

**SUNIT<sup>®</sup> fc**

**SUNIT<sup>®</sup> fd**

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**USER'S GUIDE**







## TABLE OF CONTENT

Declaration of conformity.....	6
Identification data.....	7
Precautions and safety.....	7
Hardware configuration	
Central Processing Unit .....	8
Connections .....	9
Display .....	10
Using the computer	
Start-up and shut-down .....	12
Installing and removing the SIM card .....	12
Resetting the computer.....	14
Maintenance .....	14
Startup signals .....	16
APPENDIX A	
Sunit Telematics quick start guide.....	17
APPENDIX B	
Sunit touch screen calibration .....	20
Special requirements for taxi installation .....	21

## DECLARATION OF CONFORMITY

Sunit Oy declares under our sole responsibility that the products Sunit c and Sunit d to which this declaration relates are in conformity with the Commission Directives 72/245/EEC and as amended by 2004/104/EC, including latest 2006/28/EC. Declaration of conformity is available at our site [www.sunit.fi](http://www.sunit.fi)



CE Marking on a product is a manufacturer's declaration that the product complies with the essential requirements of the relevant European health, safety and environmental protection legislations.



The Federal Communications Commission (FCC) is an independent United States government agency. The FCC is charged with regulating interstate and international communications by radio, television, wire, satellite and cable. The FCC's jurisdiction covers the 50 states, the District of Columbia, and U.S. possessions.



This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste. SUNIT products are manufactured with high quality materials and components which can be recycled and reused. Please dispose of this equipment at waste collection or recycling centre. Please help us to conserve the environment we live in!

This manual gives You the guidance of **Sunit fc and Sunit fd** On-board computer. Familiarize to this manual carefully before taking the computer in use. This manual includes copyright protected information. Copying of this manual or parts of it without permission of the author is forbidden. Sunit Oy develops products continually, therefore we reserve right to make changes to the products described in this manual and it's instructions without the prior notice.

A wide range of accessories is available for Sunit On-board computers. You can read more about our products on our web-site [www.sunit.fi](http://www.sunit.fi). There you can additionally find the current drivers, manuals, software upgrades and the instructions for installation.

Please become acquainted with the folder C:\Support. from there you will among others find device drivers, Service Packs, user guides, warranty clause and utility programs .

More information about the PC's, displays, accessories and softwares can be obtained by contacting e-mail address [info@sunit.fi](mailto:info@sunit.fi)

If problems occur one can get support from [support@sunit.fi](mailto:support@sunit.fi)

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## IDENTIFICATION DATA

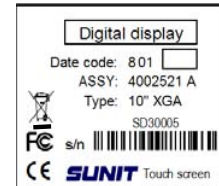
CPU identification data finds from the frame of the unit:

- CPU model and type
- year and week of manufacturing
- ASSY version
- serial number
- CE and FCC marking
- recycling mark\*



Display's identification data is located in the back cover of the display

- year and week of manufacturing
- ASSY code
- display model
- serial number
- CE and FCC marking
- recycling mark\*



Please do not remove identification data labels!

## PRECAUTIONS AND SAFETY

### Traffic safety

Unnecessary use of the On-board computer may endanger traffic safety. It's recommended to stop the vehicle before using the computer by the driver. To avoid accidents keep all peripherals (e.g. key-board) in store pockets.

### Installation and service

Only authorized service is allowed to install, repair or open the device. Unauthorized repair or opening of the device may cause faulty operation and revoke the warranty. Incorrect wiring may disturb insufficiently protected electronic systems. For further information, please contact support@sunit.fi

### Turning off the computer

Turning the computer off otherwise than using operating system's *Shut down* –command may cause corruption of the data, drivers or operating system, and computer may no more start correctly.

### Connecting of the peripherals

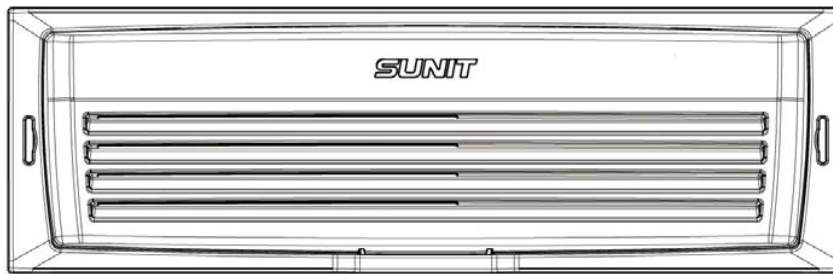
The compatibility of the peripheral devices should be ensured from the manufacturer or reseller of the device. Insufficiently EMC and EMI protected peripherals may disturb electronic components of the vehicle.

## HARDWARE CONFIGURATION

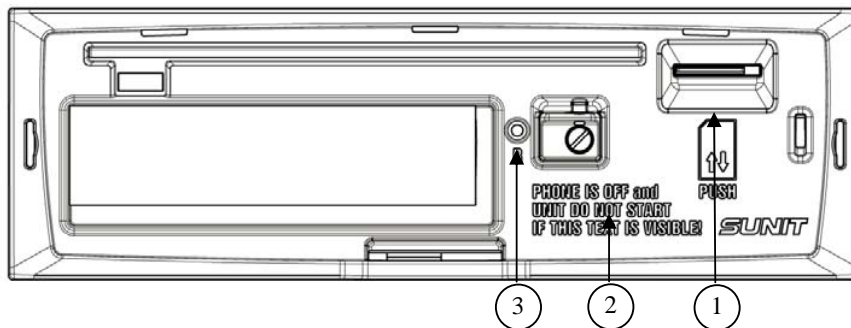
### Configuration of Sunit On-Board computer

Sunit On-board computer comprises of:  
Central Processing Unit, Display Unit, Keyboard, Mouse, Display cable, BUS-cable. Power Supply cable and GPS/GPRS antenna. Depending on the application requirements, configuration can include also integrated GSM/GPRS/EDGE phone, 802.11b/g WLAN adapter and CAN-interface.

### CPU



Sunit CPU. Guidance for removing the front panel is on page 10.

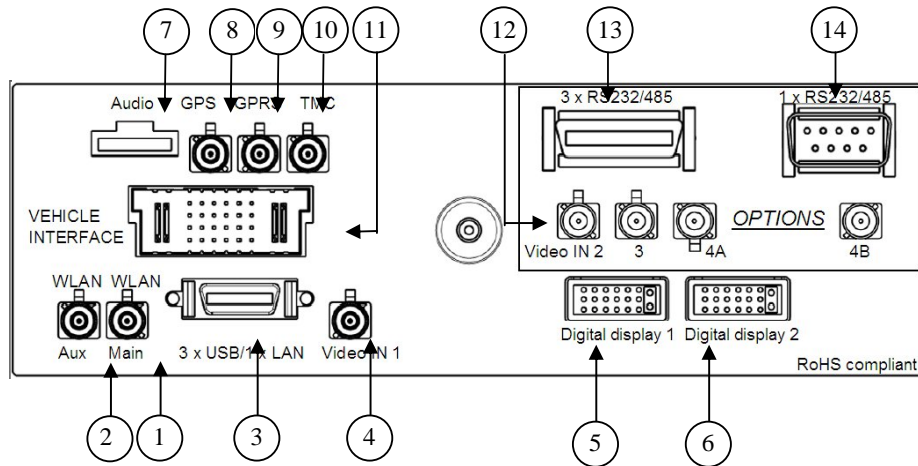


CPU with the front panel removed.

1. SIM-card slot (page 10)
2. Warning message (page 11)
3. Resetting button (page 12)



## CONNECTIONS



1. WLAN antenna cable connection (brown)
2. WLAN auxiliary antenna connection
3. BUS 3USB+LAN connection (page 11)
4. Video input
5. Main display connection
6. Second display connection
7. Audio input/output connection
8. GPS-antenna connection (blue)
9. GPRS-antenna connection (red)
10. Traffic Message Channel connection
11. Vehicle interface connection

Options:

12. Video inputs 2 - 4B
  - input 4A/4B is shared, preferred input can be selected from application
13. 3 x RS232/485 serial connection
14. RS232/485 serial connection

## DISPLAY

### f7", f10" and f12" display buttons and indicators



#### 1. Power button and brightness adjustment

- start computer by pressing the power button
- when computer is running, pressing the power button shortly turns backlight off/on
- minimum brightness adjustment of the display is available by two short press of the power button. Then every press increases minimum brightness level
- long audible signal indicates when maximum or minimum level is reached,
- if power button is not pressed in three seconds, it's function returns to normal
- if power button is pressed and held for four seconds, the computer shuts down. This is required only in exceptions, when operating system does not respond.

#### 2. Multicolor-LED

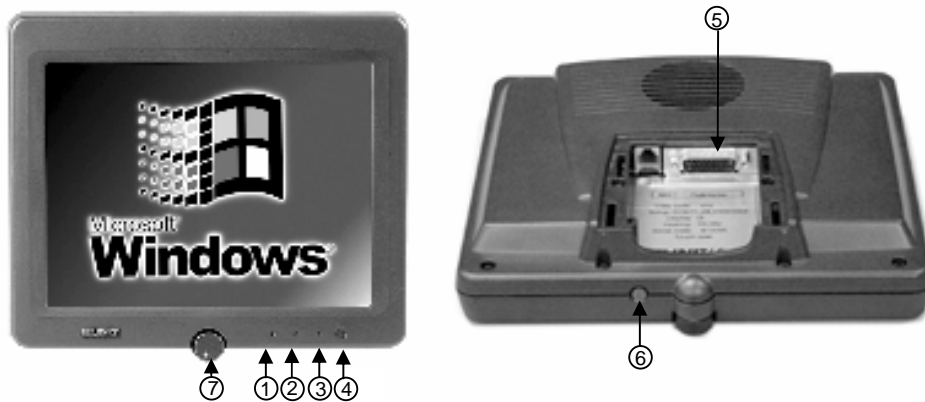
- blinking green = computer is starting
- continuous green = computer is running, power is on
- blinking yellow = computer is on by internal battery
- blinking orange = warning (e.g. problem with the GPS antenna or phone)
- continuous blue = power on, backlight turned off
- continuous red = alarm (e.g. overheating, over voltage)

#### 3. Light sensor for automatic brightness adjustment

- adjust the brightness of the display according ambient light

#### 4. Display cable connection

## 8" and 12" display buttons and indicators



Three indicator leds shows the status of the computer:

1. Green continuous: Computer on  
Green blinking: Computer is starting.
2. Yellow continuous: Preheating mode  
Yellow blinking (1 sec./1 sec.): CPU only heating mode  
Yellow blinking (0,2 sec./2 sec.): Display only heating mode
3. Red continuous: Display backlight turned off.
4. Light sensor for automatic brightness adjustment. The lowest level of auto brightness can be adjusted by the manual adjustment knob (7).
5. Connector for display cable.
6. Computer on/off and display on/off.  
Short press:
  - if computer is on, display backlight on/off
  - if computer is off, starts the unitLong press:
  - if pressed more than 4 seconds, shuts the unit down. NOTE! Required only in exception, when operating system does not respond.
7. Manual adjustment knob of the display's low-level brightness.

## USING THE COMPUTER

### Start-up and shut-down

The starting mode is selectable in Sunit Telematics

### Manual on-off (default)

- on: Press the on/off button shortly
- off: Use the operating system's Shut-down feature only.

### Automatic starting

- you can set the automatic starting adjustments in Sunit Telematics (at Windows Control Panel)

### Automatic shut-down

- you can adjust the mode of shut-down, delay and standby time in Sunit Telematics

### Cold start

- the unit starts only after the pre-heating, when the temperature inside of the unit has reached +5°C. Depending on the prevailing temperature, pre-heating can last up to 4 minutes.

### With start of the unit, the following devices starts also:

- GPS is ready to receive data as soon as the operating system is running. GPS requires signal from at least 3 satellites for location.
- if the optional phone is installed, the search of the network is performed automatically.

### Display adjustments

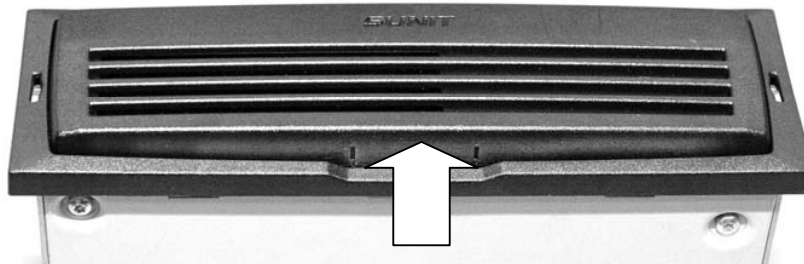
The display is equipped with automatic adjustment of the backlight, therefore manual adjustment of the brightness is not recommended except in the dark

- adjust the minimum brightness by following instructions given in page 8 or 9
- manual adjusting effects only in twilight or in the dark

## INSTALLING AND REMOVING THE SIM CARD

The Sunit d computer is implemented by integrated SIM slot for GSM/GPRS/EDGE phone. To install the SIM card:

1. Open front panel by pressing and turning it from the bottom



2. Push SIM card firmly into the slot.

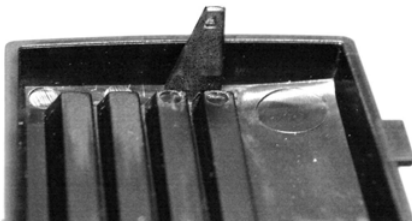


Remove SIM card by pressing it firmly and then pulling it out

**NOTE! Disable PIN code query of the SIM card using mobile phone before installing the SIM card.**

3. Attach the front panel.

Placed in the front panel there is a filter to protect the CPU from dust. Therefore the front panel has been equipped with a detector that indicates is the front panel attached. If the front panel is not attached, computer will not start and the phone is not functioning.



Please handle the front panel carefully so the detector will not brake.

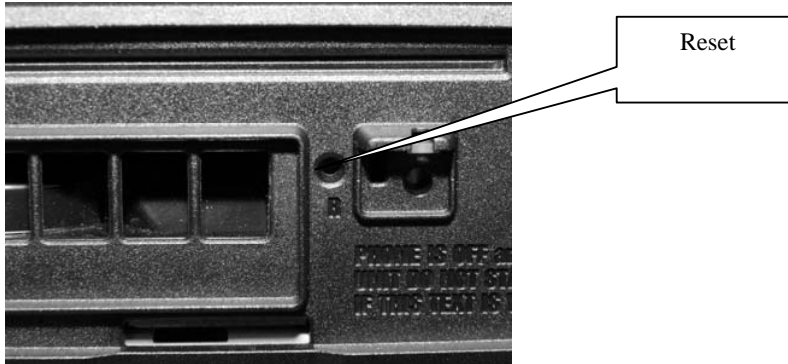
#### **Connecting BUS 3USB+LAN cable**

Central unit has a special BUS connector for 3x USB and LAN(ethernet 10/100 BASE) interfaces. Connect BUS cable (see picture below) into the central unit's 3xUSB/1xLAN-connector and use screws for locking the connector.



## RESETTING THE COMPUTER

To solve telecommunication or location problems the telematics card may have to reset. In that case the computer should be turned off by pressing on/off button for about 4 seconds. When the computer has shut down, reset the telematics card by pressing the reset button using a pen, paper clip etc



## MAINTENANCE

Do not scratch or press the cover of the device with sharp objects. You must not touch to the display element with a sharp object. Do not fasten any accessories to the cover of the display or of the central unit

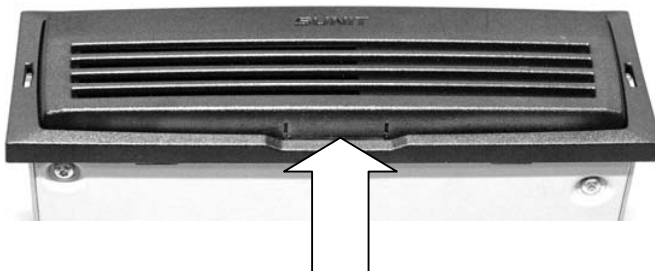
To protect the electronics of the device, the covers must be always kept closed. The device contains an internal heat management systems which controls the fan, so do not set any objects on or over the central unit, which may prevent the ventilation of the device. If any failure occurs, please contact the service.

### Cleaning

- clean the filter of the CPU regularly
- keep the display and covers clean from dust, oil or other chemicals
- clean the device by using a weak detergent
- always use a soft towel for cleaning

### Cleaning the filter

Open the front panel



The filter is located inside the panel.



Remove the filter and clean it. If the filter is very dirty, washing is recommended. Place the filter in and attach front panel.

**Alkaline or other solvent, alcohol and other similar chemicals must not be used!**

### **Software maintenance**

The computer runs with either a Microsoft Windows or a Linux operating system. Particularly the Windows operating system is vulnerable to worms, viruses and attacks against known security holes. It's essential to keep your computer up-to-date with proper virus protection application, e.g. Norton Anti-Virus or similar, and use Windows update -feature regularly. It is also very recommended to use a software firewall, considering that there are many of them available freely from e.g. internet and Windows XP has this feature build-in.

Become acquainted with the folder C:\Support. From there you will find device drivers, user guides and utility programs.

## START-UP SIGNALS

The PC has internal control system which controls the status of the device. If the device states a faulty function during start-up, it indicates it with audible signal; one long and one or more short “beeps” according to the following list.

Error Beep Code	Error	Action	Windows Pop-up
(long beep) + 1	GPS antenna not connected.	Check antenna connector and cable.	GPS antenna is not connected. Check GPS antenna connector (blue) and the cable.
(long beep) + 2	GPS antenna shorted.	Check antenna connector and cable.	GPS antenna is shorted. Check GPS antenna connector (blue) and the cable.
(long beep) + 3	GPS fault, GPS module is not responding.	Turn off and restart the computer. Contact service if the failure occurs again.	GPS module not responding. Turn off and restart the computer. Contact service if the failure occurs again.
(long beep) + 4	GSM error. GSM module not responding.	Turn off and restart the computer. Contact service if the failure occurs again.	GSM module not responding. Turn off and restart the computer. Contact service if the failure occurs again.
(long beep) + 5	SIM card error. SIM card not installed or PIN code is enabled.	Check SIM card and disable PIN code if enabled.	SIM card error. Turn off the computer, check the SIM card and disable PIN code if it is enabled.
(long beep) + 6 and 7	Not used		
(long beep) + 8	The computer is overheated. It will turn off after 16 seconds.	Contact service.	The computer is running very hot! Check the central unit cooling. Computer will shutdown in a while!
(long beep) + 9	1. The Computer is using the internal backup battery. 2. Operating voltage is below 11V (vehicle battery empty)	1. Computer turns off after 16 seconds 2. Computer turns off after 10 minutes	
(long beep) + 10	Not used		
(long beep) + 11	Display error, backlight not functional.	Contact service	
(long beep) + 12	The central unit front panel is removed. Please note that the GSM module is turned off when front panel is removed.	Make sure that front panel is properly attached. Restart the computer if necessary to recover network connections.	Front panel opened. Make sure that front panel is properly attached. Restart the computer if necessary to recover network connections.
(long beep) + 13	Telematics connection error.	Contact service	
(long beep) + continuous 30 second beep	Critical error. Overvoltage, Computer will turn off after 16 seconds.	Turn off the vehicle. Check the supply voltage.	



## APPENDIX A

### Sunit Telematics quick start guide

Sunit Telematics –application is used for setting the properties of the Sunit vehicle PC. You can find the complete user’s guide from the Support folder.

Start the application by clicking the icon in the Windows Control panel



The main window is divided into 4 functional frames

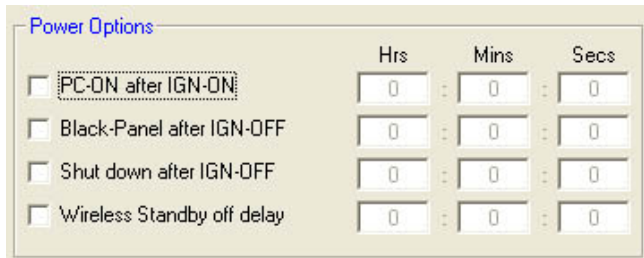
**Power Options:** Contains options when the ignition key is turned on/off

**Remote Startup Options:** Contains options when the OBU is in wireless standby mode

**Purpose of Digital Input 6 Alarm:** Contains options regarding the functionality of digital input 6

**GPS and SIM:** Contains options regarding the handling of the internal GPS receiver

### POWER OPTIONS



#### PC-ON after IGN-ON

Selected: The PC starts automatically after the ignition is turned on. You can setup a timer to delay the startup.

**Note:** If the startup temperature is too low the PC startup is delayed until the OBU has pre-heated enough or the maximum preheat time of 6 minutes is reached.

Not selected: The PC won't start automatically if the ignition is turned on. It has to be activated via the main power button on the front side of the OBU.

#### **Black-Panel after IGN-OFF**

Selected: The display turns off when the ignition is turned off. You can setup a timer to delay the turn off.

Not selected: The display state is not related to the ignition state.

#### **Shut Down after IGN-OFF**

Selected: The PC shuts down when the ignition is turned off. You can setup a timer to delay the shut down.

Not selected: PC shut down is not related to the ignition state.

#### **Wireless Standby off delay**

Selected: The PC stays for the selected time in wireless standby mode after PC or ignition is turned off. **Note: Wireless standby mode is always active when ignition is on while PC off.**

Not selected: The wireless standby mode is not timer controlled.

### **REMOTE STARTUP OPTIONS**

Remote Startup Options

- Wake up PC via SMS
- Wake up PC via voice call
- Wake up PC via data call
- Silent start
- Shut down PC after wake up: 0 Hrs : 0 Mins : 0 Secs

#### **Wake up PC via SMS, voice call or data call**

Selected: the PC can be started by reception of a SMS and by detecting an incoming voice or data call.

Not selected: The PC start cannot be triggered by SMS, voice or data call.

#### **Silent Start**

Selected: The PC starts up in silently, no picture, no LED activity and no sound. If the ignition is turned on or the power button is pressed the display and the sound system return to their active state.

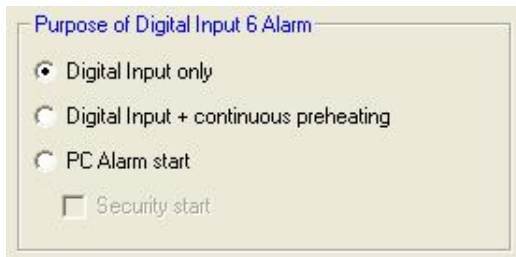
Not selected: The PC starts up normally.

#### **Shut down PC after wake up**

Selected: If the PC has been started by one of the wake up triggers, you can select a time after which the PC shuts down automatically. **Note: You can override the shut down timer by pressing the power button or by turning the ignition on after the PC has been activated.**

Not selected: The PC stays on continuously.

## PURPOSE OF DIGITAL INPUT 6 ALARM



### Digital Input Only

Selected: The Digital Input will act as a standard “Low-Active” Digital Input.

### Digital Input + continuous preheating

Selected: Similar to Black panel after IGN-OFF the OBU will start to monitor the temperature when this Digital Input becomes active.

### PC Alarm start

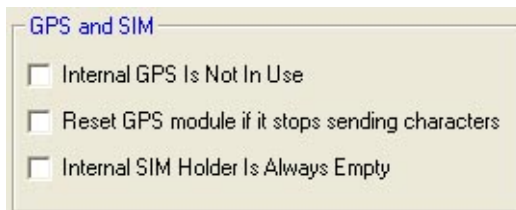
Selected: The PC will be started automatically if this Digital Input becomes active. Additionally it will store all signal levels currently present at the Digital Inputs for later use.

### Security start

Selected: Similar to Silent Start except that you cannot reactivate the display or the sound system.

Not selected: The PC starts up normally.

## GPS and SIM



### Internal GPS is not in use

Selected: The internal GPS is deactivated.

Not selected: The internal GPS is used.

### Reset GPS module if it stops sending characters

Selected: The embedded system observes the GPS receiver output and resets the module if characters are not received within 4 seconds.

Not selected: The GPS receiver output is not observed.

### Internal SIM Holder Is Always Empty

Selected: SIM card is not inserted, error code 5 is disabled.

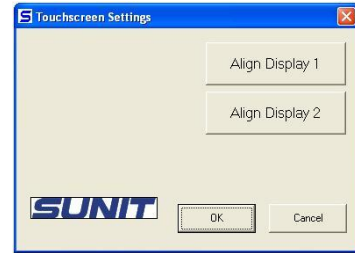
Not selected: If SIM card is not inserted, error code 5 alert at start up.

## APPENDIX B

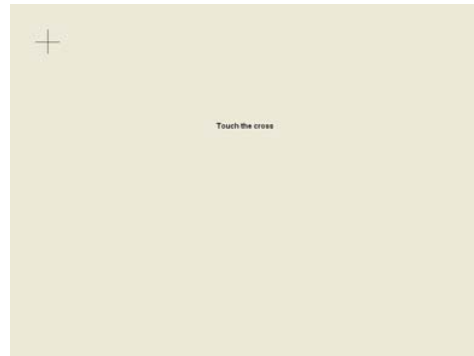
### CALIBRATING THE SUNIT TOUCHSCREEN

- start Windows Control panel
- open Sunit DTS touchscreen application by doubleclicking it's icon in control panel

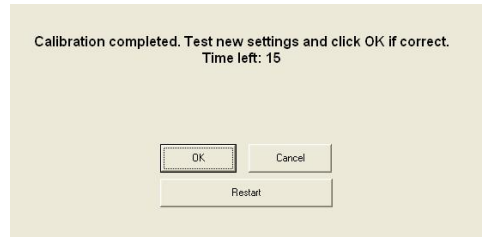
1. Start calibration:
  - Press "Align Display 1" Button.



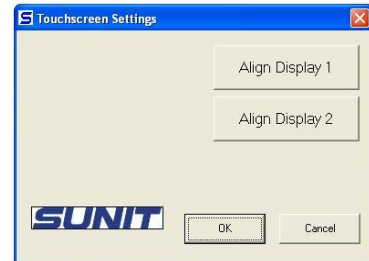
2. Calibrate touch-screen: Touch calibration cross with your finger. When cross is pressed, it will disappear, and new calibration cross will appear on the different corner of the screen. To complete calibration press the three calibration crosses.



3. When calibration is completed, check that mouse pointer will follow finger on the screen correctly, and press "OK". If calibration is not accurate, you can recalibrate touch-screen by pressing "Restart" button.



If dualscreen is in use, you can calibrate second display by pressing "Align Display 2" button, and follow the instructions from step 2. (Button is active only when dualscreen is in use) Otherwise click only "OK".



## **SPECIAL REQUIREMENTS FOR TAXI INSTALLATION**

### **Demands for distance signal generator**

The conditions for the compatibility between the taximeter and the distance signal generator

The distance signal generator output should produce low level by connecting taximeter pulse input signal to ground. The current in that state must be strong enough to make voltage on pulse input to go below maximum voltage level specified by manufacturer ( $V_{in,low}=3.5 \text{ max}$ ). The sufficient marginal for disturbance and setup time for stable voltage level must be also considered. The upper limit for input frequency of distance pulses is 2 kHz. The minimum value for a constant of distance signal generator is 500 pulses/km.

### **Installation and service of device**

Installation and service of device is allowed only for educated and authorized service accepted by device manufacturer. Opening device, braking the sealing or disconnecting cables is allowed only for authorized service.

Instructions for installation and sealing can be found in enclosed document "Sunit Taximeter SFDIN1-311121 installation, calibration and sealing instructions".

### **Permissible adjustments:**

Brightness of display backlight

## European Declaration of Conformity

We, Sunit Oy declare under our sole responsibility that the product Sunit taximeter to which this declaration relates is in conformity with the following directives and standards with noted details below:

EMC directive 89/336/EEC, Council directive 72/245/EEC as last amended Commission Directives 2004/104/EC, 2005/49/EC, 2005/83/EC and 2006/28/EC, E/ECE regulation No.10, Revision 3(2008). Measuring Instrument Directive 2004/22/EC demands for taximeters (MI-007).

EMC:

ISO 7637-2 , level 4  
ISO 7637-3 , level 4  
IEC 61000-4-2  
IEC 61000-4-3 , level 3  
IEC 61000-4-6 , level 3  
ISO 16750-2, level C

Climatic environment

IEC 60068-2-2 test Bd  
IEC 60068-2-30 edition2 revision 1, test Db  
IEC 60068-2-2 edition 5 revision 2 test Ab

Mechanical environment

IEC 68-2-64 revision 1, test Fh

Emission:

EN 55022 , class B

Manufacturer: Sunit Oy  
Contact Information: Taitoraitti 1, 87400 Kajaani, Tel. +358 8 632600,  
fax. +358 8 6326030, [info@sunit.fi](mailto:info@sunit.fi)

Product Description: Sunit Taximeter

Product Model/type: SFDIN1-311121  
Products are serial numbered and configuration of each product is stored in our product database.

The product conforms to essential parts of the EMC directive, E/ECE Regulation 10, Rev3 and MID directive.

To ensure the conformity with directives, every product is manufactured according to Sunit Oy quality guide "Laatukäsikirja Sunit ISO TS".

Kajaani 26.11.2010

  
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Kajaani

Eero Suutari, CEO  
Sunit Oy



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