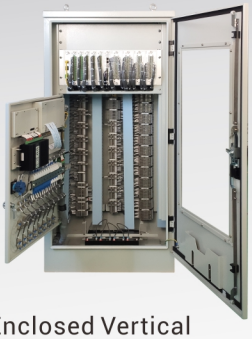
CENTRALIZED DTU DISTRIBUTION AUTOMATION SUBSTATION TERMINAL



Enclosed Vertical
(Terminal Block)



Panel-Mounted
Cabinet



Weatherproof Vertical



Enclosed Vertical
(Rectangular Aviation Connetctor)



Enclosed Vertical
(Circular Aviation Connector)



Enclosed Vertical
(Gen.21)

OVERVIEW

The CSP6000 Distribution Automation Station Terminal unit (DTU) is a series of intelligent station terminal products tailored to meet the requirements of smart distribution construction. Utilizing modern electronics, communication technologies, and computer networking, Ole Power has successfully developed the third-generation centralized DTU integrating monitoring, protection, control, and distribution management. The launch of Ole Power DTU3.0 significantly enhances distribution management efficiency and advances smart grid development.

APPLICATION

The DTU product series serves as feeder automation remote terminals in 10kV and below switchgear cabinets and distribution rooms, supporting either centralized indoor installation or weatherproof outdoor deployment.

PRODUCT FEATURES

Hign Performance	Supports teleindication, telecommand, and telemetry ("three-remote" functions) with data transmission to master stations via communication modules. Executes stable protection logic for rapid fault isolation and non-fault zone restoration. Provides protection functions, complete fault waveform recording, and file transfer capability.
Modular Design	Each sampling board: 16 analog inputs (expandable with 1–4 boards). Each digital input board: 30 teleindication channels (expandable with 1–3 boards).Each output board: 16 control outputs (expandable with 1–2 boards). Flexible configuration, replacement, and expansion to meet diverse customer requirements.
High Precision	Class 0.5 accuracy for: Three-phase voltage/current, Zero-sequence voltage/current. Class 1 accuracy for: Active/reactive power
Extensive Protocol Library	Supports all mainstream communication protocols: IEC 101/103/104, CDT, MODBUS, DNP3.0, SCADA
High Reliability	Operates in extreme environments (-40°C to +70°C). Voltage/current circuits with 150% continuous overload capacity Ensures dependable protection operation (no maloperation / failure to operate)

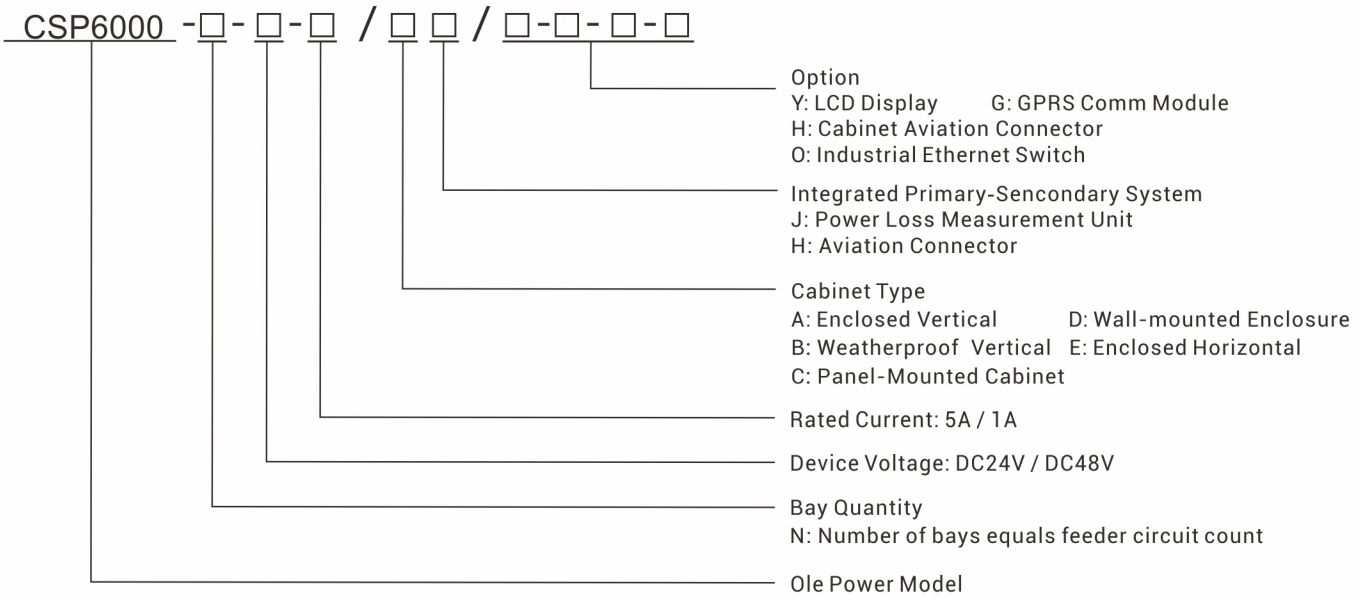
TECHNICAL SPECIFICATION

NO.	PARAMETER		UNIT	STANDARD REFERENCE VALUE
1	Environmental Conditions	Min. Temperature	℃	-40
		Max. Temperature	℃	+70
		Relative Humidity	%	10~100
		Max. Absolute Humidity	g/m3	35
2	Nominal Voltage Input		V	AC100V/AC220V
3	Nominal Current Input		A	5/1
4	Operating Power		/	AC220V, dual-circuit
5	Switch Monitoring Capacity		/	(1) Capacity Configuration: 8 feeder circuits, suited for substations with 5–8 feeders. (2) Telemetry: Per terminal: ≥6 voltage inputs (2 sets of busbar voltages) Per circuit: ≥3 current inputs (phases A/B/C or phases A/C + zero-sequence) (3) Telesignaling: ≥5 signals per circuit including: breaker close/open position, earth switch status, spring charge state, remote/local mode,etc. (4) Telecommand: ≥2 commands per circuit (open/close control outputs).
6	Voltage Measurement Accuracy		/	Class 0.5 (phase/zero-seq voltage)
7	Current Measurement Accuracy		/	Phase meas. class 0.5 (≤1.2In), Phase prot. ≤3% (≤10In). Zero-seq. class 0.5
8	Active/Reactive Power Accuracy		/	Class 1
9	Telesignaling Power		A	DC24V/48V auto-adaptive
10	Telesignaling Resolution		ms	≤5
11	Software Debounce Time		/	10~1000ms configurable
12	AC Current Loop Overload Capacity		/	1.2In, continuous; 20In, 1s
13	AC Voltage Loop Overload Capacity		/	1.2Un, continuous; 2Un, 1s
14	Timekeeping Accuracy		/	≤2s/24h
15	Control Output	Contact Rated Power	/	AC 250V/5A, 380V/2A or DC 110V/0.5A (resistive load)
		Contact Endurance	times	Make-Break≥105

NO.	PARAMETER		UNIT	STANDARD REFERENCE VALUE
16	Communication Port	Serial Ports	/	≥4× RS232/RS485 (reusable)
		Rj45 Ethernet	/	≥2
17	Protocols		/	(1) DL/T 634 standard protocols 101 or 104; (2) DL/T 634.5101-2002, DL/T 634.5104-2009 (3) SGCC's current standards
18	Terminal Power Consumption		/	(1) DC power consumption of the DTU core unit ≤20W(excluding the power supply of the communication module, distribution line loss acquisition module, and power management module). (2) Total device power consumption ≤50VA (including the distribution line loss acquisition module, excluding the communication module and backup power supply).
19	Power Supply Requirement	Power Management Module	/	Continuous stable output≥80W, instantaneous output ≥50W, duration ≥15s
		Comm Power Output	/	Rated DC24V, steady load capacity ≥24V/15W, instantaneous output≥24V/20W, duration≥50ms
		Operation Power Output	/	Rated DC48V, instantaneous output ≥48V/8A, duration≥15s
		Distirbution Line Loss Aquisition Module Power Output	/	Rated DC48V, steady load capacity≥48V/10W
20	Backup Power Options		/	(1) Lead-acid battery; (2) LiFePO battery; (3) Supercapacitor.
21	Installation Method		/	Enclosed vertical type; DTU cabinet installed alongside the switchgear in RMU or prefabricated substation.
22	Cabinet Dimensions and color		mm	≤ H1300 × W600 × D400 mm (excluding communication box); color RAL7035 or Z32.
23	Wiring Type Options		/	(1) Terminal type; (2) Circular aviation connector type; (3) Rectangular aviation connector type.
24	Wireless Comm Module	Comm Standars	/	Supports penta-mode adaptive communication: TD-LTE / LTE-FDD / WCDMA / GSM (2G/3G/4G)
		Comm Interfaces	/	≥2× RS232 (9600bps) or one 10/100M full-duplex Ethernet
		Basic Fuctions	/	Port data monitoring, automatic reconnection upon network interruption, etc.
		Interface Durability	/	≥500 tims
		Installation Method	/	Independently mounted within the DTU enclosure.
25	Mean Time Between Failures (MTBF)		h	≥50000

CENTRALIZED DISTRIBUTION AUTOMATION SUBSTATION TERMINAL

PRODUCT MODEL & NOMENCLATURE



Example:
CSP6000-8-48V-5/A-J-H/Y-G-T denotes an 8-circuit integrated primary-secondary distribution automation station terminal (DTU) in enclosed vertical cabinet with power loss measurement module (PLMU), Wireless communication module, aviation connector wiring.

DTU CABINET OPTIONS

MODEL CODE	CABINET TYPE	BAYS	STANDARD DIMENSIONS	APPLICATION
A	Enclosed Vertical (Terminal Block)	4~12	1300*600*400cm	Universal Distribution Automation Ring-Main Unit (RMU) Matched with SGCC Integrated Primary-Secondary RMU Systems Optional Communication Cabinet (400×600×400 mm)
	Enclosed Vertical (Circular Aviation Connector)	4~8	1300*600*400cm	
	Enclosed Vertical (Rectangular Aviation Connector)	4~8	1300*600*400cm	
	Enclosed Vertical (Rectangular Aviation Connector)	4~6	1300*600*400cm	
B	Weatherproof Vertical	4~8	1400*750*550cm	Outdoor RMU Retrofit Projects
C	Panel-Mounted	4~24	2260*800*600cm	Distribution Rooms & Outdoor Switching Stations

■ **Friendly Reminder:** Our company can also customize DTU cabinet types in other styles and dimensions.

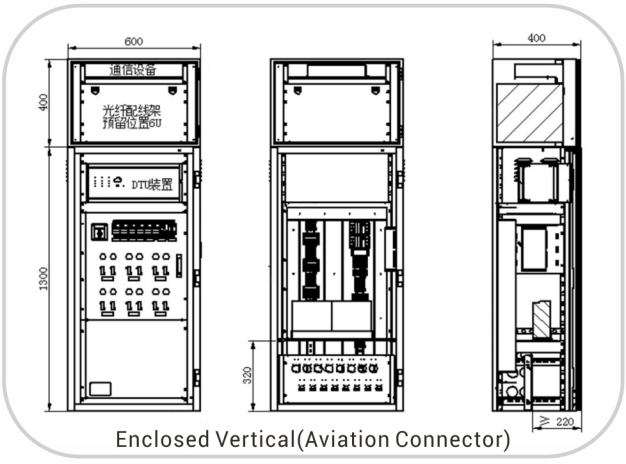
CORE UNIT BOARD CONFIGURATION

BOARD TYPE	FUNCTION
Master Control Board	Master Control Board. Performs all computational and communication tasks. Interfaces: 2× Ethernet,1× Debug serial port, 2× RS232 + 2× Rs485, GPS time synchronization, 2× DC measurement channels
Digital Input (DI) Board	Supports 30 channels of DC24V remote signals, each channel equipped with an LED indicator to show whether a remote signal is present. Remote signals are processed through hardware filtering and software filtering, and then transmitted in real time to the main control board via the internal CAN bus. From the DI board's confirmation of the remote signal to the start of processing by the main control board's remote signal program, the total delay is less than 1 ms (Test condition: fewer than 2 DI boards installed in the device).
Digital Output(DO) Board	Supports 16 relay outputs, each with a rated capacity of 8A at 250VAC.Each output channel is equipped with a dedicated feedback circuit, with every two outputs sharing a common terminal. From the issuance of an output signal by the main control board to the DO board's relay activation, the total delay is less than 1 ms (Test condition: fewer than 2 DO boards installed in the device)
Sampling Board	Supports 16 channels of analog input. Voltage: rated value 100V, maximum 264V. Current: rated value 5A, maximum 100A (applied time < 1 s). Accuracy: 0.2% for input ≤1.2 times rated value; 3% for input >1.2 times rated value.
Power Supply Board	External 24V DC Power Supply: Input via 24V+IN / 24V-IN, controlled by a rocker power switch. After internal EMC filtering, it is divided into two paths: One path goes through an internal DC/DC converter, providing ±12V and +5V to the device backplane. The other path goes through telemetry EMC filtering, and is output via 24V+OUT / 24V-OUT to supply power for the control panel, status board, and external GPRS module. EXT Serial Port: Supports connection of an external status indicator board. Shielding Ground: The shielding ground serves as the grounding terminal of the device and should be reliably connected to the grounding copper bar.
Spare Board	Since the device uses two different board widths, two types of spare boards are provided to cover unused slot.

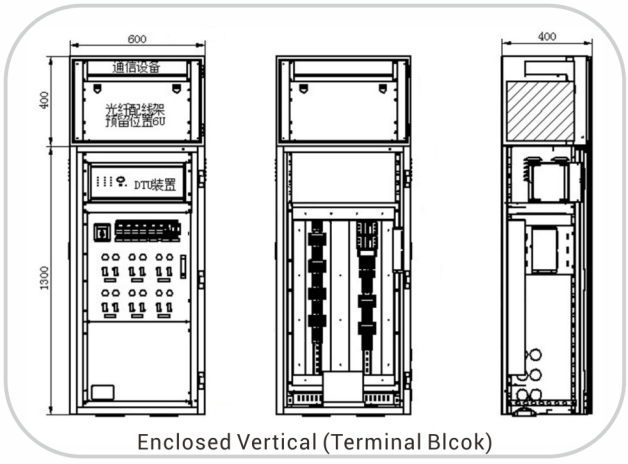
DTU ACCESSORIES SELECTION

MODEL CODE	ACCESSORIES	STANDARD CONFIGURATION PARAMETERS	DESCRIPTION
Y	Display	LCD	Option
G	GPRS communication module	4G wireless module, dual-SIM dual standby, wireless encryption	Option
H	Cabinet aviation connector	4-core、6-core、6-core open-circuit proof、10-core 26-core（circular/rectangle) aviation connector	Option
O	Industrial Ethernet switch	2Fiber+6RJ45、4Fiber+8RJ45、4Fiber+24RJ45	Option
	Optical distribution frame (ODF)	12-core、24-core、36-core、48-core、72-core.	Option

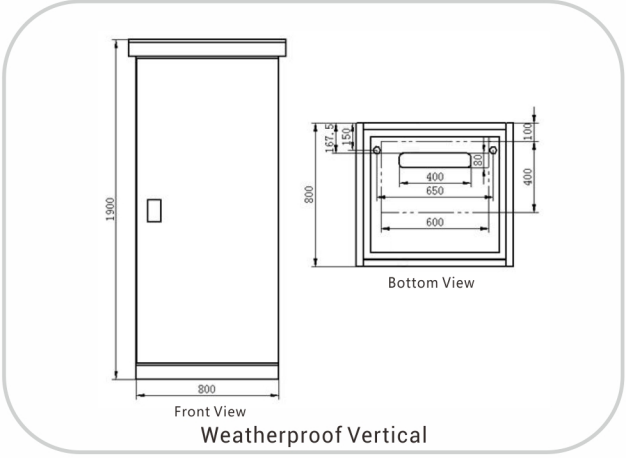
DTU CABINET STRUCTURE & DIMENSIONS



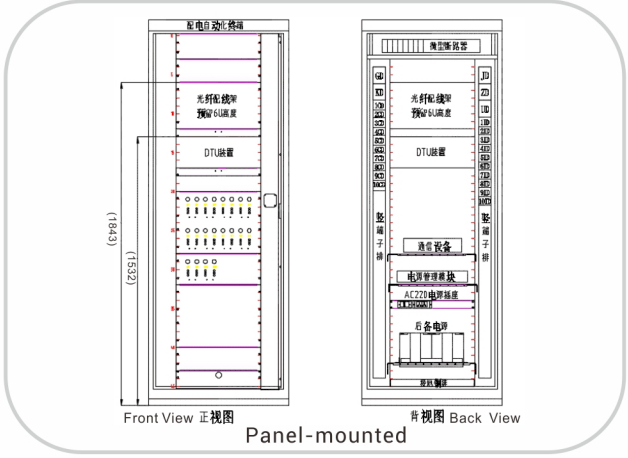
Enclosed Vertical(Aviation Connector)



Enclosed Vertical (Terminal Blcok)



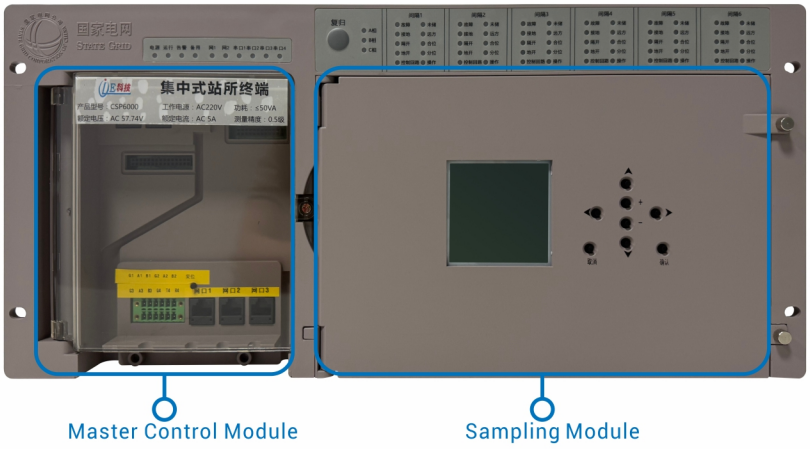
Weatherproof Vertical



Panel-mounted

DTU CORE UNIT

Gen.21 DTU Core Unit



BASIC FUNCTIONS

Overcurrent Post-acceleration Protection
Sensitive Ground Fault Protection
Three-stage Overcurrent Protection
Zero-sequence Overcurrent Protection
Zero-sequence Voltage Protection
Overload Protection
Undervoltage Protection
I/O Circuit Safety Protection
Remote/Local Parameter Configuration
Fault Detection & Discrimination
Telemetry Threshold Violation Detection & Discrimination
Sequence of Events (SOE) Recording & Reporting
Non-Interrupting Current Blocking
Power Loss Protection

HARDWARE AND SYSTEM ARCHITECTURE UPGRADE

2017 Edition DTU

Single-CPU Architecture: Mainly relies on DSP or ARM processors for data acquisition and control, featuring strong real-time performance.

Expandability: Functional modules are connected via bus and support hot-swapping.

2021Edition DTU

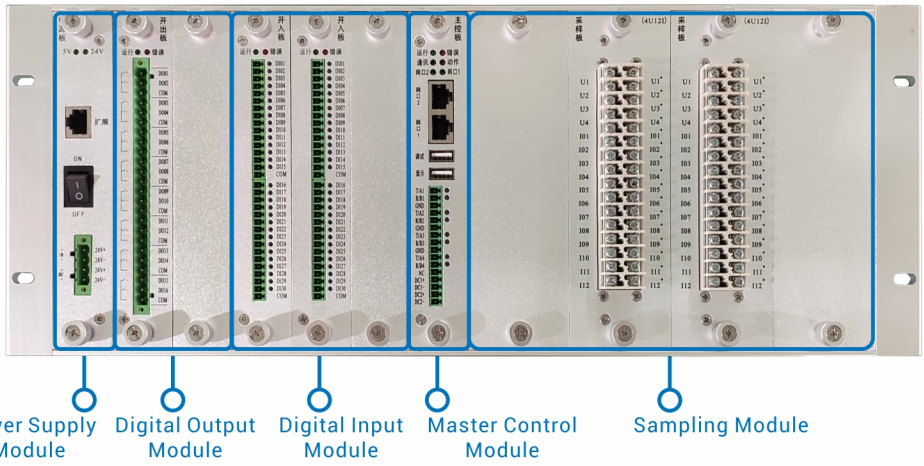
Dual-core design (Real-time Core + Management Core)

Real-time Core (MCU): Handles high-speed sampling and protection actions (e.g., fault isolation), ensuring millisecond-level response.

Management Core (MPU): Runs Linux/Ubuntu OS, responsible for communications, data storage, and intelligent analytics (e.g., power loss measurement, fault location).

Domestic hardware platform: Utilizes domestically developed core boards like jinzhi T536, integrating 8 serial ports, 3 Ethernet interfaces, SM cryptographic chip, and USB-to-Ethernet expansion support.

Gen.17 DTU Core Unit



BASIC FUNCTIONS

Overvoltage Protection
Self-diagnostics
Time Synchronization
Communication
Telecommand
Telesignaling
Telemetry
Overcurrent Trip with Outage
Fault Waveform Recording
Manual Operation
Local Debugging
Chip Encryption (SM algorithm)
Auto-reclosing
PT Wire Break Detection

OPERATING ENVIRONMENT

PARAMETER	2021 EDITION	2017 EDITION
Ambient Temperature	-40℃ ~ +70℃	-40℃ ~ +70℃
Max. Temp. Change Rate	1℃/min	1℃/min
Humidity	10% ~ 100%	10% ~ 100%
Max. Absolute Humidity	35g/m³	35g/m3
Atmosoheric Pressure	70 ~ 110kPa	70 ~ 110kPa
Seismic Resistance	Acceleration Horizontal 0.3g Vertical 0.15g	Acceleration Horizontal 0.3g Vertical 0.15g
Ingress Protection	IP30(indoor) / IP54(outdoor)	IP30(indoor) / IP54(outdoor)
EMC Resistance	EMC class 4(GB/T 17626 severity level)	EMC class 3
Reliability	MTBF≥50,000hours, Service life≥8years	MTBF≥10,000 hours

VISUALIZED SUBSTATION TERMINAL MONITORING SYSTEM

SOFTWARE INTRODUCTION

Key Features Highlighted:

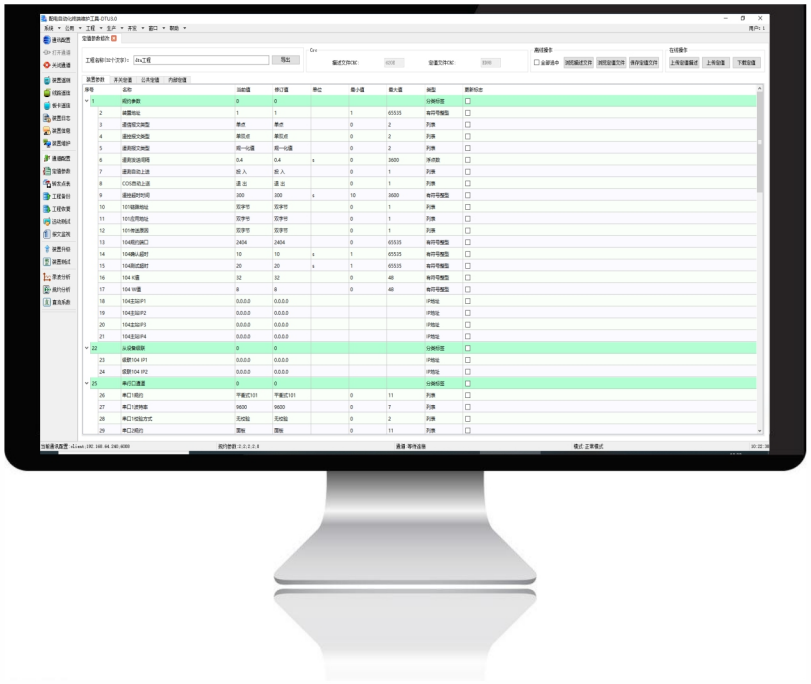
·The CSP6000 dedicated debugging tool Ensures task-specific optimization

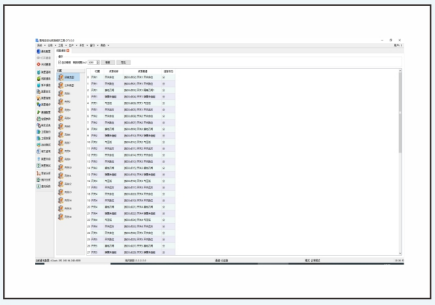
·Dual operation modes Touchscreen & remote computer access

·Comprehensive compatibility Adaptable to staffed/unmanned substations

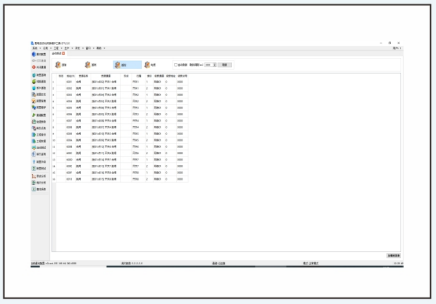
·Networked remote control Secure parameter management via PC

·User-centric design Streamlined workflow for maximum efficiency

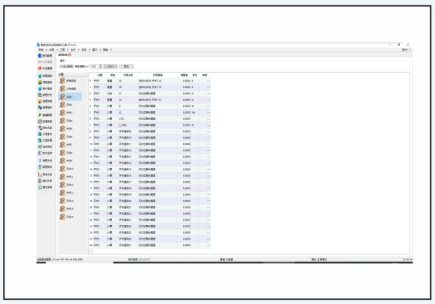




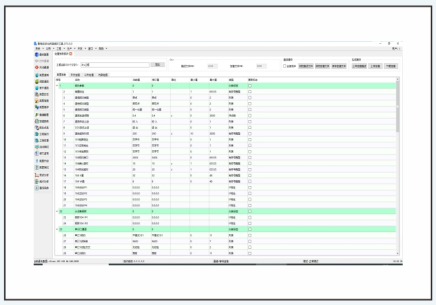
Line Telesignaling Interface



Telecommand Interface



Telemetry Interface



Setting Parameters Interface

COMMON FUNCTIONS

Include: Telemetry Data, Line Telesignaling, Module Telesignaling, Sampling Zero-Drift, Device Event Logs, Device Information, Device Maintenance.

FUNCTIONS	SPECIFICATION
Telemetry Date	Manual or real-time refresh of telemetry values.
Line Telesignaling	Manual or real-time refresh of teleindication status.
Module Signaling	View teleindication status by Slot-Module location and hardware address.
Sampling Zero-Drift	View zero drift values of the sampling module, refresh by channel per slot.
Device Event Logs	View system errors, operations, teleindication, SOE (Sequence of Events) information, and GPRS information in the device.
Device Information	View unit type, number of modules, program version, configuration information, fault information, and GPRS information. After project implementation, perform a full information refresh and export/save the data for project traceability.
Device Maintenance	Set device time, modify menu operation password, activate battery, clear event records, start fault recording, restore factory settings, and reset. (Note: restoring factory settings and reset require a secondary password.)

ENGINEERING FUNCTIONS

Include: Device Channel Configuration, Setting Parameters Modification, Data Point Mapping, GPRS Setup, Engineering Backup, Project Restoration, Telecontrol Test, Telegram Monitoring.

FUNCTIONS	SPECIFICATION
Device Channel Configuration	According to project requirements, the device's remote signaling, telemetry, and sampling channels can be configured.
Setting Parameters Modification	Supports modification of external common settings, external switch settings, internal settings, and device parameters, including protection enabling/disabling, protection settings, and communication configuration.
Data Point Mapping	The point tables of remote signaling, telemetry, and telecommand can be reconfigured to meet the requirements of different manufacturers and application scenarios.
GPRS Setup	Configuration of the GPRS module is supported.
Engineering Backup	Engineering backup and recovery functions allow critical files inside the device (including programs, settings, communication configurations, forwarding point tables, etc.) to be backed up, as well as restoring project backups saved on a PC back into the device.
Telecontrol Test	After communication with the master station is established, this function enables point-to-point verification with the master station to ensure the correctness of the configured telemetry and remote signaling point tables.
Telegram Monitoring	Monitoring functions include device system information, CAN messages between the main board and sub-boards, and IEC 101 / IEC 104 messages between the device and the master station.