

TECHNICAL DATA

THE AP9120 IS A 28V DC POWERED BI-DIRECTIONAL PROTOCOL CONVERTER MODULE. THE AP9120 PROVIDES A MIL-STD-1553B DUAL REDUNDANT TERMINAL (BC/RT/BM MODES) WITH FOUR INDEPENDENT ARINC 429 RX & TX DATA CHANNELS. THE AP9120 ALSO PROVIDES 3 OPTO-ISOLATED DISCRETE INPUTS, 3 DISCRETE OUTPUTS, AND AN OPTO-ISOLATED STATUS OUTPUT.

THE MKXX PART NUMBER SUFFIX DEFINES THE CUSTOMER SPECIFIC CONFIGURATION, SUCH AS BUS LIST, DATA RATES AND TRANSFER FUNCTIONS.

GENERAL SPECIFICATION

POWER REQUIREMENTS: 28VDC (10 watts MAX)

WEIGHT: 1.0 kg MAX

PRODUCT SPECIFICATION

REFER TO CUSTOMER SPECIFIC CONFIGURATION DOCUMENT AP9120MKXX-PS

INTERFACE CONTROL DOCUMENT (ICD)

REFER TO CUSTOMER SPECIFIC CONFIGURATION DOCUMENT AP9120MKXX-ICD

ENVIRONMENTAL

ENVIRONMENTALLY TESTED IN ACCORDANCE WITH DO-160D AS PER SHEET 2

SOFTWARE

SOFTWARE DEVELOPMENT IN ACCORDANCE WITH THE REQUIREMENTS OF DO-178B LEVEL D

TEMPERATURE

OPERATING TEMPERATURE -45 TO +70 DEGREES C
STORAGE TEMPERATURE -55 TO +85 DEGREES C

COOLING

FREE AIR CONVECTION

PRODUCT REVISION IDENTIFICATION

THE PRODUCT FOR WHICH THIS DOCUMENT RELATES SHALL BE IDENTIFIED WITH THE MAJOR REVISION NUMBER ONLY.

FOR EXAMPLE

DOCUMENT REVISION 2.03 REFERS TO PRODUCT REVISION 2

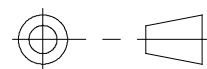
MINOR REVISIONS ARE RESERVED FOR DOCUMENTATION UPDATES THAT DO NOT AFFECT FORM FIT OR FUNCTION OF THE PRODUCT.

SCOPE OF RELEASE

PRODUCTION RELEASE

CAUTION- THIS DRAWING MAY NOT HAVE BEEN PRINTED FULL SIZE

THIRD ANGLE PROJECTION TO B.S. 8888.
FOR GENERAL TOLERANCES & FINISHES
SEE NGINIVITY STANDARD NCP001.



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APPROVED CHECKED	MATERIAL:-- PRINCIPALLY ALUMINIUM ALLOY	FINISH:-- ALOCROM & BLACK POWDER COAT	TOLERANCES .XX +/-0.75 .XXX +/-0.25	REV.	1	2	3	4	4.01	5	6	7						
LJC				DATE	12.06.06	20.06.06	13.07.06	19.11.06	27.11.06	12.12.06	20.02.08	24.09.08						
DRAWN				CHANGE	NEW	CR00122	CR00124	CR00138	CR00140	CR00167	CR00169	CR00182						
PDC			SCALE: 1:1 DIMS: mm	TITLE	ARINC-429 <-> MIL-STD-1553B PROTOCOL CONVERTER MODULE								DRAWING NUMBER AP9120MKXX SHT 1 of 2				SIZE A2	

PIN	DESCRIPTION	COMMENT
1	28VDC	+28V DC AIRCRAFT POWER
2	OVDC	0V DC AIRCRAFT POWER
3	CHASSIS	CHASSIS
4	DIGITAL GROUND	DIGITAL GROUND
5	ADDRESS INPUT 1	MIL-STD-1553B ADDRESS BIT 0 (LSB)
6	ADDRESS INPUT 2	MIL-STD-1553B ADDRESS BIT 1
7	ADDRESS INPUT 3	MIL-STD-1553B ADDRESS BIT 2
8	ADDRESS INPUT 4	MIL-STD-1553B ADDRESS BIT 3
9	ADDRESS INPUT 5	MIL-STD-1553B ADDRESS BIT 4 (MSB)
10	VALIDITY OUTPUT	SYSTEM VALIDITY DISCRETE (ACTIVE LO)
11	SERIAL PORT 0 TX/A	RS-232 TX
12	SERIAL PORT 0 TX/B	RS-232 RX
13	SERIAL PORT 1 RX A (HI)	ARINC 429 INPUT CHANNEL 1 A (HI)
14	SERIAL PORT 1 RX B (LO)	ARINC 429 INPUT CHANNEL 1 B (LO)
15	SERIAL PORT 1 TX A (HI)	ARINC 429 OUTPUT CHANNEL 1 A (HI)
16	SERIAL PORT 1 TX B (LO)	ARINC 429 OUTPUT CHANNEL 1 B (LO)
17	SERIAL PORT 2 RX A (HI)	ARINC 429 INPUT CHANNEL 2 A (HI)
18	SERIAL PORT 2 RX B (LO)	ARINC 429 INPUT CHANNEL 2 B (LO)
19	SERIAL PORT 2 TX A (HI)	ARINC 429 OUTPUT CHANNEL 2 A (HI)
20	SERIAL PORT 2 TX B (LO)	ARINC 429 OUTPUT CHANNEL 2 B (LO)
21	SERIAL PORT 3 RX A (HI)	ARINC 429 INPUT CHANNEL 3 A (HI)
22	SERIAL PORT 3 RX B (LO)	ARINC 429 INPUT CHANNEL 3 B (LO)
23	SERIAL PORT 3 TX A (HI)	ARINC 429 OUTPUT CHANNEL 3 A (HI)
24	SERIAL PORT 3 TX B (LO)	ARINC 429 OUTPUT CHANNEL 3 B (LO)
25	SERIAL PORT 4 RX A (HI)	ARINC 429 INPUT CHANNEL 4 A (HI)
26	SERIAL PORT 4 RX B (LO)	ARINC 429 INPUT CHANNEL 4 B (LO)
27	SERIAL PORT 4 TX A (HI)	ARINC 429 OUTPUT CHANNEL 4 A (HI)
28	SERIAL PORT 4 TX B (LO)	ARINC 429 OUTPUT CHANNEL 4 B (LO)
29	DISCRETE INPUT 1	OPTO-ISOLATED DISCRETE INPUT 1
30	DISCRETE INPUT 2	OPTO-ISOLATED DISCRETE INPUT 2
31	DISCRETE INPUT 3	OPTO-ISOLATED DISCRETE INPUT 3
32	DISCRETE INPUT COMMON	DISCRETE INPUT COMMON (RETURN)
33	DISCRETE OUTPUT 1	DISCRETE OUTPUT 1
34	DISCRETE OUTPUT 2	DISCRETE OUTPUT 2
35	DISCRETE OUTPUT 3	DISCRETE OUTPUT 3
36	SELF TEST INPUT	SELF TEST ENABLE (ACTIVE LO)
37	ADDRESS PARITY INPUT	MIL-STD-1553B ADDRESS PARITY BIT

NOTE

ALL INSTALLATION WIRES SHOULD BE SCREENED AND TERMINATED TO THE CONNECTOR BACKSHELL EXCEPT FOR POWER INPUT (PINS 1 & 2)

PINS 11 & 12 RESERVED FOR MANUFACTURING TEST

EFFECTIVITY

ADDRESS INPUTS (PINS 5 THRU 9) LEAVE OPEN CCT. FOR LOGIC 1, CONNECT TO 0V DC (PIN 2) FOR LOGIC 0.

ADDRESS PARITY INPUT (PIN 37) LEAVE OPEN CCT. FOR LOGIC 1, CONNECT TO 0V DC (PIN 2) FOR LOGIC 0.

VALIDITY OUTPUT (PIN 10) REFERENCE TO OVDC (PIN 2)

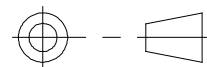
ARINC 429 SIGNALS (PINS 13 THRU 28) REFERENCE TO DIGITAL GROUND (PIN 4)

DISCRETE INPUTS (PINS 29 THRU 31) REFERENCE TO DISCRETE COMMON (PIN 32)

DISCRETE OUTPUTS (PINS 33 THRU 35) REFERENCE TO DIGITAL GROUND (PIN 4)

SELF TEST INPUT (PIN36), CONNECT TO OVDC (PIN 2) TO ENABLE

THIRD ANGLE PROJECTION TO B.S. 8888.
FOR GENERAL TOLERANCES & FINISHES
SEE NGINIVITY STANDARD NCP001.



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LJC				DATE	12.06.06	20.06.06	13.07.06	19.11.06	27.11.06	12.12.06	20.02.08	24.09.08						
				CHANGE	NEW	CR00122	CR00124	CR00138	CR00140	CR00167	CR00169	CR00182						
DRAWN	SCALE: 1:1		TITLE	ARINC-429 <-> MIL-STD-1553B PROTOCOL CONVERTER MODULE										DRAWING NUMBER		SIZE		
PDC	DIMS: mm			AP9120MKXX SHT 2 of 2										AP9120MKXX SHT 2 of 2		A2		

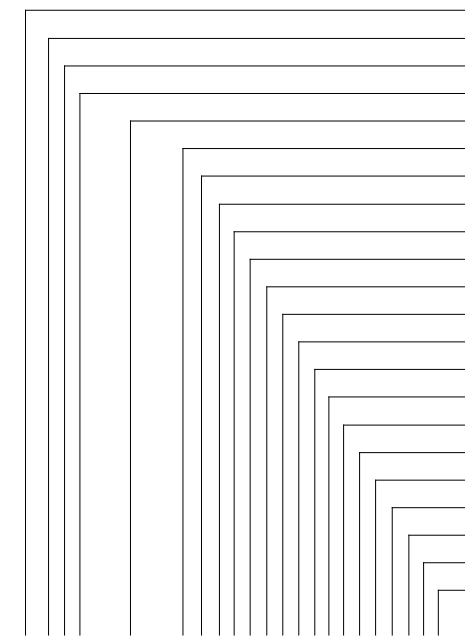


PIN	DESCRIPTION	COMMENT
A	DATA HI	MIL-STD-1553B BUS A - DATA HI
B	DATA LO	MIL-STD-1553B BUS A - DATA LO
C	CHASSIS	CHASSIS

PIN	DESCRIPTION	COMMENT
A	DATA HI	MIL-STD-1553B BUS B - DATA HI
B	DATA LO	MIL-STD-1553B BUS B - DATA LO
C	CHASSIS	CHASSIS

ENVIRONMENTAL

THE AP9120 IS COMPLIANT WITH THE FOLLOWING DO-160D ENVIRONMENTAL CATEGORIES AT THIS REVISION



B2BAC[RGG1]HWXDXXSXBAAZRBXXAA

- SECTION 4.0 TEMPERATURE & ALTITUDE (-45° C to +70° C & 25K FEET)
- SECTION 5.0 TEMPERATURE VARIATION
- SECTION 6.0 HUMIDITY
- SECTION 7.0 OPERATIONAL SHOCKS & CRASH SAFETY
- SECTION 8.0 VIBRATION
- SECTION 9.0 EXPLOSION PROOFNESS
- SECTION 10.0 WATERPROOFNESS
- SECTION 11.0 FLUIDS SUSCEPTIBILITY
- SECTION 12.0 SAND & DUST
- SECTION 13.0 FUNGUS RESISTANCE
- SECTION 14.0 SALT SPRAY
- SECTION 15.0 MAGNETIC EFFECT
- SECTION 16.0 POWER INPUT
- SECTION 17.0 VOLTAGE SPIKE
- SECTION 18.0 AUDIO FREQUENCY CONDUCTED SUSCEPTIBILITY - POWER INPUTS
- SECTION 19.0 INDUCED SIGNAL SUSCEPTIBILITY
- SECTION 20.0 RADIO FREQUENCY SUSCEPTIBILITY (RADIATED AND CONDUCTED)
- SECTION 21.0 EMISSION OF RADIO FREQUENCY ENERGY
- SECTION 22.0 LIGHTNING INDUCED TRANSIENT SUSCEPTIBILITY
- SECTION 23.0 LIGHTNING DIRECT EFFECTS
- SECTION 24.0 ICING
- SECTION 25.0 ELECTROSTATIC DISCHARGE

EXAMPLE RT ADDRESS CONFIG STRAPPING						
ADDRESS DECIMAL	ADDRESS BIT WEIGHTING (PIN NUMBER)					PARITY BIT (37)
	16 (9)	8 (8)	4 (7)	2 (6)	1 (5)	
0	#	#	#	#	#	
21		#		#		#
27			#			
4	#	#		#	#	#

KEY

(NUMBER) = D38999 CONNECTOR PIN NUMBER
= CONNECT TO PIN 2 (BINARY 0)
BLANK = NOT CONNECTED (BINARY 1)

PARITY INPUT SHOULD BE STRAPPED TO GIVE ODD PARITY.