



TEMPER

Intelligent Power Monitoring Instrument Series T-NDI智能电力监控仪表系列



TEMPER LINE CHINA

Temper welcome you 天铂欢迎您

Introduction

We have our own R&D, production, and sales teams to provide our customers with solutions in the analysis, measurement, protection, and control of electrical components.

One-on-One Service

We are engaged in the production and sales of electrical components. We have more than 30 years of history in this area. Our products have been sold to the international market. Our business slogan: Confidence, Quality, Innovation, and Flexibility.

Our products fall into two categories:

Products to improve energy efficiency, and

Products related to energy, industry and infrastructure

Our market is international. We are flexible and efficient. That's why we can provide our customers with specific solutions according to their customized demands.

The development of our company

Because of our flexibility, we can sense the current and future demands of the market and offer the best solutions to our customers.

Temper considers the direction, rather than the goals, of development the most important for a company. As we are clear about its direction, we can focus on the future and improve continuously.

Corporate philosophy

We have five basic concepts.

Confidence. We must be confident enough.

Achievement. We are result-oriented.

Quality. We offer quality service to our customers.

Improvement. We have the spirit of continuous improvement.

Flexibility. We are flexible, and open to changes.

Our requirements on product quality

Our most important quality rule is to satisfy our customers mostly.

Our products must comply with all legal, standard, and technical requirements. Each link in the supply chain from design to production to sales must be involved in the quality control system.

企业简介

我们有自己的研发、生产及销售团队，为客户提供电气材料方面的分析、测量、保护、控制解决方案。

我们的服务是专一、一对一的服务

我们是从事电气材料的生产与销售厂家。在这个领域里，我们已经有了30多年的历史，我们的产品也已经销售到国际市场中。我们企业的标签是：充满自信、优质服务、创新进取、灵活开发。

我们的产品主要分为二类：

提高能源利用率的产品

与能源、工业、基础设施相关的产品

我们的市场运作是国际化的，因为我们的灵活与高效，所以我们可以根据客户个性化的要求，提供给他们一个具体的解决方案。

企业发展方向

我们灵活多变的能力使得我们可以发现当前以及将来市场的需求，给我们的客户一个最佳的解决方案。

天铂公司认为最重要的是明确企业发展方向，而不是确定企业的发展目标。

因为明确了企业发展方向可以使得我们能不断地持续改进，使得我们能着眼于未来，不断进步。

企业理念

我们有5个基本理念

充满自信 每个人必须要有足够的自信心

完成目标 以事情的结果为导向

优质服务 向客户提供优质的服务

创新进取 我们要有不断进取的精神

灵活开放 我们一直以灵活、开放的心态接受变化

质量要求

我们的第一质量标准是争取的客户最大的满意。

我们的产品必须要符合所有的标准、法律、技术要求，我们的质量控制系统包括了从设计、生产以及到销售的所有环节的控制。

Our Team 我们的团队

We have a professional, dedicated, motivated team, which allows us to innovate all the time, to provide customers with quality service, and to fulfill the corporate philosophy.

我们有一个专业、敬业、上进的团队，这使得我们可以不断创新、为客户提供优质的服务、实现我们公司的理念。

We give our team members advanced training to help them work positively. In this way, we can face the changing market with the peace of mind and provide first-class service to our customers.

我们团队的人员工作积极，接受过高级培训，这样，我们可以从容地面对不断变化的市场，向客户提供高水平的服务。

Please come to us and visit our team. We adjust our direction for you.

请来我们公司，视察我们的团队，我们因您的需求不断地调整我们的工作方向。



Temper in China 我们在中国

China is the only country which has huge market potential in various fields. In 2008, we came to China and located at Jiangsu and entered into this market. We established a good sales and service network in more than 30 cities as well.

中国是世界上唯一一个在各个领域都拥有巨大的市场潜力的国家。2008年，我们来到中国，开始进入这个巨大的市场，在江苏常州建立生产基地。并在30多个城市建立了完善的销售服务网络。

TEMPER



T-NDI智能电力监控仪表系列
Intelligent power monitoring instrument series

T-NDI2800系列智能电力监测仪表

05

产品选型

07-13

T-NDI284E系列多功能电力仪表、T-NDI284Z系列网络电力仪表

14-22

备忘录

23

一、T-NDI2800 Series Intelligent Power Monitoring Instrument T-NDI2800系列智能电力监测仪表

1.1 Product Overview 产品简介

T-NDI2800 series intelligent power monitoring instrument is our new generation of high-end multi-functional power analysis instrument, which is suitable for intelligent high and low voltage transformation and distribution systems.

This series of products have functions such as accurate electrical parameter measurement, four-quadrant electric energy metering, time-sharing charging, power quality analysis, fault waveform recording, programmable off-limit alarm, event sequential recording and parameter trend recording; and are equipped with various I/O interfaces to detect and control the state of field devices.

T-NDI2800系列智能电力监测仪表是我公司推出的新一代高端多功能电力分析仪表，适用于智能化高、低压变配电系统。该系列产品具有精确的电力参数测量，四象限电能计量、分时计费、电能质量分析、故障波形记录，可编程越限报警，事件顺序记录、参数趋势记录等功能；配置有丰富的输入输出接口可用于现场设备状态的检测与控制。

T-NDI2800 series intelligent power monitoring instrument includes:

- ◆ T-NDI2800-A (96 square)
- ◆ T-NDI2800-B (42 square)

T-NDI2800系列智能电力监测仪表具有以下产品：

- ◆ T-NDI2800-A(96方形)
- ◆ T-NDI2800-B(42方形)

1.2 Comparison Table of Product Functions 产品功能对照表

Instrument Type 仪表类型	功能 (注)								
	Digital display 数字显示	Programmable setting 可编程设置	Communication interface 通讯接口	Electric energy pulse 电能脉冲	Switching input 开关输入	Switching output 开关输出	Transmission output 变送输出	Multi-rate electric energy 复费率电能	Power quality 电力品质
T-NDI2800 series intelligent power monitoring instrument T-NDI2800系列智能电力监测仪	●	●	●	●	●	●	●	●	●
T-NDI284Z series network power instrument T-NDI284Z系列网络电力仪表	●	●	●	●	●	●	●	●	-
T-NDI284E series multi-functional power instrument T-NDI284E系列多功能电力仪表	●	●	●	●	-	-	-	-	-
K series programmable intelligent instrument K系列可编程智能表	●	●	●	-	●	●	●	-	-
S series digital alarm measurement and control instrument S系列数字报警测控表	●	●	●	-	-	-	●	-	-
D series digital display transmission instrument D系列数显变送表	●	●	●	-	●	●	●	-	-
X series digital display electric measuring instrument X系列数显电测表	●	●	-	-	-	-	-	-	-

二、Type Selection 产品选型

1.1 Nomenclature and Definition 产品命名定义

T-NDI28	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																													
Auxiliary code for specific function description 辅助代号，特定功能说明																																				
B-Transmission J-Relay output K-Switching input 3- Three-phase B-变送 J-继电器输出 K-开关量输入 3-三相																																				
Auxiliary code for display mode 辅助代号，表示显示方式																																				
1-Single-row digital display 2-Single-row digital display+light column 3-Three light columns 4-Three-row digital display 5-Single-row digital display+changeover Y-Liquid crystal display 7-Three-row digital display (for watt-hour meter) 9-Three-row digital display (for electric energy meter) 1-单排数显 2-单排数显加光柱 3-三光柱 4-三排数显 5-单排数显加切换 Y-液晶显示 7-三排数显 (电度表专用) 9-三排数显 (电能表专用)																																				
Auxiliary code for function description 辅助代号，功能说明																																				
D -Digital display intelligent transmission Instrument K-Programmable digital display Instrument X-Digital display electric measuring instrument H-Harmonic measurement function S-Digital measurement and control instrument, multi-functional power instrument, network power instrument D-数显变送智能表 K-可编程数显表 X-数显电测表 H-谐波测量功能 S-数字式测控仪表，多功能电力仪表，网络电力仪表																																				
Auxiliary code for instrument outline 辅助代号，表示仪表外形																																				
<table border="1"> <thead> <tr> <th>Outline code 外形代号</th><th>Model of pointer meter 指针表型号</th><th>Panel size 面框尺寸</th><th>Opening size 开孔尺寸</th></tr> </thead> <tbody> <tr> <td>1</td><td>16 slot 16槽形</td><td>158x78</td><td>151x71</td></tr> <tr> <td>2</td><td>42 square 42方形</td><td>120x120</td><td>111x111</td></tr> <tr> <td>5</td><td>5 slot 5槽形</td><td>96x48</td><td>89x42 91x45</td></tr> <tr> <td>9</td><td>9 square 9方形</td><td>96x96</td><td>91x91</td></tr> <tr> <td>A</td><td>16 square 16方形</td><td>74x74</td><td>67x67</td></tr> <tr> <td>D</td><td>Slot square 槽方形</td><td>48x48</td><td>46x46</td></tr> </tbody> </table>									Outline code 外形代号	Model of pointer meter 指针表型号	Panel size 面框尺寸	Opening size 开孔尺寸	1	16 slot 16槽形	158x78	151x71	2	42 square 42方形	120x120	111x111	5	5 slot 5槽形	96x48	89x42 91x45	9	9 square 9方形	96x96	91x91	A	16 square 16方形	74x74	67x67	D	Slot square 槽方形	48x48	46x46
Outline code 外形代号	Model of pointer meter 指针表型号	Panel size 面框尺寸	Opening size 开孔尺寸																																	
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D	Slot square 槽方形	48x48	46x46																																	
Function Code 功能代号																																				
I – Current U – Voltage P – Active power Q – reactive power F – Frequency H – Power factor D – Power factor angle E – Multi-functional electric energy Z – Integrated measurement and control UI – Combination of current and voltage PQ – Combination of active and reactive power factors I-电流 U-电压 P-有功功率 Q无功功率 F-频率 H-功率因数 D-功率因数角度 E-多功能电能 Z-综合测控 UI-电流电压组合 PQ-有功无功功率因数组合																																				
Function code for input mode 功能代号，表示输入方式																																				
4-AC signal input 5-DC signal input 4-交流信号输入 5-直流信号输入																																				
Power instrument series 电力仪表系列																																				

2.1 Application Field 应用领域

T-NDI2800 series can be used as remote terminal unit (RTU) of power automation system and multi-functional power analysis instrument of power distribution system. In a word, its application range is very wide.

T-NDI2800系列产品可作为电力自动化系统的前端采集终端（RTU），也可以作为配电系统的多功能电力分析仪表，其应用范围非常广泛。

Its main application fields include: 主要应用领域有：

- ◆ High and low voltage distribution system
- ◆ Intelligent switch cabinet
- ◆ Factory automation system
- ◆ Industrial machinery and equipment
- ◆ Energy management system
- ◆ Intelligent building
- ◆ 高、低压配电系统
- ◆ 智能开关柜
- ◆ 工厂自动化系统
- ◆ 工业机器设备
- ◆ 能源管理系统
- ◆ 智能建筑

2.2 Outline and Opening Size 外形及开孔尺寸

Outline code 外形代号	Model of pointer meter 指针表型号	Panel size 面框尺寸	Screen mounting dimensions 屏装配合 尺寸	Opening size 开孔尺寸	Minimum installation distance 最小安装距离		Total installation length 安装总长	Remarks 备注
					a	b		
1	16槽形	158x78	150x70	151x71	168	88	135	
2	42方形	120x120	110x110	111x111	130	130	56	X、K系列
							95	
5	5槽形	96x48	89x41	90x42	106	58	75	单相数显度
			91x44	91x45			100	其他
9	96方形	96x96	90x90	91x91	106	106	75	
A	61方形	74x74	66x66	67x67	84	84	95	
D	微方形	48x48	45x45	46x46	58	58	85	

2.3 Index and Accuracy 指标及精度

Power supply 电源		Accuracy class 精度等级	
Operating range 工作范围	Common for AC/DC 85~265V AC/DC85~265V通用	Electrical measurement 电量测量	0.2 class 0.2级
Power consumption 功耗	< 15VA	Harmonic 谐波	B class B级
Input 输入		Frequency 频率	±0.01Hz
Measurement network 测量网络	Three-phase four-wire, three-phase three-wire 三相四线、三相三线	Transmission output 变送输出	0.5 class 0.5级
Voltage 电压	Rated value 额定值 : AC100V、AV400V	Active electric energy 有功电能	0.5 class 0.5级
	Overload: continuous: 1.2 times, instantaneous: 2 times/10s 过负荷 : 持续 : 1.2倍 , 瞬间 : 2倍/10s	Reactive electric energy 无功电能	1 class 1级
Current 电流	Power consumption 功耗 : < 0.6VA (each phase 每相)	Operating environment 工作环境	
	Impedance 阻抗 : > 200kΩ	Temperature 温度	-10~55°C
Frequency 频率	Rated value 额定值 : AC1A , AC5A	Relative humidity 相对湿度	≤93%
	Overload: continuous: 1.2 times, instantaneous: 2 times/10s 过负荷 : 持续 : 1.2倍 , 瞬间 : 2倍/10s	Altitude 海拔高度	≤2500m
	Power consumption 功耗 : < 0.4VA (each phase 每相)	Other requirement 其他要求	Place where no corrosive gas is produced 无腐蚀性气体产场所
Impedance 阻抗 : < 20mΩ		Storage environment 储存环境	
Harmonic 谐 波	Total harmonic content of voltage and current and 2nd~31st order harmonic component 电压、电流总谐波含量和2~31次谐波分量	Temperature 温 度	-20~75°C
Electric energy 电能	Bidirectional metering of active and reactive electric energy 双向有功、无功电能计量	Relative humidity 相对湿度	≤93%
Output 输出		Insulation 绝 缘	Safety 安 全
Electric energy pulse output 电能脉冲输出	Two-way electric energy pulse output 2路电能脉冲输出		Signal to enclosure resistance: 信号对壳电阻 : > 100MΩ
Communication interface 通讯接口	One-way RS485 communication, Modbus-RTU protocol 1路RS485通讯 , Modbus-RTU协议	Voltage withstandig 耐 压	Power supply to enclosure resistance: 电源对壳电阻 : > 100MΩ
Switching input 开关量输入	Four-way switching input at most, dry contact 最多4路开关量输入 , 干结点方式		Output terminal to enclosure resistance : 输出端子对壳电阻 : > 100MΩ
Switching output 开关量输出	Four-way relay output at most(AC/DC 400V/0.1A or AC 250V/5A) 最多4路继电器输出 (AC/DC400V/0.1A或AC250V/5A)		Input and power supply: 输入和电源 : > 2kV
Transmission output 变送输出	Four-way analog transmission output at most (DC 4~20mA) 最多4路模拟量变送输出 (DC4-20mA)		Input and power supply: > 1kV 输入和电源 : > 1kV
			Power supply and output: > 2kV 电源和输出 : > 2kV

2.4 Available Outline Dimension 可选外形尺寸

Outline code 外形代号	Model of pointer meter 指针表型号	Panel size 面框尺寸	Opening size 开孔尺寸
B	42 square 42方形	120×120mm	111×111mm
A	96 square 96方形	96×96mm	91×91mm

2.5 Comparison Table of Product Functions 产品功能对照表

● Standard 标配 ○ Optional 选配

Product function 产品功能		Parameter 参数	T-NDI2800-B	T-NDI2800-A
Real-time electrical parameter measurement 实时电参数测量	Phase voltage 相电压	Uan、Ubn、Ucn、Unay	●	●
	Line voltage 线电压	Uab、Ubc、Uca	●	●
	Current 电流	Ia、Ib、Ic、Iav	●	●
	Active power 有功功率	Pa、Pb、Pc、Psum	●	●
	Reactive power 无功功率	Qa、Qb、Qc、Qsum	●	●
	Apparent power 视在功率	Sa、Sb、Sc、Ssum	●	●
	Power factor 功率因数	PFa、PFb、Sc、PFsum	●	●
	Frequency 频率	Frequency	●	●
Argument 参数	Active electric energy (bidirectional metering) 有功电能(双向计量)	+Ep, -Ep	●	●
	Reactive electric energy (bidirectional metering) 无功电能(双向计量)	+Ep, -Ep	●	●
	Multi-rate (time-sharing charging) 复费率(分时计费)	8 periods of time and 4 kinds of rates programmable 可编程设置8个时段4种费率	●	○
Power quality monitoring 电能质量监测	Voltage unbalance 电压不平衡度	Yv	○	○
	Current unbalance 电流不平衡度	Yi	○	○
	Voltage component 电压分量	(positive sequence / negative sequence / zero sequence) Up/Un/Uz (正序/负序/零序)	○	○
	Current component 电流分量	(positive sequence / negative sequence / zero sequence) Ip/In/Iz (正序/负序/零序)	○	○
	Each order harmonic of current and voltage 电流电压各次谐波	2nd~31st order harmonic component 2-31次各次谐波分量	●	●
	Voltage crest factor 电压波峰因子	Crest Factor	○	○
	Demand 需量	P、Q、S slip 滑差	○	○
Time 时间	Real-time clock 实时时钟	Year、Month、Date Hour、Minute、Second	○	○
Event log 事件记录	SOE Event 事件		○ 20events 条	○ 20events 条
	Waveform recording function 录波功能	Fault waveform recording / manual waveform recording 故障录波/手动录波	○	○
Functional module 功能模块	Electric energy pulse 电能脉冲	Two-way, passive dry contact 2路, 无源干节点	●	●
	Analog output 模拟量输出	AO (DC4-20mA)	○ 4	○ 2
	Switching output (relay output) 开关量输出 (继电器输出)	DC/RO/(AC/DC400V/0.1A or AC250V/5A)	○ 4	○ 2
	Switching input 开关量输入	DI (dry contact 干结点方式)	○ 4	○ 2
	Communication 通讯	RS485 (Modbus-RTU Communication Protocol) RS485(Modbus-RTU通信协议)	●	●
Display 显示	HD backlight white-screen LCD 高清背光白屏液晶显示		Liquid crystal 液晶	Liquid crystal 液晶
D×O 外形尺寸	B (42 Square 方形)	Opening Size 开孔尺寸 : 111x111mm	✓	
	A (96 Square 方形)	Opening Size 开孔尺寸 : 91x91mm		✓

2.6 Introduction of Typical Product 典型产品介绍

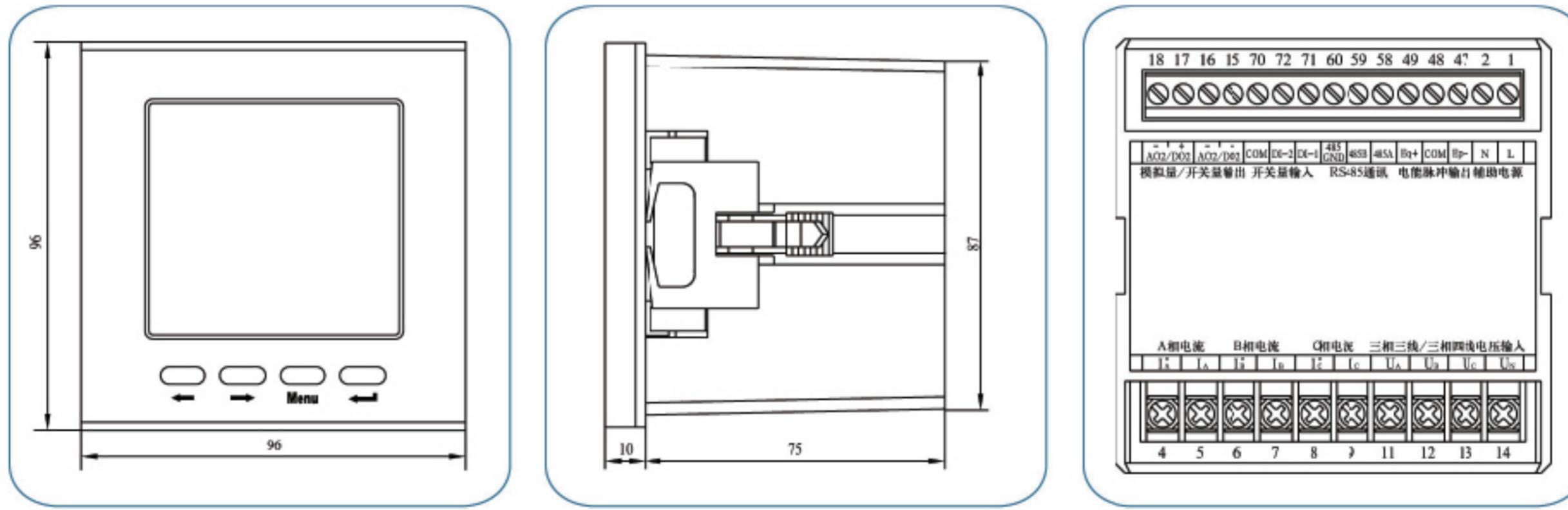
T-NDI2800-A (B)



- Simple operation and large amount of interface information with large-screen dot-matrix LCD Chinese display;
- Measuring all electrical parameters such as U, I, P, S, PF, Hz etc. of power network; and measuring 2nd~31st order harmonic ratio of voltage and current;
- Metering four-quadrant electric energy and multi-rate electric energy, and providing two-way active and reactive electric energy pulse output;
- With switching input function, adopting dry-contact resistance signal input;
- With switching output function of optical MOS relay (Type A: 400V/0.1A; Type B: 250V/5A), used for off-limit alarm indication in any place so as to protect the control output function;
- With analog transmission output 4~20mA (switching and analog are optional);
- With RS485 communication interface and industry standard ModBus communication protocol;
- Online real-time display of voltage and current waveform and observation of real-time power network situation, thus achieving phase sequence judgment of voltage and current and phase failure detection etc.;
- With functions of fault waveform recording and manual waveform recording.

- 大屏幕点阵液晶中文显示，操作简单方便，界面信息量大；
- 测量电力网络的U、I、P、Q、S、PF、Hz等全部电量参数；测量电压、电流的2 - 31次谐波含有率；
- 四象限电能计量，复费率电能计量，提供有功和无功共2路电能脉冲输出；
- 提供开关量输入功能，采用干节点电阻信号输入方式；
- 提供光MOS继电器（A型：400V/0.1A;B型：250V/5A）的开关量输出功能，可用于各种场所下的越限报警指示，保护控制输出功能；
- 提供模拟量变送输出4-20mA(开关量和模拟量可选)；
- RS485通讯接口，工业标准ModBus通讯协议；
- 可以在线实时显示电压、电流波形，观察电网实时情况，可实现电压、电流的相序判断，断相检测等功能；
- 具有故障录波记录和手动录波记录功能。

Outline Drawing of T-NDI2800-A T-NDI2800-A 外形图

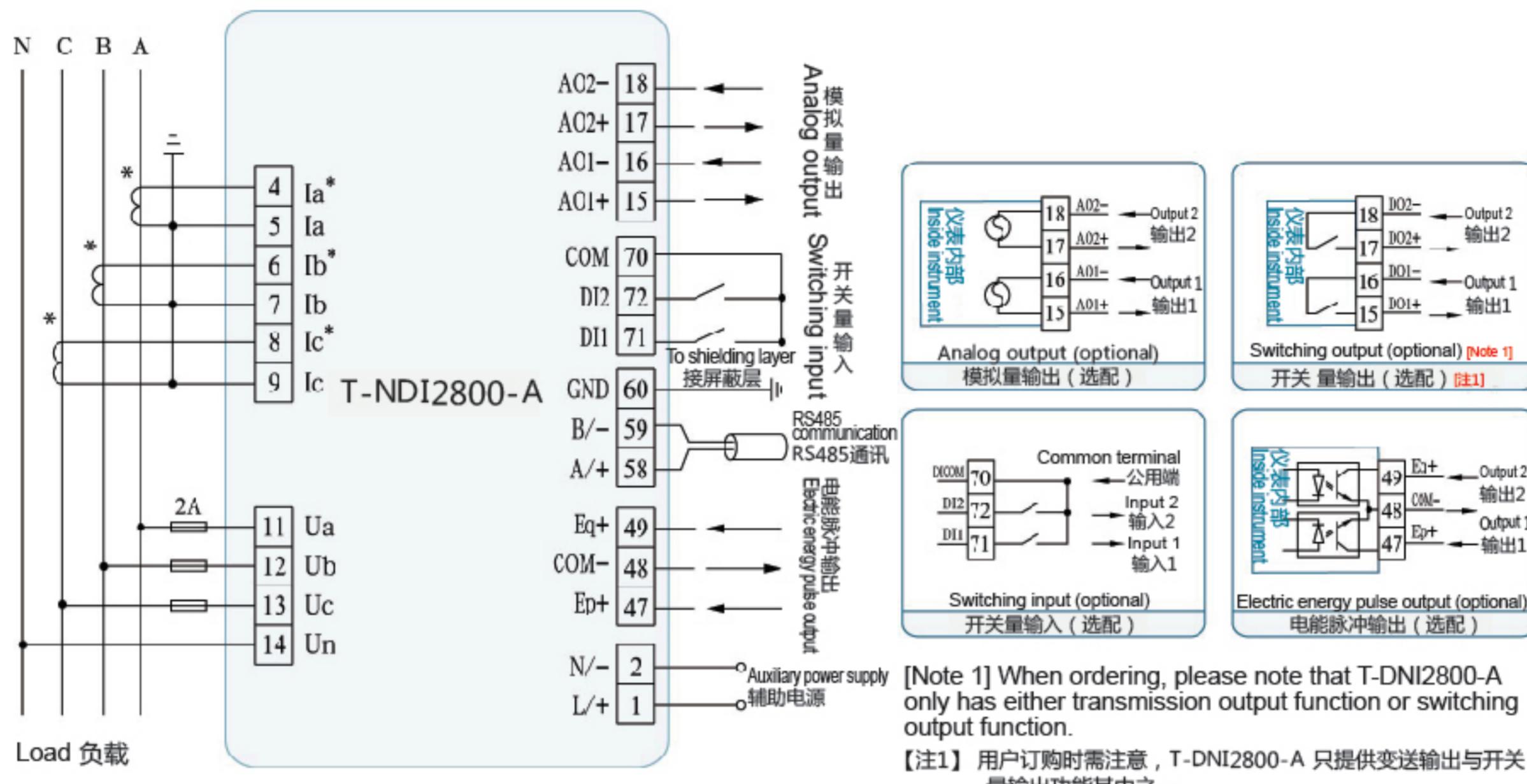


正视图

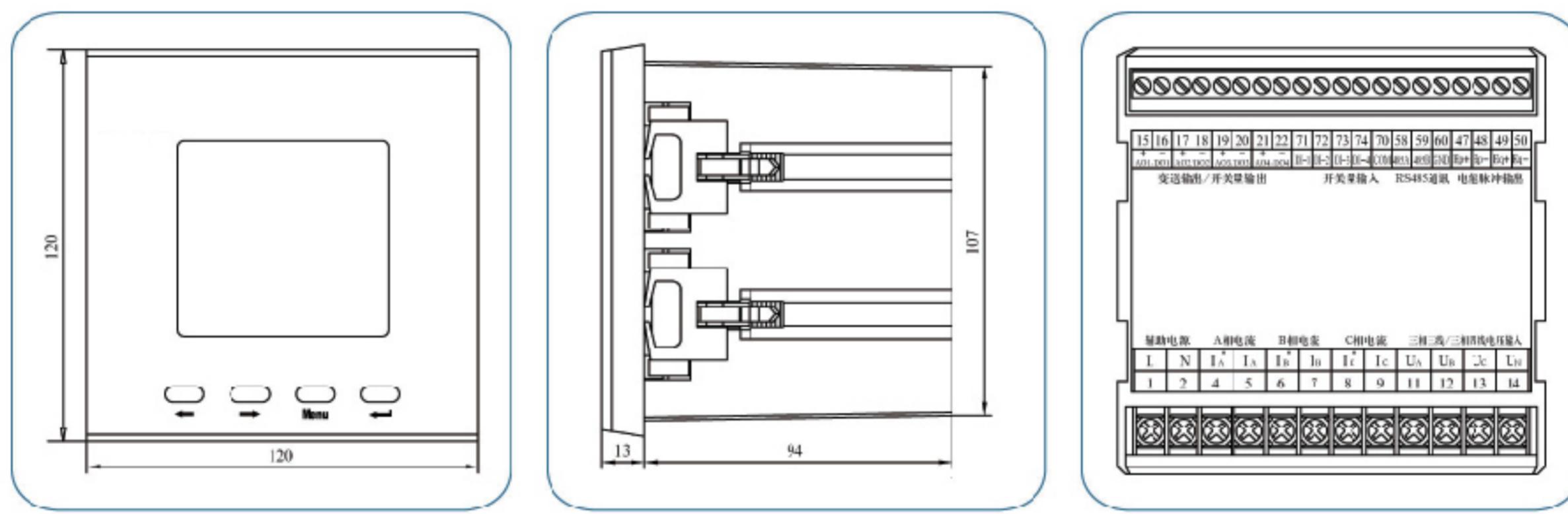
侧视图

背视图

Typical Wiring Schematic Diagram of T-NDI2800-A T-NDI2800-A典型接线示意图



Outline Drawing of T-NDI2800-B T-NDI2800-B 外形图

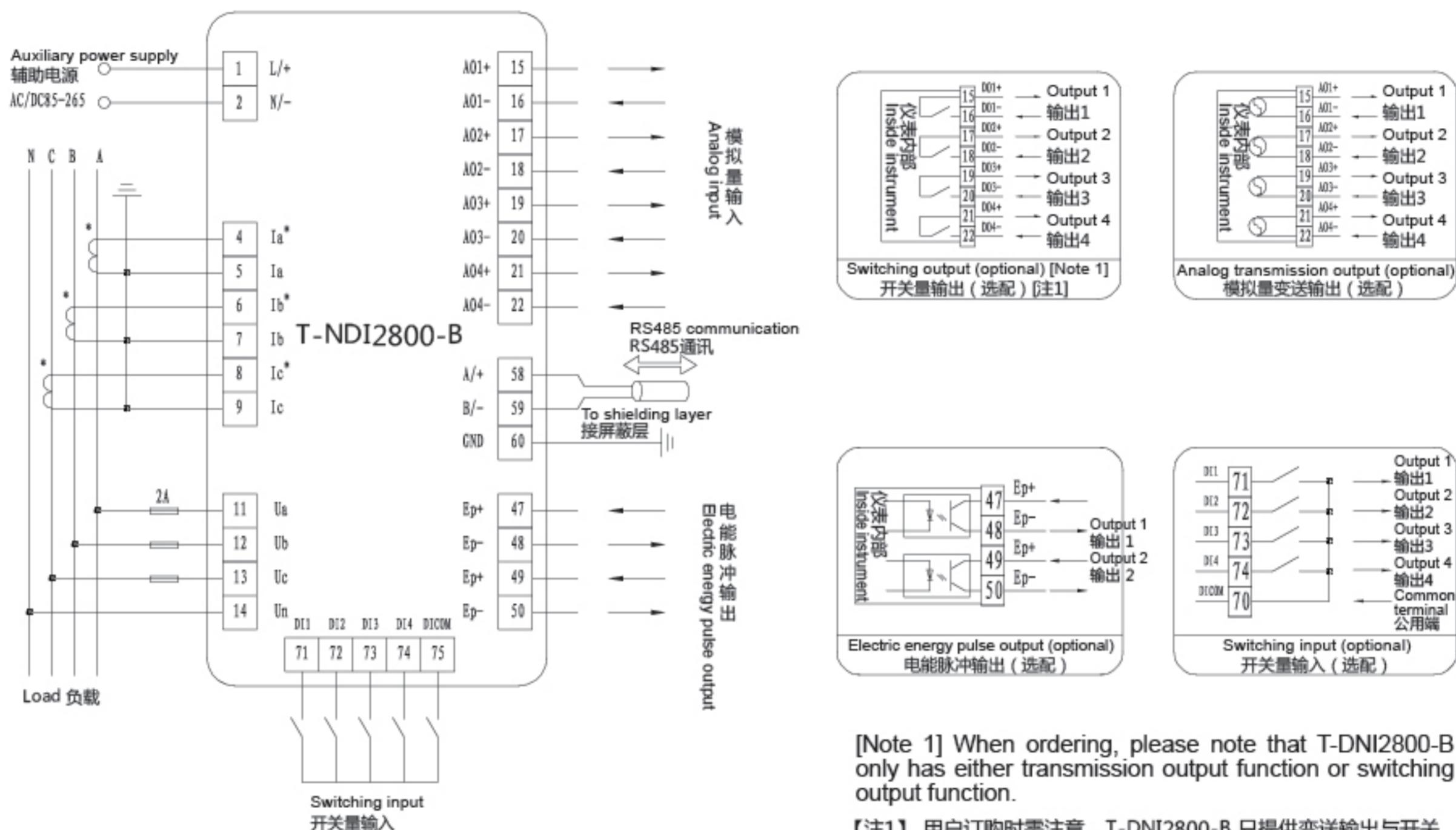
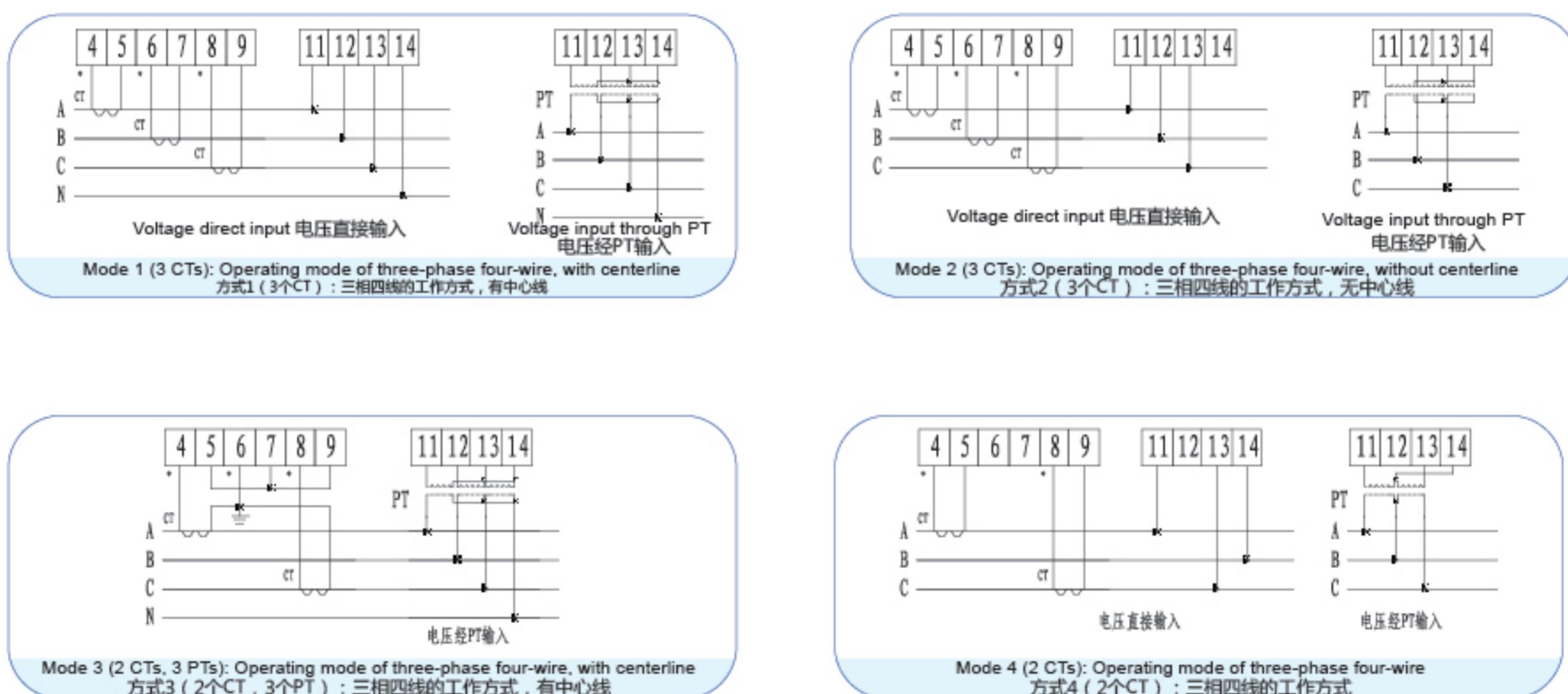


Front View 正视图

Side View 侧视图

Rear View 背视图

Typical Wiring Schematic Diagram of T-NDI2800-B T-NDI2800-B 典型接线示意图

Typical Signal Input Wiring Diagram of T-NDI2800 Series
T-NDI2800 系列典型信号输入接线图

- Voltage input: The input voltage shall not be higher than the rated input voltage (100V or 400V). Otherwise, use of PT shall be taken into consideration. For easy maintenance, it is recommended to use connector bars.
 - Current input: The standard rated input current is 5A; an external CT shall be used when the current is over 5A. If any other instrument is connected to the used CT, serial connection shall be used for wiring. Before removing the current input connection, always disconnect the CT primary circuit or short-circuit the secondary circuit firstly. For easy maintenance, it is recommended to use connector bars.
 - Make sure that corresponding input voltage and current, identical phase sequence and same direction. Otherwise, value and symbol errors will occur! (Power and electric energy).
 - The instrument can operate in three-phase four-wire or three-phase three-wire mode, so you shall select appropriate wiring mode according to the field situation. Generally, three-phase three-wire mode is used if without centerline; otherwise, three-phase four-wire mode shall be used. 2 CTs (phase A and C) may be only installed for three-phase three-wire mode, while 3 CTs need to be installed for three-phase four-wire mode (another phase current can be resultant if there are only 2 CTs).
- 电压输入：输入电压不要高于产品的额定输入电压(100V或400V)，否则应考虑使用PT，为了便于维护,建议使用接线排。
- 电流输入：标准额定输入电流为5A，大于5A的情况应使用外部CT。如果使用的CT上连有其它仪表，接线应采用串接方式，去除产品的电流输入连线之前，一定要先断开CT一次回路或者短接二次回路，为便于维护建议使用接线排。
- 要确保输入电压、电流相对应，相序一致，方向一致；否则会出现数值和符号错误！(功率和电能)。
- 仪表可以工作在三相四线方式或者三相三线方式，用户应根据现场使用情况选择相应的接线方式。一般在没有中心线的情况下使用三相三线方式，在有中心线的情况下使用三相四线方式，三相三线可以只安装2个CT(A和C相)，三相四线需要安装三个CT(在只有2CT情况下可以合成另一相电流)。

Note: Two wiring modes can be set in the instrument. The actual wiring mode must be the same as the one set in the instrument. Otherwise, the measurement data of the instrument will be inaccurate.

注意：仪表内可设置两种接线方式，实际接线方式和表内设置方式必须一致，否则仪表的测量数据不准确。

2.8 Ordering Example 订购示例

T-NDI2800 - □

Outline and function code
外形与功能代号

A – 96 square (opening size: 91×91mm)
B – 42 square (opening size: 111×111mm)
A--96方形 (开孔尺寸 : 91X91mm)
B--42方形 (开孔尺寸 : 111X111mm)

Model of power monitoring instrument (for Temper Electric)
电力监测仪表型号(天铂电气专用)

Model 型号： T-NDI2800-B

Signal input 信号输入： AC220V , AC200A/5A

Wiring type 接线类型： 三相四线 (3CT, 相电压直接输入)

Quantity 数量： 20 sets台

Transmission output 变送输出： Transmission output: four-way analog transmission output (DC 4~20mA)
4路模拟量变送输出 (DC4~20mA) 依次对应Uan、Ia、P总、Q总

Communication 通讯： RS485

Others 其它： other factory presetting (according to default setting unless otherwise specified)
其它出厂预设置 (未作说明则按照默认设置出厂)

三、T-NDI284E Series Multi-functional Power Instrument and T-NDI284Z Series Network Power Instrument

T-NDI284E系列多功能电力仪表、T-NDI284Z系列网络电力仪表

3.1、Product Overview 产品简介

T-NDI284E/Z series multi-functional network power instrument is designed according to demands for intelligent power monitoring and electric energy metering of power systems, industrial and mining enterprises, public facilities and intelligent buildings, etc. It can accurately measure all common power parameters in three-phase power network, such as three-phase voltage / current, active / reactive / apparent power, power factor, frequency, four-quadrant electric energy, multi-rate electric energy, demand, switching input monitoring, switching output control, analog output, and is equipped with functions such as communication interface and electric energy pulse output.

T-NDI284E/Z series multi-functional network power instrument has very high performance/cost ratio, and can directly replace conventional power transmitter, measurement indicator, electric energy metering instrument and related auxiliary unit.

T-NDI284E/Z系列多功能网络电力仪表是针对电力系统、工矿企业、公共设施、智能大厦等的电力智能监控和电能计量等需求而设计，能够高精度测量三相电网中的所有常用电力参数，三相电压/电流、有功/无功/视在功率、功率因数、频率、四象限电能、复费率电能、需量、开关量输入监测、开关量输出控制、模拟量输出、并带有通讯接口、电能脉冲输出等功能。

T-NDI284E/Z系列多功能网络电力仪表具有极高的性能价格比，可以直接取代常规电力变送器、测量指示仪表、电能计量仪表以及相关的辅助单元。

This series of instruments can be divided into three categories by function:

- Type H (harmonic measurement analysis)
- Type Z (comprehensive and enhanced)
- Type E (basic)

该系列仪表按功能可分为三类：

- H型（谐波测量分析型）
- Z型（综合型、增强型）
- E型（基本型）

3.2、Application Field 应用领域

T-NDI284E/Z series can be used as advanced intelligent and digitized front-end acquisition component for power network. It has been widely used in various control systems, with characteristics of easy installation, simple wiring, convenient maintenance, small amount of work, input parameters being field programmable, and being capable of communicating with different PLC and industrial control computer network in the industry.

Its main application fields include:

- | | |
|--|--------------------------------------|
| ◦ High and low voltage distribution system | ◦ Intelligent switch cabinet |
| ◦ Factory automation system | ◦ Industrial machinery and equipment |
| ◦ Energy management system | ◦ Intelligent building |

T-NDI284E/Z系列产品可作为一种先进的智能化、数字化的电网前端采集元件，已广泛应用于各种控制系统中，具有安装方便、接线简单、维护方便，工程量小、现场可编程设置输入参数、能够与业界不同PLC、工业控制计算机组网通讯。

主要应用领域有：

- | | | |
|------------|----------|-----------|
| ◦ 高、低压配电系统 | ◦ 智能开关柜 | ◦ 工厂自动化系统 |
| ◦ 工业机器设备 | ◦ 能源管理系统 | ◦ 智能建筑 |

Power supply 电源		Accuracy class 精度等级	
Operating range 工作范围	Common for AC/DC 85~265V AC/DC85~265V通用	Electrical measurement 电量测量	0.2 class 级
Power consumption 功耗	< 15VA	Harmonic 谐波	B class 级
Input 输入		Frequency 频率	±0.01Hz
Measurement network 测量网络	Three-phase four-wire, three-phase three-wire 三相四线、三相三线	Transmission output 变送输出	0.5 class 级
Voltage 电压	Rated value 额定值 : AC100V、AV400V	Active electric energy 有功电能	0.5 class 级
	Overload: continuous: 1.2 times, instantaneous: 2 times/10s 过负荷：持续：1.2倍，瞬间：2倍/10s	Reactive electric energy 无功电能	1 class 级
	Power consumption 功耗 : < 0.6VA (each phase 每相)	Operating environment 工作环境	
Impedance 阻抗 : > 200kΩ		Temperature 温度	-10~55°C
Current 电流	Rated value 额定值 : AC1A , AC5A	Relative humidity 相对湿度	≤93%
	Overload: continuous: 1.2 times, instantaneous: 2 times/10s 过负荷：持续：1.2倍，瞬间：2倍/10s	Altitude 海拔高度	≤2500m
	Power consumption: < 0.4VA (each phase) 功耗：< 0.4VA (每相)	Other requirement 其他要求	Place where no corrosive gas is produced 无腐蚀性气体产场所
Impedance 阻抗 : < 20mΩ		Storage environment 储存环境	
Frequency 频率	45~65Hz , Accuracy 精度 : ±0.01Hz	Temperature 温度	-20~75°C
Harmonic 谐波	Total harmonic content of voltage and current and 2nd~31st order harmonic component component 电压、电流总谐波含量和2-31次谐波分量	Relative humidity 相对湿度	≤93%
Electric energy 电能	Bidirectional metering of active and reactive electric energy 双向有功、无功电能计量	Safety 安全	
Output 输出		Insulation 绝缘	Signal to enclosure resistance: 信号对壳电阻 : > 100MΩ
Electric energy pulse output 电能脉冲输出	Two-way electric energy pulse output 2路电能脉冲输出		Power supply to enclosure resistance: 电源对壳电阻 : > 100MΩ
Communication interface 通讯接口	One-way RS485 communication, Modbus-RTU protocol 1路RS485通讯, Modbus-RTU协议		Output terminal to enclosure resistance : 输出端子对壳电阻 : > 100MΩ
Switching input 开关量输入	Four-way switching input at most, dry contact 最多4路开关量输入，干结点方式	Voltage withstand 耐压	Input and power supply: > 2kV 输入和电源 : > 2kV
Switching output 开关量输出	Four-way relay output at most (AC/DC 400V/0.1A or AC 250V/5A) 最多4路继电器输出 (AC/DC400V/0.1A或AC250V/5A)		Input and power supply: > 1kV 输入和电源 : > 1kV
Transmission output 变送输出	Four-way analog transmission output at most (DC 4~20mA) 最多4路模拟量变送输出 (DC4~20mA)		Power supply and output: > 2kV 电源和输出 : > 2kV

3.3 Available Outline Dimension 可选外形尺寸

Outline Code 外形代号	Model of pointer meter 指针表型号	Panel size 面框尺寸	Opening size 开孔尺寸
2	42 Square 方形	120×120mm	111×111mm
9	96 Square 方形	96×96mm	91×91mm

3.4 Product List 产品列表

T-NDI284Z Series Network Power Instrument
T-NDI284Z系列网络电力仪表

● Standard 标配 ○ Optional 选配

Product function 产品功能	Parameter 参数	T-NDI284Z-2□□				T-NDI284Z-9□□			
		9HY	2SY	2S4	2S4K	9HY	9SY	9S4	9S4K
Real-time electrical parameter measurement 实时电参数测量	Phase voltage 相电压	Uan、Ubn、Ucn	●	●	●	●	●	●	●
	Line voltage 线电压	Uab、Ubc、Uca	●	●	●	●	●	●	●
	Current 电流	Ia、Ib、Ic	●	●	●	●	●	●	●
	Active power 有功功率	Pa、Pb、Pc、Psum	●	●	●	●	●	●	●
	Reactive power 无功功率	Qa、Qb、Qc、Qsum	●	●	●	●	●	●	●
	Apparent power 视在功率	Sa、Sb、Sc、Ssum	●	●	●	●	●	●	●
	Power factor 功率因数	PFa、PFb、Sc、PFsum	●	●	●	●	●	●	●
	Frequency 频率	Frequency	●	●	●	●	●	●	●
Argument and demand 参数与需求	Active electric energy (bidirectional metering) 有功电能(双向计量)	+Ep, -Ep	●	●	●	●	●	●	●
	Reactive electric energy (bidirectional metering) 无功电能(双向计量)	+Ep, -Ep	●	●	●	●	●	●	●
	Multi-rate (time-sharing charging) 复费率(分时计费)	8 periods of time and 4 kinds of rates programmable 可编程设置8个时段4种费率	○	●			○	●	
	Demand 需量	P、Q Slip滑差	●	●			●	●	
Harmonic 谐波	Each order harmonic of current and voltage 电流电压各次谐波	2nd~31st order harmonic component 2~31次各次谐波分量	●				●		
Time 时间	Real-time clock 实时时钟	Year, Month, Date, Hour, Minute, Second	○	●			○	●	
Functional module 功能模块	Electric energy pulse 电能脉冲	Two-way, passive dry contact 2路，无源干节点	●	●	●	●	●	●	●
	Analog output [Note 1] 模拟量输出 [注]	AO (DC4-20mA)	○4	○4	○4	○4	○2	○2	○4
	Switching output (relay output) 开关量输出 (继电器输出)	DC/RO/(AC/DC400V/0.1A 或AC250V/5A)	○4	○4	○4	○4	○2	○2	○4
	Switching input 开关量输入	DI (dry contact) DI (干结点方式)	○4	○4	○4	○4	○2	○2	○4
	Communication 通讯协议	(Modbus-RTU communication protocol) RS485(Modbus-RTU通信协议)	●	●	●	●	●	●	●
Display 显示		Liquid crystal 液晶	Liquid crystal 液晶	Digital 数码	Digital 数码	Liquid crystal 液晶	Liquid crystal 液晶	Digital 数码	Digital 数码
Outline Dimension 外形尺寸	Bottled opening size 瓶装开孔尺寸		(2 Square 方形) 111x111mm				(9 Square 方形) 91x91mm		
	Panel size 面框尺寸		(2 Square 方形) 120x120mm				(9 Square 方形) 96x96mm		

[Note1] Due to the product enclosure, terminals of switching output and analog output are reusable, and only one function can be chosen.
Please indicate it when ordering.

[注1] 由于产品外壳所限，开关量输出和模拟量输出端子是复用的，两种功能只可选其一。请用户订货时注明。

3.5 Product List 产品列表

T-NDI284E Series Multi-functional Power Instrument
T-NDI284E系列多功能电力仪表

Product function 产品功能		Parameter 参数	T-NDI284 E - 2S □			T-NDI284E-9S □					
			2S4	2S7	2S9	9S4	9S7	9S9	9S9A	9S9B	9S4K
实时电参数测量	Phase voltage 相电压	Uan、Ubn、Ucn	●			●				●	●
	Line voltage 线电压	Uab、Ubc、Uca	●			●				●	●
	Current 电流	Ia、Ib、Ic	●		●	●		●	●	●	●
	Active power 有功功率	Pa、Pb、Pc、Psum	●			●					●
	Reactive power 无功功率	Qa、Qb、Qc、Qsum	●			●					●
	Apparent power 视在功率	Sa、Sb、Sc、Ssum	●			●					●
	Power factor 功率因数	PFa、PFb、Sc、PFsum	●			●					●
	Frequency 频率	Frequency	●			●					●
电能	Active electric energy 有功电能	+Ep	●	●	●	●	●	●	●	●	●
	Reactive electric energy 无功电能	+Eq	●	●		●	●		●		
功能模块	Electric energy pulse 电能脉冲	Passive dry contact 无源干节点	●2	●2	●1	●2	●2	●1	●1	●2	
	Analog output 模拟量输出	AO (DC4-20mA)									●1
Display 显示			Digital 数码	Digital 数码	Digital 数码	Digital 数码	Digital 数码	Digital 数码	Digital 数码	Digital 数码	Digital 数码
Outline dimension 外形尺寸	Bottled opening size 瓶装开孔尺寸		(2 square) 111×111mm (2方形)111×111mm			(9 square) 91×91mm (9方形)91×91mm					
	Panel size 面框尺寸		(2 square) 120×120mm (2方形)120×120mm			(9 square) 96×96mm (9方形)96×96mm					

3.6 Introduction of Typical Product – T-DNI284Z 典型产品介绍- T -DNI284Z

※ T-NDI284Z-2HY / T-NDI284Z-9HY Network Power Instrument 网络电力仪表



- ◊ Measurement: Measuring all electrical parameters such as U, I, P, Q, PF, F, etc. of three-phase power network
 - ◊ Metering: Metering active electric energy (Ep) and reactive electric energy (Eq)
 - ◊ Harmonic: Measuring 2nd~31st order harmonic component of voltage and current in the three-phase network
 - ◊ Electric energy pulse output: Two-way; one is active, the other is reactive
 - ◊ Standard RS485 communication interface supporting Modbus-RTU protocol
 - ◊ Switching input and output (optional): monitoring and remote signalling of switching status input, programmable alarm switching output or remote switching output
 - ◊ Analog transmission module (optional): Programmable output 4~20mA, with functions of traditional transmitter
 - ◊ Applicable to complete monitoring and management of electrical parameters in various input circuits and large-capacity output circuits
-
- ◊ 测量：三相电网所有电量测量U、I、P、Q、PF、F等
 - ◊ 计量：有功电能(Ep)和无功电能(Eq)计量
 - ◊ 谐波：测量三相网络中电压、电流的2 - 31次谐波分量
 - ◊ 电能脉冲输出：2路，1路有功，1路无功
 - ◊ 标准RS485通讯接口，支持Modbus-RTU协议
 - ◊ 开关量输入输出(选配)：开关状态输入监视和遥信，可编程报警开关输出或遥控开关输出
 - ◊ 模拟量变送模块(选配)：可编程设置4-20mA输出，可实现传统变送器功能
 - ◊ 适用各种进线回路，大容量配出回路中电参数的完整监测和管理

※ T-NDI284Z-2SY / T-NDI284Z-9SY Network Power Instrument

※ T-NDI284Z-2SY / T-NDI284Z-9SY 网络电力仪表



- ◊ Measurement: Measuring all electrical parameters such as U, I, P, Q, PF, F, etc. of three-phase power network
 - ◊ Metering: Programmable multi-rate electric energy and demand statistics, and metering active electric energy (Ep) and reactive electric energy (Eq)
 - ◊ Display: Clear and beautiful with large-screen LCD display
 - ◊ Electric energy pulse output: Two-way; one is active, the other is reactive
 - ◊ Standard RS485 communication interface supporting Modbus-RTU protocol
 - ◊ Switching input and output (optional): monitoring and remote signalling of switching status input, programmable alarm switching output or remote switching output
 - ◊ Analog transmission module (optional): Programmable output 4~20mA, with functions of traditional transmitter
 - ◊ Applicable to complete monitoring and management of electrical parameters in various input circuits and large-capacity output circuits
-
- ◊ 测量：三相电网所有电量测量U、I、P、Q、PF、F等
 - ◊ 计量：可编程设置复费率电能与需量统计，有功电能(Ep)和无功电能(Eq)计量
 - ◊ 显示：大屏幕LCD显示，清晰美观
 - ◊ 电能脉冲输出：2路，1路有功，1路无功
 - ◊ 标准RS485通讯接口，支持Modbus-RTU协议
 - ◊ 开关量输入输出(选配)：开关状态输入监视和遥信，可编程报警开关输出或遥控开关输出
 - ◊ 模拟量变送模块(选配)：可编程设置4-20mA输出，可实现传统变送器功能
 - ◊ 适用各种进线回路，大容量配出回路中电参数的完整监测和管理

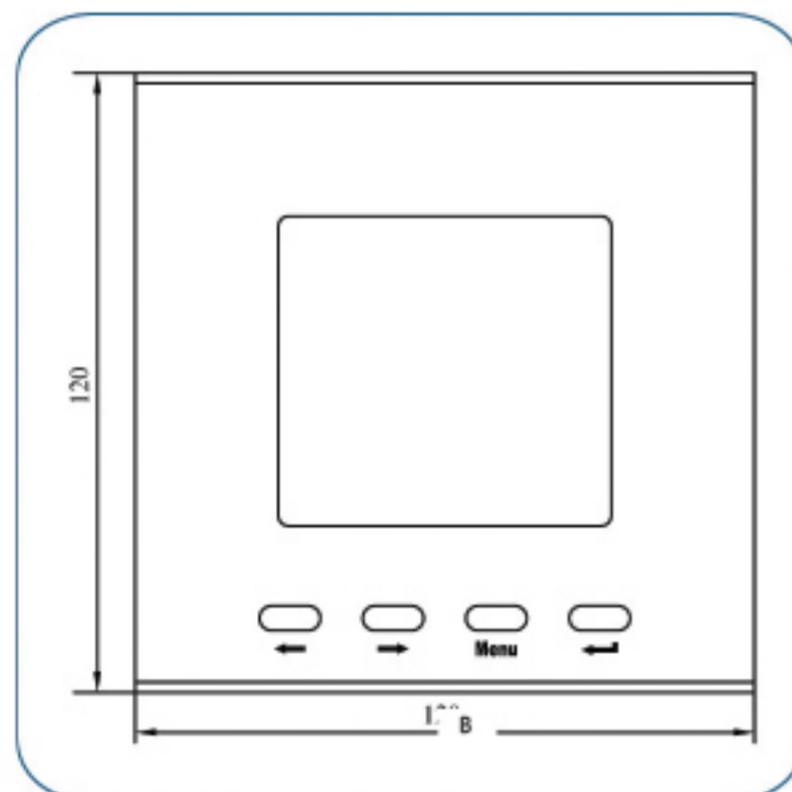
※ T-NDI284E-9S4K Network Power Instrument
※ T-NDI284E-9S4K 网络电力仪表



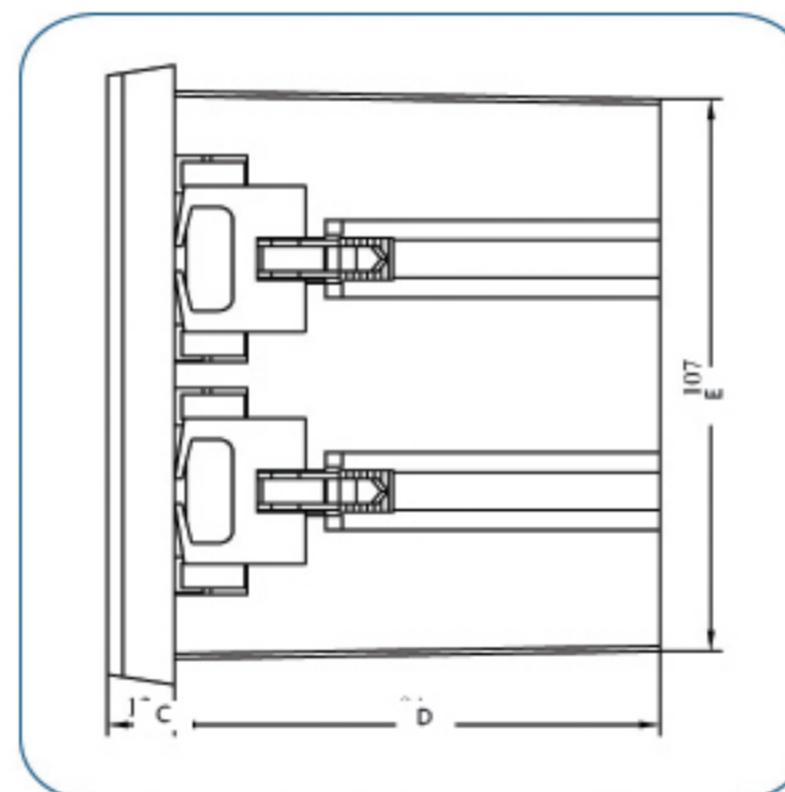
- Measurement: Measuring all electrical parameters such as U, I, P, Q, PF, F, etc.
- Metering: Active 0.5 Class, reactive 1 class
- Display: Highlighted digital display by 3 rows of 12 digits in total
- Electric energy pulse output: Two-way; one is active, the other is reactive
- Standard RS485 communication interface supporting Modbus-RTU protocol
- Analog transmission module (1-way): Programmable output 4~20mA
- Applicable to load monitoring and evaluation metering of various input circuits

- 测量：U、I、P、Q、PF、F等全部电量参数
- 计量：有功0.5级，无功1级
- 显示：3排共12位高亮数码显示
- 电能脉冲输出：2路，1路有功，1路无功
- 标准RS485通讯接口，支持Modbus-RTU协议
- 模拟量变送模块(1路)：可编程设置4~20mA输出
- 适用各种进线回路，用于负载监控及考核计量

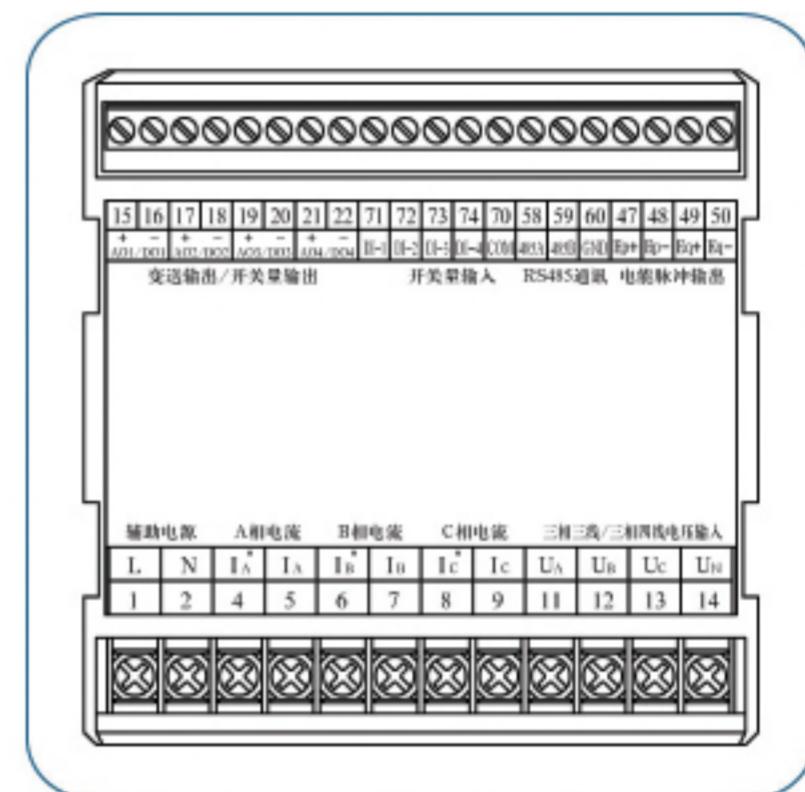
3.7 Installation and Wiring 安装和接线



Front View 正视图



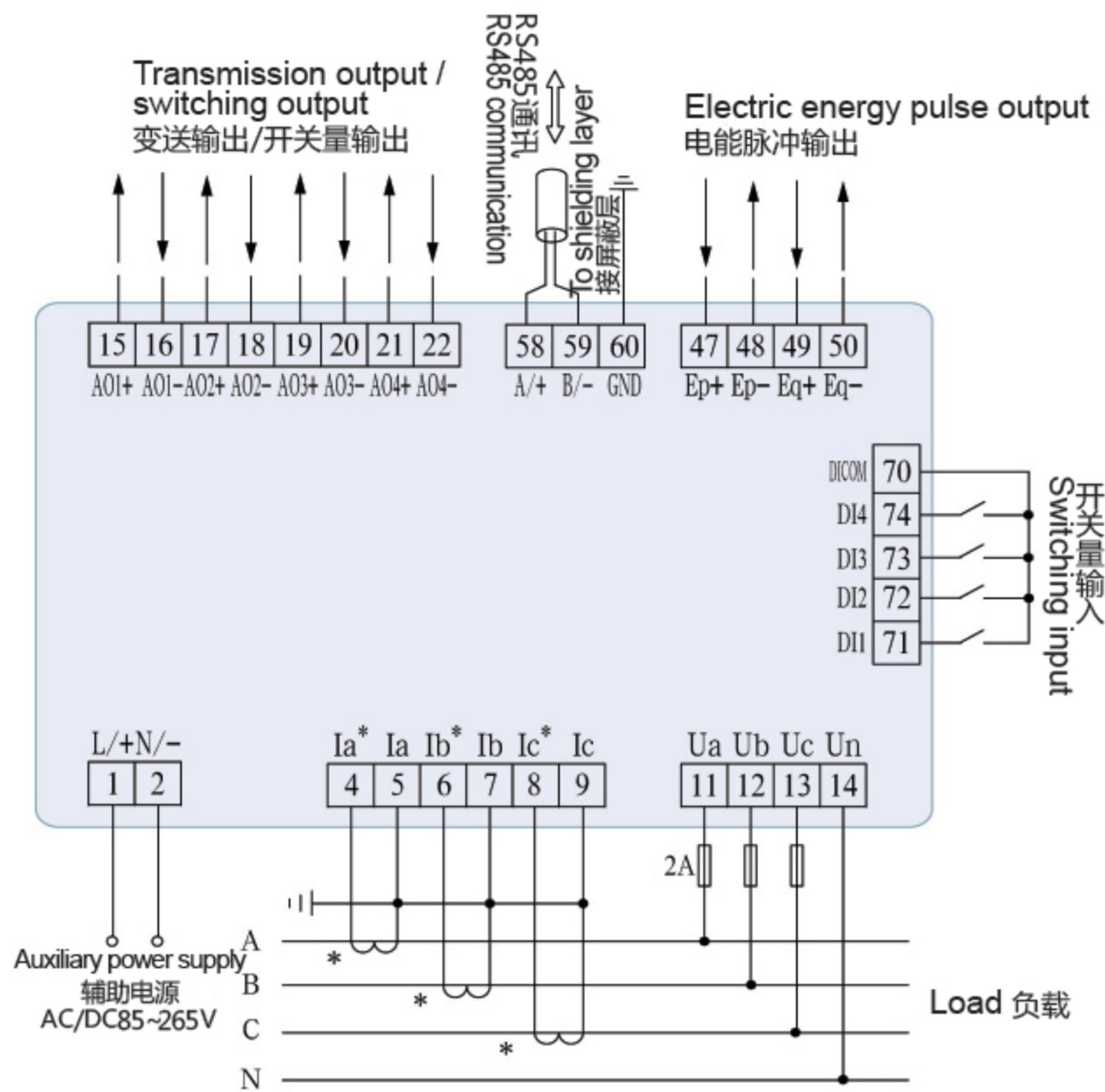
Side View 侧视图



Rear View 背视图

Product model 产品型号	A	B	C	D	E	Opening size 开孔尺寸	Model of pointer meter 指针表型号
T-NDI284Z-2HY / T-NDI284Z-2SY	120	120	13	94	107	111×111mm	
T-NDI284Z-9HY / T-NDI284Z-9SY	96	96	10	75	87	91×91mm	
T-NDI284Z-9S4K	96	96	10	75	87	91×91mm	

Typical Function Wiring Schematic Diagram of E/Z Series
E / Z系列典型功能接线示意图



This diagram takes T-NDI284Z-2SY as example, and the wiring diagram of other products is similar to it, except that terminals and function modules are reduced.

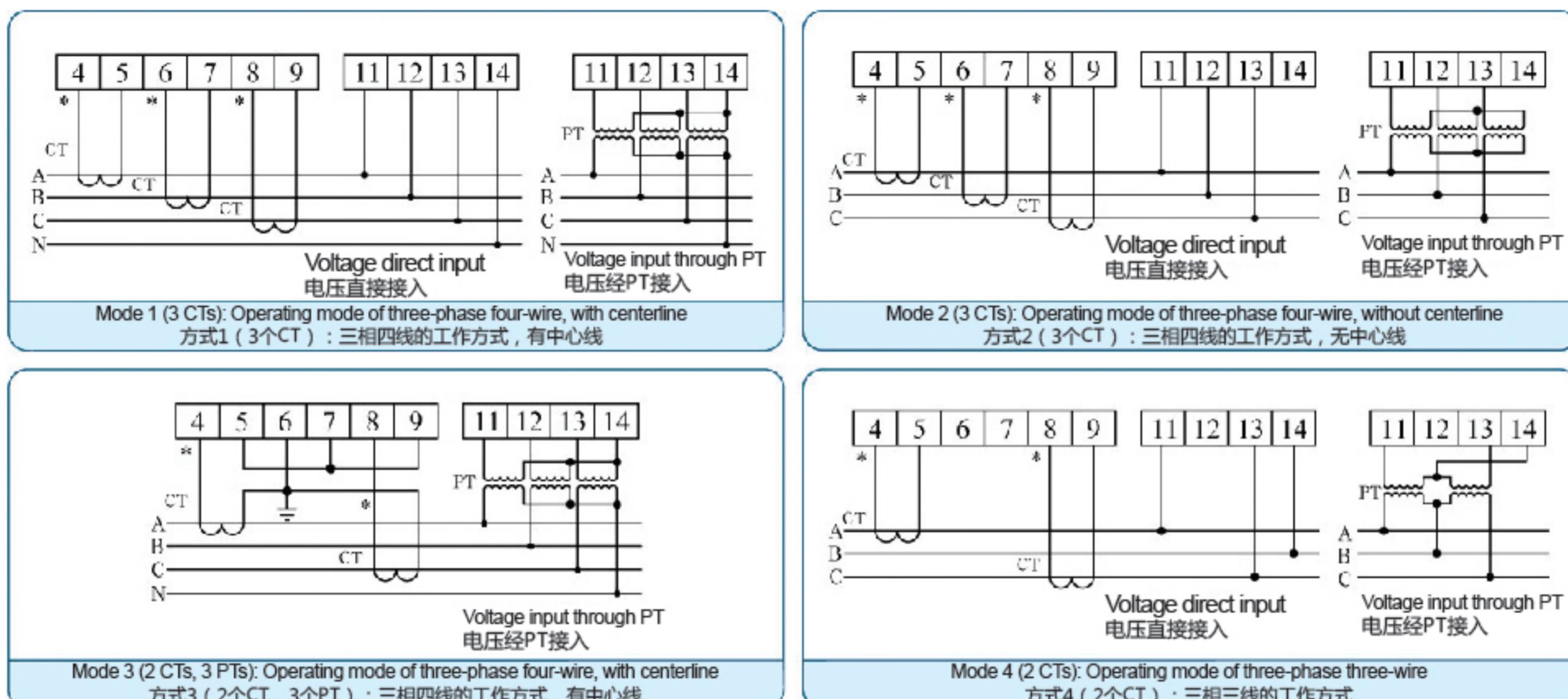
Note: Terminal orders of products are slightly different. Follow the wiring diagram on the product enclosure to connect.

该图以T-NDI284Z-2SY为例，其余产品的接线图与其类似，只是接线端子和功能模块减少而已。

注意：各个产品的接线端子次序略有不同，接线时按照产品外壳上的接线图进行连接。

Typical Signal Input Wiring Diagram of E/Z Series

E / Z系列典型信号输入接线图



Note: * is current incoming line terminal

For specific wiring mode and technical parameters such as pulse constant, follow the wiring diagram supplied with the product.

注：*为电流进线端

具体接线方式、脉冲常数等技术参数以产品随机接线图为准。

- Voltage input: The input voltage shall not be higher than the rated input voltage (100V or 400V). Otherwise, use of PT shall be taken into consideration. For easy maintenance, it is recommended to use connector bars.
- Current input: The standard rated input current is 5A; an external CT shall be used when the current is over 5A. If any other instrument is connected to the used CT, serial connection shall be used for wiring. Before removing the current input connection, always disconnect the CT primary circuit or short-circuit the secondary circuit firstly. For easy maintenance, it is recommended to use connector bars.
- Make sure that corresponding input voltage and current, identical phase sequence and same direction. Otherwise, value and symbol errors will occur! (Power and electric energy).
- The instrument can operate in three-phase four-wire or three-phase three-wire mode, so you shall select appropriate wiring mode according to the field situation. Generally, three-phase three-wire mode is used if without centerline; otherwise, three-phase four-wire mode shall be used. 2 CTs (phase A and C) may be only installed for three-phase three-wire mode, while 3 CTs need to be installed for three-phase four-wire mode (another phase current can be resultant if there are only 2 CTs).

Note: Two wiring modes can be set in the instrument. The actual wiring mode must be the same as the one set in the instrument. Otherwise, the measurement data of the instrument will be inaccurate.

- 电压输入：输入电压不要高于产品的额定输入电压(100V或400V)，否则应考虑使用PT，为了便于维护建议使用接线排。
- 电流输入：标准额定输入电流为5A，大于5A的情况应使用外部CT。如果使用的CT上连有其它仪表，接线应采用串接方式，去除产品的电流输入连线之前，一定要先断开CT一次回路或者短接二次回路，为便于维护建议使用接线排。
- 要确保输入电压、电流相对应，相序一致，方向一致；否则会出现数值和符号错误！(功率和电能)。
- 仪表可以工作在三相四线方式或者三相三线方式，用户应根据现场使用情况选择相应的接线方式。一般在没有中心线的情况下使用三相三线方式，在有中心线的情况下使用三相四线方式，三相三线可以只安装2个CT(A和C相)，三相四线需要安装三个CT(在只有2CT情况下可以合成另一相电流)。

注意：仪表内可设置两种接线方式，实际接线方式和表内设置方式必须一致，否则仪表的测量数据不准确。

T-DNI284 -

Supplementary code for function 功能补充代号

A - Measurement of three-phase current and reactive electric energy
 B - Measurement of three-phase current and active electric energy
 K -Analog output

A-表示测量三相电流和无功电能
 B-表示测量三相电流和有功电能
 K-模拟量输出

Auxiliary code for measurement and display function 辅助代号，表示仪表测量显示功能

4-Measurement of basic electricity and four-quadrant electric energy
 9-Measurement of voltage, current and active electric energy
 7-Metering of four-quadrant electric energy, without electricity measurement function
 Y- for LCD, measurement of basic electricity and four-quadrant electric energy
 4— 测量基本电量及四象限电能 9—测量电压、电流和有功电能
 7— 计量四象限电能，无测量电量功能 Y— 液晶显示专用，测量基本电量和四象限电能

Auxiliary code for function description 辅助代号，功能说明

H – Harmonic measurement display
 S – Multi-functional power instrument, network power instrument
 H - 谐波测量显示 S - 多功能电力仪表、网络电力仪表

Auxiliary code for instrument outline 辅助代号，表示仪表外形

Outline code 外形代号	Model of pointer meter 指针表型号	Panel size 面框尺寸	Opening size 开孔尺寸
2	42 square方形	120x120	111x111
9	96 square方形	96x96	91x91

Function code 辅助代号

E – Multi-functional electric energy Z – Integrated measurement and control
 E— 多功能电能 Z— 综合测控

Model of AC power instrument (for Temper Electric)
交流电力仪表型号 (天铂电气专用)

3.8 Ordering Example 订货示例

Model: T-NDI284Z-2SY

Signal input: AC 10kV/0.1kV, AC 200A/5A

Wiring type: three-phase three-wire (2 CTs, 2 PTs)

Quantity: 20 sets

Transmission output: four-way analog transmission output (DC 4~20mA) corresponding to Uab, Ia,
Psum, Qsum in order

Communication: RS485

Others: other factory presetting (according to default setting unless otherwise specified)

型 号 : T-NDI284Z-2SY

信号输入 : AC10kV/0.1kV , AC200A/5A

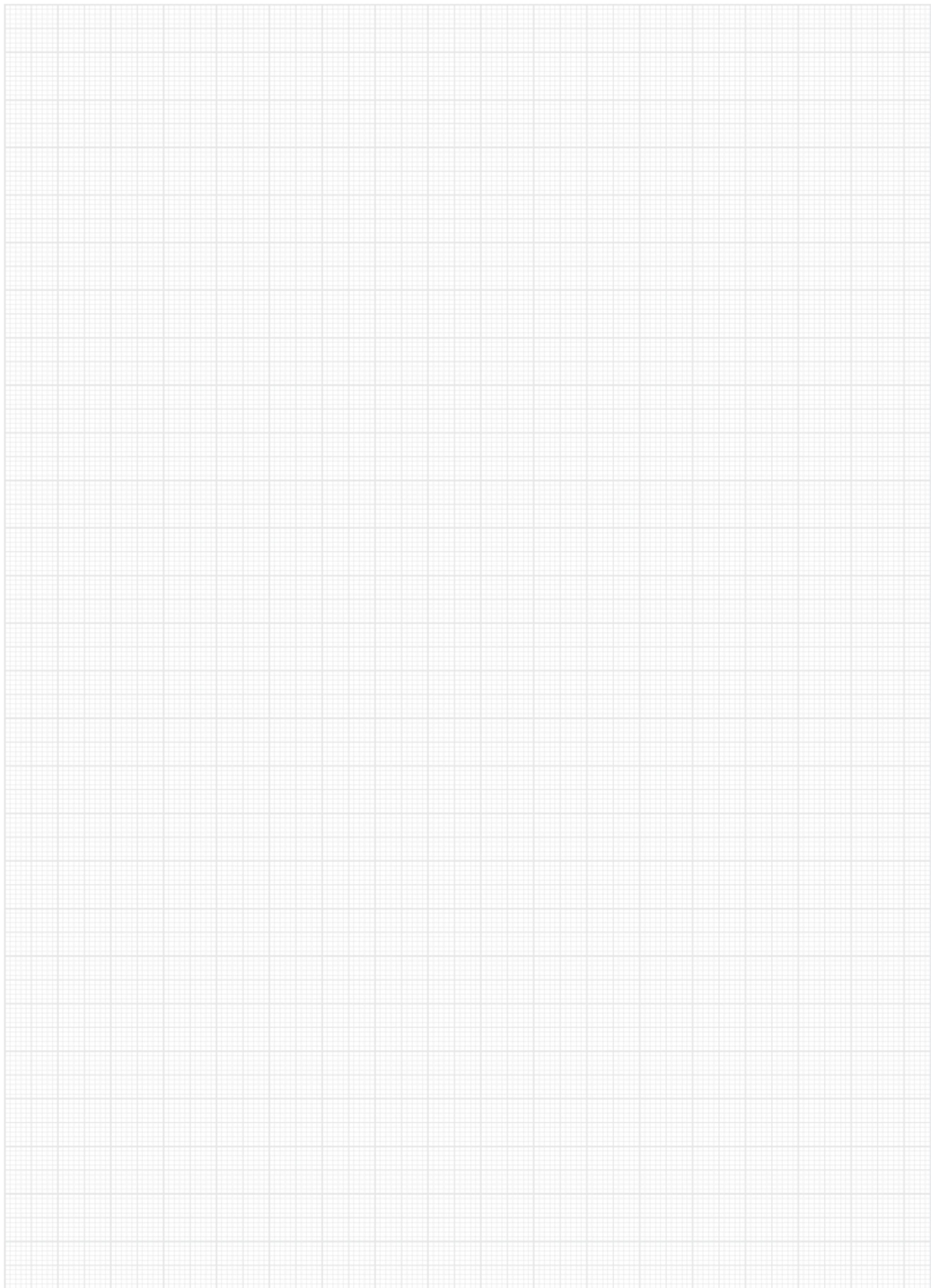
接线类型 : 三相三线(2CT2PT)

数 量 : 20台

变送输出 : 4路模拟量变送输出(直流4-20mA)依次对应Uab、Ia、P总、Q总

通 讯 : RS485

其 它 : 其它出厂预设置(未作说明则按照默认设置出厂)



TEMPER



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