auto focus, ISP parameter adjustment, system Settings and other interfaces
3. Advanced functional API, providing astronomical related interface, automatic tracking interface, panoramic stitching interface
4. Motion control API, providing interfaces to control the movement of DWARF II rotation axis and pitch axis
5. File preview and download API, providing interfaces for previewing and accessing images and videos taken by DWARF II
6. System function API, providing system-related interfaces

2. Bluetooth connection API

Bluetooth connections communicate using BLE, using the following services and features:

type	UUID	explain
Service	0000180A-0000-1000-8000-00805F9B34FB	Service UUID
Characteristic	00009999-0000-1000-8000-00805F9B34FB	Characteristic UUID

The Bluetooth request sends byte data (not enough bytes for zero) and returns a json string.

2.1 Configuring AP Hotspots

Bluetooth request

Message header (1 byte)	Password (32 bytes)	Command (12 bytes)	Country code

0x02	default：“DWARF_12345678”	wifiap	2字节

return

field	type	explain
cmd	string	wifiap
ssid	string	wifi name
psd	string	wifi password
ip	string	IP Address
code	int	Error code

2.2 Configuring STA Mode (Connecting to Router)

request

Message header (1 byte)	Password (32 bytes)	Command (12 bytes)	ssid(32 bytes)
0x01	default：“DWARF_12345678”	wifista	Router name

return

field	type	explain
cmd	string	wifista
ssid	string	Router name
psd	string	Router password
ip	string	IP Address
code	int	Error code

2.3 Get WIFI configuration

request

Message header (1 byte)	Password (32 bytes)	Command (12 bytes)	Message ta
0x05	default： “DWARF_12345678”	getconfig	0x0

return

field	type	explain
cmd	string	getconfig
state	int	0：Not configured 1：in configuration 2：Configuration complete
mode	int	0:NONE 1:AP 2:STA
ssid	string	wifi name
psd	string	Wifi password
ip	string	IP Address
code	int	Error code

2.4 Example Change the name and password of Bluetooth wifi

request

Message header (1 byte)	Password (32 bytes)	Mode (1 byte)	Command (12 by
0x06	default： “DWARF_12345678”	0：Bluetooth name 1：Bluetooth password 2：wifi name 3：wifi password	setBleWifi

return

field	type	explain
cmd	string	setBleWifi

code	int	Error code
mode	int	mode
value	string	Modified value

2.5 Reset Bluetooth WIFI

request

Message header (1 byte)	Command (12 bytes)	Message tail (1 byte)
0x07	reset	0x04

return

field	type	explain
cmd	string	reset
state	int	1：Waiting for reset 2：Reset complete
code	int	Error code

3. Basic function API

Unless otherwise specified, the communication interface is ws://192.168.88.1:/ 9900, the communication protocol is websocket, and the communication data type is json.

Note: Make sure the camera is turned on before using the basic function API.

3.1 image transmission

3.1.1 Turn on the camera

request

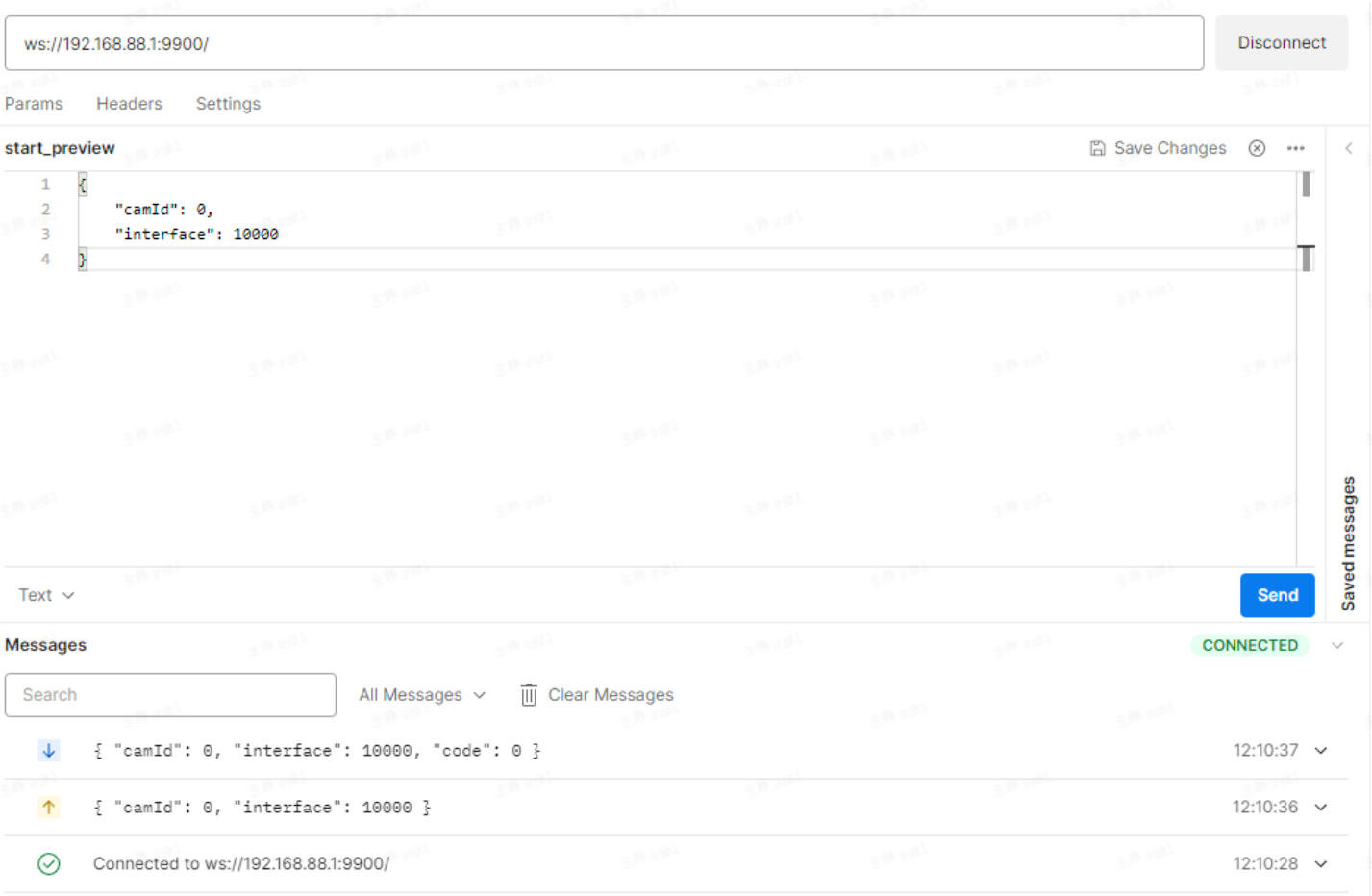
field	type	explain

interface	int	value:10000
camId(camera id)	int	0:Long focal camera 1:Wide-an

return

field	type	explain
interface	int	value:10000
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
code	int	Error code

Use example



3.1.2 Turn off the camera

request

field	type	explain

interface	int	value:10017
camId(camera id)	int	0:Long focal camera 1:Wide-ang

return

field	type	explain
interface	int	value:10017
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
code	int	Error code

3.1.3 Camera preview

The camera preview interface is jpeg video stream, requiring the receiver to parse the jpeg video stream and display. You can use the browser to test the interface.

1. Long lens preview

   http://192.168.88.1:8092/mainstream

2. Wide-angle preview

   http://192.168.88.1:8092/thirdstream

3.2 Photograph and video

3.2.1 Photograph

request

field	type	explain
interface	int	value:10006
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
mode(Photo mode)	int	0:Single shot 1:Continuous Capture
count(number)	int	default:1

name(File name without suffix)	string	Name it with a phone timestamp

return

field	type	explain
interface	int	value:10006
camId(camera id)	int	0
code	int	Error code

3.2.2 Start recording

request

field	type	explain
interface	int	value:10007
camId(camera id)	int	0:Long focal camera
name(File name without suffix)	string	Name it with a phone timestamp

return

field	type	explain
interface	int	value:10007
camId(camera id)	int	0:Long focal camera
code	int	Error code

3.2.3 Stop recording

request

field	type	explain
interface	int	value:10009
camId(camera id)	int	0:Long focal camera

return

field	type	explain
interface	int	value:10009
camId(camera id)	int	0:Long focal camera
code	int	Error code

3.2.4 Start time lapse photography

request

field	type	explain
interface	int	value:10018
camId(camera id)	int	0:Long focal camera
interval(Interval time)	int	1s-60s
outTime(Output duration)	int	1s-
name(File name without suffix)	string	Name it with a phone timestamp

return

field	type	explain
interface	int	value:10018
camId(camera id)	int	0:Long focal camera
code	int	Error code

3.2.5 Stop time-lapse photography

request

field	type	explain
interface	int	value:10019

camId(camera id)	int	0:Long focal camera

return

field	type	explain
interface	int	value:10019
camId(camera id)	int	0:Long focal camera
code	int	Error code

3.3 Adjust ISP parameters

3.3.1 brightness

request

field	type	explain
interface	int	value:10204
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
value	int	Long focal range:0-255 default：128 Wide-angle range：-64-64 default：0

3.3.2 contrast

request

field	type	explain
interface	int	value:10205
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
value	int	Long focal range:0-255 default：128

		Wide-angle range：0-95 default：0

3.3.3 saturation

request

field	type	explain
interface	int	value: 10206
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
value	int	Long focal range:0-255 default：128 Wide-angle range：0-100 default：80

3.3.4 hue

request

field	type	explain
interface	int	value:10207
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
value	int	Long focal range:0-255 default：128 Wide-angle range：-2000-2000 default：0

3.3.5 sharpness

request

field	type	explain
interface	string	value:10208

camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
value	int	Long focal range:0-100 default：50 Wide-angle range：1-7 default：2

3.3.6 Set exposure mode

request

field	type	explain
interface	int	value:10001
camId(camera id)	int	0:Long focal camera 1:Wide-ang camera
mode	int	Long focal camera：0:auto 1:man Wide-angle camera：3:auto 1:mar

3.3.7 Set exposure value

request

field	type	explain
interface	int	value:10003
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
value	double	Long focal camera:0.0000-15.0000 Wide-angle camera：0.0003-1.0

3.3.8 Set gain mode

request

field	type	explain
interface	int	value:10004

camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
mode	int	0:auto 1:manual

3.3.9 Set gain value

request

field	type	explain
interface	int	value:10005
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
value	int	Long focal camera:0-240 Wide-angle camera:64-8000

3.3.10 Start autofocus

request

field	type	explain
interface	int	value:10211
camId(camera id)	int	0:Long focal camera
mode	int	0：Global focus 1：Area focus
centerX	int	0-1920
centerY	int	0-1080

return

field	type	explain
interface	int	value:10211
camId(camera id)	int	0:Long focal camera
code	int	Error code

3.3.11 Set the white balance mode

request

field	type	explain
interface	int	value:10212
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
mode	int	0：auto 1：manual

3.3.12 Set the white balance scene

request

field	type	explain
interface	int	value:10213
camId(camera id)	int	0:Long focal camera
mode	int	0：Incandescent lamp 1：Fluorescent lamp 2：Warm fluorescent lamp 3：sunlight 4：overcast sky 5：evening twilight 6：shadow

3.3.13 Set the white balance color temperature parameter

request

field	type	explain
interface	int	value:10214
camId(camera id)	int	0:Long focal camera 1:Wide-angle camera
value	int	Long focal camera: 2800-7500

		Wide-angle camera: 2800-6000

3.3.14 IR_CUT

request

field	type	explain
interface	int	value:10203
camId	int	0
value	int	0：Red light filter 3:Unfiltered red light

3.4 Gets DWARF running status and parameters

3.4.1 Get telephoto ISP parameters

request

field	type	explain
camId	int	0
interface	int	value:10215

return

field	type	explain
camId	int	0
interface	int	value:10215
expMode	int	Exposure mode
exp	float	Exposure value
gainMode	int	Gain mode
gain	int	Gain value
awbMode	int	White balance model

awbCT	int	White balance color temperature
irState	int	0：Red light filter 3:Unfiltered red light
quality	int	Preview picture quality：30-85
brightness	int	brightness
contrast	int	contrast
hue	int	hue
saturation	int	saturation
sharpness	int	sharpness

3.4.2 Get telephoto IRCUT state (when shooting raw)

request

field	type	explain
camId	int	0
interface	int	value:10216

return

field	type	explain
interface	int	value:10216
value	int	0：Red light filter 3:Unfiltered red light

3.4.3 Returns to the telephoto working state

request

field	type	explain
interface	int	value:10022
camId	int	0:Long focal camera

return

field	type	explain
camId	int	0:Long focal camera
interface	int	value:10022
camState(Camera state)	int	0：closed 1：opened
photoState(Shooting state)	int	0：idle1：Ordinary photograph 2：Panoramic photograph 3：RAW photograph 4：Dark field photograph
recordState(Video status)	int	0：idle 1：On video 2：Time-lapse photography
trackState(Tracking state)	int	0：uninitialized 1：be initializing 2：Initialization complete 3：In track 4：Tracking stop
astroState(Astronomical state)	int	0：Under correction 1：tracking 2：stopping 3：idle 4：Calculating

3.4.4 Returns the wide-angle ISP parameter

request

field	type	explain
camId	int	1:Wide-angle camera
interface	int	value:10217

return

field	type	explain
interface	int	value:10217
camId	int	1

expMode	int	Exposure mode
exp	float	Exposure value
gain	int	Gain value
awbMode	int	White balance model
awbCT	int	White balance color temperature
brightness	int	brightness
contrast	int	contrast
saturation	int	saturation
hue	int	hue
sharpness	int	sharpness
gamma	int	gamma

4. Advanced function API

4.1 Astronomical function

Before using the astronomy function, you must set the UTC+0 time

4.1.1 UTC+0 time

HTTP request：http://192.168.88.1:8092/date?date=yyyy-mm-dd hh:mm:ss

return

field	type	explain
result	int	0:ok，-1:failed

4.1.2 correction

field	type	explain
interface	int	value:11205
camId	int	0:Long focal camera

lon	double	longitude
lat	double	latitude
date	string	timestamp:yyyy-MM-dd HH:mm:ss
path	string	DWARF_GOTO_timestamp

return

field	type	explain
interface	int	value:11205
code	int	Error code & State Code

4.1.3 Start goto

Please ensure that the correction is successful before starting the goto request

field	type	explain
interface	int	value:11203
camId	int	0:Long focal camera
planet	int	Mercury = 0, Venus = 1, Mars = 2, Jupiter = 3, Saturn = 4, Uranus = 5, Neptune = 6, Moon = 7 GO planet with this field and use right ascension and declination without it
ra	double	Right ascension
dec	double	declination

lon	double	longitude
lat	double	latitude
date	string	timestamp:yyyy-MM-dd HH:mm:ss
path	string	DWARF_GOTO_timestamp

return

field	type	explain
interface	int	value:11205
code	int	Error code & State Code

4.1.4 Take raw pictures

request

field	type	explain
interface	int	value:10011
camId	int	0:Long focal came
target	string	Shot target, default NULL, obtain
RA	string	The right ascension coordinate st
DEC	string	The declination coordinate stri
exp	double	Exposure value
gain	int	Gain value
binning	int	0:no binning mod 1:binning mode
count	int	Number of shots, def
name(File name without suffix)	string	Name it with a phone tin
overlayCount(The number of stack pictures)	int	Must set to 1
format(RAW data format)	int	0:FITS

		1:TIFF

return

field	type	explain
interface	int	value:10011
camId	int	0
code	int	Error code

4.1.5 Returns the number of raw images

No request is required; dwarf actively returns.

return

field	type	explain
interface	int	value:10014
code	int	State code
camId	int	0
totalCount	int	Total number of RAW images shot
currentCount	int	Number of RAW images taken

4.1.6 Returns the number of superimposed astronomical RAW images

No request is required; dwarf actively returns.

return

field	type	explain
interface	int	value: 10023
code	int	State code
camId	int	0
stackedCount	int	Number of RAW images stacked

4.1.7 Stop taking RAW images

request

field	type	explain
interface	int	10015

4.1.8 RAW image preview

RAW image preview interface for jpeg video stream, need the receiver to parse the jpeg video stream and display, you can use a browser to test the interface.

RAW image preview：

http://192.168.88.1:8092/rawstream

4.1.9 Switch the RAW preview source

request

field	type	explain
interface	int	value:10020
camId	int	0
source(RAW preview source)	int	0:Continuous superposition graph 1:Single 15s exposure graph 2:Single sheet according to exposure time (more than 15s) composite image

4.1.10 Taking dark field

request

field	type	explain
interface	int	value:10026
camId	int	0
count	int	default:40

name(File name without suffix)	string	DWARF_DARK prefix，Name it with a phone timestamp
binning	int	0:no binning mode 1:binning mode
darkGain	int	There are 25 gain stops, each of which corresponds to a bit of int. If shooting a dark field with 0 and 10 gain, send 3.
darkExp	int	Exposure gear, starting at zero, last 15 seconds

4.1.11 Query the shot field

request

field	type	explain
interface	int	value:10027
camId	int	0
binning	int	0:binning1*1 1:binning2*2

return

field	type	explain
interface	int	value:10027
value	int	There are 25 gain stops, each of which corresponds to a bit of int. If shooting a dark field with 0 and 10 gain, send 3.
code	int	State code
camId	int	0
binning	int	0:binning1*1 1:binning2*2

4.2 Tracking function

Before using the trace function, initialize the trace

4.2.1 Trace initialization

requst

field	type	explain
interface	int	value:11200

return

field	type	explain
camId	int	0
interface	int	value:11200
code	int	State code

4.2.2 Start tacking

request

field	type	explain
interface	int	value:11201
camId	int	0
x	int	0-1920
y	int	0-1080
w	int	0-1920
h	int	0-1080

return

field	type	explain

interface	int	value:11201
camId	int	0
x	int	Current tracking result x coordinate
y	int	Current trace result y coordinate
w	int	Current trace result width
h	int	Current trace result height
code	int	Error code

4.2.3 Stop tracking

request

field	type	explain
interface	int	value:11202
camId	int	0

return

field	type	explain
interface	int	value:11202
camId	int	0
code	int	Error code

4.3 Panoramic function

4.3.1 Start panorama

request

field	type	explain

interface	int	value:10103
row	int	Number of rows
col	int	Number of columns
mStep1(Motor 1 Subdivision)	int	1 2 4 8 16 32 64 128 256
mStep2(Motor 2Subdivision)	int	1 2 4 8 16 32 64 128 256
speed1(Motor 1 speed)	int	0-1000*mStep1
speed2(Motor 2 speed)	int	0-1000*mStep2
pulse1(Motor 1 pulse number)	int	>=2
pulse2(Motor 2 pulse number)	int	>=2
imgPath(Panoramic photo path)	string	DWARF_PANORAMA+timestamp
accelStep1(Motor 1 Acceleration steps)	int	0-1000
accelStep2(Motor 2 Acceleration steps)	int	0-1000

return

field	type	explain
interface	int	value:10103
code	int	State code

4.3.2 Stop panorama

request

field	type	explain
interface	int	value:10106

5. Motion control API

5.1 Start

request

field	type	explain
interface	int	value: 10100
id(motor id)	int	1:spin 2:pitch
mode	int	1:continuous mode 2:pulse mode
mStep(subdivide)	int	1 2 4 8 16 32 64 128 256
speed	int	range:0-65536（1-50000&&<1000*mStep）
direction	int	0:anticlockwise 1:clockwise
pulse	int	range:>=2（mStep<=32）>=5(mStep>32)
accelStep(Acceleration steps)	int	0-1000

return

field	type	explain
interface	int	value:10100
motorId	int	1:spin 2:pitch
code	int	State code

Touch limit return

field	type	explain
interface	int	value:10100
motorId	int	1:spin 2:pitch 3:focus
code	int	Error code:-22, RESULT_MOTOR_LIMIT

limit	int	0:Limit 0 1:Limit 1

5.2 Stop

request

field	type	explain
interface	int	value:10101
id	int	1:spin 2:pitch
decelStep(Deceleration steps)	int	0-1000

return

field	type	explain
motorId	int	1:spin 2:pitch
interface	int	value:10101
runMode	int	0:pulse mode 1:continuous mode
numSteps	int	Running steps
code	int	Error code

5.3 Set speed

request

field	type	explain
id	int	1:spin 2:pitch
interface	int	value:10107
speed	int	0-50000
accelStep	int	0-1000
trend	int	0:decelerate 1:accelerate

return

field	type	explain
id	int	1:spin 2:pitch
interface	int	value:10107
code	int	Error code

5.4 Set direction

request

field	type	explain
id	int	1:spin 2:pitch
interface	int	value:10108
direction	int	0:anticlockwise 1:clockwise

return

field	type	explain
motorId	int	1:spin 2:pitch
interface	int	value:10108
direction	int	0:anticlockwise 1:clockwise

5.5 Set subdivide

request

field	type	explain
id	int	1:spin 2:pitch
interface	int	value:10109
mStep	Int	1 2 4 8 16 32 64 128 256

6. File preview and download API

6.1 File preview

Preview using HTTP file server, interface: http://192.168.88.1:8090/file/ + file name, file called/sdcard directory below picture or video file.

6.2 File download

The file download protocol is ftp or sftp.

ftp login：

Account number：ftp

password：rockchip

sftp login：

Account number：root

password: rockchip

Note:

1.ftp only has download permission, no file transfer and delete permission, ftp can only access the sdcard directory

2.sftp can access all directories and has the permission to upload and delete files. Ensure that you select /sdcard as the directory to upload and delete files through sftp.

7. System function API

7.1 Returns other system states

request

field	type	explain
interface	int	value:11407

return

field	type	explain

interface	int	value:11407
chargeState(charging state)	int	0：uncharged 1：Slow charge 2：Quick charge
tfState(sd card status)	int	0：no microSD 1：have microSD
powerIndState(Power indicator status)	Int	0：close 1：open
ele(Electric quantity)	int	Electric quantity
fwVersion	string	firmware version
cpuMode	int	0：normal mode 1：Performance Mode
mtpMode	int	0：close 1：open

7.2 Get microSD card information

request

field	type	explain
interface	int	value:11405

return

field	type	explain
interface	int	value:11405
size	int	G
avail	int	G

7.3 check microSD

request

field	type	explain
interface	int	value:11409

return

field	type	explain
interface	int	value:11409
value	int	0：no microSD 1：have microSD
code	int	Error code

7.4 Get the DWARF software version number

request

field	type	explain
interface	int	value:11410

return

field	type	explain
interface	int	value:11410
version	string	example:1.5.2
code	int	Error code

7.5 Charging state (DWARF active sending)

return

field	type	explain
interface	int	value:11011
value	int	0：uncharged 1：Slow charge 2：Quick charge

7.6 MTP mode

request

field	type	explain
interface	int	value:11408

7.7 OTA upgrade (firmware version less than V1.3.19)

request

field	type	explain
interface	int	value:11400

7.8 OTA upgrade (firmware version V1.3.19 or greater)

request：http://192.168.88.1:9901/update?version=1.3.20

The value of version corresponds to the upgrade package version number

return

field	type	explain
result	int	OTA upgrade return value

returned value specification

return code	value	explain
UPDATE_SUCCESS	0	update successfully
UPDATE_FAIL	-1	update failed
UPDATE_FILE_NOT_EXIST	-2	file does not exist
UPDATE_FILE_PARSE_FAILED	-3	File parsing failure
UPDATE_VERSION_ERROR	-4	Version error
UPDATE_REQUEST_ERROR	-5	Request failed
UPDATE_UPDATING	-6	upgrading

7.9 Obtain the firmware version (firmware version greater than or equal to V1.3.19).

request：http://192.168.88.1:9901/get_version

return

field	type	explain
result	string	version

7.10 Power acquisition

request

field	type	explain
interface	int	value:11003

return

field	type	explain
interface	int	value:11003
value	int	0-100
code	int	Error code

7.11 Shut down

request

field	type	explain
interface	int	value:11004

7.12 RGB control

request

field	type	explain
interface	int	value:11000
mode	int	96-105
hue	int	0-255
saturation	int	0-255
value	int	0-255
background	int	0-7
delayTime(delay time)	int	1-255
breatheDelay(Breathing delay)	int	1-255
cycleNum(Number of cycles)	int	0-255
cycleFlag(Loop flag)	int	1：infinite loop other value：Cycle by degree

7.13 Turn off RGB

request

field	type	explain
interface	int	value:11008

7.14 Turn on the power indicator

request

field	type	explain
interface	int	value:11009

7.15 Turn off the power indicator

request

field	type	explain

interface	int	value:11010

8. Error codes & status codes

8.1 Error codes

Error code	value	explai
RESULT_OK	0	operate succ
RESULT_CAM_OPENED	-1	The camera
RESULT_CAM_CLOSED	-2	The camera
RESULT_CAM_RECORDING	-3	On vide
RESULT_CAM_TAKING_PHOTO	-4	Being photog
RESULT_MOTOR_RUNNING	-5	Motor in m
RESULT_MOTOR_STOPED	-6	Motor stop
RESULT_MOTOR_SEND_FAILED	-7	Motor instruction fa
RESULT_PANORAMA_STARTED	-8	anorama scannin
RESULT_MOTOR_ERROR_RUNNING	-9	The motor stops first a which will cause the
RESULT_CAM_PAUSING_MUTILPHOTO	-10	The beat is su
RESULT_CAM_AUTO_FOCUSING	-11	Autofoc
RESULT_TRACKER_UNINIT	-12	Tracing algorithm is
RESULT_TRACKER_INITING	-13	Tracing algorithm
RESULT_TRACKER_INITIED	-14	The tracing algorith
RESULT_TRACKER_TRACKING	-15	Under trac
RESULT_OTA_STARTING	-16	OTA upgr
RESULT_GOTO_JPGTOFITS_FAILED	-17	JPG failed to convert t
RESULT_GOTO_PLATE_SOLVING_FAILED	-18	Plate Solving
RESULT_GOTO_CALIBRATION_FAILED	-19	Level correctic

RESULT_BLE_WIFI_CONFIGING	-20	Bluetooth configu
RESULT_BLE_WIFI_CONFIGED	-21	The wifi has been
RESULT_MOTOR_LIMIT	-22	Motor reache
RESULT_TFCARD_NOT_EXIST	-23	The microSD is n
MOTOR_RESET_NOT_PERFORMED	-24	Motor not
RESULT_OTA_ERR	-25	OTA upgrad
RESULT_OTA_ELE_LOW	-26	Low electric c
RESULT_OTA_VERSION_ERR	-27	OTA versior
RESULT_GOTO_PLATE_SOLVING	-28	plate solv
RESULT_GOTO_CALIBRATING	-29	Be correc
RESULT_GOTO_TRACKING	-30	Be tracki
RESULT_GOTO_STOPPING	-31	Stopping G
RESULT_OPEN_UVC_CAMERA_FAILED	-32	Failed to open v
RESULT_UVC_CAMERA_CANNOT_FOUND	-33	The UVC camera cann
RESULT_TRACKER_STOP	-34	Tracking s
RESULT_TL_RECORDING	-35	Time lapse photogra
RESULT_AUTO_FOCUSING	-36	In auto foc
RESULT_BLE_PASSWORD_ERROR	-37	Bluetooth passv
RESULT_WIFI_PASSWORD_ERROR	-38	wifi passwor
RESULT_BLE_WIFI_CONFIG_ERROR	-39	The Bluetooth wifi cor Procedu
RESULT_PANORAMAING	-40	In panoran
RESULT_NO_DARK_FRAME	-41	No dark f
RESULT_DARK_FRAME_ERROR	-42	Dark scene sh
RESULT_CAPTURE_RAW_ELE_LOW	-43	RAW image shootin
RESULT_CLOSING_CAM_TELE	-44	Stopping the telep

8.2 Status codes

State code	value	explai
STATE_CALIBRATION_START	1000	Start corre
STATE_CALIBRATION_PLATE_SOLVING	1001	Correcting Plat
STATE_CALIBRATION_FAILED	1002	Correction f
STATE_GOTO_START	1003	Start GO
STATE_GOTO_PLATE_SOLVING	1004	GOTO Plate S
STATE_GOTO_TRACKING	1005	Start trac
STATE_GOTO_FAILED	1006	GOTO fail
STATE_ASTRO_STOPPING	1007	Stopping Astrono
STATE_ASTRO_END	1008	End of astronom
STATE_CALIBRATION_SUCCESS	1009	Correct succ