

HUMBUG for Local Stations

Local application implementation

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Yet another protocol generally supported by front end computers which make up the accelerator control system at Fermilab is HUMBUG. It provides access to the memory of a front end, as the data acquisition protocol does not support it.

Protocol

As implemented for the 68020-based local station front ends, two types of message formats are supported. The first is an Absolute Dump request whose format beyond the usual acnet header is as follows:

| Word | Meaning |
|------|------------------------------------|
| 0 | 1: Absolute Dump |
| 1 | #words of memory requested (1-128) |
| 2 | MSW of 32-bit address |
| 3 | LSW of 32-bit address |
| 4 | unused |
| 5 | unused |

The reply message format to this request is simply the data words requested. If the MLT bit is set in the first word of the acnet header—signifying multiple replies—the data is returned at 15 Hz until the request is canceled. If there is a bus error encountered, the status word in the acnet header will indicate it.

The second format is an Absolute Patch command, as follows:

| Word | Meaning |
|-------|---------------------------------|
| 0 | 3: Absolute Patch |
| 1 | #words of memory to set (1-128) |
| 2 | MSW of 32-bit address |
| 3 | LSW of 32-bit address |
| 4 | unused |
| 5 | unused |
| 6 ff. | Array of data words to set |

This command is always a one-shot. If the message type is a REQ, rather than a USM, a status-only reply will be sent. If there is a bus error, the acnet header status word will carry the news.