UNIQUE MICRO DESIGN

Application Note 147

Denso BHT Series Y2000 Compliance

This application note provide year 2000 compliance details for the Denso's BHT Series of Portable Data Entry units.

1. Calendar Format

The built in hardware calendar for all the BHT portable readers is based on the following format: YY/MM/DD HH:MM

The year is abbreviated to 2 digits. ie. 1997 is displayed as 97, 1998 as 98, 1999 as 99 and so on. The year 2000 will be displayed as 00 and 2001 as 01.

2. Possible Problems/Solutions

Software written for the BHT units and/or host systems may process this year format incorrectly, so all software must be modified (if not already) to accept this year format.

Any computations made on the year portion may cause problems as we enter the year 2000.

Take the following example:

- Date recorded 1999 December 10th
- Scanner registers 99/12/10
- Later, scanner is used again and date recorded 2000 January 20th
- Scanner registers 00/01/20
- Program, then subtracts current date from previously recorded date:
- This produces a negative result and the software most likely fails:
- 00 - 99 = - 99 (instead of 2000-1999 = +1)

The solution to this is to either force the software to work with negative numbers and adjust accordingly, or adjust all dates from the start to have a 4 digits rather than 2.

If you have altered the year format in the BHT to record four digits (ie 1997 instead of 97) then be sure that you have included a condition that caters for year 2000 onwards.

e.g. Sample program that converts 2-digit year into 4-digit year:

```
dte$=left$(date$,2)
dte$="19" + dte$
Print dte$ <---- Not year 2000 compliant
```

The above program will successfully display/record the years "1997", "1998", "1999", but when the year 2000 comes, it will display "1900".

e.g. Sample program the converts 2-digit year into a 4-digit year and is year 2000 compliant:

```
dte$=left$(date$,2)
if dte$>"50" then
dte$="19" + dte$
else
dte$="20" + dte$
end if
```

Now, the program will append leading "20" when the year is below 51. This gives compliancy 'till the year 2050. "50" is chosen so that any data being used which has dates as far back as 1951 will still register correctly. This is the best compromise if any "history" is required, otherwise one could use "97".

3. Conclusion

The BHT calendar will not cause a problem for programs that simply record and display the dates for descriptive purposes (logs etc..), as 99 ticks over to 00. Any computations (subtractions mainly) made on the abbreviated year should be adjusted. Adjustments to 4-digit year registering solves the above problems, but compromises on range must be made.