

ARINC429 to MIL-STD-1553

Part Number: YED/429/R1/1553BC/T1



This converter translates data from an ARINC429 high/low speed data bus to a MIL-STD-1553 data bus. The 1553 interface on this converter is configured as a single channel, single redundant Bus Controller (BC), but it could equally be configured as a dual redundant Remote Terminal (RT).

Typical uses for this type of converter are to provide an interface between an aircraft's INS (ARINC429) and mission equipment on a MIL-STD-1553B Databus. The interface to the ARINC429 bus is via high-speed opto-couplers assuring electrical isolation with the rest of the equipment on this bus. The interface can be used to acquire aircraft navigation and attitude data from typically an INS. The BC is responsible for transmitting the aircraft's navigation and attitude data in the form of a MIL-STD-1553 command word, immediately succeeded by a fixed number of data words. The typical update rate for the ARINC 429 data would be 64 Hz. The BC typically retransmits the data with a fixed frequency of 16 Hz.

A watchdog circuit is incorporated into the design and this is responsible for checking that the transmission of the 1553 continues under all conditions.

The customer must specify the required ARINC429 labels selected for translation onto the MIL-STD-1553 databus at the time of ordering. The 1553 data must also be specified - in particular the RT Address, Sub-Address, message type (BT to RT, RT to BC, RT to RT, etc.) and message length. In addition the customer must also supply data word formats for each of the 16-bit data words contained in the transmitted 1553 message. As the ARINC429 data can span up to 21-bits of data the translated 1553 data may have to span two 16-bit data words. Precise information on how each data field is to be translated from the ARINC429 to the 1553 must also be supplied. See below :-

Word Number	Word Name
CW	Broadcast Command
DW1	Label 324 (bits 29..14)
DW2	Label 325 (bits 29..14)
DW3	Label 314 (bits 29..14)
DW4	Label 361 (bits 29..14)
DW5	Label 361 (bits 13..11)
DW6	etc...
DW7	
DW8	
DW9	
DW10	
DW11	
DW12	
DW13	
DW14	
DW15	

Breakdown of 1553 DATA message.

This exercise it seems is the most difficult aspect for the customer. Help is available on request.

Features of this converter are:

- Power Requirements: 15-36VDC (28VDC @ 70mA)
- 1 Amp on PCB fuse. (non-resettable)
- 102 °C safety thermal fuse. (non-resettable)
- Reverse polarity protected.
- Opto-coupled ARINC429 Rx inputs.
- Automatic High/Low Speed ARINC429 receiver.
- Transformer coupled 1553 output.
- Filtered "D9" plug for power connections and ARINC429 input.
- Standard BJ-77 Triax Connector for 1553 output.

Specification (EMI and Environmental):

Weight:	750 grams.
Size:	212L x 121W x 55H (millimetres)
External supply:	15 to 36 VDC @ 110mA MAX.
Maximum supply before shutdown:	50 VDC
External DC Connector:	Filtered D9 plug (shared)
ARINC429 input:	Filtered D9 plug (shared)
1553 Connection:	BJ-77 Triax type (3 lug)
Environmental:	0 to 50°C (operating).
Temperature and Altitude:	RTCA DO-160C, Section 4, Category A1 25,000 feet Maximum.
Temperature Variation:	RTCA DO-160C, Section 5, Category C
Humidity:	RTCA DO-160C, Section 6, Category A
Operation shocks and Crash Safety:	RTCA DO-160C, Section 7, Category B
Vibration:	RTCA DO-160C, Section 8, Category M
Power Input:	RTCA DO-160C, Section 16, Category A
Voltage Spike:	RTCA DO-160C, Section 17, Category B
Audio Frequency Conducted - Susceptibility Power I/P:	RTCA DO-160C, Section 18, Category A
Induced Signal Susceptibility:	RTCA DO-160C, Section 19, Category A
Radio Frequency Susceptibility:	RTCA DO-160C, Section 20, Category V
Emission of R.F. Energy:	RTCA DO-160C, Section 21, Category A

All units are designed to meet the European and US EMC regulations.