

#### Installer Functions #1



### LEVEL MODE

Measure level of analog and digital signals or single frequency carriers

















Tune by Channel -



































## **QAM LITE MODE**

Level and MER

























































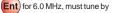












frequency and not by channel to enter



## QAM DIGITAL MODE (Option QA-1 or QA-2)

Includes all of the features of QAM Lite, plus Digital Constellation, Equalizer TAPS, and BER Graph

Change Display - DISPLAY toggles between Level, MER, Constellation, Equalizer and BER Graph (BER Graph will only appear if your 860 DSP or 860 DSP has received the Enhanced Digital Video Option)



#### AUTO TEST MODE

Run macros of preselected tests



Select Macro - ( ) select a file, i.e. test.mac

10

IMMEDIATE

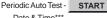
Immediate Auto Test - START



Test executes, then select a Location\* and enter a File Name\*\*



, select a Location\*, enter a File Name\*\* and enter a



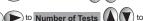
Date & Time\*\*\*













Note: 860 will go into Sleep Mode until selected time

Table of Times Auto Test - START , select a Location\*, enter a File Name\*\*











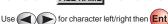
Note: 860 will go into Sleep Mode until selected time

\* To Select Location - LOCATION





\*\* To Enter File Name - FILE NAME Enter File Name



\*\*\* To Set Date & Time - Ent) mm/dd/yyyy then hh/mm/ss (24 hour time)



## AUTO TEST RESULTS MODE

Displays results and detail from Auto Test Macro

Select Macro Log -





to select macro log

Show Details of Macro Log - (Ent) to display detail





TRILITHIC

For additional assistance, refer to your operation manual or call: (800) 344-2412 or (317) 895-3600 P/N 0010218003 rev. 08-10



#### Installer Functions #2



## SPECTRUM ANALYZER MODE

Displays amplitude of carriers, beats and RF sources in a settable frequency band

Note: This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).

Set REF Level - Ref (A) (V) or Fn (V) Auto Range

Set Tuning Method - TUNING then Center/Span to see spectrum near a frequency of

Start/Stop to see frequency band of interest interest or

Center/Span Tuning -



Start/Stop Tuning -

Hold Mode -



or **2** Stop: 25,000 MHz

Setting Markers -



or 2 Marker B: 20.000 MHz Marker Functions - MARKER then select Center => Marker 1 Centers display on Marker 1

Center => Marker 2 Centers display on Marker 2 Start=M1/Stop=M2 Sets Start and Stop Marker

None

Detector Mode - DETECTOR then select \* AVERAGING **DWELL WIDE** 

**DWELL NARROW** then select

MIN

HOLD



## ADVANCED SPECTRUM ANALYZER MODE (Option SA-1)

Includes all of the features of Spectrum analyzer Mode, plus resolution bandwidth changes and zero span

Change Resolution Bandwidth - RBW 300 kHz until desired RBV

## Zero Span Settings

Set Center Frequency - Center: 50.000 MHz or 5 0 Fn 0 Ent for

Adjust Reference - Ref until signal is just off the top of the screen without overloading the DSP

Change dB/Div - 1 dB/div as desired

Change into Zero Span Mode - Span: 30.000 MHz press 0 Ent

Change Triggering - (-) or (+) or Auto (A) vuntil AUTO is displayed

Change Resolution Bandwidth - RBW 300 kHz (A) until desired RBW is displayed

Change Time per Division - 20 usec/div until desired time per division is displayed

Adjust Triggering Level - Trig (A) (V) until desired level is displayed



### RETURN SPECTRUM ANALYZER MODE

Includes all of the features of the Spectrum Analyzer Mode, but with a frequency restriction of 4 to 65 MHz.



### TILT MODE

Measure tilt channel levels and compute system tilt

Set REF Level - Ref Or Fn Auto Range Ent

Set Tilt Channels - LOW or HIGH computes tilt between low and high channel



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### Installer Functions #3



## PING MODE

Confirm operation of cable modem or network connection

Select Host - Host Name



Enter Host's domain name (Ent) or (



Host IP

enter Host's IP Ent

Set Packet Delay - Pkt Delay



Choose smallest delay and largest size compatible with available upstream/downstream data rate

Set Packet Size - ( ) Pkt Delay 256 bytes

Start/Stop Test - START or



Modem Info - MODEM displays internal modem statistics



# VoIP TEST MODE

Measure VoIP quality

Select Server IP - type numbers to enter Server IP Ent



Select START - to begin test (it will beep when complete), results shown as

"P" for Pass or "F" for Fail

Select **DETAILS** - for in-depth packet transmission statistics



### **BER MODE**

Useful for in-depth investigation of BER problems











Change Scan Time - 200 sec (A) (V) to select scan time







Reset Scan Display - RESET



#### THRU PUT MODE

Measure upstream and downstream data transfer rate

Set Server IP -







Ent enter IP of PC that is configured as

TFTP and/or HTTP server

Set Downstream File -



Downstream File



Ent) enter file name to download

from server for downstream test

Test Upstream - UPSTREAM select transfer method TFTP or HTTP or

UDP Max (Must have high speed throughput option installed to use UDP) Ent

Test Downstream - DOWNSTREAM select transfer method TFTP or HTTP or UDP 5 Mbps

or UDP 10 Mbps (Must have high speed throughput option installed to use UDP) Ent

Modem Info - MODEM displays internal modem statistics

Note: We suggest using the Trilithic Data Server software. Contact Trilithic for more information.



## WEB TEST MODE

Confirm operation of cable modem and web connectivity

Rerun Test - (Fn)



highlight BROWSER REFRESH Ent





# WEB BROWSER MODE

Browse the World Wide Web



) to highlight your choice **(Ent**) to jump to that page





) highlight BROWSER HOME Ent





Panning Horizontal - <<SCROLL SCROLL>> for pages wider than the display

Panning Vertical -



for pages longer than the display

Note: The Home Page is setup via WorkBench software. Contact Trilithic for more information.



TRILITHIC

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#### Installer Functions #4



## CM STAT MODE (DOCSIS 2.0 and 3.0)

Display a quick view of the internal DOCSIS 2.0 cable modem information

Note: This is a standard mode on 860 DSPis and is not available on 860 DSPs.

Connect the cable drop to the instrument's SLM/Forward input.

Log On to the Network -







Select CM Stat -







The connection statistics for the internal cable modem are displayed, including downstream and upstream frequency, transfer rate, power level, downstream modulation type, signal-to-noise ratio. corrected bits, and uncorrected bits.



## TRACE ROUTE MODE

Display a route and trip time from the source to the destination while displaying routers along the route

Note: This is a standard mode on 860 DSPis and optional on 860 DSPs.





Enter Host's domain name (Ent) or (





Start/Stop Test - START



The trace route is continually displayed in a loop, allowing you to see if a particular router is intermittently passing ping packets and if different routes are being taken.





#### Service Functions #1



### **CSO/CTB MODE**

Measure composite second order, composite triple beat of analog and digital channels

Note: This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).















Wait for stable level reading then remove carrier. The 860 will measure and display CSO/CTB. Turn carrier back on, 860 will hold readings until you tune to new channel. Note: Requires 0 dBmV (+60 dBuV) or greater carrier level



### **SCAN MODE**

Measure levels of all channels and tests to limits

Note: This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).

Set REF Level -





























Select Limits -











highlight your choice Ent

Limits Results -

DROP

LIMITS View Limits Summary \*= Fail

Note: The limits failed if an asterisk appears next to it.



#### **FM DEV MODE**

Measure FM Deviation and listen to audio

Note: This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).

Select Channel -













or VOL DOWN Listen to Audio -VOL UP Note: Analog channels only - see MSG bar



#### **HUM MODE**

Measure hum on non-scrambled analog channels

Note: This is a standard Mode on 860 DSPs and is only available on 860 DSPs with the Power Pack Option (PP-1).

Select Channel -













Note: Analog Channels only - see MSG bar



### C/N MODE

Measure carrier to noise on non-scrambled analog channels

Note: This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).















Select Channel - (











Note: Non-scrambled analog channels only - see MSG Bar Requires + 10 dBmV (+70 dBuV) carrier level



## MODULATION MODE

Measure % modulation of non-scrambled video and listen to audio

Note: This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).













Listen to Audio - AUDIO then VOL UP or VOL DOWN

Note: Analog channels only - see MSG bar





#### Service Functions #2



### **SWEEP MODE**

Allows balancing of forward signal levels

**Note:** This is a standard Mode on 860 DSP's and is only available on 860 DSPi's with the Power Pack Option (PP-1).

#### At Reference Site

Select Channel Plan - CH PLAN highlight your choice Ent

Auto Adjust Screen - Fn (A) (V) to highlight AUTO RANGE Ent

Save Reference - SAVE REF highlight desired slot Ent

### At Balancing Site

Retrieve Reference - GET REF highlight your choice Ent

Change dB/Div - 2 dB/div (1) to desired amount

**Note:** Make adjustments to amplifier until a flat trace at zero is created with minimal Peak to Valley across the frequency range



## SSR RETURN SWEEP MODE (Option SR-1)

Troubleshoots ingress and balances return band

Set Telemetry Frequency - Rx LINK 8 0 Ent for 80.00 MHz

Sweep or Compare \_ compare toggles between sweep, local and headend ingress view, and local only ingress view

Set Tx Level - Tx : 25 dBmV to set sweep transmit level



## **RSVP RETURN TEST MODE (Option VP-1)**

Launch level test and carrier to ingress test

To prevent accidental changes, settings for RSVP mode can only be adjusted from the SETUP menu. (Consult your Operation Manual for instructions.)

From this screen you can only perform the RSVP test against previously set limit settings and view test results.

Start Test - START and wait for results to be displayed as PASS or FAIL.



#### SOURCE MODE

Generates a return band (5 to 65 MHz) test carrier using the REVERSE/BOTH Port

Set Frequency -Freq 28.10 MHz







Set Modulation - Modulation highlight your choice - CW, PULSE, TAG, SWEEP 42,

SWEEP 65, SINGLE, REPEAT, or LOOP BACK Start/Stop Transmitter -**START** STOP



## **QAM SOURCE MODE**

Generates a return band (5 to 65 MHz) QAM test carrier using the SLM/FORWARD Port



Frea 28.10 MHz











Set Level -



Tx Level 40 dBmV



highlight your choice - QPSK, 16 QAM, 32 QAM, or 64 Set Modulation - Modulation

MAQ





highlight your choice - 160, 320, 640, 1280, 2560, or

5120 ksps





Start/Stop Transmitter - START



'RII ITHIC

For additional assistance, refer to your operation manual or call: (800) 344-2412 or (317) 895-3600 P/N 0010218003 rev 08-10



#### Service Functions #3



### **QAM EVS**

Allows tuning the meter to a downstream QAM channel and displaying its error vector spectrum to reveal noise and ingress present under the QAM channel

Note: This is a component of the QA-1 option for the 860 DSP and a component of the QA-2 option for the 860 DSPi.

Set Reference Level -







Adjust Channel -







Set Vertical Resolution -

















Select Channel Plan - CH PLAN







highlight your choice Ent







### **FDR**

Provides a tool for determining the distance to fault (DTF) of cable systems.

Set Reference Level -







Set Velocity of Propogation -











Set Step Size -



Step: 1.0 MHz



Adjust Markers -



Marker A: 0.0 ft, Marker B: 0.0 ft,





Set Cable Type - Get Vop





highlight your choice - RG-59, RG-6, RG-11, Semi-Rigid,

or Hardline Ent







## **Utility Functions #1**



Wi-Fi

#### Wi-Fi Survey Mode

Provides a means to verify Wi-Fi accessibility and verify that the configured network channel is not conflicting with a neighboring access point. Also provides a communication path for measurement data, hardware configuration, and common Wi-Fi network verification tests.

Start Wi-Fi Mode - UTILITY







Select from Available Wi-Fi Zones -



Wi-Fi access points within range are displayed in descending order of signal strength, with the connected access point highlighted in black.

#### Wi-Fi Mode

Provides a means to verify Wi-Fi access points are broadcasting adequate field strength and security protocols. Also provides a communication path for measurement data, hardware configuration, and common Wi-Fi network verification tests



















The meter logs in to the Wi-Fi network and functions the same as when connected using the internal cable modem or RJ-45 Ethernet connection.

