AMC4030

Motion Controller

User Manual

（**Version 0.2**）

CHENGDU FUYU TECHNOLOGY CO.,LTD.

Preface

Thanks for choosing AMC4030 motion controller!

AMC4030 motion controller is developed by FUYU as an economic and general-purpose controller. To return our customers' support, we will help you to build your unique control systems by offering high-quality motion controller, perfect after-sales service and efficient technical support.

Why To Use This Manual?

By reading this manual, the user can understand the basic structure of the AMC4030 motion controller, correctly install it and connect the controller to the motor control system, so as to complete the basic setting or development of the motion control system.

Who Will Use This Manual?

This user manual suits for engineers who have basic knowledge of hardware and some understanding of control systems.

Main Points of This Maunal

This manual describes in detail the AMC4030 motion controller's components, installation, wiring, debugging, electrical parameters, troubleshooting and so on.

Related Documents

For programming the AMC4030 motion controller, please refer to the "AMC4030 Motion Controller Programming Manual" supplied with the product.

General safety precautions

Please carefully review the following safety precautions to avoid injury and prevent damage to the product or any products connected to it. To avoid potential hazards, please use this product according to our instructions.

Use the correct power cable. Please use a power cable that meets the national standard.

Properly connect and disconnect. Firstly, please connect the controller output to the drive and the motor, then turn on the power. Before turn off the external power supply, please first disconnect the motor, drive and the controller.

Do not operate when there is a suspicious failure. If you think that the product is damaged, please let a qualified service representative to check.

Do not operate in a wet / humid environment.

Do not operate in explosive air.

Keep the product surface clean and dry.

To prevent electrostatic damage. Electrostatic discharge (ESD) may cause damage to components in the motion controller and its accessories. To prevent ESD, please carefully handle the controller components and do not touch the components on the controller. Do not place the controller on a surface that may generate static electricity. Transport and store the controller in a protective electrostatic bag or container.

Chapter 1   Product Overview

1.1 Introduction

FUYU's AMC4030 motion controller is a cost effective and general-purpose 3-axis motion controller. We adopt ARM as its CPU core control unit, and use a more efficient algorithm to perfect its performance. Its main functions are:

1) The AMC4030 controller can control up to 3-axis motors at the same time (stepper motor or servo motor).

2) AMC4030 controller supports high-speed point motion control, round-trip motion control, sub-motion control, homing motion control and so on.

3) The AMC4030 controller supports 3-axis linear or circular interpolation motion, and any 2-axis linear or circular interpolation motions.

4) The AMC4030 controller supports backlash compensation

Due to its precise and excellent motion control performance, the controller is particularly suitable for high-speed travel applications where efficient and smooth point control is required, including palletizing robots, XYZ stage, packaging lines, CNC machine tools, woodworking machinery, production assembly lines, electronic processing equipment and other equipment manufacturing industries.

1.2 Specifications

Item	AMC4030
Power Supply	DC24V, 2A and above
No of control axis	3
Encoder	None
General digital input	DC24V, optocouple, 4-way
General digital output	DC24V，4- way，Each up to 100mA
Dedicated digital input	DC24V，Origin signal input, 3-way
Pulse output frequency (max)	150KHz
Pulse output mode	Pulse/Dir
Pulse output value(max)	±2147483647（2^{31}）
Acceleration mode	S-type / trapezoidal acceleration and deceleration
Bus extension	2-way CAN bus expansion, to achieve multi-controller cascade control
COM	Support customized COM protocol
Operating system	WINDOWS XP and above，Memory 2G and above
Size（mm）	150*95*30

Table1-2 Specifications of the controller

1.3 System Configuration of AMC4030

AMC4030 controller has two typical system configurations: independent control system and hierarchical on-line control system, as shown in chart 1-3.
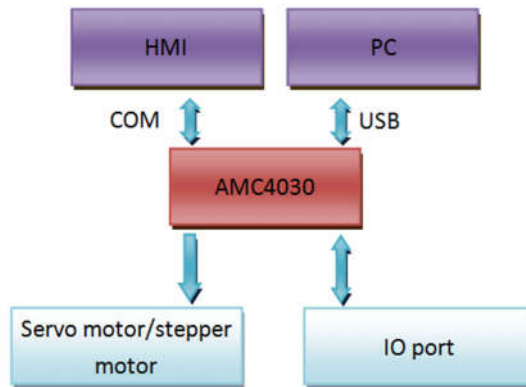
chart 1-3   Typical Control System

AMC4030 controller can be connected with PC through a USB cable to build a hierarchical online motion control sytem. It can also be separated from PC, and build a a stand-alone control system through the HMI human interaction.

When the AMC4030 is used as an online motion system, the user can edit various motion control commands through the PC-based software provided by us and realize real-time monitoring of the control system. The motion controller completes all the motion trajectory control and the response of the control commands, as well as the detection and response of all IO signals.

When AMC4030 is used as a independent control system, a separate HMI (such as a touch screen)is needed.

The motion data is pre-solidified to the control card,then the HMI commands, processing data and all the IO signal detection and response will be executed and completed via the HMI and the motion control.

Chapter 2 Instructions for Quick Use

2.1 Open-package Inspection

After unpacking, please carefully check if the product model is consistent with your order. If the product surface is damaged or product model is wrong, or accessories are missing, please do not use, and immediately contact the dealer. Standard configurations are as follows:

- AMP4030 controller，1pc；

- USB cable，1unit

- Warranty card，1pc

- Product Qualified Card，1pc

2.2 AMC4030 Interface definition

Signal	Descriptions	Signal	Descriptions
PE	CAN Signal Ground	5V	Power output DC5V
CAN1_H	CAN1 High-Level Signal	DIR1	X-axis direction
CAN1_L	CAN1 Low-level Signal	PUL1	X-axis pulse
CAN2_H	CAN2 High-Level Signal	5V	Power output DC5V
CAN2_L	CAN2 Low-level Signal	DIR2	Y-axis direction
ORG1	X-axis Original position signal	PUL2	Y-axis pulse
ORG2	Y-axis Original position signal	5V	Power output DC5V
ORG3	Z-axis Original position signal	DIR3	Z-axis direction
GND	Original point signal ground	PUL3	Z-axis pulse
IN1	General input port 1	OUT1	General output port 1
IN2	General input port 2	OUT2	General output port 2
IN3	General input port 3	OUT3	General output port 3
IN4	General input port 4	OUT4	General output port 4
24V_IN	24V Power input	USB	MINI USB, connect PC
GND	24V Power ground	COM	COM，connect HMI

Table 2-1 Interface Definitions

2.3 AMC4030 Interface Circuit

1) Connect the controller to the drive (stepper driver or servo drive)

The default output mode for each axis of the AMP4030 is pulse / direction mode. The user can set the output mode to dual pulse mode via the interface function (see the Programming Manual for details).
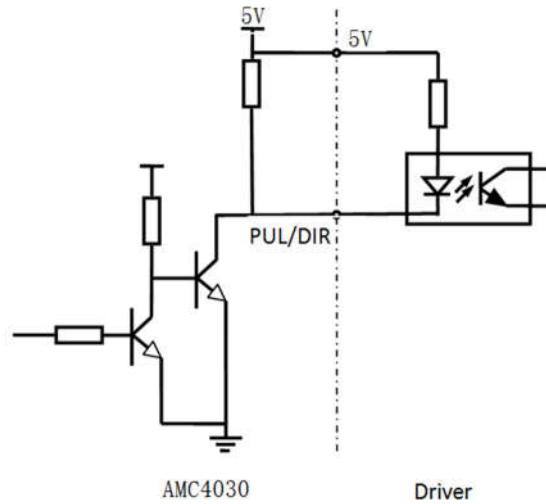
Chart 2-3-1 Axis signal wiring diagram
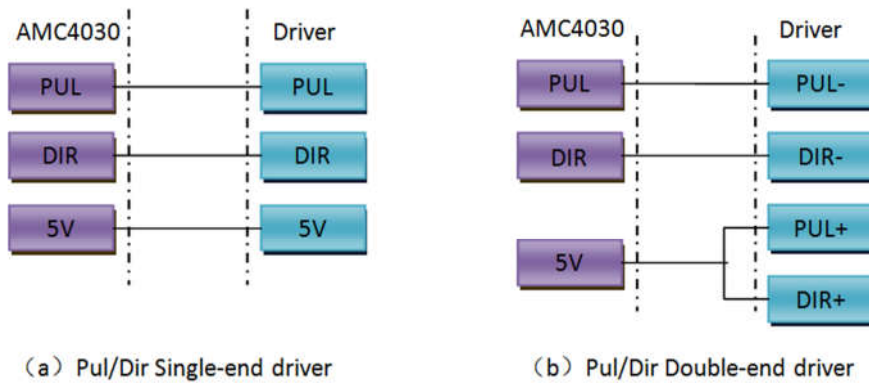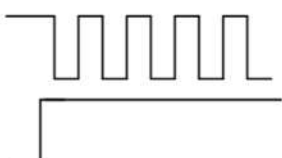
Pulse / direction mode connection diagram:

（a）Pul/Dir Single-end driver   （b）Pul/Dir Double-end driver
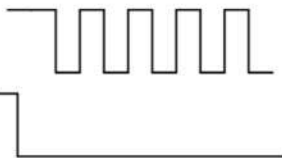
Chart 2-3-2   Pul/Dir Connecting Diagram

The pulse output waveform is as follows:

Output mode	pin	Clockwise rotation	Counter-clockwise rotation
pulse + dir	pluse dir		

2) Connect to IO port

The AMC4030 input IO port includes a dedicated input port and a general-purpose input port. The dedicated input is for original position input of each axis. General IO can be selected according to the actual situation.

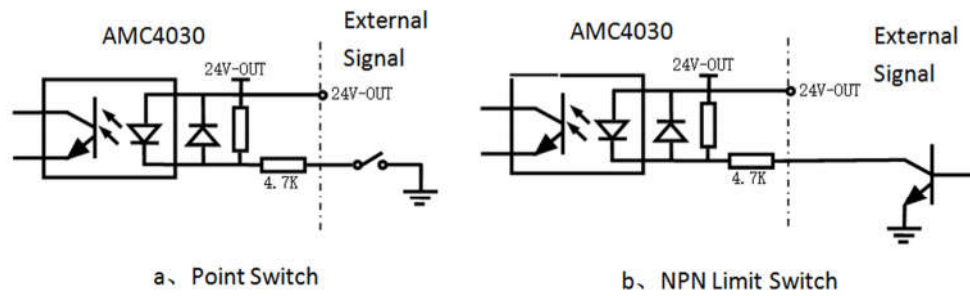Each IO port can be connected to a point switch or a NPN limit switch. The wiring method is as follows:

Chart 2-3-3   Digital input signal wiring method

3) Connect to general output port

AMC4030 has four general-purpose pull-up output. The pull-up voltage is 24V. All the output can be connected to relays, optocouplers, etc.. Max single current is 100mA.
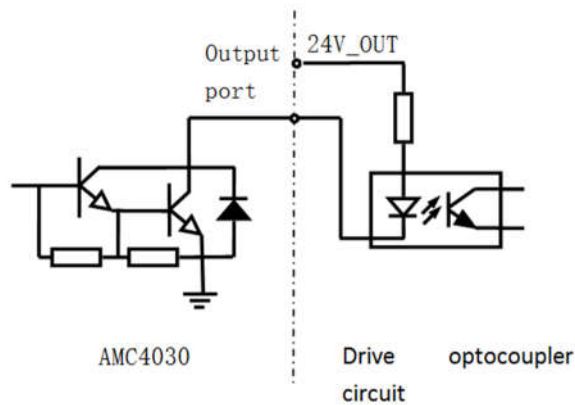

Chart 2-3-4 Drive optocoupler circuit

2.4 AMC4030 Software and driver installation

When the AMC4030 controller is connected to PC via USB cable, the driver needs to be installed on PC. Please follow the steps below to complete the installation of the driver.

（1）Download the driver installation package at the official website address:

http://www.fuyuautomation.com/ or contact our sales representative. The file is named as

"CH341SER.rar"。

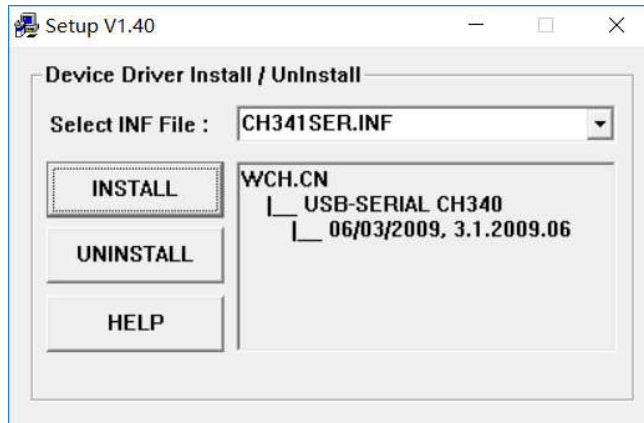（2）Extract the software and run the installation setup, as shown below, click the button

"install"。
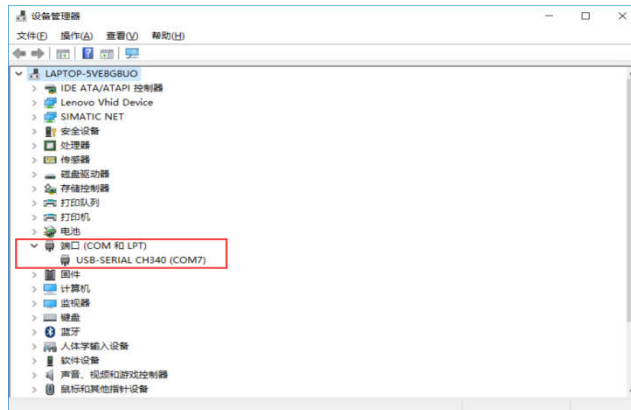

Chart 2-4-1

（3） After installation is complete, click "OK" to complete the driver installation

（4） Open the device manager, double click "port (COM and LPT)", as shown in the red

box, then the installation is successful.

Charter 2-4-3