



## **Mini APD Circular Connector Meets Size, Vibration, and Sealing Requirements of Off-Road and Industrial Applications**

While circular connectors have long been utilized in the harsh environments of off-road vehicles and industrial equipment, certain applications in these markets have limited space, such as narrow power-train compartments. Similarly, sensors for engine, transmission, and suspension systems are too space-constrained to employ traditional-sized connectors. Not only must the circular connectors be miniature in size, they must also be a) sealed to IP69K specifications to protect against fluid and b) designed to withstand the intense shock and vibration conditions experienced in these environments.

ITT Interconnect Solutions has expanded its APD Series circular connector family to include 20mm diameter plug devices with pin counts ranging from two to seven contacts, meeting the needs of these specialized applications. The APD Series connectors are highly reliable, direct in-line, multi-pin connector solutions. Originally developed specifically for the harsh environments found in commercial vehicle and industrial applications, the bayonet coupling connectors are completely sealed to IP67 and IP69K specifications to resist engine, transmission, fuel, motor oil, gear-box oil and brake fluids. Additionally, their new, miniature size meets the increased demand for connectors compatible with space-constrained applications.

The miniature APD Series connectors are available in 2-, 3-, 4-, 6- and 7-contact positions, expanding the original APD product line of 19-, 37-, and 51-position devices. With the addition of the miniature devices to the product line, ITT provides customers with the connection flexibility necessary to meet any wet area or harsh environment application requirements.



*ITT's mini APD Series connectors are available in 2-, 3-, 4-, 6- and 7-position versions, and are offered in a variety of configurations*

For increased versatility, the new miniature APD Series circular connectors are offered with various housings, including plug, flange receptacle, sensor receptacle, splitter (CAN J1939), and wire-to-wire. Overmolded plug and receptacles are also available for high volume manufacturing capabilities. The connectors feature gold and tin plated contacts, with optional silver-plating as well. All of the mini APD Series connectors are based on ISO15170 (former DIN 72585) and ISO16750 standards for transmission and engine applications.

Similar to the other circular devices in the APD product family, the miniature APD connectors are extremely robust, easy to assemble/disassemble, and provide superior reliability. Each of the connectors features a secondary locking mechanism for increased security and no special contact removal tools are required to unlock the secondary locking contact insert, resulting in a user-friendly device. With no dedicated tools other than a screwdriver required to unlock the contact insert in the field, the user is provided with a simplified means of correcting any problems that may arise.

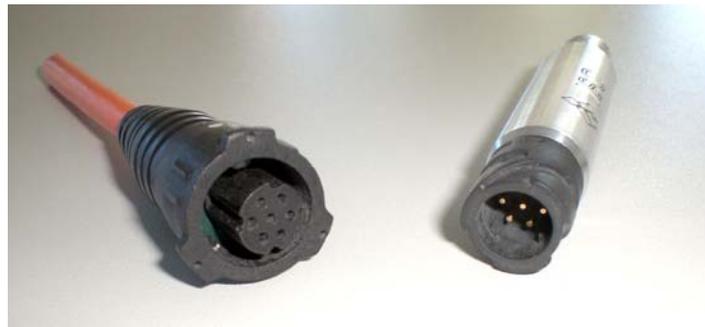
The miniature connectors also feature audible and visual indication when mated and locked, along with up to four different mechanical/key and color codings to avoid mis-mating. Easy assembly during mating and harnessing provides further simplification for the end-user.

Currently, the miniature APD Series connectors' size, coupled with IP69K sealing and color- and mechanical-coding characteristics, are unique to the marketplace.

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ITT is also the first connector manufacturer to offer a 7-pin miniature circular connector with simplified mating and un-mating capabilities, as well as a CAN-bus splitter in the 2- through 7-contact sizes, for wire gauges from 0.25 mm<sup>2</sup> to 0.75 mm<sup>2</sup>.



*Ideal for sensor applications, the mini APD connectors feature color and mechanical coding characteristics unique to the marketplace*

Due to their robustness, reliability, and miniature size, the APD Series connectors are now being specified for use in various segments of the off-road/transportation market, where traditional versions of the connector were not suitable. These segments include vehicle instrumentation, outdoor camera systems, measurement/calibration equipment, control units, solenoids and valves, brake controls, telematics, bus systems, temperature, and pressure transducers as well as sensors in transmissions, engines, suspensions, fluid sensing, air pumps and AC units, and even vehicle LED lighting applications.

In the industrial realm, the connectors are being deployed in instrumentation, level sensing, as disposable connectors without the need for calibration equipment, and a myriad of other harsh environment industrial applications.



*The mini APD connectors are ideal for a wide range of industrial, off-road and transportation applications*

ITT's miniature APD Series connectors provide significant technical and performance advantages over comparable circular connectors. Core electrical specifications for the miniature APD connectors are noted below:

<b>Maximum Voltage</b>	<b>Maximum Current</b>	<b>Operating Temperature</b>	<b>Sealing</b>
48VDC	5A @ 85°C/105°C short time at 0.8mm <sup>2</sup>	-40°C to +125°C	IP67 and IP69K

In addition to the technical and performance advantages of the miniature APD Series connectors, ITT affords its customers a significant design advantage with the ability to modify existing designs according to any customer's specifications and applications, whether it is the addition of a PCB contact, a change in the number of contacts within the design, or even adapting the APD connector for solenoid applications.

The miniature APD Series connectors are designed to meet the growing demand for miniature devices in off-road, transportation, and industrial market applications. The size, robust design, and performance characteristics meet or exceed a variety of testing and qualification standards, while also providing customers with a versatile, reliable, easy to use solution. ITT's miniature APD connectors feature characteristics unique to the marketplace and fill a void in applications where suitable connectors were not previously available.

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