Controlled Circulation Drying System User Manual

Hardware Schematic

- Structure Description

(P1)

(P2)

1. 12V power socket (over 0.4mA)
2. Camera 4Pin Cable Socket
3. Manual start/off button
4. Type-C interface (analog serial port)
5. Startup mode switching (blue light)
6. RS485 common interface

A. Reserved slot for mounting screws
B. Quick couplings
C. desiccant tube mounting slot

Note: The RS485 and 4Pin cables need to be operated with the power supply disconnected!

- Indicator Light

At Startup:
Blue: Maintenance Mode;
Yellow->Red->Off: Startup Successful

After Startup:

Light off: Standby

Green: In operation

Hardware Connection

- Using 4Pin Cable to Connect the Camera

  Please keep the power off!

- Using RS485 Interface

  Please keep the power off!

- Using Type-C Interface

  Connect the device directly to the computer via a Type-C cable and control it using the test software installed on the computer.

Any two connections can be used simultaneously.

Operation Ways

- Manual Switch

  Press the switch button to turn on/off drying operations.

Note: The press time needs to be more than 0.1 second and no more than 3 seconds.

- Schedule Tasks

  Use protocol "312" to set the week/hour/minute/second, and wait for the drying operation to start.

After disconnecting the 12V power, the scheduled task remain effective (requires the device to have a valid battery installed).

- Serial Protocol Control

```
JSON
{"cmd_id":101,"cmd_name":"version"}

//return fields version id  bv

{"cmd_id":201,"cmd_name":"g_time"}
//return fields  rtc_d date rtc_t time

{"cmd_id":202,"s_date":20240105,"s_time":162315}

{"cmd_id":301,"cmd_name":"g_pump"}
//field pump_sta_a 0/1 off/on

{"cmd_id":302,"cmd_name":"s_pump","a_status":0}

{"cmd_id":302,"cmd_name":"s_pump","a_status":1}

{"cmd_id":303,"cmd_name":"sw_pump"}
//switch operating status

{"cmd_id":311,"cmd_name":"s_timeout","s_timeout":5}
//operating timeout

{"cmd_id":312,"wd":1,"hr":10,"mi":50,"sc":20}
//schedule week hour minute second  week 0=every day  week 8=disabled

{"cmd_id":313,"cmd_name":"g_alarm"}
//check schedule d h m s

{"cmd_id":102,"cmd_name":"xx","s_debug":1}
//debug on scheduled light on show debug
```

- SDK API Control

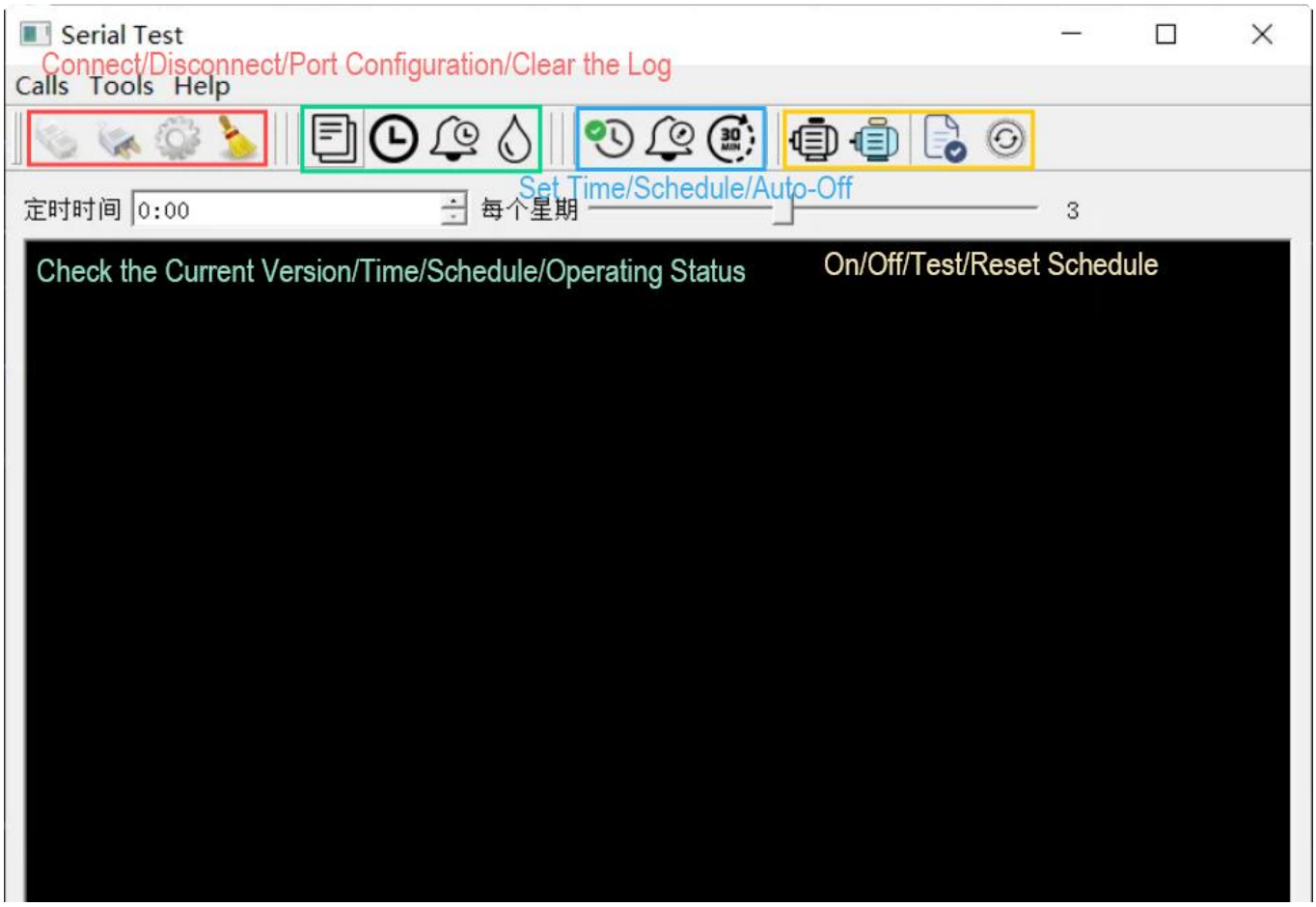
  Refer to the SDK API Menu:
  https://www.qhyccd.com/file/repository/latestSoftAndDirver/Demo/QHYCCD%20SDK%20API%20MENU_EN.pdf

  Relevant Control Parameters:

  CONTROL_ID= CONTROL_OUTSIDE_PUMP_V2 (87)

Testing Software

- Testing Interface



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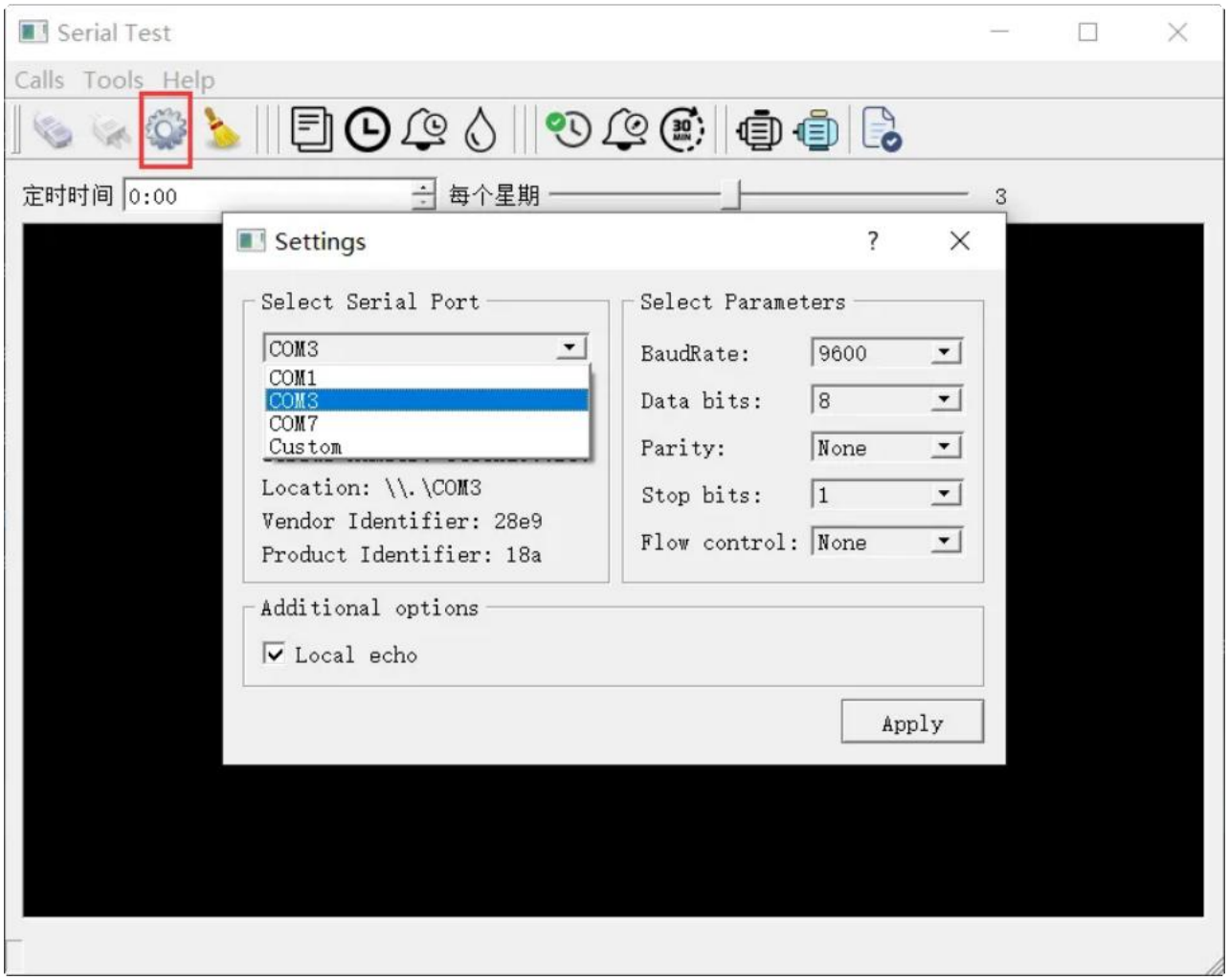
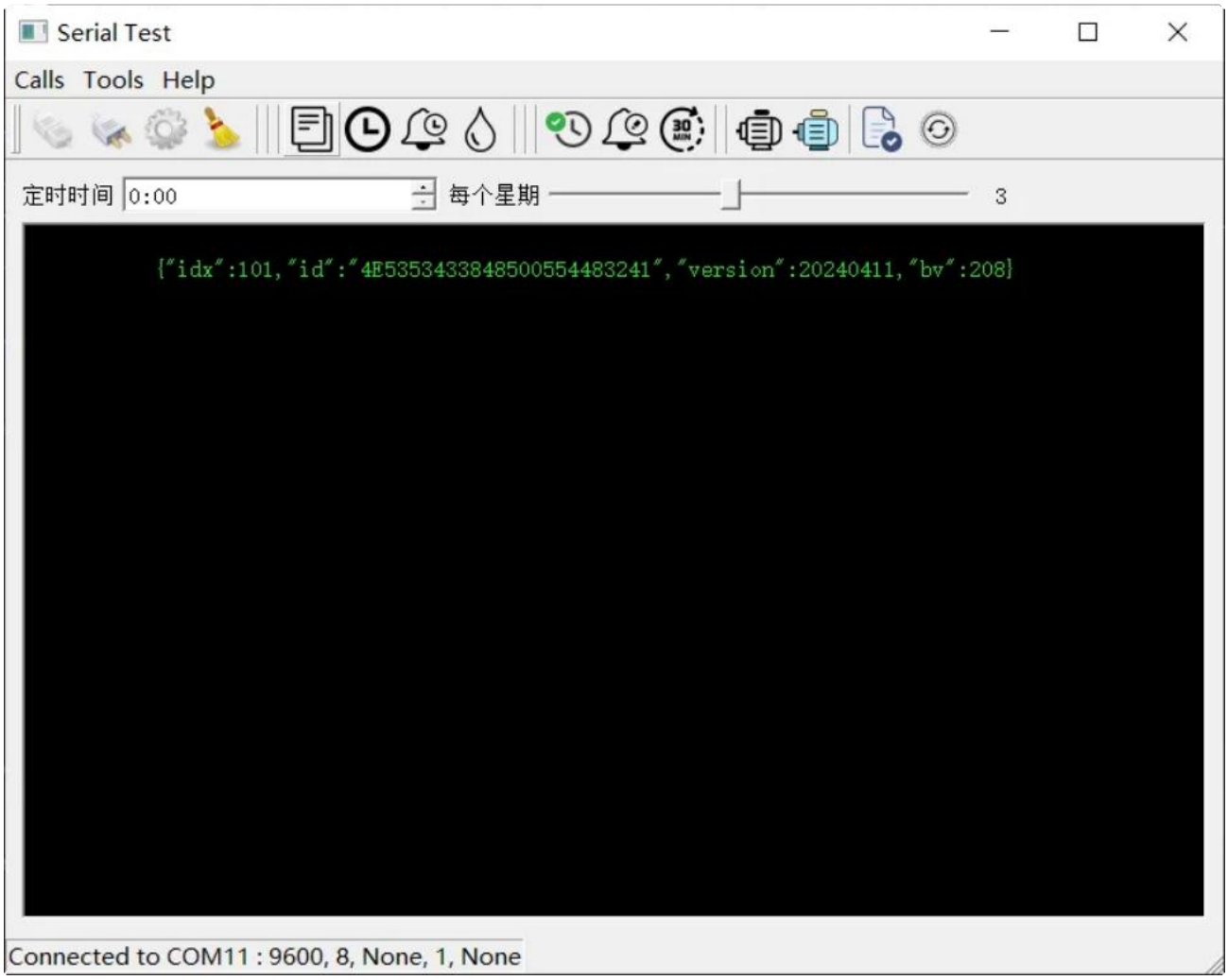
- Port Configuration



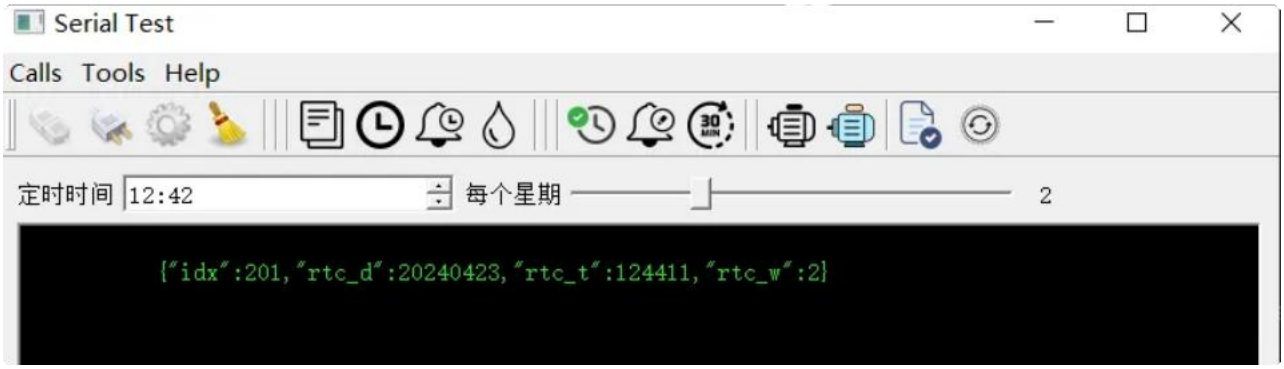
(P4)

- Connect the Device and Check the Version



(P5)

- Read Time


Serial Test
Calls Tools Help
定时时间 12:42
每个星期
2
{"idx":201,"rtc_d":20240423,"rtc_t":124411,"rtc_w":2}

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- Auto Test

The auto test will start in 10 seconds by default.

To avoid unintentional operation, perform a reset of the schedule after an auto test and read the new schedule.

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Note: You need to reset the schedule after an Auto Test, otherwise the Auto Test schedule will remain and start next!

Firmware Upgrade

- Upgrade at the Factory

Tools:

- A debugger or programmer that supports SWD (Wildfire debugger or PWLINK2 debugger)
- SWD connection cable
- Programming software (PowerWriter)

Steps:

- Connect the SWD
- Select the device model (GD32E103CBT6) in the Programming software.
- Load the firmware (version 20240411)
- Check the checkbox (if any)
- Start burning
- Disconnect

- Upgrade by Users
    - Install GigaDevice Dfu Tool 3.8.1.5784 (note the version number is correct)
    - Launch Dfu Tool:
    - Switch the device to maintenance mode (blue light on), connect the device through Type-C), and wait for the software to recognize it.
    - Select Firmware File:
      Click the “Open” button.
      Browse and select the firmware file you want to burn.
    - Check the checkbox
    - Start burning
    - After burning is complete, disconnect the device and switch back to normal launch mode (light will turn yellow->red->off).

Mounting and Fixing

Mount the tube at point Ⓒ (as shown in P2), and connect Ⓑ to your QHY camera.
Select the mounting method according to the actual situation, and use the Ⓐ slot(as shown in P1) to fix it if necessary.

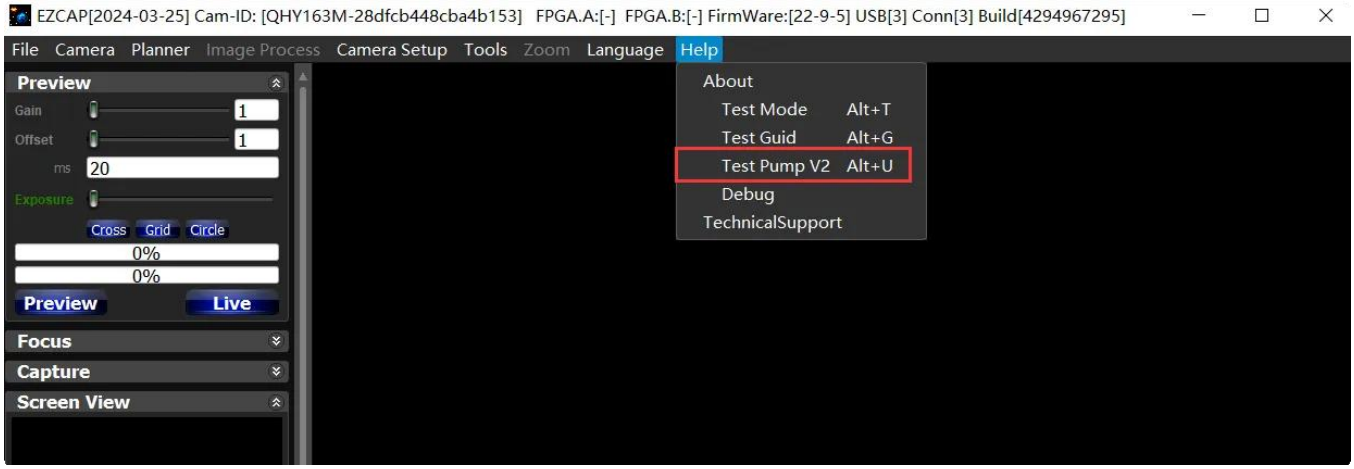
Use in the System

- Independent Control

  Refer to the "Manual Switch" above.

- Control with Camera Connected (via SDK or camera control software)

  You can switch On/Off in the Help menu of EZCAP, and refer to the "SDK API Control" section for API calls.



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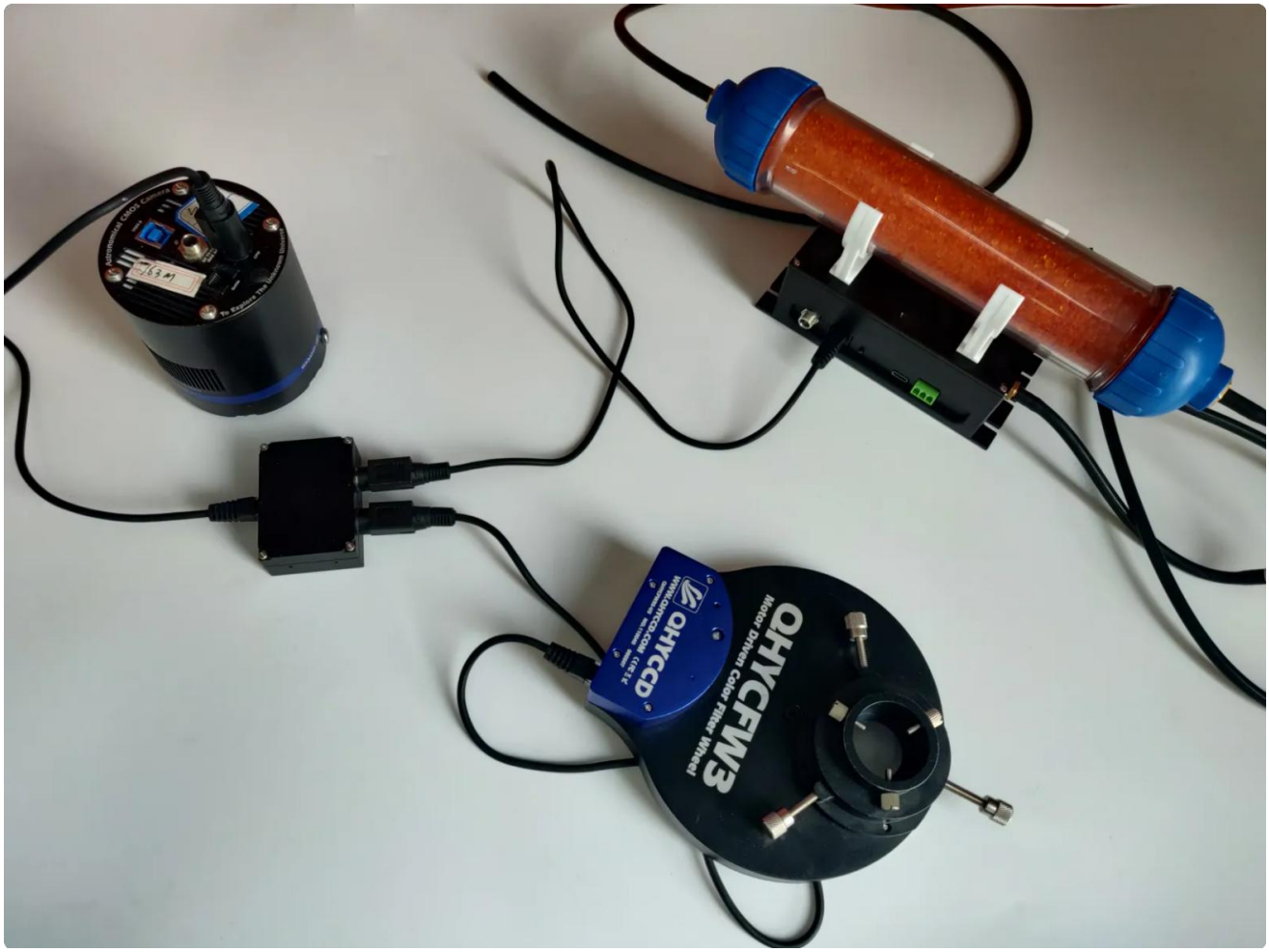
- Use with a QHY Camera and a QHY Filter Wheel

Using a 4-pin extension hub, you can simultaneously connect both a filter wheel and this drying device.



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Replacement of Desiccant

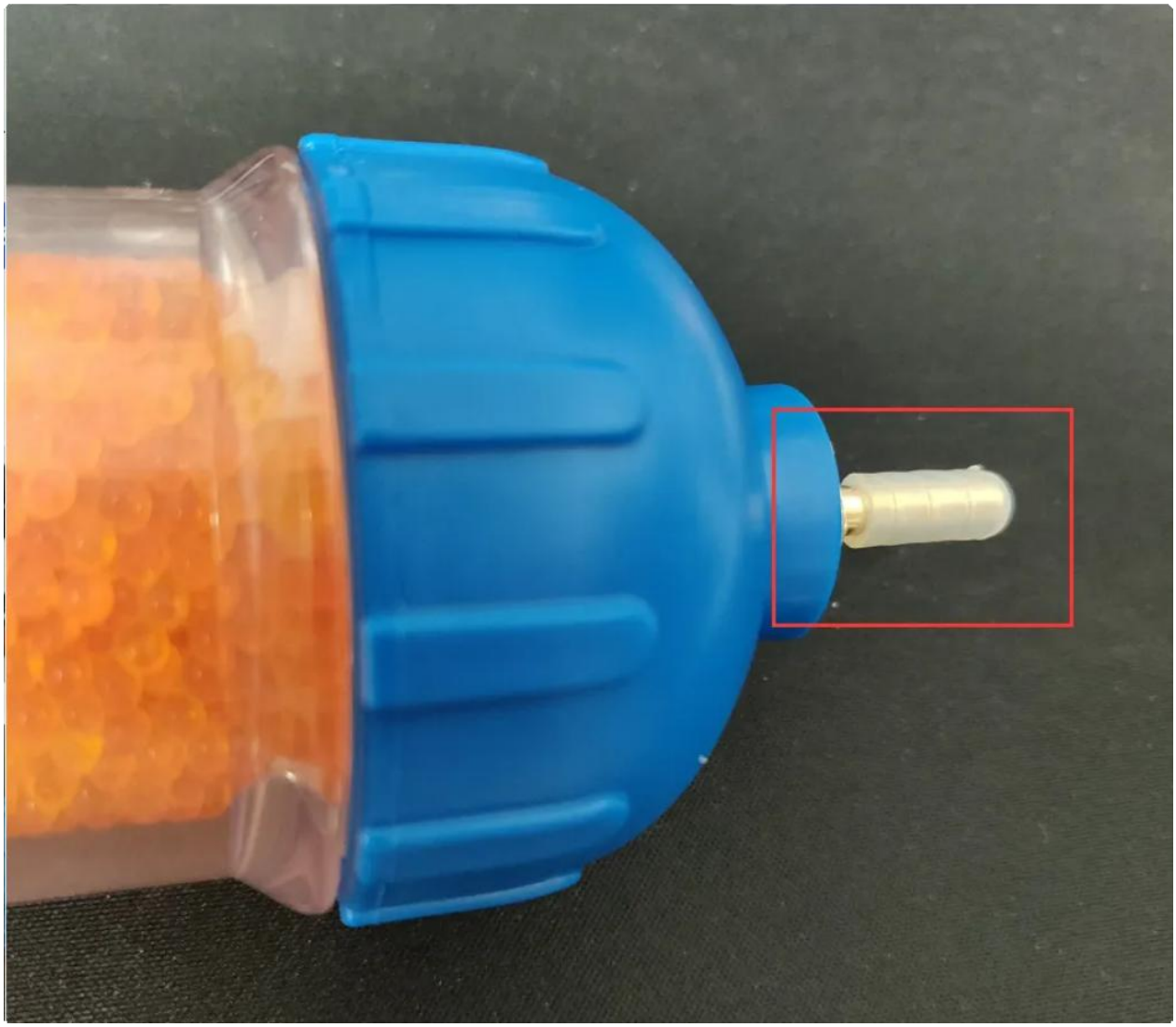
- Replacement Cycle

  Since replacement cycle is directly related to the working environment, it is recommended that the following references be considered.

  - Changes in desiccant colors: The desiccant need to be replaced when the orange desiccant turns dark or green. (For other desiccant, please read its descriptions)
  - After drying the camera, the humidity inside can not be less than 20%.

- Transportation and Storage

  A rubber sleeve is required to close the opening during shipment and should be removed for assembly.



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