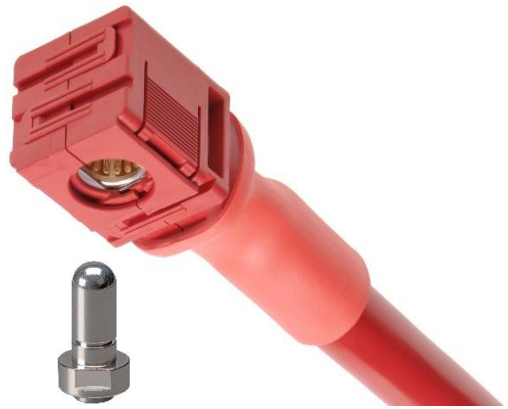


Customer Presentation

SW1 WIRE-TO-BOARD AND WIRE-TO-BUSBAR INTERCONNECTS

NPI INNOVATION

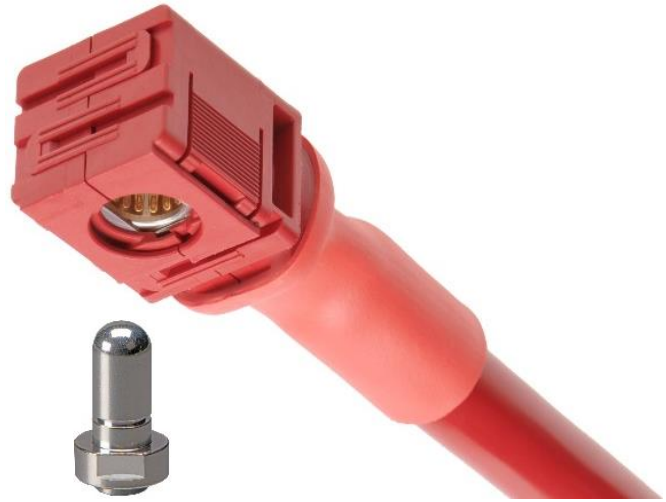
APRIL 2023 I GLOBAL RELEASE

creating connections for life

molex

SW1 WIRE-TO-BOARD AND WIRE-TO-BUSBAR INTERCONNECTS

SW1 Wire-to-Board/Wire-to-Busbar Interconnects incorporate COEUR socket technology which enables a high-current-carrying capacity in three sizes: 6.00mm (120.0A), 8.00mm (185.0A) and 11.00mm (300.0A) with a unique positive-locking design for secure mating.



Key Product Information

Category:	**Power Connectors**
Current:	**Up to 300.0A**
Contact Diameter:	**6.00, 8.00 and 11.00mm**
Operating Temperature:	**-40 to +125°C**

View Product Landing Page

Download Datasheet

Series

224356, 224412, 224415	6.00, 8.00, 11.00mm Double-ended SW1 Cable Assembly
224357, 224413, 224416	6.00, 8.00, 11.00mm Single-ended SW1 Cable Assembly
224355, 224411, 224414	6.00, 8.00, 11.00mm Receptacle to Lug SW1 Cable Assembly
218371, 218372, 218373	6.00, 8.00, 11.00mm Screw-Mount Locking Pin
218335, 216939, 218336	6.00, 8.00, 11.00mm Knurled Press-Fit Locking Pin

creating connections for life

molex

VITAL PRODUCT INFORMATION

What makes this product different from the competition? How does this product/solution create value for our customers?

The SW1 receptacles are 35% lower in height and 30% shorter than competitors' products, making them an ideal solution in space-constrained applications.

What is the Molex Advantage?

The positive-locking design allows the cable assemblies to rotate freely once mated to the pin which minimizes stress on the pins solder joint. assuring secure mating that prevents cable assemblies from backing off pins due to shock, vibration or mishandling.

creating connections for life

molex

PRODUCT OVERVIEW [HERO SPOTS]

Low Contact Resistance

The COEUR conical socket's multiple contact beams offers low contact resistance and low voltage drop so there is minimal heat generation at the contact interface which results in higher current-carrying capacity compared to other contact designs.

Compact Design

The COEUR socket design enables mated interconnects that are lower in height, with a shorter length and narrower width than comparable solutions using hyperbolic sockets, while offering significant design flexibility in applications where space is limited.

User-friendly Positive Locking

The unique quick connect and pinch-to-release design helps ensure secure mating during system integration and prevents cable assemblies from later backing off pins due to shock, vibration or mishandling. It also eliminates the need for mounting hardware and reduces installation time and routine maintenance costs.

Positive Locking with 360° Cable Assembly Rotation

The stainless-steel spring clip latches onto a groove in the locking pin, allowing the cable assembly 360° rotation about the pin for easy cable assembly dressing during system integration.

creating connections for life

molex

MARKETS AND APPLICATIONS

Energy Storage

- Battery storage systems
  - battery farms
- Power conditioning systems
  - Bi-directional inverters

Industrial Automation

- Factory equipment
- Robotics

creating connections for life

molex

FREQUENTLY ASKED QUESTIONS

What is the mated height of an SW1 cable assembly mated to a screw mount locking pin?

The height of the board of a 6.00mm SW1 cable assembly mated to a screw mount locking pin is 20.90mm.

The height of the board of an 8.00mm SW1 cable assembly mated to a screw mount locking pin is 22.90mm

The height of the board of a 11.00mm SW1 cable assembly mated to a screw mount locking pin is 29.90mm

What is the mated height of an SW1 cable assembly mated to a press-fit locking pin?

The height of the board of a 6.00mm SW1 cable assembly mated to a press-fit locking pin is 16.30mm.

The height of the board of an 8.00mm SW1 cable assembly mated to a press-fit locking pin is 18.30mm

The height of the board of a 11.00mm SW1 cable assembly mated to a press-fit locking pin is 25.40mm

I am interested in purchasing a cable assembly with SW1 connectors on both ends. Is Molex able to design and build double-ended SW1 cable assemblies?

Yes. Molex has a business segment that designs and builds cable assemblies. Contact your local Molex sales representative for details.

I am interested in purchasing a cable assembly with a SW1 connector on one end a non-Molex connector on the other end. Is Molex able to design and build cable assemblies with a SW1 receptacle on one end and a competitor's connector on the other end?

Yes. While we love it when both ends of a cable assembly use Molex connectors, we understand that is not always the best solution. The business segment mentioned above that designs and builds double-ended SW1 cable assemblies also designs and builds cable assemblies with a SW1 receptacle on one end and another manufacturer's connector on the other end. Contact your local Molex sales representative for details.

SOLVING INDUSTRY CHALLENGES

Industry Need	Industry Challenge	Industry Solution	Anticipated Results
High-current carrying capacity with minimal heat generation	Power efficiency is critical to cost and safety management in the power intensive applications within energy storage systems.	SW1 receptacles incorporate Molex's proven COEUR socket, which with its multiple contact beams creates a large contact surface at the mating interface, resulting in low contact resistance and voltage drop which leads to minimal heat generation.	Designers selecting SW1 receptacles can achieve the maximum current-carrying capacity using the minimum space.
Compact connectors	Dense electronic packaging demands a low mated height between a cable assembly and its printed circuit board or busbar.	SW1 receptacle assemblies are about 1/3rd lower in height and 1/3rd shorter in length than comparable solutions using hyperbolic sockets. The z-axis mating configuration is designed to eliminate cable bend radius complications, making it an ideal solution for applications where space is constrained.	Engineers have the flexibility to utilize a wire-to-board or wire-to-busbar solution in tightly constrained spaces, due to SW1's compact design.
Manufacturing flexibility	Identify a high current, high voltage interconnect that can attach to either printed circuit boards or busbars, accepts a wide range of wire gauges, and provides easy cable assembly management is a challenge.	SW1 offers locking pins that can attach to either printed circuits boards or busbars. The SW1 receptacle assemblies accept wire gauges ranging form 2 AWG to 4/0 AWG. SW1's unique positive locking design allows cable assembly to rotate freely about the locking pin axis after mating, simplifying cable assembly dressing.	Designers can address a wide range of application-specific requirements with a single, versatile wire-to-board and wire-to-busbar product family.

PRODUCT FEATURES AND ADVANTAGES

Color coded receptacle housings

Help to differentiate circuits and helps prevent mis-mating when multiple cable assemblies are used on the same application

Multiple contact beams with optimal current-carrying capacity

Provides low contact resistance, low voltage drop, and minimal heat generation at the contact interface

Positive-locking stainless steel spring clips

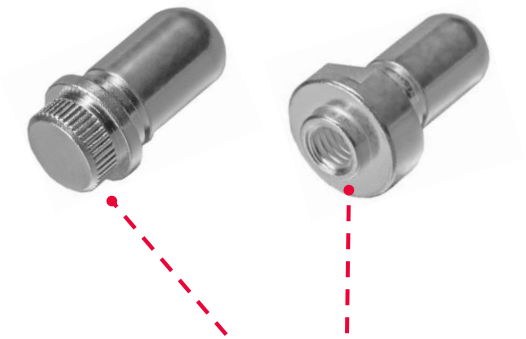
Allows 360° rotation of cable assemblies about the pin and ensures secure mating that prevents cable assemblies from backing off pins due to shock, vibration or mishandling.

Housing	PBT
Current	120.0A (6.00mm), 185.0A (8.00mm) and 300.0A (11.00mm)
Voltage	1,000V
Mating Forces	50N (6.00mm), 60N (8.00mm) and 70N (11.00mm)
Operating Temperature	-40 to +125°C

creating connections for life

molex

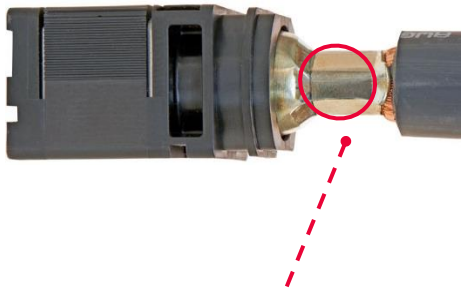
PRODUCT FEATURES AND ADVANTAGES (CONT'D)



Design flexibility

Offers designers options for attaching pins to different substrates;

- Screw mount pins attach to either printed circuit boards or busbars
- Knurled press fit pins attach to busbars



Reliable crimp geometry with high-quality 8-sided crimp profile

Helps ensure minimal contact resistance at the interface between the wire and the crimp barrel, contributing to the system's minimal heat generation and in higher current-carrying capacity compared to other designs

Quick Connect/pinch-to-release cable assemblies

Can be mated and locked or unlocked and unmated with a single hand by pinching the ergonomic ribs, unlike competitor products that requires a second hand to actuate their locking mechanism, offering enhanced functionality in tight spaces

creating connections for life

molex

PRODUCT FEATURES AND ADVANTAGES (CONT'D)

Compact Design

SW1 8.00mm receptacle assemblies are 36% lower height than competitor's 8.00mm receptacle assemblies using hyperbolic sockets, 17.60mm tall versus 27.70mm tall, enhancing design flexibility in tight spaces

Compact Design

SW1 8.00mm receptacle assemblies are 34% shorter in length than competitor's 8.00mm receptacle assemblies using hyperbolic sockets, 38.30mm versus 58.00mm, enhancing design flexibility in tight spaces

Compact Design

SW1 8.0mm receptacle assemblies are 5% narrower than competitor's 8.00mm receptacle assemblies using hyperbolic sockets, 20.60mm versus 21.70mm, enhancing design flexibility in tight spaces

creating connections for life

molex

SPECIFICATIONS

Reference Information

Packaging:
  Cable Assemblies: Bag
  Locking Pin: Bag, vacuum-sealed
UL File No.: E29179
CSA File No.: 70184994
Use With: Printed circuit boards and busbars
Designed In: Millimeters
RoHS: Yes
Halogen Free: Yes

Physical

Receptacle Housing: PBT
Contact: High–performance Copper (Cu) Alloy
Plating:
  Socket Contact Area—Gold (Au)
  Pin - Silver (Ag)
PCB Thickness (min.): 1.58mm
Busbar Thickness (min.): 1.50mm
Flammability: UL 94V-0
Operating Temperature: -40 to +125°C

Electrical (6.00mm Size)

Voltage (max.): 1,000V
Current (max.): 120.0A
Contact Resistance (max.): 0.25 milliohms

Mechanical (6.00mm Size)
Mating Force (max.): 50N
Unmating Force (min.): 5N
Durability (min.): 200 mating cycles

Electrical (8.00mm Size)

Voltage (max.): 1,000V
Current (max.): 185.0A
Contact Resistance (max.): 0.25 milliohms

Mechanical (8.00mm Size)
Mating Force (max.): 60N
Unmating Force (min.): 6N
Durability (min.): 200 mating cycles

Electrical (11.00mm Size)

Voltage (max.): 1,000V
Current (max.): 300.0A
Contact Resistance (max.): 0.25 milliohms

Mechanical (11.00mm Size)
Mating Force (max.): 70N
Unmating Force (min.): 7N
Durability (min.): 200 mating cycles

creating connections for life

molex

creating connections for life

molex