REVISIONS

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A	36-201	Initial Release	DAG	RFG	5/3/95
B	36-292	Invert TLM data in Section 3	*(signature)*	*(signature)*	13/4/95

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Approved:	RFGoeke	5/3/95	**ACIS Input to RCTU**
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Size	Code Identification No.	Drawing No.	Rev.
T	80230	36-02206	B
Scale: NONE		Sheet: 1 of 7	

ACIS Input to
RCTU Interface Requirements

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36-02206

Rev. B

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Contents

1 Introduction

This document describes particular interfaces being used by the ACIS Instrument in ways which are or may be in conflict with the TRW-generated **AXAF/I Remote Command and Telemetry Unit/User Interface Requirements, Rev. B,** dated 9 February 1995. In a perfect world, this document, an Appendix to the Observatory to SI ICD, would be reviewed, negotiated, and signed off by all the affected parties prior to the fabrication of hardware. It does not appear to be a perfect world.

2 RCTU Command Interface

2.1 Problem Statement

The circuit shown is inconsistent with the various specifications. In particular, one can just drive the 1300pf capacitive load with 300 ohms and meet the rise time requirements (which probably should be 400 ns, as in the case of the Serial Telemetry Interface); no room for component tolerance is allowed. Further, the drive transistors have specified saturation characteristics only under a 1 ma load (far less than that provided by the 300 ohms). The maximum current load allowed is 15.3 ma, which will be exceeded under conditions of high bus voltage and a low-tolerance pull-up resistor.

It has been our experience that a Schottky-barrier diode has virtually no immunity to transients which exceed DC current ratings. A 35 milliamp diode at DC is a 35 milliamp diode to a 1 μs pulse. The failure mode is a short. As a clamp, therefore, to guard against ringing and EMI-generated noise spikes, the choice of a 1N5711-series part seems inappropriate.

2.2 ACIS Implementation

We are using a 300 ohm pullup resistor on these lines, but with the caveat that the driver must be capable of meeting its requirements with a maximum load of 21ma (tolerancing both the 5VDC bus and the resistor). We assume the use of single, RC05 resistors.

We assume that the total load capacitance seen by the driver is required not to exceed 1000pf.

We have substituted a 1N4148-series part for the recommended clamp diode.
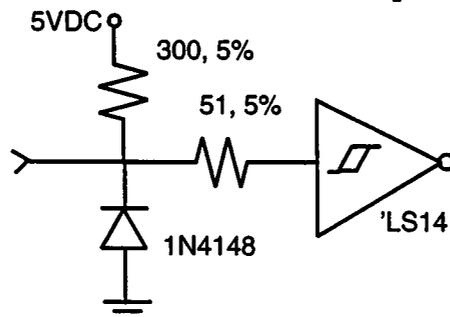
3 RCTU Telemetry Interface
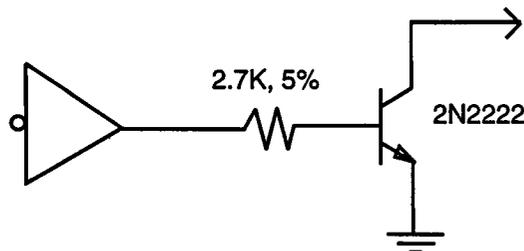
3.1 Problem Statement

The problems previously stated apply.

The logical sense of the signals may be confusing in relating Table 3-1 and Figure 3-8 of the TRW document. *At the interface* the enable and clock are active low and the data is active high. This is only a problem in that it conflicts logically with the sense of the command interface where, in that case, the data is active low.

3.2 ACIS Implementation

We have eliminated the speed-up capacitor, diode, and base-emitter resistor in the transistor drive circuit as unnecessary. We have decreased the base drive somewhat so that the forced B does not exceed 10.

We assume that the total load capacitance seen by the driver is required not to exceed 1000pf. We assume that the total load current seen by the driver is not to exceed 21ma.

2.7K, 5%

2N2222

4 Clocks

4.1 Problem Statement

The phase relationship between the 1 MHz clock and the Science Header Pulse is not specified. The duty cycle of the 1 MHz clock is also not specified.

4.2 ACIS Implementation

We assume a 50% duty cycle (nominal) 1 MHz clock. We assume that the leading, falling edge of the 62 µs sync pulse is phase aligned to a falling edge of the 1 MHz clock to within plus/minus 100 ns.

5 Bilevel and Analog Telemetry

5.1 Problem Statement

The input impedence of the reference signals for bilevel and active analog telemetry is not specified explicitly.

5.2 ACIS Implementation

We require that the signal reference for both bilevel and active analog signals be isolated from chassis by a minimum of 100 Kohms.