Dear clients, thanks for choosing IBEST DW Series coulo-meter! Before installing and operating the panel meters, please read this instruction manual carefully. For any questions, please contact our sales people immediately.

PREREAD INSTRUCTIONS

⚠ SAFETY CAUTIONS:
- Make sure the power is at "OFF" status before connecting the wires to avoid electric shock and strictly follow the connection diagram given out by the factory.
- Make sure the power OFF when cleaning the product.
- Working beyond the stated power supply is prohibited so as to avoid damage to the product or cause fire.
- User is prohibited to disconnect the housing or repair the instrument himself, to avoid causing damage to instrument, unless under instructions of manufacturer.
- Make sure the OUTPUT RELAY is used at the rated load and electrical life, if the contact of the output reply works against the electrical life, it may melt or burned or even cause fire.
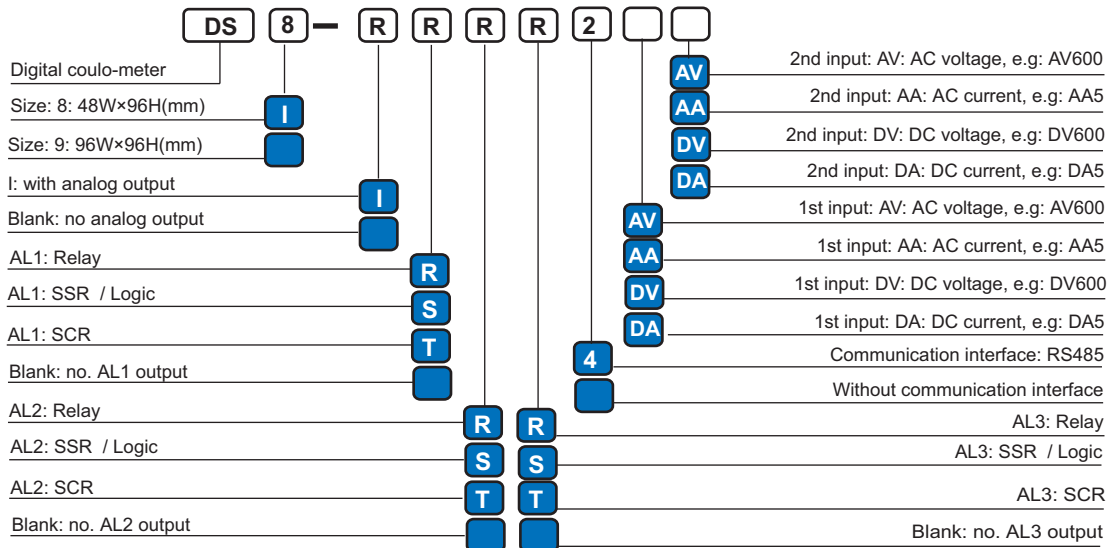
⚠ INSTALLATION NOTICE:
- The product can not be installed outdoors, otherwise will shorten the operation life or cause electrical shock accidents.
- Ambient temperature: 0℃(32F) ~ 50℃(122F)
- Avoid to use the product in the such conditions as the dusty, flammable, explosive gas, vapor, water and oil spray environments.
- Prevent from strong surge & impact, high interference or other bad influences conditions.
- The product does not include a switch or fuse, if necessary, user needs to install by themselves, suggested spec. of fuse: rated voltage:
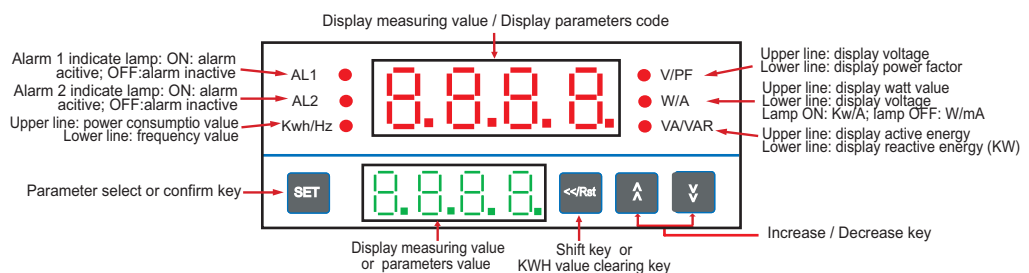
1.FEATURES

- Multi-function coulo-meter, size: DW8 (48×96×100mm); DW9 (96×96×100mm).
- Measuring object: voltage, current, power, power consumption, power factor, frequency, active energy, reactive energy.
- CT and PT are set freely.
- Up to 3 alarm relays, contact capacity: AC 250V/3A or DC 30V/3A (resistance load).
- With analog 4~20mA output.
- With RS485 communiation interface, modubus RTU protocol.
- Power supply: AC 90~260V 50/60HZ, power consumption<5VA
- Applications: applied in electrical power systems for auto control, e.g.: single/three phase current/voltage/power consumption...etc for displaying and control.

2.ORDERING CODE

DS **8** — **R** **R** **R** **R** **2** ☐ ☐

- Digital coulo-meter
- Size: 8: 48W×96H(mm) — **I**
- Size: 9: 96W×96H(mm) — ☐
- I: with analog output — **I**
- Blank: no analog output — ☐
- AL1: Relay — **R**
- AL1: SSR / Logic — **S**
- AL1: SCR — **T**
- Blank: no. AL1 output — ☐
- AL2: Relay — **R**
- AL2: SSR / Logic — **S**
- AL2: SCR — **T**
- Blank: no. AL2 output — ☐
  - **R**
  - **S**
  - **T**
  - ☐

- **AV** 2nd input: AV: AC voltage, e.g: AV600
- **AA** 2nd input: AA: AC current, e.g: AA5
- **DV** 2nd input: DV: DC voltage, e.g: DV600
- **DA** 2nd input: DA: DC current, e.g: DA5
- **AV** 1st input: AV: AC voltage, e.g: AV600
- **AA** 1st input: AA: AC current, e.g: AA5
- **DV** 1st input: DV: DC voltage, e.g: DV600
- **DA** 1st input: DA: DC current, e.g: DA5
- **4** Communication interface: RS485
- ☐ Without communication interface
- AL3: Relay
- AL3: SSR / Logic
- AL3: SCR
- Blank: no. AL3 output

3. PANEL ILLUSTRATIONS

DW8 PANEL (Single phase)

Display measuring value / Display parameters code

- Alarm 1 indicate lamp: ON: alarm acitive; OFF:alarm inactive — AL1
- Alarm 2 indicate lamp: ON: alarm acitive; OFF:alarm inactive — AL2
- Upper line: power consumptio value / Lower line: frequency value — Kwh/Hz
- V/PF — Upper line: display voltage / Lower line: display power factor
- W/A — Upper line: display watt value / Lower line: display voltage / Lamp ON: Kw/A; lamp OFF: W/mA
- VA/VAR — Upper line: display active energy / Lower line: display reactive energy (KW)

- Parameter select or confirm key — **SET**
- Display measuring value or parameters value
- Shift key or KWH value clearing key — **<</Rst**
- Increase / Decrease key — **∧** **∨**

IBEST ELECTRICAL CO.,LTD

DW9 PANEL
(Single and 3phase)

Display converting of Hz/VA/PF/KW/VAR/Kwh/∅

Display voltage value
Display parameters code

Display current value
Display parameters value

Parameter select or confirm key → SET

Shift key or KWH value clearing key

Decrease / Increase key

Hz: Frequency value indicate lamp
VA: Active power indicate lamp
PF: Power factor indicate lamp
W/KW: power indicate lamp: Flash=W; Non-flush=KW
VAR: Reactive power indicate lamp
∅ : Power consumption or phase angle indicate lamp
V: Voltage indicate lamp
KV: Voltage indicate lamp
AL1: Alarm 1 indicate lamp: ON: alarm acitive; OFF:alarm inactive
mA: current indicate lamp
A: current indicate lamp
AL2: Alarm 2 indicate lamp: ON: alarm acitive; OFF:alarm inactive
COM: Communication indicate lamp

Hz · VA
PF · W/KW
VAR · ∅
V · AL1
KV
mA · AL2
A · COM

4. INPUT SIGNALS

Input Signals (optional)	Measuring Range	Input Impedance	Factory settings
A (AA / DA)	AC 0~5A / 0~2A	Ratio freely set	0~5A
mA	0~1mA, 0~10mA, 4~20mA	≤ 150Ω	
V(AV / DV)	0~5V, 0~10V, 0~600V	≤ 200KΩ	0~600V
mV	0~10mV, 100mV	≤ 2MΩ	

Notice: 1- if special signals are requested, please point out when order.
2- when >10A, CT=XX:5A ; when >600V,PT=XX:100V.

5. TECHNICAL SPECIFICATIONS

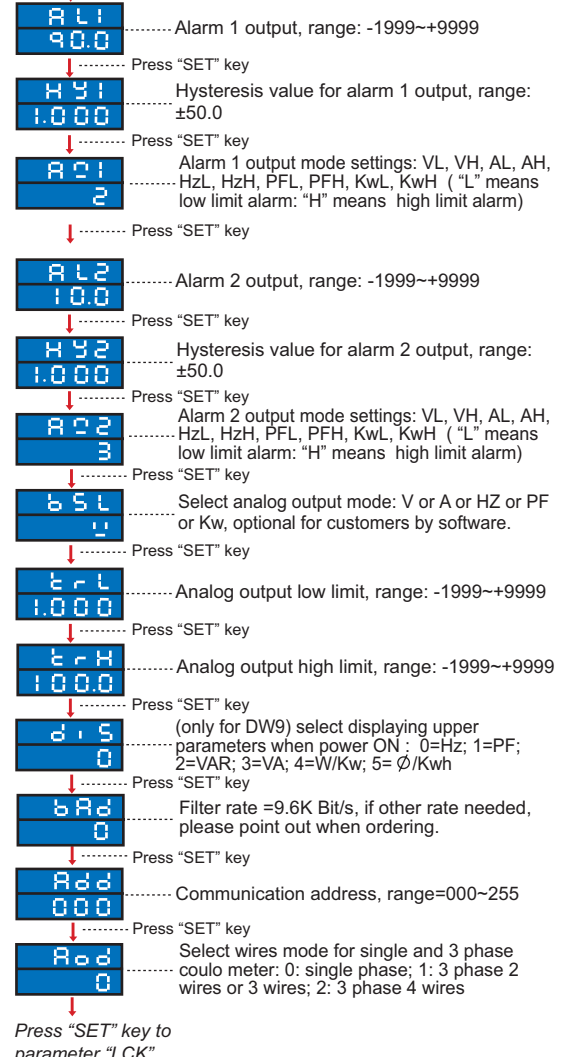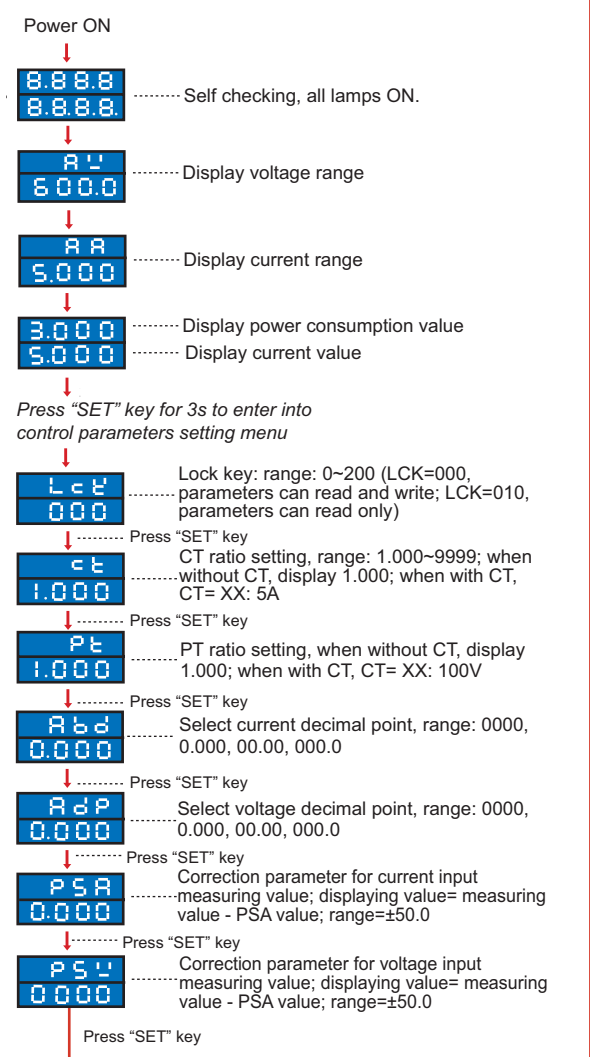|	
Power supply:	90-260V AC 50/60HZ (+/- 10%)
Power consumption:	≤ 5VA .
Meausuring object:	voltage, current, power, power consumption, power factor, frequency, active energy, reactive energy.
Input range :	Voltage: 0~600V; Current: 0~5A, 0~10A
PT/CT:	can be set freely by user
Measuring frequency:	0~2.5KHz
Alarm output:	up to 3 alarm output; alarm modes can be set by user freely
Sampling rate:	<2 times/s
Measuring accuracy:	Voltage/Power/power factor: ±0.5% F.S.±2Digit Current: ±0.3% F.S.±2Digit Frequency: .0~400Hz ±1Hz
Insulation strength:	100M Ohm (DC 500V, between terminal ends and plastic case)
Withstand voltage:	AC 1500V/1 min (between terminal ends and plastic case)
Ambient temperature:	0~50℃, humidity: 35~85% R.H.)
Communication:	RS485 interface (Modbus RTU protocol)
Instrument DIM.:	48H×96W×100L Dual line 4 digit soft buttons for setting 96H×96W×100L Three lines 4 digit soft buttons for setting

6 PANNEL DIMENSIONS AND INSTALLING HOLE DIMENSIONS

96 | 100 | 91+0.5 | 30
48 | 44 | +0.5 45 | 30

DW8: 48H×96W×100L mm

96 | 100 | 91+0.5 | 30
96 | 44 | +0.5 45 | 30
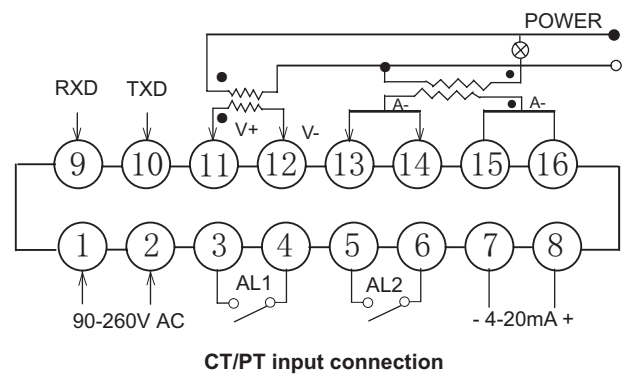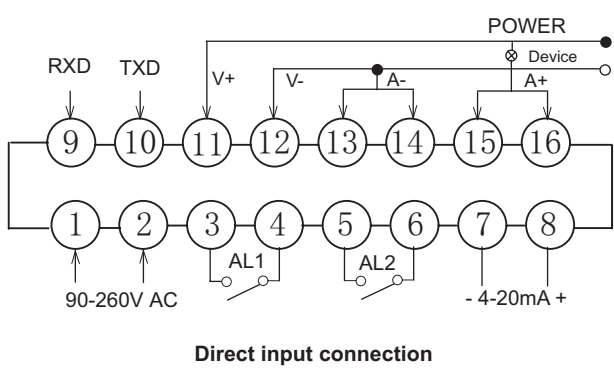
DW9: 96H×96W×100L mm

7. PARAMETERS SETTING

a. At the processing estate, press "Set" key> 3s to enter into control parameters setting menu. Press "<</RST" key once can shift the digit, press " ⌃ " / " ⌄ " to modify parameters, press "Set" key to confirm the value modified. At last Press "Set" again to move to the next parameter. No key operation within 25s, it will go back to the processing estate.

b. Kwh value clearing: when displaying VA/VAR, press " <</RST " key for 3s.

c. upper and lower dipslay parameters can decide freely by parameter " DSH (upper line)" and " DSL (lower line) "; when indicate lamp ON = display left unit; when indicate lamp FLSH = display right unit. E.g: when V/PF indicate lamp ON, display voltage value; when V/F indicate lamp FLASH, display power factor.

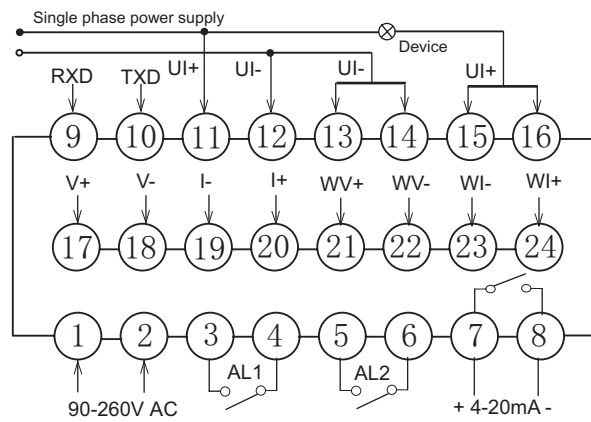c. (DW9): press "SET" key can convert displaying parameters freely.

8. CONTROL PARAMETERS MENU

Power ON

8.8.8.8 / 8.8.8.8. ------- Self checking, all lamps ON.

AV 600.0 ------- Display voltage range

AA 5.000 ------- Display current range

3.000 / 5.000 ------- Display power consumption value / Display current value

Press "SET" key for 3s to enter into control parameters setting menu

LcK 000 ------- Lock key: range: 0~200 (LCK=000, parameters can read and write; LCK=010, parameters can read only)

------- Press "SET" key

ct 1.000 ------- CT ratio setting, range: 1.000~9999; when without CT, display 1.000; when with CT, CT= XX: 5A

------- Press "SET" key

Pt 1.000 ------- PT ratio setting, when without CT, display 1.000; when with CT, CT= XX: 100V

------- Press "SET" key

Abd 0.000 ------- Select current decimal point, range: 0000, 0.000, 00.00, 000.0

------- Press "SET" key

AdP 0.000 ------- Select voltage decimal point, range: 0000, 0.000, 00.00, 000.0

------- Press "SET" key

PSA 0.000 ------- Correction parameter for current input measuring value; displaying value= measuring value - PSA value; range=±50.0

------- Press "SET" key

PSV 0000 ------- Correction parameter for voltage input measuring value; displaying value= measuring value - PSA value; range=±50.0

Press "SET" key

AL1 90.0 ------- Alarm 1 output, range: -1999~+9999

------- Press "SET" key

HY1 1.000 ------- Hysteresis value for alarm 1 output, range: ±50.0

------- Press "SET" key

AO1 2 ------- Alarm 1 output mode settings: VL, VH, AL, AH, HzL, HzH, PFL, PFH, KwL, KwH ("L" means low limit alarm: "H" means high limit alarm)

------- Press "SET" key

AL2 10.0 ------- Alarm 2 output, range: -1999~+9999

------- Press "SET" key

HY2 1.000 ------- Hysteresis value for alarm 2 output, range: ±50.0

------- Press "SET" key

AO2 3 ------- Alarm 2 output mode settings: VL, VH, AL, AH, HzL, HzH, PFL, PFH, KwL, KwH ("L" means low limit alarm: "H" means high limit alarm)

------- Press "SET" key

bSL 4 ------- Select analog output mode: V or A or HZ or PF or Kw, optional for customers by software.

------- Press "SET" key

trL 1.000 ------- Analog output low limit, range: -1999~+9999

------- Press "SET" key

trH 100.0 ------- Analog output high limit, range: -1999~+9999

------- Press "SET" key

diS 0 ------- (only for DW9) select displaying upper parameters when power ON : 0=Hz; 1=PF; 2=VAR; 3=VA; 4=W/Kw; 5= ∅/Kwh

------- Press "SET" key

bAd 0 ------- Filter rate =9.6K Bit/s, if other rate needed, please point out when ordering.

------- Press "SET" key

Add 000 ------- Communication address, range=000~255

------- Press "SET" key

Aod 0 ------- Select wires mode for single and 3 phase coulo meter: 0: single phase; 1: 3 phase 2 wires or 3 wires; 2: 3 phase 4 wires

Press "SET" key to parameter "LCK"

* When without analog output, can select alarm output.

9. ELECTRICAL CONNECTION DRAWING

POWER
Device
RXD TXD V+ V- A- A+
9 10 11 12 13 14 15 16
1 2 3 4 5 6 7 8
90-260V AC   AL1   AL2   - 4-20mA +

Direct input connection

POWER
RXD TXD V+ V- A- A-
9 10 11 12 13 14 15 16
1 2 3 4 5 6 7 8
90-260V AC   AL1   AL2   - 4-20mA +

CT/PT input connection

DW9 connection (Single or 3 phase)

Notice: * if above connections are different from connections on product, please according to product.
**   * When DW9 are used as 3 phase power consumption meter, can select 3 phase 2 wires, 3 phase 3 wires, 3 phase 4 wires.**

10. MALFUNCTION DEALING METHODS

a, Check instrument wiring is correct or wrong. Special attention: make sure not mis-connect power input wires and signal wires; make sure output terminal points not short circuit by strong current.

b, When measuring value displays incorrect, check wires direction is correct or wrong, e.g: when current wires are connected in reverse, power will be negative.

c, Check input mode, particularly 3 phase connection, attention to parameter " Aod ".

11. PACKAGING NOITICE

a, Compelete packaging includes: instrument, instrument supports brackets and screws, instrument user manual, product label, connection drawing label, QC label.

b, Guarantee peroid: 12 months from date of shipping.