

## Avtron AV5 SMARTach<sup>™</sup> III Sensor Module for AV485/AV685/AV850



Severe Duty Magneto-resistive Sensor  
for AV485, AV685 & AV850 Encoders,  
Rotor Fits Shafts 5/8"-4 1/2" [16mm-  
115mm]

### Magnetic Durability in a Compact Encoder

Wide-Gap Technology Eliminates  
Gapping and Shimming

Fits AV485, AV685, and AV850  
Encoders

Direct Machine-Mount Option

Fully Potted Electronics

-40°C to +100°C Standard; +120°C  
Option Requires Encoder Cooling

3 Year No-Hassle Warranty

Permits Up to 4.5" [115mm]  
Through-Shaft

### AV5

Avtron AV5 SMARTach III<sup>™</sup> sensors are magneto-resistive, severe duty incremental quadrature sensors for the AV485, AV685, or AV850 rotary encoders. The AV5 is also usable in applications where an encoder housing is not needed – simply mount the AV5 with your bracket, and use an AV850 or other rotor. Also available: XR5 and XR12 sensors for hazardous duty applications or XP5 for applications where explosion proof is a requirement.

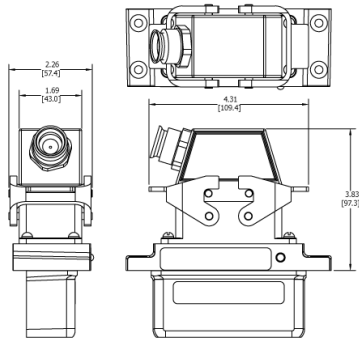
The AV5 is ideal for applications where mounting on a large diameter through-shaft is needed, including large hollow shafts for cooling water or air. The AV5 sensor + AV850 rotor combination permits through-shafts up to 4.5" [115mm].

The AV5 offers a full range of electrical connector options, including IP67 cable, IP66 MS connectors, and IP65 Industrial with built-in terminal strips. The AV5 sensor is fully protected against all types of wiring errors, including short circuits, reverse voltage, and phase-to-phase shorts. It is one tough sensor! For larger bore applications, use AV12 sensors with the AV125 encoder (or as stand-alone).

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.

## OUTLINE DRAWING



## MORE AV5 ADVANTAGES

- High resolution up to 25000 PPR
- Sensor PPR can be factory reprogrammed
- Full protection against short circuits, reverse voltage, phase-to-phase shorts
- High-power outputs for long cable runs
- Optional 24V in, 5V out option for low-voltage, long-cable applications
- Diagnostic LED and alarm output contact indicates proper operation

## MORE AV5 SPECIFICATIONS

**Operating Power:** Volts: 5 - 24 VDC\*

**Current:** 100mA nom, 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)^

**Vibration:** 18 g's

**Shock:** 1 meter drop test

**Chemical:** Polyurethane enamel paint protects against salt spray, mild acids, and bases.

**Weight:** 2 - 3 lbs [0.9 - 1.36 kg] (will vary by connector options)

\* 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.

^ Requires air cooling system option in AV485 & AV685 to reach +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](http://www.avtronencoders.com)



Nidec Industrial Solutions  
243 Tuxedo Avenue - Cleveland, Ohio 44131  
encoderhelpdesk@nidec-industrial.com  
+1 216-642-1230 - [www.avtronencoders.com](http://www.avtronencoders.com)



Features and specifications are subject to change without notice. EU-SMART™, SMARTSafe™, SMARTTach™, THIN-LINE™, WIDE-GAP™, SAFETach™, and BULLSEYE32™ are trademarks of Nidec Industrial Solution. All other trademarks and registered trademarks are the property of their respective owners. Nidec Industrial Solutions' standard warranty applies. All dimensions approximate.

# SELECTION GUIDE

MODEL	LINE DRIVER	PPR	CONNECTOR OPTIONS	MODIFICATIONS
AV5-	6 - 5-24v in, 5-24v out (7272) recommended for single-ended wiring (A,B,Z, no A/B/Z) 8 - 5-24v in, 5-24V out hi-power standard (Hx) 9 - 5-24v, 5v fixed out (7272)	F - 60 PPR C - 64 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 6 - 1800 PPR 3 - 2000 PPR 4 - 2048 PPR 5 - 2500 PPR D - 4096 PPR 8 - 4800 PPR 9 - 5000 PPR 0 - Special PPR, Consult Factory	A - 10 pin MS style w/o Mating Plug B - 10 pin MS style w/Plug C - 10 pin MS style w/Plug & Flex Cond. Adapt. 5 - 10 pin MS Connector w/o Plug, Dynapar Pin Out D - 5 Ft. Flex Conduit with 10 pin MS Connector and Plug and Insulated Adapter E - M737A Pinout 5 pin MS, w/o Plug F - M737A Pinout 5 pin MS style with Plug G - Industrial EPIC Style w/Lakeshore Pinout H - M727A Pinout 5 pin MS, w/o Plug J - M727A Pinout 5 pin MS, with Plug K - Condulet with Color Coded Leads L - 10 pin MS style w/90 Degree Elbow Plug M - 5 ft [1.5m] Flex Conduit with Insulating Adapter, Color Coded Leads N - 5 ft [1.5m] Flex Conduit, Color Coded Leads Only P - Industrial EPIC Style w/Plug Q - Industrial Mini-EPIC Style on Remote Base for Motor Cover Mount on 1.5 ft. cable, w/plug R - Baldor Mini MS style w/Plug S - Baldor Mini MS style on 3' Cable w/Plug T - 5 ft [1.5m] Flex Conduit w/Terminal Box V - Industrial EPIC Style w/Plug w/Insulated Adapter W - 3' Sealed Cable w/Color Coded Leads Y - 5 ft [1.5m] Flex Conduit w/Terminal Box w/Ins. Adapter Z - Industrial EPIC Style on 3' Cable with Plug 1 - Industrial Mini-EPIC Style w/Plug (replaces M3/M4) 3 - 6 Pin MS style w/Plug, M940 pin out 7 - 7 Pin MS style w/o Plug, BEI pinout (A, A/, B, B/, no marker pulse) 0 - Custom Connector, Consult Factory	000 - No Special Options 003 - Analog Brushless Converter (K661/C14326) Package Included 004 - Super Magnetic Shielded Sensor(s) 007 - Super Magnetic Shielded Sensor(s) and Marine Sealing O-Ring 096 - Special 8192 PPR & 15' flex conduit 097 - Special 8192 PPR & 20' flex conduit with insulated adapter 401 - 1270 PPR (Special) (Set PPR code = 0) 402 - 150 PPR (Special) (Set PPR code = 0) 403 - 50 PPR (Special) (Set PPR code = 0) 404 - 16 PPR (Special) (Set PPR code = 0) 405 - 16 PPR (Special) (Set PPR code = 0) 406 - 6000 PPR (Special) (Set PPR code = 0) 407 - 2800 PPR (Special) (Set PPR code = 0) 408 - 1400 (Special) (Set PPR code = 0) 409 - 30 PPR (Special) (Set PPR code = 0) 410 - 6000 PPR (Special) (Set PPR code = 0) 411 - 12000 (Special) (Set PPR code = 0) 412 - 200 (Special) (Set PPR code = 0) 413 - 30 (Special) (Set PPR code = 0) 414 - 1500 (Special) (Set PPR code = 0) 415 - 3000 (Special) (Set PPR code = 0) 416 - 3600 (Special) (Set PPR code = 0) 417 - 1250 (Special) (Set PPR code = 0) 418 - 2400 (Special) (Set PPR code = 0) 419 - 160 (Special) (Set PPR code = 0) 420 - 450 PPR (Special) (Set PPR code = 0) 421 - 30 PPR (Special) (Set PPR code = 0) 422 - 96 PPR (Special) (Set PPR code = 0) 423 - 10000 PPR (Special) (Set PPR code = 0) 426 - 1935 PPR (Special) (Set PPR code = 0) 430 - 25000 PPR (Special) (Set PPR code = 0) 431 - 8192 PPR (Special) (Set PPR code = 0) 901 - Special 1'/0.3m cable length built into sensor 902 - Special 2'/0.6m cable length built into sensor 903 - Special 3'/0.9m cable length built into sensor 905 - Special 5'/1.5m cable length built into sensor 910 - Special 10'/3m cable length built into sensor 915 - Special 15'/4.5m cable length built into sensor 920 - Special 20'/6m cable length built into sensor 925 - Special 25'/7.5m cable length built into sensor 930 - Special 30'/9m cable length built into sensor 933 - Special 33'/10m cable length built into sensor W02 - B Connector Option mounted on the end of a 24 in. cable with plug 9XX - Custom Cable Length, Consult Factory 4XX - Custom PPR, Consult Factory M00 - Manglam Code Only M04 - Manglam Code Only



Nidec Industrial Solutions  
243 Tuxedo Avenue - Cleveland, Ohio 44131  
encoderhelpdesk@nidec-industrial.com  
+1 216-642-1230 - www.avtronencoders.com



Features and specifications are subject to change without notice. EU-SMART™, SMARTSafe™, SMARTTach™, THIN-LINE™, WIDE-GAP™, SAFETach™, and BULLSEYE32™ are trademarks of Nidec Industrial Solution. All other trademarks and registered trademarks are the property of their respective owners. Nidec Industrial Solutions' standard warranty applies. All dimensions approximate.