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VRC 40xx/50xx

symbol®

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Patents
This product is covered by one or more of the following U.S. and foreign Patents:
U.S. Patent No. 4,460,120; 4,496,831; 4,593,186; 4,603,262; 4,607,156; 4,652,750; 4,673,805; 4,736,095; 4,758,717; 4,816,660; 4,845,350; 4,896,026; 4,897,532; 4,923,281; 4,933,538; 4,992,717; 5,015,833; 5,017,765; 5,021,641; 5,029,183; 5,047,617; 5,103,461; 5,113,445; 5,130,520; 5,140,144; 5,142,550; 5,149,950; 5,157,687; 5,168,148; 5,168,149; 5,180,904; 5,216,232; 5,229,591; 5,230,088; 5,235,167; 5,243,655; 5,247,162; 5,250,791; 5,250,792; 5,260,553; 5,262,627; 5,262,628; 5,266,787; 5,278,398; 5,280,162; 5,280,163; 5,280,164; 5,280,498; 5,304,786; 5,304,788; 5,306,900; 5,321,246; 5,324,924; 5,337,361; 5,367,151; 5,373,148; 5,378,882; 5,396,053; 5,396,055; 5,399,846; 5,408,081; 5,410,139; 5,410,140; 5,412,198; 5,418,812; 5,420,411; 5,436,440; 5,444,231; 5,449,891; 5,449,893; 5,468,949; 5,471,042; 5,478,998; 5,479,000; 5,479,002; 5,479,441; 5,504,322; 5,519,577; 5,528,621; 5,532,469; 5,543,610; 5,545,889; 5,552,592; 5,557,093; 5,578,810; 5,581,070; 5,589,679; 5,589,680; 5,608,202; 5,612,531; 5,619,028; 5,627,359; 5,637,852; 5,664,229; 5,668,803; 5,675,139; 5,693,929; 5,698,835; 5,705,800; 5,714,746; 5,723,851; 5,734,152; 5,734,153; 5,742,043; 5,745,794; 5,754,587; 5,762,516; 5,763,863; 5,767,500; 5,789,728; 5,789,731; 5,808,287; 5,811,785; 5,811,787; 5,815,811; 5,821,519; 5,821,520; 5,823,812; 5,828,050; 5,850,078; 5,861,615; 5,874,720; 5,875,415; 5,900,617; 5,902,989; 5,907,146; 5,912,450; 5,914,478; 5,917,173; 5,920,059; 5,923,025; 5,929,420; 5,945,658; 5,945,659; 5,946,194; 5,959,285; 6,002,918; 6,021,947; 6,036,098; 6,047,892; 6,050,491; 6,053,413; 6,056,200; 6,065,678; 6,067,297; 6,068,190; 6,082,621; 6,084,528; 6,088,482; 6,092,725; 6,101,483; 6,102,293; 6,104,620; 6,114,712; 6,115,678; 6,119,944; 6,123,265; 6,131,814; 6,138,180; 6,142,379; 6,172,478; 6,176,428; 6,178,426; 6,186,400; 6,188,681; D305,885; D341,584; D344,501; D359,483; D362,453; D363,700; D363,918; D370,478; D383,124; D391,250; D405,077; D406,581; D414,171; D414,172; D418,500; D419,548; D423,468; D424,035; D430,158; D430,159; D431,562; D436,104.
Invention No. 55,358; 62,539; 69,060; 69,187 (Taiwan); No. 1,601,796; 1,907,875; 1,955,269 (Japan).
European Patent 367,299; 414,281; 367,300; 367,298; UK 2,072,832; France 81/03938; Italy 1,138,713.
rev. 04/01

Introduction

The VRC System is a rugged, fixed or vehicle-mounted, PC-compatible computer. All VRC systems provide a touchscreen, full SVGA display (either electroluminescent or color LCD), multiple network options and full I/O capability. Each VRC system is fully PC-compatible with the MS-DOS Version 6.22, Windows 98, Windows 2000 and Windows NT operating systems. The VRC 50xx is equipped with a heater and NEMA 4/IP66 rating.

- The fixed-mounted terminal can be hardwired to a local area network (LAN) using either standard Ethernet or Token Ring connections. It can also be equipped with wireless (RF) network communications if a hard-wired LAN is not practical.
- The vehicle-mounted terminal is powered from the vehicle's battery through a power converter. It uses Symbol's Spectrum 24 2.4 GHz spread-spectrum radio link to communicate with (RF) network access points hard-wired to the LAN. Antenna options include patch and "rubber duck" types.

About this Guide

This guide provides instructions for the following:

- "Parts of the VRC" on page 3
- "Accessories" on page 4
- "Basic operation" on page 4
- "Connector Pinout" on page 6
- "Troubleshooting" on page 7
- "Service" page 7
- "Regulatory information" on page 8
- For information on installation, refer to the *VRC 4000 Series Installation Guide* (p/n 70-32536-xx). For more detailed information on any of these topics, refer to the *VRC 4000/5000 Product Reference Guide* (p/n 70-19725-xx).

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Parts of the VRC

Front Panel

The VRC front panel consists of a gasketed touchscreen mounted over a flat-panel video display. Operate the VRC by touching the screen to activate functions and initiate actions.

All touchscreen/display combinations operate in a similar manner. The type of display provided in your particular VRC model is matched to the specific requirements of your application, including ambient lighting, available viewing angle and environmental extremes.

Rear Panel

All cabled connections are made through the rear panel, with the exception of the RF connection in wireless communication-equipped systems.
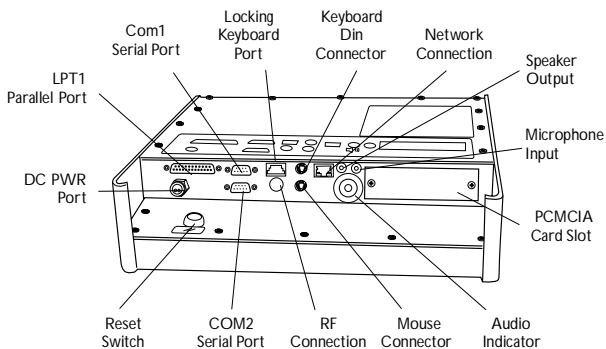
VRC 4000 Rear Panel

2
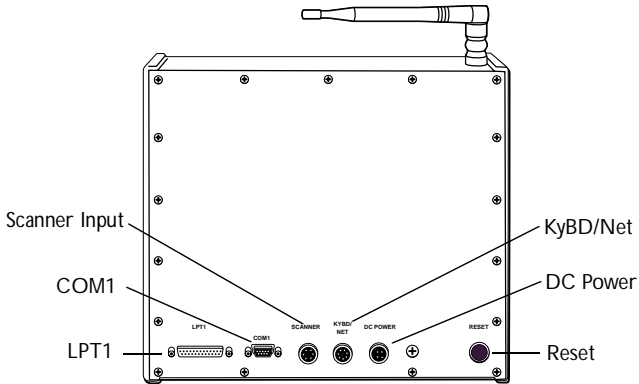
VRC 5000 Rear Panel

Accessories

The VRC is supplied with:

- Antenna (required for wireless configurations)
- This *Quick Reference Guide*

Items Sold Separately

- Power supply (AC to DC, DC to DC, UPS, and NEMA)
- Mounting Brackets (required for vehicle mounting only)
- Floppy Drive (Floppy-BP-MOD2)
- CD ROM (Backpack-CD-ROM)
- External NEMA keyboard (p/n 11NSSO203-0300)
- Software manual (p/n 70-19723-xx)
- Product Reference Guide (p/n 70-19725-xx)
- Installation Guide (p/n 70-32536-xx)

  Note: Part numbers may change without notice.

Basic Operation

Power Up

Before powering up the VRC for the first time, be sure it is securely mounted and all cable and peripheral connections have been made and are secure.

Caution:	In freezer applications, do not power up the VRC with color display in the cold environment. This can damage the fluorescent bulbs.

Caution:	To power up the VRC, plug the wall-mounted power supply into a surge-protected 110V AC outlet.

Caution:	To eliminate potential damage to the VRC, remove the power supply from the wall outlet before connecting or disconnecting the power supply to the rear panel.

The VRC does not have an ON/OFF switch. Both models power up immediately when they receive incoming electrical power. **It is important to make all peripheral connections BEFORE powering up the VRC.**

Booting-Up

Upon receiving electrical power, the VRC boots up immediately with no action required. On power up, the VRC conducts a power-on self-test, runs the hardware initialization program, and then boots DOS. (If your system does not boot, or does not have a factory-installed version of DOS, refer to *Installing the DOS Operating System* in the *Product Reference Guide*.) The system then processes the config.sys and autoexec.bat start-up files from

the boot drive, which is typically the Flash Drive (C:\). When the boot process is completed, the C:\ prompt display on the screen. If Windows is installed, the system then loads the Windows graphical user interface.

PCMCIA cards appear as unique drives under the VRC operating system. Their drive designation depends on the particular card and the PCMCIA slot in which it is installed. See the *Product Reference Guide* for more information.

Reboot

If the system freezes or locks up during normal operation, the system can be reset by performing a reboot. The type of reboot depends upon the desired state of the VRC system.

Perform a warm boot when you:

- need to clear the system's memory to run another program,
- do not want the computer to perform a self-test.

You must have a keyboard or keyboard emulator attached to the system to perform a warm boot.

Perform a cold boot when the screen is frozen, or the system is otherwise locked up. The cold boot is essentially a power-up sequence.

Warm Boot

To perform a warm boot:

1. Press CTRL-ALT-DEL on the keyboard or keyboard emulator on the touchscreen. This causes the system to reprocess the config.sys and autoexec.bat files.
2. Reload the desired software application, if necessary.

Cold Boot

- To perform a cold boot on a fixed mounted VRC, remove power from the VRC by removing the power supply from the wall outlet, then plug the unit back in.

- To perform a cold boot on a vehicle mounted VRC, turn off the power ON/OFF switch on the DC power converter, then turn it back on.

  or,

- Push the RESET button on the rear panel of unit.

Touch-Based Applications

General Functions and Guidelines

The VRC is designed and configured for touch-based applications, where the video screen displays graphical icons whose corresponding function is activated when touched by a user. Touch-based applications can be divided into two different categories:

- Graphical User Interface (GUI) applications, based on a GUI operating system such as Windows
- DOS-based applications.

For GUI applications, a "mouse-like" touch driver is installed allowing standard applications to be executed. However, for optimum ease of use, applications should:

- use only one button
- avoid double-clicks whenever possible
- keep touch targets large (for example, scroll bars are very difficult to see).

With these provisions, applications can be developed using standard tools and practices including Visual C++, Visual Basic, etc.

Touch-based applications are composed of three parts: an application program, a touch library, and a graphics library. Each of these is described in detail in the *Product Reference Guide.*

Troubleshooting

This is a checklist of common problems and their potential solutions. Perform an initial check of the VRC as follows:

1. Check the unit for any signs of exterior damage.
2. Check and reseat all rear panel cable connections.
3. Check to be sure the VRC is receiving operating power:

   Fix Mount
   - Check the circuit breakers feeding the 110VAC wall outlet supplying power to the VRC.
   - Make sure the wall-mounted power supply is firmly seated in the wall outlet.
   - If a surge protector is installed between the wall-mounted power supply and the wall outlet, make sure that if it has an ON/OFF switch, it is on, and any fuses or circuit breakers on the surge protector are not blown or tripped.

   Vehicle Mount
   - Be sure the vehicle's battery is charged.
   - Verify that the ON/OFF switch on the DC power converter is on.
   - Reseat the connectors on both the power input and output cables on the DC power converter.

Specific Problems

Problem	Causes	Solutions
Touchscreen does not respond	The touchscreen drivers did not load.	Reboot the VRC. The touchscreen may be disconnected or defective. Check connections and reboot the VRC.
Application program does not appear	The application software is corrupted, or the config.sys and autoexec.bat files are not set up properly.	Reload the application software on the system, verify the config.sys and autoexec.bat files are set up correctly to load the application program and reboot the system.
PCMCIA card(s) not working	The config.sys and autoexec.bat files are not set up correctly to recognize PCMCIA cards.	Verify the config.sys and autoexec.bat files are set up correctly to recognize PCMCIA cards. Try the card in the other PCMCIA slot, or check to make sure the card is firmly seated in the slot.

Problem	Causes	Solutions
Modem card does not work (no dial tone)	The modem card is not firmly seated in the PCMCIA slot. Incorrect modem set up strings in the software package. Faulty telephone line connection.	Check to be sure the modem card is firmly seated in the PCMCIA slot. Check the modem setup strings in the software package used with the modem card. Check the telephone line connections.
Fix Mounted Unit does not communicate with the network	Bad cable connection. Electrical interference or incorrect security ID and domain station type.	Check for cable breaks, shorts and bad crimps using a cable scanner. Check for electrical interference. Check the security ID and domain station type.

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Problem	Causes	Solutions
Vehicle Mounted Unit does not communicate with the network	Bad antenna connection or cable connection. Incorrect network configuration or Ethernet is not enabled.	Check that the antenna connection is secure. Replace broken antennas or cables. Check the security ID and domain station type. Ethernet Connection: Remove any other installed NICs in the ISA expansion slot or PCMCIA slots. Check that the network configuration is set for I/O 240, interrupt 15 and DMA 3. Check that the Ethernet is enabled.

Regulatory Information

Radio Frequency Interference Requirements

This device has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the Federal Communications Commissions Rules and Regulation. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- This device complies with FCC Part 15. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Radio Frequency Interference Requirements - Canada

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe A respecte toutes les exigences du Reglement sur le Materiél Brouilleur du Canada.

CE Marking and European Union Compliance

CE   Products intended for sale within the European Union are marked with the CE Mark which indicates compliance to applicable Directives and European Normes (EN), as follows. Amendments to these Directives or ENs are included:

Applicable Directives

- Electromagnetic Compatibility Directive 89/336/EEC
- Low Voltage Directive 73/23/EEC

Applicable Standards

- EN 55022:1998, Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment
- EN 55024:1998; InformationTechnology Equipment - Immunity characteristics - Limits and methods of measurement
- IEC 1000-4-2:1995; Electromagnetic compatibility (EMC); Part 4:Testing and measurement techniques; Section 4.2:Electrostatic discharge immunity test
- IEC 1000-4-3:1997; Electromagnetic Compatibility (EMC); Part 4:Testing and measurement techniques; Section 3. Radiated, radio frequency, electromagnetic field immunity test
- IEC 1000-4-4:1995; Electromagnetic compatibility (EMC); Part 4: Testing and measurement techniques; Section 4:Testing electrical fast transient,/Burst immunity
- IEC 1000-4-5:1995; Electromagnetic compatibility (EMC), Part 4: Testing and measurement techniques; Section 5: Surge Immunity
- IEC 1000-4-6:1996; Electromagnetic compatibility (EMC), Part 4:Testing and measurement techniques; Section 6: Immunity to conducted disturbances, induced by radio frequency fields
- IEC 1000-4-11:1994; Electromagnetic compatibility (EMC), Part 4: Testing and measurement techniques; Section 11: Voltage Dips, Short Interruptions, and Voltage Variations
- EN 60 950 + A1+A2+A3+A4+A11 - Safety of Information Technology Equipment Including Electrical Business Equipment
- EN 60 825 - Safety of Devices Containing Lasers.

RF Devices

Symbol's RF products are designed to be compliant with the rules and regulations in the locations into which they are sold and will be labeled as required. The majority of Symbol's RF devices are type approved and do not require the user to obtain license or authorization before using the equipment. Any changes or modifications to Symbol Technologies equipment not expressly approved by SymbolTechnologies could void the user's authority to operate the equipment.

This RF device has been tested and approved in accordance with US FCC Part15, Canadian IC:RSS/CNR210, and ETS 300 328.

Caution: Remote and Standalone Antenna Configurations: FCC RF Exposure Guidelines

To comply with FCC RF exposure requirements, antennas that are mounted externally at remote locations or operating near users at stand-alone desktop of similar configurations must operate with a minimum separation distance of 20 cm from all persons.

Warranty

Symbol Technologies, Inc. ("Symbol") manufactures its hardware products in accordance with industry-standard practices. Symbol warrants that for a period of twelve (12) months from date of shipment, products will be free from defects in materials and workmanship.
This warranty is provided to the original owner only and is not transferable to any third party. It shall not apply to any product (i) which has been repaired or altered unless done or approved by Symbol, (ii) which has not been maintained in accordance with any operating or handling instructions supplied by Symbol, (iii) which has been subjected to unusual physical or electrical stress, misuse, abuse, power shortage, negligence or accident or (iv) which has been used other than in accordance with the product operating and handling instructions. Preventive maintenance is the responsibility of customer and is not covered under this warranty.
Wear items and accessories having a Symbol serial number will carry a 90-day limited warranty. Non-serialized items will carry a 30-day limited warranty.

Warranty Coverage and Procedure

During the warranty period, Symbol will repair or replace defective products returned to Symbol's manufacturing plant in the US. For warranty service in North America, call the Symbol Support Center at 1-800-653-5350. International customers should contact the local Symbol office or support center. If warranty service is required, Symbol will issue a Return Material Authorization Number. Products must be shipped in the original or comparable packaging, shipping and insurance charges prepaid. Symbol will ship the repaired or replacement product freight and insurance prepaid in North America. Shipments from the US or other locations will be made F.O.B. Symbol's manufacturing plant.
Symbol will use new or refurbished parts at its discretion and will own all parts removed from repaired products. Customer will pay for the replacement product in case it does not return the replaced product to Symbol within 3 days of receipt of the replacement product. The process for return and customer's charges will be in accordance with Symbol's Exchange Policy in effect at the time of the exchange.
Customer accepts full responsibility for its software and data including the appropriate backup thereof.
Repair or replacement of a product during warranty will not extend the original warranty term. Symbol's Customer Service organization offers an array of service plans, such as on-site, depot, or phone support, that can be implemented to meet customer's special operational requirements and are available at a substantial discount during warranty period.

General

Except for the warranties stated above, Symbol disclaims all warranties, express or implied, on products furnished hereunder, including without limitation implied warranties of merchantability and fitness for a particular purpose. The stated express warranties are in lieu of all obligations or liabilities on part of Symbol for damages, including without limitation, special, indirect, or consequential damages arising out of or in connection with the use or performance of the product. Seller's liability for damages to buyer or others resulting from the use of any product, shall in no way exceed the purchase price of said product, except in instances of injury to persons or property. Some states (or jurisdictions) do not allow the exclusion or limitation of incidental or consequential damages, so the preceding exclusion or limitation may not apply to you.

Service Information

Before you use the unit, it must be configured to operate in your facility's network and run your applications.

If you have a problem running your unit or using your equipment, contact your facility's Technical or Systems Support. If there is a problem with the equipment, they will contact the Symbol Support Center:

United States	1-800-653-5350	Canada	905-629-7226
United Kingdom	0800 328 2424	Asia/Pacific	337-6588
Australia	1-800-672-906	Austria	1-505-5794
Denmark	7020-1718	Finland	9 5407 580
France	01-40-96-52-21	Germany	6074-49020
Italy	2-484441	Mexico	5-520-1835
Netherlands	315-271700	Norway	66810600
South Africa	11-4405668	Spain	9-1-320-39-09
Sweden	84452900		
Latin America Sales Support		1-800-347-0178 Inside US +1-561-483-1275 Outside US	
Europe/Mid-East Distributor Operations		Contact local distributor or call +44 208 945 7360	

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