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Introduction

The PocketDNC is a Stand-alone Handheld DNC System.

The PocketDNC offers many benefits and it is convenient and easy to use.

If your CNC machine memory is full, the PocketDNC gives you more storage, enabling you to store and reload proven programs at a later date.

When the PocketDNC is connected to your PC, any new programmes will be automatically synchronised between both devices, thus ensuring you always have the latest program.

These can then be included in your normal PC backup routine to ensure no loss of vital NC programmes.

Pocket DNC comes preloaded with two pre-set machine tool setting files for the more common controls such as Fanuc and Heidenhain. However it is easily configurable by the operator for most CNC machine controls that have an RS232 port. The only exceptions are controls that do not use a standard ISO protocol like Mazak controls running in Mazatrol mode.

Rugged design

- Meets MIL-STD-810F and 810G military specifications for drops, vibration, immersion and temperature extremes.
- Meets IP65 to IP68 waterproof and dust ratings.
- Capacity to hold tens of thousands of CNC programmes. Long 15 hour battery life.

Important! PocketDNC Licence File

The PocketDNC Licence is valid for the unit it is supplied with and the company it is supplied to. It is not transferable, unless under prior agreement with Cambridge Numerical Control.

The licence file provided is linked to the unit and uses the user name and company name setup on the unit.

Do not change the user name or company name on the PocketDNC as this will prevent the software from working correctly and will put it into Trial mode.
What's in the Box

On opening the box you will find the following

- Getac PocketDNC Unit - it will be pre-loaded with the pocket Dnc software and your licence file.
- USB Sync cable - used to connect the PocketDNC unit to your PC.
- Power supply - for charging the unit when not running on battery power. Also in the box are various international adaptors (not shown) to suit non UK customers these are interchangeable on the power supply.
- RS232 Machine Tool Cable - used to connect the PocketDNC unit directly to the Serial Port on your Machine tool.
Setting up Windows Mobile (Win7 Win8 Win10)

Turn on the unit using the power button.

Plug the USB cable (small plug) into the bottom of the Getac unit.
On plugging in the unit windows should automatically install the device drivers and start up the windows mobile software.

If the driver does not install and or windows mobile does not load, check it is installed on your PC. If not follow this link to install it.

Connect Without Setting Up Device

Connect and transfer Files or Folders without setting up your device.

Click on Connect without setting up your device.

Click on File Management.

Click on Browse the contents of your device.
If you are copying files or folders to the internal storage, you must place the files or folders in the My Documents folder.

Any folders placed here can only be 1 level i.e. no sub folders.
Files or folders copied to the external storage will just be placed in the root folder, any folders placed here can only be 1 level i.e. no sub folders.

Setting Up The Synchronization Of The PocketDNC And Your PC

Click on set up your device.
Un-tick all options except for Files.
Give the device a name. Click on Set Up.

Windows will now setup the partnership.
Your PC is now set up and ready to synchronize programmes.

Click on the Red cross top left of the box to exit Windows mobile and return to the desktop.
On your desktop you will now see a new folder shortcut to the documents synchronization folder for your PocketDNC unit.

It will be called Documents on “Name??” (the name you gave it previously). Double click this shortcut to open the folder.

Any files or folders that you copy to or create in this folder will be automatically synchronized to the PocketDNC unit every time you connect the device.

Any files or folders you create or save on the PocketDNC unit will be synchronized to the PC every time you connect the device.
With the device connected you can manually transfer files and folders to and from the PocketDNC unit by clicking on File Management.

Click on Browse the contents of your Device.

From here you can copy files to and from either the internal storage or the extended storage.
If you are copying files or folders to the internal storage, you must place the files or folders in the My Documents folder.

Any folders placed here can only be 1 level i.e. no sub folders.

Files or folders copied to the external storage will just be placed in the root folder, any folders placed here can only be 1 level i.e. no sub folders.

Also note that any files or folders placed in the external storage of the PocketDNC unit, will not be automatically synchronized, any synchronization will have to be done manually.
Setting Up The Synchronization Of The PocketDNC And Your PC For Windows XP And Earlier Only

If you are using the PocketDNC unit on Windows XP or earlier version of Windows, you will need to install a programme called ActiveSync. It can be downloaded here: [www.microsoft.com/en-gb/download/details.aspx?id=15](http://www.microsoft.com/en-gb/download/details.aspx?id=15)

After downloading the software install it on your PC by following the on screen instructions.

You will see the following appear on your computer screen.
Click Next
(you may or may not see this step in the wizard, if not just go to the next step)

untick all except Files
Leave box Unchecked and click Next.
(If you do not see this screen, please go to the next step)

Click Finish

The PC will now start to Sync with the PocketDnc unit
Using The Built-in On Screen Keyboard

The PocketDNC unit has a built-in on screen keyboard.

How this is activated depends on where you are within the operating system.

If you are in the Windows side of the system then the keyboard is activated by tapping the keyboard icon at the bottom of the screen.

If you are in the PocketDNC software then the keyboard is activated by tapping the keyboard icon at the bottom right hand side of the screen.
Using The Stylus

The PocketDNC unit has a touch screen and you navigate around by Tapping on the menus and icons using the supplied stylus.

Important!

Do not use anything sharp or with a point, such as pens or pencils. This will permanently damage the screen and will invalidate any warranties. The screen cannot be repaired or replaced, if the screen gets damaged to the point the unit stops working, it would need to be replaced with a new unit.

The retractable stylus is located in a socket at the back of the unit.

Pull the stylus from its socket and extend it.
You can now start navigating your way around the PocketDNC unit.

Do not stab at the screen with the stylus, this could damage the screen and also the stylus.

A minimum amount of pressure is all that is needed to navigate thought the menus and buttons.

Try and keep the stylus and screen as clean as possible.
It's a good habit to get into to wipe clean the stylus and screen after use.

Also try and get in the habit of always putting the stylus back in its socket when not in use, that way it will be there next time you use it.

If your stylus gets lost or damaged, replace it as soon as possible, a replacement stylus is cheaper than a replacement unit.
Starting The PocketDNC Software

Turn on the unit with the power button.

Tap the Windows start menu.

Tap on the PocketDNC icon.
This displays the PocketDNC Splash screen, now tap on the OK button.
Screen Layout

Here we see the screen layout.

It shows the selected default machine (Fanuc).
The current communication settings.
The main display area.
And the menu bar.

The Menu System (File Menu)

Tap the File Menu option.

From this menu you can

- Send a file.
- Receive a file.
- Receive Multiple Files.
- Make a New Folder.
- Edit an existing File.
- Exit the PocketDNC Software.
The Menu System (Setup Menu)

Tap the Setup Menu option.

From this menu you can

- Create a new Machine setup.
- Edit an existing setup.
- Delete an existing setup.

The Menu System (About – Help Menu)

Tap the Help Menu option.

From this menu you can;

- Find Information about the Version of software and your License details.
- Access the PocketDNC Help file.

Storing Your Files

IMPORTANT!

The way the files are stored on the PocketDNC unit is as a single level file structure. What this means is that your files cannot be stored in sub folders. All files are by default stored in the unit’s main memory under the My Documents Folder. In this folder you can create your file folders as one level (no sub folders). This can be organized in several ways, an example may be by machine or by customer.

Examples

My Documents
The unit comes with built-in main memory of 178mb and extended memory of 7.4 GB.

Both memory areas can be used to store files. However, the automatic synchronization only synchronizes with the main memory not the extended memory, copying from extended memory to and from your PC would need to be done manually using File Explorer in Windows mobile or directly in your computer.

**Selecting & Editing Machine Setups**

The PocketDNC software comes with two standard machine setups; one to suit most Fanuc based controls and another to suit most Heidenhain based controls. These can be selected by tapping on the machines tab.
To edit an existing setup first select the machine. Then tap the menu Setup / Edit Setup.

Selecting & Editing Machine Setups (Serial Port Tab)

Com Port should always be set to 1
**Baud**

The baud rate is the speed at which the CNC programme is transferred between the PocketDNC and the machine control. The most popular setting is 4800, which corresponds to a transfer rate of approximately 480 characters per second. This should be set the same on the PocketDNC as it is on the machine control.

**Parity**

The parity bit maintains the 'evenness' or 'oddness' of the number of bits in a character. Thus when a character with EVEN parity is transmitted over a communication line it should still have an EVEN number of bits at the receiver. If an error occurs during transmission, which changes a 1 bit to a 0 (or vice versa), the total number of bits will no longer be EVEN and the receiver can detect the error.

You can see from this that it is very important for the sender and receiver to be configured for the same type of parity. Parity checking in this way is not very effective. For example; if two bits in a character are corrupted then the parity will be correct at the receiver.

The most common setting for parity is Even.

**Data Bits**

Data bits sometimes referred to as word length, this is the total number of bits which are recognised as comprising a unit of data transfer i.e. a word.

**Stop Bits**

During data transfer, 1 1.5 or 2 extra bits may be added onto the end of each character by the RS232 interface so that the receiving equipment can detect the end of the character. These are the stop bits and depending on the quiescent state of the line may be 0's or 1's. The generation of the stop bits at the sender and then their removal at the receiving equipment is totally transparent to the user and is carried out by the RS232 interfaces.
Handshake

Typically, if this is not set correctly then a number of characters from the CNC program may be lost during transmission. If characters are lost during transmission then the program will not run correctly on the machine.

Xon/Xoff (Sometimes referred to as DC codes)

A simple form of data transfer protocol, which is used to control the flow of data. If the receiving system wishes to stop the transmission, for example, to save the data it has already received into a disc file, then it sends an XOFF signal to the host. When the sender receives an XOFF signal, it stops transmission and will not resume until it receives an XON signal from the receiver. XOFF is usually the ASCII character 19 (CTRL-S) and XON is ASCII 17 (CTRL-Q).

RTS/CTS (Sometimes referred to as hardware handshake)

A method of controlling the transfer of data between two devices by means of hardware signals. Hardware flow control is the preferred means of regulating the flow of data between the PocketDNC and the CNC machine control. It works by using the clear to send (CTS) and request to send (RTS) signals on the RS232 interface to start or stop the flow of data in each direction. In order to operate correctly hardware flow control requires a suitably wired connecting cable.

Selecting & Editing Machine Setups (Send / Receive Tab)

Leader

This is a list of characters that are to be sent to the control immediately before the programme. To enable you to enter codes that are not normally available on the keypad these must be entered as ASCII codes and proceeded with a back slash (\). (See Appendix for list of ASCII codes).

Trailer

This is a list of characters that are to be sent to the control immediately after the programme. To enable you to enter codes that are not normally available on the keypad these must be entered as ASCII codes and proceeded with a back slash (\). (See Appendix for list of ASCII codes).
End of Line (Sometimes referred to as EOB or End of Block)

When receiving a program the PocketDNC will always store the programme with a CR (carriage return) and LF (line feed) as the end of line so that it displays better on the screen. When sending back to the CNC control we add the required End of Line characters. Normally this is set to CRLF.

Line Delay

This is the period of time in milliseconds that the DNC software pauses after sending each line of programme. This delay is only used when sending a programme to the machine control. As some controls receive a line of programme it then moves this information around in its memory which causes the port to lose a couple of characters. If you find that a programme that has been sent to the control has lost any data try increasing this value or check that the Handshake is working properly.

Start of File

Type into this box the characters that signify the start of the programme. Normally this is the % sign.

Close Delay

This value is in seconds and is the period of time that the DNC software waits after receiving the last character before closing the file. This also means that if there is a pause in data transmission when receiving a program to the PocketDNC of 3 seconds then the file will be closed. If you find that you are not receiving a complete program then increase this value.

Selecting & Editing Machine Setups (Folder Tab)

Folder

Name of folder where the files are stored for this machine type.

Extension

File extension to be used for this machine type. Extensions can be a max of 3 characters and can be any alphanumeric character. You cannot use non alphanumeric characters like /,.)(@#~][}{!

Example: (characters after the . are the extension)

1234.pm1 1234.nc 1234.txt 1234.tap 1234.dat 1234.H

This is not a full list of extensions and you may already use
something different, if you’re not familiar with file extensions the most common would be either .TXT or .NC

It doesn’t matter what extension you use as the extension is not sent to the machine during the file transfer.

Extensions are also a good way of organising your files for different machines.

For example the file structure you have chosen is by customer name, you have 3 puma lathes that all do jobs for this customer, they all use the same program number, but the programs are slightly different.

Normally if you saved the same program number file from different machines in the same folder each file would be over written by the newest file. If you used a different extension for each machine it would then allow the same program number to be used without it over writing the existing file for the other machines. It also means that the files can be sorted by extension so in a file list it only shows the files relevant to the given machine.

Example:

(folder)

Customer 1 – O1234.pm1
   O1234.pm2
   O1234.pm3

(where .pm1 is for puma 1 .pm2 is puma2 etc)

You would need to create a machine setup for each of the Puma lathes, each one using a different extension.
(See next section on how to do this).

Description

Enter in a comment to describe the machine.

Could be the machine name i.e. Puma or type of control i.e. Fanuc or machine type i.e. Lathe or Mill.
Selecting & Editing Machine Setups (Exit Machine Setup Screen)

Once you have finished editing the machine settings you need to press the Fn button on the units key pad then press the ESC key.

This will take you back to the main PocketDNC screen.
Creating A New Machine Setup

(See Selecting & Editing Machine Setups for explanation of settings)

To create a new machine setup, tap on the setup / new setup menu option.

Now give the machine a name.

As with the editing of the machine setting, change the required settings for each tab to suit the machine you are setting up.
Serial port Tab.

Send / Receive Tab.

Folder Tab

To exit machine setting, press the Fn key on the keypad once, then press the ESC key on the keypad.
Your new machine setup is now ready to use.

Deleting A Machine Setup

From the main screen top right, tap the machine selection and highlight the machine setup you wish to delete.

Tap on Setup / Delete Setup menu option.
Deleting A Machine Setup

You will be asked to confirm deletion of the file, on taping “YES” the setup is deleted.

You are returned to the main screen, you must now select another machine to be able to send or receive files.
From the main screen top right, tap the machine selection and choose a Machine Setup.

Tapping on any of the highlighted options brings up help on that subject.
To exit help tap twice on the icon at the bottom right hand corner of screen.

About Menu

Tap on Help / About menu option to enter the About Screen

This screen displays information about the PocketDNC.

Sending A File From PocketDNC To Machine

First select the machine type you are sending to.
Tap on File menu & Tap on Send.

Select the folder the files are saved in for the selected machine.

Select the type, to show all files regardless of extension, select All Files.

If you wish to narrow down the search of files displayed select from the list a specific extension, for example;

You may have files for different machines with the extensions of .NC
.TAP  
.PM1  
(etc)

If in the Type box you select say .NC then only .NC files will be listed in the file window.

From the displayed list of files tap on the file you wish to send to the machine.

![Image of PocketDNC file window]

Your file is now ready to send to the machine.

Before tapping on the green start comm button, ensure that the RS232 cable is securely plugged into the PocketDNC serial port and the other end is securely plugged into your machine controls RS232 port.

The procedure for reading in programs on your machine will vary depending on the control type, this is not covered in this manual, please refer to your machine control manual on how to do this.

If you are unsure or don’t have a machine tool manual, you can call the CNC office and one of our engineers will try to guide you through the procedure that is required.
Tap the green start comm button to start sending your file. On tapping the green start comm button, the file will be sent to your machine.

As it is being sent you will see a percentage of transfer counting up until it reads 100%. The communication can be stopped at any time by tapping on the red Stop Comm button.
On completion of the file send the screen will revert back to the normal screen ready to send or receive another file.

**Receiving A Single File From Machine To PocketDNC**

First select the machine type you are sending to.

Tap on File menu & Tap on Receive.
Tap in the name box and then use the keypad area to tap in a filename.

Select a folder in which to store the programme, the folder name is normally the name of the machine tool.

Tap in the Type box to select the extension you wish to use.

Tap in the Location box to store the programme in either the internal or storage card memory.

Tap on the Save button when you have set the options required.

You can now select if you want to display the programme after it has been received. This is useful to ensure that the entire programme has been received successfully by scrolling to the bottom and verifying that the M30 or M02 or M99 is present.

**Warning** the process of displaying the programme after receive does slow down the process so for very large programs we recommend that you don’t display the program during the receive process but check it later.

Before tapping on the YES or NO button, ensure that the RS232 cable is securely plugged into the PocketDNC serial port and the other end is securely plugged into your machine controls RS232 port.

The procedure for sending programs from your machine will vary depending on the control type, this is not covered in this manual, please refer to your machine control manual on how to do this. If you are unsure or don’t have a machine tool manual, you can call the CNC office and one of our engineers will try to guide you through the procedure that is required.

Tap on the Yes or No button (as required).
The PocketDNC is now ready to receive the program from the machine tool.

On the CNC machine press the buttons to activate the punching of the program.

As the program is being received a block counter will be displayed at the bottom of the screen.

If you tapped on the Yes button, when the file has been received it will be displayed on the screen for you to check, if you tapped on the No button then the screen will revert back to the normal screen ready to either send or receive a file.

To abort the receive operation, tap on the red Stop Comm button at bottom of screen. You will then be asked if you want to abort receive Yes or No.
Receiving Multiple Files From Machine To PocketDNC

First select the machine type you are sending to.

Tap on File menu & Tap on Receive Multiple.
The option to receive multiple files is only available for Fanuc based machines. Tap Yes.

Tap in the name box and then use the keypad area to tap in a filename. As in the example below use a file name that will act as a prefix to the saved file name.

Example:

You are saving from the control 5 different programmes

O0100 – O0101 – O0102 – O7689 – O8345
The files will be saved as Prog0100 – Prog0101 – Prog0102 – Prog7689 – Prog8345 the PocketDNC reads the O number from the programme and uses that as the file name.

On the Fanuc control you type in O0101,O8345 Punch Exc, this will send out all programmes between the two numbers.

Select a folder in which to store the programme, the folder name is normally the name of the machine tool.

Tap in the Type box to select the extension you wish to use.

Tap in the Location box to store the programme in either the internal or storage card memory.

Tap on the Save button when you have set the options required.

You can now select if you want to display the programme after it has been received. This is useful to ensure that the entire programme has been received successfully by scrolling to the bottom and verifying that the M30 or M02 or M99 is present.

Warning

The process of displaying multiple programmes after receiving will slow down the process considerably. So for multiple program receiving we recommend that you don’t display the program during the receive process but check them later.

Before tapping on the YES or NO button, ensure that the RS232 cable is securely plugged into the PocketDNC serial port and the other end is securely plugged into your machine controls RS232 port.
The procedure for receiving programs from your machine will vary depending on the control type, this is not covered in this manual, please refer to your machine control manual on how to do this. If you are unsure or don't have a machine tool manual, you can call the CNC office and one of our engineers will try to guide you through the procedure that is required.

Tap on No.

The PocketDNC is now ready to receive the programmes from the machine tool. On the CNC machine press the buttons to activate the punching of the programme.

As the programme is being received a block counter will be displayed at the bottom of the screen.

Because you tapped on the No button, at the end of the transfer the screen will revert back to the normal screen ready to either send or receive a file.

To abort the receive operation, tap on the red Stop Comm button at bottom of screen. You will then be asked if you want to abort receive Yes or No.
Make New Folder

To help you organize your files, it makes sense to store them in folders rather than as one long list of files.

These folders could be by Machine Name or Customer or Part Number, or any other way you wish to organize your programs. The folders can only be 1 level i.e. no sub folders, only folders stored in the My Documents folder on the internal storage area is automatically synchronized. Any files outside of this folder or in the external storage area, would have to be synchronized manually.

Tap on the file menu then new folder menu option.

At the prompt type in the folder name you require and tap on Ok.
Folders can be placed on the external storage area, but you would have to do this manually via widows mobile explore or via My Computer / Windows Explore.

**Editing Existing Files**

It is possible if required to edit small changes to your files that are saved on the PocketDNC Unit.

Tap on the file menu then Tap on the Edit menu option.

1. Select the required folder.
2. Select the required file type.
3. Using the side scroll bar navigate to the file to be edited and double Tap the file.

Tap on the keyboard icon at the bottom of the screen and make your edits.

When making changes be careful to ensure that all letters you type in are upper case, as all Fanuc based controls and most others, will only except uppercase characters, this may differ on some controls, but it’s a good habit to get into, this could save any errors getting programs into your control, also be careful to ensure that any decimal points are in the correct place and not missing.

Treat the editing as you would on the control, and before saving the changes make sure and check your edits.
When you have finished editing your file Tap the Ok button.

You will then be asked if you wish to save the file.

1. Tap on Yes to save the file.
2. Tap on No to abandon the edit and return to the main screen.
3. Tap on Cancel to return to the edit screen.
### Ascii Codeset

<table>
<thead>
<tr>
<th>Code</th>
<th>Character</th>
<th>ASCII Code</th>
<th>Dec</th>
<th>Hex</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUL</td>
<td>Ctrl @</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SOH</td>
<td>Ctrl A</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>STX</td>
<td>Ctrl B</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
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<td>ETX</td>
<td>Ctrl C</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<td>EOT</td>
<td>Ctrl D</td>
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<td>6</td>
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<td>Ctrl G</td>
<td>7</td>
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</tr>
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