

DT-900 – Overview

DT-900 is a flexible terminal. It retains a high degree of compatibility with the earlier models in the DT range (DT-700,DT-750,DT-800). Application programs are written in C using the same Hitachi compiler as the other models. This compatibility means that the DT-900 can seem confusing in some respects when viewed as a standalone terminal. This document will explain the different options and highlight any areas where confusion might arise. Remember, the DT-900 is very flexible and you have a lot of choice about how you implement applications on it.

The main thing you will notice is that there are sometimes two different ways of doing the same thing on DT-900. Put simply you can do the following:

- build your application in two different ways.
- use the storage area on the DT-900 in two different ways. The file system can be formatted in DT-700 mode or in a standard FAT file format. Some C functions only apply to one or the other of the file systems. See section 3 below.
- choose between two different sets of communication utility functions. Your application can use functions that will communicate with the **Multidrop** host PC program or with the **LMWIN** program. See section 5 below.

If your application uses the Multidrop functions then you must use the DT-960IOE cradle. If your application uses the LMWIN (sometimes called FLINK) functions then you must use the DT-964IOE cradle.

The functionality that is required by the application will dictate the choices you make between these options.

1. Two different application formats

If you refer to the C Compiler Quick Start Guide, you will notice that it instructs you in how to set up the tools so that you can build an application in two different formats. These two methods will produce a final application file in a different format. The DT-700 style method will create a .mot and a .map file – this style of application can only be downloaded with the Multidrop software on the PC. The ‘Normal’ style method will produce a .lod file (this is like DT-800). *However, whichever method you choose, you can use exactly the same source code file.* It is only the last stage of the build process that is different. To create a .lod file the .mot file is converted by a PC utility called apcnvy.com. If you download an application using Multidrop (i.e. a map/mot application) then the conversion process performed by apcnvy.com is performed during the download by the Multidrop program.

The important point is that the final application that is run on the DT-900 is the same in both cases.

There is a method of using the Multidrop software to download a .lod style application file – therefore, there is no real advantage in compiling your application in the .mot/.map

format. So, in most cases, application files for the DT-900 will be created with a .lod extension. See the Quick Start Guide for details on how to use Multidrop to install a .lod application file (installing a .lod file with LMWIN is considered the 'normal' operation).

2. Two different IO boxes

If you choose to compile your source so that a mot/map style application is created then you *must* use the DT-960IOE cradle to download to the DT-900.

If you choose to compile into a .lod style application then you can use *either* the DT-964IOE or DT-960IOE cradle to download it.

The DT-964IOE cradle is capable of charging the lithium ion battery. There is also a slot that can be used to charge a spare battery at the same time. The DT-960IOE cradle has no charging capability at all – if your customer uses only this cradle then they will only be able to use alkaline batteries in the DT-900.

The DT-960IOE costs less than the DT-964IOE. Therefore, in real installations it will probably be more common that the DT-960IOE and the Multidrop software is used for file transfer to/from a PC.

3. Different file systems

The DT-900 storage areas can be configured to work in two different ways.

In DT-700 mode the storage area will be treated as one continuous area of storage – directories are not supported. Files are stored complete, in one complete block of storage space for each file. Some file management functions in the C library can only be used when the DT-900 is in the DT-700 file mode. These are highlighted on page 24 of the C Library manual.

In Normal mode the storage space is formatted using the FAT filing system. It works in exactly the same way as a FAT drive on a PC. Directories are supported and files are stored in any free space available. The File Allocation Table keeps track of what is on the disk and what file it belongs to.

There are two quick file search functions available on DT-900. These are for retrieving information from a product lookup file. The DT-700 style file search function (this is called `dat_F_Search()`) requires that the DT-900 is in the DT-700 file mode. The other file search functions (known as the Hash functions) can work with the DT-900 in *either* file mode. See the C Library Manual for details about `dat_F_Search()` and the separate Hash file search manuals for details on the other method. In both cases you should only use the search functions on files that are in the A: drive of the DT-900.

4. The storage areas on DT-900 explained

The DT-900 has two storage or memory areas – 2MB of RAM and approx 1MB of Flash storage. Whichever file system you choose to use, the 2MB RAM is configured as follows:

OS/BIOS work area	288k
Application area (C:)	336k
Free memory pool	16k
Data Storage area (A:)	1408k
Total	2048k

You can increase or decrease the size of the Application area by choosing CHG MEM SIZE on the UTILITY menu on the DT-900. If you increase the size of the Application area the Data Storage area will get smaller. If you decrease the size of the Application area the extra space is added on to the Data Storage area. The Application area is used to store the actual application file itself plus any global variables declared by your application.

The Flash storage area (sometimes called drive B:) is taken from an area of Flash memory that is 2MB in total size. However, a proportion of this area is always used by the system. By default, the DT-900 comes with a large file of font data stored on the Flash drive. However, most of this data is not needed in Europe (it is for Far Eastern fonts). Therefore, you can download a smaller version of this font information that will free up around 800 more kilobytes of storage in this Flash area. You can store up to 16 files in this drive. See section 6 for more detail about the Flash drive.

5. Communication functions

If you are going to use the Casio supplied PC communication utilities to transfer data from your application to and from a PC then you need to be aware of the different functions you will need to use on the DT-900. The LMWIN program is more flexible than the Multidrop program and there are quite a few more functions you can use if you are going to communicate with LMWIN. Remember, the type of functions you choose to use here will dictate the type of IO box you will have to use (or vice versa). The utilities and IO box options are linked as follows:

DT-960IOE (sometimes called the BASIC IO box)	Multidrop
DT-964IOE (sometimes called the Satellite IO box)	LMWIN (note LMWIN is called FLINK on the terminal)

The file system (DT-700 or Normal) you are using does **not** commit you to using one or other of the communication methods. You can use the Multidrop communication utility functions when the file system is in Normal (FAT) mode or in DT-700 mode. You can use the LMWIN (FLINK) communication utility functions when the file system is in

Normal mode or DT-700 mode. If you use the Multidrop functions then you must **not** use directories when you save files – these functions do not support the concept of a directory.

Additionally, whichever file mode you use, you can use the IrCOMM functions to communicate via the DT-964IOE cradle or directly to another IrDA compliant device. You can also use Casio's own low level communication functions to communicate via the cradle (either model) to an attached device.

6. The Flash drive explained

Drive B: is located in the Flash area on DT-900. Its purpose is for backing up important data so that it is safe from any problem that might corrupt or delete data from the RAM (e.g. total failure of batteries). During the use of your application you might copy data from the A: drive to the B: drive occasionally in order to minimise the potential loss of work if a fatal error occurred.

Therefore, you should really consider that the DT-900 has a storage capacity of up to 1.6 MB (this is the maximum possible if you set the application area to its minimum value of 128k). This storage area is the RAM drive (A:). You should consider the Flash drive as a reserve storage area for duplicating important data. See the Quick Start Guide for an explanation of how to install your application and other files to the B: drive.

Flash storage can be written to a limited number of times. A particular area of disk can be written to at least 10,000 times. Therefore, flash storage should not be used to store files that are updated frequently. If you add data to a file on the flash drive be sure to open the file for appending – this is the most efficient way to use the flash storage area.