

Acterna HSM-1000

Headend Stealth Modem

Installation Guide



ACTERNA™
The Keepers of Communications

Acterna HSM-1000

Headend Stealth Modem

Installation Guide

Notice Every effort was made to ensure that the information in this document was accurate at the time of printing. However, information is subject to change without notice, and Acterna reserves the right to provide an addendum to this document with information not available at the time that this document was created.

Copyright © Copyright 2002 Acterna, LLC. All rights reserved. Acterna, The Keepers of Communications, and its logo are trademarks of Acterna, LLC. All other trademarks and registered trademarks are the property of their respective owners. No part of this guide may be reproduced or transmitted electronically or otherwise without written permission of the publisher.

Trademarks Acterna and HSM-1000 are trademarks or registered trademarks of Acterna in the United States and/or other countries.

Microsoft, Windows, Windows CE, Windows NT, and Microsoft Internet Explorer are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries.

Pentium is a trademark or registered trademark of the Intel Corporation in the United States and/or other countries.

Specifications, terms, and conditions are subject to change without notice. All trademarks and registered trademarks are the property of their respective companies.

Ordering information This guide is a product of Acterna's Technical Information Development Department, issued as part of the **HSM-1000 Installation Guide**. The ordering number for a published guide is 6510-30-0353.

Table of Contents

About This Guide		v
	Purpose and scope	vi
	Related information	vi
	Technical assistance	vi
	Conventions	vii
<hr/>		
Chapter 1	HSM-1000 Overview	1
	About the HSM-1000	2
	Headend Stealth Modem (HSM)	2
	HSM-1000 modem specifications	2
<hr/>		
Chapter 2	HSM-1000 Installation	5
	Hardware and Software requirements	6
	Requirements to connect to a DSP565	6
	Requirements to connect to an HCU	6
	Setting up the hardware	6
	Connecting a HSM-1000 Device to a DSP565	6
	Connecting a HSM-1000 Device to an HCU	7
<hr/>		
Appendix A	Customer Services	9
	About our services	10

Customer care	10
Technical assistance (business hour)	10
Instrument repair	11
Equipment return instructions	11
Warranty information	12
Global services and solutions	14
System deployment and field engineering	15
Training	15
Instructor-led training:	15
Alternative learning:	16
Product support.	16
Consulting services	17
Integrated service programs	18

About This Guide

- “Purpose and scope” on page vi
- “Related information” on page vi
- “Technical assistance” on page vi
- “Conventions” on page vii

Purpose and scope

The purpose of this guide is to help you successfully install the HSM-1000. This guide includes task-based instructions that describe how to install the HSM-1000. Additionally, this guide provides a complete description of Acterna’s warranty, services, and repair information, including terms and conditions of the licensing agreement.

Related information

Resources that provide additional, related information pertaining the HSM-1000 system include:

- Acterna PathTrak Performance Monitoring System Installation Guide (P/N 6510-30-0416)
- Acterna PathTrak Server/Client Performance Monitoring System User's Guide (P/N 6710-00-0001, available only in an Adobe® Acrobat® PDF format)

Technical assistance

If you need assistance or have questions related to the use of this product, call or e-mail Acterna’s Technical Assistance Center for customer support.

Table 1 Technical assistance centers

Region	Phone Number	
Americas	1-866-ACTERNA 301-353-1550	(1-866-228-3762) tac@acterna.com
Cable TV/Multimedia Products	1-866-ACTERNA 941-752-9222	(1-866-228-3762) catv.support@acterna.com
Brazil	0800-7015370 4617 3839 4617 3729	

Table 1 Technical assistance centers (Continued)

Region	Phone Number	
All others	1-866-ACTERNA 1-866-228-3762	(1-866-228-3762) tac@acterna.com
Europe, Africa, and Mid-East	+800 882 85822 (European Freephone)	support.uk@acterna.com
	(Acterna UK)	support.uk@acterna.com
	+49 (0) 6172 59 11 00 (Acterna Germany)	hotline.germany@acterna.com
	+33 (0) 1 39 30 24 24 (Acterna France)	hotline.germany@acterna.com
Asia and the Pacific	+852 2892 0990 (Hong Kong)	
	+8610 6833 7477 (Beijing-China)	
Australia	+61 3 9690 6700	

During off-hours, you can request assistance by doing one of the following: leave a voice mail message at the Technical Assistance number in your region; e-mail North American Technical Assistance Center, tac@acterna.com, or European Technical Assistance Center, support.uk@acterna.com; or submit your question using our online Technical Assistance Request form at www.acterna.com.

Conventions

This guide uses naming conventions and symbols, as described in the following tables.

Table 2 Typographical conventions

Description	Example
User interface actions appear in this typeface .	On the Status bar, click Start .

Table 2 Typographical conventions (Continued)

Description	Example
Buttons or switches that you press on a unit appear in this TYPE-FACE .	Press the ON switch.
Code and output messages appear in this <i>typeface</i> .	All results okay
Text you must type exactly as shown appears in this <i>typeface</i> .	Type: a: \set.exe in the dialog box
Variables appear in this <i>typeface</i> .	Type the new <i>hostname</i> .
Book references appear in this <i>typeface</i> .	Refer to <i>Newton's Telecom Dictionary</i>
A vertical bar means "or": only one option can appear in a single command.	platform [a b e]
Square brackets [] indicate an optional argument.	login [platform name]
Slanted brackets < > group required arguments.	<password>

Table 3 Keyboard and menu conventions

Description	Example
A plus sign + indicates simultaneous keystrokes.	Press Ctrl+s
A comma indicates consecutive key strokes.	Press Alt+f,s
A slanted bracket indicates choosing a submenu from menu.	On the menu bar, click Start > Program Files .

Table 4 Symbol conventions



This symbol represents a general hazard.



This symbol represents a risk of electrical shock.



NOTE

This symbol represents a Note indicating related information or tip.

Table 5 Safety definitions



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

HSM-1000 Overview

1

This chapter provides a general description of the HSM-1000. Topics discussed in this chapter include the following:

- [“About the HSM-1000” on page 2](#)
- [“HSM-1000 modem specifications” on page 2](#)

About the HSM-1000

Headend Stealth Modem (HSM)

The HSM-1000 Modem enables the field technician to solve return path ingress problems by comparing local (field) spectrum measurements with remote (headend HCU) spectrum measurements. This hardware broadcasts spectrum data sent from the HCU to field units with the HSM-1000 Field View option via the forward RF telemetry path.

HSM-1000 modem specifications

Table 6 HSM-1000 Modem Transmitter Specification

Parameter	Specification
Frequency range	5 to 1000 MHz
Frequency accuracy	@ 77° F (25° C) ±10 ppm
Range over temperature	+ 10 ppm Aging: +3 ppm/year
Tuning resolution	10 kHz
Level range	+20 to +50 dBmV
Level resolution	2 dB
Level accuracy	± 3 dB

Table 7 HSM-1000 Modem In-Band Spectral Purity

Parameter	Specification
Harmonics	-30 dBc
Spurious	-35 dBc
Telemetry	Forward telemetry user-defined, 5 to 1000 MHz
Modulation	FSK, 100 kHz deviation

Table 7 HSM-1000 Modem In-Band Spectral Purity

Parameter	Specification
Spectrum required	1 MHz recommended
Spectral occupancy	-15 dBc @ 500 kHz offset -34 dBc @ 1 MHz offset -55 dBc @ 2 MHz offset

Table 8 HSM-1000 Modem Telemetry Capability

Parameter	Specification
Speed with multiple user	0.5 sec/unique display typical
HCU data interface	Serial, RS232 compatible, up to 57.6 Kbps
Auxiliary data interface	Serial, RS232 compatible, up to 57.6 Kbps

Table 9 HSM-1000 Modem Physical/Operational Specification

Parameter	Specification
Height	1 rack unit (1U), 10 in (25.4 cm)
Width/depth	19 inch, 48.26 cm rack mountable
Weight	7.5 lbs
Operating temperature range	32 to 122° F (+0 to +50° C)
Operating relative humidity	20% to 80% @ temperature of 104° F ±36° (40° C ±2°)

Table 10 HSM-1000 Modem Power Requirements

Parameter	Specification
Frequency/ power	47 to 440 Hz/ -10 w
Input voltage	85 to 264 VAC
Input current	1.2 A @ 100 VAC

Table 10 HSM-1000 Modem Power Requirements

Parameter	Specification
Fuse	1.25 A, 250 V 5 x 20 mm SLO-BLO (2 required)
Input connector	Integral Combination IEC connector and fuse holder
HSM-1000 RF modem interface	RS232 compatible
RF modem/Stealth protocol	Proprietary RF FSK modem

HSM-1000 Installation

2

This chapter provides hardware and software requirements and task-based instructions for connecting an HSM-1000 to an HCU or to a DSP565. The topics discussed in this chapter are as follows:

- [“Hardware and Software requirements” on page 6](#)
- [“Setting up the hardware” on page 6](#)

Hardware and Software requirements

Requirements to connect to a DSP565

The follow text describes the hardware and software requirements for connecting to DSP565.

- Phasor version 2.7 client and server software must be installed
- DSP565 firmware version 1.09 or higher

Requirements to connect to an HCU

The follow text describes the hardware and software requirements for connecting to an HCU.

- PathTrak client or server software version. 2.0 or higher must be installed
- HCU firmware version 2.0 or higher

Setting up the hardware

Connecting a HSM-1000 Device to a DSP565

To connect a HSM-1000 Device to a DSP565

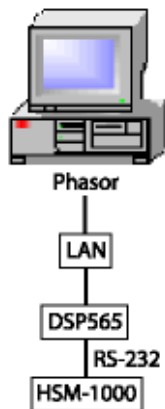


Figure 1 Connecting an HSM-1000 to a DSP565

- 1 Connect the Main Data port on the back of the HSM-1000 to the AUX RS-232 port on the back of the DSP565 using the standard serial cable provided with the HSM-1000.
- 2 Turn on the HSM-1000.
The red status LED will begin to flash. Approximately after 15 seconds, the three green LEDs will flash one time and the status LED will stop flashing and remain on.
This signifies that the HSM-1000 is booted.
The HSM-1000 can now be added through the Device Wizard.

Connecting a HSM-1000 Device to an HCU

To connect an HSM-1000 Device to an HCU

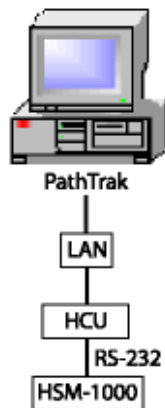


Figure 2 Connecting an HSM-1000 to an HCU

- 1 Turn off the HCU.
- 2 Connect the Main Data port on the back of the HSM-1000 to the COM2 port on the HCU using the standard serial cable provided with the HSM-1000.
- 3 Power up the HSM-1000.
The red status LED will begin to flash. Approximately after 15 seconds, the three green LEDs will flash one time and the status LED will stop flashing and remain on. This signifies that the HSM-1000 is booted.
- 4 Turn on the HCU.

When the HCU is finished booting, it will attempt to detect the HSM-1000. Once the HSM-1000 has been detected, the red status LED will automatically turn itself off

The HSM-1000 can now be added to the HCU using the Add New Device menu.

Customer Services



This chapter describes the customer services available through Acterna. Topics discussed in this chapter include the following:

- [“About our services” on page 10](#)
- [“Customer care” on page 10](#)
- [“Global services and solutions” on page 14](#)

About our services

Acterna offers an unmatched portfolio of services to deploy, support and innovate purchased equipment through its Customer Care and Global Services and Solutions organizations. Customer Care is standard with every product sale and consists of business hour technical assistance, in-warranty repair, calibration, and upgrade services. Global Services and Solutions provides professional services to optimize product capabilities and maximize efficiencies, including field engineering and deployment, technical training, product support, consulting and custom software development. Together these organizations supply the services necessary successfully utilize purchased equipment.

Customer care

Customer Care is accompanied with the sale of every Acterna product. Customer Care services include:

- Needs Analysis on Products and Services
- Comprehensive Product and Service Literature
- Pre-Sales Consulting
- Technical Assistance (Business Hour)
- Instrument Repair (Under Warranty Repair and Calibration Services)
- Immediate Return Authorizations

Contact a Customer Care representative through your local distributor or by accessing www.acterna.com for information on upgrades, calibration, warranty policies or any of Global Services and Solutions offerings. Representatives also provide assistance with product repairs and returns.

Technical assistance (business hour)

Expert business hour technical support, including help with product configuration, circuit qualification, and complete network trouble sectionalization is provided with your product (see ["Technical assis-](#)

tance” on page vi). For around-the-clock support, 7x24 technical assistance may be purchased through Global Services and Solutions FleetCare program (see “Product support” on page 16).

Instrument repair

Our service centers provide repair, calibration and upgrade services for under warranty equipment. Acterna understands the impact of equipment down time on operations and is staffed to ensure a quick turnaround. Available services include the following:

Product Repair — All equipment returned for service is tested to the same rigorous standards as newly manufactured equipment. This ensures products meet all published specifications, including any applicable product updates.

Calibration — Acterna’s calibration methods are ISO 9001 approved and based on NIST standards.

Factory Upgrades — Any unit returned for a hardware feature enhancement will also receive applicable product updates and will be thoroughly tested, ensuring peak performance of the complete feature set.

Additional repair, calibration and upgrade services are available for purchase through Global Services and Solutions (see “Product support” on page 16).

Equipment return instructions

Please contact your local Customer Care location via telephone or web site for Return or Reference Authorization to accompany your equipment. For each piece of equipment returned for repair, attach a tag that includes the following information:

- Owner’s name, address, and telephone number.
- The serial number, product type, and model.
- Warranty status. (If you are unsure of the warranty status of your instrument, contact Acterna Customer Care.)
- A detailed description of the problem or service requested.
- The name and telephone number of the person to contact regarding questions about the repair.

- The return authorization (RA) number (US customers), or reference number (European Customers).

If possible, return the equipment using the original shipping container and material. If the original container is not available, the unit should be carefully packed so that it will not be damaged in transit; when needed, appropriate packing materials can be obtained by contacting Acterna Customer Care. Acterna is not liable for any damage that may occur during shipping. The customer should clearly mark the Acterna-issued RA or reference number on the outside of the package and ship it prepaid and insured to Acterna.

Warranty information

The warranties described herein shall apply to all commercially available Acterna products. Any additional or different warranties shall apply only if agreed to by Acterna in writing. These warranties are not transferable without the express written consent of Acterna.

Hardware Warranty — Acterna warrants that Hardware Product sold to customer shall, under normal use and service, be free from defects in materials and workmanship. Information regarding the specific warranty period for this product can be obtained by contacting your local Acterna Customer Service Representative, or at our web site www.acterna.com. If installation services have been ordered, the warranty period shall begin on the earlier of (1) completion of installation, or (2) thirty (30) days after shipment to Customer. If Installation Services have not been ordered, the warranty period shall begin upon shipment to Customer. Hereafter these periods of time shall be collectively referred to as the “Initial Warranty Period.”

Acterna’s obligation and customer’s sole remedy under this Hardware Warranty is limited to the repair or replacement, at Acterna’s option, of the defective product. Acterna shall have no obligation to remedy any such defect if it can be shown: (a) that the Product was altered, repaired, or reworked by any party other than Acterna without Acterna’s written consent; (b) that such defects were the result of customer’s improper storage, mishandling, abuse, or misuse of Product; (c) that such defects were the result of customer’s use of Product in conjunction with equipment electronically or mechanically incompatible or of an inferior quality; or (d) that the defect was the result of damage by fire, explosion, power failure, or any act of nature.

Acterna performed repairs shall be warranted from defective material and workmanship for a period of one-hundred-eighty (180) days, or until the end of the Initial Warranty Period, whichever is longer. Risk of loss or damage to Product returned to Acterna for repair or replacement shall be borne by customer until delivery to Acterna. Upon delivery of such product, Acterna shall assume the risk of loss or damage until that time that the product being repaired or replaced is returned and delivered to customer. Customer shall pay all transportation costs for equipment or software shipped to Acterna for repair or replacement. Acterna shall pay all transportation costs associated with returning repaired or replaced product to customer.

Software Warranty — Acterna warrants that Software Products licensed to Customer shall, under normal use and service, and for a period of ninety (90) days from the date of shipment of the Software to Licensee (the “Warranty Period”), perform in all material respects in accordance with the published specifications for such Software as established by Acterna. However, Acterna does not warrant that the Software will operate uninterrupted or error free, operate in the combination with other software, meet Customer’s requirements, or that its use will be uninterrupted.

Acterna’s obligation and Customer’s sole and exclusive remedy under this Software Warranty is limited to, at Acterna’s option, either (i) correcting the material errors reported to Acterna in writing by Customer during the Warranty Period and which Acterna is able to reproduce, (ii) replacing such defective Software, provided that Acterna received written notice of such defect within the Warranty Period, or (iii) provided that Acterna received written notice of such defect within the Warranty Period, terminating the License and, upon return to Acterna of the Software, Documentation and all other materials provided by Acterna under the applicable License, providing Customer with a refund of all charges paid with respect thereto. Acterna shall have no warranty obligations hereunder if (a) the Software is altered or modified or is merged with other software by Customer or any third party or (b) all or any part of the Software is installed on any computer equipment other than the Designated Server or used with any operating system for which the Software is not designed.

Services Warranty — Acterna warrants that the Services provided by Acterna, if any, shall be performed promptly, diligently and in a professional manner in accordance with the commercial standards of the industry. Acterna shall not, however, be respon-

sible for any delays that are not due to Acterna's fault or negligence or that could not have reasonably been foreseen or provided against.

WARRANTY DISCLAIMER — FOR HARDWARE, SOFTWARE, AND/OR SERVICES FURNISHED BY ACTERNA, THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED. ACTERNA SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, ON ANY HARDWARE, SOFTWARE, DOCUMENTATION OR SERVICES INCLUDING BUT NOT LIMITED TO WARRANTIES RELATING TO QUALITY, PERFORMANCE, NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AS WELL AS THOSE ARISING FROM ANY COURSE OF DEALING, USAGE OR TRADE PRACTICE. UNDER NO CIRCUMSTANCES WILL ACTERNA BE LIABLE FOR ANY INDIRECT OR CONSEQUENTIAL DAMAGES RELATED TO BREACH OF THIS WARRANTY.

Global services and solutions

Global Services and Solutions markets a broad portfolio of services to enable customers to aggressively build their competitive advantage within the markets they serve. Global Services and Solutions innovative offerings respond to our customers' dynamic needs:

- System deployment and field engineering services
- Technical training
- Product support
- Consulting
- Custom software development
- Integrated service programs

Additional information can also be found on our web site under Services.

System deployment and field engineering

Acterna offers a range of support services for our centralized test systems, designed around the needs of the customer's network. Field engineering and deployment services provide a variety of options for implementing the test system into the network.

Deployment — Thorough deployment process covers the initial site survey through hardware and software installation, allowing rapid integration of systems product into customers' environment without the use of their own resources. Deployment includes survey, configuration, installation of hardware and software, site planning, cabling, acceptance testing, staging, certification and system documentation.

Basic Service for Systems — In today's fast-paced world of communications, network operators are deploying increasingly complex communications test and management systems. Acterna's Basic Service for Systems is designed to provide the system experts, support and methodologies to facilitate the integration of systems products into customers' environments. Basic Service for Systems encompasses system deployment, training, software upgrades, technical assistance and repair. This service is subject to availability, please visit www.acterna.com or contact Customer Care for additional information.

Training

Acterna delivers training in instructor-led or alternative learning formats that are flexible, convenient, and timely. Our training solutions portfolio consists of network-specific test and management tools for optical transport, cable, access, data, and wireless environments.

Instructor-led training:

Public courses (Acterna sites)

Public courses help participants quickly acquire fundamental skills or broaden their communications knowledge with advanced instruction. Our courses deliver the ideal mix of theory and practice.

On-site training (Customer site)

Acterna provides practical, customized instruction at the customer's designated site. Whether your goal is to shorten turn-up times or increase operation-wide efficiency, on-site training can be a cost-effective way to train from one to 10 participants. Prior to training, the instructor contacts the customer to ensure the course content is aligned with the organization's training needs. We conduct step-by-

step reviews of current technologies and products to help both new and experienced technicians translate theory into practical, hands-on expertise.

When scheduling an on-site course, please note that Acterna requires a minimum commitment of two consecutive days of training. Courses that are only one day in duration may either be paired with another course for a minimum total of two training days, or presented on two consecutive days to different groups of participants.

Alternative learning: **Courseware licensing program and train-the-trainer**

Recommended for customers with internal training departments, Acterna's Courseware Licensing Program is a fast, affordable alternative that allows our customers to train their own staff using Acterna's courseware. Each course provides comprehensive instructor and participant materials to ensure consistent content delivery for the length of the agreement. A critical part of Courseware Licensing is the Train-the-Trainer program, which prepares the organization's own instructors to deliver Acterna training courses. Courseware Licensing is sold in increments of one, two, or three years.

Computer-based training (CBT)

By blending learning with technology, Acterna's CBT program provides our customers with a cost-effective way to learn technology fundamentals and product applications. Topics include ATM, Frame Relay, ISDN, LAN Basics, Fiber Optics, and more. CBTs are designed to complement both public and on-site training; they can serve to prepare students for classroom Acterna courses or be used after instructor-led training to reinforce learning. In addition to our pre-packaged CBTs, Acterna custom-develops CBTs to meet your organization's training needs.

To enroll in a course or for more information on the variety of Acterna training programs available, call 1-800-638-2049 or visit www.acterna.com and complete the Training Requirement Form.

Product support To continue repair, maintenance and upgrades after a product's warranty expires, Acterna offers a variety of product support plans.

FleetCare — Designed for customers with ten or more Acterna products, FleetCare extends each product's initial factory warranty to include repair parts, labor and one-way shipping. FleetCare allows customers to upgrade the base package with a variety of options, including Calibration Plans, Calibration Plan with Manager, Loaners, 7x24 Technical Assistance and Software Enhancement Agreements.

Software Enhancement Agreements — In response to new developments in technology, Acterna continually upgrades and revises the software that drives many of its products. Software Enhancement Agreements automatically ships the latest software revisions, releases and upgrades to ensure products are operating at the most technologically advanced level.

Product Maintenance Agreements — Yearly repair and calibration maintenance agreements simplify billing and help ensure equipment is always operating at optimum levels. Product maintenance agreements can be used to extend a current warranty or provide protection for out-of-warranty units.

Repair Pricing Options — For out-of-warranty repairs, Acterna offers two additional pricing options: time and material pricing and flat rate pricing. Under time and material pricing, customers are billed for the actual cost of the repair, making this a cost-effective method for minor repairs. Under flat rate pricing, customers pay a fixed service charge to repair unit failures (excluding damage or abuse).

Consulting services

To quickly improve our customer's efficiency and productivity, Acterna offers personalized consulting programs designed to meet specific client needs. Our consulting staff will work as part of your team, providing a valuable blend of subject matter proficiency, an in-depth test and measurement systems perspective, and trusted telecommunications industry vision.

Methods and Procedure Development — Acterna's Methods and Procedure Development services include consulting with your staff and assessing your network plant's current test and turn-up procedures. After evaluating the skill level of your workforce in specific technologies and procedures, an Acterna team of experts identifies potential areas of improvement and makes appropriate recommendations in a formal implementation plan. Depending on your staff's level of expertise, test procedures can be written to any level of detail, from

general methods and procedures to detailed “button-by-button” test and network equipment-specific procedures. In addition, Acterna’s experts offer hands-on training for your field technicians and can resolve specific problems at the central office. Acterna develops test plans and procedures for Service Providers, End-users and Manufacturers of Network Equipment.

Test Automation — With Acterna’s Test Automation Development, a team of experts can develop customized automated and remote testing solutions so that you can keep your network functioning at peak levels. After consulting with you, the Acterna team can determine which of Acterna’s test and analysis equipment and automation platforms can best streamline your testing processes, data analysis, and test result storage methods. The consulting team can develop and integrate automated testing applications on customers’ currently installed computer platforms that match existing methods and procedures. An Acterna team of consultants can assist customers throughout every stage of the development and implementation of automated and remote testing solutions. Services range from developing automated scripts to integrating customized software applications to developing drivers to automated manufacturing tests.

On-site Test and Measurement Service — Acterna On-site Test and Measurement Service provides testing expertise to expedite the implementation, turn-up, and provisioning of network services. Applying their knowledge to your specific network requirements, Acterna’s network consultants can quickly verify transmission systems’ implementation, assess a fiber plant’s suitability for advanced services, future-proof your system. Because incomplete testing often results in crippling losses of revenue, carriers and providers must operate their networks with a very low margin of error. Difficulties in ensuring network performance are further compounded when technicians must employ unfamiliar yet critical test and measurement processes. But with Acterna’s dedicated, highly skilled team of professionals providing communications test and measurement solutions, your staff can concentrate on performing value-added services that will maximize your profitability.

Integrated service programs

Service Dollars (North America only) — To deliver the highest level of support with your product purchase, Acterna offers Service Dollars. Service Dollars can be purchased at anytime, for each Acterna instrument. If purchased at the same time as your product, Service Dollars

are discounted 20 percent. This is a significant savings, as Service Dollars can be used towards the purchase of any of Global Services and Solutions offerings. Service Dollars are also flexible in the fact that they can be purchased at anytime and then used later towards the specific service that best fits your support needs.

**Worldwide
Headquarters**

20400 Observation Drive
Germantown, Maryland
20876-4023
USA

Acterna is present in more
than 80 countries. To find
your local sales office go to:
www.acterna.com

**Regional Sales
Headquarters**

North America
20400 Observation Drive
Germantown, Maryland
20876-4023
USA

Toll Free: +1 866 228 3762
Tel: +1 301 353 1550
Fax: +1 301 444 8468

Latin America
Av. Eng. Luis Carlos Berrini
936/8° e 9° andares
04571-000 São Paulo
SP-Brasil
Tel: +55 11 5503 3800
Fax: +55 11 5505 1598

Asia Pacific
42 Clarendon Street
PO Box 141
South Melbourne
Victoria 3205
Australia
Tel: +61 3 9690 6700
Fax: +61 3 9690 6750

Western Europe
Arbachtalstrasse 6
72800 Eningen u.A.
Germany
Tel: +49 7121 86 2222
Fax: +49 7121 86 1222

**Eastern Europe,
Middle East & Africa**
Elisabethstrasse 36
2500 Baden
Austria
Tel: +43 2252 85 5210
Fax: +43 2252 80 727

1st Neopalimovskiy Per.
15/7 (4th floor)
RF 119121 Moscow
Russia
Tel: +7 095 248 2508
Fax: +7 095 248 4189

© Copyright 2002
Acterna, LLC.
All rights reserved.

Acterna and its logo are
trademarks of Acterna,
LLC. All other trademarks
and registered trademarks
are the property of their
respective owners. Major
Acterna operations sites
are ISO 9001 registered.

Note: Specifications,
terms and conditions
are subject to change
without notice.