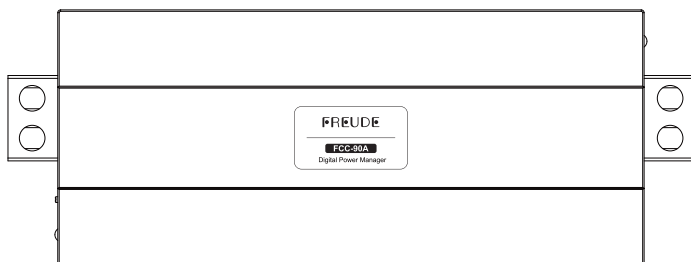


FREUDE

OWNER'S MANUAL



FCC-90A

Digital Power Manager

WARNING

PLEASE READ CAREFULLY BEFORE INSTALLING OR OPERATING THIS UNIT!

Introduction

Thank you for purchasing a FREUDE product, designed and manufactured according to the highest quality standards. Your FCC series Digital Power Capacitor is a cutting-edge product of compact size, with excellent filtering effects and powerful protective functions.

To achieve the best possible performance from your new components, we recommend you follow the instructions in this manual carefully. To design and create top-level automotive stable power supply systems and high-fidelity audio systems, you need to understand automobile mechanical and electrical issues very well; if you think you lack the required knowledge or the proper tools, please consult with a specialized installer. A professional installation will ensure your system delivers all the performance you have paid for without affecting the safety and reliability of your vehicle. This manual has been designed to provide you with the basic instructions required to install and use this product. For further information, please contact your authorized FREUDE dealer or after-sales service.

Precautions

Before making holes, check the mounting space with supplied template. To prevent noise, keep the wiring away from motors, high-voltage leads and other potential noise sources. To prevent a short-circuit, keep all wiring away from moving parts and sharp edges. Make sure you carefully read and understand the installation instructions before installing the system in vehicle.

For maximum performance, the digital power capacitor should be installed as close as possible to your amplifier. The ideal location is one that allows short wiring runs while keeping the capacitor somewhere isolated from the heat created by the amplifier system.

REM (ON/OFF) = REMOTE CONTROL

Connect the REM terminal to the automatic antenna connector of your car radio. Now, turning on and off your car radio, the amplifier automatically switches on and off. A cable diameter of 0.5mm² is sufficient.

WARNING

This power capacitor may explode and cause serious injury or death if abused or didn't connect properly. Refer to the installation manual for correct procedures when making connections, and/or charging/discharging the capacitor. Do not expose the capacitor to voltage higher than specified at any time. Do not install in direct sunlight or extreme temperatures. Improper connections of this product can cause electrical damage to the vehicle and/or equipment. FREUDE assumes no responsibility for any damages that could occur due to improper connections of this product.

| Packing List

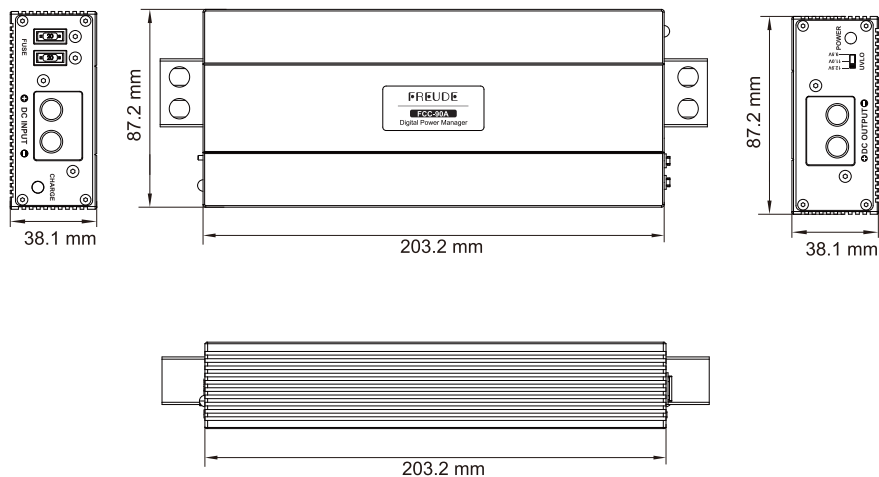
The following items should be placed in the box according to the model you purchased. If there is any missing, please inform the seller or manufacturer as soon as possible.

- | | |
|--|---------|
| • Digital Power Capacitor | • 1 pc |
| • 40A Fuse | • 2 pcs |
| • User Manual (English & Simplified Chinese) | • 1 pc |
| • Mounting Bracket | • 4 pcs |
| • Cross Countersunk Head Screws | • 8 pcs |

Product Specifications

· Model:	· FCC-90A
· Power Output	· DC 11-16V
· Soft Start Time	· 3s
· Undervoltage Protection Voltage (9.5V)	· Cut-off: 9.5V; Restart: 10.1V
· Undervoltage Protection Voltage (11.0V)	· Cut-off: 11.1V; Restart: 11.8V
· Undervoltage Protection Voltage (12.9V)	· Cut-off: 12.4V; Restart: 13.2V
· Overvoltage Protection Voltage	· Cut-off: 18.8V; Restart: 16.2V
· Static Power Consumption (@VIN=12V)	· 14mA
· Power Consumption at Undervoltage (@VIN=8V)	· 0.9mA
· Output Current	· 50A
· Dimensions(LxWxH; mm/inch)	· 203.2 x 87.2 x 38.1mm / 8.00 x 3.43 x 1.50inch

Product Dimensions



The contents of this manual and the specifications of this product are subject to change without notice.
 SICHERHEIT reserves the right to make changes to the specifications and materials contained therein without notice.

Operation

The digital power capacitor is an energy storage device designed to supplement the audio amplifier's power supply during high current demand. An example of such a demand is when music hits a low bass transient.

The overall bass response of an audio system will be enhanced by using this device. It is capable of storing a large amount of energy which can be discharged very quickly when needed.

This makes the power capacitor a logical addition to the audio system, as automotive batteries are not designed to deliver the current required in high-power car audio installations.

Another feature of the digital power capacitor is its ability to filter car AC voltage induced by the amplifier's power supply. This can otherwise cause audible noise in the car's sound system.

Features

- 18 x 6800 μ F Digital Power Capacitor
- 32 Volt Surge, 105°C
- Low impedance
- Strong finishing for a better installation result
- Tin-plated Copper Screw Terminal
- Electronic Polarity Protection Circuit
- Overcurrent Protection Circuit
- Over Voltage Protection Circuit
- Charging, Power Indicator LED
- Aluminium Housing

Safety Protection Function

1. If the user accidentally reverses the polarity of (+) and (-), it can cause damage to the system and also be harmful to the user. Therefore, we have designed the PCB relay inside to protect against incorrect connections. The unit will turn on. The digital power capacitor will only turn on if all wiring is connected correctly as per the instructions.
2. The capacitor comes with three undervoltage protection settings: 9.5V, 11.0V, 12.9V. The undervoltage protection can safeguard the battery and prevent over-discharge.
3. The capacitor features current protection function, providing protection for both the battery and the electrical devices in use.

| Power-Up Procedures

1. Connect the amplifier to the digital power capacitor, check the positive and negative polarity correctly.
2. Connect the capacitor to the battery, check positive and negative polarity correctly.
3. When the capacitor is successfully connected to the battery, the charge LED will stay green, indicating that the battery is charging the capacitor, with a charging duration of around 1 second.
4. After the charging is completed, 3 seconds later, the charge green light will turn off, and the capacitor will supply power.

| Fuse Replacement

If the fuse blows, check the power connection and replace the fuse. If the fuse blows again after replacement, there may be an internal malfunction. In this case, consult your dealer.

WARNING

Use the specified amperage fuse. Use of a higher amperage fuse may cause serious damage.

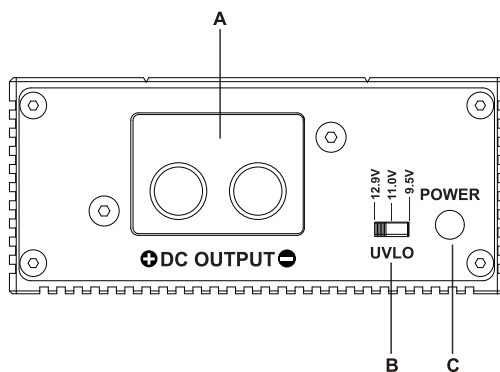
Protection Circuit:

This amplifier is provided with a protection circuit which operates in the following cases when:

- Over-temperature protection
- Over-voltage protection
- Under-voltage protection
- Over-current protection

Functions

Front Panel



☒ DC Output

☒ Under Voltage Lock Out
Setting

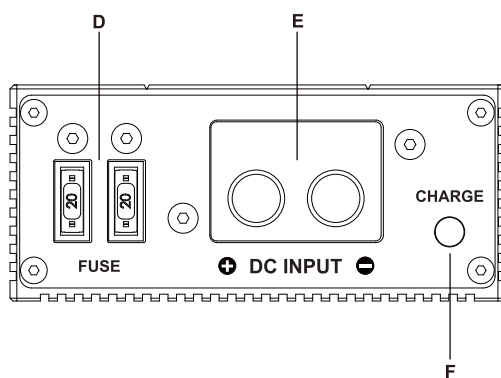
☒ Power LED

☒ Fuse 40A x 2

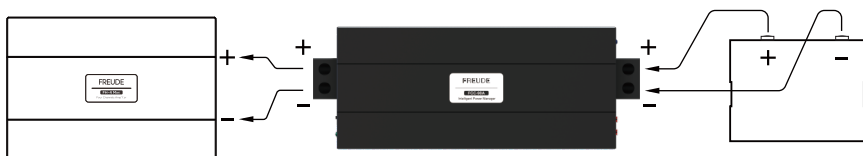
☒ DC Input

☒ Charge LED

Rear Panel



| Power Connection Leads



The positive and negative wires connected to the capacitors should have the same gauge as the amplifier power wires. High-performance 8 or 10 AWG OFC power cables are a good choice for this application.

| Interference

All cables can act as sources of interference. Among them, the power cable and RCA audio cable are particularly susceptible to interference; the remote cables are less prone. Interference is often caused by the generator(piping), ignition(cracking) or other car electronic parts. However many of these issues can be resolved through correct and careful cabling. Here are some guidelines to follow:

- Use only a signal cable for the wiring between 'low level in' of the amplifier and RCA or DIN output of the radio.
- Lay the signal, speaker and power cables separately with sufficient distance from one another and also from each other car cable. If separation is not feasible, you can bundle the circuit and ground cable together with the serial cables. However, ensure that the audio and speaker cable are kept as far away from these bundles as possible. The REM cable connecting to the automatic antenna output of the radio can be laid together with signal cables.
- If there are noises from the car electronics, consider adding an interference suppression choke to the power wiring to mitigate the interference.
- If you encounter humming noises, use thicker ground cables or add more ground cables to the chassis. Proper grounding can help reduce humming or ground loop issues.

| Wiring Instructions

POWER CONNECTION

The battery terminal (+12V) must be connected directly to the positive terminal of the vehicle battery to provide an adequate voltage source and minimize noise. Connecting the battery terminal lead to any other point (such as the fuse block) will reduce the power output and may cause noise and distortion. Use only #10 gauge or thicker (smaller gauge #) wire for this lead and connect it to the terminal of the battery after all other wiring is completed.

GROUND CONNECTION

The ground terminal (GND) is also critical to the correct operation of the amplifier. Use a wire of the same gauge as the power connection (#10 or thicker) and connect it between the ground terminal (GND) of the amplifier and a metal part of the vehicle close to the mounting location. This wire should be as short as possible and any paint or rust at the grounding point should be scraped away to provide a clean metal surface to which the end of the ground wire can be bolted.

REMOTE TURN-ON CONNECTION

The amplifier is turned on by applying +12V to the remote turn-on terminal (REM). The wire lead to this terminal should be connected to the "Auto-Antenna" lead from the car stereo which will provide the +12V only when the car stereo is turned on. If the car stereo does not provide an Auto-Antenna lead, the remote turn-on lead may be wired to "Accessory" or "Radio" terminal in the car's fuse block. This will turn the amplifier on and off with the ignition key, regardless of whether the car stereo is on or off. The remote turn-on lead does not carry large currents. So #20 gauge wire may be used for this application.

SPEAKER CONNECTION

Depending on the type and number of speakers used with the amplifier, wire them to the speaker terminals as per the appropriate wiring diagram. For most applications, #16 gauge wire should be used for the speaker leads but in no case thinner than #18 gauge. For leads in excess of 3 meters #14 gauge is recommended. When wiring the speakers, pay careful attention to the polarity of the terminals of the speakers and make certain they correspond to the polarity of the corresponding terminals on the amplifier. Do not ground any speaker leads to the corresponding terminals on the amplifier. Do not ground any speaker leads to the chassis of the vehicle.

INPUT CONNECTION

This amplifier features low-level input capability. If the car stereo does not provide low-level outputs, the power amplifier can be connected to the power amplifier by adding a high and low level converter.



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