

# Amphenol Enabling the Electronics Revolution

# Amphenol Sine A series product introduction

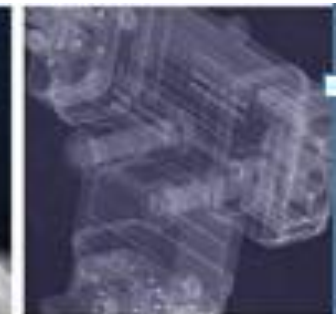
## CONTENTS

1. AIIO China Overview

2. Product Introduction

3. Product Application  
Introduction

# MORE PRODUCT BETTER SERVICE GLOBAL CONNECTOR



## AIIO CHINA - 2023

[www.amphenol-sine.com.cn](http://www.amphenol-sine.com.cn)  
[www.amphenol-cz.cn](http://www.amphenol-cz.cn)

# Amphenol

- **Founded** in 1932
- **World Headquarters:** Wallingford, Connecticut, USA
- 2022 Sales grew 16% \$12.60 Billion
- **91,000+** Employees, 140+ operating units
- **140 Operating units Worldwide, 53 WOFE (Wholly Owned Foreign Enterprise) in China**
- **Industries:** Industrial/Automotive . Mobile Devices / Networks . Information Technology . Broadband Communications . Data Communications Equipment Military/Commercial Aerospace



**Amphenol Corporation** is one of the world's leading producers of electronic and fiber optic connectors, cable and interconnect systems. Amphenol products are engineered and manufactured in the Americas, Europe, Asia and Africa and sold by a worldwide sales and marketing organization. Amphenol has a diversified presence as a leader in high growth areas of the interconnect market including: Military, Commercial Aerospace, Automotive, Broadband Communication, Industrial, Information Technology and Data Communications Equipment, Mobile Devices and Wireless Infrastructure.

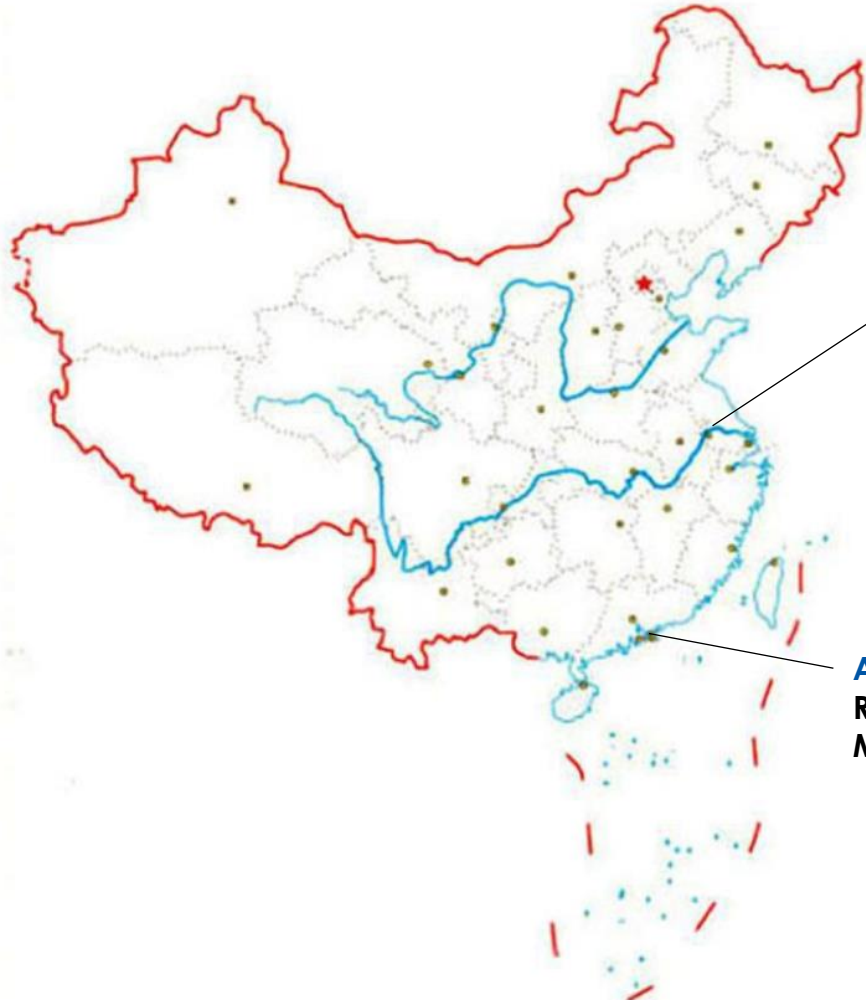
# AIIO China

Amphenol International Industrial Operation China (AIIO China) including three business units -- SINE , CATI and AAL, the products are famous in domestic and abroad, are widely applied in Industrial automation, Electric vehicles, New energy storage, Solar & Wind power, Heavy equipment, Agricultural machinery, Railway transportation, Communication, Audio, Medical etc. AIIO China keeps 10%+ sales growth annually

- Gross area 10000 m<sup>2</sup>
- Area
  - Production 5000 m<sup>2</sup>
  - Warehouse 2000 m<sup>2</sup>
  - Others (office etc) 2000 m<sup>2</sup>
- Over 600+ employees
- 2022 sales amount \$98 million(Sine \$71M)



## Location of Amphenol-TFC (Changzhou) Communication Equipment Co., Ltd



**Amphenol-TFC (Changzhou)  
Communication Equipment Co., Ltd  
Manufacturing center**

**Amphenol Sine Systems Shenzhen Office  
Research & development (R&D) and  
Marketing center**



# A Series Connectors(AT,ATM,ATP,ATS,AHD,AHDP,AHDM,ATF,ARC,ARB)

Designed with SAE-J2030, Amphenol Sine connectors A series are a high-performance, cost-effective solution. completely compatible with all other existing standard products, such as DT, DTP, DTM, DTV, HD10,HD20, HD30 series from Deutsch. applications: Heavy Duty, Transportation, Marine, Diagnostic, Military, Alternative Energy and Agricultural.

## Technical Data

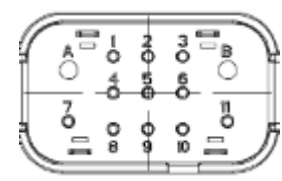
- Operating Temperature: : -55° C to +125° C
- Suitable For Indoor and Outdoor Applications
- 100 Mating Cycles
- IP67&IP69K rated in mated condition
- High-performance, cost-effective
- Wire to panel and wire to wire connection type
- UL1977. ROHS compliant
- Flammability rating of UL94-V0



# AT Series (Normal Current)

## Technical Data

- 2, 3, 4, 6, 8, 12, 13, 15, 18 positions available (9 kinds of position)
- Rating voltage: 250V AC/DC according to IEC  
500V AC/DC according to UL 1977
- 16 contact size, 13A, 14~20AWG
- 12 contact size, 25A, 10~14AWG (for 13 pin & 15 pin)
- Wire to panel, wire to wire available
- Thermoplastic, Flammability Rating: UL94, V-0



**13 Positions**  
2 size 12  
11 size 16



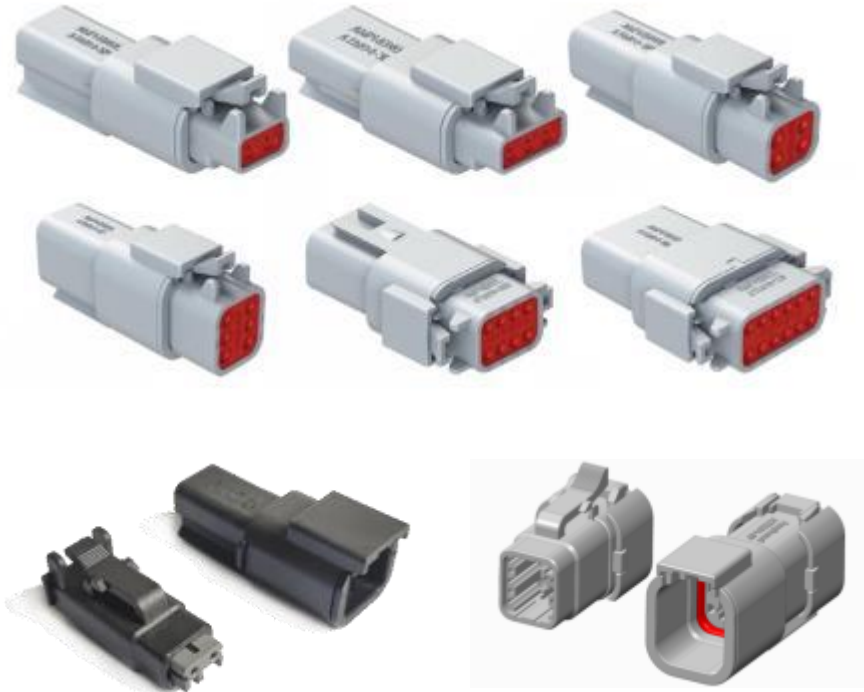
**15 Positions**  
2 size 12  
13 size 16



**18 Positions**  
18 size 16



# ATM Series (Minimum Current)



## Technical Data

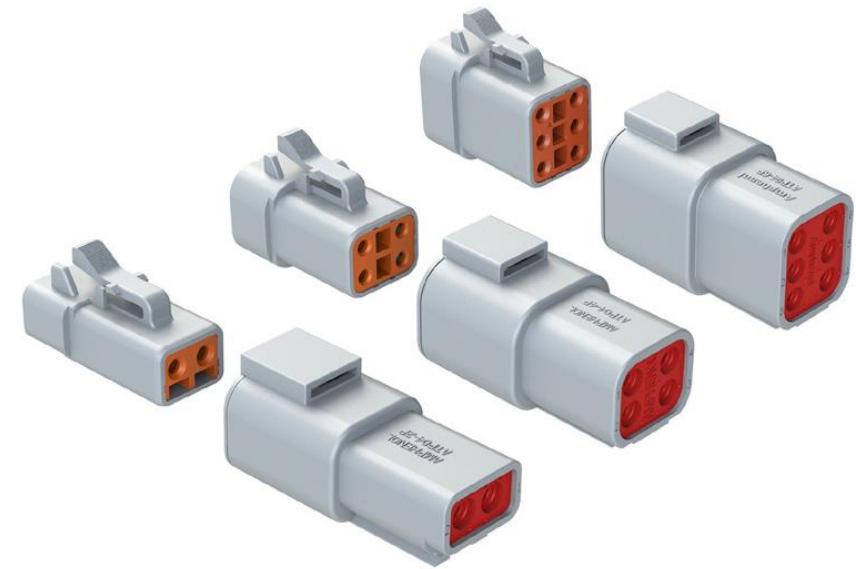
- 2, 3, 4, 6, 8, 12 positions available
- Rating voltage: 250V AC/DC according to IEC  
500V AC/DC according to UL 1977
- 20 contact size, 7.5A, 16~22AWG
- Wire to panel, wire to wire available
- Thermoplastic, Flammability Rating: UL94, V-0



# ATP Series (Power Current)

## Technical Data

- 2, 4, 6 positions available
- Rating voltage: 250V AC/DC according to IEC  
500V AC/DC according to UL 1977
- 12 contact size, 25A, 10~14 AWG
- Wire to panel, wire to wire available
- Thermoplastic, Flammability Rating: UL94, V-0



**2 Positions**  
2 size 12



**4 Positions**  
4 size 12

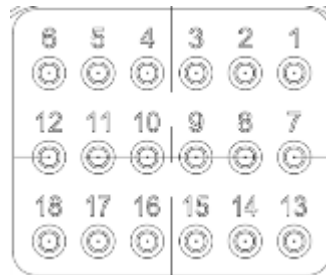


**6 Positions**  
6 size 12

# ATV Series (18Pos)

## Technical Data

- 18 positions available
- Rating voltage: 250V AC/DC according to IEC  
500V AC/DC according to UL 1977
- 16 contact size, 13A, 14~20AWG
- Wire to panel, wire to wire available
- Thermoplastic, Flammability Rating: UL94, V-0

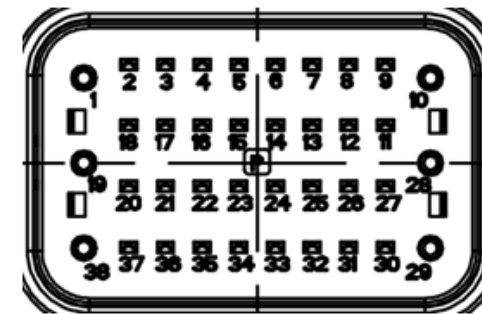


**18 Positions**  
18 size 16

# ATV Series (38Pos)

## Technical Data

- 38 positions available
- Rating voltage: 250V AC/DC according to IEC  
500V AC/DC according to UL 1977
- 16 contact size, 6 power contacts, 13A, 14~26AWG  
32 power contacts, 5A, 20~22AWG
- Wire to panel available
- Thermoplastic, Flammability Rating: UL94, V-0



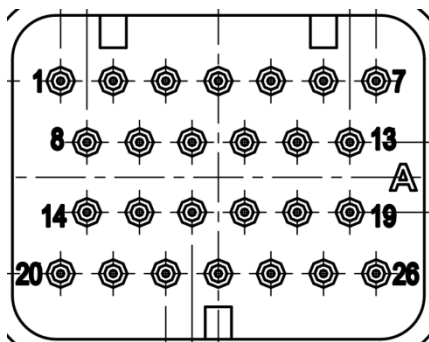
**38 Positions**  
6 size 16(13A)  
32 size 16(5A)



# ATS Series (26Pin)

## Technical Data

- 26pin; A/B key available
- 20 contact size , 7.5A , 16-22AWG
- Rating voltage: 250V AC/DC according to IEC  
500V AC/DC according to UL 1977
- Temperature Range: -55° C~ +125° C



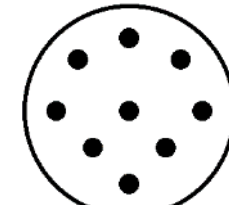
# AHD Series (6&9Pos)

## Technical Data

- 6 & 9 positions available
- Rating voltage: 250V AC/DC according to IEC  
500V AC/DC according to UL 1977
- 6 position: match with 12 contact size , 25A, 10~14AWG
- 9 position: match with 16 contact size, 13A, 14~20AWG
- High-performance, cost-effective
- **SAE J1939** protocol standard
- Ideal for controlled/uncontrolled environmental conditions



**6 Positions**  
6 size 12



**9 Positions**  
9 size 16

# AHD Series accessories





## AHDP Series (Plastic)

### Technical Data

- 24 Shell: 7, 9, 14, 16, 18, 19, 21, 23, 27, 29, 31, 35, 47 positions available (total 13 types)
- 18 Shell: 6, 8, 14, 20, 21 position available
- Rating voltage: 250V AC/DC according to UL 1977
- 5 kinds of contact:
  - 1) 4 contact size, 100A, 6AWG
  - 2) 8 contact size, 60A, 10~12AWG
  - 3) 12 contact size, 25A, 10~14AWG
  - 4) 16 contact size, 13A, 14~20AWG
  - 5) 20 contact size, 7.5A, 16~22AWG
- High density signal and mixed power insert configurations
- Bulkhead mounting or In-line
- Reverse and standard arrangements



## AHDM Series (Metal)

### Technical Data

- 24 Shell: 7, 9, 14, 16, 18, 19, 21, 23, 27, 29, 31, 35, 47 positions available (total 13 types)
- 18 Shell: 6, 8, 14, 20, 21 position available
- Rating voltage: 250V AC/DC according to UL 1977
- 5 kinds of contact:
  - 1) 4 contact size, 100A, 6AWG
  - 2) 8 contact size, 60A, 10~12AWG
  - 3) 12 contact size, 25A, 10~14AWG
  - 4) 16 contact size, 13A, 14~20AWG
  - 5) 20 contact size, 7.5A, 16~22AWG
- High density signal and mixed power insert configurations
- Bulkhead mounting or In-line
- Reverse and standard arrangements



# AHDP & AHDM Series insert arrangement and accessories



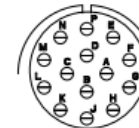
**18-06**  
2 SIZE 4 &  
4 SIZE 16

N



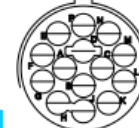
**18-08**  
8 SIZE 12

NR



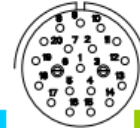
**18-14**  
14 SIZE 16

NR



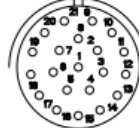
**18-C041**  
14 SIZE 16

NR



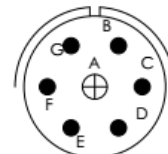
**18-20**  
2 SIZE 16  
18 SIZE 20

NR



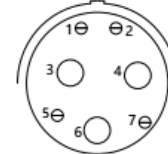
**18-21**  
21 SIZE 20

N



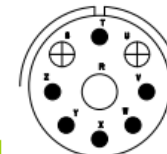
**24-07**  
1 SIZE 3.6mm  
6 SIZE 12

N



**24-07CL22**  
3 SIZE 4  
4 SIZE 16

N



**24-09**  
1 SIZE 4  
2 SIZE 8  
6 SIZE 12

R



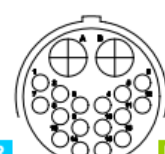
**24-14**  
1 SIZE 4  
1 SIZE 12  
14 SIZE 16

NR



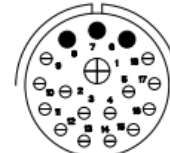
**24-16**  
16 SIZE 12

NR



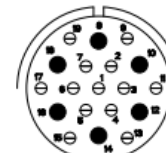
**24-18CL82**  
16 SIZE 20  
2 SIZE 8

N



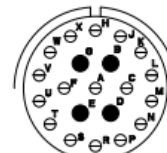
**24-18**  
1 SIZE 8  
3 SIZE 12  
14 SIZE 16

NR



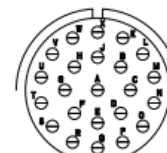
**24-19**  
6 SIZE 12  
13 SIZE 16

NR



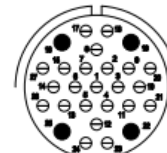
**24-21**  
4 SIZE 12  
17 SIZE 16

NR



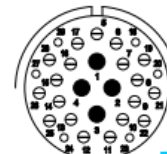
**24-23**  
23 SIZE 16

NR T



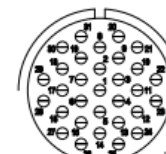
**24-27**  
4 SIZE 12  
23 SIZE 16

R



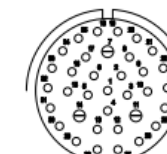
**24-29**  
4 SIZE 12  
19 SIZE 16  
6 SIZE 20

R



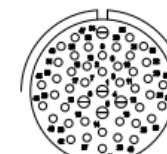
**24-31**  
31 SIZE 16

TR



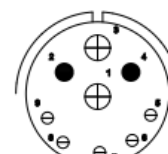
**24-35**  
3 SIZE 16  
32 SIZE 20

R



**24-47**  
5 SIZE 16  
42 SIZE 20

R



**24-91**  
2 SIZE 8  
2 SIZE 12  
5 SIZE 16

NR

# Plastic Panel-Mate Connectors



## Technical Data

- AT series 2, 3, 4, 6, 8, 12 , 18 positions: 16 contact size, 13A
- AT series 13 position: 12 contact size, 25A; 16 contact size, 13A
- ATP series 2 and 4 positions: 12 contact size, 25A
- ATV series 18 positions: 16 contact size, 13A
- ATM series 12 positions : 20 contact size, 7.5A
- ATHD series single position: 4# contact, 100A, 8# contact, 60A, 12# contact, 25A. panel waterproof connector
- Harsh environment applications

# Flange Mount Series



## Technical Data

- AT series 2, 3, 4, 6, 8, 12 positions: 16 contact size, 13A
- ATM series 12 position: 20 contact size, 7.5A
- ATP series 4 position: 12 contact size, 25A
- Harsh environment applications

# ATHD Series

## Technical Data

- Single position
- Rating voltage: 250V AC/DC according to IEC  
600V AC/DC according to UL 1977
- 4 contact size, 100A, 6AWG
- 8 contact size, 60A, 8~10AWG
- 12 contact size, 25A, 10~14AWG
- Wire to panel, wire to wire available



-BMXX



-L009



-L013



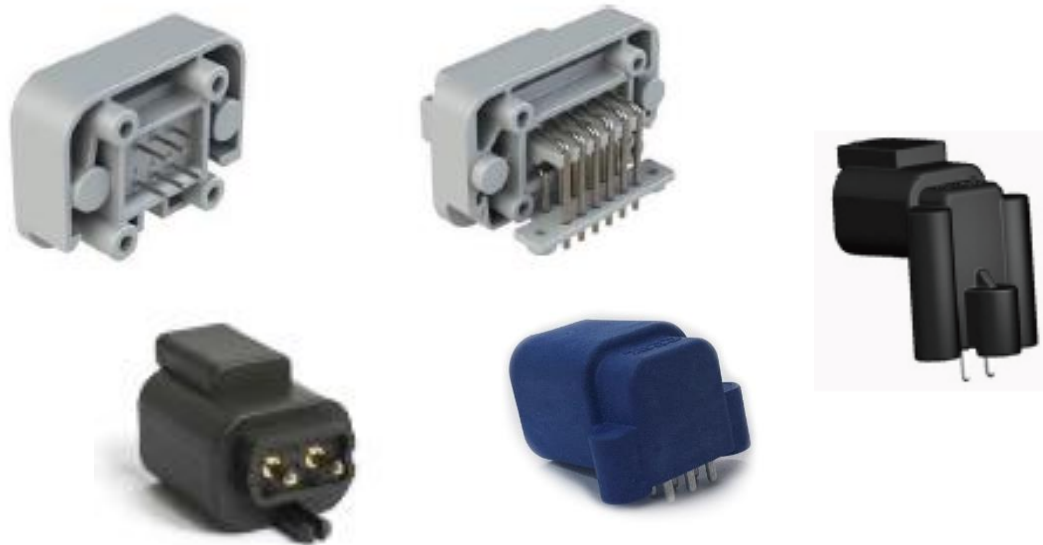
-E003



-OM

# PCB series

- The AT Family offers printed circuit board (PCB) connectors that are heavy duty environmentally sealed connectors designed for wire-to-circuit board connections. Available in a variety of styles for the AT and ATM connector series, Amphenol PCB connectors cover a range of pin counts from 2 to 12 and wire gauges from 14 to 22. Many of the connectors are available in straight or 90° pin options.



## Technical Data

- AT series 2, 4, 6, 8, 12, 13, 18 positions
- ATM series 2, 3, 4, 6, 8, 12 positions
- ATP series 2, 4 positions
- Straight or 90° pin options

# Extended Body AT Plugs Designed for Overmolding

- Custom Cable Assemblies are available for any application, and carry with them the capabilities of being overmolded in any size or length necessary. 2 pin, 3Pin ,4 pin, 6 pin, 8 pin and 12pin overmold connectors are available now, which are developed for overmolding cable assembly easily.





## With Diode and Resistor Series

- Amphenol AT connectors with diodes and resistors are useful anywhere you need to regulate power or protect a device against a potential power surge.
- A diode allows current to flow in one direction only. By preventing current from traveling a circuit in the wrong direction, a diode can protect an electronic device from damage.
- Resistors protect sensitive electronics by limiting the amount of electricity that can flow to the device through the resistor, and therefore preventing power surge.

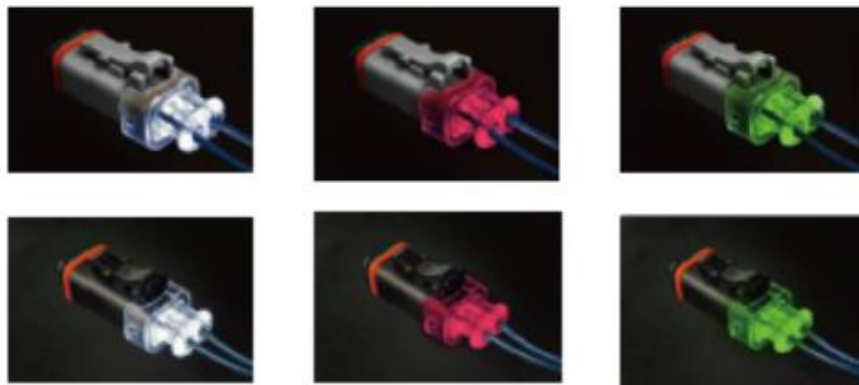
### Technical Data

- AT series 2, 4 positions available.



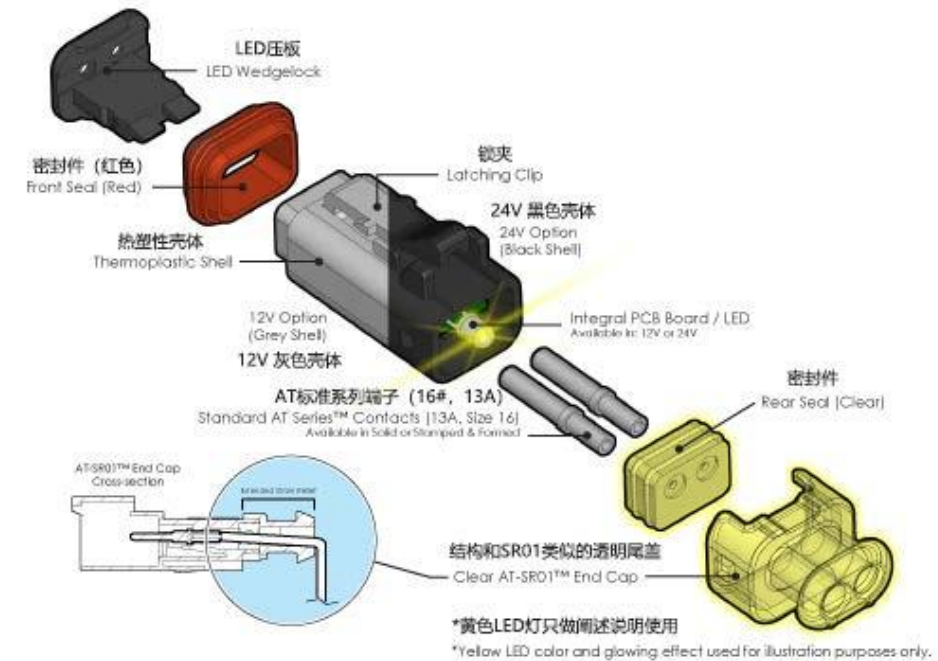
## 2 Positions LED optional

- Designed for electromechanical applications where a visible LED light is integrated into a 2 position plug allowing the user to determine the device is receiving power. Environmentally sealed, field serviceable and cost effective while reducing costly trouble shooting time. 12V and 24V versions available. Diode protected.



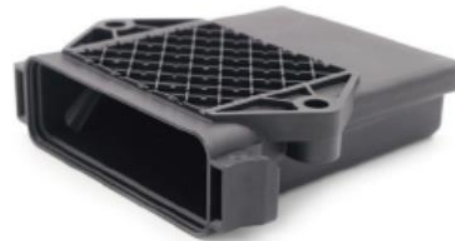
12V

24V



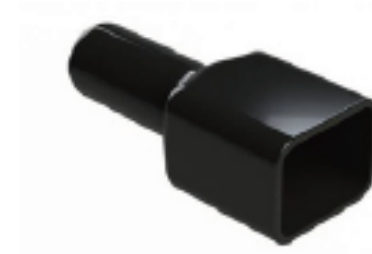
# ARMOR IPX Series

- ARMOR IPX products can quick lock by clip
- Existing PCB connectors: ATM 2x12/12 pin, AT 12,24,36,48 pin



# Boots

- Boots provide a professional looking finishing touch for A series connectors. Made of durable plastic, these slip-on boots are not only aesthetically appealing, but also provide increased protection from dirt, paint overspray, and pressure washing. The plastic boots temperature from  $-29^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$  and offer a slip-on design making installation quick and easy.





Field-Serviceable, Splicing Solution

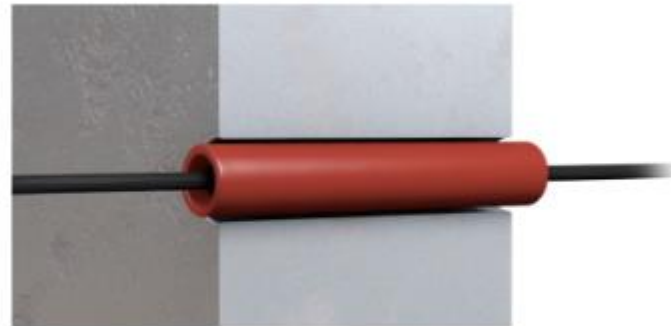
## Key Features:

- Available in Size 12, 10-14AWG; Size 16, 14-20AWG
- 13-25A Range
- Operating Temperature -55°C to +125°C

## Possible Applications:



Quickly repair damaged electrical connections



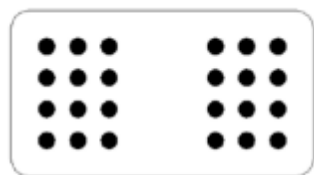
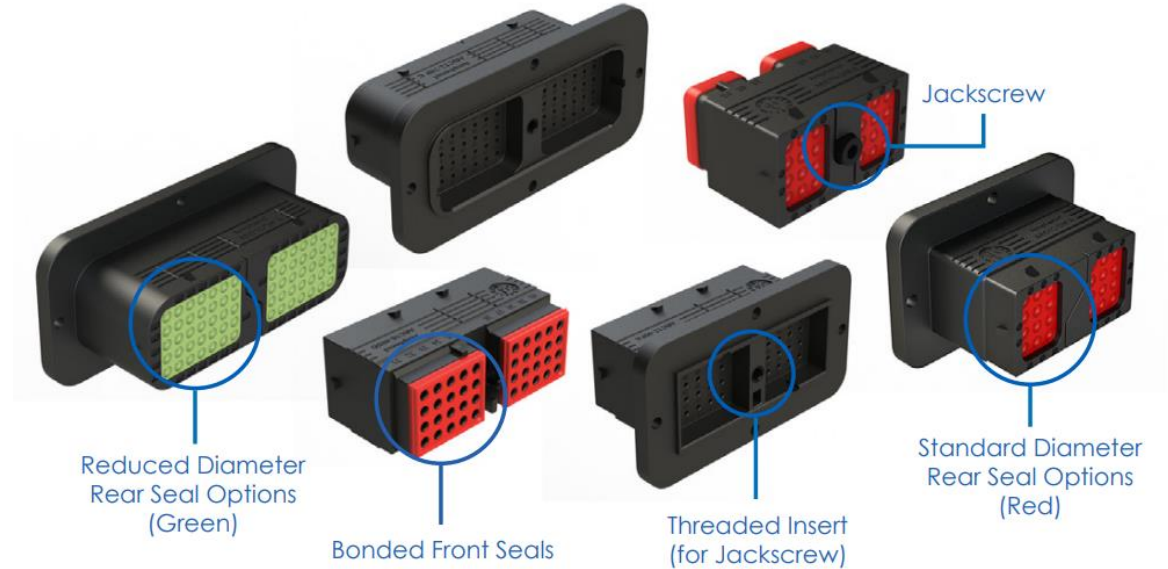
Easy connection point in tight spaces



# ARC Series (24,40 & 70Pos)

## Key Features:

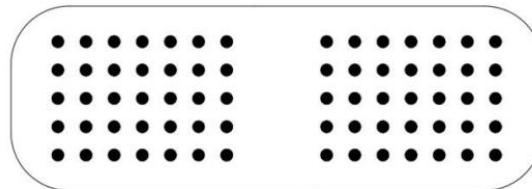
- 24, 40 and 70 positions available
- 14-20AWG, 13A, Size 16
- Jackscrew mating mechanism
- Available in A, B, C and D Keying Options
- Standard or Reduced Diameter Rear Seals
- Achieves IP67/IP69K protection (in mated condition)
- Compatible with existing standard products industry-wide



**24 Positions**  
24 size 16



**40 Positions**  
40 size 16



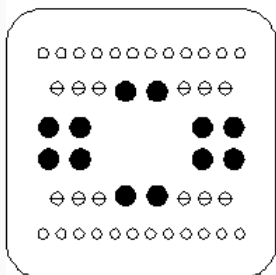
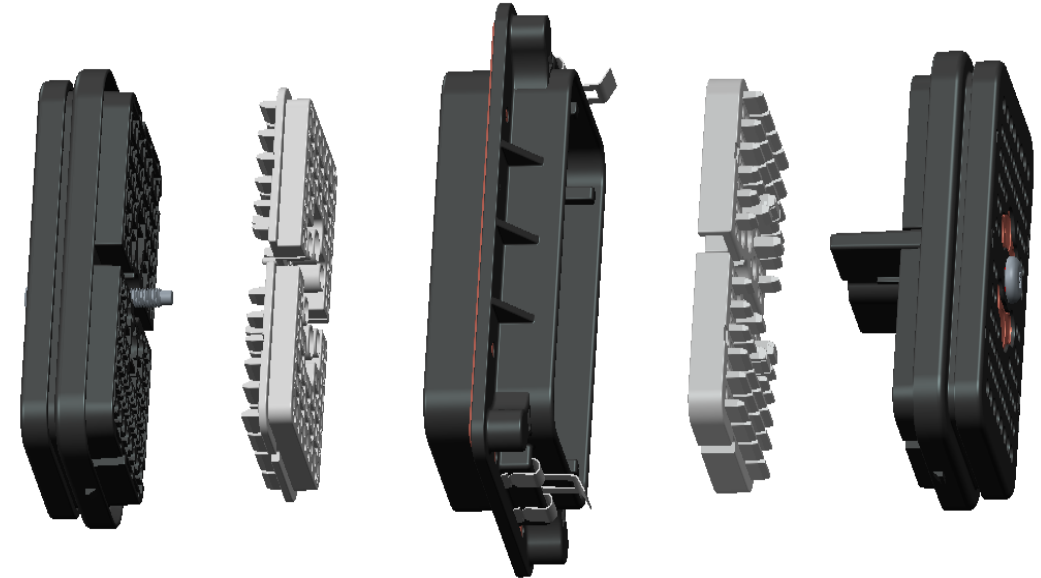
**70 Positions**  
70 size 16



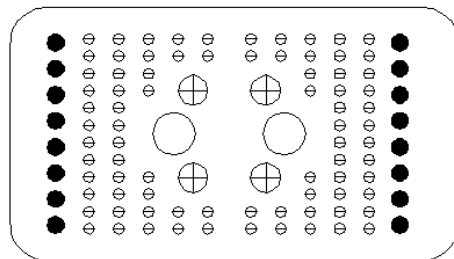
# ARB Series

## Key Features:

- 48, and 102 positions available
- Jackscrew mating mechanism
- Wedgelocks required
- Achieves IP67/IP69K protection (in mated condition)
- Compatible with existing standard products industry-wide
- Harsh environments in on-road and off-road



ARB1\*-48\*\*  
12 SIZE 12  
12 SIZE 16  
24 SIZE 20



ARB1\*-102\*\*  
2 SIZE 4  
4 SIZE 8  
12 SIZE 12  
80 SIZE 16



# A Series Contacts

➤ Stamped and Formed contact

- Gold plated and Nickel plated option
- 20 # contact 1.0mm, 16# contact 1.58mm, 12# contact 2.4mm



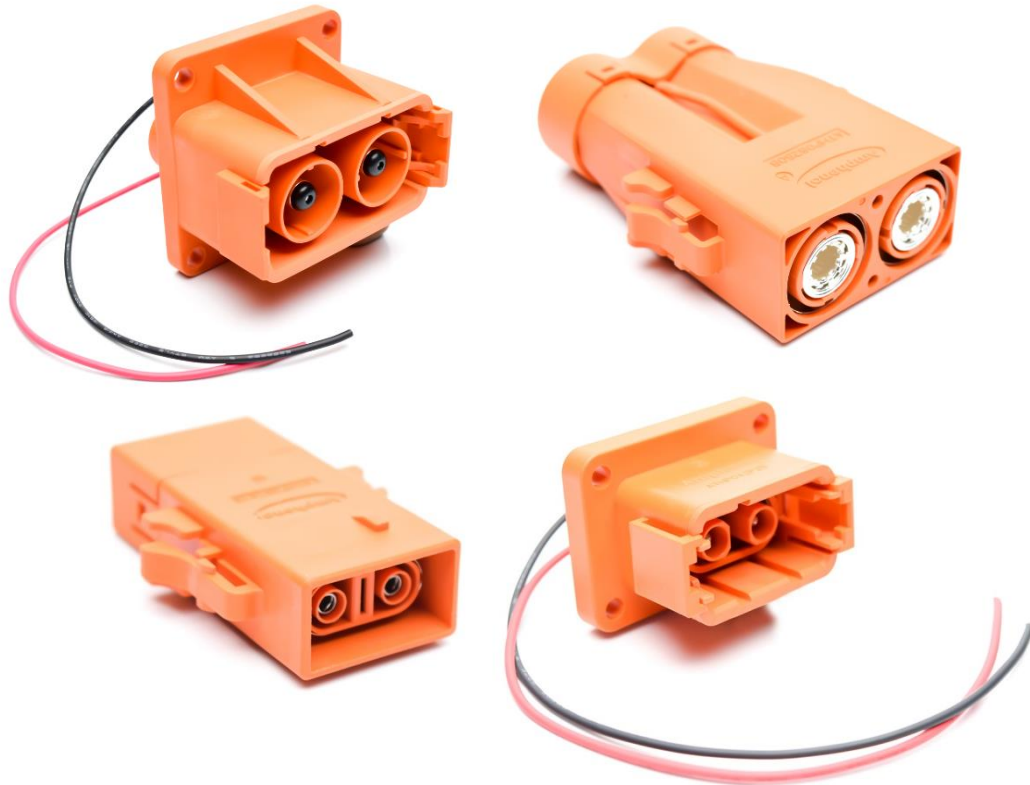
➤ Machined contact

- Gold plated and Nickel plated option
- 20 # contact 1.0mm, 16# contact 1.58mm, 12# contact 2.4mm  
8# contact 3.6mm, 4# contact 6.0mm





## ATHP Series (2Pos)



### Technical Data

- Features Amphenol's **RADSOK®** contact technology
- HVIL with shielding and unshielded solutions
- Rating voltage: 1000V AC/DC
- Test voltage: 5000V AC/DC
- Current rating of 20A for the 2.5mm<sup>2</sup> wire, 25A for the 4mm<sup>2</sup> wire, 35A for the 6mm<sup>2</sup> wire, 180A for the 50mm<sup>2</sup> wire.
- Mating cycles: 250+
- IP67 & IP 69K rated in mated condition

# ATHP Series

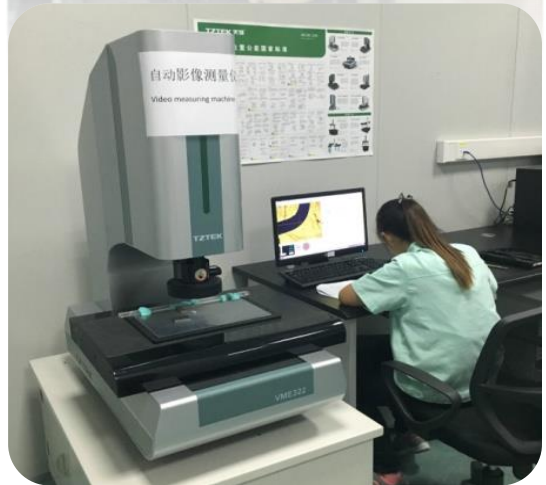
## Technical Data

- Quick lock and press-to-release design
- 360° rotating plug
- Various termination option(Threaded, Crimp, Busbar)
- Compact robust design
- Rating voltage: 1000V AC/DC
- 5.7mm contact, 10mm<sup>2</sup> @ 65A  
16mm<sup>2</sup> @ 100A  
25mm<sup>2</sup> @ 120A
- 8.0mm contact, 35mm<sup>2</sup> @ 130A  
50mm<sup>2</sup> @ 180A
- Mating cycles: 200+
- IP67 rated in mated condition





# Workplace in Changzhou & Shenzhen



# Laboratory Test Equipment 3-1



Voltage drop tester



Temperature rise test equipment

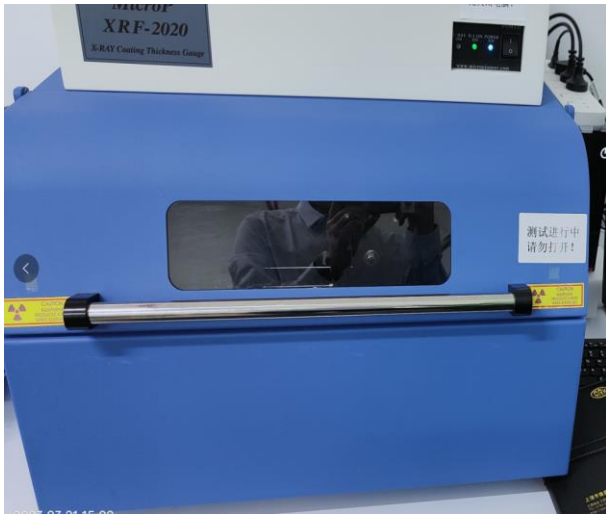


Dielectric strength tester



Low level resistance tester

# Laboratory Test Equipment 3-2



Film thickness measurement



Thermal shock test equipment

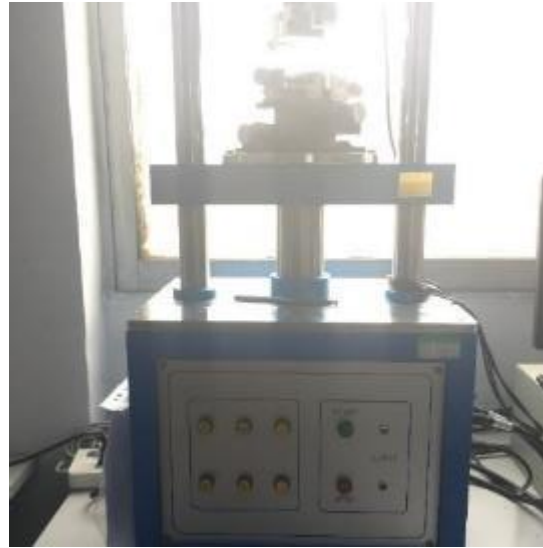
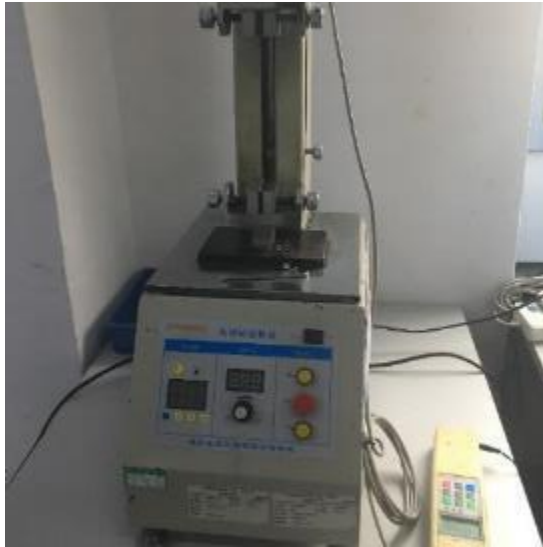


Constant temperature and Humidity equipment



high-temperature oven

# Laboratory Test Equipment 3-3



**Tensile tester**

**Lifetime tester**

**Impact testing equipment**

**Vibration testing equipment**

# Applications of A series

**Automotive**



**Heavy Equipment**



**Agriculture**



**Power Generation**



**Harsh Environment**



**Marine**



**Diagnostics**



**Mining**



**Water Resistant**



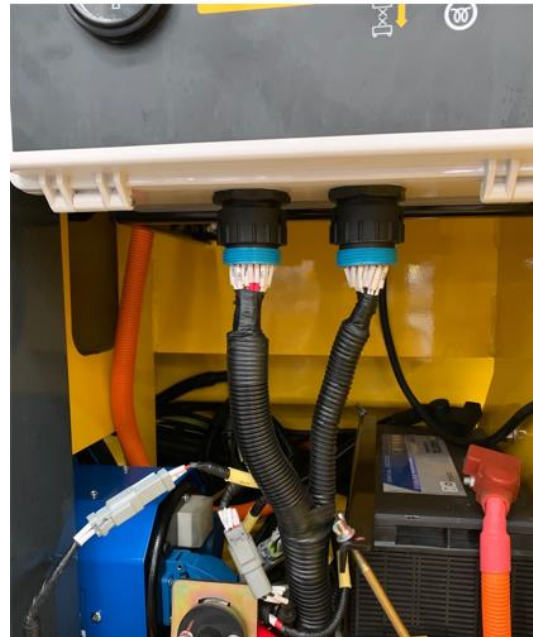
**Railway**





# A Series Success Story

- **Country:** China
- **Application:** Controller for lifter and climbing machine
- **Product:** AHDP/AT



# A Series Success Story



- **Country:** China
- **Application:** Control unit for lifter and climbing machine
- **Product:** AHDP series



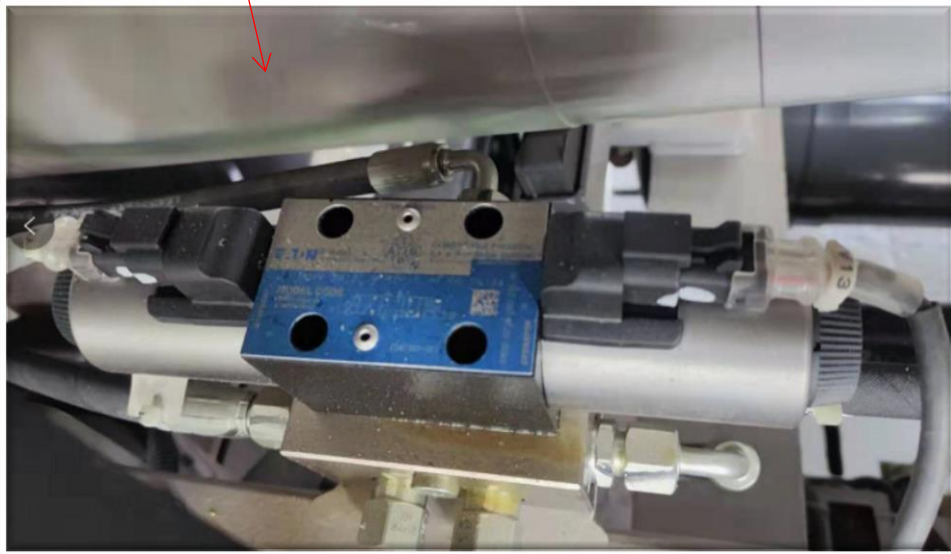
# A Series Success Story



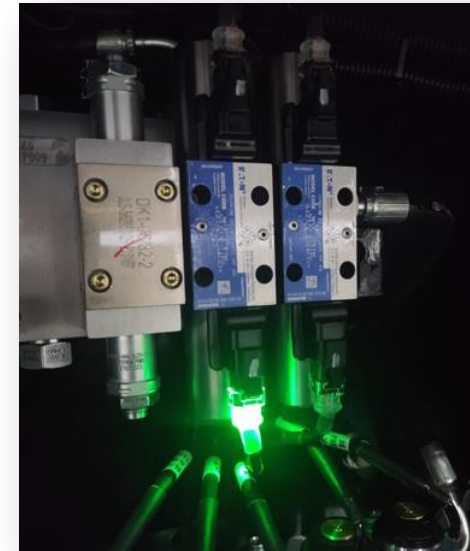
- **Country:** China
- **Application :** Proportional valve for rotary drilling rig
- **Product:** AT 2P LED



# A Series Success Story

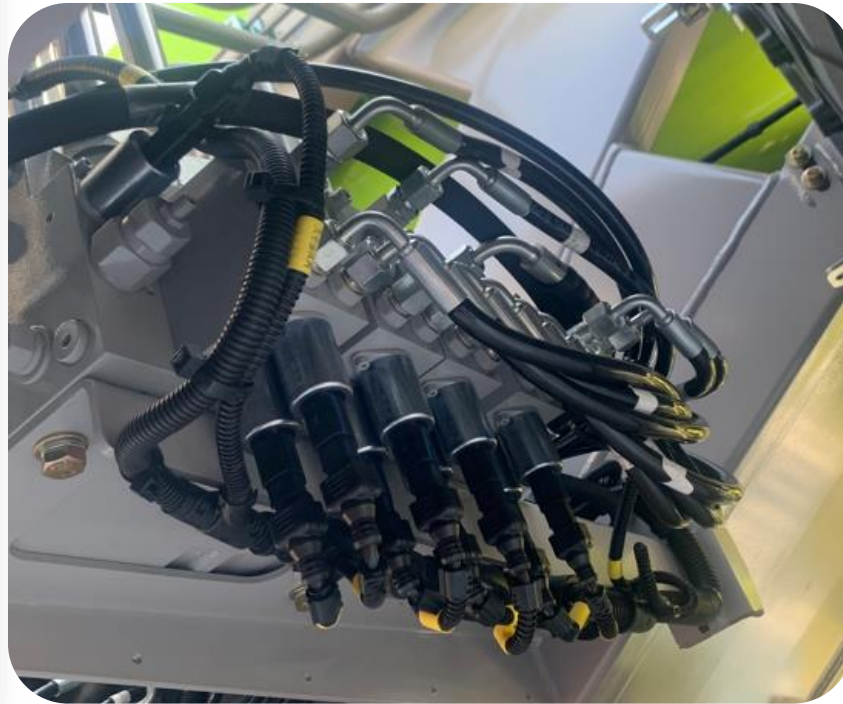


- **Country:** China
- **Application :** Switching valve for concrete-pump car
- **Product:** AT 2P LED



# A Series Success Story

- **Country:** China
- **Application:** Switching valve for crane
- **Product:** AT 2P



# A Series Success Story



- **Country:** China
- **Application:** Intelligent control box for agriculture machinery
- **Product:** AT 26pin



# A Series Success Story

- **Country:** China
- **Application:** Remote information controller
- **Product:** AT&ATM backshell



# A Series Success Story



- **Country:** China
- **Application:** Battery tray wiring harness for dismantling machine
- **Product:** AHDM series





# A Series Success Story

- **Country:** China
- **Application:** Controller box for road paving machine
- **Product:** AT series



# A Series Success Story

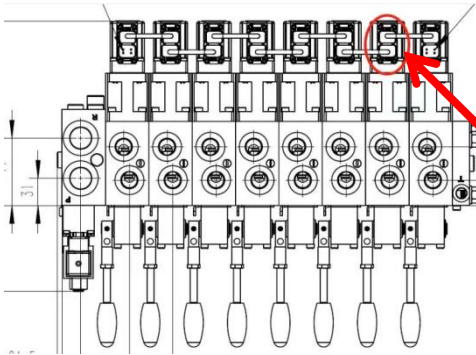
- **Country:** China
- **Application:** Tow chain harness for track of hydraulic excavator
- **Product:** A series



# A Series Success Story



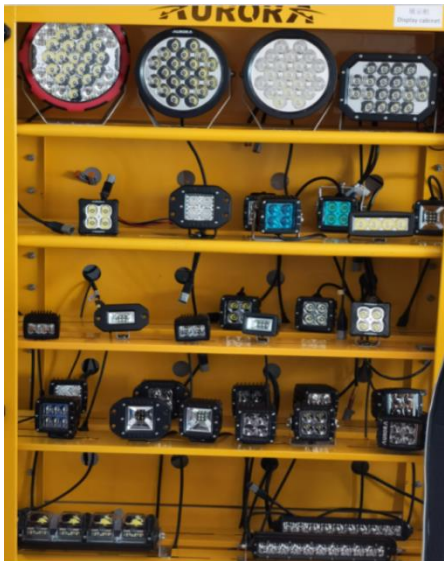
- **Country:** China
- **Application:** Hydraulic equipment
- **Product:** AT series



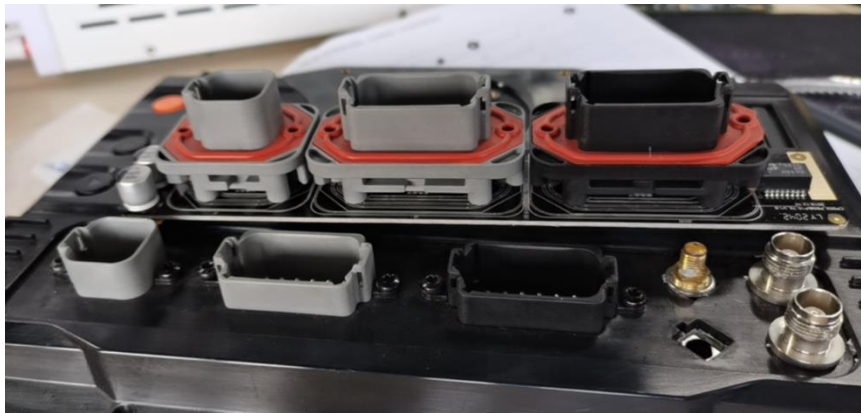
# A Series Success Story



- **Country:** United States
- **Application:** LED Light for off-road Vehicle
- **Product:** AT 2P, 6P & ATP 2P, 4P



## A series success story



- **Country:** China
- **Application:** Signal acquisition control box for agricultural machinery
- **Product:** AT 6P, 15P, 18P



## A Series Success Story



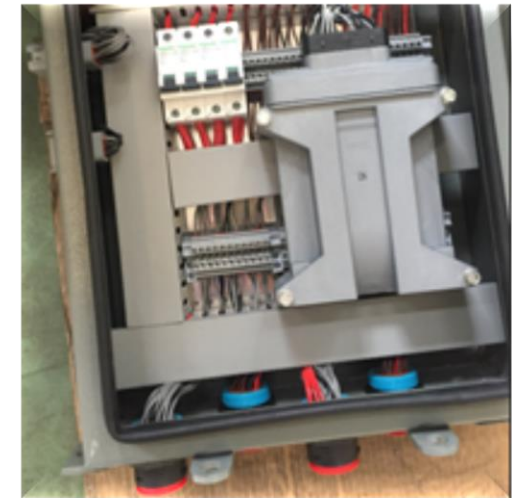
- **Country:** China
- **Application:** Cylinder wiring harness of engine for heavy equipment
- **Product:** ATP series



## A Series Success Story



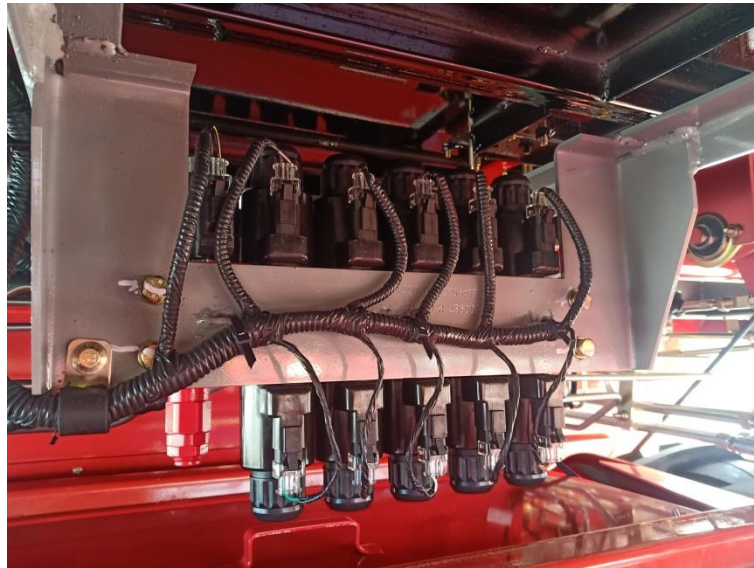
- **Country:** China
- **Application:** Motor rotation interface for mining equipment
- **Product:** AT 4pin, 12pin & AHDP series



## A Series Success Story



- **Country :** China
- **Application:** Transmission wire harness for cotton picker
- **Product:** AT LED 2PIN

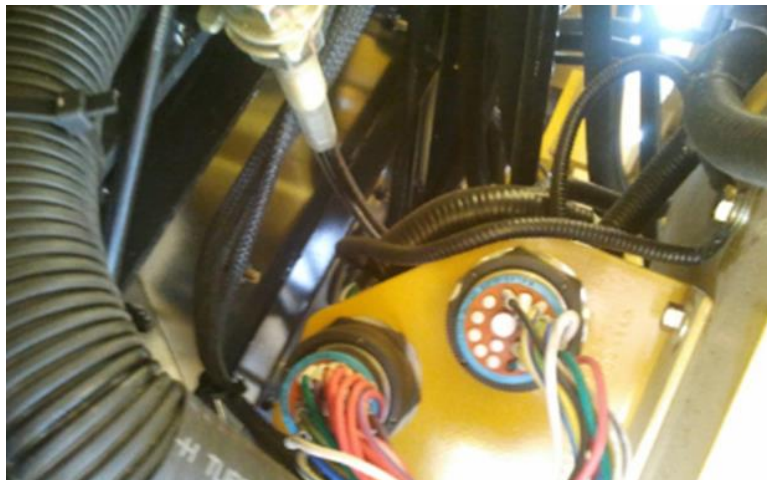




## A Series Success Story



- **Country :** China
- **Application:** Engine detection harness for Heavy Equipment
- **Product:** AHD & AHDP cable assembly



## A Series Success Story



- **Country :** Europe
- **Application:** Hydrogen fuel cell packs for Heavy Equipment
- **Product:** AT & ARMOR IPX series



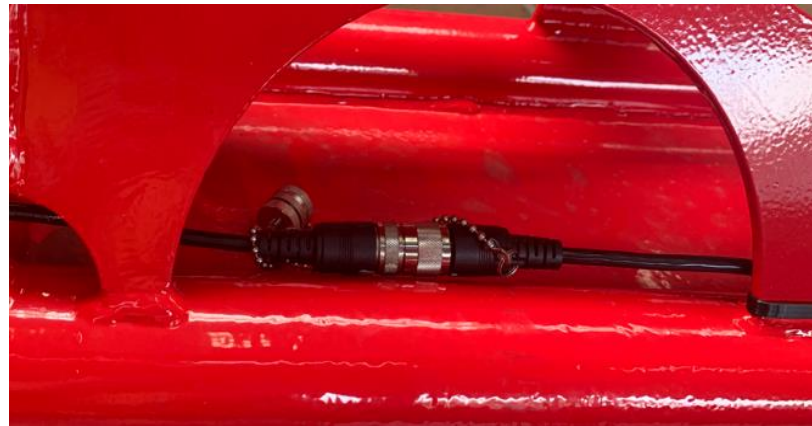
# Cable Assembly success story

- **Country:** China
- **Application:** Roller of crane
- **Product:** M12 cable assembly



# Cable Assembly success story

- **Country:** China
- **Application:** Auxiliary arm & overwind protection switch of crane
- **Product:** C091 cable assembly



# Cable Assembly success story



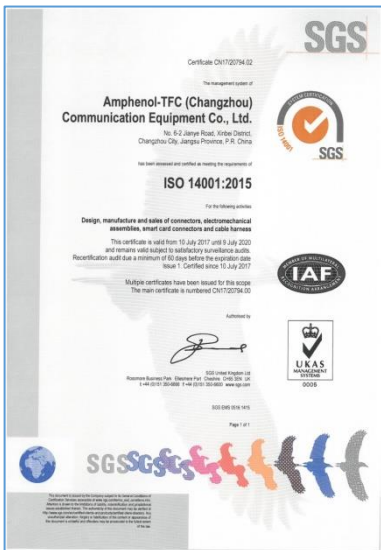
- **Country:** China
- **Application:** Auxiliary arm & over-wind protection switch of crane
- **Product:** C091 cable assembly



# Quality System Certification



**IATF 16949**



**ISO 9001 & ISO 14001**



# AIIO China Main customers



RENAULT



北汽集团  
BAIC GROUP

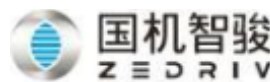


上汽集团



CATL

E-POW 亿能电子



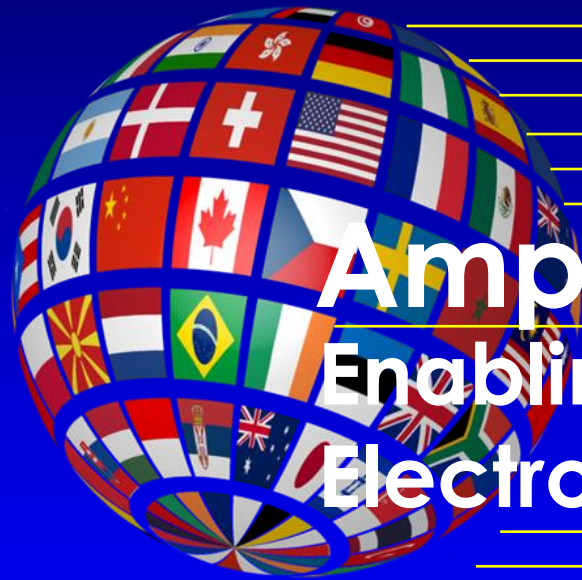
KOMATSU



# AIO China Main customers







**Amphenol**  
**Enabling the**  
**Electronics Revolution**