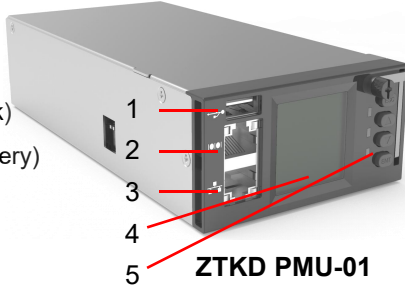
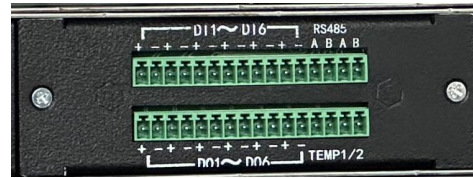


Appearance

1. USB
2. RJ45(for uplink)
3. RS485(for battery)
4. Screen
5. Button



ZTKD PMU-01



ZTKD SIU-02

Monitoring Module

- ◆ A microprocessor system can monitor the status of the rectifier, PV module, BMS, and it sends out audio and visual alarms.
- ◆ Configured with RS485 and ethernet port which support MODBUS_RTU and SNMP V2, the monitor enables remote detecting, remote control and remote adjusting.
- ◆ User-friendly interface includes LED indicators, buttons, and a LCD display.
- ◆ Control the rectifier module to operate based on actual load capacity for energy efficiency.
- ◆ Flexible use of config. files to program the system
- ◆ Operation records ≥ 3000 , Hot Swap
- ◆ Operating voltage: 40~58V

Operating environment: 0~60°C, 5% ÷ 95%

Functions

Measurement

AC input	Voltage of each phase, current, frequency, Energy consumption
DC output	Voltage, current,
Load	Total load current, MCB status
Battery	Lithium BMS, voltage, current, capacity, remaining capacity, number of cycles, temperature, MCB status,
Environment	Temperature
Time	Real time clock available

Rectifier management

- Rectifier power-on and power-off control
- Rectifier operation status(voltage/current of each module)
- Rectifier output power control
- Rectifier Over-voltage protection
- Rectifier dormancy management
- Each rectifier status (In/out voltage, in/out current, S/N)
- PV module management

Load management

- Load low voltage disconnection (LLVD); on/off load
- Battery low voltage disconnection (BLVD); on/off battery

Parameter setting

By Keys/ laptop at site/ remotely through SNMP protocol.

Battery charging current limit, float charging, boost charging/ Battery capacity/ High DC voltage cut-off/ High/low DC/AC voltage warning/ Temperature warning level

Alarm

Output voltage/current over/high/low

Load/battery/AC/CB/ disconnect/ fuse fail

Battery voltage high/low/ BLVD/LLVD

Current limiting point

AC input fail, Running generator/start failed

Envir./battery/Rectifier temperature high

Rectifier fail/over load/over current / over voltage/ fan fail /imbalance load sharing

Flexible DI/DO alarm setting

Set alarm : Yes

Battery management

Battery floating, boost charge setting

Disconnection protection, failure

Battery charging management

Battery testing

Battery temperature compensation

Battery high temperature protection

Battery capacity detection and report

Battery backup time setting

The charging voltage can be set according to the battery specifications

Remote R/W

AC low/high alarm range, /LLVDBLVD voltage, Battery capacity, Battery charging current/float voltage/ boost charging voltage limit, Temp Compensated Charging, envir./battery temp high/low alarm range, Server address receiving trap/Soft start/Smart DCDCU

Monitoring Parameter

- ◆ Power cabinet name, operating mode, power cabinet controller model, quantity, rectifier model (or solar converter, if any), battery pack number (allows user to specify battery pack number)
- ◆ AC voltage per phase
- ◆ AC phase current
- ◆ Input AC frequency (Hz)
- ◆ Energy consumption kWh
- ◆ Battery DC current (charge and discharge current)
- ◆ DC current per rectifier
- ◆ DC load current
- ◆ DC voltage supplied to load
- ◆ Collect power cabinet setting parameters (DC low, BLVD, LLVD, AC low, boost, floating, high temperature warning threshold, shunt resistor coefficient, temperature compensation coefficient)
- ◆ Battery temperature
- ◆ Ambient temperature
- ◆ Equipment temperature (controller/rectifier)
- ◆ Third-party lithium battery parameter monitoring via Modbus

Generator control and monitoring features

Generator start control conditions According to the scheduled time (schedule)
According to the voltage level of the DC power cabinet or SOC

Generator stop control

- Real-time
- Based on machine running time
- Based on battery voltage or SOC charging status

Generator fault Alarm via passive contact (dry contact)

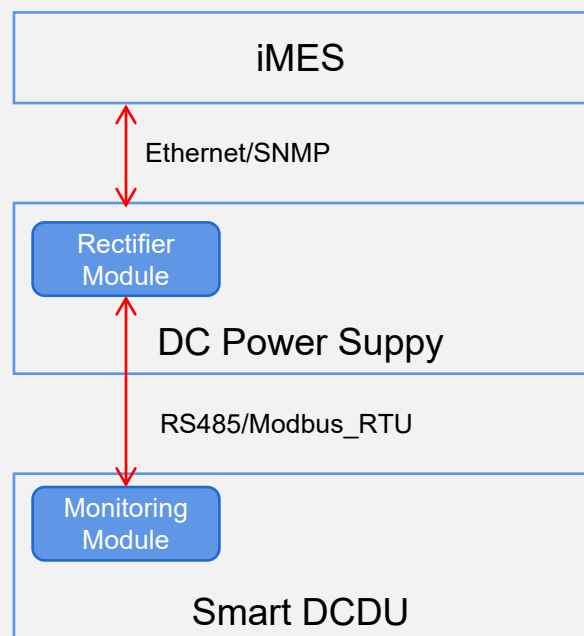
Generator power limitation Set the generator power so that the system limits the charging current to match the generator power.

Generator start and stop control method based on rectifier control

- Generator start mode: After the generator is started, it runs at no load (the running time can be set), and then the rectifier is allowed to supply power to the load, or the rectifiers are started one by one, and the minimum interval time for each rectifier is 30 seconds (adjustable).
- Generator shutdown mode: Before the generator is shut down, the rectifier will cut off the power supply first, allowing the generator to run at no load for a period of time, which can be set.

Communication Function With Smart DCDU

The DCDU monitoring module can communicate with the DCDU through the modbus protocol. At the same time, the SNMP protocol for the controller to communicate upward contains relevant control functions. For details, see the next page, **the premise is that DCDU monitoring has relevant agreement content!**



Smart DCDU Monitoring & control via Modbus_rtu Protocol

1	Setting each smart CB	<ol style="list-style-type: none"> 1. Remote control via SNMP protocol 2. Local control by DC voltage threshold 3. Local control by remaining capacity % (SOC) of lithium battery. 4. Local control by set time (time schedule/ block time) 5. Stop (disable) control modes.
2	Remote control mode for each smart CB	Allows on/off operation to each smart CB module through the DC power cabinet controller using SNMP communication protocol.
3	Local control mode for each smart CB module according to DC voltage threshold	<p>DC power cabinet controller/ DCDU controller performs:</p> <ul style="list-style-type: none"> - Automatically turns off smart CB when DC voltage drops to Disconnect Voltage Threshold. - Automatically turns smart CB back on when DC voltage increases to Reconnect Voltage Threshold.
4	Local control mode of each smart CB module according to the remaining capacity % of lithium battery (SOC)	<p>The DC power cabinet controller/DCDU controller performs:</p> <ul style="list-style-type: none"> - Automatically turns off the smart CB when the remaining capacity % of the lithium battery (SOC) drops to the Disconnect SOC Threshold threshold. - Automatically turns the smart CB back on when the remaining capacity % of the lithium battery (SOC) increases to the Reconnect SOC Threshold threshold.
5	Local control mode for each smart CB module according to time (can be divided into 3 time blocks or more)	<p>The DC power cabinet controller/ DCDU controller performs:</p> <ul style="list-style-type: none"> - Automatically turns off smart CB when the time reaches OFF time. - Automatically turns on smart CB when the time reaches ON time. - At least 03 time frames (block time) on/off are set on the DC power cabinet controller/ DCDU controller. Each block time will start from OFF time to ON time.
6	Manage labels of each smart CB module	<ul style="list-style-type: none"> - Each smart CB will be labeled/printed with a hard label on the DCDU similar to the label on the DC power cabinet controller. - The label information of each smart CB can be set on the DC power cabinet controller.
7	Manage smart CB alerts at site	<p>On the DC power cabinet controller/ DCDU controller, there must be a warning signal (by light/sound) when the following warnings occur:</p> <ul style="list-style-type: none"> - Warning of loss of smart CB supervision with the DC power cabinet controller/ DCDU controller. - Warning of smart CB error - Warning of smart CB not yet declared label (if any): Occurs when the smart CB is turned ON but not yet declared label on the controller.
8	Remotely monitor information and status of each smart CB module	<p>Ability to monitor through the DC power cabinet controller (by SNMP protocol) the information and status of each smart CB module:</p> <ul style="list-style-type: none"> - Number of smart CB modules installed on the DCDU (installed number of smart CB). - Number of smart CB modules currently connected (online) to the power cabinet controller/DCDU controller (active number of smart CB). - Connection status (online, offline) to the DC power cabinet controller/DCDU controller of each smart CB module. - On/off status (ON/OFF) of each smart CB module. - Information about the model, serial number (if any), rated cut-off current of each smart CB module. - Temperature, DC voltage, current, capacity... of each smart CB module. - Warnings of each smart CB module: <ul style="list-style-type: none"> + Warning of loss of smart CB supervision with DC power cabinet controller/ DCDU controller. + Warning of smart CB error + Warning of smart CB not declared label (if any)
9	Remotely set parameters of each smart CB module	<p>It is possible to set through the DC power cabinet controller (by SNMP protocol) the parameters of each smart CB module:</p> <ul style="list-style-type: none"> - Disconnect Voltage Threshold, Reconnect Voltage Threshold thresholds. - Disconnect SOC Threshold, Reconnect SOC Threshold thresholds. - Block time (OFF time; ON time). - Label information of each smart CB module.

NOTE: The premise is that DCDU monitoring has relevant agreement content!