User Operation Manual

DUS-24080

DC 24V-80W

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Copyright Notice

Declaration of Conformity

These restrictions are for system operation in a commercial environment from harmful interference in the operation of the system in a commercial environment. This device generates, uses and transmits radio frequency energy. If not properly installed and used correctly to the manual instructions, it may cause harmful interference to radio communications. However, even if the installation and use of the manual instructions are followed, there is no guarantee that there will be no interference. If this device will cause harmful interference with radio or television signal reception, the user can confirm by turning the device on and off. When the device produces harmful interference, the user can take the following measures to solve the interference problem:

1. Adjust the direction or position of the receiving antenna.
2. Increase the distance between this device and the receiver.
3. Plug the power connector of this device into a power socket with different circuit from the receiver.
4. For technical support, consult your dealer or an experienced radio technician.

Technical Support and Service

1. For the latest information and documentation of this product, please visit our official website www.fsp-ps.de
2. If you need technical support, please contact your local distributor, sales representative customer service center. Before technical consultation, the user must collect the following product information:

- Product name and serial number
- Description of peripheral additional devices
- Description of the user software (operating system, version, application software, etc.)
- A complete description of the problem with the product
- The full content of each error message

Safety Instruction

1. Before installing, wiring, operating, and checking the product, it is necessary to carefully read this manual and related manuals introduced in the manual, and operate the product correctly with full attention to safety.
2. Please keep this user manual for future reference.
3. Please unplug the power cord from the socket before cleaning the device with a damp rag. Do not use liquid or decontamination sprays to clean the equipment.
4. For devices that use power cords, there must be an easily accessible power socket around the device.
5. Ensure that the device is placed on a reliable surface before installation. An unexpected fall may damage the device.
6. Before you connect the device to the power socket, make sure that the power socket voltage meets the requirements.
7. Please place the power cord in a position where people cannot easily trip, and do not cover any debris in the power line.
8. Please pay attention to all warnings and attention signs on the device.
9. If you do not use the device for a long time, please disconnect it from the power socket to avoid the device being damaged by excessive voltage fluctuations.
10. Do not allow any liquid to flow into the equipment, you must disconnect to avoid fire or short circuit.
11. Please do not turn on the device by yourself. To ensure your safety, disconnect all external power supplies used by the system before turning on the device. Turn on the device by a certified professional engineer with sufficient electrical knowledge.

In case of the following situations, please be repaired by professional personnel:

- The power cord or plug is damaged
- There is liquid flowing into the equipment
- The device does not work properly, or you cannot make it work properly through the user manual
- Equipment falls or is damaged
- The equipment has obvious appearance damage

Please do not store the device in an environment beyond our recommended temperature range, that is, not lower than -40 °C or higher than 80°C, otherwise it may damage the device.

Disclaimer

All components are provide with specific hardware and software configurations are suitable for application software. Unauthorized modification and alteration of hardware or software configuration beyond the scope of the document is prohibited, otherwise FSP Power Solution GmbH. shall not be liable for any resulting liability arising therefrom.

The following actions are not within the scope of responsibility of the Company:

- Failure to comply with the provisions of this document
- Improper use
- Operated by untrained personnel
- Unauthorized replacement of parts

Employee Qualifications and Responsibilities

All operations involving software and hardware should only be performed by qualified personnel with knowledge of control and automation engineering. Qualified personnel must understand the management of control teams and related networks.
All interventions must have knowledge of control planning, and qualified personnel must be familiar with existing standards and guidelines for automated environments.
The operator must ensure that:

- Products are used only as intended
- The product runs in good condition and works normally
- Products are operated, maintained and repaired only by qualified and authorized personnel
- Regularly receive guidance from personnel on safety and be familiar with the operating manual, especially the safety instructions contained in this document
- The operating manual is in good condition, complete and always available for reference at the product location

Chapter 1 Overview

1.1 File Content

This document contains the information you need to use the product at the appropriate stage of its life cycle, as follows:

- Specification and model
- Product size
- Interface definition
- Installation mode
- Safety statement

1.2 Safety Notice

For security purposes, the following ICONS are used in this document to provide you with more security information.

Icon	Description
	Warning: Indicates a potentially dangerous situation that, if not avoided, will result in death, serious injury, or major property damage
	Danger: indicates an imminent hazardous situation that, if not avoided, will result in death, serious injury, or significant property damage
	Info: Indicates important information

Chapter 2 Product Introduction

2.1 Product Overview

DUS-24080 is a 24V DC power supply, all industrial computers can be configured with 24V UPS power supply, equipped with UPS6920C-24 industrial computer can make the computer work for a period of time when the main power supply is not off, and during this period of time notify the industrial computer to save the current status and data into the hard disk and other memory. The continuous power supply time of the UPS to the industrial computer after power failure can be set and controlled through the USB port of the UPS connected to the industrial computer. The UPS DC power module based on the supercapacitor effectively prevents the loss of important data after a power failure and ensures stable operation throughout the system.

DUS-24080 has the characteristics of small size, high reliability, low output ripple, strong anti-interference ability, voltage regulation and safety protection. It also provides rich 10 interfaces and standard communication protocols, and can be flexibly deployed in industrial environments.

2.2 Product Features

- Compact aluminum-magnesium alloy profile housing, dust-proof design
- Single side connection, DIN rail wall mount
- DC 24V power supply/ industry standard design
- With USB control, set UPS parameters and extend shutdown time
- Rated load supports 60W
- UPS can supply power for more than 12 minutes at 60W load

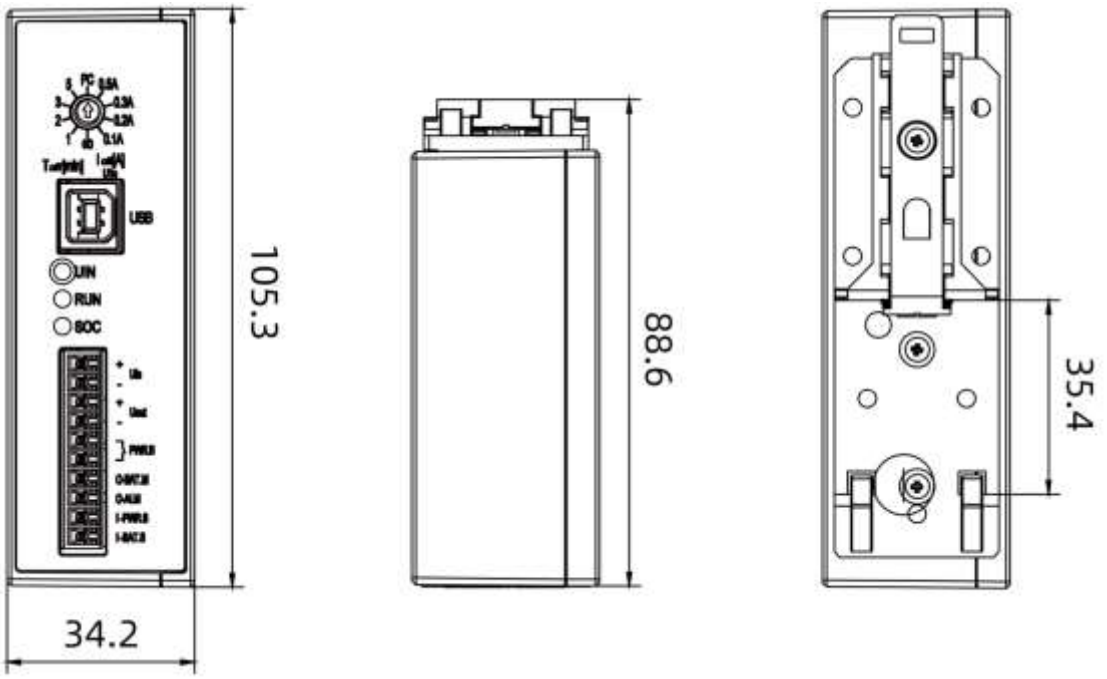
2.3 Product Specifications

<table>
<tr><th>Description</th><th colspan="3">DUS-24080</th></tr>
<tr><td rowspan="3">Power DC input
DC_IN</td><td>Voltage</td><td colspan="2">DC24V(+l 5%~-20%)</td></tr>
<tr><td>Electric current</td><td colspan="2">Max(4A)</td></tr>
<tr><td>Defense</td><td colspan="2">Anti-reverse connection, over-voltage protection · EFT±1500V
surge 2000V</td></tr>
<tr><td rowspan="4">Power DC output
DC_OUT</td><td>Voltage</td><td colspan="2">DC24V</td></tr>
<tr><td>Electric current</td><td colspan="2">Max(3.5A)</td></tr>
<tr><td>Power</td><td colspan="2">Max:80W@24V</td></tr>
<tr><td>Defense</td><td colspan="2">Overcurrent and overload protection</td></tr>
<tr><td rowspan="8">Electrical
parameter</td><td>No-load power consumption</td><td colspan="2"><3W</td></tr>
<tr><td>Battery charging parameter</td><td colspan="2">When the baterry voltage less than 6V, the trickle is 50mA; greater than 6V, the constant current is 1.2A; greater than 8.4V, the maximum charging power is 1OW</td></tr>
<tr><td>Battery output parameter</td><td colspan="2">The starting voltage is 6V, the boost voltage is closed when it is lower than 6V, and the battery output is restored when it is higher than 6.5V</td></tr>
<tr><td rowspan="2">Full of time</td><td>Operating voltage</td><td>Full of time (h)</td></tr>
<tr><td>DC24V(+l 5%~-20%)</td><td>4</td></tr>
<tr><td rowspan="4">Discharge time</td><td>Load power (W)</td><td>On-load hold time (min)</td></tr>
<tr><td>30</td><td>25</td></tr>
<tr><td>60</td><td>10</td></tr>
<tr><td>80</td><td>2</td></tr>
</table>

Description	DUS-24080	
Electrical parameter	capacity	5200F(2 strings)
	Service life	Charge and discharge 50,000 times
IO parameter	10 voltage	DC24V(+l 5%~-20%) (Uout)
	Isolation mode	optocoupler
	Environmental parameter	3.75kV
	Signal specification	DC24V/3mA
IO function	PWR.B(PowerButton)	Force power button, passive switch signal input
	BAT.M(BatteryMode)	Battery operated mode, PNP output
	ALM(Alarm)	Alarm status, PNP output
	PWR.S(PowerStatus)	Power receiving equipment operating status, PNP type input
	BAT.S(BatteryStart)	Forced battery powered,PNP type input
	Remote	Remote switch signal, signal relay output (custom function, default without this interface)
Communication interface	Communication interface	USB-COM
	Communication protocol	Modbus-RTU
Environmental Parameter	Operating temperature	-20~60°C
	Storage temperature	-40~80°C
	Working humidity	5~95% (non-condensing)
	Installation mode	DIN-Rail Install
	Net product weight	0.5kg

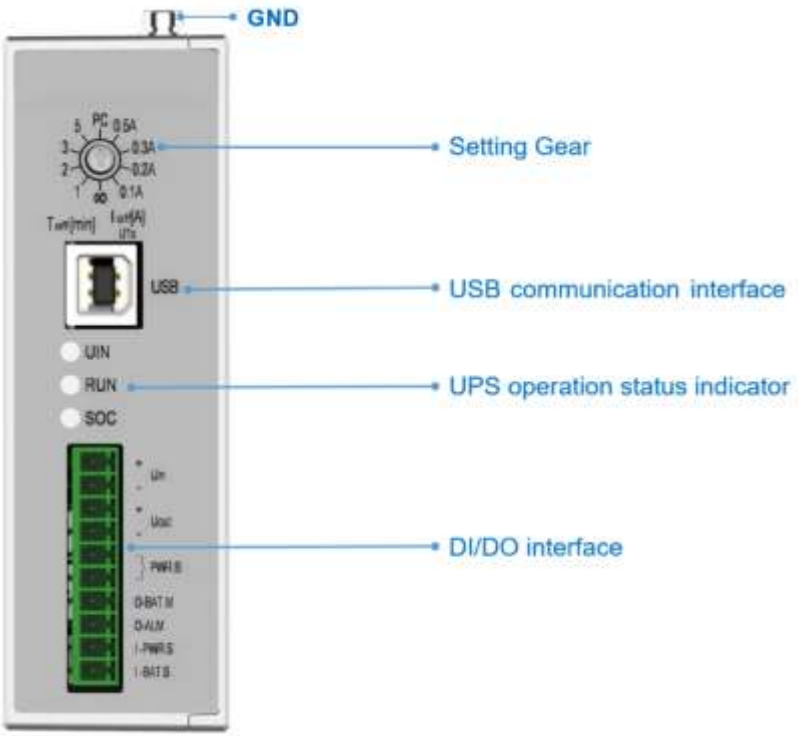
2.4 Product Size

DUS-24080 Dimensions:



2.5 Product Interface Definition

The interface definition is shown in Figure 2-5-1:



2.5.1 Port(DI/DO) Function Description

Pin	Signal	Name	Function
1	Uin+	Power Input Positive Pole	DC24V(+I5%~-20%)
2	Uin-	Power Input Negative Pole	
3	Uout+	Power Output Positive Pole	
4	Uout-		
5 **6**	PWR.B	Force The Power Button To Enter	a.)When The Uin Is Powering On: Short Switch For 1 Second. If The PC Is Powered Off, Disconnect The Uout Output For 5 Seconds And Then Power It On Again. b.)When The UPS Is Shut Down: Short Switch For 3 Seconds, Force The UPS To Start And Output, And Set The Forever Mode Until The Uin Input Is Normal Or The Power Level Is Lower Than The Alarm, And Shut Down The UPS In The Current Mode. If There Is No Power Alarm After Normal Startup, Output For At Least One Minute.
7	BAT.M	Battery Mode Signal Output (PNP)	a.) When The Uin Is Powered, The Signal Is Disconnected And The Output Level Is Low. b.) When The Uin Is Disconnected, The Signal Is On And The Output Level Is High.
8	ALM	Battery Alarm Output (PNP)	a.) Battery Is Lower Than 40015 Register Value b.) No Battery Is Installed c.)Battery Output Is Not Turned On When The Above Faults Occur, The Alarm Is On And Outputs A High Level. Otherwise, The Alarm Is Disconnected And Outputs A Low Level
9	PWR.S	Input The Working Status Of The Power Receiving Device(PNP)	a.)Register 40008=0: The Falling Edge Is Valid (It Changes From On-On To Off, Indicating That The Device Is Powered Off). After The Uin Is Disconnected, If The PWR.S Falling Edge Is Triggered, The UPS Will Turn Off The Uout Output After Delaying The Set Time Of Register 40011, And Then Delay The UPS To Shut DownFor 5 Seconds b.)Register 40008=1: The Rising Edge Is Valid (From Off To On, Indicating That The Device Is Powered Off). After The Uin Is Disconnected, lfThe PWR.S Falling Edge Is Triggered, The UPS Will Turn Off The Uout Output After Delaying The Set Time Of Register 40011, And Then Delay The UPS To Shut Down For 5 Seconds
10	BAT.S	Forced Battery Status Input (PNP)	When The Uin Is Powered, BAT.S Inputs A High Level To Force The UPS To Work Forever

2.6 Indicator Function Description

2.6.1 Power-on indication

After 2 seconds of power-on, turn on the green, blue, yellow, and red indicators for 1 second respectively, and then turn off all the indicators.

2.6.2 Functional indication

UIN

- Blue light: Input voltage is out of range
- Green light: The input voltage is normal
- Yellow light: The input voltage is off and the battery is powered on

RUN

- Red light: Operation failure
  a.Input and output voltage and current sampling failure
  b.Battery output is not started/faulty;

- Yellow light: Alarm
  a. The battery is low
  b. Battery is not installed
  c. Battery output is not enabled

- Blue light: Charging failure
  a. The temperature is above 75 degrees to turn off the charge (below 70 degrees to restore the charge)
  b. Charging failure (undervoltage or hardware failure)
  c. The battery voltage is unbalanced

- Green light: Normal operation

SOC

- Red light: No battery is installed or the battery is in poor contact
- Yellow light: The battery is lower than the Alarm value
- Blue light: The power level is between Alarm and Ready
- Green light: The battery is higher than the Ready value

2.7 Equipment Control

2.7.1 Knob gears

2.7.1.1 Forever (∞)

When the knob is in Forever gear and the Uin is powered off, the UPS maintains output until it runs out of power.

2.7.1.2 Current

The knob can be set to Ioff=0.1A/0.2A/0.3A/0.5A. After the Uin is powered off, the UPS has the following two operating policies according to the parameters:
1) If 40009 register is set to 0, the UPS maintains output until the power is lower than the Ready value, and then outputs SW pulse signal (optional), the industrial computer shuts down, waits for the Uout output current to be lower than the shutdown current set value, and then delays the delay time set by the 40011 register to disconnect the Uout output, and the UPS shuts down 5 seconds later.
2) If 40009 register is set to **1,** the UPS immediately outputs the SW pulse signal (optional), and the industrial computer shuts down until the Uout output current is lower than the shutdown current set value, and then delays the delay time set by the 40011 register to disconnect the Uout output, and the UPS shuts down 5 seconds later.

2.7.1.3 Time

Knob can be selected Toff=l min/2min/3min/5min a total of 4 stalls. After Uin is powered off, UPS maintains output until the time stall delay is set, and then outputs SW pulse signal (optional), the industrial computer shuts down, and then waits for delay 40011 register to set the delay time before disconnecting Uout output. The UPS shuts down after 5 seconds.

2.7.1.4 PC

The UPS executes the Forever/ current/time policy based on the 40005 register. In time mode, the Toff executes the Forever/ current/time policy based on the 40006 register. In current mode, the Ioff executes the Forever/ current/ time policy based on the 40007 register.

2.7.2 SW pulse signal

Note: The signal is a customized optional signal, the default version does not have this function. If this function is available, the SW pulse signal output logic is executed according to the following parameter Settings:
1) When 40012 register is set to 0: SW output positive pulse, Uin normal input, SW is disconnected (low level), Uin is disconnected, SW output on (high level), according to 40013 register output time completed, restore the disconnected state
2) When 40012 register is set to **1:** SW output negative pulse, Uin normal input, SW is on (high level), after Uin is disconnected, SW output is *off* (low level), according to 40013 register output time is completed, restore the on-state

2.7.3 The Uin recovers power when the UPS is shut down

1) Time control strategy:

a. lf the Uin recovers power before the 40006 register Toff ends, the countdown is automatically canccled, Uoutoutput is normal, and the UPS runs normally.

b. lf the Uin recovers power after the countdown of the 40006 register Toff ends, the UPs continues thesubseguent shutdown process until the Uout is disconnected, and executes subseguent policies according to the40014 register value. lf the value is 0, the Wout recovers power after 5 seconds, and the Pc is powered on again. lfthe value is 1, the ups keeps the Wout disconnected until the Win is disconnected and the Ups is powered on again.

2)Current control strategy:

a. lf the 40009 register is 0: when the battery level is higher than the 40010 register, the Uin recovers powersupply, automatically cancel the shutdown, maintain the normal output of the Uout, and the Ups runs normally. ifthe Uin recovers power after the power is lower than 40010 register, the Ups continues the subsequent shutdownprocess until the Wout is disconnected, and executes subseguent policies based on the 40014 register value, if thevalue is 0, the Uout recovers power after 5 seconds, and the pc is powered on again, lf the value is 1, the upskeeps the Uout disconnected until the Uin is disconnected and the UPs is powered on again.

b.When the 40009 recister is 1: Uin recovers power supply, the Ups continues the subseauent shutdown processuntil Wout is disconnected, and executes subsequent policies based on the 40014 register value. lf the value is 0Uout recovers power supply 5 seconds later, and the pc is powered on again. if the value is 1, the Ups keeps theUout disconnected until the Uin is disconnected and the Ups is powered on again.

2.7.4 Battery output control

1) Battery output is enabled by default when the UPS is powered on.

2) During Uin power supply, if the battery voltage is lower than 6V, turn off the battery output and report an Alarm. In this case, the Uin power off and Uout function cannot be maintained. When the battery output is off, the battery voltage recovers to more than 6.SV, and the output is enabled again.

3) When the Uin is powered off, do not judge the battery voltage and keep the UPS running. If the UPS is not powered off, shut down the UPS by hardware protection until the battery runs out.

4) When the battery output is enabled, if the difference between the output voltage and the set voltage exceeds 10%, an Alarm is reported.

2.7.5 Battery charging control

1) In the charging enabled state, if the temperature of the UPS is detected to be higher than 75 ° C, turn off the charging until the temperature is lower than 70 ° C and resume the charging.

2) When the hardware charging is detected, turn off the charging, and re-enable the charging when the power is below 95%.

3) Because the battery voltage is lower than 6V, trickle charging is slow, in order to ensure normal charging, when the battery voltage is lower than 6V, turn off the battery output until the charging battery voltage is higher than 6.5V to restore the battery output function.

2.7.6 Battery imbalance judgment

The hardware has automatic battery balancing, but the balancing current is limited. It should be ensured that the voltage error of each installed battery does not exceed 0.1V. If a battery balancing failure is reported or the battery is not fully charged, the battery should be replaced in time.

2.8 PC Control Software

Figure 3-2-1

When using a Windows industrial computer, you can use our Smart UPS host computer software to update and view UPS device data in real time and configure parameters, and you can also use the Uin power-off automatic shutdown function (please use the "LinkAge mode" by default).);(Note: Microsoft .NET Framework 4.8 and above are required to run this software; after starting the software, if the "Warning" prompt is displayed in the lower left corner, you need to run this software as an administrator, and the first run requires "Install" to install the driver and "Start" to start the background service, so that you can connect and communicate with the device, the software starts automatically when it is turned on, and the Uin power-off shutdown function can be realized In addition, you can run a customized script. The software executes this script before shutting down the Uin.

Number	Disposition	Function description	Remark
1	Power Off	Shutdown policy for external power failure 0: Shut down based on the remaining battery 1: Shut down the device based on the time after the power failure	UPS internal logical parameters
2	Power Off SOC	Ready Power Threshold % For Shutdown Strategy 0.If it is Lower Than This Value,The PC Will Be Shut Down(SW Signal).	UPS internal logical parameters
3	Power Off Time	After Triggering Pc shutdown (sw signal),Uout Power-Off Delay Time	UPS internal logical parameters
4	DC_OUT	Device shutdownjudgment Policy0:Forever Mode, continuous utput UntilThe Battery Runs Out1: Time Mode, With The same Function AsThe Toff Gear2: Current Mode, Same Function As loffGear	UPS internal logical parameters
5	DC_OUT_T	Time Value Toff (seconds) of TimeMode	UPS internal logical parameters
6	DC_OUT_C	Current Value Of Current Mode loff(MA)	UPS internal logical parameters
7	Dev.Psts	0: From High To Low, it Means ThePowered Device ls Turned Off 1: From Low To High, it Means ThePowered Device ls Turned Off	UPS internal logical parameters
8	SW	SW Pulse signal: 0: Off By Default, On when in Action 1: On By Default, off when In Action	UPS internal logical parameters
9	Pulse duration	Shutdown pulse duration configuration	UPS internal logical parameters
10	Off decision	Shutdown Process Call Policy: 0: After shutdown is completed, Delay 5Seconds For Uout To Re-0utput 1: After Shutdown ls completed, UoutRemains Disconnected	UPS internal logical parameters
11	Capacitance	Alarm Power Threshold	UPS internal logical parameters
12	Auto Boot	If this parameter is selected, the host starts with the computer	Upper computer software parameters
13	Auto Hide	If this parameter is selected, the host is hidden after startup	Upper computer software parameters
14	Auto Connect	Selecting This Option Means That The Hostcomputer will Automatically connect ToThe Device Again After Startup Until ltSucceeds.	Upper computer software parameters
15	PC ShutDown	Select To Start The Host ShutdownFunction Through The Host Computer	Upper computer software parameters
16	Time	If Selected, lt Means That The HostComputer Will lssue A ShutdownCommand After A Specified Number OfSeconds After Determining That The Powerls Off.	Upper computer software parameters

Chapter 3 Installation Instructions

Follow the following installation instructions when installing and using the network and software.

3.1 Product Overview

This product is UPS 24V DC power supply, installation mode is Din-Rail rail installation, please note before installation:

- Comply with the relevant accident prevention regulations.
- Ensure that connections meet standards to avoid risks to personnel. Ensure that data and power cables are laid in a standard manner and ensure correct pin allocation.
- Follow the relevant EMC guidelines for your application.
- Avoid polarity reversal of data and power cables, which may damage the device.
- Devices, including electronic components, may be damaged by electrostatic discharge upon contact. Comply with DINEN61340-5-l /-3 Safety measures against electrostatic discharge.

Installation mode

Din-Rail rail mounting

Matters needing attention

- Strictly follow the steps above to install the product!

3.2 Transportation and Storage

Transport

Despite the robust design of this product, these components are sensitive to strong vibrations and shocks. During transportation, the product must be protected from excessive mechanical stress and should be in its original packaging.

Store

This product needs to be stored in a dry environment in its original packaging at a temperature between -40°C and 60°C.

Package

Follow these steps to deploy the device:

1. Remove the package.
2. Keep the original packaging for future relocation.
3. Compare with your order to check that the delivery is complete.
4. Keep relevant documents. It contains important information used to process the product.
5. Inspect the product for visible transportation damage.

* If you notice any shipping damage or inconsistencies between the contents and your order, please notify FSP Power Solution GmbH. for after-sales service.

Chapter 4 Safety Prevention and Maintenance

4.1 Safety Precautions

Please follow the following safety precautions.

4.1.1 General Safety Precautions

- Always follow the electrostatic precautions outlined below with DUS-24080 turned on.
- Whenever it is necessary to install, ensure that the power supply is turned off and the power cord is disconnected.
- Do not apply voltage levels that exceed the specified voltage range. Failure may cause the fire or electric shock.
- DUS-24080 is in the running state, and once the DUS-24080 chassis is opened, an electric shock may occur.
- Do not drop or insert any object into the ventilation opening of DUS-24080.
- Once a large amount of dust, water or liquid enters the DUS-24080, the power should be turned off immediately, unplug the power cord, and then contact FSP Power Solution GmbH.
- The following activities are prohibited:
  Do not drop the device onto hard ground.
  Do not tap or exert excessive force on the LCD panel.
  It is prohibited to use DUS-24080 in places where the ambient temperature exceeds the rated temperature.

4.1.2 ESD Preventive Measures

Warning:
Failure to take ESD precautions during installation of DUS-24080 may result in permanent damage to this product and serious injury to the user.

Electrostatic discharge (ESD) may cause serious damage to the electrical components of this product. Dry climates are more likely to produce ESD. Therefore, once this product is opened and any electrical parts need to be handled, the following anti-static precautions must be strictly followed:

- Wear an ESD wrist strap: Wear a simple ESD wrist strap to prevent ESD damage to electrical components.
- Self-grounding: Any grounding conductive material should be touched before handling any electrical parts. During handling of electrical parts, any conductive substance that is grounded should always be touched.
- Use an ESD mat: When you configure electrical components or perform related operations, place them on an ESD mat. This reduces the likelihood of ESD damage.
- Only touch the edge of the electrical parts: In the case of handling electrical parts, hold the electrical parts by holding the edge.

4.1.3 The Product Is Not Applicable

This product is not suitable for operation in the following areas:

- Areas with aggressive environments, such as aggressive gases or chemicals.

4.2 Maintenance And Cleaning

Please maintain and clean the product as follows.

4.2.1 Maintenance and Cleaning

Please read the following details before cleaning any parts or components of the product. Do not spray or spray the liquid directly on any other parts.

- No internal cleaning required. Avoid liquid entering the interior.
- Care must be taken to avoid damaging the small, detachable components inside.
- Please turn *off* the power before cleaning.
- Do not drop any object or allow any liquid to enter the product through the opening.
- When cleaning, be careful of any allergic reactions your body may have to solvents or chemicals.
- Avoid eating, drinking and smoking near work areas.

4.2.2 Cleaning Tool

Only special products of special design can be used to clean certain parts. In such cases, such products are clearly noted in the cleaning instructions. Here is a list of items that can be used for cleaning:

- Wiper - paper towels or soft tissues, clothes are recommended.
- Water or rubbing alcohol - A cloth dampened with water or rubbing alcohol should be used.
- Vacuum cleaners - Using vacuum cleaners designed for computers is one of the best cleaning methods. Dust and dirt can restrict airflow and cause corrosion of the circuit.

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- Cotton swabs - Cotton swabs dipped in rubbing alcohol or water are an excellent tool for wiping hard-to-reach product areas.

Chapter 5 FAQ

1.1 Technical Support and Service

Please visit the official website of FSP Power solution GmbH www.fsp-ps.de and download the documents and related driver software, or contact the company directly for support and service.

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