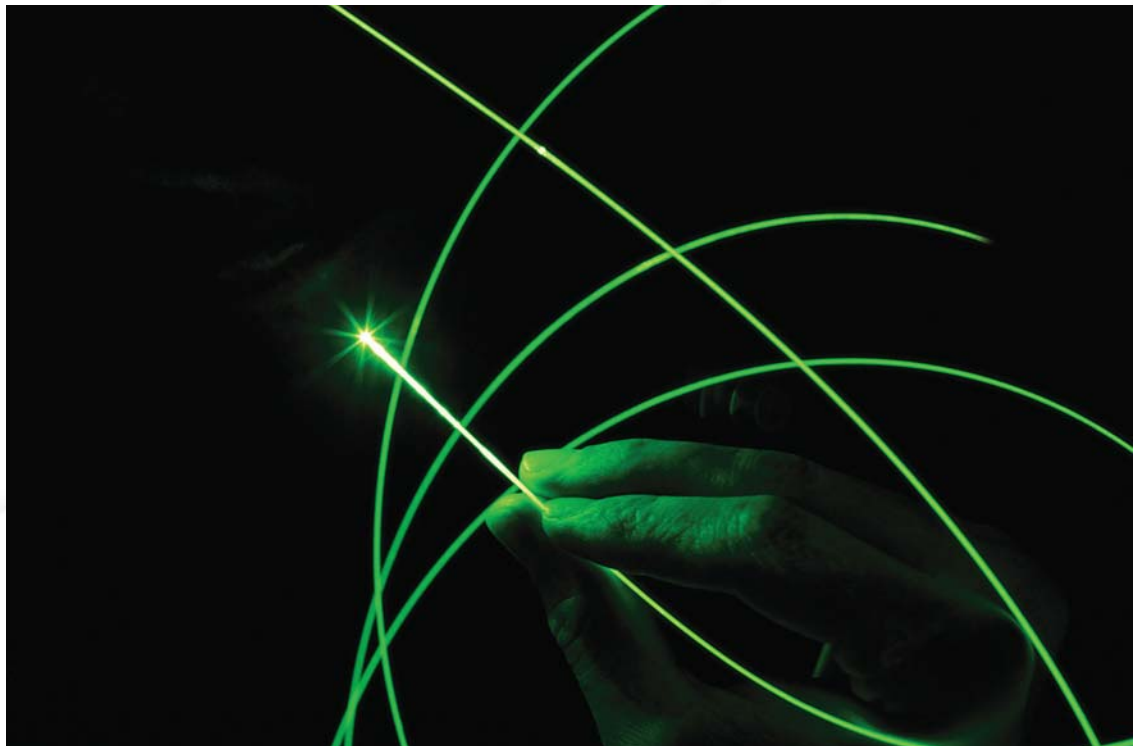


CC-Link IE

INDUSTRIAL ETHERNET

Manufacturing at the speed of light
enhancing your productivity



Deterministic – using a simple yet powerful concept CC-Link IE successfully delivers a deterministic and real time Industrial Ethernet solution



Industrial – a network designed for manufacturing and process control utilizing redundancy, noise immune fiber optic communication and advanced RAS functions



Open – a Multivendor network managed by the CC-Link Partner Association for the good of all

Productivity. Can you survive without it?



CC-Link IE combines the knowledge and experience from across the manufacturing world to deliver an Industrial Ethernet Solution to sustain and improve productivity

CC-Link IE

CC-Link IE is a new standard for open Industrial Ethernet managed by the CC-Link Partner Association (CLPA). It has been based on the demands of manufacturing and process users from across the world.

The voice of the user

It goes without saying that manufacturer's from different regions share similar problems, which have been solved in different ways.

It is easily seen that Europe and North America have lead the way in flexible manufacturing which operates seamlessly through the total plant but is based on easy to use open standards. However, colleagues in Asia have focused their efforts on high speed, yet stable processes which require ever larger amounts of data capture and utilization.

If the power of these two approaches could be captured in a single solution then all manufacturers would benefit the world over.

What is needed?

The message is clear from all corners of the production environment, what is needed is a network solution which has the following qualities:

■ Ruggedness

To withstand electrical noise, vibration and the harsh environment of the industrial workplace.

■ Reliability

Because the manufacturing process cannot stop. If it does recovery must be immediate, because we all know time is money!

■ Stability

The best production processes are ones which are stable and do not suffer from fluctuations. This means production becomes predictable and easier to manage.

■ Flexibility

A network which spans the total production process means easier modifications and line extensions as well as reduced maintenance costs.

■ Easy of use

Production and automation engineers are highly skilled people who want to focus their time on their business and not becoming IT LAN specialists.

■ Vertical integration

Users want to minimise the number of control and management tasks they perform, therefore total optimization is required from the Enterprise level to the Factory floor.

■ Openness/standardization

The chance to choose from a range of manufacturers, components and solutions which can be integrated in to a single harmonious system allows users to create the best solution possible.

The answer

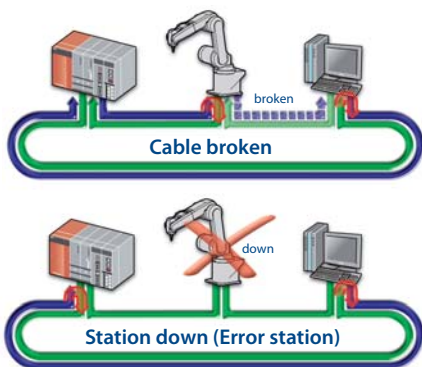
CC-Link IE combines all of these elements into a simple, single, deliverable package which will help to improve manufacturing efficiency and hence productivity.

How does it do it?

CC-Link IE is an advanced network which offers scalability and flexibility in equal measures. Looking at the user requirements one by one again:

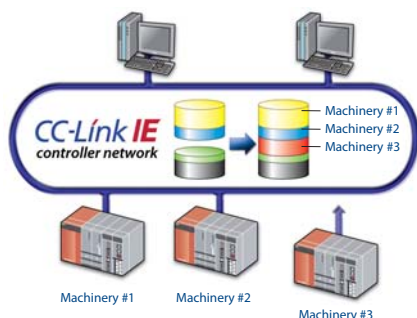
Ruggedness is built into the heart of the design of CC-Link IE, from its noise resistance fiber optic cabling to the built in redundant network loop.

Reliability can be seen in the built in redundant network loop, the use of a shared network memory and the ability to automatically and dynamical create new floating sub masters in each isolated segment when communication fails.



CC-Link IE automatically re-routes network traffic around breaks

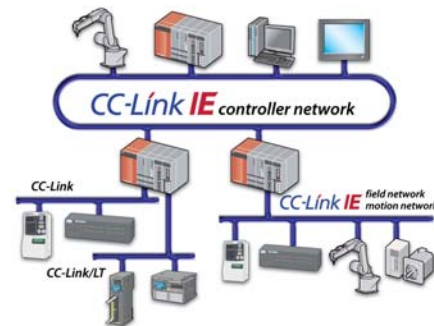
Stability is ensured with the deterministic delivery of network data through the shared network memory. In addition, this memory system enhances the flexibility to add or remove network stations as the interdependences of data exchange are



Adding a new machine to the network, "machine #3", is easy

totally removed as every network station sees every part of the network memory.

Routing tables are built in to each device which allows users to simply and easily



Users can tunnel through CC-Link IE to their existing CC-Link networks

construct their Industrial Ethernet. It also means that tunnelling of protocols through CC-Link IE to CC-Link etc is also possible.

The 1Gigabit data rate, real time communication and determinism, fiber optic connectivity and network scalability means it is easy to build vertical integration into a manufacturing plant as vast amounts of data can be safely and consistently shared.

Finally because CC-Link IE is managed by the CLPA it is an open standard for all to adopt. This provides safeguards for users against a single dominating manufacturer but also for the long term life of the networking technology.

Mitsubishi brings you more

In addition to the latest in high speed Industrial Ethernet, Mitsubishi Electric has combined technologies to offer embedded MES options for its iQ platform, System Q and GOT displays. This then reduces the headache of integrating MES to a simple module which can be configured with a "drag and drop" software environment – absolutely no knowledge of SQL or similar databases is required!

Bringing the factory together

Building on the powerful integration possibilities of CC-Link IE, Mitsubishi's iQ platform extends the existing system Q Automation Platform. The new iQ platform allows CNC, Robotics and high speed motion to become an integral part of a single control point.

Specifications ///

	Specifications
Basic communication function	Network shared memory communication (Cyclic communication: real time communication) Message communication (Transient communication: non real time communication)
Communication speed / data link control	1Gbps / based on Ethernet standard
Network topology	Loop
Data transmission reliability method	Double loop
Data transmission control method	Token passing
Size of network shared memory	max. 256Kbytes
Communication medium	IEEE 802.3z multimode optical fiber cable (GI)
Connector	IEC 61754-20 LC connector (duplex connector)
Maximum number of stations	120 stations
Station-to-station distance (When multi mode optical fiber is used)	max. 550m
Overall distance (When multi mode optical fiber is used)	max. 66km

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