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› [Hilitand](#) /

› Hilitand AT1-2200X Variable Frequency Drive User Manual

Hilitand AT1-2200X

Hilitand AT1-2200X Variable Frequency Drive

User Manual

1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of your Hilitand AT1-2200X Variable Frequency Drive (VFD). The AT1-2200X is a single-phase 220V AC input VFD designed to control 2.2kW three-phase AC motors, offering precise speed regulation and high performance. Please read this manual thoroughly before installation, operation, or maintenance.



Figure 1: Front view of the Hilitand AT1-2200X Variable Frequency Drive, showing the control panel and safety label.

2. SAFETY PRECAUTIONS

To ensure safe operation and prevent damage to the equipment or injury to personnel, observe the following safety guidelines:

- **Improper operation may result in death, serious injury, or significant property damage.** Always follow instructions carefully.
- **Always disconnect power** before performing any wiring, inspection, or maintenance. Failure to do so can result in electric shock.
- **Never connect the U/V/W output terminals to an AC power supply.** Doing so will cause severe damage to the inverter.
- **Ensure the inverter's ground terminal is properly connected to earth ground.** This is crucial for electrical safety.
- **Do not install this device in environments containing explosive gases** to prevent fire hazards.
- **Wiring and internal maintenance should only be performed by qualified professionals.** The inverter contains high voltage components; do not open the casing.

3. PRODUCT FEATURES

The Hilitand AT1-2200X VFD incorporates advanced technology to deliver reliable and efficient motor control:

- **Optimized PWM Control:** Utilizes advanced Pulse Width Modulation (PWM) control technology for enhanced electromagnetic compatibility, reducing electromagnetic interference and noise levels.
- **Robust Performance:** Offers good anti-trip performance and high adaptability to fluctuations in power, temperature, humidity, and dust, ensuring greatly improved stability in various industrial environments.
- **Efficient Heat Dissipation:** Designed with a large heat sink to facilitate superior heat dissipation, contributing to the longevity and stable operation of the device.
- **High Precision Control:** Employs a unique control method to achieve high torque, high precision, and a wide speed regulation range, resulting in high overall performance.
- **User-Friendly Design:** Simple to operate and wire, featuring convenient screw terminals for easy and secure connections.



Figure 2: Internal view of the Hilitand AT1-2200X VFD, highlighting the large heatsink for efficient cooling.

4. SPECIFICATIONS

Specification	Value
Brand	Hilitand
Model Number	AT1-2200X
Product Dimensions (L x W x H)	18 x 12.5 x 18 cm (7.1 x 4.9 x 7.1 inches)
Voltage	220 Volts AC (Single-Phase Input)
Output for Motor	Three-Phase AC
Rated Power	2.2 kW
Amperage	12 A
Maximum Rotation Speed	10000 rpm
Item Weight	1.3 Kilograms
Power Source	Corded Electric
Country of Origin	China



Figure 3: Side view of the Hilitand AT1-2200X VFD, indicating its physical dimensions.

5. INSTALLATION AND WIRING

Proper installation and wiring are critical for the safe and correct operation of the VFD. Refer to the terminal instructions below and ensure all connections are secure and comply with local electrical codes.

5.1 Terminal Instructions

Terminal	Function	Details
15V / 24V	15V / 24V Power Input	200mA 15V / 24V Power Output
X6	Input Terminal 6 (Wire Control CW / CCW Switch)	X6 connects to COM, input signal is effective
X5	Input Terminal 5 (Wire Control CCW)	X5 connects to COM, input signal is effective

Terminal	Function	Details
X4	Input Terminal 4 (Wire Control CW)	X4 connects to COM, input signal is effective
X3	Input Terminal 3 (Speed Range 3)	X3 connects to COM, input signal is effective
X2	Input Terminal 2 (Speed Range 2)	X2 connects to COM, input signal is effective
X1	Input Terminal 1 (Speed Range 1)	X1 connects to COM, input signal is effective
485 + / 485-	485 Communication Port	
COM	Common Terminal	
VI1	External Analog Voltage Input	0-5V / 10V Analog Voltage Input
CI	External Current Signal Input	4-20mA Current Signal Input
SP1	Open Collector Output 1	
SP2	Open Collector Output 2	
5V / 10V	5V / 10V Power Output	20mA
TC	Relay Output	250VAC 5A / 30VDC 3A (TA and TB are NC, TA and TC are NO)
TB	Relay Output	250VAC 5A / 30VDC 3A (TA and TB are NC, TA and TC are NO)
TA	Relay Output	250VAC 5A / 30VDC 3A (TA & TB are NC, TA & TC are NO)

5.2 Power and Motor Connections

Terminal	Function
L, N	Single-Phase AC 220V Input
U, V, W	Output, connect to three-phase AC motor
GND	Ground



Figure 4: Bottom view of the Hilitand AT1-2200X VFD, illustrating the wiring terminals for power and motor connections.

Important Note: When adjusting parameters, the VFD must be stopped. Parameters cannot be saved if the unit is operating during adjustment.

6. OPERATING INSTRUCTIONS

The Hilitand AT1-2200X VFD features an intuitive control panel for easy operation. Familiarize yourself with the buttons and display before starting.

6.1 Control Panel Overview

- **DISP:** Display button to cycle through various display parameters (e.g., frequency, current, voltage).
- **PROG/DATA:** Program/Data button to enter programming mode or confirm data entry.
- **FWD/REV:** Forward/Reverse button to change motor rotation direction.
- **Up/Down Arrows:** Used to navigate menus and adjust parameter values.
- **RUN:** Starts the motor.

- **STOP/RESET:** Stops the motor or resets errors.
- **Rotary Knob:** Used for fine-tuning frequency or speed adjustments.

6.2 Basic Operation

1. **Power On:** Ensure all wiring is correct and secure, then apply single-phase 220V AC power to the L and N terminals. The display will light up.
2. **Set Frequency/Speed:** Use the Up/Down arrow buttons or the rotary knob to set the desired output frequency (motor speed).
3. **Start Motor:** Press the **RUN** button to start the motor.
4. **Change Direction:** If needed, press the **FWD/REV** button to switch the motor's rotation direction.
5. **Stop Motor:** Press the **STOP/RESET** button to stop the motor.

6.3 Parameter Setting

The VFD has various programmable parameters to customize its operation. Refer to the detailed programming guide (usually provided separately or accessible via the PROG/DATA button) for specific parameter codes and their functions. Remember to stop the VFD before entering programming mode to save changes.

7. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your VFD.

- **Cleaning:** Keep the VFD clean and free from dust and debris. Use a soft, dry cloth for cleaning. Do not use liquid cleaners.
- **Ventilation:** Ensure adequate airflow around the VFD. Regularly check that the cooling fans and heatsink fins are not obstructed.
- **Connections:** Periodically inspect all wiring connections for tightness and signs of corrosion or damage. Tighten any loose connections.
- **Environment:** Operate the VFD within its specified environmental conditions (temperature, humidity, dust levels) to prevent premature failure.
- **Professional Inspection:** For complex issues or internal inspections, consult a qualified technician.

8. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with your VFD. For problems not listed here, or if solutions do not resolve the issue, contact technical support.

Problem	Possible Cause	Solution
VFD does not power on	No input power; faulty wiring; internal fuse blown.	Check power supply and connections (L, N). Verify input voltage. Consult a professional for internal inspection.
Motor does not start	Incorrect wiring (U, V, W); parameter settings incorrect; motor overload; emergency stop active.	Verify motor wiring. Check parameter settings (e.g., frequency, motor type). Reduce load. Ensure no emergency stop is engaged.
Motor runs at incorrect speed	Frequency setting incorrect; speed range parameter misconfigured.	Adjust the frequency using the control panel. Check and correct speed range parameters (X1, X2, X3 settings).

Problem	Possible Cause	Solution
VFD displays an error code	Overcurrent, overvoltage, undervoltage, overheat, etc.	Refer to the VFD's specific error code manual for detailed explanations and solutions. Press STOP/RESET to clear minor errors after addressing the cause.
Motor lacks power/torque	Incorrect default parameter settings (e.g., voltage/frequency curve); motor not matched to VFD.	As noted in a customer review, ensure default parameters are correctly set for your motor. Adjust voltage/frequency curve if necessary. Consult a professional if unsure.

9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please refer to the documentation provided with your purchase or contact Hilitand customer service through the retailer where the product was purchased. Keep your purchase receipt as proof of purchase for warranty claims.