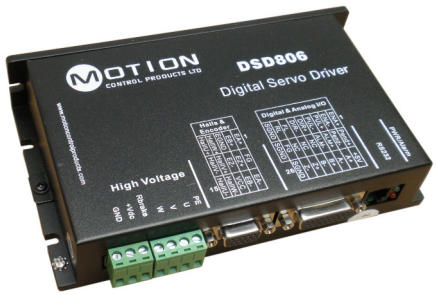
# DSD806 Digital Servo Drive

## Introduction




Motion Control Products Ltd (MCP)'s digital servo drive DSD806 is developed with 32-bit DSP based on advanced control algorithm. Since their input commands are PUL/DIR signals or ±10V analogue input, the users can upgrade stepper drives to DSD806 without changing the control systems. These drives can offer high precision, high speed and high reliability performances, and can be used widely in inkjet printers, engraving machines, packaging machines and so forth. A built-in controller can be used for testing and tuning. PC based and handheld configuration & tuning tools can meet different tuning environments or requirements.

## Features

- Input voltage: 18VDC – 80VDC
- Peak current: 18A ; continuous current: 6A (max.)
- Suitable for 50W-400W servo motors
- FOC-SVPWM technologies
- PC-based and handheld configuration tools
- Electronic gear rate from 1/255 to 255
- Self-test function with trapezoidal velocity profile
- Support PUL/DIR and CW/CCW control signals
- Opto-isolated, support single-ended and differential inputs
- Encoder output
- Following error lock range adjustable
- Over-voltage, over-current and encoder failure protections
- 10 latest failures self-record function
- Small size, surface-mount technology
- Support clock & direction or ±10V analogue input

## Applications

Suitable for large and medium automation machines and equipment, such as inkjet printers, engraving machines, electronics manufacturing equipment, special CNC machines, pick-and-place devices, packing devices and so on. Particularly adapt to the applications desired with high speed, high precision and low motor noise.

## Performance Specification (with LSM Series Servo Motors)

- Position following error: ±1 count
- Maximum acceleration speed (No load): 80rpm/ms
- Maximum speed: 4000rpm
- Positioning accuracy: ±1 count
- Velocity accuracy: ±2rpm
- Input frequency up to 600KHz
- Allowable low speed reaches 1rpm
- Suitable for 18-80VDC servo motors

## Electronic Specification

| Parameters | DSD806 | | |
|---|---|---|---|
| | Minimum | Typical | Maximum |
| **Continuous output current (A)** | 0 | - | 6 |
| **Input voltage (VDC)** | +18 | - | +80 |
| **Logical signal current (mA)** | 7 | 10 | 20 |
| **Pulse input frequency (KHz)** | 0 | - | 600 |
| **Isolation resistance (MΩ)** | 500 | - | - |
| **Current provided for encoder (mA)** | - | - | 100 |

## Pin Function

**Power Connector x1**

| Pin. | Name | Description | I/O |
|---|---|---|---|
| 1 | GND | Power ground | GND |
| 2 | VDC | DC Power input (18-80 VDC) | I |
| 3 | RBrake | Brake resistor connection (VDC-RBrake) | I |

**Motor connector x2**

| Pin. | Name | Description | I/O |
|---|---|---|---|
| 1 | PE | Motor case ground | PE |
| 2 | U | Motor phase U | O |
| 3 | V | Motor phase V | O |
| 4 | W | Motor phase W | O |

**Motor Feedback Connector**

| Pin. | Name | Description | I/O |
|---|---|---|---|
| 1 | EA+ | Encoder channel A+ input | I |
| 2 | EB+ | Encoder channel B+ input | I |
| 3 | EGND | Signal ground | GND |
| 4 | HallW+ | Hall sensor W+ input | I |
| 5 | HallU+ | Hall sensor U+ input | I |
| 6 | FG | Ground terminal for shield | GND |
| 7 | EZ+ | Encoder channel Z+ input | I |
| 8 | EZ- | Encoder channel Z- input | I |
| 9 | HallV+ | Hall sensor V+ input | I |
| 10 | HallV- | Hall sensor V- input | I |
| 11 | EA- | Encoder channel A- input | I |
| 12 | EB- | Encoder channel B- input | I |
| 13 | VCC | +5V @ 200mA max. | O |
| 14 | HallW- | Hall sensor W- input | I |
| 15 | HallU- | Hall sensor U- input | I |

**Command and I/O Signal Connector**

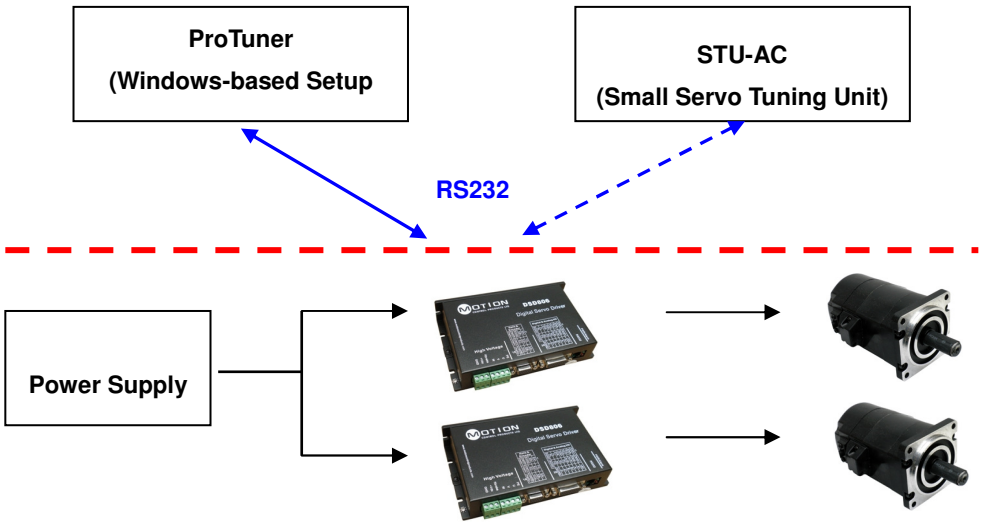
| Pin. | Name | Description | I/O |
|---|---|---|---|
| 1 | EN+ | Enable signal input + | I |
| 2 | EN- | Enable signal input - | I |
| 3 | PUL+ | Pulse signal input + | I |
| 4 | PUL- | Pulse signal input - | I |
| 5 | DIR+ | Direction control signal input + | I |
| 6 | DIR- | Direction control signal input - | I |
| 7 | FL | Positive limit signal input | I |
| 8 | RL | Negative limit signal input | I |
| 9 | SGND | Signal ground | GND |
| 10 | Pend+ | In position signal output + | I |
| 11 | Pend- | In position signal output - | I |
| 12 | ALM+ | Alarm signal output + | O |
| 13 | ALM- | Alarm signal output - | O |
| 14 | +REF | Reference signal input + | I |
| 15 | -REF | Reference signal input - | I |
| 16 | NC | Not connected | - |
| 17 | FG | Ground terminal for shield | GND |
| 18 | SGND | Signal ground | GND |
| 19 | +5V | +5V Power supply | O |
| 20 | A+ | Encoder channel A+ output | O |
| 21 | A- | Encoder channel A- output | O |
| 22 | B+ | Encoder channel B+ output | O |
| 23 | B- | Encoder channel B- output | O |
| 24 | Z+ | Encoder channel Z+ output | O |
| 25 | Z- | Encoder channel Z- output | O |
| 26 | SGND | Signal ground | GND |

**RS232 Communication Interface**

| Pin. | Name | Description | I/O |
|---|---|---|---|
| 1 | NC | Not connected | - |
| 2 | +5V | Power for STU-AC | O |
| 3 | TxD | RS223: Transmit | O |
| 4 | GND | Signal ground | GND |
| 5 | RxD | RS232: Receive | I |
| 6 | NC | Not connected | - |

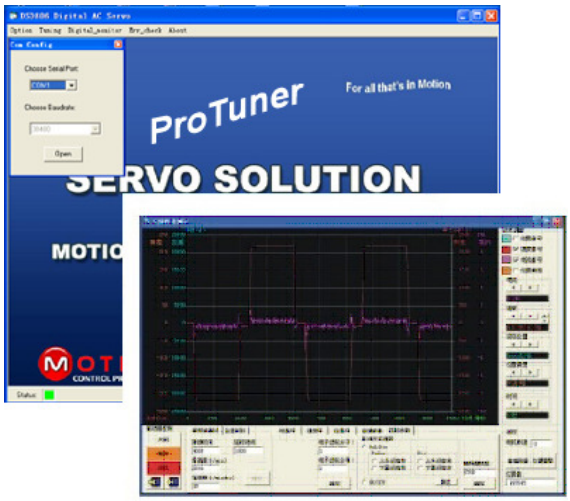
## Multiform Parameter Visible Tuning Tools

Motion Control Products Ltd develops multiform parameter visible tuning tools to meet different tuning environments and requirements. The user can tune the DSD806 with two different tuning tools, including ProTuner (windows-based setup software) and STU-AC (small servo tuning unit).




## ProTuner (Windows-based Setup Software)

- Upload & download parameter settings
- Digital oscilloscope for real-time current, velocity, position following error display. Can read any point's value with the mouse when the curves are locked
- PID parameter settings for position loop
- PI parameter settings for velocity loop
- PI parameter settings for current loop
- Motor parameter configuration
- Electronic gear rate setting from 1/255 to 255
- Position following error range setting
- Encoder resolution setting
- Parameter settings for self motion test (with trapezoidal velocity profile)
- Read the latest 10 failure events and clear the events

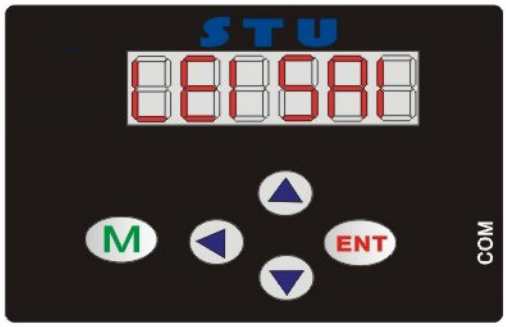



*** 1 PC RS232 interface is required.*

*** MCP offers special cable for communications between ProTuner and the drive.*

## STU-AC (Small Servo Tuning Unit)

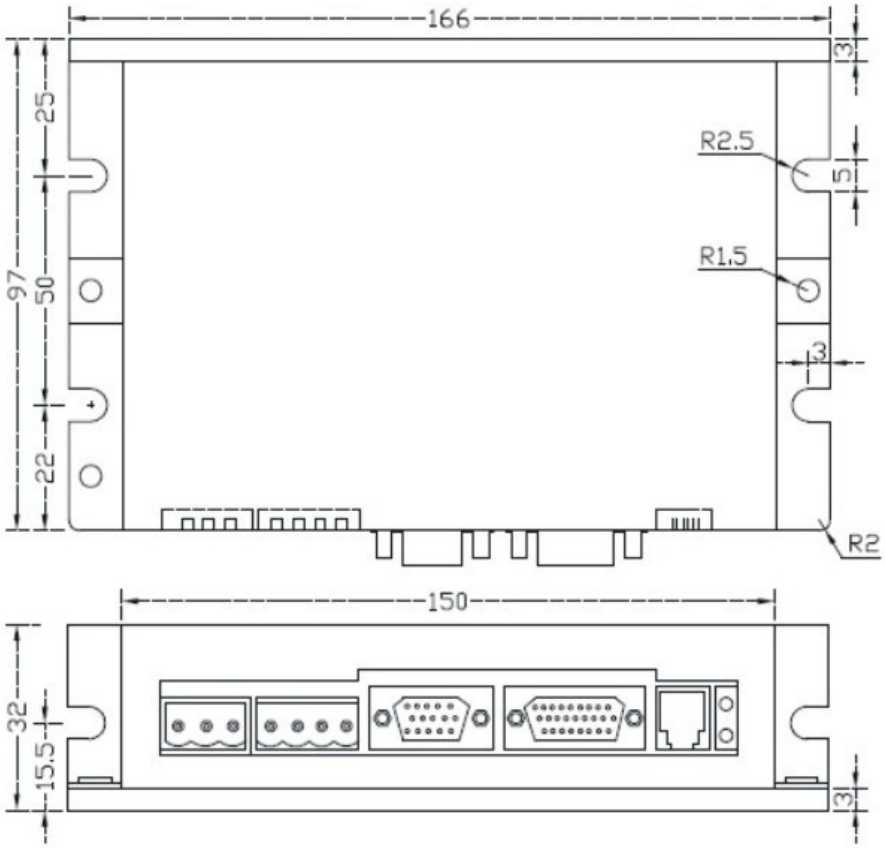
- Similar to most HMI of servo drives from other manufacturers
- PID parameter settings for position loop
- Electronic gear rate setting from 1/255 to 255
- Position following error range setting
- Real-time current, velocity, position following error display
- Parameter settings for self motion test (with trapezoidal velocity profile)



- Read the latest 10 failure events and clear the events

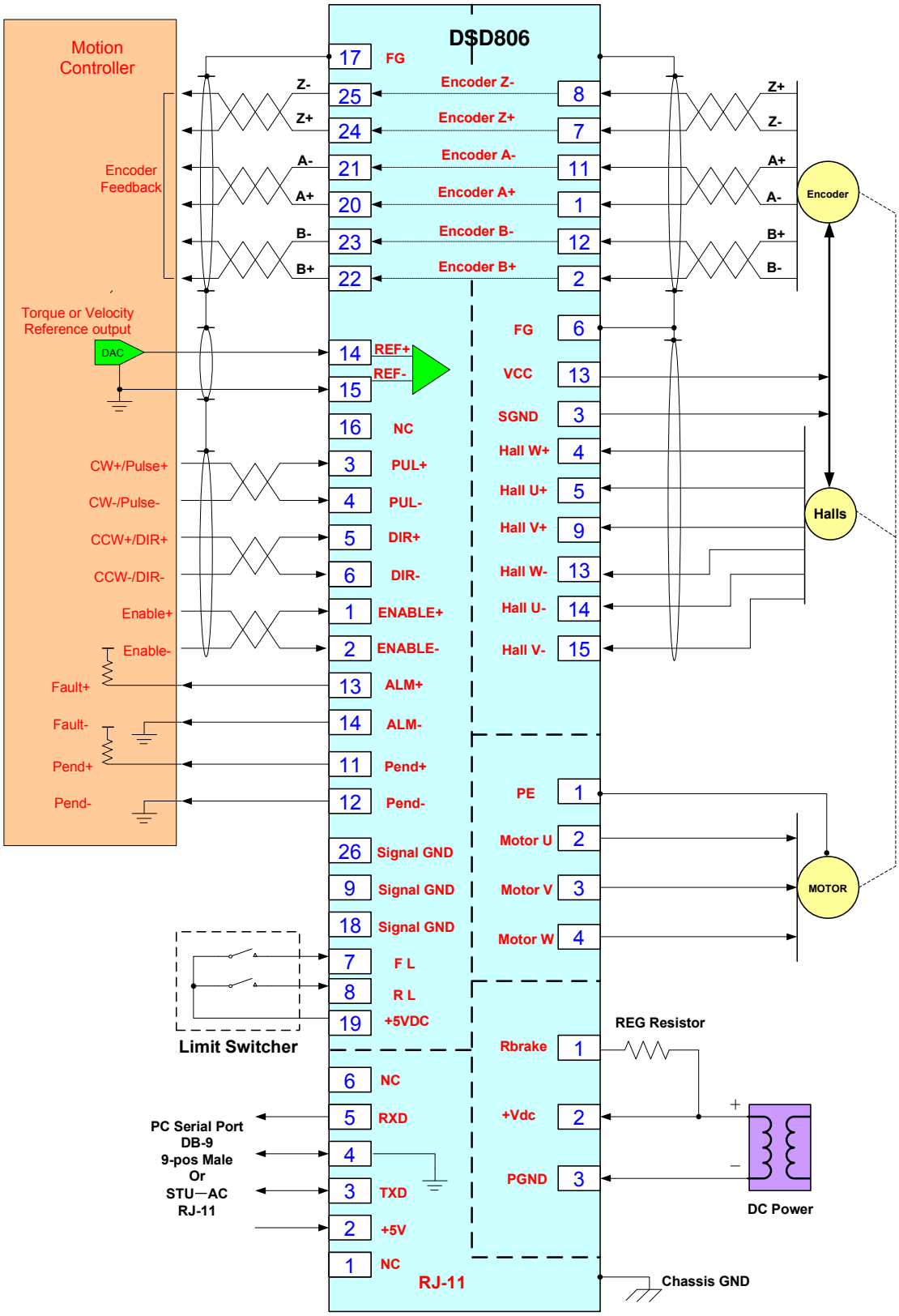
*** MCP offers special cable for communications between the STU-AC and the drive.*

## *Mechanical Specifications (unit: mm)*




## *Typical Connections*

A typical connection of LSM60 servo motor with Motion Control Products Ltd's DSD806 digital servo drive is shown in the next page:






*V09.0828*