AWS-8124

Mini-Workstation with 12.1" LCD and 4 Slot Backplane

Copyright Notice

Acknowledgments

警告使用者

這是甲類的資訊產品，在居住的環境中使用時，
可能會造成射頻干擾，在這種情況下，使用者會
被要求採取某些適當的對策。

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FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with this user's manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Packing List

Before you set up the AWS-8124, make sure that the following items have been included in your package, and that this manual is in good condition. If anything is missing or damaged, contact your dealer immediately.

- AWS-8124 with 12.1" TFT LCD display
- Utility CD-ROM
- AWS-8124 User's Manual
- TSCB-9516 driver installation guide (Only for AWS-8124T-T and AWS-8124TP-T)
- Accessories for AWS-8124:
  - HDD flat cable
  - Power cord
  - Screw bag
  - Assembly mounting brackets

Additional Information and Assistance

1. Visit the Advantech web site at **www.advantech.com.tw** where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - Complete description of the problem
   - Exact wording of any error messages

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this user's manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If any of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). IT MAY DAMAGE THE EQUIPMENT.

The sound pressure level at the operator's position according to IEC 704-1:1982 is equal to or less than 70 dB(A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Wichtige Sicherheishinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die NetzanschluBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschluBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:

    a - Netzkabel oder Netzstecker sind beschädigt.

    b - Flüssigkeit ist in das Gerät eingedrungen.

    c - Das Gerät war Feuchtigkeit ausgesetzt.

    d - Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioni ert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.

    e - Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.

    f - Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

DISCLAIMER: This set of instructions is given according to IEC704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

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CHAPTER 1

Introduction

- Description
- Specifications
- LCD Specifications
- Dimensions
- Panel Mounting

1.1 Description

The AWS-8124 series mini workstations are compact units that meet all the requirements for an industrial man-machine interface. A heavy-duty steel chassis and a sealed aluminum alloy front panel meet the toughest industrial and environmental protection standards. AWS-8124 series workstations include a 4-slot passive backplane, 80 -watt power supply, a floppy disk drive and space for a hard disk drive.

The AWS-8124 is compact, lightweight and easy to maintain.

Flexible, Expandable Industrial Workstations

PC-based systems can monitor and sample the data of several traditional PLC controllers simultaneously. They are able to take full advantage of a wide range of available software programs, and upgrading can be quickly and easily achieved with the use of plug-in CPU cards.

The user interface of the AWS-8124 can be customized with additional components. Advantech is the leader in half-size technology. When we designed the AWS-8124 series we took advantages of the half-size form factor to give you the tightest package possible. Don't worry about finding hardware for your system. Unlike other workstation manufacturers, we produce everything you need, including a full line of half-size CPU cards and DA&C hardware. For users who require a more intuitive interface we supply touchscreens (See Appendix A for a detailed description). Workers can control a process by simply touching their fingers to the monitor. This option is especially useful for Windows-based operation.

Features

- Compact mini workstation / industrial man-machine interface
- 4-slot passive backplane
- NEMA 4/IP 65 front panel protection
- 12.1" color TFT LCD display, with 800 x 600 resolution
- Full-line of half-size plug-in cards available
- 80-watt power supply
- BSMI and CE standards
- Panel mount
- Open slot on the side for convenient drive cable connection
- Includes one 3½" FDD and reserves space for one 3½" HDD
- Optional touchscreen kit for more intuitive interface applications

Applications

- Display unit for PLCs
- Industrial controller
- Man-machine interface
- Panel mount station

1.2 Specifications

General

- **Construction:** Heavy-duty steel chassis, hardened aluminum alloy front panel
- **Disk drive housing:** Accommodates one 3½" FDD and one 3½" HDD (HDD optional)
- **LCD interface:** 3.3V TTL
- **Compatiable CPU cards:** PCA-6751/6752/6770 (for 8124T), PCI-6771 (for 8124TP)
- **Maximum acceptable card size:** 185 mm x 122 mm
- **Cooling system:** Air convection
- **Dimensions: (W x H x D):** 344 x 260 x 152.4 mm (13.5 x 10.2 x 6 inches)
- **Weight:** 21 lbs (9.5kg)

Passive Backplane

- **Slots:** 4 PCI slots (8124TP series), 4 ISA slots (8124T series)
- **PC board:**
  4-layer PCB with ground and power planes for reduced noise and lower power supply impedance
- **Indicators:** LEDs for +5 V, +12 V and -12 V, -5 V

Power Supply

(I) AC input: 80W (standard offer)

- **Input voltage:** 100 V_{AC}/3 A ~ 240 V_{AC} /1.2 A @ 47 -63 Hz
- **Output voltage:** +5 V@12 A, +12 V@1.0 A
- **MTBF:** 200,000 hours

- **Safety standards:** UL/CSA/CE approved
- **EMI:** Meets FCC class B

(II) DC input: 12 V/ 24 V/ 48 V (optional by customer request)

Environmental Specifications

- **Operating temperature:** 32° to 122°F (O° to 50° C)
- **Relative humidity:** 10% to 90% @ 40° C, non-condensing
- **Altitude:** 10,000 ft. (3,000 meters)
- **Vibration (operating):**
  5 to 17 Hz, 0.1" double-amplitude displacement
  17 to 500 Hz, 1.5 G peak to peak
- **Shock (operating):** 10 G peak acceleration (11 msec. duration)
- **CE, FCC and BSMI compliant**

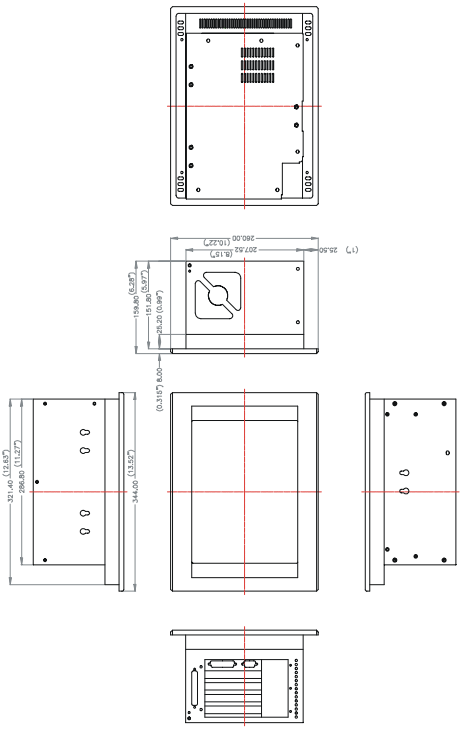
Touchscreen (optional)

- **Type:** Analog resistive
- **Resolution:** Continuous
- **Light transmission:** 72%
- **Controller:** RS-232 interface
- **Power consumption:** +5 V @200 mA
- **Software driver:** Supports both DOS and Windows 95/98/NT/ 2000

1.3 LCD specifications

Display type	TFT Color LCD
Size(diagonal)	12.1"
Max. resolution	800 x 600
Max. colors or gray scales	256K colors
Dot size (mm x mm)	0.3075 x 0.3075
Luminance (cd/m^2)	200
Viewing angel	90 (H) 40 (V)
Temperature	0 ~ 50 C
Brightness adjustment	No
Contrast adjustment	No
VR controls	N/A
Simultaneous mode	Yes
LCD MTBF	50,000 hours
Backlight lifetime	20,000 hours

1.4 Dimensions



Units = mm

Figure 1-1: Dimensions

1.5 Panel mounting

The AWS-8124 will stand on a shelf or a table, or you can mount it in a panel. Included with your AWS-8124, you'll find three panel-mount brackets. The brackets have two screws that stick out and fit in the keyhole slots on the workstation chassis. The brackets also have a long bolt with spring, which you tighten to secure the workstation against the back of the panel.

Slide the AWS-8124 backwards into the panel opening. Attach the three mounting brackets by sliding the two screw heads into the keyhole slots on the chassis cover. Fix the AWS-8124 tightly to the panel by screwing out the long bolts on the brackets.

Warning! Before panel mounting, you should have added your cards, drives, and other equipment and switched the AWS-8124 on to confirm that it works properly.

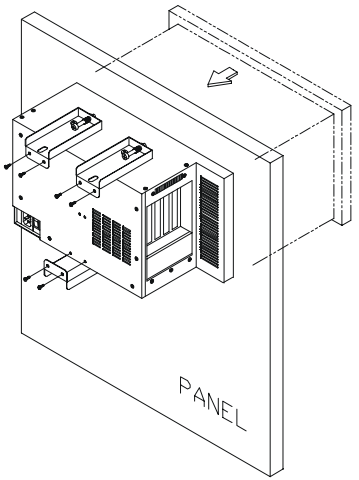


Figure 1-2: Panel mounting

Cutout dimension(mm) = 325.4(W) × 210.51(H)

CHAPTER 2

System Setup

- General
- Removing top cover and rear panel
- Adding Cards
- Protective cover
- Installing optional drives

2.1 General

When you receive your mini-workstation, you should be able to plug-and-play since we have already installed and tested the workstation's components in the factory. However, if you need to customize the AWS-8124 yourself, you will see that it is a simple job.

The AWS-8124 basically consists of a main chassis that is fitted into a protective cover. Your AWS-8124's backplane is easily accessible by removing its top cover and rear panel. Removal of these panels provides you with all the space you need to insert or remove cards and connect or disconnect cables. Other components like the disk drive bay, power supply and display are 100% accessible after sliding the main chassis out of its protective case.

Before you begin, take the workstation out of its shipping container and check the contents against the packing list.

Warning! Do not begin your installation until you have verified that no power is flowing within the AWS-8124. Power must be switched off and cables unplugged. Every time you service the AWS-8124, you should be aware of this.

Note: For the touchscreen driver installation, please refer to the "TSCB-9516 driver installation guide"

2.2 Removing top cover and rear panel

To access the backplane, remove the top cover and rear panel.

First remove the five screws that secure the top cover, then remove the top cover (see Figure 2-1).

After you remove the top cover, unscrew the six screws on the rear panel and remove the rear panel.

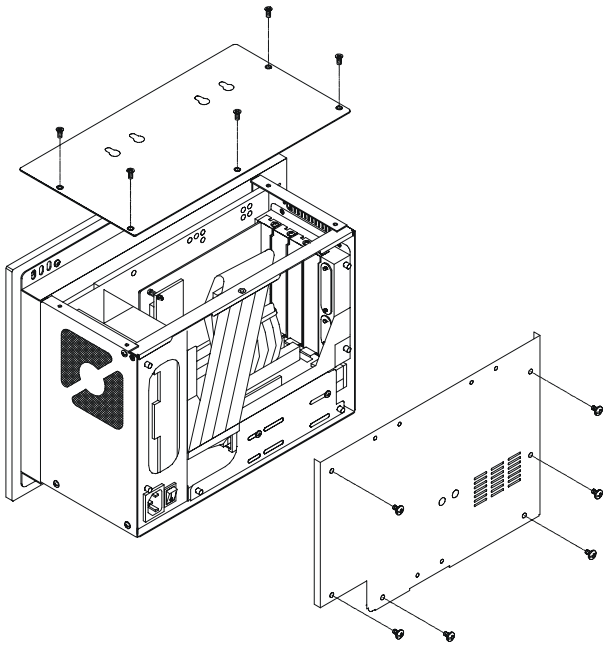


Figure 2-1: Removing the top cover and rear panel

2.3 Adding cards

The 4-slot passive backplane accepts half-size CPU and I/O cards. Slot number S4 has a little bit more space than the other slots. This slot lets you insert a CPU card with an on-board piggyback/PC-104 module. We strongly recommend these all-in-one cards, for they are durable and save valuable slot space by bundling a CPU with hard disk and floppy disk controllers, as well as serial and parallel ports.

At the side of the chassis, four bracket holes under the mounting bar match the four backplane slots. You will also find two smaller holes that you can use to install external D-type connectors.

When adding a card, slowly slide it in, carefully press it into the backplane socket and secure it with a screw to the top mounting bar. See Fig. 2-2. Refer to card manuals for wiring. Install additional cards. When you have finished, reattach the top cover and rear panel.

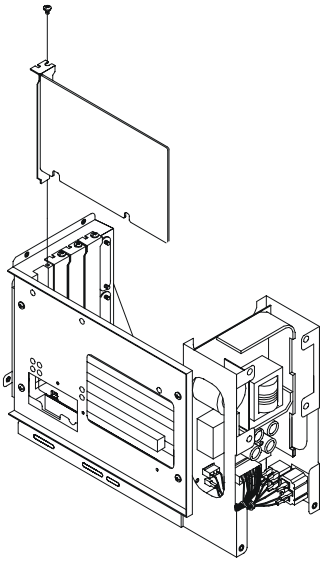


Figure 2-2: Installing add-on cards

2.4 Removing the protective cover

To reach the disk drives, power supply and monitor you must slide the main chassis out of its protective cover. First remove the top cover and rear panel as described in section 2.2.

Remove the three screws on the side panel just above the card brackets. Remove the two screws on the panel of the opposite side, below the fan. Remove the one screw on the bottom panel. Lastly, open the floppy disk door. Now you can slide out the main chassis completely.

Note: Remember to open the floppy drive door before you slide out the main chassis. The locking mechanism of the door is of a push-open and push-closed type.

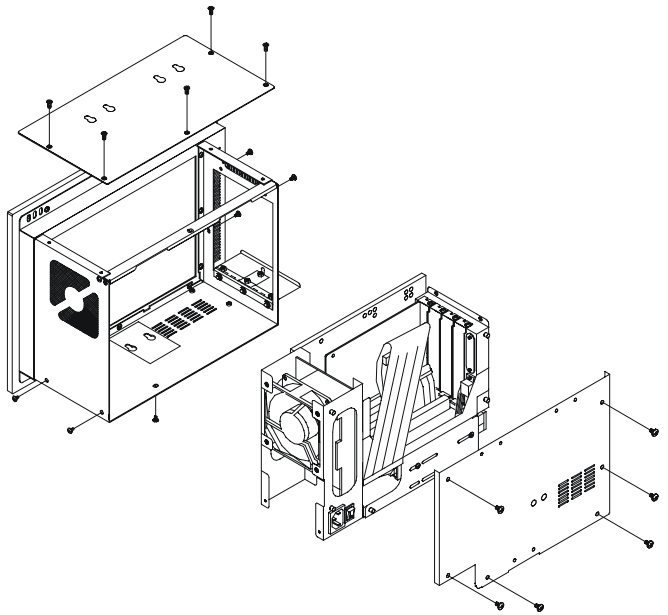


Figure 2-3: Slide out the main chassis

2.5 Installing optional drives

The AWS-8124 offers space for two disk drives. When you receive the station, a 3½" floppy drive is already installed. Only the upper drive bay offers access through the floppy disk door. The lower position should therefore be reserved for an optional HDD.

To install the optional drive first remove the protective cover completely (see section 2.4). Use four screws to mount the disk drive in the disk drive bay under the existing floppy disk drive. Connect the power connector and controller ribbon cable. Slide the chassis back in its protective cover and secure it with screws on both sides and bottom.

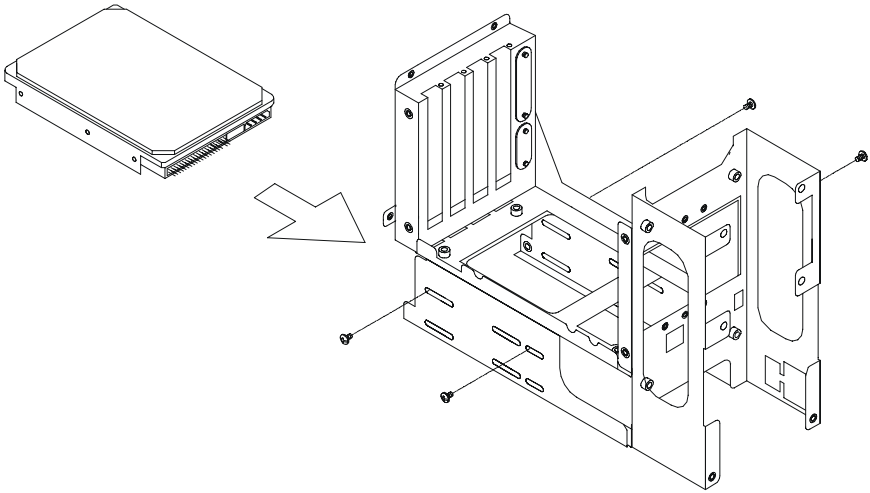


Figure 2-4: Installing an optional drive

CHAPTER 3

Maintenance

- Passive backplane
- Power Supply and cooling fan
- Flat panel Display
- LCD backlight

3.1 The passive backplane

Four screws secure the 4-slot passive backplane to the inside of the AWS-8124 chassis.

To service or replace the backplane, remove the top cover. There is no need to slide the main chassis out. Remove the four screws that secure the backplane to the chassis. Lift the backplane up and remove the power cables.

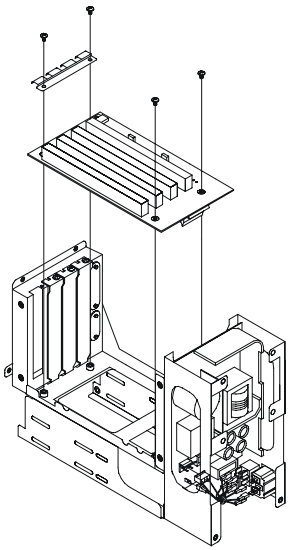


Figure 3-1: Detaching the passive backplane

3.2 Power supply and cooling fan

To service or replace the power supply and cooling fan, first remove the protective cover. (See section 2.4)

To reach the power supply you must first remove the cooling fan. Four screws connect the fan to the chassis. Unscrew the fan and disconnect its power cable.

A fuse, located at the lower left, protects the power supply. To detach the power supply from the chassis, disconnect the power cables and remove the four screws.

Warning: Shut off all power to the AWS-8124 and unplug the power cables before you attempt to repair the power supply.

For detailed power supply specifications refer to Appendix A.

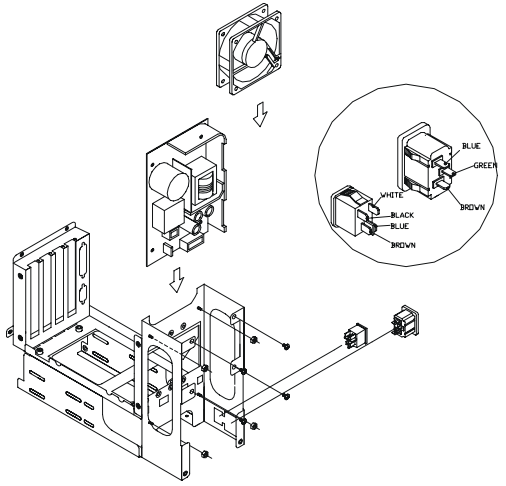


Figure 3-2: Removing cooling fan and power supply

3.3 The flat panel display

Your AWS-8124 has a 12.1" color TFT LCD.

To service the display, there is no need to remove the protective cover of the AWS-8124. You will only need to remove the front panel from the chassis. Disconnect the two display cables. One is a power cord and the other is a video adapter cable that connects the monitor with your display card. Finally, remove the four screws located on the comers of the display (See Figure 3-3).

Note: We recommend that you leave display service and repair to your supplier Contact Advantech's Customer Service Department for additional information on the displays.

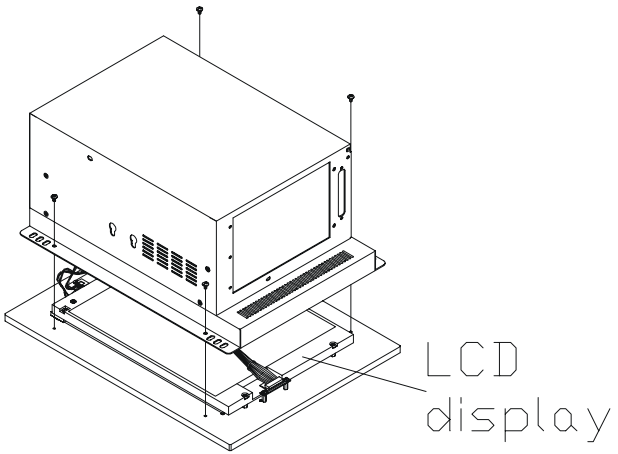


Figure 3-3: Disconnecting the display

3.4 LCD backlight replacement

In the normal working life of the AWS-8124 you will seldom need to replace the LCD backlight. If it's necessary to maintain the LCD backlight, plaese contact your distributor, sales representative, or Advantech's customer service center.

APPENDIX A

Power Supply Specifications

- SNP-8086 (AC 100~230 V/60 MHz Input)
- D12-4081 (DC 12 V Input)
- SNP-4081 (DC 24/48 V Input)

A.1 Power Supply: SNP-8086 (AC 100~230V/ 60Hz Input) SPECIFICATION

A.1.1 INTRODUCTIONS

The SNP-8086 is a 72-watt (convection cooling) / 100-watt (forced air cooling) dual-output switching power supply. It is especially designed for use with Network and Telecommunications Equipment.

A.1.2 INPUT SPECIFICATIONS

Universal AC Input Voltage

The range of input voltage is from $85V_{AC}$ to $264V_{AC}$.

Input frequency

The range of input frequency is between 47HZ to 63HZ.

Input current

The maximum input current is 3A @ $115V_{AC}$ / 1.5A @ $230V_{AC}$.

Inrush current

The inrush current Is less than 30A @ $115V_{AC}$ Input or 60A @ 230VAC input, cold start, at 25° C.

A.1.3 OUTPUT SPECIFICATIONS

Load Range

Output	Min. load	Rated load	Max. load	Accuracy range
+5V	1A	12A	16A	-5.05V to +5.05V
+12V	0A	1.0A	1.5A	11.25V to 12.75V

At the factory, the +5 V output is set between 5.OOV to 5. 10 V at 60% rated load, and the + 12 V Output is checked to be within the accuracy range.

The adjustable range for the +5 V output is ± 5 %.

Note: +12 V output voltage will track the adjustment.

Ripple and noise

The peak to peak ripple and noise for each output is less than 1% of output voltage at rated load, which is measured by a 15 MHz bandwidth limited oscilloscope and the each output is connected with 0.47 uF capacitor.

Line regulation

The line regulation Is less than ±1% at rated load with ±10% change In input voltage.

Load regulation

The load regulation for +5 V is less than ±1 %, for +12 V Is less than ±10 %, which are measured by changing the output load from 20 % to 100 % of the rated load, and the other output is kept at 60 % rated load.

A.1.4 GENERAL FEATURES

Efficiency

The efficiency is higher than 70 % while measuring at nominal line and rated load.

Hold up time

The hold up time is longer than 16 ms at 115 V_{AC} input and rated load.

Protection

Over voltage protection

The built-in crowbar circuit will shut down the outputs to avoid damaging the external circuits. The trip point of over voltage protection is around 6.4 V to 7.4 V. To recover from over voltage protection, cycle the AC line OFF and ON to make it restart.

Short circuit protection

The power supply will generate a hiccup mode to protect itself against short circuit or over load conditions, and will return to normal after wrong conditions are removed.

A.1.5 ENVIRONMENT SPECIFICATIONS

Operating temperature: 0º C to 50º C (Forced air 25CFM for output more than 80 watts is required)

Storage temperature: -20º C to 70º C

Altitude: Will operate properly at any altitude between 0 to 10000 ft.

Humidity: 10% to 90% (Non-condensing)

A.1.6 INTERNATIONAL STANDARDS

Safety standards:

UL 1950

CSA 22.2 NO. 234

VDE EN 60 950

EMI standards: Designed to meet the following limits FCC docket 20780 curve “B” EN55022 “B”

CE standards: Designed to meet the following standards

IEC-801-2 Level 3	8 KV air discharge
IEC-801-3 Level 3	3 V/M
IEC-801-4 Level 3	2 KV
IEC-80 1-5 Level 3	2 KV

A.2 Power Supply: D12-4081 (DC 12V Input) SPECIFICATION

A.2.1 INTRODUCTIONS

The D12-4081 is a 74 watts DC to DC switching power supply with a nominal input of 9 or 18 V DC, it is designed for general purpose.

A.2.2 INPUT SPECIFICATIONS

DC Input Voltage	9 V_{DC} to 18 V_{DC}
Input Current	12A @ 12 V_{DC} (max.)
Inrush Current	15A @ 12 V_{DC} (cold start at 25 C)

A.2.3 OUTPUT SPECIFICATIONS

Output	Min. load	Rated load	Max. load	Accuracy range
+5V	1A	10A	12A	4.95V to 5.05V
+12V	0A	1.5A	2A	11.25V to 12.75V
-12V	0A	0.5A		-11.25V to 12.75V

Load range

At the factory, the +5 V output is set between 4.95 V to 5.05 V and all outputs at 60% rated load, and the other output is checked to be within the accuracy range.

Ripple and noise

The peak to peak ripple and noise for each outputs are less than 1 % of output voltage at rated load, which is measured by a 15 MHz bandwidth limited oscilloscope and the each output is connected with 0.47 uF capacitor.

Line regulation

The line regulation is less than ±1% at rated load with ±10% change in input voltage.

Load regulation

The load regulation for +5 V is less than ±1 %, for +12 V outputs is less than ±5 %, for

-12 V outputs is less than ±10 %, while the measuring is done by changing the measured output loading ±40 % from 60 % rated load, and keep other output is at 60 % rated load.

A.2.4 GENERAL FEATURES

Efficiency

The efficiency is higher than 70 % while measuring at nominal line and rated load.

Protection

Over-voltage protection

The built-in crowbar circuit will shut down the outputs to avoid damaging the external circuits. The trip point of over voltage protection is around 5.7 V to 7.OV. To recover from over voltage protection, cycle the DC input OFF and ON to make it restart.

Short-circuit protection

The power supply will generate a hiccup mode to protect itself against short circuit or over load conditions, and will return to normal after wrong conditions are removed.

A.2.5 ENVIRONMENT SPECIFICATIONS

Operating temperature: 0° C to 50° C / Forced air 20CFM

Storage temperature: -20° C to 70° C

Altitude: will operate properly at any altitude between 0 to 10000 ft.

Humidity: 10 % to 90 % (Non-condensing).

B.2.6 INTERNATIONAL STANDARDS

Safety standards

UL 1950

CSA 22.2 NO. 234

VDE EN 60 950

EMI standards

Designed to meet the following radiation limits:

FCC docket 20780 curve "B"

EN55022 "B"

CE standards

IEC-801-2	Level 3 8KV air discharge
IEC-801-3	Level 3 3V/M
IEC-801-4	Level 3 2KV

A.3 Power Supply: SNP-4081 (DC 24/48V Input) SPECIFICATION

A.3.1 INTRODUCTION

The SNP-4081 is a 74 watts DC-to-DC switching power supply with a nominal input of 24 or 56 VDC. It is designed for general purpose.

A.3.2 INPUT SPECIFICATIONS

DC Input Voltage	18 V_{DC} to 56 V_{DC}
Input Current	7A @ 24 V_{DC} & 4A @ 48 V_{DC} (max.)
Inrush Current	15A @ 48 V_{DC} (cold start at 25 C)

A.3.3 OUTPUT SPECIFICATIONS

Output	Min. load	Rated load	Max. load	Accuracy range
+5V	1A	10A	12A	4.95V to 5.05V
+12V	0A	1.5A	2A	11.25V to 12.75V
-12V	0A	0.5A		-11.25V to -12.75V

Load range

At the factory, the +5V output is set between 4.95V to 5.05V and all outputs at 60% rated load, and the other output is checked to be within the accuracy range.

Ripple and noise

The peak-to-peak ripple and noise for each outputs are less than 1% of output voltage at rated load, which is measured by a 15 MHz bandwidth limited oscilloscope and each output is connected with 0.47 uF capacitor.

Line regulation

The line regulation is less than ±1 % at rated load with ±10 % change in input voltage.

Load regulation

The load regulation for +5 V is less than ±1 %, for + 12 V outputs is less than ±5 %, for

-12 V outputs is less than ±10 %,while the measuring is done by changing the measured output loading ±40 % from 60 % rated load, and keep other output is at 60 % rated load.

A.3.4 GENERAL FEATURES

Efficiency

The efficiency is higher than 70 % while measuring at nominal line and rated load.

Protection

Over-voltage protection

The built-in crowbar circuit will shut down the outputs to avoid damaging the external circuits. The trip point of over voltage protection is around 5.7 V to 7.0 V. To recover from over voltage protection, cycle the DC input OFF and ON to make it restart.

Short-circuit protection

The power supply will generate a hiccup mode to protect itself against short circuit or overload conditions, and will return to normal after wrong conditions are removed.

A.3.5 ENVIRONMENT SPECIFICATIONS

Operating temperature: 0° C to 50° C / Forced air 20CFM

Storage temperature: -20° C to 70° C

Altitude: will operate properly at any altitude between 0 to 10000 ft.

Humidity: 10 % to 90 % (Non-condensing).

A.3.6 INTERNATIONAL STANDARDS

Safety standards

UL 1950

CSA 22.2 NO. 234

VDE EN 60 950

EMI standards

FCC docket 20780 curve “B”

EN55022 “B”

CE standards

IEC-801-2	Level 3 8 KV air discharge
IEC-801-3	Level 3 3 V/M
IEC-801-4	Level 3 2 KV