

# Tellabs® 1000 Multiservice Access Platform E&M Special Services Plug-in Card

## Introduction

The Tellabs® 1000 Multiservice Access Platform (MSAP) E-lead and M-lead signaling (E&M) plug-in card is a special services channel unit. The E&M card supports one subscriber line circuit for E&M types I, II, III, IV and V and two subscriber line circuits configured for operation in E&M types I or V. The special services plug-in card also supports DX signaling (switched or fixed bias) and can provide subscriber line circuits for Tandem modes I and II (switch and station side) and Pulse Link Repeater (PLR) types I and II.

The E&M plug-in card can provide either 2- or 4-wire service. It can only provide 4-wire service when provisioned in the Tandem or DX modes. The E&M plug-in card has a fixed impedance of 600 ohms. Voice frequency gain is provisionable in 0.1 dB increments.

This special service card has expanded functionality with additional support for equalization and signaling and is fully GR-57 compatible. The primary application for the E&M card is interoffice trunking from a PBX to switch.

## E&M Plug-in Card Features

- End-to-end compatibility with existing cards in the field
- Two circuits per card, each able to support different provisioning
- Software-provisionable E&M and PLR modes (2-wire or 4-wire)
- Provides one or two E&M circuits per card, depending on modes: E&M Type I, II, III, IV, V and PLR I and II
- Software-provisionable Tandem and DX modes (4-wire only)
- Provisionable transmit and receive gain
- Provisionable bias (switched or fixed — DX mode only)
- Post equalization
- 600 ohms and 1200 Ohms fixed impedances
- Normal and reverse DX signaling

### LEDs indications:

- A green BUSY — the E&M plug-in card is busy or is being tested, do not remove from service
- A red FAIL — the unit has failed
- A blinking red FAIL — illegal signaling



## Tellabs® 1000 MSAP E&M Plug-in Card Specifications

<b>Signaling</b>	Signaling Types	<ul style="list-style-type: none"> <li>■ E&amp;M Types I, II, III, IV and V</li> <li>■ Tandem Modes I and II, Station side</li> <li>■ Tandem Modes I and II, Switch side</li> <li>■ PLR Types I and II</li> <li>■ DX (fixed or switched bias)</li> </ul>
	Signaling delay	50 ms maximum
	Wink distortion for any off wink > 50 ms	±15 ms
	On-hook interval distortion for intervals > 50 ms	±25 ms
	Maximum loop length (E&M, PLR, Tandem modes)	300 ohms
	Maximum loop length (DX mode)	3030 ohms (including 1430 ohms for DX unit)
	DX bridge circuit balancing	Fixed value of 1210 ohms for far end DX bridge, plus 1120 Ohms adjustable in 16 steps for cable resistance
	Pulse distortion	<3% at 12 pps (46% to 70% break)

<b>Audio</b>	Transmit gain adjustment (towards DLC)	<ul style="list-style-type: none"> <li>■ 2-wire Terminal mode</li> <li>■ 4-wire Terminal mode</li> <li>■ 4-wire Cable mode</li> </ul>	<ul style="list-style-type: none"> <li>■ -5.5 dB to +4.5 dB</li> <li>■ -7.0 dB to +17.5 dB</li> <li>■ -6.0 dB to +9.0 dB</li> </ul>
	Receive gain adjustment (from DLC)	<ul style="list-style-type: none"> <li>■ 2-wire Terminal mode</li> <li>■ 4-wire Terminal mode</li> <li>■ 4-wire Cable mode</li> </ul>	<ul style="list-style-type: none"> <li>■ -10.0 dB to 0.0 dB</li> <li>■ -16.0 dB to +8.5 dB</li> <li>■ -9.0 dB to +6.0 dB</li> </ul>
	Line impedance	<ul style="list-style-type: none"> <li>■ 2-wire Terminal mode</li> <li>■ 4-wire Terminal mode</li> <li>■ 4-wire Cable mode</li> </ul>	<ul style="list-style-type: none"> <li>■ 600 ohms + 2.16 uF</li> <li>■ 600 ohms</li> <li>■ 150 ohms, or 600 ohms (unloaded cable) or 1200 ohms (loaded cable)</li> </ul>
	Return loss (600 ohms + 2.16 uF)	<ul style="list-style-type: none"> <li>■ ERL</li> <li>■ SRL</li> </ul>	<ul style="list-style-type: none"> <li>■ &gt; 28 dB</li> <li>■ &gt; 20 dB</li> </ul>
	Longitudinal balance		<ul style="list-style-type: none"> <li>■ 200 Hz to 2 kHz, &gt; 58 dB</li> </ul>
	4-wire DX mode		<ul style="list-style-type: none"> <li>■ 3 kHz, &gt; 53 dB</li> </ul>
	Idle channel noise		< 20 dBnC
	Supported cable configurations	<ul style="list-style-type: none"> <li>■ 2-wire and 4-wire Terminal interface</li> <li>■ 4-wire Cable interface</li> </ul>	<ul style="list-style-type: none"> <li>■ Up to 3000 feet of intra-office cable, but ≤1.5 dB 1 kHz loss</li> <li>■ Maximum cable length is limited to 10 dB 1 kHz loss, or 1600 ohms DC cable resistance</li> </ul>
	Supported cable facilities	<ul style="list-style-type: none"> <li>• Non-loaded cable</li> <li>• Loaded cable</li> </ul>	<ul style="list-style-type: none"> <li>■ 19, 22, 24 and 26 gauges are supported up to 18,000-ft., including bridge taps. Maximum bridge tap length is limited to 6000 ft. All combinations are allowed. All loops longer than 18000 ft. must use H-88 loading.</li> <li>■ Only H-88 loading is supported. 19, 22, 24 and 26 gauges are supported, including any gauge combinations.</li> </ul>
<b>Environmental</b>	Operating temperature		<ul style="list-style-type: none"> <li>■ -40°F to +149°F</li> <li>■ -40°C to +65°C</li> </ul>
	Humidity (relative)		5%–95% non-condensing
	Average power consumption		3.0 W
	Maximum power consumption		8.8 W
	Height		5.125 inches (13.018 cm)
	Width		0.563 inch (1.429 cm)
	Depth		10.5 inches (26.67 cm)
	Weight		0.5 pound (0.23 kg)
<b>Compliance</b>	Telcordia		<ul style="list-style-type: none"> <li>■ GR-57-CORE</li> <li>■ GR-1089-CORE (for lightning and power cross)</li> </ul>

**North America**

Tellabs  
One Tellabs Center  
1415 West Diehl Road  
Naperville, IL 60563  
U.S.A.  
+1 630 798 8800  
Fax: +1 630 798 2000

**Asia Pacific**

Tellabs  
3 Anson Road  
#14–01 Springleaf Tower  
Singapore 079909  
Republic of Singapore  
+65 6215 6411  
Fax: +65 6215 6422

**Europe, Middle East & Africa**

Tellabs  
Abbey Place  
24–28 Easton Street  
High Wycombe, Bucks  
HP11 INT  
United Kingdom  
+44 870 238 4700  
Fax: +44 870 238 4851

**Latin America & Caribbean**

Tellabs  
1401 N.W. 136th Avenue  
Suite 202  
Sunrise, FL 33323  
U.S.A.  
+1 954 839 2800  
Fax: +1 954 839 2828

Statements herein may contain projections or other forward-looking statements regarding future events, products, features, technology and resulting commercial or technological benefits and advantages. These statements are for discussion purposes only, are subject to change and are not to be construed as instructions, product specifications, guarantees or warranties. Actual results may differ materially.

The following trademarks and service marks are owned by Tellabs Operations, Inc., or its affiliates in the United States and/or other countries: TELLABS®, TELLABS and T symbol®, and T symbol®.

Any other company or product names may be trademarks of their respective companies.

© 2007 Tellabs. All rights reserved.  
74.1893E Rev. A 10/07