

# ICM-700 Series

Industrial Control Manager

**VL**Automation

ICM-700



State-of-the-art  
Industrial  
Control  
Manager for your  
automation need

## Applications:

- ♦ Transportation
- ♦ Industrial Control & Automation
- ♦ Avionics
- ♦ Military
- ♦ Robotics
- ♦ Energy Management

# ICM-700 - Industrial Control Manager

## Industrial Control Manager:

The ICM-700 is a high performance embedded controller built on standard industrial platform with versatile processing power and integrated network technology.

The ICM-700 connects multi-vendor intelligent electronic devices (IED), remote terminal units (RTU), and programmable logic controllers (PLC) to higher-level SCADA Master systems using communication schemes configured on the Engineering Workstation (EWS).



**SCADA Server** - The ICM provides multiple communication interfaces to higher level SCADA Masters. The ICM supports industry standard protocols such as DNP3, IEC 60870-5, DF1 and Modbus.



**Data Manager** - The ICM has the ability to concentrate data from a wide range of industrial devices. The data is collected within the ICM's real-time database and is available to SCADA, DCS, PLC, local HMI or other devices. The ICM can perform complex calculations and logical operations on the data before it is sent to data consumers.



**Programmable Logic** - The ICM programmable logic function may be event-driven or performed on a periodic basis. Our next release will be IEC 61131-3 compliant.



**Virtual Access to Remote Device** - Once configured, the ICM provides a virtual communication gateway between a computer and a remote device. By using the ICM's Virtual Access feature with a remote device's proprietary software (which is provided by the OEM of the device), all functionalities of the remote device may be accessed and used.



**Remote Maintenance** - The ICM's embedded Virtual Access technology provides remote maintenance and diagnostics for the remote device. This allows users at the office to perform a preliminary analysis of the state and condition of equipment before traveling to the substation.

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**Integrated HMI Web Server** - The ICM contains a built-in web server, which provides flexibility in data display and communication with the ICM at a remote location. The ICM employs open platform technology such as Apache HTTP Server, PHP as the middleware and MySQL back end. These platforms can be upgraded or customized to suit individual need.



**Protocol Analyzer** - The DAP Studio - EWS software utilities provides a protocol analyzer feature in which communication between remote devices and the ICM may be analyzed. The ICM protocol analyzer provides a command line interface through which message can be sent to debug the communication channel. The ICM protocol analyzer displays filtered messages that contain timing and other relevant infor-



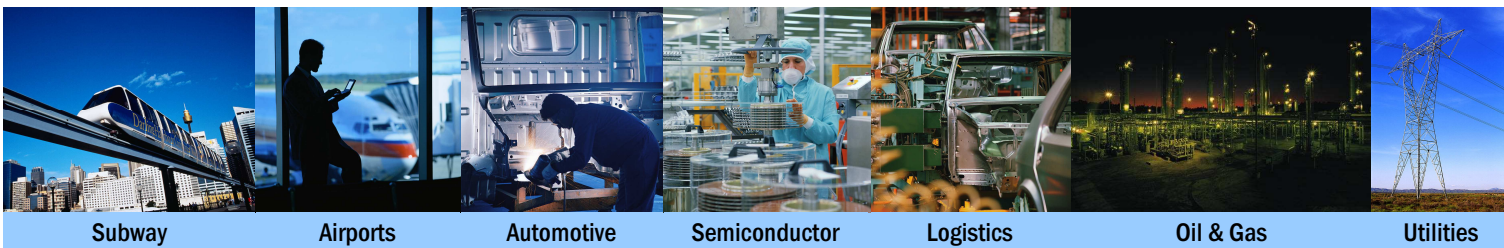
**DAPStudio EWS Software** - User friendly configuration software that runs in Windows XP/2000 platforms. The DAP Studio EWS has a library of device profiles to provide ease of configuration.



**Network Application** - The ICM provides network security and manages network application services such as Routing, Firewall, NTP etc.

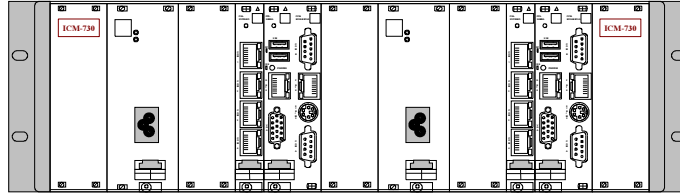


**Management of Non-Operation Data** - The ICM provides access to Setting files, oscillography files, fault records, SoE from the remote devices. Working with the User, the ICM can provide a data path for delivery of the non-operational data to the Enterprise or Data Warehouse.



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## ICM Summary:



## Features:

- ◆ Hardware Independent
  - ◇ CompactPCI
  - ◇ PCI
  - ◇ ISA
- ◆ Multiple Network
  - ◇ PTP Serial RS232
  - ◇ Multi-drop RS485
  - ◇ Ethernet LAN
  - ◇ Profibus
  - ◇ DeviceNet
- ◆ Multiple Channel Redundancy
  - ◇ Multiple Dual Channels Architecture
  - ◇ Virtual Ring Topology
- ◆ Optional System Redundancy
  - ◇ No Single Fault Failure
  - ◇ Data Synchronization
  - ◇ Standby CCU Command Dispatch or Discard
- ◆ Multiple Form Factors
  - ◇ 19" Rack Mount
  - ◇ Panel Mount
  - ◇ Din Rail Mount
- ◆ Design for Harsh Environment
  - ◇ Passive or Active Cooling
  - ◇ Standard or Extended Temperature -40°C to 85°C
- ◆ Open Platform
  - ◇ Embedded OS
  - ◇ RTC/Watchdog

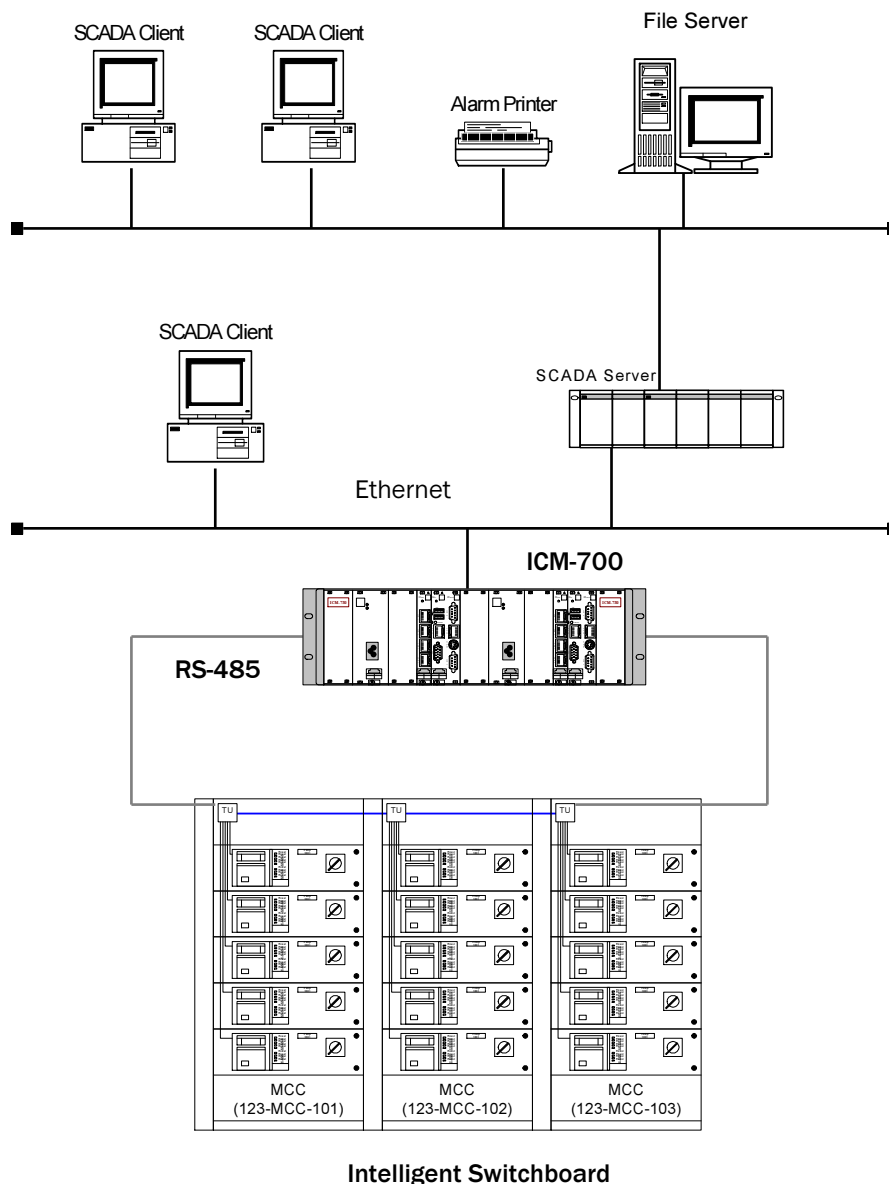
## Functions:

- ◆ Communication Server
  - ◇ Modbus Serial & TCP/IP
  - ◇ DNP 3.0 Serial & TCP/IP
  - ◇ AB DF1
  - ◇ IEC 60870-5-101, 103, 104
  - ◇ ABB SpaBus
  - ◇ Areva Courier
  - ◇ Reyrolle
- ◆ Database Server
  - ◇ Data Mapping to RTDB
  - ◇ Data Mapping to SQL RDB
  - ◇ Data Processing
- ◆ Integrated Web Server
  - ◇ Alarm Notification
  - ◇ SoE/COS/Event
  - ◇ Trending
  - ◇ Diagnostics
  - ◇ Optional HMI (Release 03/2006)
- ◆ DAP Studio EWS Software
  - ◇ Configuration
  - ◇ Monitoring
  - ◇ System Diagnostics
- ◆ Virtual Connection
  - ◇ Device Interface using OEM Software
  - ◇ Support Interlacing or port sharing
- ◆ Virtual Test
  - ◇ Off-line Test
- ◆ Protocol Analyzer & Simulator

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## Application Example:

The ICM-700 is frequently used to interconnect IED, RTU and PLC in Industrial Process Control SCADA networks that required multiple channels and the reliability of a dual channel architecture. It is also used for similar connectivity applications in Utility substation, Transportation and Security Systems Networks.



# ICM-700 - Industrial Control Manager

## CPU SPECIFICATION



*The EKF CCD-CALYPSO is a versatile 3U CompactPCI CPU board, designed especially for systems which require low power consumption. The CCD-CALYPSO is available in a variety of processors covering a wide range of industrial applications.*

Processor	1 GHz Celeron M CPU with passive or active cooling
Memory	1GB DDR SDRAM Expandable to 2 GB
FLASH Socket	4GB DOM or Compact FLASH
On board	<ul style="list-style-type: none"><li>▶ 1x VGA on DVI-I</li><li>▶ 2x 1Gigabit Ethernet</li><li>▶ 2x USB 2.0</li><li>▶ PS/2 MS/KB</li><li>▶ Watchdog – programmable up to 256 hours; issues SMI or Reset</li></ul>
Peripheral	<ul style="list-style-type: none"><li>▶ CU4-Soprano Serial Board (Up to 3 Serial Boards)</li></ul>
Software	Embedded System ICM Firmware

## Chassis & PS SPECIFICATION

Input Voltage	187-264VAC or 24Vdc
Input Frequency	50/60Hz
Output	V <sub>a1</sub> +3.3V, 10A V <sub>a2</sub> +5.1V, 8A
Overshoot	Over-voltage protection primary/secondary
Protection	Permanently short-circuit protection with auto recovery
Power	70W @+50 °C (Passive Cooling)
Efficiency	80% at maximum load
Status LED	+3.3V, +5.0V
Cooling	Convection Optional Cooling Fan
Ingress Protection	IP 20
Climate Class	EN55022, EN55024, EN60950-1



*The EKF rugged, expandable CRB-Blueline series of CompactPCI system is suitable for all industrial requirements, even under harsh conditions. The standard Blueline provides space for a maximum of 4 CompactPCI modules and equipped with a high-grade removable power supply. The system can be expanded to a full 19" rack with dual 4-slots backplane for redundant application.*



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## SERIAL I/O SPECIFICATION



*The EKF CU4-Soprano is provided with a quad UART compatible to widespread 16C550/650 series. The line transceivers are individually configurable for RS-232 or RS-485. All ports are directly accessed from the front panel via RJ-45 jacks. Integrated LEDs signal transmit and receive status information.*

UART	16C550/650 Compatible
RS-232	TXD, RXD, CTS, RTS, DSR, DTR, RI & DCD
RS485	A, B (full or half-duplex)
RS422	Twin A, B (full-duplex)
Baud Rate	Up to 230.4 (RS232) & 921.6 kBaud (RS485/RS422)
Isolation	2kV ESD Protection
Connector	4x RJ45 jacks
Status LED	Integrated status LED display for RxD/TxD/RTS/CTS

## COMMON SPECIFICATION

Weight	~ 1.2 Kg	Warranty	Three-year limited warranty
Dimension	3U x 30HP x 235 mm	Conformance	PICMG 2.0 R3.0
MTBF	> 90,000 hours @50 °C	Safety	EN60950
Operating Temperature	0-70°C	Emission	EN55022 Class B EN61000-3-2 EN61000-3-3
Storage Temperature	-40 to 85°C	Immunity	EN55024 EN61000-4-2 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-11
Humidity	5 to 95% Non-condensing		
Altitude	-300 to +3000 m		
Shock	15g at 0.33ms, 6g at 6ms		
Vibration	1g 5-2000Hz		

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## Typical Configurations 1:

### Example 1 – ICM with Modbus Serial (RS485)

In this configuration, an ICM is shown with one serial port configured as Modbus Master. The ICM connects the field Intelligent electronic devices (IED) such as protection relay (PR), power quality meter (PQM), motor control unit (MCU), feeder control unit (FCU) and I/O unit (IOU) via terminal units (TU) on the RS485 network. A second ICM can be added to provide redundancy at the ICM level.

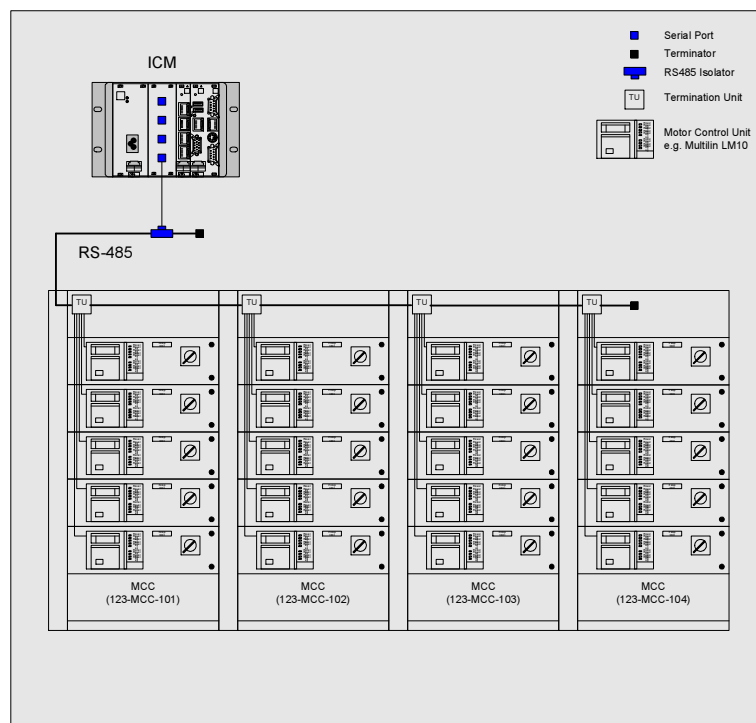


Fig. 1 - Typical ICM configuration with Modbus serial



# ICM-700 - Industrial Control Manager

## Order No.

Cat. No.	Description	On-Board	Redundant System
ICM-2204-S	Industrial Control Manager ◇ CompactPCI 4-Slot Chassis ◇ cPCI Power Supply 220Vac, 70W ◇ cPCI CPU, Celeron or eq	2x 10/100Mbps Ethernet 2x RS232, 9-Pin D-Sub 1x 4 Port Serial Card RS232	No
ICM-2208-S		2x 10/100Mbps Ethernet 2x RS232, 9-Pin D-Sub 2x 4 Port Serial Card RS232	No
ICM-2212-S		2x 10/100Mbps Ethernet 2x RS232, 9-Pin D-Sub 3x 4 Port Serial Card RS232	No
ICM-2204-D	Industrial Control Manager ◇ CompactPCI 4-Slot Chassis ◇ cPCI Power Supply 220Vac, 70W ◇ cPCI CPU, Celeron or eq	2x 10/100Mbps Ethernet 2x RS232, 9-Pin D-Sub 1x 4 Port Serial Card RS232	Yes
ICM-2208-D		2x 10/100Mbps Ethernet 2x RS232, 9-Pin D-Sub 2x 4 Port Serial Card RS232	Yes
ICM-2212-D		2x 10/100Mbps Ethernet 2x RS232, 9-Pin D-Sub 3x 4 Port Serial Card RS232	Yes

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