

ZC Sensor

# ZCT-IPI-DC01 Datalogger Configuration Manual



[www.inclinesensor.com](http://www.inclinesensor.com)

+86 21 6490 8096

[sales@zc-sensor.com](mailto:sales@zc-sensor.com)

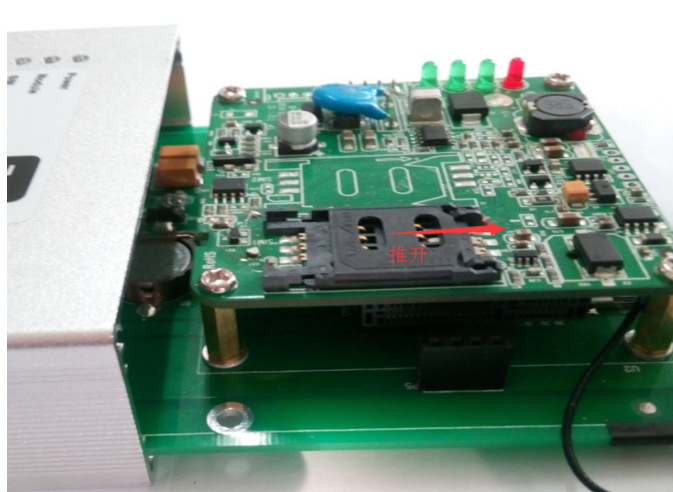
# ZCT-IPI-DC01 Datalogger

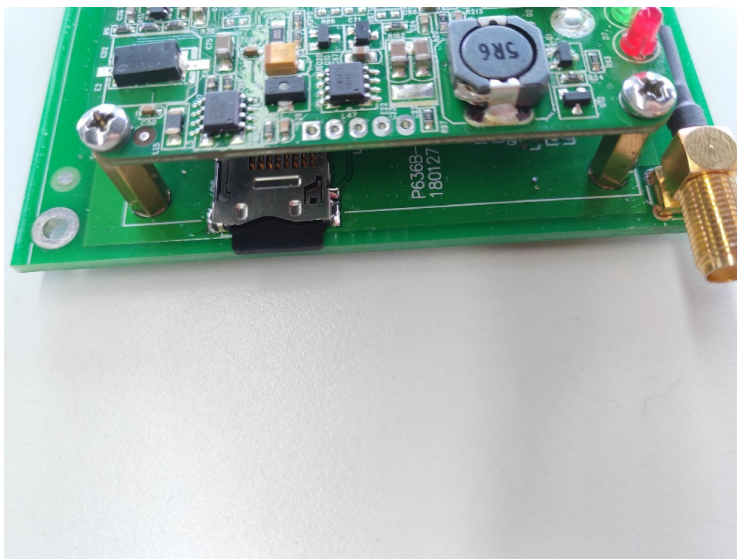
## Configuration Manual

### 1. Preparation

- Make sure that your computer network has a **public IP address**, which is fixed.
- Get GRPS connecting method from your local telecoms operator (the SIM card company):
  - Dialing #** (GPRS Network Dialing Number)
  - APN** (GPRS Access Point Name)
  - User Name** (GPRS Network Dialing User Name)
  - Password** (GPRS Network Dialing Password)
- Get the latest software tools from ZC:
  - >>> **ZCT-CX100 V1.3.exe** (IPI readout software)
  - >>> **DTUConfig V1.29.0510.exe** (DTU configuration software)

### 2. Hardware installation

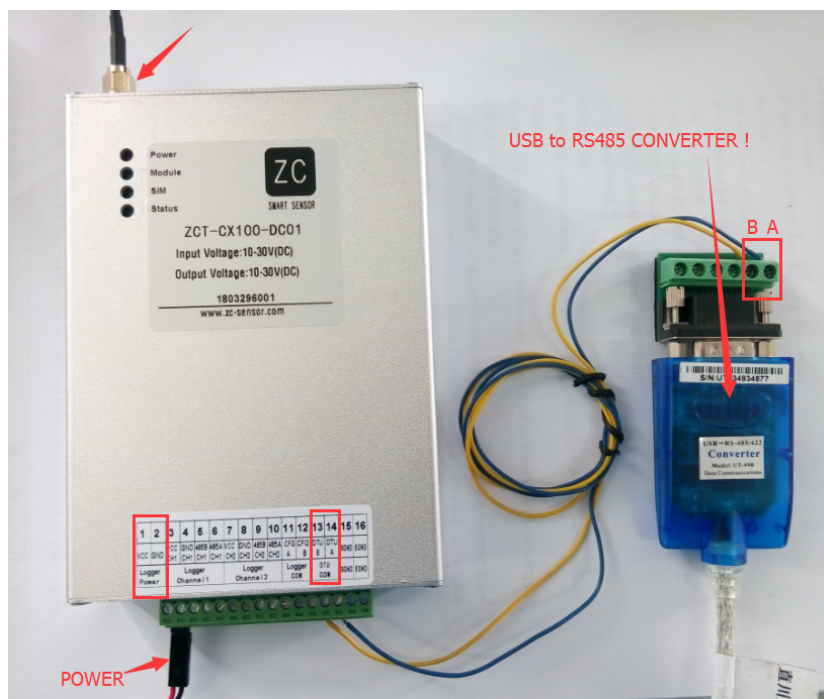






### 3. Configuring the DTU

3.1 Connect the datalogger to your PC using RS-485 to USB converter, keeping the datalogger powered off during the process.



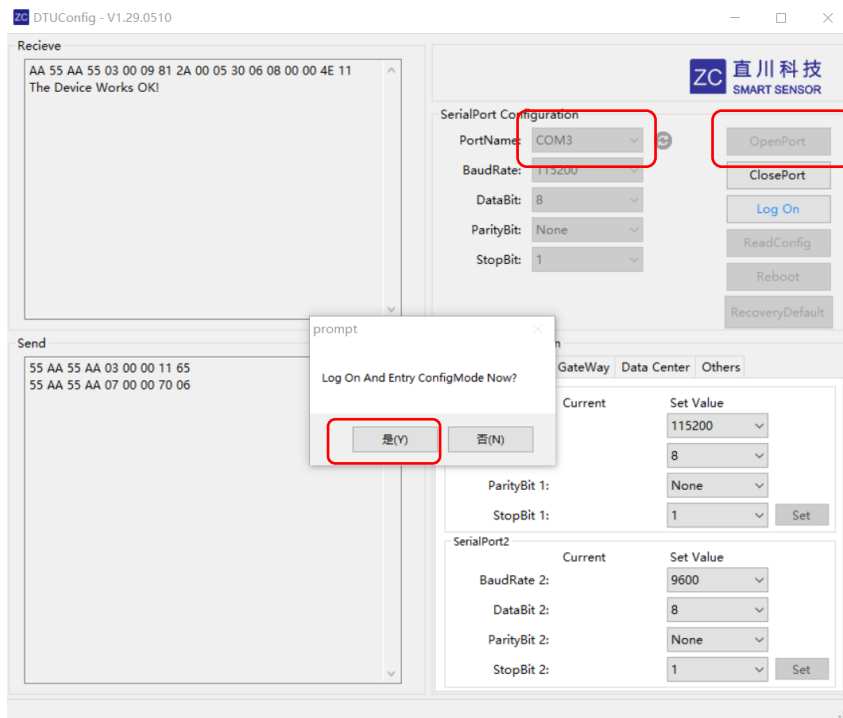
3.2 Turn off firewall and anti-virus software on your PC.

3.3 Open the DTU configuration software tool (DTUConfig) on your PC, and then power on the datalogger. Wait for 1-2

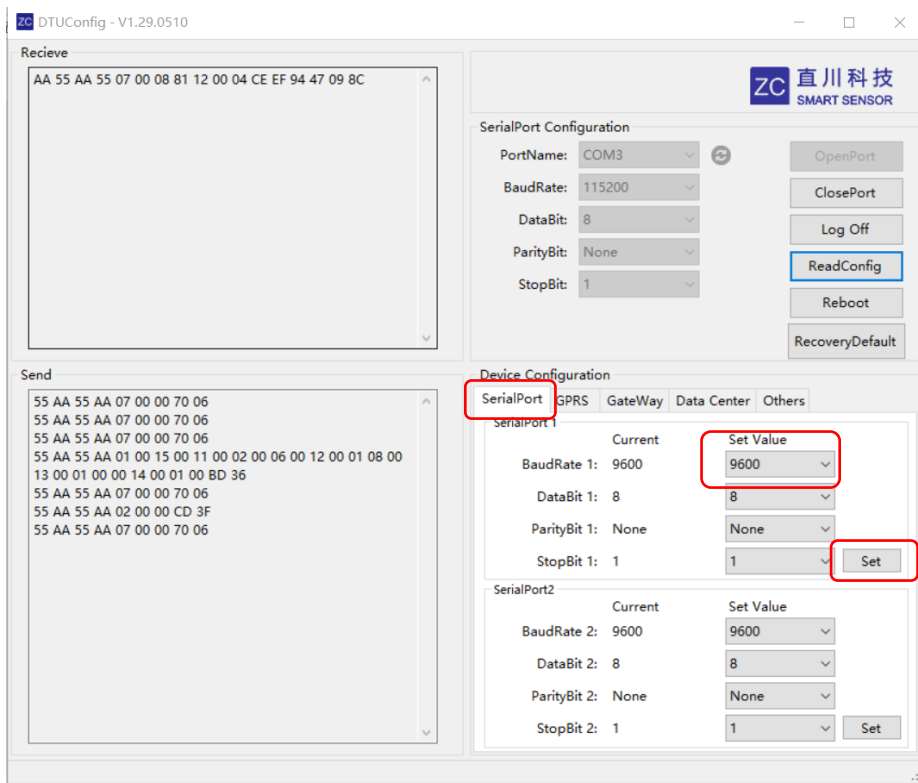
minutes, and you will see the LED's turned on.



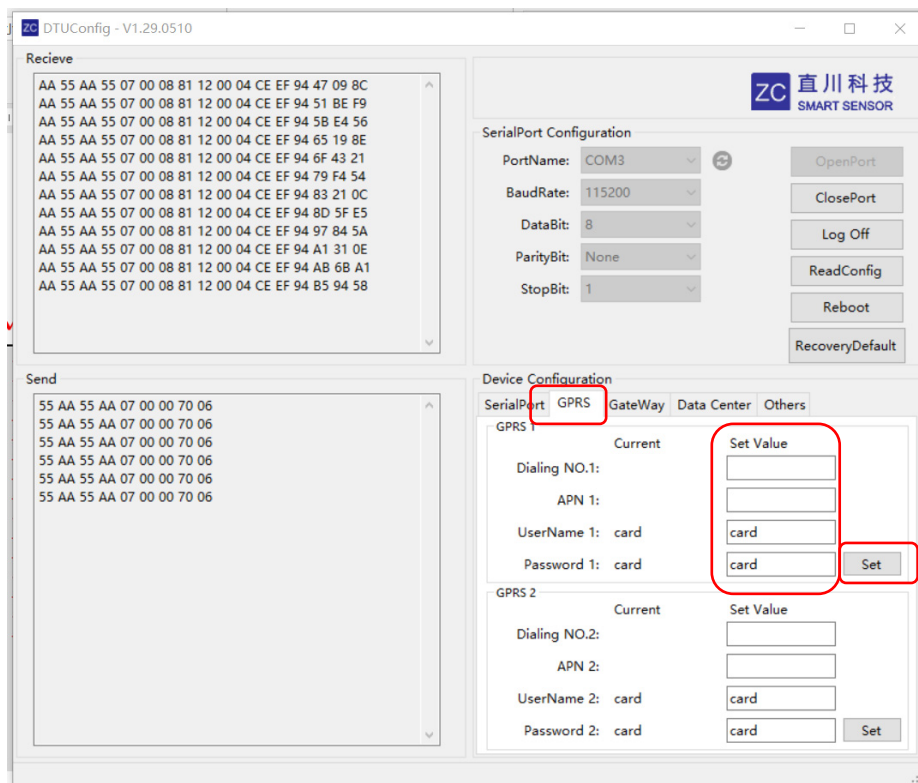
3.4 Find at the Device Manager the COM port number your PC allocates to the datalogger. On DTUConfig select that COM port, keep the other parameters unchanged, and then click **OpenPort**. A window pops up, click **Y**.



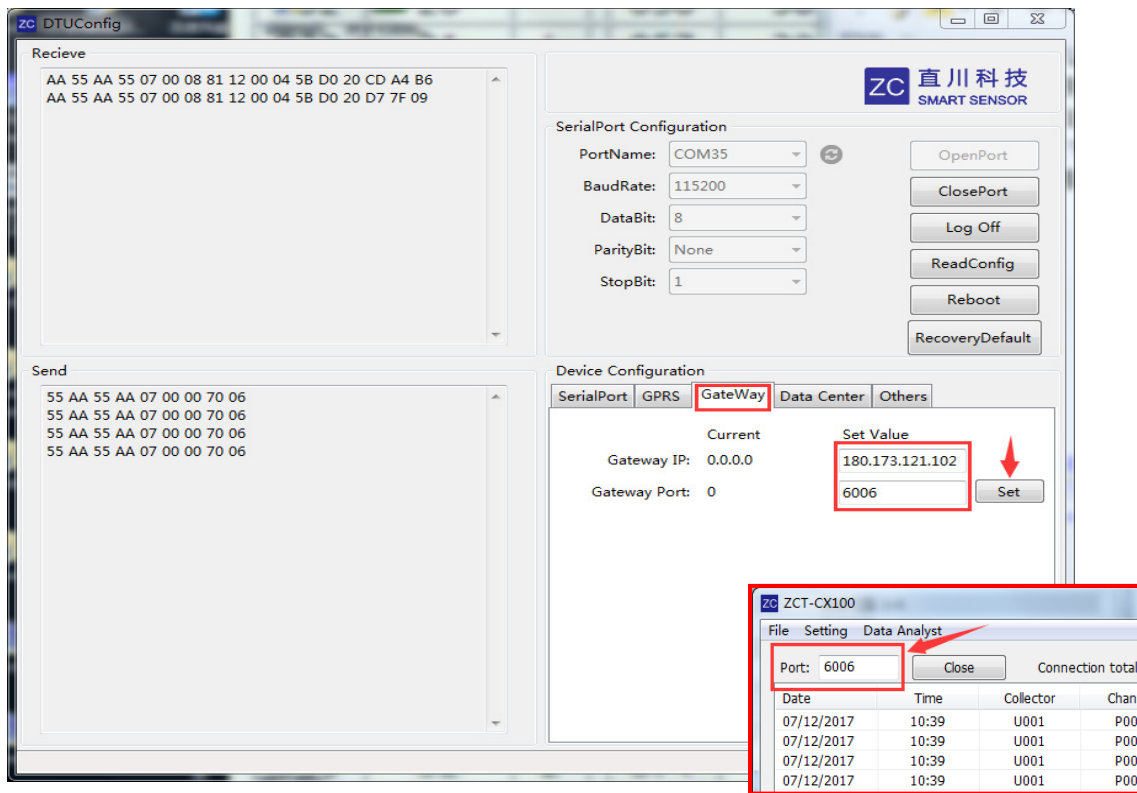
3.5 Click **ReadConfig** and set BaudRate to **9600** (do not change the others), then click **Set**.



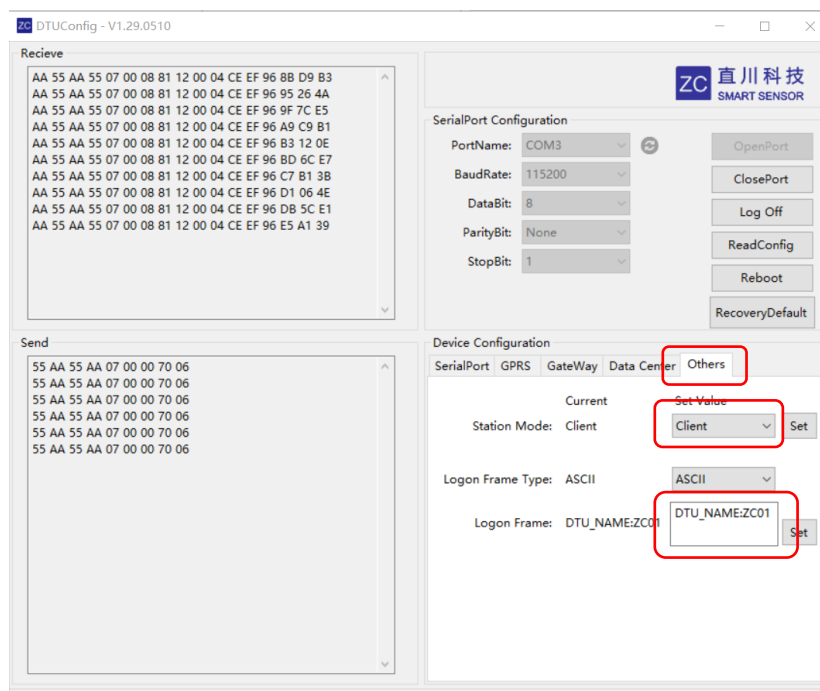
3.6 Click **GPRS** and input **Dialing #**, **APN**, **UserName** and **Password** (must be correct!), according to instructions of your SIM card company, and click **Set**.



3.7 Click **GateWay** and input **Gateway IP** (public IP address of your computer network) and **Gateway Port** (the port you name for your PC) and then **Set**. The **Gateway Port** can be any one, but please avoid commonly used numbers, such as 80 /8080 /3128 /8081 /9080 for HTTP proxy server and 21 for FTP proxy server. Later when you use the IPI readout software, you're going to use the same port number you set here.



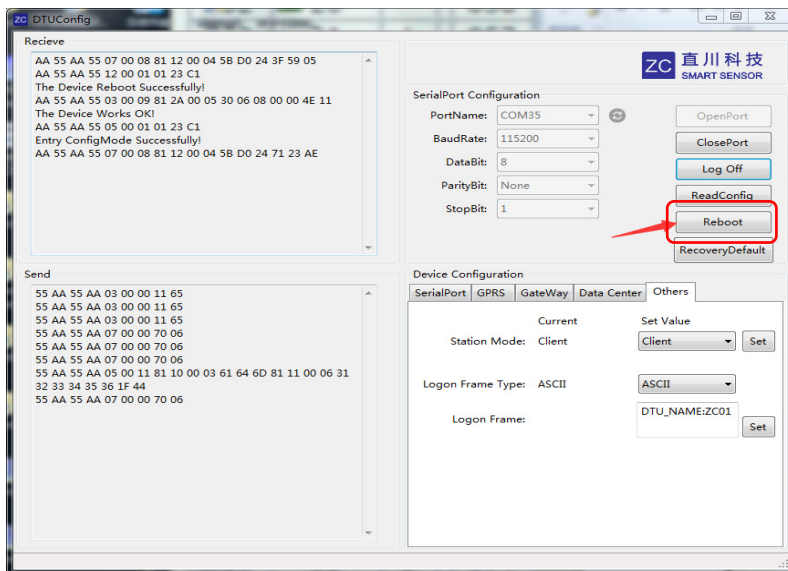
3.8 Click **Others**, set **Station Mode** to “Client” and change **Logon Frame** from “ZC01” to another DTU name that you like. Then click **Set**.



In case of multiple dataloggers set to one gateway IP and port, they can be identified by different logon frame (i.e. different DTU\_NAME: xxxxxxx). The 7 character "xxxxxxx" can be any ASCII code.

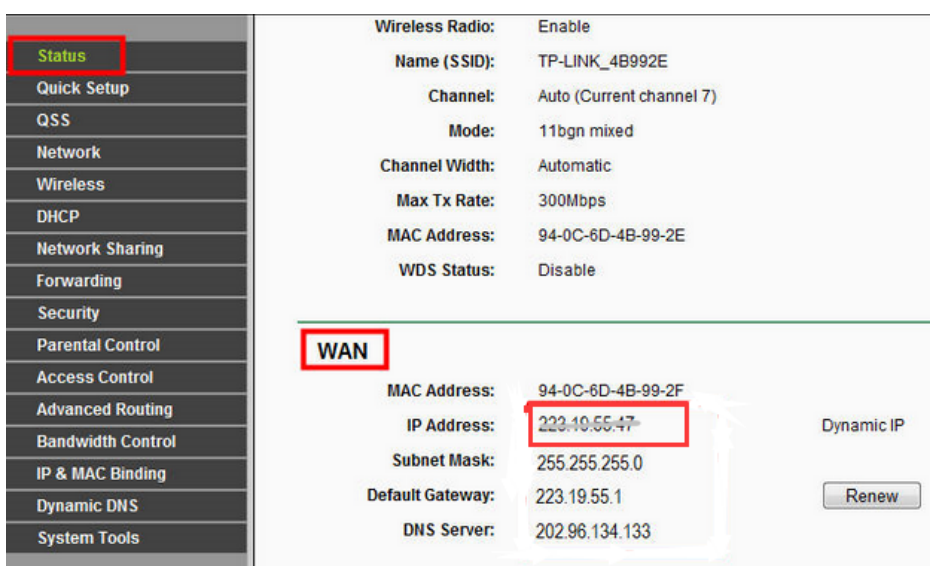
Note: You can always click **ReadConfig** to make sure the information you input is well saved in the datalogger.

### 3.9 Click **Reboot** to restart the DTU module.



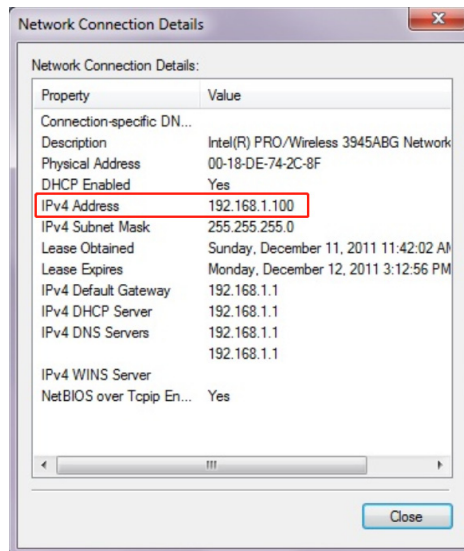
## 4. Configuring the port forwarding

4.1 Make sure that your network has a fixed public IP address: find out the IP of your PC using Google, and then log in the configuration page of your router using web browser, get the WAN IP, if the two IP addresses are the same, your network has a public IP address, which is static. This is a prerequisite for using the datalogger.





4.2 Find your LAN IP (for example, 192.168.1.100).



4.3 Build up port mapping at the “Virtual Servers” section of your router configuration page. For example, bind Service Port 9000 to LAN IP 192.168.1.102 and Internal Port 90.

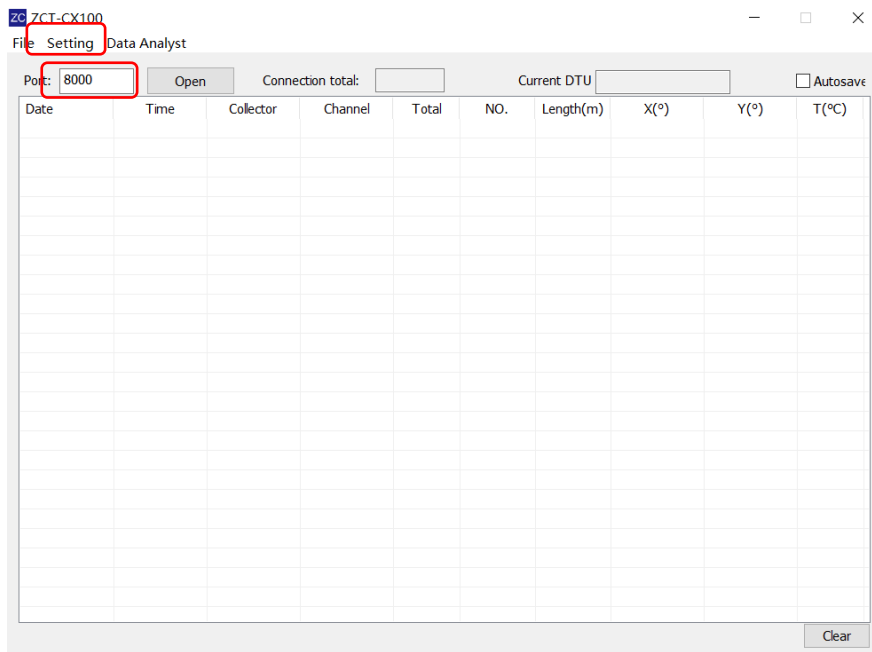


## 5. Configuring the IPI sensors

5.1 Power off the datalogger and rewire Pin 11, 12, 13 and 14: **11 connected to 14, and 12 to 13.**

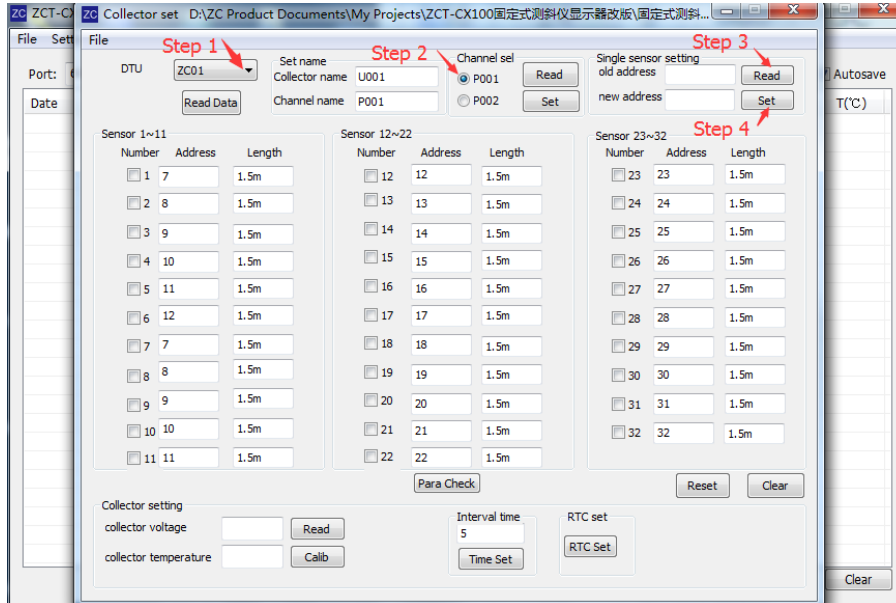


5.2 Open the IPI readout software tool (ZCT-CX100) on your PC, Set **Port** (refer to section 3.7) and click **Setting**.



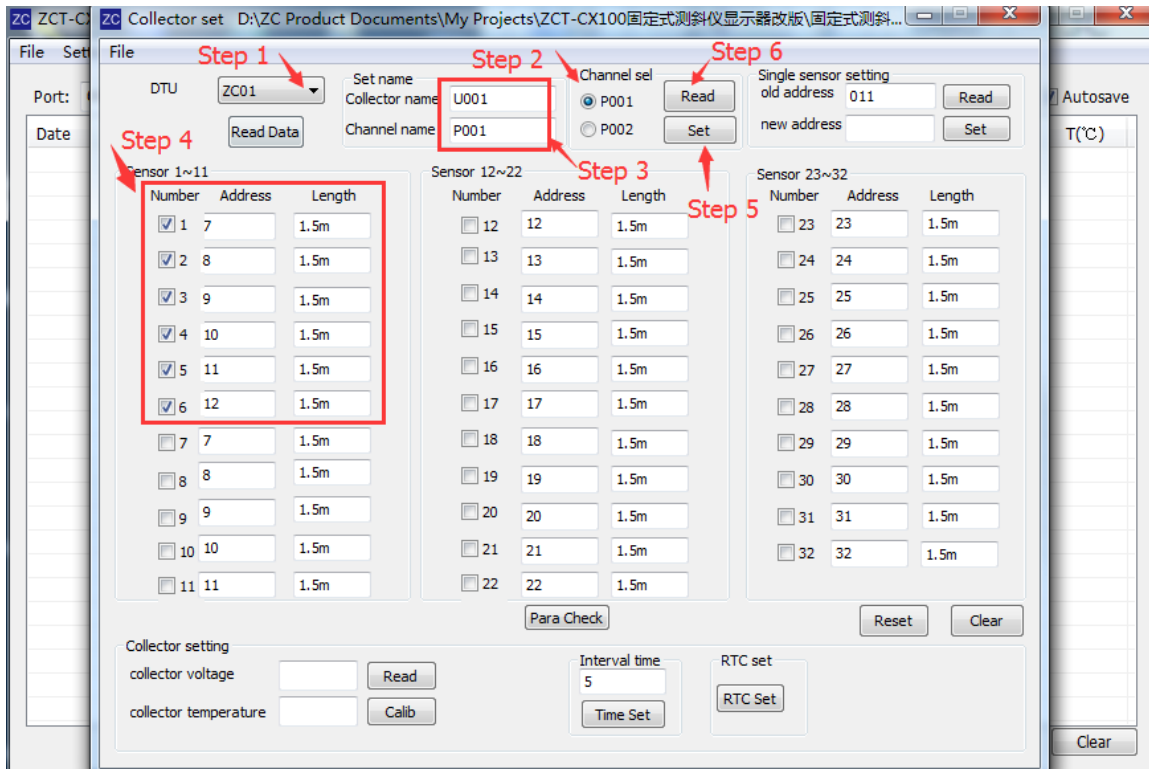
5.3 Power on the datalogger, and then waiting for their building up connection. When they are connected, the SIM and Status LED on the datalogger blink slowly at the same pace. Power off the datalogger.

5.4 Connector one sensor probe to one of the two input channels of the datalogger using M14 cable. Power on the datalogger, set DTU name, select channel, read old address and set new address (if necessary). Refer to below drawing:



Repeat the procedure for the other sensor probes.

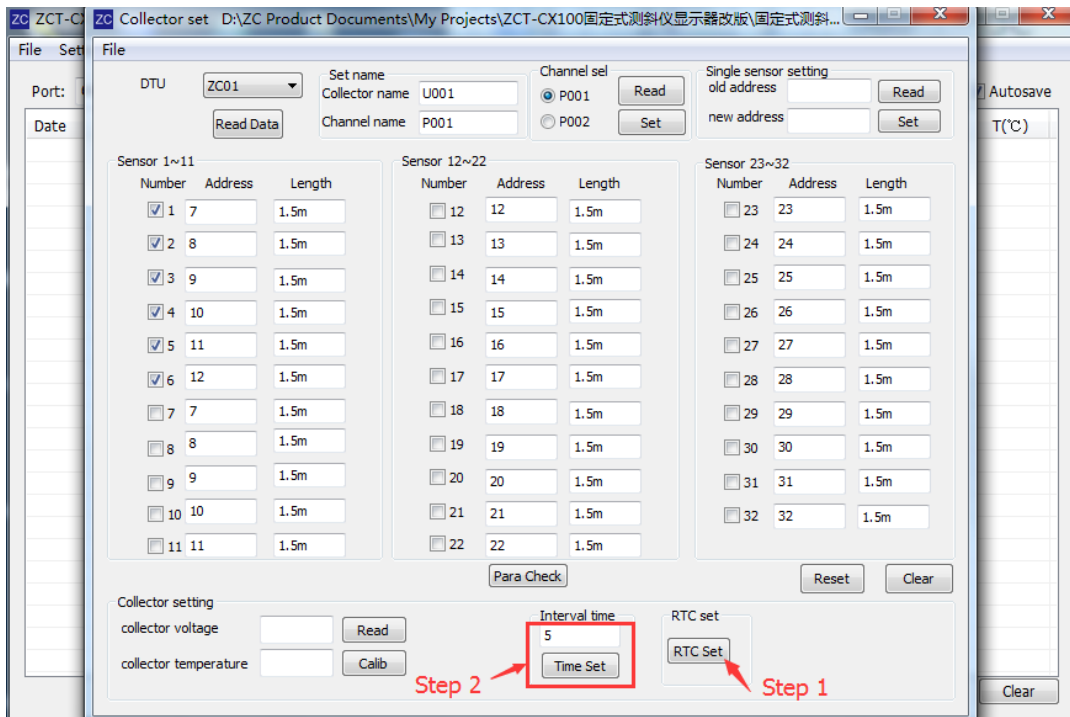
If you need to add a sensor to an existing channel, follow the drawing below:



The original (pre-set at factory) address of each sensor can be found on the body of the probe. Both decimal and hexadecimal addresses are printed on the label. For example, "01 (0x)" or "01, 0x" indicates that it is sensor number 1.



5.5 Set datalogger RTC time and turn on automatic timing acquisition. The unit of interval time is minute.



## 6. Installing the sensor probes

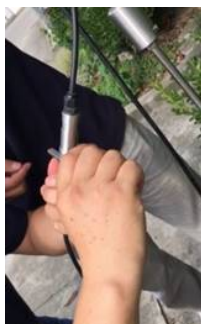
6.1 Connect the waterproof connector terminal to the cable connector at the shorter end of the first probe, with the fixed wheel facing the expected displacement direction of the measured borehole.



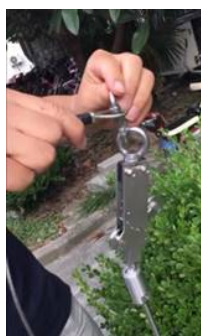
6.2 Hang the probe on the wellhead with a screwdriver or other tools, install the connecting rod, and tighten the locking bolt.



6.3 Connect the remaining probes one by one.



6.4 The last probe (the top one) should be connected to the steel suspension kit, and the latter be fixed to the wellhead tool on the borehole opening.



**CAUTION:**

1. The fixed wheel of the probe shall be installed towards the expected displacement direction of the measured borehole.
2. The cable connector joints between probes shall be locked with spanner to prevent water from entering.
3. In case the cables are longer than needed, they can be fixed on the connecting rods with cable ties so the probes will not get stuck when they are lowered into the measured borehole.
4. While lowering, lifting or fixing the probes, please hold the probe body or the rescue wire and do not hold or pull the cables hard.

**7. Data browsing and query on voltage/temperature**

Power on the datalogger that is in connection, open the ZCT-CX100 software, and set the parameters correctly. If timing acquisition is enabled, the datalogger will send data to the upper computer at the time interval that is set. Check "Autosave" on the upper computer, and the data will be saved to the directory of the upper computer in the format of TXT automatically.

Date	Time	Collector	Channel	Total	NO.	Length(m)	X(*)	Y(*)	T(°C)
05/12/2017	15:40	U001	P001	10	3	1.5	-25.502	19.806	20
05/12/2017	15:40	U001	P001	10	4	1.5	22.307	19.805	20
05/12/2017	15:40	U001	P001	10	5	1.5	-25.505	-19.809	19
05/12/2017	15:40	U001	P001	10	6	1.5	-22.708	19.804	18
05/12/2017	15:40	U001	P001	10	7	1.5	25.707	19.806	22
05/12/2017	15:40	U001	P001	10	8	1.5	-25.501	-5.505	21
05/12/2017	15:40	U001	P001	10	9	1.5	23.700	19.806	19
05/12/2017	15:40	U001	P001	10	10	1.5	25.705	19.800	19
05/12/2017	15:30	U001	P002	10	1	Error	Error	Error	Error
05/12/2017	15:30	U001	P002	10	2	Error	Error	Error	Error
05/12/2017	15:30	U001	P002	10	3	Error	Error	Error	Error
05/12/2017	15:30	U001	P002	10	4	Error	Error	Error	Error
05/12/2017	15:30	U001	P002	10	5	Error	Error	Error	Error
05/12/2017	15:30	U001	P002	10	6	Error	Error	Error	Error
05/12/2017	15:30	U001	P002	10	7	Error	Error	Error	Error
05/12/2017	15:30	U001	P002	10	8	Error	Error	Error	Error
05/12/2017	15:30	U001	P002	10	9	Error	Error	Error	Error
05/12/2017	15:30	U001	P002	10	10	Error	Error	Error	Error
05/12/2017	15:30	U001	P001	10	1	1.5	-22.207	19.807	20
05/12/2017	15:30	U001	P001	10	2	1.5	-25.503	-19.805	17
05/12/2017	15:30	U001	P001	10	3	1.5	-25.502	19.806	20
05/12/2017	15:30	U001	P001	10	4	1.5	22.308	19.805	19
05/12/2017	15:30	U001	P001	10	5	1.5	-25.505	-19.800	19

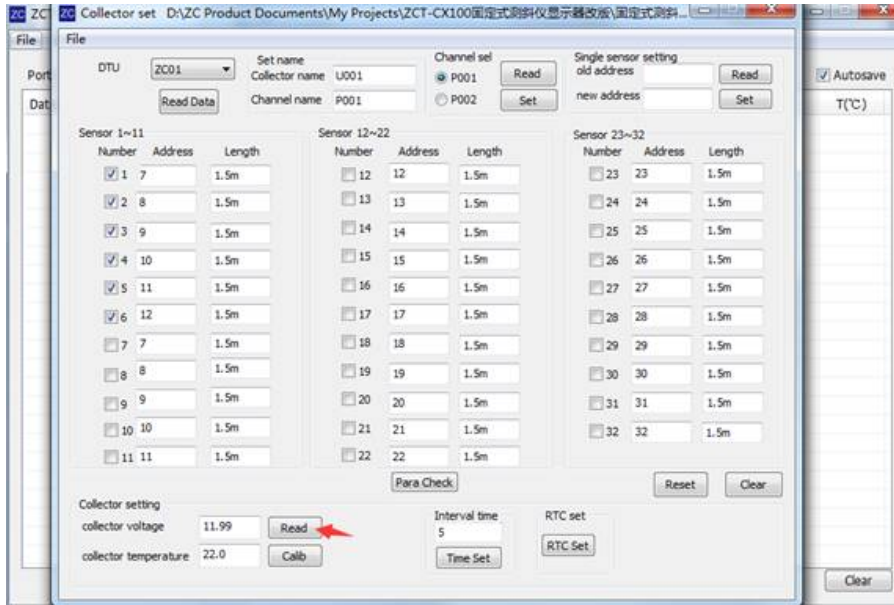
A) The sensor data displayed on the upper computer: (from left to right) date, time, datalogger number, channel (hole) number, total number of probes under the channel (hole), sensor Modbus address (displayed in the order of configuration), sensor spacing, sensor X-axis angle, sensor Y-axis angle and sensor temperature. "Error" indicates that there is no probe with this address or the acquisition of this address probe fails.

	A	B	C	D	E	F	G	H	I	J
1	ZC-DATA-INFORMATION									
2	2.02E+13 DATA_SAVE									
3	Date	Time	Collector	Channel	Total	NO.	Length	X	Y	T
4	30/03/2017	10:33	U001	P001	6	7	1.5	18.399	-18.129	19
5	30/03/2017	10:33	U001	P001	6	8	1.5	18.066	-18.373	19
6	30/03/2017	10:33	U001	P001	6	9	1.5	-17.55	-18.576	19
7	30/03/2017	10:33	U001	P001	6	10	1.5	-1.116	-18.585	22
8	30/03/2017	10:33	U001	P001	6	11	1.5	-4.72	-18.515	21
9	30/03/2017	10:33	U001	P001	6	12	1.5	-5.665	-17.86	24
10	30/03/2017	10:38	U001	P001	6	7	1.5	18.399	-18.129	19
11	30/03/2017	10:38	U001	P001	6	8	1.5	18.066	-18.373	19
12	30/03/2017	10:38	U001	P001	6	9	1.5	-17.55	-18.576	19
13	30/03/2017	10:38	U001	P001	6	10	1.5	-1.603	-18.585	22
14	30/03/2017	10:38	U001	P001	6	11	1.5	-5.52	-18.515	21
15	30/03/2017	10:38	U001	P001	6	12	1.5	-5.13	-17.86	24
16	30/03/2017	10:43	U001	P001	6	7	1.5	18.399	-18.128	20
17	30/03/2017	10:43	U001	P001	6	8	1.5	18.065	-18.373	20
18	30/03/2017	10:43	U001	P001	6	9	1.5	-17.548	-18.576	20
19	30/03/2017	10:43	U001	P001	6	10	1.5	-1.659	-18.585	23
20	30/03/2017	10:43	U001	P001	6	11	1.5	-5.568	-18.515	22
21	30/03/2017	10:43	U001	P001	6	12	1.5	-5.213	-17.86	24
22	30/03/2017	10:48	U001	P001	6	7	1.5	18.399	-18.128	20

B) Autosave data format



C) If the upper computer is down for a period of time, after the repair, the microSD card on the datalogger can be taken out and loaded into the card reader connected to the computer. The upper computer can open the file stored in the card for backup so no monitoring data is lost.



D) Upper computer reading datalogger power supply voltage and temperature

Note: The more sensors are connected in the acquisition system, the longer the time for all angle data of the entire system to be updated once. The approximate acquisition time for a system with 32 sensor probes is 1 minute.

**This information in this manual is for reference only. Shanghai Zhichuan Electronic Tech Co., Ltd. has the right to modify the information without notice.**



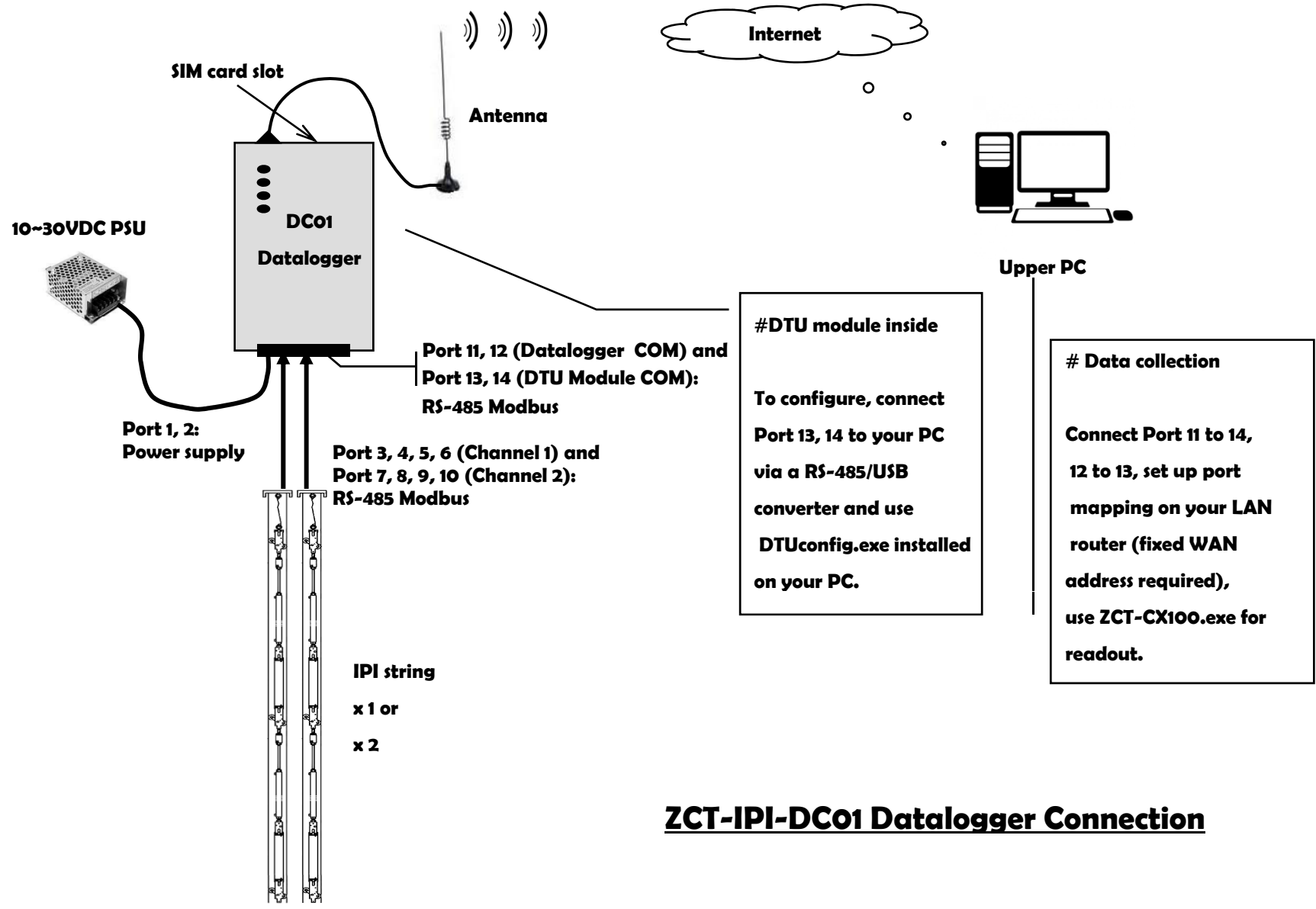
# Appendix A

## Notes on LED status

Power	Module	SIM	Status	Explanation
ON	X	Alternate flash		Module is open, in AT mode
ON	X	OFF	Blink	Initialize module using AT commands
ON	Flash	OFF	Blink	System is dialing
ON	X	Blink	OFF	Waiting for activation (short connection mode)
ON	X	Alternate blink		Dialing successful, in data mode
ON	X	Synchronous blink		APP is normal

Note:

- 1) ON/OFF: shine or not shine for over 3 seconds.
- 2) Blink: flash slowly, about once a second.



**ZCT-IPI-DC01 Datalogger Connection**