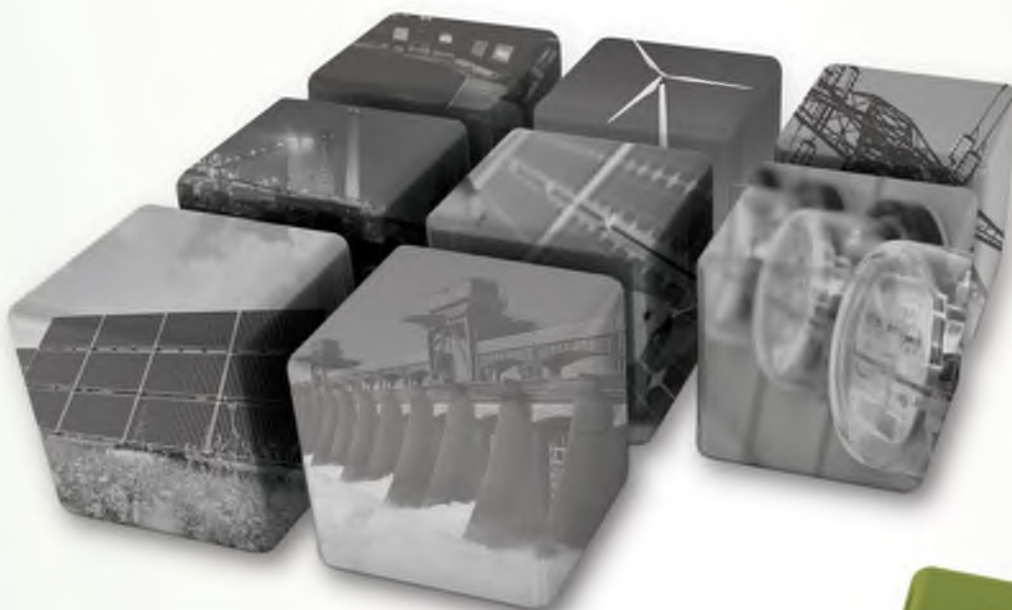# AXIOMTEK

Green Power Solutions

IEC 61850-3 & IEEE 1613 Compliant

Cost-effective & Robust Design

Fast Ring Recovery Time < 15ms

One Stop Supplier for Total Solution

Product Showcase

▶ iCON-101CU

1-port Hardened CAN to USB Industrial Converter
(Wide Temperature)

- Microprocessor inside
- Fully compliant with USB 1.1/2.0 (fully speed)
- Fully compliant with CAN 2.0A and CAN 2.0B
- Easy setup to CAN terminator by software configuration
- Powered by USB bus
- Transmission speed up to 1Mbps for CAN
- Clear LED indicators to convert status while in progress
- Supports Windows® Server 2008, 2003/Vista/2000/XP/7 and Linux OS
- -25°C to +75°C (-13°F to +167°F) operating temperature range

▶ iCON-101CS

1-port Hardened CAN to RS-232/422/485 Industrial Converter
(Wide Temperature)

Coming Soon

- Microprocessor inside
- Software configurable CAN and RS-232/422/485 communication parameters
- Fully compliant with CAN 2.0A and CAN 2.0B
- Easy setup to CAN terminator by software configuration
- Powered by wide-range DC
- Transmission speed up to 1Mbps for CAN
- Clear LED indicators to convert status while in progress
- Supports Windows® Server 2008, 2003/Vista/2000/XP/7 and Linux OS
- -25°C to +75°C (-13°F to +167°F) operating temperature range

▶ rBOX100

DIN-rail Fanless Embedded System with Intel® Atom™ Processor
Z510PT/ Z520PT up to 1.33 GHz and DIO (8 In/Out)
(Wide Temperature)

- Intel® Atom™ processor Z510PT/ Z520PT up to 1.33 GHz
- Supports two COM ports, two USB ports, one DIO (8 in/out), and VGA port
- Supports one 10/100/1000Mbps & 10/100Mbps Ethernet with Magnetic Isolation Protection
- Supports SNMP V1/V2c
- Redundant 12-48VDC terminal block power inputs
- -40°C to +70°C (-40°F to +158°F) operating temperature range

▶ rBOX101-6COM

DIN-rail Fanless Embedded System with Intel® Atom™ Processor
Z510PT/Z520PT up to 1.33 GHz and 6 isolated COM Ports
(Wide Temperature)

- Intel® Atom™ processor Z510PT/ Z520PT up to 1.33 GHz
- Supports six isolated COM ports, two USB ports, one DIO (4 in/out), and VGA port
- Supports one 10/100/1000Mbps & 10/100Mbps Ethernet with Magnetic Isolation Protection
- Supports SNMP V1/V2c
- Redundant 12-48VDC terminal block power inputs
- -40°C to +70°C (-40°F to +158°F) operating temperature range

▶ rBOX200

DIN-rail Fanless Embedded System with AMD LX800 + CS5536AF
and DIO (8 In/Out) (Wide Temperature)

- AMD LX800 processor
- Supports two COM ports, two USB ports, one DIO (8 in/out), and VGA port
- Supports two 10/100Mbps Ethernet with Magnetic Isolation Protection
- Supports SNMP V1/V2c
- Redundant 12-48VDC terminal block power inputs
- -40°C to +70°C (-40°F to +158°F) operating temperature range

▶ GOT-3156T-823

15" XGA TFT Extended Temperature Fanless Touch Panel
Computer with Intel® Atom™ processor Z510PT 1.1 GHz
(Wide Temperature)

- Intel® Atom™ processor Z510PT 1.1 GHz
- 400 nits sunlight readable LCD
- Anti-vibration up to 2G
- Supports two speakers, PCIe Mini card, and WLAN antenna
- Over-current protection fuse
- -20°C to +65°C (-4°F to +149°F) operating temperature range

Total Solutions to Create Green Power Networking

Green power is energy that comes from renewable energy sources such as wind, water, biomass, or the sun. Most wind, hydro and solar power generating systems are installed in harsh environments with exposure to dust, vibration, heat, humidity, and electrical noise. To effectively generate, distribute and manage energy for power industries, highly integrated and reliable Ethernet-based networking and computing infrastructures are essential. This will not only increase performance output but will also result in both cost and time efficiency. Axiomtek offers complete networking and computing solutions to meet these expectations for use in power plant management, electricity distribution and control system.

Full Range of Product Lines to Fulfill Your Needs

▶ Industrial Ethernet Switches
- Comply with IEC 61850-3 & IEEE 1613 environmental requirements
- Fast ring recovery time (<15 ms)
- Flexibility of copper ports and fiber ports
- Redundant power inputs with terminal block and DC jack
- Wide operating temperature -40°C to +75°C

▶ Serial Device Servers
- Comply with IEC 61850-3 & IEEE 1613 environmental requirements
- Support RS-232/422/485 serial communication
- Isolation protection to the COM port
- DNP3 supported
- Wide operating temperature -40°C to +75°C

▶ Ethernet Media Converters
- Comply with IEC 61850-3 & IEEE 1613 environmental requirements
- 10/100BaseTX auto-negotiation and auto-MDI/MDI-X
- Link Fault Pass-Through
- Power failure alarm by relay output
- Redundant power inputs with terminal block and DC jack
- Wide operating temperature -40°C to +75°C

▶ Industrial Converters
- Fully compliant with CAN bus 2.0A and CAN 2.0B
- Diversity configurations for CAN to USB or CAN to COM port or CAN to Ethernet
- Software configurable for termination
- Support Windows Server 2008, 2003/Vista/2000/XP/7 and Linux OS
- CAN monitor tool program available
- Wide operating temperature -20°C to +75°C

▶ DIN-rail Fanless Embedded Systems
- x86 architecture supported: Intel® Atom™ or AMD LX800
- Fanless operation
- Wide operating temperature -40°C to +70°C
- Multiple I/O combination: PoE, LAN, serial port, USB, and Digital I/O
- Isolated protection to I/O
- Redundant power inputs with power failure alarm

▶ Industrial HMI
- Various LCD sizes ranging from 5.7" to 15"
- Wide operating temperature -20°C to +65°C
- Anti-vibration design
- High brightness LCD
- NEMA 4X compliant
- Compatible with SCADA
- Supports panel mount, wall mount, VESA arm, and desktop stand

IEC 61850-3 and IEEE 1613 Certified

KEMA tests passed
based on IEC 61850-3 / IEEE 1613 standards

Substations are extremely demanding environments, requiring Ethernet networks that operate in them to be rugged enough to deliver high communication reliability, availability, and uptime. IEC 61850-3 certification ensures environmental and EMI immunity of the network devices used in substations, and IEEE 1613 is a standard detailing environmental and testing requirements for communication network devices. Having certification in both IEC 61850-3 and IEEE 1613, Axiomtek's power and energy products are protected against a variety of environmental factors.

Wind Power Automation

Wind farms are typically located in harsh environments where it is exposed to shock, vibration, dust, moisture, and extreme temperatures. To generate, distribute and manage energy effectively, Axiomtek's iCON, rBOX and HMI products provide all the tools you need to have a highly reliable industrial-grade network infrastructure. The iCON series consists of Ethernet switches, serial device servers and media converters all with IEC 61850-3 and IEEE 1613 certification, giving you the capability to manage smart grid more efficiently and intelligently. Rigorous quality control and fanless design of Axiomtek's rBOX embedded computers help prevent system failures and feature convenient installation and maintenance for communication control in power plant management, electricity distribution and control system. Human Machine Interface (HMI) systems are used to provide energy analysis and control, allowing users to take action for better energy management.

On a wind farm, the distance between wind turbine towers could be miles apart, and wind turbines are prone to electrical interference. It is essential for wind farms to employ rugged networking devices with long distance transmission capability for remote monitoring in harsh environments. Remote monitoring systems are used to collect and organize data generated from wind turbine towers and substations so that users in the control center can accurately control operation on the wind farm. The control center manages the state of power energy and integrates different types of power plants together. With Axiomtek's extremely reliable and non-stop network and computing solutions, you will not only achieve, but exceed your operational goals through better management of data, assets and operations.
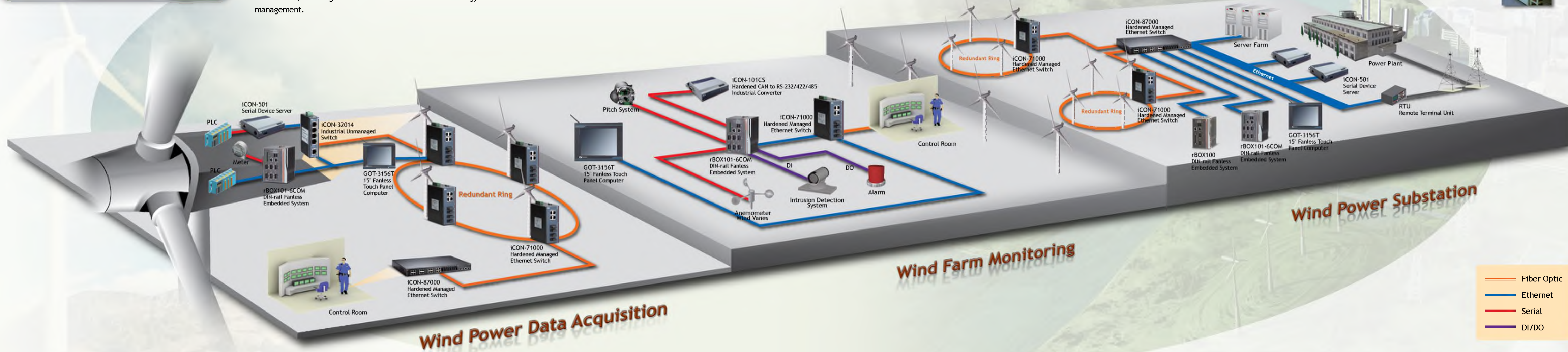
Why Axiomtek
- IEC 61850-3 and IEEE 1613 certified
- Robust design and cost-effective
- Compact-size and user-friendly interface
- -40°C to +75°C wide temperature range
- Anti-vibration & anti-shock design
- α-ring Fast network recovery within 15mS
- Wide-range DC or AC redundant power-input options
- Alarm for power and port link failure by relay output
- Various mounting options for optimal space utilization
- One stop supplier for complete total solution

Requirement
- Each wind tower requires an embedded computer used for collecting, computing wind turbine rotation rate and for sending the data back to the field site control center
- Network devices must be able to connect with many serial devices, and be able to fully integrate the devices to an Ethernet network
- Non-stop and reliable Ethernet infrastructure with secure data communication and fast fault recovery
- Network devices supporting fiber connections for long haul transmissions across large wind farms

Rigorous Tests

EFT Test

ESD Test

Freefall Test

Vibration Test

Wide Temperature Test

Wind Power Data Acquisition

Wind Farm Monitoring

Wind Power Substation

Legend:
- Fiber Optic
- Ethernet
- Serial
- DI/DO

Product Showcase

► iCON-47000

8-port 10/100Base Unmanaged Hardened Ethernet Switch (Wide Temperature)

- Complies with IEC 61850-3 & IEEE 1613 environmental requirements
- 10/100Mbps-full/half-duplex, auto-negotiation, auto-MDI/MDI-X
- DIP switch configuration for link failure alarm
- Full wire-speed forwarding rate
- Redundant 12 to 48VDC power inputs or 12VDC jack
- -40°C to +75°C (-40°F to +167°F) operating temperature range

► iCON-71000

8-port 10/100Base Managed Hardened Ethernet Switch with 2-port Gigabit and SFP Options (Wide Temperature)

- Proprietary "α-ring" support for network redundancy; recovery time <15 ms
- Supports port-based VLAN and IEEE802.1Q VLAN Tagging and GVRP
- RS-232 console, Telnet, SNMP V1, V2c & V3, RMON, Web
- -40°C to +75°C (-40°F to +167°F) operating temperature range

► iCON-83000

16-port 10/100Base Managed Hardened Ethernet Switch with 2-port Combo Gigabit (Wide Temperature)

- Complies with IEC 61850-3 & IEEE 1613 environmental requirements
- Proprietary "α-ring" support for network redundancy; recovery time <15 ms
- Supports port-based VLAN and IEEE802.1Q VLAN Tagging and GVRP
- RS-232 console, Telnet, SNMP V1, V2c & V3, RMON, Web
- -40°C to +75°C (-40°F to +167°F) operating temperature range

► iCON-87000

24-port 10/100Base Hardened Managed Ethernet Switch with up to 4-port Gigabit (Wide Temperature)

- Complies with IEC 61850-3 & IEEE 1613 environmental requirements
- Proprietary "α-ring" support for network redundancy; recovery time <15 ms
- Supports port-based VLAN and IEEE802.1Q VLAN Tagging and GVRP
- RS-232 console, Telnet, SNMP V1, V2c & V3, RMON, Web
- -40°C to +75°C (-40°F to +167°F) operating temperature range

► iCON-1141

10/100Base-TX to 100Base-FX Hardened Media Converter (Wide Temperature)

- Comply with IEC 61850-3 & IEEE 1613 environmental requirements
- Link-Fault-Pass-Through
- 10/100Mbps-full/half-duplex, auto-negotiation, auto-MDI/MDIX
- Full wire-speed forwarding rate
- Alarms for power and port link failure by relay output
- Redundant power inputs with terminal block and DC jack
- -40°C to +75°C (-40°F to +167°F) operating temperature range

► iCON-501

Hardened Serial Device Server (Wide Temperature)

- Complies with IEC 61850-3 & IEEE 1613 environmental requirements
- Supports RS-232/422/485 serial communication
- Isolated protection to COM port
- DNP3 supported
- -40°C to +75°C (-40°F to +167°F) operating temperature range

AXIOMTEK