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Need a compact PLC with powerful features?

The Productivity1000 series PLC is the super compact yet highly capable member of our Productivity controller family. Packed with many of the features you love about the Productivity series but housed in a smaller, slimmer design and with a CPU price starting at $237.00, the Productivity1000 PLC will deliver the time, space, and budget savings your project needs.

**Built-in Communication:**
The Productivity1000 comes with up to 5 built-in communication ports for easy connectivity to your PC or various industrial networks.

- Serial RS-232
- RJ12 serial Modbus RTU/ASCII or custom protocol connection
- Ethernet 10/100Mbps
- 4-pin serial Modbus RTU/ASCII or custom protocol connection
- RJ45 Ethernet port for easy plug-and-play programming

**Data Logging:**
The Productivity1000 allows for up to 32GB of historical data to be saved to a removable micro SD card (sold separately).

**Built-in Accessibility:**
- The single top-side latch on every I/O module provides free and clear access to the latching mechanism when adding/removing I/O modules.
- The pivoting wire cover on each I/O module displays the wire label in any position so it's visible at all times.
- A fulcrum lever is designed into every I/O module for easy terminal block removal.

**Slim Stackable Design:**
The super slim form factor requires minimal panel space (approximately 8.9" for a 8 module system) and the stackable design allows for simple I/O expansion.

**Micro USB**
- Micro B USB port for easy plug-and-play programming

**Serial RS-485**
- 4-pin serial Modbus RTU/ASCII or custom protocol connection

**Ethernet 10/100Mbps**
- RJ45 Ethernet port for PLC programming and/or Modbus TCP, EtherNet/IP, MQTT, custom UDP/TCP connections

**Micro USB**
- Micro B USB port for easy plug-and-play programming

**Serial RS-232**
- RJ12 serial Modbus RTU/ASCII or custom protocol connection

**Ethernet 10/100Mbps Remote I/O**
- RJ45 Ethernet port for easy GS series variable frequency drive, PS-AMC motion controller, Protos X field I/O, and P1000 remote I/O (P1-RX) connections (P1-550 ONLY)

**Multiple Wiring Options:**
- Choose from spring clamp, screw terminal or the popular ZIPLink wiring solution for your I/O wiring needs.

**Spring Clamp**
- Screw Terminal

**A variety of input, output, specialty, and combination I/O modules available**

**I/O Expansion Modules**
- You can stack up to 15 I/O modules onto the Productivity1000 CPU when using the P1-02AC power supply for a total of up to 240 local discrete I/O points or 120 local analog I/O channels. I/O expansion modules support:
  - Discrete
  - Analog
  - Temperature
  - Relay
  - High Speed
  - PWM

**Need more I/O?**
- Add an additional $12 discrete or 256 analog I/O points using the P1-RX remote expansion module (up to 4 remote I/O bases w/ 8 I/O modules each)

**Engineered in USA**

For the latest prices, please check AutomationDirect.com.
Reliable, affordable, super-compact hardware

The Productivity1000 series PLCs hardware is built to last and designed for applications where panel real estate is a concern. With various low-cost expansion I/O modules to choose from and feature-rich CPUs all backed with a 2-year warranty and a 30-day money-back guarantee, you’ll never pay for overpriced hardware again!

Full-featured CPUs

With 50MB of user memory, up to five built-in communication ports, data logging and tag name programming, these CPUs offer big features in a small package.

- Plug-and-play USB programming (uses standard A-micro B cable)
- Tag database and program documentation storage in CPU (program pre-loaded on FC not necessary)
- Supports up to five built-in communications ports simultaneously
- High-speed Ethernet port for HMI and peer-to-peer or business system networking (no Ethernet communications module needed)
- Support for Modbus, EtherCAT/TCP, and MQTT connections
- Two serial ports for peripheral device interface or controller networking
- Micro SD data logging right from the CPU
- Remote I/O port (P1-550 only) for up to 16 DS series drive connections, 1 PS-AMC motion controller, or hundreds of additional remote I/O points using the P1-RX remote expansion module and/or the Protos X field I/O system

CPU Comparison

<table>
<thead>
<tr>
<th></th>
<th>AutomationDirect P1-540</th>
<th>AutomationDirect P1-550</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Memory</td>
<td>50MB</td>
<td>50MB</td>
</tr>
<tr>
<td>Built-in USB Programming Port</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Built-in Serial Ports</td>
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<td>2</td>
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<tr>
<td>Built-in Ethernet Ports (ports)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>EtherNet/IP, MQTT, Modbus RTU/TCP Protocols</td>
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<td>✓</td>
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<tr>
<td>Remote Expansion Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Local I/O Capacity</td>
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<td>240</td>
</tr>
<tr>
<td>Max Expansion I/O Capacity</td>
<td></td>
<td>512</td>
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<tr>
<td>PG-AMC support - Coordinated Motion</td>
<td></td>
<td>✓</td>
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<tr>
<td>Integrated GS Drive/ Protocol 4 Field I/O Support</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Data Port (data logging)</td>
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<td>✓</td>
</tr>
<tr>
<td>Price</td>
<td>$237.00</td>
<td>$268.00</td>
</tr>
</tbody>
</table>

Starting at $52.00
(P1-01AC)

Remote I/O Expansion Module

The P1-RX module adds remote I/O capability to the P1-550 CPU, providing up to 512 remote I/O points (4 remote boxes with 8 modules each).

- P1-RX: Productivity1000 remote I/O module, RJ45 Ethernet (RJ45) port for use with P1-550 CPU

Power Supplies

Productivity1000 power supplies provide 16 or 26 W of output power with VDC or VAC input options.

- P1-01AC: 12-24 VDC input with 24VDC, 0.67 A, 16W output. Use with up to 8 local I/O expansion modules
- P1-01DC: 100-240 VAC or 12VDC input with 24VDC, 0.67 A, 16W output. Use with up to 8 local I/O expansion modules
- P1-02AC: 100-240 VAC or 12VDC input with 24VDC, 1.08 A, 26W output. Use with up to 16 local I/O expansion modules
- P1-02DC: 100-240 VAC or 12VDC input with 24VDC, 1.08 A, 26W output. Use with up to 16 local I/O expansion modules

Overview Video:

See what the Productivity1000 PLC has to offer!
Discrete I/O Modules
Discrete input, output and combo input/output modules are available in 8 or 16-point versions with various DC/AC voltage ranges.
- P1-08ND-TTL - Input Module 8-pt, 3.3-5 VDC
- P1-08ND3 - Input Module 8-pt, 12-24 VDC
- P1-08NE3 - Input Module 8-pt, 24 VAC/VDC
- P1-08NA - Input Module: 8-pt, 120-240 VAC
- P1-16ND3 - Input Module: 16-pt, 12-24 VDC
- P1-16NE3 - Input Module: 16-pt, 24 VAC/VDC
- P1-08TD-TTL - Output Module 8-pt, 5 VDC
- P1-08TD1 - Output Module 8-pt, 3.3-24 VDC
- P1-08TD2 - Output Module 8-pt, 12-24 VDC
- P1-08TA - Output Module: 8-pt, 120-240 VAC
- P1-15TD1 - Output Module: 15-pt, 3.3-24 VDC
- P1-15TD2 - Output Module: 15-pt, 12-24 VDC
- P1-15CDD1 - Combo Module 8-pt 12-24 VDC in, 7-pt 3.3-24 VDC out
- P1-15CDD2 - Combo Module 8-pt 12-24 VDC in, 7-pt 12-24 VDC out

Analog/Temperature I/O Modules
Analog input and output modules are available to monitor and control pressure, temperature, flow, level or any other process signal your application requires.
- P1-04AD - Input Module 4-channel, ±5VDC, ±10VDC, 0-5 VDC, 0-10 VDC and 0-20 mA, 16-bit resolution
- P1-04AD-1 - Input Module, 4-channel, 0-20 mA, 16-bit resolution
- P1-04ADL -2 - Input Module 4-channel, 0-10 VDC, 13-bit resolution
- P1-04DAL -1 - Output Module 4-channel, 4-20 mA, 12-bit resolution
- P1-04DAL -2 - Output Module 4-channel, 0-10 VDC, 12-bit resolution
- P1-04THM - Thermocouple Input Module 4-channel, 16-bit resolution
- P1-04NTC - Thermistor Input Module 4-channel, 16-bit resolution
- P1-04RTD - RTD Input Module, 4-channel, 16-bit resolution

Relay I/O Modules
Relay output modules support devices that operate with voltages up to 240VAC or 24VDC.
- P1-08TRS - Output Module 8-pt, 6-24 VDC/6-120 VAC, 3A/pt
- P1-16TR - Output Module 16-pt, 6-24 VDC/6-240 VAC, 2A/pt
- P1-08CDR - Combo Module 8 pt 12-24 VDC in, 7 pt 3.3-24 VDC out
- P1-16CDR - Combo Module 8 pt 12-24 VDC in, 7 pt 12-24 VDC out

Specialty I/O Modules
Specialty modules are designed to perform specific functions, including input simulation, which differ from the typical functions of input/output modules.
- P1-08SIM - Input Simulator Module, 8-pt
- P1-04PWM - Pulse Width Modulation Output Module, 4) 0-20 kHz pulse modulated outputs, 0-100% duty cycle

PS-AMC Enhanced Motion Controller
The PS-AMC motion controller is an ideal choice for low-cost coordinated motion that’s easy to use and reliable. Designed to work effortlessly with the Productivity family of CPUs, the AMC provides accurate, synchronized motion control on up to four axes per module (1 module per P1-550 CPU).
- PS-AMC: Motion controller with up to 4 axes, 1 MHz maximum switching frequency, up to 21 high-speed input points, 4 differential encoder inputs, 12 high-speed output points, and 4 differential outputs.
We make PLC communication practical

Two serial ports included on CPU

Two serial ports are included on the Productivity1000 CPUs for communication to peripheral devices:
1. RJ12 (6P6C) port for RS-232 devices
2. 4-wire screw terminal for RS-485 multi-drop devices

These ports provide Modbus RTU Master/Slave capability, ASCII In and Out capability and Custom Protocol over Serial capability. The RS-485 port can support up to 50 multi-drop devices (more if repeater is added to network).

Built-in Ethernet on the CPU has got you covered!

Both Productivity1000 CPUs come standard with a general purpose Ethernet port and two of the top industrial Ethernet protocols in our market. Modbus TCP and EtherNet/IP are a must for any up-to-date networked control system. MQTT is also supported which is fast becoming an industry requirement as the IIoT and machine-to-cloud connections become more and more prevalent.

Ethernet ports:
- 10/100Mbps multipurpose Ethernet port for programming, monitoring, firmware upgrades and a mixture of the following client/server connections:
  - 16 Modbus TCP Client connections (CPU Master)
  - 16 Modbus TCP Server connections (CPU Slave)

A total of 128 EtherNet/IP connections and over 5000 EtherNet/IP messages per second! And unlike many controllers, the Productivity series CPUs support both Explicit and Implicit (I/O) messaging for greater functionality.

The Productivity1000 also provides a Custom Protocol over Ethernet (CPE) option which gives the user the ability to create their own communications protocol between the Productivity series CPU and a 3rd party Ethernet device via TCP or UDP.

The ProNET feature is also available and allows any P-series CPU to seamlessly share data by publishing to or subscribing to data from other P-series CPUs. Up to 32 publishers and/or subscribers are allowed per CPU.

EtherNet/IP

Productivity Suite makes communicating with EtherNet/IP devices a snap:
- Scanner and adapter supported
- Implicit application types supported include input-only and listen-only
- EDS file configuration presented in an easy-to-use drop-down menu
- Ability to select multiple connection options from an EDS file which simplifies configuration
- The EDS file library offers an easy way to upload, store, and manage your EDS files
- AutomationDirect.com EtherNet/IP EDS files are preloaded in the library for convenience

Click the link above for a collection of videos on using EtherNet/IP with Productivity PLCs

EDS Library

The EDS file library offers a powerful way to organize and sort your EDS files - automatically group by device type or vendor and manage versions. AutomationDirect.com EtherNet/IP EDS files are preloaded in the library for convenience.

For the latest prices, please check AutomationDirect.com.
Industrial machines/systems are more connected than ever before, whether internally with upstream IT management systems or externally with remote support personnel, modern-day plant-floor machines/systems need to communicate to a variety of networks. Cloud networking, with its computing and data storage platforms, has also become a viable solution for analyzing and accessing production data from anywhere at anytime. Using powerful cloud platforms such as Microsoft Azure® or IBM Watson® to analyze production-floor data can provide better process efficiency, improved plant-wide resource management and less operational downtime.

But how does data from a simple level switch on a tank get to the cloud? With Productivity PLCs, it’s easy! Productivity PLCs have the communication capabilities and processing power needed to not only control plant-floor machines but gather valuable data from them, package it, and send it on to higher level analysis systems.

Multiple data gathering options

Productivity PLCs offer many I/O options to choose from for your system data collection. I/O modules, available in analog, discrete, high-speed, relay, and temperature versions, allow you to create the custom I/O configurations your application needs. And with Modbus RTU, Modbus TCP and EtherNet/IP protocol support, Productivity1000 PLCs can easily gather raw data from a variety of VFDs, sensors, switches, encoders, pilot devices, or almost any other control component your system may have.

We make cloud communication easy

The MQTT protocol has become the frontrunner for many machine-to-machine (M2M) and IIoT/cloud networking applications, due to its lightweight overhead and reduced bandwidth consumption. Productivity PLCs support MQTT communication and with fill-in-the-blank MQTT messaging configurations, delivering vital data to advanced cloud computing platforms is easy.

Compatible with MQTT brokers and cloud platform/services including:
- IBM Watson®
- Mosquitto®
- HiveMQ®
- Thingsboard®

Refining data into something meaningful

The Productivity Suite programming software makes refining raw data into a meaningful metric a cinch. With a multitude of simple-to-use instructions combined with the computing power of a Productivity CPU, Productivity Suite can easily transform a raw process signal, like 4-20mA, into a consumption rate, a production throughput, an energy efficiency score, a rejection percentage, or any other metric that’s vital to you.

For the latest prices, please check AutomationDirect.com.
Productivity built in

There are many features integrated into the Productivity1000 series PLCs and tools on our website that provide unmatched ease of use when selecting, expanding, configuring and wiring your hardware.

Expansion is a snap

The Productivity1000 requires no base or backplane and can easily be expanded with up to 15 snap-on I/O modules. The local P1000 system can support up to 240 discrete I/O points or 120 analog I/O channels total. The I/O modules can be easily added or removed using the single latch mechanism on the topside of each module. This stackable design allows you to purchase only the I/O required for your particular application.

VFDs configured with ease!

The Productivity Suite software is designed to recognize any AutomationDirect GS series drive. Simply connect the drive to the Remote I/O port of the P1-550 CPU and it is discovered in the Productivity Suite software. No more searching through drive manuals to find the parameter you need, each parameter, with description, range, and value, is available in the software.

Get started in seconds with auto-discovered I/O modules

Once an I/O module is installed, in either the local or one of 4 remote racks, the P1000 will automatically discover the module and create a realistic picture of your configuration in the free Productivity Suite software. Physical I/O tags will be generated based on each module's position in their rack and that's it! You are ready to program with the auto-configured settings just seconds after power-up, or you can reconfigure the setup and assign new tags manually.

Support information at your fingertips!

All Productivity1000 I/O modules have QR codes printed on the underside of their wire covers. Scan the code with your smart phone or tablet QR app to get the latest specifications/wiring diagrams for that module.

Integrated Protos X field I/O

The Productivity Suite software will auto detect the Protos X field I/O system (using a Modbus coupler) connected to the Remote I/O port of the P1-550 and automatically assign tags to the installed I/O terminals. The configuration can be manually changed and it is saved within the PLC project.

Interactive PLC Configurator Tool

Use the interactive PLC configurator tool on our website to quickly configure your Productivity1000 system to your specifications. Simply choose the CPU and I/O modules you prefer with the connection options you prefer and send the selected parts right to the shopping cart.

See how easy it is at:

www.automationdirect.com/Productivity1000

For the latest prices, please check AutomationDirect.com.
BIG PLC features in a small package for a tiny price

The Productivity1000 series PLCs are designed with features you’d expect to pay a whole lot more for. Built-in data logging, tag name programming, limitless PID, web server and mobile access, plus many other advanced features are packed into this budget and space-saving PLC series.

Up to 32GB of data!

Built-in Data Logging
Track up to 64 tags at a time and save the data to the removable micro SD card stored in the CPU. Capture up to 32GB of data either periodically (minute, hour, day, week, etc.) or when certain events occur. Scheduling and setup is done with the easy-to-use Data Logger configuration tool in the software. Log tag data, system errors and system events which can be used to track efficiency and performance, troubleshoot recurring or intermittent faults, and predict future breakdowns.

Web Server
With the P1000 CPU’s integrated Web Server, you can access Data Logger files stored on an installed flash device (optional) as well as monitor system status via the (read-only) System Tags.

Apple iOS PACDATA app
The FREE PAC/PLC Data Remote Monitor App allows you to connect to remote P1000 systems from a Wi-Fi or cellular network connection. The Remote user can monitor the local PLC system and user tags configured for remote access inside the tag database of the controller.

No-Limit PID
With 50MB of user memory, you have practically limitless PID functionality. The integrated PID function blocks make it easier to configure and control the process loops in your application.

The PID Monitor utility allows you to monitor your loops and tune them in real time. We also offer a built-in Auto-tuning algorithm (Ziegler-Nichols) to help give you a jump on fine tuning your loops.

The PID instruction supports either individual or cascade mode operation. It also includes a tab for configuring all of your process alarms, including Low-Low, Low, High, High-High Limits and Deviation Alarms.

Timesaving Tag Names!
Export your tag name database from the Productivity1000 and import it into C-more software to jump start your HMI development. No more digging through your notes, or hunting through your ladder logic to find the right tag name.

Connect up to 16 C-more HMIs to the Productivity1000 via Ethernet for control and visibility of your process/machine from anywhere in your factory.

CPU starting at $237.00 (P1-540)

For the latest prices, please check AutomationDirect.com.

www.automationdirect.com/Productivity1000

Productivity Series PLCs

1-800-633-0405
Multi-axis motion control that's accurate and affordable

The PS- AMC motion controller is an ideal solution for motion control applications requiring several independent axes of motion and/or coordinated motion between some or all axes. Available in one to four axes models, the PS- AMC provides highly accurate positioning using encoder fed control (one encoder per axis). Used in conjunction with select Productivity CPUs and programmed with the FREE Productivity Suite software, the AMC can supply up to 1MHz of pulse-train command signals to servo or stepper drives for extremely responsive movements in any application.

Flying cut-off application

The primary function of a flying cut-off system is to synchronize the speed of a servo-driven carriage, on which a cutting mechanism is mounted, with the speed of a continuously fed material to make a perpendicular cut without stopping the feed. These applications are used where it isn’t practical to stop and start a continuous production operation.

The flying cut-off shown above employs four axes of motion, a rotating pipe cutter, a continuous pipe infeed system, carriage positioning drive, and outbound conveyor. With the PS- AMC, all four of these axes can be easily controlled and synchronized within the same controller, and it’s only $542.00!

For the latest prices, please check AutomationDirect.com.
Precise linear interpolation

A common task in motion control applications is straight line motion. This can be accomplished using multiple axis of motion that work together to perform a linear move from one point to the next. This is also known as linear interpolation. The PS-AMC combined with a Productivity CPU allows you to precisely control each axis so that they all move in unison to reach the target position at the same time; resulting in a straight line from start to finish.

Milling/routing application

When milling or routing materials to match specifications, accuracy is key. Just the slightest misstep during a cut can cause a complete redo and wasted material. Most milling machines utilize three axes of motion (X, Y, and Z axes) and require accuracy that is repeatable time and time again, making these types of applications perfect for Productivity Motion components.

Productivity from A to X-Y-Z

When it comes to X-Y-Z positioning, commonly achieved with gantry systems, the PS-AMC motion controller makes it easy. With the PS-AMC, Productivity CPU, and the Multi-Axis Motion Sequencer (MMSEQ) instruction, you can:

- Perform smooth movements between two or more points in up to 3 axes, plus an optional tool axis.
- Easily code For/Next or Do/While loops to repeat portions of the sequence, as desired.
- Iterate through up to 64 steps in a motion sequence, including adding timers and pauses between move actions.

When milling or routing materials to match specifications, accuracy is key. Just the slightest misstep during a cut can cause a complete redo and wasted material. Most milling machines utilize three axes of motion (X, Y, and Z axes) and require accuracy that is repeatable time and time again, making these types of applications perfect for Productivity Motion components.
With machinery that uses coordinated motion where one move is dependent on another, especially in situations where a secondary move can only happen once the first has cleared its path, positioning inaccuracies can cause major production loss or even substantial equipment damage. Even small fluctuations can compound and become big issues if not corrected in time. The Productivity AMC has features built-in to compensate for measurement drift and allows on-the-fly position corrections to maintain superior accuracy.

FREE Software!
Download as often as you need. No license or key needed. Click here to download.

Precise positioning for when close enough just won't cut it

With machinery that uses coordinated motion where one move is dependent on another, especially in situations where a secondary move can only happen once the first has cleared its path, positioning inaccuracies can cause major production loss or even substantial equipment damage. Even small fluctuations can compound and become big issues if not corrected in time. The Productivity AMC has features built-in to compensate for measurement drift and allows on-the-fly position corrections to maintain superior accuracy.

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Precise positioning for when close enough just won’t cut it

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FREE Software!
Download as often as you need. No license or key needed. Click here to download.

Rotary table application

Rotary table applications are very common in manufacturing and can be used to move products into position for drilling, welding, milling, or even for simple tool changes. Behind the scenes, rotary tables aren’t very complicated and can be controlled with simple index moves to index the product to the next station or to a specific station. Depending on the number of stations, one PS-AMC4 may be all you need to handle the rotation of the table, as well as, product placement and station movements.

Stay on target!

One inherent problem with this type of application (as well as other continuous, same direction motion applications), is when the difference between steps/stations is fractional. If the controller doesn’t account for these fractions, the system will drift. The PS-AMC controller takes this into consideration and will accurately handle fractional steps to prevent drifting over time and always remain on target.

Drawings are for illustrative purposes only.

For the latest prices, please check AutomationDirect.com.
Productivity Suite has numerous built-in motion instructions that allow you to quickly and easily configure standard motion profiles like flying cut-off, rotary tables and more using simple drop-down selections. If you need something different, you can also create your own custom move profiles using the Motion Sequencer (MSEQ) instruction. Create your profile, download the updated project file to the CPU and you are done! A-M-C, easy as 1-2-3!

1 INSTALL HARDWARE

Once your PS-AMC arrives, install the controller either locally to or remotely from the CPU and connect the needed Ethernet cable(s). Wire up the system, power the controllers and download the free Productivity Suite software to your PC if you haven’t already. At this point, you could use the software test tool in Productivity Suite to test the hardware and verify the physical wiring, otherwise on to step 2.

2 CONFIGURE HARDWARE

With the communication cables connected, and power applied, the Productivity CPU will auto-discover any PS-AMC controllers that are on the same Ethernet network. Once discovered, you can easily set the hardware parameters and modify data tags from within Productivity Suite.

3 SET UP MOTION PROFILE

Productivity Suite has numerous built-in motion instructions that allow you to quickly and easily configure standard motion profiles like flying cut-off, rotary tables and more using simple drop-down selections. If you need something different, you can also create your own custom move profiles using the Motion Sequencer (MSEQ) instruction. Create your profile, download the updated project file to the CPU and you are done! Use the PS-AMC with select Productivity series CPUs for low cost, coordinated motion control in any application.
Get the control you need for less with Productivity

Productivity1000 PLCs have low-cost specialty modules to tackle specific functions that are beyond the realm of standard I/O modules. High-speed input counting and pulse width modulated outputs are capabilities provided by these modules for applications that require a little more than generic I/O.

Setup is a cinch!
ProductivitySuite makes it easy to configure your specialty modules. Simply use the convenient fill-in-the-blank GUI to pick the functions you desire, set the scaling (standard or custom), assign the appropriate tags or create them on the fly; it couldn’t be any easier.

High-speed Counter (HSC)
The P1-02HSC is capable of handling input pulse frequencies up to 100kHz. Easily count and/or calculate pulse rates from dedicated inputs or encoder signals that are used in many applications including package tracking and picking systems. Additionally, there are two general purpose inputs for use as 5-24 VDC inputs.

Pulse Width Modulation (PWM)
The P1-04PWM pulse width modulation module provides four channels of sinking or sourcing 0–20 kHz, 0–100% duty cycle outputs. The varying pulse widths produced by the PWM module are seen as varying power levels to the end device and are ideally suited for running motors/pumps, controlling LED lighting, opening/closing solenoid valves and more.
Fast Programming with FREE downloadable software

**Developed in-house with customer feedback**
Productivity Suite is our free programming software for the Productivity family of controllers. Our own software engineers developed this programming package at our headquarters near Atlanta, Ga. It was designed with input from our technical service team who communicate on a daily basis with our customers. As a result, Productivity Suite not only meets but exceeds the needs of our customers, and provides a quick, user-friendly way to efficiently program the Productivity family of PLCs.

**Program your way!**
Tag name based control that’s powerful and easy to use
With Productivity Suite you have the freedom to define user tags with no limits or fixed boundaries. Configure timers, counters, integer words or any other data types you need. With tag name based programming, there are no pre-defined, fixed memory maps and no wasted, unused memory allocations.

Tag name based control also offers the ability to descriptively identify the control elements in your program. Older, fixed memory controllers force the use of pre-defined nomenclature for the data types. Which would you rather see when troubleshooting: T4:01 or Oven1 Purge Timer.Pre? The tag name helps identify the element as a numeric value for the oven purge timer’s preset, making its purpose immediately clear.

**ONE SOFTWARE PACKAGE PROGRAMS ALL PRODUCTIVITY PLCS!**

**Variable communication**
Productivity Suite provides utmost flexibility when it comes to PLC communication and with the Variable Communications Instructions (VCI), you can reconfigure your communication links with simple tag value changes. By using tags in the parameter fields of Modbus, serial, EtherNet/IP, MQTT, etc. configurations, you can dynamically modify the messages, target IP addresses, and other connection parameters from the ladder code or directly from a connected HMI.

**Easy access control**
The Productivity Suite software has several remote access security features built in including project file encryption and user roles. User roles allow you to control who has access to the project file and what they can do with it. Full control, full monitor, limited monitor, and read only are some of the roles available and they can be easily set from the User Account dialog.

**Advanced user defined structures**
User defined structures (UDS) are a powerful tool that helps speed up program development and improve uniformity of your logic. A UDS is a group of data types (BOOL, FLOAT, INT, pre-defined structures, etc.) which are defined by the user and re-used at will.

Productivity Suite allows you to embed arrays within the UDS definition, as well as, create arrays of structured tags so that you can programmatically index through your tag variables.

For example, Mixing_Tank(1).Transfer_Pump(2).VFD.RUN_Command which contains two nested UDS arrays (Transfer_Pump and VFD) inside the Mixing_Tank UDS definition.

**Simple simulation**
There is no better way to get a head start on project development than building code ahead of time with the assistance of a project simulator. Now you can start your logic early and verify it’s operation even before the hardware has arrived!

Simply select the “Simulator” option in the toolbar, transfer your code as you would with a real CPU, turn on monitoring and/or open a Data View window, and start testing your code. This tool comes in handy not only with new builds but also when maintaining existing systems. With systems that are already live, and where a shutdown may be required, getting in and getting out quickly is crucial and the simulator is there to help make sure there won’t be any surprises.

**Simulator supports:**
- Analog or Discrete I/O simulation
- Data View monitoring
- Modbus TCP/IP EtherNet/IP and CoE (custom protocol over Ethernet)
- Ignores unsupported instructions

**Variable communication**
Productivity Suite provides utmost flexibility when it comes to PLC communication and with the Variable Communications Instructions (VCI), you can reconfigure your communication links with simple tag value changes. By using tags in the parameter fields of Modbus, serial, EtherNet/IP, MQTT, etc. configurations, you can dynamically modify the messages, target IP addresses, and other connection parameters from the ladder code or directly from a connected HMI.

**Easy access control**
The Productivity Suite software has several remote access security features built in including project file encryption and user roles. User roles allow you to control who has access to the project file and what they can do with it. Full control, full monitor, limited monitor, and read only are some of the roles available and they can be easily set from the User Account dialog.

**Advanced user defined structures**
User defined structures (UDS) are a powerful tool that helps speed up program development and improve uniformity of your logic. A UDS is a group of data types (BOOL, FLOAT, INT, pre-defined structures, etc.) which are defined by the user and re-used at will.

Productivity Suite allows you to embed arrays within the UDS definition, as well as, create arrays of structured tags so that you can programmatically index through your tag variables.

For example, Mixing_Tank(1).Transfer_Pump(2).VFD.RUN_Command which contains two nested UDS arrays (Transfer_Pump and VFD) inside the Mixing_Tank UDS definition.
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The Productivity Suite programming software is available for download free of charge at www.ProductivityPLC.com. Take it for a test drive before you buy or get started on your project immediately. There are no licensing fees or maintenance charges to be concerned with and any subsequent upgrades are available for free download as well. If you need assistance, the embedded help file contains detailed information on over 260 topics; also check out our instructional videos at http://www.automationdirect.com/videos or give us a call at 770-844-4200 – we are here to help.

What’s in the Starter Kit?

- (1) P1-540 CPU
- (1) P1-01AC power supply
- (1) P1-08SIM input simulator module
- (1) P1-08TRS relay output module
- (1) P2-RTB screw type terminal block
- (1) P2-RTB-1 spring clamp terminal block
- (1) Power terminal block
- (1) RS-485 4-pin terminal block
- (1) ZL-P1-CBL10 ZIPLink cable
- (1) ZL-RTB20-1 ZIPLink feedthrough connector module
- (1) USB-CBL-AMICB6 programming cable
- (1) MICSD-16G microSD memory card
- (1) 3-wire power cable
- (1) Product inserts for Productivity1000 hardware items
- (1) Battery backup

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<table>
<thead>
<tr>
<th>Feature</th>
<th>Productivity3000</th>
<th>Productivity2000</th>
<th>Productivity1000</th>
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<tbody>
<tr>
<td>User Display on CPU</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Built-in USB Programming Port</td>
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<tr>
<td>Built-in Serial Ports</td>
<td>2</td>
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<tr>
<td>Built-in Multipurpose Ethernet Ports</td>
<td>1</td>
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<td>Up to 2*</td>
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<tr>
<td>EtherNet/IP Protocol</td>
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<tr>
<td>MQTT Protocol</td>
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<tr>
<td>Modbus RTU (serial) &amp; Modbus TCP (Ethernet)</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Remote I/O Expansion Rack Support</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>Local I/O Expansion Rack Support</td>
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<tr>
<td>Max Productivity I/O Capacity</td>
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<td>Hot Swappable I/O</td>
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<td>PS-AMC Support</td>
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<tr>
<td>Data Port (data logging &amp; project transfer)</td>
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<td>microSD</td>
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<td>Total Memory</td>
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<td>Average Scantime (µsec)</td>
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<tr>
<td>American Bureau of Shipping (ABS) Certification</td>
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<tr>
<td>Price</td>
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* For 2 multipurpose Ethernet ports, Remote I/O port must be configured for multipurpose use. Remote I/O port cannot be used for native remote I/O connections if configured for multipurpose Ethernet.
** Project transfer from the microSD card is not supported in the Productivity1000 CPUs.