# About PWS3261

**D**
**Introduction**

The PWS3261 is equipped with a 10.4" VGA (640Hx480V) LCD display and analog resistive touch screen. The IP 65 (NEMA 4) rated front panel seal and industrial grade touch screen make the product rugged and durable. There are three display options: color TFT LCD, color DSTN LCD, and Mono FSTN LCD. You can choose appropriate one according to your application's need. Every PWS3261 HMI comes with a printer port that allows you to print out information about your applications. The USB port allows you to easily upload/download applications and source codes. With the support of USB, your development and test cycle could be speeded up as its speed is more than twice as fast as the traditional download/upload via COM ports.

This chapter describes how to install your PWS to a panel, to set its DIP switches, and to make cables for its communications and printer ports.

**D-1**
**Power Connector**

The three-position power connector accepts 24VDC only. The unit's power consumption is shown in the following:

| Item / Model | PWS3261-STN | PWS3261-DTN | PWS3261-TFT |
|---|---|---|---|
| Power Consumption | 24VDC±10% under 13W | 24VDC±10% under 18W | 24VDC±10% under 20W |
| Fuse Rating | 1A | 1A | 1A |

**Hitech Electronics Corporation**

4th Fl. No. 501-15 Chung-Cheng Rd.,

Shin-Tien, Taipei Shien, Taiwan

Tel:886-2-22183600 Fax:886-2-22183060

http://www.hitechsite.com.tw

hmi@hitech-lcd.com.tw

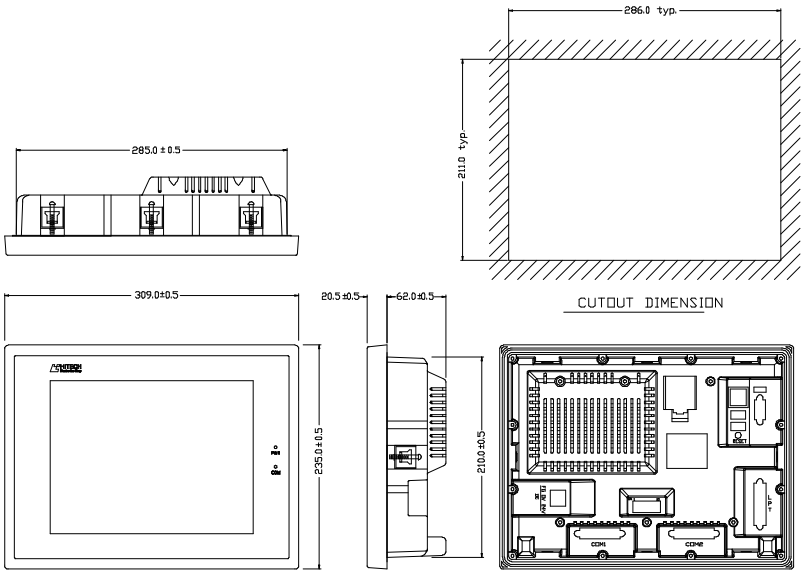
## General Specification of PWS3261

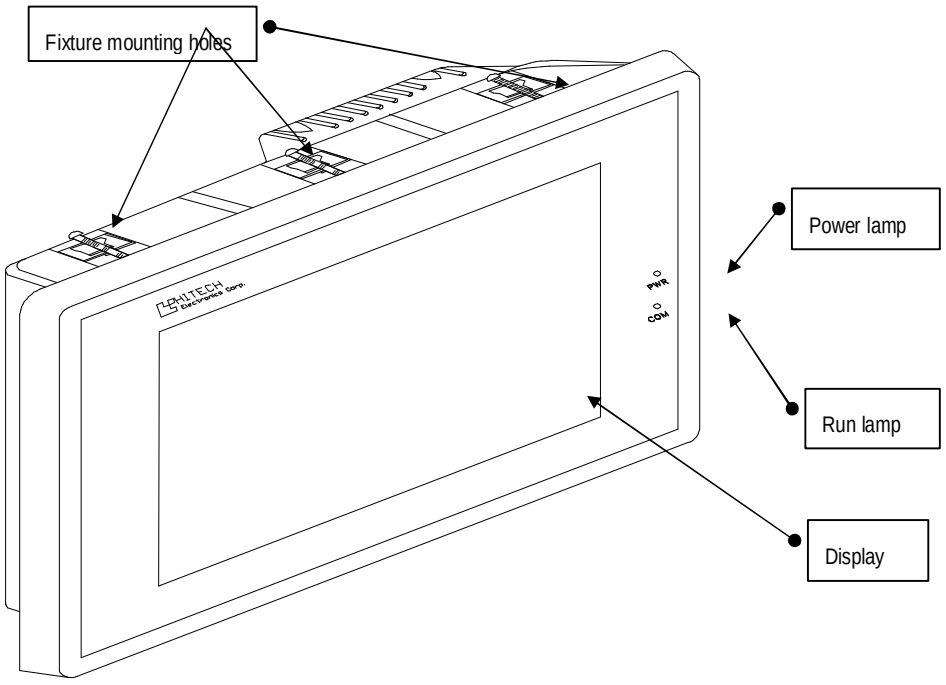
**D-2 General Specification**

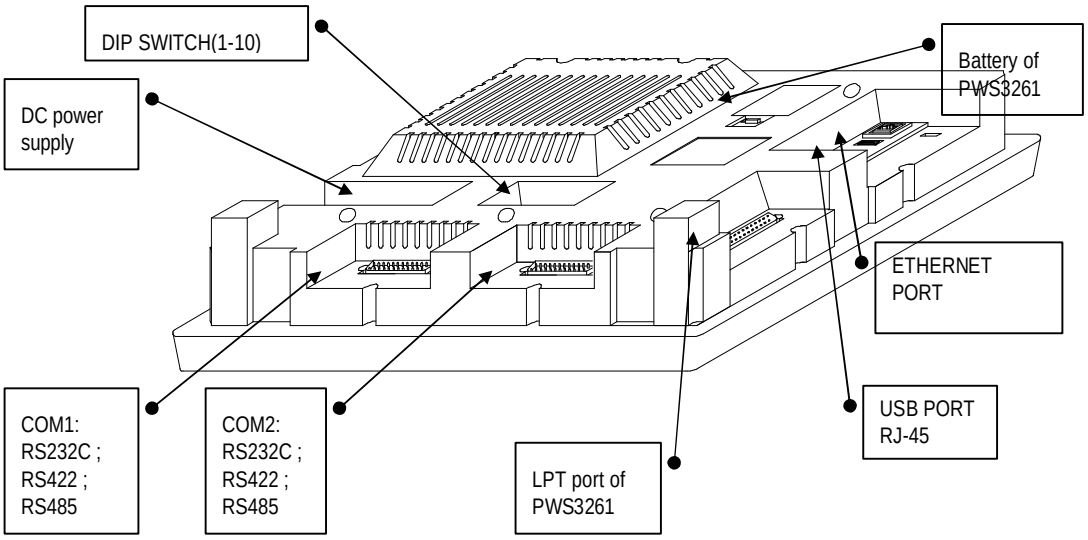
| Item | PWS3261-FTN | PWS3261-DTN | PWS3261-TFT |
|---|---|---|---|
| Display Type | Mono FSTN LCD | Color DSTN LCD | Color TFT LCD |
| Display Color | 16 shades of grey | 256 colors | 256 colors |
| Display Size | 10.4" (diagonal) | | |
| Number of Pixels | 640x480 | | |
| Display Adjustment | Contrast only (via touch screen) | | Fixed |
| Back Light | CCFT | | |
| Touch Screen | Analog resistive type; | | |
| CPU | RISC 32 bits | | |
| Flash Memory | 4096K Bytes | | |
| Battery Backed Memory | 768K Bytes | | |
| Comm Ports COM1 | RS232/RS422/RS485 | | |
| Comm Ports COM2 | RS232/RS422/RS485 | | |
| Printer Port | Centronics compatible | | |
| USB Port | USB 1.0 client | | |
| Ethernet Port | 10BASE-T; RJ-45 | | |
| Power Consumption | 24VDC±10%; 13W | 24VDC±10%; 18W | 24VDC±10%; 20W |
| Operating Temperature | 0~50°C | | |
| Ambient Humidity | 20-90% RH (non-condensing) | | |
| Storage Temperature | -10~60°C | | |
| Front Panel Seal | IP 65 / NEMA 4 | | |
| Vibration Endurance | 0.5mm displacement, 10-55Hz, 2 hours per X, Y, and Z-axis directions | | |
| Shock Endurance | 10G, 11ms three times in each direction of X, Y, and Z axes | | |
| RF Emissions | CISPR 22, Class A | | |
| Electrostatic Discharge | IEC 61000-4-2(EN 55024/1998) | | |
| RF Susceptibility | IEC 61000-4-3(EN 55024/1998) | | |
| High Frequence Transients | IEC 61000-4-4(EN 55024/1998) | | |
| Weight | 2.8 Kg | | |
| Cooling | Natural cooling | | |

## Dimensions of PWS3261

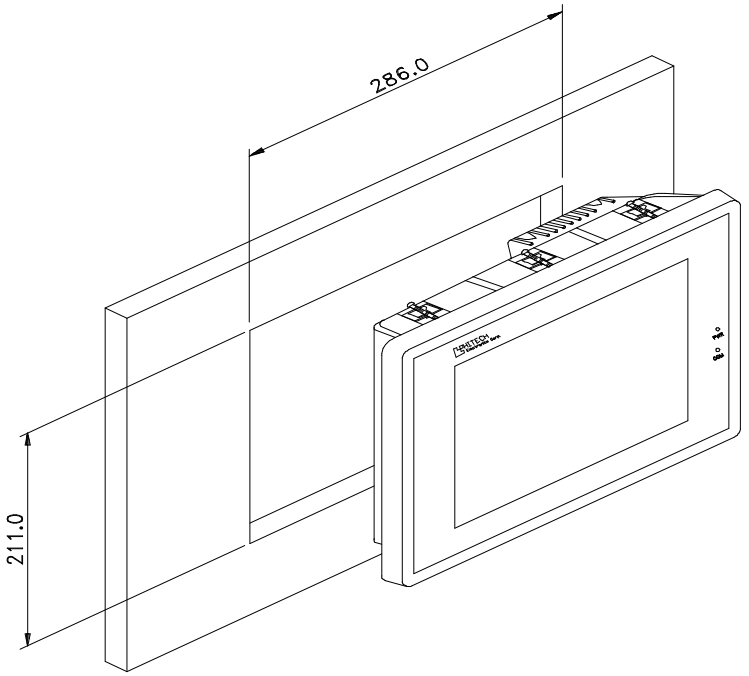
**D-3**
**Dimensions**
**&**
**Cutout Dimension**



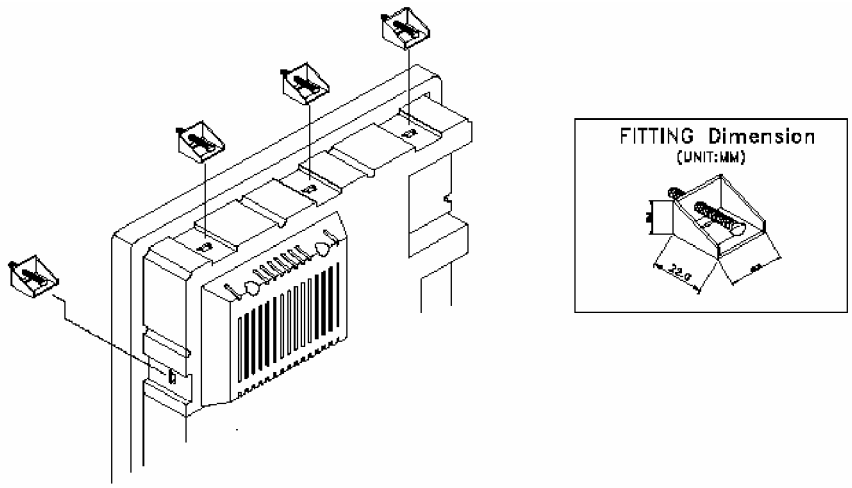





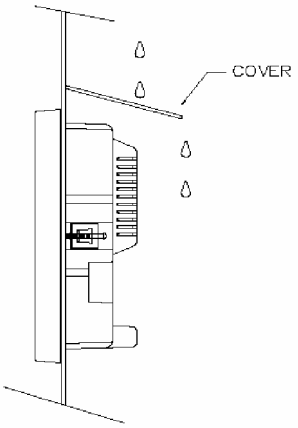

Cut out the mounting hole to match the dimensions shown below.




Insert the fixtures into mounting holes on the unit. Don't tighten the screws with too much force or it may cause damage to the front case of the unit.




When water or liquid dripping could be a problem to the back of the unit, please install the unit with an appropriate protection as shown in the picture. This will enable PWS to work properly and prolong its life.




**D-4**
**Touch Screen**

The PWS3261 is equipped with a 10.4" LCD display, 640(H) x480(V), and 10.4" analog resistive touch panel.

You can design touch keys for each of your screens. You can configure a touch key to display another screen or to control an on/off location within your PLC. You could design a touch key with any shape and with size as small as a single touch point, but the effective touch area will be the smallest rectangular that encloses

the touch key.

When you press a touch key, the PWS responds by sounding the buzzer for 200 milli-seconds (default) and reversing the color of that touch key for 200 milli-seconds. With the feedback, you know the PWS has accepted your key-press. You can use Miscellaneous Settings dialog box of ADP3 to set the parameters of touch screen.

**D-4-1 Built-in Touch Keys**

The built-in touch keys are touch keys that the ADP automatically configure for your application so that you don't have to spend any time to program them. The built-in touch keys allow you to select and to change a PLC location easily.

There are two groups of built-in touch keys called Numeric Touch Keypad and Password Re-entering Keypad that the PWS displays for you to change data. The Numeric Touch Keypad is shown in the Figure D-1-D-5.

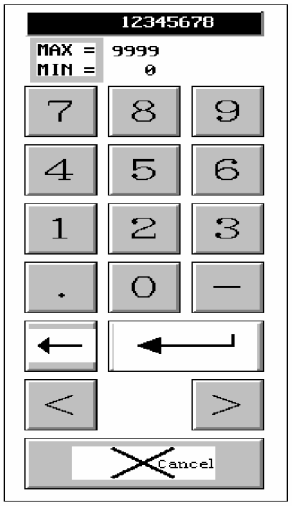



Figure D-1

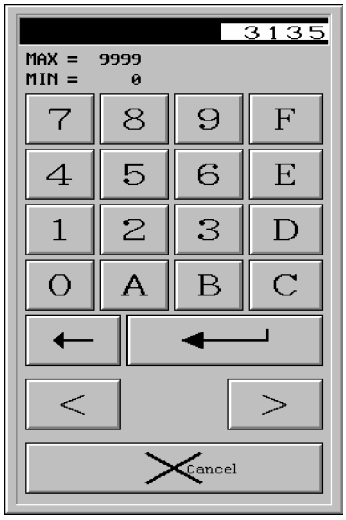



Figure D-2

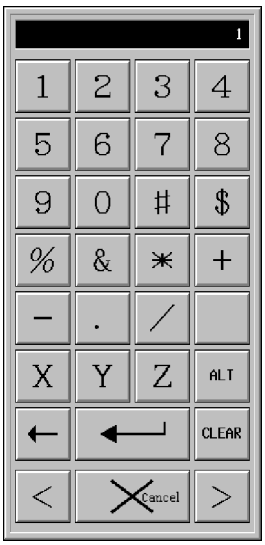



Figure D-3

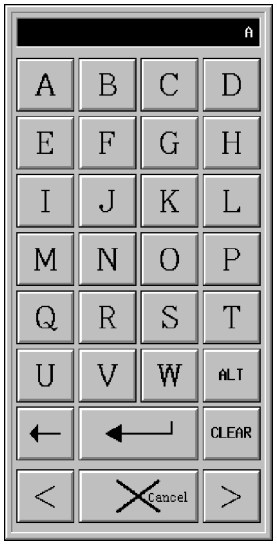



Figure D-4

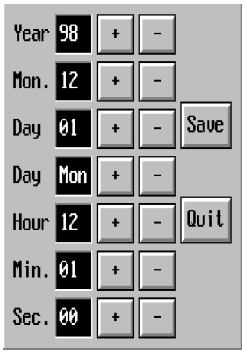



Figure D-5

**D-5 Calibrating Touch Panel**

You would not need to adjust the calibration of TOUCH KEY, unless TOUCH KEY is out of the calibration. To adjust the calibration of TOUCH KEY, please follow the procedure below:

1.Press Calibrate button on the System Menu. The Select Item box appears.

**Do not use anything that is made of metal or is sharp, such as a screw driver or ball pen to pinpoint the touch panel.**

2.Press Touch Panel button on the Select Item box. A white dot appears on the upper-left corner of the screen and the message "Pin-point the white dot of membrane on the upper-left corner" appears.

3.Use a pencil that is not sharp or anything that is soft and suitable to pinpoint the white dot on the screen. The small dot moves to the lower-right corner of the screen and the message changes to "Pin-point the white dot of membrane on the lower-right corner.

4.Pinpoint the white dots again. Then, a maze will appear. You would need to trace the line from the outside all the way to the inside of the maze. Once it is complete, you would then pinpoint the rectangle in the center. The calibration is now completed. The System menu will display again.

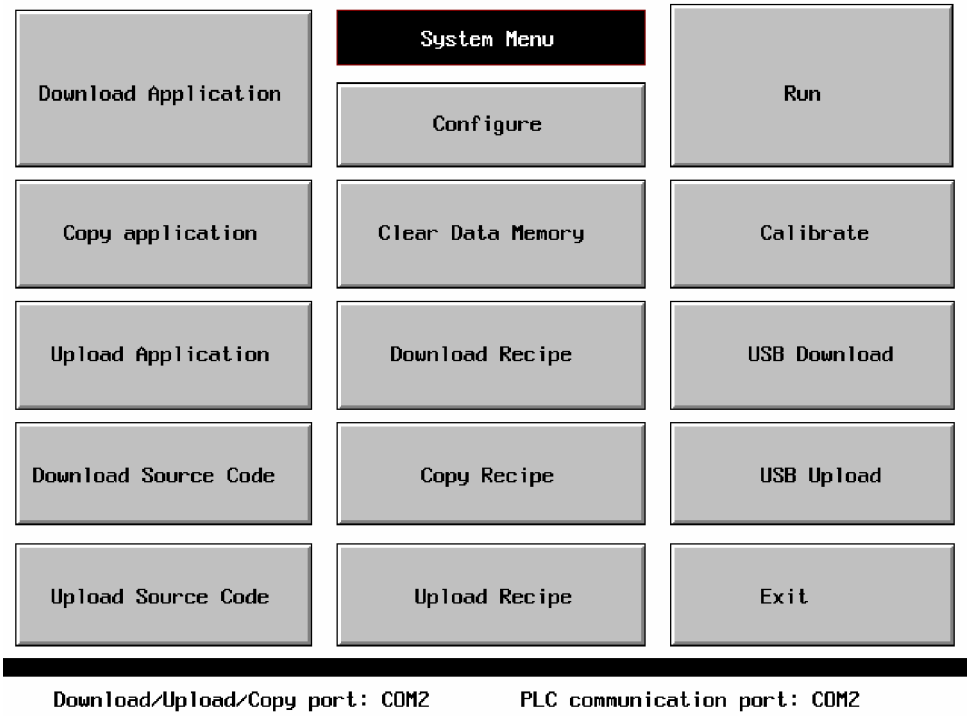



Figure D-6: PWS3261 Calibrating Touch Panel

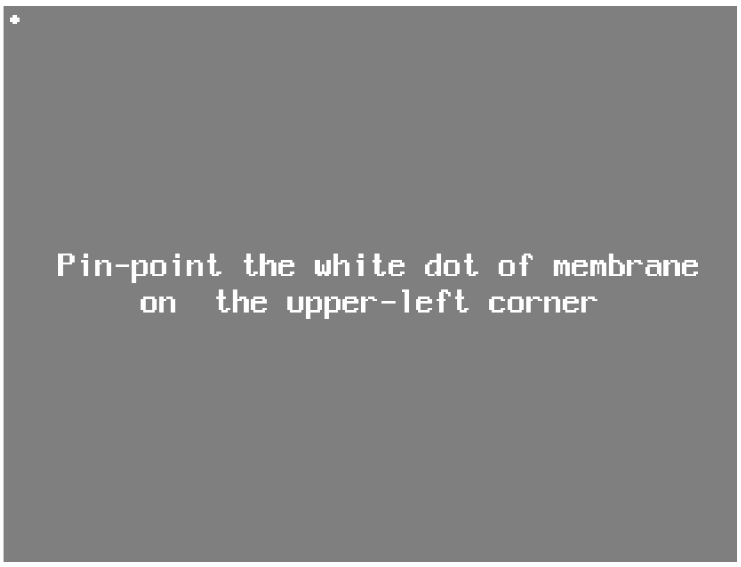



Figure D-7: PWS3261 Calibrating Touch Panel

**D-5.1 LCD Contrast Adjustment**

You can adjust the contrast of the PWS3261-FTN and PWS3261-DTN at any time your application is running on the PWS. You can calibrate the LCD contrast by pressing the "Calibrate" button on System Menu. You would then press “LCD Contrast” button to adjust the contrast. Press the “Up” button to increase the contrast of brightness and the “Down” button to reduce the contrast of brightness, as show in figure D-8. To save the setting, press “Save & Quit” button.

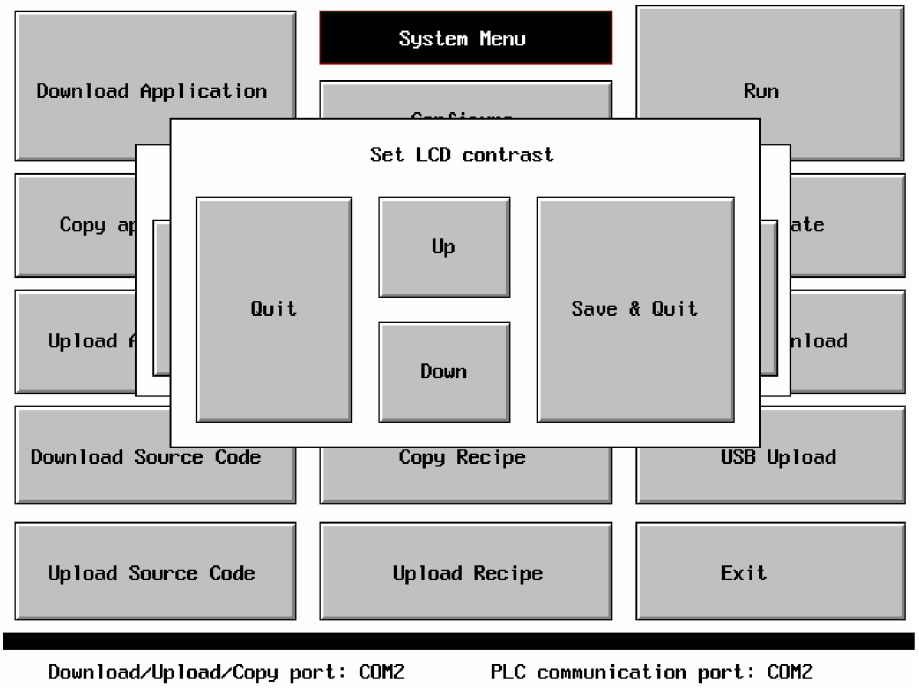



Figure D-8: LCD Contrast Adjustment

**D-6 Setting of DIP Switches**

## PWS3261 Setting of DIP Switches

| SW1 | SW2 | Function on purpose |
|---|---|---|
| ON | ON | Via COM1 in Download BIOS mode. |
| OFF | ON | Via COM2 in Download BIOS mode. |
| SW3 | SW4 | Running Mode |
| ON | ON | Runs user application. |
| ON | OFF | Runs burn-in test program. |
| OFF | OFF | Runs Hardware testing. |

| SW5 | Communication Parameters |
|---|---|
| ON | The PWS HMI uses the parameters set in the hardware configuration Table for PLC communications. |
| OFF | The PWS HMI uses the ADP3 downloaded parameters for PLC communications. |

| SW6 | Password |
|---|---|
| ON | The PWS HMI asks the operator to enter a password after power-on self-test. |
| Off | No password is required to start the PWS HMI. |

| SW7 | System Menu |
|---|---|
| ON | The PWS HMI displays System Menu after it gets a legal password or after power-on self-test if SW6 is off. |
| OFF | The PWS HMI doesn't display System Menu. |

| SW8 | Default User Level |
|---|---|
| On | The default user level is 1 if the PWS HMI requires |
| Off | The default user level is 3 if the PWS HMI requires |

| SW9 | COM1 Port |
|---|---|
| On | Enable RS485 circuitry of the COM1. |
| Off | Enable RS422 circuitry of the COM1. |

| SW10 | COM2 Port |
|---|---|
| On | Enable RS485 circuitry of the COM2. |
| Off | Enable RS422 circuitry of the COM2. |

## D-7 Self Test

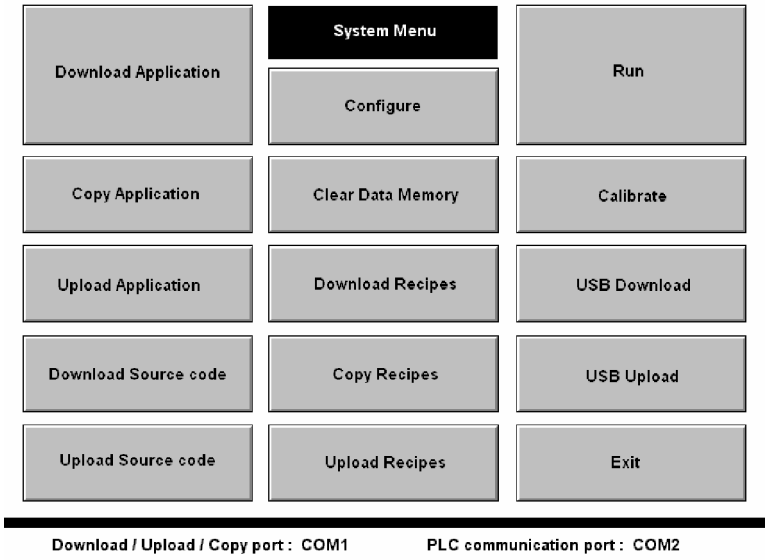
After power is applied, the PWS runs a self-test that checks its hardware. After each test, the PWS displays the result as shown in the following example.

```
                    Industrial Workstation

                      ROM BIOS Version 1.1

                (C) 2000 Hitech Electronics Corporation

Display Type     ..................... TFT Color
System RAM Size . ...................  256K  Bytes
Video RAM Size ..... ..................... 1024K  Bytes
Battery Backed RAM Size .............  768K  Bytes
BIOS Memory Size ..... ...  128K  Bytes
Firmware Memory Size .................  384K  Bytes
Application Memory Size ..... 3584K  Bytes


Working RAM Test ..... Passed
Battery Status   ..... Passed
BIOS ROM Checksum ..... Passed
Parameter Checksum ..... Passed
Firmware Memory Checksum..... Passed
User Memory Checksum ..... Passed
Source code Checksum(1280 Bytes)..... None
RTC Function Test ..... Passed
Communication Port 1 Test..... Passed
Communication Port 2 Test..... Passed
Printer Port Test ..... Passed
DIP Switches Setting (8..1) ..... 11011111
```

Figure D-9: PWS3261 Self Test

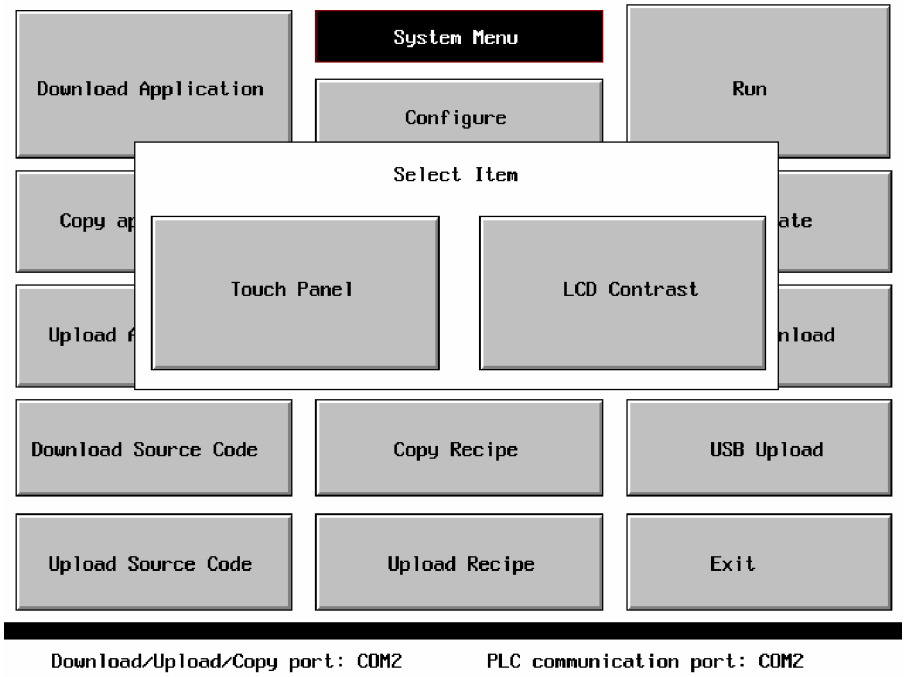
If you have never configured your PWS, the self-test may report a failure of the real time clock. If this happens, configure as described in section D.10 (Setting Operating Parameters). If you have never downloaded an application to the PWS, the self-test may report a problem in the flash chips. You can ignore these errors. If you have interrupted a download to the PWS by switching off the power, disconnect the communication cable, or click cancel button in the ADP while a download is in progress, the self-test may report a problem in the Firmware Checksum or Application Checksum. You can ignore these errors and try to download again.

If there are any items of the self-test the PWS HMI doesn't pass, the message "System error is detected! Press screen to continue." appears. The PWS continues its operation after you press screen.



**D-8 PWS3261 System Menu**

After the user level is determined by a password or by the default, the PWS displays System Menu if the DIP switch No.7 is on; If DIP switch 7 is off, the PWS starts running your application immediately. Figure D-10 PWS3261 System Menu is summarized in the following:



| Button | Function | User Level |
|---|---|---|
| Run | Starts running your application. | 1-3 |
| Download Application | Allows you to download an application to the PWS from a PC or another PWS. | 1 |
| Download Recipes | Allows you to download recipes to the PWS from a PC or another PWS. | 1 |
| Upload Application | Allows you to upload the application in the PWS to a PC. | 1 |
| Upload Recipes | Allows you to upload the recipes saved in the PWS to a PC. | 1 |
| Download Source Code | Allows you to download source code to the PWS from a PC or another PWS. | 1 |
| Upload Source Code | Allows you to upload the source code saved in the PWS to a PC. | 1 |
| Configure | Allows you to set the PWS's operating parameters. | 1 |
| Copy Application | Allows you to copy the application in the PWS to another PWS. | 1 |
| Clear Data Memory | Clear PWS Data RAM | 1 |
| Copy Recipes | Allows you to copy recipes saved in the PWS to another PWS. | 1 |
| Calibrate | Allows you to calibrate the touch panel and set the contrast or brightness of the display. | 1 |
| USB download | Allows you to download an application or source code to the PWS from a PC via USB port. | 1 |
| USB upload | Allows you to upload the application or source code in the PWS to a PC via USB poer. | 1 |
| Exit | Starts from the self-test again. | 1-3 |

**D-9 Downloading Application**

To make the PWS ready for receiving downloaded application, press the Download Application button on System Menu. The PWS displays the message "Waiting for downloading...” when it is ready.

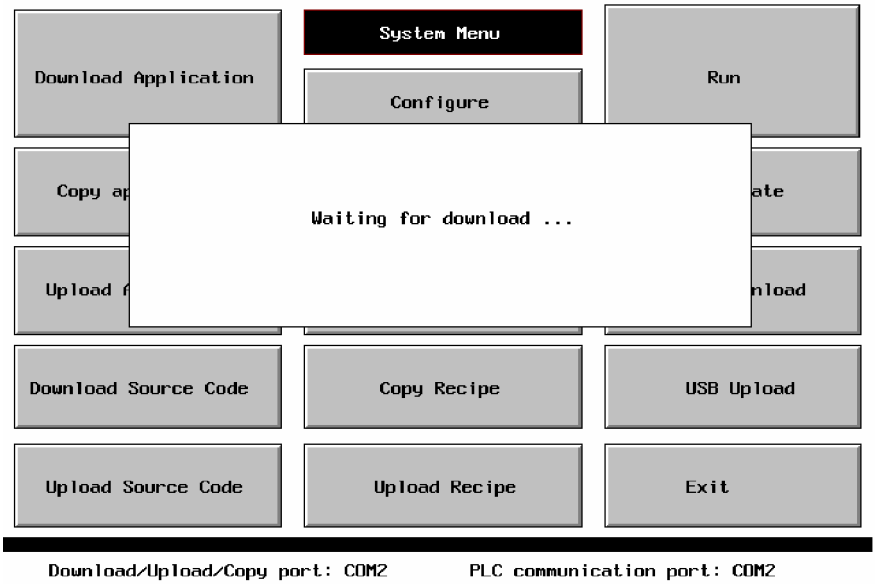
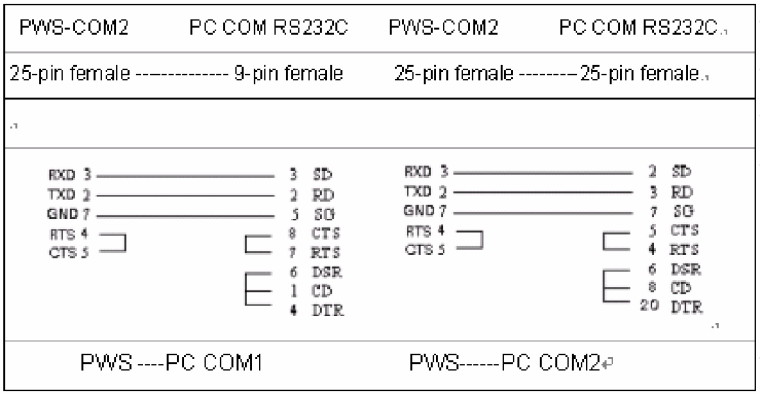



Figure D-11: PWS3261 Waiting for downloading

1. You should have a cable with the following connection for the download.




**Warning: To avoid electric shock, be sure to switch off the power when connecting the communication/download cable**

**to the PWS unit.**

## D-10 PWS Setting Operating Parameters

You can use Communication Parameter dialog box of ADP to set the parameters for the communications between your PWS3261 and PLC. The parameters set in ADP is transmitted to the PWS along with all other data when you download an application. To get Communication Parameters dialog box, click Communications button in PWS Setup dialog box. The Communication Parameter dialog box appears in Figure D-12. The PWS uses these parameters for PLC communications, if the DIP switch No.5 is off.

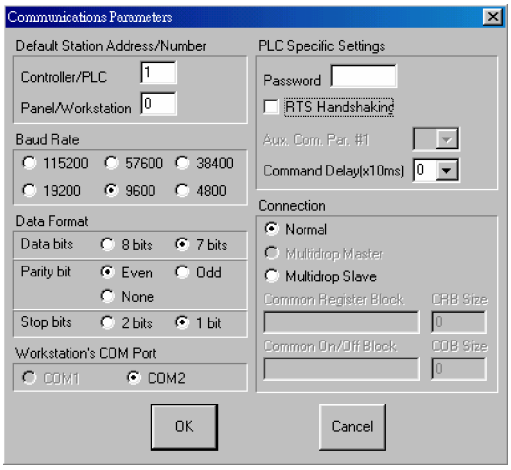



Figure D-12: ADP software Communication Parameter dialog box

If DIP switch 5 is on, the parameters set in the hardware configuration Table will be used for PLC communications. To set up the Operating Parameters of the PWS, press the Configure button on System Menu. The PWS displays Configuration Table as shown below.

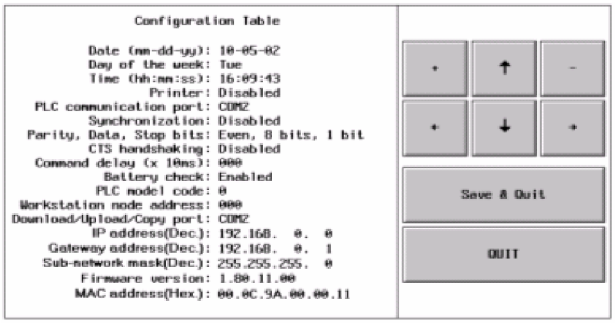


Figure D-13: PWS3261 hardware Communication Parameter

**D-11 serial Communication Port COM1 & COM2**

Both of the PWS3261 communication ports COM1 and COM2 are serial ports that support RS-232, RS-422, and RS-485 operations. The pin assignments of these ports are listed in the following table:

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | Chassis ground | 14 | RS-422 TXD+ and RS-485 TXD/RXD+ |
| 2 | RS-232 TXD | 15 | RS-422 TXD- and RS-485 TXD/RXD- |
| 3 | RS-232 RXD | 16 | RS-422 RXD+ |
| 4 | RS-232 RTS | 17 | RS-422 RXD- |
| 5 | RS-232 CTS | 18 | (no function) |
| 6 | (no function) | 19 | (no function) |
| 7 | Signal ground | 20 | (no function) |
| 8* | (no function) | 21 | (no function) |
| 9 | (no function) | 22 | (no function) |
| 10 | (no function) | 23 | RS-422 RTS+ |
| 11 | (no function) | 24 | RS-422 RTS- |
| 12 | RS-422 CTS+ | 25* | (no function) |
| 13 | RS-422 CTS- | | |

**Printer Port (LPT)**

LPT is a parallel printer port that can drive a Centronics-type parallel
printer. The connector is compatible with the IBM PC's parallel printer connector.

| Pin | Direction | Function |
|---|---|---|
| 1 | Output | Data Strobe |
| 2 | Output | D0 - data bit 0 |
| 3 | Output | D1 - data bit 1 |
| 4 | Output | D2 - data bit 2 |
| 5 | Output | D3 - data bit 3 |
| 6 | Output | D4 - data bit 4 |
| 7 | Output | D5 - data bit 5 |
| 8 | Output | D6 - data bit 6 |
| 9 | Output | D7 - data bit 7 |
| 10 | Input | Acknowledge Not |
| 11 | Input | Busy |
| 12 | Input | Paper Empty |
| 13 | Input | Printer Selected |
| 14 | Output | Auto-feed |
| 15 | Input | Error Not |
| 16 | Output | Reset Not |

| | | |
|---|---|---|
| 17 | Output | Select |
| 18-25 | Signal ground | |

**D-12 USB Port**

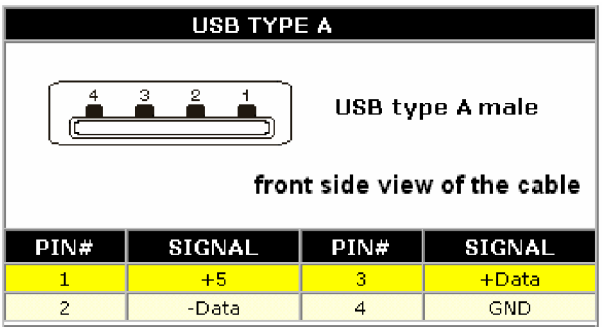
Almost all the new PCs are equipped with USB ports. Some even only have USB ports and do not support serial ports anymore. PWS3261 series are equipped with USB port that could replace serial ports for download/upload applications and source codes a PC and PWS3261. As the USB port is a client version and hence could be connect to printer for printing.

1. **Attention:**

   The USB download/upload function is only supported on PWS3261 series or later models. To use this function, you would need to upgrade your ADP to ADP 3.1.07 or later versions.

2. **Cable connection:**

   You should have a cable( USB TYPE A–male TO USB TYPE A–male) as depicted below for USB connection between PC and PWS3261.




| PIN# | SIGNAL | PIN# | SIGNAL |
|---|---|---|---|
| 1 | +5 | 3 | +Data |
| 2 | -Data | 4 | GND |

| USB TYPE A male | | | USB TYPE A male | |
|---|---|---|---|---|
| PIN# | SIGNAL | | PIN# | SIGNAL |
| 1 | +5 | ——— | 1 | +5 |
| 2 | -Data | ——— | 2 | -Data |
| 3 | +Data | ——— | 3 | +Data |
| 4 | GND | ——— | 4 | GND |

Figure D-14: Pin assignment of USB

**Warning: the communication devices may damage by electric power. Be sure to turn off the power when**

| | |
|---|---|
| | **connecting the USB cable to the HMI unit.** |

### 3. Hardware detection and USB driver installation

3-1. Connect PC to HMI with USB TYPE A-male cable. See Figure D-15

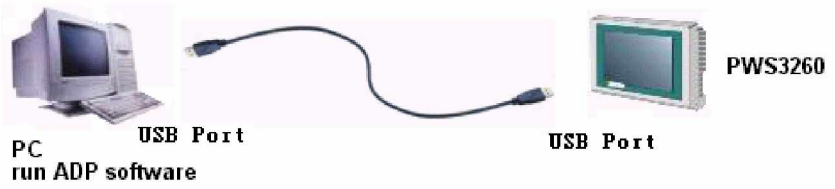



Figure D-15: USB Cable from PC to HMI

3-2. Be sure switches 7 of HMI is “ON”; then turn on the power on both HMI and PC. After system menu appears on the screen of HMI; press the “USB download” button. See Figure D-16.

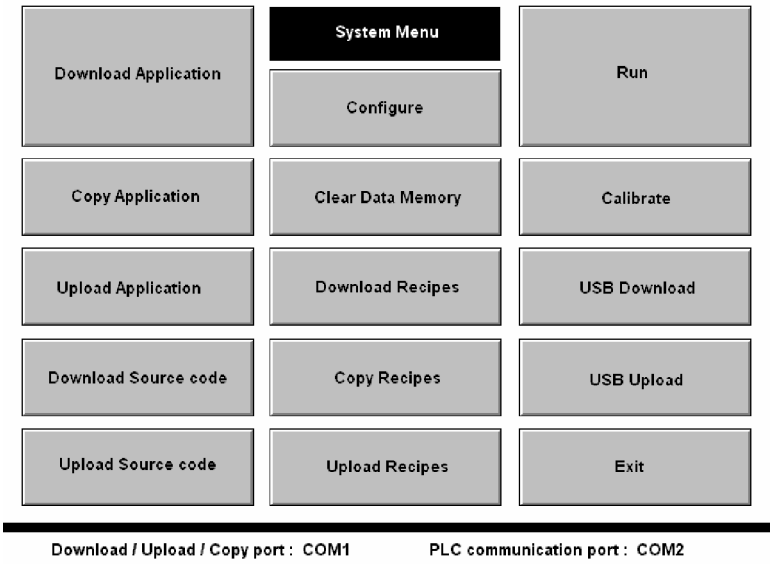



Figure D-16: system menu on PWS3261

3-3. Windows on the PC will detect the new USB device and ask to install the USB driver. See Figure D17-D21

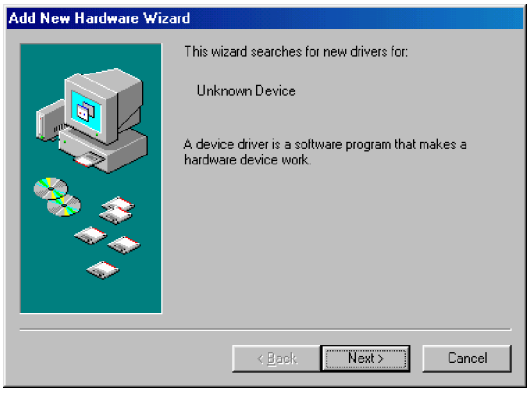



Figure D-17: Start the search for new device driver


Figure D-18: Windows searches for a device driver


Figure D-19: Specify a the file directory where the device driver is stored. The default is C:\HITECH_ADP


Figure D-20: Windows searches for the drive as you specify and begin to install


Figure D-21: the USB driver is installed

**D-13 Download an application from PC to HMI through USB port**

The PWS3261 supports the download/upload function via USB port. You can download/upload applications and source codes on PC or HMI through the USB port. the setup steps are as follow:

**1. Press "USB Download" on system menu**

1-1. Connect the USB type A male communications cable between PC and HMI.

1-2. Be sure DIP-SW No 7 is " on" then turn on the power on HMI and press the "USB Download" button on system menu. The PWS3261 displays "waiting for Downloading" and is ready to receive a download. See Figure D-22.

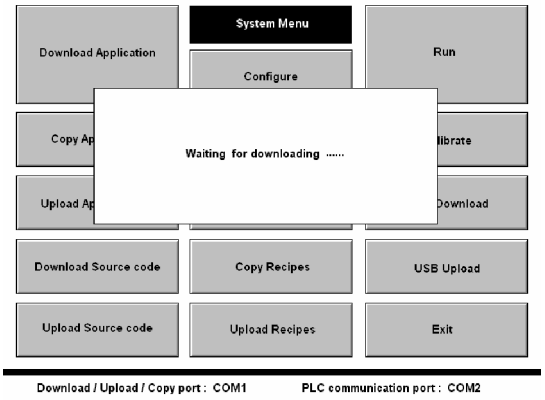



Figure D-22: the screen of "waiting for Downloading"

**2. Compile the application and select "USB" on Transmission setup box**

2-1. Before downloading, be sure to compile your application by choosing "compile" from the "application" menu.

2-2. From ADP, select "options" > "Transmission setup" to specify the computer's USB port for the downloading operation, See Figure D-23.

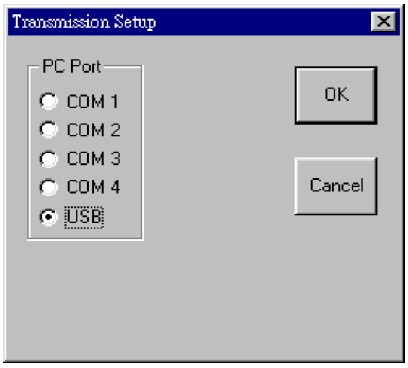



Figure D-23: Select "USB" port for download

**3. Downloading " Firmware and application" or "application"**

3-1. If you have already compiled your application, then select "Download Firmware and application" or "Download application" from the "application" menu. The download operation will start immediately. See Figure D-24

3-2. During Downloading; the PC and HMI both display their progress. See Figure D25-D29

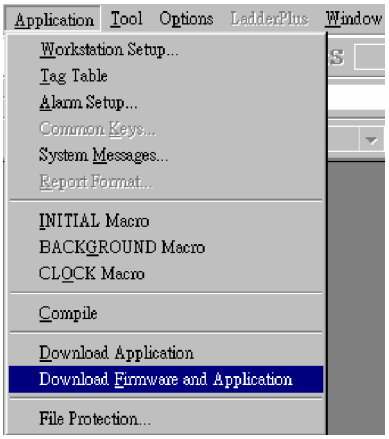



Figure D-24:"Download Firmware and application "from "application" menu of ADP

1. **"Download Firmware and Application"** à **It's suitable for first time download firmware and application or change the system parameters. it takes longer than "Download Application". (Ex: Change PLC……)**
2. **"Download Application"** à **It is suitable for subsequent changes on the screens in applications.**

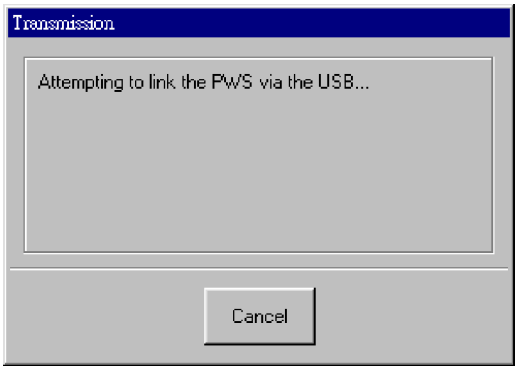



Figure D-25: ADP is trying to establish a connection to the HMI via USB port.

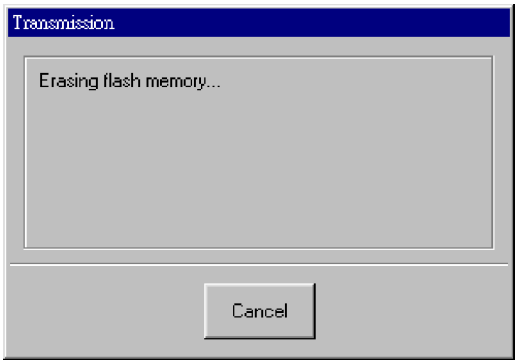



Figure D-26: ADP shows “Erasing flash memory ...”

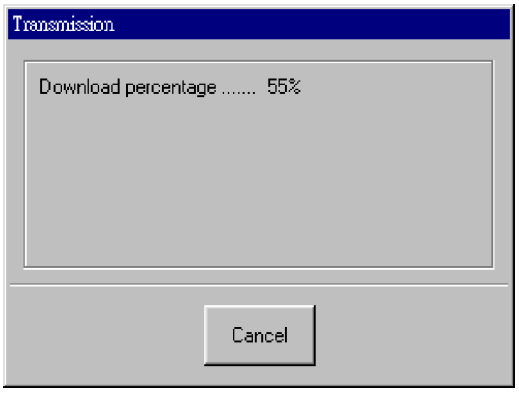



Figure D-27: ADP displays the percentage of completion.

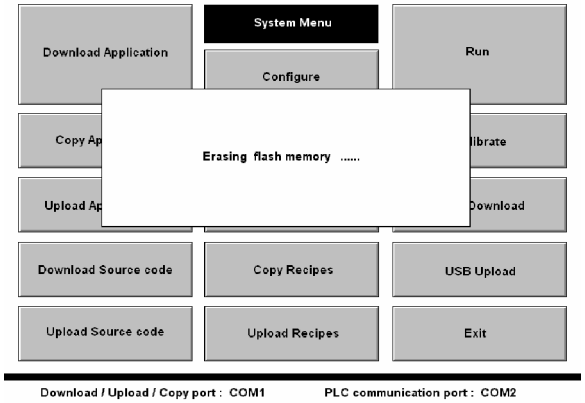



Figure D-28: HMI shows ”Erasing flash memory...”

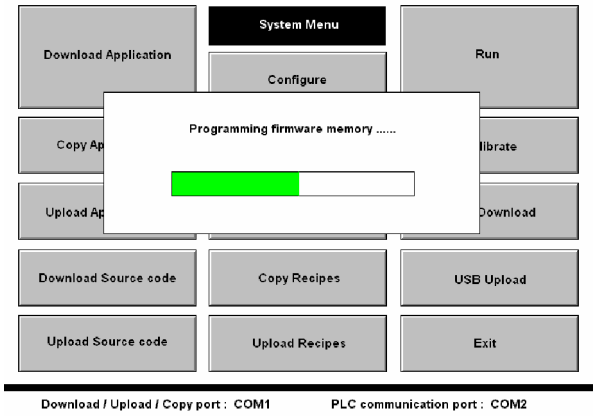



Figure D-29: Progress status of Programming the HMI

**4. Download completed**

The different messages shown on PC and HMI when download is successful. See Figure D30-D31

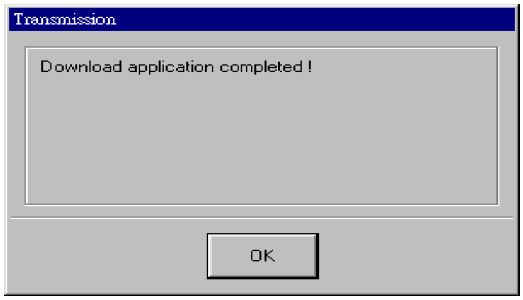



Figure D-30: ADP displays download successful.

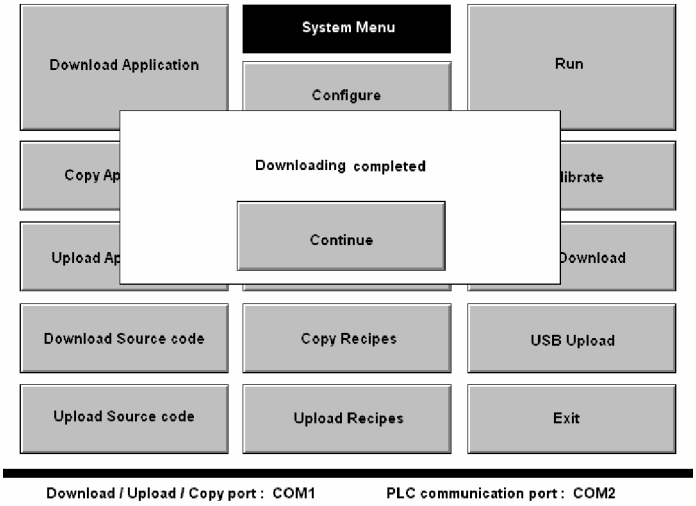



Figure D-31: HMI displays download successful.

**If your OS is Windows 2000, it will popup a warning message box. It is normal and you could just ignore it but closing the box.**

### 5. Error message

In case of an error message appear, please check your USB setting or cable connection. See Figure D32-D33.


Figure D-32: ADP shows connection failure

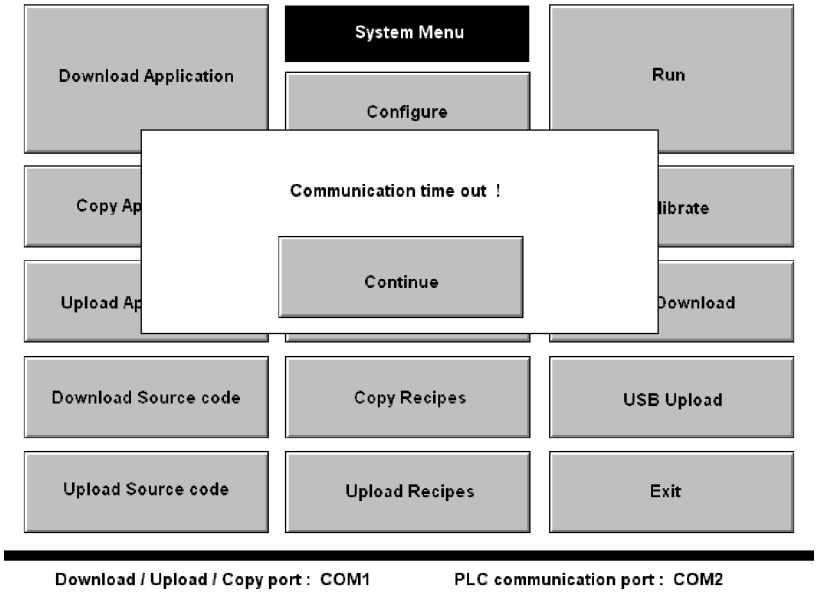



Figure D-33: The HMI shows communication time out

**D-14 Upload application from HMI to PC**

The PWS3261 supports download/upload function via USB port. You can easy to save application program and source codes into PC or HMI for backup use via USB port:

You can upload a program from the HMI to the PC; please choose “USB upload” from application menu. ADP will save the program as *.AP1 and *.AP2 in your PC. Set steps as follow:

**1. Press “USB Upload” on system menu**

1. Connect the USB type A male communications cable between PC and HMI.
2. Be sure DIP-SW No 7 is “ on” then turn on the power on HMI and press the ”USB Upload” button on system menu. The PWS3261 displays “waiting for Uploading” and is ready to receive a upload. See Figure D-34.

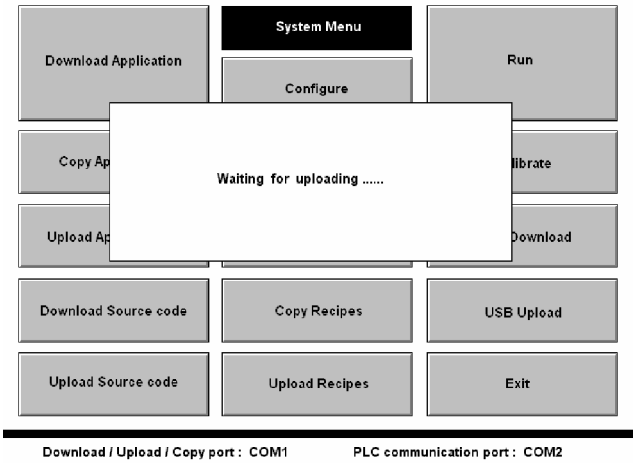



Figure D-34: the screen of “waiting for Uploading”

**2. To select “USB” on Transmission setup box**

From ADP, select “options” > “Transmission setup” to specify the computer’s USB port for the uploading operation.

**3. Execute Upload application**

If choose “Upload application” from the “File” menu. You should type the file name and directory. the uploading operation starts immediately. this program exists as an execution file named “ **.AP1” See Figure D35-D36

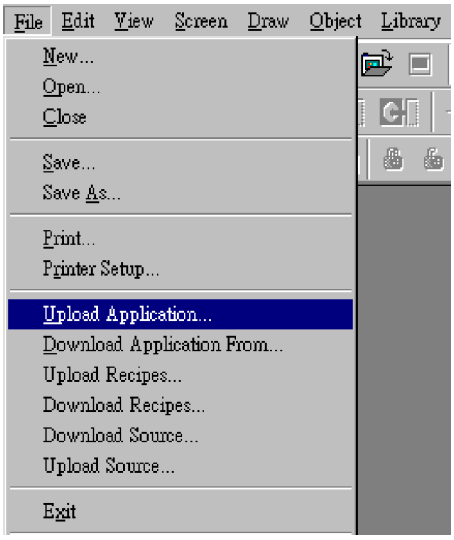


Figure D-35:"Upload Application" in "File" menu of ADP

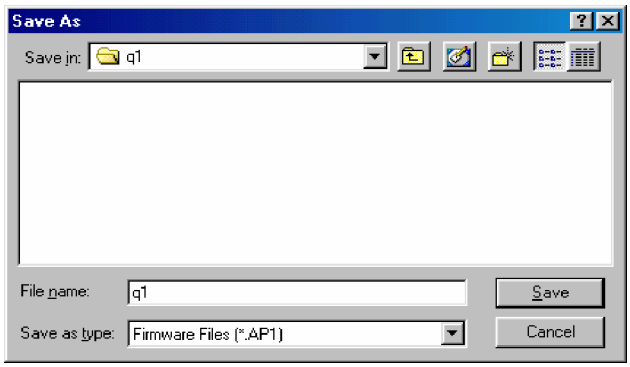



Figure D-36: PC requested for file name and directory

**4. Upload completed**

The different message shown on PC and HMI when upload is successful. See Figure D37-D38

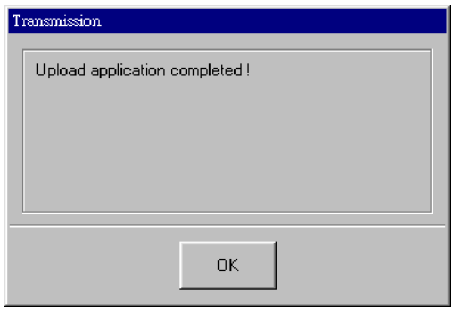



Figure D-37: ADP displays upload successful

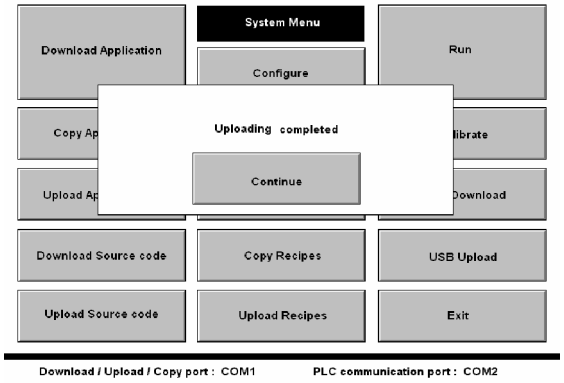



Figure D-38: HMI displays upload successful

**If your OS is Windows 2000, it will popup a warning message box. It is normal and you could just ignore it but closing the box.**

**D-15 Download application from PC to HMI through USB**

From your PC download the program ***.AP1/***.AP2 to the HMI. Select “Download Application Form” from “File” menu. Do not forget DIP SW setting and “USB” Transmission setup before download.

**D-16 Download/ Upload source codes Through USB**

**1. Download source code**

1-1. The USB cable connect way, DIP SW setting and USB transmission setup are same as previous.

1-2. Select “Download source…” from “ File “ menu of ADP and give file name and directory.

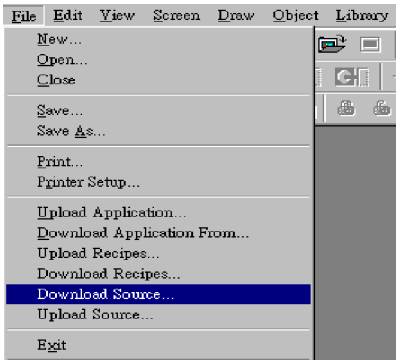



Figure D-39:”Download Source…” in “File” menu of ADP

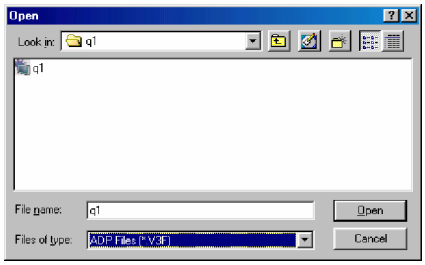



Figure D-40: PC requested for file name and directory

**2. Upload source code**

2-1. The USB cable connect way, DIP SW setting and USB transmission setup are same as previous.

2-2. Select “Download source…” from “ File “ menu of ADP and give file name and directory.

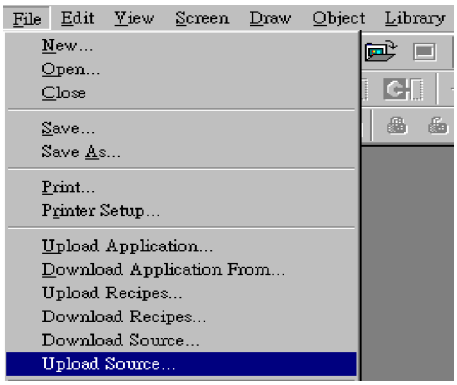



Figure D-41:”Upload Source…” in “File” menu of ADP

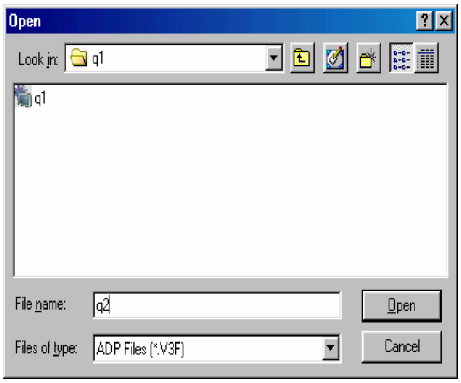



Figure D-42: PC requested for file name and directory

**D-17 Entering Password**

After the self-test, the PWS displays a keypad to prompt you to enter a password if the DIP-switch SW6 is on. If DIP-switch SW6 is off, the PWS will not ask you to enter a password. When DIP-switch SW6 is off and SW8 is on, the default user level will be set to 1. When both DIP-switch SW6 and SW8 is set to off; the default user level will be set 3.

When a password is required, the PWS will not continue its operation until a valid password is entered.

### D-17-1 Password and User Level

The PWS saves passwords in the Real Time Clock chip. A password must have eight numeric characters. When you create a password, you must specify the user level associative with that password. The user level of a password determines the privilege of the user who enters that password to start the operation of the PWS. When you want to use the function of the System Menu, to change to another screen, or to make changes to PLC locations, the PWS will check your user level. There are three user levels: level 1, level 2, and level 3. Users at Level 1 have the highest privilege and the lowest privilege when at Level 3.

### D-17-2 Registering Passwords

To register new passwords or to modify existing passwords for your application, you have to create an Action button on a screen and assign the function "Display Password Table" to that button. When the PWS is running the application, a Level 1 user can get the password table as the example shown below when he presses and releases an Action button that displays the Password Table. You can register up to eight passwords for your application. To change a password or the user level of a password, follow the steps:

1. Select the password or the user level by touching it.
2. If you select a user level, enter a number between 1 and 3 to change the user level. If you select a password, enter eight numeric characters to change the password. When you press [ENTER], the PWS accepts the change.
3. To abandon the current change, select another field to exit the current selection.
4. To save all changes that you have made to the password table, press [Save & Quit]. To abandon all changes, press [Quit].

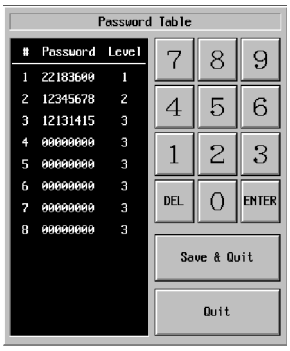



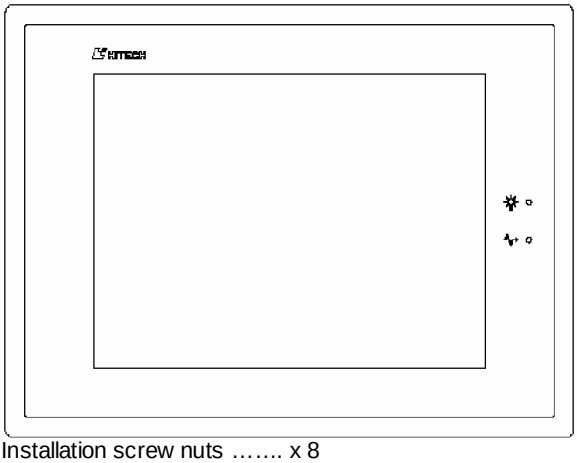
Figure D-43 : entering a password

Figure D-44: Numeric keys for password table

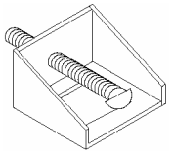
## Package Contents

The following 2 items are included in the package. Before using, please make sure they are included.

PWS unit ……. x 1



Installation screw nuts ……. x 8



## Optional accessory

Manual: English version order p/n 326118-01

Download Cable for PC COM1: order p/n WPC-p8-23

ADP Programming Software CD: order p/n 370018-A4

### Cautions ( )

If this product is used in a house, radio-wave interference might occur to other devices. In the case that it does occur, the user is requested to try a variety of remedies to solve the problem.

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### Power source

- PWS is equipped with DC24V input. If the supply power is other than DC24V, less or excess, it will severely damage the PWS. Therefore, check the switching power supply supporting the DC power regularly.
- To avoid electronic shock, be sure the Power Cable is unplugged from the power outlet when connecting the cable to the PWS.

### Grounding

- From the FG terminal at the rear side of PWS, please make sure the grounding is made exclusively.
- When the FG terminal is connect, be sure the wire is grounded. Without grounding, the operation of PWS may be severely affected by excess external noise levels and vibrations.
- Use a cable at 2 m (AWG 14) to ground the equipment. Ground resistance must be less than 100 Ω(class3).Note that the ground cable must not be connected to the same ground point as the power circuit.

# Installation

Mount the PWS from the front of a suitable preserved hole.

- Attached the brackets behind.
- Fasten the screw of the brackets with proper force. Tightening too much may cause damage to the structure of the unit.
- Input and Output signal lines must be separated from the power cables for operational circuits. Use shielded cables or it may cause unpredictable problems.
- Do not allow cut wires, filling, or shavings to fall inside a unit or block when drilling holes or connecting cables/lines.

### Environment

- Do not install in areas subject to excessive dust, oily mist, conductive dust, corrosive gas, or flammable gas.
- Do not mount in areas subject to shock or vibration.
- Do not mount in areas subject to high temperature, moisture, or rain.

Indicated loss of life, severe personal injury, or substantial property damage will result if proper precautions are not taken.

Please use ADP Ver 3.1.07 or later.