

**DP4 CONTROL SERIES**

# **DART**

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## **CONTROLS**

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### **Instruction Manual**

**DIGITAL SPEED POTENTIOMETER WITH DISPLAY  
FOR AC AND DC DRIVES**



**P.O. Box 10  
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## 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.**

## INTRODUCTION

**The DP4 Series control** is a compact, accurate, and economical microprocessor based digital speed potentiometer with LED display of set speed to directly replace the conventional 3-wire analog speedpot for most AC and DC drives. Ideal for new equipment as well as for retrofitting existing drives.

# STANDARD FEATURES & SPECIFICATIONS

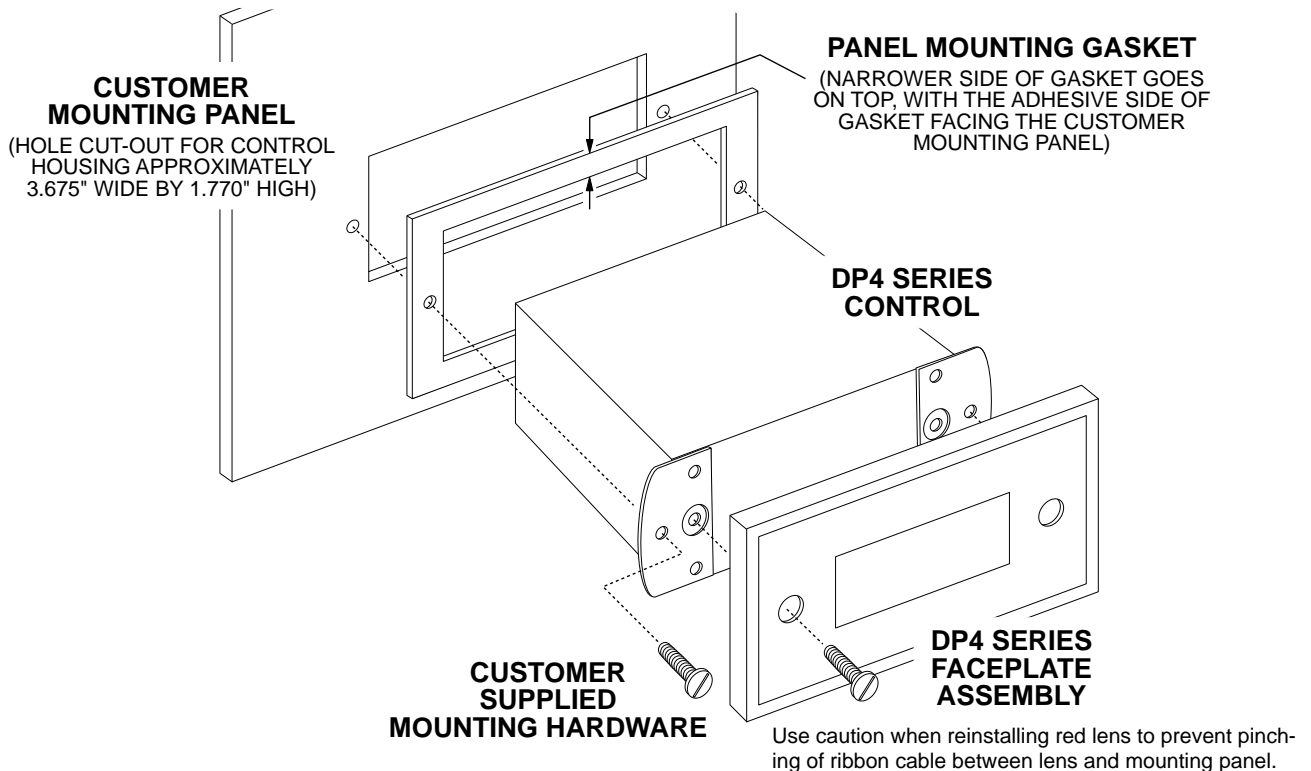
- ② Replaces the conventional 3-wire analog speed potentiometer for most AC and DC drives for precise, repetitive set points
- ② Compatible with most drives that normally operate with a 3-wire analog pot and have a supply voltage of 5 to 15VDC and an input impedance of 100 $\Omega$  to 100K $\Omega$
- ② 3-wire pseudo-pot output provides an output voltage level that is directly proportional to display setting (000.0 = 0 output, 100.0 = full output)
- ② Microprocessor based control
- ② Compact 1/8 DIN sturdy aluminum housing for panel mounting
- ② Large 4-digit 1/2 inch LED display
- ② Up and down push-button switches for set points - slow/fast sweep
- ② Screw type barrier terminal connectors
- ② G.E. Lexan® membrane covers faceplate and seals push-button switches - NEMA 12
- ② Self-contained power supply
- ② Non-volatile memory retains programmed setting or resets upon loss of AC power (user selectable via dip switch settings)
- ② Display settings of 0-100% of speed range in 0.1% increments (resolution of 1000)
- ② Digital accuracy  $\pm 0\%$  repeatability of set point
- ② Speed regulation the same as driven unit
- ② Input voltage of 120VAC  $\pm 10\%$  - 50/60 Hertz
- ② Operating temperature: -10°C to 45°C (15°F to 115°F)
- ② Normal or inverted output

## MOUNTING & INSTALLATION

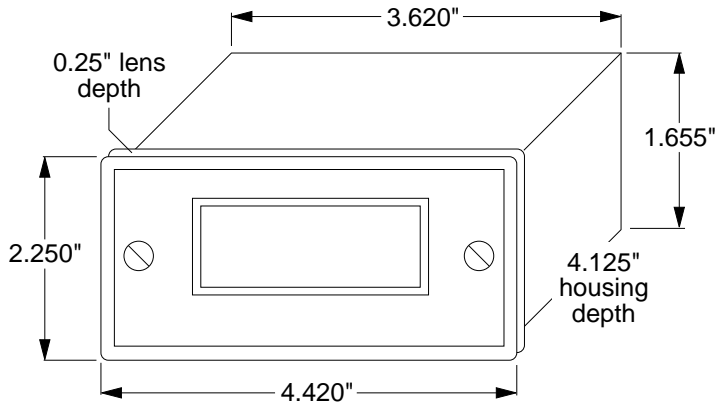
STEP 1: Remove the two (2) screws securing the red lens assembly.

STEP 2: Mount control and gasket into panel cut-out. Note diagram on following page for cut-out dimensions. Allow for easy insertion of control into panel.

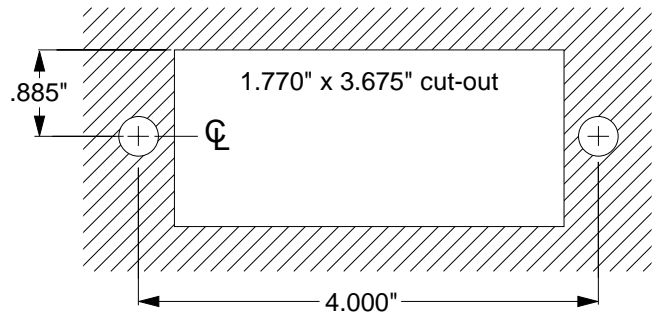
STEP 3: Secure control and gasket to panel. The two mounting holes have a diameter of .141 inch. Use #6 hardware to fasten to panel.



# MOUNTING & CONTROL DIMENSIONS

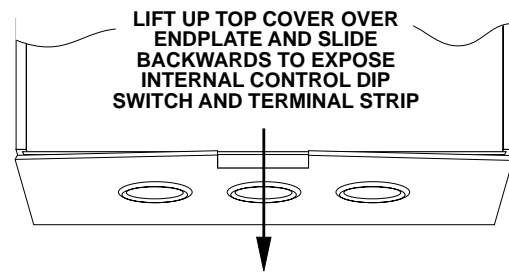


**LENS & HOUSING DIMENSIONS**



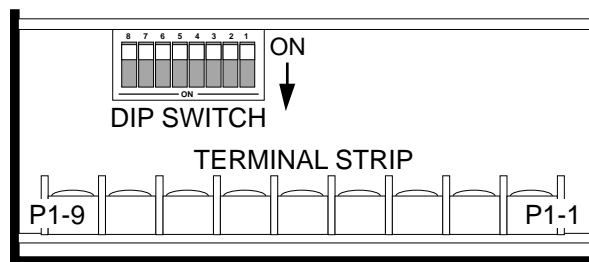
**PANEL CUT-OUT DIMENSIONS**

Model	Width	Height	Depth
<b>DP4 English (inches)</b>			
Housing	3.62	1.66	4.13
Lens	4.42	2.25	0.25
<b>DP4 Metric (centimeters)</b>			
Housing	9.19	4.22	10.48
Lens	11.27	5.71	00.64



## WIRING PREPARATION

STEP 1: To gain access to the dip switch and terminal strip, remove top cover (lift end and slide backward). The dip switch is located next to the transformer, on the upper PC board.



**BACK OF CONTROL**

STEP 2: Remove two screws that hold endplate in place and remove. Thread wires through the endplate before connecting wiring to the terminal strip.

STEP 3: Reinstall endplate and cover after wiring control.

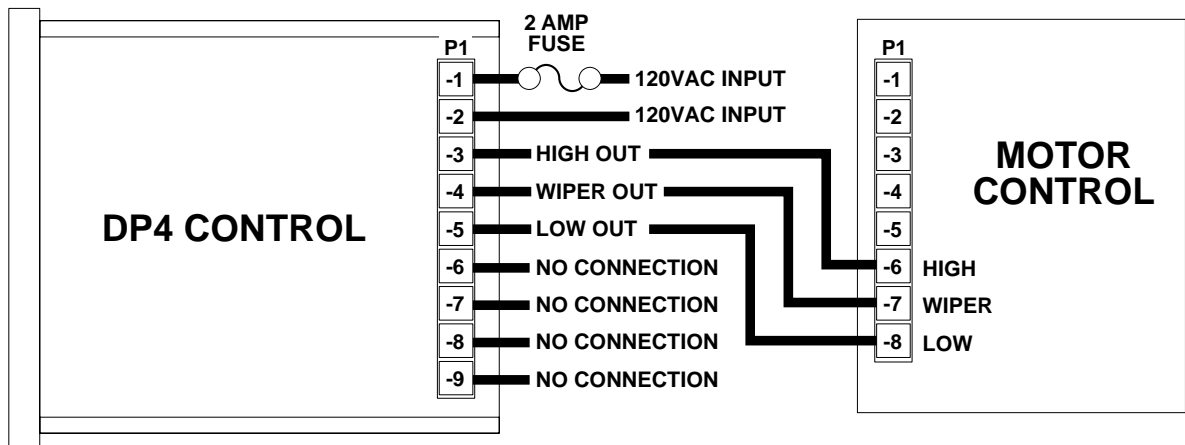
## HOOK-UP PROCEDURE & DIAGRAM

STEP 1: Connect the 120VAC input to P1-1 and P1-2. Note: Fusing should be added in series with the AC line to protect the control from excessive current. A 2 amp "regular blow" fuse is recommended.

STEP 2: With the AC power off, connect the pot output to the device being controlled.

STEP 3: You are now ready to apply power.

(continued)



Note: Hi output must be positive in respect to Low output

## SELECTING OPERATION MODE

For normal output with retained previous setting (on power loss), set switch 1 ON and all others OFF.

For normal output with reset to 0.0% (on power loss), set all switches OFF.

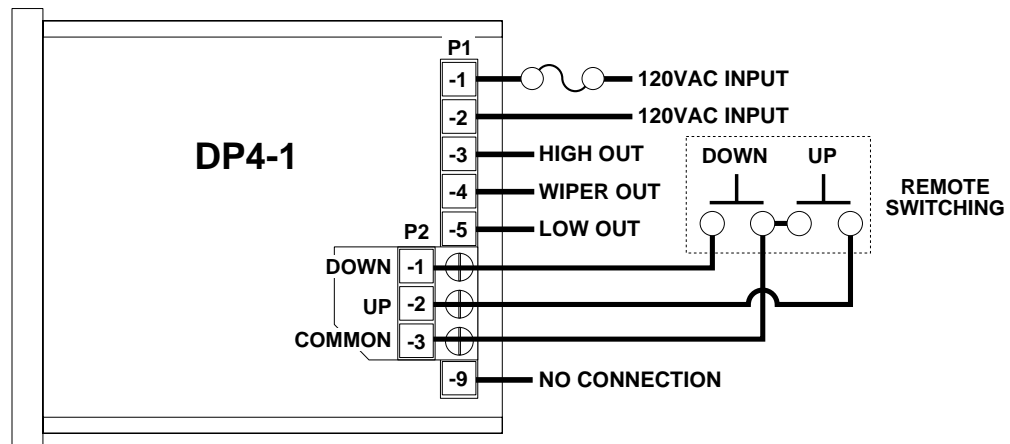
For inverted output (used with negative supply controls) with retained previous setting (on power loss), set switches 1 and 2 ON and all others OFF.

For inverted output with reset to 0.0% (on power loss), set switch 2 ON and all others OFF.

## OPTION DESCRIPTIONS

### **-1 option**..... *Remote up-down switching*

This option incorporates an option board which allows remote up-down switching.



### **-5 option**..... *240 VAC input voltage*

This option uses 240VAC 50/60 Hz. input voltage.

## NOTES:

## NOTES:

# REPAIR PROCEDURE

In the event that a Product manufactured by Dart Controls Incorporated (DCI) is in need of repair service, it should be shipped, freight paid, to: Dart Controls, Inc., 5000 W. 106th Street, Zionsville, IN. 46077, ATTN: Repair Department.

Please include with each order a P.O. number to cover any repair charges (a P.O. is needed even on warranty returns to cover misuse or other failures that have voided warranty), and include a note with a brief description of the problem experienced. **NO WORK WILL BE DONE ON ANY ORDER WITHOUT A P.O. NUMBER.**

Completed repairs are returned with a Repair Report that states the problem with the control and the possible cause. Repair orders are returned via UPS Ground unless other arrangements are made. If you have further questions regarding repair procedures, contact your Dart Distributor or Representative.

## ALSO AVAILABLE FROM DART CONTROLS, INC.



**125D SERIES**  
AC INPUT - VARIABLE DC OUTPUT  
1/50 HP through 1.0 HP



**250G SERIES**  
AC INPUT - VARIABLE DC OUTPUT  
1/50 HP through 2.0 HP



**65 SERIES**  
DC INPUT - VARIABLE DC OUTPUT  
CURRENT RATINGS OF 20, 40, AND  
60 AMPS



**500 SERIES**  
AC INPUT - VARIABLE DC OUTPUT  
1/50 HP through 3.0 HP



**MDP SERIES**  
PROGRAMMABLE  
CLOSED LOOP DC  
SPEED CONTROL



**DM SERIES**  
FIELD PROGRAMMABLE  
DIGITAL TACHOMETER

**Dart offers the industry's broadest range of electronic DC and AC motor speed controls rated to 3 horsepower, as well as speed control accessories.**

Shown above is just a sampling of the expanded line of Dart controls that feature the latest in electronic technology and engineering. Products are manufactured in the U.S.A. at our Zionsville (Indianapolis, Indiana) production and headquarters

facility - with over 2,000,000 variable speed units in the field.

In addition to the standard off-the-shelf products, you can select from a wide variety of options to customize controls for your specific application. For further information and application assistance, contact your local Dart sales representative, stocking distributor, or Dart Controls, Inc.

## Dart Controls, Inc.

*Manufacturer of high quality DC and AC motor speed controls and accessories since 1963.*

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