Pegaso PG1242P System

CNC, AND PLC SYSTEM WITH CANBUS, AND ETHERCAT INTERFACES

The Pegaso PG1242P system is an industrial operator panel, designed and produced by Mitrol s.r.l. Its single board design grants the highest level of reliability.

The power supply, the direct insertion socket mounted PC, the real time CPU, the CanBus CPU, and external sockets are all available onboard.

A 12" (800x600 pixels) color, active matrix, LED technology resistive touch screen, and USB port are installed on the front side of the panel.

On the same panel two button arrays are available. The arrays are built with quality mechanical keys whose labels can be user customized, and are used for the various plant controls. In the lower part of the panel holes are available for 6 electromechanical buttons, and the emergency button.

An external connections list, with a FIELD, or PC, indicator follows:

2 clamps for 24V input power supply	FIELD
1 PS2 keyboard port	PC
1 PS2 mouse port	PC
1 Ethernet 10/100/1000 Mbit port	PC
6 USB 2.0 ports	PC
1 VGA port	PC
1 RS232 serial port	PC
3 CanBus ports	FIELD
1 EtherCAT network port	FIELD

Input, and output signals interface modules are connected to the CanBus ports. Actuators can be connected either to the CanBus ports, or the EhterCAT port.

The standard version lacks a PC keyboard, although an industrial version is available as an option. All operator interface functions can be carried out on the touch screen. A virtual keyboard is automatically displayed in numeric, or alphanumeric form according to the context.

To increase system relyability solid state technology disks without moving parts (in the form of removable Compact Flash) have been preferred because an almost complete reliability compensates for the lower storage capacity. To protect against spurious writes, that can damage system files in case of accidental shutdowns, the Enhanced Write Filter (EWF) technology has been adopted. This organizes the disk into two partitions, one of which is completely write protected, and holds operating system files.

The systems runs on two totally independet CPUs that communicate with each other via a 32 bit dual port

memory. The first CPU is installed on the PC module where Windows 7 Embedded runs the operator interface software for automatic elaboration operations, and communication in general. The second CPU, mounted on a side of the board, is based upon a 32 bit ARM, and it is specifically designed to run the real-time control software for an industrial plan.

Beside the two aforementioned main CPUs, a third processor is dedicated to communicate with the modules installed on the field bus. On this processor a CanOpen protocol CanBus master is implemented.

The real time CPU directly drives the EtherCAT port.

Both the real time processor firmware, and the CanBus processor firmware are stored in the PC hard drive, and are uploaded to the fast RAM at every power on. Updating these firmwares is possible over the network, and even in remote assistance.

The following features are available in respect to the real time control:

- Linux operating system with realtime Xenomai extentions
- Loader for the main CPU firmware
- Loader for the CanBus CPU firmware
- Software for multitasking execution on PLC programs developed according to IEC 61131-3
- Basic CanOpen protocol with standard DS301 profile implementation that, besides supporting product specific standard profiles, allows direct, and easy interfacing with any CanBus device
- CanOpen protocol for the following product standards: DS401, DS402, DS404 e DS406
- EtherCAT master
- Software, and functions for handling axis movement
- A 6 axis interpolator
- Alarm handling software
- Software to compile and run ISO user programs.

For developing, and debugging of PLC programs the integrated environment LogicLab is available. This tool allows development of software in all the 5 levels of the IEC 61131-3 standard. The main features follow:

- Integrated text editor for IL (Instruction List), and ST (Structured Text) languages
- Integrated graphical editor for LD (Ladder Diagram), FB (Function Bloc), and SFC (Sequential Function Chart)
- Optimized compiler that directly generates executable machine code
- Debug via graphical, or textual watch windows
- Real-time debugging via triggers, and oscilloscope, that allow sampling of the variable's values in different points of the program
- Library management (creation, use, single block import, etc.)
- Network communication with the target even with remote assistance
- Basic axis movement library

For the operator interface the integrated enviroment WinPage is available, which makes it possible to design, and build pages, and subpages, according to the user needs. The main features follow:

- Basic controls: edit box, buttons, and base graphics (line, and rectangles)
- Graphical controlls: bitmaps, animations, cartesian plots, trend, and histograms
- Dynamic multitasking management
- Virtual, dynamic keyboards (numeric, and alphanumeric)
- Support of VB.Net scripts to handle events associated to controls, and pages in general
- Handling of global, local, and CNC/PLC provided variables
- Diagnosic pages prebuilt by Mitrol

- Editing of programs, and ISO storage of them

In both environments, the user interface, and the available tools, ease the programmer's work, and minimize development times.

With these tools it is possible to build any application, beeing it PLC only, or also CNC. For the latter Mitrol can:

- Provide the full version of prebuilt applications
- Develop a custom application from customer's specifications
- Cooperate on the development of a custom application, providing base packages, or developing critical ones.

Technical specifications

Dimensions (H x W x D)		535 x 360 x 85 mm
Power supply		24 V (18 – 36 V)
Current absorption		3A Max
Real Time CPU	CPU	ARM RISC Marvell 32bit 800MHz
	FLASH NOR memory	32 MByte
	FLASH NAND memory	1 GByte
	FLASH SPI memory	8 MByte
	RAM memory	128 MByte DDR2
	Dual Port CanBus memory	128 KByte
	Ethernet field bus	10 / 100 Mbit
	Dual Port PC memory	1 MByte
	Direct rthernet to PC	1000 Mbit
CanBus CPU	CPU	Fujitsu
	CanBus Controller	3 integrated circuits
	Internal FLASH memory	1 MByte
	Internal RAM memory	40 KByte
	External RAM memory	512 KByte
PC CPU	CPU	AMD Ontario G-T56N 1.6GHz Dual Core
	Cache L2	512 Kbyte x2
	RAM memory	2 GByte DDR3
	Chipset	AMD A55E
	USB ports	6 High Speed 2.0
	Serial ports	1 RS – 232
	Mass storage	8 GByte CF or optional 128 GByte SSD
	Ethernet network	10 / 100 / 1000 Mbit
	Keyboard	PS2
	Mouse	PS2
	LCD TFT	12”, 800 x 600
	VGA	Up to 2560 x 1600
CanBus Baud Rate		125 kbps / 250 kbps / 500 kbps / 1 Mbps
Marking		CE
Operating temperature		0 – +50 °C
Storage temperature		-20 – +85 °C
Warehousing humidity		Max 95% non-condensing
Front panel protection grade		IP54