CCU Family of Modules

ZETTLER

The CCUNet range of products, when integrated with XL Graphics, provide fire network amalgamation for various differing fire networks. Rapid and effective monitoring and control is provided via multi-drop secure terminals.

CCUNet is a multi-point, point to point network, meaning that different data can be simultaneously transmitted between points on the network. The network is designed in a way such that all network segments transmit and receive imultaneously - greatly increasing the capacity of the network. Each CCUNet node has routing and packet processing capability. This allows:– Network segment failure isolation– Fast data transfer via routing tables– Multi-star and multi-loop support

Features

- Reliable, compact communication devices used to connect Fire Networks to the CCUNet
- Implement CCUNet data transportation via numerous data-link protocols including
- RS485
- RS422
- RS232
- Fibre (Single & Multi Mode)
- Ethernet (TCP/IP)
- Modem
- Available in robust enclosure configurations for easy mounting

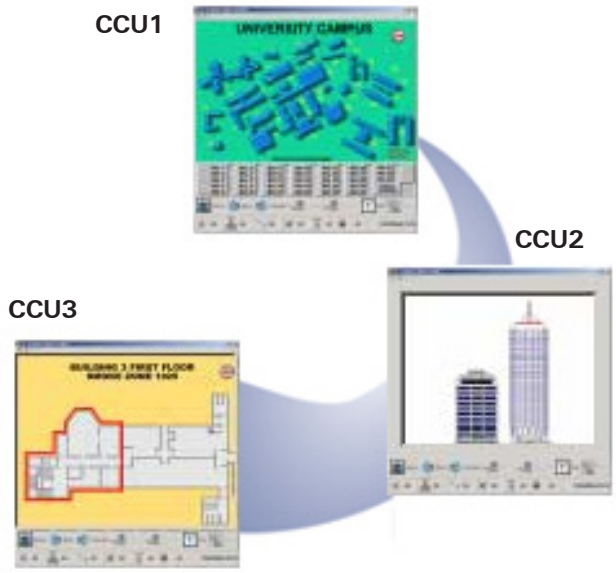
System features

- Fire networks supported include Vigilant, Simplex, MX and other Collective FIPs viahard contact
- Connects multiple FIPs and other supported devices to a central Command Centre (XL Graphics)
- Multiple XL Graphics systems can be connected and co figured for local or global system annunciation and control as required
- Provides system wide control and annunciation of multiple fire protection systems
- CCUNet implements dual redundant communica-tion loops for transparent information routing around breakages and failures in the network

CCU Family of Modules

Product Description

The CCU3 is a high quality, high end communication network product that may be used in Life Safety systems. Several isolated communication ports are capable of implementing various communication Data Link Layer protocols. It has a supervised input for network alarm annunciation even in the event of CCU3 software and/or processor failure.



Product Background

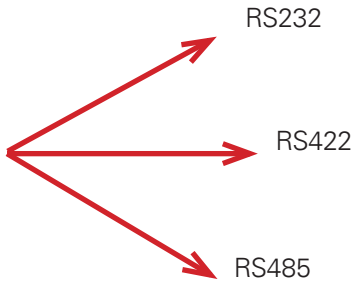
The CCU range of products have been developed over many years and are in use in a wide variety of applications within a large number of sites. Primarily they are used for networking of fire panels, normally to one (or more) centralised locations. As a secondary function, they are well suited as interfacing points for a wide variety of third party equipment and protocols. The existing CCU hardware products (CCU1, CCU2) can be described as individual hardware boards which satisfy each physical protocol. The CCU range of products are suited to star, ring and combinatorial topology networks. The CCU3 unites the individual features of the CCU1 and CCU2 into one superior life safety communication product.

Feature	Advantage	Benefit
One additional CCUNet Port	Fewer CCU boards are required in STAR and HUB network configurations	Overall reduced capital cost on large and/or complex life safety networks
Common base CCU board for mixed network topologies such as copper, fibre, modem	Fewer spares are required to maintain entire network	Reduced expenditure on holding spares
Fire Alarm annunciation to adjacent FIP even when local CCU CPU and/or software has failed	General alarm signal for building/FIP will still be annunciated until fault can be rectified	Emergency personnel and equipment can still be directed to location of fire despite there being a serious monitoring failure
Wide temperature range (-40°C to +80°C	Suitable for military and marine applications	Larger market for special and/or custom user requirements plus increased reliability at commercial temperatures
Unique embedded hardware ID	Unprogrammed boards can be automatically detected on the network	Less time required for network configuration and/or fault finding
Compartmentalised hardware design	Failure of hardware can be isolated to a discrete section of the CCU3	CCU3 may still operate as life safety network node albeit at a reduce capability
Advanced Internal Diagnostics	Different sections of CCU3 are continuously monitored for changes in power and temperature	Speedy detection of potential network node failure
Expansion Connector	Additional interfaces, protocols and standards are and will be supported utilising CCU3 expansion boards	Communication standards and speeds are progressing rapidly. Customers' initial investment is protected because future interface boards can be used for compliance and upgrade
Approvals	UL and EN approved	Complies with stringent UL and EN standards

Technical

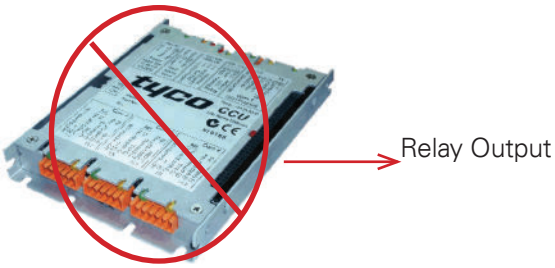
Communications

- 4 isolated COMM ports
- Each COMM port is individually software configurable to use either RS232, RS422 or RS485 communications
- Each COMM port has green transmit and yellow fault LEDs



Output Relay

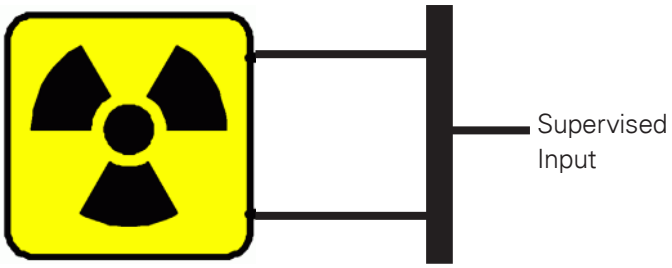
- An Electrically Programmed Logic Device (EPLD) controlled relay output and relay LED is available. It's configurable and can be used to indicate processor or comm failure, alarm annunciation or control via CCUNet combinatorial logic.
- The relay LED is EPLD controlled and so may also be used as a separate visual indicator



Supervised Input

- A Supervised Alarm input has been provided

0 mA-5 mA	– Supervision Failure
5 mA-10 mA	– Supervised Normal
>10 mA	– Active/Alrm
>40 mA	– Current Limited



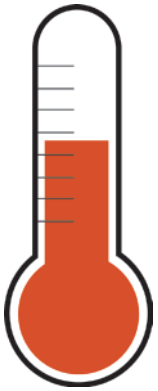
Expansion Connector

The CCU3 has provision for expansion modules which can be fitted to the top of the base unit. Up to four modules can be fitted simultaneously.

CCU Family of Modules

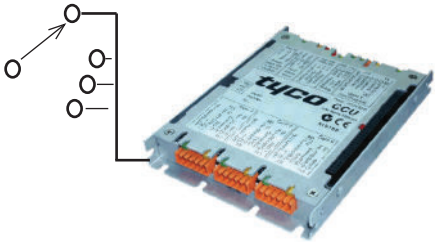
Environmental

- Robust metal enclosure
- Temperature rating : -40°C to +80°C
- MTBF > 950000 hours



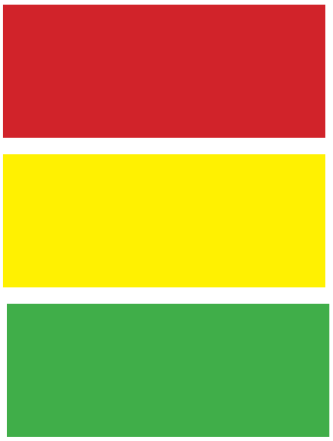
DIP Switches

- PLD Reprogram – Enable switch
- Redundancy Test – Board self test of redundant alarm signalling capability
- Watchdog Enable – switch for secondary hardware watchdog



Indicators

- LED indication for CCU status and maintenance including:
- Power to circuitry
- Excess power consumption
- Communication failure
- Earth Loop fault
- Relay mode and status indication
- Power supply temperature



Power

- CCU3 can be powered from a source range of 11.5-16 Vdc or 18-30 Vdc.
- Ideally a12 Vdc or 24 Vdc source. CCU3 consumes a max of 5 W

CCU Family of Modules

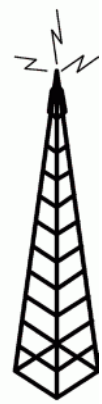
Expansion Modules

Input/Output

The expansion board adds 10 supervised inputs and 4 outputs to the CCUNet.

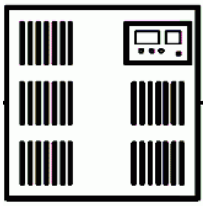
Wireless

The GSM expansion board currently supports dual band, with tri-band support in the near future. Primarily it is used as a data interface to CCU3 (eg. paging application to mobile phones). It also has the capability to interface to external voice input and output which could be used for voice evacuation and/or security applications.

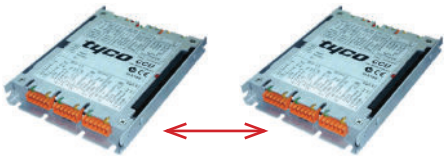


Modem

Capable of operating in leased-line mode for point to point operation of CCUNet via unpowered telephone lines and in power-line mode for operation over the carrier network (eg. PSTN).



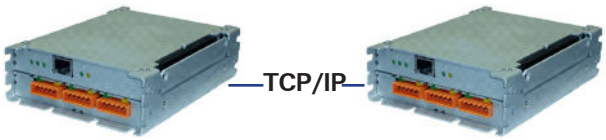
PBX



Leased Line

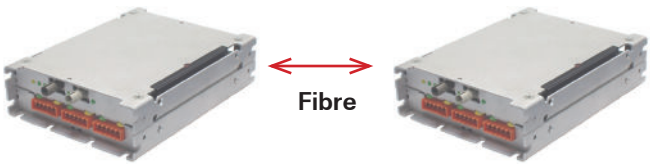
Ethernet

Supports connection of the CCUNet to a TCP/IP network



Fibre Optic

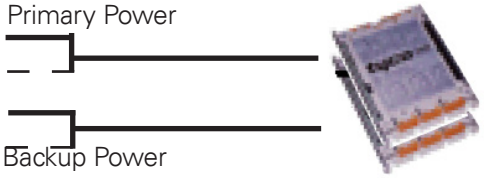
Consists of a number of expansion boards to satisfy a broad range of fibre types and interfaces. The fibre boards support the CCUNet high speed networking capability (1300nm MultiMode, 1300nm SingleMode, 820nm).

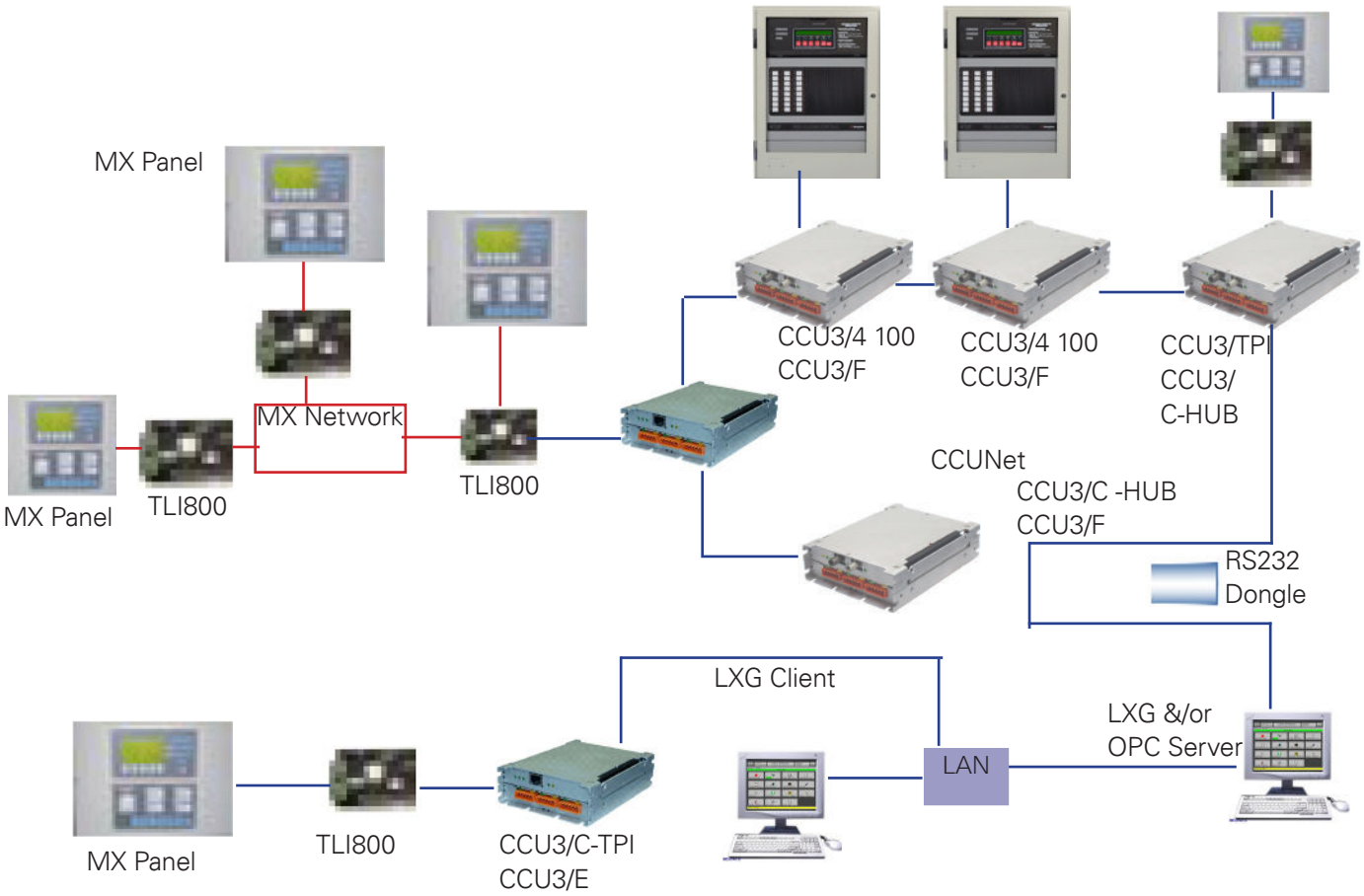


CCU Family of Modules

High Speed Networking
The communications sub systems are designed to support simultaneous operation of network communication ports at high speed. This will enable the transmission of multi channel digital voice and video via the CCUNet.

Redundant Power Supply
Used as a backup in case of failure of the primary CCU3 power supply.





Typical Applications
University Example –
CCUNet loop configuration
Existing MX, Vigilant and Simplex fire networks, located in the Administration and Chemistry buildings, were previously supervised separately via their own terminals housed in their respective buildings. Conventional FIPs are also located in the Squash Courts Complex. The Arts building is to be supervised using a new Simplex network.

Utilising CCU3/TPI, CCU3/4100, CCU3/CISIB and CCU3/IO devices, the MX, Simplex and Vigilant networks as well as Conventional FIPs are attached to the CCUNet.

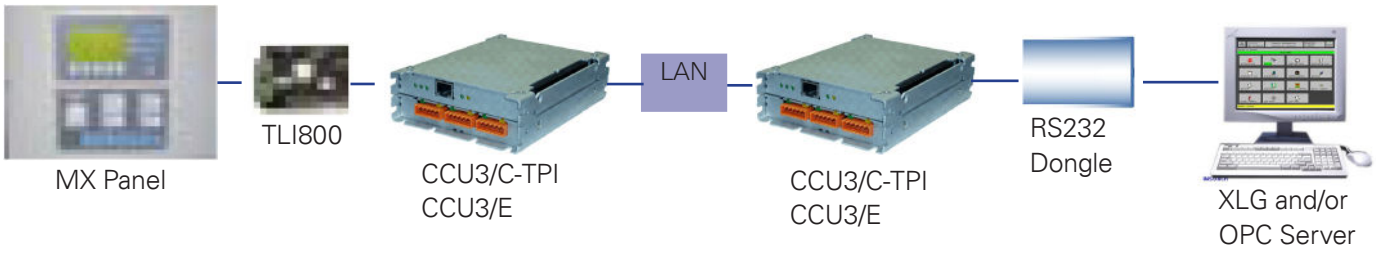
CCU3/HUB devices are used to provide access to three individual XL Graphics terminals located within each building for control and monitoring of their respective building. This is an optional addition. A fourth CCU3/HUB connects a Global XL Graphics terminal to the CCUNet. This terminal is configured to control and monitor the entire system. A CCU3/M-PAGER unit annunciates events to Fire and Security personnel. Finally, two CCU3/C-RDM units are used to provide secure remote access to the CCUNet network for a Remote Graphics Terminal. CCUNet Interface Devices support dynamic third party fire network configurations. Example 1 has CCUNet interface devices connecting dissimilar fire networks to the CCUNet (1 loop). Example 2 uses the same interface devices to connect individual FIPs to the CCUNet (2 loops).

CCU Family of Modules

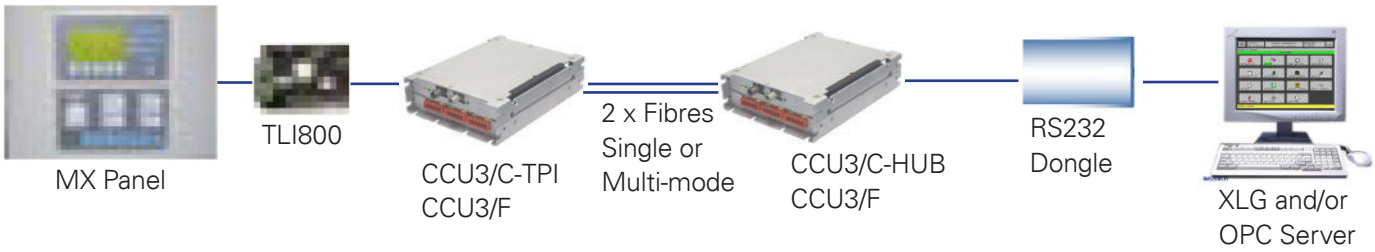
CCUNet Topologies

Direct Connection

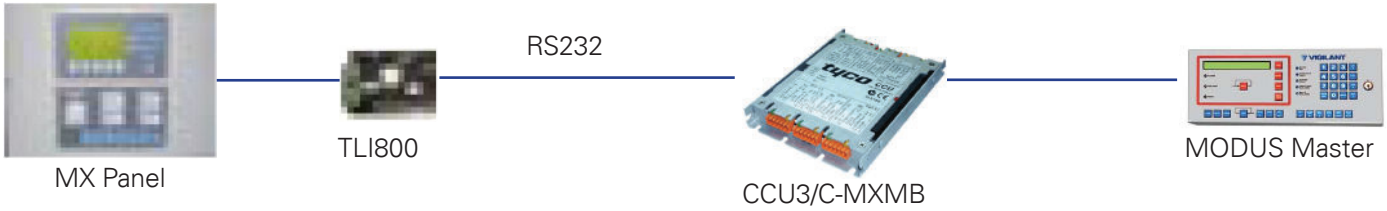
TCP/IP Connection



CCUNet over Fibre



MODUBUS



CCU Family of Modules

University Examples

CCNet Interface Devices supports dynamic third party fire network configuration

This Example has CCUNet interface devices connecting dissimilar fire networks to the CCUNet .

CCU3/C-4100 (422)

Administration Building

CCU3/M-PAGER (422)

Chemistry Building

TLI 800

TLI 800

CCU3/C-4100 (422)

Fire & Security Centre

CCU3/C-HUB (422)

Global Graphics

ARTS Building

Campus TCP/IP LAN or WAN

Simplex Panels

CCU3/C-4100 (422)

CCU3/E-HUB (422)

Engineering & Maintenance Graphics

Squash Courts

CCU3/C-IO (422)

Collective Panels

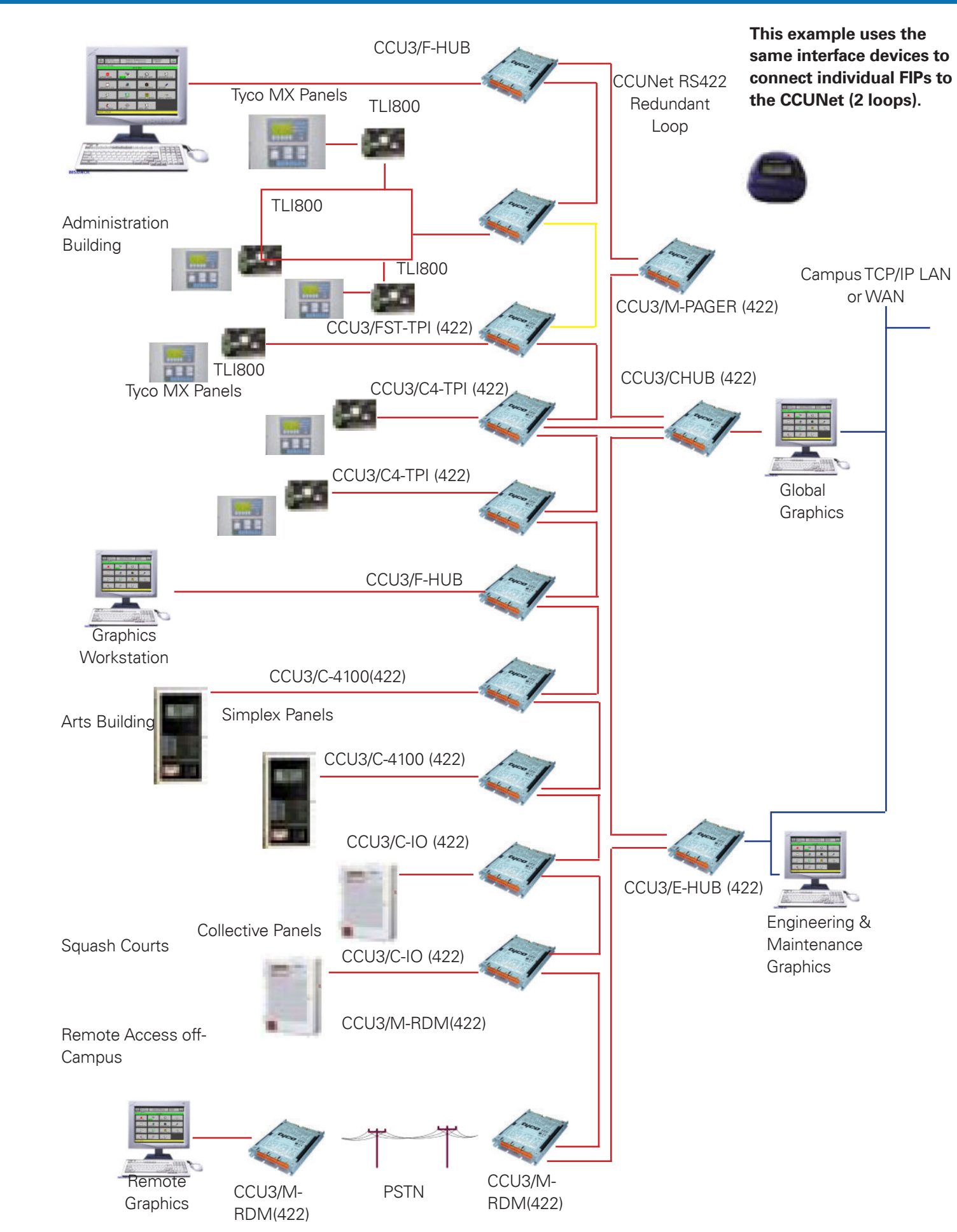
CCU3/C-IO (422)

Remote Access off-Campus

CCU3/M-RDM(422)

CCU3/M-RDM(422)

CCU Family of Modules



CCU Family of Modules

Operation

XL Graphics Command Centre Terminals
can annunciate events - such as alarms, circuits/points, supervisories, faults, disarmed devices - for every FIP via the CCUNet. Each XL Graphics terminal has the ability to control any FIP connected to the CCUNet. For example, an XL Graphics terminal can: acknowledge events, disarm devices, reset, initiate diagnostic testing - subject to the connected c.i.e.

Fire Network Event
annunciation information from the fire panels is routed via direct paths through the CCUNet. The XL Graphics Terminal acts on the first event to arrive, discarding any subsequent duplicate event packets. Under normal operation, XL Graphics will receive the event message from 2 paths. This ensures that in the event of a fatal network error (cable break), or a non fatal error (packet corrupted), event annunciation is not in any way affected or postponed.

A Single Operator
at any XL Graphics Command Centre Terminal location, can control and monitor any device or module on the entire network (subject to the support of the c.i.e. connected).

CCUNet FIP
connections support both high level (software) and low level (printer port or hard contacts). communications This ensures XL Graphics provides the full range of FIP monitoring and control functionality.

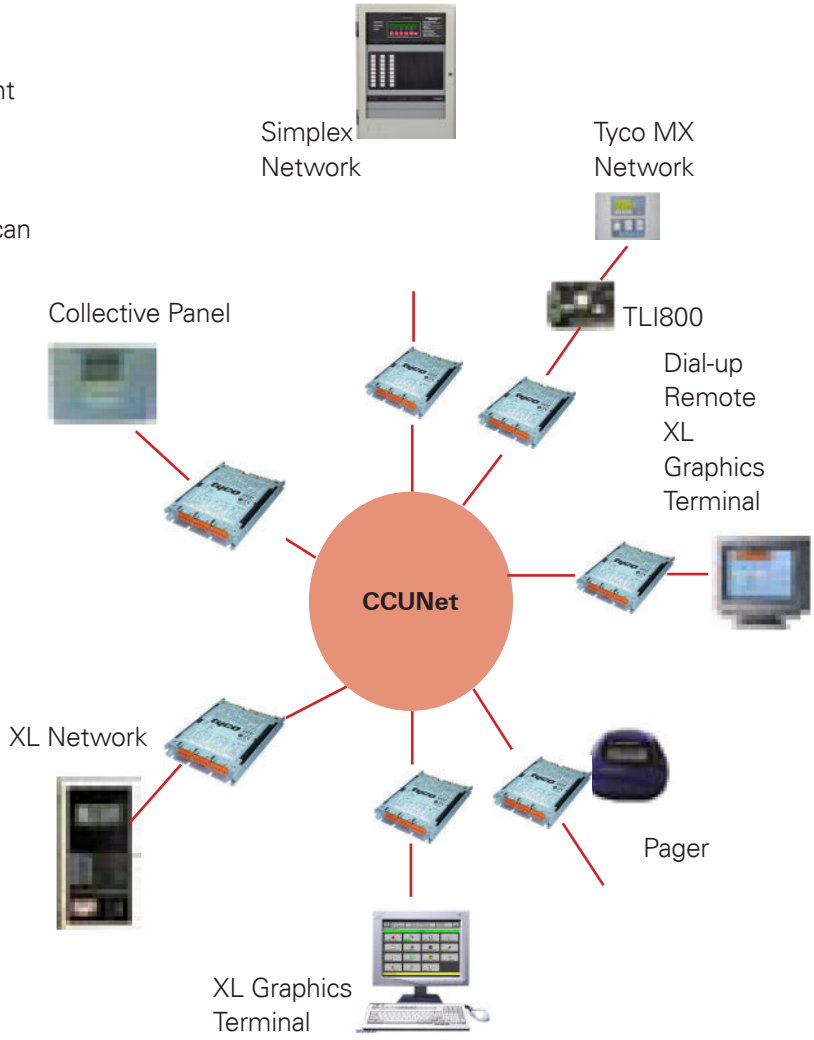
Vigilant	**Zettler**
Simplex	MODBUS
Tyco MX	Dial Up and Direct Connect Pagers

Standards

Australia
C-Tick - AS/NZS 4251.2:1999

Europe
EN6100-4-2 Electrostatic Discharge
EN6100-4-3 Radiated Field Immunity
EN6100-4-4 Fast Transient protection
EN6100-4-5 Electrical Surges Class 5
EN50081-2 EMC

VIGILANT, SIMPLEX, TYCO are registered trademarks of their respective organisations. At the time of publishing some expansion modules and approvals may not be available for CCU3 however their documented functionality may be achieved through the use of existing CCU1 and CCU2 modules. MTBF is calculated using real data from the CCU2, which has similar architecture to the CCU3.



CCUNet integrates numerous fire networks into one simple interface

ZETTLER, is a leading brand of fire detection products in the European market. The ZETTLER fire detection product line includes a wide range of EN54 CPD approved fire detection products carrying approvals and cross-listings, including VdS and NF. The ZETTLER product lines are available through ZETTLER Authorised Distributors as well as many Johnson Controls offices around the world.

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