**This Application Note applies to Unidrive SP, Mentor MP and Affinity**

# Drive Parameter Menu Structure

Today's' Digital Drives contain many parameters and option selections so that they can be used in a wide range of applications. Control Techniques drives organize these parameters into what they refer to as Menu's.

These menus are easiest to understand if one visualizes their arrangement to be similar to an Excel Spreadsheet for example. Each menu in the drive would be analogous to a column in a spreadsheet. Instead of labeling each column with a letter as is done in Excel spreadsheets, Control Techniques drives menus (columns) are numerical.

For example, parameters are giving an exact location by their column (menu) and row number. That location is described as **mm.nn** where **mm** is the menu ( or column ) number and **nn** is the row or parameter number in that column. In manuals you will see a parameter expressed as #1.21 for example. This parameter is accessed in Menu 1 parameter 21 and read as "**Parameter 1 point two one** or simply **one twenty one**. A parameter such as #0.02 can be read as "Parameter 0 point zero 2" or simply parameter 2. Sometimes one may also say parameter **point oh 2** again meaning #0.02.

## Parameter Types

There are a number of parameter types but the basic ones are numeric and bit, RO and RW.

### Read Only
Some parameters are Read Only designated by RO. These parameter types are typically used as "test points" that show you the value of a particular item. For example parameter #5.02 is the Output Motor Voltage from the drive to the motor. You can read #5.02 but you cannot alter that parameter location from the keypad. You could ask for more motor speed which would result in a higher Output Voltage which would result in a greater number perhaps in #5.02.

### Read/Write
Some parameters are Read/Write designated by R/W. These parameter types are typically used hold a value that is used as an adjustment. For example Min Speed, Max Speed, Accel Rate, Decel Rate (parameters #0.01- 0.04 respectively) are RW parameters that permit one to adjust drive action per machine requirement.

### Bit Parameters
Bit parameters are like jumper selections if designated R/W or indicator lights if designated RO. Read/Write bit parameter allow options to be selected typically. Read Only bit parameters are used to indicate conditions such as Drive is in Overload, Drive in Running Reverse etc.

Each menu or column typically contains similar items grouped by their function. For example:

**Parameters pertaining to**                                                **are Found in Menu**

Speed References                                                                          1
-               ( command speeds ), Presets, Speed Selections, Trims
Accel/Decel Rates                                                                        2
Actual Speed and Speed Feedback parameters                                                       3
Current Control Parameters ( current limit etc )                                           4

(Menu depth may vary depending on the quantity of parameters in that category)

| USER Menu | Speed Ref | Accel/Decel | Spd Loop | Current Limits | - - - - - - - | Free Registers | Free Registers |
|---|---|---|---|---|---|---|---|
| Menu 0 | Menu 1 | Menu 2 | Menu 3 | Menu 4 | | Menu 18 | Menu 19 |
| #0.00 | #1.00 | #2.00 | #3.00 | #4.00 | | #18.00 | #19.00 |
| #0.01 | #1.01 | #2.01 | #3.01 | #4.01 | | #18.01 | #19.01 |
| #0.02 | #1.02 | #2.02 | #3.02 | #4.02 | | #18.02 | #19.02 |
| ……. | ……. | ……. | ……. | ……. | ……. | ……. | ……. |
| | | #2.37 | #3.09 | | | | |
| #0.49 | #1.49 | | | #4.29 | | #18.49 | #19.49 |
| #0.50 | #1.50 | | | | | #18.50 | #19.50 |
| #0.51 | #1.51 | | | | | | |
| #0.52 | #1.52 | | | | | | |
| #0.53 | #1.53 | | | | | | |
| #0.54 | #1.54 | | | | | | |
| #0.55 | | | | | | | |
| #0.56 | | | | | | | |
| #0.57 | | | | | | | |
| #0.58 | | | | | | | |

Up Arrow

Left Arrow                              Right Arrow

To maneuver thru parameters

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Menu 0 is a collection of parameters from the entire set of drive parameters. They were selected by the factory as deemed those parameters that would typically need accessed for most applications

| USER Menu | Speed Ref | Accel/Decel | Spd Loop | Current Limits | | Free Registers | Free Registers |
|---|---|---|---|---|---|---|---|
| Menu 0 | Menu 1 | Menu 2 | Menu 3 | Menu 4 | - - - - - - - | Menu 18 | Menu 19 |
| #0.00 | #1.00 | #2.00 | #3.00 | #4.00 | | #18.00 | #19.00 |
| #0.01 | #1.01 | #2.01 | #3.01 | #4.01 | | #18.01 | #19.01 |
| #0.02 | #1.02 | #2.02 | #3.02 | #4.02 | | #18.02 | #19.02 |
| ……. | ……. | ……. | ……. | ……. | ……. | ……. | ……. |
| | | #2.37 | #3.09 | | | | |
| #0.49 | #1.49 | | | #4.29 | | #18.49 | #19.49 |
| #0.50 | #1.50 | | | | | #18.50 | #19.50 |
| #0.51 | #1.51 | | | | | | |
| #0.52 | #1.52 | | | | | | |
| #0.53 | #1.53 | | | | | | |
| #0.54 | #1.54 | | | | | | |
| #0.55 | | | | | | | |
| #0.56 | | | | | | | |
| #0.57 | | | | | | | |
| #0.58 | | | | | | | |

Up Arrow

Left Arrow          Right Arrow

To maneuver thru parameters

**Maneuvering is <u>Circular</u>**
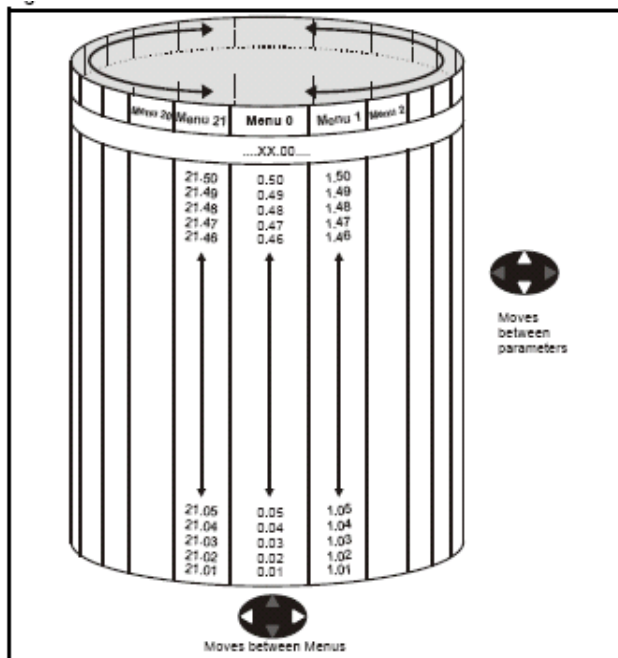


This row (he mm.00 row) is special. It is the same location in all menus. It is used for special purposes such as:

**Saving Parameters
Defaulting Parameter back to factory settings Changing Modes of Operation ( OL, Vector, Servo) Etc**

## Short Cuts

Depressing **Up & Down at the same time** will take you to the Top of that column or Menu (mm.00) that you are currently exploring.

- Quick way to get to the place where you could perform a STORE
- When you Store, <u>all</u> parameters in <u>all</u> menus are stored

Depressing **Right & Left at the same time** will take you to Menu 0 regardless of what menu you are exploring.

## To STORE

1. Go to the top of any menu, (denoted as mm.00 or xx.00)
2. Depress **M**- to tell the drive you wish to **modify** this location
3. Enter 1000 ( by depressing Left 3x and Up 1x )
4. Depress the **RED** reset button
5. When 1000 disappears, Parameters have been stored.

If power is removed without doing this procedure, your parameter changes will be lost. Drive will revert back to the way it was prior to your changes. In some cases, this can be helpful (if your changes gummed up the works- just remove power and you'll be back to before you started your damage!)

![Nidec - All for dreams]

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## Essential Codes

**All codes above below are to be entered at mm.00**
(Where **mm** is any menu ie Pr 00.00, 5.00, 12.00 etc)

**1000**    Save parameters when under voltage is not active (Pr **10.16**= 0) and
low voltage DC supply is not active (Pr **6.44** = 0).

1001    Save parameters under all conditions

1070    Reset all option modules

1233    Load standard ( European ) defaults

**1244**    Load **USA** defaults- for the selected mode of operation

1253    Enable Change of Drive mode of operation with standard defaults

**1254**    Enable Change of Drive mode of operation with **USA** defaults

1255    Enable Change of drive mode with standard defaults (excluding menus 15 to 20)

1256    Enable Change of drive mode with **USA** defaults (excluding menus 15 to 20)

**All codes above require a RESET to complete the action**

## Other Special Codes

12000    Displays non-default values only- differences from default

Observe differences by maneuvering thru each menu. If nothing is seen, nothing is different from default. This feature greatly reduces hand copying of parameters for a given drive application.

12001        Display destination parameters only

To get the display back to normal, change mm.00 = 0

**Resources:** can be found on our website: www.controltechniques.com
For help contact techsupport.cta@mail.nidec.com, or
call Technical Support at 952-995-8000, 24/7/365

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