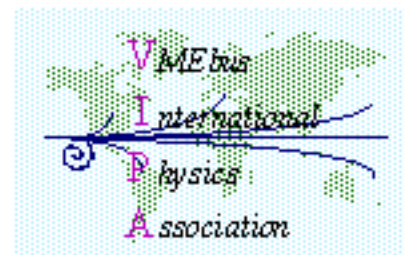


2eVME, 2eSST and VME320

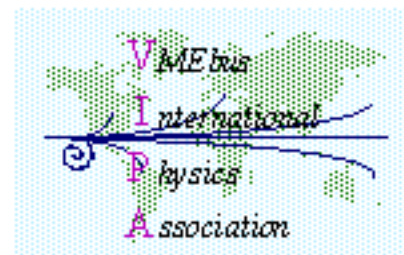
Robert Downing

2eVME



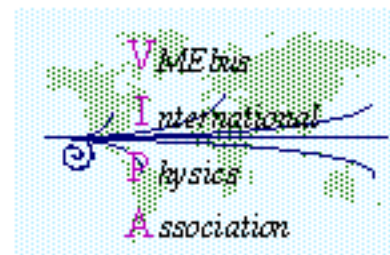
- A32 and A64 Addressing Modes
- D64 Data Mode
- 256 Transfers Maximum
 - 2 KB for 6U
 - 1 KB for 3U
- Address is 3 cycles
 - Device Address, XAM Code
 - Internal Address, Beat Count, Master GA, Master Subunit

Extended Address Definition



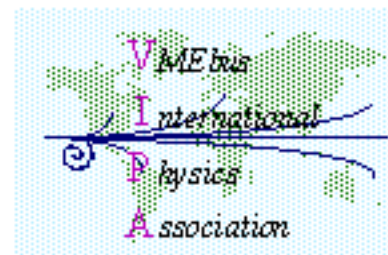
- A[0] was LWORD*
- Address to Extended Address Mapping
 - A[0] > XAM[0], A[1] > XAM[1], etc.
- For 3U VME: AM = 21
 - XAM = 1 > A32 Block Transfer
 - XAM = 2 > A40 Block Transfer
- For 6U VME: AM = 20
 - XAM = 1 > A32 Block Transfer
 - XAM = 2 > A64 Block Transfer

6U Signal Field Definitions



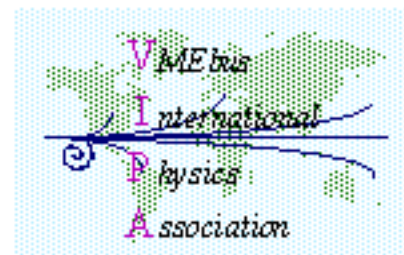
	Address Phase 1	Address Phase 2	Address Phase 3	Data Phase
AM[5:0] A[7:0]	0x20 XAM Code	0x20 Internal Address A[7:0]	0x20 Reserved	0x20 D[39:32]
A[15:8]	Device Address A[15:8]	Beat Count	Reserved	D[47:40]
A[23:16]	Device Address A[23:16]	A[23:21] = 0 A[20:16] = GA of Master	Reserved	D[55:48]
A[31:24] D[32:0]	Device Address A[31:24] Device Address A[63:32], (=0 if A32)	Subunit of Master Reserved	Reserved Reserved	D[63:56] D[31:0]

3U Signal Field Definitions



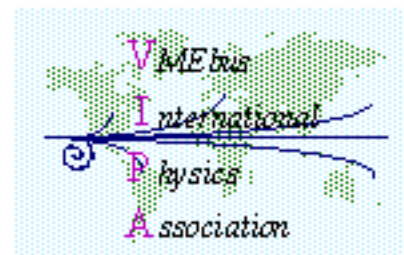
	Address Phase 1	Address Phase 2	Address Phase 3	Data Phase
AM[5:0] A[7:0]	0x20 XAM Code	0x20 Internal Address A[7:0]	0x20 Reserved	0x20 D[32:16]
A[15:8]	Device Address A[15:8]	Beat Count	Reserved	D[31:24]
A[23:16]	Device Address A[23:16]	A[23:21] = 0 A[20:16] = GA of Master	Reserved	Reserved
D[7:0] D[15:8]	Device Address A[31:24] Device Address A[39:32], (=0 if A32)	Subunit of Master Reserved	Reserved Reserved	D[7:0] D[15:8]

2eVME Data Acquisition Feature

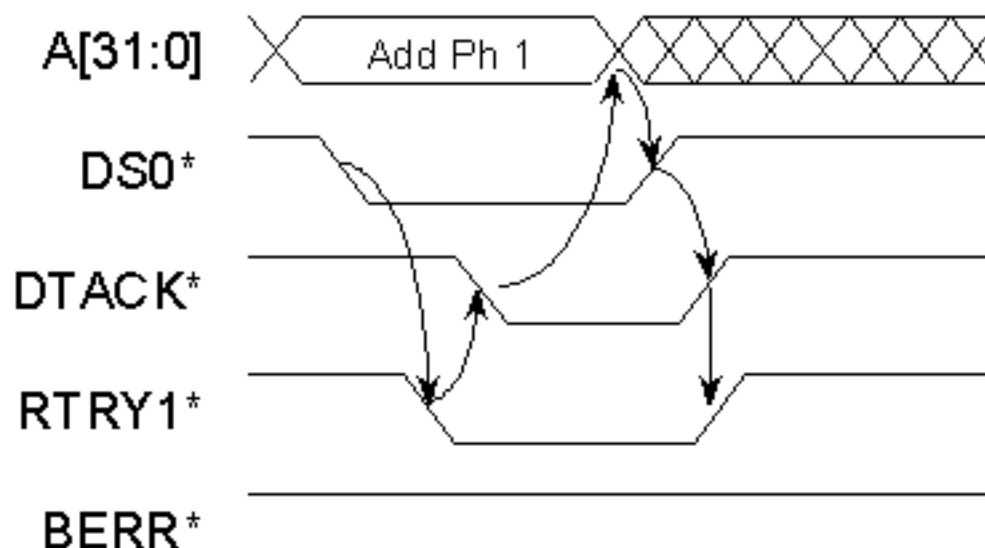


- Master Termination
 - Always on even beat
- Slave Terminated Block Transfer
 - Stop
 - No data
 - No more data, don't come back
 - Suspend
 - Busy
 - Finish later
 - Even beat
 - Error

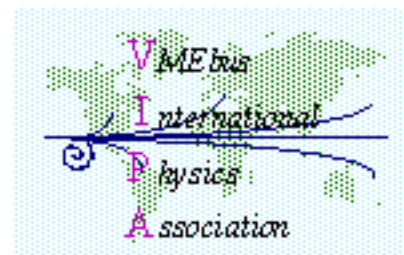
Slave Termination - Address



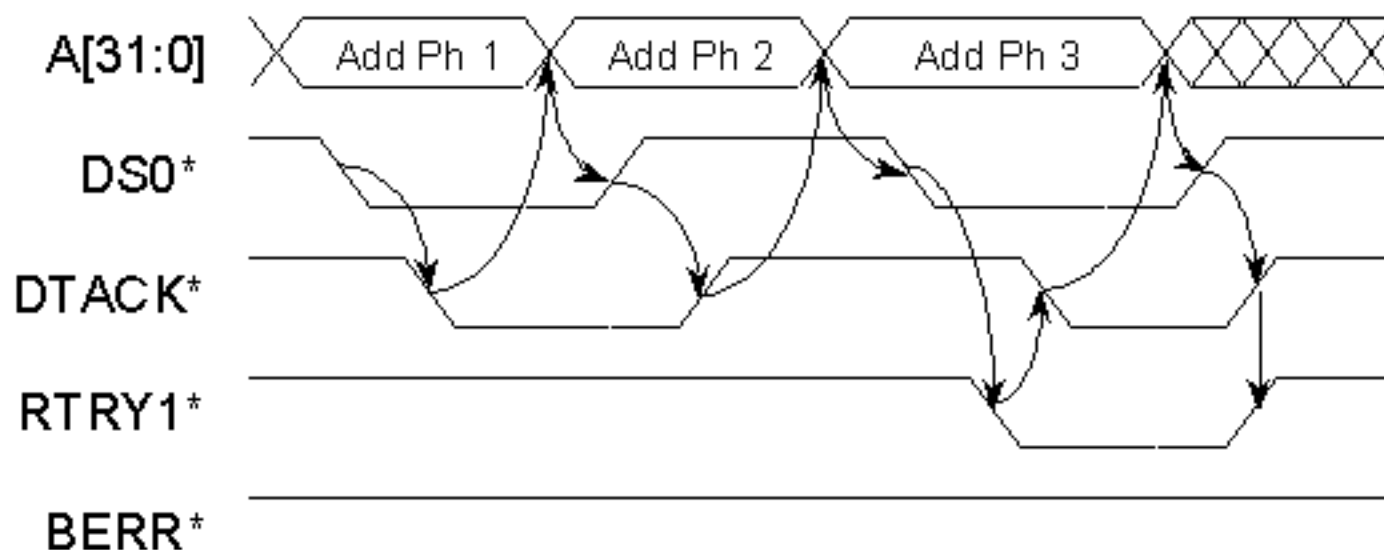
- Slave suspends operation on Address Phase 1
 - No Data but comeback
 - Device Busy but comeback



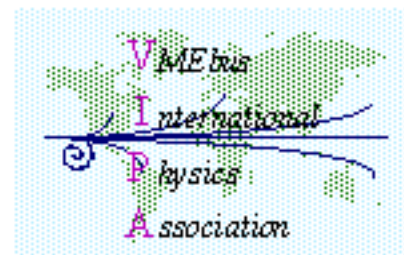
Slave Termination - Address



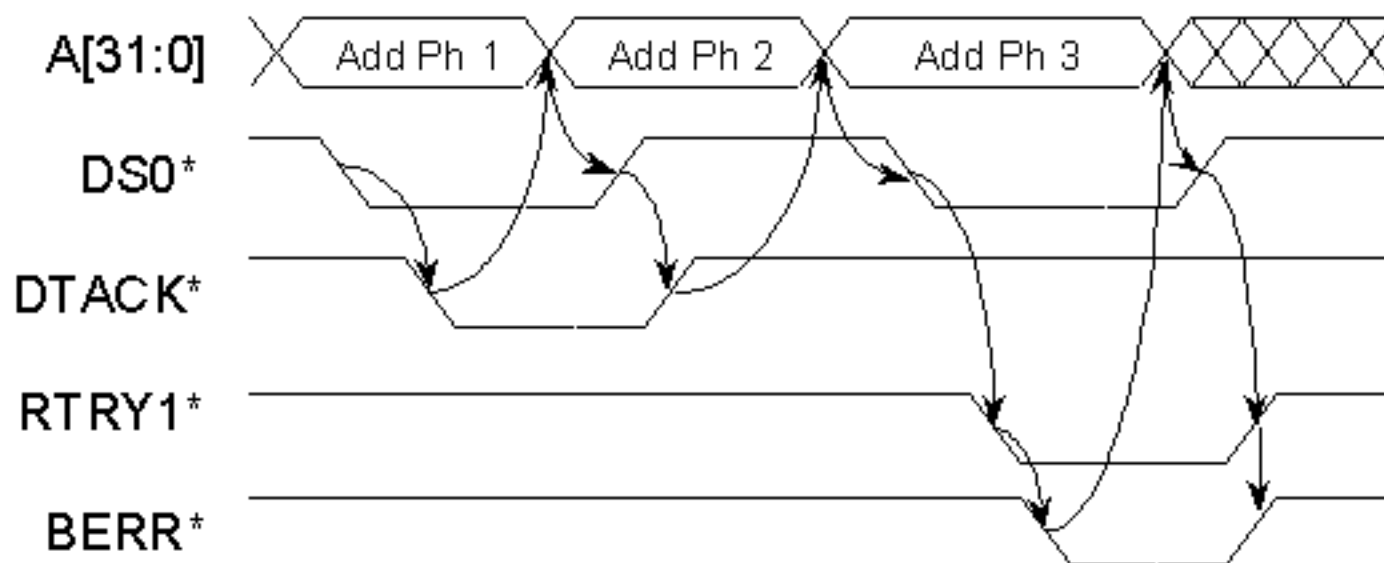
- Slave suspends operation on Address Phase 3
 - Master should try again



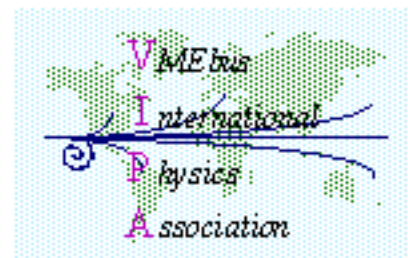
Slave Termination - Address



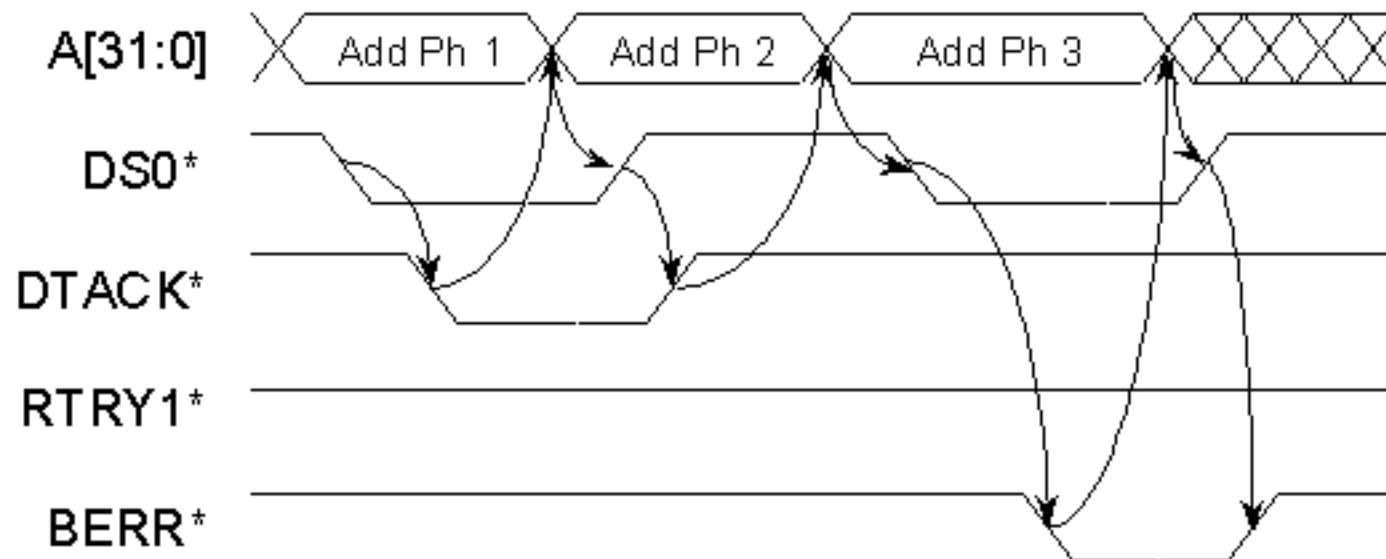
- Slave does not have any data
 - Master should not come back



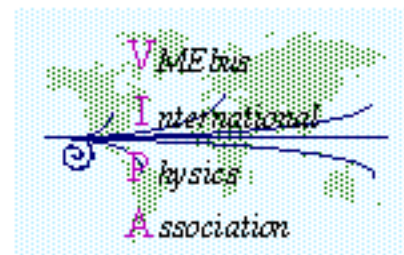
Slave Error - Address



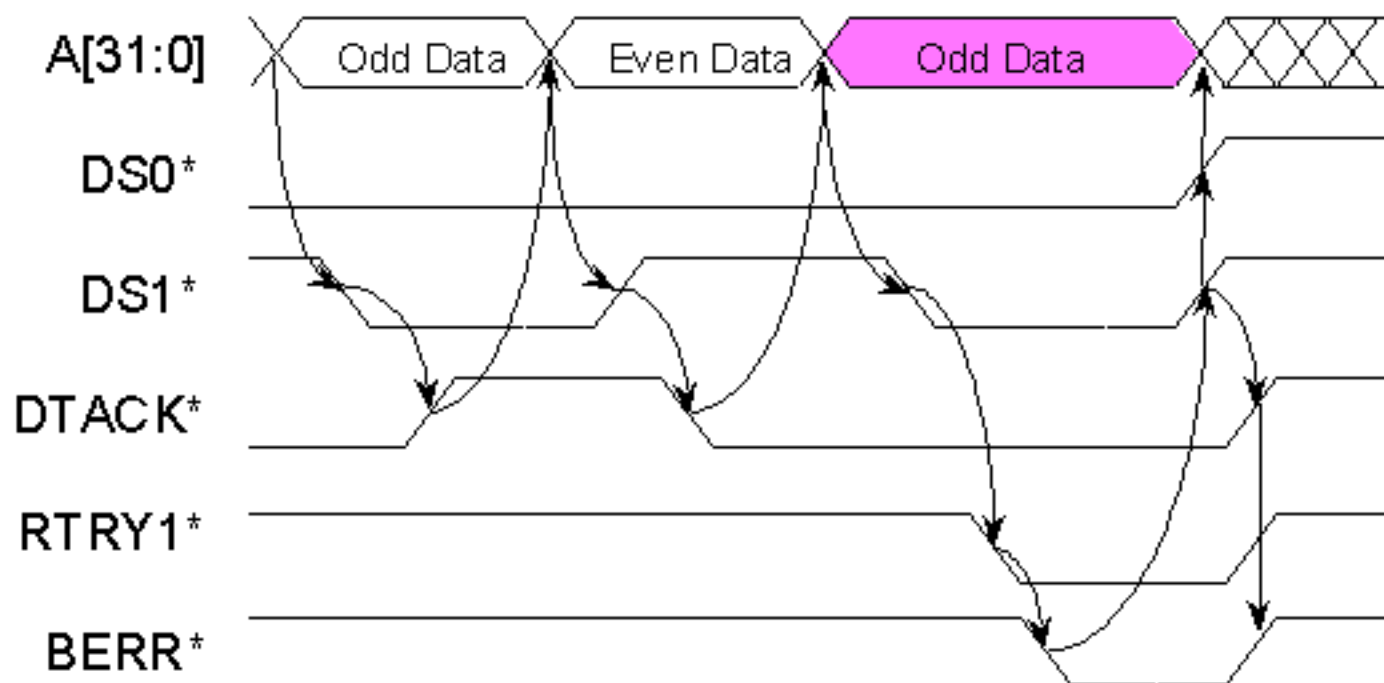
- Slave has an error condition on Address Phase 3
 - Master needs to diagnose problem



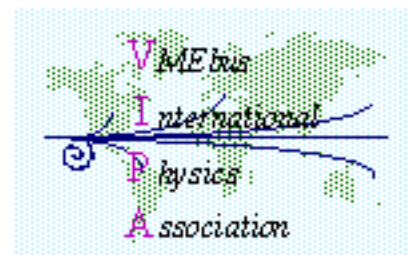
Slave Termination - Write Data



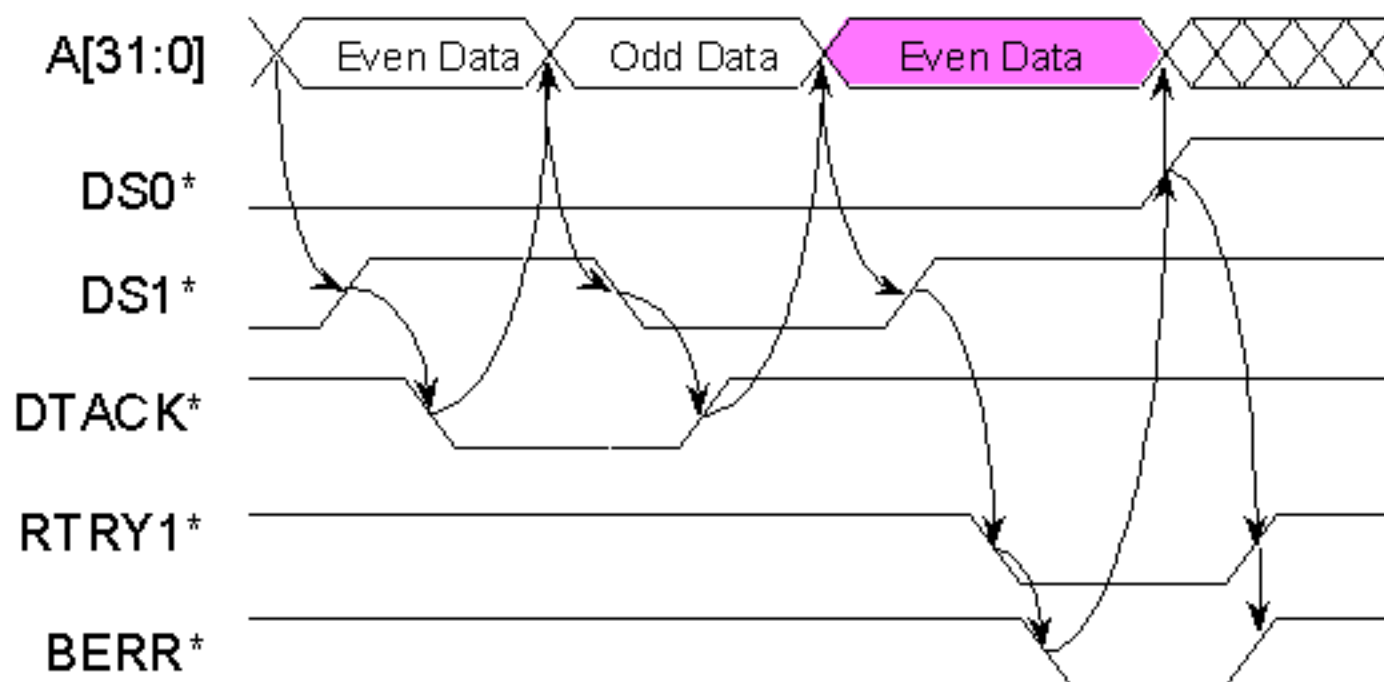
- Slave cannot accept last odd word
 - master should not come back



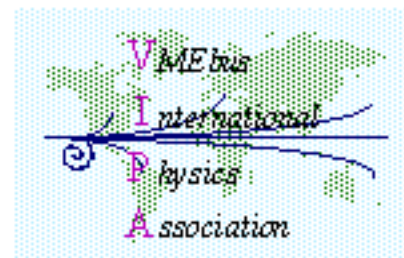
Slave Termination - Write Data



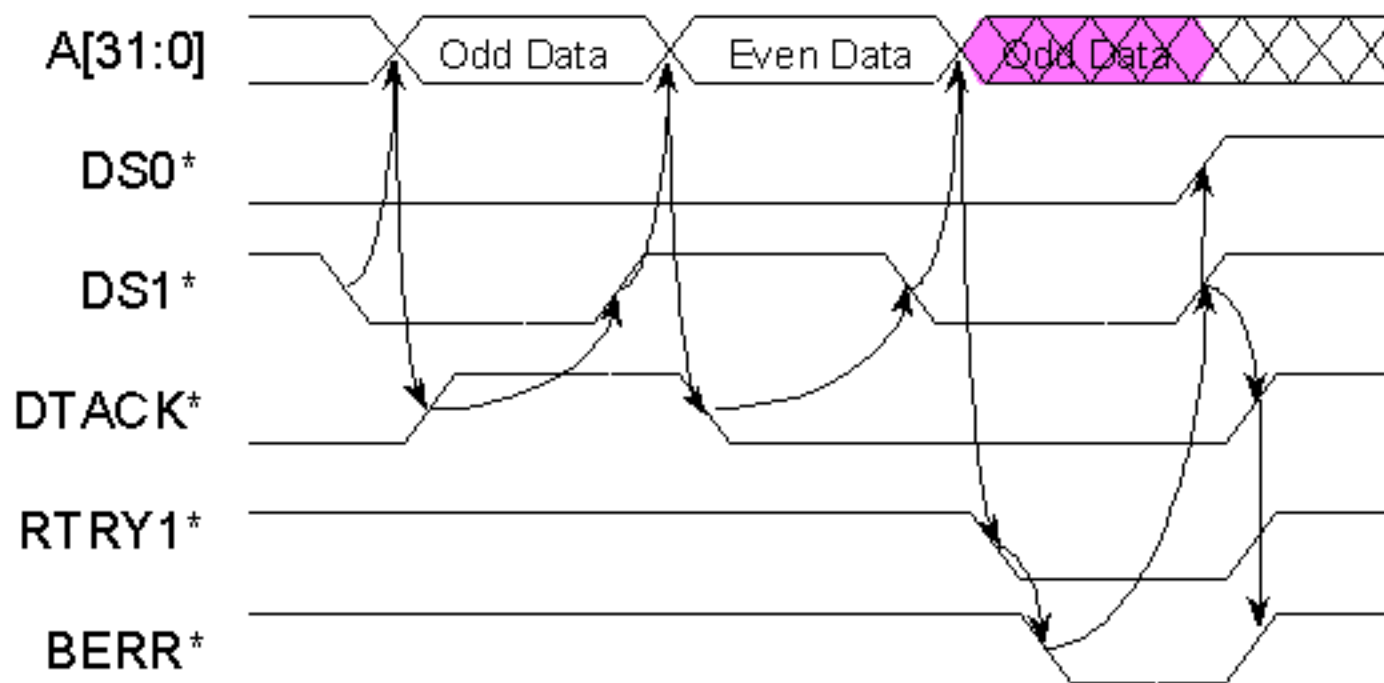
- Slave cannot accept last even word
 - master should not come back



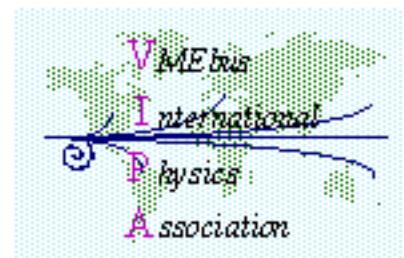
Slave Termination - Read Data



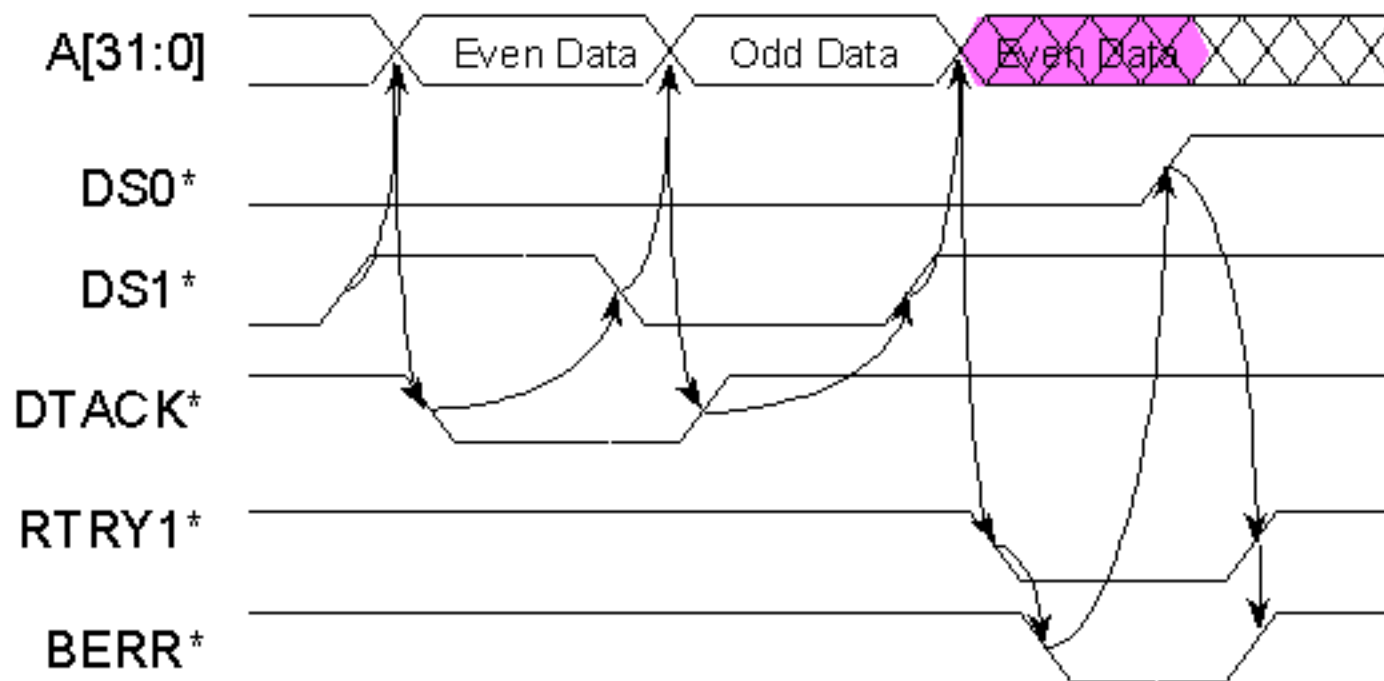
- Slave cannot send last odd word
 - no more data
 - master should not come back



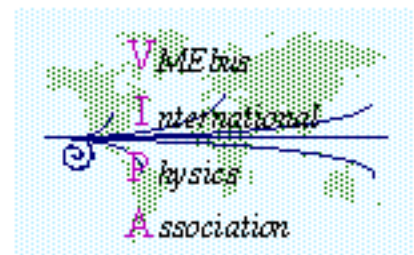
Slave Termination - Read Data



- Slave cannot send last even word
 - no more data
 - master should not come back

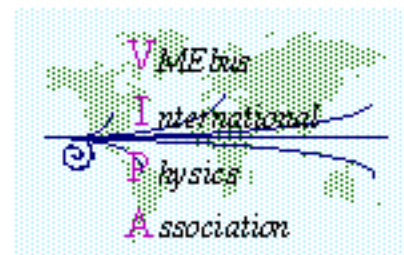


2eSST - Two Edge Source Synchronous Transfer



- Address phase same as 2eVME
- Beat Count from 0 to 256
- 2K boundary for 6U
- Termination only even beats
 - Write or Read Normal
 - Slave Suspend
- Write data - DS1* is clock
- Read Data - DTACK* is clock

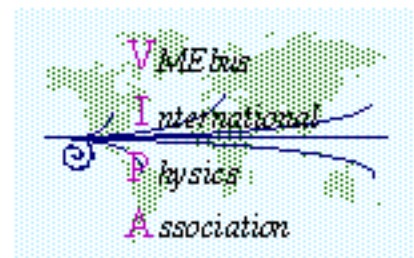
2eSST - 6U (AM = 0x020)



- XAM Codes

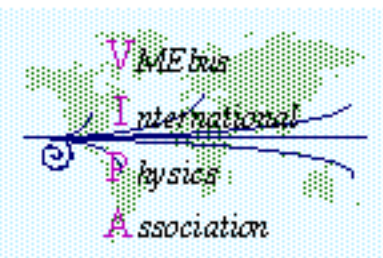
XAM Code	Xfer Rate (MB/s)	Min. Cycle (ns)	Add/Data Mode	Mnemonic
0x0D	320	25	A64/D64	SST320
0x0C	264	30	A64/D64	SST264
0x0B	160	50	A64/D64	SST160
0x0A	320	25	A32/D64	SST320
0x09	264	30	A32/D64	SST264
0x08	160	50	A32/D64	SST160

2eSST Terminations



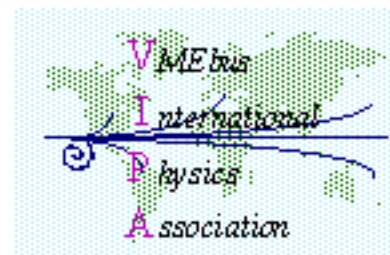
- Master
- Slave
 - Suspend
 - Stop
 - Error

Over Run



- Pipeline operations cannot be stopped instantly.
 - Master has to accept 8 extra words for Read Operations
 - Slave has to accept 8 words after Stop or Suspend for Write Operations

2eSST Timing Budget

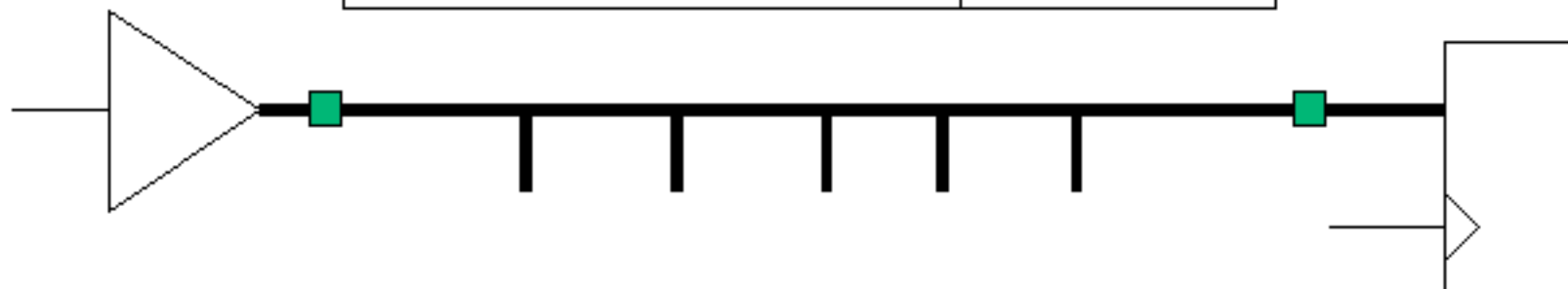


- Skew Budget - SST320

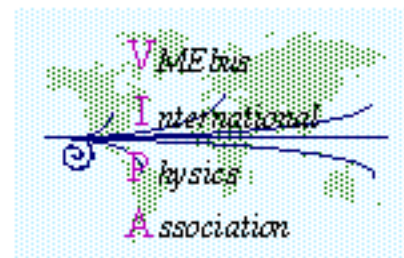
Device	Time (ns)
Transmitter	± 3.5
Backplane	± 3.0
Receiver Setup Time	2.5
Receiver Hold Time	2.5

Transmitter

Receiver

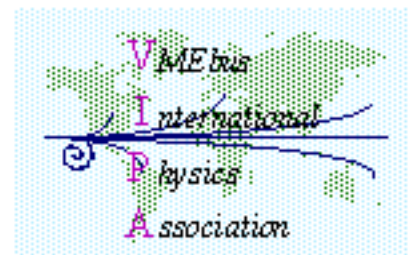


Backplane Issues



- Incident Wave switching
 - Required for 2eSST and 2eVME
- Backplane “Solutions”
 - Shorter Lines
 - Slower Rise/Fall Times
 - Special Backplanes
 - VME320
 - Other terminations

VME320



- “Bus” is wired as a star from slot 11
- Appears as a lumped load
- Rise times have to be less than the stub
- Slower edges can introduce skew at receiver

