

# MITeam

## Rotation Assembly Stand

### OPERATION

1. **Before switching ON the RAS perform the following MANDATORY check**
  - 1.1 Control the distance of AMS to the floor
  - 1.2 Control the distance of AMS to the scaffolding
  - 1.3 Control if the upper scaffolding is installed
  - 1.4. Control the distance of the RAS gear central block to the leading screws top and bottom
  - 1.5 Control if any additional obstacle is on the way of the movement/rotation.
  - 1.6 Control if any non fixed parts, that could fall down from AMS during the movement
  - 1.7 Control AMS from the top of the scaffolding
  - 1.8 Control RAS cables to RAS control box are long enough to permit the RAS movement

2. **Perform the countermeasure required based on the control performed and on the movement foreseen**
3. **Plan the sequence of movement to be performed**
4. **Stop any actions on AMS or close to AMS**
5. **Switch ON the RAS; follow RAS manual operation sequence**

**THE ONLY OPERATORS QUALIFIED TO OPERATE THE RAS ARE:**

**Robert BECKER  
Corrado GARGIULO  
Vassili PLYANSKIN**

6. **Give the input values for vertical movement/rotation to the RAS based on what planned**
7. **Continuously check moving parts respect to fix parts during rotation.**
8. **The RAS operator MUST stay in front of the RAS Control Box ready to activate the emergency stop of the system (RED button on the RAS Control Box)**
9. **Check RAS master and slave gear motors during movement**
10. **At the end of the movement switch OFF RAS software before permitting any operation on AMS; this will engage the secondary brake system.**
11. **Shut down the RAS.**
12. **Record the operation in the file “RAS\_Operation.xls”**

# RAS Control System Operation

IHEP, CHINA

Feb. 4, 2007

# Specifications

Total four motors(#1,#2,#3 and #4):

Motor #1 and motor #2 for lifting, motor #1 is master. Motor #3 and #4 for rotating, motor #3 is master.

Start sequence:

Turn on control box switch → press “Run” button on the panel → turn on 5 switches → power on computer → run software

Close sequence:

Close software → power off computer → turn off 5 switches → press “Stop” button on the panel → Turn off control box switch

# 1. Normal Operation

STEP:

1.1 Double click “*Rotating Assembly Stand*” on the desktop .

1.2 Enter the operation interface



# 1. Normal Operation

STEP:

The screenshot shows a control interface titled "Normal" in a yellow header. It is divided into several sections:

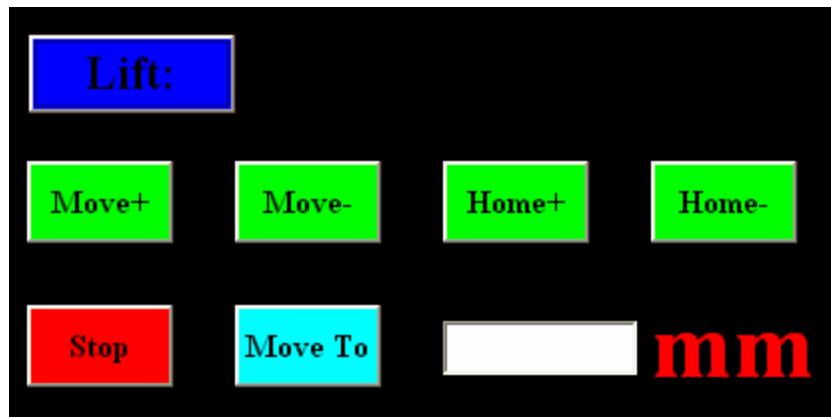
- Lift control:** A blue "Lift:" button is at the top left. Below it are four green buttons: "Move+", "Move-", "Home+", and "Home-". A red arrow points from the text "Lift control" to the "Move+" button. Below these are a red "Stop" button, a cyan "Move To" button, and a white input field followed by "mm".
- Rotation control:** A blue "Rotate:" button is at the top left. Below it are four green buttons: "Move+", "Move-", "Home+", and "Home-". A red arrow points from the text "Rotation control" to the "Move+" button. Below these are a red "Stop" button, a cyan "Move To" button, and a white input field followed by "Deg".
- Position:** A box on the right contains "Lift: 0000.00 mm" and "Rotate: 000.000 Deg".
- Velocity:** A box on the right contains "Lift: 000.00 mm/s" and "Rotate: 00.00 Deg/s".
- Single Move:** A box at the bottom left contains a grid of controls for "Lift1:", "Lift2:", "Rotate1:", and "Rotate2:". Each row has three buttons: "Jog+", "Jog-", and "Stop". A red arrow points from the text "Single control" to the "Jog+" button for "Lift1:".
- Limit Indication:** A box at the bottom right contains six green indicator lights labeled "Lift+", "Lift-", "Lift Hm", "Rotate+", "Rotate-", and "Rotate Hm".
- Footer:** A row of buttons at the bottom includes "Close Loop", "Single Move", "Stop Single", and "EXIT".

# 1. Normal Operation

Interface specification:

On the top of the interface, “*Normal*” means everything is normal, if there is something wrong, it turns into “*warring*”.

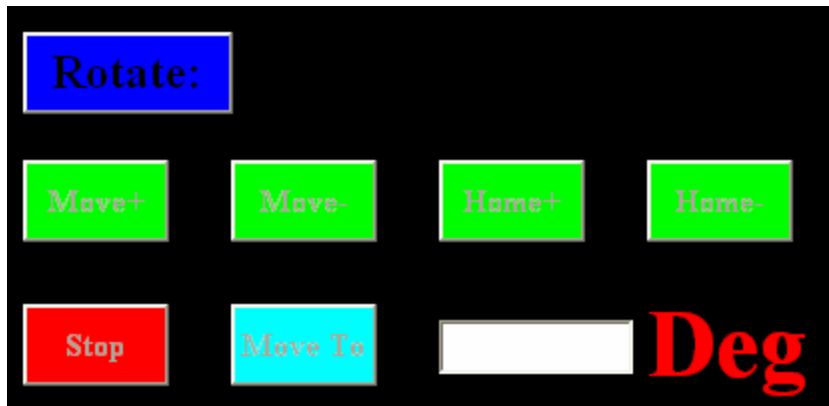
Button description:



“Lift”----lifting, “Move+”----move up, “Move-”----move down,  
“Home+”----from plus to home, “Home-”----from minus to home,  
“Stop”----stop moving, “Move to”----the distance to move

# 1. Normal Operation

Button description:



“Rotate”----rotating,

“Move+”----rotating clockwise (facing the master triangle),

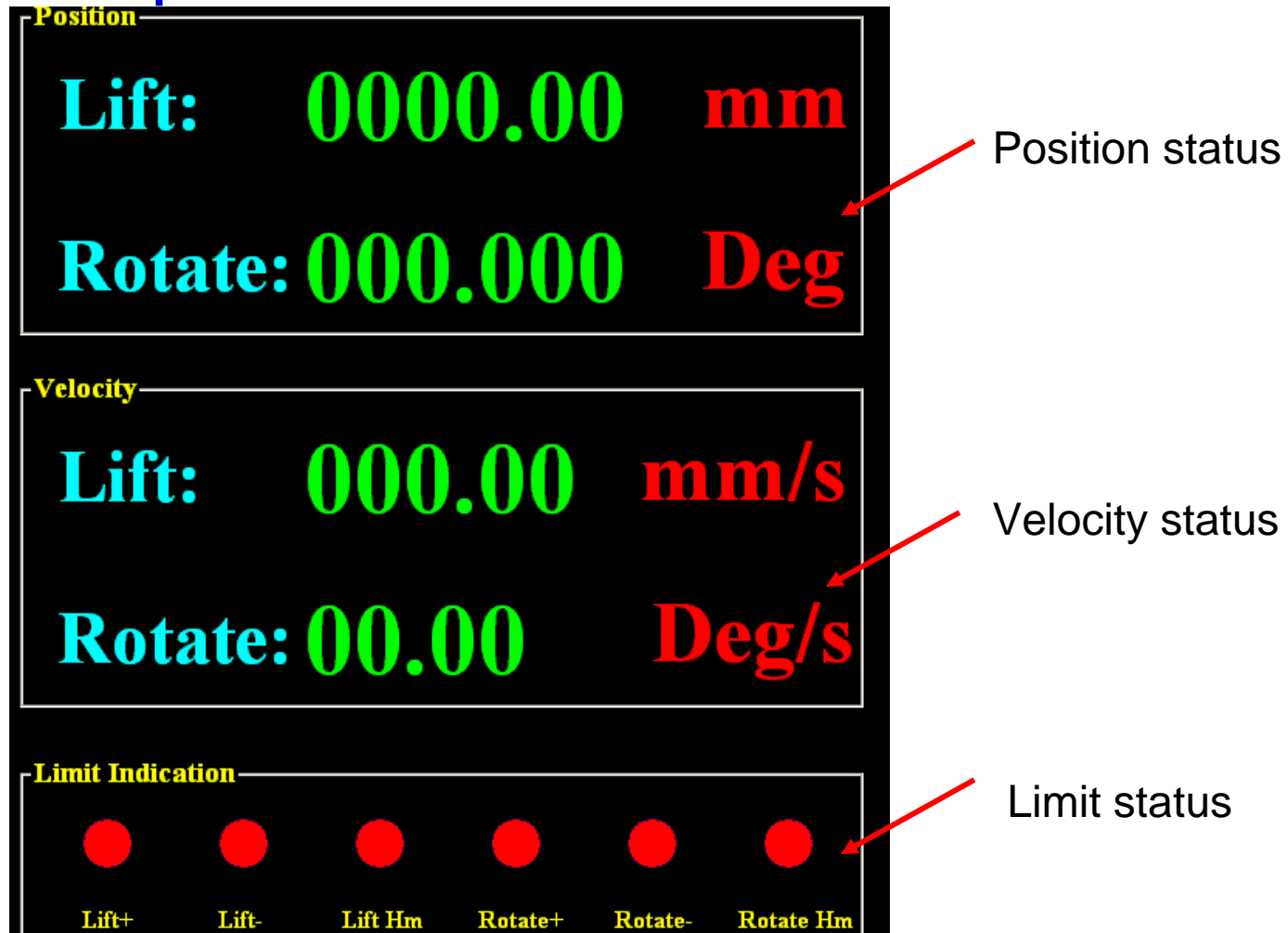
“Move-” ----rotating anticlockwise,

“Home+”----from plus to home, “Home-”----from minus to home,

“Stop”----stop rotating, “Move to”----the angle to rotate

# 1. Normal Operation

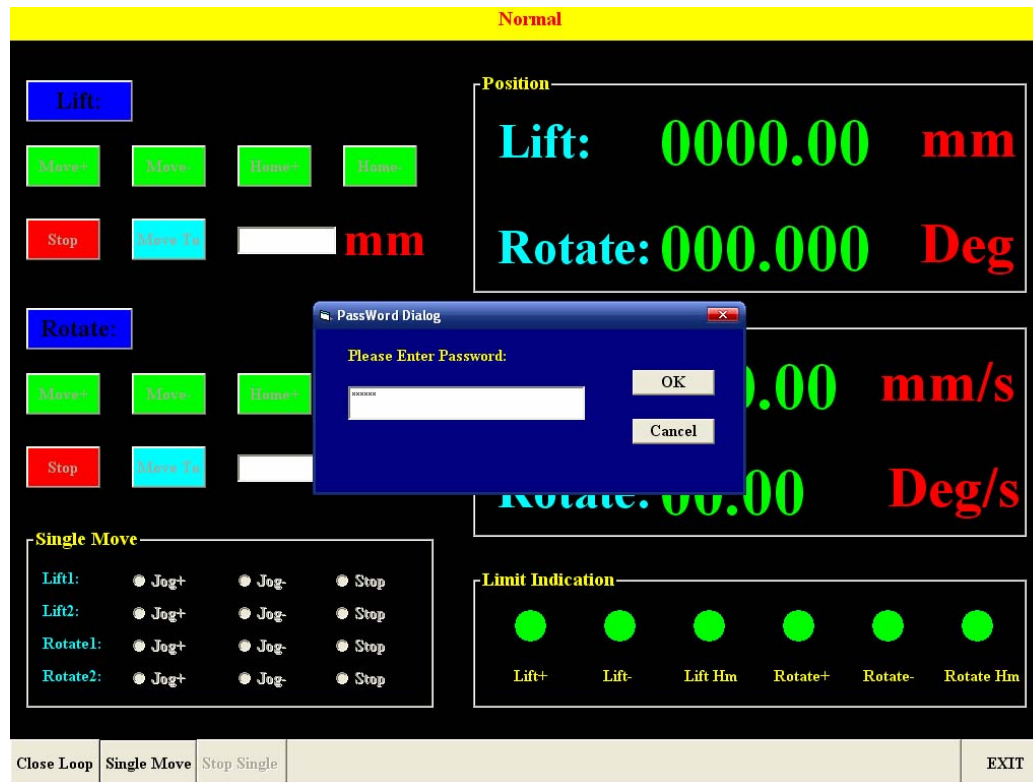
Interface specification :



# 2.FAQ

## 2.1 Single move keywords

keywords---123456 (usually we don't move singly.)



# 2.FAQ

2.2 How to change the speed of lifting and rotating?

2.2.1 Double click *“PEWIN32PRO”* on the desktop.

2.2.2 Click menu *“View->Terminal”* to open the terminal window to send commends to the PMAC.

2.2.3 Click menu *“View->Position”* to open the position window to watch the position and velocity of motors .

2.2.4 Change the value of speed variable, four variables:

Lifting  $i122=i222=90$ (default)

Rotating  $i322=i422=10$  (default)

warring: $i122$  and  $i222$  must be equal,  $i322$  and  $i422$  must be equal. Don't set the value greater than default too much.

# 2.FAQ

The screenshot displays the PEWIN32PRO software interface. The main window title is "PEWIN32PRO --- [ C:\PROGRAM FILES\DELTA TAU\PEWIN32PRO\PEWIN32PRO\_Default.INI ]". The menu bar includes File, Position, Configure, View, Resource Manager, Backup, Setup, Tools, Window, and Help. The View menu is open, listing options such as Terminal, Watch Window, Position, Jog Ribbon, DPR Viewer, Connector Status, Motor Status, Coordinate System Status, Global Status, Motor Setup Summary, Program/PLC Status (and Upload), Special Program Status (and Upload), and PLCC Status.

Three sub-windows are visible:

- Watch Window :PMAC:0 V1.17C 09/...** displays motor status:

```
m145 : 0
m320.322 : 111
m120.122 : 111
Hit Insert To Add Variable
```
- Terminal :PMAC:0 V1.17C ...** displays the instruction: "Press Enter/Return to send command to PMAC."
- Position :PMAC:0 V1.17C 09/19/2005 PMAC2: PCI BUS** displays a table of motor positions and velocities:

	Position	Velocity
# 1:	0.4 Cts	0.0 Cts/S
# 2:	0.4 Cts	0.0 Cts/S
# 3:	0.4 Cts	0.0 Cts/S
# 4:	0.4 Cts	0.0 Cts/S
# 5:	0.4 Cts	0.0 Cts/S
# 6:	0.4 Cts	0.0 Cts/S
# 7:	0.4 Cts	0.0 Cts/S
# 8:	0.4 Cts	0.0 Cts/S

The Windows taskbar at the bottom shows the Start button, system tray icons, and the taskbar with the following open applications: Local Disk (D:), RAS interface - Paint, and Pwin32PRO Version ... The system clock shows 4:24 PM.

# 2.FAQ

The screenshot displays the PEWIN32PRO software interface. The main window title is "PEWIN32PRO --- [ C:\PROGRAM FILES\DELTA TAU\PEWIN32PRO\PEWIN32PRO\_Default.INI ]". The menu bar includes "File", "Terminal", "Configure", "View", "Resource Manager", "Backup", "Setup", "Tools", "Window", and "Help".

Three windows are open:

- Terminal :PMAC:0 V1.17C ...**: Shows a list of I/O addresses and their corresponding values:

```
Press Enter/Return to send command to
PMAC.
i122
90
i222
90
i322
10
i422
10
i125
$52C000
i225
$52C008
i325
$52C010
i425
$52C018
```
- Watch Window :PMAC:0 V1.17C 09/...**: Shows a list of memory addresses and their values:

```
m145 : 0
m320..322 : 111
m120..122 : 111
Hit Insert To Add Variable
```
- Position :PMAC:0 V1.17C 09/19/2005 PMAC2: PCI BUS**: Shows a table of motor positions and velocities:

	Position	Velocity
# 1:	0.0 Cts	0.0 Cts/S
# 2:	0.4 Cts	0.0 Cts/S
# 3:	0.4 Cts	0.0 Cts/S
# 4:	0.4 Cts	0.0 Cts/S
# 5:	0.4 Cts	0.0 Cts/S
# 6:	0.4 Cts	0.0 Cts/S
# 7:	0.4 Cts	0.0 Cts/S
# 8:	0.4 Cts	0.0 Cts/S

## 2.FAQ

### 2.3 How to enable and disable the limit switches?

i125, i225,i325 and i425 control the function of limit switches.

Now, without the switches the value of these variables are (disable the switches)

i125=\$52C000,

i225=\$52C008,

i325=\$52C010,

i425=\$52C018,

After installing the switches, the value of these variables should be

i125=\$C000,

i225=\$C008,

i325=\$C010,

i425=\$C018,

# 2.FAQ

## 2.4 How to restore all the parameters ?

### 2.4.1 Run “*PEWIN32PRO*” → click menu “File” → “Open File”

The screenshot displays the PEWIN32PRO software interface. The main window title is "PEWIN32PRO --- [ C:\PROGRAM FILES\DELTA TAU\PEWIN32PRO\PEWIN32PRO\_Default.INI ]". The menu bar includes "File", "Terminal", "Configure", "View", "Resource Manager", "Backup", "Setup", "Tools", "Window", and "Help". The "File" menu is open, showing options: "New File", "Open File...", "New Workspace...", "Open Workspace...", "Save Workspace", "Save Workspace As...", "Close Workspace", "Show Project Manager F2", "Upload Variables", "Upload Program(s)", "Download File", and "Exit".

There are three data windows visible:

- Watch Window :PMAC:0 V1.17C 09/...** displays:  
m145 : 0  
m320.322 : 111  
m120.122 : 111  
Hit Insert To Add Variable
- Position :PMAC:0 V1.17C 09/19/2005 PMAC2: PCI BUS** displays a table of position and velocity data:

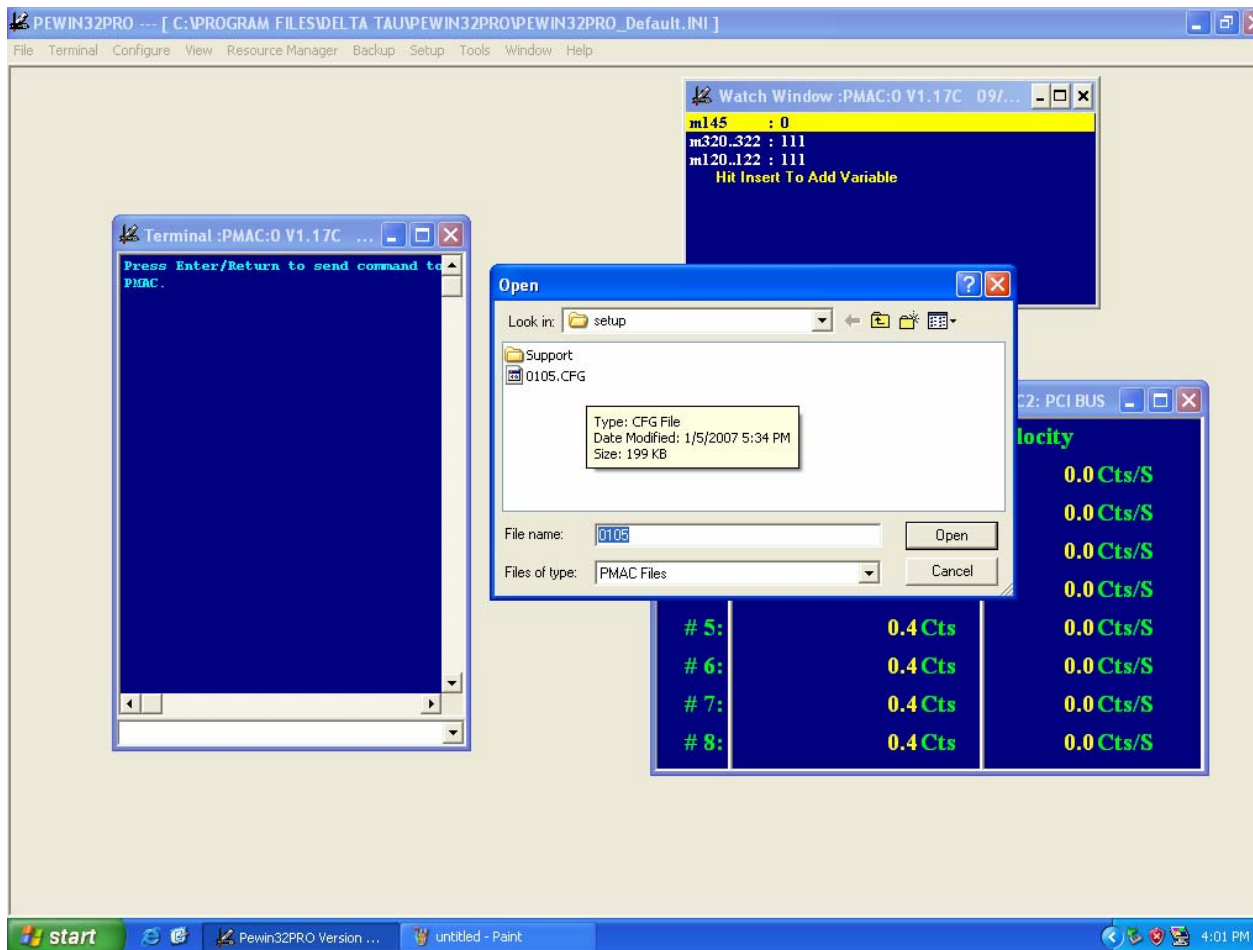
	Position	Velocity
# 1:	0.0 Cts	0.0 Cts/S
# 2:	0.0 Cts	0.0 Cts/S
# 3:	-0.5 Cts	0.0 Cts/S
# 4:	0.4 Cts	0.0 Cts/S
# 5:	0.4 Cts	0.0 Cts/S
# 6:	0.4 Cts	0.0 Cts/S
# 7:	0.4 Cts	0.0 Cts/S
# 8:	0.4 Cts	0.0 Cts/S

The Windows taskbar at the bottom shows the Start button, system tray icons, and the time 4:00 PM.

# 2.FAQ

## 2.4 How to restore all the parameters ?

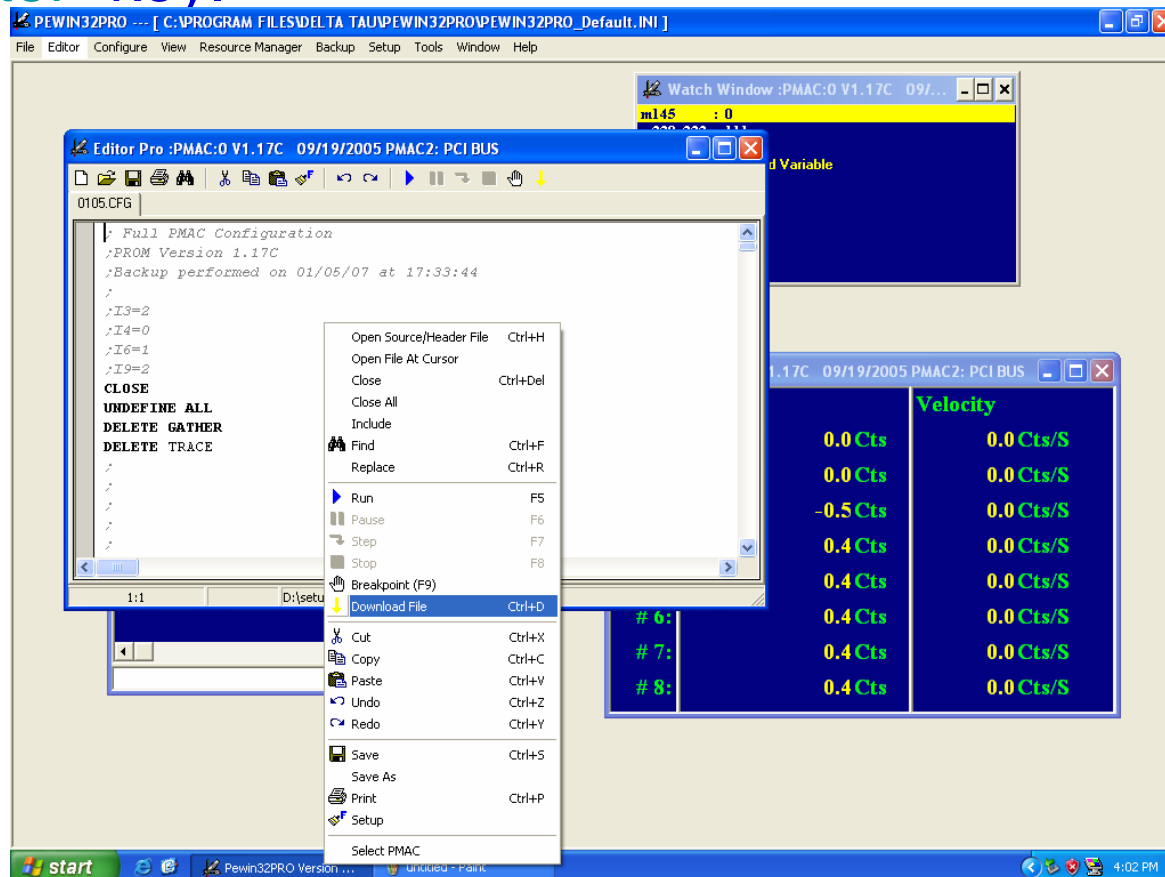
### 2.4.2 Open file “0105.cfg”



# 2.FAQ

2.4 How to restore all the parameters ?

2.4.3 Click the mouse right button, select “Download”, then input “save” in the terminal window command line and press the “Enter” key.



# 3.NOTES

3.1 All four motors switches must be turn on, otherwise the alarm lamp will flash and all the brakes work.

3.2 After finish single moving of the motors, you must click “Stop Single” and “Close Loop” to restore the following mode.

3.3 After changing the value of the variables in the terminal window of “*PEWIN32PRO*” , if you want save the value, please input “save” in the command line, the press “Enter” on the key board. Otherwise, the value of variables will be set as default.