

JY4010/JY4020

Generic Teekos JY4010/JY4020 Double Proportional Valve Amplifier Board Instruction Manual

For Injection Molding and Die Casting Machine Control

1. INTRODUCTION

This manual provides essential information for the safe and effective installation, operation, and maintenance of the Generic Teekos JY4010 and JY4020 Double Proportional Valve Amplifier Boards. These boards are designed for precise control in industrial applications such as injection molding and die casting machines, regulating proportional valves to achieve accurate hydraulic pressure or flow control. Please read this manual thoroughly before installation and operation.

2. SAFETY INFORMATION

Improper installation or operation can lead to equipment damage, personal injury, or death. Always adhere to the following safety guidelines:

- **Qualified Personnel:** Installation, wiring, and maintenance must only be performed by qualified and authorized personnel familiar with electrical systems and hydraulic machinery.
- **Power Disconnection:** Ensure all power to the machine and the amplifier board is disconnected and locked out before performing any installation, wiring, or maintenance.
- **Electrical Hazards:** This device operates with electrical voltages. Take precautions against electric shock.
- **Proper Grounding:** Ensure the system is properly grounded to prevent electrical hazards.
- **Environmental Conditions:** Do not expose the board to moisture, excessive dust, corrosive gases, or extreme temperatures outside its specified operating range.
- **Component Handling:** Handle the circuit board with care to avoid damage to sensitive electronic components. Avoid touching components directly.

3. PRODUCT OVERVIEW

The Teekos JY4010 and JY4020 are double proportional valve amplifier boards designed to provide precise control signals for proportional hydraulic valves. These boards are crucial components in systems requiring accurate control of hydraulic pressure or flow, commonly found in injection molding and die casting machinery. They convert an input control signal into a modulated current output suitable for driving proportional solenoids.



Figure 3.1: Teekos JY4010/JY4020 Double Proportional Valve Amplifier Board. This image displays the main double proportional amplifier board, featuring multiple potentiometers for adjustment, terminal blocks for input/output connections, and various electronic components including integrated circuits and power transistors. The board is green with white silk-screened labels.

The product line also includes a single scale amplifier board, model PCB019, which offers similar functionality for applications requiring single proportional control.



Figure 3.2: Teekos PCB019 Single Scale Amplifier Board. This image shows the single proportional amplifier board, which is smaller than the double proportional board. It also features potentiometers, terminal blocks, and electronic components, designed for single channel proportional control applications.



Figure 3.3: Teekos Amplifier Boards. This image displays both the JY4010/JY4020 double proportional amplifier board (partially visible in packaging) and the PCB019 single scale amplifier board, illustrating their relative sizes and packaging.

4. SETUP AND INSTALLATION

Installation should only be performed by qualified technicians. Refer to the machine's specific wiring diagrams and safety procedures before proceeding.

4.1. Mounting

- Mount the amplifier board securely within an electrical enclosure, away from excessive heat, vibration, and electromagnetic interference.
- Ensure adequate ventilation around the board to prevent overheating.

4.2. Wiring Connections

The JY4010/JY4020 board features multiple terminal blocks for power input, signal input, and valve output. Specific pin assignments are typically silk-screened on the board or provided in a detailed wiring diagram from the machine manufacturer.

- **Power Supply:** Connect the appropriate DC power supply (e.g., 24V DC) to the designated power input terminals. Observe correct polarity.
- **Signal Input:** Connect the control signal source (e.g., 0-10V, 4-20mA) from the machine's PLC or controller to the signal input terminals.
- **Valve Output:** Connect the proportional valve's solenoid coils to the corresponding output terminals on the amplifier board. Ensure correct wiring for each proportional channel (e.g., pressure and flow).
- **Grounding:** Ensure all ground connections are properly made to the machine's protective earth.

4.3. Initial Adjustments

The board typically includes potentiometers for fine-tuning parameters such as minimum current, maximum current, ramp times, and gain. These adjustments should be made carefully according to the specific requirements of the hydraulic system and proportional valve being controlled.

- **Minimum Current (Qmin/Pmin):** Adjust to set the minimum current output to the valve, corresponding to the minimum desired pressure or flow.
- **Maximum Current (Qmax/Pmax):** Adjust to set the maximum current output to the valve, corresponding to the maximum desired pressure or flow.
- **Ramp Times:** If available, adjust acceleration and deceleration ramp times to ensure smooth valve operation and prevent hydraulic shock.
- **Gain:** Adjust the gain to match the amplifier's response to the input signal and the valve's characteristics.

Note: Always refer to the specific documentation of your proportional valve and hydraulic system for precise adjustment procedures.

5. OPERATING PRINCIPLES

Once properly installed and adjusted, the amplifier board operates by receiving an analog control signal from a machine controller (e.g., PLC). This signal is then processed and converted into a precise current output that drives the proportional valve's solenoid. The current output is directly proportional to the input signal, allowing for continuous and fine control over the valve's opening, thereby regulating hydraulic pressure or flow.

- **Input Signal:** The board accepts standard industrial control signals (e.g., 0-10V, 4-20mA).
- **Output Current:** The output current drives the proportional valve, typically in the range of milliamps, precisely controlling the valve's position.
- **Feedback (if applicable):** Some advanced systems may incorporate feedback loops (e.g., from pressure transducers or flow meters) to the main controller, which then adjusts the input signal to the amplifier board for closed-loop control.

6. MAINTENANCE

The Teekos proportional valve amplifier boards are designed for reliability and require minimal maintenance. However, periodic checks can help ensure optimal performance and longevity.

- **Visual Inspection:** Periodically inspect the board for any signs of physical damage, loose connections, discoloration from overheating, or accumulation of dust and debris.
- **Cleaning:** If necessary, gently clean the board using a soft brush or compressed air to remove dust. Ensure

power is disconnected before cleaning. Do not use liquid cleaners unless specifically designed for electronics and applied with caution.

- **Connection Integrity:** Check all terminal block connections to ensure they are secure and free from corrosion.
- **Environmental Control:** Maintain the operating environment within specified limits regarding temperature and humidity to prevent premature component failure.

7. TROUBLESHOOTING

Before troubleshooting, ensure all safety precautions are followed and power is disconnected if physical inspection or wiring changes are required.

Problem	Possible Cause	Solution
No output current to valve	<ul style="list-style-type: none">• No power supply to board• Incorrect wiring• No input signal• Blown fuse (if applicable)• Faulty board	<ul style="list-style-type: none">• Verify power supply connections and voltage.• Check all wiring against machine diagrams.• Confirm input signal from controller.• Inspect and replace fuse if necessary (with correct rating).• Contact technical support if board is suspected faulty.
Incorrect valve response (e.g., too slow, too fast, unstable)	<ul style="list-style-type: none">• Incorrect potentiometer settings (Min/Max current, Ramp, Gain)• Valve malfunction• Input signal issues	<ul style="list-style-type: none">• Re-adjust potentiometers according to system requirements.• Inspect and test the proportional valve independently.• Verify stability and range of input signal.
Overheating of board components	<ul style="list-style-type: none">• Insufficient ventilation• Overload condition• Short circuit in valve wiring	<ul style="list-style-type: none">• Improve airflow around the board.• Verify valve current draw is within board specifications.• Check valve wiring for shorts.

If problems persist after attempting these solutions, contact a qualified service technician or the product supplier for further assistance.

8. SPECIFICATIONS

Feature	Description
Product Type	Proportional Valve Amplifier Board
Models Covered	JY4010, JY4020 (Double Proportional), PCB019 (Single Scale)
Application	Injection Molding Machines, Die Casting Machines, Hydraulic Control Systems

Feature	Description
Origin	Mainland China
Manufacturer	Generic
Part Number	TKS-CC08349315BC69B943AE933B6AD1A35D
ASIN	B0DN65BXHP
Input Signal	Typically 0-10V or 4-20mA (specifics depend on model variant and configuration)
Output Current	Modulated current for proportional valve solenoids

9. WARRANTY AND SUPPORT

Specific warranty terms and conditions for this product are not provided in the available information. Please refer to your purchase documentation or contact the seller directly for details regarding warranty coverage and technical support.

For technical assistance, it is recommended to contact the supplier or a qualified industrial electronics technician.