

Touchstone™ Telephony Modem TM402P



Application

The Touchstone Telephony Modem TM402P delivers two lines of primary line Voice over IP (VoIP) along with High-Speed Data Access. The Touchstone Telephony Modem TM402P has integrated lithium-ion battery back-up capability along with industry leading efficient power management to guarantee continued service of up to 16 hours during an extended power outage.

Leadership in Battery Technology

The Touchstone TM402P is the first E-MTA with lithium-ion battery back-up capabilities. A lithium-ion battery pack provides 6 to 10 years of service life versus the 3 to 5 years that a sealed lead acid (SLA) battery provide. Its smaller size and lighter weight also allow the Touchstone TM402 to be packaged a more consumer-friendly style. The Touchstone TM402 can use either one or two lithium-ion battery packs. Each lithium-ion battery pack can deliver up to 8 hours of battery back-up capabilities. The Touchstone Telephony Modem is also available in non-battery back-up versions for operators that do not plan to offer lifeline service.

The use of lithium-ion batteries offers a solution with a lower overall expense. In addition to its longer life, the lithium-ion battery is also simpler to replace. While replacing a SLA battery usually requires the operator to make a truck roll, a consumer can replace the lithium-ion battery pack. The operator can simply ship a new battery pack to the subscriber and allow them to self-install the battery.

Setting the Standard for VoIP Subscriber Premise Equipment

ARRIS is the market leader in subscriber premises equipment for cable telephony. This expertise began in constant-bit rate (CBR) circuit switched telephony with the Cornerstone® Voice Port®, which has been deployed in millions of locations worldwide. This set the groundwork for the IP telephony Touchstone product line.

The field proven Voice Port line card technology has been implemented in the Touchstone family of E-MTAs. The Touchstone Telephony Modem fully supports primary line service. It supports ringing capacity with 10 Ringer Equivalence Number (REN) per unit (5 REN per line). This means that multiple customer premises equipment (CPE) can interface and properly operate on the same line (ex. phone, fax, answering machine, extension phone, etc.).

ARRIS designs for rigorous compliance to the requirements that are outlined in Telcordia standard TR-909 for short loop telephony service. This includes testing for non-compliant CPE to ensure maximum compatibility regardless of the quality of the telephone.

Optimized Performance

ARRIS has designed the Touchstone Telephony Modem for optimal performance. This includes developing code that exhibits efficiency and stability over the variable operating parameters encountered. This helps deliver greater consistency in performance than other modems in the marketplace.

When it comes to high-speed data service, subscribers will accept occasional lock-ups that require them to reboot their cable modem. This locking up issue is not acceptable for telephony. ARRIS recognizes the need for five 9's reliability and has implemented a stable architecture to address this issue.

Finally, an E-MTA has to deliver quality voice service while simultaneously supporting the variable high-speed data needs of subscribers. The Touchstone TM402P includes the features expected for high-speed service including bridged Ethernet and USB interfaces, support for tiered services and superior throughput performance. Additionally, the Touchstone TM402P is designed to insure that voice quality is not impacted regardless of the amount of high-speed data traffic.

- **Long-life lithium-ion battery technology minimizes operations expense**
- **Toll quality voice supplies a superior subscriber experience**
- **DOCSIS® 2.0 and PacketCable™ 1.0 certified design provides a solution for the long-term**
- **Firmware configurable battery management and reporting allows customization of operation parameters**



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Specifications

| | | |
|---|--|---|
| Physical: | Operating Temperature °F (°C)..... 41 to 104 (5 to 40) | |
| | Note: Operating above 77°F (25°C) will significantly reduce life of the battery and is not recommended | |
| | Operating Relative Humidity(Min.-Max.)5-85%(Non condensing) | |
| | Storage Temperature °F (°C).....-40 to 158 (-40 to 70) | |
| | Color.....Dark gray | |
| | Dimensions (H x W x D) in. (cm) 8.3 x 2.3 x 7.5 (21.2 x 5.9 x 18.9) - excluding F-connector | |
| | Weight lbs (kg)No battery: 1.6 (0.71) 1 battery pack: 1.9 (0.88) 2 battery packs: 2.3 (1.05) | |
| | Backup BatteryLithium-ion 2.2 Ah (1 or 2) | |
| | Battery Dimensions in. (cm)0.8 x 2.4 x 3.7 (2.2 x 6.1 x 9.3) | |
| | Battery Storage Temperature °F (°C)-4 to 140 (-20 to 60) | |
| Note: Storage above 77°F (25°C) will significantly reduce life of the battery and is not recommended. | | |
| Telemetry ...AC Fail, Battery Low, Battery Missing, Replace Battery | | |
| Diagnostic LEDs Power, DS, US, Online, Link, Telephone 1, Telephone 2, Battery 1, Battery 2 | | |
| Interfaces: | RF Interface External 'F' type connector | |
| | Data Interfaces (bridged) 10/100 Base-T Ethernet (RJ-45 connector), USB 1.1 Series B connector | |
| | Telephony Interface2 lines; RJ-14 ("Line 1/2"), RJ-11 ("Line 2") | |
| | Input Power (nominal)..... TM402P/NA: 100/120 Vac 50/60 Hz TM402P/CE: 220/240 Vac, 50 Hz | |
| Telephony: | Supervisory Voltage48 V dc nominal | |
| | Maximum Loop Length to CPE 1500 ft (457M) of 26 AWG (0.4 mm) wire | |
| | Ringing Load Capacity 10 REN total; 5 per line | |
| | Provisionable High Loop Current Mode Yes (up to 40mA nominal) | |
| | Telcordia™ GR 1089 (Lightning and Power Surge) Tested..... Yes | |
| | Programmable Interface for Worldwide Applications Yes (supports multiple country templates) | |
| | RF Downstream: | Frequency Range (MHz)..... 88-860 |
| | | Modulation (QAM) 64 or 256 |
| | | Data Rate (Mbps) (Max.) 30 or 42 |
| | | RF Input Sensitivity Level (dBmV) -15 to 15 |
| RF Upstream: | Bandwidth 6 MHz | |
| | Frequency Range (MHz)..... 5-42 | |
| | ModulationQPSK, 8 QAM, 16 QAM, 32 QAM, 64 QAM & 128 QAM (S-CDMA only) | |
| | Data Rate (Mbps) (Max.)up to 30.72 | |
| | RF Output Level (dBmV).....A-TDMA: +8 to 54 dBmV (32 QAM, 64 QAM) +8 to 55dBmV (8 QAM, 16 QAM) +8 to 58 dBmV (QPSK) S-CDMA: +8 to +53 dBmV (all modulations) | |
| | Automatic Level Adjust..... Yes | |
| | Gain Control Range (dB).....50 | |
| | Frequency Stability (kHz)±5 | |
| | Output Impedance (Ohms).....75 | |
| | Standards: | Codec: G.711, 64 kbps, μ and A-law encoded speech |
| Enhanced codec support G.726, G.728, G.729 | | |
| PacketCable 1.0 Certified; PacketCable 1.1 based | | |
| DOCSIS 2.0 Certified | | |
| UL® 60950 | | |
| FCC Part 15 Class B | | |
| CE WHQL USB-IF | | |

Ordering Information

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| Touchstone Telephony Modem TM402P/NA-0 (DOCSIS 2.0 – 110V N. American Power)..... | 716694 |
| Touchstone Telephony Modem TM402P/NA-1 (includes one lithium-ion battery pack)..... | 716691 |
| Touchstone Telephony Modem TM402P/CE-0 (DOCSIS 2.0 – 220V Power and CEE7 Plug)..... | 716692 |
| Touchstone Telephony Modem TM402P/CE-1 (includes one lithium-ion battery pack)..... | 714876 |
| Touchstone Telephony Modem lithium-ion Battery pack (qty 1) | 710476 |
| Touchstone Telephony Modem lithium-ion Battery pack (30 unit pack) | 714915 |

Battery back-up times are typical and can be influenced by the age of the battery, the charging state, storage conditions and operating temperature as well as factors such as data activity and length of active telephone calls. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice. ARRIS, the ARRIS logo, Cadant®, D5™, Touchstone®, Cornerstone®, Keystone™, C4®, C3™, CXM™, Regal®, MONARCH®, Digicon® and TeleWire Supply® are all trademarks of ARRIS International, Inc. Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and the names of their products. ARRIS disclaims proprietary interest in the marks and names of others. © Copyright 2006 ARRIS International, Inc. All rights reserved. Reproduction in any manner whatsoever without the express written permission of ARRIS International, Inc., is strictly forbidden. For more information, contact ARRIS.