

# GE-104P Portable Current Meter

## User Manual



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**GE-104P portable current meter**

This portable current flowmeter is working for point-by-point measuring for accessing the current speeds in running waters. The measure values are displayed on a hand terminal, and the stored values are transferred to a PC by means of the Software. It produce by the standard ISO2548-73, C class accuracy.

This current meter is smart, aesthetic appearance, compact design, simple operation, convenient when measuring. It is widely used to measure the flow velocity in river, irrigation canal, surface runoff, hydrological experiment, and measuring pipeline flow to test the efficiency of the pump station, wastewater monitoring and seepage flow measuring in the Environmental protection.



The device is simple and convenient, energy saving, stable and reliable. It possesses complete functions and a high automaticity in accordance with the national measurement standard of open channel. Equipped with a rotating propeller which can endure 100 °C.

Figure 1 Installation diagram of the portable current meter

**I: technical requirement of the device.**

- \* Velocity measurement formula:  $V = \frac{KN}{T} + C(m/s)$ (automatic calculation)
- \* Range of the velocity measurement: 0.06-5.00 m/s ( 7.00m/s is also attainable)
- \* Error in current measurement:  $\leq 1.5\%$
- \* Display screen: 4 × 16 liquid crystal display
- \* Temperature range: -20°C- 60°C
- \* Power supply: DC8.4V Li-ion rechargeable battery, continuous operation of above 40 hours after complete charge.

**II: measurement principal**

The device was developed with the flow velocity-area method in the open channel measurement. After obtaining the flow velocity, the flow quantity can be obtained through the formula  $Q=V \cdot S$ (S is the section area)

1. The measurement of the flow velocity

In the measurement, the Propeller current meter was rotated by the water power, the signal device generates the revolution signal, and the flow velocity can be calculated by the following formula:

$$V = \frac{KN}{T} + C (m/s)$$

In it : V: The mean flow velocity during the measurement ( m/s)

K: Screw pitch C: Constant of the current meter

T: the amount of time of the measurement (unit: s)

N: The number of signals during T

During the use of the device, K and C both are constants. The flow velocity can be calculated once the value of T and N are obtained.

2. The calculation of volume of flow

By the flow velocity-area method, the volume of flow can be obtained by multiplying the flow velocity and section area which were obtained in the measurement.

**Three: operation of the device**

Normally, plug in to start up and unplug to shut down. The moment the device is plugged in, the screen will display the current meter parameter used last time. The parameter setting is illustrated as follows: Measurement can be conducted once the parameter coincides with the certificate.

ZMLSY-1.0	7.2V
K=.0288	1V=0.000
T=100	0N0000.0
Q=000000.000m3\h	

Table 1 the display of measurement parameter used last time

There are 3 buttons on the device:



**3.1 The operation of the setting of parameter**

3.1.1 **The setting of parameter 1:** Check whether the parameter displayed on the screen is the same with the current meter parameter. If not, press Menu to setting of parameter 1. Make modifications on the screen by the right shift button and shift up button. For instance, If c is 0.0010, press the right shift button to move the cursor to the position of “5” where C=0.0100. Then press the shift up button, one press will add 1 to this digit, and press the button for several times until the digit which cursor stays turns into the required value that is C=0.0150.

Modification of the K and T is the same. First press right shift button and then press shift up button until it turns into the right value. Correction can also be made with the procedure above.

**Please input K and C by the parameters given on the certificate. T represents the amount of time during the measurement.**

**3.1.2 Press Menu to enter setting of parameter 2**

<p><b>Setting 1</b>  <b>Thread pitch - K=.9710</b>  <b>Constant - C=.0170</b>  <b>Time - T=100.00</b></p>
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<p><b>Setting 2</b>  <b>Automatic - 0</b>  <b>Time delayed - 3</b>  <b>Section - 01.005 m<sup>2</sup></b></p>
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On the screen, the “Automatic – 0” means automatic operation, if manual operation is needed, change the “0” into “1”.

On the screen, the delayed time is “3” which means the device will conduct the automatic operation in 3 seconds after finishing the setting and back to the measurement interface. If the setting is automatic, the device will automatically repeat the measurement.

**If it is manual, press start/stop button and start or stop the measurement. After the value on the screen is obtained, press the button again so that you can proceed with your next measurement.**

Volume of flow on the sectional area: Unit: Square meter. The volume of flow on the sectional area can be obtained by the formula  $Q=V \cdot S$  (S is the sectional area)

**3.1.3 Version number communication displays the communication mode. (No communication in default mode)**

<p><b>Setting 3</b>  <b>LAP — 01</b>  <b>PULSE — 01</b>  <b>LANGUAG- ENG</b></p>
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<p><b>Setting 4</b>  <b>Baud rate — 9600</b>  <b>Stop bit — 1</b>  <b>Parity bit — N</b></p>
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**3.2 Data of the measurement**

After setting the right parameter, press “right shift” and “shift up”, the parameter can be kept down and the device will be back to the measuring status.

**Back to the measuring status:**

Enter the measuring status. The screen will come as portrayed: If it is automatic operation, the device will automatically calculate the flow velocity by the formula and display  $1V=0.000M/S$  at the end of the measurement. After keeping the display for 3-5 seconds, the automatic measurement will be repeated but the value of flow velocity will be preserved until the end of next measurement. If it is manual operation, the value will be recorded at the end of measurement. After recording the values, press start/stop button and you can proceed with your next measurement. During the measurement, it can be perceived that T and N start to count on the screen when the first signal comes. When T reaches the set time, the device will automatically turn off the T and N when another signal comes and automatically calculate the velocity of the flow. After displaying for 3-5 seconds, the device will automatically conduct the next measurement and repeat the procedure above. In this measurement, the value of V displayed in this measurement is actually the value of last time,

which is made for the convenience of reference and record.

### 3.4 Shutdown

The device will be shut down automatically after unplugging. Save the model and parameters you used this time. Next time you can conduct the measurement of current again by just plugging in and connecting the device with the target.

### IV. Online Operation with Computer (no such function if not specified when ordering)

First, connect the device with computer with a communication cable for exclusive use. Turn on the computer and get into the WINDOWS- Program- Attachment- Communication- Hyperterminal, set the Baud rate at 2400, communication bit at 8, stop bit at 1, no parity check, and flow control at software. Then choose the right communication entrance, connect the signal power cord of the device and start the measurement. At the end of every measurement, a set of data will be sent onto the computer screen.

K=7800 C=0.050 T=0106.5 N=0015 V=0.160

K=7800 C=0.050 T=0108.4 N=0016 V=0.165

### V: Maintenance of the Device

Unplug the device if not to be in use for a short time. Charge the device every 3 months if the time is too long.

Rinse the current meter and the measuring stick with clean water at the end of measurement every time. Dry them with a towel and keep them in the right place.

### VI: The whole set of the device

GE-104P current meter	1
GE-104P propeller	1
Signal line	1
<b>*Communication cable (selective)</b>	<b>1</b>
Charger	1

Attachments:

GE-104P portable current meter user manual 1

### Special warning:

Charge the device for above 3 hours at the first time. Set the test time above 20 seconds. Run out the battery before recharging. (The device contains a protector for over-charging and over-discharging)