

SUNIT



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innovations



SUNIT



Dedicated to providing innovative, reliable and ingenious In-vehicle Computer, AVL and Telematics technology

Sunit Oy is dedicated to providing its customers with innovative In-vehicle Computers, Telematics and AVL solutions that offers technical excellence and reliability using its extensive experience and technical expertise to develop the range of In-vehicle Computers to customer's needs.

In the year 2000 Sunit was rewarded on the award of the **Best European Small Enterprise Initiative** in the competition of **The European Awards for the Spirit of Enterprise** by European Commission and JEE.

Sunit in-vehicle computers are used for many applications and across a wide number of industries. A typical applications are Police and Fire services, Emergency Services, Public transports as Taxis, Transport logistics, Ware-

house logistics, Road maintenance services, Timber harvesting logistics, Harbour logistics, Custom and coast-guard services, and other Commercial and utility vehicles.

As a strategic partner to the automotive industry Sunit develops and produces customer tailored In-vehicle Computer, AVL and Telematics solutions for instance to Scania - one of the leading truck manufacturers worldwide.

Sunit On-board Computer family comprises a comprehensive range of purpose built fixed mounted computer models for commercial and utility vehicles. Related to the model and application requirements, each system can be equipped with a display from 6,4 inch up to 12,1 inch. Sunit In-vehicle computer model range comprises Sunit d and Sunit c series computer units with a remote displays and a standard Din car radio size dashboard

mountable computer unit or alternatively with a separate universal surface mountable computer unit. By this modulated product family you will find the ideally suited On-board computer model for virtually any kind of In-vehicle application.

Sunit On-board computers fulfil vehicle industry requirements and are verified in accordance with vehicle industrial ISO, IEC and EMC standards. Users and operating environment required demands are taken into account through the development of the products. This has resulted into unique features like integrated circuits of GPS navigation and GPRS communication, standard CAN-bus interface to vehicle's own control network, intelligent guidance of computer start & stop according to vehicle utilization mode, Integrated TV and Radio receivers, 2x30 amplifier, automatic display light adjustment according to the display environment light, controlled power management, smart battery backup system, withstanding

shocks and vibration, sustaining widely varying temperature and humidity, embedded technology in compact, light and rugged configuration.

With its strong background in technical excellence, Sunit continues to develop innovative, reliable and ingenious solutions in the In-vehicle Computer, AVL and Telematics fields to meet customer's needs.



Processor

Intel Pentium M processor with double graphic controller
 Embedded 64MHz Multimedia Processor
 Extreme low 1.1-Volt Technology
 Embedded Series

RAM Memory

256 MB - 1,0 GB RAM Type DDR Soldered

Hard Disk Drive

Automotive 20 / 30 / 40 GB HDD,
 Processor & I2C controlled preheating,
 cooling and Power-Moding
 Wide operating temperature range

DVD-RW drive

Options: Internal slim line DVD-RW drive

Navigation

Integrated GPS receiver, NMEA standard:
 VTG, RMC, GGA, GSA, GSV.

Data communication

Internal GPRS-standard communication for PC
 applications plus Telematic use without
 PC-applications during Stand-By Mode

Interfaces

COM1, Standard Dsub9 connector
 4 x USB 2.0
 1 x PS2 on display for Sunit mini keyboard
 GPS antenna
 GPRS / GSM antenna
 Digital display interface
 Vehicle power connector: Power input,
 4 x digital input, 3 x digital output, vehicle IGN15,
 Wake-Up
 1 x PCI104
 1 x Mini PCI slot
 2 x 30 W Stereo out
 Integrated LAN-controller for Ethernet
 Option: Interface II for second Independent
 Display

Available features for PCI104

Multi channel Video Input Card
 Multi Channel Video Input MPEG Encoding
 TV & RDS Radio receivers including 1 Video Input
 PC-Card/CardBus Slot
 8 x RS 232 / 485 Ports
 Dual Independent display

Available features for Mini-PCI-Slot for e.g.:

WLAN, Bluetooth

Keyboard, Mouse, Touch Screen

Std mini-AT or ultra mini-AT keyboard with 86 buttons including WIN buttons, keyboard store pocket

Glidepoint touch pad, dust and waterproof

Touch screen

Option: Small Hand Held Keyboard with lighted buttons, PS/2 connection, function-, numeric- and arrow buttons, Ctrl, Alt, Del, Enter and Esc buttons, Dashboard mounting bracket

Option: Programmable 4 button keyboard

Operating System

Windows® XP, Linux®

Battery

Internal rechargeable backup battery for Power Moding in case of Power interrupts.

Power Supply

Operating voltage 12 VDC

Power consumption 12 W, when display backlight and pre-heating is OFF.

Internal filtrations of supply voltage's fluctuation and breaks according to vehicle standard Power Moding

Power ON / OFF

Ignition controlled automatic PC Start and Stop Delay features

2 x general inputs (Ignition, Wake-Up)

Phone call wakeup feature in Stand By mode

Watchdog for the O/S states

General IO control available at Windows API

Auto Start, Standby and Stop Delay settings

Windows Interface on Control panel for

- Auto Start mode
- Switch off delay time
- Standby mode

Power Moding

Controlled by monitoring the Vehicle Ignition with supervising of the operating temperature and supply voltage.

Includes ON, OFF, Standby states and Internal Diagnostics. Intervals of each state are individually adjustable. On Standby state, where Phone and Data-inputs are activated for wakeup power to ON-state by incoming calls, alarm or equivalents, the system consumes extremely low power.



Dimensions and Weights

Std DIN Car Radio Mounting Case for Dashboard Mounting

Console mounting: 189 (w) x 61 (h) x 177,5 mm (d), 1.8 kg

With DVD-RW: 189 (w) x 80 (h) x 177,5 (d), 2,0 kg

Car Interface & Audio

1 x external CAN accordingly to vehicle standard J 1939 plus 1 x Internal CAN Bus

Audio I/O for Microphone and Stereo Out

for External Amplifier

1W, 8 ohm loudspeaker in display unit

Options: Integrated TV and RDS Radio receivers

Integrated Video input, high quality video-grabber card

Phone Audio for hands free, TV / Radio voice

Mounting

Universal surface mounting Computer Casings

Std DIN Car Radio Mounting Computer Case

for On-Board Mounting

Shock

IEC 68-2-14 Nb

Vibration

IEC 68-2-64

Corrosion protection

IEC 68-2-30 Db

Cold Weather Start-Up

IEC 68-2-1 Aa

Transient Voltages

According to ISO 7637-1, test pulse 5, level 3, vehicle system "load dump"

According to ISO 7637-2 and 3. Test pulse 1a: $V_s = -150V$, $R_i = 10\Omega$, $t_1 = 5s$.

High Active Digital Inputs: $-600V$, $1ms$, $R_i = 50\Omega$

Low Active Digital Inputs: $+300V$, $1ms$, $R_i = 50\Omega$

Reverse- and Over Voltages

Reverse battery voltage protection

24V, time not limited (wrong cable connection in 24V systems)

35V, 1 hour (alternator failure)

48V, 20 min (booster start)

Voltage drop, vehicle Engine start

ISO 7637-1, test pulse 4, $V_s = -7V$, $V_a = -6V$, $t_6 = 40ms$, $t_8 = 10s$

ISO 7637-2, test pulse 4, $V_s = -16V$, $V_a = -12V$, $t_6 = 50ms$, $t_8 = 20s$



ESD

IEC 61000-4-2: 1995, level 4 (8kV contact discharge, 15 kV air discharge)

Dry heat

According to IEC 68-2-2 Bc.: $90^\circ C/1h$, $85^\circ C/5min$, and $70^\circ C/96h$

Stress Cycling

According to IEC 68-2-14 Nb and simultaneously vibration test according to IEC 68-2-35: $1h -25^\circ C$, $1h 70^\circ C$, $48h/axle$. Rate of Temp. change: $3 \pm 2^\circ C/60s$. Number of cycles: 65

Environmental Specs

Humidity 5% - 95% non-condensing

Operation Temperature $-25^\circ C$ to $+55^\circ C$

Storage Temperature $-40^\circ C$ to $+80^\circ C$

QA Methods

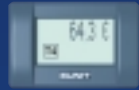
SAE J1939/11 (CAN)

DIN 40050 (IP)

IEC 68-2-38 2/Ad (TMP)

IEC 61000-4-2 (ESD)

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Specifications subject to change without notice.



SUNIT LCD-i



SUNIT 6



SUNIT 7 wide



SUNIT 8



SUNIT 10



SUNIT 12



The Sunit In-Vehicle PCs are available as complete systems, with the end user being able to define exact build requirements for a range of users and variety of vehicle models, which offer different available space. Having a separate system unit and screen unit installations have the same capability, regardless of screen size. A selection of screens is available to allow optimum screen size compared to space available within the vehicle. The selection of screen sizes gives the opportunity to design the system into the vehicle.

You can choose a screen size that best suits the vehicle, the choice of screen resolution also needs to be decided. Different screens sizes support Health and Safety approved installations into vehicles with the same system capability.

Variety of applications for fleet use is designed for touch screen control with keyboards only being used for bulk data input. Sunit offers a range of high brightness colour TFT touch screens for ease use with Sunit In-vehicle Computers.

Enabling to see the screen easily in the high ambient light of a vehicle is as crucial as a full dimming range for night use, screens feature automatic control of brightness and user defined base brightness level settings.

A single display cable connects the screen to the system unit carrying power and display data to the screen and touches input data to the system unit.

Sunit Dual Independent Display Board allows two separate displays to be connected to the Sunit In-vehicle Computer at the same time. This feature enables e.g. digital map on driver's display, while using other application on the other. Applications can be moved from one monitor to another, or can be displayed on more than one monitor simultaneously.

Sunit DDSTWIN Screen Adapter enables slave displays to be connected to the Sunit CAR PC, when same application appears on other screens simultaneously.



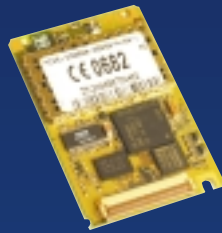
SUNIT IC SECURITY CAMERA*

Sunit security surveillance system comprises a solid-state infrared camera with an in built infrared light source and a Sunit CAR PC to capture monochrome photographs for security purposes. Typical applications are in the areas of security such as driver safety in public transport vehicles or taxis. Since the infrared light source is invisible to the human eye, surveillance photographs can be taken with no indication to the persons being photographed. Images can be captured in complete darkness. The Sunit IC Security Camera System is an event driven system in that photographs are only taken when an electrical input is provided as the trigger as a car door, a taximeter or a hidden alarm switch. The images can be stored in a HDD or transmitted to an emergency centre by GPRS data communication together GPS tracking data. The system is designed to enhance driver safety by acting as a deterrent to crime and as an effective tool in identifying those who commit crime. The Sunit IC Security Camera System is an ideal tool to take advantages of emerging communications technologies. The security camera system is impact and shock resistant, sufficient to withstand a typical car accident, and withstand the frequent movement of a vehicle over variable terrain. The Camera Head measures: 75 (w) x 27 (h) x 67 (d) mm



ALARM BUTTON

Suits excellently to various In-vehicle applications for example alarm from vehicle to emergency central through GPRS or other cordless data network. Due to its small size alarm button can be installed invisibly.



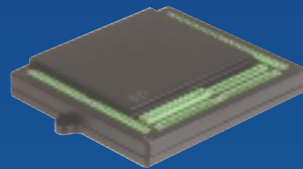
GPRS/GSM DATA MODEM

Sunit vehicle computers are equipped with internal GPRS data communication modem integrated on the computer board.



WLAN MiniPCI 802.11 b/g ADAPTER*

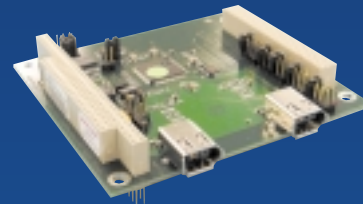
An embedded 802.11b/g MiniPCI type 3B adapter operating in the 2.4 GHz spectrum. Features the IEEE 802.11b/g industry-standard protocol for connecting with the highest available throughput in more locations. IEEE 802.11b/g standard dual-mode Wi-Fi CERTIFIED* LAN support (2.4GHz). Up to 54 Mbps at 2.4 GHz (Note: 802.11b up to 11Mbps 802.11g up to 54 Mbps throughput). Industry standard wireless LAN security support is available (802.1X, WEP, WPAS) and upgradeable support for AES enabling software implementation. Support for antenna diversity enables optimised WLAN performance for multi-antenna systems.



SUNIT ICU CONTROL UNIT

Sunit ICU controls independently each functional unit of machine. Sunit ICU control unit can be connected to Sunit Vehicle Computer through CAN Bus that comply ISO 1939 protocol. Aluminium Casing
Dimensions: 150 x 132 x 21 mm. Weight 0,4 kg
Operating Voltage: 24 V, 18 V... 35 V
Separate power inputs for processor and for Outputs
Operating temperature: -40°C... +85°C

Processor: Infineon C167, 20 MHz
Flash: 1 MB for processor program
SRAM: 128 kB for data
2x CAN, SAE J1939/11 complying DeviceNet, CanOpen, FMS Standard
1x RS-232 serial interface
PC/104 bus, 8-bit bus for options
24 x PWM digital outputs proportional
Automatic current limit and short circuit protection
Error detection of outputs
Normal 1 A current output, current limit 3 A
6x2 channel counter inputs for pulse sensors
Internal pull-up to 5 V
High or low active inputs, each input separately
Input voltage range 0–30 V
2x general digital inputs
Internal pull-down to ground
High active inputs
Input voltage 0–30 V
4x analog input
Input voltage range 0–5 V
Power supply 5 V for analogue sensors, max 15 mA
Current sense inputs 0...20 mA at the end of current line



2 X FIREWIRE IEEE 1394 BOARD*

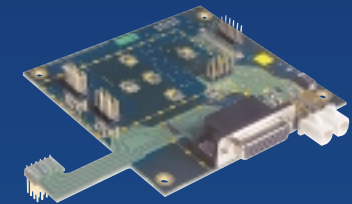
Powerful 32-Bit PCI104 IEEE-1394- (firewire-) controller board for two channels is based on the IEEE-1394 controller chip TSB43AB22 by Texas Instruments and provides a data rate of up to 400 Mbit/s across a maximum distance of 4.5 meters. The controller is equipped with two firewire connectors and thus allows 63 network nodes to be connected. The board has a hot-plug interface and supports plug play technology. Auto recognition and device configuration – for which no adjustments to the board are required – ensure a robust operation and a high reliability. Runs under Windows 2000/XP and Linux operating systems.

MPEG VIDEO & ENCODER CONTROLLER BOARD*

is a high performance real time Video and Audio capture board. Utilising the 32-bit PCI architecture, the module allows high quality real-time video and audio cap-

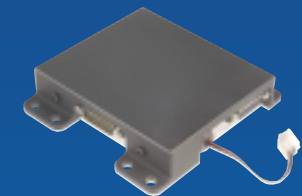


ture and compression from a PAL or NTSC video source to disk. Sound and Images can be captured and compressed using MPEG-1 encoding for continuous storage to disk or for local network transmission or over the Internet. A suite of drivers supports the module for Windows 2000/XP and Linux. The module is an ideal solution for solid-state video recording, machine vision, multimedia content creation and Internet video streaming.



SUNIT DUAL INDEPENDENT DISPLAY CONTROLLER BOARD*

allows two separate displays to be connected to the Sunit In-vehicle Computer at the same time. One way to use this capability is to create a larger desktop work surface spanning multiple displays. Applications can be moved from one monitor to another, or can be displayed on more than one monitor simultaneously. Another example of this feature is running digital map on driver's display, while using other application on the other. In addition of that the board enables up to 4 cameras to be connected to the system simultaneously. Utilising fast 32-bit PCI architecture it allows high bandwidth data bath.



SUNIT DDS TWIN SCREEN ADAPTER

Enables second slave display to be connected to the Sunit CAR PC, when same application appears on both screens.



SUNIT 4-CHANNEL VIDEO CAPTURE BOARD*

Sunit controller is high quality 4-channel video capture board (or frame grabber board) designed to provide outstanding capabilities with highest stability and reliability for general installations. Its interface complies with PCI 2.1 standards. The 32-bit PCI104 bus allows high Bandwidth data path. In addition of that the board can be used simultaneously for Dual Independent Display Controller.

The board suits extremely well to be used with Sunit IC security camera and rear-view camera systems. With Sunit rear-view camera SW, automatic digital input signal from rear gear switches rear-view sight on the screen.



PCI104 4-CHANNEL VIDEO CAPTURE BOARD*

is a high quality 4-channel video capture board (or frame grabber board) specially developed for number plate recognition applications. It is designed and developed to provide outstanding capabilities with highest stability and reliability for general installations where a high performance 4 video channel input industrial video capture board is needed. Its interface complies logically with PCI 2.1 standards. The 32-bit PCI104 bus allows high bandwidth data path.

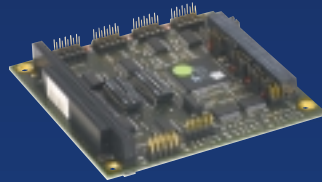


PCI104 SINGLE/DUAL SLOT

PCMCIA PC CARD ADAPTER*

is designed for standard PCMCIA compatible cards like UMTS PC-Cards. Both Slot1 and Slot2 can be used also as Card Bus slot. The module features 2 PC-Card sockets and

interfaces to the host computer over the high-speed 32-bit PCI104 bus. The Sockets support Types I, II, III cards



PCI104 8 X SERIAL PORTS MODULE*

Each port can be individually selected for TTL, RS/232 or RS 485 transmission mode. RS/232 is a single-ended electronic data communication. Independent channels are established for two-way (full-duplex) communications. RS/232 enables local communication (supports only one driver and one receiver). RS/485 support 32 drivers and 32 receivers (bi-directional-half-duplex over a single twisted pair cable) and RS485 uses differential transmission mode. The module utilizes 32-bit PCI architecture.



INTERNAL SLIM LINE DVD ROM / CDRW DRIVE*

incorporates both a 24x10x24 CDRW drive and a 8X DVD-ROM drive. Being a slot load device, there is no drive tray. You don't have to worry about a tray being damaged, and the floor space required for the system is reduced by not having to allow for a fully extended tray. Slot load design reduces risk of damage to sliding tray. Quiet operation.

- 24X Speed CD-R Writing
- 10X Speed CD-RW Writing
- 24X Speed CD-ROM Reading
- 8X Speed DVD-ROM Reading
- DVD MULTI Read Support
- Data Capacity 703 Mbytes (Mode 1)
- Buffer Memory 2 Mbytes
- Disc at Once, Session at Once
- Track at Once, Multi-Session
- Fixed / Variable Packet Writing

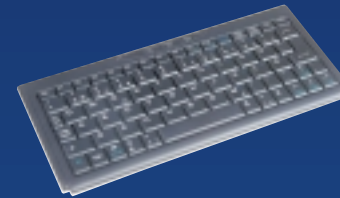
KEYBOARDS



- 86-key Std mini-AT KB incl. WIN buttons. Keyboard store pocket. Dimensions: 280x130x 22 mm



- Rugged IP65 86 Button Back Lighted Keyboard with integrated mouse. Dimensions: 298x142x22 mm



- 77-key Ultra Mini KB. Dimensions: 222x103x16 mm.



- Programmable Sunit 4-key KB for digital inputs. Dimensions 119x42x28 mm.



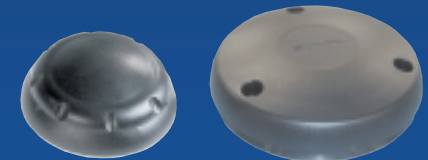
- 86-key Std Mini-AT KB with touch pad. Dimensions: 289x227x27 mm



- Back lighted SUNIT AKU HAND HELD KB with dashboard mounting clip. F1-F10 buttons, numbers 0-9, arrow keys, Ctr, Alt, Del, Tab, Esc, Shift, Enter. Dimensions: 191 mm (w) x 70 mm (d).

MOUSE

Dust and drop waterproof touch pad. Dimension: 86 mm (w) x 67 mm (d)



GPS/GPRS COMBI ANTENNA and MOUNTING COVER

Combi Antenna can be installed either inside the cabin on front or rear window of the car or outside, on the roof. When installing outside, mounting cover is recommended.



* For Sunit d serie only

For more information, see Sunit homepage
www.sunit.fi