

PROGRAMMABLE DIGITAL DISPLAY UIF COMBINED METER Operational Instruction Manual

Please read through the manual before installment and operation
Please keep the manual for future use

Chapter 1. General Introduction

● Usage

Digital display UIF combined meters are a new generation of programmable intelligent instruments, which are mainly used in the real-time measurement and indication on the voltage, current and frequency of electric wiring and display the virtual value of voltage, current and frequency through three-row nixietube at the same time. With features of high precision, good stability needing no adjustment for long term, spot field setting parameters by panel keys, it is an idea upgraded product of original dial instrument or common digital instrument.

● Technical feature

This series instruments all adopt specific three-phase electrical parameter measuring chip (ASIC) with RMS property and high-powered single chip microprocessor and apply digital signal processing technique and SMT technics for building block design. It can accurately measure the virtual value of voltage, current and frequency in the electrical network with different frequency or harmonic component and can also conveniently realize the setting of many parameters of multiplying power of transformer, digital filtering mode and so on by the keyboard of instrument. Abolishing the adjustment potentiometers of internal instrument, adopting software adjustment mode for production and modular and generalized design mode reduce the cost of instrument production significantly, which makes the instrument highly cost-effective.

Chapter 2

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Chapter 3 Technical Parameters

3.1 Measuring display range

3.1.1 Measuring display range of voltage

Direct measurement: AC 0 ~ 500V

Additional installment: AC 0 ~ 999.9kV (Any value/100V potential transformer additional, the display multiplying power can be set freely with programmability from 1 to 9999) .

3.1.3 Measuring display range of current

Direct measurement: AC 0 ~ 5A

Additional installment: AC 0 ~ 99.99kA (Any value/5A current transformer additional, the display multiplying power can be set freely with programmability from 1 to 9999) .

3.1.3 Measuring display range of frequency: 40 ~ 70Hz

3.2 Accuracy rating: Voltage, current: $\pm 0.5\%FS \pm \text{one digit}$; Frequency: $\pm 0.1Hz$

3.3 Display Mode: RMS measurement, displaying virtual value by three-row four-bit LED nixietube

3.4 Sampling rate: about 3 times /sec.

3.5 Display resolution of current: up to 0.001A, decimal point shifts automatically

3.6 Display resolution of voltage: up to 0.1V, decimal point shifts automatically

3.7 Display resolution of frequency: 0.01Hz

3.8 Input circuit consumption: current < 0.5VA, voltage < 1VA

3.9 Auxiliary power supply: AC/DC85 ~ 260V

3.10 Auxiliary supply consumption: < 3VA

3.11 Overload: last 1.2 times

3.12 Overflow indication: Displaying character "HHHH"

3.13 Operational environment: places free of gas corruption with temperature of $-10\sim 50^{\circ}C$, and relative humidity $\leq 85\%RH$.

Chapter 4 Setting and Connection

4.1 Shape and hole cut out dimension

Unit: mm

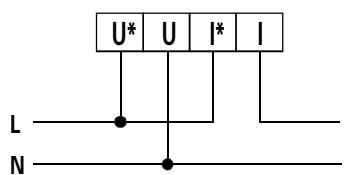
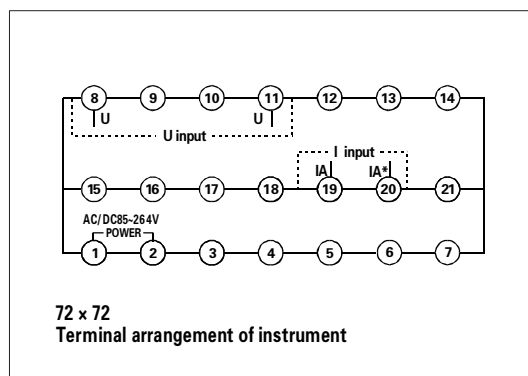
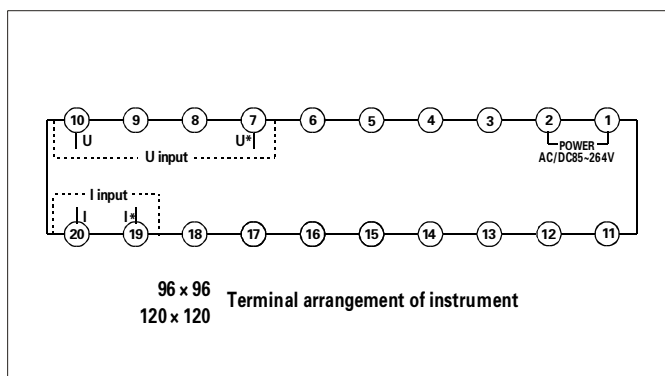
Instrument shape	Panel dimension		Case dimension			Hole cut out dimension	
	W	H	W	H	D	W	H
42 square	120	120	110	110	80	112	112
72 x 72 square	72	72	67	67	80	68	68
96 x 96 square	96	96	91	91	100	92	92
80 x 80 square	80	80	75	75	80	76	76
48 x 48 square	48	48	44	44	100	45	45

4.2 Method of installation

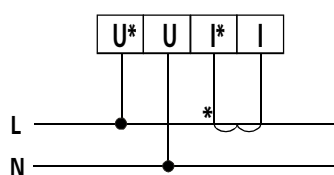
Choose the corresponding hole cutout dimension according to the instrument dimension from the table above, open a hole in the installation screen, embed instruments into the hole, put the two clamping pieces into the clamping groove, push and tighten it by hand.

4.3 Description of Wiring and terminal

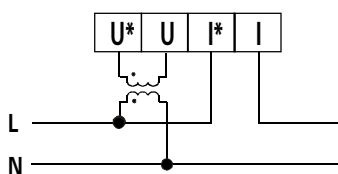
(Attention: If it is not the same with the wiring schema of the instrument case, please accord to the one of instrument case.)



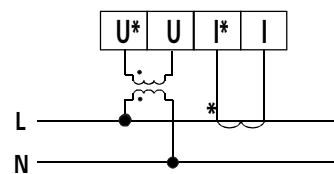
Input directly
when voltage $\leq 500V$, current $\leq 5A$



Input via current transformer
when voltage $\leq 500V$, current $> 5A$



Input via potential transformer
when voltage $> 500V$, current $\leq 5A$



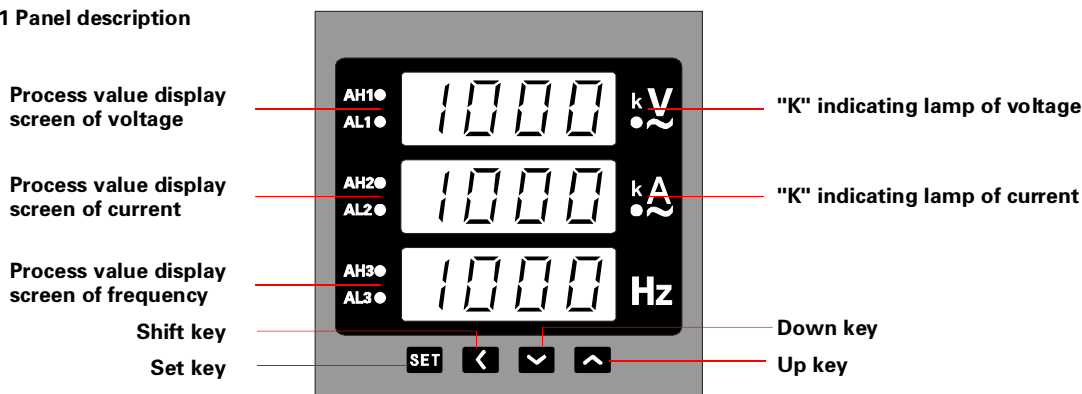
Input via potential transformer and current transformer
when voltage $> 500V$, current $> 5A$

4.3.1 Auxiliary power supply (Power): Instruments need an additional auxiliary power supply to work normally. Please guarantee the electric power provided applies to this series of instruments to prevent damage.

4.3.2 Signal Input (I input and U input): I input is AC current signal input terminal and U input is AC voltage signal input terminal. U* is the high-end of voltage input signal, I* is current lead-in terminal. It is necessary to consider using PT when the voltage is higher than AC500V and consider using CT when the input current is higher than AC5A. 1A fuses are recommended at the voltage input terminals.

Chapter 5 Programming and Usage

5.1 Panel description



Note: If k indicating lamp is on, the unit has been switched to kA (or kV)

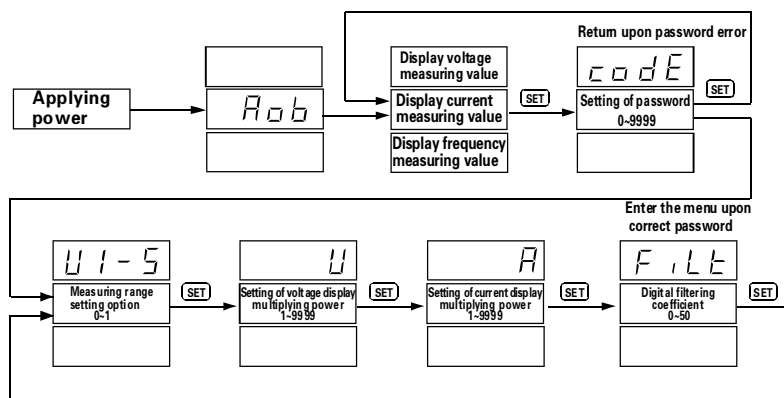
5.2 How to operate

The instrument displays “” when applying power and enters measuring value display status automatically 2s later. Enter programming status by pressing down SET key. The operational flowchart is as following:

Explanations: 1. Password to enter menu is 803

2. Press down the SET key for 2s to quit programming status under the parameter display status and it will return to measuring value display status automatically if there is no key action for 60s under the programming status.

Operational flowchart of programmable digital display UIF combined meter



5.3、 Programming parameter specification

No.	Parameter code	Parameter name	Setting range	Description
1	U1-5	Measuring range setting option U1-5	0 ~ 1	When using * /100V voltage input, U1-5 is set as 0; when inputing 0 ~ 500V voltage directly, U1-5 is set as 1, and PT display multiplying power is set as 1
2	U	The multiplying power of potential transformer U	1 ~ 9999	It is for setting the multiplying power of potential transformer in the instrument voltage input circuit. Setting value of multiplying power= (voltage value of primary circuit of transformer) / (voltage value of secondary circuit), after setting, the instrument indicating value will be calculated according to the voltage value of potential transformer's primary circuit and the multiplying power should be set as 1 when there is no potential transformer.
3	A	The multiplying power of current transformer A	1 ~ 9999	It is for setting the multiplying power of current transformer in the instrument current input circuit. Setting value of multiplying power= (current value of primary circuit of transformer) / (current value of secondary circuit), after setting, the instrument indicating value will be calculated according to the current value of current transformer's primary circuit and the multiplying power should be set as 1 when there is no current transformer.
4	FILT	Digital filtering coefficient FILT	0 ~ 50	It is used to set the filtering coefficient of the meter's measured value so that the meter's measured value can be more stable. The setting of filtering coefficient can normally affect the response time of the meter. The bigger the filtering coefficient is, the more stable the measured value will be; the lower the response time is, the poorer the measurement timeliness will be.

5.4、 Cautions

5.4.1 Please confirm if the instrument power supply, input signal and each terminal wiring are correct and reliable before applying the power.

5.4.2 The instrument must be preheated for 15 minutes to guarantee the precision of measurement and check.

5.4.3 The instrument should not be rapped, knocked and vibrate excessively and its using environment should meet the technical requirements.

5.4.4 The measuring range of instruments has been set as the same parameters provided by users at the factory. Users should check again if the measuring range setting value of instruments responds the adopted specification of instrument transformer and electrical shunt; if not, the measuring range of instruments requires setting again.

Chapter 6 Packing and Storage

The instrument and accessories with packing should keep storage conditions cool and dry and free of wet and gas corruption with temperature not more than 70°C and not less than -40°C , and relative humidity ≤85%