

Avtron AV685 SMARTach™ III Encoders



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

Magnetic Durability in a Compact Encoder

Severe Mill Duty
Up to 4000 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.

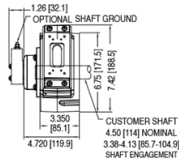
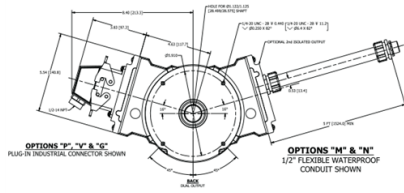
The dual, replaceable sensors have fully potted electronics and are interchangeable between AV485, AV685, and AV850. And, they feature high-power outputs that drive long cable lengths easily. These AV5 SMARTach III sensors have the best protection of any encoder—from surges, wiring outputs to power, 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



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

MORE 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.

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



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SELECTION GUIDE

MODEL	TEMPERATURE RATING	ANTI-ROTATIONAL TETHER	SHAFT MOUNTING	LEFT OUTPUT LINE DRIVER	LEFT OUTPUT PPR	RIGHT OUTPUT LINE DRIVER	RIGHT OUTPUT PPR	CONNECTOR OPTIONS	MODIFICATIONS
AV685	N - -20°C to +80°C (Standard) H - -20°C to +120°C (NOTE: Requires instrument air flow) C - -40°C to +80°C 0 - Custom Operating Temperature Range, Consult Factory	1 - 12 inch Threaded Rod Tether (B32809) 2 - 6.5 inch Threaded Rod Tether (B32809-2) X - None	E - Standard (End of Shaft) Mount T - Through Shaft Mount G - Standard End of Shaft Mount w/Shaft Grounding Added O - Overspeed Switch (Option Codes 6XX Below, Also Add Stub Shaft Separately)	X - No Left Output 6 - 5-24v in, 5-24v out (7272) Best for Single Ended Wiring (A B No Left OutputZ, no complements) 8 - 5-24v in, 5-24v out hi-power standard (HX) 9 - 5-24V In 5V Out (7272)	X - No Left Output F - 60 PPR G - 100 PPR A - 128 PPR L - 240 PPR N - 256 PPR P - 300 PPR E - 360 PPR B - 480 PPR Q - 500 PPR R - 512 PPR S - 600 PPR U - 720 PPR V - 900 PPR J - 960 PPR W - 1000 PPR Y - 1024 PPR Z - 1200 PPR 2 - 1500 PPR 6 - 1800 PPR	X - No Right Output 6 - 5-24v in, 5-24v out (7272) recommended for single-ended wiring (A,B,Z, no complements) 8 - 5-24v in, 5-24v out hi-power standard (HX) 9 - 5-24V In 5V Out (7272)	X - No Right Output F - 60 PPR G - 100 PPR H - 120 PPR A - 128 PPR L - 240 PPR N - 256 PPR P - 300 PPR E - 360 PPR B - 480 PPR Q - 500 PPR R - 512 PPR S - 600 PPR U - 720 PPR V - 900 PPR J - 960 PPR W - 1000 PPR Y - 1024 PPR Z - 1200 PPR 2 - 1500 PPR	A - 10 pin MS style without Mating Plug B - 10 pin MS style with Plug 5 - 10 pin MS style w/o Plug, Dynapar Pin Out C - 10 pin MS style with Plug & Flex Conduit Adapter D - 10 pin MS style w/Plug on 5 ft. Flex Conduit (M585 Replacement) E - M737A Pin out 5 pin MS, without Plug F - M737A Pin out 5 pin MS style with Plug G - Industrial EPIC Style with Lakeshore Pin out H - M727A Pin out 5 pin MS, without Plug J - M727A Pin out 5 pin MS, with Plug K - Condulet with leads L - 10 pin MS style with 90° Plug M - 5 ft. Flex Conduit, with Insulating Adapter N - 5 ft. Flex Conduit, Leads Only P - Industrial EPIC Style with Plug Q - Industrial Mini-EPIC Style on Remote Base for Motor Cover Mount on 18" cable, with plug R - Baldor Mini MS style with Plug S - Baldor Mini MS style on 3 ft. Cable with Plug T - 5 ft. Flex Conduit with Terminal Box V - Industrial EPIC Style with Plug & Insulated Adapter	000 - None 003 - Analog Brushless Converter (K661) Package Included 004 - Super Magnetic Shielded Sensor(s) 028 - Include Mounting Wrench Set (484017, 484018) 089 - Special mounting tether, coupling flange, and double electronic overspeed switches 096 - Special 8192 PPR (Left & Right) & 15' flex conduit connection 097 - Special 8192 PPR (Left & Right) & 20' flex conduit connection 401 - 1270 (Special) Left Output PPR (Set Left PPR Code = 0) 402 - 150 (Special) Left Output PPR (Set Left PPR Code = 0) 403 - 50 (Special) Left Output PPR (Set Left PPR Code = 0) 404 - 16 PPR (Special) Right Output (Set Right PPR Code = 0) 405 - 16 (Special) Left Output PPR (Set Left PPR Code = 0) 406 - 6000 (Special) Left Output PPR (Set Left PPR Code = 0) 407 - 2800 (Special) Left Output PPR (Set Left PPR Code = 0) 408 - 1400 (Special) Left Output PPR (Set Left PPR Code = 0) 409 - 30 (Special) Left Output PPR (Set Left PPR Code = 0) 410 - 6000 (Special) Right Output PPR (Set Right PPR code = 0) 411 - 12000 (Special) Left Output PPR (Set Left PPR code = 0) 412 - 200 (Special) Left Output PPR (Set Left PPR code = 0) 413 - 30 (Special) Right & Left Output PPR (Set Right & Left PPR codes = 0)



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MODEL	TEMPERATURE RATING	ANTI-ROTATIONAL TETHER	SHAFT MOUNTING	LEFT OUTPUT LINE DRIVER	LEFT OUTPUT PPR	RIGHT OUTPUT LINE DRIVER	RIGHT OUTPUT PPR	CONNECTOR OPTIONS	MODIFICATIONS
					3 - 2000 PPR 4 - 2048 PPR 5 - 2500 PPR T - 3072 PPR 7 - 3600 PPR D - 4096 PPR 8 - 4800 PPR 9 - 5000 PPR 0 - Special PPR		6 - 1800 PPR 3 - 2000 PPR 4 - 2048 PPR 5 - 2500 PPR T - 3072 PPR 7 - 3600 PPR D - 4096 PPR 8 - 4800 PPR 9 - 5000 PPR 0 - Special PPR	W - 3 ft. Sealed Cable with Leads Y - 5 ft. Flex Conduit with Terminal Box & Insulated Adapter Z - Industrial EPIC Style on 3 ft. Cable with Plug X - No Connector/Sensor (Housing only) 1 - Industrial Mini-EPIC style with plug	414 - 1500 (Special) Left Output PPR (Set Left PPR code = 0) 415 - 3000 (Special) Left Output PPR (Set Left PPR code = 0) 416 - 3600 (Special) Left Output PPR (Set Left PPR code = 0) 417 - 1250 (Special) Left Output PPR (Set Left PPR code = 0) 418 - 2400 (Special) Right & Left Output PPR (Set Right & Left PPR codes = 0) 419 - 160 (Special) Right & Left Output PPR (Set Right & Left PPR codes = 0) 420 - 450 (Special) Left Output PPR (Set Left PPR code = 0) 421 - 30 (Special) Right Output PPR (Set Right PPR code = 0) 422 - 96 (Special) Left Output PPR (Set Left PPR code = 0) 423 - 10000 (Special) Left Output PPR (Set Left PPR code = 0) 430 - 25000 (Special) Left Output PPR (Set Left PPR Code = 0) 431 - 8192 (Special) Left & Right Output PPR (Set Left & Right PPR Code = 0) 601 - Mechanical overspeed, 1950 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 602 - Mechanical overspeed, 374 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 603 - Mechanical overspeed, 276 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 604 - Mechanical overspeed, 414 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 605 - Mechanical overspeed, 2575 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 606 - Mechanical overspeed, 632 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 607 - Mechanical overspeed, 2250 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 610 - Mechanical overspeed, 241 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable



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									611 - Mechanical overspeed, 550 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 612 - Mechanical overspeed, 316 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 613 - Mechanical overspeed, 529 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 614 - Mechanical overspeed, 990 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 615 - Mechanical overspeed, 124 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 616 - Mechanical overspeed, 2000 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 617 - Mechanical overspeed, 500 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 618 - Mechanical overspeed, 85 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 619 - Mechanical overspeed, 1180 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 620 - Mechanical overspeed, 750 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 621 - Mechanical overspeed, 1320 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 622 - Mechanical overspeed, 77 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 623 - Mechanical overspeed, 696 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 624 - Mechanical overspeed, 864 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 625 - Mechanical overspeed, 1062 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 626 - Mechanical overspeed, 900 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 627 - Mechanical overspeed, 30 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 628 - Mechanical overspeed, 990 RPM, 1 NO & 1 NC Contacts, 5-13mm dia. Cable 901 - Special 1 ft. cable length built into sensor 902 - Special 2 ft. cable length built into sensor



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MODEL	TEMPERATURE RATING	ANTI-ROTATIONAL TETHER	SHAFT MOUNTING	LEFT OUTPUT LINE DRIVER	LEFT OUTPUT PPR	RIGHT OUTPUT LINE DRIVER	RIGHT OUTPUT PPR	CONNECTOR OPTIONS	MODIFICATIONS
									903 - Special 3 ft. cable length built into sensor 905 - Special 5 ft. cable length built into sensor 910 - Special 10 ft. cable length built into sensor 915 - Special 15 ft. cable length built into sensor 920 - Special 20 ft. cable length built into sensor 925 - Special 25 ft. cable length built into sensor 930 - Special 30 ft. cable length built into sensor 933 - Special 33 ft. cable length built into sensor



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