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# Lanner

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Introductory  
Video





## Intelligent Vehicle Computers

Rugged Platforms for Transportation







## Innovating Transportation Solutions for a Connected World

Over the past ten years, Lanner has dedicated itself in supplying the state-of-the-art hardware solutions for IoT applications and millions of Lanner hardware platforms have been deployed worldwide. With this momentum in mind, Lanner is expanding its technological fields by innovating transportation solutions for a connected world.

Built on our already established expertise and reliability in our vehicle computing systems, including fleet management, in-vehicle surveillance and infotainment, Lanner has founded its Intelligent Transportation Solution Product Division in 2014, a newly established division dedicating in rolling stock and rail gateway systems. These systems will offer robust operability to be deployed for train, high-speed rail, MRT (Mass Rapid Transit), and other public transit applications.

The launch of the new ITS Product Division comes with our true mission in bringing our clients and partners the solutions that can help them reduce development efforts and costs, while offering a wider selection of deployable platforms for a more connected world.

A handwritten signature in black ink, appearing to read 'Spencer Chou'.

**Spencer Chou**  
Senior Director, ITS 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 m<sup>2</sup>
- 3 x SMT, DIP and assembly lines
- Production capacity: 30,000 system units/month

### Beijing and Dongguang, China

- Area 8,500 m<sup>2</sup>
- 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

Who is Lanner? .....	4
Solution Overview .....	6
Feature Highlights .....	8
Vehicle Computers Comparison .....	12
Rolling Stock Computers Comparison .....	17
Application Stories.....	18

# Why Lanner?

Lanner designs and manufactures a wide range of embedded computing systems for diversified applications. Our vehicle computers feature compact form factor, ruggedness, shock/vibration resistance, wireless connectivity and rich I/O connectors. We are committed to bringing reliability and high-performance intelligent transportation systems to meet today's strict demands for IoT applications.

## Strong Allies

### Intel®



Lanner Electronics is an Associate Member of the Intel Intelligent Systems 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.

### Axis



Lanner is a member of Axis Technology Partner Program, a community of video surveillance developers, embedded developers and solution providers committed to the development of video surveillance solutions from Axis Communications. The alliance encourages its members to supply the market the products with enhanced performance, greater scalability, and maximum flexibility.

### Milestone Systems



Lanner is a member of the Milestone Solution Partner Program, a community of video surveillance developers, embedded developers and solution providers committed to the development of video surveillance solutions on Milestone technologies.

### u-blox



u-blox is a global leader in embedded wireless communications and positioning for industrial, automotive and consumer applications. u-blox delivers compact, low-power, high-performance chips and modules for consumer, professional and industrial machine-to-machine (M2M) applications.

### Microsoft



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



# Solution Overview

MRT Surveillance



Law Enforcement



e-Bus



Taxi Fleet Management



Driver Behavior Management







Fleet Management

Waste Management

Rolling Stock Communication

Ambulance Communication



# Vehicle & Rolling Stock Box PCs

Lanner's vehicle and rolling stock computers are specifically designed for versatile deployments in transportation vehicles, offering high levels of stability and reliability, as well as well-rounded balance of size, cost, performance and power consumption.

Lanner's vehicle computer line is consisted of the LVC Series and the LVR Series and their key features are listed below.



## Onboard GPS & G-sensor

Offer an on-board GPS receiver for location tracking and a G-Sensor for driver alerts.



## Power Ignition Control

A user-friendly Power Ignition Control is programmed to start and shut down the vehicle computer when the engine is started or turned off respectively.



## Wide Voltage Input Range

Offer compatibility with mostly adopted voltages, including 9~36 VDC, +12 V and 24V, ensuring compatible operations and reducing overheads.



## Military Standard Vibration & Shock Test

The LVC series is compliant with MIL-STD-810G and has passed vibration and shock tests. A suspension kit is also included in some models to assist in vibration resistance.



**LVC-5000N4**

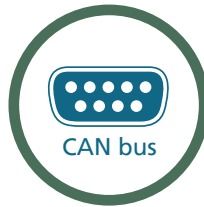


**LVR-2010**



### Wireless Communication

Support Wi-Fi, 3G, 4G/LTE modules and antenna for wireless network connectivity



### CAN Bus Support

Designed in J1939 and J1708 protocols, the CAN Bus module allows external devices to analyze driving behaviors for future references.



### M12 Connectors

Lanner LVR Series come with M12 connectors for robust vibration-proof and reliable connections.



### Fanless Design

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



### Multiple PoE Ports

The design of multiple PoE ports enables our systems to function as mobile NVRs when connected with IP surveillance cameras for real-time recording.



### Rolling Stock Compliance

EN50155 is an international standard regulating electronic equipment used on rolling stock for railway applications. The LVR Series is EN50155 compliant, and covers aspects of standards including temperature, humidity, shock, vibration and other parameters.

## Introducing the LVC and LVR Series

The LVC Series is designed for uses in public transit buses, commercial trucks, law enforcement and emergency vehicles, truly ideal for applications such as on-road tracking and monitoring, mobile video surveillance and passenger infotainment.

Built with the extreme ruggedness to meet EN50155 compliance, the LVR Series is engineered to fulfill rail system applications deployed in trains, massive rapid transit or high speed rail.

## Fleet Management

To optimize transportation cost and secure driver's safety, Lanner LVC-2000 Series provide total solution for truck fleet management. As the center of truck applications, LVC-2000 Series provide rich I/O and expansion capability to connect front/rear IP Camera, RFID scanner, temperature sensor, monitor, TPMS receiver, anti-dozing / alcohol detector and Wi-Fi/3G/4G interface cards. The whole management system makes driver and the company HQ a more efficient and safe work place.

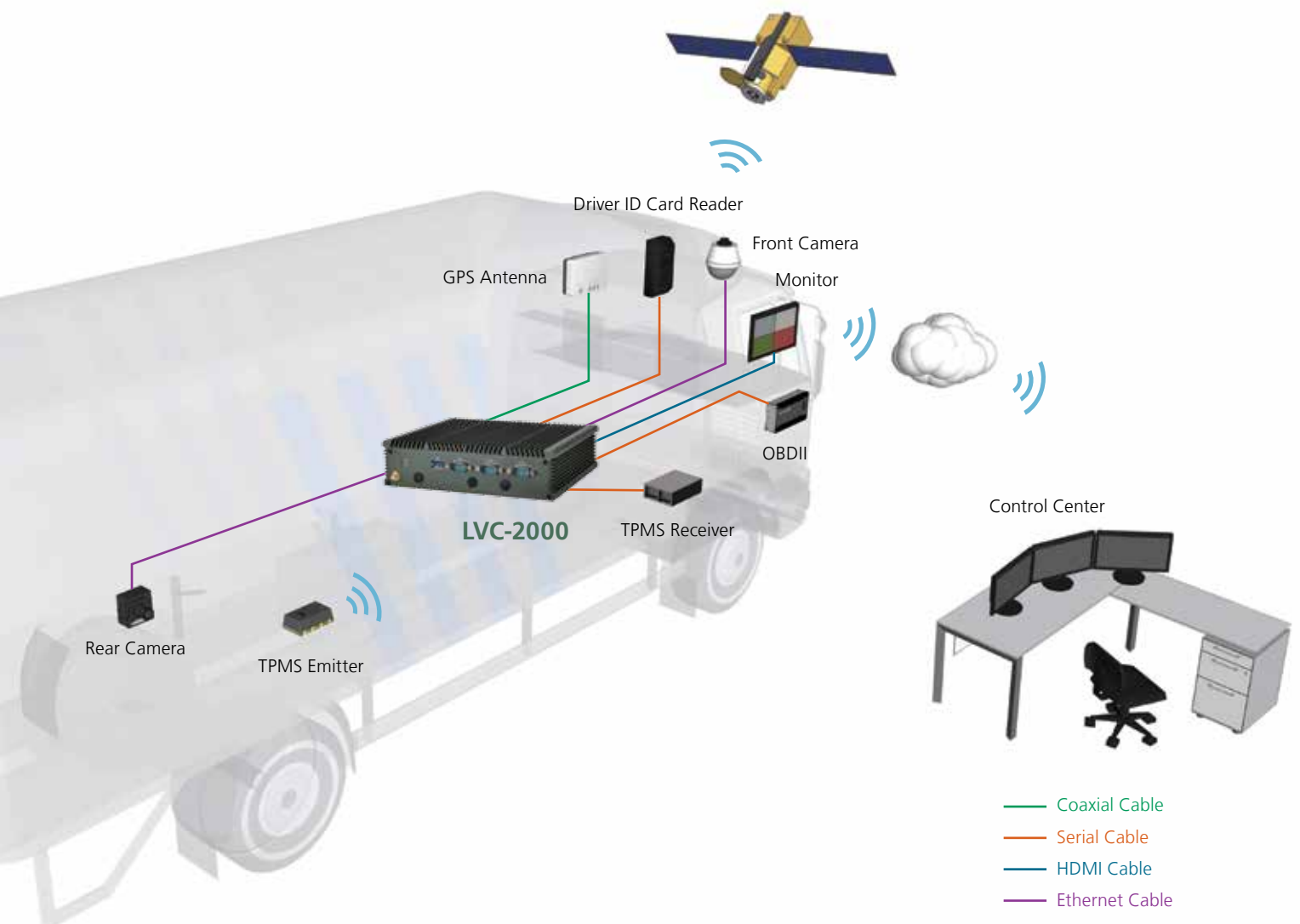


### Target Applications:

- Digital Logistics / Fleet Management
- Dispatch / Route Optimization
- Audio Intercom
- GPS Tracking
- Emergency Alarm System
- Driver Advisor System

### LVC-2000/2001

- Fanless Vehicle Gateway Controller
- Intel® Atom™ E3845 1.91 GHz CPU
- Support VGA/HDMI & 1 or 2 x RJ45 GbE Port(s)
- Optional CAN Bus Support
- E-Mark Certification





# Intelligent Bus

As a central control computer for buses, LVC-5000 connects various devices to form intelligent services to driver, passengers and communicate with head office. Through LVC-5000's rich I/O connection, including its GPS/G-sensor, CAN bus, COM and multiple display capability, it can perform digital signage infotainment, fleet management, surveillance, recording, Wi-Fi hot spot, TPMS (Tire Pressure Measurement System) emitter, e-ticketing, audio intercom, door control and people counting, to provide secure and comfortable journey for bus transportation experience.

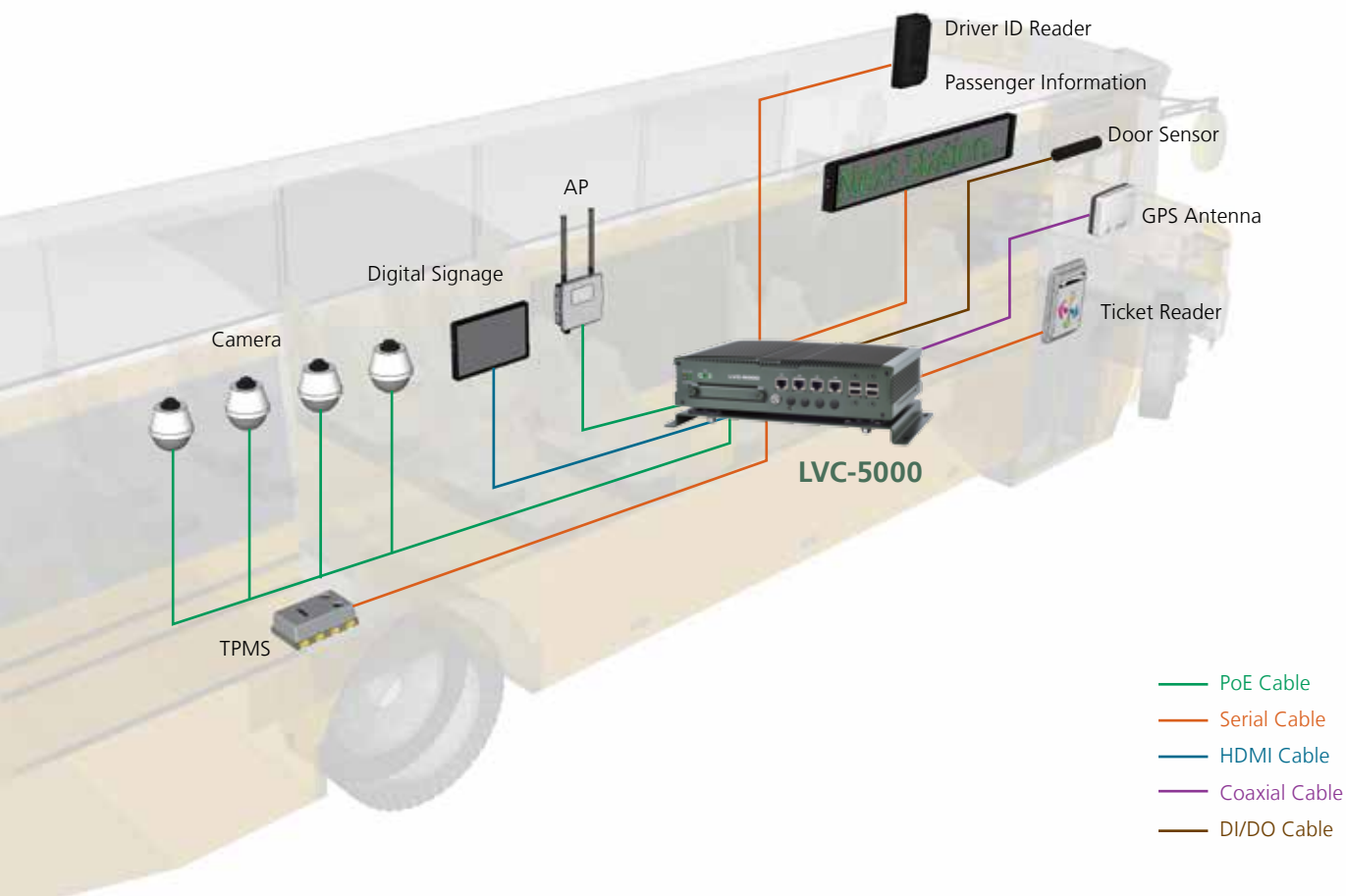


## Target Applications:

- Passenger Information
- Digital Signage
- Wi-Fi Hot Spot
- Dispatch
- GPS Tracking
- Emergency Alarm System
- Driver Advisor System
- TPMS

## LVC-5000

- Multi-purpose Vehicle Computer
- Intel® 847E or 1047UE CPU and HM65 Chipset
- Mobile NVR with 4 x PoE Ports
- 1 x Swappable 2.5" Drive Bay
- Suspension Kit
- E-Mark Certification



# Fanless Vehicle Computers



Vehicle Gateway Controller



Vehicle Gateway Controller



Vehicle Gateway Controller



Vehicle Gateway Controller

LVC Series		LVC-5550S	LVC-5570-7C	LVC-5000	LVC-5000-A0
Dimension (W x H x D)		268 x 56 x 188.2 mm (10.55" x 2.2" x 7.4")	277 x 95 x 190 mm (10.9"x3.74"x7.48")	273.8 x 64.8 x 190 mm (10.78" x 2.55" x 7.48")	273.8 x 72 x 188 mm (10.78" x 2.84" x 7.4" )
Anti-vibration mounting kit		Advanced anti-vibration kit	Advanced anti-vibration kit	Basic wallmount bracket	Basic wallmount bracket
Processor		Intel Atom D2550 1.8 GHz	Intel Core i7-3517UE	Intel Celeron 847E or 1047UE	Intel Celeron 847E or 1047UE
Chipset		Intel NM10	Intel HM65	Intel HM65	Intel HM65
System Memory	Technology	DDR3 SO-DIMM x 1	DDR3 SODIMM x 2	DDR3 SO-DIMM x 1 (Factory default: 4 GB module pre-installed)	DDR3 SO-DIMM x 1 (Factory default: 4 GB module pre-installed)
	Max. Capacity	Up to 4 GB	Up to 16 GB	Up to 8 GB	Up to 8 GB
Storage	CF/ Onboard SSD	CF socket Type I/II x 1	mSATA socket x1	CF socket Type I/II x 1	CF socket Type I/II x 1
	HDD/SSD	Removable 2.5" 9.5 mm drive bay x 1	Removable 2.5" 15 mm drive bay x 2	Internal 2.5" 9.5 mm drive bay x 1	Internal 2.5" 9.5 mm drive bay x 1
Ethernet Controller		Intel 82583V x 2	Intel 82574L x 2	Intel 82583V x 4	Intel 82583V x 2
Graphic Controller		Intel GMA3650	Intel HD Graphics 4000	Intel HD Graphics 3000	Intel HD Graphics 3000
Audio Controller		Realtek ALC886 HD codec	Realtek ALC886 HD codec	Realtek ALC886 HD codec	Realtek ALC886 HD codec
I/O	LAN	GbE RJ45 x 2	GbE RJ45 x 2	GbE RJ45 x 4	GbE RJ45 x 2
	PoE	N/A	N/A	N/A	N/A
	Display	DB15 x 1 for VGA, DVI-D x 1	DVI-D x 1, VGA x 1, HDMI x 1	DVI-D x 1, VGA x 1, HDMI x 1	VGA x 1, resolution:2048x1536
	Video Grabber	N/A	N/A	N/A	N/A
	Audio	1x Mic-in and line-out (PC), 1x Mic-in and line-out (3G)	1x Mic-in and line-out (PC) by DB-9 1x Mic-in and line-out (3G) by DB-9	Mic-in and line-out with 2 watt by terminal block MIO connector	Mic-in and line-out with 2 watt by terminal block MIO connector
	Serial I/O	DB9 Male x 2 supports RS-232/485 with RI/5V/12V DB9 Male x 1 supports RS-232	2 x RS232/422/485 with RI/5V/12V	1x RS-232/422/485 with RI/5V/12V 1x RS-232 with RI/5V/12V	1x RS-232/422/485 with RI/5V/12V 1x RS-232 with RI/5V/12V
	GPS / G-sensor	u-blox NEO-6Q / ADXL 345	u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345
	CAN Bus	N/A	N/A	Optional support J1939/J1708	Optional support J1939/J1708
	Digital I/O	4x DI 12V level, 3x DO 12V level, 2x DI (from MCU) 3.3V level, 1x 12/24V,2A relay	4x DI 5V level, 3x DO 5V level, 2x DI (from MCU) 3.3V level 9V~36V with 10A dry relay	4x DI/5V and 4x DO with 12V 2x DI (from MCU) 3.3V level 2x 12V with 2A dry relay	4x DI/5V and 4x DO with 12V 2x DI (from MCU) 3.3V level 2x 12V with 2A dry relay
	USB 2.0	Type A x4	Type A x 6	Type A x 4	Type A x 4
	Power Input	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition on/off and delay Power-on/off	3-pin terminal block (+ , - , ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control
	Power Output	12V/1A DC out	+9~36V/ Max. 10A DC out software On/Off controllable	12V/1A DC out	12V/1A DC out
	Expansion	Mini-PCIe x3 with 2 SIM card readers	Mini-PClex 4 with 3 SIM card readers	Mini-PCIe x2 with 2 SIM card readers	Mini-PCIe x2 with 2 SIM card readers
	Others	3 x SMA antenna hole, reset button, remote power switch	10 x SMA antenna holes, reset button, remote power switch	4 x SMA antenna holes, reset button, remote power switch, Lanner propri- etary Internal I/O	5 x SMA antenna holes, reset button, remote power switch, Lanner propri- etary Internal I/O
Hardware Monitoring		Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level
OS Support		XPE/WES2009, XP Pro FES,WS7E,Win 7 Pro FES	Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later
Certifications		CE, FCC Class A, RoHS, E13	CE, FCC Class A, E13, RoHS	CE, FCC Class A, RoHS, E13	CE, FCC Class A, RoHS, E13
Compliance		Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6
Operating Temperature Range	Industrial	-30~60°C/-22~140°F	-20~60°C / -4~140°F	-20~60°C / -4~140°F	-20~60°C / -4~140°F
	Commercial	-5~45°C / 23~113°F	-5~45°C / 23~113°F	-5~45°C / 23~113°F	-5~45°C / 23~113°F
Net Weight (Kg)		3.2	6	3	2.8

**Vehicle Gateway Controller****Vehicle Gateway Controller****Vehicle Gateway Controller****4ch Surveillance DVR****8ch Surveillance DVR**

LVC-2000 <b>NEW</b>	LVC-2001 <b>NEW</b>	LVC-1000 <b>NEW</b>	LVC-5570D4-CA	LVC-5000-A1
198 x 52 x 165 mm (7.8" x 2" x 6.5")	198 x 52 x 185 mm (7.8" x 2" x 7.28")	162.3 x 41 x 133.8 mm (6.6" x 1.6" x 5.3")	276.52 x 85.26 x 190 mm (10.86" x 3.35" x 7.48")	273.8 x 72 x 190 mm (10.78" x 2.83" x 7.48")
Basic wallmount bracket	Basic wallmount bracket	Basic wallmount bracket	Advanced anti-vibration kit	Advanced anti-vibration kit
Intel Atom E3845 1.91 GHz	Intel Atom E3845 1.91 GHz	Intel Quark SoC X1001 400 MHz	Intel Celeron 1020E	Intel Celeron 1047UE 1.4 GHz
N/A	N/A	N/A	Intel HM65	Intel HM65
DDR3L SO-DIMM x 1	DDR3L SO-DIMM x 1	Onboard DDR3 800 MHz 512 MB	DDR3 SO-DIMM x 2	DDR3 SO-DIMM x 1 (Factory default: 4 GB module pre-installed)
Up to 4 GB	Up to 4 GB	Up to 1 GB	Up to 16 GB	Up to 8 GB
mSATA x 1	mSATA x 1	Micro SD card x 1 up to 32 GB	CF socket Type II x 1	CF socket Type I/II x 1
Internal 2.5" 15 mm drive bay x 1	Internal 2.5" 15 mm drive bay x 1	N/A	Removable 2.5" 9.5mm drive bay x 2	Removable 2.5" 15mm drive bay x 1
Intel i210IT x1	Intel i210IT x 2	2 x 10/100M Ethernet by Intel Quark SoC X1001	Intel 82574L x 2	Intel 82583V x 4
Intel HD Graphics	Intel HD Graphics	N/A	Intel HD Graphics 4000	Intel HD Graphics 4000
Realtek ALC886 HD codec	Realtek ALC886 HD codec	USB codec x1 and I2S codec x1	Realtek ALC886 HD codec	Realtek ALC886 HD codec
GbE RJ45 x 1	GbE RJ45 x 2	GbE RJ45 x 2 with PoE	GbE RJ45 x 2	GbE RJ45 x 4
N/A	N/A	RJ45 PoE x 2, IEEE 802.3at	N/A	N/A
VGA x 1, HDMI x 1	VGA x 1, HDMI x 1	N/A	DVI-D x 1, VGA x 1, HDMI x 1	DVI-D x 1, VGA x 1, HDMI x 1
N/A	N/A	N/A	YUAN SC330N4 4ch analogue input, video input 1~4	Techwell TW5866 8ch analogue inputs
Internal Mic-in and line-out pin-header	Mic-in x1 and line-out x1 3.5mm phone jack	1x Mic-in and line-out (for PC) 1x Mic-in and line-out (for 3G module)	1x Mic-in and line-out (PC) 1x Mic-in and line-out (3G)	Mic-in and line-out with 2 watt by terminal block MIO connector
COM1 : 1 x RS-232/422/485 with RI/5V/12V; COM2 and COM3 : 2 x RS-232 optional selection for 2 x CAN bus	COM1/COM2: 2x RS-232/422/485 with RI/5V/12V COM3: RS-232 for one optional CAN Bus	1 x RS-232	2 x RS232/422/485 with RI/5V/12V	1 x RS-232/422/485 with RI/5V/12V 1 x RS-232 with RI/5V/12V
u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345	Optional / ADXL 345	u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345
Optional support 2x J1939 / J1708 on COM 2 and COM3 port	Optional support J1939/J1708 on COM3 port	1 high speed CAN (1Mbps) and 1 fault tolerant CAN (125 kbps); optional J1939 / J1708	N/A	N/A
4x DI/5V and 4x DO with 12V 2x DI (from MCU) 3.3V level 2x 12V with 2A dry relay	4x DI/5V and 4x DO with 12V 2x DI (from MCU) 3.3V level	Pin header for GPIO port	4x DI 5V level, 3x DO 5V level, 2x DI (from MCU) 3.3V level	4x DI and 4x DO with 12V level by jumper setting 2x DI (from MCU) 3.3V level 2x DO 12/24V with 2A relay
USB 3.0 Type A x 1	USB 3.0 Type A x 1, USB 2.0 Type A x 1	Type A x 3	Type A x 6	Type A x 4
3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+, -, ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control
12V/1A DC out	12V/1A DC out	N/A	9~36V/ Max. 10A DC out software on/ off controllable	12V/1A DC out
1x Full-size Mini-PCIe socket with SIM card reader, 1x half-size Mini-PCIe socket	2x Full-size mini-PCIexpress socket ( 1x USB+PCIe+2x SIM; 1x USB+2 x SIM ) 1x half-size mini-PCIexpress socket ( USB+PCIe) ;4x SIM card readers	1x full size mPCIe socket with SIM card reader and audio codec for 3G/GPS and one half size mPCIe socket	Mini-PClex 4 with 3 SIM card readers	Mini-PCIe x2 with 2 SIM card readers
4 x SMA antenna holes, reset button, remote power switch	4 x SMA antenna holes, reset button, remote power switch, Lanner proprietary Internal I/O	3 x SMA antenna holes; JTAG by pin header	3 x SMA antenna holes, reset button, remote power switch	5 x SMA antenna holes, reset button, remote power switch
Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level	N/A	Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level
Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Linux, Driver Support by Quark X1000 Software Stack	Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later
CE, FCC Class A, RoHS, E13	CE, FCC Class A, RoHS, E13	CE, FCC Class A, RoHS, E13	CE, FCC Class A, E13, RoHS	CE, FCC Class A, RoHS, E13
Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6
-20~60°C / -4~140°F	-20~60°C / -4~140°F	-20~70°C / -4~158°F	-20~55°C / -4~131°F	-20~60°C / -4~140°F
-5~45°C / 23~113°F	-5~45°C / 23~113°F	-5~45°C / 23~113°F	-5~45°C / 23~113°F	-5~45°C / 23~113°F
1.5	1.8	1	6	4.2



# Fanless Vehicle Computers



16ch Vehicle Surveillance  
DVR



8ch Vehicle Surveillance  
DVR+NVR



16ch Vehicle Surveillance  
DVR+NVR



8ch Vehicle Surveillance  
NVR

LVC 5 Series		LVC-5000-A2	LVC-5000-A5	LVC-5000-A6	LVC-5770-7D <span>NEW</span>
Dimension (W x H x D)		273.8 x 72 x 190 mm (10.78" x 2.83" x 7.48")	277 x 95 x 190 mm (10.9"x3.74"x7.48")	273.8 x 64.8 x 190 mm (10.78" x 2.55" x 7.48")	276.4 x 95 x 190 mm (10.88" x 3.7" x 7.8" )
Anti-vibration mounting kit		Advanced anti-vibration kit	Advanced anti-vibration kit	Advanced anti-vibration kit	Advanced anti-vibration kit
Processor		Intel Celeron 1047UE	Intel Core i7-3517UE	Intel Core i7-3517UE	Intel Core i7-3517UE
Chipset		Intel HM65	Intel HM65	Intel HM65	Intel HM65
System	Technology	DDR3 SO-DIMM x 1 (Factory default: 4 GB module pre-installed)	DDR3 SO-DIMM x 1 (Factory default: 4 GB module pre-installed)	DDR3 SO-DIMM x 1 (Factory default: 4 GB module pre-installed)	DDR3 SO-DIMM x 2
Memory	Max. Capacity	Up to 8 GB	Up to 16 GB	Up to 8 GB	Up to 16 GB
Storage	CF/ Onboard SSD	CF socket Type I/II x 1	CF socket type I/II x 1	CF socket Type I/II x 1	mSATA x 1
	HDD/SSD	Removable 2.5" 15mm drive bay x 1	Removable 2.5" 15mm drive bay x 1	Removable 2.5" 15mm drive bay x 1	Removable 2.5" 15mm drive bay x 2
Ethernet Controller		Intel 82583V x 4	Intel 82583V x 4	Intel 82583V x 4	Intel 82574L x 2, 82583 x 8
Graphic Controller		Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000
Audio Controller		Realtek ALC886 HD codec	Realtek ALC886 HD codec	Realtek ALC886 HD codec	Realtek ALC886 HD codec
I/O	LAN	GbE RJ45 x 4	GbE RJ45 x 4 with PoE	GbE RJ45 x 4 with PoE	GbE RJ45 x 2, GbE RJ45 x8 with PoE
	PoE	N/A	IEEE 802.3af PoE port x 4, internal PoE adapter	IEEE 802.3af PoE port x 4, internal PoE adapter	IEEE 802.3af PoE port x 8, external PoE adapter
	Display	DVI-D x 1, VGA x 1, HDMI x 1	DVI-D x 1, VGA x 1, HDMI x 1	DVI-D x 1, VGA x 1, HDMI x 1	DVI-D x 1, VGA x 1, HDMI x 1
	Video Grabber	Stretch S7100 16ch Analogue Input	Techwell TW5866 8ch Analogue Inputs	Stretch S7100 16ch Analogue Input	N/A
	Audio	Mic-in and line-out with 2 watt by terminal block MIO connector	Mic-in and line-out with 2 watt by terminal block MIO connector	Mic-in and line-out with 2 watt by terminal block MIO connector	Mic-in and line-out with 2 watt by DB-9
	Serial I/O	1 x RS-232/422/485 with RI/5V/12V	1 x RS-232/422/485 with RI/5V/12V	1 x RS-232/422/485 with RI/5V/12V	2 x RS232/422/485 with RI/5V/12V
	GPS / G-sensor	u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345
	CAN Bus	N/A	N/A	N/A	N/A
	Digital I/O	4x DI and 4x DO with 12V level by jumper setting 2x DI (from MCU) 3.3V level 2x DO 12/24V with 2A relay	4x DI and 4x DO with 12V level by jumper setting 2x DI (from MCU) 3.3V level 2x DO 12/24V with 2A relay	4x DI and 4x DO with 12V level by jumper setting 2x DI (from MCU) 3.3V level 2x DO 12/24V with 2A relay	4x DI 5V level 3x DO 5V level 2x DI (from MCU) 3.3V Level 9V~36V with 10A dry relay
	USB 2.0	Type A x 4	Type A x 4	Type A x 4	Type A x 6
	Power Input	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+, -, ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control
	Power Output	12V/1A DC out	12V/1A DC out	12V/1A DC out	+9~36V/ max. 10A DC out software on/off controllable
	Expansion	Mini-PCIe x2 with 2 SIM card readers	Mini-PCIex 2 with 2 SIM card readers	Mini-PCIe x2 with 2 SIM card readers	Mini-PCIe x2 with 1 SIM card readers
	Others	5 x SMA antenna holes, reset button, remote power switch	5 x SMA antenna holes, reset button, remote power switch	5 x SMA antenna holes, reset button, remote power switch	6 x SMA antenna holes, reset button, remote power switch
Hardware Monitor		Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level
OS Support		Windows: WES2009 / XP Pro FES WES7 (W57E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (W57E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (W57E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (W57E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later
Certifications		CE, FCC Class A, RoHS, E13	CE, FCC Class A, E13, RoHS	CE, FCC Class A, RoHS, E13	CE, FCC Class A, RoHS, E13
Compliance		Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6
Operating Temperature Range	with Industrial Components	-20~60°C / -4~140°F	-20~60°C / -4~140°F	-20~60°C / -4~140°F	-20~60°C / -4~140°F
	with Commercial Components	-5~45°C / 23~113°F	-5~45°C / 23~113°F	-5~45°C / 23~113°F	-5~45°C / 23~113°F
Net Weight (Kg)		4.2	4.5	4.5	6



**4ch Vehicle Surveillance  
NVR**



**4ch Vehicle Surveillance  
NVR**



**4ch Vehicle Surveillance  
NVR**



**4ch Vehicle Surveillance  
NVR**



LVC-5000N4	LVC-5000-B1	LVC-5000-B2	LVC-5000-B3
273.8 x 64.8 x 190 mm (10.78" x 2.55" x 7.48")	273.8 x 72 x 190 mm (10.78" x 2.83" x 7.48")	273.8 x 72 x 190 mm (10.78" x 2.83" x 7.48")	273.8 x 72 x 190 mm (10.78" x 2.83" x 7.48")
Advanced anti-vibration kit	Advanced anti-vibration kit	Advanced anti-vibration kit	Advanced anti-vibration kit
Intel Celeron 847E	Intel Celeron 1047UE	Intel Core i7-3517UE	Intel Core i7-3517UE
Intel HM65	Intel HM65	Intel HM65	Intel HM65
DDR3 SO-DIMM x 1 (Factory default: 4 GB module pre-installed)	DDR3 SO-DIMM x 1 (Factory default: 4 GB module pre-installed)	DDR3 SO-DIMM x 1 (Factory default: 4 GB module pre-installed)	DDR3 SO-DIMM x 1 (Factory default: 4 GB module pre-installed)
Up to 8 GB	Up to 8 GB	Up to 8 GB	Up to 8 GB
CF socket Type I/II x 1	CF socket Type I/II x 1	CF socket Type I/II x 1	CF socket Type I/II x 1, mSATA x 1
Removable 2.5" 9.5mm drive bay x 1	Removable 2.5" 15mm drive bay x 1	Removable 2.5" 15mm drive bay x 1	Removable 2.5" 15mm drive bay x 1
Intel 82583V x 4	Intel 82583V x 5	Intel 82583V x 5	Intel 82583V x 5
Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000
Realtek ALC886 HD codec	Realtek ALC886 HD codec	Realtek ALC886 HD codec	Realtek ALC886 HD codec
GbE RJ45 x 4 with PoE	GbE RJ45 x 1, GbE RJ45 x 4 with PoE	GbE RJ45 x 1, GbE RJ45 x 4 with PoE	GbE RJ45 x 5 with PoE
IEEE 802.3af PoE port x 4, external PoE adapter	IEEE 802.3af PoE port x 4, internal PoE adapter	IEEE 802.3af PoE port x 4, internal PoE adapter	IEEE 802.3af PoE port x 5, internal PoE adapter with on/off control
DVI-D x 1, VGA x 1, HDMI x 1	DVI-D x 1, VGA x 1, HDMI x 1	DVI-D x 1, VGA x 1, HDMI x 1	DVI-D x 1, VGA x 1, HDMI x 1
N/A	N/A	N/A	N/A
Mic-in and line-out with 2 watt by terminal block MIO connector	Mic-in and line-out with 2 watt by terminal block MIO connector	Mic-in and line-out with 2 watt by terminal block MIO connector	Mic-in and line-out with 2 watt by terminal block MIO connector
1 x RS-232/422/485 with RI/5V/12V 1 x RS-232 with RI/5V/12V	1 x RS-232/422/485 with RI/5V/12V 1 x RS-232 with RI/5V/12V	1 x RS-232/422/485 with RI/5V/12V 1 x RS-232 with RI/5V/12V	1 x RS-232/422/485 with RI/5V/12V 1 x RS-232 with RI/5V/12V
u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345
Optional support J1939 / J1708	CAN bus 2.0B support J1939 / J1708	CAN bus 2.0B support J1939 / J1708	Optional support J1939 / J1708
4x DI and 4x DO with 12V level by jumper setting 2x DI (from MCU) 3.3V level 2x DO 12/24V with 2A relay	4x DI and 4x DO with 12V level by jumper setting 2x DI (from MCU) 3.3V level 2x DO 12/24V with 2A relay	4x DI and 4x DO with 12V level by jumper setting 2x DI (from MCU) 3.3V level 2x DO 12/24V with 2A relay	4x DI and 4x DO with 12V level by jumper setting 2x DI (from MCU) 3.3V level 2x DO 12/24V with 2A relay
Type A x 4	Type A x 4	Type A x 4	Type A x 4
3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control	3-pin terminal block (+,-,ignition), +9~36VDC, ATX mode support ignition delay on/ off control
12V/1A DC out	12V/1A DC out	12V/1A DC out	12V/1A DC out
Mini-PCIe x2 with 2 SIM card readers	Mini-PCIe x3 with 3 SIM card readers	Mini-PCIe x3 with 3 SIM card readers	Mini-PCIe x2 with 2 SIM card readers
4 x SMA antenna holes, reset button, remote power switch, Lanner proprietary internal I/O	5 x SMA antenna holes, reset button, remote power switch	5 x SMA antenna holes, reset button, remote power switch	5 x SMA antenna holes, reset button, remote power switch
Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level
Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later
CE, FCC Class A, RoHS, E13	CE, FCC Class A, RoHS, E13	CE, FCC Class A, RoHS, E13	CE, FCC Class A, RoHS, E13
Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock:MIL-STD-810G, Method 516.6
-20~60°C / -4~140°F	-20~60°C / -4~140°F	-20~60°C / -4~140°F	-20~60°C / -4~140°F
-5~45°C / 23~113°F	-5~45°C / 23~113°F	-5~45°C / 23~113°F	-5~45°C / 23~113°F
3.5	4	4	3.9

# Rolling Stock Application Scenarios

## Rolling Stock Computing

Lanner's newly launched rolling stock computing systems are purposely built for the increasing demand of today's digitalized and networked railway transportation systems. Lanner has rich expertise accumulated from customization services for the railway development institution in China. Through well-experienced custom services, Lanner has innovated its LVR-series product line, all with EN45545 and EN50155 compliance and military standard endurance, ideal for data communication, mobile surveillance, and real-time information on rail environments.



### Target Applications:

- Onboard Video Surveillance
- Audio Intercom
- GPS Location-Based Service
- Digital Signage and Infotainment
- Emergency Alarm System
- Passenger Information System
- Driver Advisor System
- Wi-Fi Hot Spot

### LVR-5700

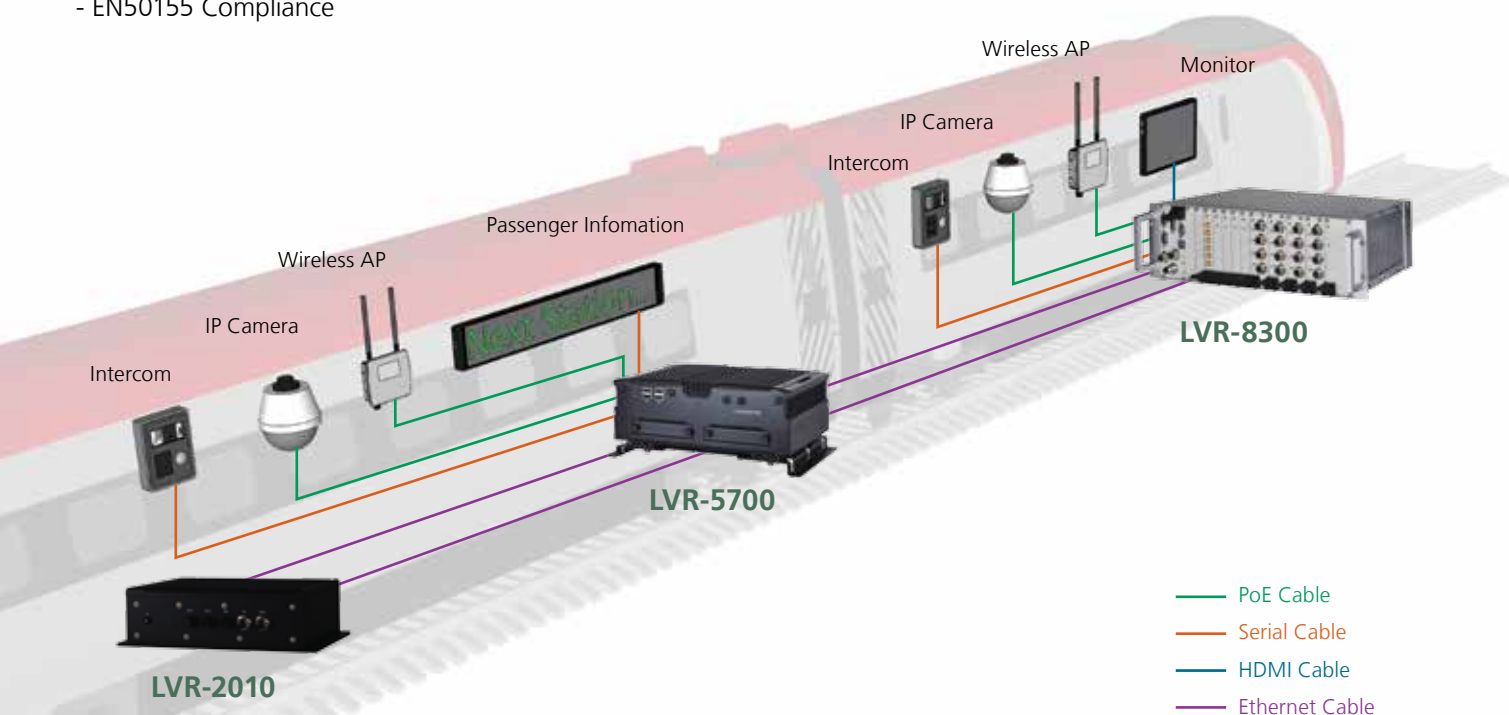
- Fanless Rolling Stock IP67 Control Box
- Intel® Core™ i7-3517UE 1.7 GHz
- Robust Vibration-proof IP67 / M12 I/O Ports
- Pass MIL-STD-810G Vibration & Shock Test
- EN50155 Compliance

### LVR-8300

- Rackmount Rolling Stock Control Box
- Intel® Core™ i5-4422E/Celeron 2002E Processor
- Support 16 x IEEE 802.11at PoE Ports
- Robust Vibration-proof IP67 / M12 I/O Ports
- Flexible I/O Module Design for Customization
- EN50155 Compliance

### LVR-2010

- Fanless Rolling Stock IP67 Control Box
- Intel® Atom™ E3845 1.91 GHz
- Robust Vibration-proof IP67 / M12 I/O Ports
- Pass MIL-STD-810G Vibration & Shock Test
- EN50155 Compliance





# Fanless Railway Computers



Rugged IP67 Railway Box PC



8-port Railway Surveillance NVR



16ch Rackmount Railway Computer

LVR Series		LVR-2010 <span>NEW</span>	LVR-5700 <span>NEW</span>	LVR-8300 (Coming Soon) <span>NEW</span>
Dimension (W x H x D)		268 x 210 x 86 mm(10.5" x 8.27" x 3.4" )	276.4 x 190 x 95mm(10.88" x 7.5" x 3.7")	482.6 x 400 x 132mm(19" x 15.7" x 5.2")
Anti-vibration mounting kit		Basic wallmount bracket	Advanced anti-vibration kit	19" rackmount kit
Processor		Intel Atom E3845 1.91 GHz	Intel Core i7-3517UE 1.7 GHz	Intel® Core™ i5-4422E/Celeron 2002E Processor
Chipset		N/A	Intel HM65	Intel QM87
System	Technology	DDR3L SO-DIMM x 1	DDR3 SODIMM x 2	DDR3L SODIMM x 1 (Factory default: 4 GB module pre-installed)
Memory	Max. Capacity	Up to 4 GB (Factory default: 2 GB module pre-installed)	Up to 16 GB	Up to 8 GB
Storage	CF/ Onboard SSD	mSATA socket x 1	mSATA socket x 1	mSATA socket x 1
	HDD/SSD	Internal 2.5" 15mm drive bay x 1	Removable 2.5" 15mm drive bay x 2	By Pluggable HDD bay module (up to 4 modules)
Ethernet Controller		Intel i210-IT x 2	Intel 82574L x 2, 82583V x 8	Intel i217-LM GbE LAN Controller x1 with AMT 9.5 support by Core™ i5-4422E
Graphic Controller		Intel HD Graphics	Intel HD Graphics 4000	Intel HD Graphics 5000
Audio Controller		Realtek ALC886 HD codec	Realtek ALC886 HD codec	Realtek ALC886 HD codec
I/O	LAN	GbE RJ45 x 2 by M12 connectors	GbE RJ45 x 2, GbE M12 x 8 with PoE	GbE LAN x1 by M12 connector
	PoE	N/A	IEEE 802.3af PoE port x 8, External PoE adapter	4-port PoE By optional LVK-POEPW1 pluggable PoE module
	Display	VGA x 1, HDMI/DP x 1 by M12 connector	DVI-D x 1, VGA x 1, HDMI x 1	VGA x 1
	Video Grabber	N/A	N/A	By optional LVK-S7VC4 Stretch S7100 16-CH video/audio input module
	Audio	M12 connector, 1 x MIC input and HD Audio output (w/ 2Watt)	DB9 female x 1 for Mic-in and Line-out	Audio MIC input and HD Audio speaker out (w/2Watt) by optional LVK-IO1 pluggable DI/O module
	Serial I/O	3 x COM: 17-pin M12 connector for COM_A: 2xRS232/422/485, COM_B: 2xRS232/422/485, COM_C: 6x Rx-Tx only RS232	2 x RS-232/422/485 with RI/5V/12V	2 x DB9 (2 x RS232/422/485, support RI/5V/12V selection) By optional LVK-IO1 pluggable DI/O module
	GPS / G-sensor	u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345	u-blox NEO-7N / ADXL 345
	CAN	Optional support J1939 / J1708	N/A	By optional Pluggable CAN Bus module
	Digital I/O	4x DI/5V and 4x DO/12V 2x DI (from MCU) 3.3V level 2x 12V with 2A dry relay	4x DI 5V level 3x DO 5V level 2x DI (from MCU) 3.3V level	1x 26 pin terminal block connector for GPIO, 4x DI ( 5V or 12V TTL selectable), 4x DO (5V or 12V TTL selectable, Max. 100mA), 2x DO with Relay support 9~36V@max 2A each, 2x DI to Ignition MCU as remote control ( 5V or 12V TTL selectable) By optional LVK-IO1 pluggable DI/O module
	USB	1 x USB 3.0, 2 x USB 2.0 by 2 x M12 connector	USB 2.0 Type A x 6	USB 3.0 type A with 900mA x 1, USB 2.0 Type A x 2
	Power Input	3-pin terminal block (+, -, ignition)	3-pin terminal block (+, -, ignition)	3-pin terminal block (+, -, ignition)
		3-pin terminal block (+, -, ignition), +9~36VDC, ATX mode support ignition on/off and delay Power-on/off by M12 connector	3-pin terminal block (+, -, ignition), +9~36VDC, ATX mode support ignition on/off and delay Power-on/off	3-pin terminal block (+, -, ignition), +9~36VDC, ATX mode support ignition on/off and delay Power-on/off by M12 connector
	Power Output	N/A	9~36V, 10A DC out software on/off controllable	N/A
	Expansion	2 x Full-size Mini-PCIe socket with 2 SIM card readers, 1 x half-size Mini-PCIe socket	Mini-PCIe x 2 with 1 SIM card reader	3 x Mini-PCIe socket with 2 x SIM card readers per socket (total 6x) by optional LVK-MINIPICIE1 module
	Others	4 x SMA antenna holes	6 x SMA antenna holes, reset button, remote power switch	6 x SMA type Antenna holes by optional LVK-MINIPICIE1 module
Hardware Monitoring		Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level	Fintek F81865 integrated watchdog timer 1~255 level
OS Support		Windows: FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: WES2009 / XP Pro FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD, Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later	Windows: FES WES7 (WS7E) / W7 Pro SP1 / WE8 STD / W8.1 Linux: Redhat Enterprise 5, Fedora 14, Linux Kernel 2.6.18 or later
Certifications		CE, FCC Class A, RoHS, EN50155	CE, FCC Class A, RoHS, EN50155	CE, FCC Class A, RoHS, EN50155
Compliance		Vibration: MIL-STD-810G, Method 514.6 Shock: MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock: MIL-STD-810G, Method 516.6	Vibration: MIL-STD-810G, Method 514.6 Shock: MIL-STD-810G, Method 516.6
Operating Temperature Range	with Industrial Components	-40~70°C/-40~94°F (Follow EN50155TX)	-20~60°C/-4~76°F (Follow EN50155T1)	-20~60°C/-4~76°F (follow EN 50155T1)
	with Commercial Components	-5~45°C / 23~113°F	-5~45°C / 23~113°F	-5~45°C / 23~113°F
Net Weight (kg)		4	6	7.5

# Bus Surveillance Management: In-vehicle Computing

## Background

The demand for integrated computer systems in commuting buses has been on a rise due to concerns of public security from passengers. In fact, modern transportation service providers are pursuing effectively integrated surveillance and monitoring solutions that can be implemented onto buses to ensure the safety of their passengers.

The needed solutions must include all the essential elements to run surveillance cameras and offer quality display output for later viewing. On the other hand, the system must be able to withstand shock and vibration as buses sometimes travel on non-flat surfaces. For bus service providers, GPS and wireless network communication are mandatory as they want to constantly keep track of where their buses are heading. Therefore, the integration is not an easy task but Lanner has the answer.



## Lanner Solution

Specifically designed as vehicle computers, the LVC-5000 series is Lanner's answer to the demands of modern bus operators. These systems are built with fanless design and MIL-STD-810G shock and vibration resistance so that they can function normally in a bus when the vehicle is traveling through places. For the convenience of the drivers, these systems come with a vehicle ignition control. The control can be programmed to start the computer when the engine is ignited, and to shut down the computer when the engine is switched off.

Lanner's LVC-5000 models work optimally with the Surveillance Video Management System provided by Milestone XProtect to offer a comprehensive surveillance package. For wide coverage, these systems are capable of connecting up to 8 in-vehicle surveillance cameras to function as mobile NVR for the buses. Here is a list of important features of LVC-5000 series:

## Featured Products

### **LVC-5000N4 / LVC-5000-B0**

Fanless Vehicle NVR with 4 PoE Ports



### **LVC-5000-B1/B2**

Fanless Vehicle NVR with 4 PoE ports and CAN Bus



- Intel® Celeron® 847E 1.1GHz/Core™ i7-3517UE 1.7GHz
- SSD up to 32GB for fast storage
- CAN Bus for driver behavior analysis
- Onboard GPS and G-Sensor for location tracking and driver alerts.
- Wireless 3G/4G connection for communications with the control center
- 8 PoE LAN ports for IP cameras
- Multiple display outputs ranging from DVI, VGA and HDMI

# Bus Digital Signage in Brazil

## Background

Curitiba, the capital of the southern Brazilian state of Paraná and the 7th largest city in the country, has long been at the forefront of bus transport implementation. The client is a systems integrator in Ribeirão Preto, São Paulo state, with 10-year experience in in-vehicle computing systems. They needed to roll out a signage, entertainment, and advertising network throughout the BRT system in Curitiba. Each bus required an industrial PC with the capability to handle adverse conditions, including temperature fluctuations and constant vibration while serving multimedia content on the move. There was also the need for real-time unbroken communication with bus control centers over the city-wide 3G network.



## Lanner Solution

Lanner's LEC-5510 was identified as the right tool for the job. With processing power and video output tailored to usage needs, the LEC-5510 is extremely price-competitive while offering solid performance and reliability. The LEC-5510 is now in place and serving a combination of entertainment, news, and transport information to passengers on the Curitiba BRT system. Because the on-board LEC-5510s are in constant communication with the bus control center via 3G network, the latest transit information can be displayed. The BRT operators benefit from expanded commercial channels to generate revenue, while media companies in Curitiba appreciate the opportunity to reach a large number of customers with in-transport advertising.

## Featured Products

### LEC-5510

Fanless Vehicle Computers



### LVC-5550S

Fanless Vehicle Computers



### LVC-5000 / LVC-5000-A0

Fanless Vehicle Computers



- Intel® Atom D510 1.66 GHz / Atom D2550 1.8 GHz or Celeron 847E
- SSD up to 32GB for fast storage
- CAN Bus for driver behavior analysis
- Onboard GPS and G-Sensor for location tracking and driver alerts.
- Wireless 3G/4G connection for communications with the control center
- 2 GbE or 4 PoE LAN ports for IP cameras
- Multiple display outputs (LEC-5510 is VGA only)



# In-vehicle Recorder for Evidence Collecting Vans

## Background

A well-known solution provider in North America, one with 75 years experience in providing turnkey solutions for criminal investigation and forensic products, came to Lanner for an in-vehicle video recording solution intended for a fleet of evidence collecting vans. The hardware solution must be shock and vibration resistant in order to survive unfamiliar and unpredictable road conditions when coming across over the course of crime scene investigation and evidence collection. In addition, this in-vehicle computer must be able to connect up to 6 cameras at one time and provide quick data retrieval from computers to portable disks for submission, together with all collected evidence, at a speedy transmission.



## Lanner Solution

Lanner's LVC-5770 was eventually selected as the ideal solution for these evidence collecting vans. The LVC-5770 features a powerful Intel® Core i7 processor, 2 SSD drives and 8 LAN ports with PoE support, collectively enabling multi-channels real-time video recording and data storage. The built-in suspension kit and E13 certification are a testament to the extensive vibration and shock testing the LVC-5770 has undergone, demonstrating its reliability for continuous video recording on even the roughest terrains. The LVC-5770's functionality is enhanced by the custom USB 3.0 support, allowing plug-n-play function for fast data retrieval from the SSD storage.

## Featured Product

### LVC-5770-7D

Fanless Vehicle NVR with 8 PoE Ports



- Intel® Core™ i7-3517UE
- Multiple PoE LAN ports to support transport surveillance
- Fanless design with corrugated aluminum
- Designed for MIL-STD-810G with extreme operating temperature and vibration resistance
- Vehicle ignition power management
- Convenient DC output
- Diversified digital input/output support

# Smart Waste Solution – Maximizing Collection & Recycling Efficiencies

## Background

The cities with high population density, diversified communities and large metropolitan areas have witnessed the accelerated waste generation rates in their environments. As a result, city government authorities are urging for an efficient technological solution that will help them manage sanitary budget more effectively. A smart waste management solution must be able to maximize the time in collection, disposal, handling and recycling in the largest possible mission area. In addition, the system must be able to capture related data for the waste collection, including the weights, the dates, the locations, and the waste categories for future analysis.



## Lanner Solution

A practical solution for waste management is to have sanitary trucks install in-vehicle computers that come with Internet connectivity and versatile I/O setting. In this case, Lanner LVC-5000-B is the optimal choices for this operation. The fanless LVC-5000-B is MIL-STD-810G certified with shock/vibration resistance so that the system can remain normal operations when facing unpredictable road conditions. Also, the computer is built with GPS navigation and 3G connectivity, providing real-time route management and tracking. Lastly, the computer also comes with PoE and multi I/O connectivity, which enables the IP cameras and sensor connection for video monitoring and data collection of waste collections.

## Featured Product

### LVC-5000-B Series

Fanless Vehicle NVR with 4 PoE Ports



- Fanless design with corrugated aluminum
- Internal PoE power supply
- Vehicle ignition power management
- Rich I/O options
- Intel® Core™ i7-3517UE (LVC-5000-B2 and B3)
- Suspension kit
- Dual 3G SIM slots
- Optional CAN Bus module

# Accessories

## 3G/4G/LTE Modules

### 0TAWHE910DZ01



### Telit HE910-D

Telit Wireless HE910-D PCI Express Mini Card offers high performance to the user on 3G and Quad-band GSM/GPRS/EDGE/UMTS/HSPA networks.

- Coverage: 800/850, 900, AWS1700, 1900, 2100 MHz
- Interface: PCI Express
- Form Factor: Mini PCIe Card Full Size

### 0TAW0ZU202Z01



### ublox ZU202

The ublox Wireless ZU202 PCI Express Mini Card with Integrated SIM holder slot offers high performance to the user on 3.75G and Quad-band GSM/GPRS/EDGE/UMTS/HSPA/WCDMA(UMTS) networks.

- Coverage: 800/850/900/1700/1900/2100 MHz
- Interface: PCI Express
- Form Factor: Mini PCIe Card Full Size

### 0TAWMC8090Z01



### Sierra MC8090

SIERRA AirPrime MC8090 PCI Express Mini Card offers high performance to the user on 3.75G, Quad-band GSM/EDGE/UMTS/HSDPA networks.

- Coverage: 850/1900/2100 MHz
- Interface: PCI Express
- Form Factor: Mini PCIe Card Full Size

### 0TAWMC7304Z01 0TAWMC7354Z01



### Sierra MC7304/MC7354

SIERRA 4G-LTE Mini PCIe Module with GPS+Glonass for LTE, DC-HSPA+, HSPA+, HSDPA, HSUPA, WCDMA, GSM, GPRS, EDGE, and GNSS for EMEA & APAC

SIERRA 4G/LTE PCI Express Mini Card for LTE, DC-HSPA+, HSPA+, HSDPA, HSUPA, WCDMA, GSM, GPRS, EDGE, and GNSS for North America/Multi operator

## Wi-Fi Modules

### 0TAWWPEA25Z01



### Atheros AR9287 802.11b/g/n Half Mini Card

Single band 802.11b/g/n Half Mini Card, Atheros AR9287, 2T2R with HMCE-101 (Mini PCIe half card extender)

### 0TAWWPER11Z01



### Ralink RT3090 802.11b/g/n Half Mini Card

Single band, 802.11b/g/n Half Mini Card, Ralink RT3090, 1T1R with HMCE-101 (Mini PCIe Half card extender)

# External Antennas

0TZW000000039	<b>WiFi External Antenna</b>  For both Mini-PCle and Mini-PCI interface WiFi modules: External Antenna: RP-SMA Female Body Female Inner Contact, Passive
0TZW000000072	<b>3G External Antenna</b>  RP-SMA Female Body Male Inner Contact, Passive
0TZW000000136 0TZW000000137	<b>4G External Antenna</b>  4G External Antenna(Black),SMA PLUG for LTE(USA) 700MHz, 1710-2155MHz  4G External Antenna(Black),SMA PLUG for LTE(EU) 800~2700MHz
0TZW000000108	<b>GSM External Antenna, Length: 300 cm</b>  SMA Female Body Male Inner Contact, IP67 Rated, Active
0TZW000000111	<b>GPS External Antenna, Length: 300 cm</b>  SMA Female Body Male Inner Contact, IP67 Rated, Active

# Internal Antenna Cables

10, 15, 20, 30, 35cm	<b>3G/GPS/WiFi RP-SMA Antenna Cables</b>  For Mini-PCle interface WiFi/3G modules: <ul style="list-style-type: none"><li>• P/N: 080W0Q0001001 3G/GPS INTERNAL ANTENNA CABLE 10CM, RP-SMA Female Body Female Inner Contact</li><li>• P/N: 080W0Q0001501 3G/GPS INTERNAL ANTENNA CABLE 15CM, RP-SMA Female Body Female Inner Contact</li><li>• P/N: 080W0Q0002001 3G/GPS INTERNAL ANTENNA CABLE 20CM, RP-SMA Male Body Female Inner Contact</li><li>• P/N: 080W0Q0003001 3G/GPS INTERNAL ANTENNA CABLE 30CM, RP-SMA Male Body Female Inner Contact</li><li>• P/N: 080W1Q0001501 WiFi INTERNAL ANTENNA CABLE 15CM, RP-SMA Male Body Male Inner Contact</li><li>• P/N: 080W1Q0002001 WiFi INTERNAL ANTENNA CABLE 20CM, RP-SMA Male Body Male Inner Contact</li><li>• P/N: 080W1Q0003001 WiFi INTERNAL ANTENNA CABLE 30CM, RP-SMA Male Body Male Inner Contact</li><li>• P/N: 080W1Q0003501 WiFi INTERNAL ANTENNA CABLE 35CM, RP-SMA Male Body Male Inner Contact</li></ul>
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