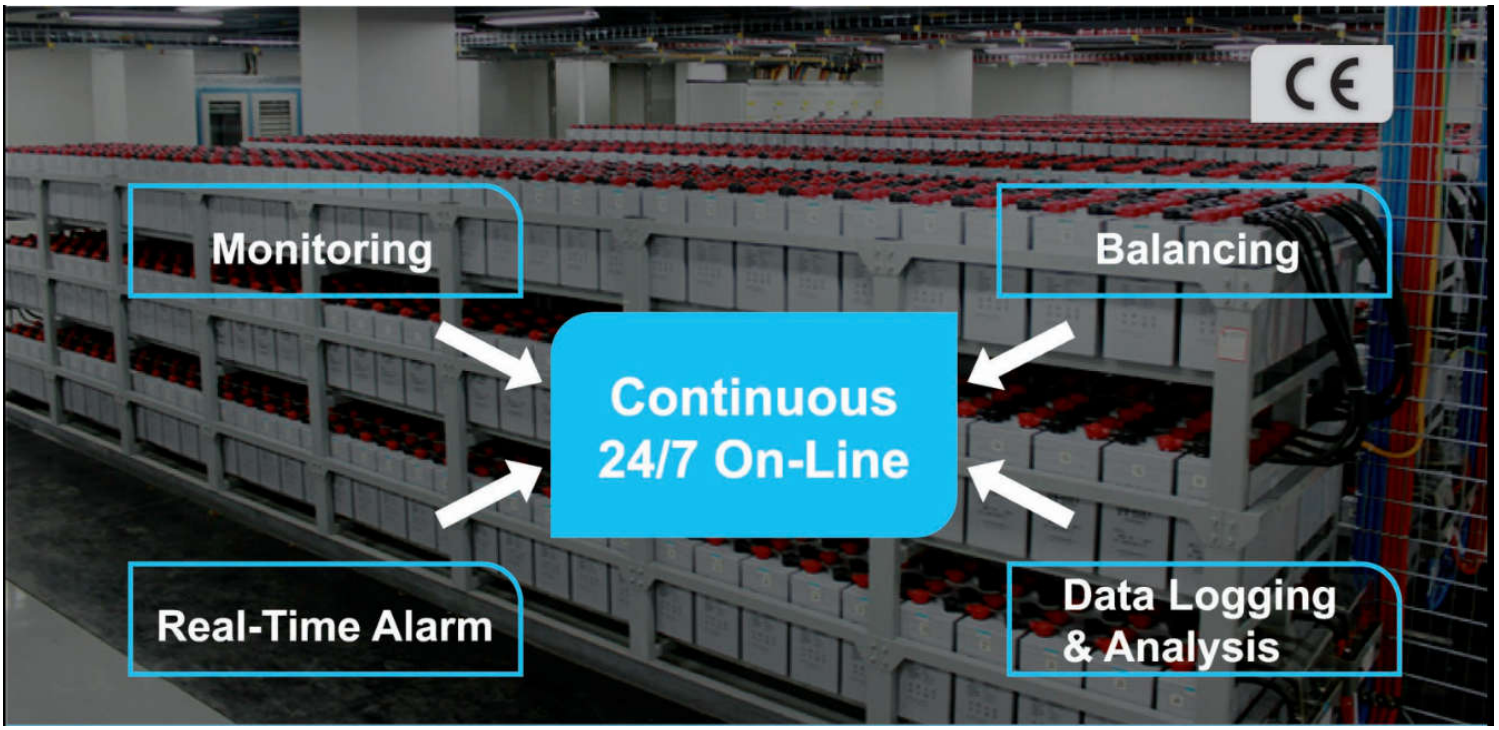
T&D ENGINEERING

BATTERY MONITORING SYSTEM (BMS)
For Data Center & UPS application



For VRLA Lead Acid Battery

BMS Including

BMS Software: WebCTRL
- Web-based technologies
- Unlimited simultaneous users
- Unlimited points
- Hierarchical Server configuration for large systems
- Support multi languages (incl.Vietnamese, Chinese,…)

BACnet Integration Platform: G5CE
- CPU: 32-bit, 600 MHz, 16 GBs Flash, 256 MB DRAM
- Gigabit Ethernet port 10/100/1000 Mbps full duplex
- Up to 999 programs, 12000 BACnet Objects
- Support BBMD and FDR
- Support DHCP IP addressing

Management Layer: TNDE-BAT-Gate
- One Per UPS, Max. Monitor 4 Strings
- Each String Max. 120pcs Batteries

Battery String Sensor: TNDE-BAT-600
- One Per String, Each string Max. 120pcs Batteries

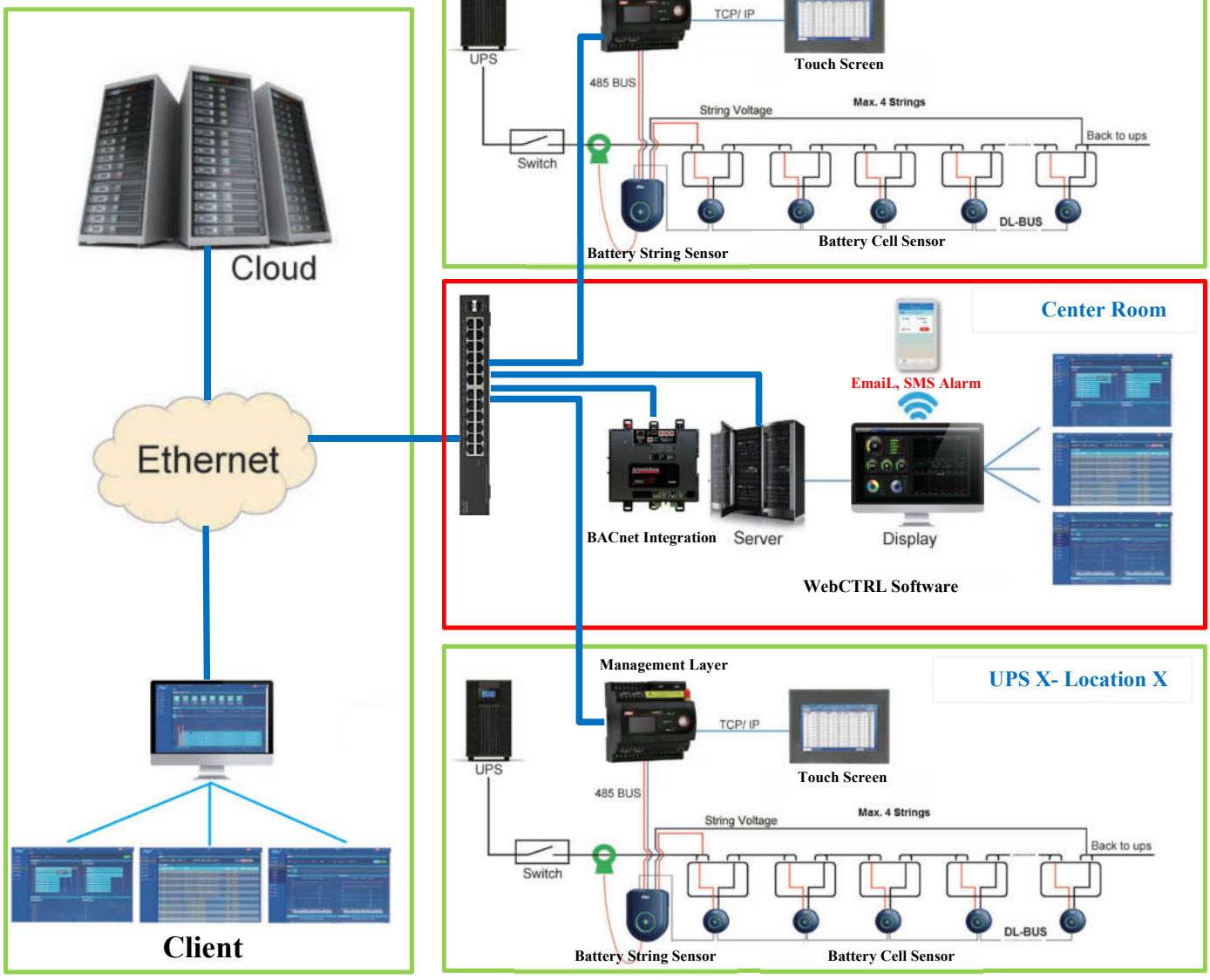
Battery Cell Sensor: TNDE-BAT-61-xx
- TNDE-PBAT-61-02: One Per Battery 2V
- TNDE-PBAT-61-12: One Per Battery 12V

Feature

- 24/7 Hours On-line Monitoring & Remote Alarms Notifies
- Suitable for UPS and Data Center Application
- Anti-interference Design, Support to Connect with High-frequency UPS
- Build-in Web Server with Visual Display
- Provide HMI for Local Display
- On-line Balancing Function
- On-line Remote Firmware Upload
- Support Autosensing for the Battery Sensor's ID Address
- Support Multi-Communication Protocol (MODBUS-TCP, SNMP)
- Apply with IEEE 1188-2005 Standard

24/7 Hours! Get Your Back Up Battery Under Your Eyes

System Structure



BMS Software | WebCTRL | Automated Logic

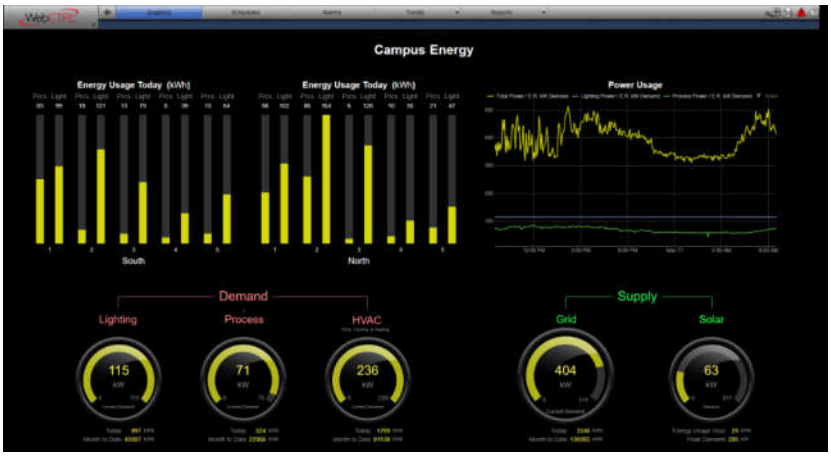
Features

- Powerful, comprehensive building management with intuitive, point-and-click graphical access
- Dynamic color floor plans convey a quick understanding of building conditions
- Customizable graphics, schedules, trends, reports, and alarms
- Inherent WebCTRL Environmental Index™ tool for measuring, analyzing, and comparing comfort conditions against setpoints, helping you balance comfort with efficiency
- Powerful WebCTRL Time-lapse™ graphics for analyzing and troubleshooting up to 24 hours of past building operation
- Built-in Fault Detection and Diagnostics (FDD), to help anticipate, provide insight, and automatically respond to building issues

WebCTRL®

Save your energy

The features are all here



- Power of Data Visualization – Educate your audience by displaying live data such as current energy and water usage, indoor air quality (IAQ), outdoor air conditions, and much more. Show live data on floor plans—like energy use, temperatures or occupancy.
- Power of Integration – The WebCTRL system integrates building systems, including environmental, energy, security and safety systems, so they can all be managed through a single, web-based management tool.
- Power of our Dealers – Automated Logic's worldwide network of authorized dealers includes more than 170 field offices with proven experience in building automation, energy management and controls. This team, consisting of company branches as well as independently owned dealers, guides customers through the process of designing, engineering, installing and maintaining the WebCTRL system

BACnet Integration | OptiFlex™ G5CE | Automated Logic

BACnet Features

- Supports routing between BACnet/IP, BACnet/Ethernet,
- BACnet ARCnet, and BACnet MS/TP networks
- Supports up to 1,500 third party BACnet points
- Supports up to two BACnet/IP networks on the Gig-E port
- Includes two additional BACnet ports for supporting either
- two simultaneous BACnet MS/TP networks (with up to
- 60 controllers each), or one ARCnet network (with up to 99
- ARCnet controllers) and one BACnet MS/TP network (with
- up to 60 controllers)
- Can serve as a BACnet Broadcast Management Device
- (BBMD), routing any BACnet broadcast mess ages directly t
- other BBMD devices on the BACnet network
- Supports BACnet Foreign Device Registration (FDR)

Modbus Features

- Can act as a master or slave on a Modbus serial network
- Can act as a server or client on a Modbus TCP/IP network

Hardware Features

- Supports and executes control programs
- Supports Gig-E, 100Mbps BACnet IP & DHCP IP add.
- Ethernet port provides local access for system start-up and troubleshooting
- Supports network captures for advanced diagnostics
- Provides network statistics numerically or as trend graphs inside the WebCTRL building automation system
- Supports DIN rail and screw mounting
- Capacitor-backed real-time clock keeps time in the event of power failure or network interruption for up to 03 days
- Connects seamlessly to the WebCTRL system
- Can serve as a BACnet Broadcast Management Device (BBMD), routing any BACnet broadcast messages directly to other BBMD devices on the BACnet network
- Supports BACnet Foreign Device Registration (FDR)

Features

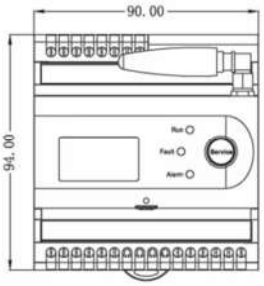
- Real-time monitoring 1 UPS with Max 480 batteries
- Data logging for all measuring data for 12 months
- Setpoint alarm for Cell Voltage, Internal Temperature, Impedance, SOC, SOH (High limit / lower limit)
- Setpoint alarm for String Voltage, Current, SOC (High limit / lower limit)
- Monitor Ambient Temperature & Humidity (Optional)
- DO for sound and light alarm (Optional)
- DI for digital Input connect (Optional)

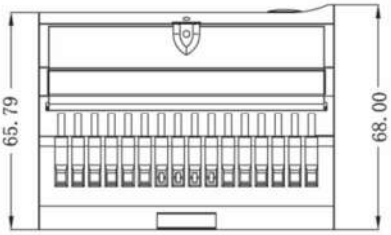
All-in-One

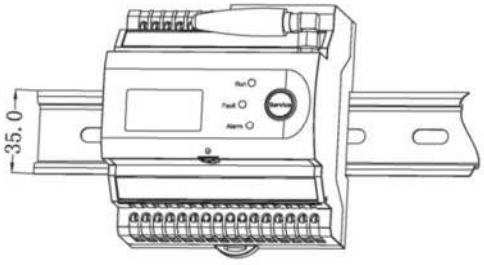
Technical Specification

CPU	ARM Cortex A8 800MHZ
Memory	512MB Flash and 8GB TF memory card, 512MB RAM
Communication	Baud rate: 1200bps - 115200bps 4CG: 4 RS485 serial ports, 2 Ethernet Ports (10/100M) 2ZG: 2 RS485 serial ports, 2 Ethernet Ports (10/100M)
Applications	Support to monitor single unit 2V or 12V battery
	Support to monitor single group 1-120 units cell sensors
	Measurement Maxim group voltage 20-800V
	Measurement current -1000A---+1000A
	Flexible installation, scalability for high reliability requirements such as finance, railways, telecommunications, electricity, mining and other occasions;
Optional Function	4 DI, 2AI, 1DO (only for TNDE-BAT-Gate-2ZG)
Operation Temperature	-15°C - +55 °C
Operation Humidity	10% - 95% Non-condensing
Operating System	Embedded Linux
Display	LCD with High Resolution
Power Supply	DC18V ~ 36V
Safety Standard	CE
Weight	650g
Dimension	90mm x 94mm x 68mm
Power Consumption	< 5W

Dimension and Installation







Features

- Monitor Battery String Voltage, Charge and Discharge Current
- Calculate Battery State of Charge (SOC)
- SOH health status
- Auto Balancing function
- Data Collecting function
- Auto-sensing for Whole Battery String Sensor's ID address
- Accessories:
  1) Hall Sensor & Cable: Range from 0~±1000Awith 2m Cable
  2) Communication Cable: 5m with RJ11 port


Running Status

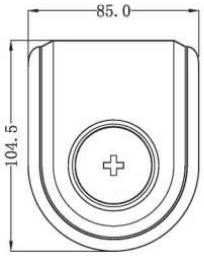

Alarm Status

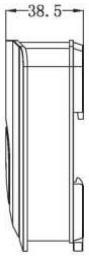

Hall Sensor

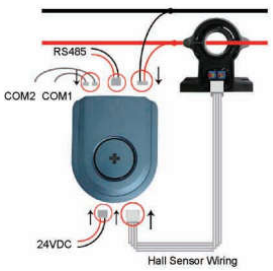
Technical Specification

Measuring Range	
• Voltage	DC 20V to 800V (±0.5%)
• String Current	DC -1000A - +1000A (by Hall sensor) (±2.0%)
Communication	RS485 interface, support the common MODBUS-RTU protocol DL-BUS communication
External Power Supply	DC 12V ~ 36V
Standard operating temperature	0℃ ～ +45℃
Storage temperature	-40℃～ +70℃
Working humidity	5% ～ 95%RH, Non-condensing
Dimension	Main-body: 104.5mm (L×85mm(W)×38.5mm(H)
Power Consumption	1W
Test Conditions	
• Insulation	Insulation voltage: DC1000V Insulation resistance > 10MΩ
• Dielectric strength	Test voltage AC 2kV Test time 1minute, leakage current < 5mA
• Impulse with stand voltage	Test voltage 5kV, 1.2/50us, ± 3 times each

Dimension and Installation







Features

- TNDE-BAT61-02 for 2V Battery, TNDE-BAT61-12 for 12V Battery
- Monitor Individual Battery Voltage, Internal Temperature (Negative pole), Impedance (Ohmic Value)
- Calculate Individual Battery State of Charge (SOC), State of Health (SOH)
- Auto-Balancing Function
- Hot pluggable, 3M Adhesive Tape Mounting
- Accessories:
  1) Battery measuring Cable: 30cm
  2) Communication Cable: 40cm & 70cm with RJ11 port (optional)

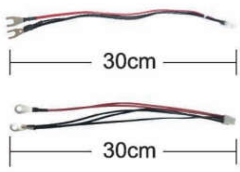
Running Status

Alarm Status

Technical Specification

Descriptions	TNDE-BAT61 -12	TNDE-BAT61 -02
Voltage Rated Input	12V	2V
Measuring Range:		
• Voltage	7.5V to 15.6V (±0.2%)	1.6V to 2.6V (±0.2%)
• Internal Temperature	-20°C to 85°C (+0.5°C)	
• Impedance	0.1 mΩ to 100mΩ Repeatability Error: 1.0%±25 uΩ Conformity Error: 1.5%±25 uΩ	
• Power Consumption	Running: <90mW Sleeping: <10mW	Running: <110mW Sleeping: <12mW
Power Supply	DC 2V (1.6V ~2.6V)	DC 12V (7.5V~15.6V)
Standard operating Temperature	0°C ~ +45°C	
Standard operating temperature	5% ~ 95%RH, Non-condensing	
Test Conditions		
• Insulation	Insulation voltage: DC1000V, Insulation resistance>550MΩ	
• Dielectric strength	Test voltage AC 3750V, Test time 1minute, leakage current< 1mA	
• Impulse withstand voltage	Test voltage 6kV, 1.2/50us, ± 3 times each	

Dimension and Installation



	Item	Description
Battery Measuring Cable	Length	30cm
	Terminal and size	U Type, Hole Diameter: 8mm
		O Type, Hole Diameter: 8mm