PLC 9000

INTRODUCTION

Accurate, timely monitoring and control of mission critical applications is imperative for the successful operation of any Plant. As a developer of one of the world's first flowchart programmable PLC, CIMCON Software's PLC have been utilized and proven themselves in hundreds of projects worldwide, helping Utilities of all types to manage their operations, while avoiding crisis management situations.

AN OVERVIEW

PLC 9000 is featured with High IO density that has been proven in many mission critical projects globally, covering almost every possible remote monitoring and control application in Water, Power, Oil and Gas industries. It supports hundreds of I/Os which are required for most demanding control applications. Each PLC 9000 is a unique blend of rugged industrial I/Os, real time multitasking software and powerful communication capabilities that is based on proven technology and open architecture to allow inter-operability with other popular automation systems using universal protocols. It has the speed of a PLC, the precision of a Data Logger and the flexibility of a large DCS at a fraction of its costs.

INSIDE THIS POWERFUL PLC

- 32 bit ARM 7 Controller
- 512KB of Flash Memory
- 4GB SD card data storage
- 10/100 Mb/s ethernet with auto MDIX
- In-built Redundancy
- High Density Digital and Analog IO card
- Isolated Digital Input and Outputs
- One RS485, Three RS232 Ports
- Modbus Master/Slave for serial and TCP, UDP, HTTP, MQTT, DNP3, and HART Protocol Support
- 3U Rack mount design ensures standardization and expandability
- Flow chart based programming support

PLC 9000

KEY FEATURES


Secure and Reliable


Easy to Install and Configure


Remote Access


User Management


Alarms and Notifications

Modular and Expandable Architecture

PLC 9000 supports high density I/Os using a standard 3U Rack based design. Each rack can support any combination of Analog and/or Digital input and output cards. Several racks can be chained together to support required set of inputs and outputs that are needed for any application.

HART Interface

PLC 9000 offers HART interface to access various key information from the HART enabled field instruments and better enable the system integrator to next level of process and device management.

Redundancy

PLC 9000 provides redundancy for the CPU and the Power supply modules to meet the reliability needs for the most demanding and critical control applications.

Report - by -Exception

The system can be configured to report only exceptions or abnormalities which optimize wireless band-width utilization.

Data Logging

The PLC logs all important process data in its non-volatile memory at the user defined logging interval.

Extensive Communication Options

PLC 9000 offers several communication options that include serial interfaces, Ethernet Interface and wireless modem interface.

Integration with Third Party SCADA Systems

PLC 9000 provides support for various industry standard protocols that allows easy integration with other SCADA systems communicating with open protocols.

Alarm Time Stamping

For critical fault analysis, the PLC 9000 is specifically designed to time stamp all alarms and events at the device level using a buit-in real time clock.

Local Display at the PLC Level

Each PLC 9000 includes a 16 x 2 alpha numeric LCD for local monitoring of field data. A 4 x 6 matrix membrane keyboard is included for scaling and changing the limits of the I/O parameters and more. Optionally it can be interface to graphical touch based HMI as well.

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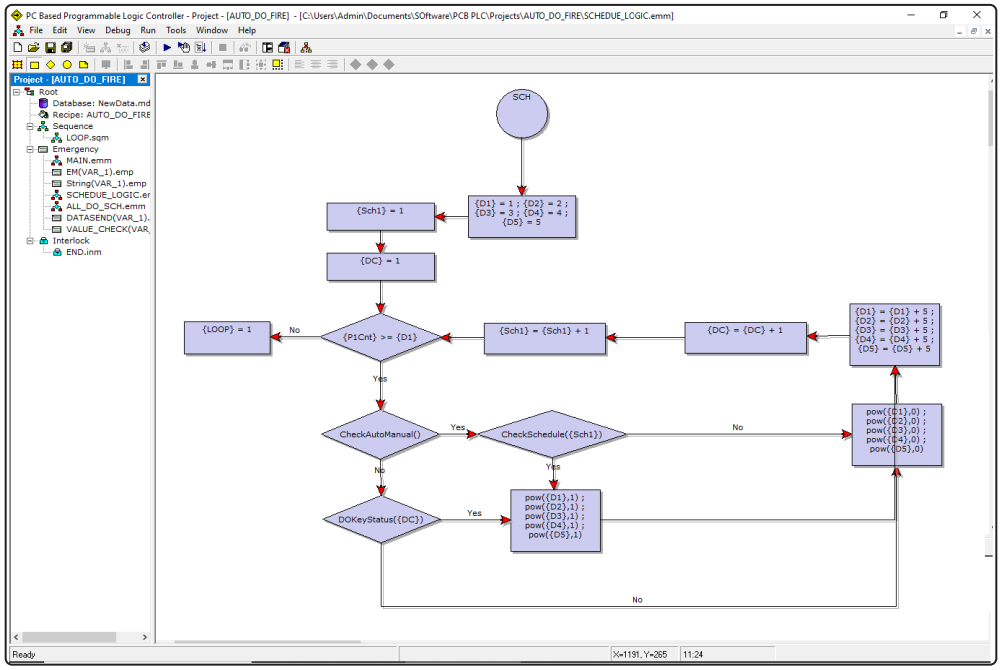
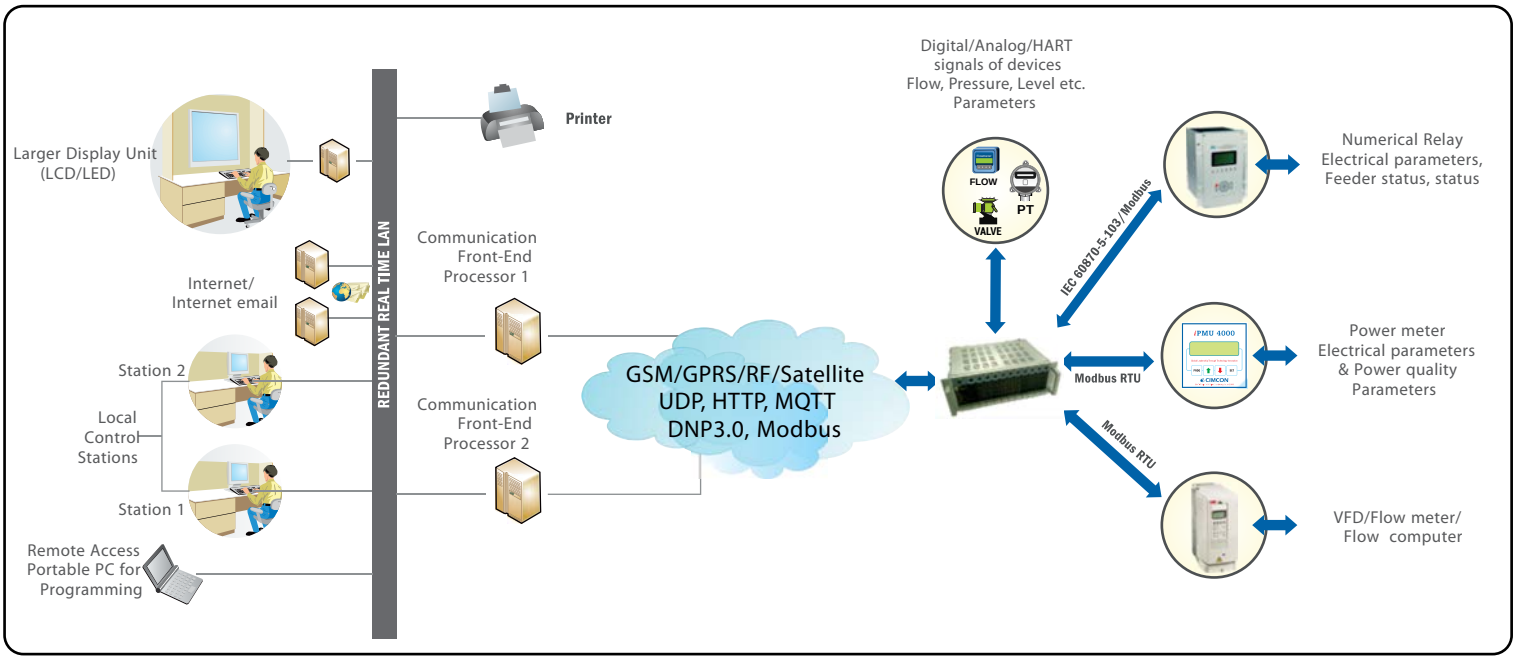
FLOW CHART PROGRAMMABLE PLC

The PLC is world's first flowchart programmable controller. Most complex control logic can be developed using flow chart building blocks provided by the PCBPLCTM programming software. This is extremely useful in case of Utilities where highly skilled manpower is not available. Flow chart based Programming is easy to undestand and supports few ready to use functions which precisely help to modify application program quickly. It does have logic simulation feature so that critical application logic can be validated before updating the programm in field devices.



HOW IT WORKS



PLC 9000

APPLICATION AREA

Water and Waste Water Treatment Plants

PLC 9000 is an ideal system for water and waste water treatment plant monitoring and control due to its powerful CPU and high density IO sub-system along with redundancy of the CPU and the Power supply that ensures uninterrupted plant operations over long durations. Water Treatment Plants typically require a system that can support large number of instruments such as turbidity sensors, chlorine analyzers, pH analyzers, flow meters and level sensors to name a few. PLC 9000 has proven itself in several such installations and has been responsible for the uninterrupted and clean water supply to various towns and cities.

Substation Automation

The PLC 9000 can be an ideal solution for Substation Automtion due to its sophisticated communication capabilities that allow it to easily integrate with several substation equipments such as Metering and Protection relays using protocols such as Modbus RTU, TCP/IP, IEC 60870-5-103 and with other high level SCADA stations using open protocols like DNP 3 and IEC60870-5-104. It's real time operating system provides the speed that is necessary for substation automation.

Reliable Control for Mission-Critical Oil & Gas Operations

The PLC 9000 is a high-performance, industrial-grade controller can be useful for the Oil & Gas industry. It provides real-time control and reliability in harsh environments like offshore platforms and pipeline stations. Its high-speed processing supports complex operations such as wellhead automation, pipeline management, Cathodic protection and gas processing. Seamlessly integrating with SCADA and DCS systems, the PLC 9000 enhances efficiency, reduces downtime, and improves safety.

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HARDWARE

The system hardware is highly modular consisting of several modules. Each module conforms to the standard format for insertion in a 3U backplane. Utilizing surface mounted devices and multi layer Printed Circuit Boards, a high integration density is achieved on the modules.

The PLC 9000 System Features:

1) 10 slot CPU Rack (9 slot with redundant solution)
2) 10 Slot Expasnsion Rack
3) CPU Card Frame
4) Digital Input Card Frame
5) Digital Output Card Frame
6) Analog Input Card Frame
7) Analog Output Card Frame
8) HART Modem Card Frame

Analog Input/Output Cards

PLC 9000 supports Analog Input cards that provide 16 differential analog inputs with 16 bit resolution and Analog Output cards that provide 4 analog outputs with 12 bit resolution.

Digital Input/Output Cards

PLC 9000 supports Digital Input and Digital Output cards that support 30 channels each with optical isolation.

HOT Redundant CPU

PLC 9000 can be configured with dual CPUs in a 100% hot standby mode thereby providing reliable solution for the most critical control applications and avoid potentialdowntime.

Extensive Communication Capability

PLC 9000 offers several types of communication ports that include traditional serial ports as well as the most advanced Ethernet port that offer unlimited interfacing options with other instruments and systems. Some of the Ports are also offered with 100% redundancy when using a redundant device solution.

TECHNICAL SPECIFICATION

CPU	32-bit micro-contoller operating on 72 MHz
MEMORY	512 KB of Program flash memory 512 Mb of Data storage flash memory 4GB SD card storage
RTC	Real time clock for time stamping with battery backup
Analog Input	16 AI Per Card Diffrential high impedence supported AI channels
Input ranges	4-20mA, -10V to 10V
Resolution	16 bit
Digital Input	30 DI Per Card
Isolation	Optical Isolated (5000V rms)
Operational Voltage	24V DC
Status Display	Local indication using LED
Digital Output	30 DO Per Card
Isolation	Optical Isolated (5000V rms)
Operational Voltage	24V DC
Switching Capacity	24V DC, 0.1A per channel
Status Display	Local Indication using LED
Analog Output	4 AO Channel per card
Output Range	0 to 10V DC/ 4 to 20 mA
Resolution	12 bit
HART Modem*	1200/2200 Hz FSK Modulation Point to point and multi drop communication mode
Local Display	LCD/Graphics Terminals with touch screen capability
Keypad	4X6 matrix membrane keys / Touch Screen
Communication ports	5 in Total: ▸3 RS 232 ▸ 1 RS 485 ▸ 1 Ethernet Port
Communication Protocol	Modbus Master/Slave for serial and TCP, UDP, HTTP, MQTT, DNP3, and HART Protocol Support
Power Supply	+5 @ 3A, +12 @ 1A,and -12V @ 0.5A for PLC Rack +24VDC for DI and DO, Ampere capacity to deriv from actual system IO count configuration. For Redundant system dual set of external SMPS need to wire to PLC through power supply redundancy module.
Operating Conditions	0˚C to 60˚C/32˚F to 140˚F 20% to 90% Rh Non Condensing
Storage Conditions	-20˚C to 70˚C/-4˚F to 158˚F 10% to 95% Rh Non Condensing
Protection	IP 20
Programming	PLC is easily programmable using flow chart programming
Software	Desktop and Web based SCADA software for Remote Monitoring and Control

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MOUNTING OPTIONS

As the number of IOs needed in any application increases, providing a robust and reliable mechanism to terminate the field signals becomes even more critical. PLC 9000 provides very elegant solution to this problem that not only makes it easier to terminate field inputs but also makes it very easy to maintain.

BENEFITS

- Housing design according to isolation needs and space restrictions.
- 3U rack design ensures high standardization.
- Standard Euro and D Shell connectors provide high level of flexibility for process connections.

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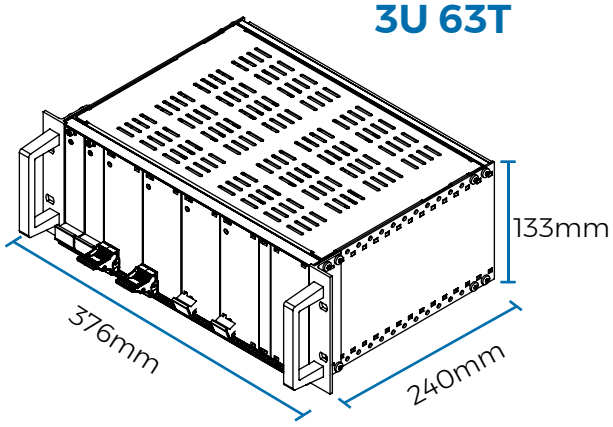
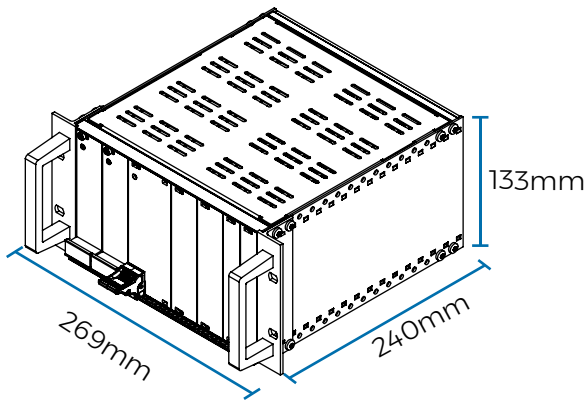
RACK DIMENSIONS

2 Rack size are available 3U 42T, 3U 63T,

3U 63T



3U 42T



ORDERING CODE

Module	Description
PLC 9000	With RS 232- 3Nos, RS 485-1 No, Ethernet 10/100 Base T-1 No

Code	Digital Input Channels
X	Number of Digital Input Channels (Pls specify)

Code	Digital Output Channels
X	Number of Digital Output Channels (Pls specify)

Code	Analog Input Channels
X	Number of Analog Input Channels (Pls specify)

Code	Analog Output Channels
X	Number of Analog Output Channels (Pls specify)

Code	HART Modem
X	Number of HART Channels (Pls specify)

Code	Redundancy
NIL	Without Redundancy
R	With Redundancy in CPU and Power Supply

Accessories:	
i Cell	Cellular modem
i HART	External HART Modem
HMI-07	7" HMI
PCBPLCTM -001	PCBPLCTM Engineering Software

PLC 9000 — 120 — 120 — 64 — 16 — 2 — R ——— Example

Note : Analog Input and Analog output channel type to be factory configured and shall be taking care during ordering.

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ABOUT CIMCON

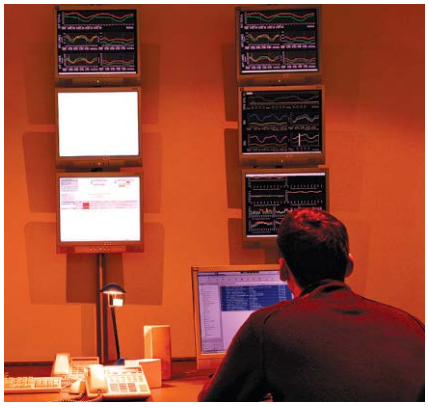
Since 1988, CIMCON has been the world's leading provider of advanced turnkey industrial automation systems, delivering practical solutions from concept through commissioning. CIMCON's mission is to develop, market and support state of the art, scalable solutions that provide the lowest "lifecycle cost of ownership" for its clients. CIMCON solutions can include hardware, software and turnkey project implementation and operating services in all areas of automation.

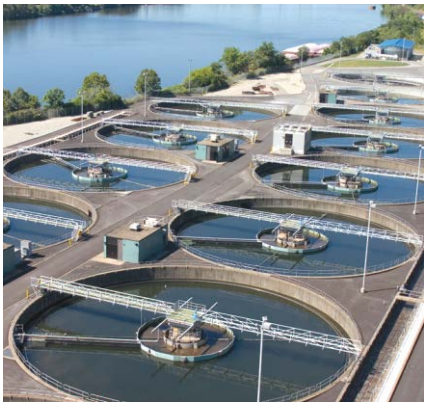
Customer Training and Technical Support

CIMCON provides engineering design, integration and support of automation hardware, software, networks and systems through its worldwide staff of qualified engineers with extensive computer and industrial automation experience.

Customer Training and Technical Support

CIMCON understands and values the importance of after sales support requirements of a mission critical real time system solutions. Highly experienced support engineers are always available just a phone call away.





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