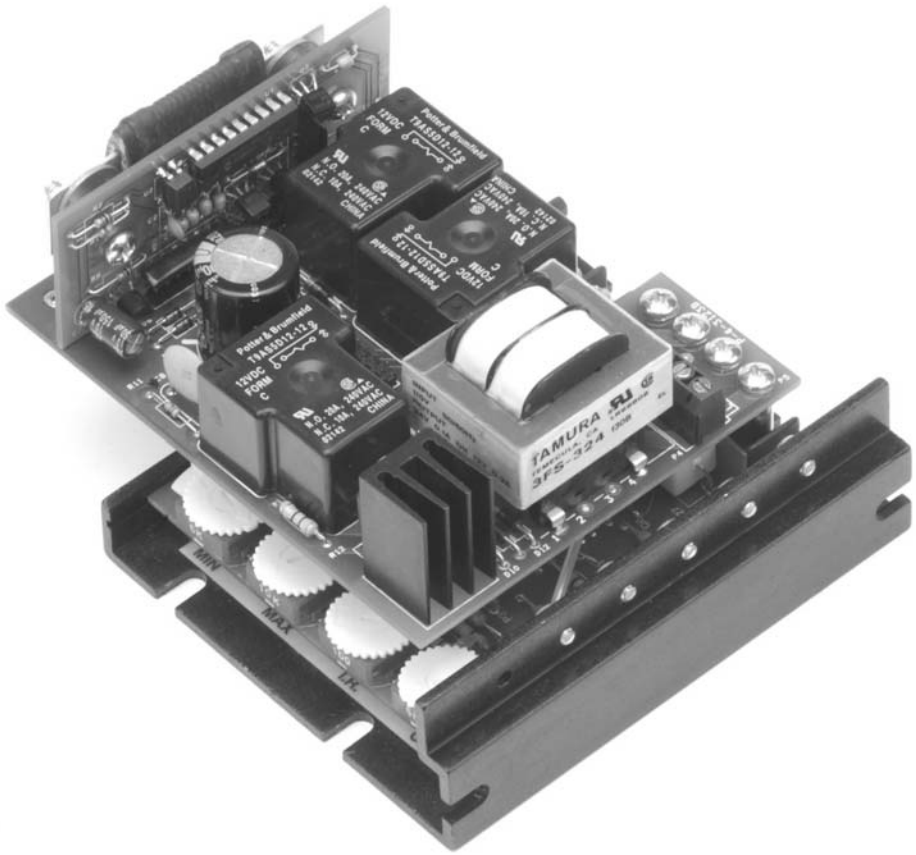
130 CONTROL SERIES

DART CONTROLS

Instruction Manual

Cycling and Reversing Variable Speed DC Control with on Board Dynamic Braking



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Quick Jump

What models and options are available?
See page 4.

Looking for detailed specifications?
See page 11.

Want to get started fast?
See basic electrical hook-up details on page 6.
See mechanical installation details on page 3.

Need Help?
See troubleshooting on page 10.

Warranty

Dart Controls, Inc. (DCI) warrants its products to be free from defects in material and workmanship. The exclusive remedy for this warranty is DCI factory replacement of any part or parts of such product which shall within 12 months after delivery to the purchaser be returned to DCI factory with all transportation charges prepaid and which DCI determines to its satisfaction to be defective. This warranty shall not extend to defects in assembly by other than DCI or to any article which has been repaired or altered by other than DCI or to any article which DCI determines has been subjected to improper use. DCI assumes no responsibility for the design characteristics of any unit or its operation in any circuit or assembly. This warranty is in lieu of all other warranties, express or implied; all other liabilities or obligations on the part of DCI, including consequential damages, are hereby expressly excluded.

NOTE: Carefully check the control for shipping damage. Report any damage to the carrier immediately. Do not attempt to operate the drive if visible damage is evident to either the circuit or to the electronic components.

All information contained in this manual is intended to be correct, however information and data in this manual are subject to change without notice. DCI makes no warranty of any kind with regard to this information or data. Further, DCI is not responsible for any omissions or errors or consequential damage caused by the user of the product. DCI reserves the right to make manufacturing changes which may not be included in this manual.

WARNING

Improper installation or operation of this control may cause injury to personnel or control failure. The control must be installed in accordance with local, state, and national safety codes. Make certain that the power supply is disconnected before attempting to service or remove any components!!! If the power disconnect point is out of sight, lock it in disconnected position and tag to prevent unexpected application of power. Only a qualified electrician or service personnel should perform any electrical troubleshooting or maintenance. At no time should circuit continuity be checked by shorting terminals with a screwdriver or other metal device.

TABLE OF CONTENTS

INTRODUCTION

- The 130 series reversing speed control is designed to provide instant reversing, quick precise stopping or rapid cycling for a wide range of DC motor applications. The 130 series controls outperform other dynamic braking and reversing controls by utilizing Dart's unique zero speed detect and solid state assisted dynamic braking circuits. These circuits eliminate the contact arcing and failed braking problems associated with other reversing and dynamic braking controls. Dart's zero speed detect circuit also eliminates the motor problems associated with plug reversing a motor by not reapplying power to the motor until zero speed is obtained.

- The 130 series controls are also designed so that upon a power loss condition to the control or an E-stop condition, the control will drop into a dynamic brake condition to safely and quickly bring the motor to a stop and remain there until power is reapplied and a run condition is recognized.

- The 130 series variable speed control come in an extremely small package size and fits the industry standard footprint for both vertical and horizantal mounting patterns.

- The 130 series variable speed control is available in a range of 500mA through 10Adc output at 120Vac or 240Vac input. This represent a Horsepower range of 1/50 through 1 at 90Vdc out or 1/25 through 2 at 180Vdc out.

- The control is designed for DC Permanent Magnet and Shunt Wound motors in the above horsepower ranges.

- Incoming AC voltage is converted to adjustable full wave rectified DC voltage to operate the DC motor. Also, a full wave field voltage is provided for shunt wound motors.

- The control incorporates transient voltage protection with adjustable current limit which fits into a compact package. It also features adjustable IR compensation along with adjustable minimum and maximum speeds settings.

- Available softstart option. (Consult factory for your OEM specific needs)

- c UL us LISTED Listed, file #E78180

CONTROL FEATURES

- **MINIMUM SPEED -** Allows adjustment of the motor speed when the speedpot is set at minimum (CCW). This permits the user to eliminate "Deadband" on the main speed control, permitting zero calibration. Clockwise rotation of "MIN" trimpot increases speed.

- **MAX SPEED (Maximum Speed) -** Allows adjustment of the motor speed when the speedpot is set at maximum (CW). This permits the user to eliminate the top end "Deadband", which will provide full speed at maximum rotation. Rotation of the "MAX" trimpot in the clockwise direction increases the maximum motor speed.

- **I.R. COMP (Speed Regulation) -** This allows for adjustment of the circuitry that controls the speed regulation of the motor. The circuitry controls armature speed by changing the armature voltage to compensate for increased or decreased motor loading. Clockwise rotation of the "IR COMP" trimpot will increase compensation.

- **CUR. LIM. (Current Limit) -** Provides protection from excessive armature current by limiting the maximum armature current the control can provide. This enables adjustment of the maximum torque the motor can deliver. Torque adjustment (Cur. Lim.) is preset at 125% of rated motor torque (current) based on horsepower. Clockwise rotation of the “CUR. LIM.” trimpot increases the torque (current) the control will provide.

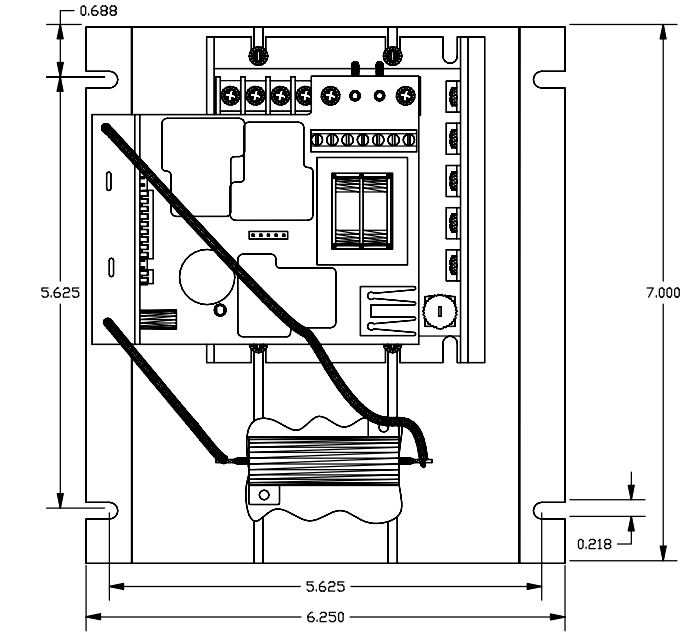
- **BARRIER TERMINAL BLOCKS -** Allows for connection of AC lines, motor leads, motor field (if needed), speed potentiometer and Fwd-Brake-Rev inputs.

- **ONBOARD DYNAMIC BRAKE RESISTOR -** Consult factory for available remote mounting option of Brake resistor.

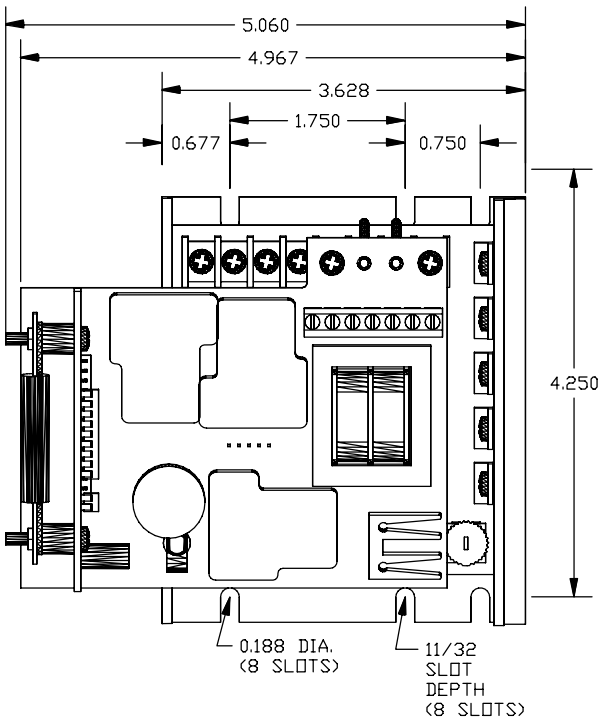
- **POWER LOSS BRAKE -** Upon a power loss to the control or an E-stop command, the control will drop into a dynamic brake condition to safely and quickly bring the motor to a stop and remain there until power is reapplied and a run condition is recognized.

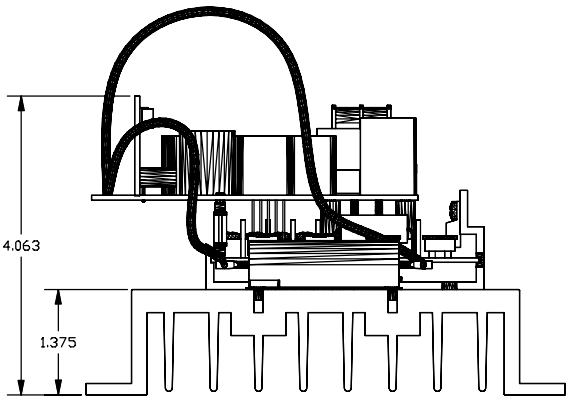
130 SERIES HEATSINK AND MOUNTING DIMENSIONS

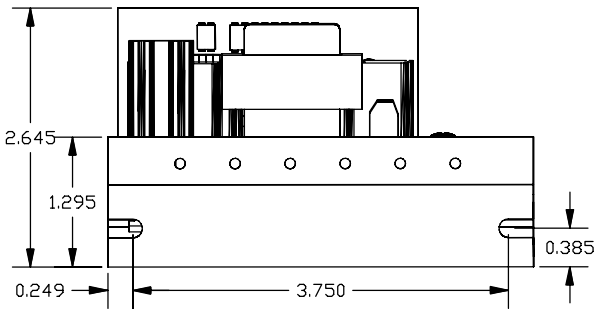
AUXILIARY HEATSINK -HS(125D)



STANDARD HEATSINK







DO NOT MOUNT WHERE AMBIENT TEMPERATURE IS OUTSIDE THE RANGE OF -10° C (15° F) TO 45° C (115° F)

MODEL SELECTION

NOTE: * With suitable external heatsink (where 130 extrusion temperature does not exceed 70° C.), maximum rating for

INPUT VOLTAGE	OUTPUT VOLTAGE	MODEL NUMBER	OUTPUT* AMPS DC	HORSEPOWER
120 VAC	0-90 VDC	130LC12	1.2 ADC	1/50 – 1/8
120 VAC	0-90 VDC	130LC100	5.5 ADC*	1/8 – 1/2*
120 VAC	0-90 VDC	130HC12	1.2 ADC	1/50 – 1/8
120 VAC	0-90 VDC	130HC100	10 ADC*	1/8 – 1
240 VAC	0-180 VDC	132LC25	1.2 ADC	1/25 – 1/4
240 VAC	0-180 VDC	132LC200	5.5 ADC*	1/4 – 1*
240 VAC	0-180 VDC	132HC25	1.2 ADC	1/25 – 1/4
240 VAC	0-180 VDC	132HC200	10 ADC*	1/4 – 2

Output Amps can be increased to 10 ADC output at up to 1Hp at 90VDC or 2Hp at 180VDC.

WIRING PROCEDURE & FUSING

1. Size all wires which carry armature or line currents **AS SPECIFIED BY NATIONAL, STATE, AND/ OR LOCAL CODES.** All other wires may be # 18 AWG or smaller as permitted by local code.

2. **Separate control wires** from the armature and AC lines when routed in conduit or in wire trays.

3. **Fusing** - The motor and control are protected against overloads by the current limit circuit and a customer installed fuse in the AC line. **THIS PROTECTION ALREADY MAY BE PROVIDED BY THE CUSTOMER WITH CIRCUIT BREAKERS OR FUSES IN BOTH MAIN LINES. IF NOT:**

   FOR 120 VAC INPUT - fuse or breaker protection should be added by the customer inline with the Hot AC Line (see following chart).

   FOR 240 VAC INPUT - fuse or breaker protection should be added by the customer inline with both Hot AC Lines (see following chart).

   FUSING ADDED BY CUSTOMER (Bussman ABC or Little Fuse 314 Series ceramic fuses)

HORSEPOWER	120 VAC INPUT	240 VAC INPUT
1/50	2 AMP	----------
1/20	2 AMP	1 AMP
1/8	3 AMP	2 AMP
¼	4 AMP	3 AMP
1/3	6 AMP	3 AMP
½	8 AMP	4 AMP
¾	12 AMP	6 AMP
1.0	15 AMP	8 AMP
1.5	----------	12 AMP
2.0	----------	15 AMP

TERMINAL STRIP WIRING INSTRUCTIONS

Upper board terminal block connections (P4)

P4-1 (AC1 / L) – For single phase AC lines, (120VAC for US or 240VAC for Europe) connect the Hot side of your AC line to this terminal. For systems with two hot AC lines, (240VAC for US) connect either of the Hot AC lines to this terminal.

P4-2 (AC2 / N) – For single phase AC lines, (120VAC for US or 240VAC for Europe) connect the Neutral side of your AC line to this terminal. For systems with two hot AC lines, (240VAC for US) connect either of the Hot AC lines to this terminal.

P4-3 (A1) – For clockwise rotation of your motor in the Fwd. Direction, connect the Plus (+) Armature wire of the motor to this terminal.

P4-4 (A2) – For counter-clockwise rotation of your motor in the Rev. direction, connect the Minus (-) Armature wire of the motor to this terminal.

P4-5 (REV) – This is the reverse direction input terminal. When connected to the COM terminal, the control will release its brake circuit and accelerate to its set point in the reverse direction. When the connection to the COM terminal is opened the control will brake to zero speed. The connection to the COM terminal can be made via a mechanical switch, a relay contact, or an ungrounded solid state open collector type switch. Switching requirements are 5VDC at less than 1ma.

P4-6 (FWD) – This is the forward direction input terminal. When connected to the COM terminal, the control will release its brake circuit and accelerate to its set point in the forward direction. When the connection to the COM terminal is opened the control will brake to zero speed. The connection to the COM terminal can be made via a mechanical switch, a relay contact, or an ungrounded solid state open collector type switch. Switching requirements are 5VDC at less than 1ma.

P4-7 (COM) – This is the common terminal for the forward and reverse speed/dynamic brake commands. **This terminal should not be grounded or tied to any other terminal.**

Lower board terminal block connections (P1)

P1-4 (-A/-F) – DO NOT use for Permanent Magnet Motor. This supplies -Field voltage for a SHUNT WOUND MOTOR (refer to field voltage table). For motors with dual voltage field (ie. 50/100V or 100/200V), make sure highest value is connected. Note: When connecting to this terminal, you will need to use a fork or ring connector placed directly under the screw head.

P1-5 (+F) – DO NOT use for Permanent Magnet Motor. This supplies +Field voltage for a SHUNT WOUND MOTOR (refer to field voltage table). For motors with dual voltage field (ie. 50/100V or 100/200V), make sure highest value is connected.

FIELD VOLTAGE TABLE		
VAC INPUT	120	240
VDC FIELD	100	200

P1-6 (Speedpot Hi) – Connects to high side (white wire) of Speedpot (CW end). This is an internal +12VDC. For start-stop applications, the connection between this terminal and Speedpot HI can be opened and closed by a SPST switch. **INPUT MUST NOT BE GROUNDED!**

P1-7 (Speedpot Wiper) – Connects to wiper (red wire) of Speedpot (center lead). For Voltage Follower applications, this **INPUT MUST NOT BE GREATER THAN +12V MAXIMUM AND MUST NOT BE GROUNDED!**

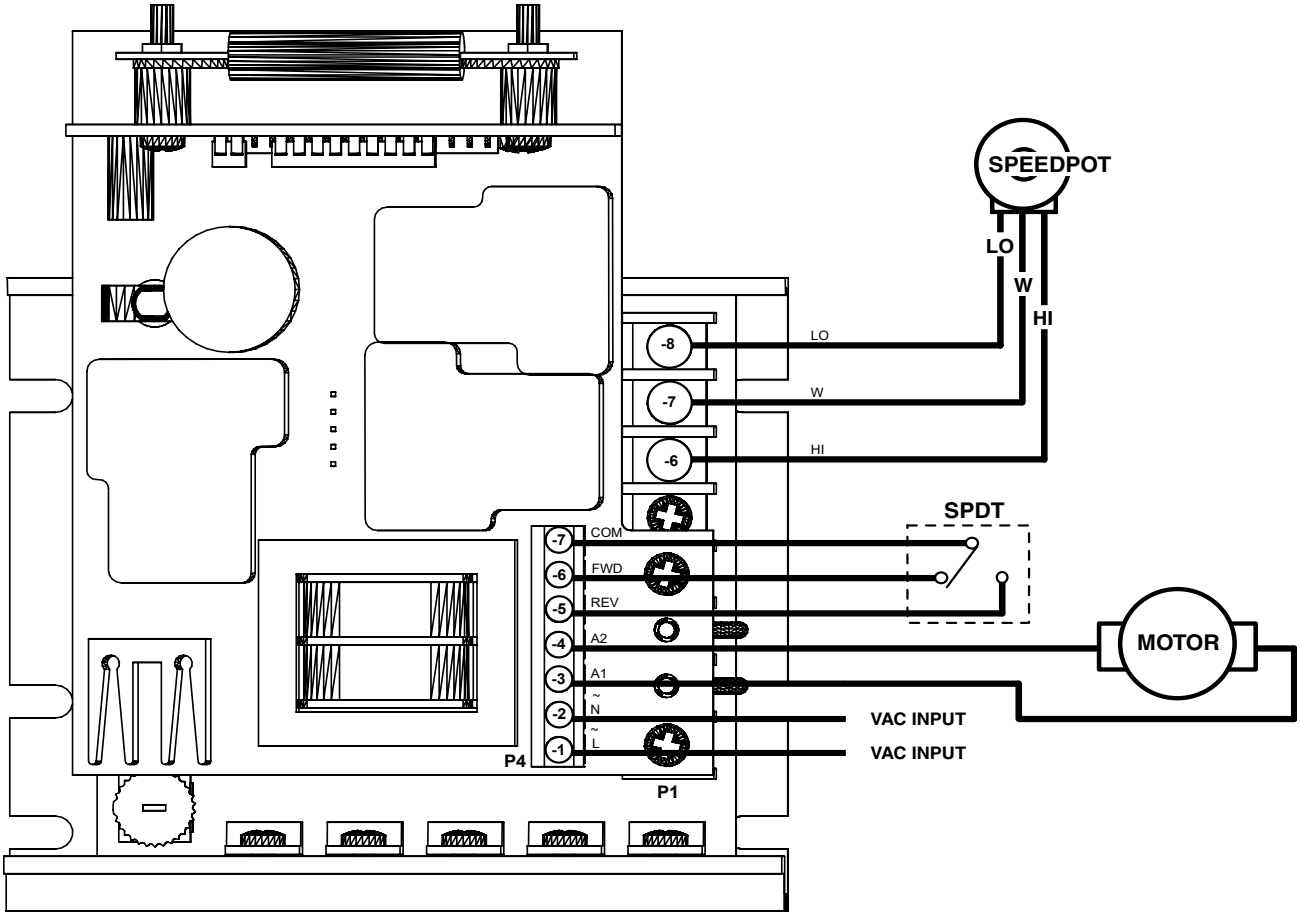
P1-8 (Speedpot Lo) – Connects to Low side (orange wire) of 5K Speedpot (CCW end). This input is raised and lowered by the MIN. trimpot (5K). Electronic speed input (voltage follower) may be referenced to Speedpot LO if the MIN trimpot adjustments are to be active. Otherwise, inputs may be referenced to -ARM, which will bypass the MIN trimpot. **INPUT MUST NOT BE GROUNDED!**

Warning:

1. Be sure the control housing is properly grounded.
2. For non-speedpot applications, the input connection to the LO, WIPER, and HI terminals must not be grounded! Serious control damage may result from a grounded input.

130 HOOK-UP DIAGRAM

Warning:
Do not attempt to perform Hi-pot test across AC lines with control in circuit.
This will result in immediate or long term damage to the control.



CONTROL START-UP

WARNING: ALL POWER MUST BE TURNED OFF BEFORE PROCEEDING!

1. Recheck all wiring. Accidental grounds to loose or pinched wires on the armature or speedpot wires may damage the control when power is applied.

2. Check to see that incoming service is of correct voltage.

3. Turn speedpot to zero (fully CCW).

4. Turn power on, close contact from COM(P4-7) to either FWD(P4-6) or REV(P4-5) and advance speedpot while observing motor rotation. **Power must be off before step 5 can be accomplished!**

5. If motor rotation is incorrect for the direction selected, turn power off at external disconnect and reverse the A1 and A2 motor connections.

6. Check for satisfactory operation throughout the speed range.

7. Open the FWD/REV connection to COM to verify motor brakes to zero speed.

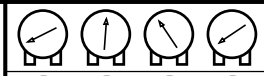
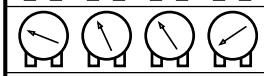
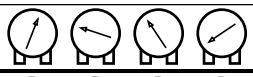
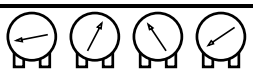
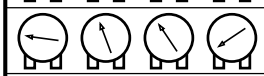
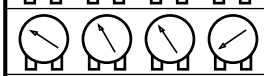
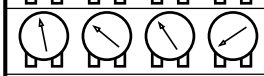
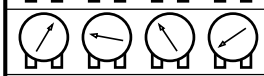
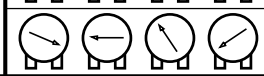
8. If operation is satisfactory, no readjustments are needed.

9. If instability or surging is observed, or if maximum and minimum speed settings need further adjustments then see “TRIMPOT ADJUSTMENT CHART & PROCEDURE”.

10. For other problems, consult page 10, “IN CASE OF DIFFICULTY”.

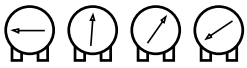
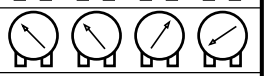
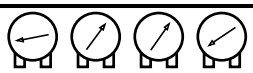
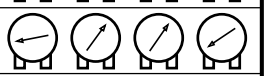
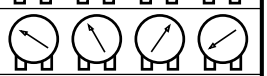
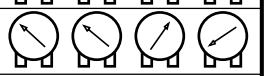
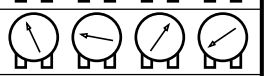
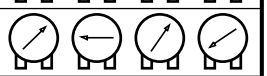
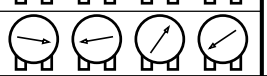
TRIMPOT ADJUSTMENT CHART & PROCEDURE

Settings apply when using a 5K ohm master speedpot. This chart is used in conjunction with the adjustment procedure and is approximate.

	C.L.	I.R.	MAX	MIN	HP
130LC12 130HC12 120 VAC input; 0-90 VDC output					**1/50**
					**1/20**
					**1/8**
130LC100 130HC100 120 VAC input; 0-90 VDC output					**1/8**
					**1/4**
					**1/3**
					**1/2**
					**3/4***
					**1.0***

Operation of the control beyond ±10% of the normal line voltage could result in re-adjustment. These adjustments are permanent; periodic re-adjustment is normally not needed.

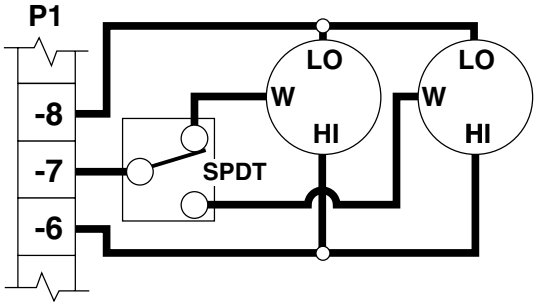
Settings apply when using a 5K ohm master speedpot. This chart is used in conjunction with the adjustment procedure and is approximate.

HP	C.L.	I.R.	MAX	MIN	
1/20					**132LC25 132HC25** 240 VAC input; 0-180 VDC output
1/8					
1/4					
1/4					**132LC200 132HC200** 240 VAC input; 0-180 VDC output
1/3					
1/2					
3/4*					
1.0*					
1.5*					
2.0*					

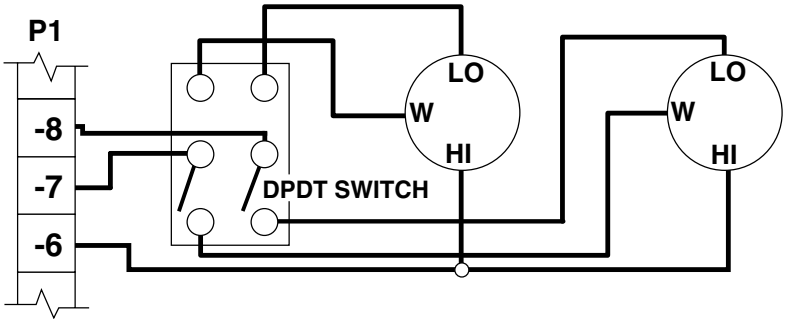
CONTROL MODIFICATIONS

TRIMPOT	FUNCTION	ADJUSTMENT
MIN.	Sets minimum motor speed when speedpot is set at zero. CW rotation will increase minimum motor speed.	1. Select a direction and set Speedpot to zero (fully CCW). 2. Rotate MIN trimpot CW until motor starts to rotate 3. Slowly rotate MIN trimpot CCW until motor stops. NOTE: If motor rotation is desired, rotate MIN trimpot CW until desired MIN speed is reached
IR COMP	Provides a means of improving motor speed regulation. If a slowdown due to load change is of no concern, rotate this trimpot fully CCW.	1. Select a direction and set Speedpot at 50%. 2. Observe motor speed at no load condition. 3. Apply full load to motor. 4. Turn IR COMP trimpot CW until you obtain the same motor speed as the no load condition.
MAX.	Sets maximum motor speed when speedpot is set at maximum (fully CW rotation). CW rotation of MAX trimpot increases maximum motor speed.	1. TURN DRIVE POWER OFF!! 2. Connect a DC Voltmeter across A1 and A2. **NOTE: Meter must not be grounded!!** 3. Set meter voltage range if needed: (90 VDC for 120 VAC, 180VDC for 240 VAC). 4. Turn power on. Select a direction and set Speedpot at100%. 5. Adjust the MAX trimpot to rated motor armature voltage as shown on meter. NOTE: A tachometer or strobe may be used in lieu of a meter. Follow above steps, except adjust MAX trimpot to rated motor base speed indicated by tachometer or strobe.
CUR.LIM.	Limits DC motor armature current (torque) to prevent damage to the motor or control. The current limit is set for the rated motor current. CW rotation of this trimpot increases the armature current (or torque produced).	1. TURN DRIVE POWER OFF! 2. Connect a DC Ammeter between A1 on motor and A1 on the control. This is in series with the motor. **NOTE: Meter must not be grounded!!** 3. Turn power on. 4. Select a direction and set Speedpot at the 50% position. 5. Apply friction braking to motor shaft until motor stalls. 6. With motor stalled, set current at 125% of rated motor armature current by adjusting CUR. LIM . trimpot.

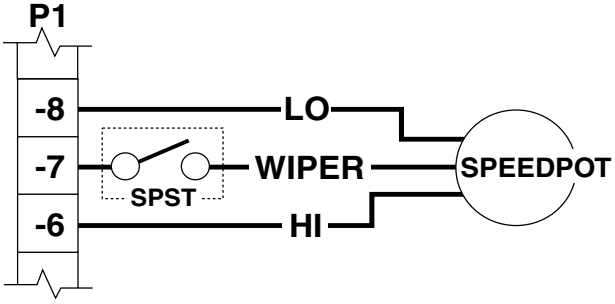
TWO SPEED OPERATION USING TWO 10K SPEEDPOTS



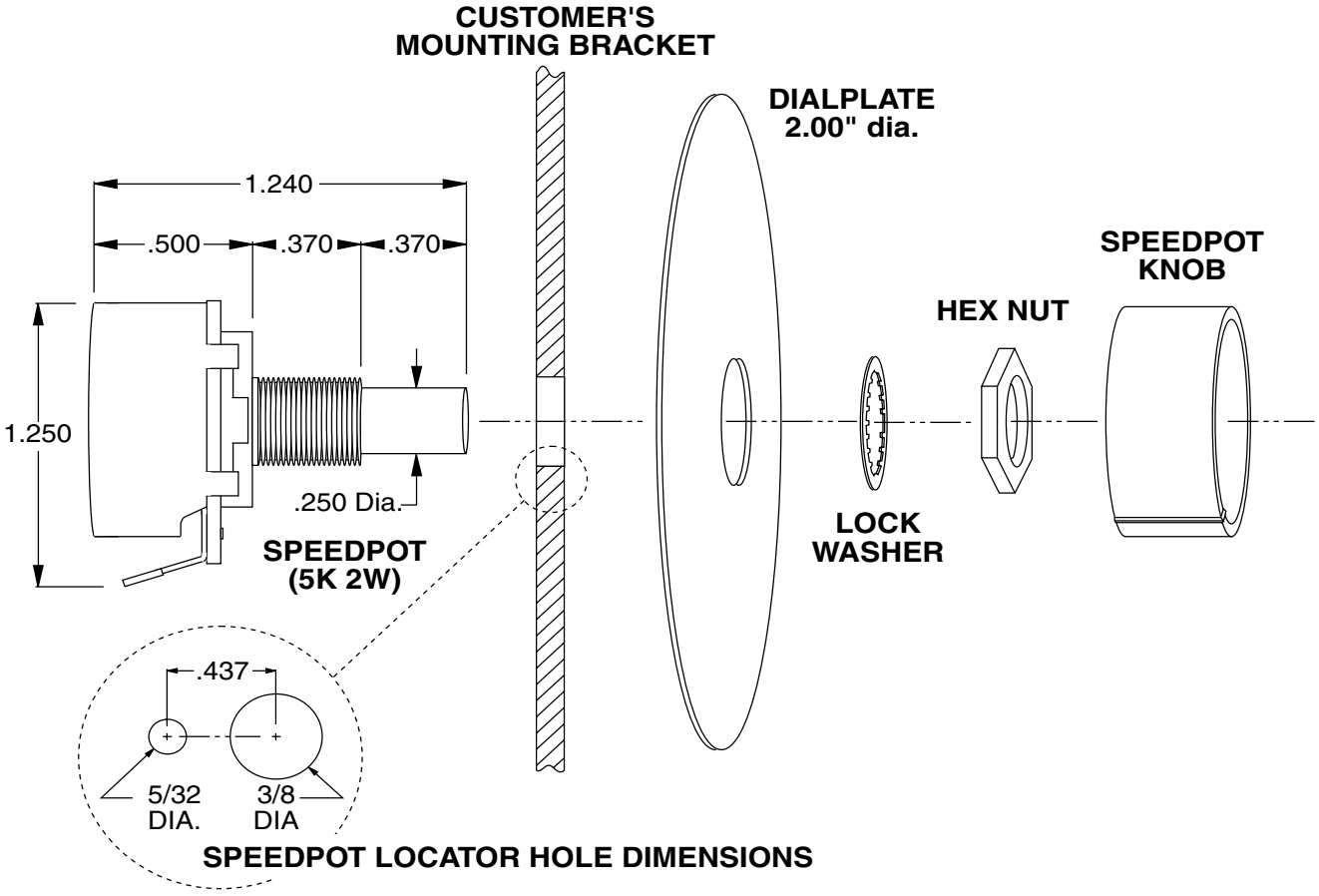
TWO SPEED OPERATION USING TWO 5K SPEEDPOTS



INHIBIT



SPEEDPOT KIT ASSEMBLY



OPTION DESCRIPTIONS

-K option

Acceleration Time Ranges — Factory Installed

This option provides the Accel time shown below. The standard Accel time is 0.5 seconds.

ACCELERATION TIME ---------- 6 seconds

USE STANDARD HOOK-UP

IN CASE OF DIFFICULTY

PROBLEM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION(S)
Motor doesn't operate	- Blown Fuse or Breaker	Replace Fuse or reset breaker
	- Incorrect or no power source	Install proper service
	- Speedpot set at Zero	Adjust Speedpot CW to start
	- Worn motor brushes	Replace brushes
Armature output voltage cannot be adjusted, output is a constant DC level	- No motor or load connected	Check that motor or load is connected to armature terminals
	- Speedpot low connection open	Check that speedpot low wire is connected
Motor stalls, or runs very slowly with speed control turned fully CW	- Low Voltage	Check that VAC is above 100VAC
	- Overload Condition	Reduce load or increase motor size and/or C.L. setting.
	- Worn motor brushes	Replace brushes
	- MAX SPEED set incorrectly	See ADJUSTMENT PROCEDURE
Motor hunts	- Motor current less than 150Ma	Motor current must be greater than 150mA D.C.
	- Too much IR COMP	See ADJUSTMENT PROCEDURE
	- Motor is in current limit	See ADJUSTMENT PROCEDURE
	- Motor speed is above rated speed	Reduce Speed
	- Max set too high	See ADJUSTMENT PROCEDURE
Repeated fuse blowing	- Low Voltage	Check that VAC is above 100VAC
	- Overload Condition	Reduce load
	- Worn motor brushes	Replace
	- Defective motor bearings	Replace
	- Defective electrical components	Call Dart Distributor or Representative

If control still will not operate, consult your Dart Distributor or Representative.

SPECIFICATIONS

AC input voltage ---------- ±10% of rated line voltage
Acceleration ---------- 0.5 seconds standard 125D
Amps - DC output; (Models 130XX12 & 132XX25) ---------- 500 mA to 1.2 ADC
(Models 130LC100 & 132LC200) ---------- 500 mA to 5.5 ADC*
(Models 130HC100 & 132HC200) ---------- 500 mA to 10 ADC
Controller overload capacity ---------- 200% for one minute
Current limit trimpot range; (Models 130XX12 & 132XX25) ---------- 0.3 to 3 ADC
(Models 130XX100 & 132XX200) ---------- 1 to 18 ADC
Deceleration 0.5 seconds (standard 125D)
Dimensions and weights:

LC MODELS	W	L	D	WEIGHT
ENGLISH	4.967”	4.250”	2.688”	1.08lb.
METRIC	126.16mm	107.95mm	68.27mm	489.87g
HC MODELS	**W**	**L**	**D**	**WEIGHT**
ENGLISH	6.250”	7.000”	4.063”	3.30lb.
METRIC	158.75mm	177.80mm	103.20mm	1496.80g

Drive service factor ---------- 1.0
Efficiency ---------- 85% typical
Input frequency ---------- 50 or 60 Hertz
Max. trimpot speed range ---------- 60% to 110% of base speed
Min. trimpot speed range ---------- 0% to 30% of maximum speed
Power devices ---------- isolated case tab
Shunt field voltage ---------- 100VDC for 120VAC input; 200VDC for 240VAC input
Shunt field current ---------- 1 amp DC maximum
Speed control ---------- via 5Kohms .5W potentiometer or 0-10VDC isolated signal
Speed range ---------- 50:1
Speed regulation ---------- ±1% of base speed
Temperature range ---------- -10° to 45° C. ambient (15° to 115° F.)
Terminal Block Torque Setting ---------- 4.4 in. lb. Max or .5Nm
Transient protection ---------- G-Mov
Trigger ---------- opto-isolator
Start/Brake cycle per minute (LC Models) ---------- 3 per min**
(HC Models) ---------- 30 per min**

Approval ---------- c UL us LISTED

* With suitable external heatsink (where 130 extrusion temperature does not exceed 70° C.), maximum rating for output amps can be increased to 10 amps D.C.

** Cycles per minute are based on typical inertia type loads. Higher cycle per minute rates may be achieved with constant torque or low inertia type loads. Lower cycle rates may be required for very high inertia type loads.

TYPICAL MOTOR CURRENTS

Horsepower	1/50	1/20	1/8	1/4	1/3	1/2	3/4	1.0	1.5	2.0
Typical AC Amps (120VAC)	0.50	1.00	2.00	3.50	4.40	6.50	9.30	13.20	-----	-----
Typical Arm Amps (120VAC)	0.42	0.81	1.60	2.70	3.40	5.00	8.20	10.90	-----	-----
Typical AC Amps (240VAC)	-----	0.80	1.20	1.80	2.20	3.30	4.80	6.50	9.70	12.90
Typical Arm Amps (240VAC)	-----	0.40	0.60	1.40	1.70	2.50	3.70	5.00	8.20	11.60

- Notes -

- Notes -

Referencia rápida

¿Cuáles son los modelos y opciones disponibles?
Consulte la página 4.

¿Busca las especificaciones pormenorizadas?
Consulte la página 11.

¿Desea comenzar rápidamente?
Vea los detalles básicos de conexión eléctrica en la página 6.
Vea los detalles básicos de instalación mecánica en la página 3.

¿Necesita ayuda?
Consulte los procedimientos de solución de problemas en la página 10.

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NOTA: Revise cuidadosamente el controlador para ver si sufrió daño en el transporte. Informe inmediatamente de cualquier daño al transportista. No intente operar el control si hay un daño visible evidente al circuito o a los componentes electrónicos.

Se considera que toda la información contenida en este manual es correcta; sin embargo, la información y los datos de este manual están sujetos a cambios sin previo aviso. DCI no hace garantías de clase alguna con respecto a esta información o estos datos. Además, DCI no es responsable de omisiones o errores o daños resultantes algunos causados por el usuario del producto. DCI se reserva el derecho a hacer cambios de fabricación que pudieran no estar incluidos en el manual.

ADVERTENCIA

La instalación u operación incorrectas de este control pueden causar lesiones al personal o falla de control. El control se debe instalar de conformidad con los códigos de seguridad locales, estatales y nacionales. Asegúrese de que el suministro de energía esté desconectado antes de intentar dar servicio o retirar cualquier componente. Si el punto de desconexión de energía está fuera del alcance visual, póngale un candado en posición de desconexión y etiquételo para impedir la aplicación inesperada de energía. Sólo un electricista calificado o personal de servicio calificado deberá realizar cualquier actividad de solución de problemas o mantenimiento. En ningún momento se deberá probar la continuidad del circuito al poner en corto las terminales con un destornillador u otro dispositivo metálico.

ÍNDICE

INTRODUCCIÓN

- El control de velocidad reversible 130 está diseñado para proporcionar acción de reversa instantánea, paro preciso y rápido o ciclo rápido para una amplia gama de aplicaciones de motores de CD. Los controles de la serie 130 superan el desempeño de otros controles de freno dinámico y reversa usando la detección de velocidad cero exclusiva de Dart y los circuitos de estado sólido para freno dinámico asistido. Estos circuitos eliminan el arqueo de contacto y los problemas de frenado fallido inherentes a otros controles de reversa y freno dinámico. El circuito de detección de velocidad cero de Dart también elimina los problemas del motor relacionados con poner un motor en reversa por medio del enchufe al no volver a aplicar energía al motor hasta que se llegue a velocidad cero.

- Los controles de la serie 130 también están diseñados para que en el caso de una pérdida de energía al control o una situación de paro de emergencia, el control pasará a una situación de freno dinámico para detener el motor de manera segura y rápida y permanecerá en ese estado hasta que se vuelva a aplicar energía y se reconozca una condición de operación.

- El control de velocidad variable serie 130 viene en un paquete extremadamente pequeño y se adapta a superficie de instalación estándar industrial para montaje vertical y horizontal.

- El control de velocidad variable serie 130 se puede obtener en una gama de salidas desde 500 mA hasta 10 Acdcon entrada de 120 VCA o 240 VCA. Esto representa una gama de caballaje de 1/50 hasta 1 a 90 VCD de salida o 1/25 a 2 a 180 VCD de salida.

- El control está diseñado para magneto permanente de CD y motores de devanado en derivación en las gamas de caballaje indicadas arriba.

- La tensión de AC de entrada se convierte en tensión de CD rectificada de onda plena para operar el motor de CD. Además, se proporciona tensión de campo de onda plena para los motores de devanado en derivación.

- El control incorpora protección contra tensión transiente con un límite de corriente ajustable que cabe en una unidad compacta. También incluye una compensación IR ajustable además de ajustes de velocidades máxima y mínima.

- Opción de arranque suave. (Consulte con la fábrica acerca de sus necesidades específicas de OEM)

- c UL us LISTED UL File No. E78180 (N).

CARACTERÍSTICAS DE CONTROL

- **VELOCIDAD MÍNIMA -** Permite el ajuste de la velocidad del motor cuando el potenciómetro de velocidad se ajusta al mínimo (a la izquierda). Esto permite que el usuario elimine la “Zona muerta” en el control de velocidad principal y permite la calibración de cero. La rotación a la derecha del potenciómetro de ajuste "MIN" aumenta la velocidad.

- **MAX SPEED (Velocidad máxima) -** Permite el ajuste de la velocidad del motor cuando el potenciómetro de velocidad se ajusta al máximo (a la derecha). Esto permite al usuario eliminar la “Zona muerta” del extremo superior, que proporcionará la velocidad plena a la rotación máxima. Al girar el potenciómetro de ajuste "MAX" a la derecha se aumenta la velocidad máxima del motor.

- **I.R. COMP (Regulación de velocidad) -** Este control permite el ajuste del circuito que controla la regulación de velocidad del motor. El circuito controla la velocidad del inducido al cambiar la tensión del inducido para compensar la mayor o menor carga del motor. La rotación a la derecha del potenciómetro de ajuste “IR COMP” aumentará la compensación.

· **CUR. LIM. (Límite de corriente) -** Proporciona protección contra una excesiva corriente de inducido al limitar la máxima corriente que el inducido puede proporcionar. Esto permite el ajuste del máximo par que el motor puede proporcionar. El ajuste del par (Cur. Lim.) está preajustado a 125% del par nominal del motor (corriente) basado en el caballaje. La rotación a la derecha del potenciómetro de ajuste "CUR. LIM." aumenta el par (corriente) que el control puede proporcionar.

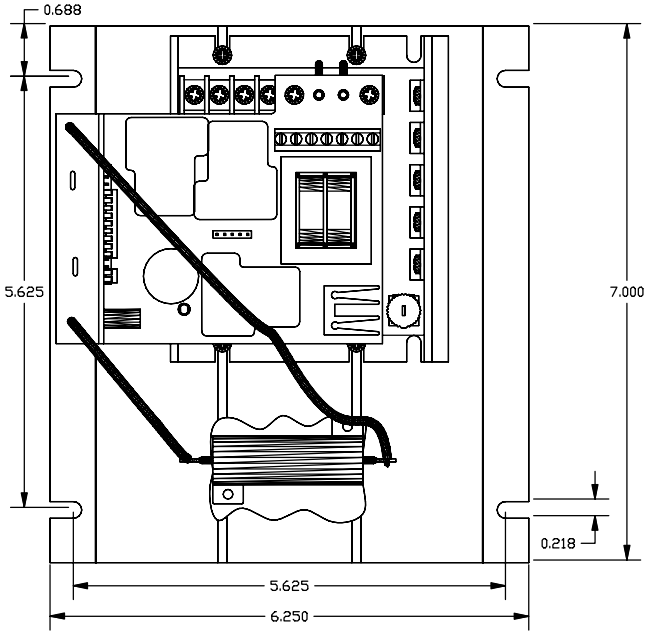
· **BLOQUES DE TERMINAL DE BARRERA -** Permiten la conexión de líneas de CA, cables de motor, campo del motor (si es necesario), potenciómetro de velocidad y entradas Fwd-Brake-Rev (Adelante-Atrás-Freno).

· **RESISTENCIA DE FRENO DINÁMICO EN TABLILLA -** Consulte con la fábrica sobre la opción disponible de montaje remoto de la resistencia de frenado.

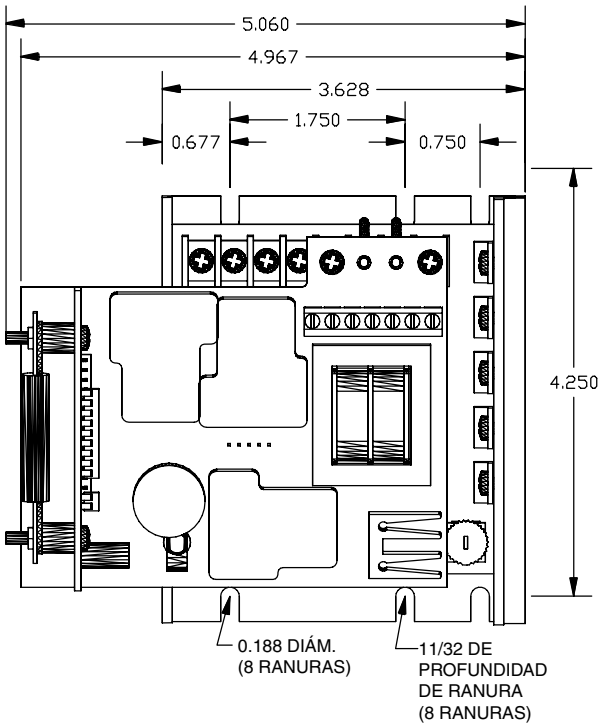
· **FRENO DE PÉRDIDA DE ENERGÍA -** En el evento de una pérdida de energía al control o una orden de paro de emergencia, el control pasará a una situación de freno dinámico para detener el motor de manera segura y completa y permanecerá así hasta que se vuelva a aplicar energía y se reconozca una condición de operación.

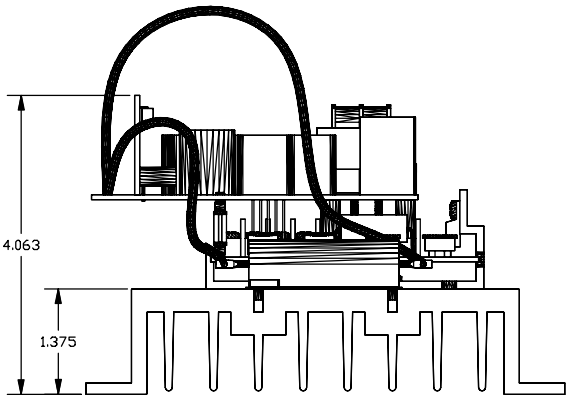
DISIPADOR DE CALOR Y DIMENSIONES DE MONTAJE DE LA SERIE 130

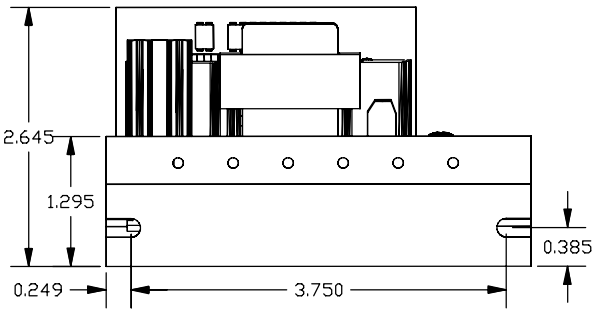
DISIPADOR DE CALOR AUXILIAR -HS(125D)



DISIPADOR DE CALOR ESTÁNDAR







PRECAUCIÓN:
NO MONTE EN LUGARES EN LOS QUE LA TEMPERATURA AMBIENTE ESTÉ FUERA DEL RANGO DE -10° C (15° F) A 45° C (115° F)

SELECCIÓN DE MODELO

TENSIÓN DE ENTRADA	TENSIÓN DE SALIDA	NÚMERO DE MODELO	SALIDA* AMPERIOS CD	CABALLOS
120 VCA	0-90 VCD	130LC12	1.2 ACD	1/50 – 1/8
120 VCA	0-90 VCD	130LC100	5.5 ACD *	1/8 – 1/2*
120 VCA	0-90 VCD	130HC12	1.2 ACD	1/50 – 1/8
120 VCA	0-90 VCD	130HC100	10 ACD *	1/8 – 1
240 VCA	0-180 VCD	132LC25	1.2 ACD	1/25 – 1/4
240 VCA	0-180 VCD	132LC200	5.5 ACD *	1/4 – 1*
240 VCA	0-180 VCD	132HC25	1.2 ACD	1/25 – 1/4
240 VCA	0-180 VCD	132HC200	10 ACD *	1/4 – 2

NOTA: * Con un disipador de calor externo adecuado (en el que la extrusión de temperatura del 130 no exceda 70° C.), la especificación máxima para amperios de salida se puede aumentar a 10 ACD hasta 1Hp a 90 VCD o 2Hp a 180 VCD

PROCEDIMIENTO DE CABLEADO Y SELECCIÓN DE FUSIBLES

1. Seleccione el calibre de todos los cables que lleven corrientes de línea o inducido **DE ACUERDO CON LA ESPECIFICACIÓN DE LOS CÓDIGOS NACIONALES, ESTATALES Y/O LOCALES.** Los demás cables pueden ser calibre # 18 AWG o más pequeños, de conformidad con lo que permita el código local.

2. **Separe los cables de control** de las líneas de inducido y CA cuando los coloque en tubo conduit o en charolas para cables.

3. **Selección de fusibles** - El motor y el control están protegidos contra sobrecargas por el circuito de límite de corriente y un fusible instalado por el cliente en la línea de CA. **ES POSIBLE QUE ESTA PROTECCIÓN YA LA PROPORCIONE EL CLIENTE CON DISYUNTORES DE CIRCUITO O FUSIBLES EN AMBAS LÍNEAS DE ALIMENTACIÓN. SI NO:**

   PARA ENTRADA DE 120 VCA - el cliente deberá agregar protección mediante fusible o disyuntor en línea con la línea de fase de CA (ver la siguiente tabla).

   PARA ENTRADA DE 240 VCA - el cliente deberá agregar protección mediante fusible o disyuntor en línea con ambas líneas de fase de CA (ver la siguiente tabla).

   FUSIBLE AGREGADO POR EL CLIENTE (fusible de cerámica Bussman ABC o Little Fuse serie 314)

CABALLOS	ENTRADA DE 120 VCA	ENTRADA DE 240 VCA
1/50	2 AMPERIOS	----------
1/20	2 AMPERIOS	1 AMPERIO
1/8	3 AMPERIOS	2 AMPERIOS
¼	4 AMPERIOS	3 AMPERIOS
1/3	6 AMPERIOS	3 AMPERIOS
½	8 AMPERIOS	4 AMPERIOS
¾	12 AMPERIOS	6 AMPERIOS
1.0	15 AMPERIOS	8 AMPERIOS
1.5	----------	12 AMPERIOS
2.0	----------	15 AMPERIOS

INSTRUCCIONES DE CABLEADO DE TIRA DE TERMINALES

Conexiones del bloque de terminales de la tablilla superior (P4)

P4-1 (AC1 / L) – Para líneas de CA monofásicas, (120 VCA para Estados Unidos o 240 VCA para Europa) conecte el lado de fase de su línea de CA a esta terminal. Para sistemas con dos líneas de CA de fase (240 VCA para Estados Unidos), conecte cualquiera de las líneas de fase de CA a esta terminal.