8.0 AVIONICS INTERFACES

8.0.1 PAYLOAD DEFINITION

8.0.1.1 Shuttle Orbiter/Payload Functional Block Diagram and Service Allocation

The Shuttle Orbiter/Cargo Element functional block diagram shall be as shown on Figure 8.0.1.1-1. The Shuttle Orbiter/Payload allocation of interfaces shall be as shown in Table 8.0.1.1-1.

8.0.1.2 STS/Payload PDI Interface

Signal characteristics associated with the Orbiter PDI interface shall be as defined in Table 8.0.1.2-1. Type I, II or III (rather than Block Mode) data is preferred in order to allow ground processing by NSTS. No onboard processing is allowed.

8.0.1.3 (Reserved)

8.0.1.4 STS/Payload PSP Interface

Signal characteristics associated with the Orbiter PSP interface shall be as defined in Table 8.0.1.4-1.

8.0.1.5 (Reserved)

8.0.1.6 STS/Payload Ku-Band Signal Processor NOT APPLICABLE

8.0.1.7 (Reserved)

8.0.1.8 (Reserved)

8.0.2 (Reserved)

8.0.3 (Reserved)

8.0.4 (Reserved)

TABLE 8.0.1.1-1 ORBITER/CARGO ELEMENT AVIONICS INTERFACE ALLOCATION

ORBITER SERVICE	REF PARA	INTERFACE TYPE/ DESCRIPTION	IDD ALLOCATION	P/L USE	NOTES
PAYLOAD DATA INTERLEAVER (PDI)	8.2.1	TELEMETRY INPUTS	1	1	
PAYLOAD SIGNAL PROCESSOR (PSP)	8.2.5	PSP 1	1	1	
PAYLOAD TIMING BUFFER(PTB)	8.2.10.1	MET OUTPUT; MODIFIED IRIG B	1	1	1

TABLE 8.0.1.1-1 ORBITER/CARGO ELEMENT AVIONICS INTERFACE ALLOCATION
(CONCLUDED)

NOTE:

1. Orbiter Timing Buffer (OTB) has the same signal characteristics and may replace the PTB.

TABLE 8.0.1.2-1 PAYLOAD DATA INTERLEAVER (REF PARA 8.2.1)

DATA FORMAT	BIT RATE (KBPS)	INPUT SIGNAL CODE	WORD LENGH (BITS)	MASTER FRAME LENGTH (WORDS OR MINOR FRAMES)	MASTER FRAME SYNC LENGTH (BITS)	MINOR FRAME LENGTH (WORDS)	MINOR FRAME SYNC LENGTH (BITS)	PORT ID	STANDARD SAMPLE RATES (SAMPLES/ MASTER FRAME)	NON-STANDARD SAMPLE RATES (SAMPLES/ MASTER FRAME)	NOTES
3	8	BIP-L	8	32	8	64	24		N/A	N/A	1;2;3;4

TABLE 8.0.1.2-1 PAYLOAD DATA INTERLEAVER (REF PARA 8.2.1)
(CONCLUDED)

NOTES:

1 N/A = Not Available

(2) Minor Frame Counter, located in Word 4, 8 bits, in ascending binary count which increments one count for each minor frame. Initial value is 0 incrementing up to 31 and resetting to 0 at the beginning of each Master Frame.

(3) Minor Frame Sync is located in the first three words of each minor frame. Sync pattern is FAF320. Sync pattern FAF320 is in conflict with Note 5 of Table 8.2.1.1-1. This pattern is utilized by the Orbiter by the Orbiter Pulse Coded Modulation (PCM) as a sync pattern. Use of FAF320 Hex by a payload could cause phase lock by ground facilities upon decommutation of the payload data stream. This will cause a real time data loss of 5 minor frames (based on payload telemetry rate of 8 kbps) of all Orbiter/Payload re-establishment of correct decommutation lock on the telemetry data stream. The lost data can be recovered through Payload Recorder.

(4) For a Type 3 Data Format, the Master Frame Sync is a 8 bit Minor Frame counter (see Table 8.2.1.1-1)

TABLE 8.0.1.4-1 PAYLOAD SIGNAL PROCESSOR (REF PARA 8.2.5)

DATA RATE (BPS)	DATA TYPE	NOTES
2000	NRZ-L	

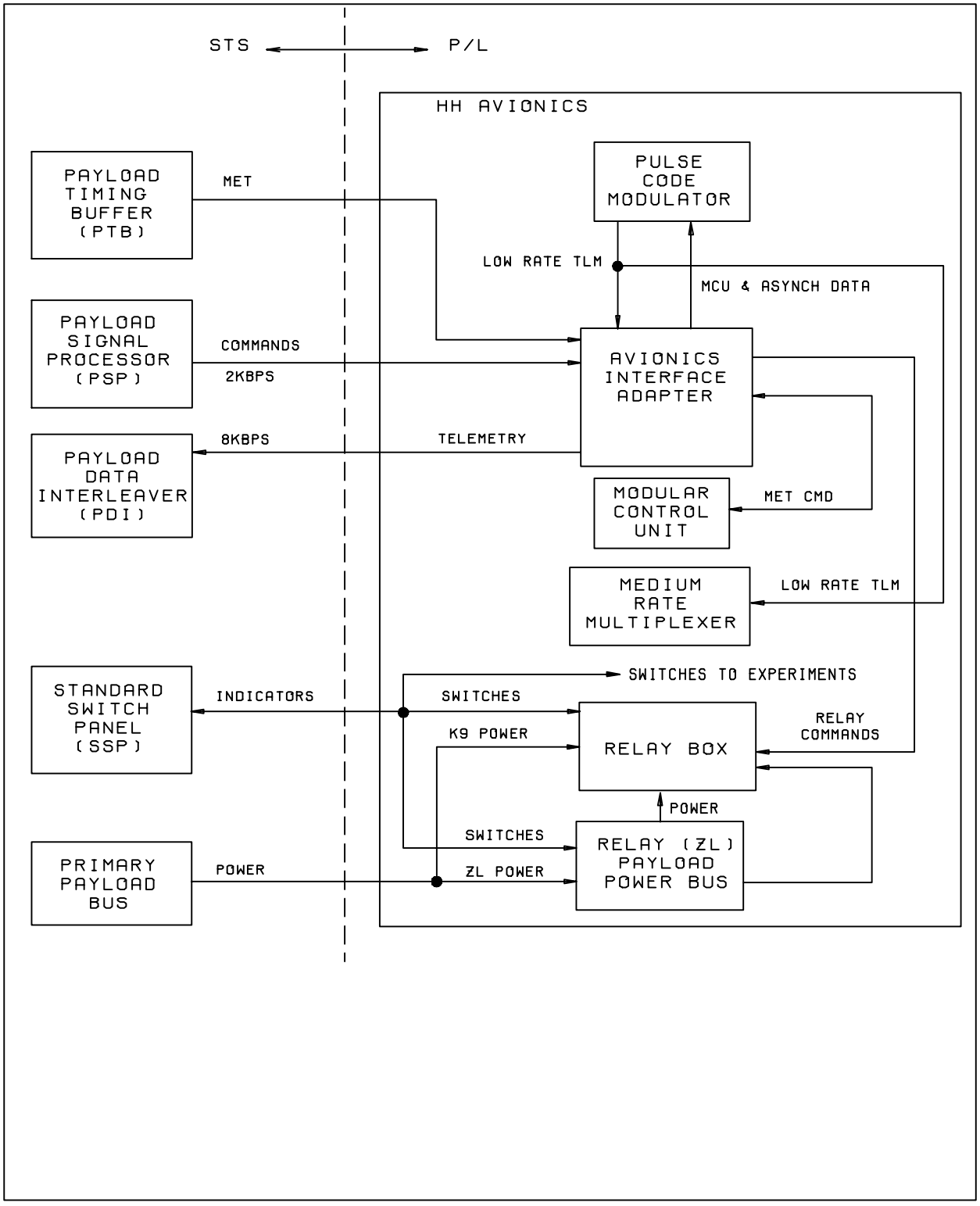

FIGURE 8.0.1.1-1 ORBITER/AVIONICS FUNCTIONAL BLOCK DIAGRAM

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