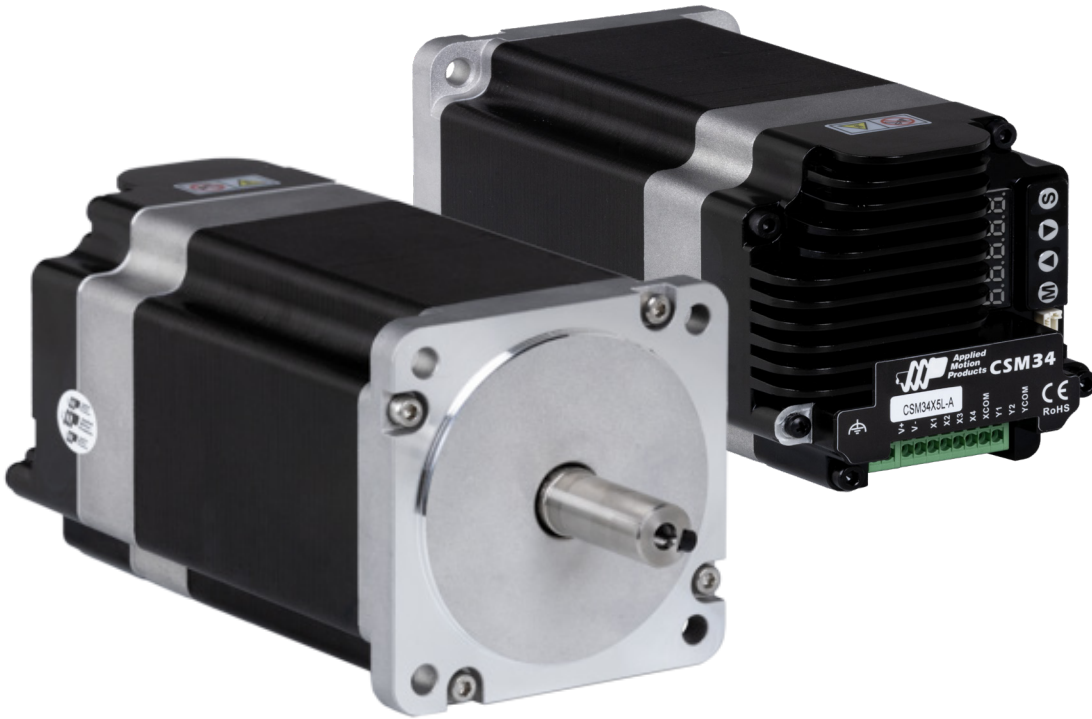


# CSM34

## Integrated StepSERVO Motor Hardware Manual

- CSM34X3L
- CSM34X5L



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## 1 Introduction

Thank you for selecting the Applied Motion Products CSM34 series motor. The CSM34 series motor is designed for space saving, easy control and long-lasting performance.

### 1.1 Features

- Integrated Motor and Drive Package
- StepSERVO close loop system position and speed control
- Direct plug-in connection
- 5 digit, 7 segment motor status display
- Quick installation
- No external control panel required
- Direction and motion control inputs
- 2 configurable speed inputs
- Push button configuration and jog motion
- “On the fly” speed change
- Operating voltage 24-70V
- Speed range 0-2000rpm
- Max Torque Output
  - CSM34X3L-A, 5.69N.m
  - CSM34X5L-A, 7.46N.m
- I/O
  - 4 optical isolated digital input, 5-24VDC
  - 2 optical isolated digital output, max 30V/100mA

## 1.2 Safety Instructions

Only qualified personnel should transport, assemble, install, operate, or maintain this equipment. Properly qualified personnel are persons who are familiar with the transport, assembly, installation, operation, and maintenance of motors, and who meet the appropriate qualifications for their jobs. To minimize the risk of potential safety problems, all applicable local and national codes regulating the installation and operation of equipment should be followed. These codes may vary from area to area, and it is the responsibility of the operating personnel to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes. Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. Applied Motion Products does not guarantee the products described in this publication are suitable for a particular application, nor do they assume any responsibility for product design, installation, or operation.

- Read all available documentation before assembly and operation. Incorrect handling of the products referenced in this manual can result in injury and damage to persons and machinery. All technical information concerning the installation requirements must be strictly adhered to.
- It is vital to ensure that all system components are connected to earth's ground. Electrical safety is impossible without a low-resistance earth connection.
- This product contains electrostatically sensitive components that can be damaged by incorrect handling. Follow qualified anti-static procedures before touching the product.
- During operation keep all covers and cabinet doors shut to avoid any hazards that could possibly cause severe damage to the product or personal health.
- During operation, the product may have components that are live or have hot surfaces.
- Never plug in or unplug the Integrated Motor while the system is live. The possibility of electric arcing can cause damage.

Be alert to the potential for personal injury. Follow recommended precautions and safe operating practices emphasized with alert symbols. Safety notices in this manual provide important information. Read and be familiar with these instructions before attempting installation, operation, or maintenance. The purpose of this section is to alert users to the possible safety hazards associated with this equipment and the precautions necessary to reduce the risk of personal injury and damage to equipment. Failure to observe these precautions could result in serious bodily injury, damage to the equipment, or operational difficulty.

## 2 Getting Started

The following item is needed:

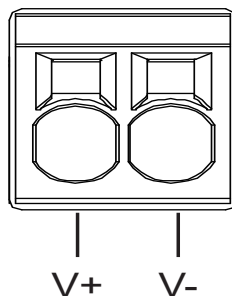
A 12 - 70 Volt DC power supply. See the section below titled “Choosing a Power Supply” for help in choosing the right one.

### 2.1 Choosing a Power Supply

The main considerations when choosing a power supply are the voltage and current requirements for the application.

#### 2.1.1 Voltage

The CSM34 is designed to give optimum performance between 24VDC and 48VDC. Choosing the voltage depends on the performance needed and motor/drive heating that is acceptable and/or does not cause a drive over-temperature. Higher voltages will give higher speed performance but will cause the CSM34 to produce higher temperatures. Using power supplies with voltage outputs that are near the drive maximum may significantly reduce the operational duty-cycle. The extended range of operation can be as low as 10VDC minimum to as high as 75VDC maximum. When operating below 18VDC, the power supply input may require larger capacitance to prevent under-voltage and internal-supply alarms. Current spikes may make supply readings erratic. The supply input cannot go below 10VDC for reliable operation. Absolute minimum power supply input is 10VDC. If the Input supply drops below 10VDC the low voltage alarm will be triggered. This will not fault the drive. Absolute maximum power supply input is 75VDC at which point an over-voltage alarm and fault will occur. When using a power supply that is regulated and is near the drive maximum voltage of 75VDC, a voltage clamp may be required to prevent over-voltage when regeneration occurs. When using an unregulated power supply, make sure the no-load voltage of the supply does not exceed the drive’s maximum input voltage of 75VDC.

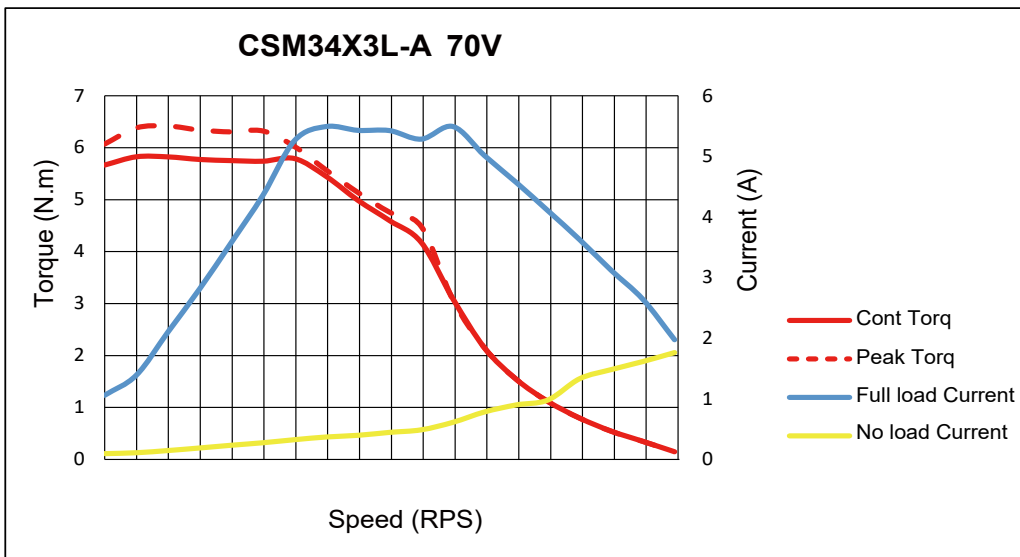
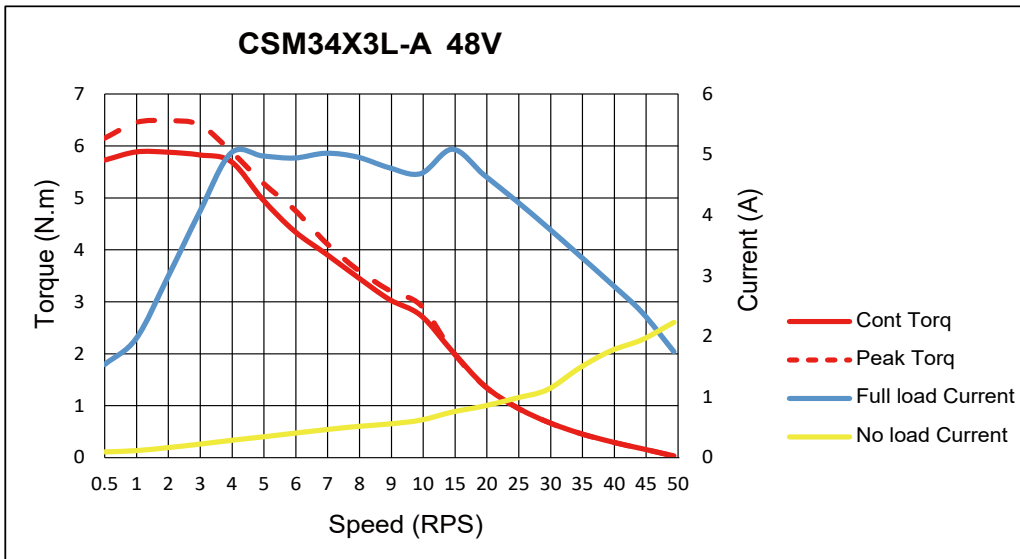
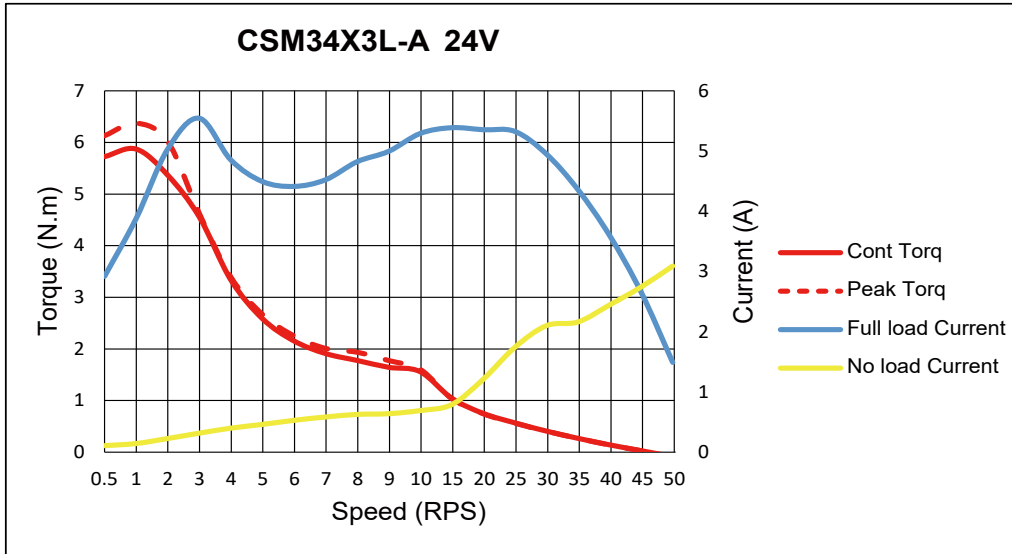


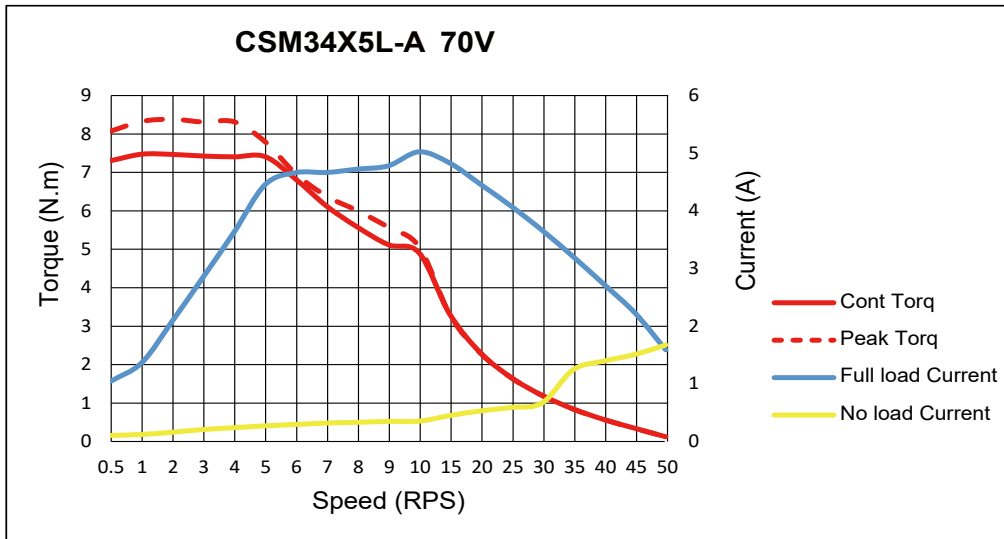
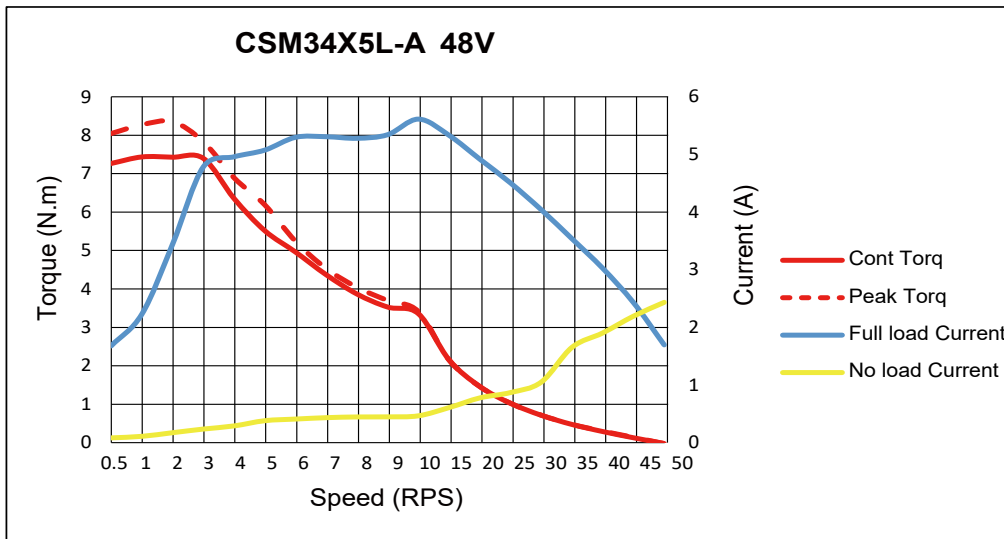
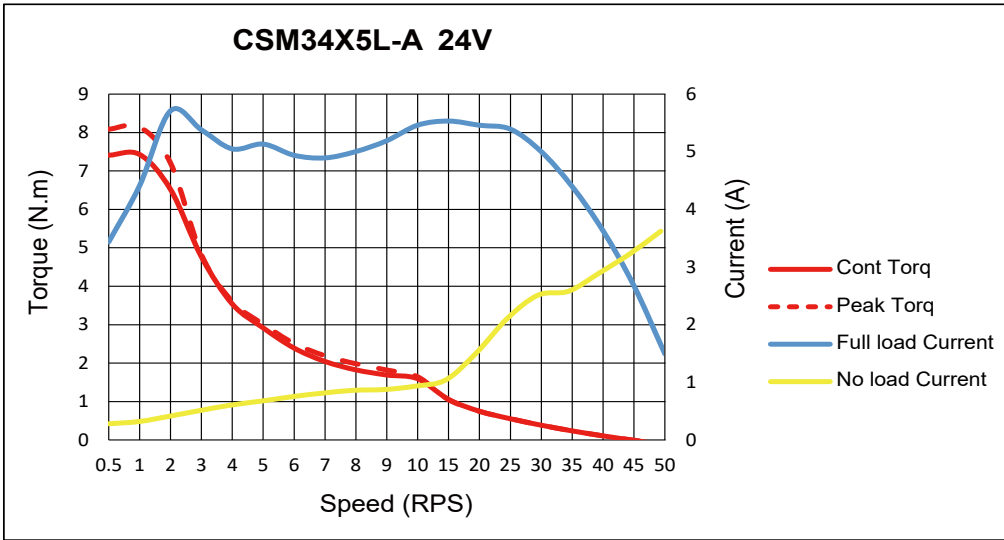
## 2.1.2 Current & Torque Curve

The maximum supply currents required by the CSM34 are shown in the charts below at different power supply voltage inputs. The CSM34 power supply current is lower than the winding currents because it uses switching amplifiers to convert a high voltage and low current into lower voltage and higher current. The more the power supply voltage exceeds the motor voltage, the less current will be required from the power supply.

It is important to note that the current draw is significantly different at higher speeds depending on the torque load to the motor. Estimating how much current is necessary may require a good analysis of the load the motor will encounter.

See next page for Curves

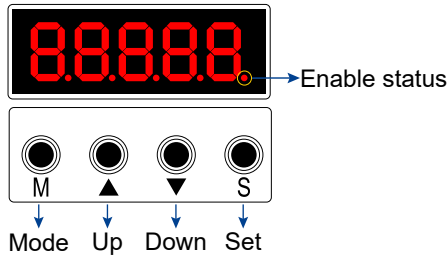






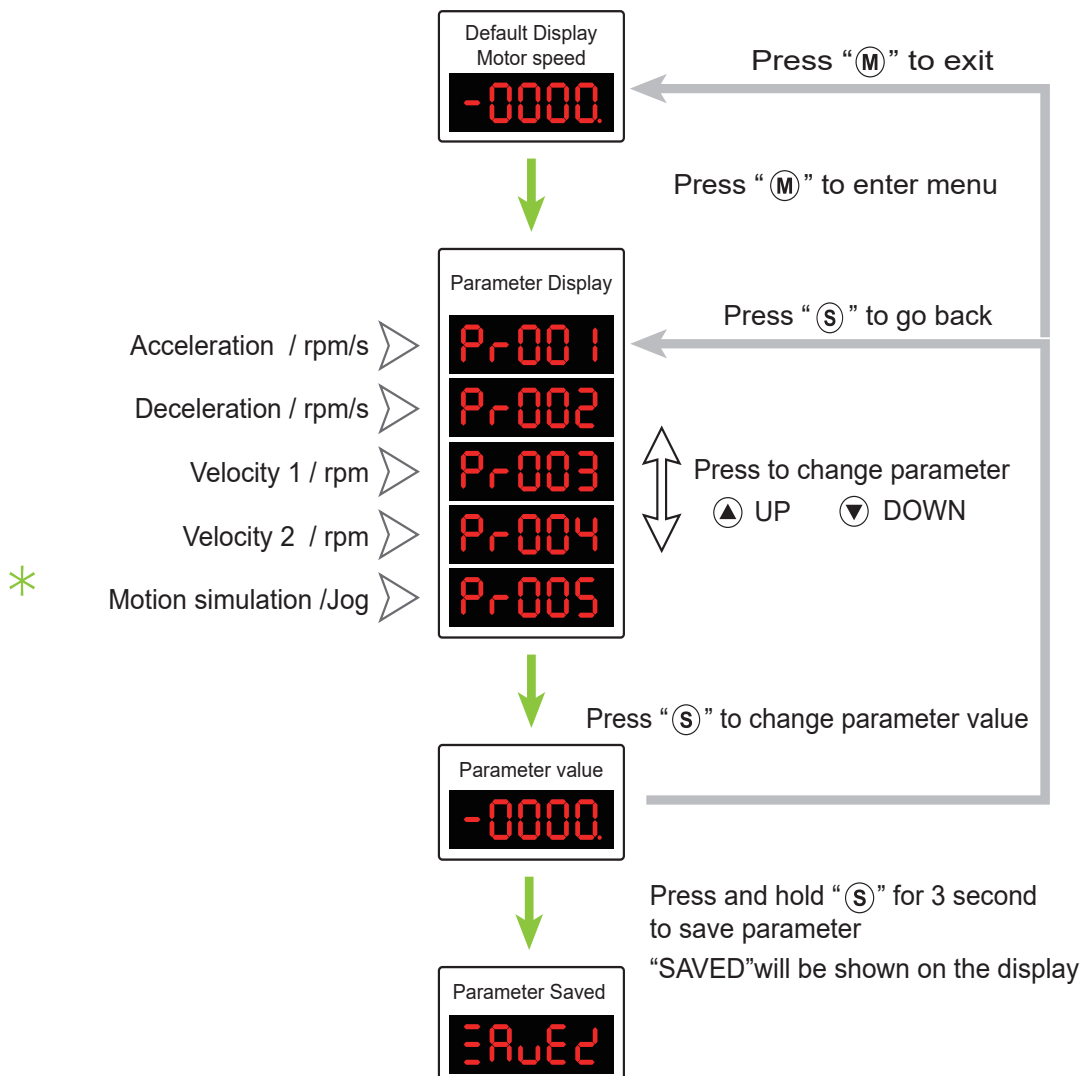
## 2.2 Control Panel

CSM has a LED display on the back side of the Motor.

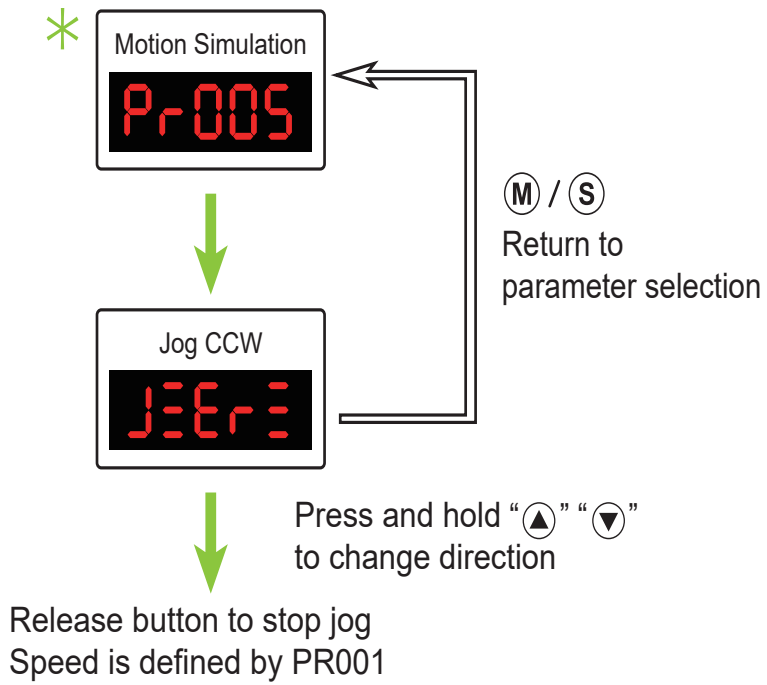


### 2.2.1 Menu

Below are the operation of the CSM dip switch and status display.



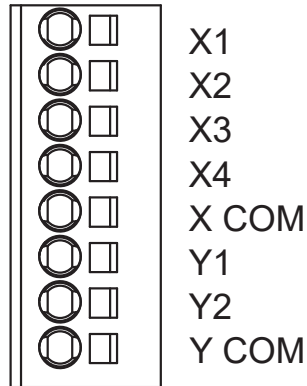
## 2.2.2 Motion Simulation



## 3 Input and Output

CSM have the following Input and Output:

- 4 optical isolated digital input, 5-24VDC
- 2 optical isolated digital output max 30V/100 mA



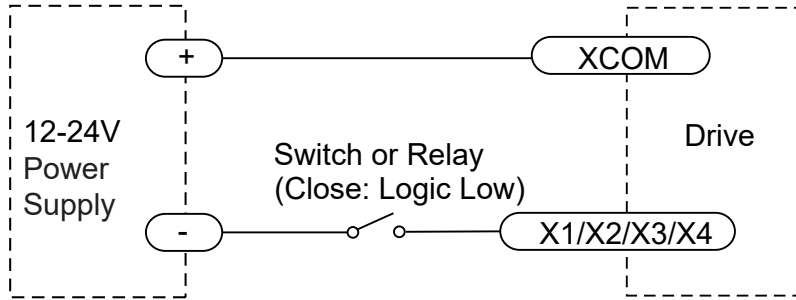
### 3.1 Input X1,X2,X3,X4

All 4 digital inputs for CSM are optical isolated. They accept 5-24VDC voltage range, upto to 2MHz. They support PNP and NPN wiring.

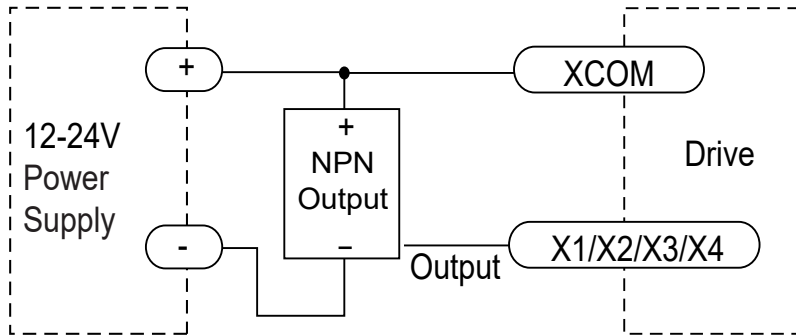
Functions of each Pin are shown below:

Pin	Description	Pin	Description
X1	CW rotation	X COM	Input COM
X2	CCW rotation	Y1	Alarm Output
X3	Clear alarm and disable motor	Y2	Dynamic In Position
X4	Secondary speed	Y COM	Output COM

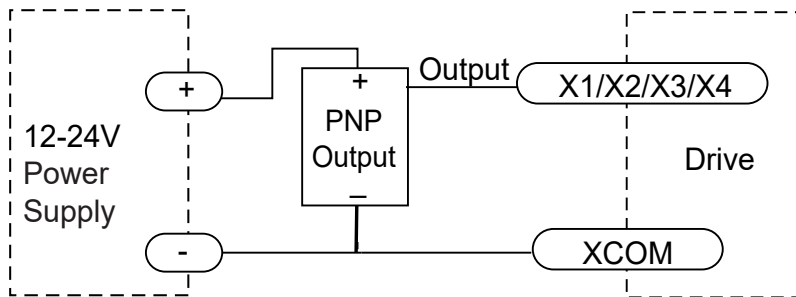
Input Wiring Diagram



Connecting Input to Switch and Relay



Connecting an NPN type Proximity Sensor to an Input  
*(when prox sensor activates, input goes low)*

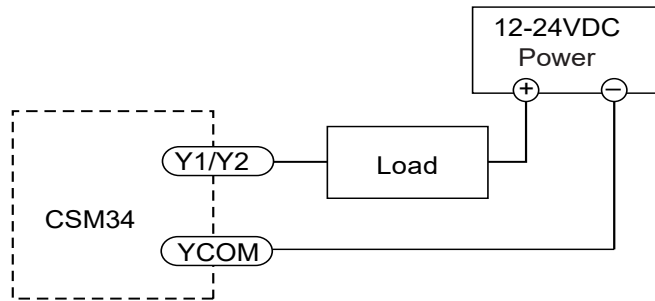


Connecting an PNP type Proximity Sensor to an Input  
*(when prox sensor activates, input goes low)*

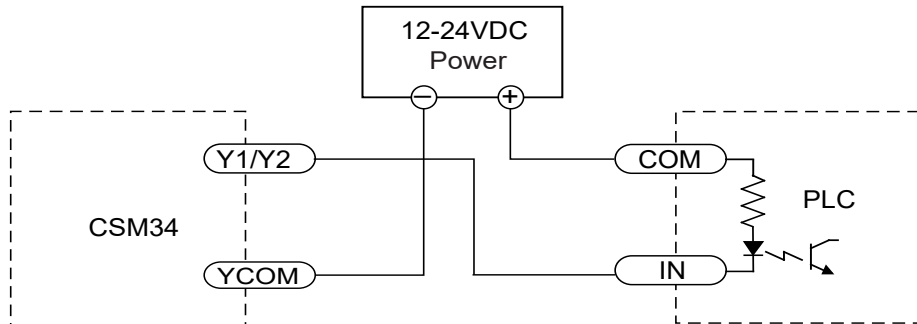
## 3.2 Output Y1,Y2

Pin	Description
Y1	Alarm Output
Y2	Dynamic In Position
Y COM	Output COM

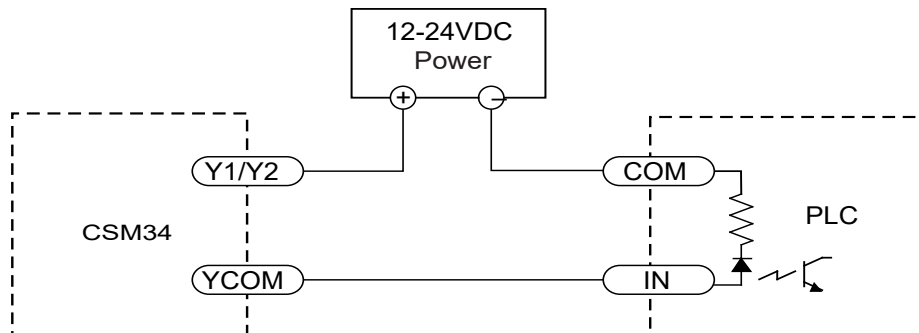
### Wiring Diagram



### Connecting Sinking Output



### Connecting to sinking output with PLC



### Connecting to sourcing output with PLC

## 4 Drive Installation

CSM34 must be mounted to provide maximum heat sinking and airflow. Keep enough space around the Integrated Motor to allow for airflow.

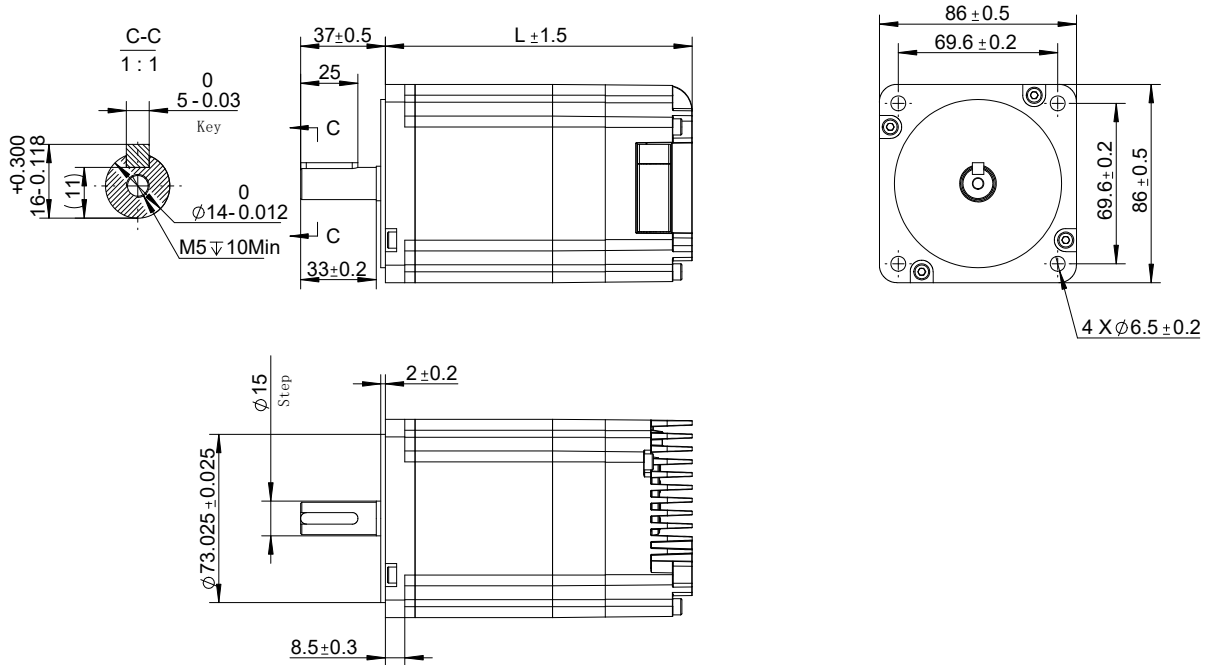
- Never use the drive where there is no airflow or where other devices cause the surrounding air to be more than 40°C (104°F).
- Never put the drive where it can get wet.
- Never use the drive where metal or other electrically conductive particles can infiltrate the drive.
- Always provide airflow around the drive.

## 5 Error Code

Display	Description	Display	Description
<b>Err-n</b>	Memory Error	<b>Err-H</b>	High Voltage Warning
<b>Err-o</b>	Open Winding	<b>Err-U</b>	Low Voltage Warning
<b>Err-P</b>	Position Fault	<b>Err--</b>	Communication Error
<b>Err-d</b>	Motor Disabled	<b>Err-t</b>	Over Temperature
<b>Err-B</b>	Internal Voltage Fault	<b>Err-E</b>	Encoder Fault
<b>Err-U</b>	Over Current		

## 6 Reference

### 6.1 Dimension



Model	Length(mm)
CSM34-3	134
CSM34-5	161.8

### 6.2 Specification

Model	CSM34X3L-A	CSM34X5L-A
Input Voltage	DC 24-70VDC	
Max Torque	5.68Nm	7.46Nm
Rotor Inertia	2580 gcm <sup>2</sup>	3860 gcm <sup>2</sup>
Control Mode	IO Control	
Speed Setting	Motor Control Panel	
Speed Range	0-2000rpm	
Encoder Feedback	Yes	
Stall Detection	Yes	
Alarm Output	Yes	
Operating Temperature	0-40C	
Humidity	Below 90%	
Input	4 Optical Isolated, differential input, 5-24VDC	
Output	2 optical isolated, 30VDC/100mA max	

## 7 Contacting Applied Motion Products



### **Applied Motion Products, Inc.**

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Phone: 1-800-525-1609

Email: [support@applied-motion.com](mailto:support@applied-motion.com)