

KBPC-240D QUICK-START INSTRUCTIONS

FOR TECHNICAL ASSISTANCE
CONTACT OUR SALES DEPARTMENT AT 954-346-4900
CALL TOLL FREE 800-221-6570

For Complete Details and Instructions, See the
KBPC-240D Installation and Operation Manual Online

**SEE SAFETY WARNING
ON REVERSE SIDE**



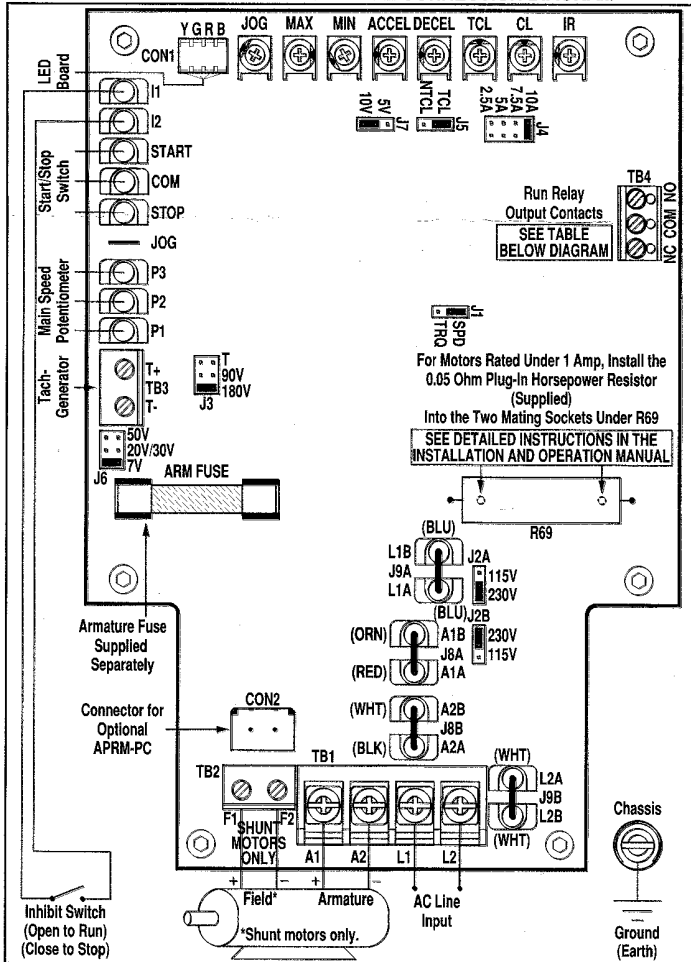
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INITIAL SETUP AND CONNECTIONS

Wire the control in accordance with National Electrical Code requirements and other local codes that may apply to the application. [Factory jumper settings shown in **bold**.]

1. Install the correct Armature Fuse (supplied separately).
2. Set Jumper J1 for Speed or Torque Mode (SPD, TRQ).
3. Set Jumpers J2A & J2B to the corresponding AC Line input voltage (230V, 115V).
4. Set Jumper J3 to the rated Motor Voltage or for tach-generator (180V, 90V, T).
5. Set Jumper J4 to the rated Motor Current (10A, 7.5A, 5A, 2.5A).
6. Set Jumper J5 to the desired Current Limit Mode (TCL, NTCL).
7. Set Jumper J7 to the corresponding Signal Input voltage (10V, 5V).
8. Connect the AC Line input to TB1 Terminals L1 and L2.
9. Connect the Motor Armature to TB1 Terminals A1 and A2.
10. Shunt Motors Only: Connect the Motor Field to TB2 Terminals F1 and F2 (full voltage field) or TB2 Terminal F1 and TB1 Terminal L1 (half voltage field).
11. Tach-Generator Feedback Only: Set Jumper J3 to the "T" position and set Jumper J6 to the rated tach-generator voltage (7V, 20V/30V, 50V). Connect the tach-generator to TB3 Terminals T+ and T-.

CONTROL LAYOUT AND GENERAL CONNECTION DIAGRAM



OPERATING CONDITION AND RUN RELAY OUTPUT CONTACTS STATUS			
Operating Condition	Description	N.O. Contact	N.C. Contact
Power Off	Main Power Disconnected	Open	Closed
Run Mode	Normal Drive Operation	Closed	Open
Stop Mode	Selected by Operator	Open	Closed
Trip	Drive Tripped	Open	Closed

JUMPER SETTINGS

The control has selectable jumpers which must be set before it can be used.

J1 (CONTROL MODE): J1 is factory set to the "SPD" position to control motor speed. To control motor torque, set J1 to the "TRQ" position. The speed and torque will be a linear function of the potentiometer rotation or analog voltage signal input. **Note:** When operating in the Torque Mode, J5 must be set to the "NTCL" position or the drive will shut down when the CL Timer times out.

J1 Set for Speed Control Mode	J1 Set for Torque Control Mode

J2A AND J2B (AC LINE INPUT VOLTAGE): J2A and J2B are factory set to the "230V" position for 208/230 Volt AC Line input. For 115 Volt AC Line input, set J2A and J2B to the "115V" position. Be sure J2A and J2B are set to the actual AC Line input voltage applied to the control.

J2A and J2B Set for 208/230 Volt AC Line Input	J2A and J2B Set for 115 Volt AC Line Input

J3 (MOTOR VOLTAGE AND DC TACH-GENERATOR): J3 is factory set to the "180" position for 180 Volt DC motors. For 90 Volt DC motors, set J3 to the "90" position. If using a DC tach-generator, set J3 to the "T" position and connect the positive (+) lead to TB3 Terminal T+ and the negative (-) lead to TB3 Terminal T-.

J3 Position	Description
	Tach-generator.
	90 Volt motor.
	180 Volt motor.

J4 (MOTOR CURRENT): J4 is factory set to the "10A" position. The maximum output current is 150% of the J4 setting, which can be adjusted with the CL Trimpot. Be sure J4 is set to the rated motor current.

J4 Position (Motor Current) (Amps DC)	Motor Horsepower (HP (kW))	
	90 Volt Motors	180 Volt Motors
10A	1 (0.75)	2 (1.5)
7.5A	3/4 (0.5)	1 1/2 (1)
5A	1/2 (0.37)	1 (0.75)
2.5A	1/4 (0.18)	1/2 (0.37)

J5 (CURRENT LIMIT MODE): J5 is factory set to the "TCL" position for Timed Current Limit, which will trip the control after being in current limit for a preset time, set by the TCL Trimpot. With J5 in the "NTCL" position, the control is in Non Timed Current Limit, and will not trip during overload but remain at the preset level until a fuse blows or the drive is manually turned off. **Note:** If the control times out in TCL Mode, the drive can be reset by setting the Start/Stop Switch to the "STOP" position and back to the "START" position or by disconnecting and reconnecting the AC Line. If the Start/Stop Switch has been jumpered, disconnect and reconnect the AC Line to reset the drive.

J5 Set for TCL Mode	J5 Set for NTCL Mode

J6 (TACH-GENERATOR VOLTAGE): If a tach-generator feedback is used, select the corresponding J6 position, in volts per 1000 RPM (based on a maximum motor speed of 1800 RPM). **Notes:** 1. See the Installation and Operation Manual, for detailed instructions, if other than a standard tach-generator voltage or motor speed is used. 2. Selection of J6 is not required if a tach-generator is not used.

J3 Position	Description
	50 Volt tach-generator.
	20/30 Volt tach-generator.
	7 Volt tach-generator.

J7 (SIGNAL INPUT VOLTAGE): J7 is set to the "10V" position for Main Speed Potentiometer operation. If an isolated analog voltage is used, set J7 to the corresponding signal input voltage. If an isolated signal is not available, install the KBSI-240D Signal Isolator (Part No. 9431).

J7 Set for 10 Volt Input	J7 Set for 5 Volt Input

AC LINE AND ARMATURE FUSING

All fuses should be Littelfuse 3AB, Bussmann ABC, or equivalent.

AC LINE FUSE: The control does not contain an AC Line fuse. It is recommended to install a 20 Amp fuse or a circuit breaker (Square D QOU or equivalent) in series with each ungrounded conductor. On domestic 230 Volt AC lines, separate branch circuit protection for each line must be used.

ARMATURE FUSE: An Armature Fuse (supplied separately) must be installed in the Armature Fuse holder. Select the correct armature fuse in accordance with the table below.

ARMATURE FUSE SELECTION

Horsepower		Approximate Motor Current (Amps DC)	Fuse Rating (Amps AC)
90 Volt DC Motors	180 Volt DC Motors		
1/8	1/4	1.3	2
1/6	1/3	1.7	2 1/2
1/4	1/2	2.5	4
1/3	3/4	3.3	5
1/2	1	5	8
3/4	1 1/2	7.5	12
1	2	10	20

THESE QUICK-START INSTRUCTIONS COVER MODELS
KBPC-240D (Part Nos. 9338 (Black Case) and 9342 (White Case))

AC LINE, MOTOR, AND GROUND CONNECTIONS

See the Control Layout and General Connection Diagram. Download the Installation and Operation Manual by scanning the QR Code at the top of this page.

WARNING! High Voltage! Read Safety Warning before using the control. Disconnect the main power before making connections to the control. To avoid electric shock, be sure to properly ground the control.

CAUTION! The AC Line voltage setting of the control must match the actual AC Line input voltage.

AC LINE INPUT: Wire the AC Line to TB1 Terminals L1 and L2.

GROUND: Connect the ground wire (earth) to the green ground screw (chassis).

PERMANENT MAGNET (PM) MOTOR ARMATURE: Wire the motor armature positive (+) lead to TB1 Terminal A1 and the negative (-) lead to TB1 Terminal A2.

FIELD (SHUNT MOTORS ONLY): Full Voltage Field: Wire the field positive (+) lead to TB2 Terminal F1 and the negative (-) lead to TB2 Terminal F2. **Half Voltage Field:** Wire the field positive (+) lead to TB2 Terminal F1 and the negative (-) lead to TB1 Terminal L1.

INHIBIT SWITCH OR CONTACT CONNECTION

The control can be stopped and started with the Inhibit Circuit.

WARNING! The Inhibit Circuit is never to be used as a Safety Disconnect since it is not fail-safe. Use only the AC line for this purpose.

INHIBIT: Close to stop, open to run. Wire the switch or contact to Terminals I1 and I2. An open collector (NPN) can be wired in lieu of a switch or contact.

ADJUSTABLE TRIMPOTS

The control contains trimpots which have been factory set for most applications. Some applications may require readjustment of the trimpots in order to tailor the control for a specific requirement.

Read Safety Warning.

MINIMUM SPEED (MIN): Sets the minimum speed of the motor when the Main Speed Potentiometer is set fully counterclockwise. **Units:** % Base Speed

MAXIMUM SPEED (MAX): Sets the maximum speed of the motor when the Main Speed Potentiometer is set fully clockwise. **Units:** % Base Speed

ACCELERATION (ACCEL): Allows for a smooth start over an adjustable time period each time the AC power is applied (and the control "started") or the Main Speed Potentiometer is adjusted to a higher speed. The ACCEL Trimpot sets the time it will take for the motor to accelerate from zero speed to full speed. Range is from 0.1 to 15 seconds. **Units:** Seconds

DECELERATION (DECAL): Sets the ramp-down time when the Main Speed Potentiometer is adjusted to a lower speed. **Units:** Seconds.

CURRENT LIMIT (CL): Sets the current limit (overload), which limits the maximum current (torque) to the motor. The CL also limits the AC Line inrush current to a safe level during startup. **Do not exceed 2 times motor current rating (maximum clockwise position).** **Units:** % Range Setting

IR COMPENSATION (IR): Sets the compensating voltage required to keep the motor speed constant under changing loads. If the load does not vary substantially, the IR Trimpot may be set to a minimum level (approximately 1/4 of full clockwise rotation). **Units:** Volts DC

TIMED CURRENT LIMIT (TCL): Sets the time the control will stay in current limit before it trips. J5 must be in the "TCL" position. **Units:** Seconds

JOG (JOG): Sets the jog speed. This trimpot is used when the Run-Stop-Jog Switch (Part No. 9340) is installed. **Units:** % Base Speed

APPLICATION INFORMATION

MOTOR TYPE: The control is designed for permanent magnet (PM) and Shunt Wound DC motors. Controls operated on 115 Volt AC line input are designed for 90 Volt SCR rated motors. Controls operated on 230 Volt AC line input are designed for 180 and 90 Volt SCR rated motors. Use of motors with higher rated voltage will result in a reduction of the available maximum speed. Also, if the motor is not an SCR rated type, the actual AC line current at full load and full speed should not exceed the motor's DC nameplate current rating.

TORQUE REQUIREMENTS: The motor selected for the application must be capable of supplying the necessary torque. Be sure the current under full load does not exceed the motor nameplate rating.

CAUTION! Consult our Sales Department before using this control on constant horsepower applications such as saws and drill presses.

ARMATURE SWITCHING: WARNING! Do not switch the armature in and out of circuit or catastrophic failure will result. If armature switching is required for reversing or dynamic braking, use the optional Forward-Brake-Reverse Switch (Part No. 9339) or APRM-PC Electronic Forward-Brake-Reverse (Part No. 9378).

STEP-DOWN TRANSFORMER AND AC LINE SWITCHING: When using a step-down transformer (460 Volts AC to 230 Volts AC), be sure the output current rating of the transformer is at least 3 times the current rating of the motor. Do not switch the primary side of the transformer to disconnect power or catastrophic failure can result. Always disconnect the control from the secondary side of the transformer.

OPTIONAL ACCESSORIES

On/Off AC Line Switch (Part No. 9341): Provides a disconnect for the AC Line.

Run-Stop-Jog Switch (Part No. 9340): Provides a momentary jog speed that can be used to increment a machine into position.

Forward-Brake-Reverse Switch (Part No. 9339): Provides a reversing function with dynamic braking. A special hesitation switch is used along with an Inhibit function which minimizes arcing and plug-reversing.

APRM-PC Electronic Forward-Brake-Reverse (Part No. 9378): Provides anti-plug "instant" reversing and solid state dynamic braking. It senses armature voltage and permits armature switching to take place only when current levels are near zero. This eliminates contact arcing normally associated with relay reversing circuits. Includes a Forward-Brake-Reverse Switch that mounts on the front cover with a watertight boot. The APRM-PC can also be operated with external contacts.

KBSI-240D Signal Isolator (Part No. 9431): Provides isolation for non-isolated signal sources.

Auto/Manual Switch (Part No. 9377): When used with the KBSI-240D, it provides signal selection from the Main Speed Potentiometer or the KBSI-240D.

To Validate the 18 Month Warranty, Register this Product Online

KBelectronics.com/registration.htm

HIGH VOLTAGE DIELECTRIC WITHSTAND TEST (HI-POT TEST)

WARNING! Disconnect all AC power before performing hi-pot test. Testing agencies such as UL, CSA, etc., usually require that equipment undergo a Hi-Pot Test. In order to prevent catastrophic damage to the control, which has been installed in the equipment, it is recommended that the procedure outlined in the Installation and Operation Manual (viewable online and downloadable) be followed.

Do not exceed 1500 VAC for 115 VAC controls and 1700 VAC for 230 VAC Controls. Control damage may result if hi-pot voltage is exceeded.

Note: Controls have been factory hi-pot tested in accordance with UL508C Standard.

CE INFORMATION

This product complies with all CE directives pertinent at the time of manufacture. Contact our Sales Department for Declaration of Conformity. Installation of a CE approved RFI filter is required. Additional shielded cable and/or AC Line cables may be required.

Note: To meet CE requirements, a separate CE approved filter must be installed.

UL NOTICE

115 Volt Drives: Suitable for use on a circuit capable of delivering not more than 5 kA RMS symmetrical Amperes. 115 Volts maximum. Use copper conductors rated 75 °C. Suitable for operation in a maximum surrounding air temperature of 40 °C.

230 Volt Drives: Suitable for use on a circuit capable of delivering not more than 5 kA RMS symmetrical Amperes. 230 Volts maximum. Use copper conductors rated 75 °C. Suitable for operation in a maximum surrounding air temperature of 40 °C.

SAFETY WARNING! - PLEASE READ CAREFULLY!

This product must be installed and serviced by a qualified technician, electrician, or electrical maintenance person familiar with its operation and the hazards involved. Proper installation, which includes electrical connections, fusing or other current protection, and grounding, can reduce the chance of electrical shocks, and/or fires, in this product or products used with this product, such as electric motors, switches, coils, solenoids, and/or relays. Do not use this drive in an explosion-proof application. Eye protection must be worn and insulated adjustment tools must be used when working with drive under power. This product is constructed of materials (plastics, metals, carbon, silicon, etc.) which may be a potential hazard. Proper shielding, grounding, and filtering of this product can reduce the emission of radio frequency interference (RFI) which may adversely affect sensitive electronic equipment. It is the responsibility of the equipment manufacturer and individual installer to supply this Safety Warning to the ultimate end user of this product. (SW 8/2012)

The control contains electronic Start/Stop circuits, which can be used to start and stop the control. However, these circuits are never to be used as safety disconnects since they are not fail-safe. Disconnect the input power for this purpose. Be sure to read and follow all instructions carefully. Fire and/or electrocution can result due to improper use of this product.

The information contained in these instructions is intended to be accurate. However, the manufacturer retains the right to make changes in design which may not be included herein.



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