



MM Magna|Mate™ Family

The **MagnaMate™ ATHP Series** is a rugged thermoplastic power connector series featuring high-performance RADSOK® contact technology. Designed for various "xEV" applications, **MagnaMate™** is IP67-rated (mated) and available in single or two-pole housings with rated current from 20A to 180A. **MagnaMate™** includes optional integrated HVIL safety features and EMI shielding protection which can withstand temperatures ranging from -40°C to +130°C.



MM Magna|Mate™ ATHP

MagnaMate™ ATHP Standard

Designed to withstand the extreme conditions of the trucking, agricultural, mining, construction, and marine industries, and features Amphenol's advanced RADSOK® contact technology.

Potential Applications: Inverters, Power Electric Box, Junction Box, xEV Battery

MM Magna|Mate™ ATHP Mini

MagnaMate™ ATHP Mini

A compact, low-profile two-pole thermoplastic power connector which features four (4) keying options for multi polarization. Designed to withstand the extreme conditions of the trucking, agricultural, mining, construction, and marine industries.

Potential Applications: Power Converters, Hybrid Electric Vehicles, Heavy Equipment Electrification, 2 and 3-Phase Motors, Starter Generators, Process Control/Automation

MM Magna|Mate™ ATHP QL

MagnaMate™ QL ATHP (Quick Lok)

The compact form-factor deliver loads of 130A or 180A for cable outer diameters up to 15.2mm. The definitive front latch design allows for multiple angles of connector engagement providing ease of mating in blind mate or confined spaces achieving IP67 ingress protection. The MagnaMate™ QL ATHP high-voltage connector system is easy to assemble, cost effective and was developed for use in ancillary units such as air-conditioning, electrical heating systems, or AC/DC converters, and for battery charging applications. **QL (Quick Lok) is available in both Black and Orange housings.**


Potential Applications: Electrical Air Condition, Battery Charger, Electrical Heater

A ASeries™ Family



Standard products. Custom solutions
Customer Service +1 800 394 7732

MagnaMate™ ATHP - Technical Specifications Overview

| Series | MM Magna Mate™ ATHP | | MM Magna Mate™ ATHP Mini | | | MM Magna Mate™ ATHP QL | |
|-----------------------|--|--|--|--------|--------|---|-------------|
| Image |  | |  | | |  | |
| Positions | 2 | | 2 | | | 1 | |
| Current Rating | 180A | | 20A | 25A | 35A | 130A | 180A |
| Wire Range/mm2 | 50mm 2 | | 2.5mm2 | 4.0mm2 | 6.0mm2 | 35mm2 | 50mm2 |
| Cable OD Range | 15.5-16.5mm | | 4.8-5.8mm & 6.5-7.5mm | | | 10.7-11.7mm | 14.2-15.2mm |
| Operating Voltage | 1000V AC/DC | | | | | | |
| Contact Resistance | <0.3mΩ | | <2.0mΩ | | | <0.3 mΩ | |
| HVIL | Optional | | Optional | | | N/A | |
| EMC Shielding | Available | | | | | N/A | |
| Housing | Thermoplastic UL94 VO | | | | | | |
| IP Rating | IP67 mated | | | | | | |
| 48 HR Salt Spray Test | Passed | | | | | | |
| Keying Options | N/A | | A, B, C, D | | | Black, Orange | |
| Temperature Range | -40°C to + 130°C | | | | | -55°C to + 125°C | |
| Mating Cycles | 100 Cycles | | | | | 50 Cycles | |
| Seal Material | Silicone Rubber | | | | | | |
| Contact Material | Copper Alloy/Various Plating Options Available | | | | | | |
| Thermal Cycle | No cracking, chipping or leaking after 20 test cycles from: | | | | | | |
| | -40°C to +130°C | | -40°C to +130°C | | | -55°C to + 125°C | |
| Vibration | No unlocking or unmating. Exhibits no mechanical or physical damage after sinusoidal vibration levels of 20G's at 10 to 2000 Hz in each of the three mutually perpendicular planes. No electrical discontinuities longer than 1 microsecond. | | | | | | |
| Fluid Resistance | Connectors show no damage when exposed to most fluids used in industrial application. | | | | | | |

MM MagnaMate™ ATHP

The standard MagnaMate™ ATHP is designed to withstand the extreme conditions of the trucking, agricultural, mining, construction, and marine industries, and features Amphenol's advanced RADSOK® contact technology.

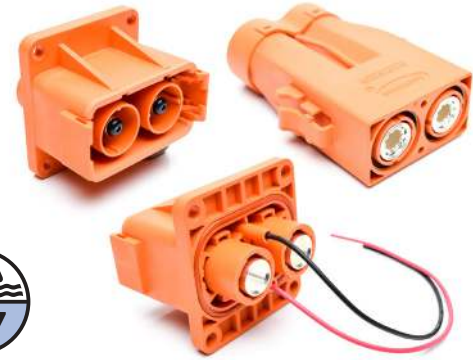
Potential Applications: Inverters, Power Electric Box, Junction Box, xEV Battery

Description

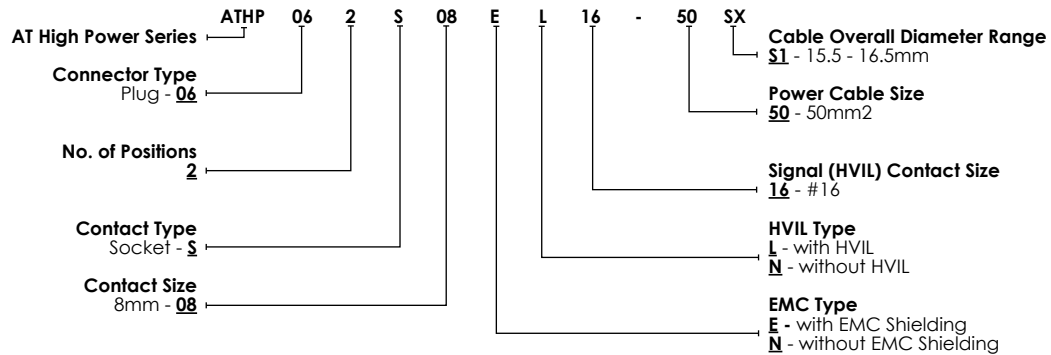
- High Voltage Interlock Loop (HVIL) safety feature optional
- ElectroMagnetic Interference shielding (EMI) for noise immunity optional
- Constructed of heavy-duty thermoplastic
- Inline or panel mount housing options
- Features Amphenol's advanced RADSOK contact technology
- Compact, quick locking and press-to-release design

Performance

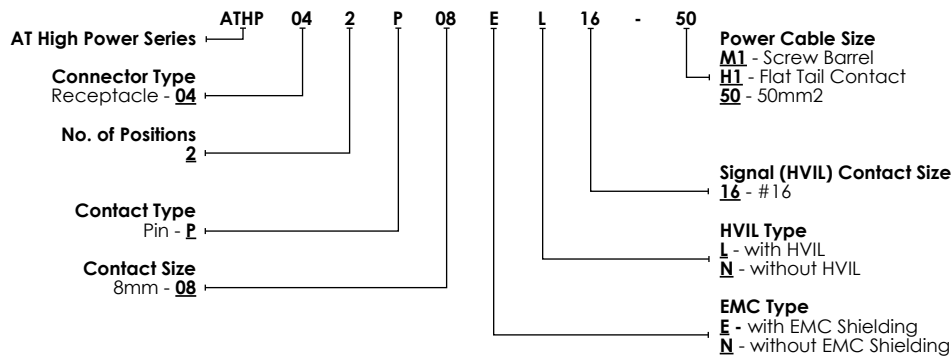
- Current Capacity up to 180A with 50mm² wire
- Voltage: 1000V AC/DC
- Temperature Range -40°C TO + 130°C
- IP67-rated (mated)



MagnaMate™ ATHP Standard Plug - Part Numbering Sequence



MagnaMate™ ATHP Standard Receptacles - Part Numbering Sequence



MagnaMate™ ATHP Standard - Plugs and Receptacles

| Part Number | Type | Position | Power Contact | Signal (HVIL) Contact Size | Power Cable | Cable OD Range | Voltage |
|---------------------|------------|----------|---------------|----------------------------|-------------------|----------------|---------|
| ATHP062S08NL16-50S1 | Plug | 2 | Socket | 16 | 50mm ² | 15.5 - 16.5 mm | 1000 |
| ATHP042P08NL16-50 | Receptacle | 2 | Pin | 16 | 50mm ² | - | 1000 |

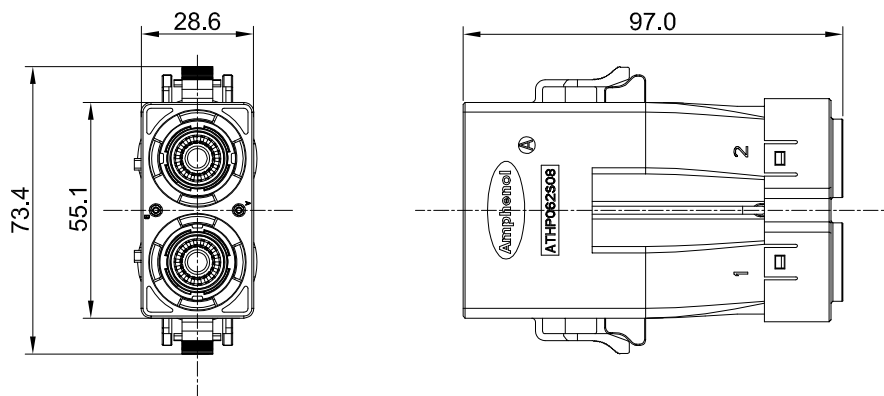
MagnaMate™ ATHP Standard - Plugs and Receptacles with EMC Shielding and High Voltage Interlock Loop

| Part Number | Type | Position | Power Contact | Signal (HVIL) Contact Size | Power Cable | Cable OD Range | Voltage |
|---------------------|------------|----------|---------------|----------------------------|-------------------|----------------|---------|
| ATHP062S08EL16-50S1 | Plug | 2 | Socket | 16 | 50mm ² | 15.5 - 16.5 mm | 1000 |
| ATHP042P08EL16-50 | Receptacle | 2 | Pin | 16 | 50mm ² | - | 1000 |
| ATHP042P08EL16-H1 | Receptacle | 2 | Pin | 16 | - | - | 1000 |

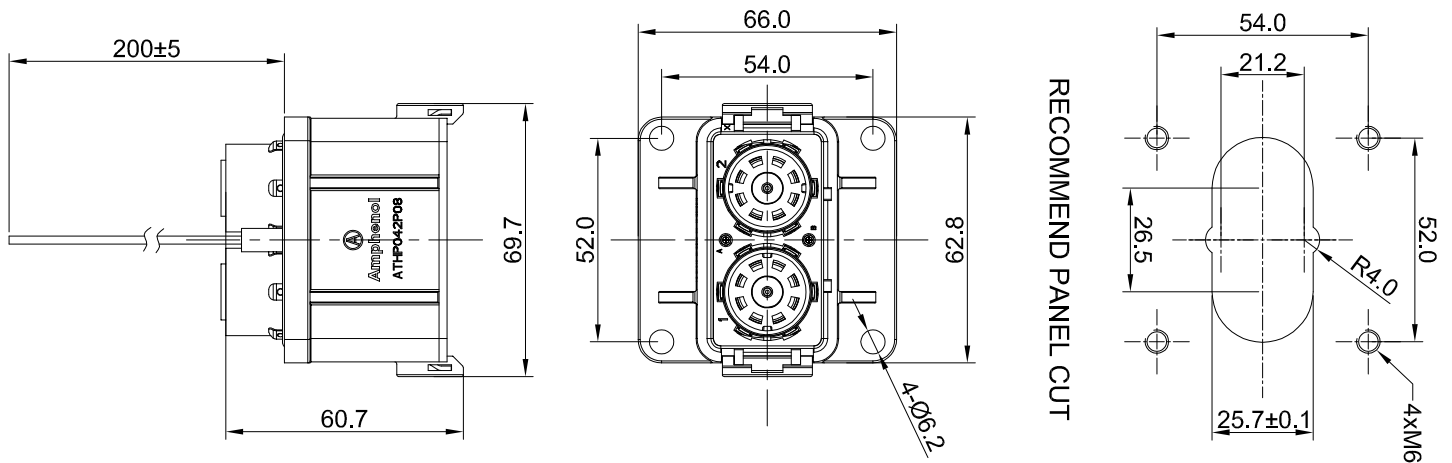
MagnaMate™ ATHP Standard - Tooling

| Part Number | Description |
|-------------|--|
| QXATHP-50 | Extraction Tool #50mm ² Contact |

MagnaMate™ ATHP Standard - Plug with 8mm RADSOK® Contacts



MagnaMate™ ATHP Standard - Receptacle with 8mm Contacts



MM MagnaMate™ ATHP Mini

The **MagnaMate™ ATHP Mini** is a compact, low-profile two pole thermoplastic power connector which features four (4) keying options for multi polarization. Designed to withstand the extreme conditions of the trucking, agricultural, mining, construction, and marine industries.

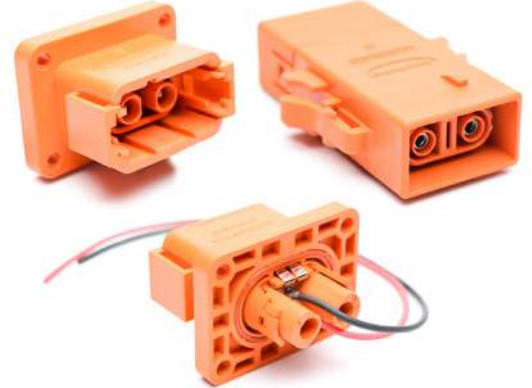
Potential Applications: Power Converters, Hybrid Electric Vehicles, Heavy Equipment Electrification, 2 and 3-Phase Motors, Starter Generators, Process Control/Automation

Description

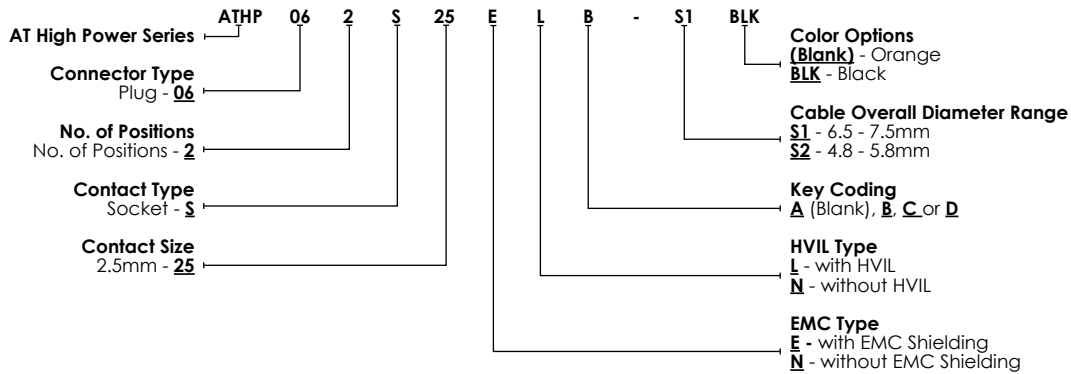
- High Voltage Interlock Loop (HVIL) safety feature optional
- ElectroMagnetic Interference shielding (EMI) for noise immunity optional
- Constructed of heavy-duty thermoplastic
- Four (4) keying options for multi polarization
- Compact, quick locking and press-to-release design

Performance

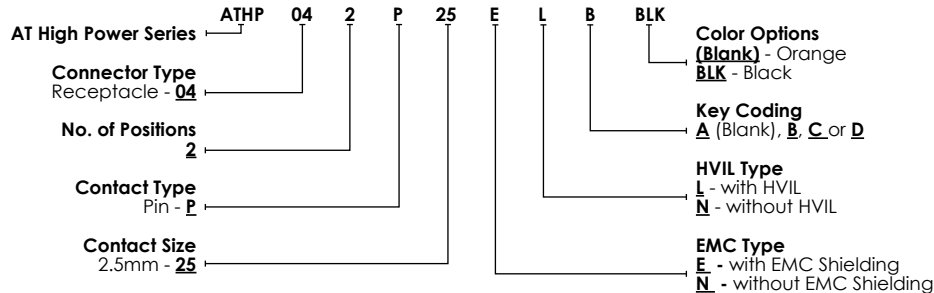
- Current Capacity up to 35A
- Voltage: 1000V AC/DC
- Temperature Range -40°C TO + 130°C
- IP67-rated (mated)



MagnaMate™ ATHP Mini Plugs - Part Numbering Sequence



MagnaMate™ ATHP Mini Receptacles - Part Numbering Sequence



MagnaMate™ ATHP Mini - Plugs with EMC Shielding and High Voltage Interlock Loop

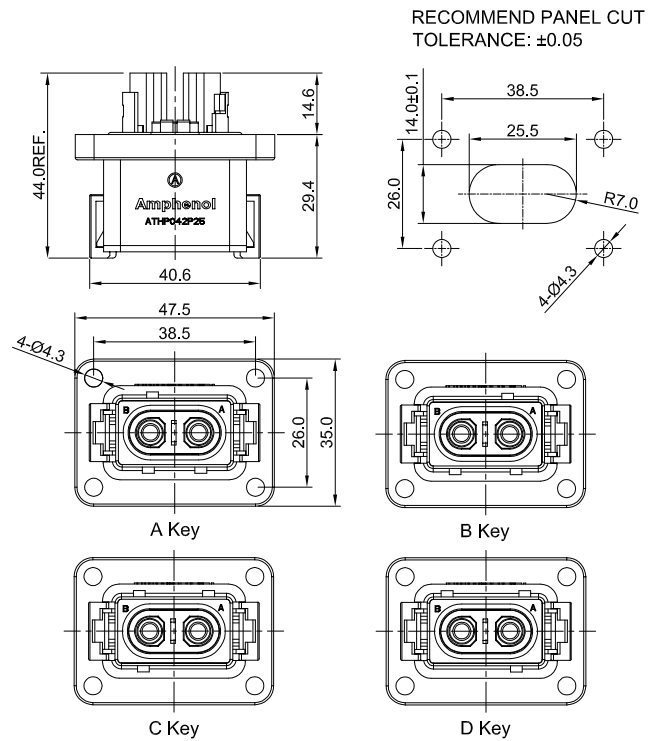
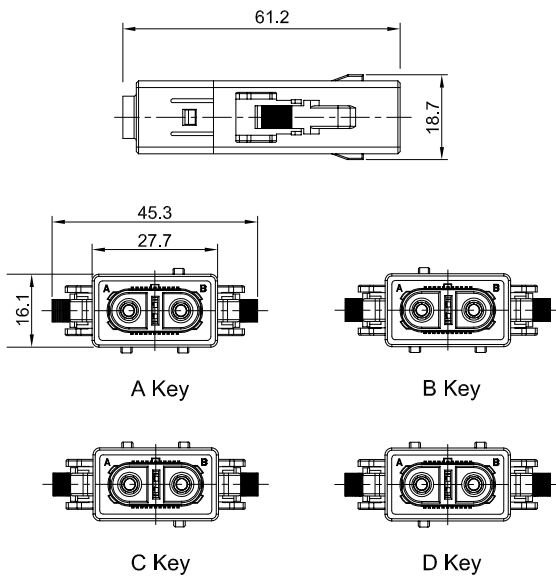
| Part Number | Type | Position | Power Contact | Keying | Power Cable | Cable OD Range | Voltage |
|------------------|------|----------|---------------|--------|------------------------|----------------|---------|
| ATHP062S25EL-S1 | Plug | 2 | Socket | A | 2.5-6.0mm ² | 6.5-7.5mm | 1000 |
| ATHP062S25EL-S2 | Plug | 2 | Socket | A | 2.5-6.0mm ² | 4.8-5.8mm | 1000 |
| ATHP062S25ELB-S1 | Plug | 2 | Socket | B | 2.5-6.0mm ² | 6.5-7.5mm | 1000 |
| ATHP062S25ELB-S2 | Plug | 2 | Socket | B | 2.5-6.0mm ² | 4.8-5.8mm | 1000 |
| ATHP062S25ELC-S1 | Plug | 2 | Socket | C | 2.5-6.0mm ² | 6.5-7.5mm | 1000 |
| ATHP062S25ELC-S2 | Plug | 2 | Socket | C | 2.5-6.0mm ² | 4.8-5.8mm | 1000 |
| ATHP062S25ELD-S1 | Plug | 2 | Socket | D | 2.5-6.0mm ² | 6.5-7.5mm | 1000 |
| ATHP062S25ELD-S2 | Plug | 2 | Socket | D | 2.5-6.0mm ² | 4.8-5.8mm | 1000 |

MagnaMate™ ATHP Mini - Receptacles with EMC Shielding and High Voltage Interlock Loop

| Part Number | Type | Position | Power Contact | Keying | Power Cable | Cable OD Range | Voltage |
|---------------|------------|----------|---------------|--------|------------------------|----------------|---------|
| ATHP042P25EL | Receptacle | 2 | Pin | A | 2.5-6.0mm ² | - | 1000 |
| ATHP042P25ELB | Receptacle | 2 | Pin | B | 2.5-6.0mm ² | - | 1000 |
| ATHP042P25ELC | Receptacle | 2 | Pin | C | 2.5-6.0mm ² | - | 1000 |
| ATHP042P25ELD | Receptacle | 2 | Pin | D | 2.5-6.0mm ² | - | 1000 |

MagnaMate™ ATHP Mini - Plugs

MagnaMate™ ATHP Mini - Receptacles



MagnaMate™ ATHP Mini - Contacts

| Part Number | Type | Style | Contact Size | Plating | Crimp Range | Amperage |
|--------------|--------|------------------|--------------|------------|-------------|----------|
| MP10B23F | Pin | Machined | 2.5mm | Gold Flash | 6mm2 | 35A |
| MP10B23G10 | Pin | Machined | 2.5mm | Gold | 6mm2 | 35A |
| MP10B23G15 | Pin | Machined | 2.5mm | Gold | 6mm2 | 35A |
| MP10B23G30 | Pin | Machined | 2.5mm | Gold | 6mm2 | 35A |
| MP10B23G5 | Pin | Machined | 2.5mm | Gold | 6mm2 | 35A |
| MP10B23S | Pin | Machined | 2.5mm | Silver | 6mm2 | 35A |
| MP10B23T | Pin | Machined | 2.5mm | Tin | 6mm2 | 35A |
| MS10B23F | Socket | Machined | 2.5mm | Gold Flash | 6mm2 | 35A |
| MS10B23G10 | Socket | Machined | 2.5mm | Gold | 6mm2 | 35A |
| MS10B23G15 | Socket | Machined | 2.5mm | Gold | 6mm2 | 35A |
| MS10B23G30 | Socket | Machined | 2.5mm | Gold | 6mm2 | 35A |
| MS10B23G5 | Socket | Machined | 2.5mm | Gold | 6mm2 | 35A |
| MS10B23S | Socket | Machined | 2.5mm | Silver | 6mm2 | 35A |
| MS10B23T | Socket | Machined | 2.5mm | Tin | 6mm2 | 35A |
| SP12A1F | Pin | Stamped & Formed | 2.5mm | Gold Flash | 2.5mm2 | 20A |
| SP12A1F-10 | Pin | Stamped & Formed | 2.5mm | Gold Flash | 4.0mm2 | 25A |
| SP12A1G10 | Pin | Stamped & Formed | 2.5mm | Gold | 2.5mm2 | 20A |
| SP12A1G10-10 | Pin | Stamped & Formed | 2.5mm | Gold | 4.0mm2 | 25A |
| SP12A1G15 | Pin | Stamped & Formed | 2.5mm | Gold | 2.5mm2 | 20A |
| SP12A1G15-10 | Pin | Stamped & Formed | 2.5mm | Gold | 4.0mm2 | 25A |
| SP12A1G30 | Pin | Stamped & Formed | 2.5mm | Gold | 2.5mm2 | 20A |
| SP12A1G30-10 | Pin | Stamped & Formed | 2.5mm | Gold | 4.0mm2 | 25A |
| SP12A1T | Pin | Stamped & Formed | 2.5mm | Tin | 2.5mm2 | 20A |
| SP12A1T-10 | Pin | Stamped & Formed | 2.5mm | Tin | 4.0mm2 | 25A |
| SS12A1F | Socket | Stamped & Formed | 2.5mm | Gold Flash | 2.5mm2 | 20A |
| SS12A1F-10 | Socket | Stamped & Formed | 2.5mm | Gold Flash | 4.0mm2 | 25A |
| SS12A1G10 | Socket | Stamped & Formed | 2.5mm | Gold | 2.5mm2 | 20A |
| SS12A1G10-10 | Socket | Stamped & Formed | 2.5mm | Gold | 4.0mm2 | 25A |
| SS12A1G15 | Socket | Stamped & Formed | 2.5mm | Gold | 2.5mm2 | 20A |
| SS12A1G15-10 | Socket | Stamped & Formed | 2.5mm | Gold | 4.0mm2 | 25A |
| SS12A1G30 | Socket | Stamped & Formed | 2.5mm | Gold | 2.5mm2 | 20A |
| SS12A1G30-10 | Socket | Stamped & Formed | 2.5mm | Gold | 4.0mm2 | 25A |
| SS12A1T | Socket | Stamped & Formed | 2.5mm | Tin | 2.5mm2 | 20A |
| SS12A1T-10 | Socket | Stamped & Formed | 2.5mm | Tin | 4.0mm2 | 25A |

MagnaMate™ ATHP Mini - Tooling

| Part Number | Description |
|-------------|-------------------------------|
| QXRT12S | Extraction Tool 2.5mm Contact |



RADSOK® Contact Technology is based upon a stamped and formed flat grid, uniquely twisted into a hyperbolic geometry to provide robust, high density contact to the mating pin contact. Most pin and socket technologies rely on spring (beam element) properties of the contact elements, which tend to weaken over time. Unlike most other pin and socket solutions, the **RADSOK®** also utilizes the tensile strength properties of the flat, high conductivity alloy grid. This provides the high normal forces required for conductivity while also providing a large conductive surface area. Correspondingly low voltage drop and low temperature rise are also achieved while maintaining low insertion forces.



The RADSOK® Design

- Socket cylinder within female contact has several equally spaced longitudinal beams twisted into a hyperbolic shape
- As a male pin is inserted, axial members in the female half deflect, imparting high current flow across the connection with minimal voltage loss
- The hyperbolic, stamped grid configuration ensures a large, coaxial, face-to-face surface area engagement
- Ideal for crimp termination applications requiring repeated mating cycles and high current with a low multi-volt drop

RADSOK® Technology Advantages

- **High Reliability** - Unique design and construction technology create an electrical contact interface that exceeds typical interconnect requirements.
- **Low Contact Engagement/Separation Forces** - The hyperbolic lamella socket contact construction distributes normal forces over a high percentage of the mating pin surface. This creates a smooth, even engagement effort. This force distribution also contributes to excellent performance in vibration applications with resistance to typical fretting corrosion.
- **Low Contact Resistance** - The large interface area between the socket lamella and pin surface result in very low contact resistance, enabling the RADSOK® contacts' high current ratings compared to traditional power contact designs.
- **High Mating Cycle Durability** - RADSOK® contacts with typical silver plating finishes have demonstrated survival of 20,000 mating cycles. Specialized plating and contact lubricants can extend cycle life to 200,000 matings or higher. Even with continuous exposure to harsh environmental abuse, RADSOK® contacts have been tested to maintain low contact resistance beyond 10,000 mating cycles.

Standard and Custom-Developed Solutions

- In addition to the various standard sizes of RADSOK® components, custom-developed solutions are also available. Amphenol has the global design, engineering and manufacturing resources to provide RADSOK® sockets pressed into busbars, crimped to cables, assembled into connectors, assembled into customer or Amphenol designed specialized electrical devices, or as stand-alone components. Amphenol also manufactures a full compliment of mating pin contacts for any application.
- Steady-state current capacities for RADSOK® products range from 50 amps to over 1000 amps.
- Amphenol connectors with RADSOK® contacts are offered with a variety of positive-locking features (HiLok® and SurLok®) that insure and maintain fully-mated connections.
- Sealing (Sealtac™) and high voltage hot break options are available within the RADSOK® itself or within a very wide range of IP rated connector housings to provide environmental protection to the contact area.

MM MagnaMate™ ATHP QL

MagnaMate™ QL ATHP (Quick Lok) connectors compact form factor deliver loads of 130A or 180A for cable outer diameters up to 15.2mm. The definitive front latch design allows for multiple angles of connector engagement providing ease of mating in blind mate or confined spaces achieving IP67 ingress protection. The MagnaMate™ QL ATHP high-voltage connector system is easy to assemble, cost effective and was developed for use in ancillary units such as air-conditioning, electrical heating systems, or AC/DC converters, and for battery charging applications. **QL (Quick Lok) is available in both Black and Orange housings.**

Potential Applications: Electrical Air Condition, Battery Charger, Electrical Heater

Description

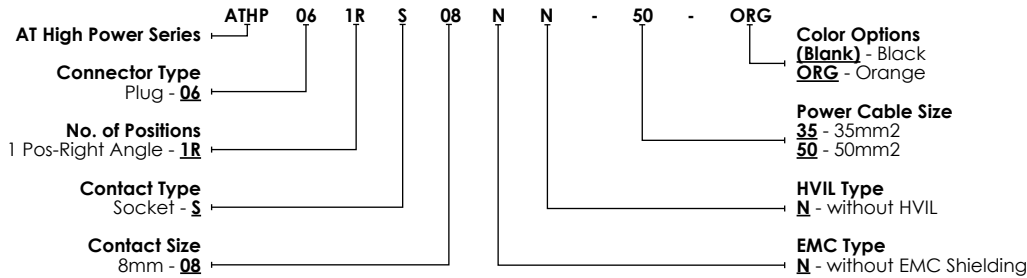
- Right Angle Plug Design
- Blind Mate Compatibility
- Compact, quick locking and press-to-release design
- Constructed of heavy-duty thermoplastic

Performance

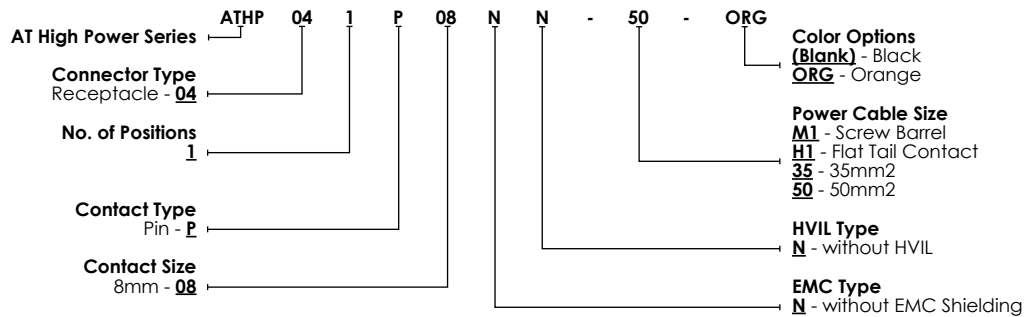
- Current Capacity up to 180A
- Voltage: 1000V AC/DC
- Temperature Range -55°C TO + 125°C
- IP67-rated (mated)



MagnaMate™ ATHP QL Plug - Part Numbering Sequence



MagnaMate™ ATHP QL Receptacles - Part Numbering Sequence



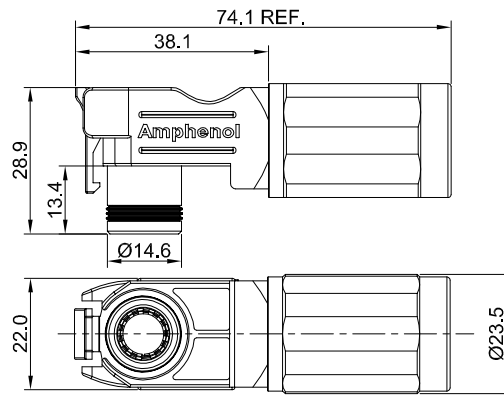
MagnaMate™ ATHP QL - Plug with EMC Shielding and High Voltage Interlock Loop

| Part Number | Type | Position | Power Contact | Keying | Cable O.D. Range | Voltage |
|------------------|------|----------|---------------|--------|------------------|---------|
| ATHP061RS08NN-50 | Plug | 1 | Socket | - | 14.2-15.2mm | 1000 |
| ATHP061RS08NN-35 | Plug | 1 | Socket | - | 10.7-11.7mm | 1000 |

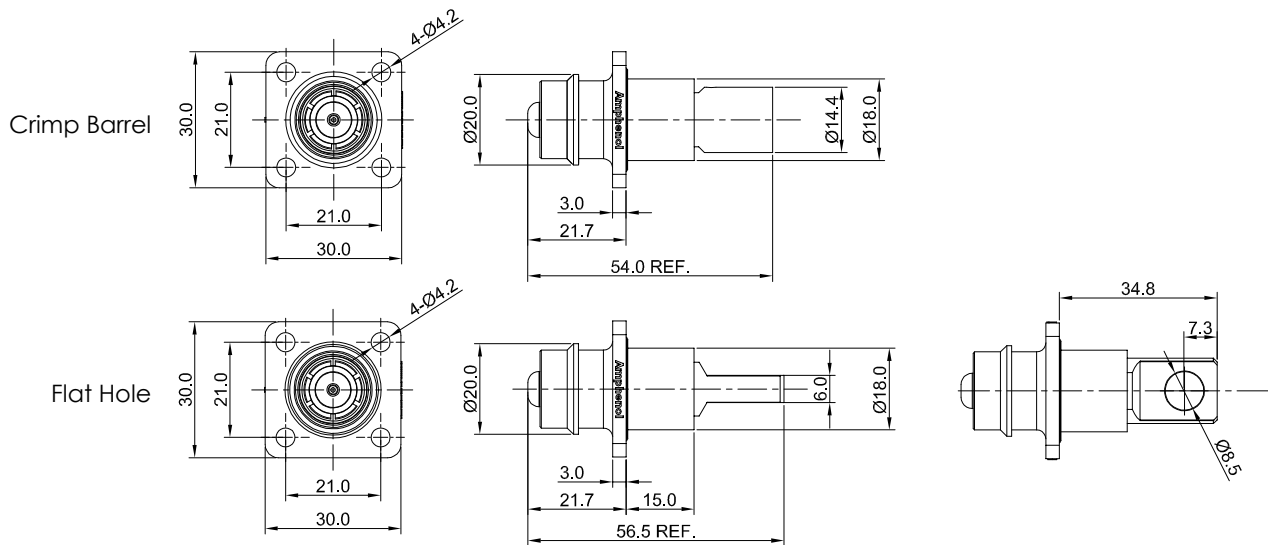
MagnaMate™ ATHP QL - Receptacle with EMC Shielding and High Voltage Interlock Loop

| Part Number | Type | Position | Power Contact | Keying | Wire Range | Voltage |
|-----------------|------------|----------|---------------|--------|-------------------|---------|
| ATHP041P08NN-H1 | Receptacle | 1 | Pin | - | - | 1000 |
| ATHP041P08NN-50 | Receptacle | 1 | Pin | - | 50mm ² | 1000 |
| ATHP041P08NN-35 | Receptacle | 1 | Pin | - | 35mm ² | 1000 |

MagnaMate™ ATHP QL - Plugs



MagnaMate™ ATHP QL - Receptacles



For more information, contact: Customer Service, +1 800 394 7732, csr@amphenol-sine.com

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