

AHG10 TIMING INTERFACE DATA SHEET SYNCHRONIZATION DISTRIBUTION EXPANDER

INTRODUCTION

The TI (Timing Interface) plug-in unit, AHG10, for the SDE (Synchronization Distribution Expander) enables the SDE to provide synchronization from only CC (composite clock) outputs. The TI may be used in both the J98726W-1 and J98726W-2 SDE shelf assemblies and is compatible with all vintages of TA (timing alarm) and TD (timing distributor) plug-ins. The TI is used in configurations where timing distribution is necessary (requiring a master-slave timing arrangement). The configurations may consist of a master-slave arrangement, a concentrated configuration, or a distributed configuration. A maximum of 20 slave panels can be supported from a single master panel for a total of 800 CC output taps. The TI may also accommodate a concentrated configuration (main-auxiliary timing arrangement). The concentrated configuration allows the main panel to support up to two auxiliary panels for a total of 120 CC outputs at a single location. The main-auxiliary arrangement may also be used in the distributed timing configuration for a maximum of 24,000 output taps. Since the auxiliary panels do not require TI plug-ins, the expansion is cost efficient.

FEATURES

The features of the TI, AHG10 include the following:

- Allows SDE synchronization from a single composite clock input source per TI
- Provides undisturbed (signal without hits) input source switching for both manual and automatic transfers

- Reduces cost by implementing distributed-timing networks having master-slave SDE arrangements which requires a minimum amount of office cabling
- Provides dedicated output taps for supporting up to two auxiliary SDE panels
- Indicates input and output alarm status through LED (light-emitting diode) lamps on the TI faceplate
- Provides a maximum of 120 output taps (three working panels) at a single location without tripling the cost of expansion. This is accomplished using the auxiliary panel option described in the following information.

DESCRIPTION

The input to the TI plug-in unit is a standard office CC input. This input is detected by a transformer coupled circuit and monitored by pulse-width detectors. If the time between pulses is greater than 20 μ s, the detectors initiate an input source transfer to the adjacent TI. The amplitude of the recovered input signal is regenerated and split into a dual-rail unipolar signal. This dual-rail signal is routed to the open-collector output drivers which distribute the clock signal to each TD plug-in, and to the auxiliary panel output taps.

Alarm indications are one of two types: input failures and output failures. Input failures occur whenever the time between clock pulses exceeds 20 μ s. When an input clock failure is detected, the IN FAIL LED indicator on the faceplate of the TI lights up and a minor alarm is registered by the SDE to the office alarms. The IN FAIL alarm continues to report a failure as long as the condition exists. When the input failure is cleared,

the IN FAIL alarm clears and silences the office alarms. The only record of the input failure is the lighted minor alarm memory indicator lamp on the TA.

Output alarms are detected by pulse-width sensors located at the output open-collector drivers. The pulse-width sensors report an output failure alarm if the time between clock pulses is greater than 30 μ s. An output failure alarm lights the OUT FAIL LED on the faceplate of the TI and a minor alarm is registered by the SDE to the office alarms. An output failure alarm does not cause any input source switching, since an output failure may not necessarily mean that one of the input sources is bad. The protection switching during an input failure occurs at the TD plug-in which selects the output of the good TI. The OUT FAIL alarm continues to report as long as the condition exists. When the output failure is cleared, the OUT FAIL alarm also clears and silences the office alarms. The only record of an output failure after it has been cleared is the lighted minor alarm memory indicator lamp on the TA.

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.

EXPANSION AND MAINTENANCE

Auxiliary Panel Expansion

The AHG10 increases the maximum output capacity of a single SDE panel by a factor of three. This output expansion is performed by using an auxiliary panel in conjunction with an existing main panel. The main panel consists of either a J98726W-1 or J98726W-2 SDE shelf, one AHG1 TA, two AHG10 TIs, and four TDs. The auxiliary panel consists of either a J98726W-1 or J98726W-2 shelf, one AHG1 TA and at least one TD. Timing input signals to the auxiliary panel are supplied by dedicated output signals from the AHG10 TIs. Each AHG10 provides a dual rail unipolar signal and alarm information to each auxiliary panel. The auxiliary panel reports input alarm failures as if the TI plug-ins were actually being used. The timing and alarm signals between the main and auxiliary panels are carried by a multi-paired

shielded cable which may have a maximum length of six feet. Specific connection information for the auxiliary panels is shown in Figure 1 and Table A. As an ESD precaution, it is recommended that the dummy board ED-3C647-30 (or equivalent) be placed in the vacant TI slots of the auxiliary panel.

Timing Interface Removal

The TI, AHG10, may be removed from an in-service SDE without disruption of output timing signals. The removal process is started by pressing the ACO (Alarm Cut Off) button located on the Fuse and Alarm panel and looking for the TI that has a lighted IN SCE LED. The lighted IN SCE LED indicates which TI's input is being used to generate the output signals for the SDE. Therefore, if a TI must be removed, the input source must first be transferred to the adjacent, working TI. If the IN SCE LED is lighted on the faceplate of the TI that is to be removed, then the input source should be switched to another TI. The input source is switched by pressing the IN SCE TR button which is located on the faceplate of the TI that is to be removed. Once this button has been pressed, only the IN SCE LED of the adjacent TI should light and remain lighted. If either the IN FAIL or OUT FAIL LEDs remain lighted, then a problem exists which must be corrected. The TI may now be removed and the replacement inserted. Once the new TI is inserted and is working properly, the MEM button on the TA is pressed and all the LEDs on the TA should extinguish. Finally, the ACO switch is pressed to turn off the switch light and allow future alarms to be reported.

SPECIFICATIONS

The specifications for the TI AHG10 include general, alarms, and auxiliary outputs.

General

Input Impedance: 133 Ohms nominal

Input Type: Transformer Coupled

Input Signal: Standard Composite Clock

Min. Input Signal Level: 2.1 volts p-p (peak-to-peak)

Type of Detection: Amplitude Regeneration

Alarms

Input Failure Detection: $\leq 20 \mu s$

Output Failure Detection: $\leq 30 \mu s$

Failure Detection Scheme: Pulse Width
Measurement

Auxiliary Outputs

Output Type: Open Collector, TTL

Output Signals: Dual-Rail Unipolar,
TI] Alarm

Cable Length: Maximum distance of
6 feet from Main to Auxiliary
backplanes.

ORDERING INFORMATION

Only one AHG10 TI circuit pack may be used in a single SDE panel at a time. The AHG10 TI may be ordered as a single circuit pack unit using the following code.

PLUG-IN UNIT	CLEI CODE
AHG10	D4PQ107AXX (?)

REFERENCES

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

- T7C389-33
- SD-7C389-02
- AT&T Practice 314-913-220 — Description and Operation
- AT&T Practice 314-913-221 — Installation and Maintenance.

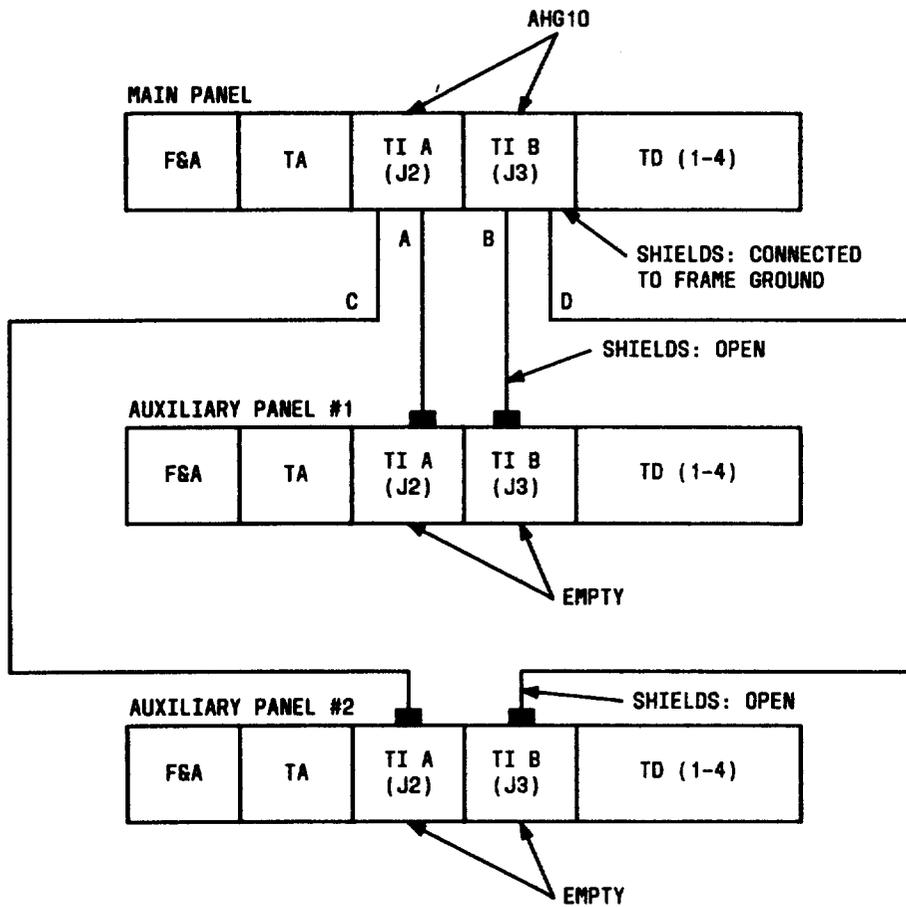


Figure 1. Cabling Diagram Showing Wiring Between Main and Auxiliary Panels Using the AHG10

TABLE A					
CONNECTION INFORMATION FOR AUXILIARY SDE PANELS					
FROM MAIN PANEL			TO AUXILIARY PANEL 1		
CONNECTOR	TERMINALS		CONNECTOR	TERMINALS	CABLE
J2 (TIA)	15		J1 (TA)	2	A
J2 (TIA)	7		J2 (TIA)	2,3	A
J2 (TIA)	34		J2 (TIA)	29,30	A
J3 (TIB)	15		J1 (TA)	3	B
J3 (TIB)	7		J3 (TIB)	2,3	B
J3 (TIB)	34		J3 (TIB)	29,30	B
FROM MAIN PANEL			TO AUXILIARY PANEL 2		
CONNECTOR	TERMINALS		CONNECTOR	TERMINALS	CABLE
J2 (TIA)	42		J1 (TA)	2	C
J2 (TIA)	8		J2 (TIA)	2,3	C
J2 (TIA)	35		J2 (TIA)	29,30	C
J3 (TIB)	42		J1 (TA)	3	D
J3 (TIB)	8		J3 (TIB)	2,3	D
J3 (TIB)	35		J3 (TIB)	29,30	D
NOTES					
<p>1. Each twisted shielded pair consists of two 26-gauge wires, P1 and P2. The P1 connections are shown in this table. The P2 connections are all tied to the frame ground on each panel. Any unused wires should also be tied to frame ground at both ends.</p> <p>2. The shield connection is tied to frame ground on the main panel but not connected on the auxiliary panel.</p> <p>3. The maximum overall cable length for each auxiliary panel should not exceed six feet.</p>					