

## IPS-ATDA70KVA 70KVA 400HZ Frequency Converter-IDEALPLUSING

### I . WHO WE ARE?

We have own factories (locate in shenzhen China), and more than 20 cooperation factories, more than 60 workers and 10000 different models with specification of power supply.

It is one of suppliers on integrating , developing, manufacture , sales,engineering design and construction for different kind of power supply.

We strict implement the operation guideline of “Leading Technology, Reliable Quality, Satisfactory Service & Customers First ! ”.

### II. WHAT WE DO?

We supply reliable and innovative Ground Power Units.

Looking for a reliable and innovative Ground Power Unit to supply your aircraft?

No matter which type of Ground Power Unit you are looking for, we have the power to cover your needs.

We have a full range of solid-state, diesel-driven, and battery-powered Ground Power Units from 400 Hz frequency converters to 28 VDC /270 VDC Ground Power Unit or a combination.

Whether you require a power supply for hangar use, for use at aircraft parking positions, or in remote areas, we have the right solution.

**We got you covered!**

[ DC-DC converter (Isolated and non-isolated), voltage from 12vdc to 1000vdc, power from 1-200kw. ]

[ AC DC power supply, voltage from 0 to 200kv, current from 0-20k amps. ]

[ DC AC inverter, dc voltage from 12vdc to 2000vdc, and power from 100w to 500kw. ]

[ AC AC power source, single phase or 3 phases, 10-500hz, power supply from 1kva to 500kva.]

[ AC DC Ground Power Unit, from 300 amps to 50000 amps.]

### III.INTRODUCTION & APPLICATION

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | The GPU400 series 400Hz intermediate frequency power supply is a power supply that converts 380V/220V 50Hz AC mains power to 400Hz, 115V/200V, 21V/36V AC power via an inverter.                                                                                                                                                                                                                                                                                                                                         |
| 2 | This power supply can be used for aircraft power supply and is also suitable for land-based applications. A single power supply can power multiple aircraft simultaneously, and multiple power supplies can also be used in parallel. This power supply can be installed on aprons, hangars, trailers, vehicles, etc., to power aircraft and is an alternative to modular power supplies. Fixed and towed centralized power supply systems for military and hangar applications can be provided according to user needs. |
| 3 | Safety features include over-power protection, over-temperature protection, overcharge protection, overcurrent protection, overload protection, overvoltage protection, and short-circuit protection. The power module complies with EMC noise radiation and immunity standards.                                                                                                                                                                                                                                         |

### IV. PERFORMANCE CHARACTERISTICS

|   |                               |
|---|-------------------------------|
| 1 | Robust metal cabinet housing  |
| 2 | Compact size                  |
| 3 | Fixed or Mobile are available |

|   |                                              |
|---|----------------------------------------------|
| 4 | Low ripple content $\leq 150\text{mV}$ (RMS) |
| 5 | Self diagnose and alarm                      |
| 6 | Complete protection                          |

## V. DATASHEET

| Model Specification     |              | IPS-ATDA70KVA                                                                            |
|-------------------------|--------------|------------------------------------------------------------------------------------------|
| Input                   | Standard     | 3-phase                                                                                  |
|                         | Voltage      | 380VAC/400VAC/440VAC (Optional)                                                          |
|                         | Frequency    | 50HZ/60HZ/400HZ/Customized (Optional)                                                    |
|                         | Power Factor | $\geq 0.8$ (6 pulse rectification, Standard), $\geq 0.9$ (12 pulse rectification,        |
| Output                  | Standard     | 3-phase                                                                                  |
|                         | Voltage      | 115VAC/220VAC/380VAC/400VAC/450VAC (Optional)                                            |
|                         | Frequency    | 50HZ/60HZ/400HZ/Customized (Optional)                                                    |
|                         | Current      | Base on model                                                                            |
| Output Crest Factor     |              | 1.414+0.1                                                                                |
| Output THD              |              | $\leq 2\%$ (Linear load)                                                                 |
| Dynamic Characteristics |              | Overshoot and recovery time meet GJB572 requirements                                     |
| Adapt to the Load Range |              | No type restrictions, but motors and rectifying loads need to be                         |
| Output Display Accuracy |              | Voltage Display: $\pm 1\%$ FS                                                            |
| Capacity                |              | 70KVA                                                                                    |
| Cooling Method          |              | Air Cooling                                                                              |
| Efficiency              |              | 90%,85%                                                                                  |
| Type                    |              | AC-DC-AC                                                                                 |
| Ambient temperature     |              | Temperature: $-40 \sim 55^{\circ}\text{C}$ , relative humidity 0-90%                     |
| Frequency Stability     |              | $\pm 0.01\%$ FS                                                                          |
| Voltage Regulation      |              | $\pm 1\%$ FS                                                                             |
| Voltage Stability       |              | $\pm 1\%$ FS                                                                             |
| Digital Display         |              | VFD digital display                                                                      |
| Communication Interface |              | RS-232/RS-485                                                                            |
| Phase Angle             |              | $120^{\circ} + 1^{\circ}$ for balanced load, $120^{\circ} + 2^{\circ}$ for 30% unbalance |
| Dimension / Weight      |              | Base on model                                                                            |
| MTBF                    |              | 50,000 Hrs                                                                               |
| MTTR                    |              | <30 mins                                                                                 |

## VI.REFERENCE PICTURE



## VII. LCD INDICATOR

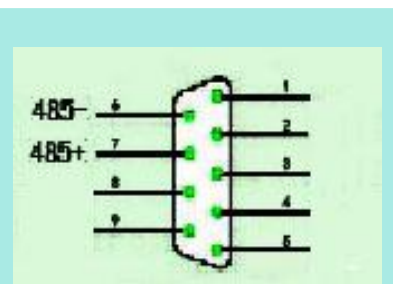


## VIII. POWER SUPPLY MODBUS COMMUNICATION PROTOCOL

This protocol adopts Modbus protocol RTU mode, which can be easily connected with various forms of configuration software.

### 1. COMMUNICATION INTERFACE DEFINITION AND PARAMETER SETTING.

|                                                                                                                             |                                      |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Connector Type                                                                                                              | 9 PINS male                          |
| Interface definitions                                                                                                       | Standard RS485 Interface definitions |
| Baud rate                                                                                                                   | 9600bps                              |
| Byte format: one start bit, eight data bits, no parity, one stop bit, command interval recommended to be greater than 200mS |                                      |



Equipment address: 100

## 2. FRAME FORMAT

### 2.1 Read device register contents (function code 0x03)

#### 2.1.1 Format of the frames sent by the host computer.

| NO | CODE                             | Sample | State                         |
|----|----------------------------------|--------|-------------------------------|
| 1  | Machine address                  | 0x64   | 0x64 means device address 100 |
| 2  | 0x03                             | 0x03   | Read register function code   |
| 3  | Start register address high byte | 0x00   | Register start address        |
| 4  | Start register address low byte  | 0x00   |                               |
| 5  | Number of registers high byte    | 0x00   | Number of registers           |
| 6  | Number of registers low byte     | 0x01   |                               |
| 7  | CRC16 checksum low byte          | 0x8D   | CRC check data                |
| 8  | CRC16 checksum high byte         | 0xFF   |                               |

#### 2.1.2 FORMAT OF FRAMES SENT BACK BY THE DEVICE

| NO   | CODE                               | STATE                         |
|------|------------------------------------|-------------------------------|
| 1    | Machine address                    | Machine address 100 i.e. 0x64 |
| 2    | 0x03                               | Function code                 |
| 3    | Number of bytes in the return data |                               |
| 4    | First register data                |                               |
| .... | .....                              |                               |
|      | Nth register data                  |                               |
| M+4  | CRC16 checksum low byte            | CRC checksum data             |
| M+5  | CRC16 checksum high byte           |                               |

### 2.2 Set device register content (function code 0x06)

#### 2.1.1 Writing data into individual device registers, frame format sent by the host computer:

| NO | CODE                       | SAMPL | STATE                        |
|----|----------------------------|-------|------------------------------|
| 1  | Machine address            | 0x64  | 0x64 i.e. device address 100 |
| 2  | 0x06                       | 0x06  | Write register function code |
| 3  | Register address high byte | 0x00  | Register start address       |
| 4  | Register address low byte  | 0x0D  |                              |
| 5  | Write data high byte       | 0x04  | Data                         |
| 6  | Write data low byte        | 0x4C  |                              |

|   |                          |      |                   |
|---|--------------------------|------|-------------------|
| 7 | CRC16 checksum low byte  | 0x12 | CRC checksum data |
| 8 | CRC16 checksum high byte | 0xC9 |                   |

2.1.2 Device loopback (write succeeded):

**If the write is correct, the device sends back the same data, i.e. the original command, and the device accepts it for execution.**

### 3. DEVICE DATA REGISTER ADDRESS

#### 3.1 Data register address

| NO | Parameter name            | DATA TYPE | UNIT  | ACCESS | Register | STATE                                |
|----|---------------------------|-----------|-------|--------|----------|--------------------------------------|
| 1  | Power supply working      | UINT      |       | R      | 0x0000   | Power supply                         |
| 2  | Output voltage            | UINT      | 0.01V | R      | 0x0001   | Power supply output parameters query |
| 3  | Output current            | UINT      | 0.1A  | R      | 0x0002   |                                      |
| 4  | Setting voltage           | UINT      | 0.01V | R/W    | 0x0003   | Power Supply Setting Parameters      |
| 5  | Setting current           | UINT      | 0.1A  | R/W    | 0x0004   |                                      |
| 6  | Control commands          | UINT      |       | W      | 0x0005   | Power supply control                 |
| 7  | Current protection values | UINT      | 0.1A  | R/W    | 0x0006   | Current protection                   |
|    |                           |           |       | R      | 0x0000   |                                      |

Description:

All parameters are unsigned double-byte words with data placed as follows: high high byte, low low byte

The access rules are R: for read only, W: for write only, R/W: for read and write.

### 3.2. DESCRIPTION OF PARAMETERS

#### 3.2.1 Description of power supply operating status data.

| Status Data | Status State                                           | Status Data        | Status Description  |
|-------------|--------------------------------------------------------|--------------------|---------------------|
| 0x0000      | Standby state                                          | 0x0005             | Short-Circuit Alarm |
| 0x0001      | Start-up, non-constant voltage<br>non-constant current | 0x0006             | Over-heating Alarm  |
| 0x0002      | Constant voltage                                       | 0x0007             | Over-load Alarm     |
| 0x0003      | Constant current                                       | Other reservations |                     |

#### 3.2. 2 output voltage

The read parameter value represents the voltage value output by the current device, and the unit is 0.01V  
For example, the read data is 0x012c, i.e. decimal 300, indicating that the current output voltage is 3.00v

#### 3.2. 3 output current

The read parameter value represents the current value output by the current device, and the unit of current value is 0.1A,

For example, the read data is 0x00d0, i.e. decimal 208, indicating that the current output current is 20.8a

### 3.2. 4 set voltage

The setting voltage unit is 0.01V, and the setting voltage parameters are readable and writable, that is, the setting voltage can be changed or the setting voltage of the current device can be read out

For example, to set the voltage of 30V, write 0x0bb8 in the register address 0x03.

### 3.2. 5 set current

Set the current unit as 0.1A, and set the current parameter as readable and writable, that is, the set current can be changed or read out

For example, to set the voltage 100A, write 0x03e8 in the register address 0x04.

### 3.2.2 CONTROL COMMANDS

| Control command data | Description of control commands       |
|----------------------|---------------------------------------|
| 0x0000               | Control the device to stop the output |
| 0x0001               | Control device start output           |
| 0x0002               | Control device stop output            |
| Others               | Reserved                              |

Description.

The device can execute the 0x0000 command i.e. the device stop output command in any condition;

The device can only execute the 0x0001 command, i.e. the device start output command, in the standby state;

The power mode can only be switched in the standby state;

## IX. MODEL LIST GROUND POWER UNIT

| N<br>O | MODEL          | INPUT (VAC)                     | OUTPUT (VAC)                           | CAPACITY<br>(AMPS) |
|--------|----------------|---------------------------------|----------------------------------------|--------------------|
| 1      | IPS-ATDA30KVA  | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 30KVA              |
| 2      | IPS-ATDA45KVA  | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 45KVA              |
| 3      | IPS-ATDA50KVA  | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 50KVA              |
| 4      | IPS-ATDA60KVA  | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 60KVA              |
| 5      | IPS-ATDA70KVA  | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 70KVA              |
| 6      | IPS-ATDA90KVA  | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 90KVA              |
| 7      | IPS-ATDA100KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 100KVA             |
| 8      | IPS-ATDA120KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 120KVA             |
| 9      | IPS-ATDA150KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 150KVA             |
| 10     | IPS-ATDA180KVA | 3-phase                         | 115VAC/220VAC/380VAC/400VAC/           | 180KVA             |

|    |                | 380VAC/400VAC/440VAC            | 450VAC                                 |        |
|----|----------------|---------------------------------|----------------------------------------|--------|
| 11 | IPS-ATDA210KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 210KVA |
| 12 | IPS-ATDA240KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 240KVA |
| 13 | IPS-ATDA270KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 270KVA |
| 14 | IPS-ATDA300KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 300KVA |
| 15 | IPS-ATDA330KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 330KVA |
| 16 | IPS-ATDA360KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 360KVA |
| 17 | IPS-ATDA390KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 390KVA |
| 18 | IPS-ATDA400KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 400KVA |
| 19 | IPS-ATDA420KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 420KVA |
| 20 | IPS-ATDA480KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 480KVA |
| 21 | IPS-ATDA510KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 510KVA |
| 22 | IPS-ATDA540KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 540KVA |
| 23 | IPS-ATDA570KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 570KVA |
| 24 | IPS-ATDA600KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 600KVA |
| 25 | IPS-ATDA630KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 630KVA |
| 26 | IPS-ATDA660KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 660KVA |
| 27 | IPS-ATDA690KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 690KVA |
| 28 | IPS-ATDA720KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 720KVA |
| 29 | IPS-ATDA750KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 750KVA |
| 30 | IPS-ATDA780KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 780KVA |
| 31 | IPS-ATDA810KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 810KVA |
| 32 | IPS-ATDA840KVA | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 840KVA |

|    |                     |                                 |                                        |         |
|----|---------------------|---------------------------------|----------------------------------------|---------|
| 33 | IPS-ATDA870KVA      | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 870KVA  |
| 34 | IPS-ATDA900KVA      | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 900KVA  |
| 35 | IPS-ATDA930KVA      | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 930KVA  |
| 36 | IPS-ATDA960KVA      | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 960KVA  |
| 37 | IPS-ATDA990KVA      | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 990KVA  |
| 38 | IPS-ATDA1000KV<br>A | 3-phase<br>380VAC/400VAC/440VAC | 115VAC/220VAC/380VAC/400VAC/<br>450VAC | 1000KVA |