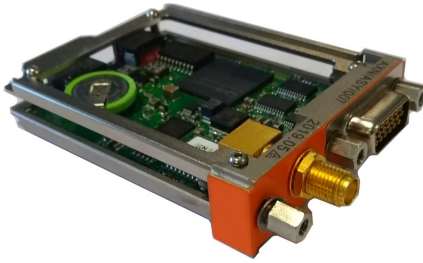


AXN/TCG/401

Voice-to-digital converter (CVSD) - 2ch at up to 128 kbps

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Overview

The AXN/TCG/401 is a dual audio-to-digital converter module. At the core of the module is a delta-modulator where the delta size depends on the rate of change. This is referred to as Continuously Variable Slope Delta (CVSD) modulation. This delta-modulator outputs a serial stream to a serial-to-parallel converter, the output of which is regularly read over the backplane. For a detailed description of this type of audio encoding, refer to the IRIG-106 standard, Chapter 5.

Key Features

- Two differential ended audio input channels, IRIG-106 compatible with 8 kbps to 128 kbps sampling rate
- Fully IRIG-106 Chapter 5 compatible
- Programmable word length

Applications

- Cockpit voice monitoring

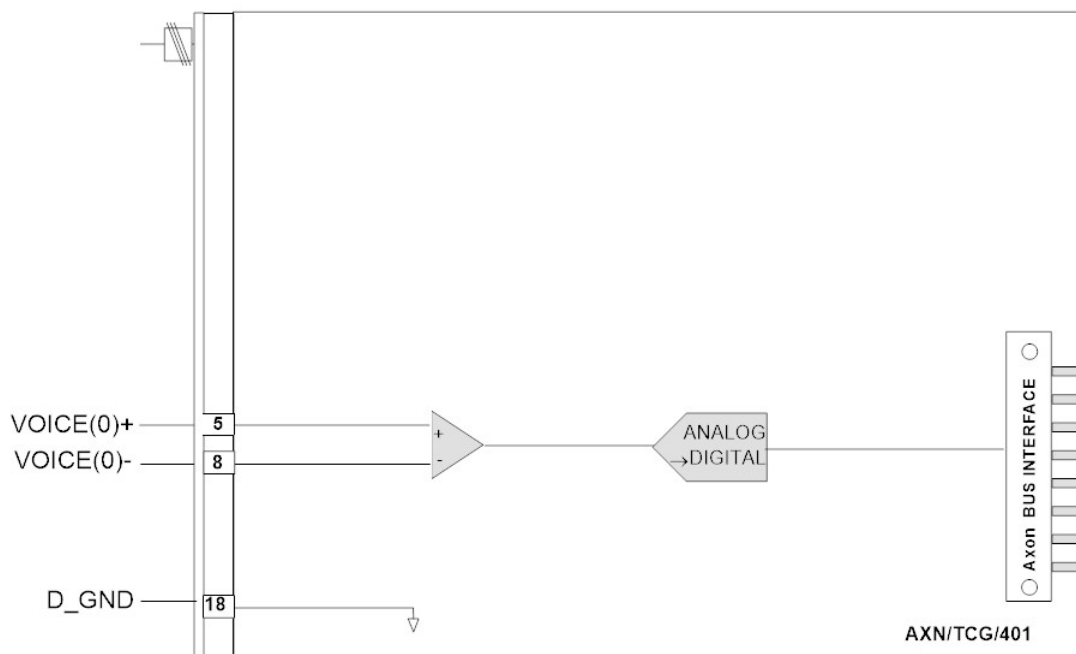


Figure 1: Inputs and outputs on the AXN/TCG/401

Specifications

All values provided in the following specification tables are valid within the operating temperature range specified under “Environmental ratings” in the “General specifications” table.

TABLE 1		General specifications				
PARAMETER	MIN.	TYP.	MAX.	UNITS	CONDITION/DETAILS	
Slots	–	–	1	–	Can be placed in any user-slot in any combination.	
Mass						
	–	90	–	g		
	–	3.17	–	oz	Design metric is grams.	
Height above chassis					For recommended clearance requirements see the CON/KAD/002/CP data sheet.	
bare connector	–	–	11	mm		
bare connector	–	–	0.43	inch	Design metric is millimeters.	
Power consumption						
+15V	–	75	87	mA		
total power	–	1.125	1.300	W	Particular combinations of Axon chassis and modules may have power or current limitations. For details, contact Curtiss-Wright support (acra-support@curtisswright.com).	
Environmental ratings					See <i>Environmental Qualification Handbook for Axon Products</i> .	
operating temperature	-40	–	85	°C	Chassis base/side plate temperature.	
storage temperature	-55	–	105	°C		

TABLE 2		Differential ended audio inputs				
PARAMETER	MIN.	TYP.	MAX.	UNITS	CONDITION/DETAILS	
Inputs	–	–	2	–		
Sampling rate						
VOICE[1:0]	8	64	128	kbps		
Input voltage						
operating range ($G_p = 1$)	-36.3	–	7.18	dB	Primary gain = 1; 0 dB = 489 mV. (Range in mV_{rms} : 0.075 mV_{rms} to 1.115 V_{rms})	
overvoltage protection	-16	–	16	V	Voltages outside of this range can damage input.	
Input resistance						
between inputs	–	42	–	k Ω	Module powered off.	
between inputs	–	22	–	k Ω	Module powered on.	
each input to GND	–	450	–	k Ω	Module powered off.	
each input to GND	–	10	–	M Ω	Module powered on.	

Setting up the AXN/TCG/401

All module setup can be defined in XML using XidML® schemas (see <http://www.xidml.org>).

Instrument settings

SETUP DATA	CHOICE	DEFAULT	NOTES
Manufacturer	-	-	-
Name	ACRA CONTROL	ACRA CONTROL	Name of manufacturer.
PartReference	AXN/TCG/401	AXN/TCG/401	The instrument part reference.
SerialNumber	AAA1234	AAA1234	Unique name for each module.
Channels	-	-	-
Audio-In(1:0) <i>Audio Input</i>	-	-	Represents a typical audio output channel on an Instrument.
Settings	-	-	-
Bits Per Word	4 to 16	16	The number of CVSD data bits per 16 bit word. First data bit is always the MSB.

Parameter definitions

NAME/DESCRIPTION	BASE UNIT	DATA FORMAT	BITS	REGISTER DEFINITION
<i>Audio-In(1:0) Parameters</i>				
VoiceChannelData Voice channel data	BitStream	BitStream	16	R[15:0]

NOTE: It is recommended that names do not contain any of the following five characters "/><\.

Getting the most from the AXN/TCG/401

Audio quality can be improved by increasing the sampling rate. Some popular choices are shown in the following table.

CVSD MODULATOR BIT-RATE	AUDIO QUALITY
128 kbps	Very good
64 kbps	Very good
32 kbps	Good
16 kbps	Acceptable
8 kbps	Public address system

Connector pinout of the AXN/TCG/401

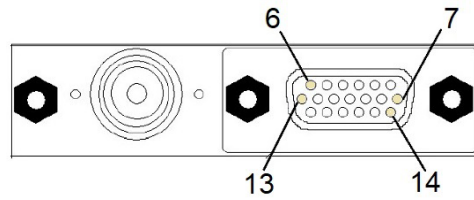


Figure 2: 19-way DD-type connector (SMA connector - DNC)

19-way Double-Density (DD) type connector

PIN	NAME	SEE SPECIFICATIONS TABLE	COMMENT
1	DNC		Do not connect
2	DNC		Do not connect
3	DNC		Do not connect
4	DNC		Do not connect
5	VOICE(0)+	Differential ended audio inputs	
6	DNC		Do not connect
7	DNC		Do not connect
8	VOICE(0)-	Differential ended audio inputs	
9	DNC		Do not connect
10	DNC		Do not connect
11	DNC		Do not connect
12	DNC		Do not connect
13	VOICE(1)+	Differential ended audio inputs	
14	DNC		Do not connect
15	DNC		Do not connect
16	DNC		Do not connect
17	VOICE(1)-	Differential ended audio inputs	
18	D_GND	Digital ground	
19	CHASSIS	Chassis	Chassis connection

SMA connector¹

PIN	NAME	SEE SPECIFICATIONS TABLE	COMMENT
DNC			Do not connect

1. The SMA connector cannot be used on this module.

Ordering information

PART NUMBER	DESCRIPTION
AXN/TCG/401	Voice-to-digital converter (CVSD) - 2ch at up to 128 kbps

By default, the standard mating connector CON/KAD/002/CP and an ACD/BAC/004/B backshell are included with each module in the shipment. Their part numbers will be added to the Confirmation of Order unless an alternative option is specified (see the *Cables* data sheet). Additional items must be ordered separately; refer to Related products for options.

Revision history

REVISION	DIFFERENCES	STATUS
AXN/TCG/401	First release	Recommended for new programs

Supporting software

SOFTWARE	DETAILS
DAS Studio 3	User interface for setup and management of data acquisition, network switches, recorders and ground stations in an integrated environment

Related products

MODULE	DETAILS
GS Works 9	Real-time and post-test data visualization and analysis software

Related documentation

DOCUMENT	DETAILS
DOC/MAN/030	DAS Studio 3 User Manual
DOC/HBK/008	Environmental Qualification Handbook for Axon Products. (Contact Curtiss-Wright support, acra-support@curtisswright.com , for availability of this document.)
XidML wall chart	Overview of key concepts and components in XidML
TEC/NOT/015	CVSD modulation of audio signals