



"Results You Can Count On"

Model 458-LM-A1-30-TR114
Local Loop Simulator for TR-114
Including Bridged Tap

Rev -
Date of Publication: 07/22/2013



Customer Support

Thank you for your purchase of the Telebyte Model 458-LM-A1-30-TR114 Local Loop Simulator for TR-114 Including Bridged Tap. This one-channel product simulates 26 & 24 AWG PIC as specified in ANSI T1.417.

Contact Information:

Telephone

General: 631-423-3232
Technical support: 800-835-3298
Fax: 631-385-8184

E-mail/Internet

support@telebytebroadband.com
sales@telebytebroadband.com
www.telebytebroadband.com

Mail

Telebyte, Inc.
355 Marcus Blvd
Hauppauge, NY 11788



Warranty

Included With Your Purchase

One-year Warranty

- Telebyte will furnish parts and labor for the repair or replacement of products found by Telebyte to be defective in material or workmanship during the warranty period.¹

One-year Calibration (where applicable)

- One N.I.S.T. traceable calibration on the first-year anniversary of the product ship date.²
- Calibration report to ensure traceability.

Extended Customer Care

There are two options available. Our three-year extended warranty extends the original warranty by an additional 36 months and the three-year calibration contract provides 36 additional months of calibration.

Three-Year Extended Warranty

You can extend the original one-year warranty that comes with your product by purchasing the **Three-Year Extended Warranty**.³

Features:

- Telebyte will furnish parts and labor for the repair or replacement of products found by Telebyte to be defective in material or workmanship during the warranty period.¹

Three-Year Calibration Contract (where applicable)

Extended calibration is available through the **Three-Year Calibration Contract**.⁴

Features:

- Yearly N.I.S.T. traceable calibrations, each on the second, third and fourth anniversary of the ship date.²
- Report to ensure traceability.

Disclaimer of Warranties and Other Terms and Conditions

¹ TELEBYTE, INC. warrants its broadband simulation equipment to be free from defects in material and workmanship, under normal and proper use and in its unmodified condition, for 12-months, starting on the date it is delivered for use. TELEBYTE'S sole obligation under this warranty shall be to furnish parts and labor for the repair or replacement of products found by TELEBYTE to be defective in material or workmanship during the warranty period. Warranty repairs will be performed at the point of manufacture. Equipment approved for return for warranty service shall be returned F.O.B. TELEBYTE factory and will be redelivered by TELEBYTE freight prepaid, except for non-continental U.S.A. locations. These deliveries will be sent COD freight and import/export charges.

² The customer is responsible for freight and customs charges when shipping products to and from Telebyte for calibration services.

³ You must purchase the extended warranty at the time of purchase or during the initial warranty period.

⁴ You must purchase the calibration contract at the time of purchase or during the initial warranty period. The above warranty is in lieu of all other warranties, expressed or implied, statutory or otherwise, including any implied warranty of merchantability or fitness for a particular purpose. TELEBYTE shall not be liable for any damages sustained by reseller or any other party arising from or relating to any equipment failure, including but not limited to consequential damages, nor shall TELEBYTE have any liability for delays in replacement or repair of equipment.



Equipment Returns

Out of warranty equipment may be returned, prepaid, to the Hauppauge, N.Y. customer service facility. Return shipping charges will be billed to the customer. The repaired unit will have a 90-day warranty. In those cases where "no trouble" is found, a reduced charge will be billed to cover handling, testing, and packaging. Whether in or out of warranty, a Return Material Authorization number (RMA) is required and may be obtained by going to www.telebytebroadband.com and opening a technical support case.

Please be sure to reference the RMA number on the outside container.



Table of Contents

1.0 Introduction	1-1
2.0 Specifications	2-1
2.1 458-LM-A1-30-TR114	2-1
2.2 458-3SLB	2-1
2.3 458-CC-16/458-CM	2-2
3.0 Control	3-1
3.1.1 RS-232 (Serial Port) Remote Commands	3-1
3.1.2 IEEE 488 (GPIB) Remote Commands	3-2
3.2 Graphical User Interface.....	3-3
3.3 LCD Display.....	3-3



1.0 Introduction

The Model 458-LM-A1-30-TR114 Local Loop Simulator for TR-114 is the ideal solution for simulating test loops as defined in TR-114 and includes a Bridged Tap. In addition, it is also suitable for ADSL, ADSL2, ADSL2+, and VDSL2 chip/modem/DSLAM testing of straight loops out to 24,000 feet in very small increments.

This versatile local loop simulator is plugged into our Model 458-3SLx (3-Slot) or 458-CC-16 (16 Slot) chassis where settings are controlled by a convenient keypad located on the front, RS-232, Ethernet or IEEE-488(GPIB). The modular design of Telebyte's products allows the 458-LM-A1-30-TR114 to be combined with other line modules for a wide variety of test configurations.

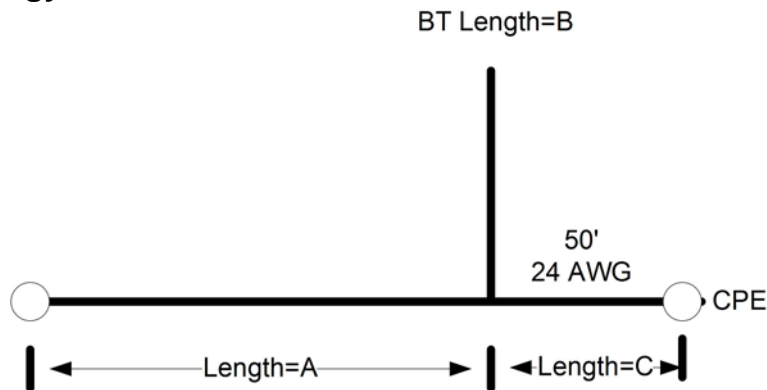
Featuring:

- Simulates 26 & 24 AWG PIC as specified in ANSI T1.417
- Bandwidth DC to 30 MHz
- Solution for TR-114 test loop simulation, including bridged tap
- Also suitable for ADSL, ADSL2, ADSL2+, & VDSL2 chip/modem/DSLAM testing
- 26 AWG loop lengths programmable from 0 to 24,000 ft in 25-ft increments
- Plugs into our Model 458-CC-16 (16-slot) or 458-3SLx (3-Slot) chassis
- Loop Lengths can be controlled manually via front panel of chassis, or remotely via RS-232, Ethernet or IEEE-488 (GPIB)



2.0 Specifications

2.1 Bridged Tap Topology



Bridge Tap Topology
(A is the distance from the CO to the BT location)

Length A= 26 AWG 0 to 24,000 ft in 25-ft increments
 Length B= 26 AWG 0 to 200 ft in 10-ft increments
 Length C= 24 AWG 50 ft

2.2 458-LM-A1-30-TR114

Product Specifications	
Simulation	<ul style="list-style-type: none"> • Accurately simulates attenuation and impedance • Full bidirectional operation at all specified frequencies • 24/26 AWG PIC as specified in ANSI T1.417
Bandwidth	DC to 30 MHz
Attenuation Accuracy (when source and load impedances are 100 ohms)	MAE < 1 dB 20 kHz to 30 MHz
Maximum Attenuation	> 90 dB
Impedance Accuracy	Typically +/- 10% 20 kHz to 30 MHz
Maximum Voltage Tip – Ring	200 V
Maximum Current	130 mA
Connectors	2 RJ-45's on front



2.2 458-3SLB

Product Specifications (Chassis and Control Module)	
Controls	Keypad for setting loop lengths and IEEE-488 address, RS-232, or Ethernet communication parameters.
Indicators	Backlit LCD display of line length and set up parameters.
Power	88 to 264 VAC, 50 or 60 Hz
Size	[2U] 19 in W x 22 in D x 3.47 in H (482.6 mm W x 558.8 mm D x 88.1 mm H)
Environmental	Operating: +32 F to +122 F (0 to +50 degrees C) Storage: 0 to 95% relative humidity (non-condensing)
Remote Control Connectors	RS-232: DB9 female (DCE); GPIB:IEEE488 24-pin connector. Ethernet: RJ-45
Plug-In Compatibility	Accepts one, two or three 458 Line Modules or one 458-RT

2.3 458-CC-16/458-CM

Product Specifications 458-CC-16 (16-Slot Chassis) & 458-CM (sold separately)	
Controls	Keypad for setting loop lengths and IEEE-488 address, RS-232, or Ethernet communication parameters.
Indicators	Backlit LCD display of line length and set up parameters.
Power	100 - 240 VAC, 50 or 60 Hz
Size	[7U] 19 in W x 22 in D x 12.22 in H (482.6 mm W x 558.8 mm D x 310.4 mm H)
Environmental	Operating: +32 F to +122 F (0 to +50 degrees C) Storage: 0 to 95% relative humidity (non-condensing)
Remote Control Connectors	RS-232: DB9 female (DCE); GPIB:IEEE488 24-pin connector. Ethernet: RJ-45
Plug-In Compatibility	Accepts 1-16 458 Line Modules

Specifications are subject to change without notice. Made in USA.

- Detailed information about the operation of the 458-3SLB and 458-CC-16/458-CM can be found in the reference manuals for those products. Only information specific to the 458-LM-A1-30-TR114 is provided in this manual.



3.0 Control

The Model 458-LM-A1-30-TR114 can be controlled three ways: via RS-232 and IEEE488 Remote Commands, our GUI interface or the LCD display on the front panel of our 458-3SLx or 458-CM.

3.1 Remote Commands

3.1.1 RS-232 (Serial Port) Remote Commands

Length Settings 26 AWG Section:

Set 26 AWG Length command SL:M:LE:C

M = Module number 01 - 16, 01 - 02, 01 - 03

LE = 0 – 24025 feet in steps of 25 feet

C = Connect mode:

- N = Connect both CO and CPE ends
- P = Connect CPE only - CO open
- O = Connect CO only - CPE open
- Z = Open both CO and CPE ends

Example

SL:02:24025,N

Set length of module 02 to 24025 feet with both CO and CPE connected.



Length Settings Bridged Tap Section:

Set Bridged Tap length command SL:M:BT:T

T = 0 – 200 feet in steps of 10 feet

For T = 0 Bridged Tap open with the 50-foot 24 AWG fixed length section disabled

For T = 10 - 200 enables the Bridged Tap and the 50-foot 24 AWG fixed section

Example

SL:02:BT:100

Set bridge tap length of module 02 to 100 feet

3.1.2 IEEE 488 (GPIB) Remote Commands

26 AWG Section

Set Length

SETCARD:LENGTH:02:24025,N

Read Length

RL:M

READCARD:LENGTH:M

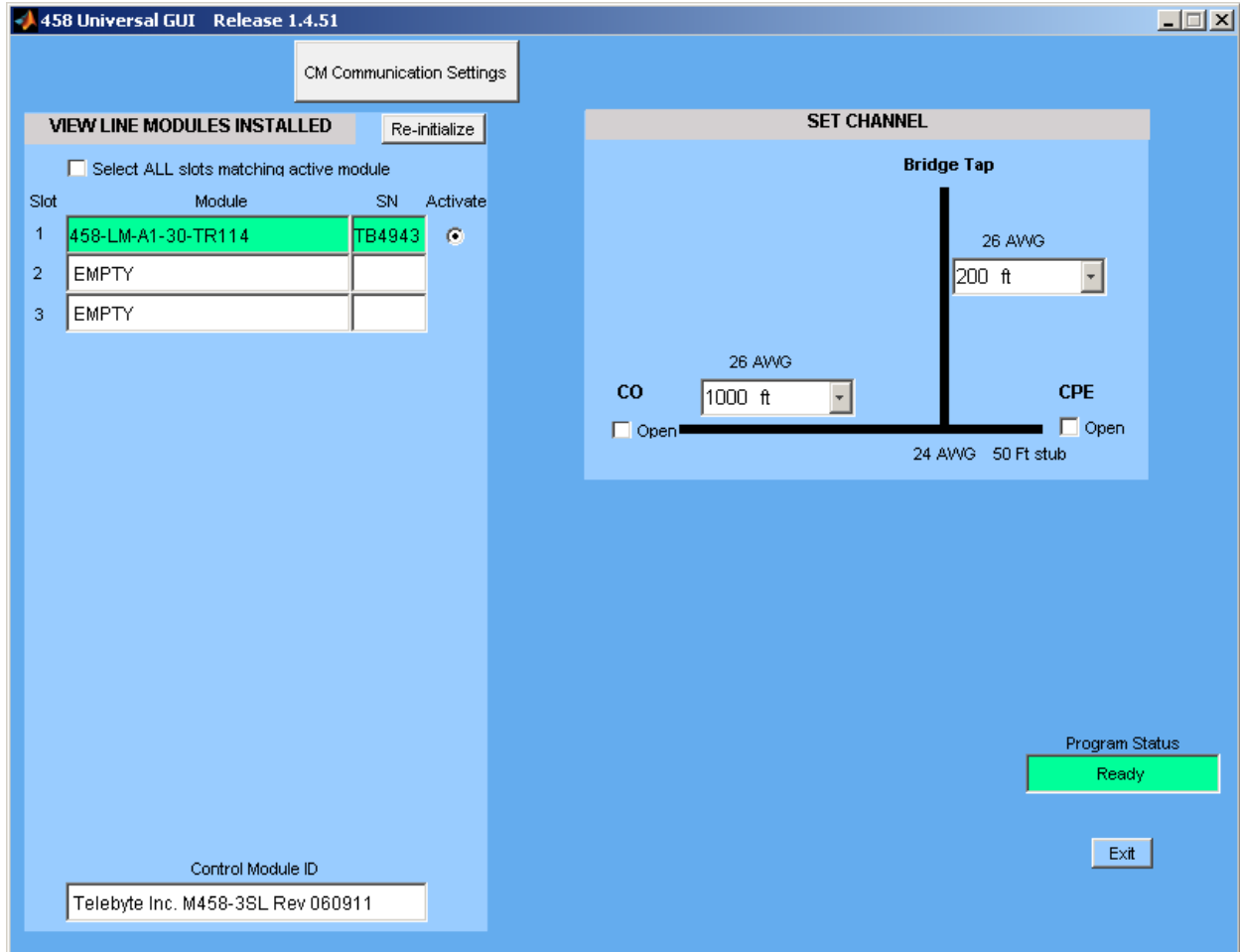
SETCARD:LENGTH:02:BT:100

Read bridge tap length command RL:M:BT

READCARD:LENGTH:M:BT



3.2 Graphical User Interface



3.3 LCD Display

- Use UP and DOWN arrows to select the slot and either the Bridged Tap or Straight Loop mode.
- Select the length for the current slot/mode using LEFT or RIGHT arrow buttons.