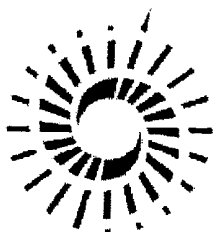
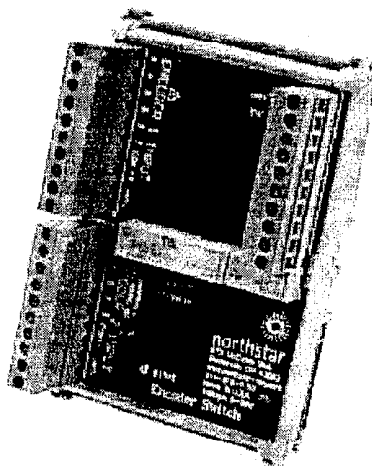




Instruction Manual

RIM Tach® Encoder Switch



northstar

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Preliminary

LIMITED WARRANTY

NorthStar Technologies, Inc. (henceforth NorthStar), the manufacturer, warrants this product for a period of twelve (12) months from the date of shipment. During the warranty period, under authorized return component parts to NorthStar freight prepaid, the company will repair, or at its option replace, any part found to be defective in material or workmanship, without charge to the Owner for parts, service labor, or associated customary shipping cost. Replacement or repaired parts will be warranted for only the unused portion of the original warranty.

This warranty is limited to NorthStar products purchased and installed in the United States. This same protection will extend to any subsequent owner during the warranty period. It does not apply to damage caused by accident, misuse, fire, flood or acts of God, or from failure to properly install, operate, or maintain the product in accordance with the printed instructions provided.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE EXPRESSLY EXCLUDED. THE OWNER AGREES THAT NORTHSTAR'S LIABILITY WITH RESPECT TO THIS PRODUCT SHALL BE SET FORTH IN THIS WARRANTY, AND INCIDENTAL OR CONSEQUENTIAL DAMAGES ARE EXPRESSLY EXCLUDED.

WARRANTY RETURN POLICY

If you experience any technical problems with NorthStar's products, please contact our Technical Support Department at (614) 818-1150 from 8:00 A.M. to 5:00 P.M. Eastern Standard Time (EST), Monday through Friday or in writing to fax: (614) 891-6909, or email to service@northstar-tec.com. Please be ready to provide your customer number, item description, serial number, invoice number, date of purchase, and the specifics of the problem.

A representative will attempt to solve your problem over the telephone by running a few diagnostics. If it is determined by our representative in conjunction with the Customer that the product requires to be returned to NorthStar's factory for warranty repair, a Return Goods Authorization (RGA) number will be issued. For control purposes, only those items identified with an RGA number may be returned to NorthStar. Please make sure that the RGA number is clearly marked on the shipping label. Packages missing an RGA number cannot be accepted by our Receiving Department and must be returned to the sender freight COD. Ship returned products to NorthStar PRE-PAID and insured for its full value.

EXPRESS SERVICE IS OFFERED ON ALL WARRANTY REPAIRS WHERE AN RGA NUMBER HAS BEEN ISSUED. IF THE SAME WARRANTY PART THAT IS BEING RETURNED IS IN STOCK, NORTHSTAR WILL IMMEDIATELY SHIP OUT A NEW REPLACEMENT PART, INVOICE THE REPLACEMENT PART AND ISSUE A CREDIT INVOICE WHEN THE RGA NUMBER WARRANTY PART IS RECEIVED AT LAKE SHORE AND IS CONFIRMED TO BE A WARRANTY REPAIR. NORTHSTAR WILL EXPRESS SHIP THE PRODUCT PRE-PAID, USING THE SAME METHOD BY WHICH THE WARRANTY PART WAS SHIPPED TO NORTHSTAR. (i.e., IF THE RGA WARRANTY PART WAS SHIPPED OVERNIGHT, NORTHSTAR WILL SHIP IN THE SAME MANNER.)

There is a 15% restocking fee on all items returned for credit to NorthStar. This includes all items in that are returned for exchange. All replacement parts must be purchased before they are sent out to the customer. If credit needs to be issued it will be issued upon the return of the product if the unit is in good condition.

TRADEMARK ACKNOWLEDGMENT

Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in this manual and NorthStar was aware of a trademark claim, the designations have been printed in initial capital letters and the ™ or ® symbol used.

RIM Tach® is a trademark of NorthStar Technologies, Inc.

Encoder Switch Specifications (PRELIMINARY)

Input Signal	1, 2 or 3 channel Digital encoder or Proximity probe, single or multiple channel, sine or square wave, open collector, differential or single ended line driver.
Input signal voltage	4-30 VDC
Input signal current	2.2mA minimum, 3.5mA typical
Input signal impedance	Opto isolated, 1K ohms at 4V , 6.8K ohms at 24V typical.
Input Voltage Power	+5-26 VDC, less than 150mA at 100Khz and 26 VDC typical, no output driver load. Reverse polarity protected.
Error output signal	Sinking normally open, closes on error. 5V, 20mA maximum load.
Power up time	Less than 10 mS
Output signal	Differential driven square wave, signal level approx. equivalent to input supply voltage
Output load	Output drivers are thermally protected and shutdown on overtemp condition, failsafe mode connects encoder 1 directly to output.
Operating frequency range	0 Hz to 100 Khz , depending on output load
Switching time	Encoder 1 to 2, less than 1 uS; Encoder 2 to 1, less than 8 uS
Operating environment	Indoors
Operating temperature	0 to 50°C <i>Input voltage limits upper operating temperature - lower input voltage for higher ambient temperature operation.</i>

Introduction(Preliminary)

Description

The NorthStar Technologies Encoder Switch accepts inputs from a variety of encoders and prox probes, allowing noise free and contact bounce free electronic switching of 2 sets of digital encoder signals to a single output set. A failsafe mode directly connects Encoder 1 Input to Output through dry contacts, bypassing all opto isolator signal conditioning and line driver circuits if Encoder Switch loses power or encounters low voltage and/or overtemp conditions. Green LED status indicator illuminates when unit is operating properly, will NOT illuminate during error / fail-safe operation. Red illuminates when Encoder 2 input is connected to Output, is off when Encoder 1 input is connected to Output.

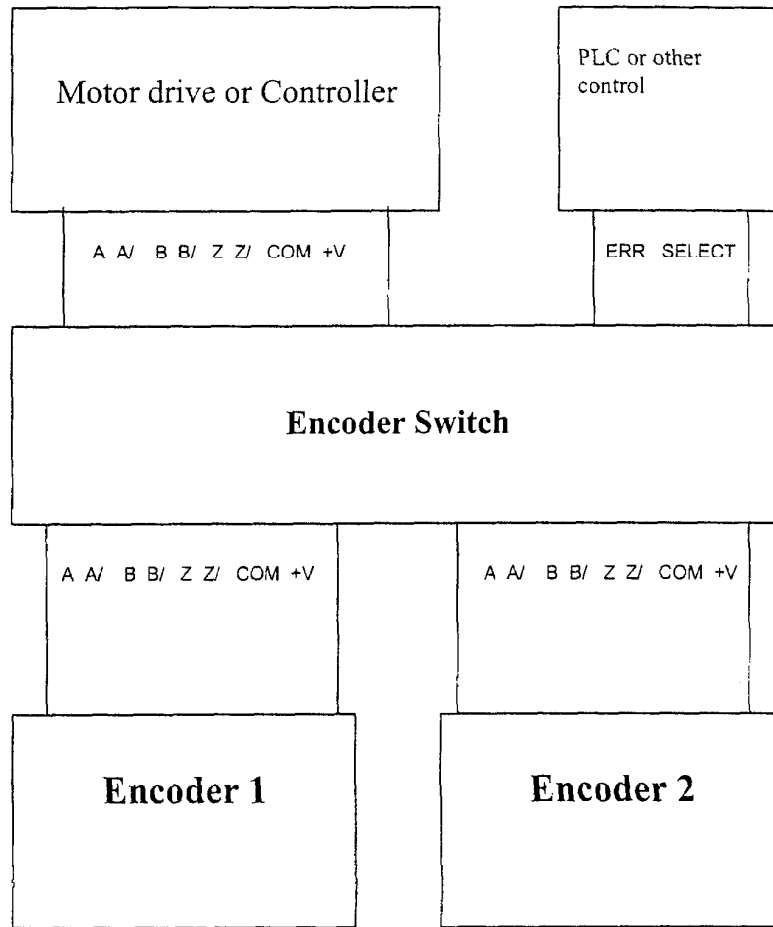
Features

- Allows selection between A,B and Z inputs of two separate encoders
- Opto-isolated inputs accepts signals from two different voltage and/or grounding levels, including open collector, prox probe and differential line driver
- Fail-safe mode directly connects Encoder 1 to Output terminals through dry contacts during power loss and fault conditions
- Can perform signal level conversion from low to high or high to low voltage signals
- Thermal, under voltage, reverse polarity and overload protection
- Status indicators for normal operation and encoder selection
- Wide input voltage range
- High power differential adaptive line driver outputs
- Inputs compatible with both digital encoders and prox probes

Applications

- Allows use of 1 drive with 2 separate encoders
- Switch between encoder resolutions for motor speed or coarse/fine position control
- Enables easy connection of backup encoder to most equipment

Connection diagram



Pin Descriptions (Preliminary)

Connector J1

1	A	Encoder 1 A channel input signal + voltage from 4-30V
2	A\	Encoder 1 A channel input signal voltage return
3	B	Encoder 1 B channel input signal + voltage from 4-30V
4	B\	Encoder 1 B channel input signal voltage return
5	Z	Encoder 1 Z channel input signal + voltage from 4-30V
6	Z\	Encoder 1 Z channel input signal voltage return
7	COM	Input / Output Power return
8	+V	Input / Output power
9	N/C	No internal connection – can be used as tie point
10	N/C	No internal connection – can be used as tie point

Connector J2

1	A	Encoder 2 A channel input signal + voltage from 4-30V
2	A\	Encoder 2 A channel input signal voltage return
3	B	Encoder 2 B channel input signal + voltage from 4-30V
4	B\	Encoder 2 B channel input signal voltage return
5	Z	Encoder 2 Z channel input signal + voltage from 4-30V
6	Z\	Encoder 2 Z channel input signal voltage return
7	COM	Input / Output Power return
8	+V	Input / Output power
9	N/C	No internal connection – can be used as tie point
10	N/C	No internal connection – can be used as tie point

Connector J3

1	A	A channel output signal
2	A\	A\ channel output signal
3	B	B channel output signal
4	B\	B\ channel output signal
5	Z	Z channel output signal
6	Z\	Z\ channel output signal
7	COM	Input / Output Power return
8	+V	Input / Output power
9	ERR\	Error signal output, sinks in failsafe, internal pull-up to +5 during normal operation
10	SELECT	Encoder 1, 2 select. Internal pull-up to +5V. Float/source to select encoder 1, sink/connect to COM for encoder 2.