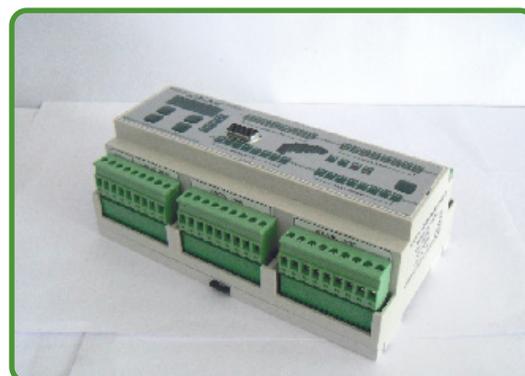


PLC μ Uno series

- Main PLC module 8+8 I/O and 16+16 I/O
- hardware fast counter for up/down encoder
- 4 analog inputs with 12 bit of resolution
- real time system **magOS**
- serial connection RS232 for programming
- ModBus master/slave for remote connections
- Mounting for inside cabinet on DIN - Ω rail
- Plug-in terminals for easy connection



PLC family description

The μ Uno family describes a set of PLCs main units with some similar features, 4 analog inputs with 12 bit of resolution, 2 fast inputs for hardware counter module, for two channels encoders or for counting + direction or as two extra digital inputs and last a basic configuration of digital inputs and outputs, varying upon the chosen model.

The model PLI1V16S16P.. is the CPU unit with 16 + 16 digital I/O, 4 function keys and a 4 digit display on the top; the model PLI1V08S08P... is the CPU unit with 8+8 digital I/O but with no function keys and no display.

All the PLCs of these family are for cabinet mounting via DIN - rail; all indicators led are placed just to become easy for the user to see the state of I/O and the state of PLC itself.

The μ Uno family is powered by a real-time system called **magOS**. This real-time system is composed by the LogicLab runtime (made by Axel s.r.l. - www.axelsw.it) on the top of cirmix bios, made by Cir.Mi. srl.

Please refer to programming manual for all features.

The CPU unit is composed by a main board equipped with PSoC5 (Cypress) microcontroller, with onboard core ARM[®] Cortex M3[®].

The CPU unit contains also the communication devices, serial RS232 for programming/debugging, RS485-2W where the Modbus[®] master/slave protocol is used, SPI communication for expansion units type μ Exp; then there are the digital I/Os, fast inputs for counter and analog inputs.

General features

Dimensions and size PLI1V16S16P..	160(L) x 90 (W) x 60 (H) mm
Dimensions and size PLI1V08S08P	105(L) x 90 (W) x 60 (H) mm
IP rating	IP20
Working temperature	0 ÷ 50 °C (273 ÷ 323 °K) 32 ÷ 122 °F
Status leds	Prg, Run, Error, Busy, I/O, fast IN
I/O led indications	inputs: green leds - outputs: yellow leds
Reset key	key on the top

Electrical features

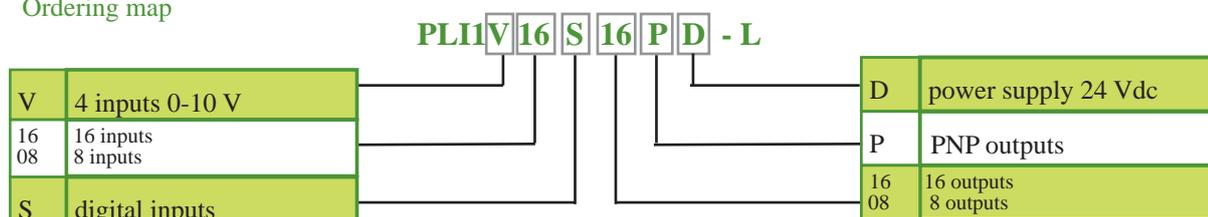
Power supply	24Vdc
Power consumption	1.5 VA
Devices	RS232 - RS485 - SPI
Ripple	10%
I/O refresh time	every 1 ms
Voltage level 0	2 V max
Digital Inputs	NPN/PNP configurable, optocoupled, 10-30 Vdc
Analog inputs	4 x 0 - 10V, 12 bit of resolution
Digital outputs	PNP - 30 Vdc max - 100 mA

Certifications

CE	EN61000-6-2 (EMC) EN61000-6-4 (EMI)
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Ordering map



Description of available models

Model	PLI1V16S16PD-L	PLI1V16S16PD	PLI1V08S08PD-L	PLI1V08S08PD
Main module digital I/O (In + Out)	16+16		8+8	
Digital direct expansion (In + Out)	none	112 + 112 with expansion μ Exp	none	112 + 112 with expansion μ Exp
Inputs for hardware counter	2 inputs for encoder or 1 counting input & 1 direction input			
Analog inputs	4 inputs 0÷10 V, with 12 bit of resolution			
CPU features	Processor	Cypress PSoc 5 (ARM Cortex M3) frequency = 67 MHz		
	Program memory	64 KBytes user program		
	Program source	64 KBytes for program source storing		
	Data memory	automatic: 11 KBytes of which 1 kByte retentive; mapped: 4 KBytes of which 2 KByte retentive		
	Flag memory	automatic: 1000 Flags; mapped: 1000 Flags of which 500 retentive		
Available Tasks	boot: init; background: asynchronous cycle; cyclic: 1 ms synchronous cycle			
Real-time system	magOS			
BIOS	cirmix			
Network protocol	ModBus® master/slave: programmable on RS485 - 2 wire interface Bus master up to 32 nodes connected (modules)			
Develop Tool Suite	magellanOSstudio build on LogicLab by Axel srl			
Programming languages IEC61131-3	All languages defined in EN/IEC 61131-3 textual: IL - ST; graphics: LD - FBD - SFC			

real-time system **magOS**

The real time system is the portion of software that is embedded into the hardware system and manages the working and the user-machine interacts with the system. Our system is multitasking type, so more than a single task can run simultaneously, so that user feels tasks running in the same time. **magOS** manages several tasks hidden to the user, as communication, ModBus protocol, input and output refresh as well for the main module as for the expansion units, the linking with led, function keys and display board on the top of the main module, the hardware internal modules such as fast counter (encoder counter) and analog inputs, over the specific user-dedicated tasks, the program tasks:

first task is called **Boot**, that manages all programs linked to this on; it is called just at start-up (power-on) or at program-to-run switch; this is typically the task for variables assignments or parameters set-up before the main cycle starts to go on;

second task is called **Background**, a non-prioritary task, indeed its cycle period is function of the serial communication, of ModBus communication (messages and queue management) and of the user programs which they are linked to; this is the task of mathematical routines, where also the variables going to or coming from an HMI can be processed and transformed and for strings manipulation;

the last (actually) task is called **Cyclic**, prioritary task of 1 ms, the main task that manages all programs are linked main cycle, as inside this the input reading function is called before, than all programs are executed and finally the output-writing function is called; this is the cyclic refresh of main module inputs/outputs, called every 1 ms;

in the units with expansions, the full versions (the ones without -L on code), there is another task, **ExpCycle**, a prioritary task of 10 ms (subtask of Cyclic) that manages all programs linked to this, with a variable cycle-time from 10 to 100 ms, user programmable; inside this task there is the inputs/outputs refresh routines about expansion units; only the used expansions are refreshed, and according to the amount of expansion modules connected in the system configuration (hardware), this task has the minimum cycling time that become higher, so the minimum value user can program will be higher than 10 ms. Finally we can tell **magOS** is the real-time system that manages our programs, the inputs and the outputs and obviously it is the system that interfaced to the develop tool **magellanOSstudio** allow us to download the program, execute the debug and all operations help us to see the system, we're programming, working.

memory map in real-time system **magOS**

