

Installation and Connection Guide for PN425 Series

Addendum to 250-0167 User's Manual

General Information

This is a supplementary manual. Refer to Minarik document 250-0167 for basic instructions in operating the regenerative control board. Additional operating and troubleshooting procedures also apply to the PN425 series.

Minarik Control Model PN425 combines switching logic with a full-wave regenerative drive to allow the control to function in limit switch operation. Commands to the logic module are provided by proximity sensors, which automatically trigger the switching process upon motion.

Operation

The control automatically cycles between FWD and REV proximity limit switches. Once an object reaches a limit switch, the process stop, reverses, and proceeds in the opposite direction. The speed of the process can be controlled with a speed adjust potentiometer. Connect the potentiometer to logic terminal board TB501 as shown in Figure 1, page 2.

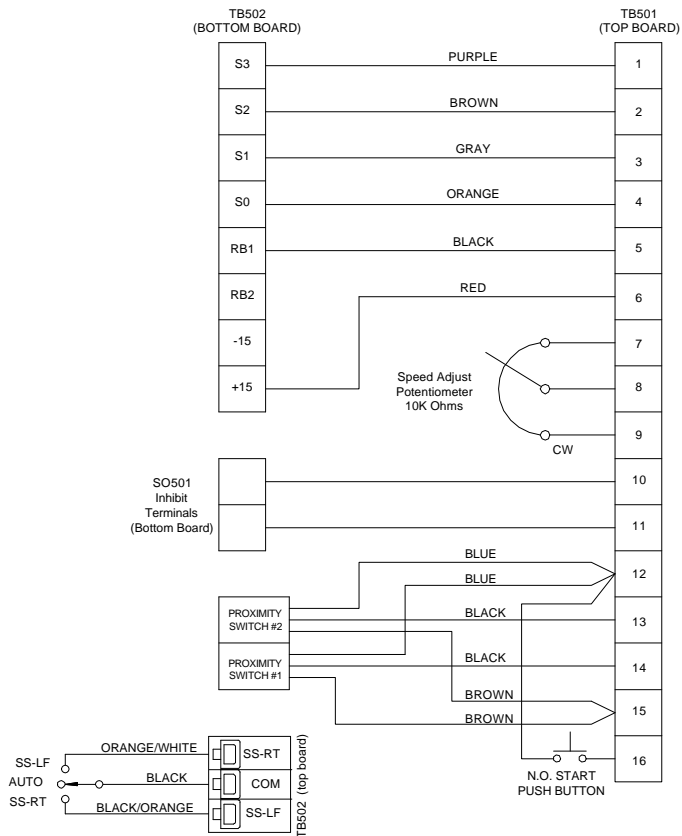


Figure 1. PN425B Connections

The PN425 control has 3 user modes:

- 1) Single-Cycle Right (SS-RT)
- 2) Single-Cycle Left (SS-LF)
- 3) Auto Mode

To switch between modes, connect a single pole, triple throw switch to TB502 as shown in Figure 1, page 2.

Single-Cycle Right (SS-RT)

If the switch connected to TB502 is set to SS-RT, the motor will run to the right after the start pushbutton is pressed, hit the first proximity switch, reverse it's direction, then stop when it reaches the second proximity switch.

Single-Cycle Left (SS-LF)

If the switch connected to TB502 is set to SS-LF, the motor will run to the left after the start pushbutton is pressed, hit the first proximity switch, reverse it's direction, then stop when it reaches the second proximity switch.

Auto

If the switch connected to TB502 is set to auto, the motor will run will run back and forth between proximity switches.

Calibration

The PN425 series control contains eight user-adjustable trimpots. Refer to Minarik Document 250-0167 for information on calibrating these trimpots.

Each drive is factory calibrated to its maximum current rating. Readjust the calibration trimpot settings to accommodate lower current rated motors.

All adjustments increase with clockwise rotation and decrease with counter clockwise rotation. Use a non-metallic screwdriver for calibration. Each trimpot is identified on the printed circuit board.

Dwell Time

Calibrating the DWELL TIME rotary dip switch adjusts the amount of time the process remains in the stop position after a limit switch has been actuated.

The range of the DWELL TIME dip switch is adjustable from 0 to 4 seconds. To set the dwell time to minimum (0 seconds), set the DWELL TIME dip switch to 0. To set the dwell time to maximum (4 seconds), set the DWELL TIME dip switch to 9. Refer to Figure 2 for dip switch location.

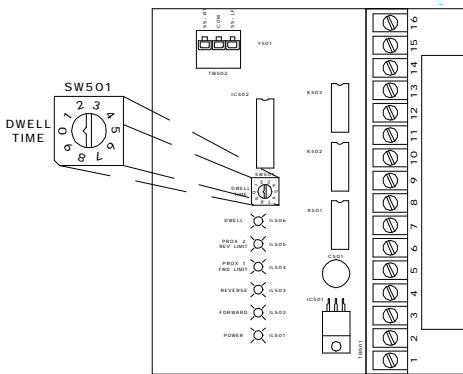


Figure 2. DWELL TIME Dip Switch Location

Diagnostic LEDs

The PN425 control contains six diagnostic LEDs to aid in functional testing and troubleshooting. See Figure 4 for LED operation.

DWELL (red):

Lights when the process remains stopped after a proximity switch has been actuated.

PROX 2 REV LIMIT (green):

Lights when the reverse limit switch is actuated.

PROX 1 FWD LIMIT (green):

Lights when the forward limit switch is actuated.

REVERSE (green):

Lights when the drive applies a signal to run the motor in the reverse direction. It is extinguished when the drive applies a signal to run the motor in the forward direction.

FORWARD (green):

Lights when the drive applies a signal to run the motor in the forward direction. It is extinguished when the drive applies a signal to run the motor in the reverse direction.

POWER (red):

Lights when AC power is applied to the drive. It is extinguished when power is removed.

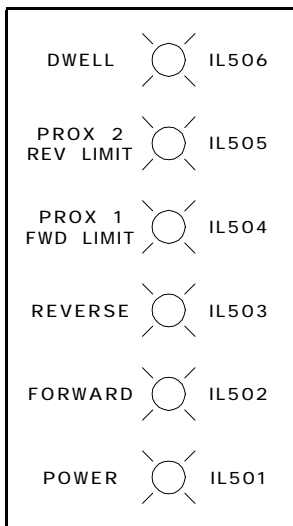


Figure 3. Diagnostic LED Layout

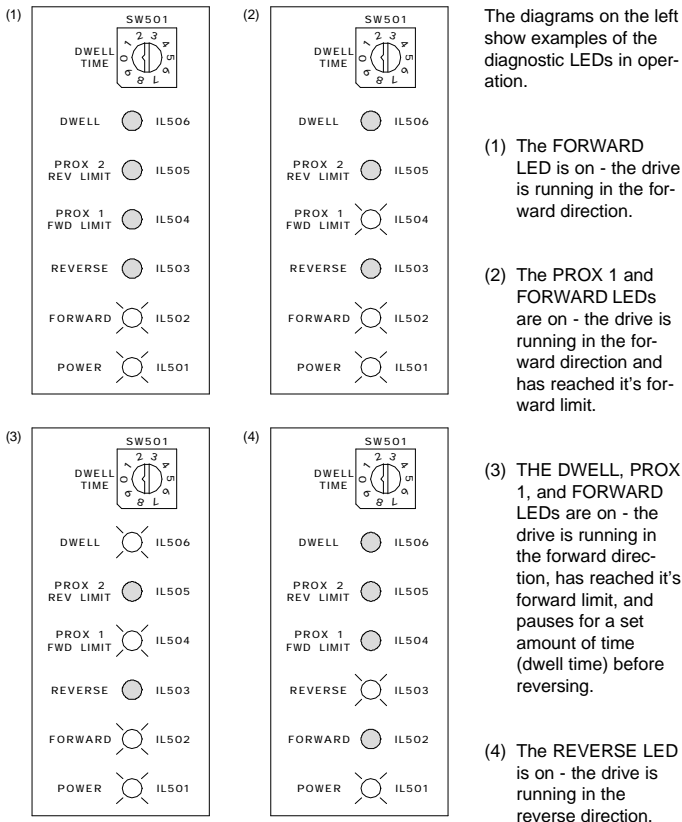


Figure 4. Diagnostic LED Operation

Troubleshooting



Warning

Dangerous voltages exist on the drive when it is powered. When possible, disconnect the drive while troubleshooting. High voltages can cause serious or fatal injury.

Check the following steps before proceeding:

1. The AC line voltage must be balanced and match the voltage on the drive nameplate.
2. The deadband (DB) must be set approximately at the 3 o'clock position for 60 Hz AC line frequency or at 9 o'clock for 50 Hz AC line frequency.
3. The motor must be rated for the drive's rated armature (all motors) and field outputs (shunt wound motors only).
4. Do not make any connections to F1 and F2 if using a permanent magnet motor.
5. Terminal block connections should be consistent with the connections shown in this manual.
6. Check that line fuse FU501 (and FU502 for 230 VAC line voltage) is properly sized and not blown.
7. Check that field fuse FU503 is 1.5A and not blown.

Troubleshooting procedures

Note: Refer to Minarik Document 250-0167 for additional troubleshooting procedures.

If drive does not reverse:

Check that the proximity switches are functioning and wired according to Figure 1. If the switches are wired correctly and the drive does not reverse when a switch is actuated, replace the switch.

If drive brakes to a stop, but does not reverse:

Check that terminals 1 - 6 of TB501 are wired to the bottom board per Figure 1 (page 2).

If drive does not brake and does not reverse:

Check that terminals 10 and 11 of the switching logic module are connected to SO501 on the bottom board. Also check that the proximity switches are functioning correctly.

If drive does not run at desired speed:

Check that the speed adjust pot is wired correctly per Figure 1 (page 2). Check that pins 1 - 6 of TB501 are connected properly. Check that the drive is calibrated properly for the application.

For additional assistance, contact your local Minarik distributor or the factory direct at:

(800) MINARIK or (800) 646-2745 (phone) or
(800) 394-6334 (fax).

NOTES

NOTES

Unconditional Warranty

A. Warranty - Minarik Corporation (referred to as "the Corporation") warrants that its products will be free from defects in workmanship and material for twelve (12) months or 3,000 hours, whichever comes first, from date of manufacture thereof. Within this warranty period, the Corporation will repair or replace, at its sole discretion, such products that are returned to Minarik Corporation, 901 East Thompson Avenue, Glendale, CA 91201-2011 USA.

This warranty applies only to standard catalog products, and does not apply to specials. Any returns for special controls will be evaluated on a case-by-case basis. The Corporation is not responsible for removal, installation, or any other incidental expenses incurred in shipping the product to and from the repair point.

B. Disclaimer - The provisions of Paragraph A are the Corporation's sole obligation and exclude all other warranties of merchantability for use, express or implied. The Corporation further disclaims any responsibility whatsoever to the customer or to any other person for injury to the person or damage or loss of property of value caused by any product that has been subject to misuse, negligence, or accident, or misapplied or modified by unauthorized persons or improperly installed.

C. Limitations of Liability - In the event of any claim for breach of any of the Corporation's obligations, whether express or implied, and particularly of any other claim or breach of warranty contained in Paragraph A, or of any other warranties, express or implied, or claim of liability that might, despite Paragraph B, be decided against the Corporation by lawful authority, the Corporation shall under no circumstances be liable for any consequential damages, losses, or expense arising in connection with the use of, or inability to use, the Corporation's product for any purpose whatsoever.

An adjustment made under warranty does not void the warranty, nor does it imply an extension of the original 12-month warranty period. Products serviced and/or parts replaced on a no-charge basis during the warranty period carry the unexpired portion of the original warranty only.

If for any reason any of the foregoing provisions shall be ineffective, the Corporation's liability for damages arising out of its manufacture or sale of equipment, or use thereof, whether such liability is based on warranty, contract, negligence, strict liability in tort, or otherwise, shall not in any event exceed the full purchase price of such equipment.

Any action against the Corporation based upon any liability or obligation arising hereunder or under any law applicable to the sale of equipment or the use thereof, must be commenced within one year after the cause of such action arises.



901 East Thompson Avenue
Glendale, California 91201-2011
Phone: (800) MINARIK or (800) 646-2745
Fax: (800) 394-6334
www.minarikcorp.com
Document number 250-0185, Revision 2
Printed in the U.S.A – 5/01
U.S.A. \$12.00, Canada \$13.00