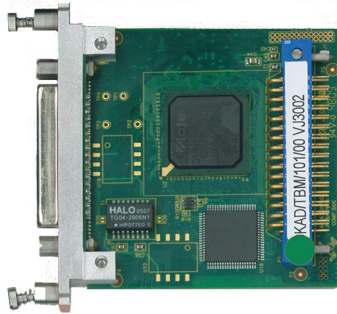


# KAD/TBM/101

TTP bus monitor

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## Overview

The KAD/TBM/101 is a Time Triggered Protocol (TTP) bus monitor, which extracts TTP messages. It can also capture every TTP frame on the bus without any filtering (packetizer).

It combines a coherent message extractor and packetizer functions in a single module. It can extract and packetize messages simultaneously.

The extractor function buffers up to 128 complete messages and their associated status bits in triple buffers. The message size is 32 bits with 10 bits of status. The packetizer captures every TTP frame on the bus and wraps the entire frame in an iNET-X packet.

## Key Features

- Monitors a single dual-redundant (TTP) bus
- Up to 128 messages can be extracted
- Packetizer which captures every TTP frame on the bus
- Can monitor asynchronous bus with data rate up to 5Mbps (MFM/Manchester over RS-485)
- Start of cluster cycle is time tagged
- Silent (monitor only; does not transmit or acknowledge)
- Extractor and packetizer can be configured to remove redundancy

## Applications

- TTP bus monitoring

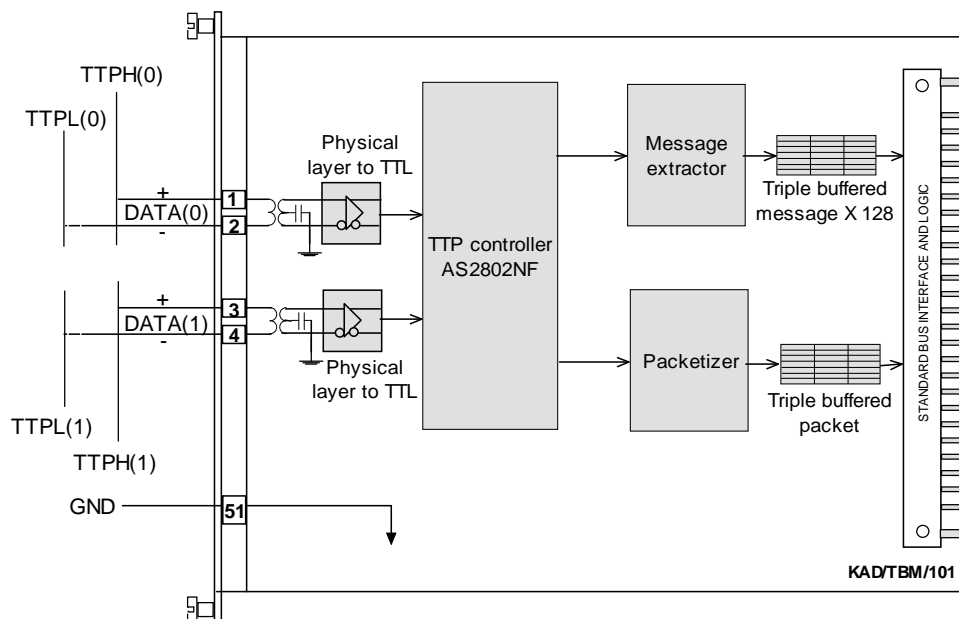


Figure 1: TTP bus monitor

## 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						
	–	66	–	g		
	–	2.33	–	oz	Design metric is grams.	
Height above chassis					For recommended clearance requirements see the <i>CON/KAD/002/CP</i> data sheet.	
bare connector	–	–	11	mm		
bare connector	–	–	0.43	in.	Design metric is millimeters.	
Access rate	–	–	2	Mbps	Maximum combined access rate for read and write.	
Power consumption						
+5V	130	–	160	mA		
±7V	0	–	0	mA		
±12V	0	–	0	mA		
total power	0.65	–	0.8	W	Particular combinations of chassis and Acra KAM-500 modules may have power or current limitations. For details, see <i>TEC/NOT/016 - Power dissipation</i> , <i>TEC/NOT/049 - Power estimation</i> , and the relevant chassis data sheet.	
Environmental ratings					See <i>Environmental Qualification Handbook</i> .	
operating temperature	-40	–	85	°C	Chassis base/side plate temperature.	
storage temperature	-55	–	105	°C		

TABLE 2		TTP bus interface				
PARAMETER	MIN.	TYP.	MAX.	UNITS	CONDITION/DETAILS	
Inputs	–	–	2	–	TTP asynchronous MFM/Manchester on RS-485 physical layer. (One dually redundant bus, compatible with TTPv1.1)	
Maximum baud rate						
DATA[1:0]±	–	–	5,000	kbps		
Physical layer						
RS-485	100	–	5,000	kbps		
Input voltage						
operating range	-7	–	12.5	V <sub>p-p</sub>		
Connection methods						
transformer coupled	–	–	–	–		

## Setting up the KAD/TBM/101

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/TBM/101	KAD/TBM/101	The instrument part reference.
SerialNumber	AB1234	AB1234	Unique name for each module.
Settings	-	-	-
Bit Rate	1e6 to 5e6	4e6	-
MEDL File	Algorithm Reference URL-Defined-Algorithm	MyMedIFileLocation	Pointer to MEDL file.
CSV File	Algorithm Reference URL-Defined-Algorithm	MyCSVFileLocation	Pointer to CSV file.
Prefix	UTF-8 String	MyBusPrefix	Specifies the prefix to be prepended to all package and parameter definitions on the bus.
Include Cstate	true false	true	Include CState into iNET-X packets.
Packetizer Redundancy	true false	false	Enable redundancy removal for Packetizer.
Extractor Redundancy	true false	false	Enable redundancy removal for Extractor.
Fill Value	0000 to FFFF	5555	Specifies the a value that should be stored when the bus monitor is not receiving data.
Processes	-	-	-
Parser(127:0)	-	-	Parser slots on the module.
Catchall-Parser	-	-	-
Channels	-	-	-
TTP-In(1:0)	-	-	-
TTP Input	-	-	-
Settings	-	-	-
Stream Id	00 to FFFFFFFF	FFFFFFF	-
Packetization Enabled	true false	false	-

### Parameter definitions

NAME/DESCRIPTION	BASE UNIT	DATA FORMAT	BITS	REGISTER DEFINITION
Global Parameters				
CStateGlobalTime Global time from C-State of TTP bus. Updated after reception of every frame.	BitVector	BitVector	16	R[15:0]
CStateMEDLPosition MEDL position from C-State of TTP bus. Updated after reception of every frame.	BitVector	BitVector	16	R[15:0]
CStateCurrentMode Current mode from C-State of TTP bus. Updated after reception of every frame.	BitVector	BitVector	16	R[15:0]

NAME/DESCRIPTION	BASE UNIT	DATA FORMAT	BITS	REGISTER DEFINITION
CStateMembership Membership from C-State of TTP bus. Updated after reception of every frame.	BitVector	BitVector	64	R[63:0]
Parser(127:0) Parameters				
MessageStatus Message Status.	Count	OffsetBinary	16	R[15:0] R[4:0] StatusBitsChannel0 - Status bits channel 0 00000: No Frame Received 00001: Reserved 00010: Reserved 00011: Correct Frame R[9:5] StatusBitsChannel1 - Status bits channel 0 00000: No Frame Received 00001: Reserved 00010: Reserved 00011: Correct Frame R[12:10] Reserved R(13) Skipped R(14) Stale R(15) Empty
Catchall-Parser Parameters				
MessageStatus Message Status.	Count	OffsetBinary	16	R[15:0]
MessageData Message Data.	BitVector	BitVector	32	R[31:0]

**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/TBM/101

**NOTE:** The KAD/TBM/101 can be used in an Acra KAM-500 chassis or an SSR-500 chassis.

### Configuring the module

To configure the module, you must provide a Message Descriptor List (MEDL) file for the TTP controller, and a signal description file. The MEDL file is a binary file and the signal description file is a Comma Separated Value (CSV) file. Sample content of a signal description file can be seen in the following table.

TABLE 3		Signal description file							
Signal name	Start bit	Number of bits	In message box	In frame	In slot	In round	CNI base address	CNI frame address	CNI message address
MySignal1	0	32	MyMessage1	MyFrame_channel_a	Node1_slot	1	0x000000	0x000100	0x000104
MySignal1	0	32	MyMessage1	MyFrame_channel_b	Node1_slot	1	0x000000	0x000200	0x000204
MySignal1	0	32	MyMessage1	MyFrame_channel_a	Node1_slot	2	0x000000	0x000300	0x000304
MySignal1	0	32	MyMessage1	MyFrame_channel_b	Node1_slot	2	0x000000	0x000400	0x000404
MySignal2	0	16	MyMessage2	MyFrame_channel_a	Node1_slot	1	0x000000	0x000100	0x000108
MySignal3	16	16	MyMessage2	MyFrame_channel_b	Node1_slot	1	0x000000	0x000200	0x000208
MySignal4	0	32	MyMessage3	MyFrame_channel_a	Node2_slot	1	0x000000	0x000500	0x000504
MySignal4	0	32	MyMessage3	MyFrame_channel_b	Node2_slot	1	0x000000	0x000600	0x000604
MySignal5	0	32	MyMessage4	MyFrame_channel_a	Node2_slot	2	0x000000	0x000700	0x000704
MySignal5	0	32	MyMessage4	MyFrame_channel_b	Node2_slot	2	0x000000	0x000800	0x000804

### KAD/TBM/101 limitations

The PCM stream contains signals that are 16-bit aligned. It is not possible to insert individual signals into the PCM stream without inserting the entire 16-bit word to which the signal belongs. Cluster mode changes and downloading new MEDL files from the TTP bus is not supported.

## Connector pinout of the KAD/TBM/101

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

## Ordering information

PART NUMBER	DESCRIPTION
KAD/TBM/101	TTP bus monitor

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/TBM/101	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/018	KSM-500 Databook
DOC/MAN/030	DAS Studio 3 User Manual
TEC/NOT/016	Power dissipation
TEC/NOT/049	Power estimation

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