

INTRODUCTION

We are now in a position to really push MINIDEK on a heavy sales campaign. It looks like all of the bugs are out of the equipment and our initial customer reactions are very good. The purpose of this application note is to give you some background information in MINIDEK and also some information on competitive equipment.

There are three levels of interface for MINIDEK. These three levels are:

1. OEM Level
2. Format Level
3. Systems Interface Level

I will go into greater detail on each one of these levels in later paragraphs of this application note. Here, it should be sufficient to say that the OEM level contains the record and read amplifiers and motor control electronics, the format level is very closely analogous to our present 1300 continuous unit interface level and the interface level is actually a number of special interfaces to pieces of equipment with particular large volume potential. Mechanically, MINIDEK has a number of features which are much better than those of the other small tape decks which are presently available on the market:

First It has a chassis on the rear which means that you can set the unit on the table and not have it resting on very critical small components on the back of the tape unit.

Second You will note that there are also cable clamp positions on the rear of the tape unit so that the user can clamp the cable to the chassis rather than having a free cable hanging from a card as it does in a PEC unit. While at

Second the OEM level we do connect directly to a card we do provide a means of securing the cable so that the card is not taking all of the connector and cable weight. Since MINIDEK has a chassis on the rear it can be mounted on rack slides if the user desires.

Third There are holes in the chassis for normal rack slides EIA positioning. The normal rack hardware provided by Digi-Data is a set of brackets which mount to the sides of the rack. Bolts from the front of the tape unit go into these small brackets. They provide a small shelf-like arrangement on the side of the rack so that the tape unit can sit on these shelves and then be bolted to these shelf brackets. We consider this approach makes for easier installation than PEC or Wang since weight is supported by brackets. Especially for the Wang unit which weighs 60 pounds. Since rack mounting rails are notoriously inaccurate DDC mount is also superior because no stresses are put on front plate.

Fourth The door on the Model 1100 opens to the left for very specific reasons: 1) in a number of desk applications the user likes to put the tape unit on the left hand side so that the operator can get to it readily. With the tape unit on the left and the door hinged on the left the user can open the door readily to load and unload tape.

Fifth The door is hinged away from the edge of the panel purposely. This location allows you to open the door even if the frame in which the tape unit is mounted comes out right against the side of the chassis. The only

Fifth part of the tape unit that overhangs the chassis is the small knob that you use to open the door. If the customer were really interested in putting a frame at the edge of the tape unit this knob could be rearranged by the customer so that nothing overhung the 19" width.

Sixth There are four slots for boards in the back of the tape unit. The minimum configuration tape unit uses two of these slots. One slot for a motor control and power supply card and the other slot for the read and write amplifier card. In the format version we use one of these slots for the format card and of course, we use the fourth slot for our stunt box card for demonstrations. The fourth slot could also be used by the customer for minimal interfaces. One problem using the fourth slot is that there is no power available in the tape unit for this slot. Also in using the third slot for his own format card the user should be very careful how much power he draws from the tape unit power supply. We would prefer to sell the tape units with a format card, if possible. We have purposely structured the pricing of the format card so that in quantities there is a favorable price on the format cards so that the customer may not want to do the format card himself.

Seventh All bulbs are de-rated for 20 plus year life.

Eighth Direct drive reel motors - no pulleys.

Ninth Easiest loading tape path.

There are basically four different versions of MINIDEK: 1) a write only unit, 2) a read only unit, 3) a W/R which is a write and read unit. This unit has a single head with a single gap. This head is time shared so that you are either using the head for reading or writing and 4) read and write version. The difference between the read after write and the write/read version is that in read after write you can read the tape without having to back up the tape and thus a maximum transfer rate can be accomplished. W/R allows the easiest indexing if you are going to write a tape and then read the tape and add data to the tape. The best demonstration of the tape unit is with a W/R unit since it shows the ability of the tape unit to back up and read its own data and then start again writing without any glitches on the tape. The read after write unit of course, shows the ability of the read head to work even when the write head is active and thus has a maximum potential for crosstalk between the write and read head.

We have supplied prices for these units and we also have published prices on single unit quantity which can be given to the customer. I would appreciate as much feedback as soon as possible on competitive pricing situations that you run into. It's very valuable to know what competitor prices are. I believe that our prices are in all cases quite a bit lower than anybody else is offering; however, we all know that if we start eating into a competitors market to any extent he will also lower his price. Our construction techniques should allow us to keep a lower price than the competitor.

OEM LEVEL

The OEM Level electronics has two cards; 1) motor control/power supply card which is the first card back from the front in the tape unit and then 2) the read and write amplifier card. A connector list and a signal description are available which describe exactly what is required to drive the tape unit at this level. The nine track tape unit at this

OEM LEVEL (cont'd)

level requires formatting electronics from the customer which include such things as CRCC generator, all the gap generating logic and the gap detection logic on read. The OEM level does include deskewed read data but it does not include any check of the parity of the data as it comes off the tape. The main advantage to the customer of the OEM level unit is that he provide his own format electronics and thus save some buy-out costs. However, we have priced the format card at a price that may make it attractive for him to still use our format electronics.

Since the OEM level includes a select line which gates all of the active outputs and inputs, a number of OEM level units can be driven off a single formatter.

The OEM level unit can be demonstrated using the PEC "cheater" cable which we supply with the demonstrator. This cheater cable allows you to plug the three cables used in the PEC interface into the cheater and then into the one plug used on the Digi-Data unit. You will also note that it is an advantage on the Digi-Data unit that less connector costs is involved since only one connector is used rather than the three used in the PEC unit. I believe that you will also find that the Wang unit should connect in exactly the same way as the PEC unit to this three connector "cheater" cable.

FORMAT LEVEL

The Format level electronics are somewhat similar to the present 1300 level of read/write electronics. The format level on 9 track includes all of the write logic for CRCC generation as well as the gap length logic and the LRCC logic. For read the format level includes gap detection circuitry and also the capability of either suppressing or bringing out the gap characters the LRCC and CRCC. This is a strap option within the format card. You can either have these characters come out for the user or they will be suppressed.

FORMAT LEVEL (cont'd)

Writing with the format level the user simply brings the write line up and then has his data available at the same time. The internal clock automatically clocks the data onto the tape. The clock output to the user simply tells him when the clock is present internally. He does not route this clock back into the tape unit as is done in the 1300. He must use the clock output however to tell him when to put new data up for the tape unit to record. The timing for this data is shown in the timing diagrams that are available with the description of signals required for the Format Level. When the forward line is brought down the unit automatically inserts the gap and then stops. The CRCC and LRCC are inserted and the proper gap length is used. Our format level description probably has no resemblance to PEC or anybody else since we have not tried to use the same signals as anyone else on this.

The read electronics in the format level include a gap detection circuit for the signal coming out to the customer telling him when the gap has been detected. At present the gap detection signal comes out after the check characters have been passed; however, I have been told that this signal could be changed so the signal comes out before the gap characters were present so that a user would be able to use the gap detector signal to tell him that the signals following are not data but gap characters, LRCC and CRCC. The outputs from the read electronics include the 8 data lines plus a line which is the computed parity on read which should always be odd parity. Another line indicates to the user that the parity of the character which was detected from tape was the wrong parity. The format electronics also includes the ability to skip forward so that if you detect an error on reading after writing you can back-up and skip forward erasing the area where the erroneous recording was. If you find that you still have errors you can back up and skip forward again and again and keep on erasing three 1/2" segments of tape until you get out of the bad area of the tape.

The reverse command allows you to give the tape unit a reverse signal and then it will stop when it detects the gap reading in reverse. This in effect is a way to give a backspace command. It will backspace one record in this manner.

FORMAT LEVEL (cont'd)

I believe you will find the format level electronics very flexible and useful to someone designing his own interface who need the IBM computer compatible format electronics. We are looking at these electronics, still, in light of our own efforts at some interfaces and there are possibilities that some signals will be changed slightly.

SYSTEMS INTERFACE LEVEL

We are working on several different types of interface for the MINIDEK. One interface which you are aware of is the PING PONG BUFFER. This will in effect make MINIDEK an incremental tape unit for very high speed inputs. Other interfaces we are working on at the present time are computer interfaces, especially for the PDP-8 and NOVA computers. If you find any very large volume applications where the interface is required to sell it or it gives us a particular position in the sale, let us know and we will see how we can work it into the engineering schedule. Of course, in order to do the interface level we need to know exactly what the customer's interface requirement is.

COMPETITION

At present the leader in the seven inch reel size tape unit is PEC. They have a number of very large volume users for this tape deck. With our price advantage we should be able to start getting some of this business. You will find that PEC has some of these people tied in with two year agreements; however, we should be able to find some way to break into this even with the volume time agreements that they have outstanding. The other competitors that presently have similar units are: Wang Computer Products, Ampex, and Williard (all in Los Angeles). The Wang unit includes a lot of electronics and probably cannot be as price competitive as we can. The Williard unit I do not know much about. The Ampex unit has not been publicized much; however, it was at the last FJCC in a pre-production model. Any information that

COMPETITION (cont'd)

you can get on these units including manuals and price information will be very valuable. To my knowledge Cipher and Kennedy have not really gotten into this part of the market yet. They do have large reel synchronous units which are of course higher priced. We should have performance equal to the PEC and other competitive units and mechanical construction that gives us an advantage in selling into PEC installations. I believe that having exactly the same interface will also help. The cheater cable will allow you to plug directly into existing applications.

You will have to fight problem of low price - best answer - we don't see why a machine this simple should cost more - we make a good profit at the price.

Some competitors have a tape cleaner. Why dont we? Those in use really do nothing. Try a side by side comparison and see if you can prove the difference.