

New CC-Link products

FX2N-16CCL-M CC-Link System Master Block from Mitsubishi Electric

Features:

- Allows an Fx Series PLC (either FX1N/FX2N/FX2NC) to act as the master station in a CC-Link System.
- Up to 7 remote I/O stations and up to 8 remote device stations can be connected to the master station.
- The Fx Series PLC can be connected as a remote device station by using the CC-Link Interface FX2N-32CCL.



Technology Highlight

CC-Link can have up to 26 floating masters on a single network. This unique feature works on the principle of secondary masters monitoring the status of the Primary Master. If the Primary Master fails to communicate within a given time period, a secondary Master then takes over, and becomes the Primary master. If this master fails then another secondary master takes it place, continuing until all 26 secondary stations are used.

This may seem an excessive feature, but if utilised in flexible manufacturing lines the use of this technology, saves having to alter or reset the network when adding or removing sections of a variable production line.

This warm standby floating master technology gives CC-Link a very high overall system availability, making it one of the most flexible, and safest fieldbusses around.

Founder Members European Branch

Vendor	Address	Product	Status
Woodhead Connectivity Ltd	Factory No.9 Rassau Ind. Est. Ebbw Vale, Gwent, Wales NP3 5SD 44-1495-350436 44-1495-350877	PCI Cards	Foundation Partner
NEC (UK) Ltd	NEC House, 1 Victoria Road, London W3 6BL 44-208-993-8111 44-208-992-7161 www.nec-global.com/office/europe.html	Master Computer and PCI Card	Foundation Partner
Matsushita Electric Works (Europe) AG	Rudolf-Diesel-Ring 2, 83607 Holzkirchen, Germany 49-8024-6480 0049-8024-648111 www.meweurope.com/mew		Foundation Partner HQ for Europe
Contec Microelectronics Europe B.V.	Binnenweg 4 2132 CT Hoofddorp, Netherlands 0031-23-567-3030 0031-23-567-3035 www.contec-europe.com	Data Acquisition & Computer	Foundation Partner HQ for Europe
Pro-face HMI B.V.	Amsteldijk 166 1079 LH Amsterdam, The Netherlands 0031-20-6464-134 0031-20-6464-358 www.proface.com/company_e/offices.htm	HMI	European HQ. For Digital HMI Foundation Partner
Mitsubishi Electric Europe B.V.	Travellers Lane Hatfield AL10 8XB 0044 1707 276100 0044 1707 278695 www.mitsubishi.co.uk/automation	Automation Products	Foundation Partner



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Welcome to our first edition of CC-Link News, for European Partners, Members and OEMs.

The CLPAs aim is to raise awareness on the benefit of 'Open Networking' with CC-Link and to keep you informed about all forms of development within CC-Link. So, if you have any interesting information please let us know. CLPA Europe has been very busy since its launch at Hannover Messe in April this year. As a direct result of being at the show, a number of new members have joined as a direct result of CLPA being at the show. These new members include Bihl and Wiedemann GMBH, Festo GMBH, Wago GMBH, Pepperl and Fuchs GMBH, Golring, UK Ltd, Option Exist and SMC UK Ltd.

The benefits of CC-Link

- Designed specifically for simultaneous control and data processing at high speeds
- Up to 65 station networks without the use of repeaters
- Network lengths of up to 13.2 km
- 65 station network refresh time of 4ms
- Up to 26 floating masters per network, giving highest possible system availability
- Reduced wiring and installation costs

SEMI STANDARD approval for CC-Link

SEMI (Semiconductor Equipment And Materials International), whose headquarters are in San Jose, USA, have just approved CC-Link and awarded it the international standard of SEMI E54. This highly cherished approval is in recognition of the superb functionality and increased importance of CC-Link in the global fieldbus networking marketplace.

The acquisition of this new standard is a major step forward for the CLPA in our endeavours to get CC-Link accepted by all major worldwide standards bodies. This approval now certainly increases the profile of CC-Link within the Semiconductor and Flat Panel Display (FPD) manufacturing industries.

SEMI has a membership of around 2500 companies worldwide and their aim is to work with the semiconductor industry to revise and issue standards relating to the global semiconductor machinery industry.

The SEMI E54 standard issued relates to an approved messaging protocol used on networks within semiconductor machinery. The issuing of the certificate of approval now gives semiconductor machine manufacturers supreme confidence in the use of CC-Link solutions in their machine control. This standard is focused on enabling SEMI members to increase efficiency in their machines and help reduce overall manufacturing costs. The implementation of a CC-Link based networking solution will dramatically reduce wiring and hence reduce costs, as well as increase and simplify data communications to other equipment within their machines.

CC-Link will now be one of the preferred networking systems for semiconductor machine manufacturers worldwide, making it easier to link different manufacturers semiconductor machines together in a simple to implement proven manner, without having to write complex data transmission handling code.

Anyone who would like to acquire a copy of this CC-Link standard can download information from the SEMI web site at www.semi.org.

CC-Link for Undersea Cables

CC-Link in action

Fraser Hydraulic Power, a family owned company based in Newcastle Upon Tyne, have developed an interesting solution to overcome some of the problems associated with the laying of the latest generation of subsea Telecommunication cables using CC-Link as the communications medium for equipment used on the project.

For many years the machines for laying the cables on the seabed have been hydraulically driven. The old cables were heavy and rugged and hydraulic systems proved to be the most reliable, suiting the arduous conditions on the exposed decks of vessels at sea. Now Fraser's (like many other companies) have been faced with new challenges as the introduction of Fibre-optic cables begins to replace the old armoured copper based cables.

During laying operations a large plough is towed behind a ship, at typical depths of 1000m and at about 2000m behind the ship, as it moves forward at speeds of up to 6 knots. The plough opens up a furrow and the cable is fed into the trench. The same plough then back fills the trench to cover the cable. All of this happens as a continuous operation, and it is essential that the tension in the telecommunications cable is maintained within predetermined limits to suit the laying conditions and the type of cable. Failure to maintain tension can cause the cable to foul up on the plough or on the towing vessel and if there is too much tension the cable can break. With typical cable repair damage being around £100k it is imperative that the cable is not damaged.

As Fibre-optic cables are not as robust as copper cables and are more easily damaged, it has therefore become more important to be able to achieve improved control over the new criteria of lower tensions.

The Linear cable engines manufactured by Fraser's are based on a series of tyred wheels that set along the axis of the ship, with the cable being fed through the tyres. The wheels are squeezed together and hydraulic motors on each of the wheels generate the power to drive or apply a braking affect on the cable as it leaves the vessel for the seabed. The number of wheels indicates the driving power of the machine; the more wheels the higher the

drive or hold back tensions. This machine must compensate for changes in the motion of the vessel and also the variations in seabed conditions.

The need for finer control over tension has resulted in Fraser's move to a new generation of machines that use a PLC system as



VSDs sending constant information of their torque status via CC-link

the electronic brains behind the controls, and a CC-Link fieldbus network connected to the AC inverter drives that control the wheels.

The PLC calculates and compensates for change in cable tension then feeds information to the processor in the drive that adjusts the wheel speeds to meet the prevailing conditions.

Each dispensing wheel on the machine is connected to a Variable Speed Drive (VSD), with all the drives connected onto the system torque-sharing the load, and working together to control torque, which is measured in the drive controllers.

Each of the Drives on the platform are connected to the PLC system via the CC-Link Fieldbus system. The Drives send constant information of their torque status via CC-Link to a PID loop control in the PLC, which then outputs speed commands to the Drives to

ensure that all drives are matched and constant torque maintained. The speed of data on the network is critical, as is the drives responding concurrently to speed adjustments. CC-Links 10Mbps communication speed and network refresh performance of 4mS for 65 stations, allowed this accurate simultaneous positioning control to be managed easily with plenty of data handling to spare.

Torque matching is extremely critical in preventing cable breaks. Each cable break runs at around £100k, making the emphasis on zero breakages very high on the agenda. The monitoring of torque on all dispensing wheels is also very important, for if a tyre punctures or bursts torque is seriously

affected, causing catastrophic effects if not reacted to quickly enough.

Fraser's approach is very different to other cable laying machine manufacturers. Their machines due in a large part to CC-Link are now much smaller, have a reduced cable and electrical installation cost, more flexible for expansion (extra drive wheels can be added without re-wiring), and meets the new adaptation requirements of the undersea cable laying industry.

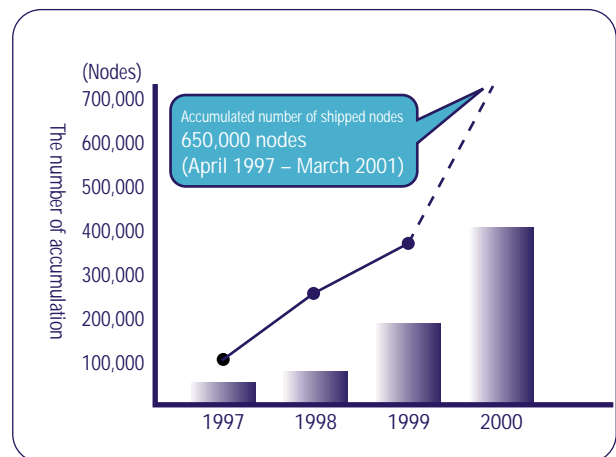
If you know of an interesting CC-Link application please let Malcolm Robins know.

CLPA Members Increase Dramatically

CC-Link is the fastest growing global open fieldbus. Despite being launched to the general marketplace later than most other fieldbusses, CC-Link with the CLPA is catching up on the big three open fieldbusses (Profibus, DeviceNet, Interbus-S) at an incredible rate and now has 205 partner members worldwide with 19 new members in Europe since April 2001. These members now produce over 330 tested CC-Link compliant products as of June 2001.

On the installed node base there has been over 450,000 nodes installed in the last 12 months, which will increase the user installed node number from a hefty 620,000, to an incredible installed base of over 1,000,000 nodes by the end of the year.

The healthy end to this factual tale is that the greatest increase in partners has come from Europe and America, with CC-Link now being utilised in thousands of installations not just in the far east but also in very large numbers worldwide.



Committee Update

Anyone who has checked out the CLPA website will know that there are two committees now working on behalf of the CLPA. The first is the Marketing committee which is responsible for the overall promotion of CC-Link worldwide, and organises a host of events and exhibitions increasing awareness of the CLPA and CC-Link technology. The second committee is of a technical nature. Its main task at the moment is to look at new transport mediums and technologies so that CC-link can meet future customer demands.

These technical committees are free for members to join and participate in. If you would like more information about how to join one or both of these committees, please contact malcolm.robins@clpa-europe.com or call on +44 (0) 1707 278953.