KAD/ABM/103

ARINC-429 bus monitor parser/packetizer - 24ch

CURTISSWRIGHTDS.COM

Key Features

- Monitors up to 24 ARINC-429 busses
- Coherently parses traffic and tags for up to 8,191 messages
- Aperiodic transmission of packetized ARINC-429 messages including tags as iNET-X parser-aligned, IENA D Type, or IENA N Type payload structures per channel or per instrument
- Detects six types of errors
- Word counter for each bus

Applications

- ARINC-429 monitoring and recording

Overview

The KAD/ABM/103 is an ARINC-429 bus monitor which combines the capabilities of a coherent message parser with the flexibility of an iNET-X packetizer and an error-detection function, on a single module.

The parser parses up to 8,191 words and their associated time and status tags. Each message has a stale bit (word read before) and a skipped bit (buffer overwritten). Messages can be parsed based on their bus number, label, SDI and/or SSM fields.

Every ARINC-429 message received from each of the 24 busses is captured and packetized, along with time tags and a bus tag, with other received messages in a packetizer buffer. The packetizer contents can be assembled into Ethernet frames by an iNET-X controller or transmitter, for example a KAD/BCU/140, for transmission over Ethernet. The module can generate a single packet per input bus or packetize messages from all the active busses into a single packet stream.

To ensure efficient use of bandwidth, packets are only generated once a threshold amount has been stored (a maximum of 84 received messages are stored in each packet). Additionally, a programmable timeout ensures that smaller packets are generated even during periods of low activity on the bus, thereby allowing real-time analysis and processing of acquired messages. When there is no traffic, no packets are generated.

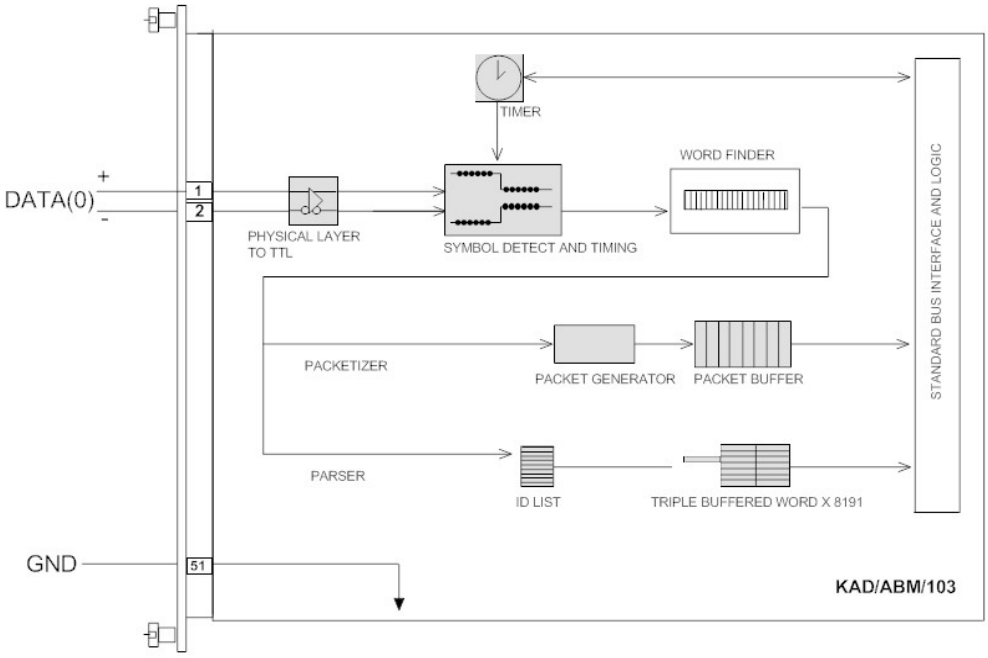

Figure 1: First of 24 parser/packetizers on the KAD/ABM/103

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					
	–	75	–	g	
	–	2.64	–	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	in.	Design metric is millimeters.
Access rate	–	–	2	Msps	Maximum combined access rate for read and write.
Power consumption					
+5V	79	–	108	mA	
±7V	0	–	0	mA	
±12V	0	–	0	mA	
total power	0.395	–	0.540	W	Particular combinations of chassis and Acra KAM-500 modules may have power or current limitations. For details, see *TEC/NOT/016 - Power dissipation, TEC/NOT/049 - Power estimation*, and the relevant chassis data sheet.
Environmental ratings					See *Environmental Qualification Handbook*.
operating temperature	-40	–	85	°C	Chassis base/side plate temperature.
storage temperature	-55	–	105	°C	

TABLE 2	ARINC-429 inputs				
PARAMETER	MIN.	TYP.	MAX.	UNITS	CONDITION/DETAILS
Inputs	–	–	24	–	
Signaling rate					
DATA	12.5	–	100	kbps	Signalling rate is either 12.5, 50 or 100kbps.
Operating range	-25	–	20	V	
logic '0'	-2.5	0	2.5	V	
logic 'L'	-13	-10	-6.5	V	
logic 'H'	6.5	10	13	V	

Setting up the KAD/ABM/103

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	KAD/ABM/103	KAD/ABM/103	The instrument part reference.
SerialNumber	AAA1234	AAA1234	Unique name for each module.
Settings	-	-	-
Packetization	Individual Combined	Individual	Packetization is set per channel or per instrument.
Settings *Setup*	-	-	-
Message Data Style	Style A Style B	Style A	Style B is the setup to transmit MessageDataStyleB. Style B is typically used when you want to transmit the ARINC parameter to a 12-bit fixed PCM.
Processes	-	-	-
Parser(8190:0)	-	-	Parser definitions.
Catchall-Parser	-	-	Parser definitions.
Channels	-	-	-
ARINC-429-In(23:0) *ARINC-429 Input*	-	-	ARINC-429 bus monitor channel configuration.
Settings *ARINC-429*	-	-	-
Rate Control	Auto-detect User specified Off	Auto-detect	Auto-detect: module detects bus speed automatically. User specified: restricts reception to specific bus rate. Off: no messages will be parsed or packetized from channel.
Bit Rate	100000 50000 12500	100000	Input bus bit rate. (Auto-detected bit rate sets to maximum to reserve backplane capacity for maximum rate.)
Parity Check	Odd Even Not checked	Not checked	Parity bit usage.
Settings *Packetizer*	-	-	-
Packetizer Format	iNET-X IENA IENA iNET-X Hybrid	iNET-X	Selects the packetizer header format for all channels.
Stream Id	00 to FFFFFFFF	FFFFFFFF	iNET-X stream identifier for selected channel if a packet is generated via the assertion of Packetization Enabled. This is a conditional setting and is only active when the Packetizer Format is set to iNET-X.
IENA Type	D N	N/A	Describes the IENA parameter type of the packet payload. This is a conditional setting and is active when the Packetizer Format is not set to IENA.
IENA Key	0 to FFFF	0	IENA Key for selected channel if a packet is generated via the assertion of Packetization Enabled. This is a conditional setting and is active when the Packetizer Format is not set to iNET-X.

SETUP DATA	CHOICE	DEFAULT	NOTES
Packetization Enabled	False	False	Enables the transmission of a packetizer packet containing the contents of this channel if a packetizer transmitter or memory module is present in the chassis.
Packet Size	200 to 511	511	Size of packet buffer in words.
Packet Timeout	10 to 999	50	Generates a packet when the oldest data recorded is this old (ms).
Utilization	0.00 to 1.00	1.00	The default of 1.0 should be used as it provides sufficient packets to carry all messages even when the bus is 100% active. Reducing Utilization schedules less packets for this bus, releasing backplane capacity for reading other modules. It should only be used when incoming message rates on the bus are known to be less than the maximum possible rate.
Packetization Sink	All Controller Only Slot 1 Slot 2 Slot 3 Slot 4 Slot 5 Slot 6 Slot 7 Slot 8 Slot 9 Slot 10 Slot 11 Slot 12 Slot 13 Slot 14 Slot 15	All	Selects which modules the packetizer package will be sent to for transmission or storage.
ARINC-429-In-Combined *ARINC-429 Input*	-	-	Single packetizer stream including all 24 ARINC-429 channels. Bus ID on each message identifies source bus.
Settings	-	-	-
Settings *Packetizer*	-	-	-
Packetizer Format	iNET-X IENA IENA iNET-X Hybrid	iNET-X	Selects the packetizer header format.
Stream Id	00 to FFFFFFFF	FFFFFFFF	iNET-X stream identifier for selected channel if a packet is generated via the assertion of Packetization Enabled. This is a conditional setting and is only active when the Packetizer Format is set to iNET-X.
IENA Type	D N	N/A	Describes the IENA parameter type of the packet payload. This is a conditional setting and is active when the Packetizer Format is not set to IENA.
IENA Key	0 to FFFF	0	IENA Key for selected channel if a packet is generated via the assertion of Packetization Enabled. This is a conditional setting and is active when the Packetizer Format is not set to iNET-X.

SETUP DATA	CHOICE	DEFAULT	NOTES
Packetization Enabled	True False	False	Enables the transmission of a packetizer packet containing the contents of this channel if a packetizer transmitter or memory module is present in the chassis.
Packet Size	200 to 511	511	Size of packet buffer in words.
Packet Timeout	10 to 999	50	Generates a packet when the oldest data recorded is this old (ms).
Utilization	0.00 to 1.00	1.00	Can be used to schedule less packets when incoming message rates are known to be less than maximum.
Packetization Sink	All Controller Only Slot 1 Slot 2 Slot 3 Slot 4 Slot 5 Slot 6 Slot 7 Slot 8 Slot 9 Slot 10 Slot 11 Slot 12 Slot 13 Slot 14 Slot 15	All	Selects the packetizer header format for all channels.

Parameter definitions

NAME/DESCRIPTION	BASE UNIT	DATA FORMAT	BITS	REGISTER DEFINITION
Global Parameters				
Report Reports the status of the module.	BitVector	BitVector	16	**R[15:0]** R(15) FreshError - An error occurred since last read. R[14:9] Reserved R[8:4] Bus - Indicates the bus the error occurred on. R[3:0] ErrorCode - Indicates the error that occurred last. When any error is detected, the corresponding message is not parsed (that is, error is flagged and message is lost). 0000: BadBit. 0001: NotEnoughBits. 0010: TooManyBits. 0011: BadGap. 0100: ParityError. 0101: Undefined Label, SSM or SDI (not supported in DAS Studio as all unparsed messages are passed to Catchall slot). 1000: Reset occurred since last read. (Report register initializes to 0008 after backplane reset or power on and stays at that value until changing to the new error code on the next valid error (with FreshError=1).)

NAME/DESCRIPTION	BASE UNIT	DATA FORMAT	BITS	REGISTER DEFINITION
ModuleWordCount Count of valid ARINC-429 messages received across all active channels. MessageCount in each parser slot stores the value of this counter as each message is stored.	BitVector	BitVector	16	R[15:0]
BusSpeedAll ARINC-429 bus speed for all 24 busses.	BitVector	BitVector	32	R[31:0]
BusSpeedHigh ARINC-429 bus speed for bus [23:26].	BitVector	BitVector	16	**R[31:16]** R[31:24] Reserved - Reserved. R(23) BusSpeed(23) - Bus Speed of Bus 23. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(22) BusSpeed(22) - Bus Speed of Bus 22. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(21) BusSpeed(21) - Bus Speed of Bus 21. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(20) BusSpeed(20) - Bus Speed of Bus 20. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(19) BusSpeed(19) - Bus Speed of Bus 19. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(18) BusSpeed(18) - Bus Speed of Bus 18. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(17) BusSpeed(17) - Bus Speed of Bus 17. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(16) BusSpeed(16) - Bus Speed of Bus 16. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz)

NAME/DESCRIPTION	BASE UNIT	DATA FORMAT	BITS	REGISTER DEFINITION
BusSpeedLow ARINC-429 bus speed for bus [15:0].	BitVector	BitVector	16	**R[15:0]** R(15) BusSpeed(15) - Bus Speed of Bus 15. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(14) BusSpeed(14) - Bus Speed of Bus 14. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(13) BusSpeed(13) - Bus Speed of Bus 13. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(12) BusSpeed(12) - Bus Speed of Bus 12. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(11) BusSpeed(11) - Bus Speed of Bus 11. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(10) BusSpeed(10) - Bus Speed of Bus 10. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(9) BusSpeed(9) - Bus Speed of Bus 9. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(8) BusSpeed(8) - Bus Speed of Bus 8. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(7) BusSpeed(7) - Bus Speed of Bus 7. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(6) BusSpeed(6) - Bus Speed of Bus 6. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(5) BusSpeed(5) - Bus Speed of Bus 5. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(4) BusSpeed(4) - Bus Speed of Bus 4. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(3) BusSpeed(3) - Bus Speed of Bus 3. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(2) BusSpeed(2) - Bus Speed of Bus 2. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(1) BusSpeed(1) - Bus Speed of Bus 1. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz) R(0) BusSpeed(0) - Bus Speed of Bus 0. 0: High Speed Arinc-429 bus (100kHz) 1: Low Speed Arinc-429 bus (12.5kHz)

NAME/DESCRIPTION	BASE UNIT	DATA FORMAT	BITS	REGISTER DEFINITION
BusActiveAll ARINC-429 bus activity for all 24 busses.	BitVector	BitVector	32	R[31:0]
BusActiveHigh ARINC-429 bus activity of bus [23:16]. Logic 1 = message received in last second. 0 = no traffic in last second.	BitVector	BitVector	16	**R[31:16]** R[31:24] Reserved - Reserved. R[23:16] BusActivityHighBits -
BusActiveLow ARINC-429 bus activity of bus [15:0]. Logic 1 = message received in last second. 0 = no traffic in last second.	BitVector	BitVector	16	R[15:0]
TypeNumber Type number of the module	BitVector	BitVector	16	R[15:0]
Parser(8190:0) Parameters				
MessageCount A copy of WordCount when message was received.	Count	OffsetBinary	16	**R[15:0]** R[15:0] MessageCount
MessageIrigTime48 48-bit wide IRIG time word.	BitVector	BitVector	48	R[47:0]
MessageTimeHi Hours and minutes time midway through first transmitted bit.	BitVector	BitVector	16	**R[47:32]** R[15:13] Reserved - Reserved for future use. R[12:7] Hours - BCD Hours 0 to 23. R[6:0] Minutes - BCD Minutes 0 to 59.
MessageTimeLo Seconds and centiseconds time midway through first transmitted bit.	BitVector	BitVector	16	**R[31:16]** R(15) Reserved - Reserved for future use. R[14:8] Seconds - BCD Seconds 0 to 59. R[7:0] Centiseconds - BCD Centiseconds 0 to 99.
MessageTimeMicro Microsecond time midway through first transmitted bit.	Second	BCD	16	**R[15:0]** R[15:0] Microseconds - BCD Microseconds 0 to 9999.
Catchall-Parser Parameters				
MessageCount A copy of WordCount when message was received.	Count	OffsetBinary	16	R[15:0]
MessageDataStyleA SSM, Data, SDI, Parity and message info. Data style A is the default data format.	BitVector	BitVector	32	**R[31:0]** R[31:30] SSM - Sign/Status Matrix. R[29:11] Data - Data Word. R[10:9] SDI - Source Destination Identifier. R(8) Empty - This parser slot has not been written to yet. R(7) Stale - This parser slot has been read before. R(6) Skipped - This parser slot has been overwritten without being read. R[5:1] Bus - The bus the message was received on. R(0) Parity - The parity bit received.

NAME/DESCRIPTION	BASE UNIT	DATA FORMAT	BITS	REGISTER DEFINITION
MessageDataStyleB Parity, SSM, Data, Bus, SDI and message info.	BitVector	BitVector	32	**R[31:0]** R(31) Parity - The parity bit received. R[30:29] SSM - Sign/Status Matrix. R[28:20] Data[18:10] - Bits 18 to 10 of the Data Word. R[19:17] Bus - The bus the message was received on (3 least significant bits only). R(16) Reserved R[15:6] Data[9:0] - Bits 9 to 0 of the Data Word. R[5:4] SDI - Source Destination Identifier. R(3) Empty - This parser slot has not been written to yet. R(2) Stale - This parser slot has been read before. R(1) Skipped - This parser slot has been overwritten without being read. R(0) Reserved
MessageIrigTime48 48-bit wide IRIG time word.	BitVector	BitVector	48	R[47:0]
MessageTimeHi Hours and minutes time midway through first transmitted bit.	BitVector	BitVector	16	**R[47:32]** R[15:13] Reserved - Reserved for future use. R[12:7] Hours - BCD Hours 0 to 23. R[6:0] Minutes - BCD Minutes 0 to 59.
MessageTimeLo Seconds and centiseconds time midway through first transmitted bit.	BitVector	BitVector	16	**R[31:16]** R(15) Reserved - Reserved for future use. R[14:8] Seconds - BCD Seconds 0 to 59. R[7:0] Centiseconds - BCD Centiseconds 0 to 99.
MessageTimeMicro Microsecond time midway through first transmitted bit.	Second	BCD	16	**R[15:0]** R[15:0] Microseconds - BCD Microseconds 0 to 9999.
ARINC-429-In(23:0)Parameters				
WordCount Count of valid ARINC-429 messages received on the bus. Increases by 1 for each message received on the channel.	Count	OffsetBinary	16	R[15:0]

NOTE: It is recommended that names are less than 20 characters, have no white space or contain any of the following five characters "/><\.

Getting the most from the KAD/ABM/103

For a detailed description on iNET-X packets, see *TEC/NOT/067 - IENA and iNET-X packet payload formats*.

Auto-detect rate

The KAD/ABM/103 automatically detects the bit rate used. The bit rate setting is only used by software to read the required number of packets from the packetizers.

KAD/ABM/103 Packet Formats

The KAD/ABM/103 can output packet payloads formatted for insertion into iNET-X or IENA systems.

iNET-X parser-aligned packet format

There is a diverse range of avionic bus technologies for which traffic may be captured, for example, MIL-STD-1553 or ARINC-429. The generalized iNET-X payload structure for parser-aligned packets is shown in the following figure.

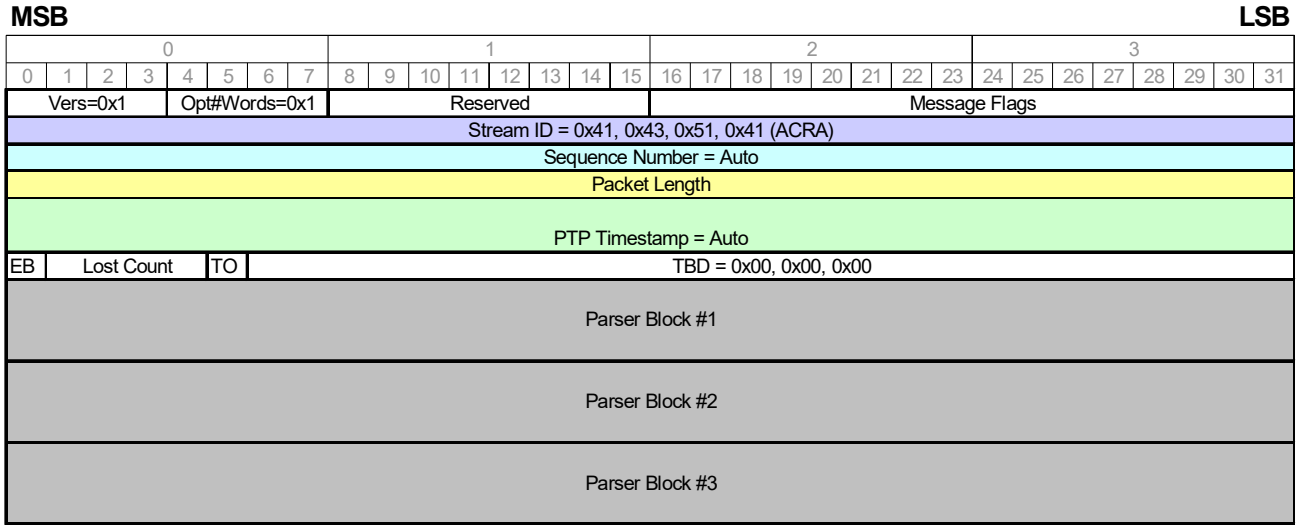

Figure 2: Generalized parser-aligned iNET-X packet

As messages are captured on the bus, they are formatted in a parser block. Each parser block begins with a 4-byte parser info word, followed by a 4-byte elapsed time tag and the message data shown in the following figure.

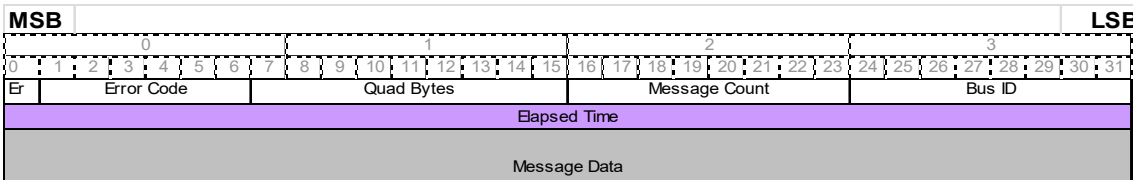

Figure 3: iNET-X parser block

A parser block consists of the following fields:

- Parser info word (4 bytes): metadata providing information about the health and status of the message.
  - Bit (0): indicates that an error occurred
  - Bits [1:6]: error codes
  - Bits [7:15]: number of quad bytes. This relates to the length of the parser info word, elapsed time tag, and the message data and padding (N x 4 bytes). For example, a 4-byte message captured from a given bus has a quad-byte value of 3, that is 12 bytes that includes 4 bytes parser information word, 4 bytes elapsed time, and 4 bytes bus message data.
  - Bits [16:23]: message counter. This is a message counter that relates to the messages contained in the payload. The message counter increments for each message contained in the packet payload and continues to increment across

consecutive packets. The message counter resets and wraps around to 0 once it has reached the maximum message count of 0xFF.

+ Bits [24:31]: Bus ID corresponds to the physical bus number on the module, that is from 0 to 23.

- Elapsed Time tag (4 bytes): time tag as an unsigned offset in nanoseconds that is added to the base PTP timestamp in the iNET-X header.
- Message (N x 4 bytes): captured bus traffic, padded if necessary to end on 4-byte boundary.

Example iNET-X parser-aligned packet format for ARINC-429 packetizer

The KAD/ABM/103 is a 24-channel ARINC-429 bus monitor. Traffic captured on each of the ARINC-429 busses is placed in an iNET-X parser-aligned packet (see Figure 4 on page 11) where each bus has its own unique stream ID.

When Combined Packetization is selected, messages from all busses are placed in a single stream of packets, with a single stream ID. The bus ID field identifies on which bus a message was received.

As ARINC messages arrive, they are tagged with a 4-byte parser information word and a 4-byte elapsed time word, followed by the 4-byte ARINC message. The parser information word identifies properties of the ARINC-429 message (such as the message counter and the ID of the bus on which the message was received) and marks the health of the message using an error bit and an error code.

The PTP timestamp in the iNET-X packet header is fixed when a packet is opened for writing and is used as the base timestamp for the whole packet. The PTP timestamp for each ARINC message in the packet can be calculated by adding the elapsed time to this base timestamp. Directly following the elapsed time field is the ARINC-429 message.

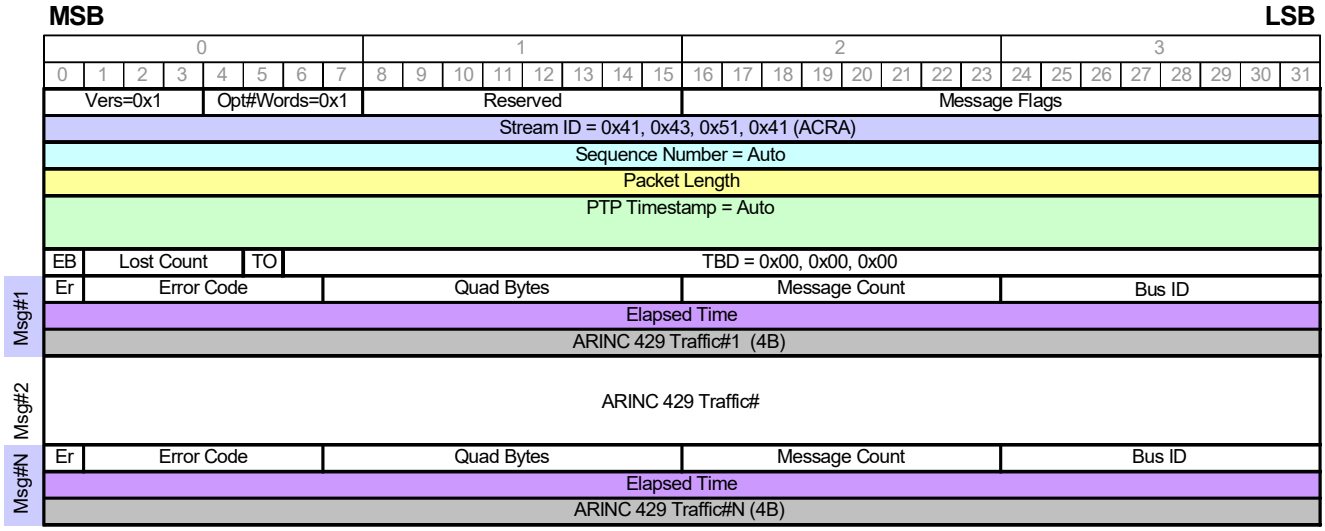

Figure 4: ARINC-429 iNET-X parser-aligned packet

For example, to facilitate real-time processing, the minimum payload size of an ARINC-429 packet is given as 1,008 bytes for a given default high-speed bus bit-rate of 100kbps, allowing for 84 ARINC 12-byte blocks to be carried in a single packet. This results in a maximum packet rate of 34 packets per second since the traffic on the bus may be asynchronous. The transmission properties for a 100kbps ARINC bus are summarized in the following table.

TABLE 3	MyARINC packet transmission properties
TRANSMISSION PROPERTY	VALUE
ARINC-429 packet payload size (bytes)	1,008 bytes (84 ARINC message blocks of 12 bytes per ARINC block)
Total Ethernet frame length (bytes)	1,082 bytes MAC header (14 bytes) + IP header (20 bytes) + UDP header (8 bytes) + iNET-X header (28 bytes) + ARINC-429 data (1008 bytes) + MAC Frame Check Sequence (FCS) (4 bytes)
Packet rate (packets per second)	34
Total number of ARINC messages per packet	84 ARINC blocks
Total bit-rate (kbps)	294.3

Packetizer error codes for the KAD/ABM/103

An error in the incoming traffic is recorded by replacing the message data in the parser-aligned message with null data (32 zero bits) and setting the error bit and code in the iNET-X headers of the packet and the message. The error bit in the iNET-X packet header indicates that at least one of the parser blocks contains an error. The Most Significant Bit (MSB)—Er bit—of the errored parser block's header is set, and can be used during post-processing, to filter/drop these error messages.

The following table lists the error codes that can occur in the error code field in the parser information word in the iNET-X parser block. The error codes reported match the codes that are also available in the module's Report Word.

TABLE 4	Error codes	
CODE[1]	REGISTER NAME	DESCRIPTION
0x0	BadBit	The gap between bits within the message is too short, too long, or an illegal bit is received (for example, simultaneous activity on both the True and False bit lines is an illegal condition).
0x1	NotEnoughBits	There is a gap large enough to be an inter-message gap before 32 valid data bits are seen.
0x2	TooManyBits	The inter-message gap is too small (for example, two messages run together so a 33rd bit is seen before a large enough gap) or spurious bit-like transitions occur on the line during a message, making it look like that is the case.
0x3	BadGap	The gap between messages is too short.
0x4	ParityError	Parity error (if enabled).
0x5 to 0x3F	Reserved for future use	

1. Error codes are in hexadecimal.

IENA

An IENA packet contains a standard IENA layer header and footer. Between these, the data field contains one or more parameters of a specified type. For the KAD/ABM/103 each ARINC-429 message can be formatted as either a D Type or N Type IENA parameter. In both cases, the 16-bit parameter ID for each parameter is composed by combining the bus ID (for channels 0 to 23) with the label and SDI fields from the received message. As shown in the following figure, these fields appear in the message from MSB to LSB in the order SDI[1:0], bus ID[4:0], and label[7:0]. The MSB is always equal to 0.

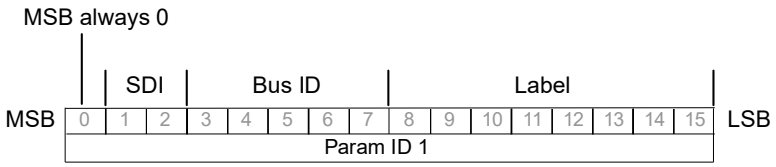

Figure 5: Parameter ID from received message

As shown in the following figure, D Type parameters consist of a 16-bit parameter ID, a 16-bit delay field, and the 32-bit ARINC-429 message. The delay field indicates the difference in microseconds between the timestamp in the IENA packet's header and the received timestamp for the specific message contained in the parameter. ARINC-429 messages use 8 bytes per N Type parameter.

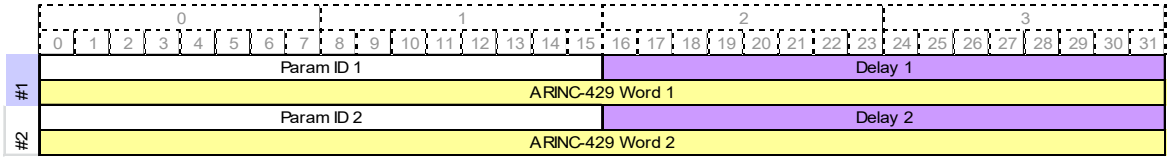

Figure 6: D Type IENA parameter for ARINC-429

As shown in the following figure, N Type parameters include the 16-bit parameter ID and the 32-bit message, but the delay field is omitted and the only timestamp is that of the packet, which relates to the first packetizer message. ARINC-429 messages use 6 bytes per N Type parameter.

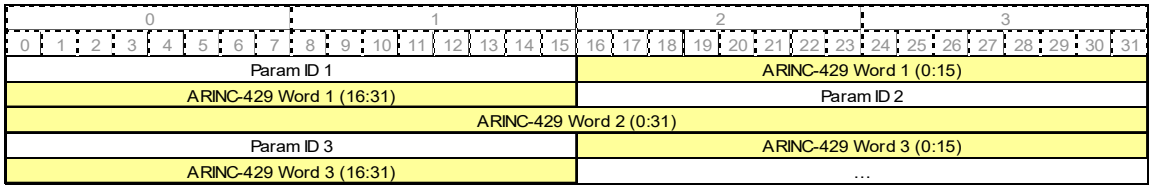

Figure 7: N Type IENA parameter for ARINC-429

MessageDataStyleB

For information on using MessageDataStyleB, contact Curtiss-Wright support (acra-support@curtisswright.com).

Connector pinout of the KAD/ABM/103

PIN	NAME	SEE SPECIFICATIONS TABLE	COMMENT
1	DATA(0)+	ARINC-429 inputs	ARINC-429 bus
2	DATA(0)-	ARINC-429 inputs	ARINC-429 bus
3	DATA(1)+	ARINC-429 inputs	ARINC-429 bus
4	DATA(1)-	ARINC-429 inputs	ARINC-429 bus
5	DATA(2)+	ARINC-429 inputs	ARINC-429 bus
6	DATA(2)-	ARINC-429 inputs	ARINC-429 bus
7	DATA(3)+	ARINC-429 inputs	ARINC-429 bus
8	DATA(3)-	ARINC-429 inputs	ARINC-429 bus
9	DATA(4)+	ARINC-429 inputs	ARINC-429 bus
10	DATA(4)-	ARINC-429 inputs	ARINC-429 bus
11	DATA(5)+	ARINC-429 inputs	ARINC-429 bus
12	DATA(5)-	ARINC-429 inputs	ARINC-429 bus
13	DATA(6)+	ARINC-429 inputs	ARINC-429 bus
14	DATA(6)-	ARINC-429 inputs	ARINC-429 bus
15	DATA(7)+	ARINC-429 inputs	ARINC-429 bus
16	DATA(7)-	ARINC-429 inputs	ARINC-429 bus
17	DNC		Do not connect
18	DATA(8)+	ARINC-429 inputs	ARINC-429 bus
19	DATA(8)-	ARINC-429 inputs	ARINC-429 bus
20	DATA(9)+	ARINC-429 inputs	ARINC-429 bus
21	DATA(9)-	ARINC-429 inputs	ARINC-429 bus
22	DATA(10)+	ARINC-429 inputs	ARINC-429 bus
23	DATA(10)-	ARINC-429 inputs	ARINC-429 bus
24	DATA(11)+	ARINC-429 inputs	ARINC-429 bus
25	DATA(11)-	ARINC-429 inputs	ARINC-429 bus
26	DATA(12)+	ARINC-429 inputs	ARINC-429 bus
27	DATA(12-	ARINC-429 inputs	ARINC-429 bus
28	DATA(13)+	ARINC-429 inputs	ARINC-429 bus
29	DATA(13)-	ARINC-429 inputs	ARINC-429 bus
30	DATA(14)+	ARINC-429 inputs	ARINC-429 bus
31	DATA(14)-	ARINC-429 inputs	ARINC-429 bus
32	DATA(15)+	ARINC-429 inputs	ARINC-429 bus
33	DATA(15)-	ARINC-429 inputs	ARINC-429 bus
34	DATA(16)+	ARINC-429 inputs	ARINC-429 bus
35	DATA(16)-	ARINC-429 inputs	ARINC-429 bus
36	DNC		Do not connect
37	DATA(17)+	ARINC-429 inputs	ARINC-429 bus
38	DATA(17)-	ARINC-429 inputs	ARINC-429 bus
39	DATA(18)+	ARINC-429 inputs	ARINC-429 bus
40	DATA(18)-	ARINC-429 inputs	ARINC-429 bus
41	DATA(19)+	ARINC-429 inputs	ARINC-429 bus
42	DATA(19)-	ARINC-429 inputs	ARINC-429 bus
43	DATA(20)+	ARINC-429 inputs	ARINC-429 bus
44	DATA(20)-	ARINC-429 inputs	ARINC-429 bus
45	DATA(21)+	ARINC-429 inputs	ARINC-429 bus
46	DATA(21)-	ARINC-429 inputs	ARINC-429 bus
47	DATA(22)+	ARINC-429 inputs	ARINC-429 bus
48	DATA(22)-	ARINC-429 inputs	ARINC-429 bus
49	DATA(23)+	ARINC-429 inputs	ARINC-429 bus
50	DATA(23)-	ARINC-429 inputs	ARINC-429 bus
51	GND	Internal ground	
52	CHASSIS	Chassis	

Ordering information

PART NUMBER	DESCRIPTION
KAD/ABM/103	ARINC-429 bus monitor parser/packetizer - 24ch

By default, the standard mating connector, CON/KAD/002/CP, is included with each module in the shipment. Its part number will be added to the Confirmation of Order unless an alternative option is specified (see the *Cables* data sheet).

Revision history

REVISION	DIFFERENCES	STATUS
KAD/ABM/103	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 documentation

DOCUMENT	DETAILS
DOC/DBK/001	Acra KAM-500 Databook
DOC/HBK/002	Environmental Qualification Handbook
DOC/MAN/030	DAS Studio 3 User Manual
TEC/NOT/006	ARINC-429
TEC/NOT/016	Power dissipation
TEC/NOT/049	Power estimation
TEC/NOT/051	TEC/NOT/051
TEC/NOT/067	IENA and iNET-X packet payload formats
TEC/NOT/086	Using the KAD/ABM/103

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