The M140 modification changes the pulse output of any single output incremental encoder into a minimum speed output. That is, the output turns "on" when the encoder's shaft exceeds a predetermined RPM, and turns "off" when the rotational speed is reduced below the predetermined RPM. The following formula can be used to establish the predetermined RPM:

$$RPM = 120 / ppr$$

where ppr is the pulse per revolution code disk used internally in the encoder. For example: if ppr = 120 then the output will turn on when the RPM exceeds 1 rpm; if ppr = 20 then the output will turn on when the RPM exceeds 6. The maximum value for ppr is 240.

Notes:
1. The RPM tolerance is +/- 10%.
2. Available output circuits are Push/Pull (i.e. combined current sinking/sourcing) and NPN open collector.
3. When the output is "on" the NPN transistor is on.
4. The output turns "off" when the rotational speed drops to 6% below the predetermined RPM.

Example: RH encoder with minimum speed detector output that turns on when the rotational speed exceeds 2 rpm, push/pull output, 8-30vdc supply.

RH-60/8-30 M140

Rev	Description	Date	Tolerances	M140: Encoder with minimum speed detector output		
a	Changed RPM tolerance from 25% to 10%	7/30/01	.XXXX ± .0005 .XXX ± .005 .XX ± .01 .X ± .015	BY: TRD	MAT'L:	
			Fractions ± 1/32 Angles ± 15 min.	DATE: 5/21/01	FINISH:	SCALE: 1 : 1
			Runout ± .003 Unless otherwise specified	PHOTOCRAFT, Inc. Elburn, Illinois		8A140a