

Chapter 1 Auto-focusing System Introduction

Sino-Galvo's galvanometer motors are designed by adopting the magnet-moving structure, combining the most advanced international photoelectric sensor technology and the PDM control mode, and using the Military-grade processes and technologies.

The model AF7106 galvo scanner has the good running stability, high positioning accuracy, fast marking speed, strong anti-interference ability, the overall performance of AF7106 has reached the international leading level in this field. The advantages are as following:

- Adopted the photoelectric sensors which imported from America, and owned the proprietary intellectual property rights.
- Differential photoelectric sensor for accurate detection of motor rotor position, good linearity, lower drift, high resolution and repeat positioning.
- Accurate load design for 10 mm mirrors, high accuracy of motor assembly, reasonable structure, very small static friction coefficient and zero offset, all ensured the best dynamic characteristics for the whole system.
- Design of overload, over-current and reverse connect protection, makes the system running more reliable.
- This scanner system solved the common problems of motor temperature drift, signal interference and zero drift, etc.
- Auto-focus mode, one key for positioning to the default focus height quickly, improving the operation efficiency.

Chapter 2 AF7106 Technical Parameters

AF7106 Motors & Drive Board Technical Parameters

Motor Specification

Working Temperature	0-45℃
Linearity	99.9%
Setting Time	≤ 0.35ms
Scale Drift	<40PPM/℃
Zero Drift	<15μRad./℃
Long-term Drift Over 8 Hours	<0.5mRad
RMS Current	2.0A
Peak Current	15A(Max)
Maximum Scan Angle	±15°
Storage Temperature	-10 to +60℃
Resolution	12μrad
Repeatability	8μrad
Input Aperture	10.0mm
Beam Displacement	13.4mm
Motor Weight	120g
Frequency	≤1000Hz

Servo Driver Board Specification

Input Voltage	±15VDC
Interface Signal	Digital
	XY2-100
Position Signal Input Resistance	1KΩ±1%
Position Signal Input Scale Factor	0.33V/°
Position Signal Output Scale Factor	0.33V/°
Working Temperature	0-45℃
Dimension(L×W×H)	75×50×28mm

Auto-focusing Control Parameter

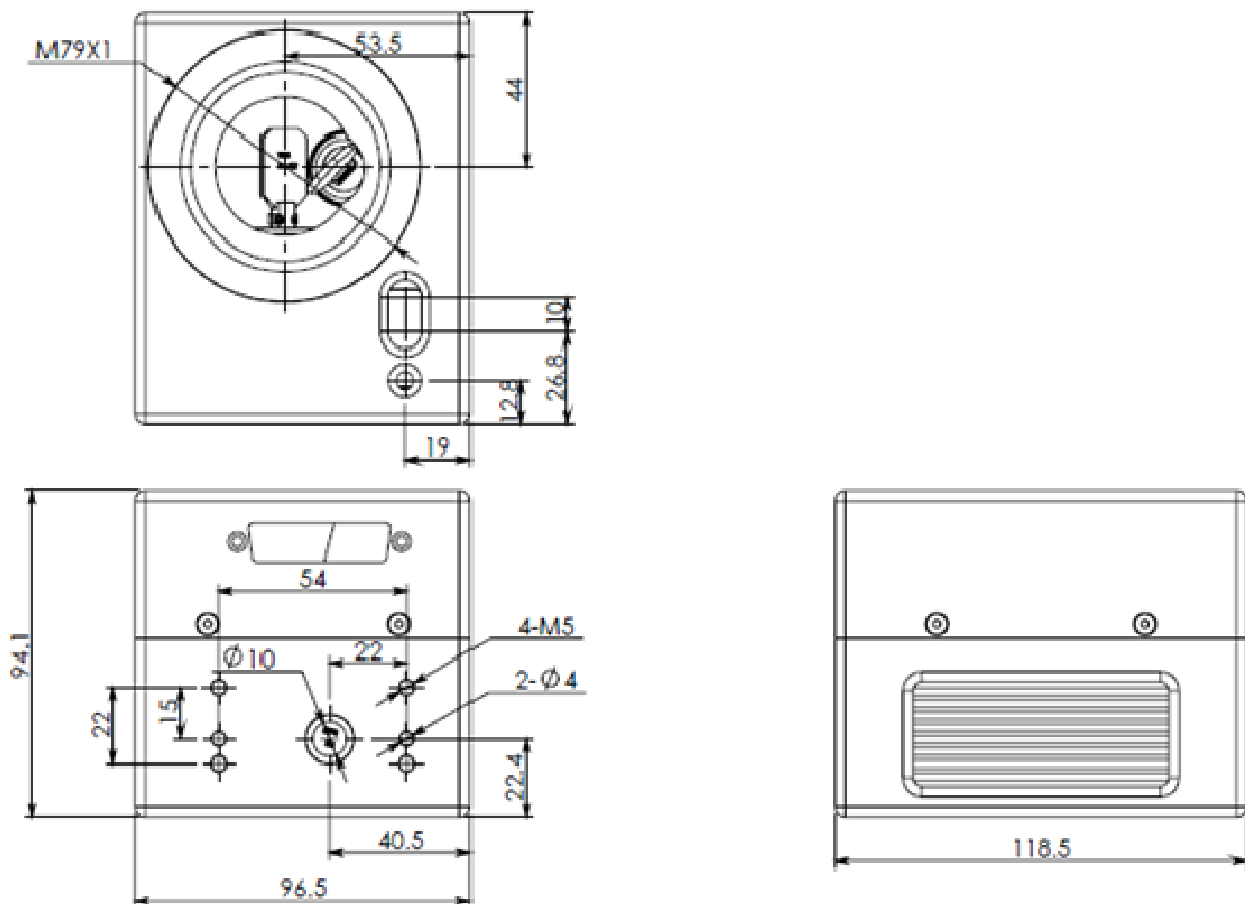
Input Voltage	±15VDC
Distance measuring	Laser measure distance
Measure resolution rate	0.01mm
Measure accuracy	±0.1mm
Laser wavelength	620-690nm
Single measure time	0.25 second
Working temperature	0-45℃

Chapter 3 The Galvanometer Structure and Wiring

3.1 Scanner Housing



3.2 Housing Dimension Drawing



3.3 Auto-focusing System Module

This module sensor is installed inside the housing of galvanometer scanner, the auto-focusing system consists of the range finder module, the stepper motor, the stepper motor driver, the control board and the buttons. The function of stepper motor is to adjust the height of the galvanometer. The buttons are the rising button, the descending button and the auto-focusing button, and the control board card controls the operation of the whole auto-focusing system.

3.4 Auto-focusing Control Board Wiring Connection

P1 is for system parameter setting
 P2 is for motor controlling (MOTOR)
 P3 is for renew control board program
 P4 is for connection of galvo scanner sensor
 P5 is for key port

P6 is for the power port (POWER)
 P7 is for alarm signal input port
 P8 is for position limitation protection
 P9 is for extension function

