

AUcontrols

Signal Insulation Board

**Equipments and
DC Motor Speed
Controls
For the industry**

AUcontrols

Thank you for purchasing our Controls & DC Speed Controllers, we guaranty you will have years of dependable operation with our equipments.

Our equipments have a 1 year guaranty under normal operations conditions.

Our goal is to keep your machines and production moving.

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Our equipment & DC Speed controllers had being designed with the customer in mind, to meet their expectations for industry, to give them the best quality and service for their investment.

We have many years working with our customers and we know their needs. That is why we offer the best solution to meet their needs in speed, power and torque control for their DC motors.

We offer Signal Insulation boards and DC Motor Speed Controls for DC motors from: 1/25 HP to 5 HP, for single phase power: 115 VAC / 230 VAC input. And outputs: 90 VDC / 180 VDC (According to the input voltage).

We offer different versions depending in the application.

Signal Insulation boards are used to run more than 1 motor (AC/DC) Master-Slave (Follower) or trough a PLC or CNC equipment.

DC controllers/drives are used in many machines because they are best choice for full torque and/or speed control applications.

Operation manual

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IMPORTANT NOTE:

A QUALIFIED TECHNICIAN MUST INSTALL THIS EQUIPMENT; THERE IS A RISK OF ELECTRIC SHOCK, WHICH CAN BE FATAL IF THE PERSON INSTALLING THE EQUIPMENT IS NOT FAMILIAR WITH DC CONTROLS OR SIGNAL INSULATION BOARDS.

WE ARE NOT RESPONSIBLE FOR WRONG CONNECTIONS, ALTERATIONS, CHANGES AND/OR DAMAGES ARISING FROM THEM.

INSTALLING THE SIGNAL INSULATION BOARD Mod: AIB-U.

1. Install it in a clean, dry and ventilated place away from vibrations, and run the wires according to the distance from the AC power and signal to the board. 2 wires for AC power + ground, 2 wires for Input signal and 2 for Output signal, use shielded cables for Signals.
2. Select the AC voltage in the board 115 or 230 VAC. And connect them to the board. **WARNING: DO NOT CONNECT ANY WIRES WITH POWER APPLIED!**
3. Mark INPUT and OUTPUT wires (Don't mix them) and make sure the wires are tightened in the board. **DO NOT MIX SIGNAL WIRES with POWER WIRES** to prevent erratic operation.
4. For Input signals from PLC's or CNC's use terminal numbers according to your needs:
5. 1 (4 ~ 20 mA), 2 (0 ~ 5 VDC) , 3 (0 ~ 10 VDC) and 4 (Common), 5 GND (Shield).
6. The Output terminals to the DC or AC drives: 10 (+) and 11 (-), the voltage output is: 0 ~ 10 VDC, regardless of the input voltage or milliamps you select in the input terminal.
7. The Signal Insulation Boards are adjusted already, but IF you want to make additional adjustments, you can do it. You'll need a Voltage Meter (Digital or Analog) good Quality and well calibrated to be sure the Voltage readings are correct.
8. Once you have all your wires connected, make sure everything is tighten and in the right place, and have your PLC or CNC adjusted to "0" Volts Output, then apply power to the AIB-U Signal Insulation Board and to the rest of the equipment. Start the PLC and check operation.
9. Depending in the application and/or configuration of your equipment, you may need to adjust the Output Speed (Voltages) of your DC Motor Speed Controllers or AC Drives.

ADJUSTMENTS.

The AIB-U has 2 trim-pots to adjust the way the signals are going to be managed. The Board is adjusted already to be: 0~10 VDC Input to 0~10 VDC Output (1 : 1).

The first one is labeled as: “**MAX**” by the Input side of the board. This one is use to set the maximum Output DC Voltage (0 ~ 10 VDC, terminals 10 (+) & 11 (-)) when the maximum Input DC Voltage/ Milliamps is applied. Using a Good Voltmeter (Digital or Analog) we can measure this voltage.

The Input MUST be only one:

0 to 5 VDC between terminals 4 (Com) and 3 (+ 5V), or: 0 to 10 VDC between Terminals 4 (Com) and 2 (+10V) or: 4 to 20 mA. -Between Terminals 4 (Com) and 1 (+ mA.).

The second one is the “**MIN**” to set the minimum Output voltage when we apply the minimum Input voltage in the same Terminals as describe above.

Calibrating the Signal Isolator for mA. Signal Input:

1. Connect the voltmeter to Terminals “10” (+) and “11”(-).
2. Apply the minimum signal input current to: “4” (-) and “1” (+).
3. Adjust the **MIN** Trim pot to have output **0 Volts DC**.
4. Apply the maximum signal input current to “4” (-) and “1” (+).
5. Adjust the **MAX** Trim pot to have an output voltage of 10 Volts DC.

NOTE:

Do not make any adjustments in the signal insulation board if not absolutely necessary, if you have to make any adjustments start first with **MIN** and then the **MAX** trim pots.

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WARNING!

Under NO circumstance should power and signal wires be bundled together. Induced voltages can cause erratic behavior in any electronic equipment.

Use shield wire for signal control wires and run them in a separate conduit a way from AC Power wires.

WARNING!

DO NOT make connections to this equipment with power applied to it! Failure to heed this instruction may result in fire or serious injury.

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The Signal Insulation Board can be operated from a PLC, CNC or any signal source Like: Motors, Tachometers, transducers, etc. that will provide the following:

- | | |
|-----------------|------------------------|
| 1. 4 ~ 20 mA. | Input in:Term: 1 and 4 |
| 2. 0 ~ 5 VDC. | Input in:Term: 3 and 4 |
| 3. 0 ~ 10 VDC. | Input in:Term: 2 and 4 |
| 4. 0 ~ 90 VDC. | For these see manual |
| 5. 0 ~ 180 VDC. | For these see manual |

Note: Term 4 is Common for signal input only!

The Output signal is: 0 ~ 10 VDC Term: 10 and 11

Terminal 10 is “+” and Terminal 11 is “-”

ONLY one signal should be applied into the AIB-U to control a devise which can be: AC Drive, DC Drive or any other system that needs: 0~ 10 VDC to be controlled.

You can operate more than one DC Drive with one AIB-U following the instructions in this manual.

You can also operate more than one AC Drive* with one AIB-U following the instructions in its manufacture’s manual. (*Always make sure the AC Drive’s input is NOT grounded nor “HOT”, In that case you will need one Signal Insulator board for each Drive.)

TROUBLESHOOTING

Symptom	Possible Cause	Solution
No signal Output from the AIB-U	*No power to the Board. *Bad Fuse.	*Check Switch. *Change Fuse
The Output from the AIB-U board is lower than the Voltage Input Signal	*Wrong terminal wiring. *Out of adjustment.	*Make sure the Voltage is Applied to the right terminal. *Re-Adjust Board
The Output from AIB-U is higher than the Voltage Input signal	*Wrong terminal wiring. *Out of adjustment.	*Make sure the Voltage is Applied to the right terminal. *Re-Adjust Board
The Output from the AIB-U is not constant.	*Check the Input signal to see if there are any variations.	*Bad Input Signal. *Change Board
The Speed of the Motors is not the same.	*Check the speed potentiometers of each Drive	*Adjust each Potentiometer to the desire Motor speed.

**Specifications for the AIB-U
Signal Insulation Board**

**Power Input: 115 / 230 VAC (+/- 10%)
@ 120 mA Max.**

Frequency: 50/60 Hz.

Output: 0 ~ 10 VDC @ 15 mA. Max.

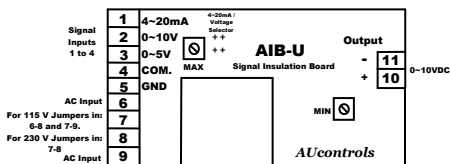
**Operation Temperature: -5°C ~ 45°C
(23°F ~ 113°F)**

Temperature Drift: 3 mV per °C Aprox.

**Use 250 V AC / 1 Amps fuse to feed the
board.**

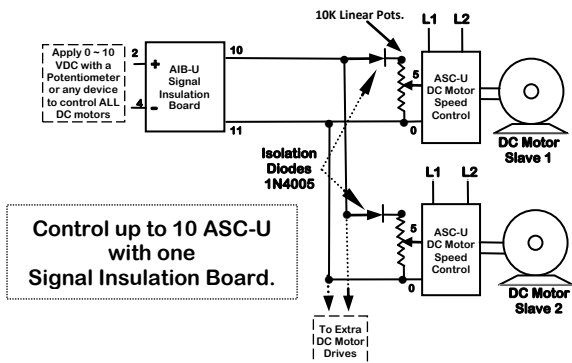
**Always make sure to use fuses
and a disconnect switch to feed
the Signal Insulation Board.**

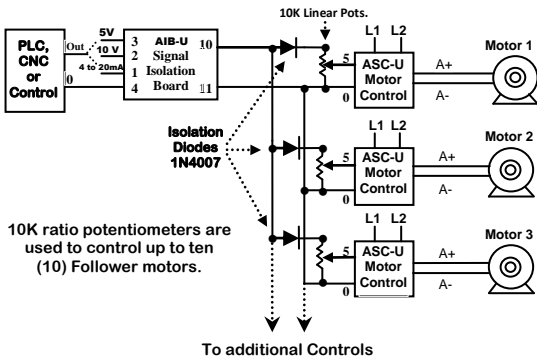
AUcontrols Wiring Diagrams



Signal Insulation Board Terminal connections.

Signal Inputs	1,2,3. COM 4
Power Inputs	6 and 9, 5 GND.
For 1150 VAC	Jumper: 6-8 and 7-9.
For 230 VAC	Jumper: 7-8.
Signal Output	10(+) 11(-)



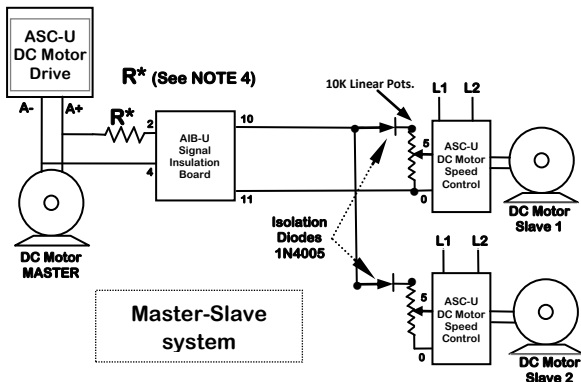


WARNING! For the signal Isolator connections to multiple speed controls.

1. Multiple controls must be powered from **THE SAME PHASE OF AC LINE**, and **DO NOT** mix L1 and L2, always connect L1 with all L1's and L2 with all L2.
2. The positive input terminal to each speed control must be installed with a 1 Amperes / 600 Volts (1N4005) isolation diode as shown.
3. Multiple speed controls **CAN NOT** be used with: PWM, Regenerative or Variable Frequency Drives (Inverters). You will need another isolation board if you want to connect different controllers or drives.

**IF YOU NEED HELP WITH YOUR DISGN WE CAN HELP,
CONTACT US AT:**

info@aucontrols.com



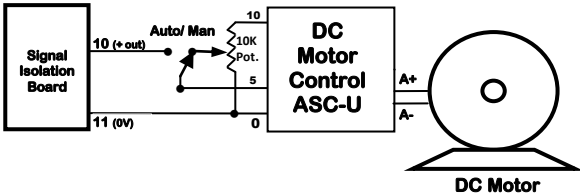
WARNING! For the signal Isolator connections to multiple speed controls.

NOTE.

1. Multiple DC controls must be powered from **THE SAME PHASE OF AC LINE, BUT DO NOT MIX** L1 and L2, always connect L1 with all L1's and L2 with all L2.
2. The positive input terminal to each speed control must be installed with a 1 Amperes / 600 Volts (1N4005) isolation diode as shown.
3. Multiple Drives **CAN NOT** be used with: **PWM, Regenerative** or **Variable Frequency Drives (Inverters)**. YOU WILL NEED MORE ISOLATION BOARDS IF YOU WANT TO CONNECT DIFFERENT CONTROLLERS OR DRIVES.
4. The Resistor shown in the drawing (R* which can be 330K / ½ Watt, for: 90 VDC or 680K Ohms for: 180 VDC / ½ Watt) has to be placed between the Drive's output and the Signal Insulation Boards.

IF YOU NEED HELP WITH YOUR DISGN WE CAN HELP, CONTACT US at:

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Process control with Auto / Man Switch

AIB-U can operate either DC or AC Drives.

For AC* Drives follow manufacturer instructions. Always make sure do not mix or reverse wires (*See NOTE).

To use the AIB-U as Master-Slave system you'll need some extra resistors as follows:

- For Armature Voltages: 90 VDC**
You'll need a 330K Ohm resistor in series with terminal #2
- For Armature Voltages: 180 VDC**
You'll need a 680K Ohm resistor in series with terminal #2