





 <sup>®</sup> STAR  
INSTRUMENT

# SMART METER & AMI SOLUTIONS



[STAR INSTRUMENT] V2019

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# ABOUT US

- Company Overview
- Company Philosophy
- Development Milestones
- Talent Concept
- Company Honors



**Shenzhen Star Instrument Co., Ltd.** was established in 1993. With its headquarters located in the CBD area of Shenzhen, China, Star Instrument has its own 100,000 m<sup>2</sup> Star Industry Park with a 50,000 m<sup>2</sup> modern production plant.

Star Instrument has been engaging in the developing, manufacturing and selling smart energy (power, water and gas) meter, intelligent data collection system for the energy meter, Advanced Metering Infrastructure (AMI), electric testing equipment and electric vehicle charging, etc. Our customers include the urban & rural utilities of China State Grid, China Southern Power Grid and the major utilities in over 80 countries and regions across Asia, Africa, Middle East, Europe and Latin America etc., and we have been one of the top exporters of the smart energy meter in China for years.

Star Instrument has obtained various certifications, such as ISO 9001 International Quality Management System, ISO 17025 Laboratory Accreditation System, ISO 14001 Environmental Management Systems, OHSAS 18001 Occupational Health & Safety Management Systems. Our products have been awarded the international recognized certificates including KEMA-KEUR, MID, DLMS, MET, CE, STS,

VMI, CIDET, SEC and INDECOPI.

Star Instrument owns a professional technical team comprised of industrial elites and eminent experts and has obtained over 100 patents and intellectual property, while a number of products and technologies have won the national, provincial and municipal awards.

The introduction of the large-scale automatic SMT production lines, automatic wave soldering workshop and automatic inspection lines have made the annual production capacity of Star Instrument reach to over 15 million units (include 13 million single-phase smart energy meters, 2.7 million three-phase smart meters and 1 million smart water meter and smart data collection devices).

With the transparent, honest, pragmatic and progressive working principles, Star Instrument upholds the business notion of independence, innovation, high efficiency and win-win strategy. With reliance on cutting-edge technology, it is determined to be a national enterprise with global insight and strategy, creating an eminent brand with international competitiveness and tenacity.



# STAR Instrument COMPANY OVERVIEW

25  
years

## Over 25 years ...

Over 25 years' experience on the R&D, manufacturing and sales of energy meters and water meters



## Over 80 countries ...

Exporting meters to over 80 countries and regions worldwide



## 100,000 square meters ...

100,000 square meters of modern production plant



## Over 15 million ...

Over 15 million units of annual production capacity



## Over 100 patents ...

Over 100 patents and intellectual property



# COMPANY PHILOSOPHY

## Company Culture

Transparent, Honest, Pragmatic, Progressive

## Operation Concept

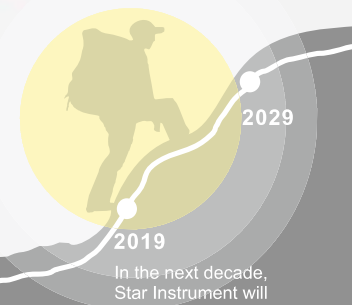
Independent, Innovative, Efficient, Win-win

## Enterprise Objective

Excellent Quality, Outstanding Achievement



# DEVELOPMENT MILESTONES



2019

In the next decade, Star Instrument will continue going beyond and making tremendous success, committed to become a national enterprise with international competitiveness.

2015

Completed comprehensive transformation and upgrading of the manufacturing plant.

2013

Advanced Automated Meter Reading and Advanced Meter Management system (AMI/AMM), which have been successfully tried out in many countries and regions.

Test center has won laboratory management system accreditation of ISO/IEC17025: 2005.

2009

Headquarters newly located in the Costal Building located in the CBD of Nanshan, Shenzhen  
Awarded as the Key Enterprise in the Equipment Manufacture Industry.

2005

Production commencement of the first-phase of Star Industry Park.

2002

Establishment of the Star Industry Park, with total investment of 500 million RMB and prospected annual production capacity of 10 million units.

1993

Founded in Shenzhen, China  
Electronic meters certified by national authoritative organization.





## COMPANY HONORS

Member of China Electrical and Electronic Instrumentation  
Technology Standardization Committee

National High-Tech Enterprise

Guangdong Key Enterprise in the Equipment Manufacture Industry

Guangdong Strategic Company in Emerging Industry

Guangdong Innovative Enterprise

Shenzhen Indigenous Innovation Enterprise

Shenzhen Leading Key Private Enterprise

Municipal Express Major Enterprise and Shenzhen Renowned Brand  
Enterprise



## TALENT CONCEPT

Talent is the most important wealth to Star Instrument who persists in the "Mutual Growth" concept in human resource exploration to achieve the organic unification of the development for company and the progress for the employee.

Star Instrument has developed an employee training system and a multiple channels career development system with company-characteristics through the management to the position, performance and talent. It standardizes the talent selection and development, and establishes a multiple kinds of career development channels in management, research & development and elite, promoting the progress and self-improvement of the employee in the terms of the position qualification, and then enhance the competence of them and achieve the sustainable development of the talents.



# INNOVATION

- 🔗 R&D Achievements
- 🔗 Research & Development
- 🔗 Accreditation



## RESEARCH & DEVELOPMENT

Star Instrument has established a R&D center to develop the advanced smart meter and cutting-edge energy saving and management system, the core R&D team is composed of over one hundred personnel. The research and development is organized and managed strictly compliant with IPD (Integrated Product Development) procedures. With persistent R&D policy of platformization, modularization and standardization, we attach great importance to the reliability design of the product and verification at research phase. All newly developed products must be induced by NPI before mass production. Meanwhile, the customized PLM (Product Life Cycle Management) system guarantees the effective control and validation of complete R&D process.

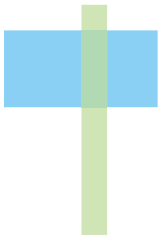


## R&D ACHIEVEMENTS

The products and techniques of Star Instrument have been validated on-site by hundreds of millions domestic and overseas users. Star Instrument has established a system for the core technology with our win-win intellectual property on the new energy metering, smart IC card energy meter, STS prepayment energy meter, smart IC card water meter, fluidic water meter measurement, micro-power remote control water meter, micro-power MESH RF energy meter, Ad Hoc LV PLC network data terminal, energy consumption system, web energy vending system and high precision test equipments, obtained Over 100 patents and registered 12 copyrights for computer software. In addition, 8 models of our products are entitled with Shenzhen Indigenous Innovation Products, while another 2 models are rewarded with Guangdong High-Tech Product and Guangxi Science and Technology Progress Award.







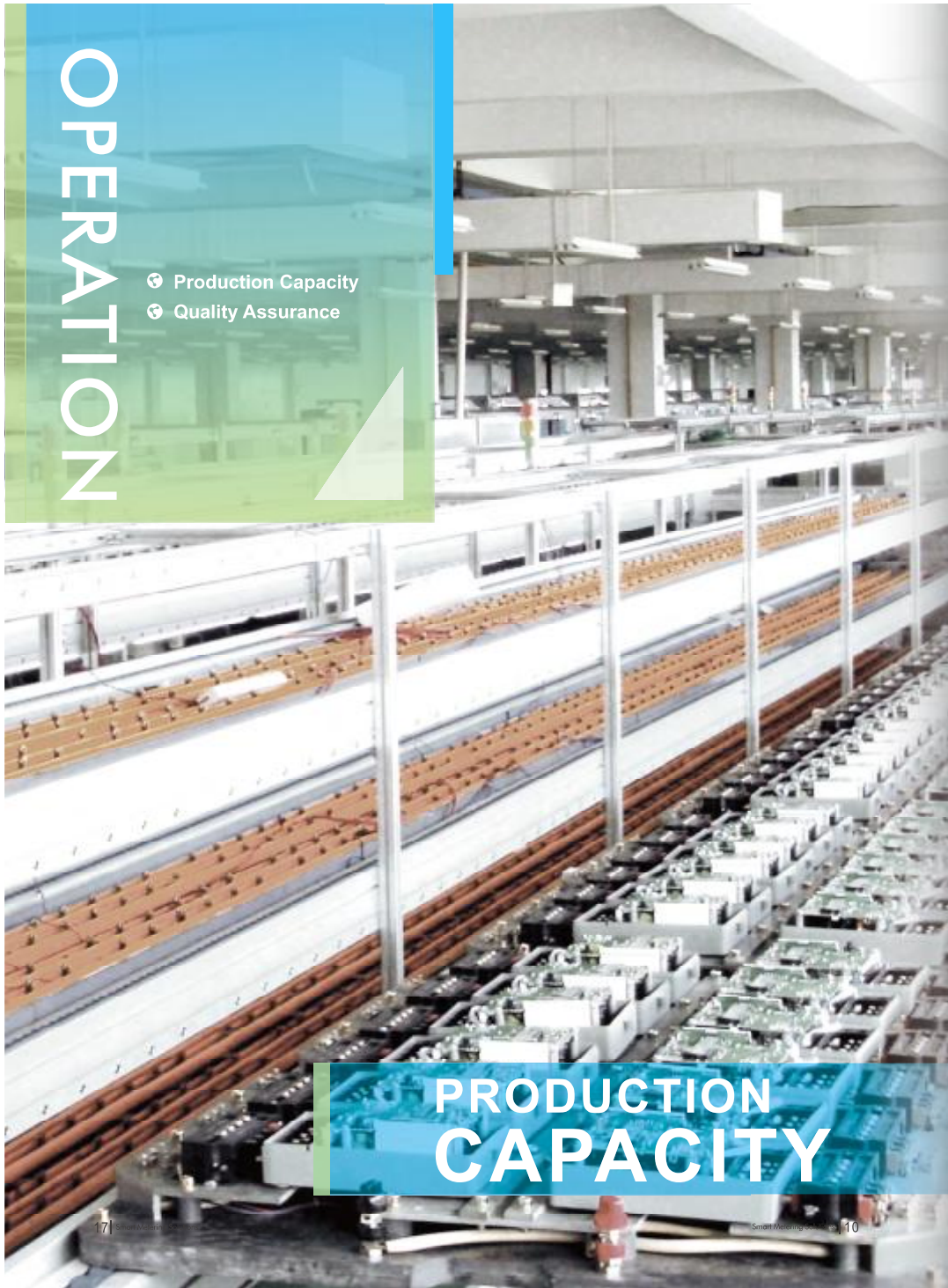
# LABORATORY ACCREDITATION

Star Instrument built and consolidated five major laboratories, including one metrological with a secondary qualification, EMC, Environment Test, Reliability Validation and Functionality Test, and it acquired the certificate of IEC/ISO17025:2005 International Laboratory Accreditation Management System. At the same time,the professional skill of our R&D team has been recognized by the authority, which greatly enhanced the competitiveness of our products.



# OPERATION

- Production Capacity
- Quality Assurance



# PRODUCTION CAPACITY





## AUTOMATIC PRODUCTION LINE

Star Instrument takes lead in running highly intelligent production line, covering seven major procedures in intelligent meter manufacture. This automatic production line is embedded with our independently developed manufacture management and regulation system FIS, which fulfills the purpose of manually free operation of automatic calibration, configuration, verification and schedule.

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## ADVANCED MANUFACTURE MANAGEMENT SYSTEM

The FIS manufacture management system possessed by Star Instrument is a domestically proceeding system with independent intellectual property, which is utilized in the manufacture and quality control of smart energy meters. It features order process tracking, techniques induction, data collection, in-process quality control and historical data tracing, thus realizing the full year online operation and the monitoring on the whole procedure of the manufacture, which helps to rapidly improve the responding speed of every manufacture procedure and the production efficiency. With it, Star Instrument is provided with the capacity of organizing large scale of production within short time and managing to stabilize the quality.



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## DUST-FREE PRODUCTION ENVIRONMENT

To ensure the quality of our products, we strictly control every aspect of production. The layout of our workshop is reasonable, properly equipped with clean rooms at the entrance to prevent work staff entering the workplace with outside dust. At the same time, the packing room is relatively isolated from the production line, therefore, dust-free purification is guaranteed from the very start to the end of the whole production.

The industrial leading automatic production line, advanced management system and the dust-free production environment create a preferable condition for the company in competition, expansion and cost reduction, greatly increased the efficiency for us to provide the service to our customers.





## QUALITY ASSURANCE

Star Instrument always focuses on product quality and keeps pursuing higher quality, insisting on making critical check from the very beginning in all processes, including discreet raw material selection, rigid manufacture procedure control and effective and accurate pre-delivery inspection. It implements the policy of "Not to manufacture defects, Not to accept defects, Not to deliver defects", thus enhancing the product quality in maximum.

Star Instrument established comprehensive quality assurance system, and obtained ISO 9001 International Quality Management System, IEC/ISO17025 Laboratory Accreditation Certificate, ISO14001 Environmental Management System and OHSAS 18001 Occupational Health and Safety Management System, ISO/IEC 27001 Information Security Management System Certificate. Its products are certificated with series of qualification, including KEMA, MID, DLMS, MET, CE, STS, VMI, CIDET, SEC, INDECOPI, DIGENOR and CPA, which help to pave way to the global market.

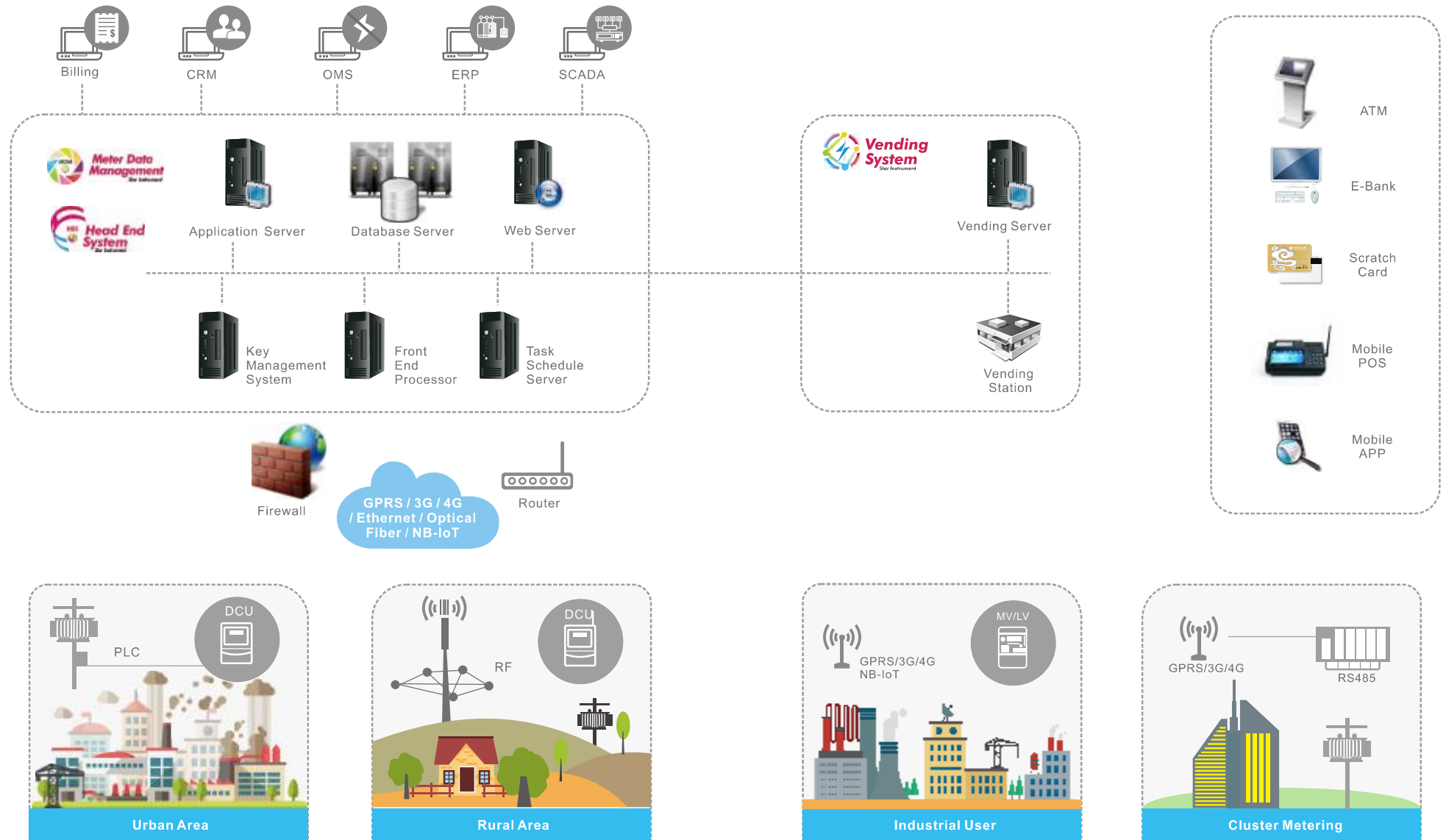
## PRODUCT

- ❖ AMI Solutions
- ❖ AMI : GPRS / 3G / 4G / NB-IoT
- ❖ AMI : PLC / G3-PLC / PRIME PLC
- ❖ AMI : RF / LoRa / Wi-SUN
- ❖ Vending System
- ❖ Water Meter Vending System





# AMI SOLUTIONS





## AMI : GPRS / 3G / 4G / NB-IoT

### AMI Solution:

Data is communicated to Utility via GPRS / 3G / 4G / NB-IoT.

### Smart Meter:

GPRS / 3G / 4G / NB-IoT plug & play module, communication protocol compliant with DLMS/COSEM.



## AMI : PLC / G3-PLC / PRIME PLC

### AMI Solution:

Data is collected via PLC / G3-PLC / PRIME PLC and communicated to Utility via GPRS / 3G / 4G / Ethernet / Optical Fiber.

### Smart Meter:

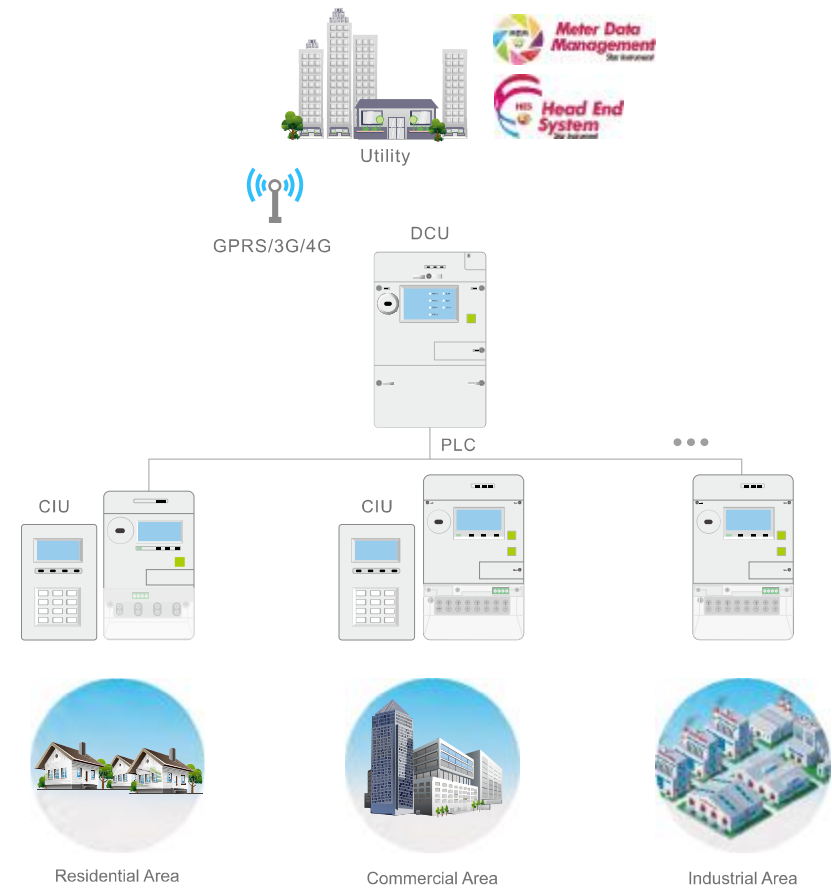
PLC / G3-PLC / PRIME PLC plug & play module.

### DCU:

PLC to meter, maximum 2048 units of energy meters per Data Concentrator Unit (DCU).

### CIU:

Customer Interface Unit (CIU), connection to meter.





## AMI : RF / LoRa / Wi-SUN

**AMI Solution:** Data collected via RF, and communicated to Utility via GPRS / 3G / 4G / Optical Fiber.

**Smart Meter:** RF: Wi-SUN / LoRa.

**DCU:** RF to energy meter, approximately 1000 units of energy meters per concentrator.

**HHU / PAD:** Hand Held Unit, an auxiliary meter reading unit.



## VENDING SYSTEM





## WATER METER VENDING SYSTEM



ATM



Mobile POS



Vending Station



Residential Area



Commercial Area



Industrial Area

## PRODUCT

- ☑ Smart Meter
- ☑ Conventional Meter
- ☑ Keypad Meter
- ☑ Smart Split-type DIN rail Meter
- ☑ ANSI Energy Meter
- ☑ Smart Terminal : DCU / HHU / PAD / POS
- ☑ Cluster Metering AMI System
- ☑ Plastic Meter Box for One Meter
- ☑ EV Charging
- ☑ Smart Water Meter
- ☑ Lines of Workshop
- ☑ Metering Test Equipment

## SMART METER





## SMART METER

### Main Features

- ◆ Measurement of the active, reactive and apparent energy at a high accuracy.
- ◆ Modular design for the hardware and firmware.
- ◆ Switchable between prepaid and postpaid mode.
- ◆ Protect from fraud or tampering, and alarm event record.
- ◆ With a built-in relay, support local and remote connection / disconnection.
- ◆ With plug and play, interchangeable module: GPRS / 3G / 4G / NB-IoT / PLC(G3-PLC / PRIME PLC ) / RF(LoRa / Wi-SUN).
- ◆ Compatible with multiple local communication ports: IR / RS485 / Wired M-bus / Wireless M-bus / P1 port / current loop / etc.
- ◆ Compliant with DLMS/COSEM.
- ◆ Support HLS-5 with encryption and authentication.

CT/PT High accuracy 0.2s



STM500

Smart Meter



STZ131

Keypad



STK131

Smart Card



STC131

Smart Meter



STZ351

Keypad



STK351

Smart Card



STC351

## CONVENTIONAL METER

### Main Features

- ◆ Measurement of active , reactive energy , voltage , current , power , etc.
- ◆ Measurement of maximum demand (optional).
- ◆ Protect from fraud / tampering, alarm and event record.
- ◆ Optical port / RS485 available (optional).
- ◆ Built-in real time clock available (optional).
- ◆ Built-in RF module available (optional).

1P2W / 1P3W



DDS26B-B

1P2W



DDS26D-D

3P4W



DTS27-F

2P3W



DTS27A



## KEYPAD METER

### Main Features

- ◆ Compliant with STS standards.
- ◆ Switch between prepaid and postpaid modes via token/remote.
- ◆ Support optical port / RS485 (optional).
- ◆ Support built-in module RF / PLC.
- ◆ Compliant with DLMS/COSEM.
- ◆ Support CIU communication with meter via RF / PLC / Current loop.
- ◆ Protect from fraud or tampering, alarm and events record.



## DIGITAL PANEL METER

### Main Features

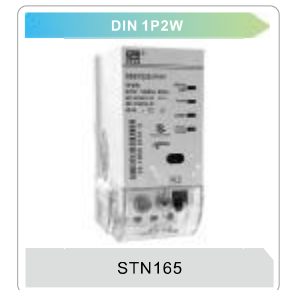
- ◆ Measurement of energy / voltage harmonic / current harmonic / current / voltage / power / power factor / etc.
- ◆ LED display , multiple buttons available for the configuration / data switching.
- ◆ Input / output interfaces available.
- ◆ Auxiliary power supply and RS485 available.
- ◆ Compliant with Modbus active and reactive energy.



## SMART SPLIT-TYPE DIN RAIL METER

### Main Features

- ◆ DIN rail-mounted.
- ◆ Compliant with STS standard.
- ◆ Switch between prepaid and postpaid modes via token / remote.
- ◆ Support optical port / RS485 (optional).
- ◆ Support built-in module RF / PLC.
- ◆ Compliant with DLMS/COSEM.
- ◆ Support CIU communication with meter via RF / PLC / Current loop.
- ◆ Protect from fraud or tampering , alarm and events record.





## ANSI ENERGY METER



### Smart ANSI Meter

ANSI DCU



DCU TJ12

1S / 2S / 4S / 12S / 25S



DTS27E-D

9S / 16S



DTS27E-E



### Main Features

- ◆ Compliant with ANSI standards, C12.10, C12.20, C12.18, C12.19, C12.22.
- ◆ 1S / 2S / 4S / 12S / 25S / 9S / 16S.
- ◆ Support optical port / RS485 (optional).
- ◆ Support built-in module: RF (LoRa / Wi-SUN) / PLC (G3-PLC / PRIME PLC).
- ◆ Support pluggable module: RF (LoRa / Wi-SUN) / PLC (G3-PLC / PRIME PLC) / GPRS / 3G / 4G.
- ◆ Protect from fraud or tampering, alarm and events record.

1S / 2S / 4S / 12S / 25S



DDS26E-C

1S / 2S / 4S / 12S / 25S



DTS27E-A

9S / 16S



DTS27E-B

## SMART TERMINAL : DCU / HHU / PAD / POS



### Main Features

- ◆ With plug and play, interchangeable WAN / LAN communication module.
- ◆ Both PLC and RF communications are supported simultaneously.
- ◆ Wide range of power supply : 3x57.7/100V ... 3x240/415V is flexible for various grids.
- ◆ CE certification.

DCU 3P4W



DCU TJ12

Mini DCU 1P2W / 1P3W / 2P3W



Mini DCU/Collector TJ21

HHU / PAD Win10 / Android



EM-T62 / EM-I62H

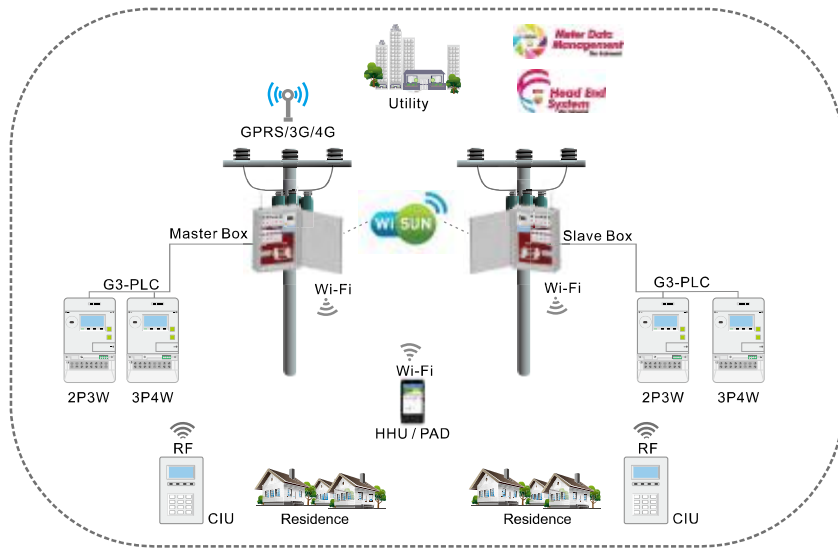
POS Vending



TPS550



## CLUSTER METERING AMI SYSTEM



## METAL METER BOX for AMI SYSTEM

### Main Features

- ◆ Stainless steel material.
- ◆ Corrosion resistant and weather resistance, IP54.
- ◆ Pluggable DCU and energy meter supported.
- ◆ 6 / 12 / 18 / 24 meters can be installed.
- ◆ Master-slave mode supported: master meter box communicates with master station, slave meter box communicates with master box.
- ◆ Collect meter data and set parameter remotely.
- ◆ Connect or disconnect the relay remotely.
- ◆ Upgrade firmware of the meter and DCU remotely.
- ◆ Event detection and reporting ( Meter box opening, temperature over-limit, meter position removal, power down, etc.)
- ◆ Switchable between prepaid and postpaid modes.
- ◆ Remote recharge ( prepaid ).
- ◆ Query and recharge via CIU unit.
- ◆ Query and set data via HHU.
- ◆ GPRS / 3G / 4G / Ethernet (DCU to HES / MDM system).



Metal Meter Box 6 / 12 / 18 / 24



BM180



## PLASTIC METER BOX for AMI SYSTEM

### Main Features

- ◆ For the installation of multiple BS meters or DIN rail meters.
- ◆ Flame resistance and weather resistance.
- ◆ UV resistant, anti-aging, IP54.
- ◆ 4 / 6 / 8 / 10 meters can be installed.
- ◆ Master-slave mode supported: master meter box communicates with master station, slave meter box communicates with master box.
- ◆ Collect meter data and set parameter remotely.
- ◆ Connect or disconnect the relay remotely.
- ◆ Upgrade firmware of the meter and DCU remotely.
- ◆ Event detection and reporting (Meter box opening, temperature over-limit, power failure, etc.)
- ◆ Switchable between postpaid and prepaid modes.
- ◆ Remote recharge (prepaid).
- ◆ Query and recharge via CIU unit.
- ◆ Query and set data via HHU.
- ◆ GPRS / 3G / 4G / Ethernet (DCU to HES / MDM system).

Plastic Meter Box 4 / 6 / 8 / 10



BP101

## PLASTIC METER BOX for ONE METER



### Main Features

- ◆ Wall-mounted / Pole-mounted.
- ◆ Flame resistance and weather resistance.
- ◆ UV resistant, anti-aging, IP54
- ◆ With mountable MCB.

Meter Box BS



BP183C

Meter Box DIN



BP191C

Meter Box BS



BP187C

Meter Box BS



BP188C

Meter Box BS 3P4W



BP389C



## EV CHARGER

### AC TYPE

- ◆ Output current & voltage: 32A / 220V.
- ◆ Output power: 7kW.
- ◆ Wall-mounted / floor-mounted.
- ◆ Colored touchscreen.
- ◆ App charging supported.
- ◆ Wired / wireless data transmission supported.
- ◆ All-around protection: over voltage / over current / short circuit / insulation / earth leakage / etc.
- ◆ Emergency stop button.



### DC TYPE

- ◆ Highly compatible voltage output: 200V...750V.
- ◆ Output power: 60kW / 120kW.
- ◆ GB / T 20234.3-2015-compliant charging interface.
- ◆ Multiple charging modes.
- ◆ Ingress protection: IP54.
- ◆ All-around protection: over voltage/over current / short circuit / insulation/earth leakage/ etc.
- ◆ Emergency stop button.



## SMART WATER METER



### The smart water meter

integrates the technologies such as modern microelectronic, sensing, IC card storage /data communication and computer to enable it to remotely and locally control the household water-consumption , it is not only capable of measuring the amount of water consumed by the user, transmitting data and billing, but also detecting the abnormal water consumption.





# | LINES OF WORKSHOP

## METERING TEST EQUIPMENT



ST1000 Three-phase  
Reference Meter  
(Class 0.01)



ST9020G3 Single-phase  
Meter Test Equipment  
(Class 0.1)



SB1300 Three-phase  
Multi-function Reference  
Meter(Class 0.02)



ST2302 Three-phase  
Energy Meter Field  
Test Analyzer(Class 0.02)



ST9001D5 Three-phase  
Energy Meter Test Equipment  
(Class 0.02/0.05/0.1)



ST2303 Three-phase  
Energy Meter Field  
Test Analyzer(Class 0.05)



ST9020 Single-phase  
Energy Meter Test  
Equipment (Class 0.05/0.1)



ST5200 Single-Phase/Three-  
Phase Automated Power  
Frequency Synchronization  
External Magnetic Field Test  
Equipment



ST6300 Portable  
Three-phase Meter Test  
Equipment (Class 0.05/0.1)



JCD-4060 Three-phase  
Precision Power Supply



# SERVICE

- 📍 Marketing Network
- 📍 Service System



Asia Utility Week



Middle East Electricity



## MARKETING NETWORK



Shenzhen Star Instrument Co., Ltd. has a professional team to participate in the exhibition on the energy and metering industry.

The exhibition covers the fields of electricity, water, gas and other alternative energy provision. with the topics of the installation of Smart Metering, Smart Grids, Data Management, AMR & AMI, telecom & IT and Energy Retail structures. The exhibition is also the most instructive and innovative professional conference and exhibition in the international Smart grid and Smart metering industries.



European Utility Week

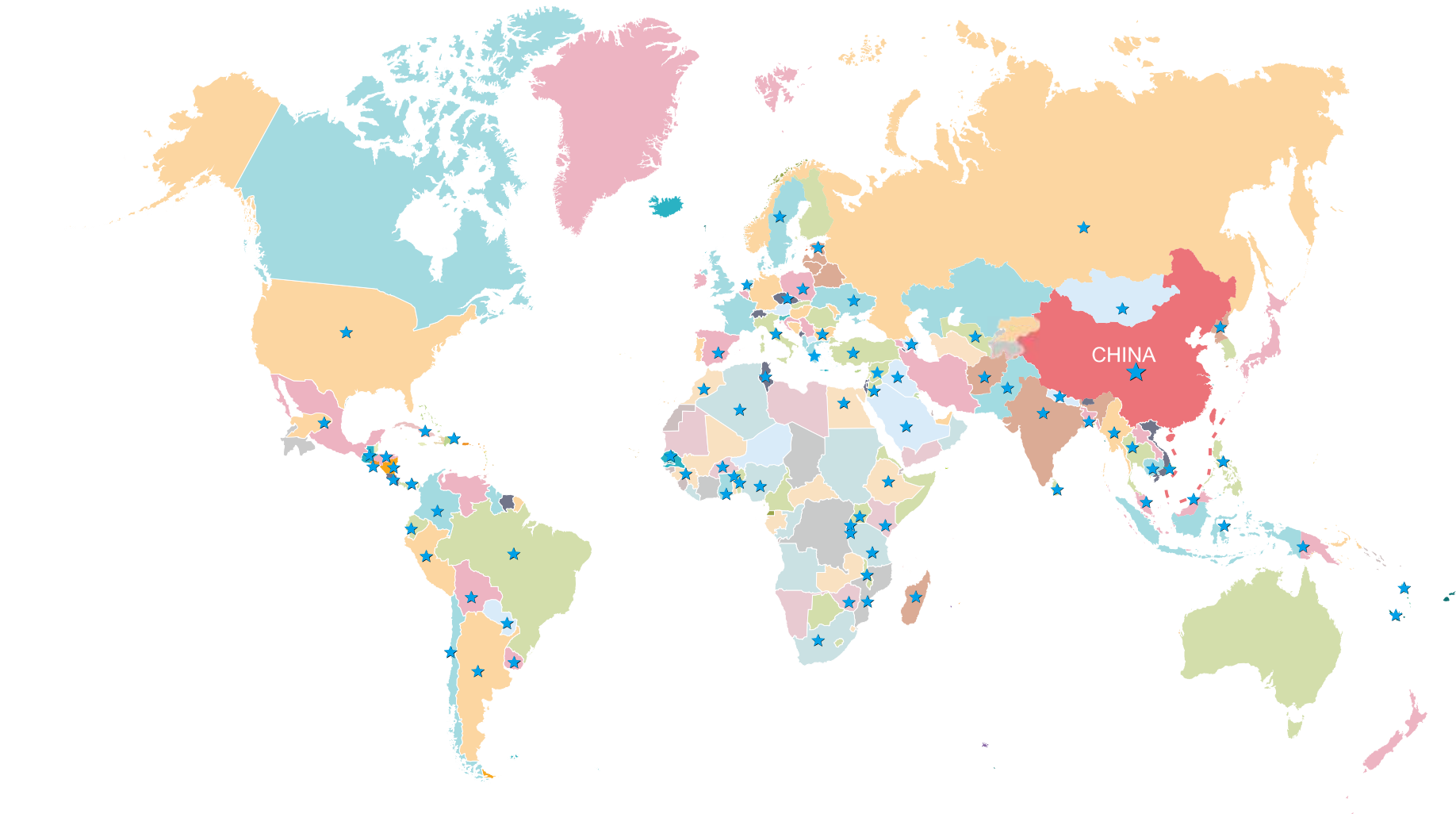


African Utility Week



SMART METER SOLUTIONS  
LIGHTING OUR WORLD

OUR PRODUCTS HAVE BEEN  
EXPORTED TO  
OVER **80** COUNTRIES AND REGIONS





## SERVICE SYSTEM

Star Instrument adheres to the service principle of Customer Foremost, striving to establish a globally technical service platform and consolidate a comprehensive service system to provide customers the fast, premium and sophisticated services, including site service, training, installation, technical support, maintenance and other relative after-sales services.



[www.szstar.com](http://www.szstar.com)

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