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XCell RTU

A modular, IEC 61850-enabled, 19" rack-mounted Remote Telemetry Unit (RTU) offering exceptional performance for a range of Transmission and Distribution applications



XCell, the name given to CG Automation Systems integrated technology suite, forms a unique patented family of products. XCell Technology, in terms of both hardware and software components, is entirely modular in nature by design. This facilitates the use of the same technology in systems ranging from the smallest Distribution Automation (DA) SCS through to the largest, fully integrated Substation Control Systems (SCS).

This unique design approach, providing uniformity of technology, applications and support, offers many advantages to the customer - not least in keeping training, configuration, re-engineering and maintenance demands to a minimum.

XCell, designed for use in the most demanding electrical environments is approved by the UK's National Grid Company (NGC) to the stringent Class Z standard and has been successfully used in 400kV environments. The XCell architecture is based on independent processing units (referred to as cells) that can be combined to form very powerful and flexible systems. Each cell can operate completely autonomously, handling plant interface, applications and communications, including the latest IEC 61850 standard.

Features

XCell is essentially a technology platform that provides utilities with choice, flexibility and expansion capabilities, such as:

- > Plant Interface
- > Scalable Flexible Architecture
- > Location of equipment
- > Legacy Protocol support
- > Distributed Database
- > Archiving and Reporting
- > Dynamic Human Machine Interface
- > Protocol Rich
- > IEC 61131 site applications
- > IEC 61850 Enabled

Modularity

The XCell architecture is based on modular hardware and software. The basic cell processor supports up to four I/O modules that can be selected from a variety of plug and play modules with various point counts, interface functionality and termination options. The cells can be combined, either centrally or distributed, providing a very modular and flexible hardware platform. The number and combination of modules or cells can be selected to meet the specific site requirements. The hardware architecture is designed such that each cell processes a limited number of directly connected hardware channels. This modularity means that the number of processors increases with the size of the system resulting in higher processing capacity for larger systems. Up to 250 processors and associated I/O (256 channels each) can be combined on the LAN to provide a system capacity of 64,000 I/O points on one system. This ensures that ample processing capacity is available for any functionality demanded by the site requirements. This powerful architecture allows it to timestamp all status inputs to 1ms accuracy. Additional data may be included from IEDs or serially connected XCell systems, resulting in very large system capacity.

Cells may be added to the system in run time without interfering with the running system. The existing cells will automatically recognise the new cells and all cells will exchange data to synchronise the new cells. Similarly, cells may be removed from a system in run time without affecting other active cells. The remaining cells will automatically detect the loss of the cells and will assign bad data quality to any associated data points. This means that maintenance and cell replacement can be performed without a complete system shut down

Inter Cell Communications

Cells may be combined using the high-speed token-passing LAN, FieldNet, which is a communications channel that will carry any type of data. It is not simply an I/O bus but will transfer I/O data, data files, fault and configuration files or whatever is required for the site application. The cells support dual LANs to ensure that no single failure can compromise the functionality of the system.

Distributed cells are generally connected using fiber optics to avoid any electrical interference that can occur within a substation environment. In a multi-cell system, each cell acts as a mini data server for its own data and all other cells can be clients for the data. Data gathered by each cell is available through the LAN to all other cells which have complete access to the entire system data. Applications residing in any cell can use data from all other cells. Communication protocols residing in any cell have access to all system data and can transmit all or part of the data, via the communications links, to multiple destinations. Multiple cells can run the same applications to provide redundancy for critical applications or communication links. With each CPR supporting 4 serial Ports and a 10/100 MByte Ethernet Port, the potential flexibility of the system is enormous.

Express Programming

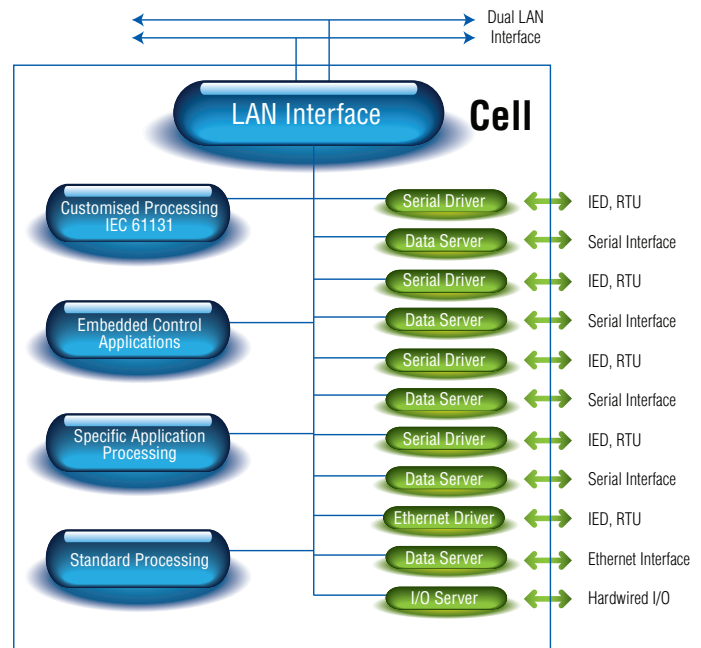
To provide flexible site-specific solutions a software module is available that supports the IEC 61131 graphical application standard. Allowing simple graphical application development using:

- > Ladder Diagrams
- > Function Block Diagrams
- > Structured Text
- > Sequential Function Charts
- > Instruction List.

This allows site-specific applications to be constructed graphically and downloaded to the product without complex programming or product modifications. These IEC 61131 applications can be simulated on a PC to verify the functionality before downloading to the XCell product. On-line debug facilities are also provided for debugging the applications. The combined software and hardware modularity form the most powerful and flexible platform to meet current and future Utility requirements

LAN/WAN Communications

Each XCell processor has an in built Ethernet interface with a TCP/IP and UDP stack. This is an Information LAN providing global data access using standard IT interfaces. This is designed to support emerging standards in high speed substation networking and communications. It supports the traditional SCADA protocols such as DNP over TCP/IP and IEC60870-5-104 plus a range of new services. These services include remote configuration, remote diagnostics, and access to IED devices for configuration or data retrieval. It provides an ideal gateway between Wide Area Networks and traditional communication interfaces supported by existing RTUs and substation IEDs. This architecture supports emerging substation standards such as IEC 61850 and provides an inbuilt upgrade path for existing installations.



Contact

CG Automation Systems Ireland

Herbert House,
Harmony Row,
Dublin 2
Ireland
T: +353 1 415 3700 F: +353 1 6787913

CG Automation Systems UK Limited

Unit F Network Centre,
Jarrow,
Tyne & Wear,
NE31 1SF
United Kingdom
T: +44 (0) 191 425 5200 F: +44 (0) 191 425 5202
E: sales.as.uk@cgglobal.com

CG Automation Systems USA Inc

240 Long Hill Cross Road
Shelton,
CT 064843
USA
T: +1 203 888 3002 F: +1 203 888 7640
E: sales.as.us@cgglobal.com

www.cgglobal.com