

# Ternary FSK/AM Detector

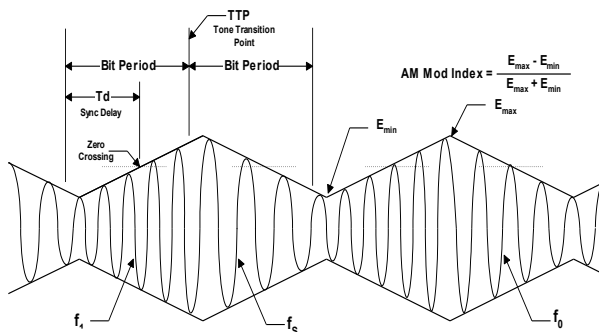
**FDT001**

## Features

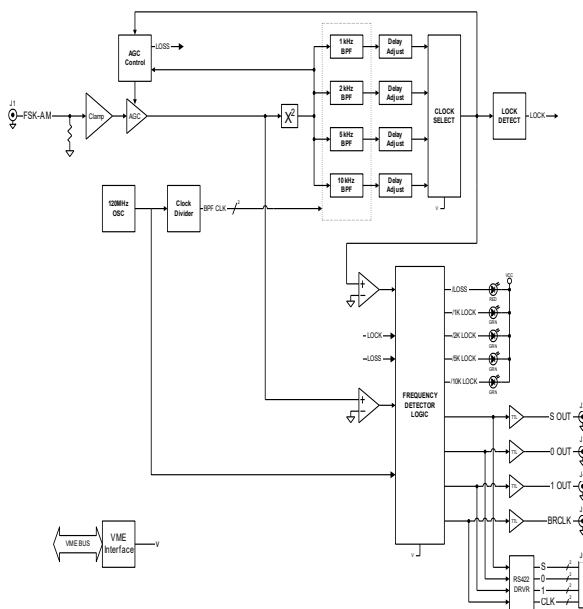
- SGLS FSK/AM Tri-Tone Demodulator
- Standard Tone Range
  - ◊ 30 kHz to 2.5 MHz
- Standard Command Rates
  - ◊ 1 kbps, 2 kbps, 5 kbps, 10 kbps
- Single slot 6U by 160 mm VME module

## General Description

The FDT001 is a SGLS FSK/AM ternary detector. The standard Space Ground Link System (SGLS) FSK/AM tri-tone signal is processed to produce 1, 0, and S ternary data outputs with a coherent command clock. The ternary tone frequencies and command data rate are programmed by the user. The demodulator accepts the FSK/AM signal input and produces both TTL and RS422 ternary (1,0,S) data and clock outputs. Operational parameters for the FDT001 are programmed via the VME bus interface.

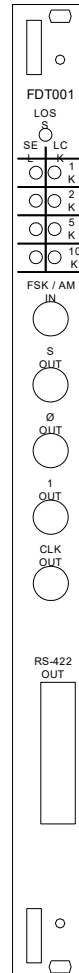


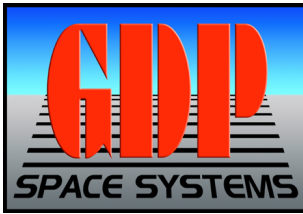
The card occupies a single 6U x 160 mm VME slot. The front panel contains SMA coaxial interface connectors for the FSK/AM signal input and single-ended TTL outputs (1,0,S & CLK). The RS422 data and clock outputs are provided on a multi-pin connector. Status LED's indicate the state of the synchronizers and detectors.



Cascaded tunable lowpass and high-pass filters serve to limit the out-of-band noise in the incoming signal. The effective pass-band of the cascaded filters passes the signal of interest without distortion, and limits out-of-band noise. The input signal is amplitude normalized with an automatic gain control (AGC) circuit.

The data rate clock is recovered from the amplitude modulated (AM) envelope of the input signal. Three FSK tones are detected using a digital frequency discriminator.





# Ternary FSK/AM Detector

**FDT001**

## SPECIFICATIONS

### INPUT

**FSK/AM SGLS Signal:** per Aerospace Report No. TOR-0059(6110-01)-3

**FSK Tone Frequencies:** three unique tones within range of 30 kHz to 2.5 MHz

**AM Modulation:** One half data rate triangular waveform. Command data rates 1K, 2K, 5K and 10K. (Other rates optional)

**Modulation Index:** 0.5

**Synchronization Delay:** 0.6 bit period (Other delays optional)

**Connections:** SMA Connector, 50 Ohm Input Impedance. (75 Ohms or High Impedance, Optional)

**Signal Level:** 0.125 volts to 4.0 volts, peak-to-peak (50 Ohm Input)

### OUTPUT

Ternary 1, 0, S Data with zero degree coherent command clock:

**TTL levels:** capable of driving 50 Ohm Load.

**RS-422:** balanced voltage interface, 100 Ohm load

### STATUS INDICATORS

LOSS (Red) - ON when the input signal level is below a preset threshold.

1 kbps SEL (Amber) / LOCK (Green) - ON if 1 kbps data rate is selected and synchronized.

2 kbps SEL (Amber) / LOCK (Green) - ON if 2 kbps data rate is selected and synchronized.

5 kbps SEL (Amber) / LOCK (Green) - ON if 5 kbps data rate is selected and synchronized.

10 kbps SEL (Amber) / LOCK (Green) - ON if 10 kbps data rate is selected and synchronized.

### POWER

+5 Vdc @ 1.3 A  
+12 Vdc @ 150 mA  
-12 Vdc @ 500 mA  
(+5V and +/- 15V, optional)

### SIZE

VME 6U x 160 mm, single-slot width

## Ordering Information

FDT001-00 Basic  
OPFDT001-01 +5V / ±15V Power

OPFDT001-89 Special Input Z  
OPFDT001-99 Special Command Rates

**Support:** Recognizing that no standard product can meet all the needs of all users, GDP stands ready to provide units tailored to unique applications. es990604

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