

UQMS User Guide

United Quantum Measuring System

Notation: <This-is-a-variable> can be replaced.

Warning !: Do **NOT** rename any file you will upload to server.

Destination: /home/<user-name>/MeasConfigs/

Sec I. Measurement Flow

-- First at Local

1. Generate the `ExpParasSurvey.toml` according to the exp you want.
 - Use `UQMS\Executions\SurveyAssign.py`
 - Can be generated to an arbitrary file path.
2. Fill in the Survey.toml and prepare the HardwareConfig you need.
 1. **QM:** <arbitrary-name>_config.pkl and <arbitrary-name>_spec.pkl
 2. **Qblox:** QD_file
3. Packaging your configs with a folder named 'ExpConfigs'.
4. Upload `ExpConfigs` and `ExpParasSurvey.toml` to server **Destination**

-- Second by Remote

1. SSH to the server and Start the env `conda activate UQMS`
2. Run the measurement with the bash file, see appendix for more.

-- Final by FileZilla-Client

1. Check the raw data and picture in the ~/Data (Only download-able), see appendix for more.
-

Sec II. Connection tools (Terminal)

-- SSH Connections

Connect: `ssh -p <port> <user-name>@<server-ip>` Close: `exit`

-- SSH via VPN

Connect: `ssh -p <port> <user-name>@<Lab-Website>`

-- SCP all items in a folder to **Destination**

`scp -P <port> -r <folder-path>/* <user-name>@<server-ip>:"<Destination>"`

-- SCP a file to **Destination**

`scp -P <port> -r <file_path> <user-name>@<server-ip>:"<Destination>"`

-- SCP back all items in a folder from the Server

```
scp <user-name>@<server-ip>:/path/to/dir/ /local/dir/path
```

Appendix

1. Bash files for executing a measurement or registration.

1 meas_exe.sh -> run the measurement with a console.

2 meas_BGexe.sh -> run the measurement at the BackGround (no console shown).

3 chip_register.sh -> Register a new sample (Only need S0-Survey to execute with).

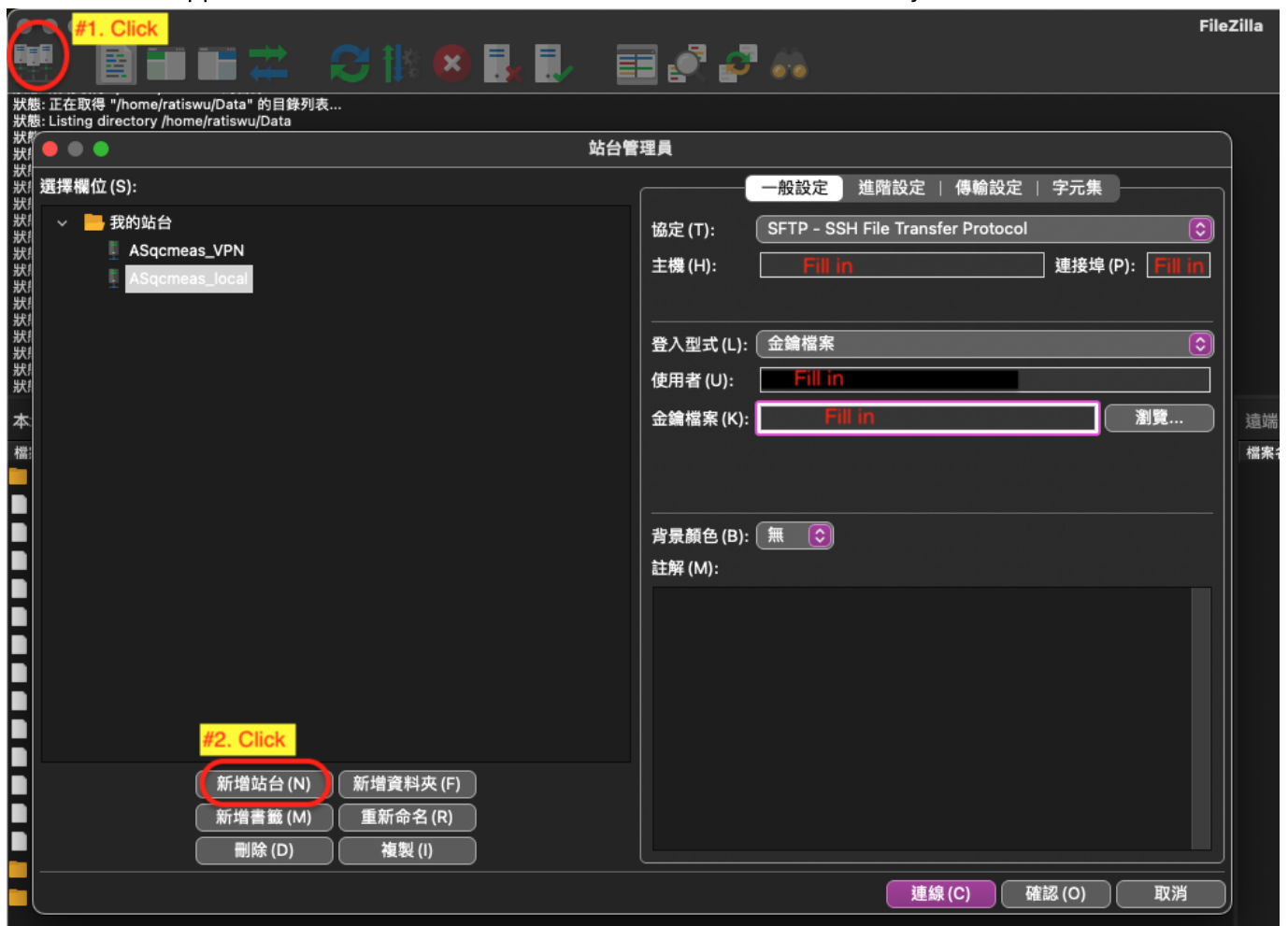
- use `./<filename>.sh` to launch it.

2. Reattach your background executions

If you use `meas_BGexe.sh`, then the log file with name `<JOB-name>` will be generated. Kill this python running with the command: `tmux send-keys -t <JOB-name> C-c`

3. FileZilla settings (via SFTP)

We use FileZilla Client to transferring the data. The following picture is the communications setup, please download the application first. You will need two different communications if you connect with VPN.



4. SSH KeyAuthentication

1. Generate the public-private Key pair

1. 生成 SSH 金鑰對 在客戶端執行以下命令生成金鑰對：

bash

複製程式碼

```
ssh-keygen -t rsa -b 4096 -C "your_email@example.com"
```

- 選擇保存位置（默認為 `~/.ssh/id_rsa`）。
- 可選擇設置密碼以加密私鑰。

2. Upload your **public key** to server

2. 將公鑰上傳到伺服器

將生成的公鑰（`~/.ssh/id_rsa.pub`）傳輸到伺服器。

方法 1：使用 `ssh-copy-id`

如果伺服器尚未禁用密碼登入，您可以直接用以下命令上傳公鑰：

bash

複製程式碼

```
ssh-copy-id -i ~/.ssh/id_rsa.pub user@your-server-ip
```

5. Run your own developed measurement script **on server**

There are some rules you should follow to do this execution:

- Your own designed measurement script should **inherit** the `ExpSpirit` which is defined at `UQMS/Association/Soul` and store in a python file.
- Generate the **ExpParasSurvey** by `UQMS\Executions\SurveyAssign.py`.
- Put this script in your **MeasConfigs** folder on server.
- **This script must be the only one python file in that folder.**

Following figure shows the correct structure that you can run a measurement.

