High Pressure Auto Flow Controller

OPERATING MANUAL

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I. Introduction

GLZ Series High Pressure Flow Auto Controller (hereafter we call GLZ) is the high-tech product of mechanical and electrical integration, which is invented and manufactured jointly by R.R. Flowmeters Pvt. Ltd. & Shanghai Yinuo Instrument Co., Ltd. (Invention Patent No.: 200610046132.3 & Utility Model Patent No.: ZL-2004 2 0031280.4). It assembles the high-pressure flow meter, high-pressure flow control valve and flow controller. There are the features of compact structure, easy operation, visual display, higher accuracy, corrosion proof, fouling prevention, dual-purpose of alternating and direct current and manual or automatic flow control, etc. It is suitable for higher-pressure water injection and the project of polymer injection, especially for water flooding.

The flow meter parts of GLZ Series Higher Pressure Flow Auto Controller are made up of impeller, shaft and bearing, which has been specially machined. So it has strong function of fouling prevention to the wastewater in the oilfield. Meanwhile, the impeller bracket can be easily taken out from the body of the meter, which brings many conveniences for the meter’s periodical test. The controlling and executive part of the flow valves is alternating electromotor, which has been passed decelerator device. With manual device and interior battery, the GLZ can work normally when alternating current is cut down. And the hand-wheel is so light that the distinguish ability ratio is high under the function of decelerator device. The application of advanced electric technology makes the whole controller the higher stability and anti-jamming capability.

II. Principle

When it runs through the controller, the measured liquid will push the rotator, and the rotation rate of the impeller is directly proportional to the flow within the definite flow range. The rotation of the impeller makes the blade close to the sensor on the body in turn, and causes the magnetic flux passing through the coil to change in order to produce the pulse signal, which is directly proportional to the flow. This signal can display the values of total flow and instant flow.

During the operation period, the user can set the flow value by keys. The controller will compare the instant flow value and the set value. If the difference value exceeds the required value, the controller will produce the instruction, and drive the electromotor to adjust the valve by open or close so that the instant flow value approaches to or equal the set value.

Besides, the controller has the matching function at some mixture ratio for two or three mediums. During this process, the controller can collect other flow signals, multiply the proper ratio to calculate and regulate the required flow (the flow range should considered) by opening or closing the valves.
III. Main Technical Datum

<table>
<thead>
<tr>
<th>Nominal Diameter (mm)</th>
<th>15</th>
<th>25</th>
<th>40</th>
<th>50</th>
<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Pressure (MPa)</td>
<td>16, 25, 32, 42</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium Temperature</td>
<td>0°C~+120°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Cast Steel, Stainless Steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure Loss (MPa)</td>
<td>&lt;0.2MPa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Supply</td>
<td>AC 220V/100W, 50Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explosion proof</td>
<td>ExIIIBT4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DN (mm)</th>
<th>Flow Range (m³/h)</th>
<th>Stability of Instantaneous Flow (m³/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accuracy of±1.0%</td>
<td>Accuracy of±1.5%</td>
</tr>
<tr>
<td>15</td>
<td>0.1<del>0.5 or 0.2</del>1</td>
<td>0.1~1</td>
</tr>
<tr>
<td>25</td>
<td>1~5</td>
<td>0.6~6</td>
</tr>
<tr>
<td>40</td>
<td>2~9</td>
<td>1~10</td>
</tr>
<tr>
<td>50</td>
<td>2~10(Z)</td>
<td>1~10(Z)</td>
</tr>
<tr>
<td></td>
<td>3~15(Z)</td>
<td>2~20(Z)</td>
</tr>
<tr>
<td></td>
<td>2~10(J)</td>
<td>1~10(J)</td>
</tr>
<tr>
<td></td>
<td>3~20(J)</td>
<td>2~20(J)</td>
</tr>
<tr>
<td>80</td>
<td>20~80</td>
<td>10~100</td>
</tr>
</tbody>
</table>

IV. Type Description

GLZ [ ]

- Output Signal: F—Standard Pulse Signal
  I—4-20mA Current Output
  D—1~5V Voltage Output
  W—Wireless Communication

- Measure Parts: K—With moving parts,
  W—Without moving parts

- Material: G-Cast Steel, S-Stainless Steel

- Structure Type: Z—Straight Type; J—Corner Type

- Nominal Pressure: 16, 25, 32, 42(MPa)

- Nominal Diameter: 15, 25, 40, 50, 80(mm)

- I-type, II-IIlttype

- High Pressure Flow Auto Controller
V. Drawings for Structure and Installation

1. Straight Type:

![Installation Drawing](image1)

![Structure Drawing](image2)

<table>
<thead>
<tr>
<th>Nominal Diameter (mm)</th>
<th>Nominal Pressure (MPa)</th>
<th>L</th>
<th>H</th>
<th>D</th>
<th>K</th>
<th>d</th>
<th>n</th>
<th>c</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>16, 25, 32, 42</td>
<td>400</td>
<td>280</td>
<td></td>
<td></td>
<td>26</td>
<td>4</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>16, 25</td>
<td>400</td>
<td>280</td>
<td>150</td>
<td>101.5</td>
<td>26</td>
<td>4</td>
<td>30</td>
<td>35.38</td>
</tr>
<tr>
<td>40</td>
<td>16, 25</td>
<td>400</td>
<td>290</td>
<td>180</td>
<td>124</td>
<td>26</td>
<td>4</td>
<td>32</td>
<td>35.38</td>
</tr>
<tr>
<td>50</td>
<td>25</td>
<td>440</td>
<td>290</td>
<td>215</td>
<td>165</td>
<td>26</td>
<td>8</td>
<td>38.5</td>
<td>50</td>
</tr>
<tr>
<td>80</td>
<td>32</td>
<td>440</td>
<td>290</td>
<td>215</td>
<td>165</td>
<td>26</td>
<td>8</td>
<td>44</td>
<td>55</td>
</tr>
</tbody>
</table>

2. Corner Type:

![Installation Drawing](image3)

![Structure Drawing](image4)

<table>
<thead>
<tr>
<th>Nominal Diameter (mm)</th>
<th>Nominal Pressure (MPa)</th>
<th>L</th>
<th>H</th>
<th>D</th>
<th>K</th>
<th>d</th>
<th>n</th>
<th>c</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>16</td>
<td>500</td>
<td>320</td>
<td>265</td>
<td>203</td>
<td>32.5</td>
<td>8</td>
<td>48</td>
<td>55</td>
</tr>
</tbody>
</table>
### VI. Set and Operation

1. **Set of Instantaneous Flow**

Using a magnetic pen can change the set of instantaneous flow value. There are two keys for the set of instantaneous flow value: “INC” and “DEC”.

First, line on the key of “INC” using the magnetic pen, then the screen will display the set value of last time, for example, “05.0” which means 5.0 m³/h. Then put the magnetic pen on the key of “INC” or “DEC”, and the value will increase or decrease continuously. When magnetic pen is approached promptly the key of “INC” or “DEC” for one time, the value will increase or decrease one digit.

To be specific, if you want to increase the set value, press the key of “INC” using the magnetic pen and the set value will increase. When the set value increases to the required degree, make the magnetic pen leave the key of “INC” promptly and the system will return to the measurement condition automatically after 30 seconds.

If you want to decrease the set value, press the key of “DEC” using the magnetic pen and will decrease. When the set value decreases to the required degree, make the magnetic pen leave the key of “DEC” promptly and the system will return to the measure state automatically after 30 seconds.

2. **Operational and Indication**

There are two kinds of lights on the nameplate of GLZ, one is “LIMIT” light with blue color and the other one is “POWER” light with red color.

“POWER” light: It will shine when 220V AC is turned on and the parts of GLZ are working normally.

“LIMIT” light: It will shine when the following two conditions occur.
First condition: When the instantaneous flow value has been set, the Control Valve will adjust subsequently. If the set value exceeds the current flow, the Control Valve will open. Once the Control Valve open to the utmost while the current flow is still less than the set value, the “LIMIT” light will shine and the Control Valve will stop to adjust, which may be caused by the less pressure difference between the customer’s water injection system and the underground well.

Second condition: If the set value is less than the current flow, the Control Valve will close. Once the Control Valve closes to the utmost while the current flow is still more than the set value, the “LIMIT” light will shine and the Control Valve will stop to adjust, which indicates that there is something wrong with the Control Valve of GLZ.

VII. Calibration

GLZ has been calibrated before delivery, whose accuracy is shown in the Certificate. In order to keep high accuracy, the user can calibrate it as well in the course of usage. There are two kinds of calibration methods: Error Calibration and Linear Calibration. Error Calibration is a general method, which requires calculating the proper flow coefficient. When the relative error among different points is too big and a proper flow coefficient is hard to calculate, the Linear Calibration will be applicable.

★ Error Calibration of GLZ High Pressure Flow Auto-Controller

Preparation for Calibration: Install the calibrated GLZ in the calibration equipment and open the upper cover (derogation) of the controller so as to set the keys of GLZ.

Calibration Steps:
1. Enter into the accurate display state. Revise “F-code 32” into 0001, the detailed operations will be introduced in the keys operation instruction. (shown in Enclosure)
2. Calibration: choose the middle value of the flow range to calibrate the quantity of flow.
   Volumetric Method: Open the valve and the liquid will run. After the volume of the flow reach the standard value and the valve will close. When the flow stops, the instantaneous flow is reset to zero. Record the indicating value of the standard container $V_0$ and the indicating value of $V_1$, and then calculate the error ratio $K_x$
   $$K_x = \frac{V_0}{V_1}$$
3. Press “ENT ■” and then “SET ●” and enter into “F-code39” to revise the basic flow coefficient, the lower screen displays flow coefficient $K_0$. Suppose the new flow coefficient is $K_N$
   $$K_N = K_0 \times K_x$$
   Calculate a new basic flow coefficient, and replace the original flow coefficient $K_0$ with the new flow efficient $K_N$. The detailed operation is in the illustration of the keys operation instruction in the enclosure. Finish revising the coefficients and enter into next step.
4. Choose another point for calibrating and repeat the second step with the same method. If the different errors of different points are all within the normal calibration range, the operation will be finished and turn into next step. If the different errors are beyond of the normal calibration range, the operation will turn into the Linear Calibration.
★ Linear Calibration of GLZ High Pressure Flow Auto-Controller

5. Point-by-point Calibration: Choose one point random or calculate 8 points according to the maximum flow range of GLZ and the Factor8~Factor15 to calibrate as follows:
   Test Point 1= maximum flow range × Factor8
   Test Point 2= maximum flow range × Factor9
   Test Point 3= maximum flow range × Factor10
   Test Point 4= maximum flow range × Factor11
   Test Point 5= maximum flow range × Factor12
   Test Point 6= maximum flow range × Factor13
   Test Point 7= maximum flow range × Factor14
   Test Point 8= maximum flow range × Factor15

   Now record the indicating value of the standard container $V_0$ and the indicating flow value $V_1$, and calculate the error ratio $K_x$ according to the formula (1) of Error Calibration. If the error of above point calibrated is within the normal calibration range, the operation will be implemented the next calibration point, rather than turn into the next step unless 8 points have been finished.

6. Press “ENT ■” and then press “SET ●” and enter into the state of flow coefficient modification, then the lower screen will displays flow coefficient. If the upper screen displays “F-code × ×”, then press “■” and “Parameter × ×” will be displayed on the upper screen. Meanwhile, the value display on the lower screen is the relative flow coefficient $K_0$. Then calculate the new coefficient $K_N$ according to the following formula (2) of Error Calibration, and replace the original coefficient $K_0$ with the new flow efficient $K_N$. The modification method is to press “▲” or “▼” to revise the coefficients on the upper screen under the condition of “Parameter × ×” displayed. Then press “ENT ■” to save, and press “▲ or ▼” to return the state of “F-code 47” (the accumulated flow has been zero-reset), and press “ENT ■” twice to exit.

7. Repeat step 5 and 6 until the operation of 8 points have been finished, and then enter into next step.

8. Recover the display of accuracy: revise the parameter “F-code 32” into 0000 (If there is no the operation of Step1, the Step 8 can be omitted)

9. Finally, it is necessary to save and exit by “F-code 49”. After calibration, disassemble the GLZ.

Ⅷ. RS485 Communication and the connection of signal output

GLZ has three signal output methods for long-distance transmission, which are RS485/422 serial communication, two-wire system 4~20mA current output and three-wire system pulse output. The related wiring diagrams are as follows:
1. Main Parameters of Pulse Output
   (1) External power supply: DC24V
   (2) Amplitude value: \( V_L < 1.5V \); \( V_H > 22V \)
   (3) Load: \( > 10K \Omega \)
   (4) Ambient temperature: \(-20^\circ C + 70^\circ C\)
   (5) Relative humidity: \(< 85\%\)
   The connections of the terminals for Pulse Output are as follows:
   (1) +: connect to DC24V +
   (2) -: connect to DC24V -
   (3) P: connect to external Pulse Input Terminal

2. Main Parameters of Current Output
   (1) External power supply: DC24V
   (2) Output Current: 4-20mA
   (3) Load: 0-600 \( \Omega \)
   (4) Basic accuracy: \( \pm 0.1\% \)
   (5) Response time: <1second
   (6) Ambient temperature: \(-20^\circ C + 70^\circ C\)
   (7) Relative humidity: \(< 85\%\)
   The connections of the terminals for Current Output are as follows:
   (1) DC24V: connect to DC24V +
   (2) I−: connect to external Current Input Terminal

3. RS485/422 serial communication
   RS485 serial communication can be connected with the field equipment of customers (for example: local computer) or long-distance computer through MODEM.
   There are four terminals to connect for RS485/422 serial communication as follows:
   (1) V+: connect to external power with 5V
   (2) A: serial communication
   (3) B: serial communication
   (4) GND: external power with 5V connected to ground

IX. Installation Instructions

1. Choose the GLZ according to the Nominal Diameter, Nominal Pressure, Flow Range and the temperature and characters of the measured medium.
2. The GLZ should be installed unstressed in the pipeline, and should not be affected by the expansion, contraction, deformation and vibration of the pipeline. It should be easy and convenient to install, disassemble, operate and avoid the interference of the high magnetic field.

3. The GLZ can be installed horizontally or vertically. There should be one section of straight tube before the flowmeter and another section after the flowmeter. The length of the straight tube before and after the flowmeter should not be less than 10 times of Nominal Diameter).

4. The flow direction of the medium in the piping should be the same with the sign of the flow direction on the body of the GLZ.

5. Open the bypass to remove the impurity out of the medium before the utilization of the new pipeline. If there is too much impurity in the medium, the filter should be installed before the GLZ.

6. Do error adjustment and verification regularly. Inspect the GLZ regularly and adjust the accuracy periodically. Examine if there is any breakage of the sealed rubber ring during every checkup. If there is any breakage or damage, replace it in time.

7. Electric connection: after filtering, AC 220V electric source on the spot should be connected with the two power lines (the black line should be connected with naught wire while the red line should be connected with live wire) set aside by the GLZ. The GLZ body should be assured to connect the ground. ( \(<0.3\ \Omega\) )

**X. Trouble Shooting**

There is little trouble for the GLZ as long as it is installed correctly. Once the trouble happens, deal with it according to the following table. If the trouble cannot be solved, please contact our company or return to the factory for repair.

<table>
<thead>
<tr>
<th>Troubles</th>
<th>Causes</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>The liquid flows through GLZ</td>
<td>1. Impeller is blocked by foreign substances</td>
<td>1. Clear out foreign substances 2. Replace sensor or impeller 3. Check the connection is right or not</td>
</tr>
<tr>
<td>but no flow display on screen</td>
<td>2. Sensor or impeller is damaged</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Socket does not work well</td>
<td></td>
</tr>
<tr>
<td>The accuracy is too large</td>
<td>1. Impeller, axle or axle-bearing is damaged</td>
<td>1. Replace impeller, axle or axle-bearing 2. Replace control board 3. Repair by the factory</td>
</tr>
<tr>
<td></td>
<td>2. Controller breaks down</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Exist sundries or fouling</td>
<td></td>
</tr>
<tr>
<td>The motor does not work</td>
<td>1. AC220V is switched on or not</td>
<td>1. Check the circuit 2. Replace the control board</td>
</tr>
<tr>
<td></td>
<td>2. Control board is damaged</td>
<td></td>
</tr>
<tr>
<td>No value display</td>
<td>1. No power for the battery in main control board</td>
<td>1. Replace new battery 2. Replace main control board</td>
</tr>
<tr>
<td></td>
<td>2. Main control board is damaged</td>
<td></td>
</tr>
<tr>
<td>“LIMIT” light flash</td>
<td>1. Impeller does not runs</td>
<td>1. Check and replace the impeller, axle or axle-bearing 2. Check the user’s injection pressure, pipelines and valves</td>
</tr>
<tr>
<td></td>
<td>2. The flow of user’s injection system is too small</td>
<td></td>
</tr>
</tbody>
</table>
Replace battery:
Open the latter cover of the GLZ (anti-clockwise rotation), screw off the two screws fixing battery and draw out the batteries, then plug into the new batteries in the same direction and the GLZ will automatically reset and start. If no indication is shown on the screen, please draw out the batteries and plug them into again till the screen normally displays. Screw on the two screws fixing battery, and then close tightly the latter cover of the GLZ.

XI. Storage and Transportation
1. The GLZ should be stored in the ventilated and dry storehouse without corrosive air, where the temperature should be between -40°C ~ +80°C, the relative humidity should not be more than 85%.
2. The GLZ should be packed with certification and operating instruction manual in one case. It is forbidden to collide strongly or laid upside down during the transportation.

XII. Order Information and Technology Service
1. Please provide Nominal Diameter, Nominal Pressure, Flow Range, Medium, Accuracy, Installation Method (horizontal, vertical) and other parameters so as to choose the appropriate model when making an order.
2. The guaranty time is one year for the troubles due to the manufacture problems.
3. The manufacturer provides various accessories at the price of costs in order to guarantee the product’s repair and maintenance for the user.

Attached Page: Keys-press Instruction of GLZ

Terms:
F-code: functional code: the GLZ has 50 function items and each function is represented by a number, that is F-code.
Parameter: the F-code is corresponding to the data. Different datum represents different meanings. For example, the basic flow coefficient 1015 represents 0.1015 unit volume per impulse.
Upper screen: the upper line on the screen.
Lower screen: the lower line on the screen.
Cursor: indicating the revisable parameter position and shown on the lower screen.
Data: F-code and parameter are collectively called data.
From left to right, there are SET ●, INC ▲, DEC ▼, ENT ■
●: Set key has three kinds of function:
   i. Press it singly for over 3 seconds, enter into instantaneous flow setting.
   ii. Press it together with “ENT ■”, enter into the data setting.
   iii. Press it together with “INC ▲” and “DEC ▼”, the cursor will move left or right.
▲: Increase key has three kinds of function:
1. Under the parameter revise state: press it singly, the parameter will be added 1 (cursor position)
2. Under the parameter revise state: press it together with “SET ●”, the cursor will move left.
3. Under the F-code revise state: press it singly, the F-code will be added 1.
Decrease key has three kinds of function:
1. Under the parameter revise state: press it singly, the parameter will be subtracted 1 (cursor position)
2. Under the parameter revise state: press it together with “SET ●”, the cursor will move right.
3. Under the F-code revise state: press it singly, the F-code will be subtracted 1.

Enter key has four kinds of function:
1. Press it together with “SET ●”, enter into data setting.
2. Under the F-code revise state, press it to affirm the revised F-code to enter into revising data.
3. Under the parameter revise state, press it to affirm the revised parameter to enter into the F-code revising state.
4. Accumulative flow is reset to zero (under the calibrating state).
Find the corresponding F-code before revising the parameter, and enter into revising parameter, and save before exit.

Revising F-code
◆ First press “ENT ■” and then “SET ●” to enter into data revising state. The flickering “F-code ××” will display on the upper screen which means it has entered into F-code revising state. “Parameter ××” displayed on the upper screen means entering directly into parameter revising state. Pressing “ENT ■” will switch into F-code revising state.
◆ Press “INC △” or “DEC ▶” when “F-code ××” is being displayed, F-code will change.
◆ When the needful F-code is displayed, press “ENT ■” to revise the parameter. “Parameter ××” is displayed on the upper screen at the same time.

Revising Parameter
When enter into the parameter revising state, the cursor of the parameter is in the unit digit, indicating the number in the unit digit can be revised.
◆ Change of the cursor position: keep pressing “SET ●” and press “INC △” once, the cursor will move left. Keep pressing “SET ●” and press “DEC ▶” once, the cursor will move right. When the cursor is in the position which needs being revised, loosen the keys.
◆ Press singly “INC △” or “DEC ▶”, the value of the cursor will change. Change the position of the cursor and revise other parameter positions. When the parameter has been revised, press “SET ●” once, it will switch into the F-code revising state. If there is still other parameters need to be revised, return to the second step of the revising F-code. If the parameter revising state is exited, go on executing.

Exit
There are two ways of exit: Saving exit and Ignoring exit. (The revised parameters is only kept in the memory)
◆ Save exit: set the parameter code to be 49, press ENT ■ twice, save the parameter eternally and exit the data setting.
◆ Ignoring exit: if the parameter need not to be saved eternally, set the parameter code to be 48, press ENT ■ twice to exit. (Now the revised parameter is in the memory. After the batteries become power-fail or the system resets, it will resume the original parameter.)
For example: change the basic flow coefficient F-code 39 of the instrument. The original parameter of F-code 39 is 3975, now change 3975 into 2039 as follows, and then save it eternally.

Keep pressing ■, then ●. 
Press △ or ▽ until “F-code 01” is displayed.
Press △ or ▽ until “F-code 39” is displayed.
Keep pressing ■, “Parameter 39” is displayed on the upper screen, while 3975 is on the lower screen. And the cursor is in the unit position (the first digit of the number from right)
Press △, 3976 is displayed on the lower screen. Keep pressing △ until 3979 is displayed.
Keep pressing ●, and press △ once, the cursor is in the 10's position (the second digit of the number from right). Press △ once, 3969 is displayed.
Press ■ until 3939 is displayed on the lower screen.
Keep pressing ● and press ▽ once, the cursor is in the 100's position (the third digit of the number from right). Press △ once, 4039 is displayed.
Keep pressing ● and press ▽ once, the cursor is in the 1000's position (the fourth digit of the number from right). Press ▽ once, 3039 is displayed.
Press ▽ once again, 2039 is displayed on the lower screen.
Keep pressing ■, the F-code flickers and press △ once, 40 is displayed as the new F-code.
Press ■ twice, save it and exit.

F-code Instruction
K00-K07: the coefficient calibrated for eight test points
K08-K15: percentage of the calibrated point
K16-K23: eight spacing points among the whole calibration flow range
K24-K31: eight test points
K32: accumulative display precision: “0” represents normal display, “1” represents precise display, “2” represents 100-times display
K33: instantaneous display resolution ratio: “0” represents normal display and “1” represents instantaneous display will ignore the last one digit.
K34: small flow cut-off, default value: 7 Hz
K35: set of acceptable instantaneous flow range
K36: linear normalized coefficient
K37: instrument type: control stride for electrical machine /non-control
K38: enter into calibrating/manual linearization/display the linearization data
K39: basic flow coefficient
K40: instantaneous unit and accumulative unit
K41: the position of decimal point about instantaneous flow
K42: the position of decimal point about accumulative position
K43: section number among the whole calibration flow range
K44: communication number (default 00)
K45: baud rate (default 1200)
K46: remote pulse coefficient. Default is 0: means no communication
“1”—1 ml/P; “2”—10 ml/P; “3”—100 ml/P; “4”—1L/P
“5”—10L/P; “6”—100 L/P; “7”—1 m³/P; “8”—4~20mA output
K47: accumulative flow Zero reset
K48: exit the keyboard (no saving the revise)
K49: exit the keyboard (save the revise)