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You can read the recommendations in the user guide, the technical guide or the installation guide for NEC SHIELDPRO FC-N21S. You'll find the answers to all your questions on the NEC SHIELDPRO FC-N21S in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual NEC SHIELDPRO FC-N21S
User guide NEC SHIELDPRO FC-N21S
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NEC

NEC Ruggedised Notebook Computer

ShieldPRO
FC-N21S
User's Manual

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Manual abstract:

ShieldPRO is a trademark of NEC Corporation in Japan. DeviceProtector is a trademark of NEC Personal Products, Ltd. Adobe, Adobe logo, and Acrobat are trademarks of Adobe Systems Incorporated in the United States and other countries. All other product, brand, or trade names used in this publication are the trademarks or registered trademarks of their respective trademark owners. © 2008 NEC Australia All rights reserved by NEC Australia. 0318-00002 Ver. 2.0 Dec 2008 1. Notes on Use Use the following information to help ensure proper and safe operation of this product. Before using this product, read this manual carefully and take note of cautions.

Keep this manual at hand for reference. The following symbols are used in this manual to indicate a potential for personal injury or damage to the product.

WARNING Indicates there is a risk of death or serious personal injury. Indicates there is a risk of personal injury or property damage. **CAUTION** The following symbols indicate a potential for personal injury or property damage due to an improper operation.

Prohibited Attention to fire Attention to electric shock Attention to personal injury Attention to laser beam Attention to high temperature Indicates a prohibited action. Indicates there is a risk of fumes and/or a fire. Indicates there is a risk of electric shock. Indicates there is a risk of personal injury.

Indicates there is a risk of loss of eyesight due to laser beam.

Indicates there is a risk of product failure due to high temperature. Indicates an instruction to unplug the power cord. Unplug the power cord. Connect grounding conductor. Indicates an instruction to connect the grounding conductor. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page i 1.1. General Warnings If smoke, odour, noise, or abnormal heat is generated, immediately turn off ShieldPRO and disconnect the power plug from the outlet.

Remove the battery, if installed, after making sure that you can do so safely. Using the computer in such conditions may cause a fire, burns, and/or electric shock. Do not hold the power plug while your hands are wet. Failure to follow this warning may cause an electric shock. Do not touch the computer during a thunderstorm. Do not touch the computer, connected cables, and peripheral devices, or install/remove such devices when a thunderstorm is approaching. Failure to follow this warning may cause an electric shock due to lightning. Do not disassemble or modify the product. Failure to follow this warning may cause an electric shock, fumes, and/or fire. Do not place the product in a fire, apply excess heat, or short-circuit the terminal.

Failure to follow this warning may cause a fire, and/or explosion. Do not intentionally remove or damage any of the warning labels. Warning labels are attached to components to inform the user that a hazardous situation may arise when using the product. If you find any labels totally/partially removed or illegible due to damage, contact your ShieldPRO supplier. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page ii 1.2. Installation Environment Warnings The following precautions pertain to environmental requirements. Failure to follow these

warnings may cause an electric shock, fumes, and/or fire.

Do not install or use the product in a location where medical vapor is emitted into the air, and avoid contact between medical substances and ShieldPRO. Do not use the product in an environment where any liquid (such as water), metals, or other foreign substances may come in contact with the product. Do not use or store the product in a place of extremely high or low temperature or extreme temperature change. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page iii 1.3. Power Supply and Power Cord Warnings The AC adapter and AC cord are designed for use only with this product. The AC adapter may be damaged if it is connected to a device other than this product. The AC cord used with this product must be approved by an acceptable accredited agency responsible for evaluation in the country where the AC cord will be installed.

Do not connect the power cord to an outlet that has an illegal number of connections. The electric current exceeding the rated flow overheats the outlet, which may cause a fire. The AC cord shipped with this product can only be used for 240 VAC. Do not connect this AC cord to an outlet of which rating exceeds 250 VAC. Failure to follow this instruction may cause a fire and/or electric shock. Make sure the power plug is inserted into the outlet as far as possible. A halfway inserted power plug may cause a fire and/or an electric shock. Do not use this product if dust has accumulated on the AC power cord plug. If dust accumulates on the power plug, an electrical discharge occurs between plug pins and it may cause a fire. Always hold the plug of the AC cord upon its removal.

Do not pull the cord. Breaking the wire may cause a fire. Do not use the AC cord if the plug blades are unstable. Poor connection may cause a fire. Do not pull the AC cord forcibly or put heavy objects on it.

Breaking the wire may cause a fire and/or electric shock. The drip-proof and dust-proof performance of IP54 do not apply to the AC adapter and AC cord. Follow instructions described below when handling them to prevent fume, fire, and/or electric shock to occur. Do not drop or cause impact to the AC adapter.

Do not use the power cord when bent or twisted.

Do not forcibly bend the base of the power cord. Do not put any heavy object on the AC adapter or power cord. Do not wrap the AC adapter with cloth or other material. Do not use the AC adapter in a place where splashing of water or other liquids may occur. Do not use the AC cord and/or AC adapter if it is damaged. Do not put the AC adapter near a thermal appliance. Do not put the AC adapter in a place that experiences extreme temperature changes (for example, near the exhaust port of an air conditioner). Do not use the AC adapter near flammable gas and/or combustible substances. Do not put the AC adapter in a place where steam is generated (for example, in a kitchen or near a humidifier). Do not use the AC adapter in a place where salinity (for example, sea breeze) or a corrosive gas (for example, hot springs) is generated.

Use only the specified AC adapter and AC cord. Never attempt to disassemble or modify the AC adapter. Doing so may cause an electric shock, smoke, and/or fire. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page iv 1.4. Battery Warnings The provided battery is designed to be used with this product only. Do not use the battery for any other device. In addition, do not use any other battery than the provided battery for this product.

Failure to follow this instruction may cause a fire and/or electric shock. To charge the battery, install it in ShieldPRO or use dedicated charger (FC-N013: option).



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Charging using another method may cause a fire and/or electric shock. Do not short-circuit the battery. Doing so may cause a fire. Do not heat the battery or place it in or near flame. Doing so may cause a fire. Do not disassemble the battery. Doing so may cause a fire and/or an electric shock. Dispose of used batteries according to the instructions.

Do not drop the battery. Doing so may cause damage to the battery. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page v 1.5. Miscellaneous Warnings Any users with implantable cardiac pacemakers should distance this product from the pacemaker by 30 cm or more. Pacemakers may be influenced by radio waves radiated from this product. In any areas where medical agencies prohibit wireless LAN from being used, turn off the power of this product or disable the wireless LAN feature. Failure to follow this instruction may affect the function of medical equipment.

If traveling in an aeroplane where the use of wireless and electronic devices is prohibited, turn off the power of this product or disable the wireless LAN feature. This product may influence electronic devices. If this product causes radio disturbance to other devices during the use of a wireless feature, disable the wireless feature or stop using this product. Failure to follow this instruction may influence other devices and cause malfunction. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page vi 1.6. Caution During Operation Take care when installing or removing the peripherals to avoid injury to hands or fingers. The bottom face of this product gets hot during and immediately after operation.

Do not place it on your lap for a long time to avoid low-temperature burn injury. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page vii 1.7.

Miscellaneous Cautions After turning off the power of this product, wait for five seconds or longer before you turn the power on again. Turning on the power just after turn-off without a certain interval may cause a malfunction or fault to occur. To remove the AC adapter, first remove the plug from the power outlet and then disconnect the plug from the product. Removing the plugs in the reserve order may cause the AC adapter and/or this product to be damaged. Avoid handling the product while eating, drinking or smoking.

A floppy disk contaminated with cigarette ash may cause data read/write error or damage to the floppy disk drive. Do not use floppy disks and/or CD-ROMs that are dirty. Using a floppy disk dirty with sand, dust, and/or liquid (for example, water) may cause failure of the drive. When relocating the product, pay attention not to give an excessive shock and/or vibration as defined in environmental specification. If a shock and/or vibration given to the product exceed the environmental specification, the internal hard disk drive and/or other components may be damaged. Notes on storage Unplug the AC cord from the outlet if you do not use the product for an extended period. Do not leave any object made of rubber or vinyl in contact with the product. Do not wrap the product in a vinyl bag or leave rubber bands or the like on the product. Doing so may cause transformation of the product surface. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver.

2.0 Dec 2008 Page viii NOTES: 1) @@2) The contents of this manual may be revised without prior notice. 3) All efforts have been made to ensure the accuracy of all information in this manual. If you notice any part that is unclear, incorrect, or omitted in this manual, contact your ShieldPRO supplier. 4) NEC assumes no liability arising from the use of this product, nor any liability for incidental or consequential damage arising from the use of this manual regardless of Item (3) above. 5) This product is not intended for use or control in the facilities or devices concerning human lives, including medical devices, nuclear facilities and devices, aeronautics and space devices, transportation facilities and devices; and facilities and devices requiring high reliability. NEC assumes no liability for any accident resulting in personal injury, death, or property damage if this product has been used in the above conditions. To use this product in facilities and devices and/or control systems, take sufficient considerations for safety such as redundant configuration, fire delay measures, and malfunction prevention measures. 6) This product (including software) is intended to be sold and used only in Australia. NEC Australia does not support maintenance service and technical support in any country outside Australia.

7) The components used in this product may be changed with equivalent components to maintain long-term supply. 8) The operating system (Windows® XP) pre-installed in the internal hard disk drive and CD-ROMs provided with the product can be used for this product only. 9) It is piracy to replicated by the constraints posed by the safety directors of such environments. The use of wireless devices on aeroplanes is governed by the Federal Aviation Administration (FAA). The use of wireless devices in hospitals is restricted to the limits set forth by each hospital.

1.12.2. Antenna Use In order to comply with FCC RF exposure limits, low gain integrated antennas should be located at a minimum distance of 20 cm (8 inches) or more from the body of all persons. High-gain, wall-mount, or mast-mount antennas are designed to be professionally installed and should be located at a minimum distance of 30 cm (12 inches) or more from the body of all persons.

Please contact your professional installer, VAR, or antenna manufacturer for proper installation requirements. 1.12.2.1. Explosive device proximity warning WARNING Do not operate a portable transmitter (such as a wireless network device) near unshielded blasting caps or in an explosive environment unless the device has been modified to be qualified for such use. 1.12.2.2.

Antenna warning WARNING To comply with the FCC and ANSI C95.1 RF exposure limits, it is recommended for the equipment installed in ShieldPRO, that the antenna for this device be installed at a distance of at least 20 cm (8 inches) from all persons and that the antenna must not be co-located or operating in conjunction with any other antenna or radio transmitter. It is recommended that the user limit exposure time if the antenna is positioned closer than 20 cm (8 inches). WARNING ShieldPRO series products are not designed for use with high-gain directional antennas. Use of such antennas with these products is illegal. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page xiv 1.12.2.

3. Use on aircraft caution CAUTION Regulations of the FCC and FAA prohibit airborne operation of radio-frequency wireless devices because their signals could interfere with critical aircraft instruments.



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1.12.2.

4. Local restrictions on 802.11a, 802.11b, and 802.11g radio usage Due to the fact that the frequencies used by 802.

11a, 802.11b and 802.11g wireless LAN devices may not yet be harmonised in all countries, 802.11a, 802.11b, and 802.11g products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use. CAUTION 1.12.2.

5. USA: Federal Communications Commission (FCC) This device complies with Part 15 of the FCC Rules. Operation of the device is subject to the following two conditions: This device may not cause harmful interference. This device must accept any interference that may cause undesired operation. NOTE: The radiated output power of the wireless network device is far below the FCC radio frequency exposure limits. Nevertheless, the wireless network device should be used in such a manner that the potential for human contact during normal operation is minimised. To avoid the possibility of exceeding the FCC radio frequency exposure limits, you should keep a distance of at least 20 cm between you (or any other person in the vicinity) and the antenna that is built into the computer. 1.12.2.

6. Europe frequency bands 2.400 - 2.4835 GHz (Europe ETSI) 5.15 - 5.

35 GHz and 5.47-5.725 GHz (Europe ETSI) Low band 5.25 - 5.35 GHz is for indoor use only 5.

47 - 5.725 GHz is current not allowed in Czech Republic and France. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002

Ver. 2.0 Dec 2008 Page xv 1.13. Telephone Line Connection Federal Communications Commission (FCC) This equipment complies with Part 68 of the FCC rules. On the bottom of ShieldPRO is a label that contains among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company. Any plug or jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA.

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. If this NEC equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice isn't practical, the telephone company will notify the customer as soon as possible. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary. If trouble is experienced with this NEC equipment, and for repair or warranty information, please contact your ShieldPRO supplier.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service. Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information. There are no user serviceable parts contained in this equipment.

NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page xvi 1.14. Transfer to Third Party The following must be observed when you transfer (or sell) the product or software provided with the product to a third party.

In addition, be sure to include this User's Guide when you transfer (or sell) the product to a third party. 1.14.1. About data on the hard disk drive Be sure to take appropriate measures not to disclose important data (for example, customers' information or companies' management information) on the hard disk drive to be transferred to any third parties. Data appears to be erased when you empty the "Recycle Bin" or execute the "format" command of the operating system. However, the actual data remains written on the hard disk drive. Data not erased completely may be restored by special software and used for unexpected purposes. It is strongly recommended that the Hard Disk Erase feature in BIOS SETUP menu or the software or service for data erasure (both available at stores) should be used in order to avoid the trouble explained above. NEC shall not assume any liability for such data disclosure caused by your failure to take the necessary measures.

1.14.2. Provided software To transfer or sell any software that comes with the product to a third party, the following requirements must be satisfied: All provided software must be transferred and no backup copies must be retained. Transfer requirements listed in the "Software License Agreement" that comes with the software must be satisfied. Software that is not approved for transfer must be uninstalled before transferring the product. 1.14.3. Disposal of Consumed Parts and Equipment Consult with your ShieldPRO supplier for disposal of the product and optional devices.

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Symbols in the Text This manual uses the following symbols: Symbol Description If the handling information is ignored, the product may be damaged, software used in the product may malfunction, and/or the data created by the user may be corrupted. If the handling information is ignored, the product may be damaged and/or software used in the product may not operate normally. This manual also uses the following symbols. Symbol Description Supplement of the text. Reference page.

NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page xviii 2.2. Typographical Conventions Concerning Keyboard Operation Example: Press Enter to exit. Keyboard keys are represented in bold-faced letters. When several keys are combined, it is indicated using the plus sign (+), press and hold the first key, press another key, and then release all the keys. An illustration may be used to indicate keys.

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0 Dec 2008 Page 1 Item Tablet button USB (Note 16) Serial Display Interface (Note 13) Network Built-in LAN Wireless LAN ShieldPRO FC-N21S (Note 1) 10 (5 buttons and 5 Tb + buttons) (Note 15) 3 ports (including 1 connect/disconnect-proof enhanced port), USB2.0 compatible 1 DB9 connector of 115,200 bps max. (male) Mini DB15 connector (female) (for analog RGB monitor) 1 RJ45 LAN connector (1000BASE-T / 100BASE-TX / 10BASE-T) Conforming to IEEE802.11a/b/g (Note 17) WEP [encryption key length: 64/128 bits (user setting key length: 40/104 bits)], WPA-PSK (TKIP/AES) and WPA2-PSK (AES) compatible Built-in modem (Note 18) 1 RJ11 modular connector Modem: 56k bps max. (Note 19) (V.90/V.92 compatible) FAX: 14.4k bps max. (V.17 compatible) Sound feature Built-in PCM record/replay feature and monaural speaker Microphone input (stereo, mini jack) and output common to headphone/line (stereo, mini jack) PC card slot (Notes 13 and 20) SD card slot (Notes 13 and 20) Security feature Finger print sensor Power management 1 Type I/II slot (Type III unavailable) conforming to PC Card Standard and compatible with CardBus 1 slot Security software included as standard (Note 21) Customised Order Option: Built-in type (line type) Authentication by fingerprint at OS logon or release of screen saver Automatic or arbitrary settings enabled (including CPU control, hard disk control, monitor power saving, suspend (standby) feature and hibernation) Power supply Computer Battery (Notes 22 and 23) Operating voltage: 16 VDC \pm 5 Standard type: Operating period - 8 hours, charging time (in power-on state about 3 hours and in power off states - 3 hours) Weight: 0.

3 kg AC adapter Input: 100 to 240 VAC \pm 10%, 1.5A, 50/60 Hz Output: 16V DC, 4.5A Conforming standard Suitable to RoHS direct and conforming to VCCI Class B. Designed based on EMC direct (EN55022 and EN61000-6-2) (Note 24) and low voltage direct (EN60950-1) (Note 24) standards. Power design based on standard UL60950-1 NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 2 Item ShieldPRO Power consumption Energy efficiency (Power saving achievement rate) Outside dimension Weight Installed OS ShieldPRO FC-N21S (Note 1) 15 W in normal use (50 W maximum.) Target year: 2005 (Note 25), S division 0.00025 (AAA) Target year: 2007 (Note 26), I division 0.0020 (A) 284(W) \times 255(D) \times 48(H) mm (excluding projections and bumper) Approx 2.

5 kg (including standard battery) Microsoft Windows XP Professional (Service Pack 2) NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 3 NOTES: 1. 2. See "4. 2 Selection Menu Table" for type names and numbers. ShieldPRO includes a control feature enabling the CPU to operate dynamically depending on use in different environments and under different loads. In any Operating System environment other than the one preinstalled, the expanded IntelSpeedStep feature may be unavailable. The security chip is unavailable to any Operating System other than the preinstalled Windows XP Professional. The standard ShieldPRO is provided with 1GB memory board.

Expanded RAM board FC-UG-M013 (1GB, PC2-4200) is available. Only one slot is available for expanded RAM. Hence the maximum RAM is the standard 1GB plus one expanded RAM card of 1GB in the second slot. The LCD display is manufactured using extremely precise technology. However, dot drops (such as tiny black points and red, blue or green points) may appear on a part of the screen. In addition, colour and/or brightness irregularities may appear depending on view angles. These are caused by characteristics of LCD displays and do not indicate any defects. The touch panel feature is unavailable if the USB Controller is disabled in BIOS Setup The base dot drop rate is calculated in sub-pixels according to the standard of ISO13406-2. An external display screen may be different from the LCD display of ShieldPRO. 16.

77 million colour display is accomplished by the dithering feature of graphic accelerator. The resolution and number of colours available will depend on the resolution and refresh rate of the connected display. The LCD display on ShieldPRO can display the same screen as an external display connected to ShieldPRO. However, if the enlarged display feature is not used, displayed data may not extend over the entire screen of the external display. Evaluate any commercial product that will be used for ShieldPRO to confirm that the product is valid. The standard English keyboard is only available for the Windows XP Professional (Service Pack 2) pre-installed model. Each tablet button can be set to launch any application loaded in ShieldPRO. Any software using peripherals connected to ShieldPRO must use the USB interface. ShieldPRO is equipped with a wireless LAN module obtaining Wi-Fi standard of the Wi-Fi Alliance. The communication speed and distance may be affected by various factors including connected devices, radio wave environment, surrounding obstacles, installation environment, user situation, or application software.

OS. IEEE802.11b/g (2.4 GHz) is not compatible with IEEE802.11a (5 GHz).

The wireless LAN is not suitable for Super AG and Atheros XR (extended Range). The wireless LAN (5 GHz) conforms to IEEE802.11a The wireless LAN (5 GHz) can only be used indoors due to relevant radio laws. 3. 4.

5. 6. 7. 8. 9. 10. 11. 12. 13. 14.

15. 16. 17. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 4 i) Disable the wireless LAN feature when abroad as it may conflict with related laws in international countries 18. The communication speed may vary depending on line status. The built-in fax modem can only be used with the general subscriber phone line. The maximum data transfer rate is 56k bps for data receive, or 33.6k bps for data transmission.

PC and SD cards are not included with ShieldPRO. Refer to "7 Installing OS and Applications" for supporting Operating System of the attached security software. The battery operating and charging times may be different from those specified depending on situations in which the battery pack is used. The battery pack is a consumable. If the long driving mode is selected on the BIOS Setup Menu, the CPU operation performance is in the low mode.

The battery operating time is measured based on the JEITA battery operation time measurement method (Ver. 1.0). The time varies depending on operating environments, brightness of LCD display and system settings. These standards are required for CE marking.

The energy consumption efficiency is obtained by dividing the power consumption measured based on the measurement method defined by the Rationalization in Energy Use Law (target year: 2005) by the composite theory performance defined by the Rationalization in Energy Use Law. Power saving achievement rates A, AA and AAA means achievement rates equal to or larger than 100% and less than 200%, equal to or larger than 200% and less than 500% and equal to or larger than 500%, respectively.



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The energy consumption efficiency is obtained by dividing the power consumption measured based on the measurement method defined by the Rationalization in Energy Use Law (target year: 2007) by the composite theory performance defined by the Rationalization in Energy Use Law. Power saving achievement rates A, AA and AAA means achievement rates equal to or larger than 100% and less than 200%, equal to or larger than 200% and less than 500% and equal to or larger than 500%, respectively. 19. 20. 21. 22. 23. 24.

25. 26. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 5 4.2. Selection Menu Table Selection menu Keyboard OS Memory capacity Disk drive and battery Wireless LAN and fingerprint authentication [1] Wireless LAN: Yes Fingerprint authentication: No [2] Wireless LAN: No Fingerprint authentication: No Series title Base unit FC-N21S CPU Intel Core Solo Processor Ultra-low voltage ver. U1400 (1.2 GHz) Memory (2 slots) PC card (1 slot) SD card (1 slot) [B] Standard keyboard [Y] [0] Windows XP 1GB Professional (1GB × 1) (Service Pack2) English ver. preinstalled (Note 1) [5] 2GB (1GB × 2) [B] Standard HDD (SerialATA spec. , 60GB) Standard battery Part name Model name Part number NOTES: 1) The key assignments are based on the Standard English keyboard layout. * The part number of ShieldPRO can be found on the base of the unit. The Windows XP pre-installed model of ShieldPRO already has Microsoft Windows XP Professional Operating System (Service Pack 2) installed. Note that deleting and down-grading of Service Packs is disabled. First partition: 20GB (NTFS) (Software already installed at shipment occupies about 5GB in the first partition.)) Second partition: Remaining memory (NTFS) NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 6 4.3. Item Environmental Specification (Main Unit) Condition Installation of standard hard disk drive and battery Operating Storage Evaluation standard 5 to 45 °C -40 to 70°C IEC 68-2-1,2,14 / MIL-STD-810F, Method 501.4, 502.4 5 to 95% RH (without condensation) 5 to 95% RH (without condensation) IEC 68-2-30 / MIL-STD-810F, Method 507.4 15,000 ft (4,572 m) 40,000 ft (12,190 m) 2,000 ft/min (609.6 m/min) IEC 68-2-13 / MIL-STD-810F, Method 500.4 147 m/s², 11 ms, half sinusoidal wave 490 m/s², 11 ms, half sinusoidal wave IEC 68-2-27 / MIL-STD-810F, Method 516.5 [Sinusoidal wave] 0.075 mm (0-P) in frequency range 10 to 55 Hz 2 9.8 m/s (0-P) in frequency range 55 to 500 Hz [Sinusoidal wave] 0.15 mm (0-P) in frequency range 10 to 55 Hz 2 19.6 m/s (0-P) in frequency range 55 to 500 Hz 2 [Random wave] 0.04G /Hz in frequency range 20 to 1000 Hz 6 dB/Octave in frequency range 1000 to 2000 Hz Operating Storage Sinusoidal wave: IEC68-2-6 Sinusoidal wave: IEC68-2-6 Random wave: MIL-STD-810F, Method 514.5 Category 24 FIGURE 514.5C-17 IP54 IP54 IEC 529 / MIL-STD-810F Temperature Humidity Operating Storage Evaluation standard Altitude Operating Storage Change rate Evaluation standard Shock resistance (Note 1) Operating Storage Evaluation standard Vibration resistance (Note 1) Operating Storage Evaluation standard Dust proof and drip proof Operating Storage Evaluation standard IEC: Abbreviation for International Electrotechnical Commission. MIL: Abbreviation for Military Specifications and Standards. NOTE 1: The vibration resistance of ShieldPRO does not assure that it has sufficient strength against resonance generated when the frequency of added vibration is close to the natural frequency of ShieldPRO. * ShieldPRO may not operate continuously under the described environmental conditions in which ShieldPRO is installed. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 7 In addition, if ShieldPRO is equipped with one or more NEC or commercial options, the most severe environmental condition among those for ShieldPRO and the options is applied. While ShieldPRO is stored in a place at ambient temperature of 0°C or lower, the clock in ShieldPRO may drift. Set the clock the next time ShieldPRO is used. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 8 4.4. Exterior View ShieldPRO can be used as a notebook or tablet PC. ShieldPRO has several characteristics including its light weight, various security features and installation of touch panel to enhance user-friendliness. The hard disk drive, expanded RAM board and battery pack can be replaced, and are accessible on the base of ShieldPRO. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 9 4.5. Names and Features of ShieldPRO (8) (1) (5) (2) (6) (7) (9) (3) (4) (10) (11) (12) (13) 4.5.1. No. (1) (2) (3) (4) (5) Inner panels Name LCD display (with touch panel) Power lock switch Power switch Fingerprint sensor Tablet buttons Description 12.1-in. TFT LCD display. Locks the power switch to prevent the switch from being set unintentionally (enabled by BIOS setting). Allows you to turn on/off power. Reads fingerprint (Customised Order Option). Allows the security, screen rotation and LCD brightness adjustment features to be executed directly. You can assign any key codes to these buttons through BIOS. 118 41 Reference page 49 90 (6) (7) (8) Keyboard Touch pad Wireless LAN antenna Used for wireless LAN. 42 42 55 NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 10 No. (9) Name Power lamp Description While power is supplied to ShieldPRO, the lamp illuminates or blinks in several colors as described below: Solid green: Power-on status Blinking green: Suspend (standby) status Solid yellow: Low battery level (7% to 10% of the full level) Blinking yellow: Low battery level in suspend (standby) state (7% to 10% of the full level) Solid orange: Extremely low battery level (0% to 6% of the full level) Blinking orange: Extremely low battery level in suspend (standby) state (0% to 6% of the full level) OFF: Power-off or not in use Reference page 23 (10) Battery charge lamp Indicates battery status. OFF: Discharging during battery refresh, or full discharged and no AC adapter or full charge completed Solid orange: Charging Blinking orange: Occurrence of error 35 (11) Disk access lamp Lit in green indicates built-in HDD activity. - (12) Caps lock key lamp Indicates whether the caps lock feature is enabled or disabled. Solid green: Caps lock feature enabled OFF: Caps lock feature disabled Press the Caps Lock button to toggle between the two states 42 (13) Numeric lock key lamp Indicates whether the numeric lock feature is enabled or disabled. Solid green: Numeral lock feature enabled OFF: Numeral lock feature disabled Press the Fn+ Num Lk button to toggle between the two states 42 1 NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver.



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5.2. Outside sections [Rear view] [Bottom view] (1) (2) (3) (4) (5) (6) (8) (9) (10) [Top view] [Left side view] (7) [Right side view] (11) (12) (13) (14) (15) (16) No. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) Name Power terminal Microphone terminal (stereo) Output terminal common to line and headphone (stereo) Antitheft lock Description Connects with the AC adapter. (17) (18) (19) Reference page 32 65 65 126 51 58 21 Connects with a commercial microphone (stereo and mini jack type) Outputs sounds to a commercial audio device or headphone (stereo and mini jack type) Connects with a commercial security cable.

External monitor output connector Connects with an external analog RGB monitor. Serial connector LCD display fixing lock Stylus storage area Battery storage area Disk drive storage area Expanded memory storage area Built-in speaker (monaural) Connects with a serial device such as a modem. Locks the LCD display. Stores the attached stylus. Stores the attached battery. Stores disk drives (installed). Stores expanded RAM board. Monaural speaker for sound replay. 34 131 127 65 NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.

0 Dec 2008 Page 12 (13) (14) (15) (16) (17) (18) (19) USB connector (1) (Connect/disconnect-proof enhanced type) USB connector (2) USB connector (3) SD card slot PC card slot Modular connector for phone line LAN (1000BASE-T) connector Connects with a USB device (USB2.0 available). Connects with a USB device (USB2.0 available). Connects with a USB device (USB2.0 available). Accepts an SD card. Accepts a PC card (PCMCIA of type II) Connects with phone line (2 Wire). Connects with LAN (1000BASE-T/100BASE-TX/10BASE-T) cable. 59 59 59 63 61 52 53 NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver.

2.0 Dec 2008 Page 13 4.6. Installation Notes This section provides notes on how to install and connect ShieldPRO and peripherals. 4.

6.1. Notes on installation location Install ShieldPRO in a place where it can be operated properly. See "4.7 Use of ShieldPRO in an Industrial Environment" for details.

4.6.2. Notes on operation 1. Before connecting or disconnecting cables to/from peripherals, make sure that power to ShieldPRO is OFF. Connecting or disconnecting cables to/from a peripheral with ShieldPRO ON may cause a malfunction or fault to occur. 2. After turning off ShieldPRO, wait for five seconds or longer before turning the power on again. Turning on the power immediately after turning it off may cause a malfunction or fault to occur. 3.

Clean ShieldPRO periodically. 4.6.3. Notes on operational environment 1. ShieldPRO is VCCI Class B information technology equipment (or information equipment mainly intended to be used in household environments) conforming to the reference level of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). 2. If ShieldPRO is used near a radio, TV and/or wireless device, ShieldPRO may cause poor reception. Also a device generating intense magnetic field located near ShieldPRO may cause ShieldPRO to operate improperly. If this occurs, move ShieldPRO away from the device.

3. To use ShieldPRO in an industrial environment, always ensure ShieldPRO meets the conditions described in "4.3 Environmental Specification (Main Unit)". 4.6.

4. Notes on cable connections 1. Use cables authorised by NEC. 2. To connect peripheral devices to ShieldPRO, use appropriate cables with connector shapes and signal alignments meeting those of ShieldPRO and the peripheral devices.

3. Do not pull cables forcefully or put objects on cables. 4. Install peripheral devices at locations where cables connected to the devices may not be pulled excessively. Avoid using ShieldPRO if cables are stretched and/or objects are put on cables. 5. Insert connectors securely. Inserting connectors loosely may cause ShieldPRO and peripheral devices not to operate at all or operate deficiently. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.

0 Dec 2008 Page 14 4.6.5. Notes on handling of HDD Hard disk drives are precision devices. ShieldPRO has buffer materials to protect the hard disk drive, however, note the following to protect data: Do not apply shocks and vibrations exceeding those defined in the environmental specification to ShieldPRO.

Ensure the hard disk drive is not subject to strong shocks when the drive is removed from ShieldPRO. 4.6.6. Notes on handling of devices sensitive to magnetism (including floppy disks) A magnet to sense opening or closing of the LCD display panel is contained at the upper left corner of the panel. The magnet may destroy data saved in magnetic media. Do not put devices sensitive to magnetism (including floppy disks) close to the magnet. Magnet NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 15 4.

7. 4.7.1. Use of ShieldPRO in an Industrial Environment Dust-proof and Drip-proof Performance ShieldPRO is designed to have high seal performance to prevent liquid and dust from getting into it from external sources.

ShieldPRO can be used outdoors if it rains and can be handled with wet and/or dirty hands. With optional dust-proof and drip-proof cables (FC-N015/FC-N016), ShieldPRO has drip-proof and dust-proof performance conforming to IP54 when connecting with one or more external devices. 4.7.1.1. Dust-proof performance Protection class IP5x means that a device cannot completely avoid entry of dust but that some dust does not interrupt the defined operations and safety of the device. To make dust-proof performance effective, the connector, HDD, battery and memory covers must be closed properly. 4.7.

1.2. Drip-proof performance Protection class IPx4 means that a device is not affected by spray from any angle (by a spray nozzle). Ensure ShieldPRO is not left wet for a long period. If it is wet, wipe and dry with a cloth. To ensure drip-proof performance, the connector, HDD, battery and memory covers must be closed properly. Always operate ShieldPRO with its base facing downward. Use optional drip-proof cables to connect to the power connector and the LAN and serial ports. For other ports, use connectors with their covers closed securely. 4.

7.2. Operating Temperature Range The 'wide temperature type' ShieldPRO can operate in the temperature range between -20°C and 50°C while of the standard ShieldPRO operates in the temperature range between 5°C and 45°C. To allow ShieldPRO to be used in the wide temperature range (20 to 50°C), the main unit, HDD and battery all should be in the wide temperature range. In a high temperature environment, the main unit may become hot.

If so, wear gloves so that hands do not contact the unit directly. To suppress heat generation, the performance of ShieldPRO may be restricted automatically.



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In an environment at a low temperature, the battery driving time is shortened. When ShieldPRO is in the tablet mode or the battery charging state, the AC adapter should be used in NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.

0 Dec 2008 Page 16 ambient temperature range 5 to 40°C. In addition, the LCD display may respond slower than normal. 4.7.3. Shock Resistance The chassis of ShieldPRO is made of magnesium die-cast alloy and equipped with a hard disk drive designed for shock resistance. ShieldPRO has been designed to endure a drop test from a height of 90 cm to a plywood or concrete floor. The shock resistance of ShieldPRO does not guarantee that no damage or faults will occur. If ShieldPRO is damaged by shock, it may have reduced dust-proof and drip-proof performance as well as shock resistance. Accordingly, it is recommended to repair ShieldPRO immediately when damaged.

4.7.4. Continuous Operation of ShieldPRO for Long Periods If ShieldPRO is operated continuously for a long period, the lifespan of parts in ShieldPRO may be reduced. Therefore, NEC may charge for the repair of ShieldPRO within the warranty period if subjected to continuous operation for a long period. If a hard disk drive (HDD) is used, rest the HDD periodically to reduce deterioration caused by continuous operation. To rest the hard disk drive, the power management may be set by the OS (Windows) to halt the HDD automatically if access to the hard disk does not occur for a certain period: Period set at shipment: 30 minutes (when ShieldPRO is connected to AC power) Recommended period: 3 minutes (when ShieldPRO is connected to AC power) NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 17 4.8.

4.8.1. Cleaning Preparation for Cleaning Use dry and clean cloths made of soft materials to clean ShieldPRO if dirt is minimal. To clean more stubborn dirt, use clean cloths soaked with water or lukewarm water and wrung to remove excess water.

Do not use volatile organic solvents including thinner and benzene or chemical rags to clean ShieldPRO. Failure to follow this instruction may cause the exterior casing to be damaged or a fault to occur. Do not pour excessive amounts of water on ShieldPRO directly. Failure to follow this instruction may cause ShieldPRO to be damaged. 4.

8.2. 4.8.2.1. Cleaning Components Main unit, touch pad and keyboard 1. Wipe the main unit, touch pad and keyboard with the prepared cloths. 2. If dust is in the gaps in the keyboard, remove it by using commercial computer cleaner.

3. If dust cannot be removed, contact your ShieldPRO supplier. 4.8.2.2. LCD display Wipe the LCD display with a soft, dry and clean cloth. Do not use a wet cloth. 4.8.

2.3. Power cord and AC adapter If ShieldPRO is left connected to the power cord and/or AC adapter, dust and dirt may accumulate on the connected plugs. Remove the dirt periodically. 4.

8.2.4. Fingerprint sensor (option) The fingerprint sensor is touched directly and therefore may pick up dirt from fingers and may not operate properly Wipe the fingerprint sensor lightly with a soft, dry and clean cloth to remove dirt. Do not use volatile organic solvents including thinner and benzene and chemical rags to clean the fingerprint sensor.

Do not use a sharp object such as a ballpoint pen to clean the fingerprint sensor. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 18 4.9. Carriage and Storage of ShieldPRO Follow the procedure below if ShieldPRO is to be carried or stored: Back up important data stored in the hard disk. Close and latch all the covers when you transport ShieldPRO. 1. Turn off the power of ShieldPRO. 2.

Disconnect the AC adapter. To pull out a cord, be sure to hold the plug. Pulling the cord itself may cause a break in the cord from the plug and electric shock or fire may occur. 3. Remove all cables connected to ShieldPRO. 4. Remove the battery. 5. Package ShieldPRO securely so that it can not be damaged. Minimise shock and vibration during transportation.

4.9.1. Storage of ShieldPRO Remove the battery from ShieldPRO if it will be stored for a long period. Do not store the battery in a place where the temperature may exceed 60°C.

This can cause deterioration of the battery. Store the battery in the following temperature ranges: -20 to 60°C for storage for a month or shorter -20 to 45°C for storage for three months or shorter -20 to 20°C for storage for a year or shorter Do not leave the battery for three months or longer without recharging. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 19 4.

10. Disposal of Devices For disposal of ShieldPRO, hard disk drives and options, contact your ShieldPRO supplier. See "5.5.5 Recycling Batteries" for disposal of the battery. Do not put the battery close to fire or soak it with water. Failure to follow this instruction may cause the battery to catch on fire, fume or explode. NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 20 5.

Using the ShieldPRO Computer 5.1. 5.1.1. Opening and Closing the LCD Display Panel Opening the LCD Display Panel 1. Pull up latch A (refer to picture below) and unhook latch B. 2. Open the LCD display panel. Pull up latch A Unlatch latch B Latch B Latch A 5.

1.2. Closing the LCD Display Panel 1. Align the guide supports on the base unit to the guides on the LCD display panel and close the panel. Guides on display panel Guide supports on base unit 2.

Pull up latch A. 3. Hook latch B onto the LCD display panel and push down latch A to securely close. Hook latch B on the position. If latch B is hooked improperly, check if the guide on the LCD display is aligned with the guide support on the base unit.

NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 21 5.2. 5.2.1. Tablet Mode Changing to Tablet Mode 1. Open the LCD display panel to a 90° angle. 2.

Rotate the LCD display panel clockwise by Do not rotate the LCD display panel clockwise by more than 180°. Do not rotate the LCD display panel anti-clockwise. 180°. 3. Align the guides on the display panel with the supports on the base unit and close the panel guide with the LCD display facing upward. 4. Pull up latch A. 5. Hook latch B onto the LCD display panel and push down latch A to securely close the display panel. If latch B is hooked incorrectly, check if the guide on the LCD display is aligned with the guide support on the base unit.

NEC ShieldPRO FC-N21S Ruggedised Notebook Computer User's Guide 0318-00002 Ver. 2.0 Dec 2008 Page 22 5.3. Power Functions This section describes how to switch ShieldPRO on and off, and how to use the power saving features including suspend (standby) and hibernate states.



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