Application

The Touchstone TM502G delivers two lines of primary line Voice over IP (VoIP) along with High-Speed Data Access. The Touchstone Telephony Modem TM502G uses a single battery slot with two battery pack options to support telephony service during extended power outages.

Leadership in Battery Technology

The Touchstone TM502G extends ARRIS battery technology leadership with the introduction of the E-MTA industry's first 2-cell, Lithium-Ion battery pack. This 2-cell, Li-Ion battery pack coupled with ARRIS industry leading power management allows the Touchstone TM502G to support up to 5 hours of battery backup. For more demanding applications, a 4-cell pack is available that provides up to 10 hours of battery backup.

Both lithium-ion battery packs provide 6 to 10 years of service life versus the 3 to 5 years typical of a sealed lead acid (SLA) battery. The lithium-ion batteries are easy to install, allowing for customer battery replacement.

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 proprietary constant-bit rate (CBR) Cornerstone® Voice Ports® and DOCSIS / PacketCable compliant Touchstone Embedded Media Terminal Adaptors.

The Touchstone TM502G continues ARRIS cable telephony leadership by incorporating 5th generation DOCSIS silicon with updated telephone line interfaces while maintaining the feature set of the widely deployed ARRIS Cornerstone and Touchstone TM402 line interfaces. Each line interface continues to support a 5 REN per line ringing capacity and 48 VDC nominal battery feed. Each line interface also supports advanced features such as selectable ringing waveforms, "boost" loop current, loop voltage management for alarm systems, and template or SNMP provisioned telephony channel settings.

The Touchstone TM502G supports enhanced telephony features include Automatic Gain compensation for Tones and Signals (FSK/CAS), provisioned fixed or dynamic jitter buffers, and G.168 compliant echo cancellation. Advanced signal processing methods provide RFC 2833 compliant DTMF relay, T.38 Fax transmission, three-way calling, call waiting, and caller ID.

Optimized Performance

The Touchstone TM502G continues the ARRIS strategy of a single firmware platform for all Touchstone Telephony Modem models. This ensures consistent quality and performance of all Touchstone Telephony Modems. Do not put your trust in reference designs that cannot deliver the performance and requirements for your telephony service. 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. This behavior is not acceptable for telephony. Telephony customers demand 99.999% availability

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 signaling protocols are based on the same architecture which allowing ARRIS to maintain similar capabilities between firmware loads (i.e., provisioning, management, web interface). In addition, the available SIP signaling provides Quality of Service (QoS) consistent with PacketCable Multimedia QoS methods.

- **DOCSIS® 2.0 and PacketCable™ 1.1/1.5 compliant design**

- **Long-life lithium-ion battery technology minimizes operational expense**

- **Simplified interoperability through PacketACE™ configuration file editor**

- **Increased CPE compatibility with Boost Current and Automatic Gain compensation for Tones and Signals (FSK/CAS)**

- **Firmware configurable battery management and reporting allows customization of operation parameters**

- ***Multiple Protocol Support: PacketCable (NCS) and Session Initiated Protocol (SIP)**

Specifications

Physical:
Operating Temperature °F (°C) ....41 to 104 (5 to 40)
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)8.6 x 2.1 x 7.1 (21.8 x 5.3 x 18.0) -
Weight lbs (kg).......... ………………No battery included: 1.2 (0.54)

Battery: 5 Hour Back-up Option (-4)
   Backup Capacity.. Lithium-ion 2.2 Ah
   Battery Dimensions in. (cm) ...1.2 x 1.85 x 3.1 (3.0 x 4.7 x 7.9)
   Weight lbs (kg)..1.5 (0.66)
Battery: 10 Hour Back-up Option (-8)
   Backup Capacity.. Lithium-ion 4.4 Ah
   Battery Dimensions in. (cm)..1.2 x 1.85 x 5.7 (3.0 x 4.7 x 14.5)
   Weight lbs (kg)..: 1.7 (0.77)
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 not recommended.

Telemetry . AC Fail, Battery Low, Battery Missing, Replace Battery
Diagnostic LEDsPower, DS, US, Online, Link, Telephone 1, Telepl

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 Interface .... 2 lines; RJ-14 ("Line 1/2"), RJ-11 ("Line 2")
Input Power (nominal) .... 100-240 VAC 50/60 Hz

Telephony:
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
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) .... up to 42.88
RF Input Sensitivity Level (dBmV) ....-15 to 15
Bandwidth ....6 MHz

RF Upstream:
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,   and A-law encoded speech
Enhanced codec support (G.726, G.728, G.729E)
T.38 Fax Relay
DOCSIS 2.0 based
PacketCable 1.0 & 1.5 based
RFC3261 SIP: Session Initiation Protocol
UL® 60950, FCC Part 15 Class B, CE
WHQL and USB-IF

Ordering Information

Touchstone TM502G/NA-0 DOCSIS 2.0 / PacketCable 1.0/1.5 Complaint E-MTA Integrated 100-240 VAC, 50/60 HZ Power supply w/ 12 foot power cord with NEMA 1-15 pass-through power plug Includes Quick Install Guide, Ethernet Cable, USB Cable, and CD-ROM with users guide and USB drivers **NO battery included** 717947

Touchstone TM502G/NA-4 DOCSIS 2.0 / PacketCable 1.0/1.5 Complaint E-MTA Includes 1, 2-cell, Li-Ion Battery Pack for up to 5 hours of battery back-up Integrated 100-240 VAC, 50/60 HZ Power supply w/ 12 foot power cord with NEMA 1-15 pass-through power plug Includes Quick Install Guide, Ethernet Cable, USB Cable, and CD-ROM with users guide and USB drivers 717948

Touchstone TM502G/NA-8 DOCSIS 2.0 / PacketCable 1.0/1.5 Complaint E-MTA Includes 1, 4-cell, Li-Ion Battery Pack for up to 10 hours of battery back-up Integrated 100-240 VAC, 50/60 HZ Power supply w/ 12 foot power cord with NEMA 1-15 pass-through power plug Includes Quick Install Guide, Ethernet Cable, USB Cable, and CD-ROM with users guide and USB drivers 718001

Touchstone TM502G/CE-0 DOCSIS 2.0 / PacketCable 1.0/1.5 Complaint E-MTA Includes 1, 2-cell, Li-Ion Battery Pack for up to 5 hours of battery back-up Integrated 100-240 VAC, 50/60 HZ Power supply w/ 12 foot power cord with CEE 7/16 "Euro" Power Plug pass-through power plug Includes Quick Install Guide, Ethernet Cable, USB Cable, and CD-ROM with users guide and USB drivers **NO battery included**..717949

Touchstone TM502G/CE-4 DOCSIS 2.0 / PacketCable 1.0/1.5 Complaint E-MTA Includes 1, 2-cell, Li-Ion Battery Pack for up to 5 hours of battery back-up Integrated 100-240 VAC, 50/60 HZ Power supply w/ 12 foot power cord with CEE 7/16 "Euro" Power Plug Includes Quick Install Guide, Ethernet Cable, USB Cable, and CD-ROM with users guide and USB drivers 717950

Touchstone TM502G/CE-8 DOCSIS 2.0 / PacketCable 1.0/1.5 Complaint E-MTA Includes 1, 4-cell, Li-Ion Battery Pack for up to 10 hours of battery back-up Integrated 100-240 VAC, 50/60 HZ Power supply w/ 12 foot power cord with CEE 7/16 "Euro" Power Plug Includes Quick Install Guide, Ethernet Cable, USB Cable, and CD-ROM with users guide and USB drivers 718046

One 2-Cell, 2.2 Ah,
Li-Ion Battery Pack for TM502G...............................718003

Kit of 60, 2-Cell, 2.2 Ah,
Li-Ion Battery Packs for TM502G 718004

One 4-Cell, 4.4 Ah,
Li-Ion Battery Pack for TM502G...............................718005

Kit of 30, 4-Cell, 4.4 Ah,
Li-Ion Battery Packs for TM502G 718006