

DW9E Series 3 Phase Power Meter User Manual



Features:

- Measuring parameters: voltage/current/active power/reactive power/frequency/power factor and etc.. total 28 parameters.
- 4 loop DI and 2 loop DO, with remote signalling and telecommand function.
- Isolated input and output.
- True RMS measurement.
- Analog output of voltage/current/active power/reactive power/frequency/power factor.
- With RS485 communication port, and ModBus RTD
- With 2loop energy pulse output.
- With 2loop programmable alarm
- Display programmable setting input parameters.
- With power fail protection function for display page selection/Kwh/KvarH
- Optional the function of tariff statistics
- Optional the function of harmonic analysis.
- With zero phase current measure function.

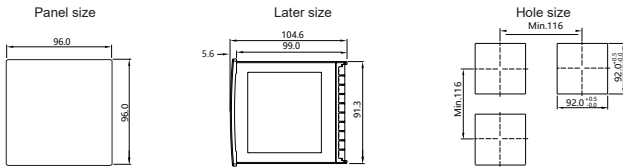
The series meter are used for controlled system, SCADA system and energy management system, substation automation, distribution automation, area power monitor industrial automation, intelligent building, intelligent distributor and switch box. It is easy to install and maintain, sample connection and feild programmable setting input parameters.

Warning: The accident may happen nad the product may be damaged if the coulometer is not operated according to the user manual.

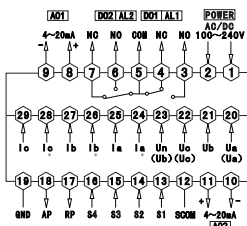
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Display	Three row LED display with instantaneous parameters, one row LED 8 digits display with energy
Power supply	AC/DC 100 ~ 240V
Power consumption	≤ 5VA
Output digit interface	Standard RS-485, MODBUS-RTU protocol
Pulse output	2 loop energy pulse output (optical couple relay)
DI	4 loop DI (Dry contact)
Alarm output	2loop DO, 250V AC / 3A or 30V DC / 5A
Analog output	1loop analog output, 4-20mA DC (The communication can be changed to other one analog output by menu)
Working Environment	Temperature: -10-55°C; Humidity: <85% RH
Storage environment	-20 ~ 75°C
Withstand voltage	Input and power 1600VAC; Input and output 1600VAC; Power and output 1600VAC
Isolation	Input, output and power to shell > 5MΩ
Dimension (mm)	96W×96H×104.6L
Weight	0.6kg

Dimensions

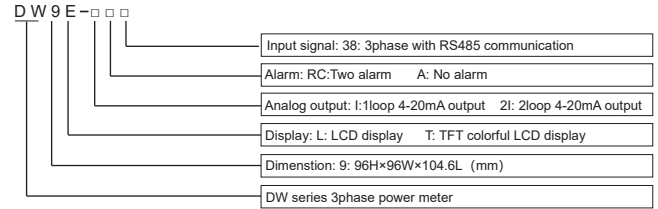


Connection



Please subject to the connection on meter if any difference here.

Model Illustration

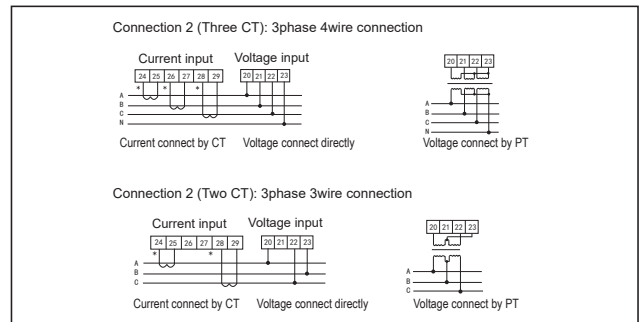


Ordering Information

Model	Alarm	Analog output	Communication	Harmonic	Tariff
DW9E-RC38	2	No	RS485	Yes	Yes
DW9E-IRC38	2	4-20mA	RS485	Yes	Yes

Specification

Connection	3phase 3wire / 3phase 4wire
Voltage rating	AC 3x57.7/3x220V
Voltage overload	Continuous: 1.2 times; Instantaneous: 2 times/10S
Voltage consumption	<1VA (per phase)
Voltage impedance	≥300KΩ
Voltage accuracy	RMS measure, accuracy level 0.5; measure range: phase voltage: 0-400V, line voltage: 0-600V
Current rating	AC 1A / 5A (Please make a note when you order)
Current overload	Continuous: 1.2 times; Instantaneous: 2 times/10S
Current consumption	<0.4VA (per phase)
Current impedance	<20mΩ
Current accuracy	RMS measure, accuracy level 0.5; Measure range: 0-5A
Frequency	Accuracy: 0.1Hz; Measure range: 10-500Hz
Power	Active power, reactive power, power factor, accuracy: 0.5%
Energy	Four-quadrant measurement, active power accuracy: 1 level, reactive power: 2 level



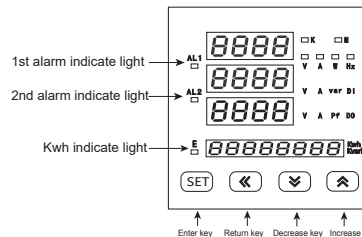
Explanation :

- Voltage input: Input voltage should not be higher than the rated input voltage of meter, otherwise a PT should be used.
- Current input: Standard rated input current is 5A, A CT should be used when the input current is bigger than 5A. If some other meters are connected with the same CT, the connection should be serial for all meters.
- Please make sure that the input voltage is corresponding to the input current, they should have the same phase sequence and direction, otherwise data and sign error may occur (power and energy).
- The connection mode of meter which is connected to power network should depend on the CT quantity. For 2pcs of CT, it should be 3 phase 3 wire connection. For 3pcs of CT, it should be 3 phase 4 wire connection.
- Please pay high attention on the difference between 3 phase 3 wire and 3 phase 4 wire connection, because wrong connection may lead to incorrect calculation of power factor, power and energy.

Caution:

- Power supply connection must be correct.
- Pay attention on the phase sequence of voltage signal input.
- Current signal input should be connected as per the connection drawing.
- Connection mode should accord to the setting of user menu link.
- Energy pulse output is open collector output.
- Isolation between power supply and circuit board, in case of leakage switch mis-action

Panel Indication



Symbol description:

- K: Kilo unit
- M: Million unit
- V: Voltage display
- Hz: Frequency display
- A: Current display
- W: Active power display
- Var: Reactive power display
- Pf: Power factor display

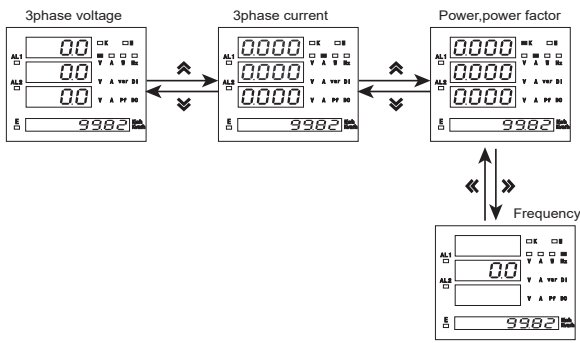
Six items parameters display: Voltage: Ua, Ub, Uc; Current: Ia, Ib, Ic; Power and power factory: W, Var, Pf; Frequency: Hz; KWH: KWh; KVarh: KVarh.

Note: Under the measuring status, press "↔" or "⏏" key can finish display exchange; LED display value should relative to the indicate light and measuring Unit on the right. Press "←" key can finish display exchange of active power and reactive power; "E" means indicate light on and the active power value display; if the light off, means reactive power value display.

NOTE: The indication of 26 letters in LED:

Letter	A	B	C	D	E	F	G	H	I	J	K	L	M
LED display	A	b	C	d	E	F	G	H	I	J	K	L	M
Letter	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
LED display	n	o	p	q	r	s	t	u	v	w	x	y	z

Operation Sequence of Measure:



Menu Operation Illustration

Under user menu status:

1. Press "↔" or "↔" key to exchange 3phase voltage, 3phase current, 3phase active and reactive power and signal frequency.
2. Press enter key "SET" to exchange the voltage value between phase voltage and wire voltage. Press "⏪" key to exchange KWh and KVarh. "E" indicate light ON means KWh, "E" indicate light OFF means KVarh.
3. Press enter key "SET" more than 5 seconds to enter user menu (Please refer following menu structure)

Under setting menu status:

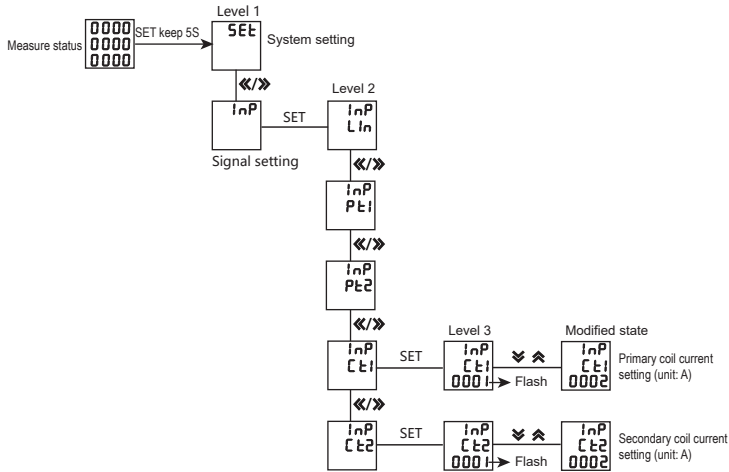
1. If current menu is 1st or 2nd level, Press enter key "SET" to enter next level. Press "↔", "↔" to change menu or sub-menu.
2. If current menu is 2nd or 3rd level, press "⏪" key to return last level.
3. If current menu is 3rd level, press "↔", "↔", the value start flash, and press "↔", "↔" to change, press "⏪" to flash and shift. Press enter key "SET" to save the setting.
4. After setting, press enter key "SET" more than 5s to enter measure status, or press "⏪" to back to menu.

Menu Structure

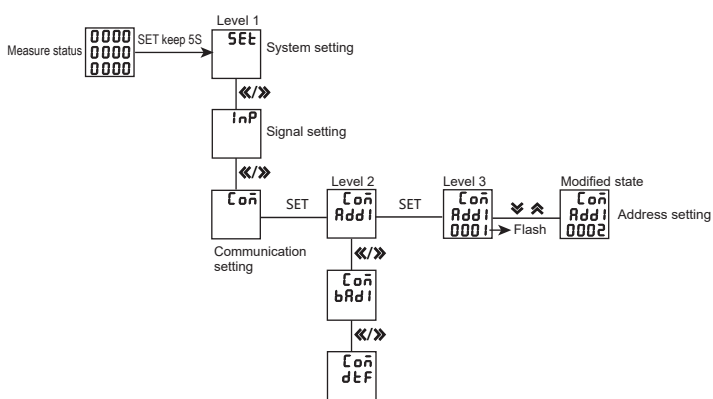
Level 1	Level 2	Level 3	Description
System setting SET	Clear energy	CLrE 0000	Input "1111" to reset energy; Input "1234" to reset factory default
	Password	USEr 0000	Alter password, factory default "0000", no pass word
	Page time	PgCh 0000	Page turning time of measure display, unit: second. There is no page tuning if the value is 0.
	Software code	SEr 1.1	Software code
Signal setting inP	Network	Lin 3-3 / 3-4	Select the input network of measure signal, 3phase 3wire or 3phase 4wire
	Voltage ratio	Pt1 0.1-999.9	Primary coil voltage, unit: KV
	Voltage ratio	Pt2 10.0-999.9	Secondary coil voltage, unit: V
	Current ratio	Ct1 1-999.9	Primary coil current, unit: A
Communication setting Con	Address	Add 1 1-247	Address range
	Baud rate	brd 1 1k2/2k4/4k8/9k6	Baud rate 1k2 means 1200, 2k4 means 2400, 4k8 means 4800, 9k6 means 9600
	Data sequence	dteF 1 H-L / L-H	Data sequence: high register ahead or low register ahead
	Parity bit	PAR 1 no/E/Er/odd	No parity / even parity / odd parity
Alarm setting AL	Alarm mode	Rd 1 1-66	It is remote control mode with DO value, otherwise it is alarm mode. Please refer the specification table of alarm output.
	Alarm value unit	Ue 1 1/E/n	1: International standard unit, K: 1000 times of international standard unit, M: 1000000 times of international standard unit.
	Alarm value	AL 1 0-999.9	1st alarm value setting (The unit is standard display unit)
	Alarm hysteresis	HY 1 0-999.9	1st alarm hysteresis value setting (the unit is standard display unit)
	Selection of alarm relay	oUt 1 rL1/rL2	1st alarm relay output for selection
	delay time	dLR 1 0-99.9	delay time, unit: second
	Alarm ending time	dLb 1 0-99.9	Reset time, unit: second
	For 2nd alarm parameters setting, please refer 1st alarm setting mode.		

Menu Operation

Example 1. Method of current ratio setting



Example 2. Method of communication address



Output Function

1. Energy pulse

- (1) Electrical characteristic: the output of optical couple relay with open collector, $V_s \leq 48V$, $I_z \leq 50mA$.
- (2) Pulse constant: 9000imp/kwh. It means the impulse output No. is 9000 when the energy meter counts up to 1KWH. The point should be emphasized is that the above 1kwh is for the 2nd coil energy. Supposed that PT and CT is connected, the primary coil energy that 9000 pulse refer to is equal to 1kwhX voltage transform PT X current transform CT.
2. Remote measure and remote control function: 4 loops DI are used to remote measure electric ON/OFF status. DO1 & DO2 function can be used to remote control electric devices. When using DO function, alarm mode should be set as 0, DO1 DO2 function control value is written via RS485 interface
4. Transform output (please refer to table 1)
5. Alarm function (please refer to table 1)

Reference table 1: Reference table for alarm output and analog output

No.	Parameter	DO code (low alarm)	DO code (high alarm)	Analog code (4-20mA)
1	Ua(A phase voltage)	1 (UaL)	2 (UaH)	1 (Ua)
2	Ub(B phase voltage)	3 (UbL)	4 (UbH)	2 (Ub)
3	Uc(C phase voltage)	5 (UcL)	6 (UcH)	3 (Uc)
4	U(Phase voltage of A/B/C)	7 (UL)	8 (UH)	4 (U)
5	Uab(AB line voltage)	9 (UabL)	10 (UabH)	5 (Uab)
6	Ubc(BC line voltage)	11 (UbcL)	12 (UbcH)	6 (Ubc)
7	Uca(CA line voltage)	13 (UcaL)	14 (UcaH)	7 (Uca)
8	UL(Line voltage of AB/BC/CA)	15 (ULL)	16 (ULH)	8 (UL)
9	Ia(A line current)	17 (IaL)	18 (IaH)	9 (Ia)
10	Ib(B line current)	19 (IbL)	20 (IbH)	10 (Ib)
11	Ic(C line current)	21 (IcL)	22 (IcH)	11 (Ic)
12	I(phase current of A/B/C)	23 (IL)	24 (IH)	12 (I)
13	Pa(A phase active power)	25 (PaL)	26 (PaH)	13 (Pa)
14	Pb(B phase active power)	27 (PbL)	28 (PbH)	14 (Pb)
15	Pc(C phase active power)	29 (PcL)	30 (PcH)	15 (Pc)
16	P(Total active power)	31 (PL)	32 (PH)	16 (P)
17	Qa(A phase reactive power)	33 (QaL)	34 (QaH)	17 (Qa)
18	Qb(B phase reactive power)	35 (QbL)	36 (QbH)	18 (Qb)
19	Qc(C phase reactive power)	37 (QcL)	38 (QcH)	19 (Qc)
20	Q(Total reactive power)	39 (QL)	40 (QH)	20 (Q)
21	Sa(A phase apparent power)	41 (SaL)	42 (SaH)	21 (Sa)
22	Sb(B phase apparent power)	43 (SbL)	44 (SbH)	22 (Sb)
23	Sc(C phase apparent power)	45 (ScL)	46 (ScH)	23 (Sc)
24	S(Total apparent power)	47 (SL)	48 (SH)	24 (S)
25	PfA(A phase power factor)	49 (PFaL)	50 (PFaH)	25 (PFa)
26	PfB(B phase power factor)	51 (PFbL)	52 (PFbH)	26 (PFb)
27	PfC(C phase power factor)	53 (PFcL)	54 (PFcH)	27 (PFc)
28	Pf(Total power factor)	55 (PFLL)	56 (PFLH)	28 (PFL)
29	F(Frequency)	57 (FL)	58 (FH)	29 (F)