

## NEW CC-Link V2

# More powerful **Version 2** set to reach new markets

**A**t Semicon 2002 the CC-Link Partners Association (CLPA) announced the release of a major upgrade to the specification and functionality of CC-Link.

Version 2 of CC-Link is a major increase to the already formidable fieldbus technology which provides high-speed communication for both data and field devices up to 13.2Km. CC-link is designed specifically for simultaneous deterministic control and data processing, all of which is performed at incredibly high speeds on the 64-station network. Major new features of the new version are an incredible 8-fold increase in the amount of word data, and a 4-fold increase in the amount of bit data that can be sent.

CC-Link will continue to provide the benefits of simplified Installation and reduced wiring costs in various automation fields including automotive and semiconductor manufacture, conveyor systems and food processing.

In addition to these traditional uses, "CC-Link Ver. 2.0" will meet the demand of large volume and deterministic data communication required by areas such as "In-Situ monitor" and "APC (Advanced Process Control)" in semiconductor manufacturing process and "multichannel analog-digital data communication" in instrumentation and control.

Existing users of the technology have no backwards compatibility problems as the new version is designed to work quite happily with existing CC-Link specification products, without any upgrading requirements.

With these new improvements to the open fieldbus's standard, the network will be in even greater demand from industry worldwide,

especially in areas such as Factory automation, Semiconductor manufacturing and instrumentation and control, all of which are already very firmly established markets for CC-Link.



### V2 free for CLPA members

CC-Link V2 specification is available free of charge to registered CLPA members. The specification contains detailed information about all the new features including the dramatic increases in data and bit volumes that can be sent through the network.

The CC-Link Version 2.00 is a development of the CLPA's Technical Taskforce and has been approved by the CLPA Board of Directors. For more information on this exciting development please contact your local CLPA office

### INSIDE

- Membership growing fast
- Eurostar on track with CC-Link
- New product news

# CC-Link V2 communications specifications

Item		New Ver. 2.0 Specification	Current Ver. 1.11 Specification	Remarks (Ver. 2.0/Ver. 1.11)
Max. number of link points (Data volume)		RX/RV: 8192 bits RWw/RWr: 2048 words	RX/RV: 2048 bits RWw/RWr: 256 words	<b>4 X increase</b> <b>8 X increase</b>
Number of link points per unit (Data volume)	When 1 station is occupied	RX/RV: 32 to 128 bits RWw/RWr: 8 to 32 words each	RX/RV: 32 bits RWw/RWr: 4 words each	<b>4 X increase</b> <b>8 X increase</b>
	When 4 stations are occupied	RX/RV: 224 to 896 bits RWw/RWr: 32 to 128 words each	RX/RV: 128 bits RWw/RWr: 16 words each	<b>7 X increase</b> <b>8 X increase</b>

## Network Compatibility

A master station (new version 2.0) is compatible with both new version (2.0) slave stations and current version slave stations. (However, current version slave stations can only be used within the specification of the current version. They cannot provide added data volume.)

## NEW CC-LINK COMPLIANT CABLE

Belden Cable and Wire have now successfully completed compliance testing of a new 3 core CC-Link compliant network cable.

This will be available from March through your local Mitsubishi

distributor or Arrow Electronics, Edinburgh Way, Harlow, Essex.  
Tel: +44 (0)1279 441144, Fax: +44 (0)1279 441687.

The cable (Belden ref. YR47205) is compliance tested from 156 KHz at 1200 metres up to the 10Mhz at 100 metres.

## CLPA membership grows by over 25%

**M**embership of the CLPA in 2002 has increased by over an incredible 25%. This expansion of members to over 400 manufacturers is an indication of the growing demand for CC-Link products worldwide.

Users now have even greater peace of mind, knowing that the number of certified CC-link equipment now exceeds over 450 different products, making connectivity even easier.

To meet the increasing testing needs for manufacturers wanting to produce CC-link compatible products, there are now four official certification test sites. These are based in Japan, the USA and South Korea, with a further test centre soon to be announced in Europe.

For further details about membership of the CC-Link Partner Association and its benefits email [malcolm.robins@clpa-europe.com](mailto:malcolm.robins@clpa-europe.com)

# Eurostar's high speed **express** uses high speed **CC-Link network**

*CC-Link in action*

## A new CC-Link open network solution is helping Eurostar improve reliability on its LDA system.

**E**urostar is the high-speed rail service directly linking the UK to France and Belgium via the Channel Tunnel. As the market leader with 60% of the London-Paris market and around 45% of the London-Brussels route, Eurostar prides itself on offering a quality service and a clean environment.

To ensure perfect sanitary conditions, they used Abbeyfield Electrical Services (part of the EPMS group of companies) to automate their Lavatory Discharge Apron or LDA system. This system maintains the hygienic cleaning of all train toilets and disposal of waste from the carriage tanks.

One of the main objectives of the new system was to increase reliability and efficiency of the LDA cleaning system. The previous control philosophy was semi automatic and consisted of PLCs connected to a twisted pair network. The old system was very unreliable, with the network crashing at least once a week, due to noise and other factors. It also had no feedback, preventing optimisation of cleaning times or tuning of the system.

The new system is based on a CC-Link, Open fieldbus, which is used to connect 41 PLCs that locally control cleansing operations. These connect back via three CC-Link networks to a central PLC which masters the networks, monitors the entire system and takes care of centralised effluent pumping.

Bryan Starling, Engineering Director for Abbeyfield said, "We needed to replace an existing network with a new very reliable industrial network. After careful examination of various systems, we chose to use CC-Link. This offered us the best fit solution and we could install it without complicated and expensive cabling or strict earthing precautions".

When a train enters the special Eurostar engineering sidings at Northpole International London, the train and its carriages are parked so the toilets are aligned opposite 41 Suction, Monitoring and Pumping (SMP) stations which stand on a special platform. The LDA system allows up to two trains to be cleaned at the same time on either side of the platform to maximise throughput.



An operator manually connects pipes from the SMPs to the adjacent toilet tanks on the train. Each SMP has three connecting pipes, one for the suction system, one for the basin tank and one for the toilet tank. The SMPs suck out all the waste effluent from the appropriate tanks and then add special disinfectant fluid back into the train to kill any bacteria and keep the train smelling fresh.

Each SMP station has a PLC in its housing. These co-ordinate all cleansing activities and are programmed to self-optimize the cleaning cycles based on local demands. When a pipe is attached to the appropriate area the operator selects the requirements for each SMP, using a simple selector switch. By simply pressing start, the automated SMP then takes care of all other events. When the whole process has been completed it signals to the operator (via a beacon on top of each SMP) that the toilet has been cleaned and is ready for disconnection.

Different types of trains demand different cleansing routines and procedures. The current requirement for the new system is for two types, but the control system has been designed to expand to accommodate up to 5 different train types.

# HMS communications interface achieves CC-Link compliance

**H**MS, who develop and supply unique communication technologies for connecting industrial products to fieldbus networks, have just received their Compliance Certificate and test report from the CC-Link Partners Association (CLPA) for their CC-Link compatible Anybus-S product.

The Anybus-S fieldbus interface is designed to be integrated with automation devices, giving them direct connection to CC-Link. Only the size of a credit card, this powerful interface can be used to connect a host of automation products, such as HMIs, Inverters, Servos, PLCs etc., onto CC-Link via its dual port parallel interface.

Optimised to work as a high performance slave interface, its unique 16 bit processor system runs the complete CC-Link protocol stack, and complies with the CLPA's BTP-

05027-B specification, which supports all profiles for remote CC-link devices.

The interface uses an asynchronous mailbox system to send and receive data (128 bit points and 32 words) up to speeds of 10Mbit/second and distances of 4.3km.

Designed to operate in temperatures from 0 to 70 degrees centigrade the industrialised interface draws only 450mA of current and, with industrial environments in mind, the interface is galvanically isolated and certified for EMC and by UL and cUL.

The Anybus-S system comes with an EEPROM memory that can be upgraded on site if necessary, which allows the interface to keep pace with improvements in CC-Link



technology, reducing customer risk of redundant products.

As defined in the CC-Link standard, HMS supply an electronic data sheet (the CSP-File) with the module, which makes it easy for programmers to utilise the HMS device using standard CC-link programming tools.

HMS join an expanding list of companies who are developing compatible products for the open fieldbus CC-Link, which is the dominant fieldbus in Asia.

## Members European Branch

### European Vendors

#### Pneumatic Valve Manifolds

SMC Pneumatics UK Ltd.  
Vincent Avenue, Crowhill  
Milton Keynes MK8 0AN  
Tel: +44 0800 1382930  
Fax: +44 1908 555064

#### Temperature Controller

TC Ltd.  
PO Box 130  
Uxbridge Middlesex UB8 2YS  
Tel: +44 1895 252222  
Fax: +44 1895 273640

#### Gateway Devices

Pepperl + Fuchs GB  
77 Ripponden Road  
Oldham, Lancs OL1 4EL  
Tel: +44 161 6336431  
Fax: +44 161 6246537

#### Pneumatic Valve Manifolds

Festo Ltd.  
Harvest Crescent, Ancells  
Business Park  
Hants GU13 8XP  
Tel: +44 1252 775000  
Fax: +44 1252 775001

#### Local Cell Equipment

Yamato Scale (UK) Ltd.  
5 Maple Park, Lowfields  
Avenue, Leeds SL12 6HH  
Tel: +44 0113 2717999  
Fax: +44 0113 2717012

#### Gateway Devices

Bihl & Wiedemann GmbH  
Flobwörthstraße 41  
D-68199 Mannheim  
Tel: +49 621 339960  
Fax: 49 621 3392239

#### PCI Cards

Woodhead Connectivity Ltd.  
Factory No.9 Rassau Ind. Est.,  
Ebbw Vale, Gwent  
Wales NP3 5SD  
Tel: +44-1495-350436  
Fax: +44-1495-350877

#### Master Computer and PCI Card

NEC (UK) Ltd  
NEC House, 1 Victoria Road  
London W3 6BL  
Tel: +44-208-993-8111  
Fax: +44-208-992-7161  
www.nec-global.com/  
office/europe.html

#### Miscellaneous

NAIS/Matsushita Electric  
Works (Europe) AG  
Rudolf-Diesel-Ring 2, 83607  
Holzkirchen, Germany  
Tel: +49-8024-6480  
Fax: +49-8024-648111  
www.meweuropa.com/mew

#### Data Acquisition & Computer

Contec Microelectronics  
Europe B.V.  
Binnenweg 4, 2132 CT  
Hoofddorp, Netherlands  
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Fax: +31-23-567-3035  
www.contec-europe.com

#### HMI

Pro-face HMI B.V. Amsteldijk  
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www.proface.com/  
company\_e/offices.htm

#### Automation Products

Mitsubishi Electric Europe B.V.  
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