DTSU666 series

three phase four wire electronic energy meter

User Manual

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校 对	{{@proofreadPath}}	{{proofreadDate}}
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审 核	{{@examinePath}}	{{examineDate}}
批 准	{{@approvalPath}}	{{approvalDate}}
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Please read the user manual carefully before use and installation

Zhejiang Chint IoT Technology Co.,Ltd

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修改记录

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User manual

1 Brief Introduction

1.1 Main application & applicable range

DTSU666 three-phase four wire electronic energy meter (Din-rail) (hereinafter referred to as the “instrument”) is designed based on power monitoring and energy metering demands for electric power system, communication industry, construction industry, etc. mainly applied into the measurement and display for the electric parameters in the electric circuit including three voltage, three current, active power, reactive power, frequency, positive& negative energy, Adopting the standard DIN35mm din rail mounting and modular design, it is characterized with small volume, easy installation and easy networking, widely applied into the internal energy monitoring and assessment for industrial and mining enterprises, hotels, schools, large public buildings.

1.2 Complied standards

IEC 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use-Part 1: General requirements

IEC 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements

IEC 62053-21 Electricity metering equipment (a.c.)-Particular requirements -Part 21: Static meters for active energy(classes 1 and 2)

1.3 Product Features

1) Characterized with positive and reverse active power,four quadrant reactive power metering and storage function.
2) Equipped with 2 independent RS485 communication ports, with a maximum baud rate of 115200bps.
3) Current and power refresh rate 50ms.
4) With voltage and current connection adaptive function.
5) Supports quick plug between current transformer and electric meter.
6) Frequency refresh resolution of 0.001Hz.
7) Support three-phase single-channel current loop or three-phase dual-channel current loop

measurement.

8) Meet safety requirements: CAT III, altitude 4000m.
9) Mounted on standard DIN 35mm rail.

1.4 Product model

Table 1 product model and specification

Model	Reference voltage （V）	Current specification (A)	imp/kWh	Accuracy class
DTSU666	3×57.7/100V…3×240/415V	Single Channel 100A/40mA	400	Active class 1.
		Dual channel 100A/40mA		
		Single Channel 250A/50mA	400	
		Dual channel 250A/50mA		
		*A/*mA	/	
		Single Channel 100A/333mV	400	
		Dual channel 100A/333mV		
		Single Channel 250A/333mV	400	
		Dual channel 250A/333mV		
		*A/*mV	/	

Note1：please refer to the actual product received.

Note2：The interface of the current transformer must be matched with the electric meter.

1.5 Model composition and meanings

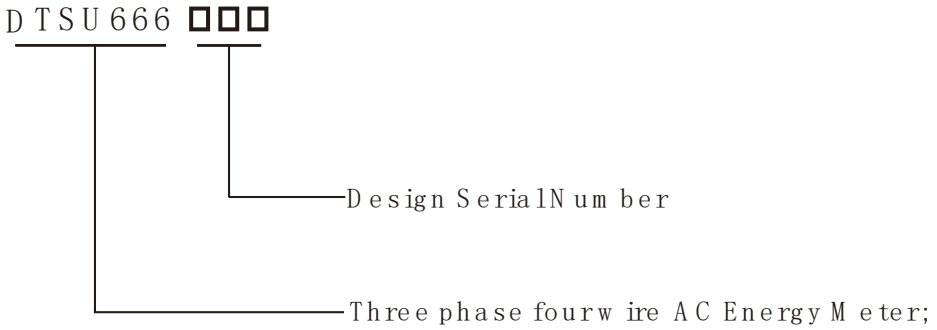


Figure1 Model composition and meanings

1.6 Applicable environmental condition

1) Standard operating temperature: -25℃～+55℃;
2) Working temperature limit: -40℃～+70℃;
3) Relative humidity(every year on average):≤75％(without condensation);
4) Atmosphere:4000m,except for special order requirements.
5) Class of protection: IP2X(Indoor);
6) Pollution degree: 2.

2 Working Principle

The instrument are composed of high accurately integrated circuit specially for measurement (ASIC) and managing MCU, memory chip, RS485 communication module, etc. The working principle block diagram of the instrument is shown in figure 2

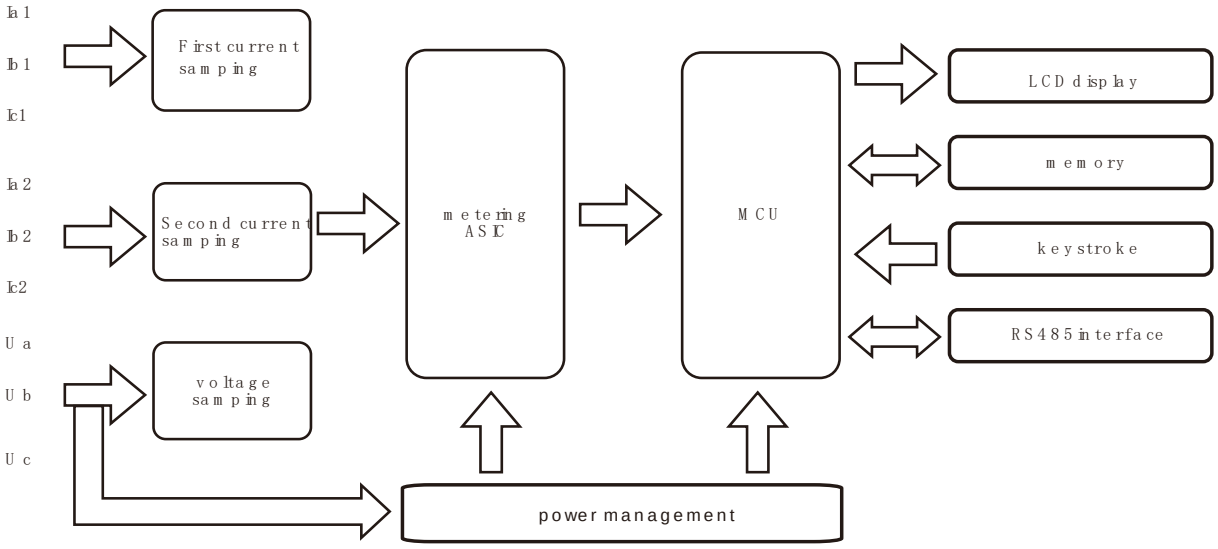


Figure2 Working principle block diagram

3 Main Technical Performance & Parameters

3.1 limit of error caused by the current augment

Table 2 Main Technical Performance and Parameters

Basic Parameters			Specifications
Input Signal	Voltage	Connection	Three phase four wire Three phase three wire
		Nominal	3×57.7/100V…3×240/415V，
		Working voltage range	$0.8U_n$～$1.15U_n$
		Voltage line power consumption	≤6VA/1.5W(Each phase)
		impedance	＞500kΩ(Each phase)
	Current	Nominal	External current transformer：100A/40mA 250A/50mA *A/*mA; External voltage transformer：100A/333mV 250A/333mV *A/*mV
		Current line power consumption	≤2VA(Each phase)
		Impedance	＜20mΩ(Each phase)
	Frequency	Input Range	(45～65±0.001)Hz
Parameter	Display		Segmented LCD
	Active Electrical Energy		class 1

3.2 The error limit caused by the change in current

Table 3 The limit value of the active percentage error of meters on balanced load

Value of current		Percentage error limits for meters of class /%
Current I	Power factor	B
Itr≤I≤Imax	1	±1.0
	0.5L~1~0.8C	±1.0
Imin≤I＜Itr	1	±1.5
	0.5L~1~0.8C	±1.5

4 Main function

4.1 LED and LCD overview

Figure3 Liquid crystal display

" 1 "and " 2 " indicates the first loop and the second loop energy pulse respectively."Fn" is function indication, always on during phase sequence adjust process.

Table 4 LCD Symbol

No.	Symbol	Description
1	III	The first measuring loop: I The second measuring loop: II
2	Imp.	Import direction
3	Exp.	Export direction
4	8	RS485-1 or RS485-2
5		Flash during communication
6	kMm℃ VVAh varh	Unit (according to the display items)

NOTE1：The measurement channel symbol III and 485 communication channel identification 8 are not displayed in single channel metering.

4.2 Display

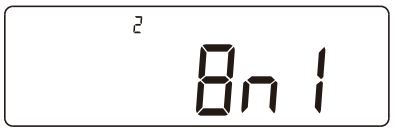
LCD displays electrical parameters and power data. The display digit of power measurement value is 7, and the display range is 0.00kWh ~ 9999999MWh. You can press "←" and "→" to flip the screen to switch the display items, including: Two-channel power data, instantaneous data (phase voltage, line voltage, current, active power, reactive power, power factor, frequency, etc.) and communication parameters are displayed in the following table.

Table 5 Display interface

No.	Display interface	Instruction	No.	Display interface	Instruction
1		Positive active energy of the first channel =10000.00kWh	15		A phase active power of the first channel =1.100kW

No.	Display interface	Instruction	No.	Display interface	Instruction
2		Positive active energy of the second channel =10000.00kWh	16		B phase active power of the first channel=1.100 kW
3		Reverse active energy of the first channel =2345.67kWh	17		C phase active power of the first channel =1.100kW
4		Reverse active energy of the second channel =2345.67kWh	18		Total power factor of three-phase of the first channel PFt=0.500
5		A Phase voltage =220.0V(This page is not available for three-phase three wire meters)	19		A phase Power factor of the first channel PFa=1.000(When using the three-phase three wire wiring method, "----" is displayed, The direction is consistent with the active power)
6		B Phase voltage =220.1V（This page is not available for three-phase three wire	20		B phase Power factor of the first channel PFa=1.000(When using the three-phase

No.	Display interface	Instruction	No.	Display interface	Instruction
		meters）			three wire wiring method, "----" is displayed, The direction is consistent with the active power)
7		C Phase voltage =220.2V（This page is not available for three-phase three wire meters）	21		C phase Power factor of the first channel PFa=-1.000(When using the three-phase three wire wiring method, "----" is displayed, The direction is consistent with the active power)
8		line voltage Uab = 220.0V	22		frequency of the first channel =50.001Hz
9		line voltage Ubc = 220.0V	23		The first channel communication serial port is Modbus, and the communication address is 1

No.	Display interface	Instruction	No.	Display interface	Instruction
10		line voltage Uca = 220.0V	24		The second channel communication serial port is Modbus, and the communication address is 2
11		A phase current of the first channel =5.000A	25		The baud rate of the first communication serial port is 9600bps
12		B phase current of the first channel =5.001A	26		The baud rate of the second communication serial port is 9600bps
13		C phase current of the first channel =5.002A	27		The first communication serial port has 8 data bits, no checksum, and 1 stop bit
14		Total active power of three-phase of the first channel =3.291kW	28		The second communication serial port has 8 data bits, no checksum, and 1 stop bit

NOTE1：The communication address of Modbus protocol is 01 (1 ~ 247), E1 means even check 1 stop bit, O1 means odd check 1 stop bit Two stop bits, N2 means two stop bits without check,N2 means 1 stop bits without check.

NOTE2：The above interface is used to show the meaning of the display content. Due to the different functions of the instrument, the display symbols will increase or decrease.

NOTE3：When RS485 communicating, the “ ” sign will flashes.

NOTE4：The 0 or 1 on the positive and negative active power page is used to distinguish the calculation method of the current active power total.

NOTE5：“ ” or “ ” on the page related to communication parameters is used to distinguish the two communication serial ports.

NOTE6：The first and second metering channels are distinguished by "I" or "II" in the upper left corner of the display interface.

NOTE7：If the value is “----”, the current display overflows or has no meaning.

NOTE8：If no second serial port is available, parameters related to the second serial port are not displayed.

4.3 Programming function

4.3.1 Default value of the programming parameter

Table 6 Default value of the programming parameter

Parameter	Default value	Instruction
Adr1	1	The Modbus protocol address of the first communication serial port is 1
Adr2	2	The Modbus communication address of the second serial port is 2
PAr1 PAr2	n.1	The parameters of the first and second communication serial ports are none check bit and one stop bit
PtL1 PtL2	n-rtU	The first and second serial port protocols are modbus-RTU
bPS1 bPS2	9.600	The baud rate of the first and second communication serial ports is 9600bps
nEt	n.34	Three-phase four-wire access
CLr.E	0	The power is not cleared
dISP	10	Change the display page every 10 seconds
b.LCd	1	Backlight the button for 1 minute
E.SEt	0	The positive (negative) active total energy calculation method is divided phase sum

NOTE1：If there is no second communication serial port, the default value of the second communication parameter is meaningless.

NOTE2：The default value is based on actual conditions.

4.3.2 Programming parameter

Table 7 Programming parameter

Parameter	Value range	Instruction
Addr1 Addr2	1～247	Communication serial port Indicates the Modbus protocol communication address. Adr1 is the first line and Adr2 is the second line
PArl1 PArl2	n.1、n.2、 E.1、o.1	Communication serial port check bit and stop bit, PAr1 is the first line, PAr2 is the second line n.1: None parity, 1 stop bi; n.2: None parity, 2 stop bits; E.1: Even parity, 1 stop bit; o.1: Odd parity, 1 stop bit;
Prot1 Prot2	M-rtU、645	Communication serial port protocol, PtL1 is the first line, PtL2 is the second line M-rtU: the modbus-RTU protocol 645: the 645 protocol
bAud1 bAud2	1.200、 2.400、 4.800、 9.600、 19.20、 38.40、 115.2	The baud rate of the communication serial port, bPS1 is the first line, bPS2 is the second line 1.200: 1200bps 2.400: 2400bps 4.800: 4800bps 9.600: 9600bps 19.20: 19200bps 38.40: 38400bps 115.2: 115200bps
nEt	n.34； n.33；	Option for wiring mode: n.34: represents three phase four wire n.33: represents three phase three wire
CLr.E	0:n0； 1:E	The setting is 1, representing the allowed instrument energy data clearance, which will be zero reset after clearing.
dISP	0～30	Display in turns(second) 0: Display does not turn pages； 1～30: Time interval of actual display.

b.LCd	0～30	Backlight lighting time control（minutes） 0: Keep the light on; 1～30: backlight lighting time without button operation
E.SEt	0~1	Positive (negative) total active energy calculation method 0: Positive (negative) active work is always a partial sum; 1: Positive (negative) active work is always an algebraic sum;

Note1: The setting range of Adr1 and Adr2 can be customized;

Note2: When entering the menu with the 701 password, only Adr1, Adr2, bPS1, bPS2, and nEt are displayed; When entering the menu with the 901 password, all the submenus mentioned above will be displayed.

4.3.3 Programming operation

Button description: The "SET" key means "OK", or "cursor shift" (when entering a number), The "ESC" key indicates exit, the "→" key indicates add, and the "←" key indicates subtract. Enter password (default: 701).

When modifying a number, "SET" can be used as the cursor moving key. "→" is the "Add" button; ESC indicates that you exit the setting screen or switch from the number modification screen to the character screen, set the number to the maximum value, then add the number from zero.

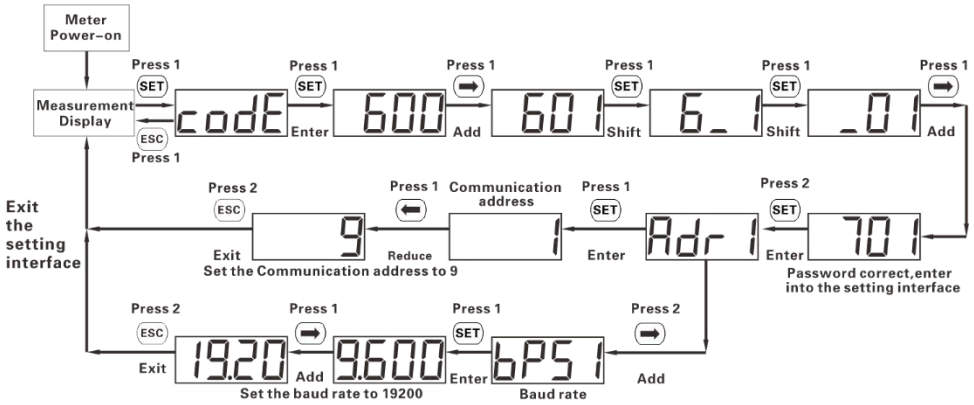


Figure4 Example of communication parameters

4.4 Communication function

With two RS485 communication interfaces, the baud rate can be changed between 1200bps, 2400bps, 4800bps, 9600bps, 19200bps, 38400bps, 115200bps.

The default communication protocol of the two RS485 ports is ModBus-RTU, the baud rate is 9600bps, the check bit, data bit and stop bit are N.8.1, the first communication address: 01, the second communication address: 02(Customized products are subject to the actual product).

The following table is a common ModBus protocol address table:

Table 8 ModBus protocol address table

Parameter address	Parameter code	Instructions of parameters	Data type	Data length (Word)	Read Write
Keyboard parameters (specific parameters see the instructions of programming parameters, the actual value with (*) parameter＝ communication parameter value × 0.1）					
0000H	rEU	Software Version	Signed	1	R
0001H	UCode	Programming code codE(1～9999)	Signed	1	R/W
0003H	nEt	Network selection (0:three phase four wire,1:three phase three wire)	Signed	1	R/W
0005H	E.SEt	Positive (negative) total active energy calculation method（0～1）	Signed	1	R/W
0006H	CT	Current transformer rate IrAt(1～9999)	Signed	1	R/W
0007H	Pt	Voltage transformer rate UrAt（*） (1～9999 represents voltage ratio 0.1～999.9)	Signed	1	R/W
000AH	dISP	Rotating display time（s）	Signed	1	R/W
000BH	b.LCd	Backlight time control（m）	Signed	1	R/W
002BH	DeviceID	Device identification code（0～9999）	Signed	1	R/W
002CH	PtL1	First communication serial port protocol (0:Modbus;1:DL/T645-2007)	Signed	1	R/W
002DH	bPS1	Baud rate of the first communication serial port (0:1200;1:2400;2:4800;3:9600;4;19200;5:38400;6:115200)	Signed	1	R/W
002EH	Adr1	First communication serial port ModBus protocol communication address (1～247)	Signed	1	R/W
0035H	SN_L	Last four digits of the SN code	Signed	1	R
0036H	SN_M	Middle four digits of the SN code	Signed	1	R
0037H	SN_F	First four digits of the SN code	Signed	1	R
0040H	PAr1	First communication serial port check bit and stop bit 0:n.1;1:n.2;2:E.1;3:O.1	Signed	1	R/W
0041H	PtL2	Second communication serial port protocol (0:Modbus;1:DL/T645-2007)	Signed	1	R/W
0042H	PAr2	Second communication serial port check bit and stop bit 0:n.1;1:n.2;2:E.1;3:O.1	Signed	1	R/W

0043H	bPS2	Baud rate of the Second communication serial port (0:1200;1:2400;2:4800;3:9600;4;19200;5:38400;6:115200)	Signed	1	R/W
0044H	Adr2	Second communication serial port ModBus protocol communication address (1～247)	Signed	1	R/W
Two-channel electrical parameter secondary data (RECOMMENDED)					
3000H	Uab1	First channel line voltage data, Unit V	float	2	R
3002H	Ubc1		float	2	R
3004H	Uca1		float	2	R
3006H	Uab2	Second channel line voltage data, Unit V	float	2	R
3008H	Ubc2		float	2	R
300AH	Uca2		float	2	R
300CH	Ua1	First channel Three phase voltage data, Unit V (Invalid for three phase three wire)	float	2	R
300EH	Ub1		float	2	R
3010H	Uc1		float	2	R
3012H	Ua2	Second channel Three phase voltage data, Unit V (Invalid for three phase three wire)	float	2	R
3014H	Ub2		float	2	R
3016H	Uc2		float	2	R
3018H	Ia1	First channel Three phase current data, Unit A	float	2	R
301AH	Ib1		float	2	R
301CH	Ic1		float	2	R
301EH	Ia2	Second channel Three phase current data, Unit A	float	2	R
3020H	Ib2		float	2	R
3022H	Ic2		float	2	R
3024H	Pt1	First channel Combined active power, Unit W	float	2	R
3026H	Pa1	First channel A phase active power, Unit W	float	2	R
3028H	Pb1	First channel B phase active power, Unit W (Invalid for three phase three wire)	float	2	R
302AH	Pc1	First channel C phase active power, Unit W	float	2	R
302CH	Pt2	Second channel Combined active power, Unit W	float	2	R
302EH	Pa2	Second channel A phase active power, Unit W	float	2	R
3030H	Pb2	Second channel B phase active power, Unit W (Invalid for three phase three wire)	float	2	R
3032H	Pc2	Second channel C phase active power, Unit W	float	2	R
3034H	Qt1	First channel Combined reactive power, Unit var	float	2	R

3036H	Qa1	First channel A phase reactive power, Unit var	float	2	R
3038H	Qb1	First channel B phase reactive power, Unit var (Invalid for three phase three wire)	float	2	R
303AH	Qc1	First channel C phase reactive power, Unit var	float	2	R
303CH	Qt2	Second channel Combined reactive power, Unit var	float	2	R
303EH	Qa2	Second channel A phase reactive power, Unit var	float	2	R
3040H	Qb2	Second channel B phase reactive power, Unit var (Invalid for three phase three wire)	float	2	R
3042H	Qc2	Second channel C phase reactive power, Unit var	float	2	R
3044H	St1	First channel Combined power factor(The direction is consistent with the active power)	float	2	R
3046H	Sa1	First channel A phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
3048H	Sb1	First channel B phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
304AH	Sc1	First channel C phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
304CH	St2	Second channel Combined power factor(The direction is consistent with the active power)	float	2	R
304EH	Sa2	Second channel A phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
3050H	Sb2	Second channel B phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
3052H	Sc2	Second channel C phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
3054H	Pf1	First channel Three phase line voltage data, Unit V	float	2	R
3056H	Pfa1	First channel A phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
3058H	Pfb1	First channel B phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
305AH	Pfc1	First channel C phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R

305CH	Pf2	Second channel Three phase line voltage data, Unit V	float	2	R
305EH	Pfa2	Second channel A phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
3060H	Pfb2	Second channel B phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
3062H	Pfc2	Second channel C phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire)	float	2	R
3064H	AngleA1	First channel A phase Angle	float	2	R
3066H	AngleB1	First channel B phase Angle	float	2	R
3068H	AngleC1	First channel C phase Angle	float	2	R
306AH	AngleA2	Second channel A phase Angle	float	2	R
306CH	AngleB2	Second channel B phase Angle	float	2	R
306EH	AngleC2	Second channel C phase Angle	float	2	R
3070H	Ft1	First channel Frequency, Unit Hz	float	2	R
3072H	Ft2	Second channel Frequency, Unit Hz	float	2	R
Energy data on the secondary side of the first channel (RECOMMENDED)					
101EH	ImpEp	（current）Total Forward active energy(kWh)	float	2	R
1020H	ImpEpA	（current）A Forward active energy(kWh)	float	2	R
1022H	ImpEpB	（current）B Forward active energy(kWh)	float	2	R
1024H	ImpEpC	（current）C Forward active energy(kWh)	float	2	R
1026H	NetImpEp	（current）Net Forward active energy(kWh)	float	2	R
1028H	ExpEp	（current）Total Reverse active energy(kWh)	float	2	R
102AH	ExpEpA	（current）A Reverse active energy(kWh)	float	2	R
102CH	ExpEpB	（current）B Reverse active energy(kWh)	float	2	R
102EH	ExpEpC	（current）C Reverse active energy(kWh)	float	2	R
1030H	NetExpEp	（current）Net Reverse active energy(kWh)	float	2	R
1032H	Q1Eq	（current）Total reactive energy in the first quadrant (kVarh)	float	2	R
103CH	Q2Eq	（current）Total reactive energy in the second quadrant (kVarh)	float	2	R
1046H	Q3Eq	（current）Total reactive energy in the third quadrant (kVarh)	float	2	R

1050H	Q4Eq	（current）Total reactive energy in the fourth quadrant (kVarh)	float	2	R
Secondary side electrical energy data of the second channel (RECOMMENDED)					
181EH	ImpEp2	（current）Total Forward active energy(kWh)	float	2	R
1820H	ImpEpA2	（current）A Forward active energy(kWh)	float	2	R
1822H	ImpEpB2	（current）B Forward active energy(kWh)	float	2	R
1824H	ImpEpC2	（current）C Forward active energy(kWh)	float	2	R
1826H	NetImpEp2	（current）Net Forward active energy(kWh)	float	2	R
1828H	ExpEp2	（current）Total Reverse active energy(kWh)	float	2	R
182AH	ExpEpA2	（current）A Reverse active energy(kWh)	float	2	R
182CH	ExpEpB2	（current）B Reverse active energy(kWh)	float	2	R
182EH	ExpEpC2	（current）C Reverse active energy(kWh)	float	2	R
1830H	NetExpEp2	（current）Net Reverse active energy(kWh)	float	2	R
1832H	Q1Eq2	（current）Total reactive energy in the first quadrant (kVarh)	float	2	R
183CH	Q2Eq2	（current）Total reactive energy in the second quadrant (kVarh)	float	2	R
1846H	Q3Eq2	（current）Total reactive energy in the third quadrant (kVarh)	float	2	R
1850H	Q4Eq2	（current）Total reactive energy in the fourth quadrant (kVarh)	float	2	R
First channel secondary side electrical parameter data F32 （NOT RECOMMENDED）					
2000H	Uab	Three phase line voltage data, Unit V(×0.1V)	float	2	R
2002H	Ubc		float	2	R
2004H	Uca		float	2	R
2006H	Ua	Three phase voltage data, Unit V(×0.1V) (Invalid for three phase three wire)	float	2	R
2008H	Ub		float	2	R
200AH	Uc		float	2	R
200CH	Ia	Three phase current data, Unit A(×0.001A)	float	2	R
200EH	Ib		float	2	R
2010H	Ic		float	2	R
2012H	Pt	Combined active power, Unit W(×0.1W)	float	2	R
2014H	Pa	A phase active power, Unit W(×0.1W)	float	2	R

2016H	Pb	B phase active power, Unit W(×0.1W) (Invalid for three phase three wire)	float	2	R
2018H	Pc	C phase active power, Unit W(×0.1W)	float	2	R
201AH	Qt	Combined reactive power, Unit var(×0.1var)	float	2	R
201CH	Qa	A phase reactive power, Unit var(×0.1var)	float	2	R
201EH	Qb	B phase reactive power, Unit var(×0.1var) (Invalid for three phase three wire)	float	2	R
2020H	Qc	C phase reactive power, Unit var(×0.1var)	float	2	R
2022H	St	Combined power factor(The direction is consistent with the active power) (×0.001)	float	2	R
2024H	Sa	A phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
2026H	Sb	B phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
2028H	Sc	C phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
202AH	PFt	Combined power factor(The direction is consistent with the active power) (×0.001)	float	2	R
202CH	PFa	A phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
202EH	PFb	B phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
2030H	PFc	C phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
2044H	Freq	Frequency, Unit Hz(×0.01Hz)	float	2	R
Second channel secondary side electrical parameter data F32 （NOT RECOMMENDED）					
2800H	Uab	Three phase line voltage data, Unit V(×0.1V)	float	2	R
2802H	Ubc		float	2	R
2804H	Uca		float	2	R
2806H	Ua	Three phase voltage data, Unit V(×0.1V) (Invalid for three phase three wire)	float	2	R
2808H	Ub		float	2	R
280AH	Uc		float	2	R
280CH	Ia	Three phase current data, Unit A(×0.001A)	float	2	R
280EH	Ib		float	2	R
2810H	Ic		float	2	R
2812H	Pt	Combined active power, Unit W(×0.1W)	float	2	R
2814H	Pa	A phase active power, Unit W(×0.1W)	float	2	R
2816H	Pb	B phase active power, Unit W(×0.1W) (Invalid for three phase three wire)	float	2	R

2818H	Pc	C phase active power, Unit W(×0.1W)	float	2	R
281AH	Qt	Combined reactive power, Unit var(×0.1var)	float	2	R
281CH	Qa	A phase reactive power, Unit var(×0.1var)	float	2	R
281EH	Qb	B phase reactive power, Unit var(×0.1var) (Invalid for three phase three wire)	float	2	R
2820H	Qc	C phase reactive power, Unit var(×0.1var)	float	2	R
2822H	St	Combined power factor(The direction is consistent with the active power) (×0.001)	float	2	R
2824H	Sa	A phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
2826H	Sb	B phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
2829H	Sc	C phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
282AH	PFt	Three phase line voltage data, Unit V(×0.1V)	float	2	R
282CH	PFa	A phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
282EH	PFb	B phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R
2830H	PFc	C phase power factor(The direction is consistent with the active power) (Invalid for three phase three wire) (×0.001)	float	2	R

NOTE1:When E.SEt is set to 1, the value of ImpEp (ExpEp) is the same as the value of NetImpEp (NetExpEp).

NOTE2:Single-precision floating point adopts standard IEEE754 format, total 32 bit(4 word). The single-precision floating point mode is assumed to be ABCD(high type in the front, low byte behind).

NOTE3:The table only give the regular correspondence address. If you need the primary data address and other addresses, you can call for the detailed communication protocol.

Table 9 Device identification code

Device ID	Reserve	Model	Channel	Specifications	Instructions
0x0317	0	3	1	7	One circuit three-phase metering, external CT maximum current 100A
0x0327	0	3	2	7	Two circuit three-phase metering, external CT maximum current 100A
0x0318	0	3	1	8	One circuit three-phase metering, external CT maximum current 250A
0x0328	0	3	2	8	Two circuit three-phase metering, external CT maximum current 250A

5 Outline and installation size

5.1 Overall Dimensions

Table 10 Installation size

Model	Width(18 mm module in Din rail mounting)	Outline size (length× width× height) mm	Net weight/g	nstallation size (din rail)
DTSU666	4	100×72×65.5	Approx. 236	DIN35 Standard din rail

Note 1: If the electric meter needs to install two upper and lower wiring covers, the overall length will increase to 175mm.

Note 2: The undeclared tolerance is ± 1 mm;

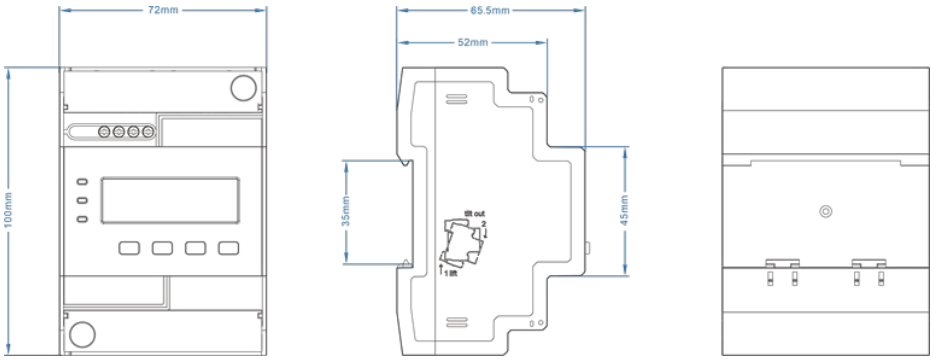


Figure5 Overall dimensions

5.2 Current transformer(CT)

Table 11 Transformer size

Type	Cable length/mm	Net weight per CT/g
100A/40mA	6000±20	Approx. 79
100A/333mV		
250A/50mA		Approx.162
250A/333mV		

Note 1: The undeclared tolerance is ± 1 mm;

Note 2: Only the size, the size of different specifications and shape differences, subject to the actual.

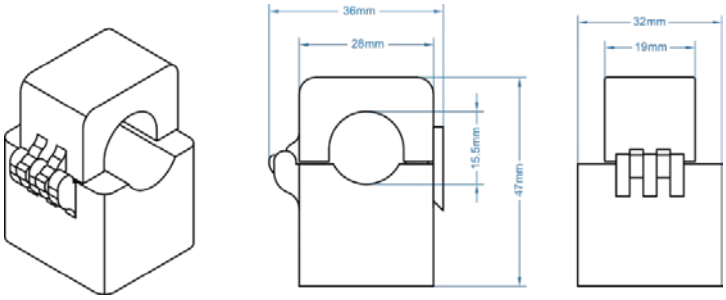


Figure6 Size diagram of 100A transformer

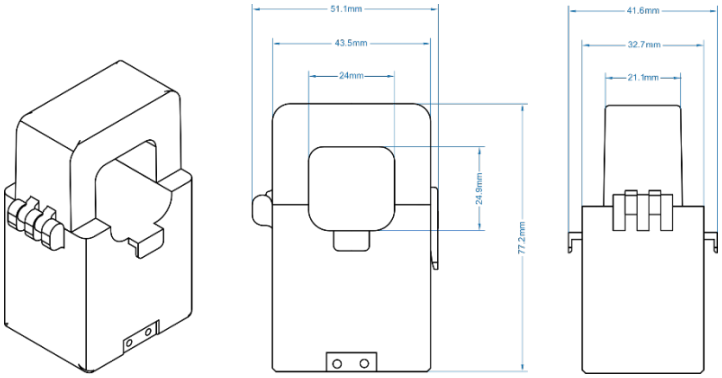


Figure7 Size diagram of 250A transformer

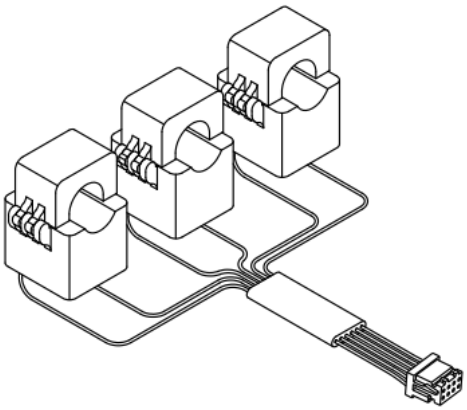


Figure8 Schematic diagram of transformer structure

5.3 Communication Connection

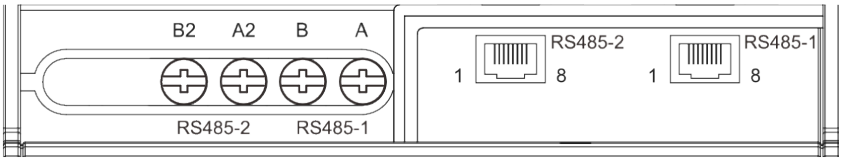


Figure9 Schematic diagram of communication interface

RS485-1 and RS485-2 are two independent communication serial ports, and the meter is not connected internally. Each RS485 communication port has two groups of ports. The first group is Phoenix terminal A and B, and the second group is RJ45 port. By default, RJ45 port PIN3 corresponds to A and PIN6 corresponds to B.

6 Installation and operation manual

6.1 Inspection Tips

When unpacking the carton, if the shell has obvious signs caused by severe impact or falling, please contact with the supplier as soon as possible.

After the instrument being removed from the packing box, it should be placed on a flat and safe plane, facing up, not overlaying for more than five layers. If not installed or used in a short time, the electric meter shall be packed and placed to the original packing box for storage.

DANGER

Before connecting the cable, make sure the smart meter has not suffered any damage. Otherwise, an electric shock or fire may occur. Ensure all electrical connections comply with local electrical standards.

6.1.1 Installation and Inspection

If the model No or configuration in the original packing box is not in accordance with the requirement, please contact with the supplier. While, if the inner package or shell has been damaged after removing the instrument from the packing box, please do not install, power on the instrument, please contact with the supplier as soon as possible, instead.

6.1.2 Installation

It requires experienced electrician or professional personnel to install it and you must read this operation manual. During the installation, if the shell has obvious damage or marks caused by violent impact or falling, please do not install it or power on and contact with the supplier as soon as possible.

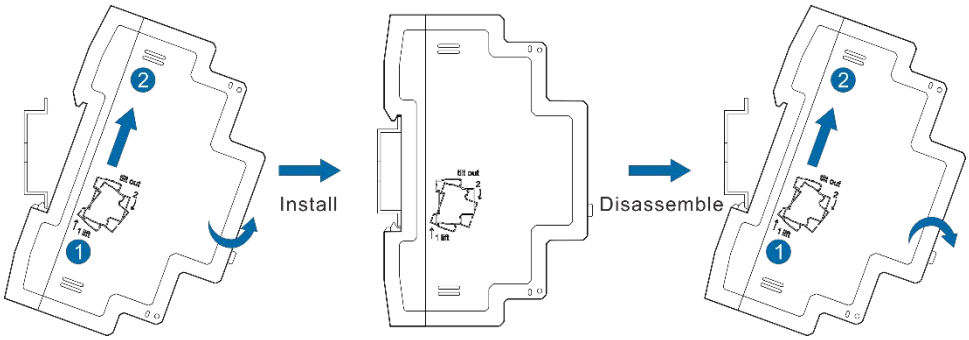


Figure10 Installation Diagram

To access the instrument through the current transformer, install a fuse outside the voltage inlet front instrument (1A 300V recommended, in accordance with EN 60947).

The meters must be installed in a power distribution cabinet that is reliably grounded. Ensure that no one can touch the meters when the power is on.

6.2 Typical wiring

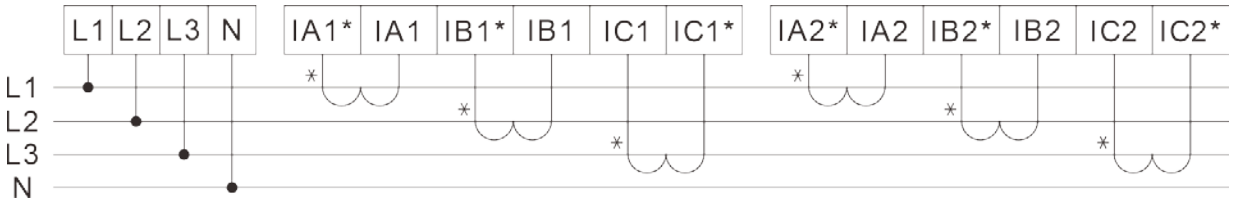


Figure11 Three phase four wire: via current transformer

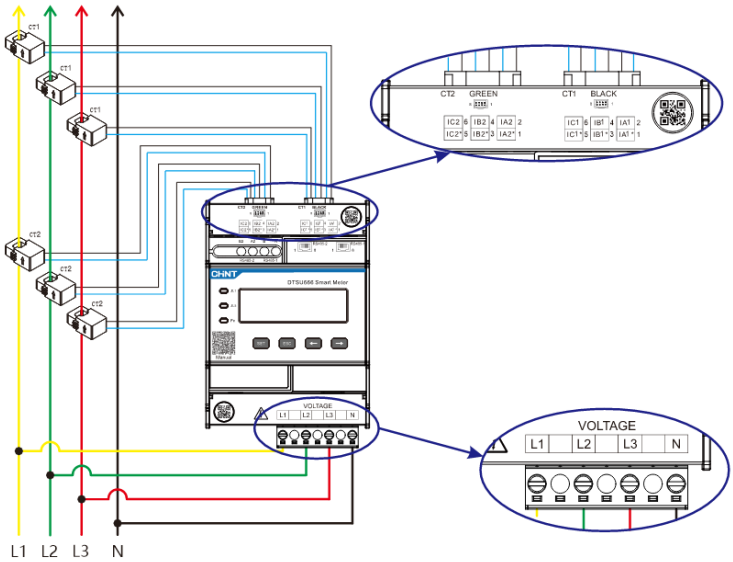


Figure12 Three-phase four-wire connection scenario

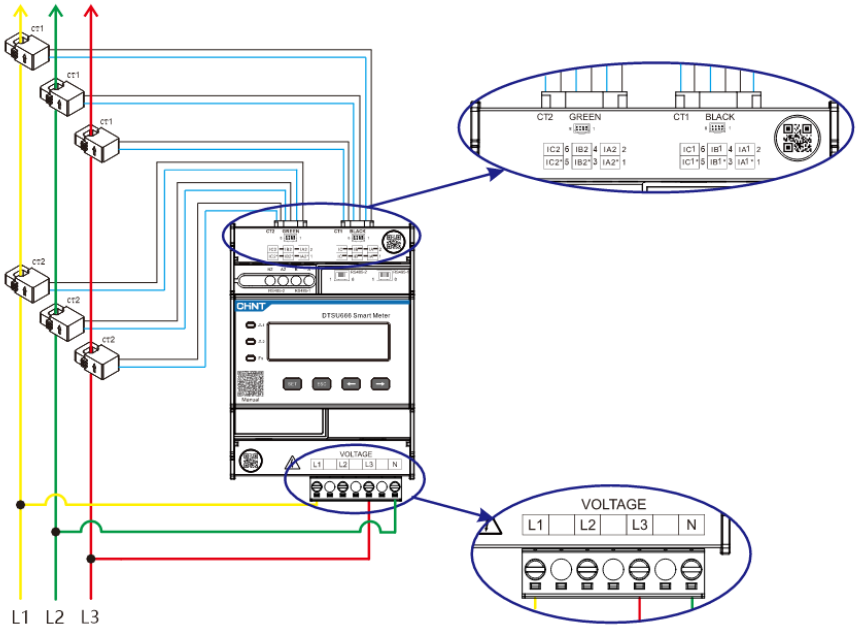


Figure13 Three phase three wire wiring scenario diagram

7 Diagnosis, analysis and elimination for common faults

Table 12 Common fault

Fault phenomenon	Reason analysis	Elimination
No display after the instrument being powered on	1. Incorrect wiring mode. 2. Abnormal voltage supplied for the instrument	1. 1.If the wiring mode is incorrect, please connect based on the correct wiring mode (see the wiring diagram). 2. 2.If the supplied voltage is abnormal, please supply the 3. voltage on the instrument specification.
Power metering inaccuracy	1. Wrong wiring, please check whether the corresponding phase sequence of voltage and current is correct. 2. Check whether the CT specification is correct. Note : Pa, Pb, and Pc are abnormal if the values are negative. (except for some special equipment).	1. For wrong wiring, please connect based on the correct wiring mode (see the wiring diagram). 2. If a negative value is displayed, change the cable connection mode of the current transformer to ensure that the high and low ends are connected properly.
Abnormal RS485 communication	1. The RS485 communication cable is disconnected, short	1. If any problems for the communication cable, please change the cable.

Fault phenomenon	Reason analysis	Elimination
	circuit or reversely connected. 2. The address, baud rate, data bit and parity bit of the instrument is not in accordance with the inverter. 3. The RS485 communication cable is not equipped with a matching resistor at the end (usually when the distance exceeds 150 meters); 4. Check whether external devices are reliably grounded; Note: The communication protocol command between the instrument and the host does not match.	2. Set the address, baud rate, data bit and parity bit of the instrument to be the same as the inverter through buttons and so as the "parameter setting". Note: If the communication distance exceeds 150 meters and the communication parameters between the instrument and the host are the same, but communication still cannot be achieved, please reduce the communication baud rate or add a 120 Ω resistor at the beginning and end of the communication cable (the resistance value can be adjusted according to the on-site conditions).

8 Transportation & Storage

The instrument should be packed with materials that meet environmental protection requirements. The instrument and accessories should be stored in a ventilated and dry place under packaging conditions to avoid corrosion by moisture and corrosive gases. The storage limit ambient temperature is -40 ° C ~ +70 ° C, and the relative humidity does not exceed 75%.

The packaging of the instrument meets the requirements of GB/T 13384, the ambient temperature requirements of conventional storage and the transportation meet the requirements of GB/T 25480.

9 Maintenance & Service

The manufacturer implements three guarantees for product quality. Within 18 months from the date of delivery, if the user fully complies with the provisions of this manual and the factory seal is still intact, the instrument is found damaged during use, and the company is responsible for free repair or replacement.

Dear Clients：

Please help me to do one thing: when the product is reaching the end of its useable life, in order to protect our environment, please do well in recovery of the products or the component materials. Please also deal with the materials which can not be recycled.

Thank you very much for your help and support!

Statement

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