

## AHG4 TIMING DISTRIBUTOR DATA SHEET SYNCHRONIZATION DISTRIBUTION EXPANDER

### INTRODUCTION

The AHG4 TD (Timing Distributor) plug-in, used in the SDE (Synchronization Distribution Expander), provides a sine-wave output signal for synchronizing the J68857AC PFS (Primary Frequency Supply). This sine-wave output may be set to either 64 kHz or 512 kHz. In addition, the output level may be selected from +10 dBm, -23 dBm, or -54 dBm. The TD is compatible with both the J98726W-1 and J98726W-2 SDE panels. The AHG4 should be used in timing distributor slot number four of the SDE.

### FEATURES

The features for the AHG4 include the following:

- TI (Transmission Interface) output-in-use indication
- Output cutoff indication
- Output selection: 64-kHz or 512-kHz sine wave
- Level selection: +10 dBm, -23 dBm, or -54 dBm.

### DESCRIPTION

Under normal operating conditions, the TD supplies an output timing signal proportional in frequency to the dual input signals to the SDE. If both inputs to the SDE fail, the TD output is disabled, and the red cutoff LED on the faceplate (Figure 1) lights. When at least one of the inputs to the SDE is restored, the TD output is enabled.

When the TD is first inserted into the SDE panel, the red cutoff LED lights. This indicates that the output is disabled until the circuit is synchronized

to the input timing signal. After 2 seconds, the cutoff LED is turned off and the output is enabled.

*Warning: This plug-in unit contains devices that are subject to damage or decreased reliability from static discharges. When handling this unit, proper anti-static measures should be taken, such as wearing grounding bracelets and handling the unit by the faceplate only.*

### OPTIONS AND INSTALLATION

The TD output frequency is set by selecting the proper position of the plug and jack assembly labeled 64 kHz and 512 kHz (Figure 1).

The TD output is set to one of two levels: attenuated or unattenuated (labelled +10 dB on the TD). Typically, the attenuated output is used. The attenuated output has two options selected by the DIP (dual in-line package) switch bank microswitches. The DIP microswitches 1 and 2 are set to the ATTEN position. If the 64-kHz frequency is selected, the -54 dBm output level is used by setting DIP microswitches 5 and 6 to the -54 dB position. If the 512-kHz frequency is selected, the -23 dBm output level is used by setting the DIP microswitches 5 and 6 to the -23 dB position. The attenuated output is accessed from TD slot 4 backplane terminals 20 (tip), 47 (ring), and 22 (shield). This signal is carried via an installed, twisted, triple cable to terminals E20, F20, and D20, respectively. These terminals are located on terminal block B of the SDE. The connection between the SDE and the PFS should be with a 22-gauge twisted shielded cable. Detailed information on source wiring to the PFS.2B (J68857AC) may be found in SD-50802-1, Figure 102.

The unattenuated output of the TD is used when the office environment is noisy and the SDE cannot transmit low-level synchronization signals to the PFS without interference. The unattenuated output provides a sine-wave signal at a +10 dBm level. This output is selected by setting DIP microswitches 1 and 2 to the +10 dB position. The unattenuated output signal is accessed at TD slot 4, backplane terminals 21 (tip), 48 (ring), and 22 (shield). This signal is carried via an installed twisted, triple cable to terminals E20, F20, and D20, respectively. These terminals are located on terminal block B of the SDE. When the unattenuated signal is used, an external attenuator must be placed between the SDE and the PFS (close to PFS) to supply the proper PFS input signal. A 22-gauge twisted shielded cable should be used to connect the SDE to the PFS.

The +10 dBm output may also be used to verify that a valid output exists. Using a differential oscilloscope, the output waveform can be observed across a 133-ohm resistor. The connection is made between TD slot 4, backplane terminals 21 (tip) and 48 (ring) with 22 (shield) grounded. The waveform should be a sine wave with a peak-to-peak amplitude of approximately 1.4 volts for the 64-kHz setting and 2.4 volts for the 512-kHz setting. The available plug and switch options are summarized in Table A.

Additional backplane wiring is necessary in order to use the TD with either the J98726W-1 or J98726W-2 SDE panels. The control lead terminals between the TI (Timing Interface) circuit packs and TD slot 4 should be connected with 26-gauge wire as follows:

- Connect terminal 42 of TD slot 4 to terminal 16 of TI-A
- Connect terminal 43 of TD slot 4 to terminal 16 of TI-B.

Unlike the AHG3 TD, a PCS (Parallel Changeover System) procedure cannot be used when replacing the AHG4 TD. The replacement of the AHG4 TD consists of removing the bad TD and installing the replacement in the same TD slot.

*Caution: There will be a disruption of the output signal to the PFS. However, the PFS will assume a Stratum II+ holdover during this time interval and allow service to operate with minimal disruption.*

## SPECIFICATIONS

The specifications for the AHG4 TD include: attenuated output, unattenuated output, spectral purity, input reference switching, temperature, and humidity.

### Attenuated Output:

64 kHz (Sine wave) at -54 dBm +/-2 dBm  
512 kHz (Sine wave) at -23 dBm +/-2 dBm

### Unattenuated Output:

64 kHz (sine wave) at 7 dBm +/-2 dBm  
512 kHz (sine wave) at 10 dBm +/-2 dBm

### Spectral Purity:

64 kHz second harmonic at 25 dBm below fundamental

512 kHz second harmonic at 41 dBm below fundamental

### Input Reference Switching:

90 +/- 35 (upon loss of TD input signal)

### Temperature:

+40 to +100 degrees F - long term  
+4.4 to +37.8 degrees C  
+35 to +120 degrees F - short term  
+1.6 to +49 degrees C

### Humidity:

#### Min. Relative Humidity Range:

20 to 80 percent - short term  
20 to 55 percent - operating.

## ORDERING INFORMATION

Only one AHG4 timing distributor plug-in unit may be used in a single SDE panel at a time. The AHG4 TD may be ordered as a single plug-in unit.

PLUG-IN UNIT	CLEI CODE
AHG4	D4PQ107AXX

**REFERENCES**

The following publications provide more information on the SDE plug-in-units:

- SD-7C389-01
- SD-7C389-02
- AT&T Practice 314-913-220 — Description and Operation.

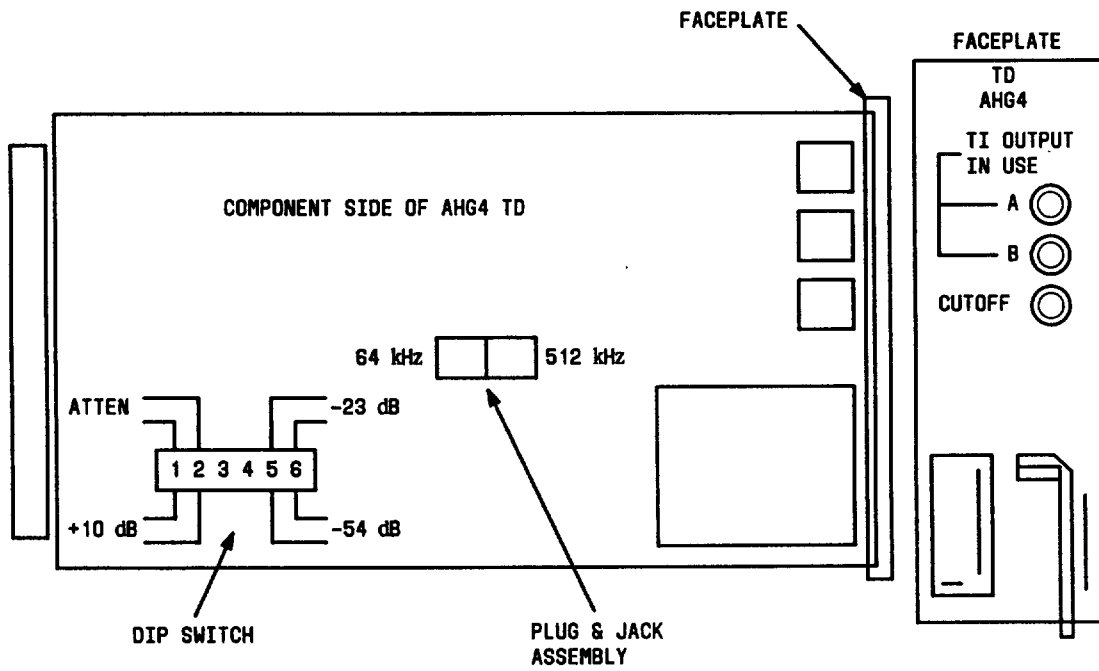


Figure 1. Location of Options on the AHG4 Timing Distribution Circuit Pack

TABLE A			
AHG4 TD PLUG AND SWITCH SETTINGS			
PLUG POSITION	SWITCH	SWITCH	OUTPUT
	1-2	5-6	
64 kHz	ATTEN	-54 dB	ATTENUATED OUTPUT
512 kHz	ATTEN	-23 dB	ATTENUATED OUTPUT
64 kHz	+10 dB	DON'T CARE	UNATTENUATED OUTPUT
512 kHz	+10 dB	DON'T CARE	UNATTENUATED OUTPUT