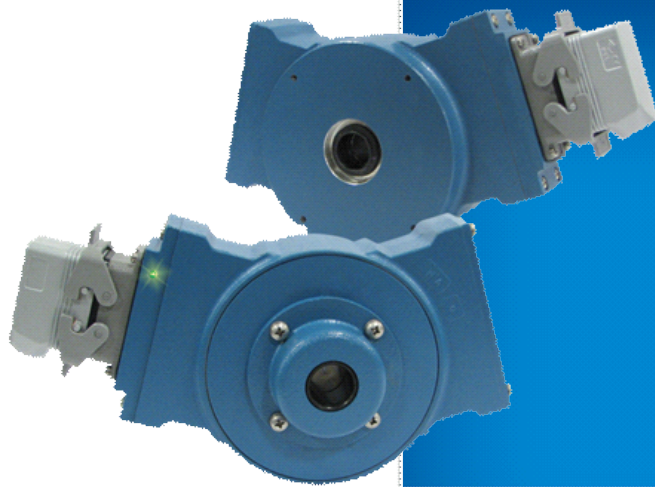# Avtron AV685 SMARTach™ III Encoders

Severe Mill Duty SMARTach™ III Magnetic Encoder, 1- 1/8" Hollow Shaft Mount

The Toughest Hollow Shaft Encoder Built!

- Severe Mill Duty
- Up to 5000 PPR
- Replaces Competitive Models Without Rewiring
- Self-Diagnostic LED & Alarm
- Outputs Fully Short Circuit Protected
- Removable Sensors
- End of Shaft and Thru Shaft Models Available
- IP66 Enclosure
- High-Power Output Standard
- Optional Dual Isolated Outputs
- 1 Year No-Hassle Warranty

AV685

SMARTach™ III Magnetic Encoder, 1-1/8" Hollow Shaft Mount

AV685 hollow shaft encoders survive the worst conditions: dust, dirt, liquid sprays, and temperature extremes from -40°C* to +120°C*!

The durable hollow shaft design tolerates huge axial movements, and withstands more shaft runout than any other encoder available.
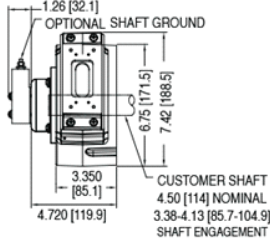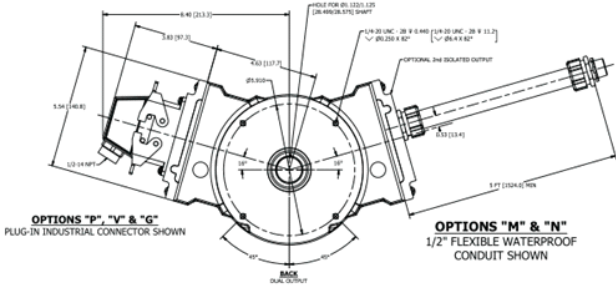
The dual, replaceable sensors have fully potted electronics and are interchangeable between AV485, AV685, and AV850. And, they feature high-power outputs that drive long cable lengths easily. These AV5 SMARTach III sensors have the best protection of any encoder—from surges, wiring outputs to power, ground, between phases, or even short circuits!

The universal 5-24V design drives longer cables and is protected against wiring errors and surges.

Adaptive Electronics: At power-up you know you installed it right! The green LED tells you your AV5 Sensor is aligned with the rotor and reading signal. If at any time, the AV5 cannot produce consistent signals, the LED changes to red and the optional remote alarm contact activates. However, the encoder keeps working to give you time to schedule service. Even wiring errors and short circuits that cause an over-temp situation will be detected and indicated by changing the LED to orange.

So if you want the highest reliability most durable encoder in your mill, select AV685.

OUTLINE DRAWING

OPTIONS "P", "V" & "G"
PLUG-IN INDUSTRIAL CONNECTOR SHOWN

OPTIONS "M" & "N"
1/2" FLEXIBLE WATERPROOF
CONDUIT SHOWN

1.26 [32.1]
OPTIONAL SHAFT GROUND
6.75 [171.5]
7.42 [188.5]
3.350 [85.1]
4.720 [119.9]
CUSTOMER SHAFT
4.50 [114] NOMINAL
3.38-4.13 [85.7-104.9]
SHAFT ENGAGEMENT

Check out our website for more detailed specifications, drawings, and installation instructions. www.avtronencoders.com

MORE AV685 ADVANTAGES

- SMARTach II sensors find problems before they cause failures
- Replaces Avtron M585, M685; Dynapar HS56, HS85 models
- Optional K661 signal converter for direct replacement of analog tachs (BC42, 46, etc.)
- Mix and match any PPR's
- No sensor shimming required
- Dual oversize bearings, spaced farther apart
- Synthetic bearing lubricant for longer life
- Optional overspeed switch
- Optional shaft grounding
- Huge range of stub shaft adapters available to fit shafts from 1 3/8" to 12" & most motor brands

AV685 SPECIFICATIONS

Operating Power (Each Sensor): 5 - 24 VDC*
Current: 100mA,nominal, no load
Output Format: A Quad B with marker (A,A–, B,B–, Z,Z–)
Second Isolated Output: Optional
Frequency Range: @5V, @1m cable, 250 kHz Max
@24V, @300m cable, #8 output, 45 kHz Max
Maximum Cable Length: 1000'
PPR: 4 - 50000***
Speed: 5400 RPM Max****
Electronics: Fully Encapsulated, IP67**
Temperature: -40°* to 120°C* (150°C rotor)^
Environmental: Electronics: Fully Encapsulated; IP66**; Nema 4, 13 Rating
Chemical: Polyurethane enamel paint protects against salt spray, mild acids, and bases.
Weight: 15-17 lbs. [6-8 kg

* Electrical specifications for SMARTach III model (serial #30,000 or higher), consult Nidec Industrial Solutions for earlier model specifications.
** Certain connector options may reduce IP rating.
***(PPR) Standard maximum PPR is 5000. Consult Factory with your application for PPRs up to 50,000.
**** (Speed) Maximum RPM may be limited for PPR > 2,500. Consult Factory with your application.
^ -20°C to 80°C Standard, requires high-temperature model and instrument air feed for 120°C rating

All dimensions are in inches [millimeters].
Specifications and features are subject to change without notice.

SELECTION GUIDE

AV685 PART NUMBERS AND AVAILABLE OPTIONS INCLUDING AV5 SENSORS

Model	Temp Rating	Tether	Style	Left Module		Right Module		Connector Options	Modifications
				Line Driver / **PPR**		**Line Driver** / **PPR**			
AV685	N- -20°C to 80°C C- -40°C to 80°C H- -20°C to 120°C+ Spare sensors and accessories can be ordered separately. See Table 2. + Contact Factory	X- none 1- B32809 threaded rod	E- standard (EOS) T- through shaft G- grounding O- over speed switch	X- none 6- 5-24V in/out (7272) 8- 5-24V in/out, (HX) 9- 5-24V in, 5V out (7272)	X- none F- 60 C- 64 G- 100 H- 120 A- 128 L- 240 N- 256 P- 300 E- 360 B- 480 Q- 500 R- 512 S- 600 U- 720 V- 900 J- 960 W- 1000 Y- 1024 Z- 1200 2- 1500 6- 1800 3- 2000 4- 2048 5- 2500 D- 4096 8- 4800 9- 5000 0- special	X- none 6- 5-24V in/out (7272) 8- 5-24V in/out, (HX) 9- 5-24V in, 5V out (7272)	X- none F- 60 C- 64 G- 100 H- 120 A- 128 L- 240 N- 256 P- 300 E- 360 B- 480 Q- 500 R- 512 S- 600 U- 720 V- 900 J- 960 W- 1000 Y- 1024 Z- 1200 2- 1500 6- 1800 3- 2000 4- 2048 5- 2500 D- 4096 8- 4800 9- 5000 0- special		003- Include analog signal converter (K661) 004- Super magnetic shielding 028- Include Spanner Wrenches 4xx- Special PPR (see table below) 9xx- Special Cable Length, XX= Length in Feet

Connector Options

Mounted on Encoder Body				3' Cable			5' Flexible Conduit
Industrial Connector	**5 pin MS**	**10 pin MS**	**Other**	**Industrial Connector**	**Twist Lock**	**Other**	
G- (NorthstarTM Pinout) with Plug P- with Plug V- with Plug, w/insulated adapter	E- (M737 Pinout) without Plug F- "E" with Plug H- (M727 Pinout) without Plug J- "H" with Plug	A- without Plug B- with Plug & clamp C- with Plug & Flex. Adapter L- with Right Angle Plug	K- Condulet R- Twist Lock Mini MS with Plug 1- 10 Pin Mini Epic With Plug (M3 & M4 Replacement)	Z- with Plug Q- 18" flex cable, with Remote Base	S- Mini MS with Plug	W- Leads only	D- 10 pin MS w/ins. adapter M- w/ins. adapter N- In Flextight T- Terminal box on 5' Flextight Y- "T" w/ins. adapter

SPECIAL PPR OPTION CODES
For full list download manual