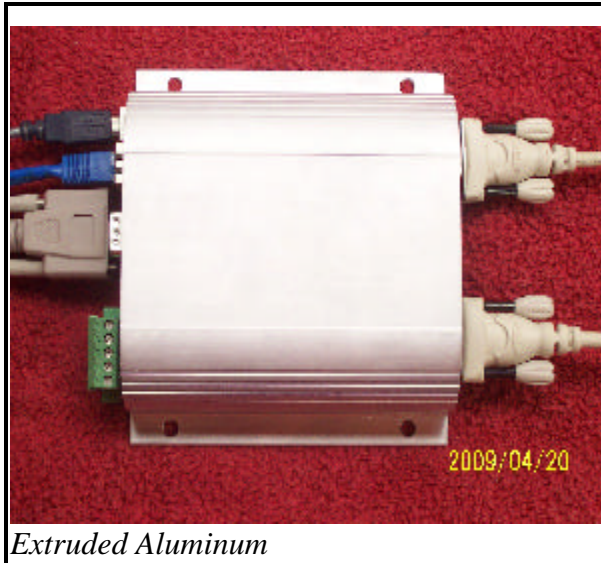


# INC,LLC

## Programmable Controller

### uPLC01



*Extruded Aluminum*



*ABS Plastic*

### Overview:

The INC, LLC. uPLC01 is a programmable controller that has 16 digital I/O points. The PLC is well equipped with many communication ports used for industrial control networks and has the option for various wireless interfaces. The gateway comes standard with an Ethernet port, a USB port, a CAN port, and two serial ports (one RS232 and one RS485). Wireless connectivity can be added, including WIFI, Bluetooth, EDGE, CDMA, and GPRS. In addition, 802.15.4 can also be added to support Zigbee and other low power networks. The module is available with three different firmware applications, a control engine that allows downloading of Ladder programs, a solar/radiant controller, or an open source application where the user can write their own application and have complete control over the program.

### Processor/Memory:

The uPLC01 uses a fast 32 bit ARM7 from NXP. The processor performs at 72MHz. A battery backed real time clock is provided for time relevant processing. The data/program storage can be expanded using an optional removable SD/MMC card.

### I/O:

The uPLC01 has 16 built in digital I/O points that can be used as outputs or inputs when the corresponding output is turned off. The outputs are rated at 700ma each and are thermally and overload protected. The I/O can operate from 10.5 to 34V. The connectors can be populated with 15 pin Dsub, or 14 pin ribbon cable connectors. The ribbon cable connector has latches and is pin compatible with the Phoenix Contact PLC-Relay cabling adapters. This allows the use of ready made relay and breakout modules. See Phoenix Contact website for available modules. External I/O can also be added through the supported networks.

### Display/Keypad:

Several displays are available including text and graphics LCD and VF. Custom keypads and/or touch-screens are available. The uPLC01 ships standard with no keypad or display. Please call or email for specific needs.

### Applications:

Vehicle Automation, Solar/Radiant Controller, Conveyor Systems, Batching Systems, Home Automation

**Firmware:**

The module is available with three different firmware loads. The first firmware runs INC's control engine that allows the user to download a ladder sequence written using INC's programming tool. This provides operation typical to other commercial PLCs. The second firmware has the functionality of a solar/radiant controller. The third option is an open source application where the user can write their own application and have complete control over the program. INC provides sample applications and projects using several open source tools as well as various commercial IDEs such as IAR and Crossworks.

Firmware 1) Firmware 1 runs the INC, LLC. Control engine that allows users to write and download their own programs using the INC provided Ladder Logic Editor and Compiler. The firmware includes a Modbus Slave, DeviceNet Slave, EtherNet/IP Slave, Zigbee Coordinator, Router and End Device. A Modbus Master, DeviceNet Master, and EtherNet/IP Master modules will be added later this year.

Firmware 2) The solar/radiant controller allows all the parameters to be monitored and changed using a web browser. The values can also be logged to track the daily, monthly, and yearly solar contributions. A display can also be added.

Firmware 3) INC provides all the sample code and or links to use all open source code to create their own programs. This includes the RTOS, TCP/IP stack, and all other code. The example projects can be compiled with several open source or commercial IDE tools.

**Communication Interfaces**

<b>Standard Communication Ports:</b>	<b>Optional Wireless Communications Port 1:</b>	<b>Optional Wireless Communications Port 2:</b>
<b>EtherNet</b> (EtherNet/IP, Modbus TCP, Webserver)	Wireless – <b>802.11b/g</b> (Wifi)	Wireless – <b>802.15.4</b> (ZigBee, SimpliciTI)
<b>CAN</b> (CANopen <sup>1</sup> , DeviceNet <sup>2</sup> )	Wireless – <b>Bluetooth</b>	
<b>USB</b> (Control and/or monitoring, data logging)	Cellular – <b>EDGE</b>	
<b>RS232</b> (Serial, X-10 or Insteon through external adapter not included <sup>3</sup> )	Cellular – <b>GPRS</b>	
<b>RS485/422</b> (Modbus ASCII, Modbus RTU)	Cellular - <b>CDMA</b>	

Note 1) The CANopen version supports communication through SDOs and PDOs.

Note 2) The DeviceNet version supports UCMM Explicit, Poll, Peer-to-Peer, COS, and Strobe connections. Please see the uPLC01 CANopen and uPLC01 DeviceNet Network Specifications for more details.

Note 3) The RS232 port can be used to control an external X-10 or Insteon controller for a complete home automation/security system.

**Enclosure:**

The enclosure is available in two different enclosures, economical black ABS plastic, and a more rugged extruded aluminum alloy. The aluminum version is potted to help protect against vibration, shock, and foreign matter. The CAN network connector is available in a standard 5 pin sealed micro connector or a low cost 5 pin Combicon connector with screw flanges. The Combicon connector allows the use of lower cost cabling, and also allows the use of a dual row Combicon plug to facilitate the daisy chaining of modules in the network.

## Ordering Information:

**Order #: UPLC01-NC-NI-C1-W1-W2-EN**

Abbreviation	Meaning	Option
<b>NC</b>	CAN Connector	MC = 5 pin micro CB = 5 pin Combicon with screw flanges
<b>NI</b>	CAN Isolation	NI = Non-Isolated (CAN is not isolated from USB or serial ports, but is isolated from I/O. IS = Isolated (Network is isolated from USB and serial ports as well as from the I/O)
<b>C1</b>	Connector I/O	DB = DB-15 RC = Ribbon cable with latches
<b>W1</b>	Wireless Interface 1	BG = 802.11.b/g BT = Bluetooth GP = GPRS CD = CDMA ED = EDGE NO = None
<b>W2</b>	Wireless Interface 2	ZG = 802.15.4 NO = None
<b>EN</b>	Enclosure Type	AB = ABS AL = Extruded Aluminum BO = Board Only