

FEATURES

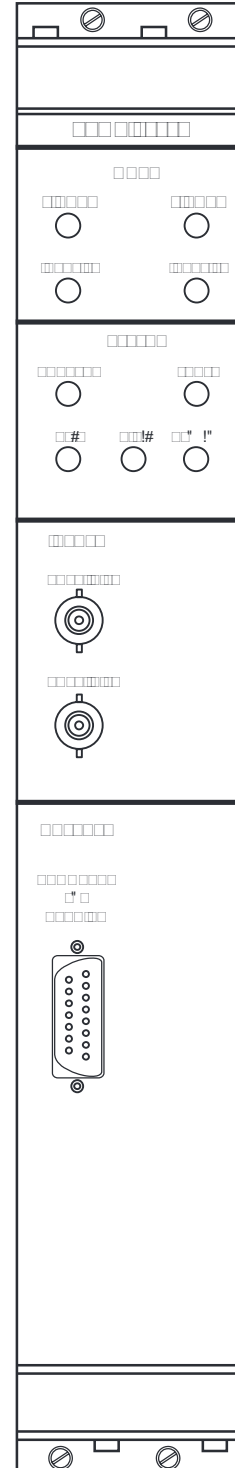
- N Fully compliant with the Air Force Satellite Control Network (AFSCN)
- N Modes-Command, Ranging or composite
- N Command Signals - S, 0, 1
- N Tone Frequencies - 65 KHz (S), 76 KHz (0), and 95 KHz (1)

DESCRIPTION

The AVME 3714D SGLS Demodulator VME module performs demodulation of SGLS standard signals. The dual slot 6U VME module is designed to maintain superior performance in the presence of a multiplex of signals and noise.

The SGLS input is a composite signal with a frequency shift keyed (FSK), amplitude modulated (AM) SGLS component and/or a PRN ranging signal. The AVME 3714D takes the SGLS component and extracts the transmitted message from the frequency modulation and extracts the timing information from the amplitude modulation. The unit can operate at data rates of 1 or 2 KHz by automatically determining which rate is present. The Demodulator goes into squelch when the input signal degrades to the point where data cannot be extracted from the tones. Squelch includes shut down of the sync output. A buffered version of the input signal is provided for range processing.

The U.S. Air Force Satellite Control Network (AFSCN) uses the Space Ground Link System (SGLS) for satellite telemetry, tracking, and control (TT&C). The digital satellite command words are FSK modulated where a logic "1" input is represented by a 95 KHz frequency, logic "0" input is represented by a 76 KHz frequency, and a third 65 KHz frequency is used when no data is present or an error condition exists.



communications

DESCRIPTION (continued)

The AVME 3714D performs SGLS demodulation for either command echo or telemetry purposes.

The AVME 3714D also accepts a PRN range code and strips the range code out of the downlink and makes it available on a separate conductor of the DB 15 output connector.

SGLS Demodulation

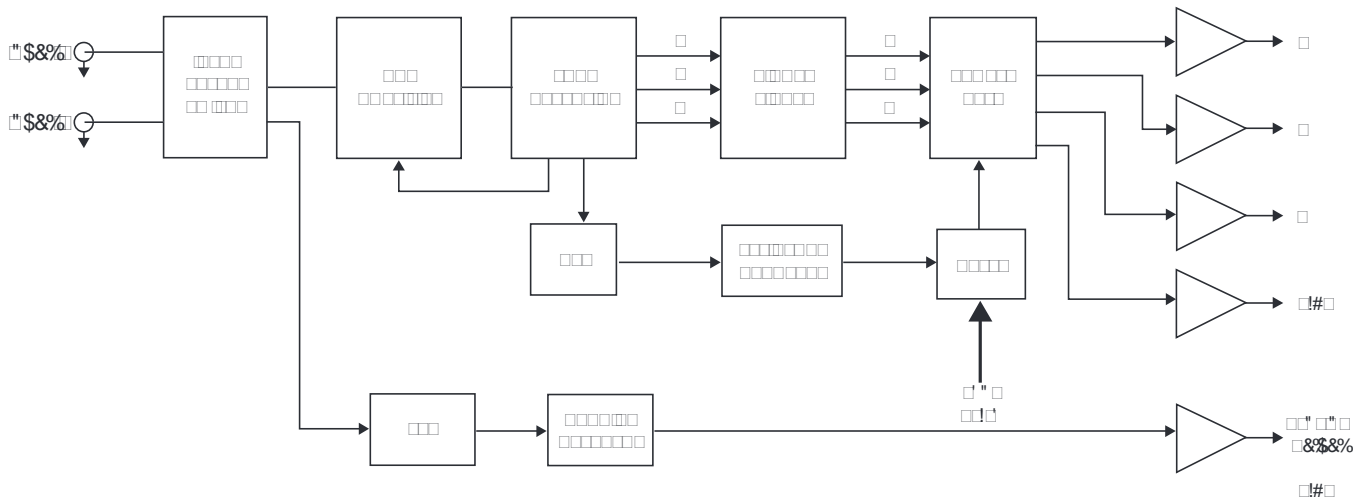
The AVME 3714D demodulator selects one of two SGLS inputs. The SGLS input is a composite signal with a frequency shift keyed (FSK), amplitude modulated (AM) SGLS component and a PRN ranging signal. The PRN ranging signal may or may not be present. The demodulator extracts the SGLS command data and clock from the composite signal and passes the baseband signal to the output port. The PRN output is automatically enabled when the composite input signal has a ranging component present and thus does not require any operator intervention to configure the unit.

The SGLS Demodulator takes the SGLS component and extracts the transmitted message from the frequency modulation and extracts the timing information from the amplitude modulation. The Demodulator goes into squelch when the input signal degrades to the point where data cannot be extracted from the tones. Squelch includes shutdown of the sync output.

Prior to installation and operation of the AVME 3714D, the user sets the base address of the module of DIP switch in center of the board.

The VME control interface of the AVME 3714D is simple but sufficiently flexible to allow the experienced user to tailor the control parameters to the current application. The setup and control parameters consist of bit rate, input select, loop bandwidth, mode, and sync delay.

AVME 3714D Functional Block Diagram



SPECIFICATIONS

Functional	
Demodulation Mode	Command, Ranging, or Composite (simultaneous Command and Ranging)
Command Signal	S, 0, 1
Tone Frequencies	65 kHz (S) □ 0.01% 76 kHz (0) □ 0.01% 95 kHz (1) □ 0.01%
Tone Distortion	Harmonics: -50 dBc minimum Non-Harmonics: -60 dBc minimum
Tone Amplitude Stability	All tone amplitudes within 1.0% of each other
Baud Rate	1000 or 2000 baud, □ 0.1%
AM Synchronization Signal	
Envelope Frequency	Half the baud rate, □ 0.01%
Envelope Shape	Triangle
Envelope Linearity	Better than 1.0%
Percent AM Modulation	47% □ 5.6% (programmable)
Synchronization Time Delay	(Programmable)
Default Settings	500 □ 100 □sec for 1k baud
(See Figure 1-3)	250 □ 50 □sec for 2k baud
Ranging Signal	PRN serial data at 1 Mbps □ 0.1%
Input Signal	
Impedance	50 ohms
Level	Input #1 -10 dBm Input #2 +10 dBm
Output Signals	
Level	RS-422 Compatible
VMEbus Interface	
Address Sizing	Short I/O-A16
Address Modifier	2D Hex or 29 Hex
Data Sizing	D16
Electrical Physical Input DC	
+5 Vdc	1.5 amps (typical)
+12 Vdc	0.5 amps (typical)
-12 Vdc	0.5 amps (typical)
Environmental	
Relative Humidity	5% to 95% non-condensing
Operating Temperature	0°C to +45°C
Storage Temperature	-5°C to +50°C
Physical	
Dimensions	Dual width 6 UH VME Card

