3 Phase Power Meter User Manual

This series meters are widely applied to control system, SCADA system and energy management system, transformer substation automation, distributing net automation, community electrical power monitor, industrial automation, intelligent construction, intelligent switchboard, switch cabinet, etc. It is easy to install and maintain, simple connection, programmable setting input parameters.

Features:
⊙Measuring parameters: voltage/current/active power/reactive power/frequency/ power factor, etc.
⊙2 loop DI and 2 loop DO,with remote signaling and remote ocntrol function.
⊙Isolated input and output.
⊙True RMS measurement.
⊙With RS485 communication port,and ModBus RTD protocol.
⊙With 2 programmable alarm output
⊙Display programmable setting input parameters.

⚠ Warming:
1.The energy measuring function of this product can only be used as a reference for energy consumption，and it cannot be used for trade settlement.

KKDS7E-B01E-A1-20250604

I. Model Illustration

DS 7 E □ - □ □

- Input signal: 38: 3phase with RS485 30: 3 phase withtout RS485
- Alarm: RC: Two alarms A: No alarm
- Measure: V : 3 phase voltage A : 3 phase current
  P : 3 phase voltage, current and power
- Display: E: LED
- Dimension:7 : 72H×72W×72.5L（mm）
- DW series 3phase power meter

II. Ordering Information

Model	Measured signal	Communication	Alarm output
DS7E-V-RC38	3 phase voltage	RS485	2
DS7E-A-RC38	3 phase current	RS485	2
DS7E-P-RC38	3 phase voltage, current, power	RS485	2

III. Specification

Connection	3phase 3wire / 3phase 4wire
Voltage rating	AC 10-480V(L-L)
Voltage overload	Continuous:1.2 times; Instantaneous: 2 times/2S
Voltage consumption	<0.5VA　(per phase)
Voltage impedance	≥300KΩ
Voltage accuracy	RMS measurement, accuracy 0.5 class
Current rating	AC 0.025~5A
Current overload	Continuous:1.2 times; Instantaneous: 10 times/2S
Current consumption	<0.5VA　(per phase)
Current impedance	<20mΩ
Current accuracy	RMS measurement, accuracy 0.5 class
Frequency	45 ~ 60Hz, accuracy 0.01Hz
Power	Active/reactive/apparent power, accuracy: 0.5 class
Display	Red LED
Power supply	AC/DC 100~240V （85～265V）
Power consumption	≤5VA
Output digit port	RS-485，MODBUS-RTU protocol
Alarm output	2 DO，AC 250V/3A or DC 30V/5A
Working Environment	Temperature: -10 ～50℃　　Humidity: ＜85% RH; Non corrosive gas；altitude≤2500m
Storage environment	-40~70℃

1

Resistance	Power supply and 485 port，DI port ≥ DC 2000V
Insulation	Input/output/power supply to meter cover > 5MΩ
Dimension	72 W×72H×72.5L（mm
Weight	0.5kg

IV. Dimension and installation (unit: mm)

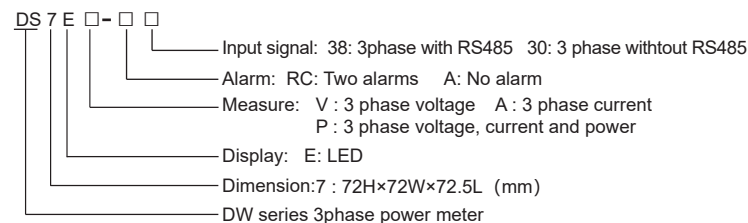Panel size   Side size   Hole size
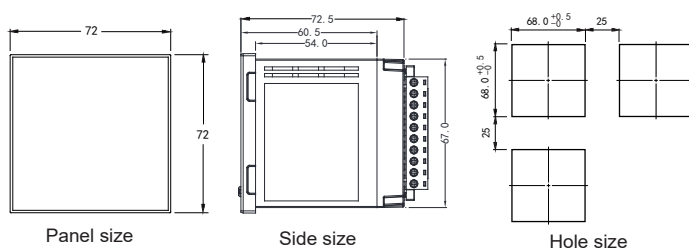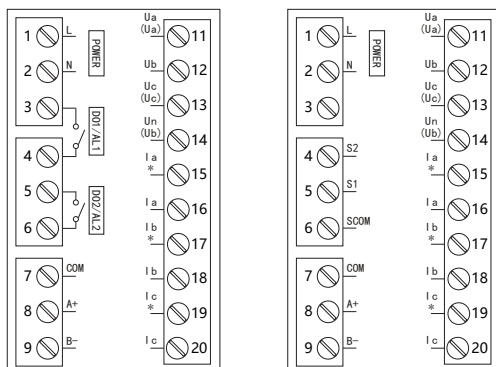
V. Connection

Please subject to connection diagram showed on the meter.

Note: Voltage input connection terminal, labels in bracket show 3 phase 3 wire connection method. If there is any change,please subject to the connection on the meter.
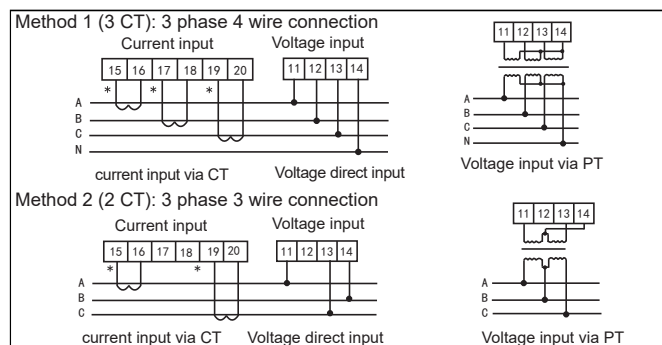

Illustration:
A. Voltage input: Input voltage should not be higher than the rated input voltage of meter, otherwise a PT should be used.
B. Current input: Standard rated input current is 5A. A CT should be used when the input current is bigger than 5A. If some other meters are connected with the same CT, the connection should be serial for all meters.
C.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).
D.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 3 pcs of CT, it should be 3 phase 4 wire connection. Meter wire connection, the input network Link setting in the software menu should accord to the connection mode of the measured load. Otherwise, the measured voltage or power is incorrect.
Caution：
1.Power supply connection must be correct.
2.Pay attention on the phase sequence of voltage signal input.
3.Current signal input should be connected as per the connection drawing.
4.Connection mode should accord to the setting of user menu "LIN".
5.Isolation between power supply and circuid board, in cause of leakage switch mis-action

VI. Panel Indication
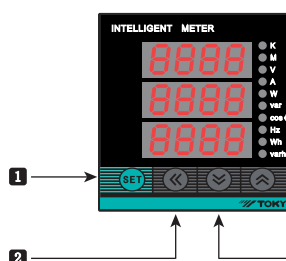
Symbol	Illustration
K	Kilo unit indicating light
M	Million unit indicating light
V	Voltage display
Hz	Frequency display
A	Current display
W	Power factor display
Var	Reactive power display
cosø	Power factor display
Wh	kwh display
varh	Kvarh display

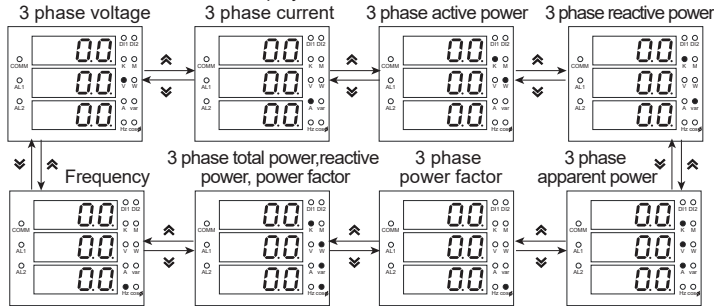| No.	Symbol	Name	Function
1	SET	Enter key	Press this key more than 3s to enter the menu;confirm the set value
2	«	Left key	In menu operation, it can be used as return key; while modification, it can be used as shift key.
3	⌄	Decrease key	In menu operation, it is used to enter data setting; decrease value
4	⌃	Increase key	In menu operation, it is used to enter data setting; increase value

Measurement display interface illustration:
1. Under 3 phase 4 wire measuring status, press "⌃/⌄" key to shift display 3 phase voltage, 3 phase current, 3 phase active power, 3 phase reactive power, 3 phase apparent power, 3 phase power factor, total power, frequency, etc.
2. Under alarm mode, DO1, DO2 are used as alarm output status indicator. Under switching remote control mode , DO1 and DO2 are used as switching output status indicator.
3. COM flash means communicating.
Note: The indication of 26 letters in LED

Letter	A	B	C	D	E	F	G	H	I	J	K	L	M
LED display	R	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	u	u	u	y	z

Measurement interface shift display illustration:

3 phase voltage   3 phase current   3 phase active power   3 phase reactive power

3 phase total power,reactive power, power factor   3 phase power factor   3 phase apparent power   Frequency

(Note: Under 3 phase 4 wire measuring status, it only display 3 phase voltage, 3 phase current, total active power, reactive power, total power factor, frequency.)

VII. Menu Modification Illustration

Under measuring status
1. Under 3 phase 4 wire, press "⌄" or "⌃" key to respectively display 3 phase voltage, 3 phase current, 3 phase active power, 3 phase reactive power, 3 phase power factor, 3 phase total power, reactive power factor, frequency.
2. Under 3 phase 4 wire, press "SET" key to make the voltage display value switch between phase voltage and line voltage. Under 3 phase 3 wire, it only display line voltage.
3. Press "SET" key more than 5 second to enter user menu, operation precedure refers to menu structure.
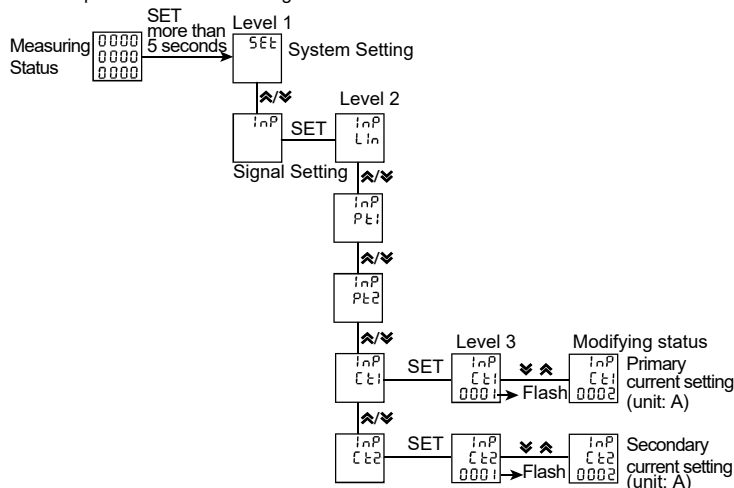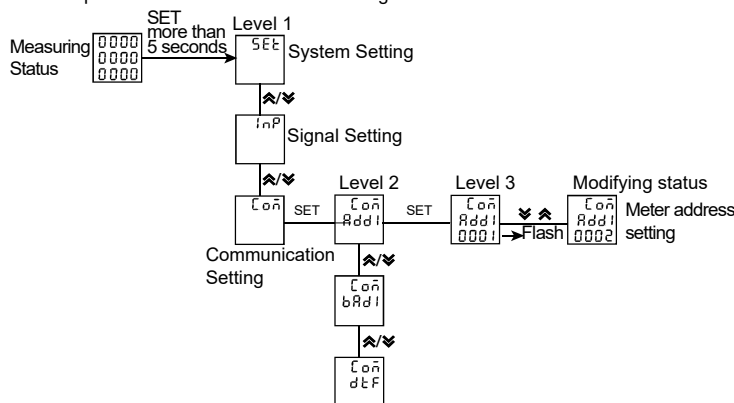
Under Customer Menu Status
1. If the current display is Level 1 or Level 2, press SET key, enter into next level display, press"⌄", "⌃" key to change menu or sub-menu.
2. If the current display is Level 2 or Level 3, press "«" key, return to previous display.
3. If it is Level 3 display, press "⌄", "⌃" key flash the number, press "⌄", "⌃" key to modify, press "«" key to shift, press "SET" key to save set value.
4.After modification, press SET key more than 5 seconds to exit user menu and enter into measuring status, or press " «"key to exit level by level.
Menu Structure and Function Description(Note: the decimal point of the paramenter in the menu is fixed)

Level 1	Level 2	Level 3	Description
System setting SEt	Clear energy CLrE	0000	Input "1111" to clear 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 UEr	1.1	Software code
Signal setting InP	Network Lin	3-3 / 3-4	Select the input network of measure signal, 3 phase 3 wire or 3 phase 4 wire
	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	1-9999	Primary coil current, unit: A
	Current ratio Ct2	1.0-999.9	Secondary coul current, unit: A
Communication setting Con	Address Add	1-247	Address range
	Baud rate brd	1k2/2k4/ 4k8/9k6	Baud rate 1k2 means 1200, 2k4 means 2400, 4k8 means 4800, 9k6 means 9600
	Data sequence dtF	H-L / L-H	Data sequence: high register ahead or low register ahead
	Parity bit PrtY	no/EUEn/odd	No parity / even parity / odd parity
Alarm setting AL	Alarm mode Ad1	0-58	When value is DO, it is remote control mode, otherwise it is alarm mode, please refer to"alarm output electric parameters"
	Alarm value unit Ut1	1/K/m	1:International standard unit,K:1000 times of international standard unit, M:1000000 times of international standard unit.
	Alarm value AL1	0-999.9	1st alarmvalue setting (The unit is standard display unit)
	Alarm hysteresis HY1	0-999.9	1st alarm hysteresis value setting (the unit is standard display unit)
	Selection of alarm relay oUt1	rLY1/rLY2	1st alarm relay output for selection
	delay time dLA1	0-99.9	delay time, unit: second
	Alarm ending time dLb1	0-99.9	Reset time, unit: second
	For 2nd alarm parameters setting, please refer 1st alarm setting mode.		

Note: menu modification example
Example 1. current ratio setting method

Measuring Status → SET more than 5 seconds → Level 1 SEt System Setting → Level 2 InP Signal Setting → InP Lin → InP Pt1 → InP Pt2 → InP Ct1 → SET → InP Ct1 0001 → Flash → InP Ct1 0002 Primary current setting (unit: A)
InP Ct2 → SET → InP Ct2 0001 → Flash → InP Ct2 0002 Secondary current setting (unit: A)

Example 2. communication address setting method

Measuring Status → SET more than 5 seconds → Level 1 SEt System Setting → InP Signal Setting → Con Add Communication Setting → SET → Con Add → SET → Con Add 0001 → Flash → Con Add 0002 Meter address setting → Con bAd1 → Con dtF

VIII. Output function
1. DO1 & DO2 can be used to remote control electrical equipment. To use this function, the alarm mode should be set as "0"(DO), otherwise DO1, DO2 are used as alarm AL1, AL2 output; DO1, DO2 function control value can be wrote by RS485 port.
2. Communication function(communication protocol is offered separately)
3. Alarm function, after power on and steady run for more than 5 sec, alarm start to work. (refer to table below)

Alarm output electric parameters

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