

CASIO DT-900

C Compiler and Application Downloading Quickstart Guide

INSTALLING THE C COMPILER

Firstly, make the required directory as follows:

C:\CASIO\SHC

- Insert the SHC Compiler disk 1/3 into your A: drive
TYPE "XCOPY /S A:*. * C:" <ENTER>
- Insert the SHC Compiler disk 2/3 into your A: drive
TYPE "XCOPY /S A:*. * C:" <ENTER>
- Insert the SHC Compiler disk 3/3 into your A: drive
TYPE "XCOPY /S A:*. * C:" <ENTER>
- Insert the SH Cross System disk 1/1 into your A: drive
TYPE "INSTALL" <ENTER>
When prompted enter "c:\casio\shc\bin" as the directory

Note: If the compiler was supplied on 1 floppy disk, then just run SHCINST.BAT to install it instead of following the above.

MODIFY YOUR STARTUP FILES

Once you have installed the compiler you need to add a few lines to your AUTOEXEC.BAT file (or run a batch file containing this before using the compiler):

```
echo off
SET DRV=C:\CASIO\SHC
PATH=%drv%\BIN;%path%
SET DOS16M=0@1M;1M
SET SHC_LIB=%drv%\BIN
SET SHC_INC=%drv%\INCLUDE
SET SHC_TMP=C:\
```

INSTALLING THE DEVELOPMENT TOOLS

The tools should be provided on a floppy disk. This disk will contain the suitable directory structure for using the tools in the environment that is set up in this document. It is recommended that you use this setup on your own PC as it will make it much easier for us to identify any problems you may have.

The floppy disk contains 2 directories – \DT900 and \SHC. Copy the \DT900 directory into a directory called C:\CASIO on your PC. The \SHC directory contains just one file in \SHC\LIB – if this is the first of time you have set up the compiler then copy this file to your PC; if you have already set up the compiler for other Casio Handy Terminals then you should already have this file.

TELLING THE COMPILER WHAT TO DO - TPMAKE.ORG,MAKEFILE AND MAKE.BAT

You need to make sure that these 3 files contain the correct settings and information. These files are supplied on the tools disk – it is not necessary to know the detail of the contents of these files in order to use the compiler.

TPMAKE.ORG should contain the following:

```
ROM (D,R)
input  ..\obj\ap_start.obj,&
       source.obj,&
       ..\obj\ap_init.obj
```

```
LIBRARY \CASIO\SHC\LIB\hicif.lib
LIBRARY \CASIO\SHC\LIB\shclib.lib
```

```
START P,C,D,hicif(09048030)
```

```
Output apsmmp
Print  apsmmp
DEBUG
Form   a
Exit
```

MAKEFILE should contain the following:

```
HOME   =    ..\inc
INC_A   =    $(DRV)\INCLUDE
INC = /i=$(HOME),$(INC_A)
C       = shc $(INC) /op=0 /DEB
C1      = shc $(INC) /op=1 /DEB
C2      = shc $(INC) /op=1
ML       = asmsh           # Assembler File Name
all:  apsmmp.mot

#----- motorola conversion -----#
apsmmp.mot:  apsmmp.abs
            cnvs      apsmmp

#----- link -----#
apsmmp.abs:  source.obj ..\obj\ap_start.obj ..\obj\ap_init.obj
            lnk  -SUBCOMMAND=tpmake.sub
            submk tpmake.sub
            lnk  -SUBCOMMAND=tpmake.sub

#----- compile -----#
source.obj:  source.c makefile
            $(C) /OB=source.obj source.c
```

Creating a .lod application file (like DT-800)

The **MAKE.BAT** file should then contain (suggestion only):

```
copy tpmake.org tpmake.sub
copy %1.c source.c
nmake /f makefile > make.log
if errorlevel 1 goto ERR
..\pc_tool\apcnvy apsmo.mot apsmo.lod
del tpmake.sub
del source.obj
copy apsmo.lod %1.lod
copy %1.lod ..\ap
del %1.lod
goto END
:ERR
type make.log
:END
```

Creating mot/map application files (like DT-700)

If you want to compile programs for downloading with Multidrop via the Basic IO box (DT-960IOE) then you just need to alter your make.bat file as follows:

```
copy tpmake.org tpmake.sub
copy %1.c source.c
nmake /f makefile > make.log
if errorlevel 1 goto ERR
del tpmake.sub
del source.obj
copy apsmo.m?? ..\ap
goto END
:ERR
type make.log
:END
```

Using the above setup, you should create and edit your source code in the C:\CASIO\DT900\SOURCE directory. To make an application from your source code type 'make <source>' where <source> is the name of your source code file (leave out extension).

Hopefully, you will now be able to compile programs for the DT-900 quickly and easily.

DOWNLOADING PROGRAMS TO THE DT-900 – MULTIDROP METHOD

Multidrop

To handle communication between DT-900 and PC we will use a utility called Multidrop. There are versions of Multidrop for 16 bit and 32 bit systems. There is also a slightly different version of the program for DOS. ***This communication method uses the DT-960IOE cradle only.***

To install Multidrop, just run the setup.exe installation routine.

Configuring config.hts

Config.hts is a parameter file that allows you to set up all the items on the System Menu of the DT-900. It is most useful when developing programs because it makes sure that all your communication settings are maintained after a re-boot. You can edit the config.hts file using the utility HTS.EXE.

Downloading a program to the DT-900

NOTE: The procedure below applies if you have followed the installation suggestions above. If you have not, then you will have to change the path names. You must have a .map and a .mot file in the download directory (each application consists of a .mot file but Multidrop will refer to the .map file during installation). Additionally, you will have the latest version of the OS patch files patch001.lod and patch002.lod (these files make up what is called version 1.04 of the OS patch). Also, you will need config.hts in that directory too.

1. Run the Multidrop on the PC.
2. Select 'File setting' from the 'Settings' menu and set the 'Application storage directory' to 'C:\CASIO\DT900\AP'. Note that your input will not be accepted if the directory does not exist on the PC.
3. Select 'Communication setting' on the 'Settings' menu and set the speed to 19200. Note COM 0 = COM 1 on your PC and COM 1 = COM 2. Set this to whichever port you are using.
4. Select 'Execute' and the Multidrop will enter the 'Polling' state.
5. On the DT-900, get to the System menu by holding down Shift and . (full-stop key) together as you switch the machine on.
6. Press 4 for TRANSMIT
7. Check that options 5,6 and 7 (Protocol, Port, Speed) are correctly set. For example, if using the cradle these settings would be MLT, IR and 19k.
8. Press 2 for AP INSTALL
9. Press 1 for DRIVE A. In fact, the application is not copied to drive A: or B:. It is installed in an area called the 'Application storage area'. This is part of the 2MB RAM – in DT-700 mode it has not drive letter but in Normal mode it is known as drive C:.

Downloading data files to the DT-900

If you want to download a data file to the DT-900 then follow these steps:

1. Set the 'Transmitting data storage directory' in Multidrop to the directory where your files are stored.
2. Select 'Execute' and the application will enter the 'Polling' state.
3. On the DT-900 press 4 TRANSMIT
4. Press 4 UTILITY
5. Press 2 RECEIVE FILE
6. Press 1 A DRIVE or 2 B DRIVE

The files will be downloaded to the terminal and you will be able to access them from an application. In this case, the files really are copied to the drive you specify.

DOWNLOADING PROGRAMS TO THE DT-900 – LMWIN METHOD

The upload/download method for DT-964IO cradle using LMWIN is much more flexible. Here are some brief instructions for downloading a program and patch files to the DT-900.

If you have not already done so, install the LMWIN utility. The latest version is 3.01. Check that the DIP switches on the cradle are set correctly (see manual for detail). However, you can set the DIP switches to 1,5,7,8,9 and 10 all ON to use 115,200 bps communications (make sure you match this in LMWIN by setting it to 115,200 as well).

NOTE: Applications are copied to disk C. All other files are copied to A: (or possibly B:)

This communication method uses the DT-964IOE cradle.

A. Create a script to download patch files

Run the LMWIN program and carry out the following steps.

1. Select NEW from the SCRIPT menu.
2. Click BROWSE.
3. Navigate to the directory where you have stored the patch files (e.g. c:\casio\dt900\ap) and click on patch001.lod. Click OK.
4. Click on the DESTINATION DIR box and type 'A:\'.
5. Click ADD. You should see '/S C:\.....\PATCH001.LOD A:\' appear in the Script file box.
6. Repeat steps 2 to 5 for any other patch files.
7. Click SAVE and give the file a name (e.g. patch900.scr).
8. Click EXIT.

B. Create a script to download an application

Run the LMWIN program and carry out the following steps.

1. Select NEW from the SCRIPT menu.
2. Click BROWSE.
3. Navigate to the directory where you have stored the .lod file (e.g. c:\casio\dt900\ap) and click on it. Click OK.
4. Click on the DESTINATION DIR box and type 'C:\'.
5. Click ADD. You should see something like '/S C:\.....\APSMP.LOD C:\' appear in the Script file box.
6. Click SAVE and give the script and name (e.g. program.scr).
7. Click EXIT.

C. Execute a script to download files to the DT-900

1. Select SCRIPT FILE from the EXECUTE menu.
2. Select the required .scr file and click OK.
3. On the DT-900 System Menu press 4 (TRANSMIT). Check that items 5,6 and 7 are FLNK, IR and 115k.
4. Press 4 (UTILITY).
5. Press 1 (TRANS FILE).

The download should now take place. When it is done, select 1 (EXECUTE AP) from the System menu on the DT-900. You only have to download the patch files once. You would need to download them again if you have formatted the A: drive on the DT-900. If you want to download other files (product look up or font files) then it is simple to create a script or issue a send command in LMWIN to do this.

Tip: If you do not have a DT-964IOE, you can download to the DT-900 using the DT-860IOE (i.e. the DT-800 IO box). Follow the same steps but make sure that the small black button in the centre of the IO box is depressed and the IR ports of the cradle and terminal are pointing at each other.

Installing your application to the B: drive

You can install your application and other important information on drive B: to ensure that your users can recover from a fatal error (for example, if the A: drive was corrupted or lost its format for some reason). Follow these steps:

1. Compile your application so that it is in the .lod format.
2. Copy the application, patch files and system files (config.hts, etc) to B:\
3. Create a text file called astart.hts. It should contain one line which will be something like this:

B:\mainapp.lod (where mainapp.lod is the name of your application)

Copy astart.hts to B:\.

4. When the system re-boots after a fatal error it will ask you to re-format the A: drive. After that it will access the files in the root directory of B:. It will apply the patch files and config files. It will read the astart.hts file. The application listed in the astart file will be copied to the Application area in the RAM (sometimes known as drive C:) and then executed.

If your application is designed in such a way that it backs up important data to the B: drive occasionally, then you can re-copy the backed up data to the A: drive and continue. Therefore, you can minimise any loss of data.

Using Multidrop to download a .lod application file

If you are using the DT-960IOE cradle and the Multidrop software you can download a .lod application file to B: (along with the other necessary files) as follows:

1. Copy the .lod file, config.hts, astart.hts and patch files (plus any other files you may want) to a directory on their own on the PC.
2. In Multidrop, set the 'Transmitting data storage directory' to the directory in item 1 above.
3. Set Multidrop into polling mode by clicking 'Execute'.
4. On the DT-900, check that the Protocol, port and speed settings on the TRANSMIT menu are correct (normally, MLT, IR and 19K)
5. Press 4 for UTILITY
6. Press 2 for RECEIVE FILE
7. Press 2 for B DRIVE

The files will now be downloaded. When you select EXECUTE AP your .lod file will be copied to the application area and executed.