

Touchstone™ Telephony Modem TM402G



Application

The Touchstone Telephony Modem TM402G delivers two lines of primary line Voice over IP (VoIP) along with High-Speed Data Access. The Touchstone Telephony Modem TM402G includes an integrated lithium-ion battery back-up capability that helps guarantee continued service of up to 8 hours during an extended power outage.

Leadership in Battery Technology

The Touchstone Telephony Modem TM402G can hold one lithium-ion battery back. 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 allows the Touchstone Telephony Modem TM402 to be packaged in a more consumer-friendly design. A lithium-ion battery pack used in the TM402G can deliver up to 8 hours of battery back-up capabilities.

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 with deployments of millions of lines of constant-bit rate (CBR) Cornerstone® Voice Port® worldwide. This sets the groundwork for the IP telephony Touchstone product line.

The same field proven Voice Port line card technology has been implemented in the Touchstone family of Embedded Terminal Adapters (E-MTAs). All Touchstone E-MTAs support ringing capacity of 5 Ringer Equivalence Number (REN) per line. As with all Touchstone TM402 products, the TM402G provides an option to increase the loop current to 40mA to overcome troublesome customer premises equipment (CPE) clients and poor in-house wiring. These two features ensure that multiple CPE devices can interface and properly operate on the same line (e.g. phone, fax, answering machine, phone, etc.).

Optimized Performance

Do not put your trust in reference designs that cannot deliver the performance and requirements for your telephony service. ARRIS ensures that the quality and performance of all Touchstone Telephony Modems are consistently maintained at the highest level. When it comes to high-speed data service, subscribers will accept occasional lock-ups or momentary loss of connectivity that may require them to reboot their cable modem. **Telephony customers demand 99.999% availability!**

ARRIS market leadership and ongoing development experience is reflected in all Touchstone products, enabling operators to rely on the highest level of efficiency and stability over variable operating parameters. That translates to greater consistency in performance when compared to other modems and E-MTAs in the marketplace. In addition, ARRIS continues to stress improvements toward operational efficiency allowing operators to roll out service faster and at a lower cost.

All ARRIS Touchstone Telephony Modems support a wide variety of class features including three-way calling, call waiting, caller ID, Emergency 911 and regulatory requirements for wiretap under CALEA legislation.

PacketCable & Session Initiated Protocol Support

All Touchstone Telephony Modems support PacketCable (NCS) and Session Initiated Protocol (SIP) protocols. Both protocols are based on the same architecture allowing ARRIS to maintain similar capabilities (i.e., provisioning, management, web interface) between models. In addition, the available SIP capability provides Quality of Service (QoS) consistent with PacketCable Multimedia QoS methods.

- Long-life lithium-ion battery technology minimizes operations expense
- Toll quality voice supplies a superior subscriber experience
- DOCSIS® 2.0 certified and PacketCable™ 1.1 compliant design provides a solution for the long-term
- Simplified interoperability through PacketACE™ configuration file editor
- Increased CPE compatibility with Boost Ringing and FSK/CAS Auto-Tuning
- 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: 1.5 (0.68) 1 battery pack: 1.9 (0.86)	
	Backup BatteryLithium-ion 2.2 Ah	
	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	
	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")		
Telephony:	Input Power (nominal) TM 402G/NA: 100/120 Vac 50/60 Hz TM 402G/CE: 220/240 Vac, 50 Hz	
	Supervisory Voltage.....48 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		
Modulation QPSK, 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 & 1.1 based
	DOCSIS 2.0 based	
	UL® 60950	
	FCC Part 15 Class B	
	CE WHQL USB-IF	

Ordering Information

Touchstone Telephony Modem TM402G/NA-0 (DOCSIS 2.0 – 110V N. American Power).....	713886
Touchstone Telephony Modem TM402G/NA-1 (includes one lithium-ion battery pack).....	713887
Touchstone Telephony Modem TM402G/CE-1 (includes one lithium-ion battery pack).....	714995
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.