

USER'S MANUAL

AMB-632 Series

*Industrial Workstation
With Flat- Panel Display*

About This Manual

Welcome to the AMB-632 series of industrial workstation. The manual is made to help you understand how to set up and use the AMB-632 series industrial workstations. It is divided into three chapters and three appendixes.

- Chapter one* gives you an overview of the workstations.
Chapter two tells you how they are basically constructed and what procedures you should take for system setup or upgrading.
Chapter three tells you how to maintain them.
Appendix A gives detailed specifications of power supply used in them.
Appendix B shows the dimensions of backplane.
Appendix C gives a picture of exploded diagram on them.

Important Safety Instructions

- Please read this manual thoroughly before operating the unit and retain it for future reference.
- Before you start any of the actions, be sure that you have the correct version of the unit. See page 7.
- Unplug this product from the wall outlet before cleaning. If the surface of the LCD cells needs to be cleaned, wipe it swiftly with cotton or other soft cloth. If still not completely clear, blow on its surface and wipe.
- Since the display panel polarizer is easily damaged. Please pay attention not to scratch on its face.
- Do not use this product near water. And avoid exposing this product to the direct sunlight, strong ultraviolet light, etc. for a long time.
- This product should be operated from the type of power source specified. If you are not sure which type of power source is available, please refer to Appendix A.

Packing List

Then you should also check if the package contains the following items. You should contact your dealer immediately if any of these items are missing or damaged:

- One AMB-632 industrial workstation with flat panel display
- One flat panel/CRT display control card
- One power cord
- A pack of accessory
- One CD Title

Chapter 1 Overview

1.1 General

The AMB-632 series industrial workstations are IBM PC/AT compatible computers specially designed to meet the harsh requirements by factory floor and other strict industrial environments.

They can equip with a variety of LCD panels, passive backplane, switching power supplies, and disk drive housings. It also equipped with flat panel/CRT display control card, two membrane-sealed keypads, and an LED power indicator on the 59-key keypad. All of them are enclosed with a heavy-duty steel chassis and an aluminum alloy front panel, which meet the NEMA 4/12 industrial and environmental protection standards.

1.1.1 Touchscreen (option)

You also can add a touchscreen to the workstations. That allows you to control functions and processes simply by the figures touching on the screen.

NOTE Touchscreen or DC power supply is optional as your order and to ask for additional price table.

It has been specially manufactured to meet the demanding requirements of analog resistive touch screen (ARTS). The thin conductive layer, Indium-Tin Oxide (ITO), is made by a vacuum deposition process called sputtering. An alloy of indium and tin is sputtered in a reactive oxygen atmosphere to produce a very thin, uniform coating on a flexible substrate. It also provides the combination of mechanical, electrical and optical properties required for superior touch screen performance. All values are typical and obtained after printing and other processing.

1.1.2 About Thumbscrew-On Doors

It's very convenient for you to add or exchange cards by the rear cover turning the thumbscrews by hand to open/close it, called *thumbscrew-on rear door*. Oppositely, there is a *thumbscrew-on front door*, anti-dust front door, can isolate dust, water, or something like that from the outside.

1.2 Features

- Heavy-duty steel chassis, NEMA 4/12 aluminum alloy front panel
- 10.4“ color TFT LCD, color DSTN LCD, or 9.4” B/W LCD display
- Analog resistive touchscreen (option)
- ISA-bus 10-slot (default) or PCI-bus 10-slot passive backplane, or space for motherboard
- Universal 250W switching power supply (or other options)
- ISA-bus (default) or PCI-bus flat panel/CRT display control card
- Two sealed-membrane keypads: one with 59 data keys and the other with 20 function keys
- Two disk drive housings: one for a 3.5” FDD and the other for two 3.5” HDDs
- 64-CFM cooling fan
- Brightness & contrast control VRs, external keyboard connector, FDD slot behind a thumbscrew-on front door.
- Hold-down clamp for keeping add-on cards against vibration
- 19” rack mounting

1.3 Specifications

■ **General**

Construction: heavy-duty steel chassis, NEMA 4/12 front panel

FDD housing: for two 3.5" FDD

HDD housing: for two 3.5" HDD

Cooling system: one 64-CFM fan

Dimensions: 483mm (W) x 310mm (H) x 239.6mm (D)

Weight: 13 Kgs

■ **Front panel**

Data keypad: 59 keys

Function keypad: 20 keys

Thumbscrew-on door: covering FDD slot, keyboard connector, contrast and brightness control VRs

■ **Power supply**

(Refer to Appendix A)

■ **Passive backplane**

1) 10-slot ISA-bus passive backplane:

4-layer PCB with ground/power-plane for reduction in noise and power supply impedance

LED power indicators for +12V,+5V, -12V, -5V

2) 10-slot PCI-bus passive backplane: (option)

Multi-layer PCB design with UL 94V-0 approval

LED power indicators for +12V,+5V, -12V, -5V, +3.3V

■ **Environmental**

Operating temperature: 0°C to 45°C

Storage temperature: -20°C to 60°C

Relative humidity: 5 to 95%, non-condensing

Altitude: 10,000 ft (3000 meters)

Vibration: 5 to 17 Hz, 0.1" double-amplitude displacement

17 to 500 Hz, 1.5 G peak to peak

Shock: 10G-peak acceleration (11-msec. duration)

Safety: meets UL/CSA/TUV

EMI: meets FCC/VDE Class A

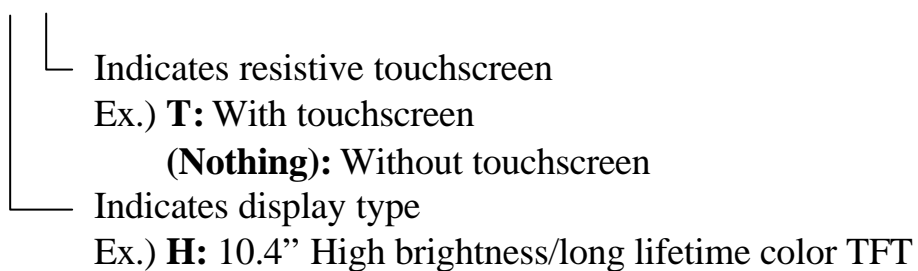
■ **Display Selection Table**

Item	Mono_DD	Color DSTN	Color TFT
Diagonal	9.4"	10.4"	10.4"
Display area	196(H) x 147.6(V)	214.2(H) x 164.4(V)	211.2(H) x 158.4(V)
Resolution	640 x 480	640 x 480	640 x 480
Color or Gray scale	16 gray scales	16 colors	64K colors

NOTE Model Number System

Product Name

AMB-632 H T



■ **Touchscreen (option)**

(Refer to the touchscreen user's guide which will be included in the package if you opt for a touchscreen)

■ **Power Supply:**

(See Appendix A)

1.4 Dimensions

Unit: mm

Chapter 2 System Setup And Basic Operations

2.1 General

The AMB-632 workstations are very easy to set up for operation, all you have to do is open their back cover, install your CPU card, display control card, hard disk drive and other I/O cards required by your application, and you are ready to mount them onto a 19” rack and start operating. You can be assured of that because we have set them up and tested them at our factory before they were shipped.

IMPORTANT Do not plug in any power when you start to setup the system. Also remember whenever you want to open the panel PCs again for either upgrading or maintenance you have to switch all the power off and unplug them.

To work the system setup, you just need to prepare a plus screwdriver. Then follow the steps presented in each section. Do not drop any small object, especially conductor, in your unit when you are setting up the system for the sake of safety and avoiding short-circuit occurrence.

2.2 Opening The Thumbscrew-on Rear Door

The back cover is fastened to the chassis with two thumbscrews at the upper side and two hinges at the bottom side. To open it you need only to turn the two thumbscrews counter-clockwise to release and draw it out. Then you will see the hold-down clamp across the unit, graphic card, passive backplane, power supply, and cooling fan only.

2.3 Removing The Hold-Down Clamp

The clamp is designed to hold the add-on cards against vibration during operation. It is fastened with three screws, so you only need to unfasten the three screws to remove the clamp.

Now you will see two long rubber bands going down the clamp which are the part that will come pressing down on the AT add-on cards you install. You will also see a line of eight holes going down the groove in the middle of the clamp. They are for securing the eight small clamp kits provided in the accessory box, which will serve to hold down the XT add-on cards you install.

Remember to put the clamp back and secure it in place when you have finished installing all your add-on cards.

2.4 Installing Add-On Cards

There are 10 slots on the passive backplane, but for the sake of saving them you should basically install an all-in-one SBC and the flat-panel/CRT display control card which comes with the workstations before taking up any of other I/O cards.

To install add-on cards

1. Take up a card and slide it slowly into a slot until its gold finger goes well down a groove on the securing panel.
2. Match the screw hole on the bracket with the one on the groove and drive a screw tight through.

2.5 Installing Disk Drives

2.5.1 The disk drive housings

There are two disk drive housings equipped in the workstations. One is for you to install a 3.5“ FDD and the other is for two 3.5” HDDs. You need to take them out to install and their location as shown in the following figure.

2.5.2 Installing a 3.5" FDD

1. Put the unit front panel side down gently on a soft object.
2. Release the four screws on the bottom of unit to take the 3.5" FDD bay off.
3. Put your 3.5" FDD into the bay.
4. Fix it with four screws on the both sides.
5. Put the disk bay back to the unit.

2.5.3 Installing 3.5" HDDs

1. Release the four screws on the top of unit to take the 3.5" HDD bay off.
2. Put your 3.5" FDD into the bay.
3. Fix it with screws on its both sides.
4. Put the disk bay back to the unit.

2.6.1 External Keyboard Connector

The two membrane keypads placed on the front panel of the workstations allow you to enter all text and numerical data. You can also attach an external keyboard to them via a connector placed behind the thumbscrew-on front door. A built-in controller will merge the signals from the two sources into one signal which acts as a standard IBM PC/AT keyboard.

2.6.2 Connecting external keyboard

1. Buying with CPU card:

If you buy AMB-318/310/311 or 610/611/618/632 with CPU card, you may just plug in keyboard on the front side of control box.

2. Buying without CPU card:

Please connect “keyboard internal cable” and “keyboard connector on CPU card”. Then, you may plug in keyboard on the front side of control box.

3. Using motherboard:

Please connect the “PS 2 port on the motherboard” and “mini-DIN port on the rear side of control box” with cable provided. Then, you may plug in keyboard on the front side of control box.

2.7 Power Inlet And Power Switch

This product is designed to accept the worldwide AC power source from 85VAC to 265VAC at 47Hz to 63Hz and 440Hz. The power inlet provides an easy connection to the AC power outlet via power cord, and the power switch controls the system ON and OFF status.

To turn the system power ON or OFF

- Depress the power switch’s “0” end to make the system in the OFF status.
- Depress the power switch’s “1” end to make the system in the ON status.

To connect the power cord to the power inlet

1. Depress the power switch to the “0” position.
2. Check the line voltage if its range is within specifications.
3. Plug the power cord into the power inlet.
4. The system is ready to work now.

2.8 Basic Operations

All the operations of your works can be down from the front panel. You can enter any kind of data by using the two membrane-sealed keypads: one with 59 data keys and the other with 20 function keys. Furthermore, opening the thumbscrew-on front door, you can use 3.5" FDD to read/write data and connect external keyboard for fast data key in.

2.8.1 Touchscreen (option)

If the display of this product with touchscreen then the accessories include a user's manual, drivers, and a pen for touchscreen.

To work the touchscreen function

1. You should setup the software in advance. Please refer to the user's manual of touchscreen.
2. Use the pen to calibrate and use the pen or a finger to operate touch function.

NOTE The surface of touch panel is a layer of transparent conductor. The touch panel works by applying a voltage gradient across the conductive layer and measuring the voltage at the point of contact with the opposing conductive layer. So please avoid using hard object to scratch on its face.

Chapter 3 Maintenance

3.1 General

Now you have known how to set up the workstations for operation, hereafter we shall tell you how to maintain them during the operation. There are other essential parts which we haven't mentioned of so far but you will need to know them sooner or later during the operation for the purpose of either maintenance or upgrading. In the following sections they will be introduced to you one by one, and after you have gone through all them you will know almost all the essential parts in the workstations, as well as how to take each of them down and put back.

But hereof we would like to remind you once again: *whenever you need to takedown a part for either maintenance or upgrading purpose, you should switch off all of the power and unplug all of the power cords first.*

3.2 Passive Backplane

As we said in section 1.2 the workstations each come with either an ISA-bus 10-slot (default) or PCI-bus 10-slot passive backplane, or space for motherboard. When a backplane is involved and you need to take it down for the purpose of either maintenance or upgrading, please follow these steps:

1. Remove all the add-on cards and connecting cords on it.
2. Release the screws which on the backplane.

3.3 Power Supply

A universal 250W switching power supply is provided in the workstations (for other options please refer to Appendix A). It is housed in a metal case which is mounted on a corner within the unit.

To detach power supply from the unit

1. Put the unit front panel side down gently on a soft object.
2. Release the six screws on the outside of unit to take power supply off.
3. Release the four screws on the power inlet side.
4. Pull the power supply out.

3.4 Cooling Fan

A 64-CFM fan is installed on the thumbscrew-on rear door to keep the working temperature inside of chassis. You are expected to clean or replace the filter from time to time. The filter is placed behind the fan's back cover which is mounted on the outer side of the chassis' back cover. So just take off the fan's back cover and take the filter out for cleaning or replacement.

Appendix A Power Supply Specification

Power supply constitutes an essential part of the workstations, so we make this section to let you know more about the power supply used in them.

A.1 Power Supply Selection Table

Model	Input voltage	Max. Outputs Current				MTBF (Hrs)
		+5V	+12V	-5V	-12V	
<i>Input/output Spec. at 40</i>						
Universal/250W	85-265VAC	22A	7A	0.5A	0.7A	204,100
<i>Input/output Spec. at 50</i>						
-48VDC/250W	-40V to -65VDC	25A	8A	1A	2A	198,500
+24VDC/250W	19V-30VDC	25A	6A	1A	2A	206,000
+12VDC/160W	8.5V-16VDC	20A	4A	0.5A	0.5A	202,500

A.2 Universal Switching Power Supply

It is a universal 250W AC switching power supply (default), and it has the following industrial features:

- 85-265 VAC input
- 47-63Hz and 440Hz input frequency
- 100% equipped “NIPPON CHEMI-CON” super high reliability aluminum electrolytic capacitors
- 60KHz switching frequency control IC inside
- 55 operating temperature
- High reliability “ball bearing” cooling fan
- High precision and stable DC outputs for long term operation

It also has the following general specifications:

Ripple and Noise: The peak to peak ripple and noise for +12V is less than 140mV. The other outputs are less than 1% of each output voltage at rated load, 115/230VAC. Measurement is done by 15Mhz-band width limited oscilloscope and terminated at each output with a 47-uF capacitor.

Line Regulation: The output line regulation for +12V is less than +/-2%, for other outputs are less than +/-1% while measuring at rated loading and +/-10% of input voltage changing.

Load regulation: The output voltage load regulation is less than the values in the following table by changing each output load +/-40% from 60% rated load, and keep all other outputs at 60% rated load.

Output # +5V: +/-3% +12V: +/-5%
 -5V: +/-1% -12V: +/-1%

Hold-up Time: Hold-up time is 16ms typical by measuring from the last AC line changing pulse to the point that +5V drop down to +4.75V

Power Good Signal: When power is turned on, the power-good signal will go high for 100ms to 500ms after all output DC voltages are within regulation limits.

Output Protection: The built-in over voltage protection circuit will shut down the outputs to prevent damaging external circuits. The trip point of crowbar circuit is around 5.9V to 7.0V. The power supply will go into hiccup mode against short circuit or over load conditions, and will auto-recover while faulty conditions are removed.

Efficiency: The efficiency is higher than 73% by measuring at nominal line and rated load.

Safety: Designed to meet the following standards
UL 1950 D3 (approved)
TUV EN60 950 (approved)
CSA 22.2 No. 234

EMI: Designed to meet the FCC docket 20780 curve “B”

AC Connectors:

AC Inlet: Meet IEC 320/CEE 22 standard
AC Outlet: Meet IEC320 (reverse type)

DC Connectors:

to Motherboard (P8/P9/P10): Burndy GTC6P-1 or equivalent
to HDD Drive: AMP 1-480424-0 or equivalent

to 3.5“ FDD: AMP 171822-4 or equivalent

Operating Temperature: 0 to 55

Storage Temperature: -40 to 75

A.3 Other Types Of Power Supply (option)

General Specifications of –48V/24V/12VDC Power Supply:

- *Max. Input Current:* 8A at –48VDC input
16A at +24VDC input
22A at +12VDC input
- *Input Protection:* against wrong polarity
- *Short Circuit Protection:* auto-recovery
- *Over-voltage Type:* Crowbar, trip point 5.7V to 6.7V
- *Thermal Protection:* use built-in 110C thermal switch in HIS
- *Efficiency:* 70% min.
- *Operating Temperature:* 0 to 55
- *Storage Temperature:* -40 to +75
- *Operating Altitude:* 15,000 feet
- *Safety Standard:* TUV EN 60905/UL 1905 D3 (approved) CSA234 (meet)
- *EMI:* meet FCC class “B”
- *Built-in Power Good and Power Fail Signal*

Appendix B Dimensions of Backplane

Unit: mm

B.1 ISA-bus 10-slot (default)

B.2 PCI-bus 10-slot

Appendix C Exploded Diagram

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