



Reliable Interconnect for Industrial IoT

The Industrial Internet of Things (IIoT) is the heart of Industry 4.0. It helps companies improve efficiency, productivity, and output quality. It enables a high level of automation within manufacturing and processing facilities. Real-time data/analytics from machinery and processes enables production planning and maintenance work to be accurately scheduled and executed. Assets within the supply chain can be tracked, preventing loss or theft.

Analysts predict considerable global expansion in the next few years:

- ▣ Tens of billions of IOT nodes will be deployed;
- ▣ Market size will grow at high rates, from 8% to 25% yearly;
- ▣ Total market value could exceed \$1 trillion USD before the end of the decade.

The reliability of node components is vitally important. Remote or inaccessible locations have implications for maintenance or upgrade. Servicing and repairing hardware may be difficult (or almost impossible). Even within factories, downtime is undesirable and unacceptable.

Industrial Connector Applications

- Smart Factory**
 - Robotic assembly
 - IIOT (Industrial Internet of Things)
 - Drives and controls
 - HMI (Human-Machine Interface)
- Safety**
 - Fire & gas detection and alarms
 - Automated cut-off systems
 - Surge protection
- Metering**
 - Smart meters
 - Smart grid
 - Monitoring and feedback
- Building Control**
 - Elevators
 - Entry and Security
 - Temperature and Environment



Wired v Wireless in IIoT

Although IIoT and IloT are wireless applications, nodes and associated control & monitoring equipment contains electronic sub-systems. These often have more than one PCB, or interface to the surrounding enclosure for direct plug-in diagnostics. Linking these boards and interfaces requires internal connectors, and all must withstand any environmental factors.

Changes in Temperature

IIoT devices can encounter extremes in temperature – for instance, inside petrochemical plants or steelworks have sustained high levels of heat. Smart farming and pipeline monitoring sees higher temperatures during the day and freezing conditions through the night.

Consider connector options with wider operational temperature ranges:

- Thermal shock to EIA-364-32C Condition III (or similar) – 10 cycles from -55°C to +125°C;
- Temperature Life EIA-364-17B Method A – +125°C for 96 hours.

Shake and Shock

Nodes may be mounted on, or close to, industrial drives and other heavy machinery – making vibration unavoidable. Any momentary separation between contact mating faces causes electrical discontinuity, leading to loss of data or control. Successful testing to gives confidence in vibration resistance.

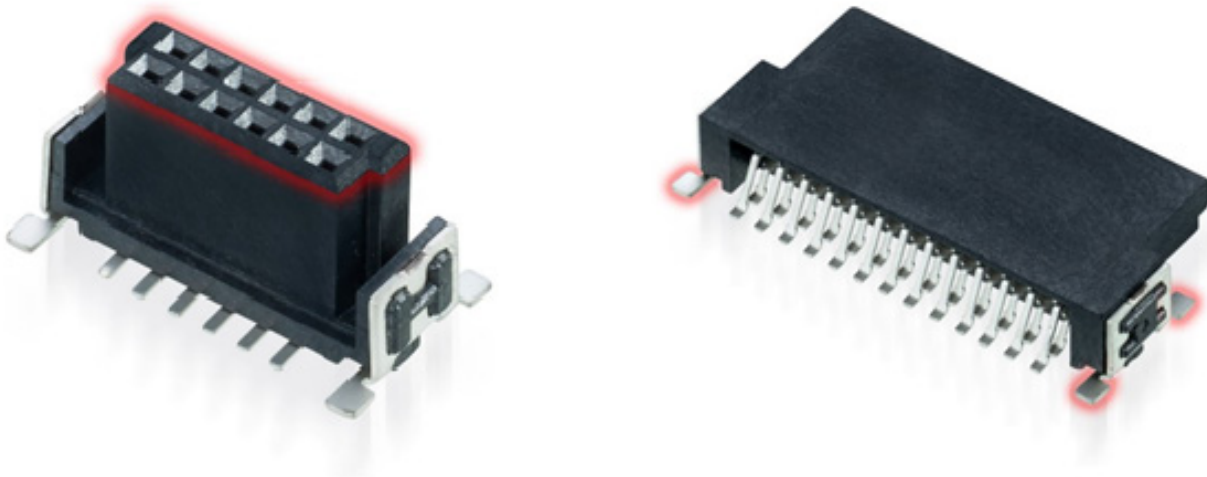
- EIA-364-28D Condition IV – 12-hour testing period, amplitude of 1.52mm at frequencies cycling from 10Hz to 2000Hz, 196m/s² acceleration (equivalent to 20G)

Out of Sight, Out of Mind

Locating IIoT nodes in remote outdoor sites without human supervision puts them at risk of vandalism or industrial sabotage, long-term or unexpected weather impacts. General wear and tear occurs from motion in operation, or accidental damage from scheduled maintenance or upgrade. These are causes for sudden failure, or unnoticed deterioration.

Rugged construction will help prevent a loss of operation. Connectors may need to endure higher rates of disconnection/reconnection.

- Elevated levels of mating cycle durability;
- Shrouded and Polarized housing designs protect contacts while un-mated, and help guide connectors together with correct orientation during mating.
- Surface-mount hold-downs or throughboard terminations give extra PCB retention against mated cable weight or pulling on mating/un-mating.





Connector Selection Guide

Archer Kontrol - Durable 1.27mm pitch connectors for PCB and cable.

Double row mating connectors with variable stacking heights of 8mm to 20mm for parallel PCB mating, plus horizontal connectors for right angle or co-planar. Ready-made cable assemblies.

CURRENT: 1.2A (MAX)



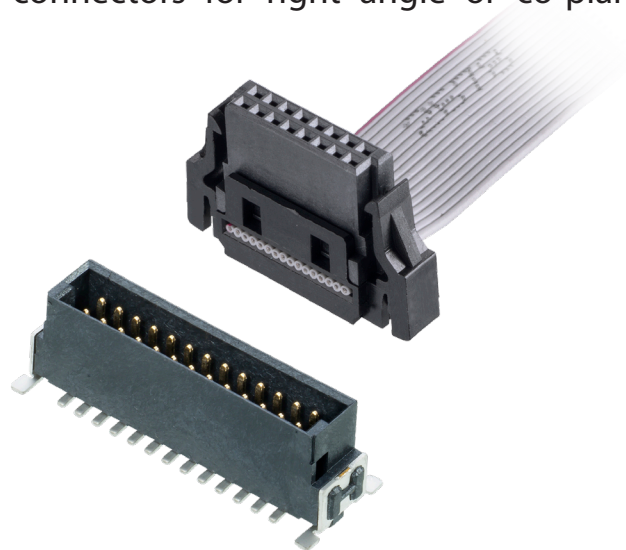
VIBRATION: 20G



TEMPERATURE: -55°C TO +125°C (MAX)



OPERATIONS: 500



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Archer .8 - Ultra-compact, lightweight 0.8mm pitch double row connectors.

Minimized PCB footprint with a maximized 120 contacts available. Fully shrouded & polarized for mezzanine PCB connection, capable of 12GHz or 24Gb/s.

CURRENT: 0.5A



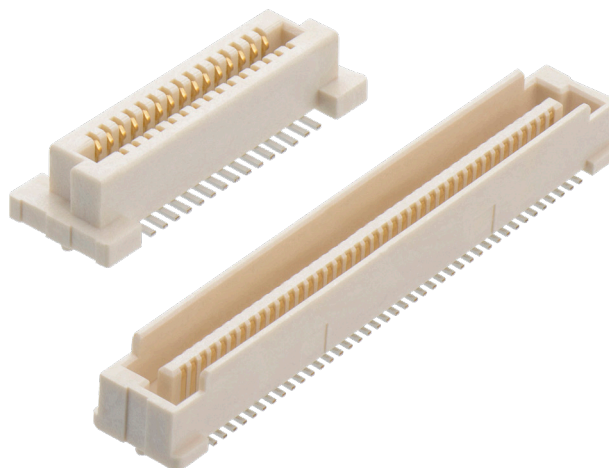
VIBRATION: 10-55Hz



TEMPERATURE: -40°C TO +125°C



OPERATIONS: 30



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Connector Selection Guide

Archer M50 - 1.27mm pitch versatile pin header and socket connections.

Everyday reliable connections, single and double row. Ready-made IDC cabling and jumper sockets, easy to use.

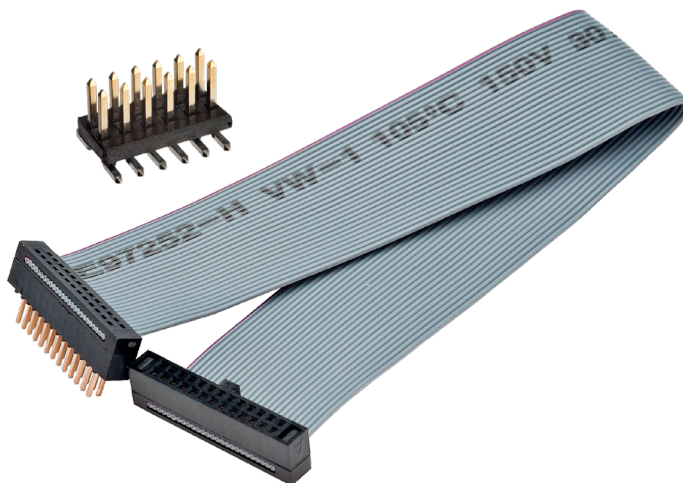
CURRENT: 1A



TEMPERATURE: -40°C TO +105°C (MAX)



OPERATIONS: 300 (AVERAGE)



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EMC Shielding - Board-level shielding with simple remove-and-replace usability.

SMT clips are soldered with other PCB devices. Simple 5-sided cans are then quickly and easily assembled by hand. Fast to remove and replace for rework or maintenance access.

- ▣ Shield Can designs readymade for immediate assembly
- ▣ 0.15, 0.2 and 0.3mm thick
- ▣ SMT Clips for 0.13-1.00mm can thicknesses
- ▣ Prototype Kit available - make your own custom Can



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EMC Shield Can Clips

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EMC Shield Cans

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EMC Shield Can Kit

Connector Selection Guide

PCB Sockets - Individual SMT and Throughboard contacts for total flexibility.

Use with terminal pins for single connections. Make sensors, relays and other components replaceable & upgradeable.

CURRENT: 20A (MAX)



TEMPERATURE: -55°C TO +125°C (MAX)



OPERATIONS: 500 (AVERAGE)



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Spring Contacts - SMT single piece contacts or pogo pins with internal springs. Antenna connection, grounding or single contact on demand. Variety of spring forces, working heights, horizontal contacts and mating SMT pads for complete flexibility.

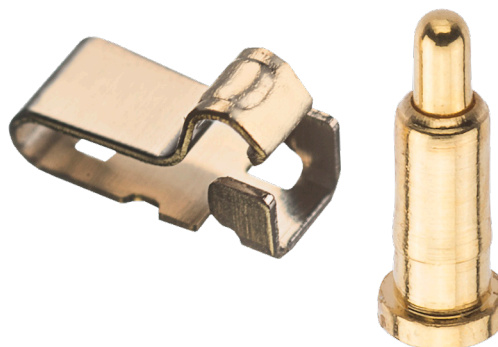
CURRENT: 9A (MAX)



TEMPERATURE: -55°C TO +125°C (MAX)



OPERATIONS: 5000 (AVERAGE)



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