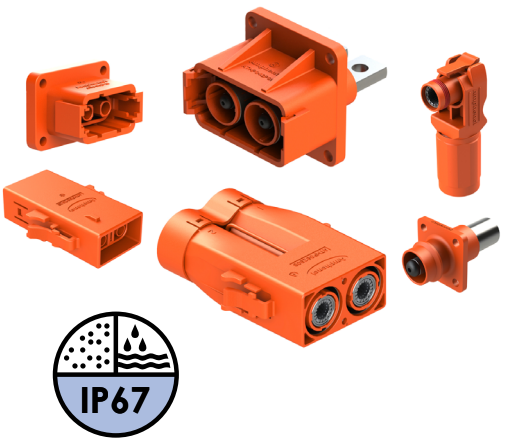
MagnaMate™ Family



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.

MagnaMate™ 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

MagnaMate™ 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

MagnaMate™ 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.**

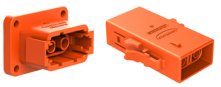
Potential Applications: Electrical Air Condition, Battery Charger, Electrical Heater

IP Ratings
IP67 rated (Dust tight; 1M of Water for 30 Minutes, in mated condition)
IP68 rated (Dust tight; 1M of Water for 24 Hours, in mated condition)
IP69K rated (Dust tight; High-Pressure Waterproof, 4 Points (0°, 30°, 60°, 90°), in mated condition)

A ASeries™ Family

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

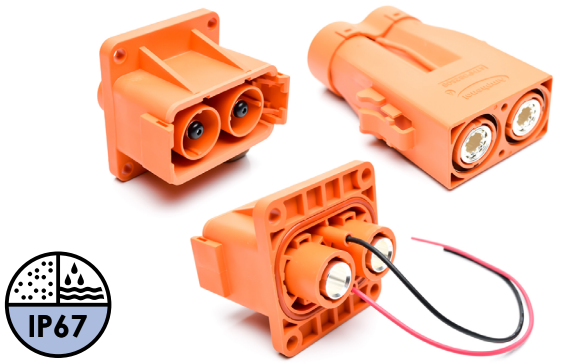
MagnaMate™ ATHP - Technical Specifications Overview

Series	MM MagnaMate™ ATHP	MM MagnaMate™ ATHP Mini			MM MagnaMate™ 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
Max Voltage Rating	1000V					
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 (in mated condition)					
48 HR Salt Spray Test	Passed					
Keying Options	N/A	A, B, C, D			Black, Orange	
Temperture 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 Resistence	Connectors show no damage when exposed to most fluids used in industrial application.					

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
- Max Voltage Rating: 1000V
- Temperature Range -40°C TO + 130°C
- IP67-rated (mated)

MagnaMate™ ATHP Standard Plug - Part Numbering Sequence

ATHP 06 2 S 08 E L 16 - 50 SX

AT High Power Series

Connector Type
Plug - **06**

No. of Positions
2

Contact Type
Socket - **S**

Contact Size
8mm - **08**

Cable Overall Diameter Range
S1 - 15.5 - 16.5mm

Power Cable Size
50 - 50mm2

Signal (HVIL) Contact Size
16 - #16

HVIL Type
L - with HVIL
N - without HVIL

EMC Type
E - with EMC Shielding
N - without EMC Shielding

MagnaMate™ ATHP Standard Receptacles - Part Numbering Sequence

ATHP 04 2 P 08 E L 16 - 50

AT High Power Series

Connector Type
Receptacle - **04**

No. of Positions
2

Contact Type
Pin - **P**

Contact Size
8mm - **08**

Power Cable Size
M1 - Screw Barrel
H1 - Flat Tail Contact
50 - 50mm2

Signal (HVIL) Contact Size
16 - #16

HVIL Type
L - with HVIL
N - without HVIL

EMC Type
E - with EMC Shielding
N - without EMC Shielding

MagnaMate™ ATHP Standard - Plugs and Receptacles

Part Number	Type	Position	Power Contact	Signal (HVIL) Contact Size	Power Cable	Cable OD Range	Max Voltage
ATHP062S08NL16-50S1	Plug	2	Socket	16	50mm2	15.5 - 16.5 mm	1000V
ATHP042P08NL16-50	Receptacle	2	Pin	16	50mm2	-	1000V

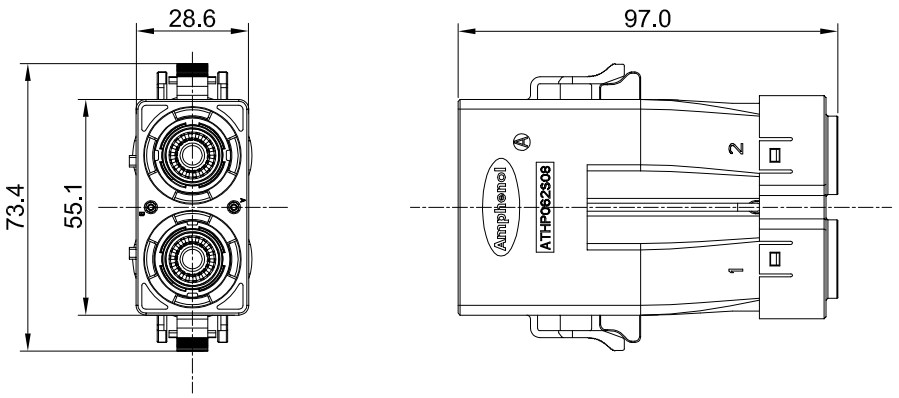
MagnaMate™ ATHP Standard - Plugs and Receptacles with EMC Shielding and High Voltage Interlock Loop

Part Number	Type	Position	Power Contact	Signal (HVIL) Contact Size	Power Cable	Cable OD Range	Max Voltage
ATHP062S08EL16-50S1	Plug	2	Socket	16	50mm2	15.5 - 16.5 mm	1000V
ATHP042P08EL16-50	Receptacle	2	Pin	16	50mm2	-	1000V
ATHP042P08EL16-H1	Receptacle	2	Pin	16	-	-	1000V

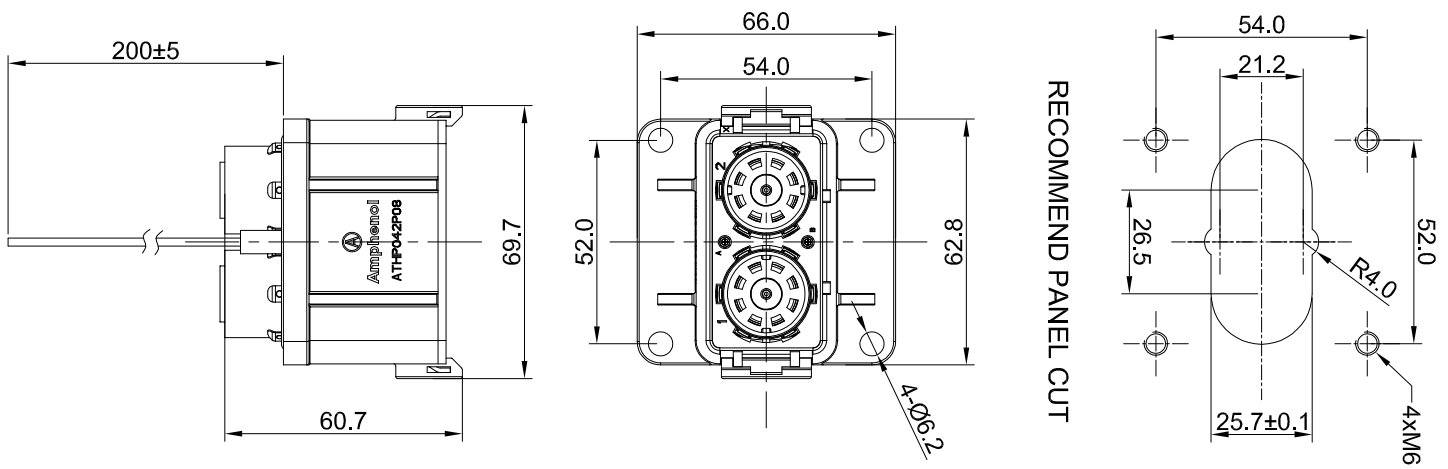
MagnaMate™ ATHP Standard - Tooling

Part Number	Description
QXATHP-50	Extraction Tool #50mm2 Contact

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



MagnaMate™ ATHP Standard - Receptacle with 8mm Contacts Dimensions



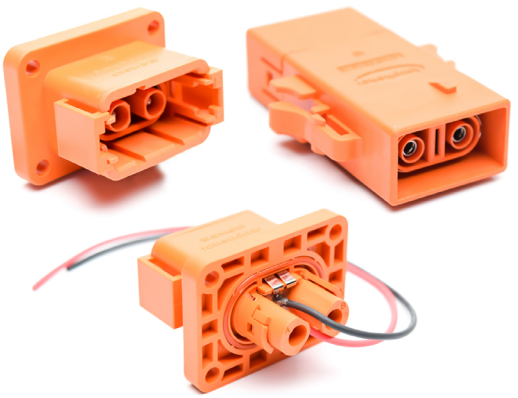
MM MagnaMate™ ATHP Mini

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

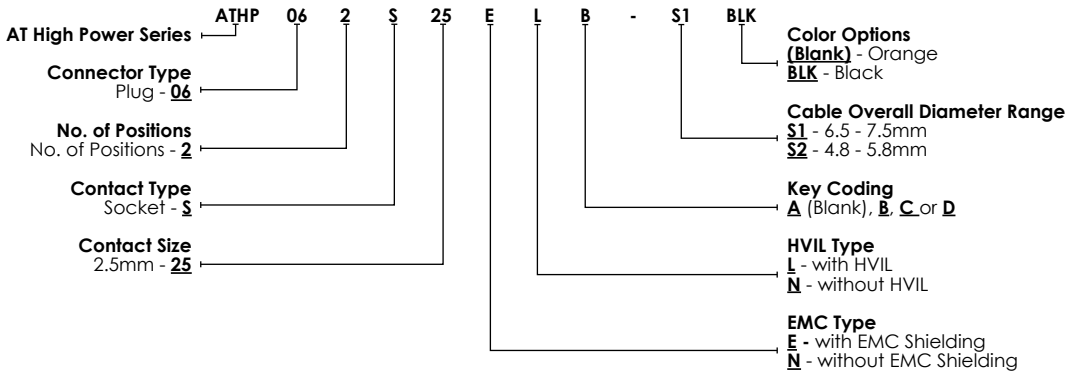


Performance

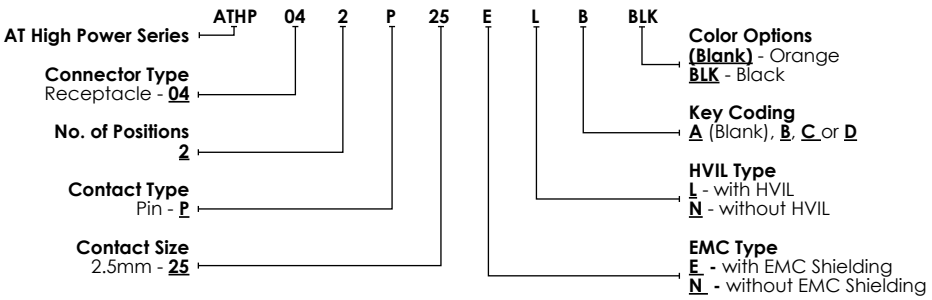
- Current Capacity up to 35A
- Max Voltage Rating: 1000V
- Temperature Range -40°C TO + 130°C
- IP67-rated (mated)

IP67

MagnaMate™ ATHP Mini Plugs - Part Numbering Sequence



MagnaMate™ ATHP Mini Receptacles - Part Numbering Sequence



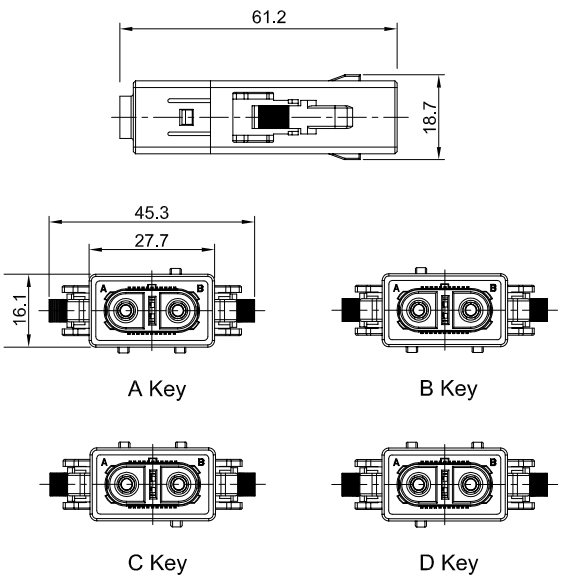
MagnaMate™ ATHP Mini - Plugs with EMC Shielding and High Voltage Interlock Loop

Part Number	Type	Position	Power Contact	Keying	Power Cable	Cable OD Range	Max Voltage
ATHP062S25EL-S1	Plug	2	Socket	A	2.5-6.0mm2	6.5-7.5mm	1000V
ATHP062S25EL-S2	Plug	2	Socket	A	2.5-6.0mm2	4.8-5.8mm	1000V
ATHP062S25ELB-S1	Plug	2	Socket	B	2.5-6.0mm2	6.5-7.5mm	1000V
ATHP062S25ELB-S2	Plug	2	Socket	B	2.5-6.0mm2	4.8-5.8mm	1000V
ATHP062S25ELC-S1	Plug	2	Socket	C	2.5-6.0mm2	6.5-7.5mm	1000V
ATHP062S25ELC-S2	Plug	2	Socket	C	2.5-6.0mm2	4.8-5.8mm	1000V
ATHP062S25ELD-S1	Plug	2	Socket	D	2.5-6.0mm2	6.5-7.5mm	1000V
ATHP062S25ELD-S2	Plug	2	Socket	D	2.5-6.0mm2	4.8-5.8mm	1000V

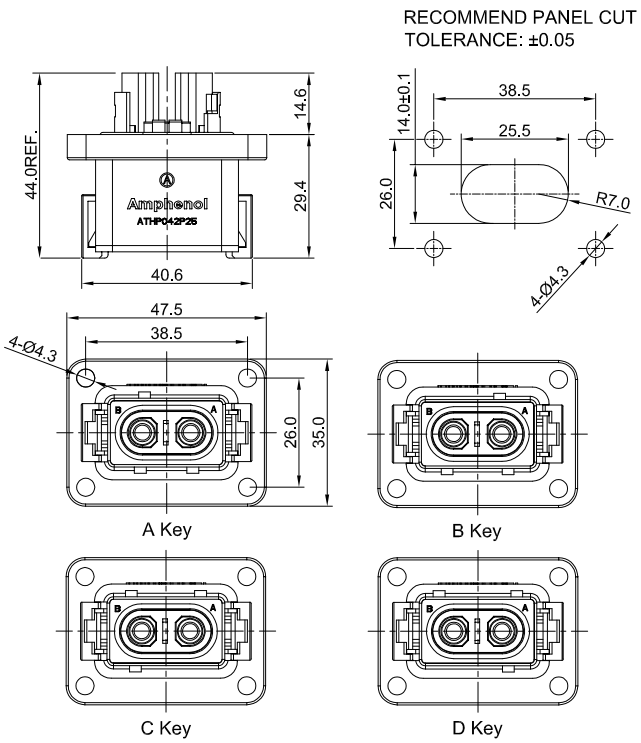
MagnaMate™ ATHP Mini - Receptacles with EMC Shielding and High Voltage Interlock Loop

Part Number	Type	Position	Power Contact	Keying	Power Cable	Cable OD Range	Max Voltage
ATHP042P25EL	Receptacle	2	Pin	A	2.5-6.0mm2	-	1000V
ATHP042P25ELB	Receptacle	2	Pin	B	2.5-6.0mm2	-	1000V
ATHP042P25ELC	Receptacle	2	Pin	C	2.5-6.0mm2	-	1000V
ATHP042P25ELD	Receptacle	2	Pin	D	2.5-6.0mm2	-	1000V

MagnaMate™ ATHP Mini - Plug Dimensions



MagnaMate™ ATHP Mini - Receptacle Dimensions



MagnaMate™ ATHP Mini - Contacts

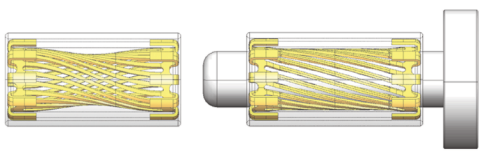
Part Number	Type	Style	Contact Size	Plating	Crimp Range	Amperage
MP10B23F	Pin	Machined	2.5mm	Gold Flash	6mm2	35A
MP10B23G10	Pin	Machined	2.5mm	Gold	6mm2	35A
MP10B23G15	Pin	Machined	2.5mm	Gold	6mm2	35A
MP10B23G30	Pin	Machined	2.5mm	Gold	6mm2	35A
MP10B23G5	Pin	Machined	2.5mm	Gold	6mm2	35A
MP10B23S	Pin	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®

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.

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
- Max Voltage Rating: 1000V
- Temperature Range -55°C TO + 125°C
- IP67-rated (mated)

IP67

MagnaMate™ ATHP QL Plug - Part Numbering Sequence

ATHP 06 1R S 08 N N - 50 - ORG

- **AT High Power Series**
- **Connector Type** Plug - **06**
- **No. of Positions** 1 Pos-Right Angle - **1R**
- **Contact Type** Socket - **S**
- **Contact Size** 8mm - **08**
- **EMC Type** **N** - without EMC Shielding
- **HVIL Type** **N** - without HVIL
- **Power Cable Size** **35** - 35mm2 **50** - 50mm2
- **Color Options** **(Blank)** - Black **ORG** - Orange

MagnaMate™ ATHP QL Receptacles - Part Numbering Sequence

ATHP 04 1 P 08 N N - 50 - ORG

- **AT High Power Series**
- **Connector Type** Receptacle - **04**
- **No. of Positions** **1**
- **Contact Type** Pin - **P**
- **Contact Size** 8mm - **08**
- **EMC Type** **N** - without EMC Shielding
- **HVIL Type** **N** - without HVIL
- **Power Cable Size** **M1** - Screw Barrel **H1** - Flat Tail Contact **35** - 35mm2 **50** - 50mm2
- **Color Options** **(Blank)** - Black **ORG** - Orange

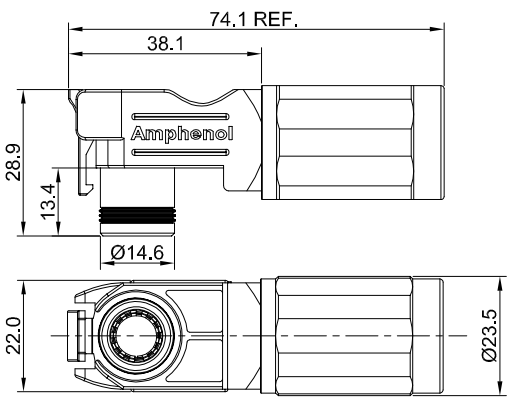
MagnaMate™ ATHP QL - Plug with EMC Shielding and High Voltage Interlock Loop

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

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

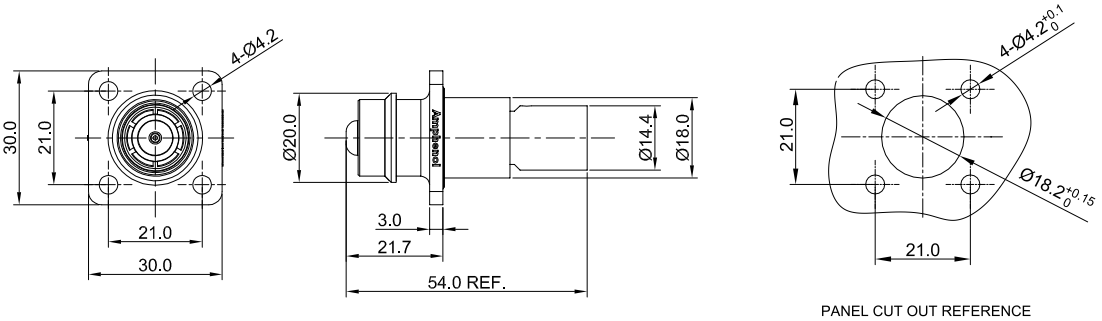
Part Number	Type	Position	Power Contact	Keying	Wire Range	Max Voltage
ATHP041P08NN-H1	Receptacle	1	Pin	-	-	1000V
ATHP041P08NN-50	Receptacle	1	Pin	-	50mm²	1000V
ATHP041P08NN-35	Receptacle	1	Pin	-	35mm²	1000V

MagnaMate™ ATHP QL - Plug Dimensions



MagnaMate™ ATHP QL - Receptacle Dimensions

Crimp Barrel



PANEL CUT OUT REFERENCE

Flat Hole