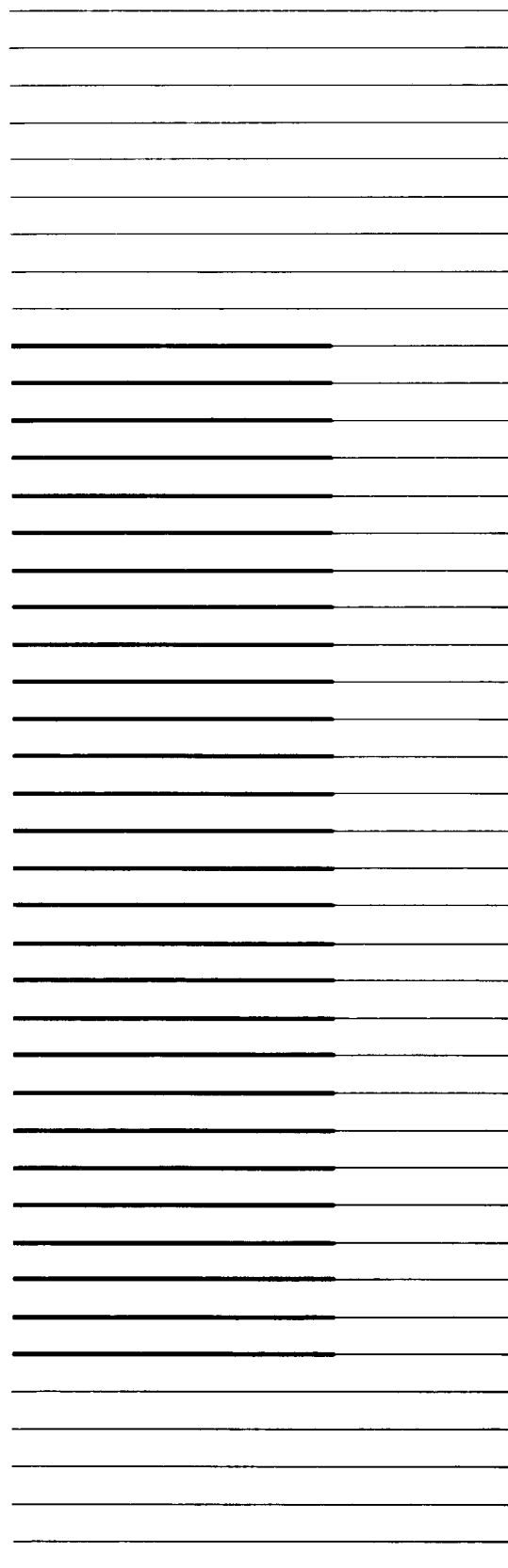## adaptec, inc.

ACB-3530A User's Manual
¼" Streaming Tape Controller
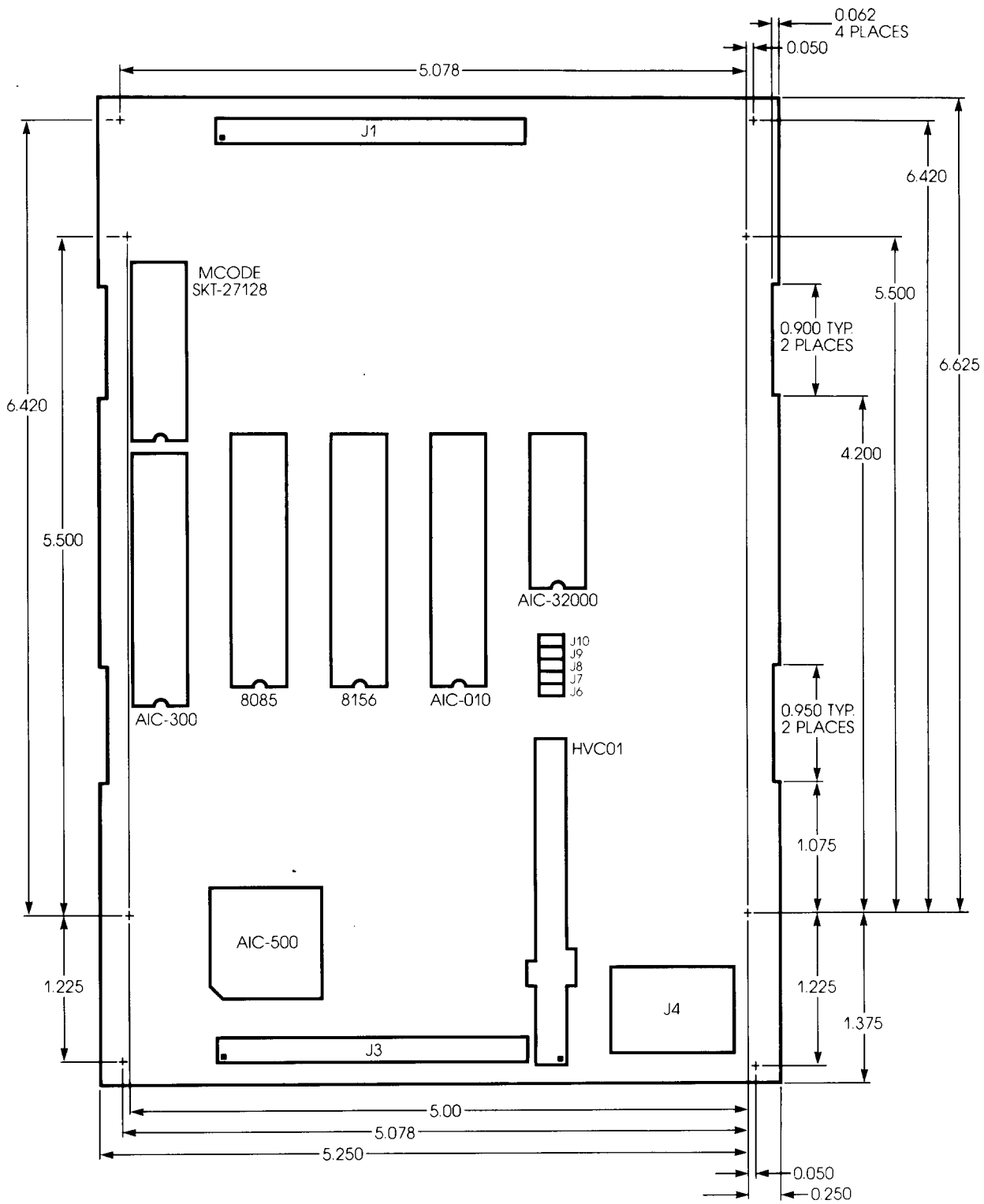# SCSI to QIC-36

November 1986

FIGURE 1-1.   ACB-3530A BOARD LAYOUT

3.0 INSTALLATION OF THE ACB-3530A

The ACB-3530A is designed to provide the performance and flexibility required to reliably operate a QIC-36 1/4" tape drive for streaming backup of system data. Some basic installation steps are required to assure proper board operation.

3.1 UNPACKING

The ACB-3530A is shipped in a protective carton with shock-absorbing and static protection material completely surrounding the card. The carton should be examined for external damage as it is opened. The cards are physically inspected prior to packaging, any damage noted should be reported immediately.

CAUTION: ALL CIRCUIT BOARDS CONTAINING VLSI CIRCUITRY HAVE SOME SENSITIVITY TO ELECTROSTATIC DISCHARGE. THE ACB-3530A IS NO EXCEPTION. PROPER HANDLING PRECAUTIONS, INCLUDING PERSONNEL AND WORK SURFACE GROUNDING, SHOULD BE TAKEN TO PREVENT CIRCUIT STRESS WHICH CAN CAUSE COMPONENT FAILURE.

3.2 PREPARATION OF INSTALLATION AREA

The ACB-3530A is generally incorporated into the physical installation of a system or a peripheral subsystem. Proper attention should be given to the location of the ACB-3530A to assure that necessary ventilation, installation clearances, and cabling paths are provided.

3.2.1 MOUNTING CONSIDERATIONS

The ACB-3530A can be physically mounted using the four mounting holes. These holes are in locations compatible with standard 5-1/4" Form Factor for mounting onto the drive. The controller can also be mounted onto custom designed brackets for alternate mechanical requirements. Care must be taken, however, to consider the physical forces the system will be subject to. No conductive material should come in contact with the ACB-3530A PC card.

3.2.2 RF CONSIDERATIONS

The ACB-3530A and all other partially shielded electronic devices are sensititve to high power, high frequency or magnetic sources. The controller should be protected from such sources. In particular, unshielded switching power supplies should be physically isolated from all electronic boards and interconnecting cables. Additional cable shielding may be required in some environments.

3.3 ACB-3530A CABLING

The ACB-3530A is connected into the host system or subsystem using board connectors J1, J3 and J4. The connectors are used as follows:

        J1 - 50 Pin QIC-36 Connector (Section 4.1)
        J3 - 50 Pin SCSI Connector   (Section 5.2)
        J4- 4 Pin Power Connector   (Section 3.3.1)

Figure 3-1 shows proper system cabling. Take care to note Pin 1 orientations of all connectors. These are easily found by locating the square solder pad on the solder side of the PC board.

NOTE:
IF THE ACB-3530A IS NOT THE LAST CONTROLLER ON THE SCSI BUS,THE SCSI TERMINATORS, RN1, RN2, AND RN3, SHOULD BE REMOVED.
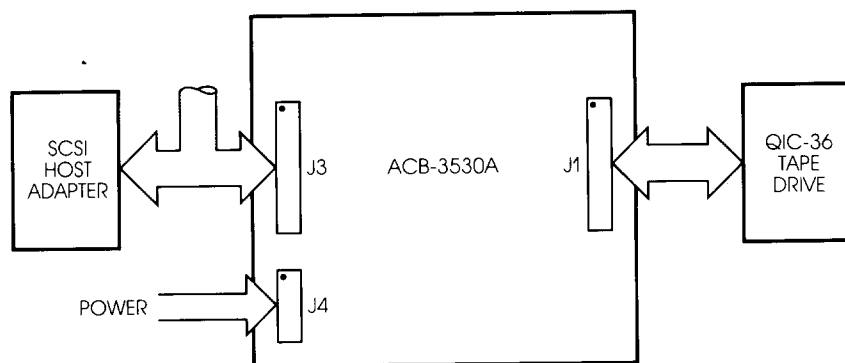

FIGURE 3-1. ACB-3530A SYSTEM CABLING

3.3.1 ACB-3530A POWER CONNECTOR, J4

Figure 3-2 shows the pin assignments for power connector, J4.
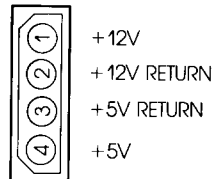The suggested mating connector to J4 is AMP P/N1-480424-0 or
equivalent.

```
  ┌───┐
  │ ① │  +12V
  │ ② │  +12V RETURN
  │ ③ │  +5V RETURN
  │ ④ │  +5V
  └───┘
```

FIGURE 3-2.   POWER CONNECTOR, J4, PIN ASSIGNMENTS

4 ACB-3530A CONFIGURATION

e ACB-3530A requires a minimum of hardware setup.

e function of J6 through J10 is shown in Table 3-1.   Sections
.1 and 3.4.2 detail these functions.

TABLE 3-1. ACB-3530A CONFIGURATION JUMPERS, J6

J6	00	SCSI Bus Address 2^0
J7	00	SCSI Bus Address 2^1
J8	00	SCSI Bus Address 2^2
J9	00	SCSI Parity Disable
J10	00	Spare

.1 SCSI BUS ADDRESS

e installation of jumpers J6, J7 and J8 set the address ID of
e ACB-3530A on the SCSI bus. SCSI devices can have bus
dresses of zero to seven, however, no two devices may have the
me address. A jumper installed indicates a logicalone bit
ress.

3.4.2 SCSI BUS PARITY DISABLE

The installation of jumper J9 will disable the ACB-3530A odd bus
parity check on all data transferred from the host. If the
attached host does not generate parity, parity must be disabled.
The ACB-3530A will always generate odd parity on data transferred
to the host.

3.4.3 SCSI BUS PARITY OPERATION

The ACB-3530A incorporates full SCSI bus parity generation and
verification. The handling of parity errors by the controller is
detailed below.

Parity error on ID Message or Command Byte

A parity error on either an ID message to the controller or on
the transfer of command bytes to the controller will result in
the command terminating after transmission of all six command
bytes with a Sense Key of 04h (Hardware Error) and Sense Byte 08,
bit 2 set.

Parity Error on Data to Controller During WRITE DATA

A parity error on data out to the controller during a WRITE DATA
command is latched and checked at the end of the transfer of each

<!-- damaged / illegible region -->

[Parity Error on Data t]o Controller

e controller, a parity error will cause
to be terminated with a Sense Key of 04h
09 set. The message itself will be
is always followed by a Status Out phase
essage Out phase, which terminates the

[Parity Error on] Status In or Message In

ected by the host on Data In, Status In,
will send a message 05 to the controller
or). In all cases, this will result in
s terminating with a Sense Key of 0Bh
Read and Write commands, the residue

Parity Error on Message t[o Controller]

On any Message Out to the
the command in progress
and bit 2, sense byte
ignored. This situation
(status = 2), then by a M
command.

Parity Error on Data In,

If a parity error is dete
or Message In, the host
(Initiator Detected Erre
the command in progres
(command aborted). For
count will be valid.

For Read commands, any data and/or status which resulted from "Lying Read" type operations (i.e., from the tape process being ahead of the SCSI process) will be disregarded. The tape will then be positioned at the end of the last record transferred to the host before the Initiator Detected Error message was received. Thus, the host will be able to retry the operation by backspacing the tape and rereading.

While transferring Data Out during a Read command, the ATTN will be checked between blocks to allow the host to notify the controller of a parity error on Data In. It should be noted that if the host waits more than 128 blocks between the time it detects a parity error on Data In and the time it notifies the controller of this fact by raising ATTN and sending an Initiator Detected Error message, backspacing to recover from the error will not be possible (as per current QIC-36 specification, Reverse Space commands are limited to 128 blocks).

3.4.4 SCSI RECONNECT

When attempting to reconnect after having disconnected, the ACB-3530A will wait 250 ms for the host to assert BSY after the ACB-3530A has won arbitration for the bus. If the host does not respond before the 250 ms expires, it will clear the data bus and check once more for BSY. If the host still does not respond, the I/O operation is immediately terminated and no further attempts to communicate with the host will be tried without rearbitration. See pages 5-6 and 5-12 in this manual for more information on this feature.

3.5 POWERING ON THE ACB-3530A

The ACB-3530A, once properly cabled and configured, can be powered-on. Power should not be applied to the controller if activity is present on the attached SCSI bus. The electrical nature of the components typically used to drive this interface could interrupt bus activity.

If a cartridge is installed in the attached drive at power-on, the controller will rewind it to BOT to prepare for read and write accesses.

If a cartridge is installed some time after power-on, it will be rewound by the controller upon insertion.

The controller will present a Busy status to any access attempts made during the power-on cartridge insertion tape rewind.