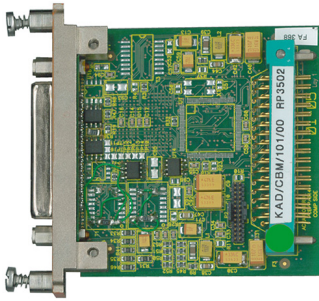


KAD/CBM/101

CCDL bus monitor parser - 4ch



Key Features

- Parses 4 x 2.5MHz CCDL busses
- Coherently stores 32 traffic words per bus
- Adds stale, skipped and empty tags per message
- Adds message count and time tags per message
- Detects bit errors, and message length errors
- Features message counters on all four busses

Applications

- CCDL bus monitoring

Overview

The KAD/CBM/101 is a coherent CCDL bus monitor. It separately parses (triple buffers) data from four independent busses.

Each channel consists of a bit finder followed by a serial to parallel converter. After a valid preamble, 32 16-bit words with no bit errors, and a valid postamble the message is considered valid. Each valid message is then stored, along with the time the first bit of the preamble appeared and the message count for that channel. The message parser then waits for the next message.

Errors reported include bad bit after preamble and postamble not correct. In the event of an error message the parser will immediately start looking for the next preamble.

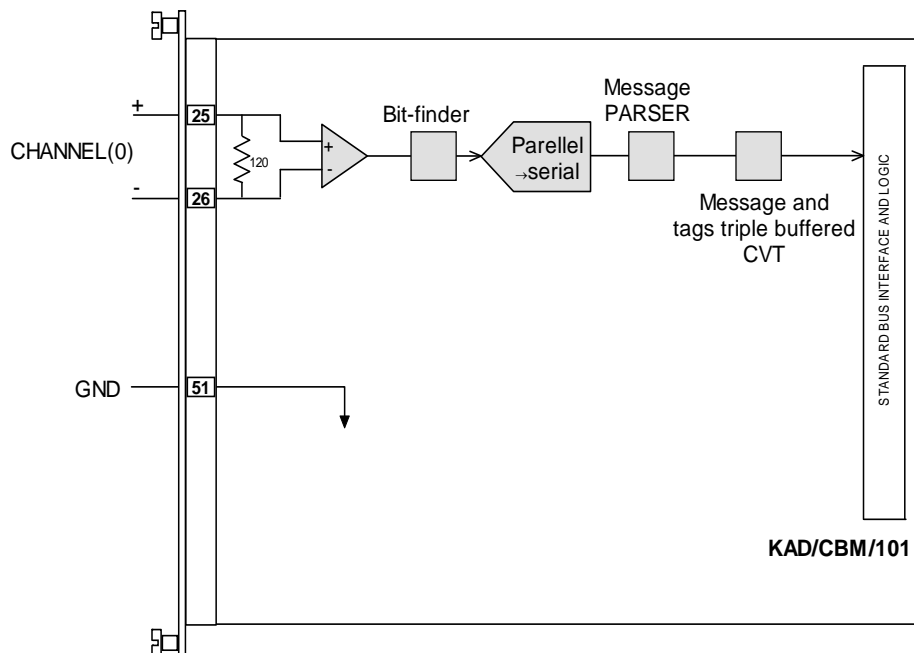


Figure 1: First of four independent CCDL parsers

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						
	–	70	–	g		
	–	2.47	–	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	71	–	73.3	mA		
+7V	0.8	–	0.8	mA		
-7V	3.21	–	3.28	mA		
+12V	2.6	–	2.68	mA		
-12V	3.7	–	3.92	mA		
total power	0.458	–	0.474	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 RS-422 inputs

PARAMETER	MIN.	TYP.	MAX.	UNITS	CONDITION/DETAILS
Inputs	-	-	4	-	
Signaling rate					
DATA	-	-	2.5	Mbps	
Input voltage					
operating range	-7	-	12	V	Do not exceed operating range.
logic 0	-	-	0.2	V	$V_{IN+} - V_{IN-}$
logic 1	0.2	-	-	V	$V_{IN+} - V_{IN-}$
common mode voltage	-7	-	12	V	
overvoltage protection	-7.5	-	12.5	V	Voltages outside of this range can damage input.
ESD protection	8	-	-	kV	Human Body Model.
Input resistance					
between inputs	-	120	-	Ω	Module powered on and inputs terminated.
between inputs	-	120	-	Ω	Module powered off and inputs terminated.
each input to GND	-	71	-	k Ω	Module powered on.
each input to GND	-	50	-	k Ω	Module powered off.

Setting up the KAD/CBM/101

Setting up Parameters

①

Parameter Name	Mode	Bus	Word	Protocols	Comment
CBM101_0_J3_D1_B0	DATA	Bus_0	1	None	

```

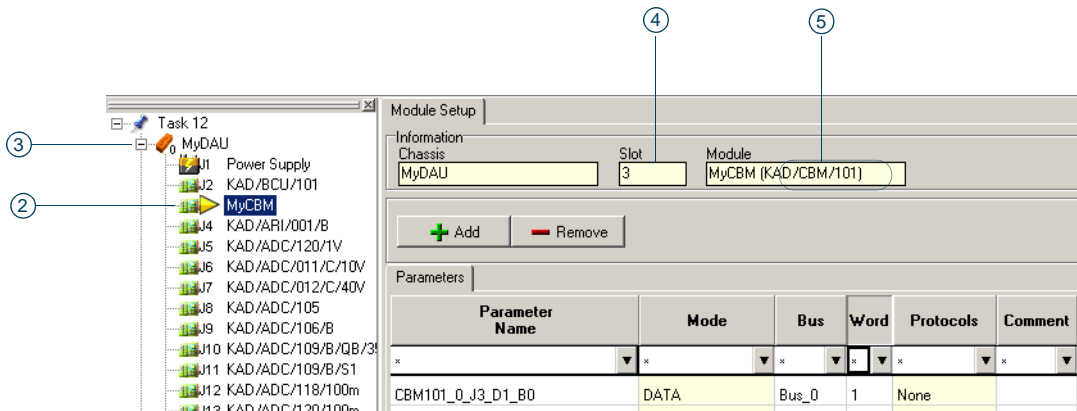
:
<Parameters>
  <ParameterTypeSet>
    <ParameterType Name="MyTemperatureType">
      <BaseUnit>Celsius</BaseUnit>
      <RangeMaximum>500</RangeMaximum>
      <RangeMaximum>-100</RangeMaximum>
    </ParameterType>
  </ParameterTypeSet>
  <ParameterSet>
    <Parameter Name="LeftWingTemperature">
      <ParameterProperties>
        <ParameterTypeReference>MyTemperatureType</ParameterTypeReference>
      </ParameterProperties>
      <Source>
        <Package>
          <InstrumentReference>MyCCDLModule</InstrumentReference>
          <PackageReference>MyCCDLPackage</PackageReference>
          <ParameterMap>CBM101_0_J3_D1_B0</ParameterMap>
        </Package>
      </Source>
    </Parameter>
  </ParameterSet>
</Parameters>
:
    
```

①

	NAME	TYPE	RANGE	DEFAULT	MANDATORY	APPLIES TO	DESCRIPTION
①	ParameterMap	Name	N/A	N/A	No	Each module	The ParameterMap element can be used to specify a location in a package.

For brevity, some code has been removed from the above example, code not shown is indicated by “:”

Setting up Instrumentation



```

:
<Instrumentation>
  <InstrumentSet>
    :
    <X-DAU-1.0 Name="MyDAU">
      <Manufacturer>
        <Name>ACRA CONTROL</Name>
        <PartReference>KAM/CHS/13U</PartReference>
      </Manufacturer>
    </X-DAU-1.0>
    :
    <X-Module-CCDL-1.0 Name="MyCBM">
      <Manufacturer>
        <Name>ACRA CONTROL</Name>
        <PartReference>KAD/CBM/101</PartReference>
      </Manufacturer>
      <Location>MyDAU</Location>
      <SubLocation>3</SubLocation>
      <Interconnect>MyCCDLPackage</Interconnect>
    </X-Module-CCDL-1.0>
    :
  </InstrumentSet>
</Instrumentation>
:
    
```

	NAME	TYPE	RANGE	DEFAULT	MANDATORY	APPLIES TO	DESCRIPTION
②	InstrumentReference	Name	N/A	N/A	Yes	Each module	Name of module.
③	Location	Name	N/A	N/A	No	Each DAU	Name of DAU.
④	SubLocation	Number	N/A	N/A	No	Each module	The slot the module fits into. First user-module goes into slot 3.
⑤	PartReference	Selection	N/A	N/A	No	Each module	ACRA CONTROL part number.

Setting up Packages

⑥

Parameter Name	Mode	Bus	Word	Protocols	Comment
CBM101_0_J3_D1_B0	DATA	Bus_0	1	None	

⑥

```

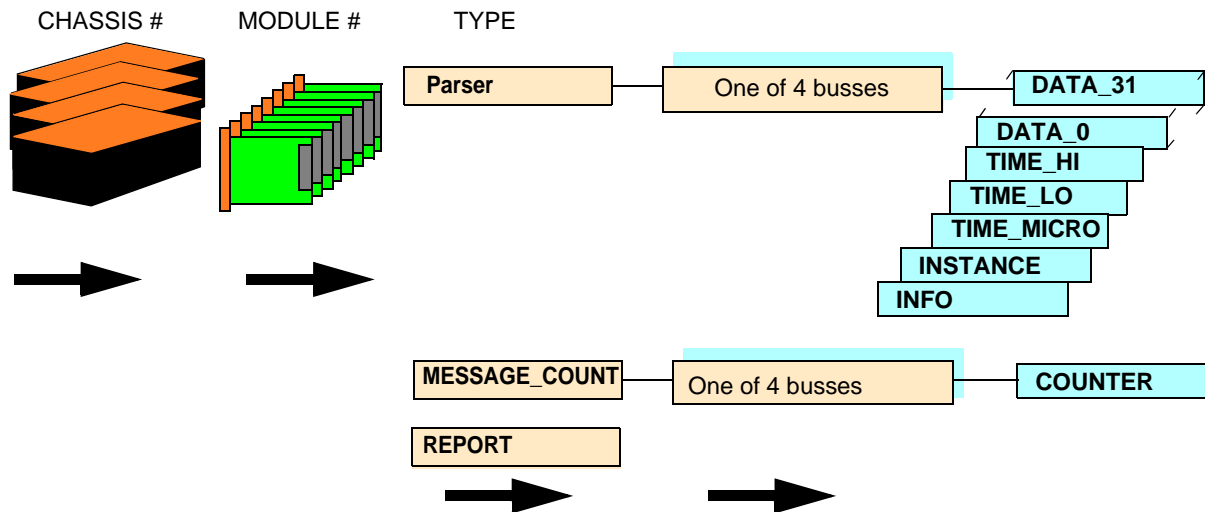
:
<Packages>
  <PackageSet>
    :
    <X-CCDL-1.0 Name="MyCCDLPackage">
      <Synchronous>Yes</Synchronous>
      <PackagesPerAcquisitionCycle>2</PackagesPerAcquisitionCycle>
      <Content>
        <Parameter Name="P1">
          <Location>
            <Offset_Bits>0</Offset_Bits>
          </Location>
        </Parameter>
        :
      </Content>
    </X-CCDL-1.0>
    :
  </PackageSet>
</Packages>
:
    
```

	NAME	TYPE	RANGE	DEFAULT	MANDATORY	APPLIES TO	DESCRIPTION	NOTES
⑥	Off-set_Bits	Integer	N/A	N/A	Yes	Each package	The location of a parameter in the package in terms of bits from beginning of the data stream	In the GUI this is set in units of 16-bit words, in XidML it is set in bits.

The field definition table explains the extracts shown opposite for the kSetup GUI and corresponding XidML task file for one channel of the KAD/CBM/101.

Output registers

The diagram shows the 153 registers that can be read from the KAD/CBM/101



REGISTER	BITS	DESCRIPTION	MSB
DATA_		Data word stored in parser; DATA_0 is first 16-bits, DATA_31 is last 16 bits	
	R[15:0]	Bits received (less preamble and post-amble bits), R(15) is FBR	R(15)
TIME_MICRO		Microsecond time at the time the start of message was detected	
	R[15:0]	BCD 0000-9999 microseconds	R(15)
TIME_LO		Seconds and centiseconds at the time the start of message was detected	
	R[15:0]	BCD 00.00-59.99 sec.	R(15)
TIME_HI		Hours and minutes at the time the start of message was detected	
	R[15:13]	Reserved for future use	
	R[12:7]	BCD 00-23 hours	R(12)
	R[6:0]	BCD 00-59 minutes	R(6)
INSTANCE		The message count when message is received	
INFO		Stale/skipped indication for this PARSED message	
	R(15)	1 indicates that this parser slot is empty	R(15)
	R(14)	1 indicates this message was read before	R(14)
	R(13)	1 indicates this message overwrote another	R(13)
	R[12:0]	Reserved for future use	
REPORT		Error on Bus 3	
	R(15)	Error on Bus 3	R(15)
	R(14)	Reserved for future use	R(14)
	R[13:12]	See Error codes	R(13)
	R(11)	Error on Bus 2	R(11)
	R(10)	Reserved for future use	R(10)

REGISTER	BITS	DESCRIPTION	MSB
	R[9:8]	See Error codes	R(9)
	R(7)	Error on Bus 1	R(7)
	R(6)	Reserved for future use	R(6)
	R[5:4]	See Error codes	R(5)
	R(3)	Error on Bus 0	R(3)
	R(2)	Reserved for future use	R(2)
	R[1:0]	See Error codes	R(1)
COUNTER	R[15:0]	Message counter on one of the 4 busses	R(15)

FBR = First Bit Received

MSB = Most Significant Bit

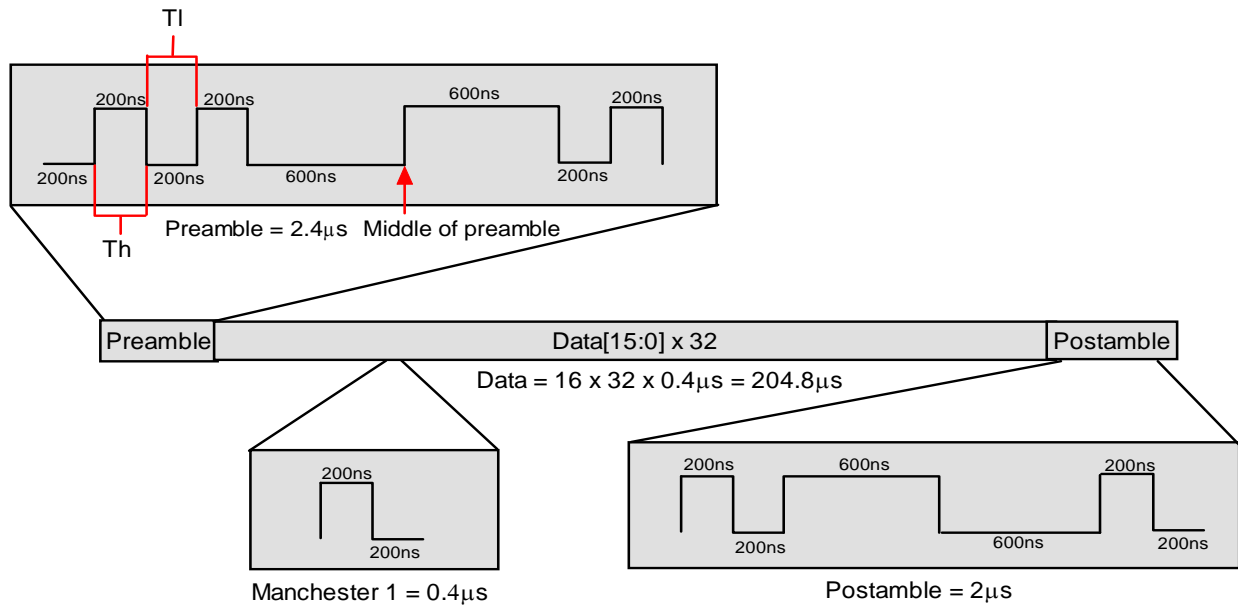
Error codes for the KAD/CBM/101

CODE ¹	DESCRIPTION	CODE	DESCRIPTION
00	Default value after power-up	10	Postamble not correct or message too long
01	Bad-bit after preamble	11	Reserved for future use

1. Error codes are in binary.

Getting the most from the KAD/CBM/101

Typically the report and counter words are only used for debug.



Th, TI ≥ 180ns
 Inter-message gap can be one of the following:
 (a) Manchester encoded 1s or 0s
 (b) High always, or low always, or tri-state

Figure 2: CCDL frame structure

Connector pinout of the KAD/CBM/101

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	DNC		Do not connect
6	DNC		Do not connect
7	DNC		Do not connect
8	DNC		Do not connect
9	DNC		Do not connect
10	DNC		Do not connect
11	DNC		Do not connect
12	DNC		Do not connect
13	DNC		Do not connect
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	Channel(0)+	RS-422 inputs	D/E input, internally terminated with 120Ω
26	Channel(0)-	RS-422 inputs	D/E input, internally terminated with 120Ω
27	DNC		Do not connect
28	DNC		Do not connect
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	Channel(1)+	RS-422 inputs	D/E input, internally terminated with 120Ω
35	DNC		Do not connect
36	DNC		Do not connect
37	DNC		Do not connect
38	DNC		Do not connect
39	Channel(1)-	RS-422 inputs	D/E input, internally terminated with 120Ω
40	DNC		Do not connect
41	DNC		Do not connect
42	Channel(2)+	RS-422 inputs	D/E input, internally terminated with 120Ω
43	Channel(2)-	RS-422 inputs	D/E input, internally terminated with 120Ω
44	Channel(3)+	RS-422 inputs	D/E input, internally terminated with 120Ω
45	Channel(3)-	RS-422 inputs	D/E input, internally terminated with 120Ω
46	DNC		Do not connect
47	DNC		Do not connect
48	DNC		Do not connect
49	DNC		Do not connect
50	CHASSIS	KAM-500 chassis	
51	GND	KAM-500 internal ground	
52	CHASSIS	KAM-500 chassis	Double-density connector only

Ordering information

PART NUMBER	DESCRIPTION
KAD/CBM/101	CCDL bus monitor parser - 4ch (with 52-way double-density connector)
KAM/CBM/101	CCDL bus monitor parser - 4ch (with 51-way micro-miniature connector)

By default, the standard mating connector (CON/KAD/002/CP for KAD modules; ACC/CON/008/04 for KAM modules) 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). In this data sheet, KAD/CBM/101 refers to both the KAD and KAM version of the module.

Revision history

REVISION	DIFFERENCES	STATUS
KAD/CBM/101	First release	Recommended for new programs

Supporting software

SOFTWARE	DETAILS
KSM-500	This module is supported by the KSM-500 suite of software tools

Related documentation

DOCUMENT	DETAILS
DOC/DBK/001	KAM-500 Databook
DOC/GBK/002	Environmental Qualification Handbook
DOC/MAN/018	KSM-500 Databook
TEC/NOT/016	Power dissipation
TEC/NOT/049	Power estimation

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