64 kbit/s Engineering Service Channel Option for the SDM-8000

COMTECH EF DATA™

Engineering Application Note
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Overview

Comtech EFData has incorporated the IESS-308 (Rev 8) 64 kbit/s data channel option as a standard feature on the SDM-8000 satellite modem. This 64 kbit/s data channel option replaces the two 32 kbit/s ADPCM audio channels currently standard on IDR compatible satellite modems. The IDR 8 kbit/s data channel and the four backward alarm functions remain unmodified and function as defined in the SDM-8000 Installation and Operation Manual (IOM).

Minimum Requirements

The 64 kbit/s data channel option is available as a standard feature on modems with software version 16.1.1 or later. Modems with software at an earlier revision level must be upgraded. The following table lists the minimum firmware upgrade requirements to enable the 64 kbit/s data channel option on the SDM-8000 modem:

Card	Location	Firmware
M&C	U17	FW/2448-1V
Interface	U109 and U110	FW/2882-P
Interface	U111	FW/2451-2V

Configuration

The customer must select between two 32 kbit/s ADPCM audio channels or the 64 kbit/s data channel option. To determine the current configuration, please review the following:

1. If the jumper selections on the interface card are configured for **STD IDR** (as shown in the following table), then the two 32 kbit/s ADPCM audio channels are functional.

2. If the jumper selections on the interface card are configured for **64 kbit/s** (as shown in the following table), then the 64 kbit/s data channel option is functional.

   Note: "EIA" is the latest industry term to replace "RS". Currently, the IOM reads EIA-422. The equivalent on the board is RS-422.

Jumper Location	Jumper Designation		Jumper Placement	
	Std IDR	64 kbit/s	Std IDR	64 kbit/s
JP1	EIA-422	EIA-422	Left	Left
JP2	IDR	IDR	Right	Right
JP3	IDR	IBS	Right	Left
JP5	IDR	IDR	Right	Right
JP23	G.703	EIA-422	Off	Left
JP22	G.703	G.703	Off	Off
JP7	G.703	G.703	Off	Off

Note: Comtech EFData has revised the UTILITY - INTERFACE menu to include "IDR ESC TYPE" that will allow the customer to confirm whether the two 32 kbit/s ADPCM audio channels or the 64 kbit/s data channel option has been selected. Depending on which option has been configured, the screen will indicate either "32 kbit/s AUDIO" or "64 kbit/s DATA". This addition is included in Rev. 11 of the SDM-8000 IOM.

Timing Diagram and Pinouts

The 64K_SD data is clocked into the modem on the rising edge of the 64K_ST TX clock. The state of the data (0 or 1) is determined during the setup and hold times of the rising edge of the 64K_ST clock (about 5μs total). If desired, the 8 kHz clock can be used for byte alignment. The timing relationships between the 8K_SD data and the 8K_ST clock are the same as the relationship between the 64K_SD data and the 64K_ST clock, including the setup and hold times of the rising edge of the 8K_ST clock (about 5μs total).

The following illustration is a graphical overview of the timing relationships of the TX Data to the TX Clock:

64K_ST	
64K_SD	07 00 01 02 03 04 05 06 07 00 01 02 03
8K_ST	
8K_SD	07 00
TX_OCTECT	
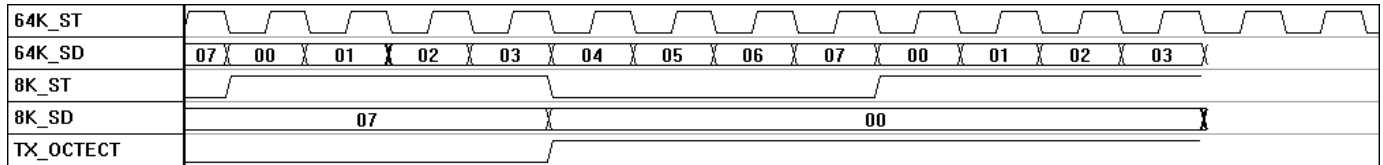
Note: The timing relationships for the RX Data are identical to the TX Timing.

Refer to the following tables to determine the difference between the two 32 kbit/s ADPCM audio channels and the 64 kbit/s data channel option connectors:

32 kbit/s ADPCM audio channels		
Function	Designation	Pin #
CH 1 Audio in	A1I_A	45
	A1I_B	29
CH 1 Audio out	A1O_A	46
	A1O_B	30
CH 2 Audio in	A2I_A	47
	A2I_A	29
CH 2 Audio out	A2O_A	48
	A2O_B	32

64 kbit/s data channel		
Function	Designation	Pin #
64 kbit/s TX data	64K SD_A	45
	64K SD_B	29
64 kHz RX clock	64K RT_A	46
	64K RT_B	30
64 kHz ST clock	64K ST_A	47
	64K ST_B	29
64 kbit/s RX data	64K RD_A	48
	64K RD_B	32

Refer to the following table to determine how the pinout diagrams are remapped on the breakout panels (BOP) when switching from the two 32 kbit/s ADPCM audio channels to the 64 kbit/s data channel option:

32 kbit/s ADPCM audio		64 kbit/s data		BOP Pin number		
Function	Designation	Function	Designation	IDR (B-308-4)	SMS7000 UB300* IB86xx	IB800x
CH 1 Audio in	A1I_A	64 kbit/s TX data	64K SD_A	TB3, 1	J6, 1	TB3, 1
	A1I_B		64K SD_B	TB3, 2	J6, 6	TB3, 2
CH 1 Audio out	A1O_A	64 kHz RX clock	64K RT_A	TB3, 4	J6, 2	TB3, 4
	A1O_B		64K RT_B	TB3, 5	J6, 7	TB3, 5
CH 2 Audio in	A2I_A	64 kHz ST clock	64K ST_A	TB3, 6	J6, 8	TB3, 7
	A2I_B		64K ST_B	TB3, 8	J6, 4	TB3, 8
CH 2 Audio out	A2O_A	64 kbit/s RX data	64K RD_A	TB3, 10	J6, 9	TB3, 10
	A2O_B		64K RD_B	TB3, 11	J6, 5	TB3, 11

*Note: For the SMS-7000, use J5 for the 64 kbit/s data. For the IB86xx series BOPs, use J17 for the 64 kbit/s data.

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