Australian Utilities and Scada Technologies

"Value through excellence and innovation"

Technical Application Release Note:

Railway Signalling Goes Industrial Ethernet

Foreword:

This application note's purpose is to inform, educate and to give insight into real world solutions. Technology is useless and meaningless unless it has commercial applications that deliver benefits of a tangible nature. This showcase application is an example of how new emerging technology can be applied to existing or new systems that have positive outcomes.

The current world trend of Ethernet enabled industrial devices is growing at a staggering rate, the release of new technologies like video and voice over Ethernet have only been made possible because of the bandwidth that Ethernet offers. Ethernet is not restricted or confined by communication mediums. We can pump massive amounts of Ethernet data over wire, fibre, powerlines and licensed and un-licensed wireless systems, making topologies and the choice of physical mediums more flexible.

Fieldbus protocols like Modbus, DeviceNet, LonWorks, Profibus, DNP3 and the like can now be integrated easily into Ethernet systems and offer a complete end to end communications solution. With 10/100/1000 and 10gigabit awaiting an approved standard, we can only see a greater uptake and use of the Ethernet and the benefits of the "Fat Pipe" it offers.

For a complete setup configuration outline of the serial to IP server's communications parameters to suit the tested Signalling Controller, please just email a request to us and we will be happy respond with the information.

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Client & Project Services.

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Recommended Ethernet Site: ***www industrialethernetu.com***

Email this document to a friend or colleague: ***Click Here***

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The equipment was tested on one of the world leading supplier's for rail signalling systems and equipment. The field signalling processors have serial based communications capabilities.

The existing serial based communications networks had limitations on the amount of nodes on the network, restrictions on topologies and offered very poor communications performance. Where as Ethernet offered high performance, (10/100/1Gigabit) and almost no limitations on network nodes or various topologies. Ethernet also offered newer technologies and emerging technologies the opportunity to be integrated into the network and systems. Video over IP, IP based communications, Industrial WiFi and Broadband Wireless systems.

The question was how do we do this without major investment in new signalling equipment development and how do we protect the investment made by many clients of installed systems? The answer was in the use of Acksys Communications range of Industrial Serial to IP Servers, CTRlink Blue Line Industrial Ethernet Switches and Industrial Media Converters. With this as a base we demonstrated the seamless integration of Acksys Communications Industrial Ethernet Wifi and Motorola Canopy 5.8Ghz Wireless Broadband systems.

Testing and proving communications was the next step. We set up an Ethernet network of three Field Signal Controllers. Controller1communicated via an Acksys serial to Ethernet WiFi server to an Access Point connected to a central CTRlink Industrial switch. Controller 2 communicated via an Acksys Cometh Dongle serial to IP server then to a second CTRlink Industrial switch. Which in turn was connected to the central switch via Multimode fibre optic cable and an Industrial Media Converter at the central switch?

The third and last Field Signal Controller was connected again by an Acksys Cometh Dongle serial to IP server directly into the central switch. A notebook Pc running the coms port re-direct software and the Controllers Development System software, proved communications to all controllers on the network.

"Anywhere to anywhere Industrial Networks"

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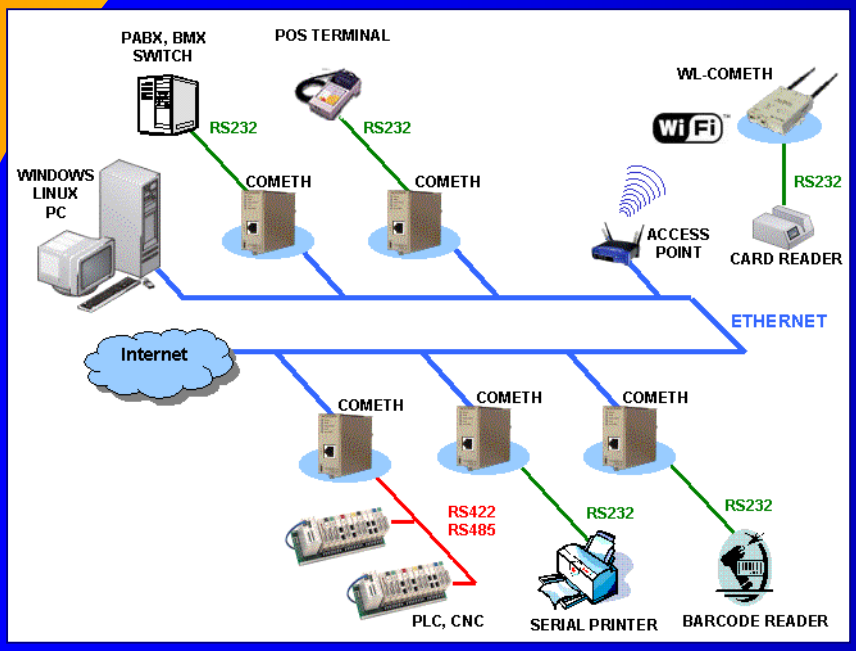
Our final recommendations for equipment to be used on any Railway Signalling equipment are for wire, fibre or wireless Ethernet are...

- **1, 2, 4 or 8 serial ports**
- **RS232, RS422, RS485 interfaces**
- **Tunnel mode connection through the network**
- **Local serial port emulation**



WL-ACCESS & WL-BRIDGE enable to build an Ethernet WiFi compliant wireless network

- **RJ45 Ethernet input (10/100) to IEEE 802.11b**
- **Lan to Lan wireless connection between two distinct Ethernet networks (AD-HOC mode)**
- **Up to 255 devices connected to access point**
- **300 m cover range, dual antenna plus external antenna for long range communications**
- **Universal mounting (wall, desktop, Din rail)**
- **Built-in AC or DC power supply**

WL-COMETH provides instant serial connection to the WiFi wireless network

- **3 in one interface : RS232, RS422, RS485**
- **High speed full duplex connection between two devices (AD-HOC mode)**
- **300 m cover range from access point and greater distances with antenna options**
- **Dual antenna plus external antenna for long range communications**
- **Universal mounting (wall, desktop, Din rail)**
- **IP65 Rated with tropicalised printed circuit board version available**

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High Performance Industrial Ethernet Switches with up to 24 Ports in a -40°C to +75°C operating temperature range

With the new CTRLink – EISB family of extreme environment switches, we provide up to the 24 ports (10/100 BaseT/TX) for the control cabinet (DIN-Rail). Many applications need switches in the control cabinet for the distributed construction of industrial networks. To comply with the different requirements, the EISB-Line is available in 3 different versions:

- Switch (plug and play)
- Switch with static configuration (configurable Switch)
- Switch with SNMP functionality (managed Switch)

The devices can be operated in an environment temperature range from -40°C up to +75°C. An internal temperature sensor will supervise the inner temperature of the device with static or SNMP configuration feature. Furthermore there is an I/O relay for fault alarms and SPS-integration available.

EISW IP67 Proof

With the new CTRlink- EISW facility a new Switch is available which can work in rough, dirty and non safe Industrial areas. To comply with different requirements the EISW is offered in 4 different versions

- Plug and Play / No Power Out
- Plug and Play / Power Out
- SNMP-Managed / No Power Out
- SNMP-Managed / No Power Out

These units can be operated in an environment temperature range from -40C up to +85C The IP67 guarantees a total protection against dirt, dust and water and can provide different devices with power

EI -IAR-10T Router

The Internet Access Router provides a transition to another IP network via a PPP connection. This connection is provided by the internal integrated analog 56k modem.

- Internet Access Router
- 2 x RS 232,1x10BaseT, RJ45
- Internal analog 56k Modem
- Firewall incl.
- Configuration Software
- VPN Call back, DynDNS uvm.
- Comprehensive Instructions
- UL,CE, IP30 Housing
- Special Safety Functions
- 3 Year guarantee / 15 Month free UPDATE Service