Lanner

Industrial Communications

Rugged Platforms for Power Communication and Cyber Security

Lanner – The Expert in Smart Grid Connectivity & Industrial Cyber Security Appliances

Over the past decade, Lanner has shipped more than 1 million units of networking appliances. By designing and manufacturing the state-of-the-art quality platform, we have proved our long-lasting dedication and unwavering commitment and earned strong patronage from our partners and clients.

With the trend of Internet of Things (IoT), we have experienced a rapid growth in our business operations. Based on our expertise in networking and reliable computing for telecom systems, our small form factor industrial PCs have quickly gained a leading reputation in the field. In 2014, we have successfully developed the brand new Hybrid Industrial Communication Device (Hybrid ICD), which combines Intel® x86 and RISC-based advantage in a 4U form factor. The Hybrid ICD platform is innovated to demonstrate the valued convergence of our "3-multi"s - "multi-processor", "multi-platform" and "multi-I/O".

Lanner has invested heavily in the rapidly growing sector of smart grid connectivity and ICS cyber security. Through several successful industrial communication projects in the USA, China and Europe, we have managed to gain the experience and insight necessary to create the best industrial PC for these applications. Our industrial PCs will save your time during system development and will continue to offer the wide range of features that meet the needs of industrial computing systems today and for many years to come.

Jeffrey Wang

Senior Manager, Industrial Communication Product Division

Who is Lanner?

Lanner Electronics Inc. (TAIEX 6245) is a world-leading hardware provider in design, engineering, and manufacturing services for advanced network appliances and rugged industrial computers. With 28-year experiences, Lanner provides reliable and cost-effective computing platforms with high quality and performance. Today, Lanner has a large and dynamic manpower of over 800 well-experienced employees worldwide with the headquarter in Taipei, Taiwan and subsidiaries in the US, Canada, and China.

Global Manufacturing Capabilities

Taipei, Taiwan

- Area 30,000 m²
- 3 x SMT, DIP and assembly lines
- Production capacity: 30,000 system units/month

Beijing and Dongguang, China

- Area 8,500 m²
- Assembly lines
- Production capacity: 8,000 system units/month

Service Capabilities

- Custom design and production in board, chassis and system
- High mix low volume manufacturing
- Quality assurance services
- Global order fulfillment services

Certifications

- ISO 9001:2008
- ISO 14001:2004
- IECQ QC080000
- RoHS
- OHSAS 18001:2007

Contents

Why Lanner?

Taking aim at the many unique system integration challenges associated with industrial computing, Lanner has created a product line designed specifically for this demanding environment. By working closely with our customers, we have developed a number of key features that address specific issues encountered in power and energy applications. Isolation protection, easier I/O access, dual-power input, IEC 61850-3 certifications and support for fiber-optic modules are some of the many components our customers have requested that we now deliver in the LEC-3 and the LEC-6 Series. Customers choose Lanner industrial PCs to streamline their system integration efforts and speed their products to market.

Strong Allies

Intel®

Lanner Electronics is an Associate Member of the Intel IoT Solutions Alliance. This alliance is committed to developing scalable and interoperable platforms to reduce deployment efforts and costs. By leveraging processor architectures, services and technological benefits from Intel, Lanner provides reliable hardware and software solutions in meeting the rise of IoT applications.

Microsoft

As a Windows Embedded Partner, Lanner is given early access to product plans, Microsoft information events and the latest embedded developments. In 2011 and 2012, Lanner was awarded the Windows Embedded Partner of the Year.

Freescale™ Semiconductor

Lanner is a member of the Freescale™ Alliance, taking advantage of Freescale™ network processors for better performance in IPS, DPI and cryptographic acceleration.

Marvell®

Lanner offer products with processors from Marvell® Technology. Marvell® processors accelerate complex network traffic to significantly enhance the performance and functionality of advanced mobile and wireless infrastructure, storage, cloud services, and infrastructure networks.

Lanner Power & Energy Solution Overview

Power and energy industries are experiencing an unprecedented change in both interconnectivity and complexity. To ensure reliability, flexibility and profitability, critical infrastructure owners are searching for capable solutions to enable a smoothly, compatibly interconnected control system and build up a reliable cyber security platform to defend their network vulnerabilities, while keeping maintenance costs at low levels. As a global leader in network security, Lanner offers series of industrial solutions not only ensuring intelligent industrial communications, but also providing firewall, intrusion prevention and deep packet inspection measures.

Substation Automation

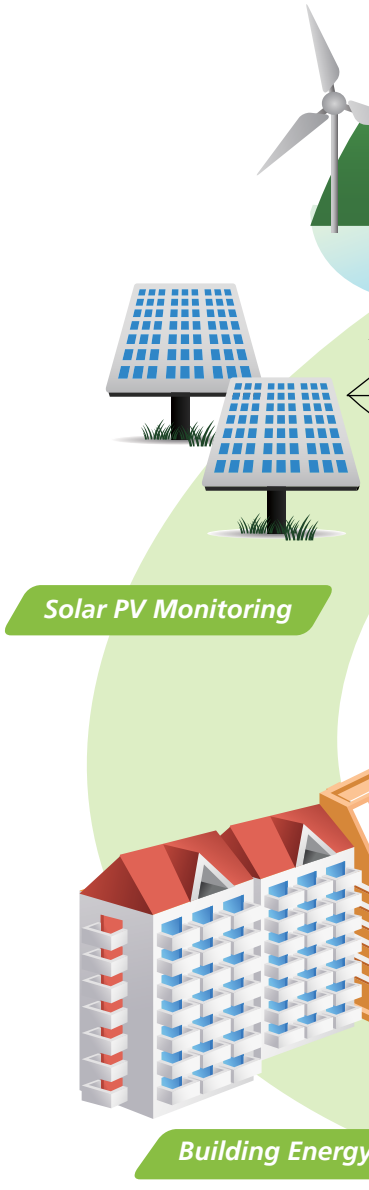
Lanner's rackmount appliances for substation automation offer high integration of automation devices and sensors for control consolidation, infrastructure monitoring and data transmission to achieve the highest stability and productivity.

- Power SCADA Automation Platform
- Power SCADA Communication Gateway
- Automation Platform for Substation
- IED Communication Gateway

Industrial Cyber Security

Our rugged industrial cyber security platforms provide the needed network security protection for critical infrastructures in harsh, unmanned environments. Our platforms are designed to conduct protocol filtering, packet inspection, white-listing and network traffic monitoring.

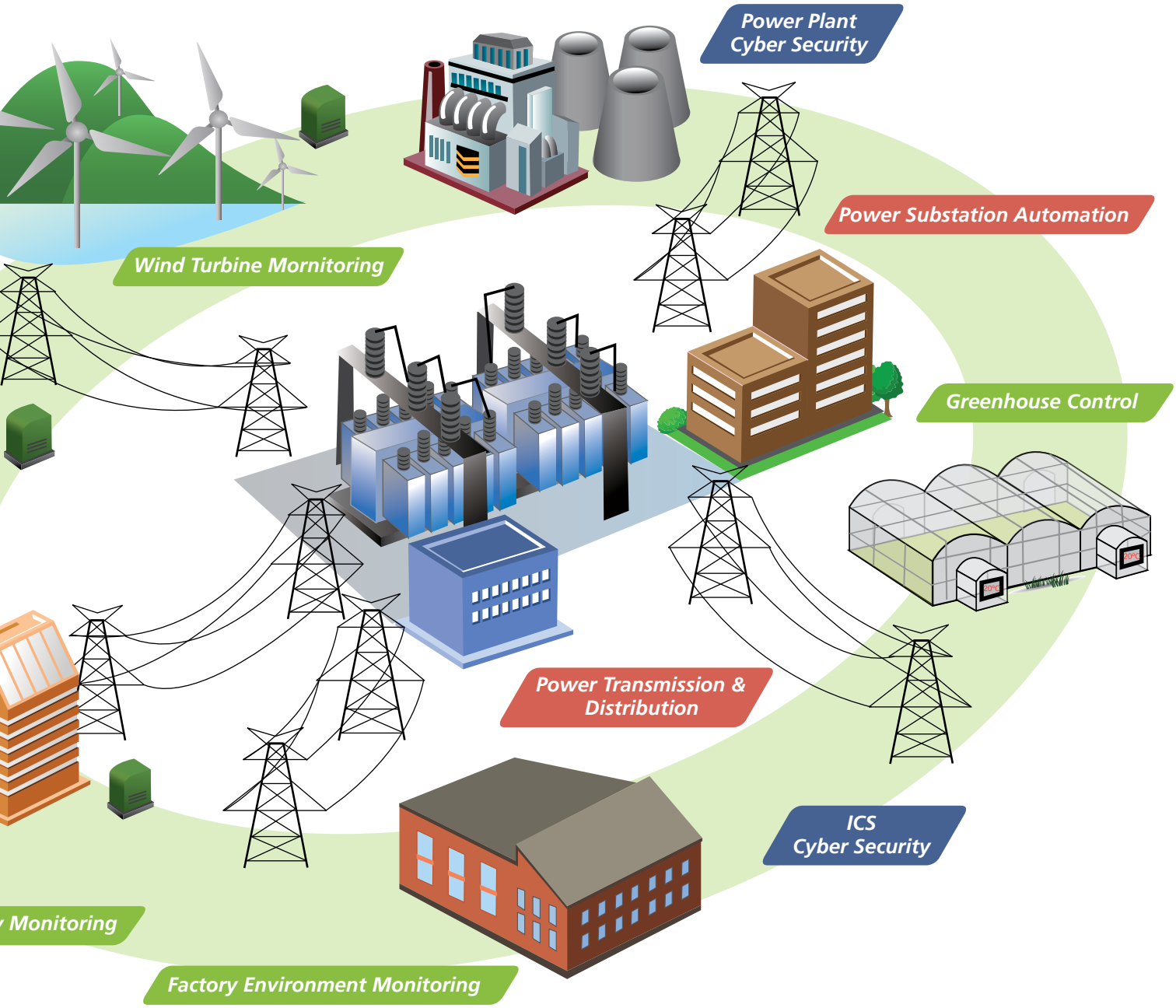
- Power Plant Cyber Security
- ICS Cyber Security
- Industrial UTM / Firewall
- Security Gateway
- SCADA Network Security



Energy Management

We have robust and compact Box PCs for collecting and monitoring data from meters and sensors deployed with energy generating sites. Our computing systems are innovated to optimize performance and efficiency of energy generation and usages.

- Renewable Energy Monitoring
- Building Energy Monitoring
- Factory Environment Monitoring
- Greenhouse Control



Power Communications & Cyber Security Box PCs

Lanner's power communications and cyber security box PCs are specifically designed for versatile deployments in substation and renewable energy plants. Our box PCs offer high levels of stability and reliability, as well as well-rounded balance of size, cost, performance and power consumption.

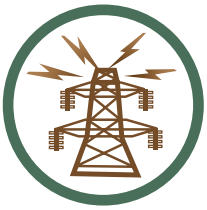
Lanner's industrial communication systems consist of the LEC-3 and LEC-6 series and their key features are illustrated.

Diversified I/O Design

Various I/O options, including multiple COM, LAN, USB, CF, VGA and Phoenix Contacts connectors.

Advanced Protection

Most Lanner systems feature protected connectors to cope with harsh environments, such as isolated COM/DIO with ESD/surge protection, and magnetic isolated LAN ports.



IEC 61850-3 Compliance

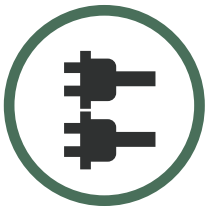
Most of our LEC-3/6 product lines pass IEC 61850-3 compliance. The test certifies electrostatic discharge, fast transient (burst immunity), surge immunity, radiated RF susceptibility, and other criteria.

Wide Temperature

Built to be ruggedized to tolerate a wide range of temperatures, from -40°C to 75°C when installed with industrial components (CF, SSD and flash memory).

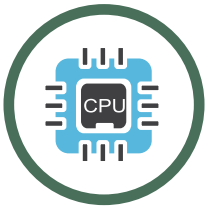
LEC-3230

LEC-3013



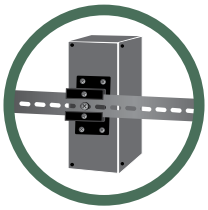
Dual Power Inputs

Many of our LEC-6000 series support power input options of 12V~36Vdc or 12V~48Vdc. Our systems use terminal blocks to connect two power inputs for backup supply.



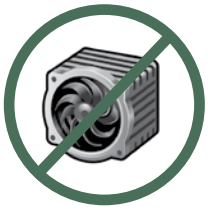
High-Performance CPU

Exceptional computing performance, and outstanding energy efficiency made possible by Intel® Core™, Atom™ or Celeron® processors.



DIN-Rail Mounting

Majority of our industrial platforms are designed with DIN-Rail mounting option for convenient installation in industrial environments.

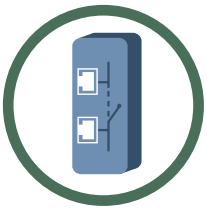


Fanless Design

Without the most frequently replaced part, the systems can be widely deployed in various environments.

Low-Power Consumption

Many of our industrial box PCs use low power Intel® Atom™ processor with 13W, 6.5W or even only 3.5W TDP (Thermal Design Power).



LAN Bypass

Bypass ports allow uninterrupted network traffic by providing backup LAN connection. Lanner has improved bypass functionality for higher reliability and greater control.

Introducing the LEC-3 and LEC-6 Series

Built with the extreme ruggedness to meet IEC 61850-3 or IEEE 1613 compliance, the LEC-3 series is ideally designed for uses in substation automation or renewable energy infrastructure sites.

Aside from IEC 61850-3 compliance, the LEC-6 series features LAN bypass, ESD/magnetic isolation protected connectors, and high-performing CPU, with the aim to secure power plant and prevent cyber security attack.

SCADA Industrial Communication Gateway

SCADA (Supervisory Control And Data Acquisition) plays a crucial role in remote control of industrial and energy infrastructures. Through data acquisition facilities, SCADA systems are informed of the status of remote infrastructures and deliver alerts to owners through communication networks with remote monitoring display or recorded images. Today, SCADA is a widely adopted ICS (Industrial Control Systems) type of communication channel controllers in utility generating infrastructures such as power substations, hydro, nuclear plants and solar grids.

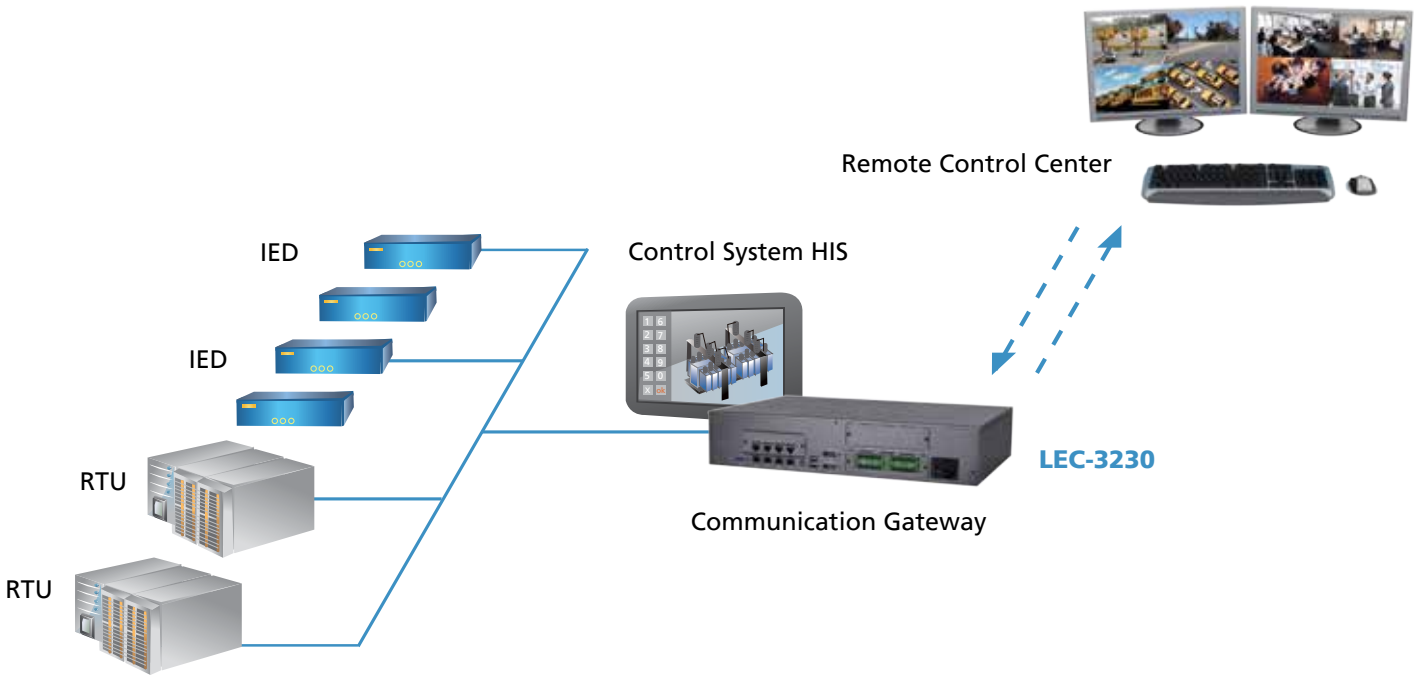
The LEC-3230 is an IEC 61850-3 and IEEE 1613 certified data collection server designed for power SCADA and power communication gateway. The 2U rackmount communication appliance offers rich, customizable I/O interface with combinations of multiple GbE LAN/SFP fiber ports, making it easy to configure to meet specific needs.

Target Applications:

- Power SCADA System Communication Gateway
- Automation Platform for Substation
- IED Communication Gateway

LEC-3230

- Fanless Rack Mounting Box PC for Power Substation
- IEC 61850-3 and IEEE-1613 Compliance
- Intel® Celeron® 847E, Core™ i3-3217UE or i7-3517UE CPU
- Up to 10/18 Isolated Serial Ports and 4/8 Magnetic Isolated LAN ports



Hybrid Industrial Communication Device (Hybrid ICD)

Lanner's LEC-3480 is the first product built with Hybrid ICD architecture, which defines the next-generation performance and multi-operability for industrial communication platform. There are 6 computing blades in one 4U rackmount form factor, capable of flexible configurations, high scalability and redundant power supplies. LEC-3480 is a successful integration of Intel® x86 and RISC architectures, supporting up to 6 processors. Environmental wise, LEC-3480 is EMC Class 4 certified and complies with IEC 61850-3 and IEEE 1613 industrial standards. This Hybrid ICD system is optimal for power substation automation, intelligent railway control, oil refinery control and other communication monitoring gateways.

Multi-platform

Multi-processor

Multi-I/O

Advantages

- IEC 61850-3 and IEEE 1613 Compliance
- Hybrid Architecture: x86 and RISC-based Computing Blades
- Support up to 6 Processors
- Various Connectivity Options
- Redundant Power Supply

Selection Guide




LEC-3 Series		LEC-3101	LEC-3110	LEC-3230	HICD-3480 NEW
Processor Options		Intel® Atom™ N455 or D525	Intel® Atom™ D525 (1.8GHz)	Intel® Celeron 847E, Core™ i3-3217UE/i7-3517UE	-
Chipset		Intel ICH8M	Intel ICH8M	Intel HM65	-
BIOS		AMI Flash BIOS	AMI Flash BIOS	AMI Flash BIOS	-
System Memory	Sockets	1 x 204-pin DDR3	1 x 204-pin DDR3	1 x 204-pin DDR3	-
	Technology	DDR3 SO-DIMM x1	DDR3 SO-DIMM x1	DDR3 SO-DIMM x1	-
	Max. Capacity	2 or 4 GB	Up to 4 GB (1GB built-in)	Up to 8 GB	-
USB		USB2.0 compliant, 2x Type A connector,1x internal Type A connector, 2x internal pin header	USB2.0 compliant, 2x Type A connector,1x internal Type A connector, 2x internal pin header	USB2.0 compliant, 2x Type A connector,1x internal Type A connector, 3x internal pin header	-
Expansion Bus		1 x PCI-104	1 x PCI-104	PCIe expansion slot	-
OS Support		Windows 7, Windows 7 Embedded, Linux	Windows 7, Windows 7 Embedded, Linux	Windows 7,Windows 7 Embedded, Linux	-
Networking	LAN	8 x 10/100/1000 Mbps Autosensing, RJ45	6 x 10/100/1000 Mbps Autosensing, RJ45	8 x 10/100/1000 Mbps Autosensing, RJ45	-
	Magnetic Isolation Protection	1.5 KV built-in	1.5 KV built-in	1.5 KV built-in	-
Serial Interface	Serial Standard	2 x DB9,& 2x2x10pin terminal block for 10 x RS-232/422/485	2 x DB9,& 2x2x10pin terminal block for 10 x RS-232/422/485	2 x DB9,& 2x2x10pin terminal block for 10 x RS-232/422/485	-
	ESD Protection	15 KV for all signals	15 KV for all signals	15 KV for all signals	-
	Isolation Protection	2KV digital isolation	2KV digital isolation	2 KV digital isolation	-
Display	Display Interface	DB15 x1 for VGA (2048x1536)	DB15 x1 for VGA (2048x1536)	DB15 x1 for VGA	-
Weight		5.2 kg	5.2 Kg	5.8 kg	11 kg
Dimensions (W x H x D)		440 x 44.5 x 351.5 mm (17.32"x1.75"x13.84")	440 x 44.5 x 301 mm(17.32"x-1.75"x11.85")	440 x 89 x 351.5 mm (17.32"x3.50"x13.84")	440 x 180 x 300 mm (17.32" x 7.08" x 11.81")
Environment	Operating Temperature	-20~55°C	-20~55°C	-20~55°C	-20~55°C
	Storage Temperature	-40~80°C	-40~80°C	-40~80°C	-40~85°C
Power	Input Voltage	AC power input 100~240 Vac	Dual power input 12~36Vdc, 100~240Vac	AC power input 100~240Vac	100~240Vac/dc Redundant power supply
Reliability	Alter tool	Built-in buzzer and RTC (real-time clock) with battery lithium backup	Built-in buzzer and RTC (real-time clock) with battery lithium backup	Built-in buzzer and RTC (real-time clock) with battery lithium backup	-
	Automatic Reboot Trigger	Watchdog Timer 1~255 level	Watchdog Timer 1~255 level	Watchdog Timer 1~255 level	-
Ordering Information		LEC-3101, LEC-3101A	LEC-3110	LEC-3230B, LEC-3230C, LEC-3230D	HICD-3480



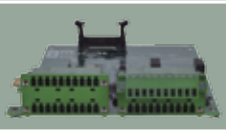

Hybrid ICD Series		LEC-3480 NEW	LEC-3480-16CM NEW	LEC-3430 NEW	LEC-3430-16CM NEW
Processor Options		Freescale™ P1020	Freescale™ P1020	Intel® N2807	Intel® N2807
Chipset		N/A	N/A	N/A	N/A
BIOS		N/A	N/A	AMI SPI Flash BIOS	AMI SPI Flash BIOS
System Memory	Sockets	N/A	N/A	1 x 204-pin DDR3 SO-DIMM	1 x 204-pin DDR3 SO-DIMM
	Technology	Onboard DDR3	Onboard DDR3	DDR3 SO-DIMM x1	DDR3 SO-DIMM x1
	Max. Capacity	1 GB	1 GB	8 GB	8 GB
USB		2 x USB 2.0 Type A connector x 2	2 x USB 2.0 Type A connector x 2	1 x USB 2.0, 1 x USB 3.0 Type A connector	1 x USB 2.0, 1 x USB 3.0 Type A connector
Storage		1 x SATA	1 x SATA	1 x SATA, 1 x CF	1 x SATA, 1 x CF
OS Support		Linux 2.6	Linux 2.6	Linux 2.6	Linux 2.6
Networking	LAN	8 x 10/100/1000 RJ45 connector with VLAN support	8 x 10/100/1000 RJ45 connector with VLAN support	8 x 10/100/1000 RJ45 connector legal IP and dedicated MAC	8 x 10/100/1000 RJ45 connector legal IP and dedicated MAC
	Magnetic Isolation Protection	1.5 KV built-in	1.5 KV built-in	1.5 KV built-in	1.5 KV built-in
Serial Interface	Serial Standard	None	16 x RS485 with terminal block connector	None	16 x RS485 with terminal block connector
	ESD Protection	None	15 KV for all signals	15 KV for all signals	15 KV for all signals
	Isolation Protection	None	Digital isolation protection	None	Digital isolation protection
Display	Display Interface	None	None	DB15 x1 for VGA (2048x1536)	DB15 x1 for VGA (2048x1536)
Weight		8 kg	8 kg	8 Kg	8 Kg
Dimensions (W x H x D)		436.8 x 276 x 177 mm	436.8 x 276 x 177 mm	440 x 44.5 x 301 mm (17.32"x1.75"x11.85")	440 x 44.5 x 301 mm (17.32"x1.75"x11.85")
Environment	Operating Temperature	-20~55°C (-40~70°C)	-20~55°C (-40~70°C)	-20~55°C	-20~55°C
	Storage Temperature	-40~85°C	-40~85°C	-40~85°C	-40~85°C
Power	Input Voltage	DC +12V (Internal Bus)	DC +12V (Internal Bus)	DC +12V (Internal Bus)	DC +12V (Internal Bus)
Reliability	Alter tool	Built-in buzzer and RTC (real-time clock) with lithium battery backup	Built-in buzzer and RTC (real-time clock) with lithium battery backup	Built-in buzzer and RTC (real-time clock) with battery lithium backup	Built-in buzzer and RTC (real-time clock) with battery lithium backup
	Automatic Reboot Trigger	Watchdog Timer 1~255 level	Watchdog Timer 1~255 level	Watchdog Timer 1~255 level	Watchdog Timer 1~255 level
Ordering Information		LEC-3480	LEC-3480-16CM	LEC-3430	LEC-3430-16CM

Accessories

Lanner provides Configure-To-Order Service to its customers, allowing them to configure their LAN modules or COM port modules to meet their individual needs. The following are examples of possible custom configurations:

- 4 x 10/100/1000 RJ45 GbE module
- 8 x 10/100/1000Mbps RJ45 GbE module
- 2 x RJ45 + 2x fiber GbE module
- 8 Isolated serial port module

Note: Please contact Lanner sales for this service.

Part Number	Description	Features	Photo
LEK-2G2F	4x Gigabit Ethernet module	• Intel i210T/i210IS controller • 2 x RJ45, 2 x SFP • Support Windows 7/Linux driver	
LEK-EN1	4x Gigabit Ethernet module	• Intel 82583V controller • 4 x RJ45 • Support Windows/Linux driver	
LEK-8GE	8x Gigabit Ethernet module	• Intel 82583V controller • 8 x RJ45 • Support Windows/Linux driver	
LEK-2GE2MM	Ethernet module w/ Gigabit and 100M multi mode optic fiber	• Intel 82583V / VIA VT6105M controller • 2 x RJ45, 2 x multi-mode ST • Support Windows/Linux driver	
LEK-2GE2MMA	Ethernet module w/ Gigabit and 100M single mode optic fiber	• Intel 82583V / VIA VT6105M controller • 2 x RJ45, 2 x single-mode ST • Support Windows/Linux driver	
LEK-COM8A	Isolated RS-232/422/485 module	• EXAR 17B358 controller • 8 x RS-232/422/485 • Support Windows/Linux driver	

Solar PV Farms Monitoring

Solar PV (photovoltaic) installment is now most significant and globally implemented source of renewable energy, besides hydro and wind power. In some countries where the governments are determined to provide electricity by solar energy, large-scale solar PV farms or solar power stations have been constructed for power supply. Solar farms are generally sited in remote or agricultural areas and may require communication gateways for monitoring and controlling the performances in energy conversions.

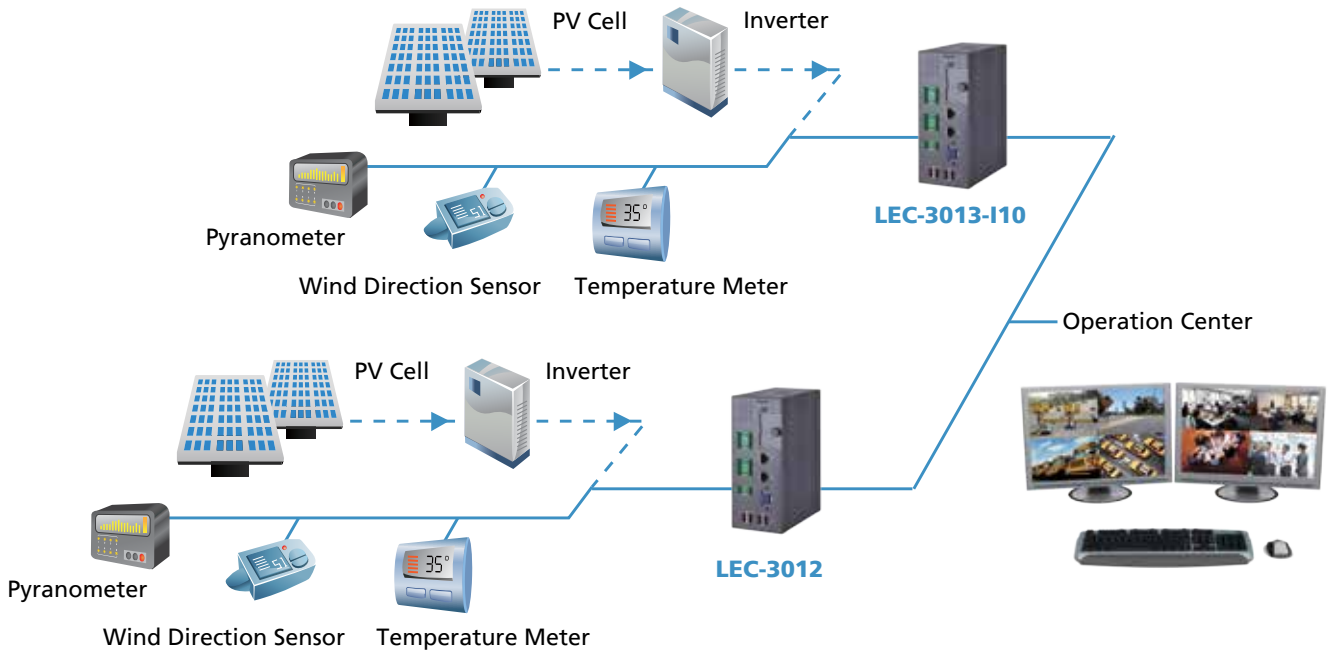
The LEC-3013-I10 is an integrated communication platform for solar inverter substations. Equipped with multiple EMI-protected and isolated serial ports, the DIN-Rail industrial PC monitors and analyzes data that includes daily sunlight, power generation efficiency, array disconnect statistics and other metered information.

Target Applications:

- Solar Photovoltaic Monitoring System
- Data Concentrator
- Wind Turbine Vibration Monitoring System
- Wind Power Field Monitoring System

LEC-3013-I10

- Fanless Industrial DIN Rail Box IPC for Solar PV Application
- Intel® Atom™ D525 CPU with ICH8M Chipset
- 8 x Isolated COM RS485 + 2 x Isolated RS232/485
- 2 x GbE LAN and 4 x USB Ports
- DIN-Rail or Wall Mount



Energy Monitoring

The trend of smart and green buildings is currently one of the most discussed subjects in architecture fields. In fact, there have been reports indicating that residential and commercial buildings in urban areas are found with enormous consumptions of utility. Therefore, smart energy management and meter measurement are needed in order to monitor and control energy usages in urban buildings. In addition, certain degree of automation may be beneficial.

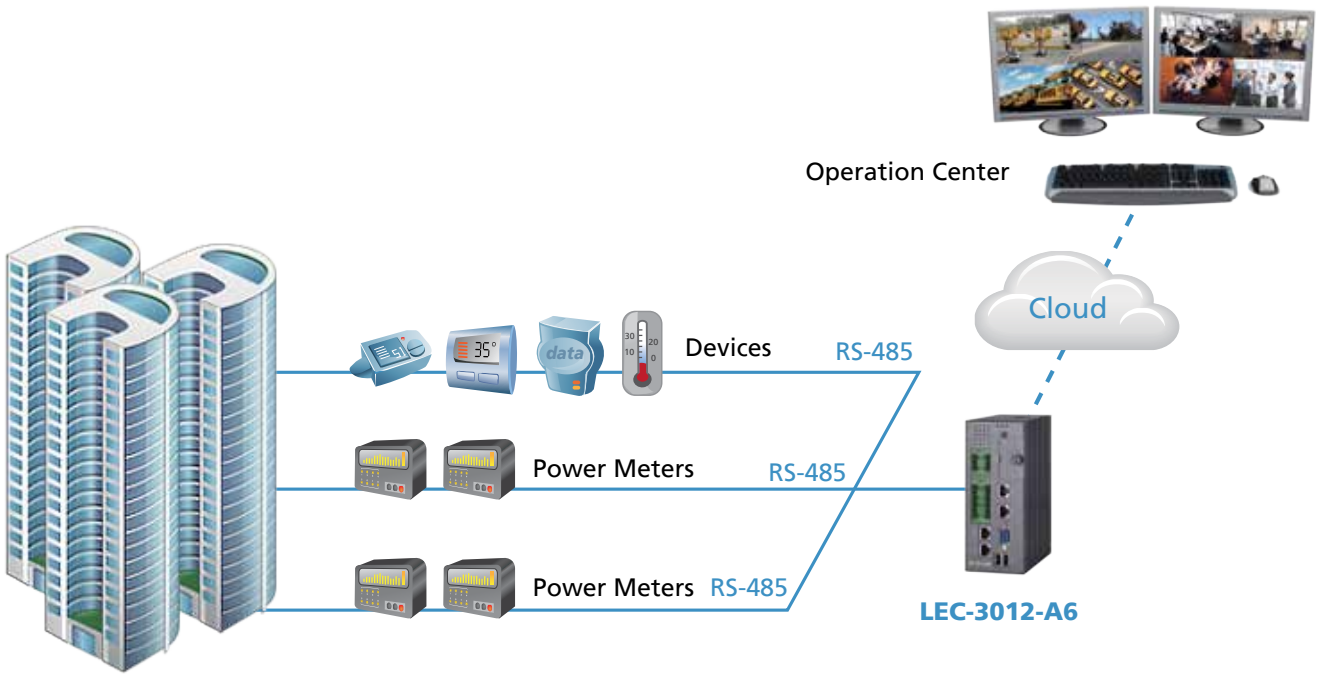
The LEC-3012 Series are ideal for building energy monitoring. This particular fanless industrial computer features 2 or 4 LAN ports with magnetic isolation and up to 6 or 8 serial ports with ESD/surge protections. The compact, DIN rail form factor, front facing I/O ports and the Intel Atom CPU N455 together make the LEC-3012 Series energy and space-efficient appliances for power communication applications.

Target Applications:

- Smart Energy Management
- Smart Meter Management
- Energy Server
- Remote Monitoring
- Building Automation

LEC-3012-A Series

- Fanless DIN-Rail Box PC
- Intel® Atom™ N455 CPU with ICH8M Chipset
- 4/6/8 x Serial Ports with ESD and Surge Protection
- 2 or 4 x GbE LAN and 2 x USB Ports
- DIN-Rail or Wall Mount



Selection Guide

LEC-3 Series		LEC-3000A	LEC-3010
Processor Options		VIA Eden ULV 1 Ghz	Intel® Atom™ N450 (1.66 GHz)
Chipset		VIA VX800	Intel ICH8M
BIOS		AMI Flash BIOS	AMI 8 Mbit SPI Flash ROM BIOS
System Memory	Sockets	1 x 200-pin DDR2 SODIMM	1 x 200-pin DDR2 SODIMM
	Technology	DDR2 SODIMM x1	DDR2 SODIMM x1
	Max. Capacity	2 GB	2 GB
USB		USB 2.0 compliant hosts x 4, Type A connector, internal pin-connector x 2	USB 2.0 compliant hosts x 2, Type A connector, internal pin-connector x 2
OS Support		Windows XP Embedded, Linux	Windows XP Embedded, Linux
Networking	LAN	2 x 10/100/1000 Mbps, Autosensing, RJ45	4 x 10/100/1000 Mbps, Autosensing, RJ45
	Magnetic Isolation Protection	1.5 KV built-in	1.5 KV built-in
Serial Interface	Serial Standard	1 x 20 pin terminal block for 4 x RS-232/422/485	2 x 10, 1 x 20 pin terminal block for 6 x RS-232/422/485
	ESD Protection	None	None
	Isolation Protection	None	None
Digital I/O	Digital Input	4 x DI	4 x DI
	Digital Output	4 x DO	4 x DO
Display	Display Interface	DB15 x 1 for VGA (2048 x 1536)	DB15 x 1 for VGA (2048 x 1536)
Weight		1 kg	1.7 kg
Dimensions (W x H x D)		60 x 165 x 126 mm	60 x 165 x 127 mm
Environment	Operating Temperature	-10~55°C/14~131°F	-10~55°C/14~131°F
	Storage Temperature	-20~80°C	-20~80°C
Power	Input Voltage	+12~36 V DC	+12~36 V DC
Reliability	Alter tool	Built-in buzzer and RTC (real-time clock) with lithium battery backup	Built-in buzzer and RTC (real-time clock) with lithium battery backup
	Automatic Reboot Trigger	Watchdog Timer 1~255 level time interval system reset, software programmable	Watchdog Timer 1~255 level time interval system reset, software programmable
Ordering Information		LEC-3000A	LEC-3010

LEC-3 Series		LEC-3012	LEC-3012-A
Processor Options		Intel® Atom™ N455 (1.66 GHz)	Intel® Atom™ N455 (1.66 GHz)
Chipset		Intel ICH8M	Intel ICH8M
BIOS		AMI 8 Mbit SPI Flash ROM BIOS	AMI 8 Mbit SPI Flash ROM BIOS
System Memory	Sockets	1 x 204-pin DDR3 SODIMM	1 x 204-pin DDR3 SODIMM
	Technology	DDR3 SODIMM x1	DDR3 SODIMM x1
	Max. Capacity	2 GB	2 GB
USB		USB 2.0 compliant hosts x 2, Type A connector, internal pin-connector x 2	USB 2.0 compliant hosts x 2, Type A connector, internal pin-connector x 2
OS Support		Windows XP Embedded, Linux	Windows XP Embedded, Linux
Networking	LAN	2 x 10/100/1000 Mbps, Autosensing, RJ45	2 or 4 x 10/100/1000Mbps, Autosensing, RJ45
	Magnetic Isolation Protection	1.5 KV built-in	1.5 KV built-in
Serial Interface	Serial Standard	1 x DB9 for RS-232, 1 x 20 pin terminal block for 4 x RS-232/422/485	1 or 2 x 20 pin terminal block for 4, 6 or 8 x RS-232/422/485
	ESD Protection	15 KV for all signals	15 KV for all signals
	Isolation Protection	2 KV optical isolation	None
Digital I/O	Digital Input	4 x 2KV optical isolation	None
	Digital Output	4 x 2KV optical isolation	None
Display	Display Interface	DB15 x 1 for VGA (2048 x 1536)	DB15 x 1 for VGA (2048 x 1536)
Weight		1.7 kg	1.7 kg
Dimensions (W x H x D)		69 x 169.5 x 127 mm	69 x 170 x 127 mm
Environment	Operating Temperature	-10~55°C/14~131°F	-20~55°C/-4~131°F
	Storage Temperature	-40~80°C	-40~80°C
Power	Input Voltage	+12~36 V DC	+12~36 V DC
Reliability	Alter tool	Built-in buzzer and RTC (real-time clock) with lithium battery backup	Built-in buzzer and RTC (real-time clock) with lithium battery backup
	Automatic Reboot Trigger	Watchdog Timer 1~255 level time interval system reset, software programmable	Watchdog Timer 1~255 level time interval system reset, software programmable
Ordering Information		LEC-3012	LEC-3012-A4/A6/A8



LEC-3 Series		LEC-3013-A	LEC-3013T	LEC-3013-I10
Processor Options		Intel® Atom™ N450 (1.66 GHz)	Intel® Atom™ N450 (1.66 GHz)	Intel® Atom™ D525 (1.8 GHz)
Chipset		Intel ICH8M	Intel ICH8M	Intel ICH8M
BIOS		AMI Flash BIOS	AMI Flash BIOS	AMI Flash BIOS
System Memory	Sockets	1 x 200-pin DDR2 SODIMM	1 x 200-pin DDR2 SODIMM	1 x 204-pin DDR3 SODIMM
	Technology	DDR2 SODIMM x1	DDR2 SODIMM x1	DDR3 SODIMM x1
	Max. Capacity	2 GB	2 GB	4 GB
USB		USB 2.0 compliant hosts x 2, Type A connector, internal pin-connector x 2	USB 2.0 compliant hosts x 2, Type A connector, internal pin-connector x 2	USB 2.0 compliant hosts x 4, Type A connector
OS Support		Windows XP Embedded, Linux	Windows XP Embedded, Linux	Windows 7, Windows 7 Embedded, Linux 2.6
Networking	LAN	2 or 4 x 10/100/1000 Mbps, Autosensing, RJ45	2 or 4 x 10/100/1000 Mbps, Autosensing, RJ45	2 x 10/100/1000 Mbps, Autosensing, RJ45
	Magnetic Isolation Protection	1.5 KV built-in	1.5 KV built-in	1.5 KV built-in
Serial Interface	Serial Standard	-2 x 2 x 10pin terminal block for 8 x RS232/422/485 -2 x 10pin + 2 x 5pin terminal block for 6 x RS232/422/485 -2 x 10pin terminal block for 4 x RS-232/422/485	-2 x 2 x 10pin terminal block for 8 x RS232/422/485 -2 x 10pin + 2 x 5pin terminal block for 6 x RS232/422/485 -2 x 10pin terminal block for 4 x RS-232/422/485	1 x 3 pin terminal block for 2 x RS-232/485,2 x 6 pin terminal block for 8xRS485, 1 x DB9 internal pin header
	ESD Protection	None	None	15 KV for all signals
	Isolation Protection	None	None	2 KV digital isolation
Digital I/O	Digital Input	4 x DI	4 x DI	None
	Digital Output	4 x DO	4 x DO	None
Display	Display Interface	DB15 x 1 for VGA (2048 x 1536)	DB15 x 1 for VGA (2048 x 1536)	DB15 x 1 for VGA (2048 x 1536)
Weight		1.7 kg	1.7 kg	1.7 kg
Dimensions (W x H x D)		60 x 165 x 127 mm	60 x 165 x 127 mm	69 x 170 x 127 mm
Environment	Operating Temperature	-20~55°C/-4~131°F	-40~70°C	-20~55°C/-4~131°F
	Storage Temperature	-20~80°C	-20~80°C	-40~80°C
Power	Input Voltage	+12~36 V DC	+12~36 V DC	+12~36 V DC
Reliability	Alter tool	Built-in buzzer and RTC (real-time clock) with lithium battery backup	Built-in buzzer and RTC (real-time clock) with lithium battery backup	Built-in buzzer and RTC (real-time clock) with lithium battery backup
	Automatic Reboot Trigger	Watchdog Timer 1~255 level time interval system reset, software programmable	Watchdog Timer 1~255 level time interval system reset, software programmable	Watchdog Timer 1~255 level
Ordering Information		LEC-3013-A4/A6/A8	LEC-3013T-A4/A6/A8	LEC-3013-I10




LEC-3 Series		LEC-3031	LEC-3031T	LEC-3031-I4	LEC-3031-I10
Processor Options		Intel® Celeron N2807 (2.16 GHz)	Intel® Celeron N2807 (2.16 GHz)	Intel® Celeron N2807 (2.16 GHz)	Intel® Celeron N2807 (2.16 GHz)
Chipset		N/A	N/A	N/A	N/A
BIOS		AMI Flash BIOS	AMI Flash BIOS	AMI Flash BIOS	AMI Flash BIOS
System Memory	Sockets	1 x 204-pin DDR3 SODIMM	1 x 204-pin DDR3 SODIMM	1 x 204-pin DDR3 SODIMM	1 x 204-pin DDR3 SODIMM
	Technology	DDR3 SODIMM x1	DDR3 SODIMM x1	DDR3 SODIMM x1	DDR3 SODIMM x1
	Max. Capacity	4 GB	4 GB	4 GB	4 GB
USB		USB 2.0 compliant hosts x 1, USB 3.0 x 1 Type A connector	USB 2.0 compliant hosts x 1, USB 3.0 x 1 Type A connector	USB 2.0 compliant hosts x 3, USB 3.0 x 1 Type A connector	USB 2.0 compliant hosts x 3, USB 3.0 x 1 Type A connector
OS Support		Windows 7, Windows 7 Embedded, Linux 2.6	Windows 7, Windows 7 Embedded, Linux 2.6	Windows 7, Windows 7 Embedded, Linux 2.6	Windows 7, Windows 7 Embedded, Linux 2.6
Networking	LAN	2 or 4 x 10/100/1000 Mbps, Autosensing, RJ45	2 or 4 x 10/100/1000 Mbps, Autosensing, RJ45	2 x 10/100/1000 Mbps, Autosensing, RJ45	2 x 10/100/1000 Mbps, Autosensing, RJ45
	Magnetic Isolation Protection	1.5 KV built-in	1.5 KV built-in	1.5 KV built-in	1.5 KV built-in
Serial Interface	Serial Standard	1 or 2 x 10 pin terminal block for 4,6 or 8 x RS-232/422/485	1 or 2 x 10 pin terminal block for 4,6 or 8 x RS-232/422/485	1 x 2 x 6 pin terminal block for 4 x RS485	1 x 2x3 for 2 x RS232/485, 2 x 2 x 6 pin terminal block for 8 x RS-485
	ESD Protection	15 KV for all signals	15 KV for all signals	15 KV for all signals	15 KV for all signals
	Isolation Protection	None	None	2 KV optical isolation	2 KV optical isolation
Display	Display Interface	DB15 x 1 for VGA (2048 x 1536)	DB15 x 1 for VGA (2048 x 1536)	DB15 x 1 for VGA (2048 x 1536)	DB15 x 1 for VGA (2048 x 1536)
Weight		1.7 kg	1.7 kg	1.7 kg	1.7 kg
Dimensions (W x H x D)		69 x 170 x 127 mm	69 x 170 x 127 mm	69 x 169.5 x 127 mm	69 x 170 x 127 mm
Environment	Operating Temperature	-20~55°C/-4~131°F	-40~70°C/104~158°F	-20~55°C/-4~131°F	-20~55°C/-4~131°F
	Storage Temperature	-20~55°C	-40~80°C	-20~55°C	-20~55°C
Power	Input Voltage	+12~36 V DC	+12~36 V DC	+12~36 V DC	+12~36 V DC
Reliability	Alter tool	Built-in buzzer and RTC (real-time clock) with lithium battery backup	Built-in buzzer and RTC (real-time clock) with lithium battery backup	Built-in buzzer and RTC (real-time clock) with lithium battery backup	Built-in buzzer and RTC (real-time clock) with lithium battery backup
	Automatic Reboot Trigger	Watchdog Timer 1~255 level	Watchdog Timer 1~255 level	Watchdog Timer 1~255 level time interval system reset, software programmable	Watchdog Timer 1~255 level
Ordering Information		LEC-3031-A4/A6/A8	LEC-3031T-A4/A6/A8	LEC-3031-I4	LEC-3031-I10

ICS Cyber Security

ICS structures are implemented in segregated environments to control and monitor critical infrastructures. In recent years, we have heard various incidents of critical infrastructures such as nuclear plants being breached by malicious cyber attacks. One of the most discussed is the Stuxnet which devastated the computing system of Iran's nuclear plant. There are reports indicating that hackers usually attack the weak sides of DCS, PLC and HMI. Therefore, it is necessary to implement firewalls designed with endurance in harsh environments.

The LEC-6020 Series are DIN-Rail cyber security appliances designed to cope with challenging conditions and extreme temperatures. Certified for Class 1 Division 2 hazardous environments, the LEC-6020 Series are ideal gateway platforms for industrial firewall/UTM to provide white-listing function, alerting the system administrator when abnormal network events occur.

Target Applications:

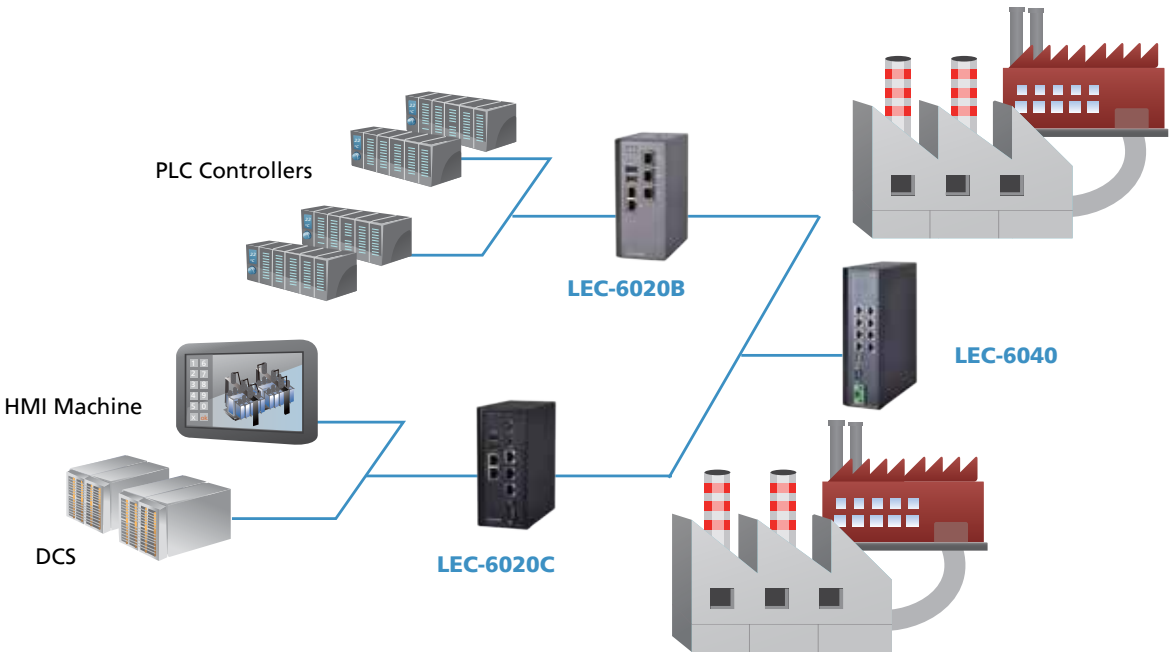
- Industrial UTM
- Security Gateway
- Industrial Firewall
- SCADA Network Security Appliance

LEC-6020

- Fanless DIN Rail Box PC
- Intel® Atom™ N2600 CPU with NM10 Chipset
- 1 or 4 x Serial Ports with ESD and Surge Protection
- 3 or 5 x GbE LAN with LAN Bypass

LEC-6040

- Intel® Core™ i3-4102E/i5-4402E CPU with QM87 Chipset
- 1 x RS-232 Serial Ports with ESD and Surge Protection
- 4 or 8 x GbE LAN and 2 x USB 3.0 Ports



Selection Guide



LEC-6 Series		LEC-6020	LEC-6021A	LEC-6030 NEW
Processor Options		Intel® Atom™ N2600 (1.6 GHz)	Intel® Atom™ N2600 (1.6GHz)	Intel® Atom™ E3815 (1.46 GHz)
Chipset		Intel NM10	Intel NM10	N/A
BIOS		AMI Flash BIOS	AMI Flash BIOS	AMI Flash BIOS
System Memory	Sockets	1 x 204-pin DDR3 SO-DIMM	1 x 204-pin DDR3 SO-DIMM	1 x 204-pin DDR3L SO-DIMM
	Technology	Dual-channel DDR3,1066/1333MHz	Dual-channel DDR3,1066/1333MHz	DDR3L 1067 MHz
	Max. Capacity	2 GB	2 GB	4 GB
USB		USB 2.0 compliant hosts x 2, Type A connector (LEC-6020A x 4)	USB 2.0 compliant hosts x2, Type A connector	USB 3.0 compliant hosts x 1, USB 2.0 compliant hosts x 1 Type A connector (6030A USB 2.0 x 3)
SATA pinheader / CF		1 / 1	1 / 1	1 / 1
OS Support		Windows 7, Windows 7 Embedded, Linux 2.6	Windows 7 Embedded, Linux 2.6	Windows 7, Windows 7 Embedded, Linux 2.6
Networking	LAN	6020A: 3 x GbE RJ45, 1 pair LAN Bypass 6020B: 5 x GbE RJ45, 2 pairs LAN Bypass 6020C/D: 5 x GbE RJ45, 1 pair LAN Bypass 6020C with 2 x SFP Fiber ports	5x10/100/1000Mbps with 1 pair LAN Bypass, 2x GbE SFP ports	6030A: 3 x GbE RJ45, 1 pair LAN Bypass 6030B: 5 x GbE RJ45, 2 pairs LAN Bypass 6030C/D: 5 x GbE RJ45, 1 pair LAN Bypass 6030C with 2 x SFP Fiber ports 6030E: 2 x GbE RJ45, 4 x GbE PoE
	Magnetic Isolation Protection	1.5 KV built-in	1.5 KV built-in	1.5 KV built-in
Serial Interface	Serial Standard	6020A: 2 x 10 pin terminal block for 4 x RS-232/422/485, 1 x internal header (RS232) 6020B:1 x internal header for RS232 6020C/D: 1 x COM port for RS232	1x DB9 for RS-232, Internal pin-header x1	6030A: 2 x 10 pin terminal block for 4 x RS-232/422/485, 1 x internal header (RS232) 6030B:1 x internal header for RS232 6030C/D: 1 x COM port for RS232
	ESD Protection	15 KV for all signals	15 KV for all signals	15 KV for all signals
	Isolation Protection	None	Digital isolation protection	None
Display	Display Interface	Internal pin-header	Internal pin-header	Internal pin-header
Weight		1 kg	2.2 kg	1 kg
Dimensions (WxHxD)		65 x 146 x 127 mm (17.32"x1.75"x11.85")	53.5 x 186 x 160	65 x 146 x 127 mm (17.32"x1.75"x11.85")
Environment	Operation Temperature	-40~70°C	-40~75°C	-40~70°C
	Storage Temperature	-40~85°C	-40~85°C	-40~85°C
Power	Input Voltage	12~36 V DC	12~48 Vdc	12~36 V DC, 6030E: Single 24~48Vdc
Reliability	Alter tool	Built-in buzzer and RTC (real-time clock) with lithium battery backup	Built-in buzzer and RTC (real-time clock) with battery lithium backup	Built-in buzzer and RTC (real-time clock) with lithium battery backup
	Automatic Reboot Trigger	Watchdog Timer 1~255 level	Watchdog Timer 1~255 level	Watchdog Timer 1~255 level
Ordering Information		LEC-6020A/B/C/D	LEC-6021A	LEC-6030A/B/C/D/E


LEC-6 Series		LEC-6040 NEW	LEC-6230 NEW
Processor Options		Intel® Core™ i3 4102E, i5-4402E	Intel® Core™ i7-3517UE
Chipset		Intel QM87	Intel HM65
BIOS		AMI Flash BIOS	AMI Flash BIOS
System Memory	Sockets	1 x 204-pin DDR3 SO-DIMM	1 x 204-pin DDR3
	Technology	Dual-channel DDR3,1333/1600 MHz	DDR3 SO-DIMM x1
	Max. Capacity	Up to 8 GB	Up to 8 GB
USB		USB 3.0 compliant hosts x2, Type A connector, internal pin-header x2	USB2.0 compliant, 2x Type A connector,1x internal Type A connector, 3x internal pin header
SATA pinheader / CF		1 / 1	1 / 1
OS Support		Windows 7, Linux	Windows 7, Linux
Networking	LAN	B1: 4 x GbE LAN ports, B2: 6 x GbE LAN ports, 2 x SFP ports, B3: 8 x GbE LAN ports	8 x 10/100/1000 Mbps Autosensing, RJ45, 4 x Fiber GbE SFP ports
	Magnetic Isolation Protection	1.5 KV built-in	1.5 KV built-in
Serial Interface	Serial Standard	1x DB9 for RS-232	2 x DB9 for RS-232/422/485
	ESD Protection	15 KV for all signals	15 KV for all signals
	Isolation Protection	Digital isolation protection	Digital isolation protection
Display	Display Interface	Internal pin-header	DB15 x1 for VGA
Weight		2.8 kg	5.8 kg
Dimensions (WxHxD)		60 x 230 x 190 mm	440 x 89 x 351.5 mm (17.32"x3.50"x13.84")
Environment	Operation Temperature	-20~55°C	-20~55°C
	Storage Temperature	-40~85°C	-40~85°C
Power	Input Voltage	12 Vdc	AC power input 100~240Vac
Reliability	Alter tool	Built-in buzzer and RTC (real-time clock) with battery lithium backup	Built-in buzzer and RTC (real-time clock) with battery lithium backup
	Automatic Reboot Trigger	Watchdog Timer 1~255 level	Watchdog Timer 1~255 level
Ordering Information		LEC-6040H-B1, LEC-6040H-B2, LEC-6040H-B3, LEC-6040M-B1,LEC-6040M-B2, LEC-6040M-B3	LEC-6230

Establishing Solid Network Security for Industrial Control System

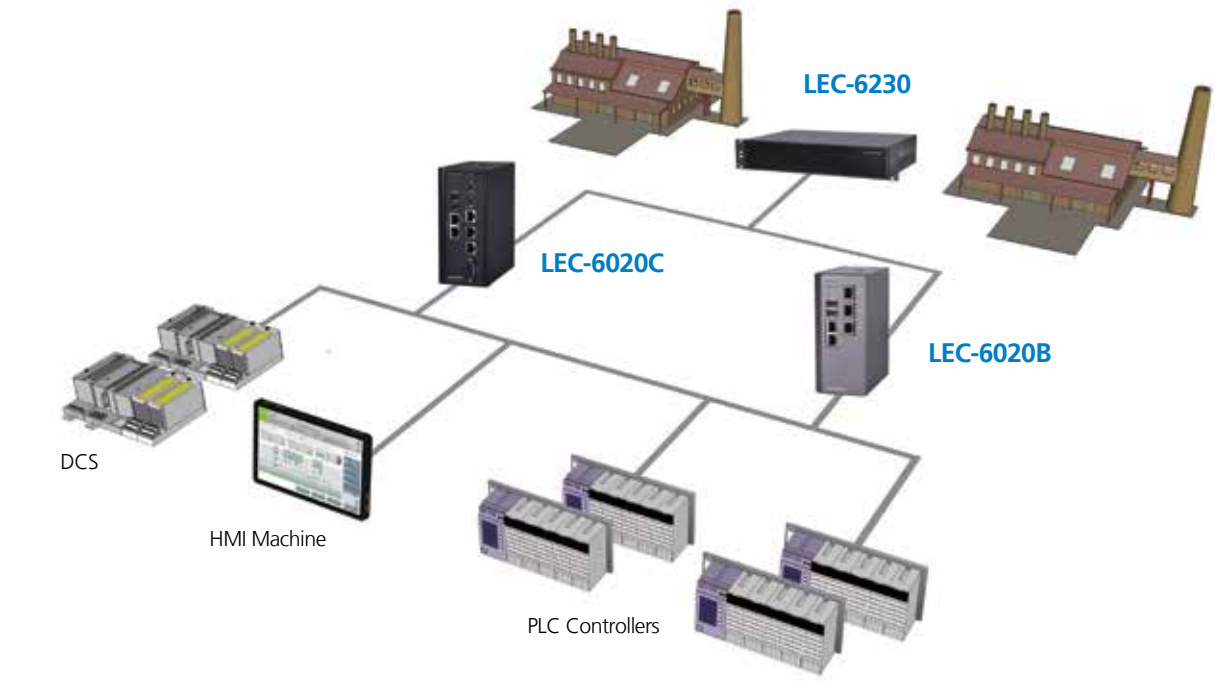
Requirements

ICS and SCADA are implemented in segregated environments to control and monitor critical infrastructures. Only authorized individuals have the access to enter these environments. However, in recent years, we have heard various incidents of critical infrastructures such as nuclear plants being breached by malicious cyber attacks. Hackers usually attack the weak sides of DCS (distributed control systems), PLC (programmable logic controllers) and HMI (human machine interface) through unauthorized remote accesses, non-inspected packets, lack of protocol scanning and filtering as well as loose authentication process.

The Solution

As illustrated in the diagram below, robust industrial gateway controllers (namely LEC-6020B/LEC-6020C) are placed between PLCs/HMIs/DCS and the main control center of the infrastructures. These controllers must be IEC 61850-3 compliant in order to perform white-listing, protocol filtering, and access detections for the networks that bridge PLCs/HMIs/DCS with the infrastructure. These gateway controllers the packets traveling through its monitored network protocols.

In a more sophisticated implementation, owners of critical infrastructures may also adopt the use of LEC-6230 as shown in the diagram below, a powerful cyber security appliance with both IEC 61850-3 and IEEE 1613 compliances. In this scenario, LEC-6230 acts as the main control center to perform encryptions while LEC-6020s will function as the decryption stage.



Intelligent Solar Power Monitoring System

Requirements

One of China's electric companies sent out a request for hardware solutions capable of monitoring solar power substations located at unmanned, remote areas with harsh climates. The requested system was to be developed into an integrated communications platform for gathering, storing and analyzing data relating to sunlight strength, direct current power, power conversion efficiency, array disconnect statistics and overseeing meters such as wind speed and temperature. The collected data would be uploaded instantly to an operation center via the serial-to-Ethernet communication.

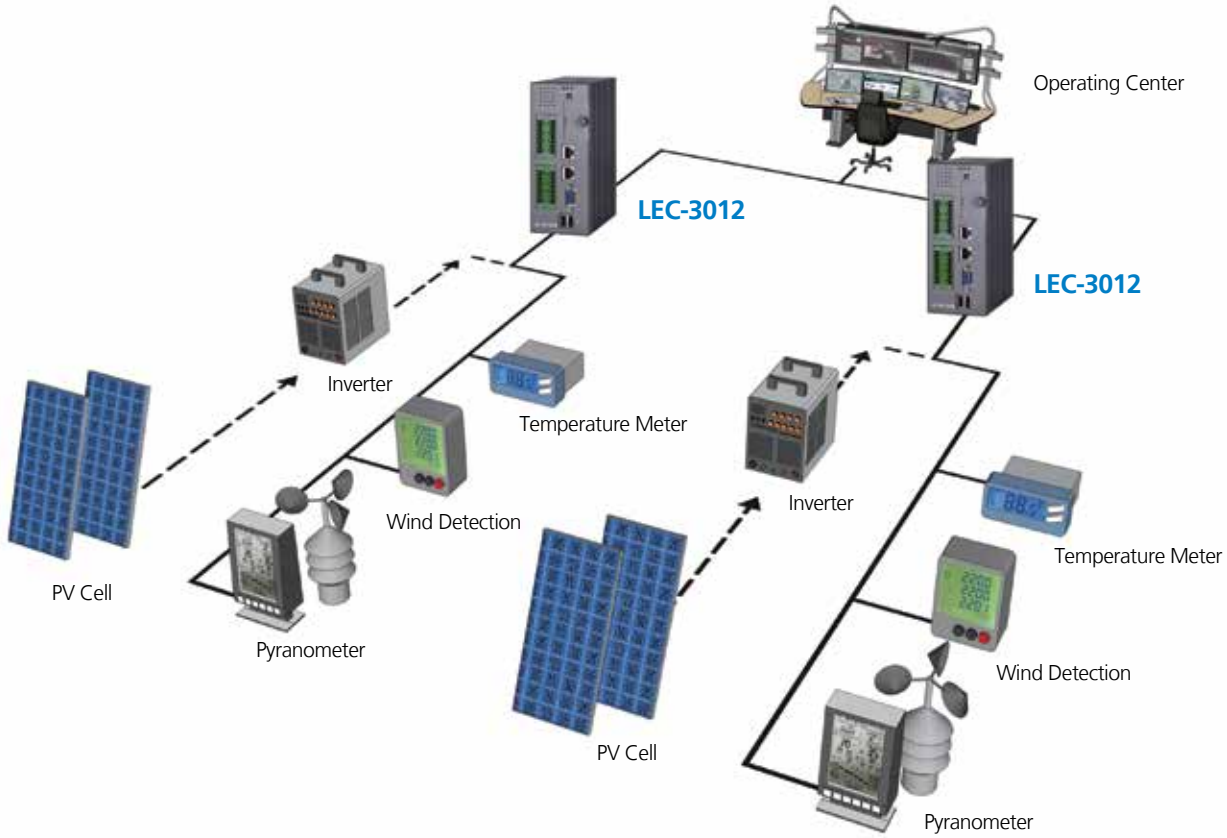
The Solution

Lanner's LEC-3012, a robust and compact IPC was eventually selected as the data concentrator for the aforementioned solar power monitoring system capable of gathering and analyzing data from sensors and meters deployed at the remote site.

LEC-3012 features Intel Atom N455 CPU, 4 Serial COM ports with 15KV ESD/surge protections and 2 GbE LAN ports with magnetic isolation protections; such configuration makes possible an integrated setup on which reliable communications with inverters for overseeing the DC to AC conversion efficiency can be developed.

LEC-3012 also features 2 x 10 terminal block function for the Serial COM ports, providing a multitude of wiring options adaptable for various types of sensors and meters.

LEC-3012's solid chassis and fanless design are two critical factors for a remote site industrial communication device. Furthermore, the DIN rail mount and front access ports simplify hardware maintenance as service can be carried out while the appliance was still mounted.



The Integrated Data Communication Platform for Power Substation Management

Requirements

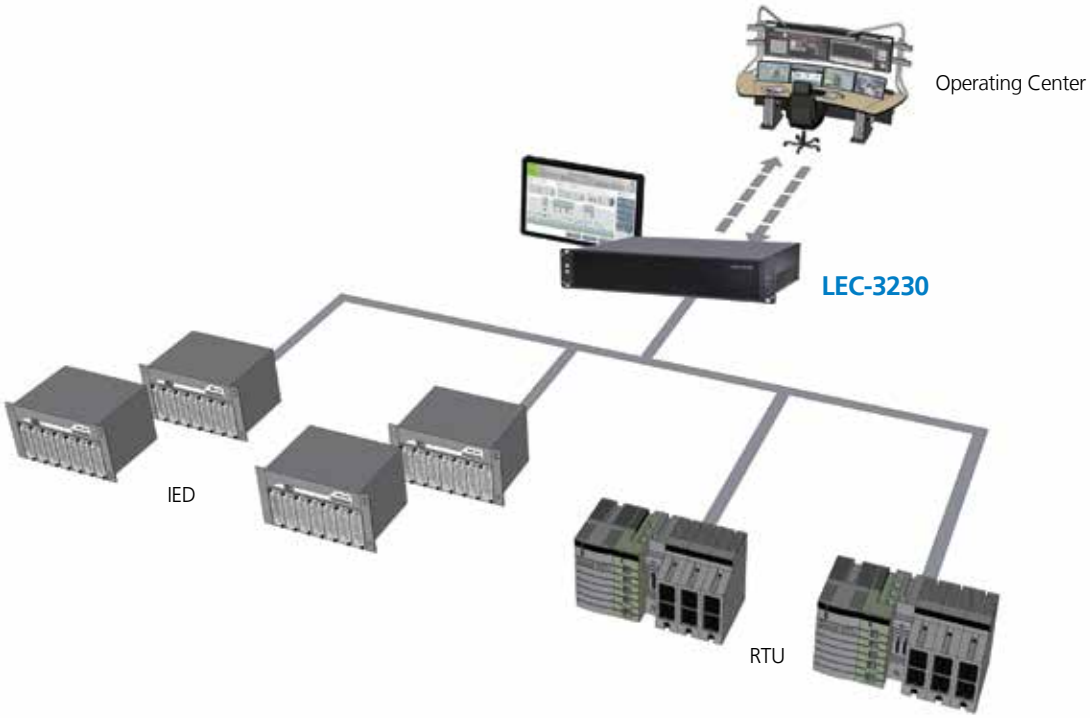
Device interoperation is the foundation for establishing efficient communications. Since most power substations are consisted of numerous automation devices and sensors from various manufacturers with different communication protocols, it is imperative that an intelligent system must be the one device responsible for control consolidation, asset monitoring and data transmitting. Having such centralized system like SCADA in place not only improves facility management efficiency but also ensures operation security, preventing potentially damaging consequences as a result of power outrages. Such system must fulfill the following requirements:

The Solution

Lanner's LEC-3230 was eventually selected as the ideal hardware for this integrated substation communication system. The LEC-3230 features a powerful Intel Core i7 CPU and up to 10 serial COM ports for connecting up to 20 intelligent control, security and monitoring devices, including environmental monitoring devices for lighting, water, ventilation and air conditioning and security system for fire alarm and entrance access control.

Positioned as a rugged industrial gateway, the LEC-3230 is certified with LEC 61850-3 and China Electricity Certificate IV Level. It supports a broad temperature range, from -20°C to 55°C and features ESD/surge isolation protections on serial COM ports. What's more, the LEC-3230's lifespan is extended by its solid, fanless and dustproof hardware chassis. It also comes with a dual power input and a screw-locked power plug for reliable and secure power connection.

A range of expandable I/O modules, such as optional 4+4 GbE LAN ports, 4+8 GbE LAN ports and 2+8 or 2+16 isolated serial COM ports is made available for the LEC-3230 so that it is capable of meeting substations' deployment requirements.



Intelligent Building Solution - Building Energy Monitoring System

Requirements

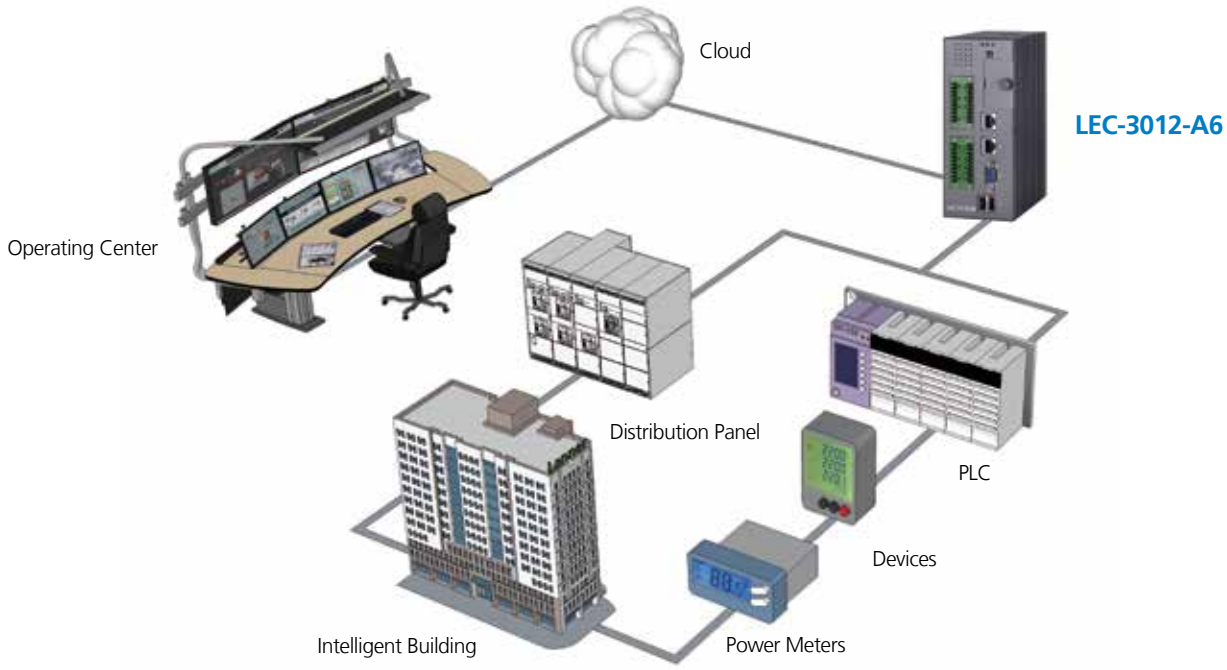
In order to implement the aforementioned power conservation regulations, one must first find out where and how the energy is being consumed, and by whom. A municipal government in China set out to enforce the local power regulations by monitoring the city's office buildings and residential complexes, both widely believed to be responsible for the most excessive electricity usage in the said city.

To effectively collect electricity usage from thousands of electricity meters in these buildings, the city administrators needed an intelligent electricity monitoring system for collecting and storing data from various terminal devices, as well as uploading collected data back to a datacenter. The hardware for this intelligent system must meet the following requirements:

The Solution

Designed as a robust platform for power communication applications, LEC-3012-A6 was eventually selected for setting up this energy monitoring system. This particular fanless industrial computer features 2 LAN ports with magnetic isolation and up to 6 serial ports with ESD/surge protections, offering great compatibility for 3rd party device integration and high reliability when operating in high voltage environments. The compact, DIN rail form factor, front facing I/O ports and the Intel Atom CPU N455 together make the LEC-3012-A6 an energy and space-efficient appliance, one that outperforms its counterparts.

Once implemented, power consumption in lighting system, water /gas meters and air-conditioning/heating systems can be monitored so that excessive usage can be curtailed and greater energy efficiency can be achieved.



Corporate

Lanner Electronics Inc.
7F, No.173, Sec.2, Datong Rd.
Xizhi District,
New Taipei City 221, Taiwan
T: +886-2-8692-6060
F: +886-2-8692-6101
E: contact@lannerinc.com

USA

Lanner Electronics Inc.
47790 Westinghouse Drive
Fremont, CA 94539
T: +1-855-852-6637
F: +1-510-979-0689
E: sales_us@lannerinc.com

China

立华科技
北京市海淀区农大南路33号
厢黄旗东路兴天海园一层
T: +86 010-82795600
F: +86 010-62963250
E: service@ls-china.com.cn

Canada

LEI Technology Canada Ltd
3160A Orlando Drive
Mississauga, ON L4V 1R5
Toll_free: +1 877-813-2132
T: +1 905-362-2364
F: +1 905-362-2369
E: sales_ca@lannerinc.com

Taiwan

立端科技股份有限公司
221新北市汐止區
大同路二段173號7樓
T: +886-2-8692-6060
F: +886-2-8692-6101
E: contact@lannerinc.com

Lanner

intel IoT Solutions Alliance

More Information